Eisbaer SCADA 3

Handbuch
User Manual

ALEXANDER MAIER GMBH

Table of Contents

Top Level Intro

This page is printed before a new
top-level chapter starts

Part

I

1   General

Fields of application, technology and interfaces

Areas of application

The software is a modern and cost-effective software for the visualisation and automation of intelligent buildings or systems. Its performance spectrum ranges from individual rooms or machines, flats and houses to the most modern and largest buildings and building complexes. The convenient graphical editor improves the creation of user interfaces with a flexible menu structure, practical layout tools and numerous visual effects. Interfaces to a wide range of control, regulation and IT systems make the software a universal building management platform. EisBär SCADA enables the realisation of systems of any complexity and size. The software is available in various languages for our international customers. The user interface can be realised in any language available in Windows operating systems.

Technology

The technical basis is the Microsoft® .NET Framework 4.8, the basis of modern software and current Microsoft® server and desktop operating systems. The internal network structure and the protocol-independent design make EisBär SCADA a flexible and universal system. The component-oriented structure simplifies and accelerates the development phase of your visualisation project. EisBär SCADA also offers an open interface for the integration of specially developed components. Microsoft's latest WPF and WCF concepts are used as technologies. They form the basis for design and functionality.

Interfaces

The most important interface standards such as KNX, Modbus, digitalSTROM, Fidelio, ESPA, ESPA-X, Sonos, BOSE SoundTouch, Revox Voxnet, Lutron, Tesla, ekey, Philips hue, Gardena Smart System, EVIS, Serial, BACnet, CAN, OPC, IRTrans and many more are integrated into the software licence-free.

Note: When using external connections, e.g. as a web service or cloud connection, we cannot guarantee permanent availability. The services may be temporarily unavailable or, in extreme cases, may be cancelled by the providers without replacement.

Content of this chapter:

1.1   Introduction

This system manual gives you direct access to the product with individual step-by-step instructions. Advanced users can use it as a reference guide and command reference.

The following summary of the content gives you an overview of each chapter of the manual:

General
Software-Program suite and system requirements

Installation[20]
Installation guide for Microsoft® Windows™ incl. Microsoft® .NET Framework 4.8

Program parts[26]
Quick start into the Scada-visualisation technology and a brief description of the software

Design[74]
In single step-by-step instructions to the finished project

Commissioning of the project[92]
From the Editor to a running project in Client-Server-Operation

Components[104]
Full overview and detailed descriptions of the individual components and functions

1.2   System requirements

The individual software parts require different software and hardware requirements. EisBär software was developed for Microsoft® Windows® operating systems.
The systems are to be used as a standard installation. The user must have full administrator rights locally. No standard Windows services may be disabled.

Minimum requirements:

Editor	EisBär SCADA 3.0	EisBär 4.0
Operating system	Microsoft® Windows 10, 11 or Windows Server 2016, 2019, 2022 each with Microsoft® .NET Framework 4.8 and all updates	
Main memory	2048 MB or more (4096 MB or more recommended)	4096 MB or more (recommended 8192 MB or more)
CPU	2.0 GHz DualCore or higher	2.2 GHz DualCore or higher
Free hard disk space	2 GB or more (recommended: 10 GB or more)	10 GB or more (recommended: 20 GB or more)

Client	EisBär SCADA 3.0	EisBär 4.0
Operating system	Microsoft® Windows 10, 11 or Windows Server 2016, 2019, 2022 each with Microsoft® .NET Framework 4.8 and all updates	
Main memory	2048 MB or more (4096 MB or more recommended)	4096 MB or more (recommended 8192 MB or more)
CPU	2.0 GHz DualCore or higher	2.2 GHz DualCore or higher
Free hard disk space	2 GB or more (recommended: 10 GB or more)	10 GB or more (recommended: 20 GB or more)

Server	EisBär SCADA 3.0	EisBär 4.0
Operating system	Microsoft® Windows 10, 11 or Windows Server 2016, 2019, 2022 each with Microsoft® .NET Framework 4.8 and all updates	
Main memory	4096 MB or more (recommended 8192 MB or more)	4096 MB or more (recommended 8192 MB or more)
CPU	2.0 GHz DualCore or higher	2.2 GHz DualCore or higher
Free hard disk space	10 GB or more (recommended: 20 GB or more)	100 GB or more (recommended: SSD for fast write operations)

Note: If virtual environments such as VMWare ESXI or Microsoft Hyper-V do not have a physical USB interface, a USB dongle server[22] must be used to connect the polar bear licence dongle. The chapter 'Installation --> USB dongle server[22] describes the configuration of a suitable USB dongle server.

The use of KNXNet-IP routers is recommended for connecting a KNX system. No KNX-USB interface can be used.

App	EisBär SCADA 3.0	EisBär 4.0
Android	7.0 or higher	7.0 or higher
iOS	13.0 or higher	13.0 or higher

Standard ports:

Direction	EisBär SCADA 3.0	EisBär 4.0
EisBär Server Incoming	TCP 9959, 9960 (Windows clients) TCP 8003, 8004 (smart clients) UDP: 3702 (server search) ICMP: Autoupdate	TCP 9961, 9962 (Windows clients) TCP 8005, 8006 (smart clients) UDP: 3702 (server search) ICMP: Autoupdate
Updates Outgoing	www.busbaer.de	www.busbaer.de
Portal Outgoing	eisbaer-manager.de; TCP 8182 (encrypted), 8181 (unencrypted)	eisbaer-manager.de; TCP 8182 (encrypted), 8181 (unencrypted)

Microsoft .NET Framework
The installation of Microsoft® .NET Framework 4.8 and all available updates is required to use EisBär SCADA.

As a rule, you will receive all necessary parts via the auto-update of your operating system. Please check this in the control panel under "Programmes and functions". If the Microsoft® .NET Framework 4.8 is not yet installed, please start an auto-update. If this does not install the framework, please search for the manual download on the Microsoft homepage or on our homepage.

After successful installation of the .NET Framework 4.8, including all updates, you can start with the installation of EisBär SCADA.

In some cases, the previous version 3.5.1 is required for installation - this mainly concerns the installation of the separately available OPC add-on for EisBär SCADA and the video door intercom components.
This can be activated as follows: Control Panel -> Programs and Features -> Enable or disable Windows features -> Microsoft .NET Framework 3.5.1 (tick the box -> OK)

1.3   Software 3.0 and 4.0

EisBär is available in 2 versions
Both versions are developed in parallel. All components have the same appearance and function in both versions.
The plotter differs in appearance and function. With EisBär 4.0 a better and more detailed data analysis is possible.

EisBär 3.0 is a 32-bit software.
EisBär 4.0 is the first 64-bit solution in our market segment. Thanks to the greater resources available (e.g. RAM, threads, computing power), projects can grow in size as required with more performance. This means that large projects no longer need to be split into several systems. Large projects with a large number of pages, drivers and components can be realised.

EisBär 3.0 uses individual databases to store faults and measured values.
EisBär 4.0 has the latest database technology and is therefore particularly suitable for projects with a high volume of data/values. All switching operations, fault signals and measured values of all connected systems are automatically recorded over time. Thanks to the new time series database, we are able to save all signal sequences of the systems over the entire runtime and retrieve them quickly.
With a right mouse click on any component, all current and historical data can be accessed at any time.
If it is not yet clear what data you want to analyse in the future, EisBär 4.0 makes it easy. The data is stored and can be retrieved.

With the "debug mode" in EisBär 4.0, the system can be set to any point in time and the individual processes of the past can be run through again. So if, for example, something did not work "correctly" on Monday at 10:00, you can return to this point in time and view and analyse the entire system with all signals "offline".
A database server works in the background for this purpose. All data generated during the life of the system is stored here. This database enables assessments to be made which are required for more efficient system operation. This function is not available in EisBär 3.0.

WebApp access is already included in EisBär 4.0. This is optional[16] for EisBär 3.0.

The EisBär programme package consists of three programme parts:

- Editor[28] , for creating the interfaces
- Server[45] , service as a central server for the clients
- Client[49] , operating software for the user.

Detailed information on the individual programme components can be found in further chapters of the manual.

1.4   Licensing

The complete software package is available in the current version on the homepage www.busbaer.de for free download.

No license is required for the use of the editor. A license is required for permanent operation of the server. Without a license, the server-client operation will be terminated after 30 minutes. Only the server is licensed. The number of clients is arbitrary. The required license size depends on the size of the project, the number of realized pages and the created components/channels.

For the size of the license it is important that the pages and/or the components/channels in the realized project are smaller than or equal to the license size. If a larger license is required, an upgrade is possible at any time. The USB license dongle does not have to be exchanged. You will then only receive a new activation for the existing dongle by e-mail or, if you have an Internet connection, these can be reloaded online via the server console.

Project Licenses EisBaer SCADA V3:
- EisBär SCADA project license Pro Domo (5 pages / 200 components / channels), incl. USB license dongle
- EisBär SCADA project license starter (10 pages / 500 components / channels), incl. USB license dongle
- EisBär SCADA project license Professional (30 pages / 3,000 components / channels), incl. USB license dongle
- EisBär SCADA project license architect (100 pages / 10,000 components / channels), incl. USB license dongle
- EisBär SCADA project license Enterprise (unlimited pages / 100.000 components / channels), incl. USB license dongle

WebApp licenses (optional from EisBär SCADA V3 with existing dongle license):
- EisBär SCADA ProDomo WebApp / HTML5 access

- EisBär SCADA Starter WebApp / HTML5 access
- EisBär SCADA Professional WebApp / HTML5 access
- EisBär SCADA architect WebApp / HTML5 access
- EisBär SCADA Enterprise WebApp / HTML5 access

Project licences EisBär V4:
- EisBär SCADA project licence Professional (30 pages / 3,000 components/channels), incl. USB licence dongle and WebApp/HTML5 access
- EisBär SCADA project licence Architect (100 pages / 10,000 components/channels), incl. USB licence dongle and WebApp/HTML5 access
- EisBär SCADA project licence Enterprise (unlimited pages / 100,000 components/channels), incl. USB licence dongle and WebApp/HTML5 access

Update and upgrade licenses are also available. An overview is available in the current price list and on our homepage / online shop at www.busbaer.de

Portals licenses for portal service (optional for EisBär SCADA V2, EisBär SCADA V3 and EisBär 4.0):
- Remote access portal service - 1 year
- Remote access portal service - 2 years
- Remote access portal service extension - 1 year
- Remote access portal service extension - 2 years

Updates within the purchased license are free of charge. The useful life of the software is not limited to running time. An annual fee for use is not charged.

Some components are included in the calculation with a weighting of more than 1. In the component window of the editor, the corresponding multiplier for these components is enclosed in square brackets. If such a component is used, x more components are counted for license calculation.

Components with increased weighting

Categories	Category name	Multiplier	Minimum licence	Remark
Communication	SIP server internal	[x200]	Starter	
Energy efficiency	Maximum guard	[x500]	Professional	
	Solar energy manager/planner	[x200]	Starter	
E-mobility	OCPP Local backend	[x150]	Starter	+150 per charging station
	OCPP Client	[x150]	Starter	
	Dynamic charge management V2	[x2000/3000]	Professional	From 11 charging stations, the multiplier increases to 3000
	Tesla	[x200]	Starter	
	EVCS	[x150]	Starter	
	wallbe	[x150]	Starter	

Categories	Category name	Multiplier	Minimum licence	Remark
driver	BACnet Server	[x2500/3000]	Professional	From 300 channels, the multiplier increases to 3000
	BACnet Client	[x2500/3000]	Professional	From 300 channels, the multiplier increases to 3000
	IEC60870 Server (Slave)	[x500]	Professional	
	CIM	[x2500]	Professional	
	Profibus	[x200]	Starter	
	SNMP Manager	[x200]	Starter	
Manufacturer-specific drivers	Honeywell MB-Secure	[x2500]	Professional	
	Fidelio FIAS	[x3000]	Architect	
	Fidelio Room Info	[x3000]	Architect	
	Lutron	[x200]	Starter	
IoT	MQTT Client	[x200]	Starter	
	MQTT Broker	[x200]	Starter	From 200 channels, the weighting increases according to the number of channels.
	MQTT Bridge	[x200]	Starter	
	Azure IoT Hub Service	[x500]	Professional	
	The Things Network	[x500]	Professional	
	LoRBaer LoRaWAN	[x500]	Professional	
Multimedia	Revox Voxnet	[x200]	Starter	
DALI Emergency Lighting Manager	DALI Emergency Lighting Manager	[x2500/3000]	Professional	From 100 channels the multiplier increases to 3000

The number of channels is displayed in the properties window of the components. Channels or data points for driver components are not counted.

Top Level Intro

This page is printed before a new
top-level chapter starts

Part

II

2 Installation

The most recent Eisbaer SCADA software package is available as a Microsoft Installer (.msi) package on our website www.busbaer.de as a free download. Please register as a user and login for download.

Chapter:
- Notes
- Software-Setup
- USB Dongelserver
- Different EisBaer Version

2.1 Notes

From Windows 8.1 and higher (eg Wndows 10) make sure that the following settings have been made: Network settings must be set to "**Private network**" or "Workstation network". If this is accidentally "public", almost the complete communication is stopped.

If this is not possible directly, you can do the following:
Open the Group Policy Editor by entering the command "gpedit.msc" in the start menu or at the command prompt and starting the program.
Click through to "Computer Configuration> Windows Settings> Security Settings> Network List Manager Policies".
Double-click "Unidentified Networks" and change the "Location Type" to "Private".
After confirmation with "OK" and a restart, Windows also allows access to the Internet in unidentified networks.

The Set as a **timed connection** option must be set to **Off**.
Win10: Settings -> Network and Internet -> Ethernet -> Network Select -> Set as a clocked connection to "Off" (depending on the version can also be "Should the computer be found")

For e.g. The **EisBär SCADA dongle** and a connected KNX USB interface require the Windows8 / Windows10 USB fix from Microsoft. Via the hyperlink this patch can be downloaded directly, as well as via www.busbaer.de from our download area.

The power settings must be set so that the USB ports can not be disabled by the system. This must be set in the Device Manager and in the general power settings. The PC should also be configured to have this, e.g. after a power failure, automatically starts up and logs on.

If you have purchased an upgrade of your license, you will need a new license file. These can be downloaded and installed in the EisBär SCADA Server Configuration Console with the server stopped.

Delete Eisbär service if it can not be uninstalled

One possibility would of course be to delete the registry, if you want to shimmy up to the path of the services.
This is located here: HKEY_LOCAL_MACHINE \ SYSTEM \ CurrentControlSet \ Services
Here it is enough to delete the key with the service name.

About the CMD console it goes like this:
sc \\ localhost stop IceBear SCADA 3.0 WindowsService
sc \\ localhost EisBär SCADA 3.0 WindowsService

2.2 Software-Setup

After successfully installing the .NET Framework 4.8 or newer, you can now install the software package.

The current EisBär SCADA program package is available free of charge as a Microsoft installer package (.msi) on our homepage www.busbaer.de. Please register there as a user. After successful login, you can download the current installation package in the download area.

The installation begins with a double click on the EisBär SCADA.msi file.

*Note: Make sure that you have administration rights on the local PC and are logged in as administrator. During the installation, the **firewall** of the operating system must be activated. The communication ports are entered there. If this is not possible, the installation will abort.*

On the PC that is used to create the interfaces, you should carry out a "standard" installation. This will install all available programme parts. This is important because it allows you to test the projects in live operation with server and client.

If you only want to install the editor, server or client on a PC, please select the installation type "User-defined" and only install the required programme parts.
A separate button is available for the installation of a pure client computer.

The installation of the client can also be triggered with the start parameter /qn of the EisBär SCADA setup. This makes it possible to install the client via software distributions.
Remove the spaces in the MSI name and replace them with an _ underscore.

EisBaer SCADA 3:
The command line for this is: msiexec.exe /i EisBaer_SCADA_3.0en.msi /qn
For a silent deinstallation: msiexec.exe /x EisBaer_SCADA_3.0en.msi /qn

If you want to have the client as autostart after the installation, you can run the setup in a console with the following command line:

msiexec /i "EisBaer SCADA 3.0.msi" SET_CLIENT_AUTO_START=1

The client is then entered in the registry for the Autostart (without a link in the Autostart group).
HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows\CurrentVersion\Run

Overview of the ports that are entered in the firewall:

Name	Port	Art
Eisbaer3.Service.KNXtcpPort	3671	TCP
Eisbaer3.Service.KNXudpPort	3671	UDP
Eisbaer3.Service.DiscoveryPort	3702	UDP
Eisbaer3.Service.SIPtcp	5060	TCP
Eisbaer3.Service.SIPudp	5060	UDP
Eisbaer3.Service.EVCSReceiver	7090	UDP
Eisbaer3.Service.RestPort	8003	TCP
Eisbaer3.Service.WebsocketPort	8004	TCP
Eisbaer3.Service.Port	9959	TCP
Eisbaer3.Service.DownloadPort	9960	TCP
Eisbaer3.Service.BACnetudpPort	47808	UDP
Eisbaer3.Service.Service.tcp	any	TCP
Eisbaer3.Service.Service.udp	any	TCP
Eisbaer3.Service.Sonos	any	TCP
AnyDesk (können mehrere Einträge vorhanden sein)	any	TCP/UDP

Notice:
*The EisBaer service requires ports **808** and **3702** as "Lisener" and "Discovery" port for the client/server search. Without port 808 the service cannot be started and without 3702 no client will find the server via the search.*

2.3 USB Dongleserver

For use in virtual environments without an available USB port, the EisBär USB license dongle can be connected via a USB device server.
It must automatically connect the USB license dongle as a service before the user logs in - the SEH myUTN50a Device Server fulfills these requirements.

Installation Guide SEH UTN Manager for SEH myUTN50a Device Server

- start application
- Next, accept
- Installation for all users of this computer, Next,
- Complete, Next, Next, Next,
- Installation starts

- Complete

Configuration Instructions SEH UTN Manager for EisBar dongle on a SEH myUTN50a Device Server

- Start SEH UTN Manager, select UTN Server and add, OK
- Open the Port \ Settings menu
- Activate automatic reconnect
- Activate Port (SG-Lock)
- Program -> Options -> Automatic -> Auto Disconnect must not be active.
- The SEH UTN Manager can be closed. He is not necessary for the operation.

Notice:
Web UI myUTN under Security --> Device access --> USB devices HID class must be active.
Web UI ServerPro under Security --> USB --> USB devices HID class must be active

The dongle number is displayed in the server configuration console by clicking on the "Show dongle" button.
The dongle server is ready for use and the EisBär dongle is connected to the EisBär server service before the user logs on.

For newer versions:
- Activate port
- Right-click on the server -> Activate Activate Auto-Connection for the corresponding USB port.

2.4   Different EisBaer Version

It is possible to use several versions of EisBär on one PC.

To do this, the installation folder in the directory (C:\Program Files (x86)\Alexander Maier GmbH\ or C:\Program Files\Alexander Maier GmbH\) must be copied.
This must be done before installing a new version.
It is best to add the version number to the name of the folder. However, there must always be a folder with the original name.
The Editor in the corresponding version can now be called up from the individual folders. The server service cannot be started.

Example:

r (C:) › Program Files (x86) › Alexander Maier GmbH ›

Name	Änderungsdatum	Typ
EisBär SCADA 3.0 - 2571	02.06.2023 10:57	Dateiordner
EisBär SCADA 3.0 - 1964	25.07.2022 17:28	Dateiordner
EisBär SCADA 3.0 - 1878	10.01.2022 10:10	Dateiordner
EisBär SCADA 3.0	01.06.2023 14:40	Dateiordner

Top Level Intro

This page is printed before a new
top-level chapter starts

Part III

3   Program suite

The EisBär SCADA program package consists of several programs.

After a complete installation, the following program links are created on the desktop and in the start menu:

Program parts	EisBär SCADA 3.0	EisBär 4.0
Editor Create or edit the project.	EisBär SCADA Editor[28]	EisBär Editor[28]
Server configuration Settings for the server service.	EisBär SCADA - Server Configuration Console[45]	EisBär Server Configuration Console
Client The client can be started in 2 alternative further display variants: Client Gadget mode[53] and Client Tray mode[55] .	EisBär SCADA - Client[49]	EisBär Client
Manual Description of the software and all components.	EisBär SCADA 3.0 Help	EisBär 4.0 Help
Update service This takes over the automatic updating of the clients in the local network after the EisBär server has been updated programmatically.	EisBär SCADA - Client update service[57]	EisBär SCADA - Client update service[57]
WebApp / HTML5 Client The WebApp / HTML5 client is optionally available for EisBär SCADA 3. This is already included in EisBär 4.0.	EisBär SCADA WebApp/HTML5 client (browser)[70] optional	EisBär V4 WebApp/HTML5 client (browser)[70] included
Smart - Client The Smart-Client (App) is available free of charge under Apple iOS in the Appstore and under Android in the Playstore.	EisBär SCADA Smart Clients (iOS, Android)[58]	EisBär SCADA Smart Clients (iOS, Android)[58]

EisBaer 3 / EisBaer4 work flow

3.1   Editor

EisBär SCADA - Editor [28]

With the editor, EisBär SCADA visualization projects are created, edited and can also be tested live via the integrated simulation - with all interfaces used in the project. Ideal for quick tests and functionalities or applications of EisBären uncomplicated and without any cost in advance to be able to check.

It is not essential to test the created project in server-client mode. For very few components, e.g. user administration, a test is already necessary in server-client mode, as you are always an administrator with full rights in the editor.

The editor displays the interface identically to the client view (WYSIWYG = What You See Is What You Get")

A GDI-capable graphics card is required for the editor.

Please observe the Important notes[80] for project planning.

3.1.1 Workspace

	Especially when working on a notebook, the space on the screen is limited. The ribbon can be made smaller by pressing the arrow key. This provides more space for displaying and editing the page.
	AnyDeskr-Web Support, starts the remote maintenance application. This is also stored in the help tab.

	This icon opens the help.
	Here you can see the current version and the contact details of Alexander Maier GmbH.
	The blue tick stands for the latest version of the software. If an update is available, a red flag is displayed instead. This can be used to switch directly to the Update Manager. Alternatively,"Check for updates[36] " can be selected via the *Help* tab.

Menu lines

Description of the individual buttons in the menu bar of the EisBär Editor. A short description is displayed at "Mouse over".

Avaiable shortcuts are:

- Ctrl+R   Simulation start/stop
- Ctrl +K   Open server console
- Ctrl +N   New page
- Ctrl +M New master page
- Ctrl +F   Fit page
- Ctrl +O   Open project
- Ctrl+mouse wheel to zoom the project page

3.1.1.1   Main Menu

In the main menu ribbon, the most important and frequently used functions are included, such as opening a project or projects most recently used, the general settings[31] of the editor, and the project is downloaded from a running server through a network connection.

More features are available after loading a project in the editor and are therefore grayed out.

3.1.1.1.1 Options/Settings

The general settings of the editor can be changed under Settings.
The settings are called up in the file/main menu.

To apply the settings, the editor must be restarted.

The settings are divided into:

- [Appearance][32]
- [General][32]
- [Page Editor][33]
- [Language][33]
- [Diagnosis][33]

3.1.1.1.1.1 Appearance

Appearance

After changing the **standard text formats**, all new components dragged onto the workspace are created with these format settings.
The editor does not need to be restarted to apply the changes.

TheDefault Image Path defines the folder where all graphics are copied to when imported into the Editor.
Default path: **C:\Users\USERNAME\Documents\Alexander Maier GmbH\EisBär 3.0\Media\Images\Custom**
By changing the path you can change the graphic location to your desired location.
The changes will be applied for each newly created project. The editor does not have to be restarted.

It is not possible to change the path for an existing project at this location.
This must be done via the graphic properties[106] of a component.

If "Optimize images on import" is activated, graphics files are optimized when imported into the project.
This option can also be enabled and disabled in the import dialog[106] .

3.1.1.1.1.2 Common settings

By activating the Undo Redo function, it is possible to undo or restore changes in the project.
If "Create backup copies of the folder" is set, the project is compressed and saved in the backup folder when the project is closed. The backup folder is located in the project folder.

Autosave I and Autosave II

Activate Autosave	With this function the project is saved in the set time interval.
Interval in min.	Time interval in minutes for the automatic saving of the project.
with confirmation / in the background	Autosave can be executed with confirmation (popup window in the header) or in the background.
Save before start	With this option the project is saved as soon as the server console is opened from the editor with "Start".
Save before simulation	With this option, the project is saved as soon as the simulation mode is switched to.

The "4k Mode" is for a better display on high resolution screens.
Popup Editors Margins can be resized with this setting. Depending on the screen setting, some input windows (for example, channel editor) may be displayed too small. This resizing will enlarge the windows accordingly.

Macro folder / ScadaComp folder path specifications.

3.1.1.1.1.3 Page designer settings

In the "Selection settings" area, the color and the frame width can be predefined.

Grid settings refers to the editing interface. There you can set the grid color, the grid spacing in pixels and the transparency (0.0 - 1.0). If "Align to grid" is activated, all components that are inserted into the project are automatically aligned to the grid.

3.1.1.1.1.4 Language

Here the language of the editor can be set to German or English. After a change, the editor must be restarted.

Default project language affects new projects. This sets, for example, the component "Project language selection" to the corresponding language.

3.1.1.1.1.5 Diagnostics

To log error messages of the EisBär editor, logging can be activated here. As with the server console, the storage path of the log file can be selected. The log level can also be adjusted.

Attention: Diagnostics are only for error cases. Please use only after consulting the support team! They can significantly affect the performance of the service when used.

3.1.1.2 Start

The menu can be accessed through the "Start" ribbon.

Clipboard (Microsoft Standard - Ctrl+x Cut, Ctrl+c Copy and Ctrl+v Paste)

Simulation "on" The editor is in a live mode, so the project can be directly tested in the editor without having to start the server. All drivers are activated and fully operational.
(In simulation mode driver and invisible components are still visible)

Add or remove page, master page.

Select/Deselect all components on the current page
Component property, Bring to front, Move to back, Z-Level
Change arrangement of the component evenly and distances larger one another or out.
Align two or more selected components. Left, Top, Right, Bottom
Distribute componente, Top, Center Bottom, Left, Middle, Right
License of the loaded project

3.1.1.3 Project

	Export and import selected components. The settings are also adopted. Optionally, new networks can be created during the import. In order to have the ScadaComp in the component list, this export must be stored under "C: \ Users \ UserName \ Documents \ Alexander Maier GmbH \ EisBär 3.0 \ **ScadaComp**".
	User management details in chapter [User management](#)[82] .
	Project Up-/Download via network, details in chapter [Project Up/Download](#)[85] .

3.1.1.4 Tools

	Translation of component-specific labels in different languages. Further information in chapter [Multi language projects](#)[86]

3.1.1.5 View

The menu can be accessed through the "View" ribbon.

	Hide individual windows of the editor

Translator	The user-defined texts can be translated in the Translator. If a translation is required, a translation must be available for each caption; user-defined captions are only translated if there is a $ sign in front of the text. Further information in chapter Multi language projects[86]
Restore Default Settings Save Settings Settings	Restore default settings of the Editor view or save current view. This refers to the arrangement of windows and menus.

3.1.1.6   Help

The Help tab can be accessed through the "Help" ribbon.

WebSupport	Anydesk WebSupport will start an remote session. When the program starts, the phone number of the support person and the ID for the session is displayed.
Help	Online Help or online manual.
About EisBaer	Information about the currently installed Eisbaer Scada version.
Check for Updates	Check for updates, and view the changelog of the latest version. If a new program version becomes available, it can be downloaded and installed here.

3.1.2   Component overview

Overview of all available components[104] and drivers[544] . Simply drag and drop these into the currently open page of your project.
Depending on the project size it can be helpful to group components onto individual layers on the respective page, you will find further details in the chapter Layer[44] .

Components

Search

Date Time Display

FlipClock

Clock

Smiley

Sensors

Button Switch

Controller

Animated Controller

Touch Value Editor

Text Edit

Hand Automatic Switch

Multistate Fan Switch

RTR Operation Mode Switch

ColorPicker

Code Lock

Comfort

ColorShow

ColorShow Editor

Scenarios

Scenarios Editor

Change Project Language

Wpf Theme Selector

Presence Simulation

Weather forecast

Media Player

Controlling, Logic & Time

Graphical Logic

Calendar

Calendar Editor

Components | Project Window

3.1.3   Project window and pages

The project window is a tree representation of the pages and components contained in the project. The page names can be changed during creation or by right-clicking on the page.

It is possible to protect a project with a password. In this way, projects can be protected against unauthorised changes. The function is located in the right-click menu of the project and only has an effect in the editor when opening the project.

Project Window

search item ...

- English Manual 2016
  - **Project 1**
    - Exercise 1
      - All on/off
      - Entrance
      - Hall
      - Kitchen
      - Kitchen power point
      - KNX1
      - Offices
      - Picture
      - RTF (Rich-Text-Format)1
    - Exercise 2
    - Exercise 3
    - Exercise 4
    - **Exercise 5**
    - Exercise 6
    - Exercise 7
    - Exercise 8
    - Master

Components | Project Window

Project Window

search item …

⊿ Schulung

⊿

Add New Project

Add Existing Project

Expand tree

Collapse tree

Rename

Change/set solution password

Remove solution password protection

> 🟥 Master

A **master page** is a page that can serve as a background for one or more other pages. Components on a "master page" appear "behind" components on the current page. It is suitable for backgrounds, general design, for central buttons and navigation components. In the properties of each visualisation page (blue), you can assign a master page as a background (master page ID).

> 🟩 Exercise 5

The start page can be reset by right-clicking on a (blue) page. The colour then changes from blue to green.
If permissions are assigned via the user administration, individual start pages can be defined for each user created. See chapter [User management](#)[82] .

> 🟦 Exercise 3

One page (blue) is the actual visualisation page and contains all operating elements for control. This page can also be copied completely via the right-click menu. Links within the page remain (new network).

3.1.4   Communication

The Communication window is used to link the individual components with data points, e.g. from the KNX driver.
If data points are connected, networks are created. In principle, these networks are like group addresses in the ETS. However, they cannot be named and are created automatically by linking.
In the left part you can see the data points of the current selection, in the right part, for example, the data points of a component on another page can be displayed. This makes it possible to link across pages. To do this, open the pull-down menu via the arrow button and open the corresponding page.

A short description is available for each data point as well as the respective data point type. If a link is present, the internal network name, the KNX group address and the KNX group address name are displayed. The arrow in front of a data point can be used to show or hide all linked components.

The colour coding is used to distinguish whether it is an input, output or bidirectional data point. Linked components are displayed with a bar in the data point.

○ Lock operation (display only) On/Off, DataPointBooleanVal...	**Input** (Receiver only, no sender)
> ◆ Switch On/Off	**In-/ Output** (Bidirectional, sending and receiving
● Value On (press) DataPointValue	**Output** (Sender only, no receiver)
◆ XT 4 Breaker.Page 2.Button Swit... DataPoint3BitControlled	linked component (project name. page name. component name. data point name). Double-click or right-click --> "Select linked component" to switch to the component page.

With remove or a right mouse click on the data point, the network can be disconnected from a data point.
Double-click or right-click (select linked component) on the data point of a linked component (black) to switch to the component page.

3.1.5 Properties

In the Properties window, the components / drivers specific setting can be made. Because this property dialog differs for each component, this chapter does not discuss it in more detail. The components[104] section describes the properties of the individual components.

For text ads, this panel configures the formatting of the ad. For value examples, see: Formatting[109] .

3.1.6 Data point list

A data point list is created for each driver available in the project (in this example a KNX driver). In this list, all available group addresses are listed with which the components can be linked. The display is similar to the structure in the ETS. The sorting of the list can be selected in the top line. Without sorting, the data points are displayed freely one below the other.

Data points are dragged and dropped onto the component. This takes place respectively at the desired data point of the component.

You can find the detailed explanation on how to create the data point list in the chapter KNX Driver set up⌐⁵⁵⁶ .

3.1.7 Layer

Layers can be used to organise large and complex pages. Locking, hiding/showing individual layers or even individual components can prevent accidental moving or reparameterisation. If no components are explicitly inserted into a layer, they are all located in the "Background" layer created by default. They can then be individually locked or hidden there.

Layers also define the Z layer area in which the components in it can be located. The Z-level of a component can only be changed within this area.

Adding / removing a layer
Important: If a level is to be deleted, there must no longer be any components on this level!

Components can be searched for by name using the search function.

Eye: Visible On/Off
Lock: Edit On/Off

The Z-index of the above example are define as below:
Background   0-9999   (default)
Lighting   10000-19999
Shutter   20000-29999

The Z-index starts on the page at 0 (smallest value). All further levels build upwards. In the above case, a component in the000 level is therefore always above a component in the background, regardless of which Z level is selected within the level.
When using a **master page**[38] , the contents of the master page are always displayed **below the "Background" level**.

Important: The layer _cannot_ be changed subsequently, or only by cutting the component and pasting it into the desired layer. When pasting, be sure to select the "Keep meshes" option.

3.2   Server Configuration console

EisBär SCADA - Server configuration console

The EisBär SCADA Server runs as a system service on the installed computer. The service is preset to "Automatic (Delayed Start)", i.e. when the computer is started, the EisBär SCADA Server is automatically started with a 2 minute delay. This happens before the user logs on. A user login is not required. The delayed start is necessary to establish the network connection before the EisBär service is started.

The EisBär SCADA server service is set up using the EisBär SCADA - Server Configuration Console. Administrator rights are required to open the console. A fixed IP address must be set in the server so that the clients (Windows, WebApp and MobileApp) can access the server at any time.

Projects are automatically updated to the installed EisBär version when the EisBär service is started, provided the project status was created with an older EisBär version. Before this, a backup copy is created in the project folder under the name ../Backup (ZIP file). This function is identical in the EisBär Editor.

Messages related to the EisBär SCADA Server are saved in the Windows Event Viewer under Windows Logs\Application. EisbaerServerWindowsService is used as the source.

Note: For virtual environments, please observe the notes in the chapter _USB dongle server_[22] .

Settings in the console are only possible when the service is stopped.

Name	Description
IP address	A fixed IP address must be set in the server PC so that the clients (Windows, WebApp and MobileApp) can access the server at any time. If the server and the client are the same machine and no other clients are needed, the IP 127.0.0.1 (local host) can also be set. However, this will not allow any other client to reach the server.
Folder / Project	Storage path to the project that the service is to load. For Project, the ".EisbaerV3Solution" file of the project is selected.
Save and load system state	If this option is set, the last state of the components will be loaded after a restart of the service. Without, all components are displayed with their "undefined" state.
Load Status / Server Status	There are 3 states: Server is not started, Start pending and Server is started. If the server is not started (project not loaded), the visualisation cannot be displayed in the client. If the service is started by pressing the "Start service" button and the project is loaded, the status changes to "Start pending". Next to it, the steps carried out until the start are displayed. This process must not be interrupted. When the server is ready, the display changes to "Project loaded". Projects are automatically updated to the installed EisBär version when the EisBär service is started, provided the project status was created with an older EisBär version. This creates a backup copy in the project folder under the name .../Backup (ZIP file). This function is identical in the EisBär Editor. Stop Service unloads the project again. Restart Service restarts the service. The behaviour is the same as with Stop and Start Service.
Connection status	Indicates whether the server console is connected to the service itself.
Licence	Shows whether the licence is valid or not. The licence file can also be downloaded here. No further action is then required. Alternative manual installation: Install the "Eisbaer.EisD" file via the "Install licence" button; select the file type *.* for this. Use Show Dongle to display the licence number.

The **Windows client ports** are responsible for access by the Eisbär Windows client. The download port is also used for uploading and downloading in the Eisbär Editor. If changes are made, these ports must also be changed in the Windows client and in the editor.
9959 and 9960 are the standard ports.

Smart client ports are responsible for accessing the Eisbär mobile apps under IOS or Android. In addition, they are used for WebApp/HTML access via web browser. 8003 and 8004 are the standard ports.
The ports are automatically released in the firewall during installation. If changes are made, these must be configured in the firewall or port forwarding, etc.

Notice:
*The EisBaer service requires ports **808** and **3702** as "Lisener" and "Discovery" port for the client/server search. Without port 808 the service cannot be started and without 3702 no client will find the server via the search. All ports that are entered in the firewall are listed under [Software Setup](#)[21] .*

http secure must be activated in order to use encrypted transmission. Clicking on "http secure" opens the dialogue for integrating the certificate. There is a self-signed "EisBaer default certificate".

Alternatively, **you** can use **your own private certificates** (with key icon). To do this, the fingerprint/thumbprint[47] of the certificate used must be entered. After pressing the "Bind" button, it is displayed whether the binding was successful.
Alternative control via the Windows command prompt (cmd) : netsh http show sslcert ipport=0.0.0.0:8003

To retrieve the fingerprint/thumbprint of a certificate
1. open "Manage computer certificates"
2. click on Certificates (Local computer) in the left-hand section of the Console root window
3. click on the **My/Personal certificates** folder to expand it. The certificate must be installed here.
4. Click on the Certificates folder to expand it.
5. search for your certificate in the list of certificates. The "Intended purpose" column must contain "Server authentication". 6.
6. double-click on the certificate.
7. click on the Details tab in the Certificate dialogue box
8. move the contents of the field list and click Fingerprint
9. copy the hexadecimal characters from the field (Ctrl-C).

The **portal server connection** is **described** in **the chapter Portal server**[66]. **If no portal access is available, the autostart must be deactivated.**

Server Monitor:

All clients that are connected to the EisBär server service can be displayed in the server monitor. The display consists of the computer name and its IP address.
All network communications are recorded via "Start net traffic monitor". The display consists of the time stamp, network name, internal number and the value that was sent to the network.

Update:
The current and available EisBär SCADA version is displayed in this tab. All new features of the EisBär versions are displayed via "Show changelog".
If a newer version is found after "Check for updates", it can be downloaded and installed. The update version is saved under C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\deploy.

QR Code:
Display of the QR code in order to take over the connection data with the Android or iOS app[58] . This only needs to be scanned when changing the IP address or the ports. Not when changing the polar bear project.

Diagnosis:
The server logging can be activated in TAB Diagnosis. **Only activate in the event of an error and after consulting the support team!** Below this is the selection for the storage location and the log level.
In addition, the installation of the EisBär Dongle Fix and the KNX USB Fix is possible here. This changes the energy saving settings of Windows 10 to allow permanent access to KNX/USB interfaces.

3.3   Windows-Client

EisBär SCADA - Client[49] 3.0 (Windows)

The EisBär Windows client is the actual display and operating programme for the created visualisation. The connection to the EisBär server is realised both locally and via the LAN/WLAN/WAN or via a VPN tunnel. Several client connections are possible at the same time, even with different user logins previously defined in the editor project.

With the function "Logout after [min]", a time can be set. After this time has elapsed, a user change is carried out automatically. The user entered under "User/Password" is changed.

Windows-Client Menu:

File	short cut	description
Open	Alt + O	Opens the settings for the server connection. Further information is described in the chapter Commissioning[92] the project.
Close	Alt + C	Ends the server-client connection without closing the client.
Options	Alt + T	This opens a window with advanced settings. See below
Exit	Alt + X	Ends the server-client connection and the client.

File --> Options:

Autostart	short cut	description
Server Download Address		Server control display with download port.
Server communication Address		Display for controlling the server setting with communication port.
User		Input for the default user.
Password		Enter the password for the default user.
Auto logoff timeout [min]		Setting for an automatic user change. If another user is logged in than the default user, the system will return to the default user after the set time.
Maximize (F6)	F6	The client window will start maximized. The display can also be pre-set.
Hide scale bar (F10)	F10	The client window is started without a scaling toolbar (footer). The display can also be pre-set.
Hide menu (F8)	F8	The client window is started without a menu bar. The display can also be pre-set.
Windowstyle none (F7)	F7	The client window is started without title bar and frame. The display can also be pre-set.
Fit page size to window (F12)	F12	The client window adjusts the project page resolution to the window size of the client. The display can also be pre-set.
Activate Scrollbars		If the image section is larger than the client window, scroll bars are displayed. The display can also be pre-set.
Zoom In (Long Press)		Display is enlarged by 50% with each long right mouse button press (Zoom In). The display can also be pre-set.
Pan (Press and Hold)		The client window is moved by pressing and dragging. The display can also be pre-set.
Zoom All (Double Click)		Display is adjusted with each double-click with the right mouse button or touch the window size (zoom out). The display can also be pre-set.
Language	**Standard**	**description**
Language	German	The desired client language can be set with the drop down menu. After a change, the client must be restarted.

Diagnostics	Standard	description
Enable internal logging	off	Enables / disables client logging. Attention: This is only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Log file		Displays the current storage path of the log file. This can also be changed here.
Log level		Setting what should be logged: 1. Only mistakes 2. Errors and warnings 3. Errors, warnings and information 4. All messages

Optimization	Standard	description
Cache Size (Number of Pages)		This setting determines how many pages of the project load at client startup. This increases the memory requirements in RAM, but offers faster page changes and higher user interface performance.
Fill Cache at Start		If this option is active, the number of pages set above will be loaded into the cache.
Graphics Optimization		Through an active optimization, all images in the project are downsampled to the real size and displayed. This achieves a faster page change and higher user interface performance. In addition, the memory requirement is minimized.
Force translation on page switch		This option is set in order to reload the language when switching pages.

Extras	Standard	description
Enable EisTouch 6G RGB control	off	Activate / deactivate the RGB control on the EisTouch 6G. >go to the Component[949] <
Baud rate	9600	Setting for the transmission speed.
COM Port	COM 3	Setting for the communication port.
Force project file reload		Clicking on the button deletes the client project folder. This forces the client to reload the project the next time they connect.

Behavior in the various operating options

keyboard operation	description
F6	Switch window / fullscreen
F7	Window: Show / hide title and frame
F8	Show / Hide menu bar
F10	Show / hide scaling toolbar
F11	Zoom to 100%, it will display the page size set in the editor
F12	Fit page to window size
+ Key (letter field, not tens field)	Display is enlarged by 10% each time you press the button (Zoom In).
- key (letter field, not tens field))	Display is reduced by 10% each time you press the button (Zoom Out).

mouse operation	description
Scrollbar active	If the image section is larger than the client window, scroll bars are displayed.
Zoom in (long press))	Display is enlarged by 50% with each long right mouse button press (Zoom In).
Zoom entire page (doubleclick)	Display is adjusted to the window size with each double-click with the right mouse button (Zoom Out).
Pan (press and hold)	The client window is moved by pressing and dragging the mouse pointer

Touch operation	description
Scrollbar active	If the image section is larger than the client window, scroll bars are displayed. Operation by pulling in some touch techniques locked z. B. at the controllers.
Zoom in (long press)	with touch operation no function
Zoom entire page (doubleclick)	Display is adjusted with each double touch to the window size (Zoom Out).
Pan (press and hold)	The client window is moved by pressing and dragging

> **User login via command line:**
> The Windows client can be started with user login via the command line.
> This must be started with the following call:
> *"C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA*
> *3.0\Eisbaer.Client.WindowsApplication.exe" /u:user /p:password /ip:IP address /cp:9959 /dp:9960*
>
> Replace "user" with the created user
> "password" with the password created (one space for no password)
> Replace "IP address" with the IP address of the server
> "cp" with the communication port (default 9959), if the parameter is missing the default is used
> Replace "dp" with the download port (default 9960), if the parameter is missing, the default is used.

If /u: and/or /:p are missing, all parameters are ignored and the current settings from the Autostart configuration are used.

3.4   Windows Client Gadget Mode

The Gadget Mode is a mini-client that can be opened on the Windows desktop. The start icon and the gadget client are always on-top (top-most).

After the start, the gadget icon will appear on the desktop and the EisBaer project will be started with the configuration of EisBaer-Client.
Clicking on the start icon opens the gadget client and clicking it again closes it.

The Gadget Client can be positioned over the black top border. The current position is saved when you exit (Alt-X or Alt-F4) and will be reused the next time you start the gadget.

Gadget icon:
If a file with the name 'gadget.png' exists in the EisBär installation directory, it will be used as gadget symbol. Otherwise the default EisBär Client Icon will be displayed.

There are two ways to activate the gadget mode. Via start parameters or via the settings in the EisBär Client configuration file.

Settings in the file link / command line
"[...]
Eisbaer.Client.WindowsApplication.exe" /gadget /widthGadget:800 /heightGadget:600 /AlignGadget Vertical:top /AlignGadgetHorizontal:left

Without the optional specifications for width and height the client starts in 'Gadget Mode' with 1366x768 pixels.

The position of the "close" symbol can be defined using the following optional parameters.
With the parameters top, left the start symbol and close symbol are at the same position.
 /AlignGadgetVertical:top /AlignGadgetHorizontal:left
/AlignGadgetVertical:top /AlignGadgetHorizontal:right
/AlignGadgetVertical:bottom /AlignGadgetHorizontal:left
/AlignGadgetVertical:bottom /AlignGadgetHorizontal:right

without the start parameter /gadget the **settings in the EisBär Client configuration** will be used (C:\Users\BENUTZERNAME\AppData\Roaming\Alexander Maier GmbH\EisBär 3.0\EisbaerClientProgramSettingsV3.config)

```
<Settings>
    ...
   <Gadget>
     <TrayMode>False</TrayMode>
     <Height>600</Height>
     <Width>800</Width>
     <GadgetModeActive>True</GadgetModeActive>
     <ImageHorizontal>left</ImageHorizontal>
     <ImageVertical>top</ImageVertical>
    </Gadget>
</Settings>
```

Without the specifications for width and height the client starts in 'Gadget Mode' with 1366x768 pixels.

User login via command line:
The Windows Gadget Client can be started with user login from the command line.
This must be started with the following call:
"C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\Eisbaer.Client.WindowsApplication.exe" /u:<u>user</u> /p:<u>password</u> /ip:<u>IP address</u> /cp:9959 /dp:9960
 /gadget /widthGadget:800 /heightGadget:600 /AlignGadgetVertical:top /AlignGadgetHorizontal:left

Replace "user" with the created user
"password" with the created password (one space for no password)
Replace "IP address" with the IP address of the server
"cp" with the communication port (default 9959), if the parameter is missing the default is used
"dp" with the download port (default 9960), if the parameter is missing the default is used

If /u: and/or /:p are missing, all parameters are ignored and the current settings from the autostart configuration are used.

The following autostart settings are taken over by the Windows Gadget client.
Window and scaling menu: Behaviour with the various operating options

Mouse operation	Description
Scroll bar active	must be deactivated, otherwise the zoom function will not work.
Zoom In (long press)	The display is enlarged by 50% with each long right mouse click (Zoom In).
Zoom entire page (double click)	Display is adjusted to the window size with each double click of the right mouse button (Zoom Out).
Pan (press and hold)	The client window is moved by pressing and dragging the mouse pointer

Touch operation	Description
Scroll bar active	must be deactivated, otherwise the zoom function will not work.
Zoom In (long press)	No function with touch operation
Zoom entire page (double click)	The display is adapted to the window size with each double touch (Zoom Out).
Pan (press and hold)	The client window is moved by pressing and dragging

3.5 Windows Client Tray Mode

The Windows Tray Mode is a mini-client that can be opened and closed on the Windows desktop via the taskbar.
The control icon is displayed in the notification area next to the clock in the taskbar.

Once started, the EisBär project is launched with the Clients start-up configuration and the tray icon is displayed in the task bar.
Clicking the tray icon closes the client and clicking it again opens it.

The tray client can be positioned over the black upper border. The current position is saved on exit (right mouse click on tray icon, Alt-X or Alt-F4) and will be reused the next time the client is started.

Tray symbol:
If a graphic with the file name 'DefaultTrayIcon.ico' exists in the EisBär installation directory, it will be used as a tray icon. Otherwise the default EisBär Client icon will be displayed.

Settings in the file link / command line
Eisbaer.Client.WindowsApplication.exe /traymode /widthGadget:800 /heightGadget:600
Without the optional width and height specifications, the client starts in tray mode with 1366x768 pixels.

If no command line parameters are passed, the settings in the configuration file apply.
(C:\Users\UserName\AppData\Roaming\Alexander Maier GmbH\EisBär 3.0\EisbaerClientProgramSettingsV3.config)

```
<Settings>
    ...
    <Gadget>
      <TrayMode>True</TrayMode>
      <Height>600</Height>
      <Width>800</Width>
      <GadgetModeActive>False</GadgetModeActive>
      <ImageHorizontal>left</ImageHorizontal>
      <ImageVertical>top</ImageVertical>
    </Gadget>
    ...
</Settings>
```

Without the specifications for width and height the client starts in 'Gadget Mode' with 1366x768 pixels.

User login via command line:

The Windows Gadget Client can be started with user login from the command line.

This must be started with the following call:

"C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\Eisbaer.Client.WindowsApplication.exe" /u:<u>user</u> /p:<u>password</u> /ip:<u>IP address</u> /cp:9959 /dp:9960 /gadget /widthGadget:800 /heightGadget:600

Replace "user" with the created user

"password" with the created password (one space for no password)

Replace "IP address" with the IP address of the server

"cp" with the communication port (default 9959), if the parameter is missing the default is used

"dp" with the download port (default 9960), if the parameter is missing the default is used

If /u: and/or /:p are missing, all parameters are ignored and the current settings from the autostart configuration are used.

The following autostart settings are taken over by the Windows client.

Window and scaling menu: Behaviour with the various operating options

Mouse operation	Description
Scroll bar active	must be deactivated, otherwise the zoom function will not work.
Zoom In (long press)	The display is enlarged by 50% with each long right mouse click (Zoom In).
Zoom entire page (double click)	Display is adjusted to the window size with each double click of the right mouse button (Zoom Out).
Pan (press and hold)	The client window is moved by pressing and dragging the mouse pointer

Touch operation	Description
Scroll bar active	must be deactivated, otherwise the zoom function will not work.
Zoom In (long press)	No function with touch operation
Zoom entire page (double click)	The display is adapted to the window size with each double touch (Zoom Out).
Pan (press and hold)	The client window is moved by pressing and dragging

3.6 Windows Client Update Service

EisBär SCADA - Client Updateservice[57]

The EisBär client update service **automatically** updates the EisBär Windows client to the same EisBär software version as the associated EisBär server. If the EisBär version is updated on the EisBär server, this is communicated to the EisBär clients during reconnect from the server and the loading of the project from the server is stopped. In the background the current installation file is transferred from

the server to the clients and the client setup is executed automatically. This reduces the time and cost involved in installations with several client computers to a minimum.
The client update service is automatically installed during the EisBär installation. It is only required for the EisBär client.

For the EisBär client update service to function, the installation file must be located in the subfolder **C:\ProgramData\Alexander Maier GmbH\EisBär\deploy\EisBaer SCADA 3.0en.msi** on the server. If the update of the EisBär SCADA V3 Suite is carried out via the auto update from the editor or the server configuration console, the file is copied directly to the correct location. The file name must be exactly**"EisBaer SCADA 3.0en.msi"**.
If Windows User Account Control (UAC, default setting after Windows installation) is enabled, the client update will work without problems. This is the recommended setting.

Notes:
The ProgramData folder is a hidden folder. If it is not displayed, it can be accessed from the address bar by typing C:\ProgramData. Such folders can also be displayed permanently via the view options in Windows Explorer.
*If the user account control is deactivated, the download of "**EisBaer SCADA 3.0en.msi**" is denied. The access rights are missing. By starting the Eisbär client with administrator rights (right mouse click) the rights are increased. Thus the Autoupdate works then also with deactivated user account control.*

3.7   Smart-Clients (App)

EisBaer SCADA Apps - Smart-Clients (iOS, Android)[58]

Smart clients (app clients) are available for Apple iOS, Android, Windows Phone 8/10, as well as for Windows 8 RT and Windows 10 (however, Windows apps have not been developed since mid-2017 and are currently on hold) , The apps are available free of charge in the respective stores of the platforms. The smart clients behave like the Windows clients. It is thus an independent operation by multiple users possible.

As a special feature, the Smart Clients offer the possibility of two different forms of presentation:
1. If the mobile device is held horizontally, the user sees the "normal" graphical part of the interface, as configured in the editor.
2. If the device is held upright (vertical), the display of a menu system (APP list view[919]) is possible. For this purpose, this menu structure must be configured in the project. The "APP List View" component is available in the Editor in the component list under System.

For operation, the corresponding device must be in the same network as the server. If a control is also outside of the own network, a portal connection is required. **The portal server connection is described in the chapter Portal Server**[66] **.**

Note: Should any components be missing, the cache must be cleared to bring an app up to date. After the reconnect all new elements are present.

Optimal resolutions:
Apple devices (screen resolutions, iPhones and iPads)

Device	Display size (in zoll)	HARDWARE-PIXEL	Optimal resolutions	Aspect ratio
iPhones				
iPhone 5, 5c, 5s, SE	4"	1136 x 640	568 x 320	16:9
iPhone 6, 6s, 7, 8	4.7"	1334 x 750	667 x 375	16:9
iPhone 6 Plus, 6s Plus, 7 Plus, 8 Plus	5.5"	2208 x 1242	736 x 414	16:9
iPhone 11, XR	6.1"	1792 x 828	896 x 414	19,5:9
iPhone 11 Pro, X, XS	5.8"	2436 x 1125	1218 x 563	19,5:9
iPhone 11 Pro Max, XS Max	6.5"	2688 x 1242	1344 x 621	19,5:9
iPhone 12, 12 Pro, 13, 13 Pro	6.1"	2532 x 1170	1266 x 585	19,5:9
iPhone 12 Pro Max	6,7"	2778 x 1284	1566 x 768	19,5:9
iPads				
iPad mini 2, mini 3, mini 4, mini 5	7.9"	2048 x 1536	1024 x 768	4:3
iPad mini 6	8,3"	2266 x 1488	1133 x 744	13,71: 9
iPad 4, 5, 6, Air, Air 2, Pro 9.7	9.7"	2048 x 1536	1024 x 768	4:3
iPad 7, 8, 9	10.2"	2160 x 1620	1080 x 810	4:3
iPad Air 4	10,9"	2360 x 1640	1180 x 820	4,3:3
iPad Pro 10.5, Air 3	10.5"	2224 x 1668	1112 x 834	4:3
iPad Pro 12.9	12.9"	2732 x 2048	1366 x 1024	4:3
iPad Pro 11	11"	2388 x 1668	1194 x 834	4,3:3

The EisBär SCADA app:

After downloading the app from the store, the EisBär SCADA logo will be displayed on the home screen. By opening the app, the Eisbär demo project is automatically downloaded from the server and opened. In the vertical view, the menu bar of the app is visible. By selecting the left button (house), the loaded project is ended and the overview of the server connections is displayed. If there is only one project in this list, it will be loaded automatically. At first use, there is only one server. For this reason, the menu for the server settings must be called up here via the right-hand button (cogwheel).

App overview:
The first tab (house icon) displays all saved server connections. If only one server is stored here, this project will be started automatically. The arrow icon in the upper right corner indicates that the list has been updated.

The microphone icon allows voice commands to be executed in the app list view. Only visible controls can be detected. Currently the following commands are supported:

Action Button: Command = Button Text
Switch: Command = Label + "on" or "off"
Dimmer: Command = Label + Number Example: "Office Light 33"
Venetian blind: command = label + "up", "down" or "stop"
RTR switch: Command = Label + "Comfort", "Standby" or "Night"

  For several identical designations, the designation of the subpage can also be used. Example: "Office light on" and "Living room light on"

The third tab activates the QR code scanner. This allows a project to be loaded directly by scanning the QR code. The QR code is located in the server configuration console[45] in the last tab "QR Code". After scanning, you will be asked if the connection with the project should be recorded directly or if the connection should only be saved. With "Done" the settings are displayed. The name of the project is now also displayed in the overview of the server connections. A QR code[923] can also be created as a component in the project.

Positionieren Sie den Barcode innerhalb des Rechteckes.

In the last tab "Settings" you will find all required settings of the app. The first setting option "Networks" refers to the EisBär projects. If network is selected all projects will be displayed. You can manually create a connection via the plus symbol in the upper right corner.

If a project is now selected, all settings of the server are displayed. Make sure that the **WebSocket port 8004** is entered and **TLS/SSL** is set **to "No"**. Without this port, unwanted displays may occur. From a technical point of view, with WebSocket, as with HTTP, the client starts a request, with the difference that after the transmission of the data to establish the connection, the underlying TCP connection remains in place and enables asynchronous transmissions in both directions. If the WebSocket connection does not work, a message is displayed. It is possible to remove the port from the settings to avoid the error message.

In the lower part of the settings, the access data for the portal access are entered. If Use "portal server[66]" is set to *No,* the login is hidden. If the selection is set to *Yes,* only the portal access is used to connect to the project. If the selection is set to *Automatic*, an attempt is first made to reach the server address and thus the project via the local network. If this fails, an attempt is made to connect to the portal server[66] via the Internet and load the project.

A push[393] function can also be built into the EisBär project. If push messages are to be active, "Push messages" must be set to "On".

The X in the top right corner is used to delete the server connection.

In the settings menu under Design the settings for the display are stored.

- Under Theme, the background color of the app can be set.
- Under Function mode the display of the project will be edited. **By default, the [app's list view][919] is shown in portrait format and the project visualization in landscape format.** If no app list view is stored, nothing is displayed.
- Under Orientation, the display is either Automatic between High and Landscape, or always in Portrait or Landscape.
- Under Different Settings you can choose whether the [WebBrowser][311] component should open automatically or not. Furthermore, the zoom function can be deactivated. The last entry refers to the app list view. If this setting is activated, a small bar will appear on the right side of the App List View while scrolling.
- With "Protect settings with PIN" a PIN can be defined. This protects the entire range of settings from unauthorized access.

The entries for the door intercom can be found under Eisbaer Solutions. These can be set or edited here (see video door inter[316] com --> Mobile App[376]).

Example showing a button and a slider in the App List view and in the Project view. Both must be created independently of each other.

3.8 Portalserver

The EisBar portal server allows access to the Eisbaer server without configuring the Internet gateway (router). This eliminates the settings for e.g. following services: VPN, port forwarding or DynDNS. The portal server is a server operated by us on the Internet. In order to be able to use it, the access must first be ordered from Alexander Maier GmbH (www.busbaer.de).

EisBaer SCADA - Portalserver

© 2016 - Alexander Maier GmbH

Information about activating the portal access.

First, you must log in to our portal.
1. To do this, call the following address on http://www.eisbaer-manager.de
2. Create your account (All required information is marked with an asterisk)
3. The login name (login name) must contain at least 6 characters. Write down the name, it will be needed later in the server and in the app.
4. Copy the sent activation code.

Activation code: XXXX-XXXX-XXXX

5. ATTENTION: The password must be at least 8 characters long, contain a capital letter and a number. Write down the password, it will be needed later in the server and in the app.
6. You will get an activation link to the specified e-mail address which you must click on. After that, the activation is completed. For confirmation, you will receive an e-mail with your registration information.
7. Stop the service (TAB "folder") on your Eisbär server PC in the Eisbär Server configuration console.

Server Configuration Application 3.0   ✕

Solution | Diagnostics | Server Connection Settings | **Portal Settings** | Language | Update | QR Code

Portal Settings

The use of the portal is subject to a charge.
Please order at

https://www.busbaer.de/en/produkte/portalserver

Autostart   ☑

Portal Username: Username

Portal Password: ************

TLS   ☑

Help   About   Close

8. Switch to the TAB "Portal Settings" and enter your login name and password. Put the hook on autostart and TLS.

9. Start the service in the TAB "Folder". The polar bear server logs on to the portal and can be reached by the apps.

10. Next, in the app under Settings \ Network \ ACCESS \ "Use Portal Server", you must set to Auto and enter your name and password.

Thereafter, access via the portal should work. First the app attempts to connect locally, if this does not work, the connection is established via the portal.

There are currently activation codes with 3 different durations. The runtime starts with the creation of the portal server account.
3 weeks before the end of the term, a reminder will be sent to the deposited e-mail address. This leaves enough time to extend the portal access.

ATTENTION: After the connection has been disconnected, the server can not be reached for about 1-2 minutes. This can e.g. by abortive network connection or by manual abort of the download.

All port shares are set automatically. If the firewall is managed by an administrator, the information for entering into the Windows Firewall is displayed here.
Used ports for portal connection. If necessary, these ports must be released starting if the portal login is not possible.

A connection is established to the address http://eisbaer-manager.de with the following ports.

Encrypted connection (default):
Eisbaer Server -> server.portSsl = 8182 (new)

Unencrypted connection (TLS deactivated in app and EisBärserver):
Eisbaer Server -> server.port = 8181

Access via the EisBär portal access:

The URL to the registration form via browser using our portal server access is: https://eisbaer-manager.de/webapp
The data you specified when creating the portal access and set in the EisBär server configuration console are entered here as the system name (login name) and password.

Automated login with and without autologin via an existing portal server access:
With completed login mask without autologin:
**https://eisbaer-manager.de/webapp?
username=Musteranlage&password=Musterpasswort&eis_user=Mustermann&eis_pass=Musterpass
wort2&use_tls=1&submit=0**

With completed login mask with autologin:
**https://eisbaer-manager.de/webapp?
username=Musteranlage&password=Musterpasswort&eis_user=Mustermann&eis_pass=Musterpass
wort2&use_tls=1&submit=1**

Optical differences and components:

The displays of the following components may differ from the EisBaer Windows client. Differences may also be caused by the browser used.
- Touch value input
- Slider (depending on style)
- Colour Picker (colour selection)
- Calendar editor week clock in horizontal view
- Pie chart cannot animate
- Manual-automatic switch, multi-stage ventilation switch and operating mode switch are always displayed "square".
- Start programme has no function
- Mirroring of the component
- Font and colour

These components are not displayed:
- Textbox
- WPF Theme selection
- Video door intercom (without function)
- File selection

- Media Player
- DALI Emergency Light Manager Display

3.9　WebApp / HTML5 Browser-Client

EisBaer SCADA WebApp / HTML5 client

Via the WebApp access, the EisBär SCADA visualization can be accessed and operated with newer Internet browsers (such as Firefox, Chrome, Edge). The HTML5 access can be ordered optionally and always requires an existing dongle license and also depends on the license size of the dongle used.

Important:
When using links to the URLs below, the username and password must <u>not</u> contain <u>any spaces</u>!

Standard access via LAN / WLAN / WAN:
To access the EisBär server service via browser, you only need a Websocket supporting browser. Using the address bar of the browser you call the server accordingly and you will have to authenticate yourself to a login mask.

Example URLs for calling the WebApp via HTML5-enabled browser with login:
The default call including login form is: http://IP-Adresse-of-Servers:8003/Eisbaer.RESTServices/WebServer

Within a few seconds, you will be taken to a login screen that you can use to log in to the visualization. As long as you have not changed anything in the user administration (EisBär Editor), the default user is for logging in with guest and without a password.

Example URLs for calling the WebApp via HTML5-capable browsers without logging in:
For a faster user login, you can also pass the credentials of the corresponding user in the URL:

http: // IP address-of-server: 8003/ / Eisbaer.RESTServices / WebServer eis_user = Username & eis_pass = User password & submit = 1?

Username and user password must be specified accordingly (see User Administration[82]). For a standard login this would be guest / no password, as already mentioned in the example above.

Annotation:
Port 8003 and 8004 is the default HTTP port that must be set in the EisBär SCADA Server Configuration Console V3. This is also used for access via browser. Please pay attention to firewall ports, port forwarding, etc. if no communication between browser and server should be possible.

Access via the EisBar portal access:

The URL to the registration form via browser is via our portal server access: https://eisbaer-manager.de/webapp . As attachment name (login name) and password, the data that you are considering when creating your personal portal account and most likely already stored in the EisBär server service is entered here.

For access via HTTPS, "https secure" must be activated in the server configuration console[45] .
Access via HTTP is then deactivated.

Automated login with and without autologin via an existing portal server access:

With completed registration form without autologin:
**https://eisbaer-manager.de/webapp?
username=Musteranlage&password=Musterpasswort&eis_user=Mustermann&eis_pass=Musterpasswort2&use_tls=1&submit=0**

With completed registration form with autologin:
**https://eisbaer-manager.de/webapp?
username=Musteranlage&password=Musterpasswort&eis_user=Mustermann&eis_pass=Musterpasswort2&use_tls=1&submit=1**

Visual differences and components that are not displayed

The displays of the following components may differ from the EisBaer Windows client. Differences can also be caused by the browser used.
- Touch value input
- Slider (depending on style)
- Color Picker (color selection)
- Calendar editor week clock in horizontal view
- Pie chart cannot animate
- Manual-automatic switch, multi-stage ventilation switch and operation mode switch are always displayed "square".
- Program start is without function
- Mirroring of the component
- Font and color

These components are not displayed:
- Textbox
- WPF Theme selection
- Video door intercom (without function)
- File selection
- Media Player
- DALI Emergency Light Manager Display

Top Level Intro

This page is printed before a new
top-level chapter starts

Part

IV

4 Design

Please take the time to read the section <u>Important Notes</u>⁸⁰ before proceeding with the design.

First steps in EisBaer

Start Editor and create solution
After starting the editor a project folder need to be created in the first step. There are three options: Use the key combination Ctrl + N, or use the buttons (A, B)

The EisBaer solution wizard opens, which leads you through the creating of a new solution.

1. Define solution name
2. Name the project
3. Add project (currently only one project per solution)
4. Add and name the first page
5. Optional: resolution / format of the page can be defined
6. Add page(s)
7. Close wizard

Now you see the actual work space of the editor with the currently created page.

Add and configure KNX-Driver

The first step is to insert a KNX driver on the page by drag & drop from the list of components (left side) to enable communication. To do this, click on the component with the left mouse button and

drag it onto the desktop (middle field). Release the mouse button to insert the component at the location.

On the right side are the properties of the component, as well as the driver data points list.
Each component should be given a unique name to keep track of larger projects. Otherwise, the driver can be left at the default settings.

To get the data points of the KNX driver, the ETS project has to be imported. By clicking on the field Datapoint list (1) the import dialog opens.

Depending on requirements, the required import dialog can be opened here (ETS4, ETS5, ETS6). See also: Setting up the KNX driver [556]

1. Select import format / ETS version
2. Select project file (eg * .knxproj)
3. Select project
4. To confirm

5. Result window is displayed
6. To confirm
7. Now the data point list contains all data points contained in the project.

If required, the data points or read flags can be adjusted. First and foremost, however, this should always be done in the ETS in order not to overwrite the changes in a further import and to fundamentally minimize the error sources. Always consider the ETS software as the basis - both for your KNX system and your visualization projects.

If the data point types were not set in the ETS:
Unclearly defined data types are indicated by the red question mark in the first column. When importing, the ETS only outputs the data width of a group address if the data point type was not defined. Different types of data have different possibilities of interpretation. Right-clicking on the question mark opens a selection of the possible data types. Select the desired data type and the question mark disappears.

Note: When importing the data EisBär automatically selects the "common" data types to save you this work. So it is usually only necessary to make these adjustments when you z. B. with 2-byte measured values, date, time or counter measurement data work. In these cases, follow the instructions of the manufacturer in the manual of the device. As a rule, the required data type is specified there.

Driver Datapoints

Group addresses Phys.Addr. Object name Type Prio

R Building None

English Manual 2016 - KNX English Manual

Clear

Name	Object n...	Group... ▲	GA Name	R	Type

❯ **Main group: 01 Light**
  ❯ **Middle group: 1 Dali Gateway**
❯ **Main group: 02 New main group**
❯ **Main group: 07 New main group**
❯ **Main group: 08 Energy**
  ❯ **Middle group: 0 SE_S**
    ❯ **: 000 Meter reading 4-byte signed**
    ❯ **: 001 Active power**
    ❯ **: 002 Current**
    ❯ **: 003 Voltage**
    ❯ **: 004 Apparent power**
    ❯ **: 005 Power factor**
    ❯ **: 006 Crest factor current**
    ❯ **: 007 Time of the day**

Properties Driver Datapoints

Data points in the group address view. In the header of the window the sort by group addresses can be activated .

Add and configure a button control

If a control element is inserted, it can be linked to a group address. Drag and drop the desired group address either directly onto the button (1) or onto the data point window (2) of the component .

Now these two data points are linked via an automatically generated network. In the communication window of the component one can see the linked group address and network.

Save the project and start the simulation mode.

Internal links

By highlighting the first component the data points will be displayed in the communication window. Linking is carried out by drag&drop of the data point from the communication window to the target component. If you drag the desired data point onto the target component a window open up and shows all available data points of the target component. Drop onto the desired target data point. It automatically creates a network with a unique number.

Start project in server mode

Open Server Configuratione Console

1. Select IP address, if the default IP 127.0.0.1 is set, it works exclusively with the client on the same computer. Another choice is the IP address of the computer/server, it is advisable to assign a fixed IP it will be always clear on what address the server can be reached.

2. Select solution and project

3. If no hardware license exists, you can install the license, or plug in the USB license dongle into the server PC.

4. In order to launch the project effectively, the server has to be stopped and started again. (After each change of the solution, this step must be performed to activate the changes in the server).

5. Wait for server feedback of load state of the project and validility of the license.

Important: After each change of the solution, this step must be performed to activate the changes in the server

Connect Client

Start the Client

1. When starting the client, it tries to establish a connection to the EisBär server. If this does not work, a red bar is displayed at the bottom of the client window. The client tries up to 40 times to connect to the server. The connection attempt can be aborted at any time.

2. Open the server search window via "File" - "Open

3. Use "Search Server" to find possible servers in the network. After a few seconds the available server(s) will be displayed.

4. With "Add Server" the server can be added manually via the IP.

5. Check the Autostart box of the desired server and confirm with Connect.

6. Optionally, another server can be added as a "slave" to create a redundant system.

7. If necessary, change the user name and enter the password if these have been changed in the editor.

Upon successful completion of these steps, the project is ready.

4.1 Important notes

Please always save your projects on the local hard drive. Always open them locally, not from a cloud drive. Automatic synchronisation can damage the project files and lead to a total loss of the project. For backup, you can always save the project data in the cloud. Please note that when copying, the project and the editor are completely closed.

Drag & Drop:
When inserting components, make sure that the new components are NOT stored on a panel or macro panel.
No more than 1024 components can be created per page.

Working with graphics:
The visualization allows you to use all popular pixel graphic formats. It should be noted that the graphics files are each inserted in full resolution, i. that z. For example, images created with the digital photo might have a file size of 2 MB or more. In the PC, the required memory can easily be 5 times larger. With multiple use of such graphics can quickly be needed much memory. This then causes a slowdown of the system. For this reason, please use files in the actual required size (pixels). The smaller the graphics, the faster the download of the project to the different clients will be. This is important when connecting over the Internet.

As file format we recommend * .png. With this can be, for example, Transparency and partial transparency and the file size can be reduced very well. As a processing program, we recommend the free image editing program GIMP (https://www.gimp.org). This makes it possible to create slim and fast surfaces.

For App / WebApp:
If plotters are created in the project, they should be on a separate project page. When the page is called up with a plotter, the information is downloaded and only displayed when all the data is available. This then also affects components that are on the same page as the plotter, for example the app list view [919] . The amount of data that is downloaded for historical data is limited. For this reason, data may not be displayed completely. The time range to be displayed should be selected as small as possible.

resolution:
For projects where the title bar, the menu bar and the scaling bar are to be displayed, a gray bar is normally displayed to the right and left of the visualization. To avoid this, the resolution in the project should be adjusted.

Example:
Desktop resolution: 1920x1080
Project resolution: 1920x1005

Design of the EIB / KNX system

Note the following guidelines when configuring a KNX installation, for the best result of your software front end:

- In principle, you should not work with status feedback for actuators. Active status feedback may appear to be the optimum solution at first glance, but in practice the bus is overloaded by too many status feedbacks; this results in telegram losses. The display on the visualization, the pushbuttons and the panels are then incorrect. The main load occurs with group-wise or complete control of the KNX devices, as all devices then respond AT THE SAME TIME.
The visualisation maps the state of the KNX device object in each case, i.e. even if many group addresses are assigned, the state is recorded correctly. The only application for the use of active status feedback is, for example, circuits with time functions in outputs. Since these are usually a few/individual circuits in the project, this is not critical for the telegram load on the bus.

- When using KNX devices with collective objects, e.g. with KNX tableaux or dummy applications, it is necessary to solve the concatenation of the addresses in the communication object. For this purpose, an additional auxiliary address, e.g. 31/7/0-x is created in the first position of the communication object. This is not used for any other function. All other addresses are automatically created in the data point list as so-called "central addresses" and can be used normally for linking.

- To read out the system status, i.e. when starting the visualisation software, it is necessary to set the read flag once for each group address. The address to be read out must be a sending address,

since in the case of a read request to a receiving address, the response is sent by the sending group address of the device object. For this reason, it is also important to ensure that no central addresses (e.g. total lighting ON/OFF) are entered as the sending address in the device objects to be queried. First always assign the local functions as group address and assign these to the sensor and actuator objects.

- To avoid reactions of other KNX devices to read-response telegrams, the update flag should be removed from the device objects concerned. In this way, the KNX devices only react to switching commands.

- If addresses are queried which are located in several objects or KNX devices, all objects will generally interpret the response telegram as a switching command. In practice, this means that other switching circuits for lighting and/or blinds can move or be switched on and off during initialisation. For this reason, you should create a local group address for each switching function/group (usually for each output). This should then be used to query the switching status/status. With devices of new design, it is possible to delete the update flag in the objects. This completely prevents unintentional switching as a result of response telegrams.

- In any case, do NOT set any read flags for all relative dimming addresses and for blind addresses for up/down and stop/slat adjustment.

- The EisBär visualisation can execute the initialisation of the individual group addresses with different priorities. The same priorities are used for this as in the ETS. The priority levels entered there are adopted during the import into the KNX connection. There are 4 priorities:

High	Data points (group addresses) are initialised first
Low and Medium	Data points (group addresses) are initialised.
None	Data points (group addresses) are not initialised.

Within the priority levels, the group addresses are queried in ascending order.

Further information on filter tables can be found in the chapter Driver\KNX\KNX Dummy / Filter Tables[570].

4.2 User Management

The user management can be accessed through the "Project" ribbon.

The user administration is used to allow or restrict access to certain pages or components for individual users or user groups.
For example, a single server can handle the visualisation for several offices, whereby each office only has access to its own lighting groups.

The user administration is inactive by default. It only becomes active when the Full Access checkbox is removed. In test mode, it can be reset to Full Access at any time. The settings selected below are retained.

Users	Create individual users, a separate password is defined for each user, name of the person
User groups	If several users are allowed to see and operate the same pages. Group of persons.
Rights	Rights can be defined here, which can then be assigned to the individual user groups. When rights are defined, each component[84] must then be added to the respective desired right.

The individual users and rights can be assigned to the user groups using Drag&Drop. To assign several pages to a user, the top page must be selected (single left-click) and the last page (left-click and **hold!**) with the Shift key pressed. All pages in between are then selected and can be dragged to the user with the (still!) pressed mouse button.

Start page: If "Full-Access" is deactivated in the user administration, the start page must be defined for each user. To do this, the desired page is dragged and dropped from the rights window (right) onto the user in the user window (left). Otherwise the clients cannot establish a connection to the server.

With drap & drop you can assign a different Start page for every user.
Following is visible to which user which home page is assigned.

The desired user must be set in the settings in the clients. The home page associated with the user is then displayed when the clients are started.
In addition, user switching can be performed with the user switching component.

Additional rights can be set individually for each component. For this, there is the rights property[84] for every visible component. see chapter Component specific rights.

4.3   Component specific rights

If access is to be restricted to an entire page only, the default value Full access can be left in the component properties.
Only if the access is to be limited additionally still to certain components something must be changed at these settings.

By default no rights are assigned after deactivating full access. After that, the rights only have to be set in one of the two views.

If rights are assigned in both views, these permissions will work in parallel. A restriction in the user view can be taken back by the rights view.

Under the properties of the respective component, in the tab Rights, the following dialog can be opened.

If the user view is selected, the component can be assigned to the respective users. A distinction is made between visible and operable.

ATTENTION: The selection "Select all" and "Deselect all" also affects the rights view!

If you select the "Right View", the component can be assigned to the respective created rights.

4.4   Project Up/Download

The project upload/download is called up via the project ribbon or in the file/main menu.

Only the "Administrator" user can upload/download projects. All other users are blocked.
The administrator must have a password, even if full access is set in the user administration.

Download Project	With this function of the editor, the currently running project can be downloaded via the network from the server. Settings made by the user will be transfered into the project (changed scenes, calendar entries, etc.)

Upload Project	The project will be uploaded over the network, the server will automatically stop and restart.

When downloading, all project data is downloaded to the Editor. A new storage location is required for this. It is possible to create and name a new folder. Make sure that you press the **Enter key** after entering the name and only then close the dialogue by pressing OK. Without confirmation, the new folder name will not be accepted.

Server settings can be overwritten during the upload. Therefore, always download the project before making changes in the Editor.

Affected components are:
Touch value input, text input, colour show, scenarios, presence simulation, calendar, counter, operating hours average, alarm clock, plotter settings, consumption value display, channel settings, maximum monitor, energy meter.

4.5   Multilingual projects

If a multilingual project is created, a translation must be created manually for the texts of the components.
To do this, a $ sign must be placed in front of each text that is to be translated and defined in the translation list. The translation table will be searched for this $-word and translated into the desired language, if an entry has been entered for it.

The translations of the component texts must be created in the translator[87] (translation window), which can be activated in the view ribbon.
The translations of the component dialogs are checked / created in the component translator[88] , which can be activated in the tool ribbon.
Both settings must be identical.

Attention: The translator must be set to the same language as in the component translator.

The language can be changed as required during runtime in the client. All you have to do is to integrate the "Project language selection" component from the comfort menu into the interface.

4.5.1   Translator

Activate the translator window in the "view ribbon" See chapter View[35] .
Enable the required languages in the pull-down menu. Add variables with the green "plus button".
Delete variable with the red "X button".
- The variable name is free.
- All variables must be unique.
- Enter the varaible name in this table without the leading $ character.

Attention: The translator must be set to the same language as in the component translator.

In the example below, the text was described as "$ VARIABLE0". VARIABLE0 corresponds to "light" in English and "light" in English, depending on the language selected.

4.5.2   Component translator

Under Tools --> Component Translator the required languages are activated via the pull-down menu. German and English texts are already entered. For all others, the English texts are stored.

Attention: The same language must be set in the Translator as in the Component Translator.

Note: In order for the language files to be created, a one-time text change must be made in each activated language. Otherwise the language selection will be discarded when leaving the dialog. To make the new language available in the editor, the editor must be restarted.

Top Level Intro

This page is printed before a new
top-level chapter starts

Part

V

5 Commissioning

To start up the system, the following essential steps must be performed:

Editor

Create a solution and a project in the editor

- Transfer the solution folder to server PC (\ Documents \ Alexander Maier GmbH \ EisBär \ project data ...). During the initial start of the server, the project data must be copied manually to the server PC . After the project is running on the server, you can exchange project data via Project Up/Download[85]

Server

Open Server Configuratione Console

- Set the IP address. If only one client is to be operated on the same PC, the local address 127.0.0.1 (default) can be used. It is then not possible to access the EisBär server PC via the network with an EisBär client.

*Note: It is important to assign a **fixed IP address**to the server PC in the Windows network settings . Automatically assigned addresses may lead to a non-functioning system after a system restart.*

- Select folder and project. The solutions should be stored in the user's Documents folder under "Alexander Maier GmbH". The solution must be in a local folder because the EisBar Server service has no rights to access network drives.

- If the parameter "Save and load system state" is activated, all network states will be restored when the project is started. These were automatically saved when the server was last shut down.

- Connect the USB license dongle to the server PC.
    Note: For virtual environments, note the notes in the chapter USB Dongle Server[22] .

- Stop service and start again

- If everything is OK, "Project loaded" , "Server started" and "License valid!" are displayed. If one of the 3 displays is not OK, the polar bear service does not run correctly.

- Project loading status: Project not loaded. Project not loaded. Map file not found Project not found in the specified Windows folder. It has been deleted or moved.

- **"Server Status"** indicates whether the EisBär service is running.

- License: License invalid is displayed in the following cases:
    - no dongle plugged in or detected, can be checked via "Show dongle" - Windows energy saving settings must be deactivated, USB dongle fix must have been executed.

- Dongle license is not installed - Use the button "Download-Install License" or "Install License manually" to install the dongle license file(Eisbaer.EisD) from the CD enclosed with the dongle.
- License of the dongle is too small - Check the license size via "Show dongle" and compare it with the required license size of the project. This is displayed in the editor, in the start ribbon. See also Licensing[16] - Buy Polar Bear Project License Upgrade.
- License is for a different polar bear version - Buy Polar Bear Dongle Update.

If the license is invalid, the polar bear service runs for 30 minutes and is then terminated (demo mode). After several starts in demo mode, starting the polar bear service is blocked for one day. Messages related to the EisBär SCADA Server are stored in the Windows Event Viewer under Windows Logs\Application. EisbaerServerWindowsService is used as the source.

- Close Server Configuration Console (this is not needed for operation)

Note: After each change to the solution, the service must be restarted for the changes to become active in the server! With a project upload from the editor this happens automatically.

Client
Start the Client

On start up the client will attempt to connect to the EisBaer server. If it fails a red bar at the bottom of the client window will inform you. The client attempts up to 40 times to connect to the server . The connection attempt can be canceled at any time.

Open File (Alt-O) opens the server connection window. Via the button "Search server" the search for available servers starts. All running servers are listed. The search works only in the same network segment and not over other network segments, VPN connections or the Internet.

The IP address, port addresses and Http Secure settings of the server must be set.

By default as follows:
Download Port: 9960
Communication Port: 9959
Master Ping Port: 8003

- The marked server entry is deleted with Delete server.
- If the Autostart checkbox is ticked, this server will be used automatically the next time the client is started.
- Select a line and "Connect" to connect to the desired server and load the project.
- If necessary, change the user name and enter the password if these have been changed in the editor.
- In the Server Type column, it is possible to set the settings for master/slave operation. If only one server is used, Master must be set here. Further information on this can be found in the [Master/slave operation](#)[95] chapter.

The portal server connection is described in the [Portal server](#)[66] chapter .

5.1   Configuration EisBaer with several network cards, change metrics

If several network cards are present on a PC and a KNXNet / IP routing connection is to be used, the network cables must be connected correctly.
The EisBaer server service must be started with the IP address of the network with the EisBaer clients (IP address in the EisBaer server configuration console).
The KNX router is operated in the second network (KNX network).

You must manually configure the metric setting of the network adapters. Automatically off and the desired network card to assign the lower number.
Manual:
- Open the system control
- Open Network and Sharing Center
- Open "Change adapter settings"
- Select network connection via which the multicast connection is to be established.
- Right click on the network connection and select Properties
- Select TCP / IPv4 in the connection list and click Properties
- Click Advanced
- Deactivate "Automatic Metric" and enter a "1" in the "Interface Metric" field. (KNX network)
- 2. Select the network connection and enter a "2" in the interface metric. (EisBaer client network)
- enter correspondingly higher numbers for further network connections

- Restart the computer

Command line parameters to check the assignment of the multicast address to the network card

Listing of the interface metrics
Execute: Powershell (possibly as admin)
Get-NetIPInterface

Command line parameters to check the allocation of the multicast address to the network card
Start Eisbear project with activated KNX connection
cmd.exe
netsh interface ip show joins

ATTENTION: If the multicast address is in several network cards this will cause problems when sending or receiving KNX telegrams. Then the PC must be restarted.

IP address information
ipconfig / all

List of Interface Metrics Execute: CMD - route print

5.2   Master-/Slave-Operation

An automatic master/slave switchover is integrated in the EisBär SCADA client (not in the app / web app). This function enables redundant operation with two or more EisBär servers. This is also referred to as "hot redundancy" or "hot spare". **A licence is required for each server for this purpose.**

Mode of operation:
The EisBär Client switches to the next slave server if the EisBär master server fails. If the second server fails, it switches to the third and so on. After switching to a slave server, a constant check is made to see whether the EisBär master server is available again. If this is the case, the client automatically switches back to the master server. The master server is checked by querying the **ping port**. By default, the **port 8003** is set. **The ping on the port must be released in the network.** This is already used for the access of the smart clients (apps). When changing the smart client port in the server configuration console, the port must be adjusted.

No configuration changes are necessary on the server side. All necessary settings are made in the client in the "Eisbär Server Connections" window. This is called up in the client via File - Open (Alt-O).

Open the server settings with key combination Alt+O or via menu "File - Open" the search console. Click "Scan Server" to discover the, in the network available, EisBaer server. This can take a few minutes. With "Add Server manually" you can type in the IP address of the EisBaer server you would like to connected to. In the column "Server Type" is defined, which server will act as the master server. All servers which are to be used as a redundant server must be set to "Server Type" slave. There can be multiple slave servers.

When starting the client, the master server must be running. It is not automatically switched to a slave server.
It must be ensured that the project statuses are the same on both servers. This can be done e.g. via "Upload project" in the editor. There is no automatic synchronization of project data between servers.
In most cases 2 servers can be operated in parallel in one installation. If this does not work, there are possibilities to activate or deactivate drivers and communication on the respective server.

Example:
The KNX driver component has the property and the data point "Send active" to allow slave servers to listen, but not to send. In the slave server project deactivate the property "Send active" by default. The slave server will send a continously ping to the master server and if it does not get an answer sets the KNX "Send active" property to "ON". On the evaluation of a heartbeat, it is also possible to trigger Alarm messages.
Important: Master and slave server should not send simultaneously, this would lead to multiple messages for e.g time programs or logics etc.

Note: The switching between slave and master server can take up to 2 minutes. During this time, an operation is not possible.

5.3   Synchronization

It is possible to synchronize calendars and scenarios between polar bears. For example, to keep both projects in master / slave operation on the same status for switching times and scenarios.

For the synchronization to work, the calendars or scenarios must have identical channels. Since IDs are used internally in the program, we recommend copying the project after creating the calendars or scenarios. It is also possible to export and import the components as ScadaComp. In addition, there are export and import functions for the calendar to exchange the channel settings in the channel editor. For the scenarios, export and import is possible in the scenario editor.

If "export on change" is activated, the changes are sent to the other server every time the calendar or the scene is changed and imported into the calendar and the scene there.

Thesynchronization is realizedvia the data points XML text at the calendar[263] and scenario components[212] .

Name	Standard	Function
XML text output[97]	Output	Output of the appointment data in xml format. This data can be sent to another calendar/scene(XML text import).
XML-Text Output Trigger	Input	Trigger input to output the appointments at the output "XML-Text Output" in xml format.
XML-Text Import[97]	Input	Input to import the calendar entries/scenes as xml text. The data can come from another calendar/scene(XML text output).

The transfer between the EisBaer servers is done via text exchange. Synchronization is possible in both directions.
In the following example, an MQTT connection[97] is established between 2 servers.

5.3.1   Synchronization via MQTT

An MQTT client is used in server 1 (master) and an MQTT broker in server 2 (slave).

ATTENTION: To test in the EisBär Editor, it must be started as administrator.

For the synchronization to work, the calendars or scenarios must have identical channels. Since the program works internally with IDs, we recommend copying the project after creating the calendars or scenarios. It is also possible to export and import the components as ScadaComp. In addition, there are export and import functions for the calendar to exchange the channel settings in the channel editor. For the scenarios, export and import is possible in the scenario editor.

If "export on change" is activated, the changes are sent to the other server each time the calendar or the scene is changed and imported into the calendar and the scene there.

The IP address of the server 2 is entered in the MQTT client of server **1**.

The data points are connected to the XML text import and output data points of the calendar and the scene.
The datapoint name contains output or import as appropriate.

Activate the property "Export appointments on change" / "Export scenes on change".

The local IP address of **server 2** is set in the MQTT Broker .
ATTENTION: The set port (1883) must be released in the firewall.

In the channel editor, send and receive channels are created for each component to be synchronized. In the example, there is a calendar and a scene that are to be synchronized in both directions.

The data points are connected to the XML text import and output data points of the calendar and the scene.
The datapoint name contains output or import as appropriate.

Activate the property "Export appointments on change" / "Export scenes on change".

Top Level Intro

This page is printed before a new
top-level chapter starts

Part

VI

6 Components

Components are all elements that can be inserted into a project via drag & drop. These components are divided into the following categories:

- Components independent properties[105]
- Component independent data points[113]
- Data Point Type DPT[114]
- navigation[117]
- Static[122]
- Display and signaling[128]
- sensors[175]
- Comfort[263]
- Control, logic and time[228]
- communication[307]
- Energy efficiency[440]
- E-Mobility[483]
- driver[544]
- Manufacturer specific drivers[701]
- IoT[805]
- Multimedia[839]
- DALI emergency light[897]
- system[918]
- Macros[951]
- ScadaComps[951]
- Sample templates[951]

6.1 Component properties

This chapter describes the general properties. These can be selected one after the other with the tabulator.

Surname
Each component has a freely definable name. The name is purely documentation for the creator. He has no influence on the function. The name can be used multiple times to e.g. To be able to assign the name "corridor" to all components for the corridor.
The name of the component is set in the properties window and serves as the display name in the project window.

ID
For some components, the unique component ID is displayed. This is used to assign the databases in Folder \ Prj001 \ DBs to the respective component.

On the following pages you will find explanations for the following properties:

- [alignment]105
- [Appearance]106
- [right]109
- [formatting]109
- [Supported data types]112

6.1.1 Alignment

In "Alignment" you can define the size and arrangement of the component.
Values changes are applied to the component, when leaving the cell, or by pressing the Enter key.

Name	Function
Width [Pixel]	Width of the component in Pixel
Height [Pixel]	Height of the component in Pixel
X	X coordinate of the component, in pixels, relative to the left margin of the page or the panel. Zero is always top-left.
Y	Y coordinate of the component, in pixels, relative to the top margin of the page or the panel. Zero is always top-left.
Z	Z-Index. This property is not directly editable. It can only be changed via the configuration buttons on the "Start" ribbon. The z-index starts on the page or in the panel always with the value 0. The value 0 stands for the lowest positions. A higher value means that the component is covering components with a lower z-index.
Rotation Angle	Rotational angle of the component in degrees. The angle is measured in clockwise direction.

The current size is also displayed on the individual components.
The position of the cursor is displayed in the footer of the editor.

6.1.2 Look

The look defines the look of the component.
Changed values are displayed directly on change in most settings, at the latest when leaving the cell or by pressing Enter / Return.
Depending on the component, the following options are available:

Name	function
TextFormat	Select the font color and size, and the alignment and formatting.
Effects	Activate shade and/or reflection as an effect. The settings of the effects is done in the individual tabs. The changes are carried out immediately .
Corner radius	Adjust the corner radius of the component in pixel. The changes are carried out immediately .
Border	Set the color of the border. The changes are carried out immediately.
Border thickness	Adjust the thickness of the border in pixel.The changes are carried out immediately.
Visible	Visibility default. If this parameter is set, the component in the is visible in the client, if not set, the component will be invisible at start up of the client. On/Off signal on the visible data point of the component will toogle the visibility. See chapter Common data points [113]
Transparency	Set the transparency of the component in percent.
Tooltip	The tooltip appears when you hover over a component with the mouse. On touch screens the use is difficult.
Background	Set the background of the component. The changes are carried out immediately.
Text	Display text of the component may be set differently for different states of the component.
Animation on/off	If this parameter is set, the operation of the component is animated.

Background & Border

For each background property of a component you can choose between four basic types. These can be selected by the icons in the top row. From left to right the following types are available: NullBrush, color, gradient color and image.

NullBrush
The element is invisible in this state. No mouse clicks or other user action will be accepted . The component is not present and inactive.

Color
The entire area of the background is filled with this color. The base color can be selected via the spectrum slider or via the pull-down list. In addition, the controls R (red), G (green), B (blue) and A (alpha channel -> transparency) are available for manual mixing of a hue or directly via the input of the hexadecimal color. It should be noted that the first two values represent transparency.

With the pipette a color can be taken over from any application. For example, it is possible to determine from the company's website the exact color of the logo.
The plus button adds the currently set color to the pull-down list (at the end). So it can also be selected directly. This color is then available to all elements.

Gradient color
Basically, the gradient color selection behaves as described in the solid color. In addition you can select the nature of the gradient and the number of color gradations in the bottom line.

Image

Via **"Change path"** the storage path of the graphics library can be changed. The change affects all components of the existing project.
This must be adjusted if the user changes, e.g. if the project is opened on another PC.

The button Select Image can be used to insert any image file from the graphics library. If the desired graphic is not yet contained in the library, it must first be added via Add. Afterwards it can be selected with a double-click.

It is also possible to drag images to the property that have a brush editor. To do this, select the corresponding property row of the component, then drag and drop the corresponding graphic onto the property. The image is imported and displayed. The graphics are **not** optimized.

Please note the important notes[80] for graphics. In addition, the orientation and background of the image file can be selected.

6.1.3   Rights

User access can be granted for entire pages down to individual components. Default for the components is alway Full acess.
Only if you would like to limited access to certain components you need to change the settings of the component.

In the tab "user view" you can assign individual users to the selected component. You can also choose between visiblility and operation.
If you choose the "Right view", the component can be assigned to the respective applied rights.

Find more information in chapter [Component specific rights](#)[84] .

6.1.4   Settings

The display format specifies the representation of values within a text. Precondition is that the component has an input "value display".

For strings and other values '#' can be used as a placeholder . If a value has been received # will be replaced by the value. Should the value "0" be displayed, the placeholder must be 0 instead of #.

Examples of value displays:
#0,0   for two digits before the decimal point and one digit after the decimal point
##0,000   for three digits before the decimal point and three digits after the decimal point
%H:%M:%S   for operating hours
HH:mm:ss   for hour:minute:seconds
dd.MM.yyy   for day/month/year. The following applies: MM=month, dd=day, yy=year, HH=hours, mm=minutes, ss=seconds
0.0 °C   for temperatures
0,0 A   for current
Text "%"   for a % - value (The percent sign must be directly enclosed in quotation marks to prevent incorrect displays. In the touch value input \% is displayed).
Text #0,0 °C; Text -#0,0 °C   for temperatures with positive and negative values
"Text positive" ##0,00; "Text negative" -##0,00 for values with positive and negative values

To show both, text and numbers in a cell, close the text characters in quotation marks (' '),
E.g .: If you would like to use the % -symbol, you have to close it in any case in superscript (quotation marks), otherwise the arithmetic operation% (multiplied by 100) is executed. Should be: '%'.

Display of Text and Numbers

0 (Null)	Placeholder for numeric displays with meaningless zeros, if a number has fewer digits than zeros in the format. If you enter eg. 8.9 and you want display it as 8.90, use the format # .00
#	This placeholder follows the same rules as the 0 (zero). However no additional zeros will be dsiplayed, if the number you entered has on both sides of the decimal fewer digits, as the # symbols in the format. When the custom size z. B. #, ## states and 8.9 is entered, the number 8.9 will be displayed.

Display of Date and Time

d	1-31	Shows the day as a number without leading 0.
dd	01-31	Shows the day as a number with leading 0.
ddd	Sun-Sat	Shows the day as an abbreviation.
dddd	Sunday-Saturday	Shows the day in complete notation.
M	1-12	Shows the month as a number without leading 0.
MM	01-12	Shows the month as a number with leading 0.
MMM	Jan-Dec	Shows the month as an abbreviation.
MMMM	January-December	Shows the month in complete notation.
y (klein)	0-99	Shows the year as a number without leading 0.
yy (klein)	00-99	Shows the year as a two-digit number with leading 0.
yyyy (klein)	1900-9999	Shows the year as a four-digit number.
H	0-23	Shows the hour as a number without leading 0.
HH	00-23	Shows the hour as a number with leading 0.
h	0-12	Shows the hour as a number without leading 0. The display is based on the 12-hour clock.
hh	00-12	Shows the hour as a number with leading 0. The display is based on the 12-hour clock.
m	0-59	Shows the minute as a number without leading 0.
mm	00-59	Shows the minute as a number with leading 0.
s	0-59	Shows the second as a number without leading 0.
ss	00-59	Shows the second as a number with leading 0.
t	A-P	Displays the first character of the AM / PM designation for the specified time. (Will not be displayed in all regions)
tt	AM-PM	Displays the AM / PM designation for the specified time (does not appear in all regions)
z	-12 - +13	Displays the offset of the current system time zone in whole hours. The offset is always displayed with a leading plus or minus sign (zero is called a "+0" is displayed), the hours before the (+) GMT (Greenwich Mean Time) or by - indicates GMT (). The range is between -12 and +13. If the offset is a single digit (0-9), it is displayed as a single digit with the appropriate sign. The setting for the time zone is specified as + X or -X, where X is the offset from GMT in hours. The displayed offset is affected by daylight savings time.
zz	-12 - +13	Displays the offset of the current system time zone in whole hours. The offset is always displayed with a leading or trailing plus or minus sign (zero is called "+00" is displayed), the hours before the (+) GMT (Greenwich Mean Time) or by - indicates GMT (). The range is between -12 and +13. If the offset only a single digit (0-9), this prefix will be added when formatting a 0 (01-09). The setting for the time zone is

6.1.5 Supported data types

Input data types
- all DataPointValue data types
- String (.NET data type)
- Bool (.NET data type)

Ouput data types (if filter is is valid)
the follwing DataPointValue types:

- DataPointBooleanValue
- DataPoint1BitControlledValue
- DataPoint3BitControlledValue
- DataPoint8BitSignedValue
- DataPoint8BitUnsignedValue
- DataPointStatusWithModeValue
- DataPoint2OctetSignedValue
- DataPoint2OctetUnsignedValue
- DataPoint2OctetFloatValue
- DataPointDateValue
- DataPointTimeValue
- DataPoint4OctetSignedValue
- DataPoint4OctetUnsignedValue
- DataPoint4OctetFloatValue
- DataPointAccessValue
- DataPointStringValue
- DataPoint8OctetSignedValue
- DataPoint3x16BitSignedFloatValue
- DataPointPSCValue
- DataPointStringExtendedValue
- DataPointByteArrayValue
- String (.NET Datentyp)
- bool (.NET Datentyp)

Note: No binary numerical values will be sent or received due to interoperability. All data types are sent in its String representation and accepted upon receipt, whether TCP, UDP or HTTP is selected as the type of transport.

6.2   Common data points of a component

This chapter describes the general properties of the components. These are located in the communication bar of the selected component. However, this does not apply to drivers, for example.

Disable operation (display only)
If this input is not used, the component can always be operated. If the input is connected with an ON signal, the component cannot be operated. It then only has the display function. The locked status of a component is indicated by it being slightly darkened (grey) and covered by a small lock (dark grey).

Mouse over
This output can be used to start an event when the mouse is moved over the object. **This function is only valid for the Windows client!**

Visible
If this input is not used, the component is visible. When used, the component is switched invisible with an off signal and visible with an on signal.

Text color [ARGB-HEX]
This data point can be used to change the font color. The desired color is passed as a character string (hexadecimal value without #). It is possible to copy the color from the Brush Editor.

Opacity [0-255]
The opacity of the component can be changed via a 1 byte value from 0-255. The value 0 corresponds to complete opacity. The value 255 corresponds to the value that was set via the transparency in the properties. If, for example, 80% transparency is selected, this corresponds to the optical impression at value 255 at this data point.

6.3   Data Point Typ DPT

The value dialogs of the components (e.g., button, calendar) define which values for a state are output at the respective outputs.
The designation of the respective output values is based on the definition of the DPT (Data Point Type) of the KNX standard.

```
┌────────────────────────────────────────────────────────────────────────────┐
│ ⠿                                                                        [×] │
├────────────────────────────────────────────────────────────────────────────┤
│  ┌──────────────────────────────────┐  ┌─ Status ──────────────────────┐    │
│  │ DPT 1.*Boolean (EIS 01)          │  │                               │    │
│  │                                  │  │  ○ On                         │    │
│  │ DPT 2.* 1-Bit Controlled (EIS 08)│  │  ○ Off                        │    │
│  │                                  │  │                               │    │
│  │ DPT 3.* 3-Bit Controlled (EIS 02)│  │                               │    │
│  │                                  │  │                               │    │
│  │ DPT 5.* 8-Bit Unsigned Value     │  │                               │    │
│  │       (EIS 06)                   │  │                               │    │
│  │ DPT 6.10 8-Bit Signed (EIS 14)   │  │                               │    │
│  │                                  │  │                               │    │
│  │ DPT 6.20 Status with Mode        │  │                               │    │
│  │                                  │  │                               │    │
│  │ DPT 7.* 2-Byte Unsigned Value    │  │                               │    │
│  │       (EIS 10)                   │  │                               │    │
│  │ DPT 8.* 2-Byte Signed Value      │  │                               │    │
│  │       (EIS 10 signed)            │  │                               │    │
│  │ DPT 9.* 2-Byte Float Value       │  │                               │    │
│  │       (EIS 05)                   │  │                               │    │
│  │ DPT 10.*Time (EIS 03)            │  │                               │    │
│  │                            ▲     │  │                               │    │
│  │                            ▼     │  │                               │    │
│  └──────────────────────────────────┘  └───────────────────────────────┘    │
├────────────────────────────────────────────────────────────────────────────┤
│  ◉ No value                                    [  OK  ]    [ Cancel ]         │
└────────────────────────────────────────────────────────────────────────────┘
```

The following KNX data point types are currently supported in the Eisbär.

DPT 1. * Boolean (EIS 01)
switch; The output sends on or off switching commands.

Definition KNX: The data point type On / Off is used to switch an actuator function.

DPT 2. * 1-Bit Controlled (EIS 08)
Priority; The output sends free on, free off, prioritizes on or prioritizes off.

Definition KNX: With the help of the DPT Prio. It is possible to operate actuators - in addition to the normal operation via the DPT on / off communication object - by means of a higher-level "forced-controlled" control.

DPT 3. * 3-Bit Controlled (EIS 02)
dimming; The output sends dimming functions: up, down or stop. With a value between 0 and 7 we set the increment for up or down. At stop the dimming is stopped. The parameter "Value" is without function at "stop". After starting a dimming command, it must always be stopped. Otherwise, the dimmer dims to its maximum brightness.

Definition KNX: In addition to the 4-bit object (relative dimming - DPT 3 dimmer step), the entire "dimming" function block consists of at least one switching object (corresponds to DPT 1 on / off) and a value object (corresponds to DPT 5).
Via the 'Relative dimming' object DPT 3 (dimmer step), the dimming actuator receives a dimming command relative to the currently set brightness.

DPT 5. * 8-bit unsigned (EIS 06)
Absolute value (e.g., dimming, position); The output sends a value between 0 and 255 (8 bit, unsigned). The value is entered directly in the text box on the left, and the value in percent is entered in the text field on the right. In addition, entry via the slider is possible.

Definition KNX: With the function "Absolute dimming" (DPT percent), a brightness value between 1 (minimum) and 255 (maximum) is set directly.

DPT 6.10 8-bit Signed (EIS 14)
Absolute value; The output sends a value between -128 and 127 (8 bit / 1 byte with sign). In the text field, enter the value directly, select it with the arrow keys or adjust it with the slider.

DPT 6.20 Status with Mode
This tab defines which values and which mode an output sends. You can select multiple values, but only one mode.

DPT 7. * 2-Byte Unsigned Value (EIS 10)
16 bit value; In this register you can set a value between 0 and 65535 (16 bit / 2 byte unsigned) for the output. You can either enter the value directly in the text field, select it with the arrow keys or adjust it with the slider.

DPT 8. * 2-Byte Signed Value (EIS 10 signed)
In this register you can set a value between -32768 and 32767 (16 bit, with sign) for the output. You can either enter the value directly in the text field, select it with the arrow keys or adjust it with the slider.

DPT 9. * 2-Byte Float Value (EIS 05)
In this register you can enter an arbitrary floating point value (16 bit / 2 bytes) for the output.

DPT 10. * Time (EIS 03)
In this tab, you can enter the weekday, hour, minute, and second as the value for the output.

DPT 11. * Date (EIS 04)
In this tab you can enter the value of the day, month and year for the output.

DPT 12. * 4-byte unsigned (EIS 11)
In this register you can set a value between 0 and 4294967295 (32 bit / 4 byte unsigned) for the output. You can either enter the value directly into the text field or use the arrow keys to select.

DPT 13. * 4-Byte Signed (EIS 11)
In this register you can set a value between -214783648 and 214783647 (32 bit / 4 bytes with sign) for the output. You can either enter the value directly into the text field or use the arrow keys to select.

DPT 14. * 4-Byte Float (EIS 09)
In this register you can enter an arbitrary floating point value (32 bit / 4 byte) for the output.

DPT 15. * Access
In this tab you can set a six-digit access code for the output. In addition, you can select the following options:
error
authorization
direction
encoded

DPT 16. * String
In this tab you can enter any string for the output. Note, however, that the length is limited to 14 characters.

DPT 29.012 8-byte Signed Value
In this register you can set a value between -9223372036854775808 and 9223372036854775807 (64 bit / 4 byte with sign) for the output. You can either enter the value directly into the text field or use the arrow keys to select.

DPT 212.100 3x16 Bit Signed Float
In this register, you can enter three arbitrary floating point values (16 bit / 2 bytes) for one telegram. These values are combined and sent as a telegram.

DPT 236.001 Prioritised Scene Control
This DPT can be used to implement load shedding with switching stages or for safety critical applications where multiple levels of safety are required.

String Extended
In this tab, you can enter any extended string for the output. In contrast to the KNX string, the length is not limited to 14 characters.

Byte array
In this tab you can enter any sequence of hex values for the output.

6.4 Navigation

With the navigation elements you realize the jumps (Navigation) between each page within the project.

Following components are currently available:

- Change Page[118]
- Change Page Selection Box[121]

6.4.1   Change page

Purpose

Using the 'Change Page' component you can change to another page by clicking on the respective button. In the properties as a function of the name of the target page from the list of available pages must be selected.

This page change will allow the display of switching states via the input "status" to be freely chosen text and / or color. With input Mouse over image, you can display the image by creating an off signal. If no signal is

present, the image is displayed when the pointer is located over the component. With the signal output of the component a boolean switch command for signaling the page jump is sent. You can choose between an on-or off signal.

Using an on / off command at the data point "Visible", the component is shown or hidden (visible /invisible) in runtime. An On command makes the component visible and an Off command invisible. You can test this feature only in runtime.

Data points of the component

Component name	Type	Type Function
Disable operation (display only)	Input	If this input is not used, the component can always be operated. If the input is connected with an On signal, the component cannot be operated. It then only has the display function. The locked status of a component is displayed by darkening it slightly (grey) and covering it with a small lock (dark grey).
Mouse over	Output	This output can be used to start an event when the mouse is moved over the object. **This function only applies to the Windows client!**
Mouse over function	Input	The "Mouse over function" can be activated/deactivated via an on/off signal at this input.
Switch	Output	When the page change is activated, another event can also be triggered.
Switching Set value	Input	The value for "Switch" can be changed at runtime.
Trigger page change	Input	A page change can also be triggered by an external signal.
Visible	Input	If this input is not used, the component is visible. When in use, the component is switched invisible with an Off signal and visible with an On signal.
Status input	Input	This can be used to switch the background (colour / text) externally between on and off.
Text colour [ARGB-HEX]	Input	This data point can be used to change the font colour (if available). The desired colour is transferred as a character string. It is possible to copy the colour from the brush editor (hexadecimal value without #) in order to change the colour via a text input.
Opacity [0-255]	Input	The opacity (opacity) of the component can be changed via a 1-byte value of 0-255. Here, 0 corresponds to complete transparency. The value 255 corresponds to the value that was set via the transparency in the properties. If, for example, 80% transparency is selected, this corresponds to the visual impression at the value 255 at this data point.

For further information, see [Components independent data points](#) [113] .

Properties

Name		function
Mouseover Text		Enter the text in the mouse via function.
Mouseover function		Enable or disable the mouseover function.
Animation On/Off		Enable or disable the animation when pressed and released.
Show current page state		Enable or disable the progress bar for the current page. The status for the component is changed when the set "page change to" destination matches the current page name. See example below.
Current page Background		Displays the set color when the set "page change to" destination matches the current page name. See example below.
Current page format		Formatting for the text to be displayed
Current page text		Text that is displayed as soon as the status is true.
Page name	selection	Here, the project page to be jumped to is selected.
switch page type	Standard	Select the mode of operation between "Next", "Back" and page change.
switch output	selection	Here, the data type for the switching procedure is set.

ATTENTION: The display of the current page is only supported in server/client mode. The page status is not always displayed in the editor simulation.

Example:

Note: You must assign the page name before you create the navigation components. At subsequent changes to the page name you must change it here also. It is not updated automatically.

6.4.2   Change Page Selection Box

This function is used to switch to a specific page in projects with several pages. Here the desired project page can be selected via the drop-down menu.
Additionally, a switching event can be added.

With "WPF-Theme[218] " the appearance of this component can be varied.

Data points of the component

Name	Type	Function
Next page	Input	An On signal is used to switch to the next page in the list.
Switching	Output	When the page change is activated, another event can be triggered in addition
Page change by name	Input	Input for list selection[196] "Selected value", if Search for components is active.
Previous page	Input	An on signal is used to switch to the previous page in the list.

For the other data points, see Component independent data points[113] .

Properties of the component

Name	Standard	Function
Switching	Selection	Here the data type[114] for the switching process is set.

Note: The site selection is the simplest form of navigation. It automatically collects all created pages and displays alphabetically sorted. If you change the name of a page or new one inserted, it is updated automatically. It allows you to navigate from any page to each page of the project.

6.5 Static

Static components are elements which have a passive display function. The display cannot change dependent values. The components can be switched visible / invisible with an on/off signal at the data point "Visible" .
An operation using these components is not possible.

The following components are currently available:

- Picture[123]
- Panel[125]
- Text[125]
- RTF[126]

6.5.1   Picture

Using the 'Picture' component you can display a picture file on the page. It is possible to load a foreground or/and a background image. For example, the finished layouts in *. bmp, *. gif, *. tif, *. png, *. ico, in the parameter "icon" are inserted. Thereafter, the active components for displaying lights, blinds, etc., are inserted in the picture.
With an on/off signal at the data point "Visible" the component will be switched visible / invisible in runtime. An on signal switches the component visible, an off signal invisible. This function can only be tested in runtime.

Data points of the component

Name	Typ	function
Image Url	Input	Change the picture dynamically, you can send a picture url from a weather service for instance, if the server is connected to the internet the component will download the picture
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
Opacity [0-255] [113]	Input	Over a 1-byte value of 0-255, the Opacity [0-255] of the component can be changed. 0 is complete transparency. A value of 255 corresponds to the value that was set on the transparency in the properties of the component. If for example, the transparency in the properties of the component is set to 80%, this will be the level if you send a value off 255 to this data point.

Properties of the component

Name		Function
no caching		If "No Caching" is activated, graphics that are passed via "Image Url" are updated by a server request. If "No Caching" is deactivated, the graphics are loaded only once.

Via the data point "Image Url" the background image can be loaded and changed dynamically at runtime.
This makes it possible to display e.g. charts or weather pictures from external systems in the polar bear.
For this purpose the path to the graphic file is sent to the data point. e.g. C**:\grafik\beispiel.png**

The graphics can also come from a web server. In the polar bear server is already a web server integrated which provides graphics for the image component.
The graphics must be stored in the following folder: **C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www**
This web server always sends the updated graphic to the image component when the graphic content changes.
For this purpose the URL to the graphic file is sent to the data point. e.g. http://IP-ADRESSE:8003/Eisbaer.**RESTServices/CustomWebsite/beispiel.png**

The update of the graphic in the different polar bear clients reacts differently.
- In the Windows client, the graphic is updated every time the path or URL is sent.
- In the App-Clients you have to switch temporarily to another graphic for updating. e.g. with a sequence (main sequence with 2 entries) which briefly calls up another graphic.
- In the webapp the graphic is only updated after a page refresh (F5).

Note: The visualisation allows you to use all standard pixel graphics formats. It should be noticed that the graphics files are inserted in full resolution, i.e. that, for example, the digital images created in *.jpg can have a file size of 2 MB. In RAM of the PC they are converted into BMP data and can then easily be 10 times larger. Repeated use of such images can use a lot of RAM very quickly, which yields to a slowing of your system.

For this reason please use as *.gif or *.png files in the actual required size (pixels). This allows the creation of lean and fast a GUI. · Using the background image function of the page or in the component always causes a performance loss.
For Windows, the background image feature is something special, as these graphics are tiled. So a few pixels large graphic can fill the whole screen.Use this feature only if the tiling function is required. In all other cases (this is the rule), you always use the property background to insert your graphics. Your system stays lean and fast.

6.5.2   Panel

Purpose

Using the 'Panel' component you can group other components within a specified frame. This allows to group room or area details or input masks for certain functions. With the Opacity [0-255] property you type in the degree of transparency of the component, where a value of 0 represents full transparency, the value 255 of the complete Opacity [0-255]. Using the same data point, you can externally change the Opacity [0-255], with an 8bit unsigned value.

With an on/off signal at the data point "Visible" the component will be switched visible / invisible in runtime. An on signal switches the component visible, an off signal invisible.

Data points of the component

Name	Typ	function
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Opacity [0-255][113]	Input	Over a 1-byte value of 0-255, the Opacity [0-255] of the component can be changed. 0 is complete transparency. A value of 255 corresponds to the value that was set on the transparency in the properties of the component. If for example, the transparency in the properties of the component is set to 80%, this will be the level if you send a value off 255 to this data point.
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.

Tips for the background design[106]

Sample templates:
Download link: Panel switching

General information on sample templates (SCADAComp):
Download the desired SCADAComp file and unzip the ZIP file in an empty folder. Start the "Import components" option in the EisBär Editor ribbon under Project and load the template. If a conversion is necessary because the EisBär version is newer, confirm the process with YES. To maintain the functionality, select the option: "Create new nets" as a copy rule when pasting.

6.5.3   Text

Using the 'Text' component you can display any given text on the page. These have no active / status-dependent function. With an on/off signal at the data point "Visible" the component will be switched visible / invisible. An on signal switches the component visible, an off signal invisible.

Data points of the component

Name	Typ	function
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Opacity [0-255] [113]	Input	Over a 1-byte value of 0-255, the Opacity [0-255] of the component can be changed. 0 is complete transparency. A value of 255 corresponds to the value that was set on the transparency in the properties of the component. If for example, the transparency in the properties of the component is set to 80%, this will be the level if you send a value off 255 to this data point.
Text color [ARGB-HEX]	Input	The font colour can be changed via this data point (if available). The desired colour is transferred as a character string. It is possible to copy the colour from the brush editor (hexadecimal value without #) in order to be able to change the colour via a text entry.
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.

6.5.4   RTF

Using the 'Rich Text' component you can display a text in Rich Text Format (RTF) on the page. This text can be changed during runtime. So changeable text can be realized, e.g. as visitor guides or texts on change of room names or numbers. The text can be loaded as *. rtf directly in the component. Inserting graphics in Rich text is also possible.

The text can be send as an ASCII string on the value output e.g. to a File Logger component. The output is triggered optionally when closing the Editor by clicking OK or by triggering the input. With an on/off signal at the data point "Visible" the component will be switched visible / invisible in runtime. An on signal switches the component visible, an off signal invisible.

Via "WPF-Theme" the appearance of this component can be varied.

Data points of the component

Name	Typ	function
Lock operation (display only)	Input	If this input is not used, the component can be operated normally. If the input is connected with an on-signal, the component will be locked can not be operated. It only has display function. The locked state of a component is displayed, with a padlock sign on a slightly gray background.
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Dispatch Trigger	Input	True sends the text of the "RichText" Component on the Value data point
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
HTML Format	Output	Output, which will send the "RichText" in HTML format
Value	Output	Output, which will send the "RichText"
Opacity [0-255] [113]	Input	Over a 1-byte value of 0-255, the Opacity [0-255] of the component can be changed. 0 is complete transparency. A value of 255 corresponds to the value that was set on the transparency in the properties of the component. If for example, the transparency in the properties of the component is set to 80%, this will be the level if you send a value off 255 to this data point.

Properties

Name		function
Send on OK		Sends the text to the outputs, if the user has acknowledge the dialog with "OK"
Send - Trigger	send if ON or OFF	Property of the input "Dispatch-Trigger, Send-On,Send-Off, Send-On/Off

The text can be changed at runtime. The functions Load, Save, Print and many more are available.

6.6 Display and Signal

This chapter describes the functions and properties from the Display & Signaling category.

Currently the following components are available:

- Value driven text [129]
- Animator [130]
- Marquee Text [132]
- Alarm [133]
- Faultmanager [136]
- Faultmanager - display [142]
- Pie Chart [145]
- e!Sankey [146]
- Linear Gauge [152]
- Circular Gauge [153]
- Plotter [153]
- Date / time display [158]
- FlipClock [158]
- Clock [159]
- Smiley [160]
- MiniPlotter [160]
- MiniChart [170]

6.6.1   Value driven text

Purpose

Using the 'Value driven Text' component you can display value dependent different text . This applies to the states on / off / undefined, also as the display of values, such as temperatures within a text.

The component is not a control element.

Formatting:

The formatting for values received via the data point Value Display is set at Text Undefined.

For strings and other values, '#' can be used as a placeholder. In this case, #'s are hidden if a value is present. If the value "0" is to be displayed, a 0 must be used as a placeholder instead of #.

 In this case, # are hidden if a value is present. If the value "0" is to be displayed, the 0 must be used as a placeholder instead of the #.

 To protect the character string from unwanted formatting, it must be framed with "" or ''.

For value displays and presentation, see Formatting.[109] The formatting applies to "Text On", "Text Off" and "Text at Undefined".

Text display format:

You can set the following properties for the displaying text:

· The display format defines the representation of values within the text.

· #0,000 for. three digits, int

· %H:%M:%S for hours of operation,

· hh:mm:ss for hours/minutes/seconds,

· dd.MM.yyyy für day/month/year. The rule is: MM=month, dd=day, yy=year, HH=hours, mm=minutes, ss=seconds.

· Text #,#; Text -#,#; Text 0.0

· "Text positive" ##0,##; "Text negative" -##0,##;"Text 0"

For strings and other values '#' are used as a placeholder for a digit. To protect a string against unwanted formatting, it must be framed with "..." or '...'. Between the different formatting sections these must be separated with; (semicolon).

Properties

Alignment	see chapter Alignment[105]
Look	see chapter Look[106]
On Text	A Text which is displayed in the state "On"
Off Text	A Text which is displayed in the state "Off"
Undef Text	A Text which is displayed in the state "Undefined"
Text Color Status On	A Text is displayed in the choosen color in the state "On"
Text Color Status Off	A Text is displayed in the choosen color in the state "Off"
Text Color Status Undef	A Text is displayed in the choosen color in the state "Undef"
Rights	see chapter Rights[109]
Settings	see chapter Settings[109]

Factor	The received value is multiplied with the factor value and shown in the text.
Text List	Predefined list of strings, which can be shown dependend on the received value
Show string from list	switch between value or list presentation

Data points of the component

Name	Type	Function
Lock operation (display only)	Input	If this input is not used, the component can be operated normally. If the input is connected with an on-signal, the component will be locked can not be operated. It only has display function. The locked state of a component is displayed, with a padlock sign on a slightly gray background.
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Opacity [0-255] [113]	Input	see components independent data points [113]
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
Text color [ARGB-HEX]	Input	The font colour can be changed via this data point (if available). The desired colour is transferred as a character string. It is possible to copy the colour from the brush editor (hexadecimal value without #) in order to be able to change the colour via a text entry.
Value display	Input	Receives the value that is displayed.
Status	Input	To highlight certain value a received On/Off will change the status of the background, see above On Text, Off Text and can also change the font color

Note: When using the % character it must be in quotation marks, otherwise the arithmetic operation % is calculated (Multiplication will be calculated with 100). Should be: "%" Format values [109]

6.6.2 Animator

This component can be used to play several images one by one, for example, to simulate an animation.

Please note: Important notes [80] -> Working with graphics

Data points of the component

Name	Typ	function
Current Frames per Second	Output	Returns the current number of frames per second
Set Speed	Input	Determine the images to be displayed per second
Mouseover	Output	You can use this output to start an event when the mouse moves over the object.
Visible	Input	With an off signal, the component becomes invisible and visible with an on signal.
Start/Stop Backward	Input	Starts the sequence of the images in the reverse order
Start/Stop Forward	Input	Starts the sequence of the images in the order in which they were created.
Opacity [0-255] [113]	Input	See component independent data points [113]

Properties

Name	Default value	function
Images	0	The images for the animation are defined in the editor. Any number of custom images can be inserted into the collection. The top images is for the start, the lowest for the maximum position. The number of images are calculated into the value range.
Value at maximum setting	10	Here, the value is selected at which the maximum forward speed (positive value) is reached. 0 = stop. This limits the "Set speed" input.
Value at minimum setting	-10	Here, the value is selected at which the maximum speed is reached backwards (negative value). 0 = stop. This limits the "Set speed" input.
Default Speed [Frames per Secound]	5	Sets the default speed
Maximum Speed [Frames per Secound]	20	Sets the maximum speed

Animated Image Editor

Explanation of the keys in the menu bar, from left to right:

Add a picture
Select a new graphic from the graphics library. This can be used here, e.g. A simple bmp, png or gif graphic. In addition, it is possible to select an animated gif graphic. This is split with the import into its subpictures and displayed.
The top graphic (1) is used for the undefined state.
The graphic (2) for the off state.
Graphic (3) stands for the mini- mum position and the lowest for the maxi- mum position. The graphics between them are divided into the range of values.

Remove image
Deletes the currently selected image from the list.

Arrow up
Moves the currently selected image up one position in the list.

Arrow down
Moves the currently selected image down one position in the list.

6.6.3 Marquee Text

Using the 'Marquee Text' component you can display selected text on the page as scroll text. The displayed text and the parameters for the behaviour of the scrolling text can be set and modified using the inputs of the component in runtime mode. With an on/off signal at the data point "Visible" the component will be switched visible / invisible in runtime. An on signal switches the component visible, an off signal invisible.

Data points of the component

Name	Typ	function
Speed	Input	Determine the speed of the text. (0-255, the larger the number, the slower the text)
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Direction	Input	Direction of the text: Left to Right, Right to Left, Top to Bottom, Bottom to Top
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Text	Bidirectional	Receives and sends the text that is displayed or put into the default settings
Text color [ARGB-HEX]	Input	The font colour can be changed via this data point (if available). The desired colour is transferred as a character string. It is possible to copy the colour from the brush editor (hexadecimal value without #) in order to be able to change the colour via a text entry.
Opacity [0-255][113]	Input	see components independent data points[113]

Properties

Name	Default value	function
Text	Text	Creates the scrolling text to be displayed
Speed	10	Determine the speed of the text. (0-255, the larger the number, the slower the text)
Direction	Left to right	Direction of the text: Left to Right, Right to Left, Top to Bottom, Bottom to Top

If the direction is entered externally (eg via touch value input):

1 = from left to right;
2 = from right to left;
3 = from top to bottom;
4 = from bottom to top

6.6.4   Alarm

This component is used to visualize an alarm condition. If this component is to be used for acknowledgment, "Send signal on acknowledgment" must be activated. In the event of an alarm, the screen is woken up by moving the mouse.

Data points of the component

Name	Type	Function
Aucoustic alarm	Input	(De)Activate the audible alarm.
Alarm audio file (*.wav)	Input	If the storage path of a wav audio file is transferred, the component uses this as an alarm. All clients must have this wav file (PCM codec) in the same directory.
Alarm message	Input	Here the disturbance signal is switched on
Disable operation	Input	The input option can be enabled or disabled externally here.
Mouse via	Output	This output can be used to start an event when the mouse is moved over the object.
Acknowledgement	Bidirectional	Alarms can be acknowledged with this output. Feedback is sent back.
Visible	Input	With an off signal the component is switched invisible and with an on signal visible.
Text color [ARGB-HEX]	Input	see Components independent data points[113]
Opacity[113]	Input	see components independent data points[113]

Properties

Name	Default value	function
Alarm Value is On signal	on	Alarm triggers at Value On; if not set, the alarm is at Value Off (low / high level)
Text		Text for the caption of the component
Flashing speed [ms]	1000	Blink frequency in milliseconds
Acoustic alarm signal	on	(De)Activate the acoustic alarm.
System beep signal	on	If this function is set, an acoustic alarm is output via the PC internal loudspeaker. If it is not set, a sound is output via the sound card. This only works if an acknowledgement option is selected.
Alarm status	Undefined	for test purposes: 0 = undefined, 1 = alarm unconfirmed, 2 = alarm confirmed, 3 = no alarm unconfirmed, 4 = no alarm confirmed
Change page	on	Trigger automatic page change to the page of the alarm component or not. This function must not be active if the alarm component is on the master page. The page change is only executed in server-client mode, **not in the editor simulation**.
Send signal on confirmation		Sends a signal via the data point "Acknowledgment" when the alarm has been acknowledged
Confirmation on alarm triggered	on	"Alarm triggered" must be acknowledged if this option is selected.
Confirmation on alarm ended		"Alarm Complete" must be acknowledged when this option is selected.
Background - Alarm	red	Sets the appearance[106] .
Background - No Alarm	green	Sets the appearance[106] .
Background - Not acknowledged	yellow	Sets the appearance[106] .
Background - Undefined	purple	Sets the appearance[106] .
Activate EisBär		When an alarm is triggered, the EisBär client is activated and placed in the foreground.
Alarm Audio File (*.wav)		An alternative acoustic alarm can be defined here.

Valid Audio Wav Codecs

Short name	Format	Bitrate	1 min =
11k 8bit pcm	11.025 Hz 8 Bit PCM	88.2 KB/s	646 K
11k 16bit pcm	11.025 Hz 16 bit PCM	176.4 KB/s	1.292 K
8k 8bit pcm	8,000 Hz 8 bit PCM	64 KB/s	468,8 K
8k 16bit pcm	8,000 Hz 16bit PCM	128 KB/s	937,5 K

Invalid Audio Wav Codecs

Example	Format	Bitrate	1 min =
11k ulaw	11.025 Hz u-law	88.2 KB/s	646 K
8k ulaw	8,000 Hz u-law; * fixed network quality	64 KB/s	468,8 K
11k adpcm	11,025 Hz 4 bit ADPCM	44.1 KB/s	323 K
8k adpcm	8,000 Hz 4 Bit ADPCM	32 KB/s	234,4 K
11 kgsm	11.025 Hz GSM6.10	18 KB/s	131,8 K
8k mp316	8,000 Hz MP3 16 K	16 KB/s	117 K
8k gsm	8,000 Hz GSM6.10; * Mobile radio quality	13 KB/s	102,5 K
8k sbc12	8,000 Hz Lernout & Hauspie SBC 12k	12.0 KB/s	87,9 K
8k truespeech	8,000 Hz DSP Group TrueSpeech	9 KB/s	65,9 K
8k mp38	8,000 Hz MP3 8 K	8 KB/s	60 K
8k celp	8,000 Hz Lernout & Hauspie CELP	4.8 KB/s	35 K

6.6.5   Faultmanager

The fault message manager is an unVisiblee server component for recording fault and operational messages. For each message a good range can be defined. If the signal leaves the good range, a fault is triggered. For centralized signaling of the fault situation, collective outputs in accordance with DIN 19235 are available as new value message. In addition, fault conditions can be signaled by e-mail. The course of the disturbances is stored in an internal database. Each manager has its own database. The component is not visible on the interface in the client.

To use the fault message manager, at least one fault message manager display, as a visible client component, must be connected.

Flowchart of messages:

Data points of the component

Name	Type	function
Active Alarms [Text]	Output	Outputs a text that includes all Active Interference
Number of active messages [High priority]	Output	Outputs the number of active messages of the corresponding priority.
Number of active messages [Info]	Output	Outputs the number of active messages of the corresponding priority.
Number of active messages [Medium priority] Output	Output	Outputs the number of active messages of the corresponding priority.
Number of active messages [Low priority]	Output	Outputs the number of active messages of the corresponding priority.
Dynamic (Display after channels have been defined)	Folder	In the Dynamic folder there are further folders in which the created channel can be wired according to the designation. -Deactivate: The individual fault messages can be deactivated with an ON signal. -Individual acknowledgement: An individual acknowledgement input is available for each fault message. -**Message input**: The inputs for the defined messages are displayed. -Optical**individual display:** The fault message status of each individual alarm message is output. Alarm triggered: alternating on/off every second Alarm terminated: alternating on/off every second Alarm confirmed: off

Name	Type	function
		Confirmation before alarm ended: on Confirmed alarm ended: off **ATTENTION**: After starting the programme, the outputs are only set in the event of a fault. The state of a connected component is undefined in the good state.
Mail Debug	Output	When using e-mail signaling, diagnostic messages relating to e-mail transmission are output here. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
External notification	Output	This data point can be linked to the SMS or PUSH component to forward messages (see below).
Last Event [Text]	Output	Returns a text that contains the last error
Summary Deactivation	Input	An on signal at this input deactivates all messages in the tab.
Summary Alarm	Output	See "Output Concept" below.
Summary Alarm Confirmation	Input	An on-signal at this input acknowledges all messages in the Active tab.
Summary Alarm Alert	Output	See "Output Concept" below.
Summary Alarm (high priority)	Output	See "Output Concept" below.
Summary Alarm (info)	Output	See "Output Concept" below.
Summary Alarm (medium priority)	Output	See "Output Concept" below.
Summary Alarm (low priority)	Output	See "Output Concept" below.
SMTP Account User	Input	Here you can change the user name for the outgoing mail server.
SMTP Account Password	Input	Here you can change the password for the outgoing mail server.
Faultmanager Display	Bidirectional	Connection between a fault message manager and one or more fault message manager displays.
Collective Alarm (high priority)	Output	See "Output Concept" below.
Collective Alarm (info)	Output	See "Output Concept" below.
Collective Alarm (medium	Output	See "Output Concept" below.

Name	Type	function
priority)		
Collective Alarm (low priority)	<mark>Output</mark>	See "Output Concept" below.

Properties of the component

Name	Default value	Function
Channels	0	Here the individual messages are defined in a list. These then appear as inputs in the data point folder Dynamic. Subfolders can be created with #, whereby the text before # is the folder name and the text after # is the data point name. This allows data points to be summarised. Example: Current#L1; Current#L2; Current#L3 - A Current folder containing the data points L1; L2; L3 appears in the Dynamic folder.
E-mail Settings		The settings of the mail server for sending e-mails are made here.
Encoding	System Default	Setting option for the character set to be used: UTF8, UTF7, UTF32, Unicode (UTF16), System Default (e.g. ISO-8859-1), Unicode big endian (UTF16BE) and ASCII.

Channel / Meldung definieren

Columns marked with an asterisk (*) can be edited simultaneously using the multi-select function.

Add a message:

Error message:
Name of the message with up to 255 characters, this is also the name of the data point at the fault manager (Folder Dynamic).

Priority:
Here you can choose from High (<mark>RED</mark>), Medium (<mark>YELLOW</mark>), Low (<mark>BLUE</mark>) or Information (WHITE). See explanation of the color scheme below.

Allowed values:

Here, the value range for the good status of a message is defined. There are two types of values ? possible, Boolean and any values. For any values, the good value range is defined by a start and end value.

Cyclic monitoring in min. (0-360): Cyclic monitoring can be activated for each message. If 0 is specified, this function is not active. If the value is greater than 0, the input of the message is monitored and a fault is triggered in the event of a signal failure. If no signal is received within the specified time, a fault is also triggered. To ensure that no fault is triggered, a good message must be cyclically sent to the fault message manager.

Error details (info button):

A detailed text for the message can be entered here via an editor and/or a hyperlink can be called up. Files but also URLs are possible as links, e.g. pdf documents or network cameras can be called up directly from the detailed text.

Calling up files also works in the **WebApp.** For this, an http path must be used as the file link. A web server is integrated in the polar bear server for this purpose.

The files must be stored in the following memory path on the polar bear server:

C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www\DATEINAME

e.g. C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www\Delta.pdf

The retrieval link in the Eisbär fault message manager must be set as follows:

http://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/DATEINAME

e.g. http://192.168.100.11:8003/Eisbaer.RESTServices/CustomWebsite/Delta.pdf

E-mail settings:

Here you define one or more e-mail addresses to which a message is automatically sent. The e-mail contains the trigger time (date/time of the message), the name of the message and the message status as the subject. As message content, the fault details are transmitted as text, hyperlink incl. linked external documents. It is defined which of the message states should trigger an automatic e-mail. In order to use the e-mail service, the e-mail data must be entered in the **properties of the component** . An e-mail must also be entered for the "To address".

External notification:

If faults are to be forwarded to the PUSH [393] or SMS [400] component , a pseudo e-mail must be entered for the "To Address"

The correct, service-dependent recipient ID is entered before the @.

After the @ follows "local." (incl. the dot) followed by the service identifier:

- eisbaer
Empfänger-ID@local.eisbaer
Ex: QXg2vOyMqICaJkm2sdfr66474e520EWvWXTg@local.eisbaer

- pushover
Empfänger-ID@local.pushover
Ex: uuno78tooCxwiqokfws6rwVMHFQ6nH@local.pushover

- prowl
Empfänger-ID@local.prowl - the recipient ID is the API key from the prowl account.

Bsp: 523ac413d8b83509fae8f253185a275bf47@local.prowl

- redone
Empfänger-ID@local.redone
Ex: Sanitaeter + Betrisbsschutz@local.redone

- sms
Nummer@local.sms
Ex: 0170123456789@local.sms

acknowledgment:
Under History, you can select which message states must be acknowledged: Fault triggered and/or Fault completed. This defines whether a message is displayed in the "New" tab when the corresponding state is reached. In addition, under "Logging behaviour" it is defined whether the name of the logged-in user is logged or whether an input field with name/password for an authentication of the user pops up (free).

Export exports all channels in XML format.
Import imports channels from an XML file.
ATTENTION: The existing channels are replaced with the imported channels. Channels that no longer exist are deleted and linked networks are lost. Newly added channels are not automatically linked.

Color scheme:
Depending on the status, different colors are defined for the messages:
- RED (high): dangerous condition, highest priority, immediate intervention required
- YELLOW (mean): abnormal condition, medium priority
- BLUE: Intervene expedient, lowest priority
- WHITE: neutral, information
- GREEN: normal state, intended for the above messages as "good state"

Edition concept:

Sequence: Alarm triggered / terminated / confirmed / confirmation before the alarm has ended / ended

Priority	Collective visual indicator	Collective visual indicators total	Priority collective visual indicators	Summary annunciator
High	on / on / off / off / -	blink / blink / off / on / off	blink / blink / off / on / off	on / off / - / - / off
Mid	on / on / off / off / -	blink / blink / off / on / off	blink / blink / off / on / off	on / off / - / - / off
Low	on / on / off / off / -	blink / blink / off / on / off	blink / blink / off / on / off	on / off / - / - / off
Information	-	-	blink / blink / off / on / off	on / off / - / - / off

6.6.6 Faultmanager display

The fault message manager display is a Visible Client component. It is used to display and operate the messages of the fault message manager.

To use the fault message manager display, this must be connected to a fault message manager. It is possible to connect several fault message manager displays with one fault message manager, but not vice versa several fault message managers with a fault message manager display.

The fault message manager display is a list box with tab switching.
- In the "New" tab, all new incoming messages are displayed until a user action processes the message.
- The "Active" tab displays all messages that have been moved from the "New" tab via a user intervention, but have not yet been canceled.
- All messages are collected in the "History" tab. Must be loaded separately!

Data points of the component

Name	Type	function
Lock operation (display only	Input	The input option can be enabled or disabled externally.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	If this input is not used, the component is Visible. When used, the unvisible component is switched with an off signal and a Visible on signal.
Faultmanager	Bidirectional	Connection between a fault message manager and one or more fault message manager displays.
Opacity [0-255] [113]	Input	See component independent data points [113]

message status
Messages can have four states:
- Fault triggered
- Fault triggered acknowledged or parked on time
- Error terminated
- Fault finished acknowledged
The statuses and the time stamp of the respective state changes are displayed in the Status and Date / Time column.

Client-View

New

When a new message arrives, it will be displayed here. There is an automatic switch to this tab.
Control columns:
- Detail: by clicking on the I symbol, the additional information entered in the fault message manager is displayed.
- Logbook: This opens the dialogue for entering information. These are saved with date / time and user information.
- Confirm: Clicking on the message confirms and moves it to the active folder (message is still pending) or the archive (message finished).
- Parking: By clicking on the message parked in the Active TAB. The parking duration is adjustable. The message is suppressed for the set time.

active

In this tab, all messages are displayed that have been acknowledged or parked, but are still in the fault state.

History

This tab displays all completed messages, i. if they are no longer in the tab New or Active.
To view the history, press "Load" in the header of the history.
All fault messages in the course are written to a separate database for each fault message manager.
A good filter function is provided by the Print tab. There, all messages can be grouped, sorted and filtered.

Printing

This tab displays the messages from the history database for printing. By grouping, sorting and filtering the messages can be printed.

The layout settings are saved for each EisBär client. Thus it is possible to reload the previously saved layout settings after a client restart.

Settings

This tab displays all created channels for changing channel settings. Clicking on changes the error message text, priority, permitted values, error message details, e-mail settings and acknowledgment behavior. The user display authorization is changeable only in the EisBär client, not in the simulation.

Every change must be accepted by saving.

ATTENTION: Changes must be saved as soon as possible. If any fault message arrives at the fault message manager, unsaved changes will be lost.

Export exports all channels in XML format.
Import imports channels from an XML file.

ATTENTION: The existing channels will be replaced with the imported ones. Channels that no longer exist are deleted and connected networks are lost. Newly added channels are not linked automatically and thus have no function.

6.6.7   Pie Chart

Partial values can be graphically displayed using the pie chart. The diagram always refers to 100% (sum of the values applied to the inputs) and divides them according to the values.

Data points of the component

Name	Type	function
Dynamic	Folder	List of created channels
Mouseover	Output	This event can be used to start an event when the object is moved by mouseover.
Visible	Input	If this input is not used, the component is Visible. When used, the unvisible component is switched with an off signal and a Visible on signal.
Opacity [0-255] [113]	Input	See component independent data points [113]

Properties

Name		function
Channels	0	Add the data channels that appear as part of the pie.
Char title		Add the title in the diagram
Bottom right title		Add a caption in the footer. The font size is 8 smaller than the chart title
Animation On/Off		This will allow the animation to be turned on and off
Show Legend		Shows or hides the legend
Show series labels		Displays the label with values in the corresponding diagram section.
Legend text Format Pattern	Prefix {A}: {V:0.000} Postfix	Formatting the display in the Legend area. 0.000 stands for formatting the number (here: 3 decimal places). For the decimal place a point must be set here, in the visualization a comma is displayed. For the thousands of separators, the comma is used here, which is then represented as a point.
Series label text format Pattern	{A}: {VP:P0}	Formatting the value representation in the diagram.
Tooltip text Pattern	({A}) : {V:##.##}	Formatting the presentation of the tooltip. The # after the dot indicates the number of decimal places of the value.

Name		function
Wpf Themeing (On/Off)		Activating will affect the background and font with the appropriate theme.
Series label foreground color		With deactivated theming the color can be adjusted here.
Series label front size		Setting option for the font size of the display in the diagram.
Legend background color		If the theme is deactivated, the background color of the legend can be set here.
Legend foreground color		If the theme is deactivated, the text color can be set here.

Variable	Meaning
Prefix	Caption of the legend before the channel name; Example: Prefix text {A}: {V: 0.00} Postfix text
Postfix	Label the legend after the channel name and the value; Example: Prefix text {A}: {V: 0.00} Postfix text
{A}:	This is the placeholder for the channel name. Here, a caption can be made directly, which is the same for all channels.
{V:}	This is the placeholder for the current value applied to the input. Here the number is output directly.
{VP:}	With the setting {VP:} the output number is displayed in%.
{VP:P0}	The number after the "P" indicates the number of decimal places of the percentage display.

6.6.8   e!Sankey diagram

For the use of this component the .NET-Framework 4.8 is mandatory!

To create a template for displaying a diagram, the e!Sankey-Software is required.
The template must be saved for this purpose and the storage location must be specified in the component. Furthermore, the same variables as in the diagram template must be created in the "Key" column in the channel editor (see below). If this column is not visible, it must be activated under "Edit --> Options --> Advanced --> Show 'Key' field for diagram elements". Via "Edit\Keys" the variables can be exported to the clipboard. Copy the keys from the clipboard via a text editor into a text file and save it as CSV. The CSV file can then be imported in the EisBär Editor into the channel list of the e!Sankey component.

Use of the eSankey diagrams

1. Insert the eSankey component into the EisBaer project.
2. There is a selection for a diagram template file in the properties of the component. Select the desired template there.
3. Add the data channels that are to be displayed as part of the diagram. To do this, import the "XX_keys.csv" supplied in the folder C:\ProgramData\Alexander Maier GmbH\EisBär XX\eSankey. These can also be created manually.
4. Once the data channels have been created, the communication objects are displayed in the dynamic folder of the component in the Communication objects window. Please connect the corresponding data points for power there.

Note on display in different application scenarios:
The generated images are stored in the folder "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www" of the EisBär server.

Local operation only: Data point "Diagram image file (local file)" is linked to the image [123] component. -> EisBär server and client run on the same machine. No access via network or internet is possible.

Local network: "Publish images" propertydisabled, "Diagram image file (Http(s) URL)" data pointis connected to the image [123] component. -> EisBär server and client run on different machines or apps in the local network. Access via the local network is possible. No internet access

Internet:Publish Images propertyenabled, data point "Diagram Image File (Diagram Image File (Http(s) URL)" is connected to the image [123] component. -> EisBär server and client can run on different machines, apps, locally or on the internet. The images are cached on our web server. FTP access to "http://eisbaer-scada.net" must be possible.

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation with the support team! If used, these can significantly affect the performance of the service.**
Diagram Image File (Http URL)	Output	For external access (EisBär clients), the URL to the diagram file must be sent to the data point of the image component: **http://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/sankey_image.png**.
Diagram image file (local file)	Output	Output of the local location for the data. This URL can be linked to the image component. The chart will only be displayed if the server and client are running on the same machine.
Create diagram now	Input	A switch edge is used to recreate the chart.
Dynamic	Folder	Listing of the created channels.
Extended Diagnosis	Input	The output of the diagnosis can be extended here with an An value.
Driver On/Off	Bidirectional	Switches the driver On (true) or Off (false).

Note: Caching must be disabled in the displaying image component.

Properties of the component

Name	Standard	Function
Diagram Template File		Path specification for the storage location of the Sankey template file (x.sankey). This is **not** the storage location for the diagram! An example can be found under: C:\ProgramData\Alexander Maier GmbH\EisBär SCADA 3.0\eSankey
Channels	0	Add the data channels that will be displayed as part of the graph. They must be the same variables as were created in the diagram template in the "Key" column. Example: C :\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\eSankeyChannel.csv
Trigger	Input Trigger	Here you can set when the data should be saved. Inputs (selected) --> Trigger on change at selected input Cyclic (interval) --> Trigger automatically after the set time. Inputs and cyclic --> Trigger is triggered both when there is a change at the marked input and after time has elapsed.
Trigger interval [s]	60	Time setting for the cyclic execution of the code. Only has an effect if cyclical has also been selected under "Trigger".
Encoding		Selection of the encoding for the CSV generation.
User-defined encoding	1252	Specify the code page number (see Wikipedia)
Publish images		If this function is set, the images are published on the web server (http://eisbaer-scada.net/esankey/...). They are then no longer processed with the local Eisbaer server.
User defined FTP connection		With this activation, the graphics are stored in a user-defined FTP directory.
Add timestamp to uploaded images		Adds the timestamp to the file name of the graphic.
User-defined FTP connection	...	Entry of the user-defined FTP connection for uploading the graphics.
URL Base for User Defined Publish		Entry of the URL for user-defined FTP connection from which the graphic is to be downloaded.
Driver On/Off		Switch the driver on or off.

Example:

6.6.8.1 templates

EisBär now provides ready-made eSankey diagrams for visualising energy and data flows. These allow consumption and flow data to be clearly displayed directly in the EisBaer visualisation.
We offer diagrams for various building types, including detached houses and apartment blocks. These preconfigured diagrams help to analyse energy flows quickly and efficiently. The ready-made eSankey diagrams are automatically provided in the folder C:\ProgramData\Alexander Maier GmbH\EisBär XX\eSankey during installation or update.

Download link: Private house_1 sample template
General information on sample templates (SCADAComp):
Download the desired SCADAComp file and unzip the ZIP file in an empty folder. Start the "Import components" option in the EisBär Editor ribbon under Project and load the template. If a conversion is necessary because the EisBär version is newer, confirm the process with YES. To retain the functionality, select the option: "Create new meshes" as a copy rule when inserting.

Keys for single-family house:
Grid reference
PV
Battery
Charging station
Home appliances

HVAC
Consumption_General

Keys for apartment block 1:
Grid supply
PV
Charging station1
Charging station2
Charging station3
UV1
UV2
UV3
UV4
UV5
HVAC
UV_General
Grid feed

Keys for apartment block 2:
Netzbezug
Charger
UV2
UV3
UV4
UV5
Netzeinspeisung
PV1
PV2
PV2Batt
Batt2Home

Templates:

Private house_1

Private house_2

Private house_3

Private house_4

Private house_5

Private house_6

Private house_7

Private house_8

© 2

6.6.9   Linear Gauge

The Linear Scale component is used to display parameters or values in linear form. The minimum / maximum value can be set in the Properties under Appearance. The scale is divided into 3 parts, which can be set arbitrarily in color and areas.
Under "Appearance" the minimum and maximum scale values, as well as the different ranges in value and color, can be defined. For larger numbers, the clarity can be improved by a factor. In the line "unit" any text can be inserted, which can be seen below the scale.

Factor = Incoming values are multiplied by the factor.

Data points of the component

Name	Type	function
Range 1	Output	If the input value is in this range, the output is set to 1 / On.
Range 2	Output	If the input value is in this range, the output is set to 1 / On.
Range 3	Output	If the input value is in this range, the output is set to 1 / On.
Range 4	Output	If the input value is in this range, the output is set to 1 / On.
Range 5	Output	If the input value is in this range, the output is set to 1 / On.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Text color [ARGB-HEX]	Input	The font colour can be changed via this data point (if available). The desired colour is transferred as a character string. It is possible to copy the colour from the brush editor (hexadecimal value without #) in order to be able to change the colour via a text entry.
Opacity [0-255] [113]	Input	See component independent data points [113]
Value	Input	Analogue value input. Temperatures, meter readings, velocity etc.

6.6.10 Circular Gauge

Like the Linear Scale, the Angle Plate component is used to display specific parameters or values in a circle shape. The minimum / maximum value can be set in the Properties under Appearance.
Under "Appearance" the minimum and maximum scale values, as well as the different ranges in value and color, can be defined. For larger numbers, the clarity can be improved by a factor. In the line "unit" any text can be inserted, which can then be seen under the angle plate.
In addition, 4 different display modes are available, which can be set via "Display style".

Factor = Incoming values are multiplied by the factor.

Data points of the component

Name	Type	function
Range 1	Output	If the input value is in this range, the output is set to 1 / On..
Range 2	Output	If the input value is in this range, the output is set to 1 / On.
Range 3	Output	If the input value is in this range, the output is set to 1 / On.
Range 4	Output	If the input value is in this range, the output is set to 1 / On.
Range 5	Output	If the input value is in this range, the output is set to 1 / On.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Text color [ARGB-HEX]	Input	The font colour can be changed via this data point (if available). The desired colour is transferred as a character string. It is possible to copy the colour from the brush editor (hexadecimal value without #) in order to be able to change the colour via a text entry.
Opacity [0-255][113]	Input	See component independent data points[113]
Value	Input	Here an external value can be fed in. The scale reflects the value accordingly.

6.6.11 Plotter

With the help of the Plotter component, it is possible to display any measured values in a line diagram.

Data is buffered internally and only written to the database when the internal buffer is full.

The appearance of this component can be varied via "WPF Theme[218] ".

Data points of the component

Name	Type	Function
Lock operation (display only)	Input	If this input is not used, the component can always be operated. If the input is connected with an ON signal, the component cannot be operated. It then only has a display function.
Data export Output	Output	Displays the current export status as text. e.g. "Export running!", "Export completed. All data up to *the point in time* has been exported!"
Trigger data export	Input	The export is started via an on signal, stopping is not possible. All data is exported. Depending on the size (runtime) of the database, the export may take a long time. The export is saved on the server under "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\Export\" as a csv file. The previous file is overwritten when the programme is restarted.
Dynamic	Folder	In the folder Dynamic the inputs of the measuring channels are displayed.
Mouse over	Output	This output can be used to start an event when the mouse is moved over the object.
Visible	Input	An off signal makes the component invisible and an on signal makes it visible.
Opacity [113] [0-255]	Input	see Components Independent Data Points [113]

Properties of the component

Name	Standard	Function
Channels	0	Here the individual channels are defined in a list. These then appear as a channel in the Dynamic data point folder.
Update interval [s]	20	The adjustable update interval can be used to define the time interval at which the input values are drawn and saved in the database. Value changes within the sampling interval are not recorded. The sampling interval depends on the number of channels. For every 3 channels, one second is added to the minimum sampling interval of one second; if the selected interval is greater, it remains unchanged. *Tip: Set the update interval as high as possible or only as low as actually required. It makes no sense to scan the course of an outdoor temperature with an interval of 10 seconds. You can save system resources this way.*
Y-axis Maximum	100	Maximum value on the Y-axis when no autoscaling is active.
Y-axis minimum	0	Minimum value on the Y-axis when no autoscaling is active.
Line thickness [pixels]	1	Thickness of the drawn curve in pixels.
Chart title		Text that is displayed as the title in the diagram.
Y-axis Designation		Designation of the Y-axis (value axis)
X-axis Designation		Designation of the X-axis (time axis)
X-axis Range [min]	60	Setting of the visible X-range of the diagram, in minutes.

Channel settings

Designation	Function
Name	Freely definable name for the channel and the legend.
Type	Selection between digital (edge display) and analogue (straight line between the last and the new measured value) input values. The values at the channel input are calculated with the factor and displayed in the diagram.
Unit of measurement	The entry of the unit of measurement is only used for the overview in the channel editor and is not used otherwise.
Colour	Specification of the line colour in the diagram.
Factor	Multiplication factor for the input value.
Min. diff. Factor (%)	The "Min. diff. Factor (%)" indicates by how much the input value must change from the last saved value in order to be saved.
Group Name	It is possible to combine several channels into groups. This generates a new, additional graph that represents the sum of the channels with the same group names.
Group colour	When a group has been created, it is given the colour set here.
Is clone of	If information from one plotter is also to be displayed on another page, the plotter can be cloned. This avoids duplicate databases and links. The basis for this is a plotter that has the channels and links. The basic plotter can be selected for all other plotters that are to have the same display. It is not necessary to create channels. Channels that have already been created are ignored. The clone obtains the information directly from the basic plotter.

Notes on operation:

The Important Notes[80] must be observed for the display in the app / web app.
The app or web app displays a maximum of 1000 values during a query.

Live" tab
- o In the channel list, the channels to be displayed can be selected and deselected via the check mark. This also shows only the selected channel in the display.
- o To display values in the live display after a page change, the **last 300,000 values** are kept.
- o After the server is started, the **live display** is **empty** and starts collecting measured values again. The historical values can be retrieved via the Database tab.
- o By double-clicking in the plotter window, the display area is reset and **automatically scaled**.
- o The small **arrow** at the top left shows and hides the channel list. This makes the displayed area larger.
- o Click on "**Diagram**" to display a menu selection. This contains, from left to right, the functions for
  - ▪ Pause/continue real-time display in the plotter,
  - ▪ switching between line/point/bar/surface diagram and the
  - ▪ WPF setting[218] for the plotter itself. Only special themes are available for the WPF selection.

- o Click on "**Label**" to display a menu selection. This contains, from left to right, the functions for Pointer (default), Horizontal Line (insert a horizontal line with value indication at the left edge), Vertical Line (insert a vertical line with label at the bottom edge), Axis Marker (marker with value

indication at the left edge), Box (for marking an area), Text (for inserting a comment) and Delete. Delete always refers to the marked element.

- o Click on "**Y-axis**" to display a menu selection. This contains, from left to right, the functions for Left (position of the label on the left side), Right (position of the label on the right side), Linear/Logarithmic (switching the type of diagram) and Auto Scal. (automatically scales the section to the largest possible display).

Database tab

- o In addition to the functions mentioned above, there is "**Archive**" here. A click opens a menu bar. In the two fields, the time period to be viewed is set. With the button "Retrieve data" the database is read out and displayed.
- o The export function refers to the selected period and the selected channels (data must be retrieved beforehand). These are saved as a CSV file on the **client** under **C: \ProgramData\Alexander Maier GmbH\EisBär 3.0\Export**.
- o The App or WebApp display a maximum of 1000 values during a query.

Options tab

- o **Y-Max.Value:** A maximum value can be set manually here. If the scaling was set to Automatic under Live --> Y-axis, the field cannot be edited. The settings are only applied by clicking the "Apply" button.
- o **Y-Min. value:** A minimum value can be set manually here. If the scaling was set to Automatic under Live --> Y-axis, the field cannot be edited. Only the "Apply" button will apply the settings.
- o **X Section (min):** Specifies the viewing period of the plotter in minutes. The settings are only applied by pressing the "Apply" button.
- o **Curve width**: Defines the line thickness of the recording.
- o **Graph title**: Inserts the entered text in the plotter graph.
- o **X-axis title:** Inserts the entered text in the plotter graphic below the diagram.
- o **Y-axis title**: Inserts the entered text in the plotter graphic to the left of the diagram.

Troubleshooting hints:

Error: When starting a EisBär client, only a little over one hour is displayed in the live view .10 digital values are recorded with the plotter. Update interval: 2s, Diff. Factor: 0%.
Solution: With these settings this results in approx. 18000 entries per hour! When starting the client, a maximum of 5000 measuring points are read out. In such cases the update interval should be set to 20s and the Diff. Factor should be set to 0.5%. Then a longer period is displayed in the live view.

Error: A plotter records 3 measured values (e.g. tank levels).No values are written to the database. Update interval: 60s, diff factor: 1%.
Solution: Only when the plotter has received 500 values is it written to the database.It takes a very long time (>month) for these to come together in this constellation. Suggestion here: Diff factor: 0%, because with very large values (e.g. 10,000 litres) the relative change of 1% to the last stored value may be too much and thus too few values are written away.

Error: No points are recognisable in the dot diagram.
Solution: Increase the width of the curve so that the points are more clearly visible.

Error: In the App or WebApp, not all data points are displayed during a database query.
Solution: The App or WebApp display a maximum of 1000 values during a query.

Example CSV export:

ChannelID;TimeStamp;Value
Value;28.07.2022 14:01:51;583,05
Value;28.07.2022 14:08:31;470,35
Value;28.07.2022 14:15:11;490,13
Forecast;28.07.2022 14:01:51;187
Forecast;28.07.2022 14:08:31;187
Forecast;28.07.2022 14:15:11;187

6.6.12   Date Time Display

Using the 'DateTimeDisplay' component you can display the current date and current time in different formats on the page.

Data points of the component

Name	Type	function
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255] [113]	Input	See component independent data points [113]

Properties

Name		function
Format	dd.MM.yyyy HH:mm:ss	Set format according to Settings [109].
Time Zone Offset	(UTC+01:00) ...	Choose the time zone to be displayed.

6.6.13   FlipClock

Using the 'Flip clock' component you can display the current date and current time in different formats on the page as a flip clock.

Data points of the component

Name	Type	function
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255] [113]	Input	See component independent data points [113]

Properties

Name		function
two digit extension	Yes	Extends the date and time with zeros to represent two digits.
Show date	Yes	Display the date on and off
Time format am/pm		If this setting is activated, the English time will be displayed as "AM" and "PM".
Time Zone Offset	(UTC +01:00)	Choose the time zone to be displayed.

6.6.14 Clock

Using the 'Analog clock' component you can display the current time on the page. This allows to you the construction of a world time clock in which you use own analogous clock for every desired world time.

Data points of the component

Name	Type	function
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
Opacity [0-255] [113]	Input	Over a 1-byte value of 0-255, the Opacity [0-255] of the component can be changed. 0 is complete transparency. A value of 255 corresponds to the value that was set on the transparency in the properties of the component. If for example, the transparency in the properties of the component is set to 80%, this will be the level if you send a value off 255 to this data point.

Properties

Name		function
Time Zone Offset	(UTC +01:00)	Choose the time zone to be displayed.

6.6.15 Smiley

With this smiley, a status can be displayed. The expression of the smiley symbolises how the status is to be evaluated.

Data point of the component

Name	Type	function
Mouse over	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Status extrem happy	Input	Send a 1 to this input and the smiley will change according to the name.
Status extrem sad	Input	Send a 1 to this input and the smiley will change according to the name.
Status happy	Input	Send a 1 to this input and the smiley will change according to the name.
Status sad	Input	Send a 1 to this input and the smiley will change according to the name.
Status index	Input	Enter the values of 0-3 in order to achieve the effects extremely happy to extremely sad.
Opacity [0-255][113]	Input	See component independent data points[113]

Status index values

0 = extreme happy
1 = happy
2 = sad
3 = extreme sad

6.6.16 MiniPlotter

This component can be used to create a time series diagram. The diagram can be displayed in the image component[123]. The chart is created continuously at the specified interval (similar to the plotter). A maximum of 1000 data points can be displayed.

To use the OpenAi functions, access to ChatGPT is required for a fee.

Note on display in different application scenarios:
The generated images are stored in the folder "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www" of the EisBär server.
Local operation only: Data point "Diagram image file (local file)" is linked to the image component. -> EisBär server and client run on the same machine. No access via network or internet is possible.

Local network: "Publish images" propertydisabled, "Diagram image file (Http(s) URL)" data pointis connected to the image component. -> EisBär server and client run on different machines or apps in the local network. Access via the local network is possible. No internet access

Internet:Publish Images propertyenabled, data point "Diagram Image File (Diagram Image File (Http(s) URL)" is connected to the image component. -> EisBär server and client can run on different machines, apps, locally or on the internet. The images are cached on our web server. FTP access to "http://eisbaer-scada.net" must be possible.

Data points of the component

Name	Type	Function
Active	Bidirectional	(De)Activate recording.
Update status	*Folder*	This subfolder contains data points for outputting update time, whether the update was successful and whether the update is taking place.
Number of data points (total)	Output	Output of the total number of available data points.
Filled curve	Bidirectional	Turns the area colour under the curve on/off.
Backup Trigger	Input	An on or off signal creates a backup of the current display
Bar chart	Bidirectional	The measured values are displayed as bars and no longer as a curve.
Clear data	Input	Clears the display
Definition area - daily plot	Bidirectional	On/Off switches the display between the day display and the defined time range
Definition range [min]	Bidirectional	The displayed time range is set in minutes by entering a number. e.g. 360 min, the last 6 hours are displayed.
Definition range zoom window [min]	Bidirectional	The time range displayed in the zoom window is set in minutes by entering a number. Example: Zoom window=60 min, definition range=360 min -> the first hour of the time range is displayed. In this example, it is the data from -6 hours to -5 hours.
Diagnosis [Text]	Output	Here, a diagnosis can be output as text. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, these can considerably impair the performance of the service.**
Update diagram	Input	Refreshes the display and creates a new diagram.
Diagram path (URL)	Output	For external access (EisBär clients in the network), the URL to the graphic file must be sent to the data point of the image component: Example: **http**(s)**://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Diagram path (local file)	Output	Output of the local storage location for the data. This file path can be linked to the picture component. The chart is only displayed if the server and client are running on the same machine.

Name	Type	Function
Diagram Path Backup (URL)	Output	For external access (EisBär clients in the network), the URL to the diagram file must be sent to the data point of the image component: Example: **http**(s)**://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Diagram path backup (local file)	Output	Output of the local storage location for the data. This file path can be linked to the image component. The chart is only displayed if the server and client are running on the same machine.
Downsampling	*Folder*	Contains data points to reduce the total amount of data to the display size. Equidistant distances: Reduction by the factor calculated from: quantity of data points and display width Median window: Reduction by the median value in the set time window Min/max window: Min and max value from the scaled size Average value window: Average value from the set time window No downsampling
Dynamic	*Folder*	see below
Extended Diagnosis	Input	Enables the extended output of the diagnosis via an on signal.
Export - All data	Input	Triggers the export of all channels and their data.
Export - Displayed data	Input	Triggers the export only for the channels and their data that are currently visible.
Channel names	Output	Text output of the channel names for the [list selection][196]
Toggle channel visibility (list view)	Input	Input for the [list selection][196] to be able to show/hide a specific channel.
Show legend	Input	Shows the legend via an on signal.
Legend outside the diagram	Input	An on signal reduces the size of the diagram so that the legend is outside the display.
Manual rollover	Input	Restarts the selected time range at the trigger time.
Maximum Y-value	Input	To scale the Y-axis on the left side, the maximum Y-value can be entered here. If min and max are identical, scaling is automatic.
Maximum Y2 value	Input	For scaling the Y-axis on the right-hand side, the maximum Y-value can be entered here. If min and max are identical, scaling is automatic.
Minimum Y-value	Input	For scaling the Y-axis on the left-hand side, the minimum Y-value can be entered here. If min and max are identical, scaling is automatic.
Minimum Y2 value	Input	For scaling the Y-axis on the left side, the minimum Y-value can be entered here. If min and max are identical, scaling is automatic.
OpenAi - Autoupdate active	Output	Updates the text output of the response.
OpenAi - Image output	Output	Output of the local storage location for the data. This file path can be linked to the image component. The diagram is only displayed if the

Name	Type	Function
(local file)		server and client are running on the same machine.
OpenAi - Image output (URL)	Output	For external access (EisBär clients in the network), the URL to the graphic file must be sent to the data point of the image component.
OpdenAi - CSV output	Output	If a CSV is the result of the query, the CSV content is output here.
Open Ai - Entire conversation	Output	Text output for the entire conversation with OpenAI(conversation mode).
OpenAi - (de) activate conversation mode	Input	OFF = simple mode: The data including the request is sent and the response is displayed. Enquiries are not possible here as the conversation is considered complete for OpenAI. ON = Conversation mode: Before or after sending data, further enquiries can be made or data (e.g. from other channels) can be sent. To do this, the assistant mode must first be started and ended after completion (the conversation is automatically ended 1 hour after the last enquiry)
OpenAi - Last answer	Output	Text output for the response from OpenAI (simple mode).
OpenAi - Manual prompt	Input	Global prompt input (independent of channels/groups). Here, for example, you can ask your own questions via a text input. It can be combined with group/channel-specific data in conversation mode. The data can be sent without a separate prompt via the "Analyse data (without prompt)" channel data point.
OpenAi - Tokens (last request)	Output	Outputs the number of tokens used for the last query.
OpenAi - Tokens (last response)	Output	Outputs the number of tokens used for the last response.
OpenAi - Tokens (last conversation)	Output	Outputs the number of tokens used for the last conversation.
Show Y-grid	Bidirectional	Auxiliary lines for reading the values can be shown/hidden here.
Y-grid line width	Bidirectional	Here the line width can be set between 0.2 and 5.
Follow time	Bidirectional	If the current time range is filled, a new range is automatically displayed. If Follow time is active, the
Vertical time	Bidirectional	Switches whether the time is to be displayed horizontally (off) or vertically (on).
Time formatting	Bidirectional	Formatting for the time axis e.g. %H:%M:%S

Dynamic data points

If groups are created, a data point is created for each group in order to trigger the analysis for the grouped channels.

Data point name	Type	Function Type
Number of data points	Output	Output of the total number of data points available for this channel.
Hide	Input	The graph of the channel can be made (in)visible here.
CSV Import	Input	Graphs can be generated from a CSV file via"File selection" [926] (file content)". The formatting is date time semicolon value. Example of a value: 24.01.2025 16:00:00; 42
Analyse data (without prompt)	Input	You can create your own query for the channel by entering text.
Moving average	Bidirectional	Switches the diagram from individual data points to calculated mean value.
Moving average (window size)	Bidirectional	Specification of the time that should be relevant for the average value.
Delete	Input	Deletes all collected data of the channel
Type - Filled line chart	Bidirectional	Switches the diagram display
Type - Bar chart	Bidirectional	Switching the diagram display
Type - Line chart	Bidirectional	Switching the diagram display
Value	Input	Input for the values to be displayed in the diagram.

Properties of the component

Component name	Standard	Function
Channels	0	Channels can be created with the green plus button. The red X deletes the selected channel. The import/export is intended for data backup of the settings. See below for an explanation of the settings. Requests can only be made for each individual channel. These are triggered via channel-specific data points.
Groups		Groups can be created here and then channels can be added to the groups in the channel editor. A channel can be part of several groups. Group queries can then be triggered via the new data points in the group folder.
Prompts		Queries (questions to OpenAI) can be predefined in this editor. These can then be assigned to groups (in the group editor) and/or channels (in the channel editor). Several queries can also be assigned to a channel/group here.

Component name	Standard	Function
Moving averaging		Activate to display the averaged data for each channel instead of the raw data if required. Global activation of the mean value calculation - The display does not yet take place, it must also be activated for each channel, either via the data point or the channel editor.
Downsampling		Treatment of the existing data for display via the image component. If there are more data points than pixels in X-resolution for the created diagram, a preselection of the data can be made to speed up the time required to create the plot. All data: No downsampling, all data is displayed The following variants apply: The entire amount of data is divided into equal areas (windows), depending on the Resolution (X) property. One value from each area is displayed. Last value window: Equidistant distances - the last value of the range is displayed. Average value window: The average value of all values in the range is calculated and displayed. Median window: The median of all values in the range is calculated and displayed. MinMax window: Both the largest and the smallest value of the range are displayed. This makes it easier to visualise outliers.
Colour (background)		Selection of the background colour for the display
Colour (text)		Colour of the text (label)
Diagram title	Chart title	Heading of the diagram
X-axis	Time	Labelling for the X-axis
Y-axis	Value	Labelling for the Y-axis on the left-hand side
Y-axis (2)	Value	Labelling for the Y-axis on the right-hand side
Minimum Y-value	0	The minimum Y-value can be entered here for scaling. If the minimum and maximum values are identical, scaling is performed automatically.
Maximum Y-value	0	The maximum Y value can be entered here for scaling. If the minimum and maximum values are identical, scaling is performed automatically.
Minimum Y2 value	0	The minimum Y2 value can be entered here for scaling. If the minimum and maximum values are identical, the system scales automatically.
Maximum Y2 value	0	The maximum Y2 value can be entered here for scaling. If the minimum and maximum values are identical, scaling is performed automatically.
Show legend	x	Selection for displaying the legend in the plotter image
Show Y-Grid	x	Auxiliary lines for reading the values can be shown/hidden here.
Y-Grid line thickness	1	The line thickness can be set between 0.2 and 5 here.
Legend outside the diagram		If this is set, the diagram is minimised so that the legend is outside the display.

Component name	Standard	Function
Diagram creation on value change		If this is activated, the diagram is immediately redrawn if the value of one of the channels changes.
Update interval [s]	60	The diagram display is updated at the set interval. This means how often the image is redrawn on the system. It is not the time interval at which the values are queried.
Follow time	x	If the current time range is filled, a new range is automatically displayed.
Set definition range (X-axis)		Specify the period for which data is to be saved, which period is to be displayed and how much time is to be displayed in the future (as a placeholder to the right edge). Today's day (24 hours) is displayed as the daily plot.
Bar chart		The measured values are displayed as bars and not as a curve.
Filled curve		Switches the area colour under the curve on/off.
Resolution (X)	1024	Specifies the resolution (pixels) that the image should have in width.
Resolution (Y)	768	Specifies the resolution (pixels) that the image should have in height.
Font size (title)	50	Defines the font size for the title of the diagram
Font size (text)	30	Defines the font size for the labelling of the X/Y axis
Font size (axes and legend)	15	Defines the font size of the values on the X/Y axis
Time formatting		Formatting for the time axis e.g. %H:%M:%S
Time vertical	X	If this option is set, the time axis is displayed vertically, otherwise horizontally.
Offset label X-axis	2	This can be used to set the distance between the X-axis text and the X-axis of the diagram between 0 and 10.
Offset label Y-axis	3	This can be used to set the distance between the Y-axis text and the Y-axis of the diagram between 0 and 10. If the value is too high, the text may lie outside the display. The "Margin left" parameter must then be adjusted so that the text is moved back into the visible area.
Offset label Y2 axis	3	This can be used to set the distance between the Y2 axis text and the Y2 axis of the diagram between 0 and 10. If the value is too high, the text may lie outside the display. The "Margin left" parameter must then be adjusted so that the text is moved back into the visible area.
Left margin (shifting the Y-axis to the right)	12	This can be used to set the distance between the left edge of the image and the Y-axis of the diagram between 0 and 50.
Edge right	6	Specifies the distance between the diagram and the margin on the right-hand side.
Bottom margin	5	Specifies the distance between the diagram and the margin on the bottom page.

Component name	Standard	Function
Top margin	6	Specifies the distance between the diagram and the margin on the top page.
Publish diagrams		If this function is set, the images are published on the web server (http://eisbaer-scada.net/Gnuplott/...).
User-defined FTP connection		If this function is activated, the diagrams are stored in a user-defined FTP directory.
Add timestamp to uploaded images		Adds the time stamp to the file name of the graphic.
Custom FTP connection		Entry of the user-defined FTP connection for uploading the graphic.
URL basis for customised publishing		Entry of the URL for customised FTP connection from which the graphic is to be downloaded.
OpenAI - Connection		Connection settings to the OpenAi API (see [example] [168]).
OpenAI - Maximum data points	500	Maximum number of data points for the request to limit the prompt tokens.
Active		(De)Activate recording at server start.

Channel editor:

Designation	Function
Name	Name of the channel for the display.
Graph colour	Colour for the graph display.
Line width	Displayed line width for the channel.
Plot type	Selection for the graph display.
Sampling	Sampling determines the interval at which the data is saved. Reduces the stored values. Reduces the data available for later evaluation.
	All data: every incoming value is saved, the "Sample interval" is ignored
	Fixed interval: Data is saved in the "Sample interval". The last value is saved.
	The following variants apply: Only one value is saved at the end of the set "Sample interval".
	Average value window: The average value from the data received during the last "Sample interval" is saved.
	Median window: The median of the data received during the last "Sample interval" is saved.
	Min/Max window: Both the largest and the smallest value from the data received during the last "Sample interval" are saved.
Sampling interval [s]	Sampling rate of the input values, the points are drawn at this interval
Factor	Incoming values can be adjusted via a factor for the display.

Designation	Function
Min diff. Factor [%]	The "Min. diff. Factor (%)" specifies by how much the input value must change from the last saved value for it to be saved.
Mean value	If activated, a smoothed plot (moving average) is displayed. Can be adjusted at runtime if this has been activated globally via the component property.
MW window [s]	Defines the time range of the channel for averaging. Higher value = stronger smoothing
Digital	If the input value is a Bool, this option must be set in order to obtain a digital graph. Otherwise, ramps would be displayed.
Y-axis 2	With this option, the 2nd Y-axis is used as a value scalar.
Function	Mathematical functions can be entered here. Variables are set in {}. This variable then also appears as a data point in the dynamic folder for the channel. The letter x always stands for the time (subsequent setting). To draw the function, the starting point must be set via the "Recalculate from here" trigger (data point in the channel).
Time range [min]	This setting only applies to the display of a function, if available. The time end is defined here.
Values from yesterday	If this function is set, the graph from yesterday is always displayed, not from today. For a comparison (yesterday to today), an additional second channel is required for the current values.
Group	Assignment to a group, which can be created in the group editor.
Analysis prompt	Assignment of a predefined query, which can be created in the prompt editor. Several queries can also be assigned to a channel/group here.

An underscore in the labelling (title, X-axis and Y-axis) leads to a "subscript" following text. Example Test_a -->Test$_a$

6.6.16.1 Example for OpenAI

In this example, temperature and PV power are to be compared.

Setting the OpenAI connection
The secret key must be entered for communication. This can be created at:
https://platform.openai.com/api-keys.
The version of the AI must be entered under Model, for example *gpt-4.1*.
The timeout time defines when a communication interruption should be recognised.
The number of response tokens specifies the maximum number of tokens that may be used for a response.
In this context, model temperature refers to the behaviour of the AI with regard to the response:
 0.0 → extremely deterministic, i.e. always the same (most objective) answer
 0.5 → balanced mix of creativity and precision
 1.0 → more variety, more "courage to leave gaps", freer answers
 >1.0 → sometimes very experimental or unreliable
With a specification for the system prompt, the AI is told how it should process the data. It is assigned a role such as: "You are a data analyst for time series".

The polling interval can be set in the second tab "Options". This is the time in which the response is retrieved. ChatGPT writes its response continuously, character by character. To avoid having to fetch each individual character separately, a sensible size should be selected here.
Session timeout defines the time after a previous conversation is discarded.
The maximum number of data points can be limited in order to shorten the calculation time.
The padding option means that if not all channels have a value at a certain time, the last known value is used.

Define prompts
Queries (questions to OpenAI) can be predefined in this editor. The query prompts could be something like:
"Analyse the channel data. Determine only the min/max temperatures and the mean value",
or for group queries:
"Are there any recognisable correlations between the channels. Do not report until the analysis is complete or ask me manually if the analysis takes longer."
For the name of the prompts, it makes sense to add the information for individual queries or group queries.

Name	Prompt
Einzelabfrage - Analyse	Analysiere die Daten des Kanals. Ermittle lediglich die Min/MAx Temperaturen und den Mittelwert
Einzelabfrage - Vorhersage	Sage die Daten des Kanals vorraus. Melde dich erst nach Abschluss der Analyse oder bitte mich manuell nachzufragen, falls die analyse länger daue...
Gruppenabfrage - Korrelation	Sind Korrelationen zwischen den Kanälen erkennbar. Melde dich erst nach Abschluss der Analyse oder bitte mich manuell nachzufragen, falls die an...
Gruppenabfrage - Vergleich	Vergleiche die Daten der Kanäle. Melde dich erst nach Abschluss der Analyse oder bitte mich manuell nachzufragen, falls die analyse länger dauert.

Create groups
A name for the group query is created in the group settings and the appropriate prompts are added.

Name	Prompts
Gruppe001	Gruppenabfrage - Vergleich (3),Gruppenabfrage - Korrelation (4)
Gruppe002	

Create channels
Two channels are created, one for PV power and one for the outside temperature.
Assign the prompts and groups to the channels in the channel editor

Links

The global output for diagram path is linked to a screen component. The current data is displayed there.

The global output for OpenAI - image output is also linked to an image component. The output of OpenAI is generated there if an image (as csv) is to be created.

Data points for the query are created in the Dynamic folder. The "Analyse data (with prompt)" data points can be triggered with a simple button (or another trigger). data points can be triggered. This sends the predefined query to OpenAI.

The "Analyse data (without prompt)" data point means that you can enter your own question here (e.g. via a text input). This function can be found both in the individual channel and in the group.

Output of the response

The response is output via the global data point "OpenAI - Last response". It is recommended to use the Log window component for display.

If the conversation mode is active, the response is output at the "OpenAI - Total conversation" data point.

6.6.17   MiniChart

A diagram can be created with this component. The diagram can be displayed in the image component[123] . The diagram is generated based on values and their supporting points (x-value position). No time series are generated. Only static diagrams.

Note on display in different application scenarios:

The generated images are stored in the folder "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www" of the EisBär server.

Local operation only: Data point "Diagram image file (local file)" is linked to the image component. -> EisBär server and client run on the same machine. No access via network or internet is possible.

Local network: "Publish images" propertydisabled, "Diagram image file (Http(s) URL)" data pointis connected to the image component. -> EisBär server and client run on different machines or apps in the local network. Access via the local network is possible. No internet access

Internet:Publish Images propertyenabled, data point "Diagram Image File (Diagram Image File (Http(s) URL)" is connected to the image component. -> EisBär server and client can run on different machines, apps, locally or on the internet. The images are cached on our web server. FTP access to "http://eisbaer-scada.net" must be possible.

Data points of the component

Name	Type	Function
Update status	Folder	This subfolder contains data points for outputting update time, whether the update was successful and whether the update is in progress.
Backup trigger	Input	An on or off signal creates a backup from the current display
Range display	Input	Switches between range display (ON) and total display.
Range display end (x)	Input	The end value for the range display can be set here.
Range display end (y)	Input	The end value for the range display in the Y direction can be set here.
Range display start (x)	Input	The start value for the range display can be set here.
Range display Start (y)	Input	The start value for the range display in the Y direction can be set here.
Display CSV [string]	Input	Graphics can be generated from a CSV file via"File selection[926] (file content)". The transfer of the text outputs of the SMARD[482] component can also be linked here.
Delete Data	Input	Clears the display
Diagnosis [Text]	Output	Here, a diagnosis can be output as text. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, these can considerably impair the performance of the service.**
Update diagram	Input	Updates the display and creates a new diagram.
Diagram path (local file)	Output	Output of the local file location for the data. This file path can be linked to the image component. The chart is only displayed if the server and client are running on the same machine.
Diagram path (URL)	Output	For external access (EisBär clients in the network), the URL to the diagram file must be sent to the data point of the image component: Example: **http**(s)**://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Diagram path backup (URL)	Output	For external access (EisBär clients in the network), the URL to the diagram file must be sent to the data point of the picture component: Example: **http**(s)**://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Diagram path backup (local file)	Output	Output of the local storage location for the data. This file path can be linked to the image component. The chart is only displayed if the server and client are running on the same machine.
Dynamic	Folder	1 data point is generated per channel. If numerical values are sent to the inputs, this is shown in the

Name	Type	Function
		diagram.
Extended diagnosis	<mark>Input</mark>	Enables the extended diagnosis output via an on signal.
Graph type	<mark>Input</mark>	The graph can be switched via a number. Possible graphs are: Line graph, pie chart and bar chart.
Maximum Y-value	<mark>Input</mark>	The maximum Y-value can be entered here for scaling. If min and max are identical, scaling is automatic.
Minimum Y-value	<mark>Input</mark>	The minimum Y-value can be entered here for scaling. If min and max are identical, scaling is automatic.
Generate cyclically	<mark>Bidirectional</mark>	If activated, the image is recalculated in the set time period.

Properties of the component

Name	Standard	Function
Channels	0	Create the interpolation points (X-axis position) for the display value with name, factor and colour. At least 2 channels must be created. 1 data point is created per channel.
Import-Culture	German (de-DE)	Selection for formatting numbers, date and time
Colour (graph)		Select the colour for the graph.
Colour (background)		Select the background colour for the display.
Colour (Text)		Colour of the text (caption)
Colour (selection area)		If there is a selection area, the colour set here for the area is displayed in the background.
Colour (selection area frame)		If there is a selection area, the colour set here is used for the frame.
Show selection area frame		Show/hide the frame around the selection area.
Diagram title	Title	Title of the diagram
X-axis	Index	Label for the X-axis
Y-axis	Value	Label for the Y-axis
Minimum Y-value	0	For scaling, the minimum Y-value can be entered here. If min and max are identical, scaling is automatic.
Maximum Y-value	0	The maximum Y-value can be entered here for scaling. If min and max are identical, scaling is automatic.
Range display		Switches between range display (ON) and total display.
Range display end (x)	2	The end value for the range display can be set here.
Range display start (x)	1	The start value for the range display can be set here.
Range display start (y)	1	The start value for the range display in the Y direction can be set here.

Name	Standard	Function
Range display end (y)	2	The end value for the range display in the Y direction can be set here.
Resolution (X)	1024	Specifies the resolution (pixels) that the image should have in width.
Resolution (Y)	768	Specification of the resolution (pixels) which the image should have in height.
Line thickness	4	Setting for the line width in pixels.
Font size (title)	50	Defines the font size for the title of the diagram.
Font size (text)	30	Defines the font size for the label of the X/Y-axis
Font size (axes and legend)	15	Defines the font size of the values on the X/Y-axis
X-Axis vertical		If this option is set, the time axis is displayed vertically, otherwise horizontally.
X-axis time format	%H:%M:%S	The time display can be customised here.
Offset Label X-Axis	2	Allows the distance between the X-axis text and the X-axis of the diagram to be set between 0 and 10.
Offset Label Y-Axis	3	Allows the distance between the Y-axis text and the Y-axis of the diagram to be set between 0 and 10. If the value is too high, the text may lie outside the display. Then the parameter "Margin left" must be adjusted so that the text is moved back into the visible area.
Margin left (shifting the Y-axis to the right)	12	Here you can set the distance between the left edge of the image and the Y-axis of the diagram between 0 and 50.
Edge right	6	This can be used to set the distance between the diagram and the edge of the image.
Bottom margin	5	This can be used to set the distance between the diagram and the edge of the image.
Top margin	6	This can be used to set the distance between the diagram and the edge of the image.
Activate X offset		Activate to shift the zero point of the X-axis to the right by one data point.
Diagram Creation on Value Change		If activated, the diagram is immediately redrawn when the value of one of the channels changes.
Plot type	Line diagram	Setting the possible graphs: Line chart, pie chart and bar chart.
X-Ticks interval	5	X-axis graduation marks (markings) at the specified interval.
Generate cyclically	x	With this option, the diagram is recalculated and output at the time interval entered below.
Diagram Interval [s]	60	The display of the diagram is updated at the set interval.

Name	Standard	Function
Publish diagrams		If this function is set, the diagrams are published on the web server (http://eisbaer-scada.net/Gnuplott/…).
User-defined FTP connection		With this activation, the diagrams are stored in a user-defined FTP directory.
Add timestamp to uploaded images		Adds the timestamp to the file name of the graphic.
User-defined FTP connection	…	Enter the user-defined FTP connection for uploading the graphic.
URL basis for user-defined publishing		Entry of the URL for user-defined FTP connection from which the graphic is to be downloaded.

Example for the CSV (X-axis value ; Y-axis value):
1;1
2;2
3;3
4;4
5;3
6;2
7;1

6.7 Sensors

Currently the following components are available:

- Button Switch [176]
- Polygon Button [178]
- Controller [179]
- Animated Controller [181]
- Touch Value Editor [183]
- Text Edit [185]
- Hand Automatic Switch [186]
- Multistate Fan Switch [188]
- RTR operation mode switch [190]
- Color Picker [192]
- Code Lock [193]
- Textbox [194]
- List Selection [196]

6.7.1   Button Switch

The button is a Visible Client component. It is used for display and operation.

The button can display the states On / Off / Undefined, each with different representation, color and text. Values or texts can be displayed within the control area.

The component, like an EIB / KNX button, can distinguish between short and long operation.
The short press (less than the set time "Send value to [ms]") always triggers the data point "SwitchOutput".
If the parameter "Send value after [ms]" is changed to a value greater than 0 ms, the set value is sent to the data point "Value On" when pressed and when released, the value is sent to the data point "Value Off" , This makes it possible to realize classic functions such as "switching and relatively dim" for lighting circuits or "driving and stopping" for blinds.

An on / off command at the data point "Visible" allows the component to be shown or hidden (Visible / unVisible). An on command switches the component Visible, an off command unVisible.

The button can also be used to display variable values. By entering a factor, you can z. For example, also use for display and brightness values of 0 - 100% (### 0 "%"), as well as the display of temperatures # 0.0 "° C". The formatting in fields "Text On / Off / Undefined" can also be used to specify units. These must be defined in "characters, before and after the unit.

Note: When using the % sign, this must always be in uppercase characters ("%"). Otherwise, the arithmetic operation% (division by 100) is executed.
see also formatting

Data points of the component

Name	Type	Function
Lock operation (display only)	Input	If this input is not used, the component can be operated normally. If the input is connected with an on-signal, the component will be locked can not be operated. It only has display function. The locked state of a component is displayed, with a padlock sign on a slightly gray background.
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Opacity [0-255] [113]	Input	See component independent data points [113]
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
Mouse over function	Input	Switches the mouse over function on/off
Status input	Input	Changes the status of the button
Switch	Bidirectional	When the component is pressed, the selected function is output at the switching data point. The settings Alternating On/Off, Always On, Always Off and Press On / Release Off are possible. This data point is always triggered by a short actuation.
Value on (press)	Output	Sends value set in parameter on press
Value on (release)	Output	Sends value set in parameter on release
Value Display	Input	value is displayed on the button

Properties

Name	Standard	Function
Switch	Toggle on/off	When the component is actuated, the selected function is output at the switching data point. The settings Switch On / Off, Always On, Always Off and Press On / Release Off are possible. This setting applies when the button is pressed briefly.
Send value after [ms]	0	After this time, the operation is recognized as a "long press" and not the switching data point triggered, but the value outputs. When pressed, after the specified time, in milliseconds, the "value On (Press)" is triggered. When released, the output "value off (release)" is triggered.
Value On (press)		Here, the arbitrary value is selected which is output at the output.
Value Off (release)		Here, the arbitrary value is selected which is output at the output.
Factor	1	Incoming values at the "Value display" input are multiplied by this value before they are displayed.
Change display only via status input		If this parameter is set, the display status On / Off will only be changed via the signal at the status input. Pressing the button does not change the display.
Lock operation (display only)		If this parameter is set, the component can not be operated. It then has only display function.

6.7.2 Polygon Button

The polygon button is a visible client component and behaves like the button switch[176].

In order to draw the polygon surface, the edit mode must be started in the component by right-clicking. Then the button can be drawn. The corners can be moved via the displayed point (cursor becomes a +). For an additional corner, a left-click is performed on the corresponding position on the line. For deleting, a right-click on the node is executed. For termination and deletion, the right-click menu of the component is to be called.

Data points of the component

Name	Type	Function
Lock operation (display only)	Input	If this input is not used, the component can be operated normally. If the input is connected with an on-signal, the component will be locked can not be operated. It only has display function. The locked state of a component is displayed, with a padlock sign on a slightly gray background.
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Opacity [0-255] [113]	Input	See component independent data points [113]
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
Status input	Input	Changes the status of the button
Switch	Bidirectional	When the component is pressed, the selected function is output at the switching data point. The settings Alternating On/Off, Always On, Always Off and Press On / Release Off are possible. This data point is always triggered by a short actuation.
Value on (press)	Output	Sends value set in parameter on press
Value on (release)	Output	Sends value set in parameter on release

6.7.3   Controller

The slider is a Visible Client component. It is used for display and operation.

The controller can output a wide variety of values as control signals or display values. It is usually used in conjunction with 8-bit brightness values, dimmed consumers or as a temperature setpoint. Values are generally sent when the controller is released (mouseUp).

The display styles of the controller are identical to the setting in the editor only in the PC client. On Android and iOS devices it can come here to the deviations. Not all styles are available for the mobile clients. If you want to achieve exactly the same appearance, please use the animated slider with specific graphics.

An on / off command at the data point "Visible" allows the component to be shown or hidden (Visible / Unvisible). An on command switches the component Visible, an off command unvisible.

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can be operated normally. If the input is connected with an on-signal, the component will be locked can not be operated. It only has display function. The locked state of a component is displayed, with a padlock sign on a slightly gray background.
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
Status input	Input	the Statusinput allows the setting of the state without a retrigger of the controller (status feedback)
Opacity [0-255] [113]	Input	See component independent data points [113]
Value	Bidirectional	This data point is used to send the current value and / or to receive a value.

Properties

Name		function
Look:		
- Controller Skin	none	select from different controller skin, dimmer, shutter, blind, temperature, volume
- Background Indicator		Color setting for the background indicator
- Buttons		Some displays may show plus-minus buttons to allow step-by-step input.
Einstellungen:		
- Value at maximum setting	255	Here, the value is selected which is output when the controller has been moved to the uppermost position (rotation 0 °).
- Value at minimum setting	0	Here, the value is selected which is output when the controller has been moved to the bottomrmost position (rotation 0 °).
- Lock operation (display only)		If this parameter is set, the component can not be operated. It then only has display function.
- Send interval [ms]	2000	After this time, the current value at the "Value" data point is sent with continuous operation (MouseDown). Otherwise, the value will generally be sent when the controller is released (MouseUp).
- Change Display only via status input		Display status (On / Off / Undefined) is only changed via the signal at status input if this parameter is set.

6.7.4 Animated controller

Purpose

Using the 'Controller' component you can trigger analogue operations and display them. Different images can be displayed for each state. Data is displayed with a separate controller animation of an animated *.gif file. Preferably, this component is to control and display of 8bit values, for example, dimming values or heights of blinds. For operation of the component with the "pull" method set the mouse pointer anywhere on the

graph. Now press the left mouse button and drag the mouse button pressed in the set direction (Y-, Xor XY-axis), so in both directions, the values increase or decrease. The value is when you release the button or not later than transmission interval time in ms. In addition to the "pull" method you can operate the controller with the "click" method. Click the left mouse button on a point of the graphic and then release the button. The value is sent which corresponds to the position of the graphic. This method is only when using the control direction of Xand Y-axis possible (not with XY-axis). The sensitivity must be higher at Y-axis control of componentlevel

and wider at X-axis control of the components. The minimum value indicates the value at the bottom (Y axis) or left (X axis) edge of the component and the first image in the animation. The maximum value indicates the upper (Y-axis) and right (X axis)With an on/off signal at the data point "Visible" the component will be switched visible / invisible in runtime. An on signal switches the component visible, an off signal invisible.

Please note the important notes on graphics[80] *.*

Data points of the component

Name	Type	Funktion
Lock operation (display only)	Input	If this input is not used, the component can be operated normally. If the input is connected with an on-signal, the component will be locked can not be operated. It only has display function. The locked state of a component is displayed, with a padlock sign on a slightly gray background.
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
Status input	Input	This input can be used to change the display value of the component. Here is e.g. the signal of an active feedback switched on.
Opacity [0-255]	Input	See component independent data points[113]
Value	Bidirectional	This data point is used to send the current value and / or to receive a value.

Properties

Name		Funktion
Images		The editor defines the graphics for the animation. Any number of own graphics can be added to the list. The top graphic is intended for the undefined state, the lowest for the maximum position. The graphics in between are split over the value range.
Operation horizontal		If the check mark is set, the operation is limited to horizontal movement when the component is in normal orientation (rotation 0 °). If the tick is not set, operation is performed with vertical movement.
Value at maximum setting	255	Here, the value is selected which is output when the controller has been moved to the uppermost position (rotation 0 °).
Value at minimum setting	0	Here, the value is selected which is output when the controller has been moved to the bottommost position (rotation 0 °).
Lock operation (display only)		If this parameter is set, the component can not be operated. It then has only display function.
Send interval [ms]	2000	After this time, the current value at the "Value" data point is sent with continuous operation (MouseDown). Otherwise, the value will generally be sent when the controller is released (MouseUp).
Change Display only via status input		Display state (On / Off / Undefined) is only changed via the signal at the status input, if this parameter is set.

Animimated graphic editor

Add image

Here you can select a new graphic from the graphics library. This may, for example here be a simple bmp, png or gif image. In addition, it is possible to select an animated gif graphics. This is split and displayed with the import into their fields. The top image (1) is used for the undefined state, the second for the minimum position and the lowest for the maximum position. The number of graphics are divided between the value range.

Delete image

Deletes the selected image

Replace image

Allows "Replacing" the currently selected image file without appending it at the end of the list.

Arrow up

Moves the selected images up.

Arrow down

Moves the selected image down.

6.7.5 Touch Value Editor

A numerical value can be entered via this component. This is then output directly in the "DataPointValue, Floating Comma 64-bit" format.

Via "WPF-Theme[218]" the appearance of this component can be varied.

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Status input	Input	This input can be used to change the display value of the component. Here is e.g. the signal of an active feedback switched on.
Trigger send value	Input	The entered value is sent with an ON signal.
Text colour [ARGB-HEX]	Input	This data point can be used to change the font color. The desired color is passed as a character string (hexadecimal value without #). It is possible to copy the color from the brush editor.
Opacity [0-255][113]	Input	See component independent data points[113]
Value	Bidirectional	This data point is used to send the current value and / or to receive a value.
Send value	Input	The entered value is sent with an ON signal.

Properties of the component

Component name	Standard	Function
Maximum input value	100	Specifies the maximum possible input value. If a larger value is entered, the output is limited to this number.
Minimum input value	0	Specifies the minimum possible input value. If a smaller value is entered, the output is limited to this number.
Send status		Sends the last value at server start to the network.
Send value if focus is lost		Sends the set value if the touch value input is no longer selected.
Send value after input	X	If active, the value is sent by pressing the "Enter" button or the "=". If this option is not active, the value is only sent when an ON or OFF signal is sent at the "Send value" data point (depending on the setting).
Send value when ON	X	Activate to trigger a value transmission with an ON edge. If deactivated, it reacts to OFF edges.
Factor	1	Transmitted values are multiplied by the set factor. The incoming value is divided by the factor so that values (incoming) are displayed correctly again via the bidirectional data point.
Formatting	##0	see Formatting [109]
Auto delete on input		If a new value is entered via the dropdown, the value is set to zero to facilitate the new value entry
Lock operation (display only)		If this parameter is set, the component cannot be operated. It then only has a display function.

Under Formatting, "# # 0" specifies the type and length of possible input. For example, for a number greater than 999, the formatting must be extended to # # # 0.

6.7.6 Textedit

Text can be entered and output via this component. Furthermore, a text can also be received and displayed.

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Send-Trigger	Input	Via this input, the transmission pulse is started.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Text	Bidirectional	This data point is used to send the current text and / or receive a text.
Text color [ARGB-HEX]	Input	The font colour can be changed via this data point (if available). The desired colour is transferred as a character string. It is possible to copy the colour from the brush editor (hexadecimal value without #) in order to be able to change the colour via a text entry.
Opacity [0-255][113]	Input	See component independent data points[113]

Properties

Name		function
Text		Here you can enter a predefined text.
Don´t modify value over the net		The entered text can not be changed by an external instance.
Send text when starting the server		The entered text is sent directly when the server is started.
Sende-Trigger		Specifies when to send the text.
Lock operation (display only)		If this parameter is set, the component can not be operated. It then only has the display function.

6.7.7   Hand-Automatic Switch

A rotary switch for the switching states On / Off / Automatic. Different types of data can be sent here, each for "On" and "Off" per switch position.

Data points of the component

Name	Type	function
0 - Value On	Output	Returns the corresponding value on defined in the component's settings.
0 - Value Off	Output	Returns the corresponding value off defined in the component's settings.
1 - Value On	Output	Returns the corresponding value on defined in the component's settings.
1 - Value Off	Output	Returns the corresponding value off defined in the component's settings.
Auto - Value On	Output	Returns the corresponding value on defined in the component's settings.
Auto - Value Off	Output	Returns the corresponding value off defined in the component's settings.
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Status Value	Bidirectional	This data point is used to send and / or receive the current value.
Status input - 0	Input	The display of the component switches to 0 when the corresponding switching status has been reported back from the bus.
Status input - 1	Input	The display of the component switches to 1 if the corresponding switching status has been reported back from the bus.
Status input - Auto	Input	The display of the component switches to Auto if the corresponding switching status has been reported back from the bus.
Opacity [0-255][113]	Input	See component independent data points[113]

Properties

Name		function
0 - Value On		Specifies the set [data type][114] / value for this input / output.
0 - Value Off		Specifies the set [data type][114] / value for this input / output.
1 - Value On		Specifies the set [data type][114] / value for this input / output.
1 - Value Off		Specifies the set [data type][114] / value for this input / output.
Auto - Value On		Specifies the set [data type][114] / value for this input / output.
Auto - Value Off		Specifies the set [data type][114] / value for this input / output.

6.7.8   Multistate Fan Switch

A ventilation switch for the switching states Level 3 / Level 2 / Level 1 / Off / Automatic. Different types of data can be sent here, each for "On" and "Off" per switch position.

Data points of the component

Name	Type	function
0 - Value On	Output	Returns the corresponding value defined in the component's settings.
0 - Value Off	Output	Returns the corresponding value defined in the component's settings.
1 - Value On	Output	Returns the corresponding value defined in the component's settings.
1 - Value Off	Output	Returns the corresponding value defined in the component's settings.
2 - Value On	Output	Returns the corresponding value defined in the component's settings.
2 - Value Off	Output	Returns the corresponding value defined in the component's settings.
3 - Value On	Output	Returns the corresponding value defined in the component's settings.
3 - Value Off	Output	Returns the corresponding value defined in the component's settings.
Auto - Value On	Output	Returns the corresponding value defined in the component's settings.
Auto - Value Off	Output	Returns the corresponding value defined in the component's settings.
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal,

Name	Type	function
		the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Status Value	Bidirectional	This data point is used to send and / or receive the current value.
Status input - 0	Input	The display of the component switches to 0 when the corresponding switching status has been reported back from the bus.
Status input - 1	Input	The display of the component switches to 1 when the corresponding switching status has been reported back from the bus.
Status input - 2	Input	The display of the component switches to 2 when the corresponding switching status has been reported back from the bus.
Status input - 3	Input	The display of the component switches to 3 when the corresponding switching status has been reported back from the bus.
Status input - Auto	Input	The display of the component switches to Auto when the corresponding switching status has been reported back from the bus.
Opacity [0-255][113]	Input	See component independent data points[113]

Properties

Name		function
1 - Value On		Specifies the set [data type](#)[114] / value for this input / output.
1 - Value Off		Specifies the set [data type](#)[114] / value for this input / output.
2 - Value On		Specifies the set [data type](#)[114] / value for this input / output.
2 - Value Off		Specifies the set [data type](#)[114] / value for this input / output.
3 - Value On		Specifies the set [data type](#)[114] / value for this input / output.
3 - Value Off		Specifies the set [data type](#)[114] / value for this input / output.
0 - Value On		Specifies the set [data type](#)[114] / value for this input / output.
0 - Value Off		Specifies the set [data type](#)[114] / value for this input / output.
Auto - Value On		Specifies the set [data type](#)[114] / value for this input / output.
Auto - Value Off		Specifies the set [data type](#)[114] / value for this input / output.

6.7.9 RTR-Operation Mode Switch

A rotary switch for the comfort / night / protection and standby switching states. Different types of data can be sent here, each for "On" and "Off" per switch position.
Status values:
1 comfort
2 standby
3 night
4 protection

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function
Comfort - Value On	Output	Returns the corresponding value defined in the component's settings.
Comfort - Value Off	Output	Returns the corresponding value defined in the component's settings.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover
Night - Value On	Output	Returns the corresponding value defined in the component's settings.
Night - Value Off	Output	Returns the corresponding value defined in the component's settings.
Protection - Value On	Output	Returns the corresponding value defined in the component's settings.
Protection - Value Off	Output	Returns the corresponding value defined in the component's settings.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Standby - Value On	Output	Returns the corresponding value defined in the component's settings.
Standby - Value Off	Output	Returns the corresponding value defined in the component's settings.
Status Value	Bidirectional	This data point is used to send and / or receive the current value.
StatusInput - Comfort	Input	The display of the component switches to Comfort when the corresponding switching status has been reported back from the bus.
StatusInput - Night	Input	The display of the component switches to Night when the corresponding switching status has been reported back from the bus.
StatusInput - Protection	Input	The display of the component switches to Protection when the corresponding switching status has been reported back from the bus.
StatusInput - Standby	Input	The display of the component switches to Standby when the corresponding switching status has been reported back from the bus.
Opacity [0-255][113]	Input	See component independent data points[113]

Properties

Name		function
Comfort - Value On		Specifies the set data type[114] / value for this input / output.
Comfort - Value Off		Specifies the set data type[114] / value for this input / output.
Standby - Value On		Specifies the set data type[114] / value for this input / output.
Standby - Value Off		Specifies the set data type[114] / value for this input / output.
Night - Value On		Specifies the set data type[114] / value for this input / output.
Night - Value Off		Specifies the set data type[114] / value for this input / output.
Protection - Value On		Specifies the set data type[114] / value for this input / output.
Protection - Value Off		Specifies the set data type[114] / value for this input / output.

6.7.10 ColorPicker

Here you can select and display ready-made colors from a palette. In addition, the color code can be output as RGB (8bit number).

Data points of the component

Name	Typ	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Color Blue	Output	Returns the corresponding color as 8bit number.
Color Green	Output	Returns the corresponding color as 8bit number.
Color Red	Output	Returns the corresponding color as 8bit number.
HSL	Folder	For the colour space, the corresponding values are output here.
HSV/HSB	Folder	For the colour space, the corresponding values are output here.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255][113]	Input	See component independent data points[113]

6.7.11 Code Lock

With the code lock, it is possible to trigger functions by entering PIN numbers. The PIN entered is also output at the PIN data point after the OK button is pressed.
The PIN entry can be checked via the integrated display. In the display, the characters are masked by asterisks. External entry is also possible. Here, attention must be paid to the security of the PIN number because the PIN entry is only masked in the "code lock" component.

The appearance of this component can be varied via "WPF Theme"[218].

Data points of the component

Name	Typ	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Last Pin was wrong	Output	Here, the signal set in the properties is transmitted after a PIN entry.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Dynamic	Folder	Here, the channels defined in the channel list are displayed and made available as data points for linking to the networks.
PIN	Bidirectional	The entered PIN is output as text via the PIN data point, and the PIN entry as text over a network is also possible, for example. with the text input. Entry with the touch value input is not possible.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255]	Input	See component independent data points[113]

Properties

Name	Standard	function
Channel	0	Here the individual channels are defined in a list. These then appear as a channel in the data point Folder Dynamic.
Value to send when access denied	on	Specifies the data type for the "last pin input invalid" output sent when an invalid PIN entry is made.
Value to send when access is granted	off	Specifies the data type for the "last pin input valid" output sent when an valid PIN entry is made.

In the channel editor, the up to 999 PIN outputs are defined.

Channels (example)

Name	PIN	Active time(s)	Value active	Value inactive
Output001	***	0	On	Off
Output002	1234	0	17	124

Name

This name is displayed as the data point name on the component.

PIN

The PIN number with which transmission via the output is triggered is entered here.

Note: The PIN of an output must NOT be the master PIN.

Active time (s)

The active time is entered in seconds. After entering the correct PIN, the output is set to "Value active" for this time. After the time has elapsed, the output "Value inactive" is triggered. If 0 seconds are entered, the output is always active after the PIN is entered and is sent again when the PIN is entered again.

Value active

This value is sent when the PIN output is activated. Any values are possible.

Value inactive

This value is sent when the PIN output is deactivated (after the active time has elapsed). Any values are possible.

Mask PINs

If this check mark is deactivated, the PINs are displayed in plain text. Otherwise, all PINs are replaced by asterisks.

Master PIN

If a master PIN is set up, this can be used to call up the channel editor at runtime. This allows the PINs of the created channels to be changed. This is only possible in the EisBär Windows Client!

6.7.12 TextBox

This component is used to collect input strings and then send them out completely. The values at the input are entered without separation and continuously. For example, it can be used for the video door station. The number to be dialed can be entered and displayed here, but also corrected. If the entered number is to be called, the current value only needs to be sent.

Data points of the component

Name	Typ	function
Send selected Value	Input	An on signal sends the value of the component
Text	Output	Prints the entered value as text after triggering
Clear	Input	The entire entry is deleted
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Backspace	Input	Deletes the last entry
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255][113]	Input	See component independent data points[113]
Value Input	Input	The values to be entered are created here

Properties

Name		function
Read only		If this selection is made, the value of the TextBox can only be changed via one data point

6.7.13   List Selection

This component has several functions.
- **Table mode:** Send a specific value from a list
- **Search components mode:** Search for components in the project and switch to the component page.
- OCPP charging point data[529] : Duplicate charging station DLM, use OCPP component (known station names)
- Charging history[533] (OCPP / DLM): Select historical data originating from the OCPP or DLM component.
- Debugger diagnostics[932]: route several diagnostic outputs from components to a log window

Data points of the component

Name	Type	Function
Selected value	Output	The line selected in the dropdown is output here. In the "Search component" mode, the data point "Page change by name" from the [Page selection](#)[121]component is linked here.
Selected value (pre-selection)	Output	The line selected in the dropdown is output here, even if the entry has not yet been confirmed. This switches the output even if an entry is only selected (e.g. using the arrow keys)
Lock operation (display only)	Input	If this input is not used, the component can always be operated. If the input is connected with an on signal, the component cannot be operated. It then only has a display function.
Data import [csv]	Input	A CSV file is imported here via the["File selection"](#)[926] " component.
Import data from string	Input	Data can be imported directly here, e.g. from the OCPP component (active charging stations).
Search KNX interfaces	Input	This data point is only visible if the "Scan KNX interface" property is active. With an On signal, all available KNX interfaces (IP and USB) are searched for and entered in the list. If a connection is selected, the configuration can be adopted on the [KNX driver](#)[549] "Change generic configuration".
Mouse via	Output	This output can be used to start an event when the mouse is moved over the object.
Visible	Input	An off signal makes the component invisible and an on signal makes it visible.
Text colour [ARGB-HEX]	Input	see [Components Independent Data Points](#)[113]
[Opacity](#)[113]	Input	see [components independent data points](#)[113]
Select line	Input	A number can be used to select a specific line from the list.
Select value	Input	A text can be used to select a specific value from the list for display.

Properties of the component

Name	Standard	Function
Separator	Tabulator	Column separator: Tab, Semicolon, Comma
Show Add New Dialog	x	If this property is activated, new entries can be created in the client. For this purpose, a dialogue opens after entering a new text in the search field.
Store Table Data	x	All data is saved in the database so that the contents are retained after a restart. When importing data from strings coming from the OCPP, this property must be deactivated, as this information is generated dynamically by the OCPP.
Scan Knx interface		This property makes the data point of the same name visible in the communication window.
Set 'Search components' mode		If this option is selected, all components and the page on which they are located are displayed in the list.
Component filter		A search filter can be entered here.

Table mode

The first line is used to label the table and the others are assigned accordingly. If a row is selected with a mouse click, the entry in the last column is displayed at the "Selected value" output. In the component, the entry in the second column is displayed as a reference.

Example of a table:
First name   Last name   Department   Phone
Max   Mustermann   Sales   0815
Franz   Somehow   Somewhere   0715

This is written using a text editor or WordPad, for example, and must be saved as a CSV file. **Tabs** must be used to separate the columns.
The table must be imported in the EisBär Windows client! This is not possible in the editor.
For the import, the file path of the CSV file must be transferred as text to the data point "Data import [csv]", e.g. with the file selection component. The component then loads the data from the CSV file and displays it.

There is an "empty entry" in the selection window, which serves as a search in the corresponding column. Filters can also be set in the header.

Table mode

Vorname	Name	Abteilung	Telefon
Max	Mustermann	Vertrieb	0815
Franz	Irgendwie	Irgendwo	0715

Sample templates:
Download link: List selection (unzip CSV file into the folder c:\Eisbaer)
General information on sample templates (SCADAComp):
Download the desired SCADAComp file and unzip the ZIP file in an empty folder. Start the "Import components" option in the EisBär Editor ribbon under Project and load the template. If a conversion is necessary because the EisBär version is newer, confirm the process with YES. To maintain the functionality, select the option: "Create new nets" as a copy rule when pasting.

Search components mode

For this function, you must link the "Selected value" data point of the list selection with the "Page change by name" data point of the page selection[121].

You can use the list selection in "Search components" mode to search for a component (e.g. light corridor) in the project at runtime. To do this, the name you are looking for is written to the list selection. If you then click on the line with the component name, the client jumps to the corresponding page on which the component you are looking for is located.

As the component name is used for the search, it must be uniquely assigned to the components to be searched for.

Component filter:
If no character is entered, all components of the project are shown in the list with their names. Components that are located on a master page are not displayed. If only certain components are to be displayed, these names can begin with a search filter, e.g. $, and the filter can be set to $. This means that only the $name components are listed. The $ is then no longer displayed in the list.

Search components mode

Komponentenname	Seitenname	
▼		
► Listenauswahl1	Start	▲
Text1	Start	
Text Werte Parser1	Start	
Dateiauswahl1	Start	
Texteingabe1	Start	
Text2	Start	
Verzeichnisspiege…	Start	
MQTT Broker1	Start	
Lightware MX21	Start	
WAGO PFC eICO…	Start	
JSON/XML Parser1	Start	
Schaltfläche1	Start	
BACnet Server [x…	Start	
BACnet Server [x…	Start	
BACnet Client [x2…	Start	
$Brandschutzklap…	BSK2	
$Pumpe 1	HK3	
$Pumpe 2	HK3	
$Ventil1	Ventil1	
$Ventil2	Ventil2	
$Ventil3	Ventil2	
$Ventil4	Ventil2	

6.8   Comfort

This chapter describes the functions and properties from the comfort category.

Currently the following components are available:

- [ColorShow](#) [202]
- [ColorShow Editor](#) [204]
- [Human Centric Light (HCL)](#) [206]
- [Scenarios](#) [212]
- [Scenarios Editor](#) [215]
- [Change Project Language](#) [217]
- [WPF Theme Selector](#) [218]

- [Presence simulation](#)[219]
- [Weather forecast](#)[221]

6.8.1 ColorShow

The ColorShow is an unVisiblee server component with the ability to control RGB or RGBW lights. The control is carried out via 8-bit values per color channel. These can then be used for any external driver such as e.g. KNX, DigitalSTROM or DMX. KNX can be used with any dimmer (0-10V or DALI). The only prerequisite for this is that they have an 8-bit brightness value.

To use the ColorShow, at least one ColorShow Editor, as Visiblee Client component, must be connected. The use of multiple editors is also possible. This means that several control panels can access the same ColorShow and display and operate it. It is not possible to switch several ColorShow components in parallel, as this leads to looping.

Data points of the component

Name	Type	Function
Current color memory number	Output	The memory number of the color that is currently selected is output at this data point.
CIE	Folder	Outputs the color space coordinates xyY according to the standards table as a number and as a color packet (6 bytes). (Y = brightness parameter)
ColorShow Editor	Bidirectional	Connection between a ColorShow and one or more ColorShow Editors.
Trigger Color	Input	Byapplying an 8bit signal to this input, the stored colors M1-10 can be triggered with the value 1-10. Applying an off signal or the 8bit value 0 will turn the fixture off.
Save colour	Input	Using a value of 1-10 at this input, the set colours can be saved on M1-M10.
Colour Blue Status input	Input	The 8bit brightness value for the color blue is received at this data point.
Color Blue	Bidirectional	The 8bit brightness value for the color blue is output or received at this data point.
Color Green Status input	Input	The 8bit brightness value for the color green is received at this data point.
Color Green	Bidirectional	The 8bit brightness value for the color green is output or received at this data point.
Color red	Bidirectional	The 8-bit brightness value for the color red is output or received at this data point.
Color Red Status input	Input	At this data point the 8bit brightness value for the color red is received.
Color White / Brightness	Bidirectional	The 8bit brightness value for the color white is output or received at this data point (only if RGB-W has been selected).
Color white / Brightness Status input	Input	The 8-bit brightness value for the colour white is received at this data point (only if RGB-W has been selected).

Name	Type	Function
Colour packet (6 byte DPV)	Bidirectional	At this data point, the colour is output as a data packet (6 byte DPV). An input is also possible.
Colour packet (6 byte DPV) Status input	Input	At this data point, the color is received as a data packet (6 bytes DPV).
Color packet HSL (4 bytes 211)	Output	At this data point, the color is output as a data packet (4 bytes 211). (2 bytes color, 1 byte brightness, 1 byte saturation)
Color packet HSL (4 bytes 211) Status input	Input	At this data point, the color is received as a data packet (4 bytes 211). (2 bytes color, 1 byte brightness, 1 byte saturation)
Color packet HSV (4 bytes 211)	Output	At this data point, the color is output as a data packet (4 bytes 211). (2 bytes color, 1 byte brightness, 1 byte saturation)
Color packet HSV (4 bytes 211) Status input	Input	At this data point, the color is received as a data packet (4 bytes 211). (2 bytes color, 1 byte brightness, 1 byte saturation)
Color packet RGB (3 bytes hex string)	Output	At this data point, the color is output as a data packet (3 bytes HEX).
Color packet RGB (3 bytes hex string) Status input	Input	At this data point the color is received as a data packet (3 bytes HEX).
Color packet RGB (3 bytes)	Output	At this data point, the color is output as a data packet (3 bytes).
Color packet RGB (3 bytes) Status input	Input	At this data point, the color is received as a data packet (3 bytes).
Color packet RGB (4 bytes hex string)	Bidirectional	At this data point, the color is output as a data packet (4 bytes HEX). An input is also possible.
Color packet RGB (4 bytes hex string) Status input	Input	At this data point the color is received as a data packet (4 bytes HEX).
Color packet RGB (4 bytes)	Bidirectional	At this data point, the color is output as a data packet (4 bytes). An input is also possible.
Color packet RGB (4 bytes) Status input	Input	At this data point, the color is received as a data packet (4 bytes).
Increase brightness	Input	If an ON signal is applied to this input, the brightness of the current color is increased by 5%.
Decrease brightness	Input	If an ON signal is applied to this input, the brightness of the current color is decreased by 5%.
Brightness value	Input	An 8-bit signal applied to this input adjusts the brightness to the desired level.
HSL	Folder	For the color space, the corresponding values are output here.
HSV/HSB	Folder	For the color space, the corresponding values are output here.

Name	Type	Function
Light is On/Off	Output	An on signal is output at this output as long as the light is on.
Sequence Start/Stop	Bidirectional	An ON signal is output at this data point when the colour sequence is activated. If an ON signal is applied to this data point, the colour sequence is started.
Store color	Input	The set colours can be stored on M1-M10 via a value of 1-10 at this input.

Properties

Name		function
Loop active		If this parameter is set, the infinite loop of the color sequence, when starting the solution in the server, or when switching on the simulation in the editor, is set as default.
Sequence active		If this parameter is set, the color sequence is started when the solution is started in the server or when the simulation is started in the editor.
Send default color at startup		If this parameter is set, the defined color is started when the solution is started in the server or when the simulation is started in the editor.
Startup Color	0	The color with this memory number (M1-10) is sent if the parameter "Send StartColor" is activated.
Color mode	RGB Mode	Select here between RGB and RGBW mode. RGBW mode means that there are additional white spots of light besides red, green and blue.
Scale brightness value (for RGBW)		If activated, the calculated W value is scaled before output (0-120 --> 0 ; 120-240 --> 0-255).

6.8.2 ColorShow Editor

The ColorShow Editor is a Visible Client component. It is used to display and operate the ColorShow.

To use the ColorShow Editor, it must be connected to a ColorShow. It is possible to combine several ColorShow editors with one ColorShow, but not the other way around ColorShow with a ColorShow Editor.

Data points of the component

Name	Type	function
ColorShow	Bidirectional	Connection between a calendar and one or more ColorShow editors.
Is color editor open	Output	Outputs an ON signal when the color configurator is open.
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Opacity [0-255][113]	Input	See component independent data points[113]
Open/close color editor	Input	The Colour Configurator can be opened via an ON signal at this data point. An OFF signal closes the configurator again.
Visible	Input	If this input is not used, the component is Visible. When used, the unvisible component is switched with an off signal and a Visible on signal.

Client View
The ColorShow Editor is displayed as a rectangular button. In the area we show the current color. Click on the area to open the control element (here in RGBW mode).

Main window

By clicking on the color ring / spectrum we select the desired color and output it directly on the data points. The white ring indicates the chosen color.

Control buttons:
- On / Off (top left): With this button, the lighting can be switched off, i. on all color data points we sent the value 0. If the sequence is running it will be stopped.

- X (top right): The X button is used to close the control without any further action.
- M: (bottom left): This button will show or hide the lower memory / sequence window.
- Play / Pause (bottom right): With this button it is possible to start and pause the color sequence.

Memory / Sequence window opened

- The memory buttons M1-10 can be used to save and recall colors that are selected in the main window. A short press of <1000 ms will output the color on the color data points. With a long key press> 1000 ms, the color selected in the main window is added to the actuated position. With a very long key press> 3000 ms we set the storage position to the color black. The label of the key then changes from black to white.

- With the + and - keys you can change the step time of the color sequence. The time in seconds is displayed in the text field. With a short button press <1000 ms, the time is increased by 1 second. With a long button press> 1000 ms, the time is increased by 10 seconds. Pressing and holding the button will increase the remaining 1000 ms by another 10 seconds after the first press. A maximum of 900 seconds can be set.

- Use the circle / arrow key (bottom right) to toggle the infinite loop function. With the circle arrow, the sequence runs endlessly, with a straight arrow only once.

6.8.3   Human Centric Light (HCL)

This invisible component is used for daylight simulation. This can also be used to set the corresponding color temperature for the course of the day.

Data points of the component

Name	Type	Function

Active Time [min]	Bidirectional	In "Free Period Selection" mode, the set active time is output here or can be adjusted here during runtime.
Current Position [s]	Bidirectional	Above this, in "Free period selection" mode, the output of the current simulation position within the period is displayed in seconds. Furthermore, the position can also be set manually to jump to a certain position within the period and continue from there.
Current State	Output	Output of the simulation status (0 = STOP, 1 = RUN, 2 = PAUSE)
Presence	Input	Via this data point, the component can be informed whether persons are present. If the presence evaluation is active, the outputs will be deactivated in case of absence (light switched off).
Use presence input	Bidirectional	This is used to output / set whether the presence is evaluated or not.
Debug [Text]	Output	Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dimm Value (higher color temperature, linear)	Output	Output of the linear dimming value for the luminaire with the higher color temperature
Dimm Value (higher color temperature, linear) [0-255]	Output	Output of the linear dimming value for the luminaire with the higher color temperature in a range of 0-255.
Dimm Value (higher color temperature, logarithmic)	Output	Output of the logarithmic (DALI standard) dimming value for the luminaire with the higher color temperature
Dimm Value (higher color temperature, logarithmic) [0-255]	Output	Output of the logarithmic (DALI standard) dimming value for the luminaire with the higher color temperature in a range of 0-255.
Dimm Value (lower color temperature, linear)	Output	Output of the linear dimming value for the lamp with the lower color temperature
Dimm Value (lower color temperature, linear) [0-255]	Output	Output of the linear dimming value for the lamp with the lower color temperature in a range of 0-255.
Dimm Value (lower color temperature, logarithmic)	Output	Output of the logarithmic (DALI standard) dimming value for the luminaire with the lower color temperature

Dimm Value (lower color temperature, logarithmic) [0-255]	Output	Output of the logarithmic (DALI standard) dimming value for the luminaire with the lower color temperature in a range of 0-255.
End time (24h mode)	Bidirectional	Dynamic entry of the end time for the 24 hour mode. This represents the suns
Endless	Bidirectional	Data point for displaying / setting the endless repeat.
color temperature [K]	Output	Currently calculated color temperature
Manual color temperature [K]	Bidirectional	Value of the color temperature, which is set, if over the data point "Manual" a true is received (causes a temporary overwriting of the computed color temperature).
Manual brightness [%]	Bidirectional	Value of the brightness that is set when a true is received via the "Hand value" data point (causes a temporary overwriting of the calculated brightness).
Manual brightness [0-255]	Bidirectional	Value of the brightness that is set when a true is received via the "Manual value" data point (causes the calculated brightness to be temporarily overwritten).
Set Manual Value	Bidirectional	Input to call the defined manual value manually (true) or delete it (false -> return to the current or last simulation value)
brightness (calculated)	Output	Calculated brightness value as a comma value
brightness (compensated)	Output	Brightness, compensated for current brightness with constant light control in %
brightness (regulated)	Output	Calculated brightness (incorporation of the lumen package and the correction factor), compensated for the current brightness with constant light control
brightness [%]	Output	Returns the current brightness in %.
brightness [0-255]	Output	Returns the current brightness in a range of 0-255.
Within active range	Output	Here you can see if the simulation is currently in the "active range of the curve" or not.
Constant Light Regulation	Bidirectional	This can be used to set whether the currently measured ambient light should be taken into account when calculating the dimmer values.
Meassured Light	Input	Input of measured light for constant light control
Lux Correction	Bidirectional	This factor is taken into account when calculating the value "brightness calculated".
Pause	Input	Pause the output. When the pause is finished, the values are reissued according to the pause mode setting.

Period [min]	Bidirectional	Writing / reading the periods duration, in the "free period selection" mode in minutes.
Reset	Input	Resets the calculation to the beginning of the period
Setpoint of the external constant light control	Input	The type of curve can be changed at runtime 0 = Daylight curve 1 = Activate 2 = Manual curve
Start	Input	Starts the output
Start time (24h mode)	Bidirectional	Dynamic entry of the start time for the 24 hour mode. This represents the sur
Stop	Input	Stops the output
Driver On/Off	Bidirectional	Driver on or off.
Type	Bidirectional	Data point for displaying / setting the progression type (0 = daylight, 1 = activate)

Properties

Name	Standard	Function
Mode	FreePeriod...	Setting for 24h mode or own period time, as well as endless repetition
Max colour temperature [K]	6500	Maximum value of the colour temperature in Kelvin for light source 1 (mixture with light source 2)
Min colour temperature [K]	3000	Minimum value of the colour temperature in Kelvin for light source 2 (mixture with light source 1)
Max brightness [%]	100	Maximum brightness in per cent
Min brightness [%]	40	Minimum brightness in per cent
Manual value Colour temperature [K]	4000	Manually set value of the colour temperature in Kelvin. This value is assumed if a true is received at the manual value data point.
Manual value brightness [%]	100	Manually set brightness value in per cent. This value is assumed if a true is received at the Manual value data point.
Type	Daylight curve	Type of colour temperature/brightness curve. There are currently 3 profiles available: Daylight curve, Activate curve and Manual curve (see below).

Name	Standard	Function
Manual curve		This option can be used to set your own curves for colour temperature and brightness.
Update interval [s]	30	Setting the intervals for updating the calculated colour temperature/brightness values.
Pause mode	Hold position	This can be used to set whether the simulation of the curve progressions should be continued or paused in the background during a pause (or during overwriting using a manual value).
Constant light control		This can be used to set whether the currently measured ambient light should be taken into account when calculating the dimming values. The current brightness of the curve is offset against the brightness actually measured by the sensor. The calculated value is output at the "Brightness (regulated)" data point.
External constant light control		If activated, the dimming values at the outputs are compensated according to the setpoint value of the external control.
Lumen package	1	The maximum brightness of the lamps used can be entered here. This value is multiplied by the calculated target brightness (in %) and the correction factor and output on the data point (brightness calculated).
Light correction factor	1	This factor is taken into account when calculating the "Brightness calculated" value.
Evaluate presence		If this option is set, presence evaluation is active
Upper threshold value for 0% hysteresis	5	If the brightness was at 0%, it must rise above this value before it is output again.
Autostart		This can be used to set whether the sequence should start automatically when the component is active.
Driver on/off		This can be used to set whether the component should be active when the system is started.

Below are the progressions of the brightness and color temperature of the two modes. The following values are set:
Color temperature = 3000K - 6500K;
Brightness = 40% - 100%;
Period: 2 minutes;
Active time: 1 minute;
Repeat: Active

Course of the brightness in the mode "daylight" (runs within the defined "active time" between color temperature min and color temperature max):

Color temperature trend in "daylight" mode (runs within the defined "active time" between color temperature min and color temperature max):

Color temperature trend in "Activate" mode (runs within the defined "Active time" between color temperature min and color temperature max):

Example:
Time lapse with a period of 2 minutes and an active time of 1 minute (continuous repetition), Type: Activate.

6.8.4 Scenarios

The scenarios is an unVisiblee server component, with the ability to record static states of channelsn in one out of 256 possible scenes and render them back when needed. The user can so z. B. Save values ∂f any data points and trigger them with a keystroke. The values ɑan be changed, saved and recalled at any time. An intervention in the programming of the surface is not necessary.

The component can use up to 999 channels for storage and retrieval. Data suppliers can be arbitrary sources, whether internal signals, KNX data points or other drivers. Each channel is defined by a unique channel name. Thus, the components is a universally applicable "value memory". When saving, the channel state and use (Ignore) are always saved.

After calling up a scene, the component monitors whether the state of a channel has been changed subsequently. If the current situation differs from the values ∂f the scene, this is signaled via the "scene changed" output with an "on signal". If the target state of the scene is restored, the output is set to "Off" again.

To use the scenarios, a scenario editor, as Visible Client component, can be connected. The use of multiple editors on different pages of the project is also possible. This allows multiple keypads to access the same scenario building blocks, and display and operate this.

Data points of the component

Name	Type	function
Dynamic	Folder Bidirectional	Folder Dynamic displays the data points for the defined channels. These must be linked here. Each channel has 3 data points available: - Channel001 - Bidirectional (blue) Input and output of the desired signal - Channel001_Input - StatusInput (green) to set the channel. e.g. for status feedback - Channel001_Ignore - Bidirectional (blue) input and output, to set channel usage. If a true signal is applied to the data point and the scene is saved again, this channel is not connected the next time it is called up. This has the same functionality as the "Selected" option in the scene editor.
1Bit	Folder	has the subfolders Recall and Save, which each contain the inputs from 000 to 255. Here the scenes can be addressed directly.
Export (XML Text) Output [97]	Output	Output of the scene data in xml format. This data can be sent to another scene (Import (XML Text)).
Export (XML Text) Trigger	Input	Trigger input to output the scenes at the output "Export (XML text) output" in xml format .
Import (XML Text) [97]	Input	Input for the scene data as xml text. The data can come from another scene (export(XML text) output).
Scenario Editor	Bidirectional	Connection between a scenario component and one or more scenario editors.
Scenario Name	Output	Text output of the last accessed scene.
Scenario Number	Output	Output of the number of the last called scene. The output number corresponds to the internal memory number of the scene.
Scenario Save Name	Input	If a saved scene name is transferred to this input, the scene is called up with the corresponding name and the stored values are output.
Call Scene 000	Input	If an arbitrary signal is applied to this input, the scene is called with the internal number 000 and thus the stored values are output.
Save Scene 000	Input	If any signal is applied to this input, the scene with the internal number 000 is saved with the currently applied values of the channels. **ATTENTION**: The selection of the channels within the scene is set according to the states at the ignore data points. If the data points are not linked, all channels are set to "Selected" when saving.
Scene was changed	Output	If the current situation differs from the values of the last called scene, this is signaled via the "Scene changed" output with On
Call Scene XXX	Input	If a NumberValue On is set for this input, the Scene is called with the corresponding internal number and the stored values are output.
Save Scene XXX	Input	If a numerical value is applied to this input, the scene is saved with the corresponding internal number with the currently applied values of the channels. **ATTENTION**: The selection of the channels within the scene is set according to the states at the ignore data points. If the data points are not linked, all channels are set to "Selected" when saving.

Properties

Name	Standard	function
Channels	0	Here the individual channels are defined in a list. These then appear as a channel in the data point folder Dynamic. Channels can also be read in via a CSV file. One channel and its name is added per line. No further formatting is necessary in the file.
Send delay [ms]	0	Here, the delay when calling a scene is selected. The transmission delay is the pause between the output of two values. This allows the telegram load of the downstream system to be controlled.
Export scene on change		If this option is set, an export is automatically triggered when a scene changes.

To call a scene with a button, the button is set to "Always on" and the send value declared as 8-bit. Then the output "Value On" can be connected to the component scenario at the input "Scene XXX".

6.8.5   Scenarios Editor

The Scenarios Editor is a Visible Client component. It is used to display and operate the scenario component.

Via "WPF-Theme²¹⁸" the appearance of this component can be varied.

To use the scenario editor, it must be connected to a scenario building block. It is possible to connect multiple scenarios editors with one scenario building block, but not vice versa multiple scenarios with a scenario editor.

If subsequent channels are added to the Scenario component, they must be activated in the Polar Bear client as follows.
- Each scene must be called in the EisBär client.
- Copy the name of the scene to the clipboard.
- Delete scene.
- Save the scene again.
- Paste scene names from the clipboard
The scene is recreated with the same number and has integrated the newly created channels.
Update all other scenes according to this scheme.

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	If this input is not used, the component is Visible. When used, the unvisible component is switched with an off signal and a Visible on signal.
Scenarios Component	Bidirectional	Connection between a calendar and one or more scenarios editors.
Opacity [0-255][113]	Input	See component independent data points[113]

Client-Ansicht

Meaning of the icons (from left to right):

New scene (sheet)
Insert new scenes via this icon. When creating, all channels from the channel list are displayed. If you do not want to add all channels to the new scene, deactivate the corresponding channel with the parameter checkbox "Selected". The Value column displays the current values of the channels. They can also be changed in the Value field. If no value exists, you can preset this here. Please make sure to select only values that match the connected data points of the bus system.

Save scene (floppy disk)
First, select the scene to save in the list. Now you can press the memory button. The current values of the channels are saved.
ATTENTION: The selection of the channels within the scene is set according to the states at the ignore data points. If the data points are not linked, all channels are set to "Selected" when saving.

Delete scene (X)
First, select the scene to be deleted in the list. Now you can press the delete button. The scene and its data are deleted.

Settings (gear)
First, the scene to be edited in the list is selected. The Settings button opens the Settings window. It will show the channels with their settings. Each channel is set whether this is used in the scene (Selected) or not. The value to be sent is set under Value. With OK the changes are saved.

Call scene (arrow)
First, select the scene to be recalled in the list. Now you can press the call button. The scene with its stored values is triggered.

export
Attention: ONLY POSSIBLE ON THE SERVER.
Press the export button to export the entire settings of the scenario module to an external xml file. This function is used to back up the programming. The default path is ...\Documents\Alexander Maier GmbH\EisBär 3.0\Export.

import
Attention: all existing scenes will be overwritten.
Press the Import button to import the scenario block settings from an external xml file. Here, the file must be imported without the addition "_Channels". The scenes are now displayed in the editor and the dynamical folder containing the data points is created in the unVisible component.
It is also possible to import EisBär 1 light scene data (* .CSV). These must first be exported to a CSV file in the EisBär 1 Light Scene Editor. To view the imported scenes, the simulation must be stopped and restarted.

6.8.6   Change Project Language

This component is used to switch the project languages. More on this under Multilingual Projects[86] .

About "WPF Theme[218] ", the appearance of this component can be varied if the carousel view has been disabled.

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	If this input is not used, the component is Visible. When used, the unvisible component is switched with an off signal and a Visible on signal.
Set Culture Setting	Input	Changes the language by an external signal. Here you can switch over a string with eg de-DE to German or with en-US to American-English.
Opacity [0-255] [113]	Input	See component independent data points unabhängige Datenpunkte [113]

Properties

Name	Standard	function
Carousel Panel View	active	Here the view can be toggled between carousel and dropdown menu.

6.8.7   WPF Theme Selector

This component is used to switch the project languages. More on this under Multilingual Projects.

With "WPF Theme", the appearance of this component can be varied if the carousel view has been disabled.

Data points of the component

Name	Type	function
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	If this input is not used, the component is Visible. When used, the unvisible component is switched with an off signal and a Visible on signal.
Change Theme	Input	Changes the display style by an external signal (0-33).
Opacity [0-255] [113]	Input	See component independent data points [113]

The following components can be changed via the WPF theme selection:

- Page Selection [121]
- RTF [126]

- [Touch-value input](#)[183]
- [Code lock](#)[193]
- [Color Show](#)[202]
- [Scenarios](#)[212]
- [Project Language Selection](#)[217]
- [Plotter](#)[153]
- [Alarm clock](#)[292]

6.8.8   Presence simulation

The presence simulation is an invisible server component with the possibility to record switching operations of channelsn temporally and to give them time-synchronized if required. For example, an inhabited building is to be "simulated" by the playback operation.

The component can use up to 99 channels for recording and playback. Data suppliers can be arbitrary sources, whether internal signals, KNX data points or other drivers. Each channel is defined by a unique channel name.
The component constantly records the data. The save does not have to be activated.

Internally, the component has a "ring memory", i. H. the oldest data will be overwritten with new data after exceeding the set storage time. Only if there are recordings for the set storage time in the ring buffer, playback can take place over this period. Be, z. For example, if 14 days of storage time are set, but only 10 days are recorded, then only 10 days will be played, and on the "empty" 4 days, nothing will be played back.
<u>In order to use the playback function of the component at least one complete day (> 24h) must be recorded.</u> If you select 7 or 14 days in the parameter Storage time, playback will be synchronized with the day of the week.

Data points of the component

Name	Type	function
Dynamic - Channelname - Channel_Playback - Channel_StatusInput	Folder Bidirectional Bidirectional Input	Folder Dynamic displays the data points for the defined channels. These must be linked here. Each channel has two bidirectional data points. - The data point with the channel name is used to input and output the desired signal. - Data points ending in "_Playback" enable (On) or disable (off) the playback of the corresponding channel. - You can also enter a status here.
Export	Input	Create the folder path or name of the export file here. Triggering this input triggers the export process.
Import/Export result	Output	Text output as status message whether the import or export was successful or failed. To display the text, we recommend using the display component Value-dependent text with its value-display input.
Import	Input	Create the folder path or name of the import file here. Triggering this input triggers the import process.
Activate Simulation	Input	If an ON signal is applied to this input, playback of the recorded events begins. When an off signal is applied, playback stops.
Clear Simulation data	Input	If an ON signal is applied to this input, the recorded events are deleted. The ring buffer is then emptied and must be refilled.
State	Output	Text output during recording and playback as information as to which recording day is currently being played or how many days have been recorded.
Activate time-lapse	Input	If an ON signal is applied to this input during the activated simulation, the events will not be output synchronized with time, but immediately at the set time-lapse interval.

Properties

Name	Standard	function
Channels	0	Here the individual channels are defined in a list. These then appear as a channel in the data point Folder Dynamic.
Speicherzeit [Tage]	1	Here the size of the ring buffer is selected in 1 - 14 days.
Zeitrafferintervall [s]	1	The stored events are output at this distance when the component is in the simulation and the time-lapse has been activated.

6.8.9 Weather forcast

With this component, the current weather data can be retrieved. It is an unvisible component. The possibility of data output for: Current, Today, in 1 day, in 2 days, in 3 days and in 4 days is provided. The weather data are obtained via the Internet (https://openweathermap.org). For updating the data, a sequence is available that triggers the update input.

Under http://www.busbaer.de in the Download tab, there is also a template (ScadaComp).

Data points of the component "global"

Name	Type	function
Debug [Text]	Output	Returns the error diagnosis as text. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Last Weather Document	Output	Send the last weather document
Update	Input	An on-edge updates the weather data over the Internet

Data points of the component for each folder

Name	Type	function
Air Preassure [mbar]	Output	Returns the air pressure of the selected location
Clouds [%]	Output	Output of cloud cover as numerical value in percent
Date	Output	Date / time of the data, standard formatting as for date / time display
Feels like Temperature day [°C or °F]	Output	The temperature feeling at the day.
Feels like Temperature evening [°C or °F]	Output	The temperature feeling in the evening.
Feels like Temperature morning [°C or °F]	Output	The temperature feeling in the morning.
Feels like Temperature night [°C or °F]	Output	The temperature feeling in the night.
Humidity [%]	Output	Issue of Humidity as numerical value in percent
Weather	Output	Output of the weather trend as text
Max Temperature [°C or °F]	Output	Maximum temperature in the period
Min Temperature [°C or °F]	Output	Minimum temperature in the period
Rain (still expected) [mm]	Output	Expected rainfall in mm
Snow (still expected) [mm]	Output	Expected amount of snow in mm

Name	Type	function
Sunrise	Output	Date / time, standard formatting as for date / time display
Sunset	Output	Date / time, standard formatting as for date / time display
Temperature [°C or °F]	Output	Returns the expected temperature of 12:00
Temperature day [°C or °F]	Output	The temperature at the day.
Temperature evening [°C or °F]	Output	The temperature in the evening.
Temperature morning [°C or °F]	Output	The temperature in the morning.
Temperature night [°C or °F]	Output	The temperature in the night.
Weather Icon	Output	Outputs the corresponding data at the output (icon number), see also Weathericons [223]
Weather Icon URL	Output	Outputs the corresponding data at the output (Icon URL for the image output in the image component), see also Weathericons [223]
Wind direction	Output	Output of the wind direction as text
Wind direction [degree]	Output	Output of the wind direction as numerical value in degrees
Wind Speed [km/h or miles/h]	Output	Output of wind speed as numerical value in km / h or miles / h

Additional data points of "Current"

Name	Type	Function
Date of observation	Output	Date / time of the data, standard formatting as for the date / time display
Place of observation	Output	Outputs the corresponding data at the output
Rain last 1h [mm]	Output	Rainfall in past hours in mm
Rain last 3h [mm]	Output	Rainfall in mm in the past 3 hours
Snow last 1h [mm]	Output	Amount of snow in the past hours in mm
Snow last 3h [mm]	Output	Amount of snow in the past 3 hours in mm
Visibility [km or miles]	Output	Output of the current visibility in km or miles
Dew point [° C or ° F]	Output	Output of the calculated dew point
UV Index	Output	Outputs the corresponding data at the output

Properties

Name	Standard	function
Location	Eberbach	Here you can select your location via the search function
Metric Units	yes	When this selection is made, e.g. the temperature is output in ° C, if not, then in ° F.
German Text	yes	Switch between English and German text output
Use System-Proxy	no	Select if a proxy is used to access the Internet on the computer.

6.8.9.1   Weathericons

Iconlist

Date: 13.02.2019

Day icon	Night icon	Description
01d.png	01n.png	clear sky
02d.png	02n.png	few clouds
03d.png	03n.png	scattered clouds
04d.png	04n.png	broken clouds
09d.png	09n.png	shower rain
10d.png	10n.png	rain
11d.png	11n.png	thunderstorm
13d.png	13n.png	snow
50d.png	50n.png	mist

Weather condition codes

Group 2xx: Thunderstorm

ID	Meaning	Icon
200	thunderstorm with light rain	11d
201	thunderstorm with rain	11d
202	thunderstorm with heavy rain	11d
210	light thunderstorm	11d
211	thunderstorm	11d
212	heavy thunderstorm	11d
221	ragged thunderstorm	11d
230	thunderstorm with light drizzle	11d
231	thunderstorm with drizzle	11d
232	thunderstorm with heavy drizzle	11d

Group 3xx: Drizzle

ID	Meaning	Icon
300	light intensity drizzle	09d

301	drizzle	09d
302	heavy intensity drizzle	09d
310	light intensity drizzle rain	09d
311	drizzle rain	09d
312	heavy intensity drizzle rain	09d
313	shower rain and drizzle	09d
314	heavy shower rain and drizzle	09d
321	shower drizzle	09d

Group 5xx: Rain

ID	Meaning	Icon
500	light rain	10d
501	moderate rain	10d
502	heavy intensity rain	10d
503	very heavy rain	10d
504	extreme rain	10d

511	freezing rain	13d
520	light intensity shower rain	09d
521	shower rain	09d
522	heavy intensity shower rain	09d
531	ragged shower rain	09d

Group 6xx: Snow

ID	Meaning	Icon
600	light snow	13d
601	snow	13d
602	heavy snow	13d
611	sleet	13d
612	shower sleet	13d
615	light rain and snow	13d
616	rain and snow	13d
620	light shower snow	13d

621	shower snow	13d
622	heavy shower snow	13d

Group 7xx: Atmosphere

ID	Meaning	Icon
701	mist	50d
711	smoke	50d
721	haze	50d
731	sand, dust whirls	50d
741	fog	50d
751	sand	50d
761	dust	50d
762	volcanic ash	50d
771	squalls	50d
781	tornado	50d

Group 800: Clear

ID	Meaning	Icon
800	clear sky	01d 01n

Group 80x: Clouds

ID	Meaning	Icon
801	few clouds	02d 02n
802	scattered clouds	03d 03n
803	broken clouds	04d 04n
804	overcast clouds	04d 04n

6.9   Control, logic & time

This chapter describes the functions and propertiesn from the category Control, Logic & Time.

Currently the following components are available:

- Graphic logic [230]
- Calendar [263]
- Calendar Editor [271]
- Calendar Editor weekly timer [276]
- Sequence [277]
- Autoreset [279]
- Gate [240]
- Simple String Value Parser [281]
- Byte Splitter [281]
- Multi converter [282]
- LUA Interpreter [255]
- Counter [251]
- MinMaxAverage [287]
- Time stamp [289]
- Operating Hours Mediator [290]
- Alarm clock [292]
- Alarm Clock Editor [295]
- Random Generator [296]

- Date / Time Sender [297]
- Date / Time Receiver [297]
- AstroTimer [298]
- Pray Timer [302]
- Plaza Shading [304]

6.9.1   Graphical logic

The graphic logic is an unVisiblee server component and is used to implement control and control tasks. Any number of inputs and outputs of different types of data points can be used.
The component is not visible on the interface in the client.

Properties

Name		function
Logic editor		This opens the Logic Editor for creating the functionality.
Cyclical calculation interval [ms]	500	Define here the calculation interval for the cyclical calculation.
Cyclical calculation		If the checkmark is set, the calculation is cyclical. If the tick is not set, the calculation is event-driven.
Logic On/Off		If this parameter is set, the calculation of logical functionality starts. If the parameter is not set, the graphic logic will not work.
automatically sort		With this option, the gates are automatically sorted when the logic editor is closed.
Password		A password can be used to protect the processing of the component.

General
The graphic logic basically differentiates between two operating modes: the cyclic and the event-driven execution. The selection takes place in the properties over the Parameter "Cyclic calculation". If the tick is set, the cyclic operating mode is selected, otherwise the event-driven.
The logic must always be activated via the "Logic on / off" parameter, otherwise it will work Not. Check the box when you have finished creating the logic circuits.

Cyclic mode
Classic logic modules in the area of the EIB / KNX work with cyclic calculation. It must not to pay attention to an ascending order of the logic components.

Event-driven mode
The calculation only works if the components are sorted in the correct order.
The sorting (numbering of components) must be done from the inputs through the components the outputs take place. Event-driven processing is the fastest way of doing the logic to calculate, since immediately at a change at one of the inputs the chain of functions over the gates calculated to the output and output directly.

Proper sorting

If the order is not ascending, from the input to the gate and then to the output, it works
the calculation is not.

Wrong sorting

feedback

In order to be able to give signals within the logic to the rear gates, the cyclic operating mode must
to get voted. In case of event-driven execution and / or in general, feedback can take place
via the external communication ports of the graphic logic. Connect to that
desired output with the required input. It will be a connection in the form of a network
created.

simulation

The graphical logic has a built-in editor simulator, d. H. You can the
Test developed circuits within a simulation window before putting them into operation
go. In the simulator, time sequences can be tested in a time-lapse method.

6.9.1.1   Logikeditor

The logic editor is divided into a toolbar, a [component list][232] and the workspace. Double-click on the
title bar to enlarge the logic editor to full screen. Confirmation with OK transfers the logic.

toolbar

	Import layout from * .xml file
	Export layout to a * .xml file
	Print layout
	undo last action
	restore undo action
	Delete selected components
	delete all components
	Show / hide grid
	Open parameter dialog for selected component, also possible by double-clicking on the component
	Re-sort items
	Start simulation

6.9.1.2   Component list

The Component List contains the logical elements, inputs and outputs. They can be dragged and dropped on the page out if the the List box. By double-clicking on the component a Properties window opens.

Icon	Name	Description
TEXT	Text	The text provides an outline and commentary on the logic layouts.
INPUT	Input	The input is connected internally to the logical elements. At the component it provides a communication port to link with networks. It can have different data types.
OUTPUT	Output	The output is connected internally to the logical elements. At the component it provides a communication port to link with networks. It can have different data types.
OR ≥1	OR	An OR gate has the value 1 if at least one input has the value 1.
AND &	AND	An AND gate has the value 1 if all inputs have the value 1.
XOR =1	Exclusive-OR	An exclusive OR gate only has the value 1 if an odd number of inputs has the value 1.
GATE	Gate	A gate has an input, an output and a control input. A gate may pass, if it is released at an event at the input, a value from the input to the output. If blocked, then there is no reaction.

COMP	Comparator	A comparator has two inputs and one output. It compares two input values with an adjustable comparison operator with another. When the comparison condition is satisfied, the output is 1, not satisfied, is 0.
MATH	Arithmetic Operator	An arithmetic operator performs basic arithmetic functions with two inputs and pushes the result to the output.
CONV	Converter	A converter converts the value at the input to any format at the output.
DELAY	Delay	The input signals are delayed at the output.
TIMER	Timer	With an event at the input a timer sends the value of the input with an on/off switch delay to the output. The output can be reset with a pulse function and an input and output signal after a set period of time.
FILTER	Filter	A filter can pass values at the input with a low-, high-and bandpass function to the output.
ACTIVE	Activator	With the activator turning it is possible to turn the Grafical Logic on and off the from an external connection.
INV	Inverter	The inverter has an output of 0 if the input is at 1.
SWITCH	Switch	The Switch selects one of two inputs with a control input and passes the input value to the output.
MIN MAX	MinMax-Finder	The MinMax Finder looks for the smallest and the largest adjacent value to all 10 inputs and returns the smallest value at the output MIN and the largest at the output MAX.
COUNTER	Counter	The counter counts the rising edges or pulses at the CLK input. An input count direction (up/down) can be selected. A reset sets the output value to 0.
RS FlipFlop	RS-FlipFlop	The gate is a reset-set flip-flop. If the set-input is 1, the A output is set to 1. If the reset input is 1, the A-output is set to 0. The reset input has higher priority than the set input.
PID	PID-Controller	The gate is PID control function. It consists of a proportional, an integral and a differential portion. The single controller parts may be selected or deselected.
OSZI	Oscillator	The oscillator generates periodic rectangular signals. The cycle time (Z) and the pulse width (P) are internally and externally adjustable.

6.9.1.2.1 Input / Output

You can open the parameter window of the component with the command "parameters ..." in the
Context menu (right mouse button), or double-click on the component visible.

In the parameter window, the specific properties and behavior at the start-up of the logic is defined.

Name
The name of the component can be chosen freely. This name is displayed as a data point name of the
component.

Datatype
With this parameter, the data type is defined. The data type range covers all possible EIB/KNX data
point types (DPT).

Note: For on/off signals, use the default data type "Boolean". For 8bit-dimming values use the data type 1 byte (unsigned) and for measured values, e.g. Temperature values, the data type "4 bytes floating point".

Initialization

The behavior of input, at the start of the graphical logic, is defined with this parameter.

Initial value with trigger	the initial default value is passed to the following gate and immediately triggers a calculation
Initial value without trigger	the initial default value is passed to the following gate but triggers no calculation
Read Value	the input value is read from other components outside the grafical logic or read thru the bus driver
Wait for new value	the input is passive until the first time, a value of is given from outside to the input

Initial value

This parameter is the start value of the input when using the initial value. The adjustable range dependents on the data type.

Send

With this parameter you select when the value is sent at output, after every calculation or only when the value is changed.

Send Value

This parameter defines in Boolean data type, if all conditions are sent, or only certain states.

NOTE: This filter defines the send behavior. It sends only if the calculation requires it. If the output is set to "After each calculation" and contains "only ON" , then with a result of OFF nothing will be sent. When the calculation returns two successive "ON"s , both commands will only be sent with "After every calculation". In the mode "Only after value change" it is only send at the first time.

Send initial value on startup

With this parameter set, the status of the output is actively sent at start the logic of. When not set, the output waits until the first change or calculation. Setting the parameter is sensible when a afterswitch function in the visualization is set to a defined status. If in the input of the calculation chain, which defines the output, the parameter "Initial value with trigger" is set then this makes no sense because the output will be set in any case.

6.9.1.2.2 OR-Gate

An OR gate sets the output value to 1 if at least one input has the value 1. An OR gate has up to 16 inputs and one output. When creating the gate has 2 inputs and one output. The number of inputs can be adjusted in the
pull-down menu, number of inputs. The inputs and the output can be inverted. This can be set within the parameter window, or by double-clicking on the connectors. The inputs of the OR gate can be linked with an input object or an output of an other component. The output of a gate can be connected with an output, or to an input of another component. A gate output can be connected with several gate inputs.
The inputs are located on the left side of the element. The output is located on the right side of the element.The name of the gate can be chosen freely.

Note: Only 1-bit objects (boolean) are permitted at the inputs and the output of the OR gate.

6.9.1.2.3 AND-Gate

An AND gate sets the output value to 1 if all inputs have the value 1. An AND gate has up to 16 inputs and one output. When creating the gate has 2 inputs and one output. The number of inputs can be adjusted in the
pull-down menu, number of inputs. The inputs and the output can be inverted. This can be set within the parameter window, or by double-clicking on the connectors. The inputs of the AND gate can be linked with an input object or an output of an other component. The output of a gate can be connected with an output, or to an input of another component. A gate output can be connected with several gate inputs. The inputs are located on the left side of the element. The inputs are invertible. This may be made within the parameter window or by double-clicking the connection. The name of the gate can be chosen freely.

Note: Only 1-bit objects (boolean) are permitted at the inputs and the output of the AND gate..

6.9.1.2.4 Exclusive-OR (XOR)-Gate

An XOR gate sets the output value to 1 if exactly one input has the value 1. An XOR gate has up to 16 inputs and one output. When creating the gate has 2 inputs and one output. The number of inputs can be adjusted in the
pull-down menu, number of inputs. The inputs and the output can be inverted. This can be set within the parameter window, or by double-clicking on the connectors. The inputs of the OR gate can be linked with an input object or an output of an other component. The output of a gate can be connected with an output, or to an input of another component. A gate output can be connected with several gate inputs. The inputs are located on the left side of the element.
The output is located on the right side of the element. The name of the gate can be chosen freely.

Note: Only 1-bit objects (boolean) are permitted at the inputs and the output of the OR gate.

6.9.1.2.5 Gate

A Gate has one input, one output and one control input. The gate sends the value of an event at the input to output, when the control input is true. If the control input is false, nothing will pass from the input to the output. The input also has a supplementary function. This defines the behavior of the gate, depending on the state of the control input.

Additional function

none	If selected "none", the first received input value, after opening the gate, passes to the output.
save during lock	Selecting "save during lock", the last input value before opening the gate, is send to the output, when opening the gate.
value buffer with send trigger	Selecting "value buffer with send trigger", sends the output with each release command to the control input, even if the gate was already released and the

input value has not changed.

The input of the gate can be linked with an input object or an output of another component. The output of a gate can be connected to an output, or to an input of another component. A gate output can be connected with several gate inputs.

The input is marked with an I and is located on the left side of the element. The control input is marked with an C and is located bottom on the left side of the element. The Control input is invertible. This may be made within the parameter window or by double-clicking the S-connection.
The output is marked by an O, top right of the element. The name of the gate can be chosen freely.

Note: For input and output, all data types are allowed. For the control input are just 1-bit objects (Boolean) allowed.

6.9.1.2.6 Comperator

A comparator has two inputs and one output. It compares two input values with an adjustable comparison operator with another. When the comparison condition is true, it sends to the output an on-signal, if it is not fulfilled, it sends an off-signal. Mostly input 1 is for values and input 2 is used for reference purposes.

Options

Less A < B	The value on input 1 (A) is less than the value on input 2 (B).
Greater A > B	The value on input 1 (A) is greater than the value on input 2 (B).
Equal A = B	The value on input 1 (A) is the same as the value on input 2 (B).

Less or equal A <= B	The value on input 1 (A) is less or equal to the value at input 2 (B).
Greater or equal A >= B	The value on input 1 (A) is greater or equal to the value at input 2 (B).
Inequal A< >B	The value on input 1 (A) is not the same as the value on input 2 (B).

The inputs are marked with an A and B, and are left at the element. The output is marked with an O, is top right of the element.
The name of the gate can be chosen freely.

Note: For input and output, all data types are allowed.

6.9.1.2.7 Arithmetic Operator

An arithmetic operator performs basic arithmetic operations with two inputs and puts the result to the output.
An arithmetic operator has two inputs and one output. It takes two Input values for an adjustable arithmetic function. The result of this operation is set at the output.

Functions

Addition E1 + E2	The value on input 1 (A) is added with the value at the input 2 (B).
Subtraction E1 - E2	The value on input 2 (A) is subtracted from the value on input 1 (B).
Multiplication E1 * E2	The value on input 1 (A) is multiplied by the value at the input 2 (B)
Division E1 / E2	The value on input 1 (A) is divided by the value at the input 2 (B).

If the check "invert error out" is set, the output is 1 if no error or overflow exists. With the parameter "Use value on input 2 only if value of input 1 is new" you can realize, for example, an ascending or descending counting function. This is for example the replication of temperature control functions to increase or decrease the temperature by a certain value.

The inputs are marked with an A and B, and are left at the element. The output is characterized by an O, is top right of the element. The name of the gate can be chosen freely.

Note: For input and output all data types are allowed.

6.9.1.2.8 Converter

A converter converts the value at the input to any format at the output. If the input and output data type is larger than a boolean data type, a "Out value true "(the input is 1)
and a "Out value false "(the input is set 0) is set in the context of the data type. These values are then set at the output, depending on the input status.
If the check "Invert overflow output" is set, the output is 1 if no error or overflow exists. The input is marked with an I, and is left at the element.
The output is characterized by an O, is top right of the element. The name of the gate can be chosen freely.

Note: For input and output all data types are allowed.

6.9.1.2.9 Delay

Delay
The delay sets input signals delayed at the output. The delay has an input and an output. The delay time can be adjusted by a value and a timebase.
The input is marked with an I, and is left at the element. The output is characterized by an O, is top right of the element. The name of the gate can be chosen freely.

Note: For input and output all data types are allowed.

6.9.1.2.10 Timer

A timer can pass an event at the input with an on- or off-delay to the output. A pulse function can reset the output after a set period of time.

The input and the output can be inverted. This is possible within the parameter window, or through a double click on the connectors.

The input also has a supplementary function. With the "Calculate" parameter can be defined which event at the input is passed to the output (filter function).

Calculate

true and false	On and Off signals at the input are used as trigger.
only true	Only an On signal at the input is evaluated. Off signals are filtered out, i.e. there is no calculation..
only false	Only an Off signal at the input is evaluated. On signals are filtered out, i.e. there is no calculation.

If the parameter "Retrigger if new value received" set, the time is retriggered and restarts from 0 again.

Delay switch on	An on signal at the input of the timer is passed to the output after expiry of the set time. An off signal is, without delay, sent at the output.
Delay switch off	An off signal at the input of the timer is passed to the output after expiry of the set time. An on signal is, without delay, sent at the output.
Pulse duration	After an on signal at the input the output is turned on. After the set pulse duration time the output is turned off automatically.

The input is marked with an I and, and is top left at the element. The output is characterized by an O, is top right of the element.
The name of the gate can be chosen freely.

Note: For the input and the output of the timer are just 1-bit objects (Boolean) allowed.

6.9.1.2.11 Filter

A filter can pass values at the input with a low-, high- or band-pass function to the output. When filter rule is fulfilled, the input values are passed to the output. If it is not fulfilled, there is no reaction at the output.

Filtertype

High pass >=	When the input value is higher or equal than the value of the low value, the Input signal is passed to the output.

Low pass <=	When the input value is lower or equal than the value of the high value, the Input signal is passed to the output.
Band pass -	WeWhen the input value is between the value of the low and high value, the Input signal is passed to the output.

The input is marked with an I and, and is top left at the element. The output is characterized by an O, is top right of the element.
The name of the gate can be chosen freely.

Note: For input and output all data types are allowed.

6.9.1.2.12 Activator

With the activator it is possible to turn the graphical logic on and off via an external Signal. After inserting this element and ending the editing process an data point called "Activator" is created at the component in the communication window.

The element can only be inserted once and has the function of activating (true) or deactivating (false) the graphical logic at runtime.
The function is only available if the property of the "Logic On/Off" component is also active.

With this technique it is possible to create several graphical logics in the visualization and enable them via external signals. Simple logic for a particular operational case can be created without worrying
about locking with another operation. For the further operational cases can also a simple Graphical logic be created. Now you can activate depending on use case, a graphical logic and deactivate the other, and vice versa.

Note: The data point of the activator is type Boolean. The logic is turned on when the an on signal is present at input.

6.9.1.2.13 Inverter

An Inverter sets the output value to 1 if the inputs has the value 0.

The input is marked with an I and, and is top left at the element. The output is characterized by an O, is top right of the element. The name of the gate can be chosen freely.

Note: For the input and the output of the Inverter are just 1-bit objects (Boolean) allowed.

6.9.1.2.14 Switch

The Switch selects thru the control input one of the two inputs and sends the input value to the output.

When the control input S is a off-signal, the value of I1 is passed to the output. When Control input S is a on-signal, the value of I2 is passed to the output. When switching the last value of the new selected input is sent to the output.

The inputs are marked with I1 and I2 and are located on the top left of the element. The control input is marked with an S and is located bottom left of the element. The Control input is invertible. This may be made within the parameter window or by double-clicking the S-connection. The output is characterized by an O, it is right on top of the element.

The name of the gate can be chosen freely.

Note: For input and output are only identical types of data allowed. For the control input are just 1-bit objects (Boolean) allowed.

6.9.1.2.15 MinMax-Finder

The MinMax Finder looks for the smallest and the largest value at all 10 adjacent inputs and gives the smallest value at the output of MIN and the largest MAX at the output.

The inputs are marked with I1 to I10 and are located on the left of the element.

The outputs are identified by MIN and MAX, located top right of the element.

The name of the gate can be chosen freely.

Note: *For inputs and the output are only identical types of data allowed*.

6.9.1.2.16 Counter

The counter counts the rising edges or pulses at the CLK input. With an input the count direction (up/down) is selected. A reset sets the output value to 0.

In the "pulse-triggered-mode ", the counter output is increased / decreased by 1 when an entire pulse
(rising and falling edge) at the CLK input has been detected. In the edge-triggered-mode ", the counter output is increased / decreased by 1 when a rising edge (1-pulse) at the CLK input has been detected.

Using the control input DIR the counting direction of the counter is set. At no signal or 0 at the input, it is counted upwards. A 1-signal sets the count-down-mode. In the "pulse-triggered-mode", the counter output is set to 0 if a complete Pulse (rising and falling edge) on the reset input RES was detected. On the CLK input is in principle then always a 1-signal. When you trigger the reset, this signal is not queried. The next arrival of the 1-signal at the CLK input starts counting again.

In the "edge-triggered-mode", the counter output is set to 0 with a rising Edge (1-pulse) at the reset input RES.

The counter counts in a circle, ie, when reaching the maximum is 32,767 is continued with -32,768. Opposite for the reverse count direction.

The inputs and the output can be inverted. This can be set within the parameter window, or by double-clicking on the connectors.

The inputs are marked with CLK, DIR and RES and are located on the left side of the element. The inputs are invertible. This may be made within the parameter window or by double-clicking the connection.

The output is marked by an O, top right of the element. The name of the gate can be chosen freely.

Note: The inputs are Boolean data types. The output data type is 2 bytes (Integer).

6.9.1.2.17 RS-FlipFlop

The gate is a reset-set flip-flop. If the input (S) is set 1, the output A is set to 1. If the reset input (RS) is 1, the A output is set to 0. The reset input has the higher priority than the set input.

The output A\ corresponds to the inverted state of the output A.

The input to each gate can be linked with an input object or an output of another function. The output of a gate can be connected to an output, or to an input of another function. A gate output can be connected with several gate inputs. The inputs can be inverted. This can be set within the parameter window, or by double-clicking on the connectors.

The inputs are marked with S and RS and are left at the element. The outputs are marked A and A\ are right top of the element.

The name of the gate can be chosen freely.

Note: The inputs and outputs are Boolean data type.

6.9.1.2.18 PID-Controller

The gate is for PID control functions. It consists of a fixed proportional, an optional integral and/or differential part. The optional controller parts can be selected/deselected.

Additional integrations and differentiations functionality can be added with the parameter Type to the proportional controller.

With reset the integrator part is set to zero. To achieve a realistic calculation accuracy, the environmental assessment task cycle time should be at
least 10 times smaller than the period of the critical cut-off frequency of the control system.

Input/Output
I   Input signal
PFAK   Proportional factor
T/TC   Time constant in seconds
RS   Reset
O   Output signal

The values on PFAK and at T/TC input may be changed at any time during operation.

Step response

The input of each gate can be linked with an input object or an output of another function. The output of a gate can be connected to an output, or to an input of another function. A gate output can be connected with several gate inputs.

The inputs are marked with I, PFAK, T/TC and RS, and are left at the element.
The reset input is marked with an RS and is located left of the element. This input is invertible. This may be made within the parameter window or by double-clicking the S-connection.

The output is characterized by an O, right top of the element. The name of the gate can be chosen freely.

Note: For the input and output are the same types of data allowed. The reset input (RS) is set to the data type Boolean (0/1).

6.9.1.2.19 Oszillator

The oscillator generates periodic rectangular signals. The cycle time (Z) and the pulse width (P) can be set internally and externally.

A change in the input value at the Z or P input will not be effective until the beginning of the next period (with a rising edge at the A output).
The output A \ corresponds to the inverted state of the output A.

The inputs of the gate can each be connected to an input object or to an output of another function. The outputs of the gate can be connected to an output, or an input of another function. A gate output can be connected to several gate inputs.

The inputs are marked Z and P and are located on the left side of the element.

The outputs are marked A and A \, they are located at the top right of the element.
The name of the gate can be chosen freely.

Note: The inputs are of the data type 2Byte (unsigned). The outputs are of the data type Boolean.

6.9.2   Script IDE (LUA / Python)

This component is used to realise your own sequences / scripts. The number of inputs and outputs can be freely selected.
The programming language to be used for this is LUA or Python.

Note: This component is only suitable for programmers who are familiar with the LUA / Python script language. Incorrect input can lead to system malfunctions (or crashes)!

Important for LUA:
Access to arrays: If channels with more than one element are created via the channel editor, the first element of the array is accessed with "MyChannelName[0]". If the "Array" was created in the LUA code, the first element is accessed with "InternalArray[1]". Example to convert the EisBaer array into a LUA array:

Channel001 is a polar bear channel array

```
internalArray={}
 for i=1,channel001_count do
 internalArray[i] = channel001[i-1]
```

end

Important for Python:

The Python setup must be installed as a 32bit version (EisBaer3) or 64bit version (EisBaer4) in order to use .

Select "Install Now"

At the end of the installation, you will be asked whether the character limit should be deactivated (Disable path lenght limit). This must be deactivated.

After installation, "Auto Search" must be executed in the Script Interpreter component in the Language Interpreter parameter. This sets all the necessary path settings.

Data points of the component

Component name	Type	Type Function
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.**
Dynamic	*Folder*	*The edited inputs and outputs are provided as data points in this folder.*
Extended diagnostics	Input	The output of the diagnostics can be extended here with an On value.
Driver On/Off	Bidirectional	Switch LUA on or off.
Processing delay [ms]	Bidirectional	Execution of the script can be delayed at runtime.
End script	Output	An ON edge is output when the script has been processed.
Script error	Output	An ON signal is output if the script contains errors, otherwise an OFF signal is output.
Script running	Output	An ON signal is output if the script is being executed, otherwise an OFF.
Script processing time [ms]	Output	Outputs the script processing time in milliseconds.
Update script code	Input	The script code from the higher-level LUA is updated with any signal.
Script code Output	Output	The script code entered can be transferred to another LUA.
Script code input	Input	The script code of a higher-level LUA can be received.
Cyclical trigger interval [s]	Bidirectional	The cyclical execution of the script can be set at runtime.

Properties of the component

Name	Standard	Function
Language interpreter	Lua	Option for switching between LUA and Python as the script language. To use Python, this must also be

Name	Standard	Function
		installed as a 32bit version (EisBaer3) or 64bit version (EisBaer4). At the end of the installation, you will be asked whether the character limiting should be deactivated. This should be deactivated.
Predefined modules	...Custom	Only for LUA! If available, ready-made scripts can be loaded here. To do this, the complete data set (script (.lua), channel list (.luaChannels), encryption file (.luaPasswd) if required and possibly icon (.png)) must be stored in the directory C:\Program Files (x86) \Alexander Maier GmbH\EisBär SCADA 3.0\Devices. The file name must be the same for all parts.
Channels	0	The inputs and outputs can be created in the channel editor. The number of data points per channel can also be set here. If a number is entered, the data points are part of an array and are addressed via the channel name. The channel name can only consist of letters [a-z] [A-Z], numbers [0-9] and the underscore character [_]. Other characters are not allowed. Umlauts such as "ä" are converted to "ae".
Script file		Only for LUA! Enter the storage path if a script file is to be executed. If nothing is entered, the code from the LUA itself is used.
LUA Code	230 bytes	Opens the Code Editor. see also Extensions[259]
Code editor - font size	10	Adjustment of the font size within the Code Editor.
Codeeditor - Font colour		Adjustment of the font colour within the Code Editor.
Codeeditor - Background		Adjustment of the background colour within the Code Editor.
Password		Here you can protect the access to the code editor with a password.
Trigger		Here you can set when the code should be executed. Inputs (selected) --> Trigger on change at the selected input. Cyclic (interval) --> Code is automatically executed after the set time. Inputs and cyclic --> Code is triggered both when there is a change at the marked input and after time has elapsed.
Cyclic trigger interval [s]		Time setting for the cyclic execution of the code. Only has an effect if cyclical was also selected under "Trigger".
Processing delay [ms]	0	The script call is delayed by the specified time after a trigger input is changed.
Delay Trigger During Execution		If enabled, triggers are delayed during script execution and the script is triggered once after completion. This

Name	Standard	Function
		avoids multiple execution of the script if multiple trigger inputs are triggered at the same time.
Execute script at start		If this option is set, the script is executed immediately at system start.
Read out network values on startup		Read out and accept network values at start. This can be used to trigger the interpreter itself. Default values can only be accepted if there is no network at the data point.
UTF8 Encoding		Set to process strings in UTF8 format.
Driver On/Off		Switch interpreter on or off.

Special features for the LUA component[259] **are described separately**.

Example channel list export:

```xml
<?xml version="1.0" encoding="utf-8"?>
<LuaChannelList>
 <LuaChannel Name="Channel001" Id="1" Direction="Input" NumberOfElements="3"
TriggerOnlyOnchange="False" UseAsTriggerInput="True" OutputDefaultValues="True"
OutputsDoNotReflectExternalValues="False">
 <DataPointValue xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xsi:type="DataPointBooleanValue">
 <Data>AQ==</Data>
 </DataPointValue>
```

```
    </LuaChannel>
</LuaChannelList>
```

6.9.2.1 Eisbaer-specific extensions

Special functions:

Description	LUA	Python
Check whether a specific input was a trigger (add "_triggered" to the end of the input name) or whether the cyclical triggering was triggered.	if inputName_triggered == true then ... end if inputArrayName_triggered[index] == true then ... end _cyclic_triggered	if inputName_triggered == True ... if inputArrayName_triggered[index] == True: ... _cyclic_triggered
Get last value of an input (add "_lastValue" at the end of the input name):	lastValueOfVariable = channelName_lastValue lastValueOfArrayElement = channelArrayName_lastValue[index]	lastValueOfVariable = channelName_lastValue lastValueOfArrayElement = channelArrayName_lastValue[index]
Get the number of elements for input/output arrays (add "_count" at the end of the input/output name):	elementCount = channelName_count	elementCount = len(channelName)
Direct set an output datapoint within the script (will be set even if the script still runs [e.g. waiting or processing]):	eisbaerComponent:SetOutputSpFromLua("outputName", valueToSet) eisbaerComponent:SetOutputSpFromLua("outputName", valueToSet, forceOutput) eisbaerComponent:SetOutputSpFromLua("outputArrayName", valueToSet, index) eisbaerComponent:SetOutputSpFromLua("outputArrayName", valueToSet, index, forceOutput)	Eisbaer_SetOutputSp("outputName", valueToSet) Eisbaer_SetOutputSp("outputName", valueToSet, forceOutput) Eisbaer_SetOutputSp("outputArrayName", valueToSet, index) Eisbaer_SetOutputSp("outputArrayName", valueToSet, index, forceOutput)
Direct set an output datapoint with definition of the KNX DPT within the script (will be set even if the script still runs [e.g. waiting or processing]): valid dataPointTypes are DataPointByteArrayValue and DataPoint1OctetGenericValue - DataPoint14OctetGenericValue	eisbaerComponent:SetOutputSpFromLuaAsDpt("outputName", valueToSet, dataPointType)	Eisbaer_SetOutputSpAsDpt("outputName", valueToSet, dataPointType) valid dataPointTypes are: • DataPointByteArrayValue • DataPoint1OctetGenericValue • DataPoint14OctetGenericValue The input must be of the byte array type

Description	LUA	Python
and the input values have to be of type byte array		
Direct read the current input datapoint within the script (will be read the current value even if the script still runs [e.g. waiting or processing]):	eisbaerComponent:ReadInputSpFromLua("inputName") eisbaerComponent:ReadInputSpFromLua("inputArrayName", index)	Eisbaer_ReadInputSp("inputName") Eisbaer_ReadInputSp("inputArrayName", index)
Print text to the debug output:	eisbaerComponent:SetOutputSpFromLua("#DEBUG#", text) eisbaerComponent:SetOutputSpFromLua("#DEBUG_VERBOSE#", text)	Eisbaer_SetOutputSp("#DEBUG#", text, True) Eisbaer_SetOutputSp("#DEBUG_VERBOSE#", text, True)
Store a value (can be read on a later script run):	eisbaerComponent:StoreValue("freeKeyName", valueToStore)	Eisbaer_StoreValue("freeKeyName", valueToStore)
Store a value persistant (can be read on a later script run, even after project is reloaded):	eisbaerComponent:StoreValue("freeKeyName", valueToStore, true)	Eisbaer_StoreValue("freeKeyName", valueToStore, True)
Recall a stored value:	storedValue = eisbaerComponent:RecallValue("freeKeyName")	storedValue = Eisbaer_RecallValue("freeKeyName")
Remove a stored value from the storage:	eisbaerComponent:RemoveValueFromStorage("freeKeyName")	Eisbaer_RemoveValueFromStorage("freeKeyName")
Clear the storage:	eisbaerComponent:ClearStorage()	Eisbaer_ClearStorage()
Sleep/Delay function:	eisbaerComponent:Sleep(delayInMs)	Phyton eigene Implementierung.
Convert DataPointValue function:	convertedValue = eisbaerComponent:GetValueFromDpt(value) eisbaerComponent:SetOutputSpFromLuaAsDpt("MyChannelName", "Byte array with correct length")	convertedValue = Eisbaer_GetValueFromDpt(value)
Perform web request requestType: GET=0, PUT=1, POST=2, DELETE=3 queryFormat: Unspecified=0, TEXT_HTML=1, APPLICATION_JSON=2, APPLICATION_XML=3, APPLICATION_URL_ENCODED=4, TEXT_XML=5, TEXT_JSON=6,	eisbaerComponent:DoWebRequest(url, body, [requestType], [queryFormat], [authType], [user], [password], [headers]) **Example:** Answer = eisbaerComponent:DoWebReq	Eisbaer_DoWebRequest(url, body, [requestType], [queryFormat], [authType], [user], [password], [headers]) requestType: GET=0, PUT=1, POST=2, DELETE=3 queryFormat: Unspecified=0, TEXT_HTML=1, APPLICATION_JSON=2, APPLICATION_XML=3,

Description	LUA	Python
TEXT_PLAIN=7, MULTIPART_FORM_DATA=8, VND_API_PLUS_JSON=9, APPLICATION_FORM_URL_ENCODED=10, APPLICATION_JSONP=11 authType: None=0, Basic=1, HttpBasic=2, BearerToken=3 header["User-Agent"] = "Firefox" header["andererKEy"] = "andererWert"	uest(Url, "", 0, 0, 0, nil, nil, header)	APPLICATION_URL_ENCODED=4, TEXT_XML=5, TEXT_JSON=6, TEXT_PLAIN=7, MULTIPART_FORM_DATA=8, VND_API_PLUS_JSON=9, APPLICATION_FORM_URL_ENCODED=10, APPLICATION_JSONP=11 authType: None=0, Basic=1, HttpBasic=2, BearerToken=3 or Python own implementation.
Get last web request error:	eisbaerComponent:WebRequestGetLastError()	Eisbaer_WebRequestGetLastError()
Get last web request status code:	eisbaerComponent:WebRequestGetLastStatus()	Eisbaer_WebRequestGetLastStatus()

Valid dataPointTypes are:

DataPoint2OctetFloatValue
DataPoint2OctetSignedValue
DataPoint2OctetUnsignedValue
DataPoint4OctetFloatValue
DataPoint4OctetSignedValue
DataPoint4OctetUnsignedValue
DataPoint8BitSignedValue
DataPoint8BitUnsignedValue
DataPoint8OctetSignedValue

string and bool values are always recognised automatically and do not have to be specified explicitly.

6.9.2.2 LUA Beispiel

Example:

If you want to log on-times (e.g. how long was the light on or similar) at the MinMaxAverage component, for example, the LUA component can be connected upstream, which determines the on-times and then forwards them to the MinMaxAverage component once a day.

Channels:

Name	Meaning	Direction	Number of elements	Write output only on value change	Use as trigger
DiffSinceLast Trigger	Buffer	Output	1	yes	
Input	The binary signal whose "active time" is to be counted	Input	1		yes
LastDay	Buffer	Output	1	yes	
LastTimesta mp	Cache	Output	1	yes	
OnTimeOutS econds	current on-time (updated with every trigger)	Output	1	yes	
OnTimeOutS econdsDay	Day on-time (only triggered at day change - this must be connected to the input of the MinMaxAverage component)	Output	1	yes	
UpdateTrigg er	additional trigger (e.g. every second) to output the current on-time and to detect the day change (can also occur less frequently - but should definitely trigger once at the day change so that the day change can be detected and the on-time can be output at the output)	Input	1		yes
WasActive	Intermediate memory	Output	1	yes	

LUA-Code:

```
function ScriptFunc()

    isActive = Input
    currentTimestamp = os.time()
    currentDay = os.date("%M") -- %M for minute (test purposes) %d = Day

    if LastDay == nil then LastDay = currentDay end
    if OnTimeOutSeconds == nil then OnTimeOutSeconds = 0 end

    -- add seconds since last timestamp if the input was on since last trigger
```

```
if WasActive == true then
  if(LastTimestamp ~= nil) then
    DiffSinceLastTrigger = tonumber(currentTimestamp - LastTimestamp)
    OnTimeOutSeconds = tonumber(OnTimeOutSeconds + DiffSinceLastTrigger)
  end
end

-- if is active - save timestamp for difference calculation on next trigger
if isActive == true then
  LastTimestamp = currentTimestamp
end

-- day changed - trigger on day for last day and reset counter
if LastDay ~= currentDay then

  OnTimeOutSecondsDay = tonumber(OnTimeOutSeconds)
  OnTimeOutSeconds = 0
end

LastDay = currentDay
WasActive = isActive

end
```

6.9.3   Calendar

The calendar is an invisible server component with the possibility to control the time of created channels. A use as a pure appointment calendar, without switching function, is also possible.

The calendar can control up to 999 channels. For each channel a name, a colour and any start and end value can be defined.

To use the calendar, at least one calendar editor must be connected as a visible client component. The use of several editors on different pages of the project is also possible. This allows several operator stations to access, display and operate the same calendar. The sorting of the channels is alphanumeric.

Data points of the component

Name	Type	Function
Deactivate	Input	With an on signal, the calendar is disabled and all channels that have *status* send active (and *status send on start*) send *value inactive*. With an Off signal on the *datapoint*, all channels that have Send Status active (and *Send Status on Start*) send the actual state to the output.
Deactivate state	Output	Outputs the disable status. (On = disabled, Off = active)
Debug [Text]	Bidirectional	Status and error reports are output as text. **Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can significantly affect the performance of the service.**
Dynamic	Folder	Data points for the defined channels are displayed in the Dynamic folder. These must be linked here. See below
Advanced diagnostics	Input	To (dis)enable the extended debug output. **Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation with the support team! They can significantly affect the performance of the service when used.**
Calendar Editor	Bidirectional	Connection between a calendar and one or more calendar editors.
Lock	Input	An on signal at this input disables the output of the switching commands of all channels. An off signal releases the output again. The states of the outputs are not sent.
Lock state	Output	If the calendar is locked, an on signal is output at this data point.
Call startup routine	Input	Trigger input to call the "Send status at start" again.
Appointment	Folder	This folder contains the data points for import and export options.
Delete appointments	Input	An on signal at this input deletes **all** appointments of the calendar. No further query appears. **Please note that the last status of the channel is retained!**

Appointment

Name	Standard	Function
Import CSV file	Input	Imports the calendar entries from a CSV. Description see below.
Import CSV text	Input	Imports the calendar entries from a CSV. Description see below.
Exchange Import	Input	An on or off signal is used to trigger the calendar import from the Exchange server. The import process may take some time. Setup see below. Appointments that have been created in the EisBär will be kept.
Exchange Import Status	Output	Display whether the import process is still running (on) or finished (off).
Export XML file	Input	Exports the calendar entries. This is only used for data backup. An 8Bit value is used. Storage path: C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\Export\calendar
Import XML file	Input	Imports the calendar entries. Serves as data recovery. Here an 8Bit value is used, which corresponds to the exported 8Bit value.
XML text output [97]	Output	Output of the appointment data in xml format. This data can be sent to another calendar (XML text import).
XML text export trigger	Input	Trigger input to output the appointments at the output "XML text output" in xml format .
XML-Text Import [97]	Input	Input for the calendar entries as xml text. The data can come from another calendar (XML-Text Output).

Dynamic Data points per Channel:

Name	Type	Function
Output	Output	The value set in the channel list is output here
Subject	Output	The subject text of an event is output here at the start time. The text is deleted at the end time.
Deactivate	Input	The channel is deactivated with an on signal. If *Send status* is active (and *Send status at start*), the *value* is sent *inactive* .With an Off signal on the data point, the channel (if *Send*Status is active),sends the actual state to the output.
Disable Status	Output	Outputs the disable status. (On = disabled, Off = active)
End Offset	Bidirectional	Set the offset for ending the channel in minutes.
Name	Output	Text output for the appointment name
Offset output	Output	The set signal is output here at the respective offset time.
Lock	Input	An on signal at this input disables the output of the switching commands of this channel.
Disable status	Output	If the channel is disabled, an on signal is output at this data point.
Start offset	Bidirectional	Setting the offset for starting the channel in minutes
Appointment visible	Input	Via an on-signal the appointments of the channel become visible. An off signal makes the appointments invisible.
Appointment visible Status	Output	Status output of the visibility. On = visible, Off = not visible.
Date info (current/next)	Folder	This folder contains information about the appointments of the channel (current and next).
Description	Output	Output of the appointment description in text form.
Subject	Output	Output of the appointment subject in text form.
End	Output	Output of the appointment end in text form (date and time).
Combined display	Output	Output of the appointment information in combined form (time from - to and subject). This can be varied in the properties of the component under "Info Format".
Start	Output	Output of the appointment start in text form (date and time).

Properties

Name	Standard	function
Channels	0	Here the individual channels are defined in a list. These then appear as output in the data point folder Dynamic. Depending on the user set, these channels are available when an appointment is created. Channels can also be read in via a CSV file. One channel and its name is added per line. No further formatting is necessary in the file.
Send state at startup		If this parameter is set, the current target status of the channels is sent when the solution is started in the server or when the simulation is switched on in the editor, provided that Send status is activated in the channel. The status is **not** sent when the calendar is reactivated from the deactivated state.
Delete non-existing appointments		If this parameter is set, any existing appointments will be deleted if they are not (anymore) available in the CSV to be imported. Otherwise, the appointments will only be deleted if the start date is empty.
CSV Import - Appointment filter		If this option is activated, only those appointments are imported via the CSV import for which an output (channel) is also defined.
Info format		Here the output of the "Combined display" can be formatted. The 2 display blocks are separated with ;. 1st block = date time according to the formatting, separator = ; 2nd block = free text and/or %s for the display of the subject of the appointment and/or %d for the display of the appointment description. Example: dddd", den" dd.MMMM yyy HH:mm "Uhr"; Free text %s %d Output: Wednesday, 24 February 2021 12:00 - Wednesday, 24 February 2021 13:00 Free text Subject Description **Important: If no free text/subject/description is required, a semicolon (;) must still be placed after the formatting!**
Export appointments on change		If this option is set, an export is automatically triggered when appointments change.
Exchange configuration		Here you can connect to an Exchange. Further information is available below.

Channel List

When adding a channel, set the following items:

- Name: Name of the channel with up to 255 characters. This is also the name of the data point on the calendar (Folder Dynamic). With this name, the channel is displayed in the calendar editor for selection.

- Value active: This value is sent at the switch-on time of the time beam. Any data types are possible.

- Value inactive: This value is sent at the switch-off time of the timeline. Any data types are possible.

- Color: Defines the display color for the display in the calendar editor.

- Start Offset [min.]: This time (+ or -) in minutes is added to the switch-on time of the channel and sends the value Offset active.

- Offset value active: This value is sent at the switch-on time +/- of the offset time of the time beam. Any data types are possible.

- End Offset [min.]: This time (+ or -) in minutes is added to the switch-off time of the channel and sends the value Offset inactive.

- Offset value inactive: This value is sent at the switch-off time +/- of the offset time of the time beam. Any data types are possible.

- Users: Selection of users allowed to view this channel. This setting must be checked for users who have been added subsequently.

- Visible: Option whether the created appointments of the channel are displayed or not.

- Send status: If this parameter is set, the status of the channel is sent when programming the switching time in the calendar editor if it leads to a change of the current status due to the newly programmed / changed switching time. The status is **not** sent when the calendar is reactivated from the deactivated state.

Import (CSV-File) and Import (CSV-Text):
The only difference is that in one of the CSV content is passed directly as a string and the other is the CSV content in the file passed as a string.
The CSV specifies one appointment per line. A line end is marked by "\ r". A line consists of the following through ";" separate information:
- Subject

- Description (If the description should contain line breaks, they must not be passed as "\ r \ n" but must be represented by _newline_, which will be replaced by "\ r \ n" in the description)
- Start (dd.mm.yyyy HH: MM: SS)
- End (dd.mm.yyyy HH: MM: SS)
- Calendar Output Name
- unique appointment ID (alpha-numeric). If no ID is used, an ID is automatically generated.
Example of CSV text: Subject; Description_newline_Text in the second line; 12.11.2018 17: 00: 00; 12.11.2018 17: 10: 00; Output001; 0815 \ r
Example for CSV file: C: \ Users \ Eisbaer \ Documents \ Alexander Maier GmbH \ EisBaer 3.0 \ Projektdaten \ Kalenderimport.csv

Setting "Do not delete existing appointments":
Tick not set: In the CSV not or no longer created appointments that already exist in the calendar remain unchanged.
Tick set: In the CSV not or no longer created appointments that already exist in the calendar are deleted!

Settings for the Exchange Import:

URL	Enter the Exchange URL. Example: https: //server .../Exchange.asmx
User	Enter the user name that the user has on the Exchange.
Password	Enter the password for the Exchange user.
Domain	Enter the domain name of the Exchange server.
Exchange Version	Select the version of the Exchange server. The servers are downward compatible.
Test	The test establishes a connection to the Exchange and displays the calendars in the calendar list.
Available calendars	After the "Test" all available calendars are displayed here. By selecting the calendar will always be used for import.
Calendar name	Manual entry of the calendar name if no calendar was selected via the drop-down list.
Days	Specifies the time span of the appointments to be imported. The appointments from today to [set] days are imported.

Prerequisite for use is that the use of EWS is allowed for the entire organization.

This is enabled with the command: *Set-OrganizationConfig -EwsEnabled: $ true*. Here is more information.

When using Office 365 (Microsoft Office - Cloud) via an Exchange gateway, please store the following settings:
https://outlook.office365.com/EWS/Exchange.asmx / Version Exchange2013_SP1 (specification of the domain is omitted).

6.9.4   Calendar Editor

The Calendar Editor is a visible component. It is used to display and operate the calendar.

To use the calendar editor, it must be connected to a calendar. It is possible to connect several calendar editors with one calendar, but not vice versa multiple calendars with a calendar editor. For this purpose, the data point "Calendar Editor" of the calendar component is connected to the data point "Calendar component" of the calendar editor.

This display can be changed via the WPF theme[218] . The touch themes lead to display problems and should not be used.

Data points of the component

Name	Type	function
Delete all Appointments	Input	An ON signal at this input cancels all appointments. No further prompt appears. **Appointments from weekly calendars are not deleted!**
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Go to today	Input	If this input is triggered, today's day will be focused and displayed.
Show/hide extra ribbon group	Input	An OFF signal removes the "Extras" group from the display in the calendar. The display can be shown again with an ON signal.
Show/hide import/export ribbon group	Input	An OFF signal removes the "Import/Export" group from the display in the calendar. The display can be shown again with an ON signal.
Calender Component	Bidirectional	Connection between a calendar and one or more calendar editors.
Set allow conflicts mode (on/off)	Input	With an on signal, schedule conflicts are allowed; with an off signal, conflicts are not allowed.
Allow conflicts Mode	Output	Display for the conflict mode.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Outlook Import	Input	Via this the appointments can be imported from the Outlook path. **To assign the appointments to the EisBär channels, the channel name must be entered in the Outlook appointment for "Location".**
Visible	Input	If this input is not used, the component is Visible. When used, the unvisible component is switched with an off signal and a Visible on signal..
Opacity [0-255] [113]	Input	See component independent data points [113]

Properties of the component

Name	Default	Function
Lock operation only display		If checked, the component only displays and cannot be operated.
Activate Outlook Import		If this function is set, the Outlook import function is available.
Path to Outlook Calendar		Select Outlook Calendar if the appointments are to be imported. (This process may take a longer time). Example: \max.mustermann@beispiel.deCalendar If there is no Outlook installed, the dialog will say "Outlook is not installed".
Allow overlapping appointment		This property can be used to set whether appointment conflicts (appointments with the same channel at overlapping times) are allowed or not.
Show 'Import/Export' ribbon groups		When enabled, the 'Import/Export' ribbon group is displayed. When disabled, the group is hidden.
Show 'Extra' ribbon		When enabled, the 'Delete All' ribbon group is displayed. When disabled, the group is hidden.

Calendar menu bar

Appointment

By pressing "New appointment" or "New appointment series" in the menu bar, the popup for the appointment settings opens.

Also, to create a new appointment, double-click (long press in the app) on the day to be executed, in which the appointment is to be added. The "New Appointment" popup will appear. At the end of the dialog, leave the dialog with OK.

Edit appointment

To re-edit an appointment, it is opened by double-clicking (long in the app) on the entry in the calendar editor. If the appointment is a recurring appointment, the query will ask if the event (date that was clicked) or the entire series should be edited.

Delete appointment

To delete an appointment, it is opened by double-clicking (long in the app) on the entry in the calendar editor. If the appointment is a repetitive appointment (appointment series), the query is whether the event (date that was clicked) or the series is to be edited. Now you can delete the appointment or series via the "Delete" button.

Please note:

If "Send status" is active on the channel, an "Off" is always sent when deleting. If "Send status" is not active, the last status is retained.

Day I / Day II
In the Day II view, appointments lasting longer than 24 hours are shown separately above the shorter appointments. Thus, more space for the representation of the shorter is available.

Set working hours / working hours
For a better overview of the calendar, it is now possible to set the displayed range (from-to time). Set via Working time opens a dialog in which the beginning (time) and end (time) of the working time can be set. Working hours can then be used to scale the calendar to just the set working time.

Outlook import
Starts the Outlook import. In the import dialog that opens, the calendar to be imported must be selected. All appointments imported via Outlook are deleted and replaced by the newly imported appointments.
Manually created appointments and appointments imported via ICal are not deleted.
It should be noted that when importing a security query may appear (usually in the background). Only by confirming the message will the import be carried out.

iCal import
All iCal format events in an ics file are imported. All appointments imported via iCal will be deleted.
Manually created appointments and appointments imported via Outlook are not deleted.
If only one channel is created in the corresponding calendar, all imported appointments are automatically assigned to this channel. Thus, it is easy to create a holiday calendar.
In the download area on www.busbaer.de are holiday calendar templates as ics file or SCADAComp file with all public holidays in Germany, which are valid in more than 2 states.
Further holiday and holiday calendars are available for download at www.schulferien.org or http://www.feiertage-deutschland.de.

iCal export
All appointments created in the calendar are exported. A reimport preserves the channel mappings. When importing into another calendar, all channels must be present, otherwise the import will be aborted.

Meeting-Editor (example for normal-mode)

The "Back to series" button is active when an appointment has been moved from a recurring appointment to a single appointment. The button returns the "single date" back to the appointment series.

Subject
Enter an explanation of the appointment here. It should describe the task of the appointment. It is sent to the associated data point at the start time. At the end time, the text is deleted.

Start value
At this date we sent the start value from the calendar.

End value
At this date, the end value is sent from the calendar.

Normal / Series
By pressing the button, you can switch between normal and serial appointments. If "Normal" is selected, this appointment will only be executed once. If "Series" is selected, you can choose between different repeat series. Selection includes daily, weekly, monthly and yearly series.
In addition to the series type and its serial settings, an expiration date can be defined for each series. Here you can choose between a number of executions of the event or an end date for the last execution.

Send start / end value
These parameters are set by default and cause the calendar component to trigger a circuit at the start or end date. For example, if you want to turn on an illumination for an appointment and then switch it off again, both parameters must be set. If, however, only one channel activation is to be carried

out, the parameter Send end value must be deactivated. This way, channels can be switched on, but switched off manually.

channel
Here are the channels created in the calendar for selection.

description
If a description is to be displayed for the appointment, this can be added here. This can be used by the user for a better understanding of the executed switching function.

6.9.5   Calendar Editor weekly timer

The Calendar Editor Weekly is a visible component. It is used to display and operate a series appointment in the calendar.

To use the calendar editor, the weekly clock must be connected to a calendar. It is possible to connect several calendar weeklies with a calendar, but not vice versa. For this purpose, the data point "Calendar Editor" of the calendar component is connected to the data point "Calendar component" of the calendar editor Weekly Clock.

Set appointments are shown in the calendar display, but can not be edited! This is only possible in the weekly calendar editor.

This component is also available in the App List View.

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Calendar Component	Bidirectional	Connection between a calendar and one or more calendar weeklies.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255][113]	Input	See component independent data points[113]

Properties of the component

Name	Standard	Function
Lock operation only display		If the check mark is set, the component only displays the set data and cannot be operated.
Display channel color		If the check mark is set, the channel color is displayed around the component.
Horizontal view		If the check mark is set, the display is aligned horizontally.

Create new appointment
To create a new appointment, click on the calendar editor weekly timer. The "Create appointment ..." pop-up will appear. Here, the switching times can be set. If, for example, Monday and Thursday are marked, the calendar will not switch on these days.The same applies to "Send start value / End value send" .The appointment is saved by confirming with OK.

Edit appointment
To process an appointment again, proceed as with the new creation of an appointment.

Delete appointment
To delete an appointment, the weekly calendar is used in the calendar editor, the "Create appointment ..." pop-up, the "Delete" button. The subsequent demand should prevent the appointment from being deleted by mistake.

6.9.6   Sequence

The sequence is an invisible server component for issuing staggered command sequences of any values, for up to 99 outputs.
The component is divided into 3 stages. The switch-on sequence is executed when an on signal is present at the "Start/Stop input". Processing takes place according to the entries in the sequence editor.

The set step time is multiplied by the time factor. This defines how long the waiting time is before each command line. The commands within a line are executed simultaneously.
For example, the 1st line would be executed after step time * 1 second. According to the list, the value for channel 01 is set to "On". Channels 02-04 do not change (no output). Then the 2nd line is executed after the set waiting time and so on until the last line has been executed. The switch-on sequence is then completed at this point and the main sequence is called up. This sequence executes all lines one after the other, but always starts again from the beginning (continuous loop). This is executed until a new signal is applied to the "Start/Stop input".

Startup sequence   Main sequence   Shut down sequence

| Starting the sequence | one-time operation of the startup sequence | Loop operation of the main sequence | Stopping the sequence | one-time operation of the shutdown sequence |

Note: As the name sequence implies, the output values are sequentially send one by one and not in parallel. When used as an activation function of a set of n functions remember that you first disable all functions in a row and then in a next row activate a function. It is to ensure that at no time two of the available functions are active.

Data points of the component

Name	Type	Function
Dynamic	Folder	Dynamically generated outputs (see Properties "Channels").
Input Start/Stop	Input	If the start / stop signal 'input' switches to TRUE, the startup sequence is activated and runs once. Afterwards, the main sequence is repeated until the start / stop signal 'input' switches to FALSE, in which case the shutdown sequence runs once.
Step duration [s]	Input	base time, in seconds, for 1 step (line) of the sequence can be dynamically changed.

Properties of the component

Name	Standard	function
Channel	0	Number of outputs that can be configured in each sequence.
Startup sequence	0	Sequence to be played at startup.
Cancel startup sequence		If TRUE, the startup sequence will be canceled upon shutdown. If FALSE, the startup sequence will be finished upon shutdown.
Main sequence	0	Sequence to be played permanently.
Shutdown sequence	0	Sequence to be played at shutdown.
Abort shutdown sequence		If TRUE, the shutdown sequence will be aborted with a new start.
Start automatically		If TRUE, the sequence is started immediately after loading into Editor or Server.
Step duration [s]	1	Base unit for the time required to complete one sequence step using a factor of 1 and measured in seconds.

6.9.7   Autoreset

This function provides a timed switching operation e.g. to reset values. When the component is started, the set time is counted down. With "0" the output is switched according to the settings. The output can also be inverted. Thus, this component is very versatile.

Data points of the component

Name	Type	function
Delay (s)	Input	Input of the runtime in seconds via a value input
Remaining Timescale	Output	Returns the value of the remaining term in the format % H:% M:% S
Time remaining [s]	Output	Returns the value of the remaining time in seconds
Switch	Output	After the time has elapsed, a switching process is activated here
Start/Stop	Input	Starts the timeout / Ends the timeout

Properties

Name		function
Delay (s)	10	Enter the running time in seconds between the start and the switch process.
Invert switch Output		Inverts the switching output. Meaning, the output signal is set from low to high and vice versa
Retrigger allowed		If a signal is created at the input start / stop, it interrupts the time and restarts again from the set running time.
Stop allowed		Allows the termination of the time via the start / stop input

Changing the runtime resets the starting value of the countdown. If this has already been started, the elapsed time is taken into account and recalculated.

6.9.8   Gate

The gate has an input, an output and a control input. The gate, when enabled, sends the value from the input to the output for an event at the input. If it is locked, then there is no reaction. The control input can be inverted. The input and output can also act as bidirectional data point. Then the values are sent through the gate in both directions.

Data points of the component

Name	Type	function
Control Input	Input	The gate is "closed" (0) or "released" (1) via the control input.
Value I	Input / Bidirectional	Here the input signal is created. Any values are processed.
Value II	Output / Bidirectional	Here is the output of the component. Any values are processed.

Properties

Name		function
Bidirectional/Unidirectional		Switching affects value I and value II. If bidirectional is set, the values are sent in both directions through the gate, e.g. Partition Function.
Invert Control Input		The input signal at the control input is inverted. 1 = closed; 0 = enabled e.g., 1 = gate is enabled by default, 0 = disabled

6.9.9   Simple String Value Parser

This component compares the input value to a stored comparison value. If these values match, the signal set under [Send value]^{112} will be transmitted. Any values can be used for this purpose.

Data points of the component

Name	Type	function
Dynamic	Folder	Contains the outputs of the parser.
Input	Input	Here you can enter any format you want to compare.

Properties

Name		function
Output list	0	Defines the outputs (see picture below)

Outputliste:

Outputs can be added via the green plus and removed via the red X.
The input data is compared with the comparison value. If these match, the corresponding send value is transmitted.

Attention!: The entered name may only be used once!

6.9.10   Byte-Splitter

The byte splitter converts an 8-bit numerical value applied to the input into 8 individual output bits. The output is of the type "on / off". Thus, one could, for example, display an 8-bit numerical value in binary code.

Data points of the component

Name	Type	function
Bit 0	Output	Output of Bit 0
Bit 1	Output	Output of Bit 1
Bit 2	Output	Output of Bit 2
Bit 3	Output	Output of Bit 3
Bit 4	Output	Output of Bit 4
Bit 5	Output	Output of Bit 5
Bit 6	Output	Output of Bit 6
Bit 7	Output	Output of Bit 7
Byte	Input	The byte to be converted can be received here.

Properties of the component

Component name	Standard	Function
Sequence	Any	The outputs are set in the selected sequence.
Pause [ms]	0	Delay time in milliseconds for switching between ON and OFF signal outputs. This refers to the sequence ON/OFF or OFF/ON
Changes only		If this option is set, the outputs are only switched if the status changes. Otherwise, the states are retriggered.

Example:

Input = 170 (Bin 0101 0101
With the sequence**"First OFF then ON**", BIT 0, 2, 4, 6 is set to OFF. Then the pause [ms] is waited for. BIT 1, 3, 5, 7 are then set to ON.
In the**"First ON then OFF**" sequence, BIT 1, 3, 5, 7 are set to ON. The pause [ms] is then waited for. BIT 0, 2, 4, 6 are then set to OFF.
With the

6.9.11 Multiconverter

Using the "Multi Converter" component a variable amount of inputs and outputs of various data types can be defined and used in an own written parse function which converts the specific input values to specific output values. The parse function can be freely written in C# or VB. In the output list any number of data points can be defined each by a name. In the input list any number of data points can be defined each by a name. ***Please always make a try {} catch(){} around the function!***
The internal behavior of the component is defined inside the parser code editor.

Data points of the component

Name	Type	Function
Dynamic	Folder	Foder for the created data points

Properties of the component

Name		function
Inputs	0	Please configure here the desired inputs.
Outputs	0	Please configure here the desired outputs.
Parser code	106 Bytes	Contains the parse method for parsing the received string.
Password		Here the access to the code editor can be protected with a password.
Store output state		This option saves the states at the outputs.

Input list
In the Input list of the Multi Converter you can define up to 999 output channels. Add channels to the list with or delete by clicking.

Name
Name of the input which is displayed in the communication window.

Output list
In the Output list of the Multi Converter you can define up to 999 output channels. Add channels to the list with or delete by clicking .

Name
Name of the output which is displayed in the communication window.

Parser Code Editor
Within this window the parser functionality will be defined.

You can choose between C# and VB as programming language.

Note: The Code Editor should not be used for the development of your parse function instead you should use a separate IDE (Integrated Development Environment), for example Visual Studio .Net or SharpDevelop.

Example:

The following example converts a float data type to a string data type. The output format can be defined thereby the decimal places can be set, additionally.

Inputs:
Format --> Input of the text output format. For example, a text input defines the format as 0.0 or 0.00.
Input --> Input for the float value.

Outputs:
Output --> Output of the string.

C# Code:

```csharp
public override void Parse( string sInputName, Hashtable htInputValues,
Hashtable htOutputValues )
{
try
{
    if( (sInputName != null) && (sInputName == "Input") )
    {
        if( htInputValues["Format"] != null )
        {
        string sFormat = (string)htInputValues["Format"];
        sFormat = sFormat.Replace(",",".");
        if( htInputValues["Input"] is DataPoint2OctetFloatValue )
    {
        float ValueAsFloat = ((DataPoint2OctetFloatValue)
htInputValues["Input"]).GetOctet2FloatValue();
        htOutputValues["Output"] = ValueAsFloat.ToString(sFormat);
                                                            }
        else if( htInputValues["Input"] is DataPoint4OctetFloatValue )
        {
        double ValueAsDouble =
    ((DataPoint4OctetFloatValue)
htInputValues["Input"]).GetOctet4FloatValue();
        htOutputValues["Output"] = ValueAsDouble.ToString(sFormat);
                                                            }
        else if( htInputValues["Input"] is double )
        {
        double ValueAsDouble = (double)htInputValues["Input"];
        htOutputValues["Output"] = ValueAsDouble.ToString(sFormat);
```

```
                                                                              }
            else if( htInputValues["Input"] is float )
            {
            float ValueAsFloat = (float)htInputValues["Input"];
            htOutputValues["Output"] = ValueAsFloat.ToString(sFormat);
}
}
}
}
catch( Exception ){}
}
```

VB Code:

```vb
Public Overrides Sub Parse(ByVal sInputName As String, ByVal
htInputValues As Hashtable, ByVal htOutputValues As Hashtable)
      Try
            If (Not (sInputName Is Nothing)) AndAlso (sInputName = "Input")
Then
            If (Not (htInputValues("Format") Is Nothing)) Then
            Dim sFormat As String = DirectCast(htInputValues("Format"), String
                )
            sFormat = sFormat.Replace(",", ".")
            If TypeOf htInputValues("Input") Is DataPoint2OctetFloatValue
      Then
            Dim ValueAsFloat As Single = DirectCast
      (htInputValues("Input"),
DataPoint2OctetFloatValue).GetOctet2FloatValue()
      htOutputValues("Output") = ValueAsFloat.ToString(sFormat)
            ElseIf TypeOf htInputValues("Input") Is
      DataPoint4OctetFloatValue Then
      Dim ValueAsDouble As Double = DirectCast
            (htInputValues("Input"),
DataPoint4OctetFloatValue).GetOctet4FloatValue()
htOutputValues("Output") = ValueAsDouble.ToString(sFormat)

            ElseIf TypeOf htInputValues("Input") Is Double Then
            Dim ValueAsDouble As Double = CDbl(htInputValues("Input"))
htOutputValues("Output") = ValueAsDouble.ToString(sFormat)
            ElseIf TypeOf htInputValues("Input") Is Single Then
            Dim ValueAsFloat As Single = CSng(htInputValues("INput"))
htOutputValues("Output") = ValueAsFloat.ToString(sFormat)
End If
End If
End If
Catch generatedExceptionName As Exception
End Try
End Sub
```

6.9.12 Counter

This function counts the input signals. There are several output values available for this purpose.

Data points of the component

Name	Type	function
Disable	Input	Here the component can be deactivated with an "on" signal. A "Off" signal reactivates the counter.
Input	Input	Here only on / off values are counted. These are **not** added to "Meter reading values". All input formats are counted as 1 here when creating. The output varies depending on the formatting. For example, when entering a text, the output "count of any command" is incremented by 1; When a switching pulse is input, we additionally count "counter status of switching edge" and "counter status of switching cycles".
Threshold - On time reached	Output	Switches from off to on when the set time has been reached.
Value Input	Input	Here, the entered numerical values are added to the output meter reading values.
Counter cycles	Output	Returns the counterValue On for which an arbitrarily formatted signal has been created at the input.
Counter stateless	Output	Returns the number of switching edges. Which edge is counted can be selected in the settings.
Counter switching edges	Output	The number of times the value input has been delivered
Counter Values	Output	Returns the current CountValue Off. This corresponds to an addition of all input values.
Reset	Input	Sets all outputs of the counter to 0
Time On	Output	Returns the time in which the "on" signal is present at the input. The output in e.g. The value-dependent text component must be formatted[109] accordingly. e.g. % H: % M or% H:% M:% S
Time On [s]	Output	Returns the time in second, in which the "on" signal is present at the input.
Time Off	Output	Returns the time in which the signal "Off" is present at the input. The output in e.g. The value-dependent text component must be formatted[109] accordingly. e.g. % H: % M or% H:% M:% S
Time Off [s]	Output	Returns the time in second, in which the signal "Off" is present at the input.

Properties

Name		function
Counter direction - On to Off		If the parameter is not set, circuits are counted from on to off. If this was set, the flank is counted from off to on.
Threshold - On time(h)	0	Defining the threshold value for the switching state An in hours
Trigger interval (ms)	60000	Sampling rate in milliseconds (min. 1000) Tip: If changes are made, the project must be reloaded in the editor for the simulation to work.

Tip: When using the "Value-dependent text" component, the output of the counter readings is undefined.

6.9.13   Min Max Average

The MinMax average is an unVisiblee server component with the task of calculating the minimum, maximum, and average in different time ranges for an input value.

The calculation and output of the calculated values are carried out on a daily, weekly, monthly and annual basis.

Note: The "Reset all" input resets all outputs. This loses historical data for the past two years. Please use with care. A separate sub-folder is available for the determination of values over an independent period. This can then be reset at will and does not affect the "long-term values".

Data points of the component

Name	Type	function
Week [Min, Max and Average]	Folder / Output	Here the minimum, maximum and average values of the value input for the current week are displayed. The values are reset on Monday 00:00.
Month [Min, Max and Average]	Folder / Output	Here the minimum, maximum and average values of the value input for the current month are displayed. The values are reset on the 1st of the month 00:00 o'clock.
Year [Min, Max and Average]	Folder / Output	Here, the minimum, maximum and average values of the value input for the current year are output. The values will be on 1.1. Reset 00:00.
LastDay [Min, Max and Average]	Folder / Output	Here the minimum, maximum and average values of the value input for yesterday's day are displayed. The values are reset at 00:00 o'clock each day, or replaced by the values of the then "Today" day.
Day [Min, Max and Average]	Folder / Output	Here the minimum, maximum and average values of the value input for today are displayed. The values are reset at daytime 00:00 and then output to the data points "Yesterday".
last Week [Min, Max and Average]	Folder / Output	Here, the min, max, and averages of the value input for the past week are output. The values are reset Monday 00:00 clock, or replaced by the values from the then past week "this week".
Last Month [Min, Max and Average]	Folder / Output	Here the minimum, maximum and average values of the value input for the past month are displayed. The values are reset on the 1st of the month 00:00 clock, or replaced by the values from the then last month "this week".
Last Year [Min, Max and Average]	Folder / Output	Here, the minimum, maximum and average values of the value input for the current year are output. The values will be on 1.1. 00:00 clock reset, or replaced by the values from the then past year "this year".
Independent [Min, Max and Average]	Folder / Output / Input	Here, the minimum, maximum and average values of the value input are output for an independent time range. The values are only reset manually via the "Reset" input.
Value	Input	Here, the value is created as input signal for the calculation.
Reset All	Input	An arbitrary signal at this input resets all values of the calculation.
Debug	Output	Status and error reports are output as text. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Debug (Errors)	Output	Error reports are output as text. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Debug (Verbose)	Input	Extended status and error reports are output as text. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.

6.9.14   Time stamp

The time stamp is an unVisiblee server component with the task of capturing the last time an incoming signal arrives on a network. So it can be seen when e.g. a command has last arrived or a user has last triggered a command.

Note: The display format can be set on the component. If the property field for the display format is empty, the default is: MM.dd.yyyy HH: mm: ss.

Data points of the component

Name	Type	function
Input	Input	If an arbitrary signal is applied to this input, the time stamp is triggered.
time stamp of last Input	Output	Here, the time is output in the entered display format. In addition, there is the option of outputting milliseconds via the format extension ".ms".

Properties

Name		function
Display format		Here, the display format for the last trigger time is selected. If the field is empty, the default is dd.MM.yyyy HH: mm: ss active. dd.MM.yyyy for day / month / year, HH: mm: ss for hour / minute / second. The following applies: dd = day, mm = month, yyyy = year. Further: HH = hours, mm = minutes, ss = seconds, .ms = millisecond.
Only if value changed		If this parameter is set, the time stamp will only be triggered if the newly created value at the input is not identical to the last one.

6.9.15   Operating hours mediator

The operating hours average is an invisible server component with the task of averaging the running times of loads that are controlled in groups as a 50% or one-third circuit. In this way, the controlled consumer groups are to achieve the same operating hours in total and thus the wear is to be evenly distributed across the group.

Note: The component does not function in the simulation, but only in server-client operation!

On the component, you can choose between group control with 2 or 3 switching groups. In this way, consumer groups e.g. in corridors can be controlled as a 50/50 circuit or e.g. strip lighting can be controlled in a three-phase circuit (L1-L2-L3).

Internally, the component has counters for the on/off time of each individual group. If a group is to be switched on, the group that has the lowest on-time is always switched on. If several groups are switched on and one is to be switched off, the group with the highest on-time is switched off. This principle ensures that the operating hours of the consumer groups are as equal as possible.
After an adjustable on-time in hours has been reached, a maintenance signal is emitted for the individual group. After maintenance has been carried out, the respective maintenance counter can be reset.

Data points of the component

Name	Type	function
Switch on all groups	Input	If an ON signal is applied to this input, all groups switch on, regardless of whether another input (All or Groups) requests a different switching state. This input has the highest priority.
Switch off all groups	Input	If an ON signal is applied to this input, all groups switch off, regardless of whether a group input requests a different switching state. This input has a lower priority than "Turn on all groups", but takes precedence over the group inputs.
Switch on group (A-C)	Input	If an ON signal is applied to one of these inputs, a correspondingly selected switching output group (A-C) switches on. The number of ON signals at the group inputs corresponds to the number of switched-on switching outputs.
Switch output group A-C	Output	Here, the switching signal for the individual groups is output.
Reset maintenance interval group A-C	Input	If an ON signal is applied to this input, the internal time-on counter of the respective group is reset to 0 operating hours.
Maintenance signal group A-C	Output	The outputs are switched on when the on-time of the respective group has reached the selected threshold value for the maintenance interval.
On time group A-C	Output	At these outputs, the on-time of the respective group is output as operating hours in hours:minutes:seconds.
Off time group A-C	Output	At these outputs, the off-time of the respective group is output as operating hours in hours:minutes:seconds. This is reset after a server restart because the component cannot know how long the service was off or what the real off-time is.

Properties

Name		function
Number of Group	2	Here the number of groups, 2 or 3, is selected.
maintenance interval [h]	5000	Here, the threshold for the on-time of the maintenance interval is set. The threshold value is the same for all groups.
Time On/Off update interval [s]	60	The on or off times of the groups are output at this distance on the corresponding outputs.
Interval "All on"		If this parameter is set, the signal at the input "Turn on all groups" is used inverted. The function is then active with an off signal at the input.
Interval "All Off"		If this parameter is set, the signal at the input "switch off all groups" is used inverted. The function is then active with an off signal at the input.

6.9.16 Alarm clock

The alarm clock is an invisible server component with the ability to schedule created channels. Use as a pure alarm clock, without switching function, is also possible.

The alarm clock can control up to 99 arbitrary channels. In this case, each channel name, switching offset, active time, any active and inactive value can be defined. The summer / winter selection can be used to group season-related circuits.

To use the alarm clock this can be connected with buttons and text inputs, as a Visible Client component. So it is possible to operate the functions of the alarm clock in the client and, for example. to change the alarm time.

Data points of the component

Name	Type	function
Dynamic	Folder	Folder Dynamic displays the outputs for the defined channels. These must be linked here. - There is an output for each channel to output the desired signal. - A positive (later) time offset (in minutes) or a negative (earlier) time offset will be set or sent via the Bidirectional data point "Output Offset Time". - Via the bidirectional data point "Output Active Time" of the same name, the active time (in minutes) of the output is set or the active time preset in the Channel Editor is sent.
Active	Bidirectional	Here, the alarm is activated or the status is displayed as active / inactive.
Alarm	Output	Here, an on signal is output at the time of the alarm for the duration of the alarm or until it is deactivated.
Alarm Off	Input	An on signal at this input disables the alarm.
Alarm duration [min]	Bidirectional	Time duration for which the alarm signal is active after triggering
Alarm time [hh:mm]	Bidirectional	Alarm time in the format hh: mm defined via the parameters or specified via a text input in this format.
Snooze duration [min]	Bidirectional	Time period in minutes for which the alarm output is deactivated after the snooze function is activated. This functionality is only active **during the alarm time period**.
Snooze	Input	Enables slumbering mode on a wake-up signal
Alarm Clock-Editor	Bidirectional	Connection between an alarm clock and one or more alarm clock editors.
Winter	Input	If an on signal is present at this input, the alarm clock is in winter mode and only channels with winter marking are used.

Properties

Name		function
Channels	0	Here the individual channels are defined in a list. These then appear as output in the data point Folder Dynamic.
Alarm time [hh:mm]	06:00	If this parameter is set, the current nominal state of the channels is sent when the solution is started in the server or when the simulation is started in the editor.
Alarm duration [min]	2	Time duration for which the alarm signal is active after triggering
Snooze duration [min]	1	Duration in minutes, for which the wake-up signal is deactivated after actuation of the slumber function. This functionality is only active during the alarm period.
Send state at startup		If this parameter is set, the current nominal state of the channels is sent when the solution is started in the server or when the simulation is started in the editor.
Send state in activation		If this parameter is set, the current nominal state of the channels is sent when activating the alarm clock.
Active		Here the alarm is activated / deactivated.

Channels

Name	Switch-offset(min)	Active time(min)	Value active	Value inactive	Summer	Winter
Output01	-1	1	127	0	x	x
Output02	10	1	On	Off	x	x
Output03	0	0	3	30	x	x
...						

Here the outputs of the alarm clock are set with switching times.

Name: A freely definable name for the output
Shift Offset (min): Time in minutes when this output should switch in relation to the alarm time
Active time (min): Time in minutes, for the duration of the output signal
Value active: Specify what is sent.
Value inactive: Define what should be sent after the active time.
Summer / Winter: Times for summer and winter operation can be set separately. If the input "Winter" in the alarm clock is set to "high", only the switching times are active for which the tick was set in winter.

In the example above, Output01 is set to one minute before the alarm time, to 127 for one minute, and then back to 0.
At the set alarm time, Output03 is set to the value 3. This output does not automatically switch to inactive because the active time has been set to 0.
Ten minutes after the set alarm time, Ausgan02 becomes active (ON) for one minute and then sends the OFF signal.

6.9.17 Alarm Clock Editor

This is the indicator of the alarm clock. Via "WPF-Theme[218]" the appearance of this component can be varied.

The buttons "Napping" and "Alarm off" are only displayed when creating and when the alarm is active.

Data points of the component

Name	Typ	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255][113]	Input	See component independent data points[113]
Alarm Clock	Bidirectional	Communication Channel to alarm clock. Must be connected to an alarm clock component

- The alarm clock is activated via the switch in the upper left corner.
- Double-click on the displayed alarm time to set the alarm time via the setting wheels. To do this, move the thumbwheel up or down and double-click on the time.
- The top right wheel opens the channel editor. Here all channel settings are changeable.
- If an alarm is active, 2 buttons appear in the title bar. Snooze activates Snooze mode. The alarm output of the alarm is turned off for the configured snooze time. This functionality is only active during the alarm period. "Alarm off" switches off the alarm output.

6.9.18   Random Generator

Returns a random number in the set value range.

Data points of the component

Name	Type	function
Output	Output	Returns the value as a 32bit number.
Generator Start/Stop	Bidirectional	Starts and stops the random number generator

Properties

Name		function
Value range (0 to ...)	100	Sets the numeric random range
Auto start		Automatically starts the random number generator after the project is started.
Value Interval (ms)	1000	Time in which the random value changes in milliseconds

6.9.19   Date/Time Sender

With the date / time transmitter, it is possible to send the current date or time by means of a trigger (digital value) (sends on each edge). The component is unvisible, d. H. the operator does not see them in runtime.

If a single edge is received at the trigger input, both outputs will be sent. The trigger is the calendar, the sequence or the graphic logic with the oscillator. The current PC time is always used as the time base.

Note: Two telegrams with different group addresses are required for the date and time in the EIB / KNX. The data types must be set in the ETS according to the content as date or time.

Should be e.g. If the value-dependent text is to be used for display, the rules of formatting[109] must be observed.

Data points of the component

Name	Type	function
Trigger	Input	Trigger the transmission
Date	Output	Transmission of the date (format: dd.MM.yyyy)
Time	Output	Transmission of time (format: HH: mm: ss)

6.9.20   Date/Time Receiver

With the help of the date/time receiver, it is possible to receive the current date or time via the EIB/KNX, e.g. from a DCF clock. The component is invisible, i.e. the operator does not see it in the client. It is only executed on the server.

Normally, the DCF77 time is sent as local time, e.g. adjusted to summer or winter time. In most cases, this setting is correct.
If the DCF receiver receives UTC/GMT time, it must be changed to system time.

Note: For date and time, two telegrams with different group addresses are required in the EIB/KNX. The data types must be set in the ETS as date or time according to the content.

Data points of the component

Name	Type	function
Date	Input	Input of the date to be synchronized
Time	Input	Input of the time to be synchronized

Properties

Name		function
Interval [Minutes]	1	Refresh interval in minutes, how often the time is set in the PC.
Type	Local time	Type of time received. Local time is UTC / GMT + X or -X. System time means UTC / GMT + 0

6.9.21   Astro Timer

The Astro timer is an invisible server component with the task of calculating the position of the sun at the set location. In addition, the moon phase is calculated and output. The Astro timer works with an internal calculation logic and does not require internet access.

For the sunrise and sunset can be defined circuits, which are output via corresponding outputs. The data types are freely adjustable. In case of output, the [formatting]▯109 should be taken into account.

The sunrise and sunset output in the format [hh: mm: ss] is of type DateTime and can be displayed in 12 or 24h format. For a 12h ad, use hh: mm: ss formatting and for a 24h display, use HH: mm: ss.

Data points of the component

Name	Type	function
Moon phase	Output	Here, the moon phase is output as a numerical value between 0 and 30 as an integer. The value 0 corresponds to new moon and the value 15 full moon. Accordingly, phases 0-14 are increasing and those of 16-30 decreasing.
Visible Moon Area [%]	Output	Here, the Visible Lunar Surface is output as a percentage value.
Sunrise [hh:mm]	Output	Here the time of the sunrise is displayed in the display format [hh: mm].
Sunrise Output	Output	Here, at the time of the Sunrise, the selected value is output, according to the selected data point type.
Sunrise Offset [hh:mm]	Output	Output of the offset time in the display format [hh:mm].
Sunrise Offset [min]	Bidirectional	Here, the selected offset for the offset output, in minutes, is output and can be changed externally.
Sunrise Offset Output	Output	Here, at the offset time of the Sunrise, the selected value is output, according to the selected data point type.
Sun azimuth northern hemisphere [°]	Output	This output gives the position of the sun, in degrees, for the chosen location in the northern hemisphere.
Sun azimuth southern hemisphere [°]	Output	This output gives the position of the sun, in degrees, for the chosen location in the southern hemisphere.
Sun Elevation [°]	Output	This output outputs the elevation angle of the sun, over the horizon, in degrees.
Sun Hours [h]	Output	This output outputs the hours of sunshine (time between sunrise and sunset) in hours.
Sunset [hh:mm]	Output	Here, the time of the sunset is displayed in the display format [hh: mm].
Sunset Output	Output	Here, at the time of sunset, the selected value is output, according to the selected data point type.
Sunset Offset [hh:mm]	Output	Output of the offset time in the display format [hh:mm].
Sunset Offset [min]	Bidirectional	Here, the selected offset for the offset output, in minutes, is output and can be changed externally.
Sunset Offset Output	Output	Here, at the offset time of the sunset, the selected value is output, according to the selected data point type.

Properties

Name		function
Time Zone	UTC +1 Berlin	Here, the time zone is chosen for the location of the calculation. Thus, summer / winter time changes are taken into account in the calculation.
Location [latitude;longitude]	Eberbach	The latitude and longitude are used to define the location for the calculation. This information is available via internet map services.
Cyclic Sun Position Output [min]	10	Here the time for the cyclic output of the sun position values, azimuth and elevation, in minutes is selected. The values are output on the respective outputs at this distance.
Sunrise Output Value	On	This value is output at the time of the Sunrise on the data point of the same name. Any data types are possible.
Sunrise Offset Output Value	On	This value is output at the time, +/- the offset time, of the Sunrise on the data point of the same name. Any data types are possible.
Sunrise Offset [min]	0	This time, (+ or -) in minutes, is added at the Sunrise time and then triggers the offset output.
Sunset Output Value	Off	This value is output at the time of the sunset on the data point of the same name. Any data types are possible.
Sunset Offset Output Value	Off	This value is output at the time, +/- the offset time, of the sunset on the data point of the same name. Any data types are possible.
Sunset Offset [min]	0	This time, (+ or -) in minutes, is added at the time of sunset and then triggers the offset output.
Send state at startup		With this property, the component sends the current status when the project is loaded.

Azimuth and elevation of the sun
The position of the sun azimuth refers to the chosen location as the location of the EisBär server.

The elevation angle indicates the height of the sun above the horizon (negative value: sun has set).

The azimuth angle indicates the direction of the compass with respect to the north of the sun.

sun

The position of the sun is the position of the sun in the sky. It depends on the place of observation, the time of day and the season. The position of the sun determines, among other things, the angle of incidence and the intensity of the sunlight.

In particular, one speaks of high or low sun position and its change over the seasons. The sun reaches its highest level at noon (to be precise: at 12 o'clock true local time) in the south (for an observer north of the northern tropic) or in the north (for an observer south of the southern tropic). This so-called "noon height" depends on the latitude and the date; It varies from 16.5 ° to the winter solstice and 63.5 ° to the summer solstice at a width of 50 °.

6.9.22   Pray Timer

This component is used to output the Muslim prayer times.

Data points of the component

Name	Type	Function
Asr	Output	Switching output for the prayer.
Asr Start Offset	Output	Offset switching output for the prayer. This is set in time dependence with the offset settings.
Asr Start Time	Output	Output of the prayer time in DateTime[format] [109].
Dhuhr	Output	Switching output for the prayer.
Dhuhr Offset	Output	Offset switching output for the prayer. This is set in time dependence with the offset settings.
Dhuhr Start Time	Output	Output of the prayer time in DateTime[format] [109].
Fajr	Output	Switching output for the prayer.
Fajr Offset	Output	Offset switching output for the prayer. This is set in time dependency with the offset settings.
Fajr Start Time	Output	Output of the prayer time in DateTime[format] [109].
Isha	Output	Switching output for the prayer.
Isha Offset	Output	Offset switching output for the prayer. This is set in time dependency with the offset settings.
Isha Start Time	Output	Output of the prayer time in DateTime[format] [109].
Maghrib	Output	Switching output for the prayer.
Maghrib Offset	Output	Offset switching output for the prayer. This is set in time dependency with the offset settings.
Maghrib Start Time	Output	Output of the prayer time in DateTime[format] [109].
Next prayer Coutdown [hh:mm]	Output	Time when the next prayer will start.
Next prayer name [text]	Output	Text output which is the next prayer.
Offset Outputs - End Offset [min]	Bidirectional	Data point to be able to set the offset time at runtime (for example with a touch value input).
Offset Outputs - Start Offset [min]	Bidirectional	Data point to be able to set the offset time at runtime (for example with a touch value input).
Sunrise	Output	Switching output for sunrise.
Sunrise Offset	Output	Offset switching output for sunrise. This is set in time dependence with the offset settings.
Sunrise start time	Output	Output of the sunrise time in DateTime[format] [109].
Sunset	Output	Switching output for the sunset.
Sunset Offset	Output	Offset switching output for sunset. This is set in time dependence with the offset settings.
Sunset start time	Output	Output of the sunset time in DateTime[format] [109].

Properties of the component

Name	Default	Function
Time zone	UTC +1 Berlin	Here the time zone for the place of calculation is selected. So also summer-/wintertime-switchings are considered in the calculation.
Location [Latitude;Longitude]	49,469481 ; 8,989844	The place for the calculation is defined by the latitude and longitude. This information is available via map services on the Internet , e.g.http://www.laengengrad-breitengrad.de.
Calculation method	Jafari	Setting of the calculation, depending on the prayer scheme
Juristic method	Shafi	Switching between Shafi and Hanafi method
High Latitude Correction	None	Correction for start of calculation
Pray duration	10	Time specification for the prayer duration in minutes.
Offset Outputs - Start Offset [min]	0	Time setting for the start offset in minutes. A negative number Switches the offset before the actual switching time.
Offset Outputs - End Offset [min]	0	Time setting for the end offset in minutes. A negative number Switches the offset before the actual switching time.
Start value and End value per prayer time	On / Off	Setting for the outputs, what should be sent.

6.9.23 Plaza Shading

The component is used to control any number of group addresses of a KNX system depending on an assignment table.
At each entered hour of a year, the entered motors are controlled with a 1-byte position command. The height is calculated from the control file with the height in cm and the maximum hanging height. It is possible to read in new control files at runtime. This is possible via the file selection component or via e-mail reception. After the import, the import log file is automatically generated. This is stored in the folder "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\Export\". And can be sent e.g. by e-mail.

Data points of the component

Name	Type	Function
Active	Bidirectional	Enable / disable the component.
Import data [File name]	Input	The control file can be re-imported at runtime. For this, the absolute storage path of the file (CSV) must be sent to this data point.
Diagnostics [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can significantly affect the performance of the service.**
Extended Diagnosis	Input	The diagnostic output can be extended here with an An value.
Import running	Output	If a new table is imported, this output is set to true until the import is finished (false).
Import log generated successfully	Output	If an import log was successfully generated, this output is set to true, otherwise false.
Import result [filename]	Output	A log file is created during the import. The absolute storage path of the log file is output at this data point.
Generate import log	Input	By any trigger, an import log (CSV) is created in the directory C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\Export\.
Sending running	Output	While all motors receive a position change, an on signal is output here.
Status table	Output	Connection to the data point of the same name of the KNX driver.

All CSV files are comma separated.

Example control file:
With the columns
date time: in format day/month/year
hoy: Hour of Year - hour of the year
shade area (m²): this value is not evaluated by the polar bear.
This is followed by the motor numbers with the shading heights to be controlled in millimetres, with a dot as a thousand separator.

date,hoy,active shade area (m²),0,1,2,3,4,5,6,7,8,9,10
01/01/2020 09:00,9,90.26,0.012,0.012,0.013,1.082,0.452,0.452,0.01,0.926
01/01/2020 10:00,10,128.36,1.89,0.015,0.017,1.9,0.099,0.099,0.019,1.9,0.858
01/01/2020 11:00,11,131,1.893,1,1,1.9,0.037,0.037,0.037,1.9,1.002,1.002,1.9
01/01/2020 12:00,12,143.4,1.897,1.07,1.07,1.9,0.182,0.132,0.132,1.9,1.067
01/01/2020 13:00,13,68.55,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
01/01/2020 16:00,16,46.06,1.888,1.888,1.888,1.891,1.891,1.891,1.894

Example Import Log Result:
hoy: Hour of Year.
Subsequently, the group address assigned to the motor and the hanging height position command to be controlled are entered.
The group address per motor is assigned from the imported motor mapping.
The hanging height is calculated from the control file and the "maximum travel" property.

hoy,2/1/1,2/1/2,2/1/3,2/1/4,2/1/5,2/1/6,2/1/7,2/1/8
9,5,3,3,193,196,50,9,,197,4,,,,,,,,,197,,9,,,,
10,196,,,197,28,28,28,197,91,91,,,,197,,4,,4
11,,105,105,,80,80,26,,106,106,,,,,,5,,5,,23
12,197,112,112,,53,53,3,,113,113,,,,,,8,,8,,
13,195,197,197,187,3,3,31,,112,112,,,,,187,0
14,,,,194,197,197,3,,104,104,,,,194,,4,,4,,
15,196,,,195,,,28,,88,88,,,,,195,,,,,,,88,88
16,,,,196,,,197,,4,4,,,,,196,,42,,42,,,,4,4,,

Properties of the component

Name	Default	Function
Motor mapping	0	Display of the table of all motors and their group address. The group address export of the ETS, comma separated, is used for this. The motor number is imported from the "Description" column.
Sending delay [ms]	50	Setting of the transmission delay between the move commands.
Maximum travel [cm]	250	Specification of the maximum hanging height in centimeters.
Send positions at start		If this component is activated, all hanging heights are sent.
Autostart		Activate to start the component on server startup.

Example Motor mapping CSV file imported in the properties window.
The group address export of the ETS, comma separated, is used for this. The motor number is imported from the "Description" column.

"Group name", "Address", "Central", "Unfiltered", "Description", "DatapointType", "Security"
"N M001 S1-N-01-N1-001 12 move to", "1/1/1","", "12","", "Auto"
"N M002 S1-N-01-N1-002 9 move to", "1/1/2","", "9","", "Auto"
"N M003 S1-N-01-N1-003 16 move to", "1/1/3","", "16","", "Auto"
"N M004 S1-N-01-N1-004 32 move to", "1/1/4","", "32","", "Auto"
"N M005 S1-N-01-N2-005 13 move to", "1/1/5","", "13","", "Auto"
"N M006 S1-N-01-N2-006 26 move to", "1/1/6","", "26","", "Auto"
"N M007 S1-N-01-N3-007 33 move to", "1/1/7","", "33","", "Auto"
"N M008 S1-N-01-N3-008 42 move to", "1/1/8","", "42","", "Auto"
"N M009 S1-N-01-N3-009 41 move to", "1/1/9","", "41","", "Auto"

"N M010 S1-N-01-N3-010 50 move to", "1/1/10","", "50","", "Auto"
"N M011 S1-N-01-E1-011 15 move to", "1/1/11","", "15","", "Auto"

6.10 Communication

This chapter describes the functions and properties from the Communication category.

The following components are currently available:

- JSON/XML Parser [308]
- Webbrowser [311]
- eMailer [313]
- Video Door Entry System [316]
- Video [378] Door Entry System KIT [316]
- SIP-Server internal [x200] [380]
- IP Camera Viewer (MJPG) [381]
- IP-Camera and Media Viewer [384]
- IP Camera Archive [388]
- Server-Connection Observer [391]
- Push Notification Sender [393]
- SMS [400]
- KNX DataPointPlayer [409]
- HTTP Server [412]
- HTTP Client [418]
- Remote Terminal [419]
- Serial [438]
- Multi-IO-IP [421]

6.10.1 JSON/XML parser

The JSON / XML driver is an unVisiblee server component with the ability to query data from a web server.

The JSON or XML data supplied by the web server is displayed in the tree editor in a tree structure. There, individual elements can be selected. The selected elements are then made available as data points in the communication window for further linking.

Data points of the component

Name	Type	Function
Query once	Input	A query is executed via an on signal at this input.
Query running	Output	Outputs a true if the query is active.
Query cyclically	Bidirectional	Via an on-signal at this input cyclic polling is executed. The waiting time between two queries can be set separately.
Query cyclic - Pause [s]	Bidirectional	Here the input/output of the pause between two cyclic requests takes place.
Reply as text	Output	Here the result of the query is output as text.
Dynamic	Folder	The Dynamic folder shows the outputs for the data elements. Depending on the type, different data points are made available.
Diagnosis [Text]	Output	The status outputs are formatted here. **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service.**
Text input [JSON/XML].	Input	Text input for the formats JSON and XML.
Time stamp	Output	The date and time of the last query is displayed here.

Properties

Name		function
Channels		Here the imported data elements are listed. These then appear as sub-folders in the data point Folder Dynamic.
Delay between update [s]	60	In the set interval, the data is read from the server.
Cyclic Update - Autostart		If this parameter is set, the data is cyclically read from the server.

Channels

Setting: Web request:
Enter the link to the file to be queried in the "URL" field and set the corresponding data format (JSON or XML). In addition, you have the option to define the query type and, if authentication is required, to store it. After all necessary settings have been made, execute the first actual query to parse the incoming data package. The JSON/XML parser will display the structure of the data according to a tree structure in continuous rows.

Put a tick in the column "Select value" accordingly if you want to take over a data element and output it via a data point at the components. In the column Data type you also select the desired data type. The data type can only be changed if the corresponding data point is not linked. If necessary, the link must be broken before changing the data type.
If the selected data points are text, select "String". If it is a numerical value, select "Double" and for date-time values select the "DateTime" format. For all other cases, select the data type "Object".
Finally, the selected entries are displayed in a dynamic folder structure. Created query structures can be saved and restored via the menu items "Import" and "Export".

Default Header = User-Agent=Eisbaer

JSON test URL:
http://echo.jsontest.com/key/value/otherkey/othervalue
http://www.busbaer.de/test/testjson.xml

XML Test-URL:
http://www.busbaer.de/test/test.xml

Setting: File:

To query local files, the storage path of the JSON / XML file to be parsed must be entered as the URL. Query type / authentication are of course unnecessary and grayed out accordingly. The parsing and the further steps are carried out as already described under "Settings: Web Request", only that you can also directly transfer the file to be parsed at the communication input "Text input JSON / XML" of the parser.

Setting: Text box:

This setting variant works similar to a clipboard and serves as an intermediate link, e.g. between an MQTT broker and the EisBären, in which case the topic does not contain a value from the broker, but several pieces of information in a JSON string.

Set the selection to "Textbox" and click on Query - a text window will open in which you can insert the JSON string to be parsed. With OK, the tree structure of the individual data points is built up after the text box has been parsed and the required data types are set. If "Select value" is checked for each entry, the data connection is created dynamically in the communication window after the window is closed. Finally, connect the communication input "Text input JSON / XML" to the relevant topic of the broker, which contains the JSON string in the example mentioned.

Tip:
If you do not receive a response when querying or reading files, this could be due to an incorrect format selection, the JSON / XML content deviates considerably from conformity, the authentication has failed or the query type is incorrect. For a further analysis, if the call should not work, connect the diagnostic output (text) of the parser e.g. with the receipt of a log window[931] in order to recognize any error messages or problems.

6.10.2 Webbrowser

It is possible to integrate a browser window using the web browser component. Any web content can be integrated, e.g. Internet pages, IP cameras, etc..
Two browser types can be set. "Chrome" and "Internet Explorer". Depending on the content to be displayed, it may be necessary to switch from the standard browser "Chrome" to "Internet Explorer".

Note: If "Internet Explorer" is set as the browser engine, the component must be selected in the project tree or on the frame to select it.

Data points of the component

Component name	Type	Type Function
Disable operation (display only)	Input	If this input is not used, the component can always be operated. If the input is connected with an On signal, the component cannot be operated. It then only has a display function.
Mouse via	Output	This output can be used to start an event when the mouse is moved over the object.
Reload	Input	The displayed website is reloaded (refreshed) with an On signal.
Page is loaded	Output	Outputs an On signal while a page is being loaded. After the loading process is complete, an Off signal is output.
Visible	Input	The component is switched invisible with an Off signal and visible with an On signal.
Home	Input	The start page (URL) set in the properties is called up with an On signal.
Opacity [113]	Input	See Components independent data points [113]
URL	Bidirectional	The address to be called up is entered as text via this data point. After loading the website, the address of the displayed website is output.
Forward	Input	The next website is called up with an On signal. Only works if a page was previously jumped back.
Zoom factor [%]	Input	The zoom factor (%) of the Internet page is set at this input. The page can be zoomed in and out. The default resolution of 100% is set to 100 (Internet Explorer). For Chrome, the range is 0.5 - 10, where 1.0 = 100% zoom factor.
Back	Input	The last website displayed is called up again with an On signal

Properties of the component

Component name	Standard	Function
Home page	about:blank	Start page (URL) which can be accessed via the "Start page" data point.
URL	about:blank	Page that is loaded directly when the project is started.
Select browser	Chrome	Selection of the browser engine used.

It is possible to set up an automatic login to IP cameras in the web browser in order to display a video image (mjpg stream).
Firstly, the user and password of the network camera must be entered, separated by a colon. This is followed by the IP address at which the camera can be reached on the network, separated by an "@" sign. Finally, the path under which the relevant stream can be accessed must be added.

URL of the video stream (format: http://benutzer:passwort@ip-address/path/)
e.g. http://root:root@192.168.100.14/mjpg/video.mjpg

For cameras with the so-called "server push" method, please ensure that the refresh time of the camera is not set too low. This method is used, for example, with cameras from Mobotix and Panasonic. Here, the entire image from the camera is transferred as a graphic file. This requires a lot of computing power/performance in the system.

Ideally, cameras with the MJPEG process (Motion-JPEG) should be used. These only transfer the image changes, i.e. the amount of data transferred is smaller and therefore the performance is better. As a result, smooth image sequences can be transmitted with little load. This method is used in cameras and web servers from Axis or Santec, for example.

6.10.3 eMailer

With this component it is possible to send and receive e-mails. The component is unvisible. The component sends and receives emails through local mail servers or Internet mail servers. The required user names and passwords for the used e-mail inbox are entered in the properties of the e-mailer. The dispatch of any file attachments, as well as e.g. Snapshots of the camera archive are also possible.

The SMTP connection must be possible.

Data points of the component

Name	Type	Function
Active	Bidirectional	Enables or disables the e-mailer.
To address	Input	Destination address of the e-mail. If there are multiple addresses, they are separated by ; and spaces.
Attachment	Input	The complete path and file name of the attachment to be sent must be entered here as text.
Check for new e-mail	Input	Checks for new e-mails.
BCC address	Input	BCC address(es) to which the e-mail is sent.
Subject	Input	Subject of the e-mail
CC address	Input	CC address(es) to which the e-mail is sent.
Diagnosis [Text]	Output	Error messages are output here. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service.**
E-mail file attachments [Text]	Output	Outputs the file name of the file attachments as text. The file attachments are saved in the project folder on the server.

Name	Type	Function
E-mail Content [Text]	Outbox	The content of the received e-mail is output here as text.
Extended Diagnosis	Input	All debug events are output at the output "Diagnosis [Text]". **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Pop3 Retrieval - Current Message	Output	Output of the current message being processed.
Pop3 Retrieval - Number of messages in mailbox	Output	Total number of messages in the mailbox
Pop3 Retrieval - Progress	Outbox	Shows the processing progress from 0-100%.
Pop3 Retrieval - In Progress	Output	On signal = in progress; Off signal = finished
Pop3 Account User	Input	Pop3 account username
Pop3 account password	Input	Password for the Pop3 account
Signature	Input	Signature of the e-mail
SMTP account user	Input	Here you can change the user name for the outgoing mail server.
SMTP Account Password	Input	Allows you to change the password for the outgoing mail server.
Text	Input	Text of the e-mail
Trigger	Input	The channel is triggered via any command. This can be set in the properties. Any event: Any input signal at the trigger input sends the e-mail. On or Off: A True or False at the trigger input triggers the e-mail.
Value	Input	Value for the predefined text with a placeholder formatted with {{ }}.

"Trigger" sends the e-mail with the defined text. Values at the data point "Value" can be adopted in the e-mail text if the placeholder is formatted with {{ }} in the text. Example: {{#0.0°C}}

Properties of the component

Name	Standard	Function
Filter Tokens		Filters the e-mails with a certain subject text. The e-mail content and file attachment are only output for these e-mails! For filtering, the "Mail content output format" must be set to "Plain text".

Name	Standard	Function
Add path to attachments		Output of the storage path of the attachment at the data point "E-mail file attachments [Text]".
Account Settings	...	Settings such as user name and password. See picture below
Send Timeout [s]	100	If sending is unsuccessful, it will continue to be attempted for the set time.
Send Trigger Selection	Send on or off	Determines at which input signal the e-mail is sent. Send directly: E-mail is sent when the text or attachment changes. Send on: E-mail is sent with an ON edge. Send on Off: E-mail is sent with an OFF edge. Send on or Off: E-mail is sent with an ON or OFF edge.
Mail content output format	Plain text	Switch option from plain text to XML. If Filter Token is used, "Plain Text" must be set here.
Standard To Addresses		Here you can enter a default address that should always be used if no other entries have been made. If there are several addresses, they are separated by ; and spaces.
Standard CC addresses		A standard can be entered here that should always be used if no other entries have been made. If there are several addresses, they are separated by ; and spaces.
Standard BCC addresses		Here you can enter a standard that should always be used if no other entries have been made. If there are several addresses, they are separated by ; and spaces.
Standard Subject		Here you can enter a standard that should always be used if no other entries have been made.
Standard Text		A default text can be entered here that should always be used if no other entries have been made.
Standard Signature		Here you can enter a standard that should always be used if no other entries have been made.
Standard Attachments		A standard can be entered here that should always be used if no other entries have been made.
Delete attachment after sending		If this option is set, the file sent as an attachment is deleted. **ATTENTION: The attachment will also be irrevocably deleted if the sending of the e-mail fails!**
Filter Token [Subject]		Filters the e-mails with a certain subject text. The e-mail content and file attachment are only output for this e-mail! For filtering, the "Mail Content Output Format" must be set to "Plain Text".
Encoding	System Default	Setting option for the character set to be used: UTF8, UTF7, UTF32, Unicode (UTF16), System Default (e.g. ISO-

Name	Standard	Function
		8859-1), Unicode big endian (UTF16BE) and ASCII.
Active		Switches the e-mailer On/Off

Logging in to the Google Account where 2-factor authentication is active:

1. Sign in to the Google Portal
2. Select the "Security" function and there, under "To sign in to Google" --> "Two-step confirmation".
3. Select app passwords and generate a password (app = email; device = Windows computer).

Account settings

General Settings:
A valid sender email address and name must always be entered.

Incoming:
Set the server address, port, SSL/TLS and login information as specified by the e-mail server.

Outgoing:
Set the server address, port, SSL/TLS and login information as specified by the e-mail server.

Option:
Retrieve only the latest: ticked = only the mails of the last x days are retrieved. At least 1 day should be set here.
Check for messages every (min.): If 0, there is no automatic query.

6.10.4 Video door entry system

With the help of the Video Door Intercom component, it is possible to integrate SIP-capable door intercoms with audio and video into the user interface.
These notes [20] must be observed for Windows 8.1 and higher.

The .Net Framework 3.5 must be installed before using the component.

It must be activated under Programs and Features in the Control Panel. To activate, the .NET Framework 3.5 (contains .NET 2.0 and 3.0) checkbox must be ticked. An Internet connection is required for this option.

A SIP server is required as the connection between the door intercom and the Eisbär video door intercom. If there is no SIP server in the door intercom or the telephone system, the "SIP server internal [380] " component must be used as an exchange. The user data (name/password) of all clients used are defined in this. A direct connection between the Eisbär video door intercom and the external door intercom is not possible.

Note: Please check whether the existing codes cover the requirements of the door intercom manufacturer. In case of uncertainty, the function should be checked in a test.

All settings you make in the properties window in the editor are only used in the editor. These settings must be made again in the client if they differ from the settings in the editor.

In addition, the component contains the function of the IP Camera Display component. This makes it possible to display a camera image of a "normal" IP camera when you are not in conversation with the door intercom. This could be, for example, an outdoor camera that shows a view of the entrance to the building.
The images from the camera are scaled to the size of the component. The aspect ratio is displayed unchanged.
The URL must be entered completely and in the following example format (Axis):
http://192.168.100.123/mjpg/video.mjpg

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Open Settings Dialog	Input	The client settings for the door intercom open with any trigger signal on this input. When used in the editor, the data is not saved. The setting is done in the client, specific for each PC.
IP-Camera Video Visible	Input	When an On signal is input, the display of the IP camera pictures is paused. No picture is displayed. If an Off signal is applied, the images will be displayed at the set number of frames per second.
Doorphone Ringing	Output	On while the doorbell rings. Off if the call is accepted or the remote site hangs up.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Call Number	Input	The received name or number is called by the door station
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Register Phoneline again	Input	Disconnects and establishes a new connection with the SIP server.
Local Video Start/Stop	Input	Starts or stops the video stream defined in the "IP Camera" tab
Opacity [0-255][113]	Input	See component independent data points[113]

Properties

Name	Standard	function
Configuration	...	Here you can set the parameters shown below.
Dtmf Signaling Mode	RFC2833	
Play Dtmf Sounds		This selection switches the beep on and off.
Expiration Time[s]	30	Time to register until the timeout
Auto Hang Up active		Turn this function on and off
Auto Hang Up Time [s]	120	Time until automatically hung up.

Note: High refresh rates on the IP Camera Display will burden the system more than low. Please always choose reasonable, lowest possible number.

Name	Standard	function
Display Name		Any name that is displayed when connecting to the remote station.
User Name		Name of the user in the server domain. Mostly identical to the registration name.
Register Name		Name for registration at the proxy.
Password		Password for registration at the proxy server (switchboard / exchange).
Domain		Domain of the Proxy, sometimes referred to as Realm. In many cases, the IP address of the proxy is also entered here.
Domain Port	5060 od. 5061	SIP port of the proxy server for registration.
Outbound Proxy IP		IP address of the proxy server (switchboard / exchange).
Registration Required	x	If the check mark is set, the video door station must be registered with the proxy (switchboard / exchange) with name and password.

Name	Standard	function
Keep Alive Mode	Register	Set the keep alive mode.
Keep Alive Interval	60	Time of the check intervals in seconds.
Auto Answer		Automatic acceptance of an incoming call.
Only Audio Calls		If this option is set, the video signal is not transmitted.
Ringtone	Default	Set the desired ring tone. You can also use your own tones. Only the WAV format is supported. The files must be located in the folder: C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\Doorphone\Ringtones. All clients must have this wav file in the same directory.

Name	Standard	function
Local IP		The local IP address is entered here automatically.
Transporttype	All	Here the transmission type is set. The selection options are: All, Connectionless, Connection-oriented, TCP and UDP
SRTPMode	None	
Auto Detect NAT		With this selection, the system can read the NAT and the settings are adopted accordingly.

Settings for the various codecs for audio and video. Here, the sequence must be observed.

Name	Standard	Function
Echo Cancellation	selected	This suppresses a reverb effect
Auto Gain Control		Automatic volume control
Echo Delay	0	Delay of the echo
Max Gain	0	Setting for the maximum volume
Noise Reduction Level	Medium	Suppresses noise at the set level

If there are several external call stations, these can be entered here. The camera image from the calling external intercom station is then displayed before the call is accepted. **Only http mjpeg streams canbe displayed: http://<IP>/<Pfad>**

Name	Standard	function
Nummer/Name Sprechstelle		Internal number or name of the station on the proxy server (switchboard / exchange).
DTMF Signal Tür öffnen		DTMF signal tone sent to open the door.
DTMF Signal Licht schalten		DTMF signal tone sent to switch the lighting.

Name	Standard	function
IP Kamera URL/Pfad zum MJPG-Stream		URL / path to the MJPG stream in the IP camera, e.g. http: // <IP> / <xxxx.mjpg path />. This stream is displayed when there is no SIP communication.
IP Kamera Bilder pro Sekunde (0-20)	5	Refresh rate of the image display. The set number of pictures of the camera is displayed, per second. 0 = speed of IP camera
IP Kamera Benutzername		Username to log in to the camera if anonymous access is not possible.
IP Kamera Passwort		Password of the user to log in to the camera.

Here you can find some example paths of common IP cameras. You can find out the exact path for your camera model directly from the manufacturer.

Axis
http://IPADDRESS/mjpg/video.mjpg
http://IPADDRESS/mjpg/1/video.mjpg
http://IPADDRESS/axis-cgi/mjpg/video.cgi

Mobotix
http://IPADDRESS/control/faststream.jpg?stream=full
http://IPADDRESS/mjpeg

Sanyo
http://IPADDRESS/liveimg.cgi?serverpush=1

Sony
http://IPADDRESS/image
http://IPADDRESS/img/mjpeg.cgi
http://IPADDRESS/video.mjpg

6.10.4.1 Mobotix manual

Instructions for setting up a Mobotix door communication system in the EisBär SCADA

Requirements:

The Mobotix door station must not be set up for MXEasy.

(1) IP of Mobotix is 192.168.100.16
(2) Mobotix enabled as SIP server, with port 5061
(3) Mobotix registers itself with the registration name 201 as a SIP client on the SIP server.
(4) The EisBar is registered on the Mobotix SIP server with registration name 200.

Under these conditions, the door intercoms function component.

Properties

Name	Standard	function
Registration Required	x	If the check mark is set, the video door station must be registered with the proxy (switchboard / exchange) with name and password.
Display Name	200	Any name that is displayed when connecting to the remote station.
User Name	200	Name of the user in the server domain. Mostly identical to the registration name.
Register Name	200	Name for registration at the proxy.
Password	200	Password for registration at the proxy server (switchboard / exchange).
Domain Server Host	192.168.100.16	Domain of the Proxy, sometimes referred to as Realm. In many cases, the IP address of the proxy is also entered here.
Proxy IP	192.168.100.16:5061	IP address of the proxy server (switchboard / exchange).
Proxy Port	5060	SIP port of the proxy server for registration.
DTMF Key	1	DTMF signal tone sent to open the door.
DTMF Light	2	DTMF signal tone sent to switch the lighting.
Number	201	Internal number or name of the station on the proxy server (switchboard / exchange).
IP Camera URL/Pfad zum MJPG-Stream		URL / path to the MJPG stream in the IP camera, e.g. http: // <IP> / <xxxx.mjpg path />
IP Camera User Name		Username to log in to the camera if anonymous access is not possible.
IP Camera Password		Password of the user to log in to the camera.
IP Camera Pictures per Second (0-20)	5	Refresh rate of the image display. The set number of pictures of the camera is displayed, per second. 0 = speed of IP camera

Preamble:
To deactivate the onscreen displays in the SIP video, the following settings must be adjusted in the Mobotix door station.
Admin Menu> Configuration> Edit>

VOIPMENUAUTOHIDE = On (put on on)
VOIPMENUHIDETIMEOUT = 1 (set to 1 or insert completely if not present)

Setting up the SIP communication in the Mobotix door station:
First, the SIP server must be set (in the Admin menu). All SIP clients that are to establish a connection must be set up (for example, EisBär Client 1, EisBär Client 2, EisBär App, door intercom, ...)

After setting the settings, it is possible to register the EisBär at the Mobotix door station (Registration Succeeded).

Then the SIP client must be set up (in the Admin menu). The door intercom can be reached under this user name.

Under Settings for incoming calls (in the Admin menu), all SIP addresses that are allowed to call the door station must be entered.

The voice dial-in is to be set to VoiP.

After setting the settings, it is possible to call the Mobotix door station with the EisBär.

In order to be able to call a remote station with the door station, the outgoing call must be configured (in the Admin menu). The specified profile name must be on the
next page in the action groups.
After setting the settings, it is possible with the "testing" to call the EisBären.

To trigger a call with a key, it must first be assigned to an action group (in the setup menu). If the key (event selection) is grayed out, it must be activated beforehand.
Under Action the previously created outgoing call is connected.
After setting the settings, it is possible to call the EisBären with the button set under Event Selection.

Finally, all settings must be written to permanent memory. This can be done when closing the settings menus or in the admin menu.

Configuration examples for the EisBär Smart Clients (App)
Entries are to be adapted to the configuration of the door station.

IOS App Door Phones Settings	Android App Door Phones Settings
In the IOS app, the IP address of the door station must be entered at Realm.	In the Android app, the realm name specified in the SIP server must be entered in Realm.

Doorphones (IOS)

Türsprechstelle

Server
- IP: 192.168.101.147
- Port: 5061

Benutzer
- Name: 202
- Passwort: •••
- Realm: 192.168.101.147

Gegenstelle
- Nummer: 201

DTMF Tastencodes
- Türöffner: 1
- Licht: 2

Doorphones (Android)

Türsprechstelle

Server
- IP: 192.168.101.147
- Port: 5061

User
- Name: 203
- Password: •••
- Realm: mobotix

Peer
- Number: 201

DTMF codes
- Open door: 1
- Light: 2

The settings are only saved after leaving the settings dialogs. To transfer the data, you have to switch to the settings dialog and then to the home menu. If there are several existing servers, select the desired server.

6.10.4.2 SIEDLE Türsprechstelle

Instructions for setting up SIEDLE intercoms in the EisBär SCADA
Setting e.g. Siedle Access Server with Siedle Vario outdoor station or Siedle SMART Gateway SG 650
Create participant, assign password

Add device, type Snom821.
The phone number is the registration name in EisBär.
For each client, a new device must be added.

In the front door station, add the bell button "SIP Audio Eisbaer"

Properties

Name	Standard	function
Registration Required	x	If the check mark is set, the video door station must be registered with the proxy (switchboard / exchange) with name and password.
Display Name		Any name that is displayed when connecting to the remote station.
User Name	213	Name of the user in the server domain. Mostly identical to the registration name.
Register Name	213	Name for registration at the proxy.
Password	siedle	Password for registration at the proxy server (switchboard / exchange).
Domain Server Host	192.168.2.1	Domain of the Proxy, sometimes referred to as Realm. In many cases, the IP address of the proxy is also entered here.
Proxy IP		IP address of the proxy server (switchboard / exchange).
Proxy Port	5060	SIP port of the proxy server for registration.
DTMF Key	#61	DTMF signal tone sent to open the door.
DTMF Light		DTMF signal tone sent to switch the lighting.
Number		Internal number or name of the station on the proxy server (switchboard / exchange).
IP Camera URL/Pfad zum MJPG-Stream		URL / path to the MJPG stream in the IP camera, e.g. http: // <IP> / <xxxx.mjpg path />
IP Camera User Name		Username to log in to the camera if anonymous access is not possible.
IP Camera Password		Password of the user to log in to the camera.
IP Camera Pictures per Second (0-20)	5	Refresh rate of the image display. The set number of pictures of the camera is displayed, per second. 0 = speed of IP camera

Setting up the SIEDLE door station via the SIEDLE Access Server 3.2

installation Guide
Planning and system manual

Connection to the server's Access Administration Console 192.168.1.1
via network: account name: admin password: admin
Remote: Account name: Administrator Password: SiedleAccessMain2015

The Dashboard displays the current status of the attachment

In the Basic Parameters tab, the IP address of the Siedle Access Server must be entered (default 192.168.1.1). Here also the language can be adjusted.

Under Administrators, Accounts, the user groups can be created.

Under Subscriber status you get an overview of the status of the set devices with phone number and name.

In the Participants menu, the project can be created as a folder and the participants (terminals) added.
The participants are displayed individually under the folder and can be edited by a selection.

Settings for an EisBär connection are made via a SIP video telephone.

The door station is then configured in the EisBär with the video codec H263_Plus at the top.

Under App, the following settings are made in the app list view:
In the polar bear app you have to enter "cytel" in the settings (app list view) under Realm.

IP: IP of the Siedle DHCP server
Port: Port of the server
Name: Call number of the SIP subscriber in the Siedle system
Password: Password that forgives the system
Domain / Realm: cytel

Gegenstelle

Nummer

200

DTMF Tastencodes

Türöffner

Licht

Number of the remote station: Telephone number of the outstation
DTMF door opener: # 61
DTMF light: not available

6.10.4.3 Siedle SG 650

Siedle Smart Gateway 650

The screenshots / instructions require an already finished system with Smart Gateway 650.
Log in SG650

Switch to network participants

Now switch to "IP subscribers"

Create IP subscribers

Then switch to IP groups.
There is an upper limit of 6 participants. With a second SG650 it can be extended to 12 participants.

Here in the example other devices are configured.

The prerequisite for this configuration is correct licensing of the system.

EisBaer Setup:

IP Camera remains empty, as Siedle does NOT provide a SIP video stream. Instead, the "IP Camera and Media Display" can be used.
In the case of the media source, the path that is displayed when creating the participant is entered accordingly.

Username / password is not required, the camera stream is ONLY issued when the connection is established.

6.10.4.4 GIRA TKS

Instructions for setting up a GIRA-TKS door communication system in the EisBär SCADA
Excerpt from GIRA TKS IP Gateway manual

Notes on operation and commissioning of IP telephones

In the configuration of the IP telephone, the following settings must be made:

IP Port	5060
Audio	PCMU/PCMA
Video	H.264
Format	QVGA bzw. 320x240
IP Server	IP-Address of the TKS-IP-Gateway
IP User	Username under menu item IP Phone in the GIRA Assistant
IP Password	Password under menu item IP-Phone in GIRA Assisstent "IP-User" and "IP-Password"; must match the settings in the TKS-IP gateway

Trigger the door opener function via the IP telephone

If "* 0" is pressed after a door call, the door opener function is activated.

Requirements:
• The TKS actuator has been assigned to the corresponding door.
• The IP telephone must use SIP Info or RTP (RFC2833) as the DTMF transmission method. The EisBar client uses the RTP transmission method
• DTMF via inband is not supported by the TKS IP gateway.

commissioning examples
Important: The IP addresses shown in the following screenshots may differ depending on the network.

Properties

Name	Standard	function
Registration Required	x	If the check mark is set, the video door station must be registered with the proxy (switchboard / exchange) with name and password.
Display Name	TKS-IP-Gateway	Any name that is displayed when connecting to the remote station.
User Name	100	Name of the user in the server domain. Mostly identical to the registration name.
Register Name	100	Name for registration at the proxy.
Password	100	Password for registration at the proxy server (switchboard / exchange).
Domain Server Host	192.168.100.16	Domain of the Proxy, sometimes referred to as Realm. In many cases, the IP address of the proxy is also entered here.
Proxy IP	192.168.100.16	IP address of the proxy server (switchboard / exchange).
Proxy Port	5060	SIP port of the proxy server for registration.
DTMF Key	*0	DTMF signal tone sent to open the door.
DTMF Light		DTMF signal tone sent to switch the lighting.
Number		Internal number or name of the station on the proxy server (switchboard / exchange).
IP Camera URL/Pfad zum MJPG-Stream		URL / path to the MJPG stream in the IP camera, e.g. http: // <IP> / <xxxx.mjpg path />
IP Camera User Name		Username to log in to the camera if anonymous access is not possible.
IP Camera Password		Password of the user to log in to the camera.
IP Camera Pictures per Second (0-20)	5	Refresh rate of the image display. The set number of pictures of the camera is displayed, per second. 0 = speed of IP camera

6.10.4.5 ABB Welcome manual

Instructions for setting up an ABB or Busch Welcome door communication system in the EisBär SCADA V2

First important information: Only one EisBar door communication user is allowed per ABB Welcome IP gateway.

For each ABB Welcome IP gateway user, only one mobile device with a fixed IP address or dyndns account is generally permitted (iOS, Android, EisBär). This means that for every EisBär indoor station one Welcome IP gateway has to be installed.

Firmware V 3.13 from 1.7.2015 or newer must be used in the IP gateway.
Downloadlink: http://www.busch-jaeger-katalog.de/artikel.php?
bereich=1016301&programm=1016477&gruppe=1016493&produkt=1016494

The compatibility mode for ComfortPanel 2.x must be activated and the IP of the EisBaer client must also be specified.
Under "Associated ComfortPanel 3.x" a user must be created with a password.

Important note about sound quality or feedback:
The quality of the call is directly related to the equipment used (Touch PC ....) Of the computer used to display the EisBär client.

Via the Advanced IP Scanner, the plant is called: "ABB Genway Xiamen Electrical Equipment CO., LTD".

Configuration of the IP-Gateway 2.0 / 3.0:

A fixed IP address should be used for the gateway, as otherwise connection errors may occur.

Basic settings:
System-specific, at least one unit must be created with ID 1.

Device settings:

Each outdoor unit must be created with the corresponding ID.

Associated ComfortTouch 2.x:

Here, the 2.x series is activated and the IP address of the associated EisBär client is entered.

Associated ComfortTouch 3.x:
Register user

Abmelden

Netzwerkkonfiguration

Grundeinstellungen

Passwort ändern

Netzwerkinformation

Geräteeinstellungen

Login Portal

App-Management

Zugehöriges ComfortPanel 2.x

Zugehöriges ComfortPanel 3.x

Upload/Download Konfigurationsdatei

Firmware-Update

Datum und Uhrzeit

Versionsinformation

Zugehöriges ComfortPanel 3.x

▶ Benutzer hinzufügen

ID		Benutzername
1	Bearbeiten Löschen	Welcome

Abmelden

Netzwerkkonfiguration

Grundeinstellungen

Passwort ändern

Netzwerkinformation

Geräteeinstellungen

Login Portal

App-Management

Zugehöriges ComfortPanel 2.x

Zugehöriges ComfortPanel 3.x

Upload/Download Konfigurationsdatei

Firmware-Update

Datum und Uhrzeit

Versionsinformation

Benutzer bearbeiten

Benutzername: Welcome

Passwort: ••••••

Bestätigen: ••••••

Berechtigung: ☑ Überwachungsfunktion

☑ Tür öffnen

☑ Licht schalten

▶ Zurücksetzen ▶ Speichern

For the user, all authorizations must be enabled here.

Creating the "indoor station" in the EisBär editor

To set up an indoor call station in the EisBär SCADA visualization, you need the "Video Doorphone" component in the Communications component chapter.
On the side you pull the component as far as possible, that the buttons but also the video image is easy to use or visible.

1. Operation of the door opener
2. Acceptance / Structure Call of the external station
3. End call
4. Actuation of the light relay
5. Adjust the volume / mute of the microphone on the EisBär page
6. Adjusting the volume / muting of the speakers on the EisBär side

Settings of the component in the EisBär editor:

These settings are for testing only in the editor. These are not transmitted to the client. If several EisBär clients are in use, each client must be configured separately.

Display name: The name (plain text) of the external unit can be entered here. However, it is not displayed.

User name: User name that is created in the Welcome IP gateway under "**Associated ComfortTouch 3.x**".

Registration name: User name that is created in the Welcome IP gateway under "**Associated ComfortTouch 3.x**".

Password: Password that is created in the Welcome IP gateway under "**Associated ComfortTouch 3.x**". ATTENTION: The password must be different from the name!

Domain: ABB or the IP address of the corresponding ABB Welcome IP gateway.

Domain Port: 5060

Outbound Proxy: IP address of the corresponding ABB Welcome IP gateway

Registration required: Yes

Important: The video codec "H264" must be at the top!

Number / Name Station: 100000001 The number on the far left (1) stands for the address of the outstation. The number on the far right (1) stands for the address of the bell button.
DTMF signal door open: 1
DTMF signal switching light: 2

6.10.4.6 DoorBird

Instructions for setting up a DoorBird BirdGuard B10x camera:

The camera / intercom configuration is done with the Doorbird app, which is available on the Apple App Store or Google Playstore.

	After the start, select the first installation.
	Add device. Scan or enter the QR code of the Digital Passport.
	Under Further functions, select Administration. Scan or enter the QR code of the Digital Passport.
	Follow the sequence
	1. SIP settings
	2. SIP numbers
	3. disable external video service (NVR)
	4. doorbell schedule

Next, the SIP settings are set:	
	- Activate SIP - SIP Proxy: IP address of the SIP server (e.g., Eisbär SIP server) - Enter SIP user and password as deposited in the SIP server - DTMF: activate and enter pins; ATTENTION in the Eisbär SIP client must be entered after the PIN # - Allowed SIP users: here is the one or more SIP clients registered, which the You can call DoorBird directly, e.g. eisbaer@192.168.100.59
Next, the number to be called when ringing is set	
	Here is the number of Eisbaer Video door intercom, as deposited in the SIP server register

Finally, the schedule for SIP calls must be set.

Properties

Name	Standard	function
Registration Required	x	If the check mark is set, the video door station must be registered with the proxy (switchboard / exchange) with name and password.
Display Name	eisbaer	Any name that is displayed when connecting to the remote station.
User Name	eisbaer	Name of the user in the server domain. Mostly identical to the registration name.
Register Name	eisbaer	Name for registration at the proxy.
Password	eisbaer	Password for registration at the proxy server (switchboard / exchange).
Domain Server Host	192.168.100.59	Domain of the Proxy, sometimes referred to as Realm. In many cases, the IP address of the proxy is also entered here.
Proxy IP	192.168.100.59	IP address of the proxy server (switchboard / exchange).
Proxy Port	5060	SIP port of the proxy server for registration.
DTMF Key	2#	DTMF signal tone sent to open the door.
DTMF Light	1#	DTMF signal tone sent to switch the lighting.
Number	doorbird	Internal number or name of the station on the proxy server (switchboard / exchange).
IP Camera URL/Pfad zum MJPG-Stream		URL / path to the MJPG stream in the IP camera, e.g. **http**: // <IP> / <xxxx.mjpg path />
IP Camera User Name		Username to log in to the camera if anonymous access is not possible.
IP Camera Password		Password of the user to log in to the camera.
IP Camera Pictures per Second (0-20)	5	Refresh rate of the image display. The set number of pictures of the camera is displayed, per second. 0 = speed of IP camera

Audio-Codec: PCMU

IP Camera:
http://192.168.100.59/bha-api/video.cgi
Username: App user from the document "Digital Passport"
Password: App Password from the document "Digital Passport"
The IP address can be determined by the following query, or with an IP scanner.

A test of the Doorbird microphone unit is possible via the online portal. To do this, enter the MAC address and the token of the camera at: https://www.doorbird.com/de/checkonline.

Thereafter, further information about the system will be displayed.

Online check

Device MAC Address	1CCAE370D76E
Status	online
Last disconnect	2018-09-03 12:36:51 GMT Click here for information about "GMT +00:00"
Available users	2
Firmware version	000112
Reconnects to the Cloud Server on the Internet within the past 24 hours	1 *The less reconnects the better is the connection of the device to the Internet. Average is 1 to 3 reconnects per 24 hours.*
Last Push-Notification sent	unknown Click here for information about "GMT +00:00"
Device is connected via	LAN
Last known LAN IP-Address	192.168.100.43 Click here to access the HTML5 Widget, if you are on the same LAN as the device.

By clicking on "here" in the last line, the camera is called up and the video stream is displayed.
To do this, enter the app username and app password.

For operation under IOS or Android we recommend to use the Doorbird app. This can be accessed via the Start Program [940] component from the Polar Bear app.

Available video stream:
http://*<User>*:*<Password>* @ <IPADDRESS>/axis-cgi/mjpg/video.cgi

rtsp://*<User>*:*<Password>* @ <IPADDRESS>/mpeg/media.amp
http://*<User>*:*<Password>* @ <IPADDRESS>/bha-api/view.html
http://*<User>*:*<Password>* @ <IPADDRESS>/bha-api/video.cgi

The video transmission on the DoorBird BirdGuard B10x was very time-delayed (<10 sec). The web browser was the best.
As of: 09/2018

6.10.4.7   2N

Instructions for setting up a 2N door intercom:

The camera/door intercom is configured via web access on the door intercom. The IP address is displayed in the 2N Network Scanner.
A SIP server is required as the connection between the door intercom and the Eisbär Video door intercom, e.g. our SIP server internal. The user data (name/password) of all clients used are defined in this.

To test the intercom, start the simulation in the editor.

The paging station is configured in the web server of the paging station (IP of the doorphone) e.g. https://192. 168.100.62/#services-phone-sip?tabindex=0

Services \ Phone
the SIP settings are made here.

SIP1
Identity of the intercom
Show name [2N IP Uni]
Phone number (ID) [IPSOLO1]
Domain [192.168.100.65] --> IP of the EisBaer-Server
With "Test call" the function can be tested. For this, the SIP server must be running and a client, e.g. the video door intercom, must be configured in the Polar Bear Editor.

Authentication
User authentication ID [X]
Authentication ID [IPSOLO1]
Password [IPSOLO1]
SIP Proxy
Proxy Address [192.168.100.65]
Proxy Port [5060]
Backup proxy address []
Backup proxy port []
SIP Registrar
Registration enabled [X]
Address Registrar [192.168.100.65]
Port Registrar [5060]
Address backup registrar []
Port Backup Registrar [5060]
Registration expires [120] [s]
Registration status REGISTERED / NOT REGISTERED
Cause of error - Details of the cause of the error are displayed.

Save with the disk symbol. The call station attempts to register with the SIP server after saving. The success is displayed in the Registration status field.

Calls
Under Incoming Calls in Answering Mode (SIP1) Set Automatic
Save

Directory \ Users
Create SIP clients (all remote stations in the polar bear) to be called.

Hardware \ Switch
Set the code to open the door e.g. 00
00* must then be entered in the polar bear.

Hardware \ Keys
Under speed dialling keys, use + to select the subscribers who are to be called by the call station, per key.

ATTENTION: For the direct tap of the video image the additional license "Extended Video License" is required.

Services \ Streaming
Activate RTSP Server
Set the parameters as desired. e.g. Video Codec H.264 and anonymous access.
The URL of the stream for access is displayed: rtsp://192.168.100.62:554/mjpeg_stream
To view in polar bear, use the "IP Camera and Media Display".

Save

Services \ ONVIF

Set name and password to access the camera if anonymous access is not desired.

e.g. eisbaer1 / eisbaer1

The URL of the stream is then: rtsp://eisbaer1:eisbaer1@192.168.100.62:554/h264_stream.

Use the "IP Camera and Media Display" to display in the polar bear.

<ins>Settings in the EisBear</ins>
Properties of the "Video door intercom" component

Name	Standard	Function
Display name	eisbaer1	Any name that is displayed at the remote terminal when a connection is established.
User name	eisbaer1	Name of the user in the server domain. Mostly identical to the registry name.
Registration name	eisbaer1	Name for registration at the proxy.
Password	eisbaer1	Password for registration at the proxy server (switchboard/exchange).
Domain Server Host	192.168.100.65 IP address of the SIP server	Domain of the proxy, sometimes also called **realm**. In many cases, the IP address of the proxy is also entered here.
Proxy IP	192.168.100.65 IP address of the SIP server	IP address of the proxy server (switchboard/exchange).
Proxy Port	5060	SIP port of the proxy server for registration.
DTMF signal Open door	00*	DTMF signal tone sent to open the door.
Registration required	x	If the check mark is set, the video door intercom must be registered with the proxy (telephone exchange/exchange) with name and password.
DTMF signal light switching		DTMF signal tone, which is sent to switch the light.
Number/Name Intercom station	IPSOLO1	Internal number or name of the call station on the proxy server (switchboard/exchange).
IP camera URL/path to MJPG stream		not possible because the call station uses RTSP. Use IP Camera and Media Display instead
IP Camera Username		not possible
IP Camera Password		not possible
IP Camera frames per second (0-20)		not possible

Audio Codec: PCMU, PCMA
Video Codec: H.264, H.263plus, H.263
changeable under **Services \ Phone \ Audio and Video**

Status: 06/2021

6.10.4.8 TCS Doorphone

The IP built-in door speaker ASI91000 is a SIP-based door station.
To set up the SIP client, the software "Configuration and service software configo IP" is required. This can be down
Several tabs are available in the TCS Configo IP. The "Audio" tab is used to adjust the volume and microphone sens
The tab "SIP account" establishes the connection to a SIP server.

In the key configuration tab, a "call" is set up so that the outstation calls a SIP subscriber when ringing.
In this example, the SIP client is called "eis" when key 1 is pressed.

6.10.4.9 ReneKoch SIP-Gateway

The AVS2100 is a SIP server from René Koch AG. On a touch panel, the use of the USB sound card is recommended.

IP Scanner Search finds the manufacturer: "TurControlSystme AG".

Settings in the SIP server --> VoIP settings:
One or more group calls of up to 5 participants can be set. The serial number is the number of the bell button on the front-door station. The call destination is the SIP number of the recipients.

As bus devices, the outstations with the corresponding logon data are created.

Setup SIP-Server:

Successfully logged in clients will be marked with a green dot behind the user password.

According to the manufacturer, the levels for Audio Out and Audio In should only be changed at the outdoor statio
For the video stream the codec H264 is used. The path to the stream in this example is "http://192.168.1.200:12000/

Setup DTMF function:

EisBaer setup
Properties of the component

Name	Standard	Function
Registration required	x	If the check mark is set, the video door station must be registered with the proxy (switchboard / exchange) with name and password.
Display name	103	Any name that is displayed when connecting to the remote station.
User name	103	Name of the user in the server domain. Mostly identical to the registration name.
Register name	103	Name for registration at the proxy.
Password	103	Password for registration at the proxy server (switchboard / exchange).
Domain Server Host	192.168.1.200	Domain of the Proxy, sometimes referred to as Realm. In many cases, the IP address of the proxy is also entered here.
Proxy IP	192.168.1.200	IP address of the proxy server (switchboard / exchange).
Proxy Port	5060	SIP port of the proxy server for registration.
Codecs	PCMA und H264	Audio Codec PCMA and Video Codec H264 must come first.
DTMF Signal door opener	7	DTMF signal tone sent to open the door. In this example 7.
DTMF Signal light switch	8	DTMF Signal tone that is sent to switch the lighting. In this example 8.
Number/Name station	100	Internal number or name of the station on the proxy server (switchboard / exchange).
IP Camera URL/path to the MJPG-Stream		URL / path to the MJPG stream in the IP camera, e.g. http: // <IP> / <xxxx.mjpg path />
IP camera user name		Username to log in to the camera if anonymous access is not possible.
IP camera Password		Password of the user to log in to the camera.
IP camera pictures per second (0-20)	5	Refresh rate of the image display. The set number of pictures of the camera is displayed, per second. 0 = speed of IP camera

Testing 08/2019
Firmware Version Device: 1.0.0
Firmware Version Engine: 1.0.2-756ae1fe-rkag
Firmware Version uC: 0.3.4
Hardware Version: 2

6.10.4.10 Mobil App

If the video door intercom is to be used via the Android or iOS app, the following points must be observed:

The "App list view" component must have been created in the project.

A new node type "Control element" of the type "Door intercom" is created in its settings.

Once the project has been started on the server, the local settings for the door intercom can be made in the app. Each SIP client requires a unique identification. To do this, the data for this device is entered in the app settings (cogwheel) --> Eisbaer Solutions --> Project name and the corresponding door intercom (name assigned in the app list view). In this example, the "Video door intercom1" is also listed. This is for the video door intercom[316] in the Windows client.

If a connection to the EisBaer server is established, the app logs on to the SIP server according to the settings and can then also be called.

The mobile device is woken up and rings when it is called. The prerequisite is that the EisBaer app is still open in the background.

6.10.5 Video door entry system KIT

The video door intercom KIT behaves like the [video door](#)[316] intercom in Windows Server / Client operation. Here, the inputs and outputs can be freely selected / placed.
For Windows 8.1 and higher, these [instructions](#)[20] should be followed.

Data points of the component

Name	Type	function
Accept	Input	Unlock the communication paths
Call	Input	Selects the entered number and starts the call process
Caller [Text]	Output	For an incoming call, the corresponding text is displayed (for example, name or station)
Hang up	Input	Interrupts the communication connection
DTMF 0	Input	Enter the number 0
DTMF 1	Input	Enter the number 1
DTMF 2	Input	Enter the number 2
DTMF 3	Input	Enter the number 3
DTMF 4	Input	Enter the number 4
DTMF 5	Input	Enter the number 5
DTMF 6	Input	Enter the number 6
DTMF 7	Input	Enter the number 7
DTMF 8	Input	Enter the number 8
DTMF 9	Input	Enter the number 9
DTMF 10 (star)	Input	Enter the star symbol
DTMF 11 (hash)	Input	Enter the diamond symbol
Open Settings Dialog	Input	The client settings for the door intercom open with any trigger signal on this input. When used in the editor, the data is not saved. The setting is done in the client, specific for each PC.
IP-Camera Video Visible	Input	When an On signal is input, the display of the IP camera pictures is paused. No picture is displayed. If an Off signal is applied, the images will be displayed at the set number of frames per second.
Doorphone Ringing	Output	On while the doorbell rings. Off if the call is accepted or the remote site hangs up.
Speaker Mute	Bidirectional	Turns the speaker on and off
Speaker Volume	Bidirectional	Adjusts the volume of the speaker
Switch Light	Input	Switches the lighting on the call station on / off
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Microphone Mute	Bidirectional	Turn the microphone on and off
Microphone Volume	Bidirectional	Sets the sensitivity of the microphone.
Call Number	Input	Calls the dialed number
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Register Phoneline again	Input	Disconnects and establishes a new connection with the SIP server.
Local Video Start/Stop	Input	Establishes the connection to the camera of the microphone unit
Hide Status Text	Input	Hides the status text On and Off
Opacity [0-255][113]	Input	See component independent data points[113]
Open Door	Input	Gives the door lock free
Phoneline State	Output	Returns the connection status.

Properties are identical to the video door station!

6.10.6   SIP-Server intern [x200]

The SIP server is an exchange via which several SIP clients can communicate with each other, e.g. SIP door intercoms and EisBär clients.
The domain name of the EisBär SIP server is **OzekiPBX**. This must be entered, for example, for the EisBär Smart Client (App) under Domain/Realm.
 If this component is created, it counts as 200 components.
For Windows 8.1 and higher, these notes[20] must be observed.

Data points of the component

Name	Type	function
Import User Accounts from File	Input	The user list can be imported under the filename and folder path created here.
SIP Server Logging	Output	Returns the current messages of the SIP server
Start SIP Server	Input	Starts / stops the SIP server

Properties

Name		function
User Accounts	0	User list with login data of the SIP clients
SIP Server On/Off		SIP server on / off switching
SIP Port	5060	SIP port under which the SIP server is reachable

Member list
The user list defines the user name and password with which each SIP client must log on. The respective SIP client is called via the user name.

6.10.7   IP Camera viewer (MJPG)

With the help of the component IP Camera Display it is possible to integrate a display window for IP cameras.

The images of the camera are displayed scaled in the size of the component, with the aspect ratio unchanged.
The URL must be entered completely and in the following example format (Axis):
http://192.168.100.14/mjpg/video.mjpg

Data points of the component

Name	Type	function
IP Camera Url	Input	URL / path to the MJPG stream in the IP camera, e.g. **http: //** <IP> / <xxxx.mjpg path />
Camera Url Output	Output	Here, the URL / path to the MJPG stream is output to the IP camera when the user clicks the mouse on the display. This can e.g. be switched on as a signal to other IP camera ads.
Pause	Input	If an on signal is applied, the display of the pictures will be paused. No picture is displayed. If an Off signal is applied, the images will be displayed at the set number of frames per second.
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Opacity [0-255][113]	Input	See component independent data points[113]
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.

Properties

Name	Standard	function
URL/Path to MJPG-Stream		URL / path to the MJPG stream in the IP camera, e.g. http: // <IP> / <xxxx.mjpg path />
Username		Username to log in to the camera if anonymous access is not possible.
Password		Password of the user to log in to the camera.
Frames per second (0-20)	5	Refresh rate of the image display. The set number of pictures of the camera is displayed, per second. 0 = speed of IP camera

Note: High Refresh rates load the system more than low. Please always choose reasonable, lowest possible number.

URL of the video stream (format: http: // user: password @ ip-address / path)

Here are some example paths of popular IP cameras. The exact path to your camera model is available directly from the manufacturer.

Axis
http://IPADDRESS/mjpg/video.mjpg
http://IPADDRESS/mjpg/1/video.mjpg
http://IPADDRESS/axis-cgi/mjpg/video.cgi

It is possible to add further parameters with the ? and & symbol separately:

Parameter	Parameter	Description
fps	0 … 30	Frame rate in fps. 0 = unlimited
resolution	Width x Height	All supported camera resolutions
compression	0 … 100	Additional JPEG compression
camera	1 … quad	defines the video source if there are multiple cameras.

Examples:
http://Benutzer:Passwort@192.168.111.191/axis-cgi/mjpg/video.cgi?fps=24&resolution=1280x720
http://Benutzer:Passwort@192.168.100.31/axis-cgi/mjpg/video.cgi?fps=12&resolution=640x360
http://Benutzer:Passwort@192.168.100.33/axis-cgi/mjpg/video.cgi?fps=12&resolution=640x360
http://Benutzer:Passwort@192.168.100.46/axis-cgi/mjpg/video.cgi?
camera=1&resolution=480x270&rotation=0&audio=0&mirror=0&fps=0&compression=30

Mobotix
http://IPADDRESS/control/faststream.jpg?stream=full

It is possible to add further parameters separately with the & symbol:

Parameter	Parameter	Description
stream	full, MxPEG	full = M-JPEG
preview	-	Necessary for the further parameters below
size	Width x Height	All support camera resolutions
quality	10 … 90	Additional JPEG compression
fps	0 … 30.0	Framerate in fps. 0 = unlimited
camera	right, left, both, auto	Defines which sensor should be displayed

Here's an example to get an M-JPEG stream at PDA resolution (320x240px) from the right image sensor. The image quality (quality = 40) and frame rate (fps = 4.0) are reduced to minimize bandwidth consumption.
http://12345678:admin@192.168.100.33/control/faststream.jpg?
stream=full&preview&size=320x240&quality=40&fps=4.0&camera=right

Sanyo
http://IPADDRESS/liveimg.cgi?serverpush=1

Sony
http://IPADDRESS/image
http://IPADDRESS/img/mjpeg.cgi
http://IPADDRESS/video.mjpg

Geo Vision Kamera
http://IPADDRESS/JpegStream.cgi?username=#####&password=#####&channel=2

On the following website the paths for many cameras are deposited.
http://www.ispyconnect.com/sources.aspx

6.10.8 IP-Camera and Media Viewer

With the help of the component, it is possible to integrate a display window for IP cameras and video streams.

The camera images are displayed scaled to the size of the component, with the aspect ratio unchanged. For this reason, the resolution of the stream should be adapted to the component size in EisBaer.

The URL must be entered in full and in the following example format:
http://<IP>/<Path>/xxxx.mjpg

If the camera is secured with **login data**, the Uri is written as follows:
http://<User**>:**<Password>@<IP>/<Path>

Depending on the camera, the port must also be specified:
http://<User>:<Password>@<IP**>:<Port>/<Path>**

Data points of the component

Component name	Type	Type Function
File played	Output	Outputs an on signal when playback is finished.
File name last snapshot	Output	Outputs the file name of the last snapshot
Louder [+5]	Input	Increases the volume by 5%
Volume [0-100]	Input	Sets the volume to the set value
Quieter [-5]	Input	Reduces the volume by 5%
Media source URL	Input	Sets the path of the media source to be displayed
Media source URL (own window)	Input	Opens a window with the URL sent to the data point, also multiple times with different URLs.
Media source URL Output	Output	Outputs the path of the media source which was sent as a URL to the "Media source URL" data point. (Does not work if the URL from the list was used). Click on the component to output the URL at this data point again.
Pause	Input	The stream is paused with an ON signal. Playback is resumed via "Start".
Visible	Input	The component is switched invisible with an OFF signal and visible with an ON signal.
Trigger snapshot*	Input	Triggers a snapshot with an ON command
Start	Input	With an ON edge Starts / Continues the display
Stop input	Input	Stops the display when ON or OFF
Open stream in separate window	Input	The current stream is played back in a new display window via an ON signal.
Sound On/Off	Input	Switches the sound on and off
Turbidity [113]	Input	See components Independent data points [113]
Repeat	Bidirectional	On = repeat active, Off = play the file once

Properties of the component

Component name	Standard	Function
URL list		Several camera stream URLs can be specified in this editor. These are then available for selection in the display. The operation of the display is explained below.
Media source URL	about:blank	Source (path) of the media to be displayed
Show stream in separate window		With this option, the stream that was entered as the default is displayed in a separate window. The component itself is not displayed and only serves as a placeholder. The camera settings can be found under C:\Users\Eisbaer\AppData\Roaming\Alexander Maier GmbH\EisBär 3.0\ClientProject\<UID>\MediaViewer_CameraStates. In this file, the size and
Camera window always in the foreground		If this function is set and the camera is displayed in a new window, this window is always on top of all other windows.
Storage location for snapshots	C:\Users\Public\Pictures	Specifies the local storage path for the snapshots and is only valid for **one PC**. Snapshots can only be created if the project page with the component is active. However, the component itself does not have to be visible for this. Alternatively, the use of the IP camera archive [388] is recommended.
Automatically repeat		The specified file is played in a loop

Menu in the component display

Menu in the window display

Operating the display:

Designation	Description
Open menu (on the display)	A long press on the display in the client (>750ms) displays the menu when released. Double-click to open the menu in a separate window.
Select camera	The cameras from the list editor are displayed in the menu. The stored stream is set up by pressing on the name.
Open window	Opens the current stream in a new window that is decoupled from the EisBaer client.
Start / Pause / Stop	Starts, stops or pauses the current playback
Sound / Volume	Setting for the volume.
Frame On/Off	Shows or hides the window frame.
Snapshot	Creates a photo of the displayed bid and stores it under "C:\Users\Public\Pictures" (public).
Close	Closes the stream window.

Examples:

Camera	URL URL
Axis	rtsp://<user>:<password>@<IP:Port>/axis-media/media.amp?videocodec=h264 http://192.168.123.234/mjpg/video.mjpg
Reolink	rtsp://<User>:<Password>@<IP>:<Port>/h264Preview_01_sub rtsp://<User>:<Password>@<IP>:<Port>/ROH/channel/11
Mobotix	rtsp://<User>:<Password>@<IP>:<Port>/mobotix.h264
DoorBird BirdGuard B10x	rtsp://<User>:<Password>@<IPADDRESS>/mpeg/media.amp http://<User>:<Password>@<IPADDRESS>/axis-cgi/mjpg/video.cgi
FosCam	http://<User>:<Password>@<IPADDRESS>/videostream.cgi

Note: It may take some time to display an image.

The **example paths** for various IP cameras are stored on the following website:
http://www.ispyconnect.com/sources.aspx

Example UniFi cameras via UniFi-Protect:
Select the desired camera via the UniFi-Protect web interface and click on the list entry to open the management interface of the camera. Click on "Manage" in the upper icon menu of the opened interface and open the entry "RTSP" with the + symbol. The available streams can now be activated with a SlideSwitch. The activation creates a dynamic RTSP stream path incl. key, which can now be transferred 1:1 to the IP camera and media display component. Please note that a change in the camera settings creates a new stream path key, which must then be transferred to the component accordingly.

Note on Ubiquiti's DreamMachinePro (Protect):

The video streams are to be integrated into the Polar Bear as follows: under Devices, select the corresponding camera - under Settings, go to Advanced and activate the desired stream. The link that can be copied is then as follows:
rtsps://IPDERUDMPRO:7441/Oe7VUuhmjbGMM8Ik?enableSrtp - adapt this link as follows:
rtsp://IPDERUDEMPRO:7447/Oe7VUuhmjbGMM8Ik

Tip: Use the appropriate stream (image size) as it is used in the visualisation in order not to unnecessarily load the performance of the computer used. It is often not necessary to output a FullHD stream to a display size of only 640 x 360 - it is better to use the "suitable" stream.

6.10.9 IP Camera archive

The camera archive is an invisible server component with the option of creating and saving snapshots from IP cameras.

The snapshots can be saved and also sent by e-mail. The image files are provided with a date/time stamp when they are saved.

Data points of the component

component name	Type	Type Function
Diagnosis	Output	The status outputs are formatted here. The output is used for diagnosis in the event of faulty switching. To display the text, we recommend using the display component Value-dependent text with its Value display input. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, these can significantly impair the performance of the service.**
Trigger e-mail	Output	This output is connected to the send trigger of the e-mailer component. If the snapshot has been saved and the path to the image file is available to the E-mailer at the "Attachment" connection, the output is set to On and the e-mail is triggered.
Trigger snapshot	Input	If an On or Off signal is applied to this input, a snapshot image is loaded from the camera and saved as a file.
URL last snapshot	Output	The storage location and the name of the last image file are output at this output. When using the E-mailer to send the file, this output must be connected to the Attachment input on the E-mailer.
URL last snapshot (http)	Outbox	For external access (EisBär clients in the network), the URL to the image file must be sent to the data point of the image component: Example: **http://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Trigger cyclical snapshots	Input	If an On signal is applied to this input, snapshots are created in the selected cycle time. The function remains active until an Off signal is applied to the input.

Properties of the component

Component name	Standard	Function
Use Https		Activate to establish a secure connection. Otherwise, only http is used.
IP address	0.0.0.0	The IP address of the camera is set here. ***Without http(s)://***
port	80	The camera's communication port is set here. By default, http = 80 and https = 443.
User		Enter the user name if the camera requires a login.
Password		Specification of the password if the camera requires a login.
Cycle time [s]	900	Cycle time in seconds in which snapshots are created and saved cyclically if the corresponding input is active.
Delay [s]	0	The creation of the snapshot is delayed by this time, in seconds, when the snapshot trigger input is triggered.
Repetition [s]	0	After this time, in seconds, a snapshot is taken again if it was triggered via the Trigger snapshot input. If the value is 0, only one snapshot is created and not a second one.
Configuration file		The path details for the image file in the camera are saved in camconfig files. You can use this parameter to select this file. The path contained is transferred to the parameter of the same name. C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\Cameras Config
Image URL in the camera		The path to the **image file** in the camera is specified here, for example /jpg/image.jpg. It can be edited manually or imported via the configuration file (see one line above).
Memory path	C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\Export	Select the storage path for the created snapshot files here. Make sure that this path is available on the server PC. If necessary, use a UNC path or set this path in the editor on the server before commissioning.
Complete URL		Complete URL to the image. Other settings are ignored if it is not empty. Beispiel: https://192.168.178.114:443/jpg/image.jpg
Publish image		If this function is set, the images are published on the web server (http://eisbaer-scada.net/Gnuplott/...).
Customised FTP connection		With this activation, the graphics are stored in a user-defined FTP directory.
Add timestamp to uploaded images		Adds the time stamp to the file name of the graphic.
Custom FTP connection		Entry of the user-defined FTP connection for uploading the graphic.
URL basis for customised publishing		Entry of the URL for customised FTP connection from which the graphic is to be downloaded.

Note on display in different application scenarios:
The generated images are stored in the folder "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www" of the EisBär server.
Local operation only: "Diagram image file (local file)" data pointis linked to the image component. - EisBär server and client run on the same machine. Access via the network or Internet is not possible.

Local network: "Publish images" propertydeactivated, "Diagram image file (Http URL)" data pointis connected to the image component. -EisBär server and client run on different machines or apps in the local network. Access via the local network is possible. No internet access

Internet:"Publish images" propertyactivated, data point "Diagram image file (Diagram image file (Http URL)" is connected to the image component. -EisBär server and client can run on different machines, apps, locally or on the Internet. The images are cached on our web server. FTP access to "http://eisbaer-scada.net" must be possible.

6.10.10 Server-Connection Observer

This invisible component can test the server connection and issue a corresponding message about the connection status of the connected computers.

Data points of the component

Name	Type	function
Test all	Input	Starts with On or Off all created server connection tests in the respectively set test intervals.
Debug [Text]	Output	This output reports the server connection status as a text output. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	The Dynamice Folder contains one subfolder per created channel
- Connection001	Folder	For each channel, a folder is created with the following data points.
-- Response Time [ms]	Output	Duration of the last response in ms. Output as an integer value.
-- Result	Output	Result of the review. On (True) = connection exists, off (false) = connection is broken
-- Check	Input	Starts a manual connection test with On or Off
-- Last Check	Output	Returns the last check as date / time message
-- Last seen	Output	Output of the time of the last online message in the format dd: MM: yyyy HH: mm: ss
-- Next check	Output	Returns the next check as date / time message
-- Last seen - Date	Output	Output of the date of the last online message in the format dd: MM: yyyy
-- Last seen - Time	Output	Output of the time of the last online message in HH format: mm: ss
Driver On/Off	Bidirectional	Switches the driver on / off

Properties

Name		function
Connections	0	Here, the servers to be monitored (network destinations) are created.
Driver On/Off		Driver on or off.

Name	function
Channel Name	Name of the connection
Address	IP address of the server or IP device to be monitored, http:// or https:// incl. deviating ports are also possible. e.g.:https://meinserver.com:8080
Connection Type	Selection of the type of monitoring: PING, HTTP, TCP
Port	Target port to be monitored (only for TCP connections). Port 80 is always used for HTTP and port 443 for HTTPS. For a different port, this must be specified in the URL. Example: http://meinserver.com:88 or https://meinserver.com
Check-Interval [min]	Sets the polling interval in minutes
Timeout [s]	Setting when the server is declared offline.

6.10.11 Push Notification Sender

General

This component is used to send push messages when data is received at the defined inputs.
For this purpose, various push services are supported, for which there are clients for Android and / or IOS. Depending on the service, the possible recipients either have to be defined manually (for this the user has to determine the recipient IDs from the respective service provider) or they can be imported (for example in the case of the polar bear push service).
Also, the data points available per channel defined differ depending on the service selected.

properties

The component can be configured via the settings.

Name	Standard	function
Service Konfiguration	Eisbaer...	Opens the editor for configuring the push service to use.
Recipient	0	Opens the editor for creating the recipients.
Channels	0	Opens the editor for creating message channels.
Timeout [s]	5	Here, the timeout for communication with the respective service can be set in seconds.
Verfügbarkeitstest-Intervall [min]	5	Here, the interval can be set by checking the availability of the service. It should be noted here that partial test messages must be sent in order to reduce the possibly available quota.
Driver On/Off		Turns the driver on or off.

Recipient

For each recipient, a name and the recipient ID (depending on the push service used) must be specified.

In the case of the **EisBaer push service**, an import from the recipient of the specified **portal user**is also possible. For this purpose, the polar bear must be selected in the settings under Channels and the portal data must be entered. Then the recipient and the ID can be imported via "Import from portal". Only then can the receiver be set in the channel editor.

In the case of **PushOver**, the devices can also be entered for each user key. This allows the messages to be sent to individual devices. The name must match the name under "Your Devices" on the homepage. If no device is specified, the message is sent to all devices.

For **Prowl**, the API key must be entered.

Channels

The messages can be defined via the channel editor

Name	Function
Channel Name	Freely definable name for the notification. This name is displayed in the message as a heading.
Recipient	A recipient must be selected for the messages. This is done using the drop-down list and selecting the defined recipient.
Priority	A priority for the message can be specified. The effects of this specification differ depending on the push service used. For example, emergency messages (priority "Emergency") are displayed to the recipient even if the time of the message lies within the idle time set by the recipient in his service app. Emergency messages must also be explicitly confirmed. If they are not confirmed, they are sent again. For details, please refer to the documentation of the push services.
Send - Trigger	The send trigger specifies under which circumstances a message is sent. Any event: Any input signal at the trigger input sends a push. At ON: Only at an On signal at the trigger input a message is sent. At OFF: Only at an Off signal at the trigger input a message is sent.
Text (send on trigger)	If a text is entered here and the data point "Trigger (send predefined message) "is used, this text is also sent with a notification .
Channel name as prefix	If this option is set, the channel name is additionally output before the actual message.

Service configuration

Opens the editor for configuring the push service to use.

If the **Eisbär push service** is to be used, the [portal]⁶⁶ access data must be entered. In order to be able to use it, the access must first be ordered from Alexander Maier GmbH (www.busbaer.de). Similar to the pushover service, emergency messages can be sent repeatedly unless canceled or confirmed. For this, the repetition period and the repetition interval can be specified. Here, among other things, the muting of the receiver is also ignored. For this special function the repetition duration and the repetition interval can be specified. This only works for messages which have the priority "Emergency" in the channel editor. Other priorities are not considered for this service. In the case of the **"Eisbaer Portal"** and **"PushOver"**service, there is the following additional data point: **"Attachment (JPG/PNG)"**. This allows image files to be transmitted. For this purpose, the absolute storage path of the image file must be specified before the send trigger (or message input).

If the service "**Prowl**" is selected, a name for the application must be selected.
In order to remove the limit of deliverable messages per day, a provider key with flexible quota can be created on the Prowl website and optionally entered here.

In the case of "**Pushover**", enter the application token (application token or user key) that can be created on the service's website. For this an application has to be added in pushover. This generates a new token, which is entered in the polar bear as an application token. Furthermore, here the repetition interval for messages of priority "emergency", as well as an associated expiry time (after this time the repetitions end, even if the message was not confirmed by the receiver) can be set. In the case of the "Eisbaer Portal" and "PushOver"service, there is the following additional data point: "Attachment (JPG/PNG)". With this, image files can be transmitted. For this purpose, the absolute storage path of the image file must be specified before the send trigger (or message input).
Pushover can also distinguish priorities. This can be set in the online settings. Meaning (excerpt from: Pushover.net):

Lowest Priority (-2)

When the priority parameter is specified with a value of -2, messages will be considered lowest priority and will not generate any notification. On iOS, the application badge number will be increased.

Low Priority (-1)

Messages with a priority parameter of -1 will be considered low priority and will not generate any sound or vibration, but will still generate a popup/scrolling notification depending on the client operating system. Messages delivered during a user's quiet hours are sent as though they had a priority of (-1).

Normal Priority (0)

Messages sent without a priority parameter, or sent with the parameter set to 0, will have the default priority. These messages trigger sound, vibration, and display an alert according to the user's device settings. On iOS, the message will display at the top of the screen or as a modal dialog, as well as in the notification center. On Android, the message will scroll at the top of the screen and appear in the notification center. If a user has quiet hours set and your message is received during those times, your message will be delivered as though it had a priority of -1.

High Priority (1)

Messages sent with a priority of 1 are high priority messages that bypass a user's quiet hours. These messages will always play a sound and vibrate (if the user's device is configured to) regardless of the delivery time. High-priority should only be used when necessary and appropriate. High-priority messages are highlighted in red in the device clients.

Emergency Priority (2)

Emergency-priority notifications are similar to high-priority notifications, but they are repeated until the notification is acknowledged by the user. These are designed for dispatching and on-call situations where it is critical that a notification be repeatedly shown to the user (or all users of the group that the message was sent to) until it is acknowledged. The first user in a group to acknowledge a message will cancel retries for all other users in the group.

In the case of pointomega's "**redOne**" service, a freely selectable application name can also be assigned, which is inserted into all sent messages in order to identify the message source.
In addition, the server address and the port under which the redOne server can be reached must be specified.
If the checkbox "Add channel name to message" is activated, the set name of the respective channel is explicitly set to the beginning of the sent message.

In the case of the "redOne" service, there are the following additional data points:
- **Notification aborted** informs the component that the redOne server has stopped delivering the message.
- **Notification dismissed** informs the component that the message has been rejected.
- Via "**Notification started**", the component informs that the redOne server has started the transmission of the message.
- **Notification Complete** informs the component that the redOne server has finished delivering the message.
- Via "**notification finished**" the component informs, the message was acknowledged at the redOne server.
- Via "**Alarm completed**", the component informs that the alarm source was marked as "finished" on the redOne server. Furthermore, this status can also be triggered by the polar bear and the component reports this to the redOne server.
- Via "**Cancel notification**" the transmission of a previously started message can be stopped by the polar bear.

Data points of the component

Name	Type	function
Debug Error	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Debug Info	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
External notification request	Input	This data point can be linked to the fault message manager component.
Dynamic	Folder	In this menu the data points for each channel are kept.
Last Message	Output	Output on which the most recently sent messages are output.
Service State	Output	Specifies the result of the last availability check.
Driver On/Off	Bidirectional	Toggles the function of the component on or off.

Data Points in the Folder Dynamic

Name	Type	function
Abort Message	Input	The repetition of emergency messages can also be aborted via the "Cancel notification" input (send TRUE).
Attachment (JPG / PNG)	Input	URL Input for the storage location of an image file.
Notification confirmed	Output	The "**Notification acknowledged**"outputis triggered (TRUE) when a message has been acknowledged. The TRUE signal is then output cyclically.
Acknowledge expected (disable)	Bidirectional	Changes to TRUE after a message has been sent. If the message is confirmed, the value changes back to FALSE. If a FALSE is sent to this data point, in the case of emergency messages, the repetition is terminated.
Debug	Output	Debug outputs errors and information pertaining to the specific message channel.
Message	Input	The message to be sent (text, value ect.) Is defined via the SP "message" and the sending is triggered at the same time (in the case of boolean values, depending on the send trigger setting of the channel).
Error sending Message	Output	The Datapoint "Send Error" displays a problem when sending / delivering the message.
Trigger (send predefined message)	Input	Any command will trigger the channel. This can be set in the channel list.
Value	Input	Value for the predefined text where a placeholder occurs formatted with {{ }}.

With "Text (send on trigger)", a predefined text can be sent on triggering. If "With channel name prefix" is activated, the channel name is also sent. Values at the data point "Value" can be taken over in the channel if the placeholder is formatted with {{ }}. Example: {{#0.0°C}}

6.10.12 SMS

This component is used to send and receive SMS messages via GSM/UMTS radio sticks.
The use of a GSM LAN modem is recommended.The ConiuGo GSM LAN modem LTE[405] was tested.
Here you can find the configuration guide[405].
In addition, the sticks **HUAWEI Stick E303** and the 4G XS Stick P14weretested.
When using some sticks, a user must be logged on to the EisBär SCADA server PC. This is the only way to ensure that the stick-specific software starts and makes it available as a COM port.
 This is not necessarywhen using the **HUAWEI Stick E303**. Here, the component also works without a user login on the server PC.
The received SMS are automatically deleted on the stick! If there is no network connection or the hardware was not detected, the SMS is saved and only sent when there is a connection again (driver must be on).
In the event of faulty transmission, an attempt is made to send the SMS again every 5 minutes. This is limited to 60 attempts.

Data points of the component:

Name	Type	function
Debug Error	Output	Here the status outputs are output formatted. The output is used for diagnosis in case of faulty circuits. To display the text, it is recommended to use the display component protocol window with its input (signal). **Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
Debug Info	Output	All operations of the driver are output here.
External notification request	Input	This data point can be linked to the fault message manager component[136] . If faults are to be forwardedto theSMS[400] component , a pseudo e-mail must be entered for the "To address". This has the following form: <Number>@local.sms Example: 0170123456789@local.sms
Dynamic	Folder	This folder contains the subfolders for the recipients and the channels.
- Channels	Folder	This folder contains the created channels. These have the following data points
- - Debug	Output	Here the status outputs are output formatted. The output is used for diagnosis in case of faulty circuits. To display the text, we recommend using the display component Value-dependent text with its value-display input. **Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
- - Message	Input	Input for the text to be sent
- - Error sending Message	Output	Display whether the message has been sent or not. If true, the transfer failed.
- - Trigger	Input	Any command will trigger the channel. This can be set in the channel list. Any event: Any input signal at the trigger input sends an SMS with the content that was entered in "Text (send with trigger)". When ON or OFF: With a true or false at the trigger input, an SMS will be sent with the content entered at "Text (send at trigger)".
- - URL	Output	If a URL is recognized in the SMS, it is output here.
- - Value	Input	Value for the predefined text where a placeholder occurs formatted with {{ }}.
- Kontakte	Folder	The folder contains the stored contacts.
- - Message	Output	If a contact sends an SMS to the polar bear, the message will be displayed here.
- - URL	Output	If a URL is recognized in the SMS, it is output here.
Valid PIN	Output	If true, the PIN entry was valid.

Manufacturer info	Output	Indicates the manufacturer and the model name of the stick.
HW State	Output	Indicates whether communication with the stick is possible.
IMEI	Output	Returns the IMEI number of the SIM card.
Last Message (received)	Output	Output of the last received SMS with "Number -> Text"
Last Message (sent)	Output	Output of the last sent SMS with "day, date and time, channel name -> text"
Network-State	Output	Indicates whether the stick is logged in to a network
Network-State (enum)	Output	Returns a numeric code. Here the assignments are as follows: 0 = not logged in, no network search 1 = logged in the home network (sending and receiving possible) 2 = not logged in, network search 3 = not checked in, booking rejected 4 = status unknown 5 = logged in the foreign network
Send Error	Output	If the output is set to true, sending an SMS has failed.
Clear resend list	Input	Deletes the message list that results when the messages can not be sent.
Serial	Output	Returns the serial number of the stick.
Signal strength	Output	Specifies the reception strength in dB. See below.
Signal strength (secondary)	Output	Execution command reports the signal quality indicators according to the network (2G, 3G, 4G) on which the module is registered. See Additional info section below.
SIM PIN	Input	Differing from the set PIN (which is only transmitted when the component is started), a SIM PIN can be entered via "SIM PIN" (only valid temporarily).
Driver On/Off	Bidirectional	Turns the driver on or off
URL	Output	If a URL is recognized in the SMS, it is output here.

With "Text (send on trigger)", a predefined text can be sent on triggering. If "With channel name prefix" is activated, the channel name is also sent. Values at the data point "Value" can be taken over in the channel if the placeholder is formatted with {{ }}. Example: {{#0.0°C}}

Properties:

Name	Standard	function
Service-Configuration	COM1 ...	Here the hardware is configured.
Contacts	0	Opens the editor for creating the contacts.
Channels	0	Opens the editor for creating defined messages as channels.
Driver On/Off		Turns the driver on or off

Service Configuration

Opens the editor for configuring the hardware.

Here, the COM port and the BAUD rate for communication with the stick must be set. For the two tested sticks, the BAUD rate is 9600. The correct COM port can be taken from the Windows device manager. It should be noted that depending on the stick and software several virtual COM ports are created. The correct port for the

HUAWEI Stick is "HUAWEI Mobile Connect - 3G PC UI Interface" and for the
4G stick "Device-Application Interface".

Attention:

- *In order to set up the COM ports, the respective software must be installed, as the required drivers are also installed. The latest software from the Internet should always be used. If necessary, the APN for the provider used must be entered in the manufacturer's software.*
- *In order for the polar bear to be able to communicate with the sticks, the COM port must not be occupied by the manufacturer's software*
- *This software must be closed beforehand. Usually the software is started automatically when the stick is plugged in - this must either be prevented by suitable measures or the software must be terminated manually.*
- *The character § cannot be transmitted. An undercut is inserted for this purpose. Furthermore, care must be taken not to use ß.*

contacts

Here the recipients are defined. For this purpose, any name and the associated telephone number can be entered. If you want to receive SMS from a number, then make sure that the number is entered here exactly as sent by the telephone - in particular, this also applies to the country code. It is also advisable to enter the number of the provider here. Messages about account balance or data volume are usually also sent via SMS.

channels

For a send channel, an associated receiver and a send trigger must be specified. Transmit trigger refers to the data point "Trigger" in the created channel. With "Text (send with trigger)" a predefined text can be sent on triggering. If "With channel name prefix" is activated, the channel name will be sent as well.

With "Text (send on trigger)", a predefined text can be sent on triggering. If "With channel name prefix" is activated, the channel name is also sent. Values at the data point "Value" can be taken over in the channel if the placeholder is formatted with {{ }}. Example: {{#0.0°C}}

Send SMS to the EisBär

If an SMS is sent to the EisBär, the message is output at the output of the stored receiver. The output is made via the data point "Message" of the contact.

Additional info for signal strength

Signal strength:

approximate rating:
-89 dBm or better: 4 bars (very good)
-99 dBm to -108 dBm: 3 bars
-109 dBm to -118 dBm: 2 bars
-119 dBm to -128 dBm: 1 bar
-129 dBm or worse: No bar (no reception)

2G Networks Signal strength (secondary)
Values:
0 : less than 0.2%
1 : 0.2% to 0.4%
2 : 0.4% to 0.8%
3 : 0.8% to 1.6%
4 : 1.6% to 3.2%
5 : 3.2% to 6.4%
6 : 6.4% to 12.8%
7 : more than 12.8%
99 : not known or not detectable

3G Networks Signal strength
Values:
0 : -115 (or less) ÷ -112 dBm
1÷31 : -111 ÷ -51 dBm
31 : -50 ÷ -25 (or grater) dBm
99 : not known or not detectable

Signal strength (secondary)
Values:
8 : -24 (or less) dB
7 : -23,5 … -21 dB
6 : -20,5 … -18 dB
5 : -17,5 … -15 dB
4 : -14,5 … -12 dB
3 : -11,5 … -9 dB
2 : -8,5 … -6 dB
0 : -5,5 … 0 dB

4G Networks
Signal strength
Values:
0 : -113 (or less) dBm
1 : -111 dBm
2÷30 : -109 … -53 dBm
31 : -51 (or greater) dBm

Signal strength (secondary)
Values:
0 : -4 … -3 dB
1 : -6 … -5 dB
2 : -8 … -7 dB
3 : -10 … -9 dB
4 : -13 … -11 dB
5 : -15 … -14 dB
6 : -17 … -16 dB
7 : -19 … -18 dB
99 : not known or not detectable

6.10.12.1 ConiuGo GSM-LAN-Modem LTE

Settings in the modem itself:

Delivery status:
IP-Address   192.168.1.100
Subnet: 255.255.255.0
Port: 10001
Username / password remains empty. Only confirm with OK.

1. Make sure that the set IP address of the LAN modem "matches" your network.
2. Please check, if in the LAN-Modem under "Connection / Common Options" the "Telnet Com Port Cntrl" is set to "Disable".
3. Set the BAUD rate to 115200!

Installation of the "COM-Port Redirector"

1. Please download from the Lantronix homepage, the most recent for your operating system "Redirector" and install it please, taking into account the hints displayed.
2. Start the "COM Port Redirector" (CPR Manager).
3. Then press the button "Search for Devices".
4. The LAN modem should then be listed with its IP in the lower part of the window.

Requirements:

    The following items are required to run CPR:

    x86 (32bit): Windows XP, 2003 Server, Vista, 7, 8, and 2008 Server

    x64 (64bit): Windows Vista, 7, 8, and 2008 Server

    Microsoft .NET Framework v4.0 (For CprManager.exe and CprMonitor.exe only)

    30MB free hard drive space.

    Device Servers must have firmware version 6.5.0.6 or greater to use RFC2217 (TruPort) capability.

Firewall:

The "Internet Connection Firewall" must be disabled, or else UDP Ports 30718, 43282, 43283 must be available. Otherwise, you will not be able to detect or communicate with any devices on the network.

To configure the firewall, go to the Control Panel, go to Network Settings, select the corresponding network adapter, choose Properties, and go to the Advanced tab. You may need to allow these ports access through the corporate firewall as well.

For most current Lantronix device servers, only port 30718 must be added as an Exception. If you are using the CPR with legacy device servers such as the MSSs, add exceptions for 43282 and 43283.

If the connection is between two different sites you may also need to allow these ports access through the corporate firewall.

1. Then click on the "Add / Remove COM Ports" button and select a COM port that is not yet occupied by you (for example, port 40).

2. Then press the "OK" button. Then please right-click on the LAN-Modem under Device-List and select "Add to settings".
3. Add the RX port to the firewall. See the screenshot.
4. Then press the "Save" button and confirm with "Yes".
5. To check the settings, you can test the connection in the second tab.

The device is now ready for connection with the EisBär. The SMS driver must then also be used to enter the port configured here.

6.10.13 KNX DataPoint Player

With the help of the KNX Telegram Player component, it is possible to send or query any number of group addresses on the KNX.

To use the component , it**must be**connected to the connection of the same name of the KNX component via the data point Status table. Any number of KNX telegram players can be used in parallel.

The group addresses and their functions are defined inthe [telegram list of](#)[410] the component.

When the component is started by an On command on the Start/Stop input, the entries of the telegram list[410] are sent to the KNX. While processing is running, the status output is On. If another On command arrives at the input during processing, this is discarded. Only after complete processing can this be restarted via an On command. If an Off command is received at the input, processing is stopped immediately.

Data points of the component

Name	Type	Function
Ready	Output	Outputs an on signal when the list has been processed.
Progress	Output	Indicates the progress in %.
In progress	Output	If the telegram list is being processed, the output is "On", if the processing is finished, the output is "Off".
Start/Stop	Input	The processing of the telegram list is started with an On signal. With an off signal, the processing is stopped.
Status table	Output	Connection of the component to the KNX component.

Properties of the component

Name	Standard	Function
Telegram list[410]	0	The telegrams to be processed are defined here.
Transmission interval [ms]	50	Specifies the send pause between two telegrams in milliseconds.

6.10.13.1 Telegram list

Telegram list
In the internal list, the data from an imported csv file is processed.

Sample data

Nr.	Adresse	Typ	Wert	Bezeichnung
1	_1/1/2	DataPointBooleanValue	true	Light Kitchen on/off
2	_1/1/3	DataPoint8BitUnsignedValue	155	Light corridor brightness
3	_1/1/4	DataPoint8BitUnsignedValue	240	Light dining room brightness

Note: The entries of the first line of the file are not imported. When you import unavailable lines are internally automatically deleted.

No
It sets the sequence for processing. Numbering the lines starting at 1 do this continuously until the end.

Address
Here you define the group addresses to be sent down in two-or three-level notation.

Note: In the column "Address" before the group address a "_" (underscore) is written. Excel knows this information as text and not as a date.

Type

Here the data type of the group address is defined. Enter all of the projected data types from the list into field type.

If „Read" is specified as a type, instead of a write telegram a Read-/Request telegram is triggered. Value data are ignored in this case.

Datentypen für die Komponente KNX Telegramm Player			
Data type	**Sample 1**	**Sample 2**	**comments**
DataPointBooleanValue	true	false	On / Off
DataPoint3BitControlledValue	1	9	relative dimming
DataPointTimeValue	3:10:11:47	1:15:10:33	Format: Day of the week: Hour:Minute:Second
DataPointDateValue	01.05.2008	15.03.2007	Format is: Day.Month.Year
DataPoint2OctetFloatValue	3,14	5,7	Temperatures
DataPoint8BitUnsignedValue	0	255	Brightness values
DataPoint1BitControlledValue	0	1	
DataPoint4OctetFloatValue	67,45	23,99	
DataPoint2OctetSignedValue	-32000	32000	
DataPoint2OctetUnsignedValue	0	650000	
DataPoint4OctetUnsignedValue	-25356234	27834782	
DataPoint4OctetSignedValue	0	2738472347	
DataPointStringValue	Hallo Welt	Hallo;Welt	Not more than 14 characters
DataPoint3x16BitSignedFloatValue	3,14_4,5_8,9	8,1_19,7_27,6	
Read	**xxx**	**xxx**	**Read request**
DataPointAccessValue			Not supported
DataPointStatusWithModeValue			Not supported
DataPointCharacterSetValue			Not supported
DataPointByteArrayValue			Not supported
DataPointStringExtendedValue			Not supported

Value

Enter the value to be sent to the column value. This must be the notation matching the example values from the data type-table.

Description

The Description serves as an information field, and usually contains the group address name . This

field is true with importing and exporting, it is not relevant for the function of the component.

6.10.14 Http Server

The HTTP server is used to communicate via HTTP over the specified port via HTTP GET, or POST. It can be sent and read.

Data points of the component:

Name	Type	function
Start / Stop http listener	Input	Here, the component is switched on and off.
Http Service is listening	Output	This shows the activity of the component.
Url of last request?	Output	The last URL that picked up the component is output here as text.
Debug	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	Folder Dynamic displays the data points of the channels. These can be inputs or outputs.

Properties:

Name	Standard	function
Channels	0	Here are the channels for sending and receiving set.
IP white list	All	All hosts or just one selection of hosts can be accepted. These must then be specified explicitly.
URL Prefixes	http://*:9090/	Specifies the port on which the component listens.
Start Http listener automatic		If this selection is hit, the Http server starts automatically.

Add Channels:

Over the green plus the necessary channels can be added and removed over the red X again. The labeling of the channels can be edited. The channel type can be input, output and bidirectional.

Examples (use URL window browser):

Write single values (Output)
http://192.168.100.59:9090/set?Channel001=False [412]
http://192.168.100.59:9090/set?Channel001=True
http://192.168.100.59:9090/set?Wert003=abc
http://192.168.100.59:9090/set?Wert003=124

write several values (output)
http://192.168.100.59:9090/set?Channel001=true&Channel002=false&Wert003=Text

read (Input)
http://192.168.100.59:9090/get?channels=Channel002
http://192.168.100.59:9090/get?channels=all
http://192.168.100.59:9090/get?channels=Channel001;Channel002; …

6.10.14.1 Http-requests

According to EisBär SCADA version 3.0.2270.687, http requests can also be received via the http server and displayed or evaluated accordingly in combination with other components. During the tests, please make sure Start the EisBär Editor with explicit administration rights or, what would be recommended, run the test in the server-client environment.

In the following example, an HTTP request from an AXIS camera with firmware 9.x is sent when the camera detects motion with the text: Alarm and is received in the EisBären and processed accordingly.

Settings - AXIS camera:
Activate and open the motion detection via the configuration menu under APPS and define the detection area.

Then set the following options in the configuration menu under EVENTS:

1. Receiver (in this case the IP address of the EisBär SCADA server with the corresponding port number, which was defined in the http server component).

Rules Schedules **Recipients** Manual triggers

EISBAER-VM
HTTP

Name

EISBAER-VM

Type

HTTP

URL

http://192.168.100.140:9090

Username

Password

Proxy

Test

Cancel

2. Create rule (in the example, an http command ALARM should be sent to the polar bear when moving)

If only the notification is defined, the camera will automatically set up the request as follows:
http: // IP: port receiver / Message = ALARM

Rules Schedules Recipients Manual triggers

● Alarm ⌃
VMD 4: Profile 1 | Send notification through HTTP

☑ Use this rule

Name

Alarm

Wait between actions (max 23:59:59)

00:00:00

Condition VMD 4: Profile 1 ⌄

+

Action Send notification through HTTP ⌄

🗑 📋 Save

+

Action ⌃

Send notification through HTTP ▼

Recipient
EISBAER-VM

Query string suffix

Message (will be encoded)

ALARM

Full recipient URL:
http://192.168.100.140:9090/?Message=ALARM

🗑 📋 Save

Settings - EisBär SCADA:

1. set **Http server** to receive a specific IP address or any IP addresses incl. port number and define the prefix of the request as channel name in the channel list (e.g. Message).
Alternatively, the data point "Last request" can be used.

The communication of the http server can be used to output and display the notification of the incoming request as well as the other messages via the protocol window, value-dependent texts, etc. via the defined output.

2. Text value parser. In order to convert the notification text into a switching signal, the TEXT VALUES PARSER component would be ideal in the above application. In the component, the incoming value is compared with the defined search value (here: ALARM) and if this is recognized, the set send value is triggered at the output.

3. Analysis and output in server / client mode

6.10.15 Http Client

The HTTP client is used for communication with an HTTP server

Data points of the component:

Name	Type	function
Dynamic	Folder	Here, the inputs / outputs of the component are displayed
Trigger	Input	This shows the activity of the component.

Properties:

Name	Standard	function
Channels	0	Here the channels of the client can be set up. The channels can be defined as input or output. If the EisBaer component "Http Server" is used, the corresponding channel list can be exported / imported. The channel name must be identical to the channels in the server.
HttpServiceUrl		Here, the URL of the remote station to be monitored is entered. Example: http://192.168.178.123:9090

Note:
The inputs to the HTTP server are the outputs on the HTTP client and vice versa.

6.10.16 Remote Terminal

This component is used to execute commands on remote devices using SSH access.

Please note the information below on how the remote terminal commands work and function. Please also bear in mind that this is not an interactive terminal programme such as Putty, MobaXterm, etc., but only individual commands with corresponding restrictions (no interaction possible) can be sent from a created list or via text input fields.

Data points of the component

Name	Type	Function
Command (asynchronous)	Input	Any (valid) command to be executed on the remote machine can be sent to this data point. The command is executed asynchronously - the response is issued on the command response datapoint after the command is completed.
Command (synchronous)	Input	Any (valid) command to be executed on the remote machine can be sent to this data point. The response is issued on the command response data point.
Command response	Output	Output of the command response of commands triggered via the two global command data points.
Connection	*Folder*	This folder contains data points that can be used to change the terminal connection at runtime. The "Text input[185] " component can be used for this purpose, for example. To accept all entries, the Reinitialise data point must be triggered.
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**

Name	Type	Function
Dynamic	Folder	Two data points are created in the "Dynaamish" folder for each of the predefined channels/commands - one for triggering the command and one for the respective command response.
Extended diagnostics	Input	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service**
Driver On/Off	Bidirectional	(De)Activate the component
Connection	*Folder*	This folder contains data points that can be used to change the terminal connection at runtime. The "Text input [185] " component can be used for this purpose, for example. To accept all entries, the Reinitialise data point must be triggered.
Driver status	Output	Shows whether the driver is On (true) or Off (false).

Properties of the component

Name	Standard	Function
Connection		Connection settings to the remote system
Channels	0	Here the devices can be imported or set. If a command should be executed asynchronously (e.g. a long lasting backup process), this can be selected separately for each channel.
Driver On/Off		(De)Activate the component.

Note:
The call of commands is a self-contained session - i.e. when calling another command, the effects of the previous one are usually no longer present (e.g. directory change). Furthermore, no interaction is possible via the executed terminal command - the call of commands that require e.g. sudo is not possible without further ado (since sudo always requires an interaction to enter the password). However, there are several solutions for this problem (some of which involve removing the security settings):

Variant 1:
Using optimized echo: -> echo -e 'SUDO_PASSWORD\n' | sudo -S /sbin/reboot -n the reboot command would work the same way.

Variant 2:
1. save your file / etc / sudoers by entering the following command: sudo cp / etc / sudoers /root/sudoers.bak
2. edit the file / etc / sudoers by entering the command visudo: sudo visudo
3. add the line like this in the file / etc / sudoers for the user named "vivek" to execute the

commands "/ bin / kill" and "systemctl": user ALL = NOPASSWD: / sbin / reboot
4. save and exit the file.

This means that the user "user" no longer needs a password when calling sudo for the command /sbin/reboot. The polar bear can then be used to send the command "sudo /sbin/reboot - n", for example.

6.10.17 Multi-IO-IP

Using the "Multi-IO-IP" component, IP-Commands can be sent and received from any device or website. The component is invisible, ie, the operator cannot see it in Runtime.

Introduction
The multi-IO-IP component is used to send arbitrary data to an IP network and / or receive from this. In addition, software serialized internal data types between two Multi-IO components in different instances of Eisbaer (on different computers) can be replaced. For this the transport protocols TCP /IP, UDP / IP "and" http " are available, for example, to query data from a Web server.
The component can operate as usual client by parameterized or even on Input sent values sent to another IP endpoint, and the subsequent answer is processed and forwarded to an output of the component. This is based on the TCP, UDP and HTTP alike. The component can act as a server (receiver) by listening on a UDP port and received telegrams will be processed through the filters. Subsequently, these are forwarded to a data point connection. The component is not STANDALONE and send Telegrams back to the network, only when one other component above it should from a a received telegram send a value again to the component. The multi-IO-IP component is not an independent bidirectional server and can only receive telegrams based on UDP.
To extract from as formatted data structures, certain values, there are a number of filters. These filters can, for example, XML documents after retrieving an XML Document from a Web server to parse and extract a certain value. Subsequently it can in an internal data type in the editor configured to be converted and will be forwarded to an Output data point. The multi-IO-IP component is available for the PC under Microsoft. NET and Microsoft Windows CE under the. NET Compact Framework 2.0 in the same range of functions executable. The individual settings are discussed in the dialogues.

Data points of the component

Name	Type	Function
Debug [Text]	Output	Error messages (for example network errors, conversion errors, exceptions ...) are output here. These may be send to e.g. the "Value-dependent text" component.
Dynamic	Folder	The inputs / outputs for the data elements are displayed in the Dynamic folder. Different data points are made available depending on the type.
Driver On/Off	Bidirectional	Komponente zur Laufzeit (de)aktivieren
Sent telegrams [Text]	Output	The transmitted telegram is output in text form.
Sent telegrams [HEX]	Output	The transmitted telegram is output in HEX form.

Properties of the component

Name		Function
Transport Type[422]	TCP	The transmission protocol (TCP, UDP or HTTP) is defined here
Filter[423]	0	The data filter editor is used to extract values from the received raw data from the network and to send them to an ice bear network via the corresponding bi-directional input. After the data has been received and a data filter for an entry has been selected in the input list, this data is processed by one of the selected filters.
Prefix/Postfix[427]	0	List of Prefixes/Postfixes for the commands of the Multi-IO-IP component.
Channels[427]	0	The dynamic data points (inputs, outputs) of the Multi-IO-IP component are defined here
Settings[430]	TCP/UDP	Settings for the HTTP/TCP/UDP connections
Timeout	1000	Response time to wait (in milliseconds) after an HTTP or TCP / UDP request. An error text is sent via the data point debug.
Driver On/Off		Hierüber kann eingestellt werden, ob die Komponente bei Start des Systems aktiv sein soll.

6.10.17.1 Transport type

TCP
By using the TCP protocol, you can only send data (TCP client). There must be a TCP server.

UDP
By using the UDP protocol, you can receive both data (UDP servers) and send data (UDP clients).
Note: When receiving UDP data, a filter must be defined.

HTTP
By using the HTTP protocol, you can send "HTTP-GET Web Requests" to a Web server, thereby executing specific commands or retrieving entire documents and parse through the use of the receive filters.

A number of filters exist to extract certain values from arbitrarily formatted data structures. These filters can, for example, parse XML documents after retrieving an XML document from a Web server and extract a specific value. It can then be converted to an internal data type configured in the editor and passed to a data point output.
The individual setting options in the dialogs are explained below.

The configuration options for TCP / UDP differ from those for HTTP. Therefore, any inputs in the HTTP input list are not visible in the TCP / UDP and vice versa. If you change the transport type, you must confirm that the list is deleted.

TCP / UDP differs from HTTP in several points:

For HTTP, only string strings can be sent. On the other hand, binary data can also be sent using TCP / UDP.

In order to retrieve, evaluate and convert certain data into polar bear internal data types, HTTP offers the possibility to extract certain XML data from the response from the web server and then convert it and forward it to an output in the EisBär network.

TCP / UDP, on the other hand, can control devices in the u.a. Also binary data are sent and corresponding answers are compared with parameterized positive or negative acknowledgments.

6.10.17.2 Filter

Data filter Editor

The data filter editor is used to extract values from the received raw data from the network and send them to an ice bear network via the corresponding dynamic data point. After the data has been received and a data filter for an entry has been selected in the input list, this data is processed by one of the selected filters.

Name

    Name of the filter, which is displayed in the entry bar in the column Data Filter for selection.

Filtertyp

- XML[425]
- SEARCH_PATTERN[426]

Filter expression

The filter expression is defined here, depending on the filter type selected. When UDP is received, a search_pattern filter must be created.

Data type

The value of the Data Type field is a list of data types (see Supported Data Types[112]) that are applied to conversion to an extracted value if no condition is specified (see Conditions). If the conversion was successful, the value is passed to the output for which this filter rule was selected in the input dialog. If the value can not be converted (for example, the attempt to convert an ASCII text to a numeric DataPointValue), an error text is output at the error output of the component.

Note: This mechanism is only used if no condition is entered in the Condition field (see Condition).

Conditions

It is possible to compare a value extracted by a filter with a condition, only when the condition is true, the value entered in the "Text replacement" field is transferred via the bidirectional input as a "string" to the corresponding ice- Network. The value extracted by the filter is thus replaced.

The decisive factor is that the values to be compared have to be numerical values. It is therefore important to ensure that the value extracted by the filter is actually an integer (integer) or a floating-point number (double). If this is not the case, the condition can not be applied and the received value is rejected. The following conditions can be used:

Operators: <=,> =,! =, ==, <,>,
Interval: a: b (range of values)

Syntax Operator:
<EXTRACTED VALUE> <OPERATOR> <COMPARE VALUE>

Syntax interval:
<LEFT_INTERVAL_LIMIT>: <VALUE>: <RIGHT_INTERVAL_LIMIT>

Integers are written as normal integers; for a double value, a point separates the forward of the fractional part.

Example 1:
The text is only to be sent to the EisBär network in the text replacement field if the received double value is less than or equal to 4.52.

Condition: <= 4.52

Thus all the operators mentioned above can be used instead of the <= character.
If condition is true, TEXT1 is sent to the EisBär network.

Example 2:
It is only then that the text in the field text replacement is to be sent to the EisBär network, if the received integer value is greater than 1000.

Condition:> 1000
If condition is true, TEXT2 is sent to the IceBar network.

Example 3 (range of values):
It is only then that the text in the field text replacement is to be sent to the EisBär network if the received double value is in the range of 4.1 and 4.9.

Condition: 4.1: 4.9
For example, if the value 4.34 is received, TEXT3 will be sent to the EisBär network.

Text replacement
The "text replacement" field contains the "string" that is sent when a condition is met. (See "Conditions")

6.10.17.2.1 XML_Filter

XML filter (only on strings)

The XML filter expects an XML document, for example, in response to an XML Web service. The individual fields of the data filter editor are explained below.

The filter expression is shown by way of example in the following. Only the XPath expression has to be entered (see examples at the end of this chapter). The syntax of the path specification corresponds to the XML Path Language (XPath). XPath is a request language developed by the W3 consortium to address parts of an XML document. The addressed node must be a sheet, that is, no element type and must have a convertible text as a value. A path to an "end node" is specified in XPath over the individual tag names separated by a "/". If you want to address tags with attributes and concrete attribute values, these are specified in brackets after a tag name. At the end of this chapter are a few examples that illustrate the use of XPath.

example
Xml Document:

```
<? Xml version = "1.0" encoding = "utf-8"?>
<Dok>
   <! - an XML document ->
   <Tag1> testtext </ tag1>
   <Kap title = "Nice document">
      <Pa> A paragraph </ pa>
      <Pa> Another paragraph </ pa>
      <Pa> And another paragraph </ pa>
      <Pa> Nice, is not it? </ Pa>
   </ Cape>
   <Kap title = "Second Chapter">
      <Pa> 3 </ pa>
   </ Cape>
   <Kap title = "Second Chapter">
      <Pa> 3 </ pa>
   </ Cape>
   <Tag2 attr2 = "attr2 value" attr2 = "attr2 value">
<Value> Example value </ value>
   </ Tag2>
</ Dok>
```

XPath path example 1
/ Dok / tag1
This XPath string extracts the value "testtext" from the XML document.

XPath path example 2
/ Dok / kap [@ kap = "Second chapter"] / pa

This XPath string extracts the value 3 from the XML document. If a tag has more than one attribute, it can also be specified in the XPath string using the identifier "and":

/ Dok / tag2 [@ attr1 = "attr valuel" and attr2 = "attr2 value"] / value

Returns the text "Example value".
For more detailed information, please see documentation for XPath. The following link provides a fairly compact and sufficient tutorial on XPath:

XPath Path Example 3 (Determine Attribute Values)
To read out the value of the attribute "attr1" from the above example of <tag2>, the following expression is used:

Expression: / dok / tag2 / @ attr1
Return value: "attrvalue"

XPath path example 4
If a document contains multiple nodes with the same tag name, the correct one can be determined using an index. In the above example, there are several nodes with the name kap.
The following expression returns the value of the title attribute of the 3rd node as seen from the beginning of the document, which has the tag name cape

Expression: / dok / cape [3] / @ attr1
Return value: "third chapter"

http://www.w3schools.com/xpath/default.asp

6.10.17.2.2 SearchPattern

Search Pattern Filter (Only on strings)

This filter looks for a start element in the received raw data and extracts the string until the end element occurs. To do so, select SearchPattern in the Filter type field and click on the Filter expression field.

It is possible to enter no data for the start element and the end element (leave fields blank) to forward all the received data to the output.

In addition, all data may be filtered out of the received data until the end element occurs, by leaving the field for the start element blank. Correspondingly, all data must be forwarded from the occurrence of the start element to the end of the received data.

6.10.17.3 Prefix/Postfix Editor

Prefix/Postfix Editor
The entries of this dialog are available both in the input list of TCP / UDP as well as in Http.

Name
The name that is displayed in the Pre / Postfix entries column in the entry bar.

Prefix
The prefix is the data that precedes the data before it is sent over the network.

Postfix
The postfix is the data that is attached to the data to be sent before it is sent over the network.

If the prefix and postfix are used in a binary protocol, binary data can be specified in hexadecimal form. It is also possible to enter control characters such as "carriage return" or "line feed", so-called escap sequences (see chapter <u>"Binary representation and Escap sequences"</u>[429]).

6.10.17.4 Channel

Entries editor

The properties of the entry editor depend on the selected transport protocol.

Features independent of transmission:

Name
This name is displayed as an input name on the component.

Prefix / Postfix
Here a prefix / postfix can be selected from a list.

Data filters
A previously defined data filter can be selected from a list.

Answer
In order to process received data from several filters, entries can be concatenated. The "Redirect" field of each entry contains a list of all other entries. If an entry is selected, this means that the received data is processed by the filter of the current entry as well as by the filter of the entry selected here. It is possible to concatenate several filters by selecting additional entries. If a filter can not extract data and an entry is selected in the Redirect field, the data is still passed to the selected entry.
There is the possibility to direct a response to any number of MultiIO outputs.

Protocol-dependent transmission:

TCP / UDP

command
When an "On" or "Off" arrives at the corresponding data point, the value of the "Command (Hex or ASCII)" field is sent. If the value is not equal to bool, this value is used to create the request URL and the value in the "Command (Hex or ASCII)" field is ignored. Since TCP / UDP allows the sending of binary data, Hex values and Escap sequences can also be specified here (see chapter "Binary representation and Escap sequences 429 ").

If the value of the "Command (Hex or ASCII)" field is used for the user data, the following steps and conversion attempts are applied to the data:

It is first tried to convert the string completely into a binary representation. For this purpose, the entire string can only consist of hex values. If this is successful, the binary data to be sent already exist and the data are sent.
If the conversion is unsuccessful, all supported escap sequences are substituted.
Then, the data is concatenated with the possible prefix / postfix values (here the same strategy, first hex values try to convert, then convert the escap sequences) and the finished user data are sent.

If the data has been transferred to the component via the EisBär network, DataPointValue and String values are converted to a byte array. Thereafter, the same conversion rules as explained above are applied.

Example:
<PREFIX> <DATA> <POSTFIX>

Expected answer
After the component has sent the data to the server or device via the TCP or UDP protocol, a response is compared to the value of this field to implement the principle of positive and negative acknowledgment. If the received value corresponds to this value, the device has acknowledged reception and nothing happens. If the value is not equal, a message is sent to the error message output. Similarly, if a connection has not been established. This value is also used to convert hex to a byte array and to substitute the escaped sequences.

Only receivable
To be able to receive asynchronous request data asynchronously, the "Only receivable" field can be activated. Data received from the network without a request has been filtered only by those entries that are marked with this check mark. For example, two EisBär instances can communicate with each other by exchanging these UDP telegrams with a particular structure.

Coding
This parameter defines the coding of the data to be sent over the network. Depending on the remote, the correct coding must be set here.
The following encodings can be selected:

ASCII (7 bit)
Unicode (16 bit, little endian)
Unicode (16 bit, big endian)

HTTP

The component can be used to send HTTP-GET Web Requests and HTTP Post Commands.
The first two fields allow the user to select entries from the prefix postfix and the data filter editor list.

command
Here a fixed value can be specified, which can be sent as a Web Request by the component. This value is only sent by the component if an "On" or "Off" arrives at the corresponding input. If a value is not equal to bool for this input, the string from the "Command" field is ignored and the received value, in character string representation, is taken instead of the value of the "Command" field to form the request URL. The prefix / postfix entry is still applied to it.

Example:
<PREFIX> <DATA> <POSTFIX>

URL
In the "URL" field, both the IP and the target port as well as parts of the request URL can be attached, to which the complete string (see above) is attached.

Example:
Http: // <IP_ADDRESS>: <PORT> / XXX

The resulting request URL has the following pattern:
Http: // <IP_ADDRESS>: <PORT> / XXX <PREFIX> <DATA> <POSTFIX>

HttpMethod

GET - Queries of data from a specified resource
POST - Sends data to a specified resource to be processed

6.10.17.4.1 Binary format and escape sequences

Binary representation and escap sequences

Hexadecimal values should be given as follows: 0x <Hexvalue>
Example, sequence of hex values: 0xf3 0x2d 0x17

Escape sequences are replaced by the corresponding 1 byte values before dispatch. The following are available:

\ R = carriage return
\ N = line feed
\ T = tab

\ 0 = zero byte, value zero

Note: Please note that the escape sequences must always be entered with \\ and not with only one \.

6.10.17.4.2 Import / Export

It is possible to import all necessary data of the component into a TXT file by import / export and import it into another component in the editor. For this purpose, there is a button for export and import in the menu bar.
An exported file can only be imported again with the dialog of the corresponding transport type. If, for example, you try to import an HTTP file with the TCP / UDP dialog, a message is displayed to change the transport type and try again.
All data from all dialogs are exported to the file (filter, prefix / postfix, entries and settings).

6.10.17.5 Settings

Connection settings

This dialog depends on the selected transport type.

TCP / UDP
When sending TCP / UDP telegrams, it is possible to provide these with a fixed sender IP address and port numbers, which are specified in the field "Source IP / Port". If the checkbox for activating a fixed IP / Port combination "Use fixed source IP / port" is deactivated, a random port number, which is assigned by the operating system, is selected as the sender port for each transmitted telegram.

Under "Destination IP / Port", enter the IP address and the port number to which the telegrams are to be sent.

Only when using UDP:
If the "Use fixed source IP / port" checkbox is activated, a multicast address can be registered to this network adapter. To do this, activate the "Use multicast" field and enter a multicast-compliant IP address including the port. (E.g. 224.0.20.12: 1234

HTTP
Url: here the server address of the web server is entered starting with http: //.
When using HTTP, a Web proxy server can act as a man-in-the-middle. The URL of this server can be specified here in the preface of http: //. If no proxy server is to be used, the check box "Proxy active" should be deactivated. If your proxy requires authentication, you can enable the "Use Authentication" check box and enter your user data (username and password) in the appropriate text boxes.

6.10.17.6 How to connect Multi I/O to a device

You can connect to a device through the transmission type HTTP[431], TCP[434] or UDP[434]. Before successfully connection some adjustments must be made in the newly created component in the editor.

After creating the component in the editor, you must select the type of transport in the properties of the component.

The settings depend on the selected transmission mode. Below we explain how to create and connected to a device.

6.10.17.6.1 Example with HTTP

In the following example, a Web request is to be issued and any evaluated response received. In the second example a response is to be received in the form of an XML document, extracting a certain value and forwarded to the internal network.

Example 1

Play a playlist on a MP3 player, which has an HTTP interface. How to stop the play list with another command. The device has the IP address 192.168.1.100 and the internal Web server is listening on port 80. According to the documentation, the Request URL for the two exemplary commands should look like as follows:

Command:
Command Play: GET /commandscript?cmd=play
Command Stop: GET /commandscript?cmd=stop
URL:
http://192.168.1.100:80

There are now several approaches to get the multi-IO component to send. One approach is, WITHOUT selected prefix / postfix entry and WITHOUT selected data filter entry (because in this example 1, we want to get an answer and evaluate) a request with the settings of this dialogue should be discontinued. Create a new entry and enter a unique name. Then enter in the "Command" the actual "Request URL" String.

Transmission method: HTTP
no Prefix/Postfix
no filter
Entries:

Name	Prefix/Po stfix	Filter	Command	Url	Http Method	Forward Answer
InputExample_1	no	no	/commandscript? cmd=play	http://192.168.1.1 00:80	Get	no

Because the command entry will be only attached to the URL, the actual command may also be entered in full in the "URL". A possible value in the "command" field is only attahced to the URL, when this data point is linked and triggered with an on / off or a DataPointValue Boolean with a EisBär output data type.

Entries:

Name	Prefix/Postfix	Filter	Command	Url	Http Method	Forward Answer
InputExample_1	no	no		http://192.168.1.100:80/commandscript?cmd=play	Get	no

Another more dynamic approach is for several different commands that are similar in structure, provide only ONE entry in the inbox. The be appended to the request URL to be deducted command data are transmitted via the connected to this input output of data type string or a DataPoint Value of type string to this input of the multi-IO component. Then, the entry in the "command" of this dialogue will be ignored and the transmitted value is taken instead.

Entries:

Name	Prefix/Postfix	Filter	Command	Url	Http Method	Forward Answer
InputExample_1	no	no		http://192.168.1.100:80/commandscript?cmd=	Get	no

Such dynamic data point will be linked to several outputs of other components, which transmit the commands to be the attached parts. As an example, a button switch, which is linked to its "Value On" starting with this input, the multi-IO component, only send the string "play" and, for example, for "Value On" the string "stop". This is attached to the URL and sent. Each button toggles "play" and "stop" of MP3 songs to the episode.
If you select an entry in the field "Prefix / Postfix", so the strings are as follows
Composed:

Request URL = <Content_FELD_URL>
        + <PREFIX>
      + <REQUEST_ODER_DYNAMICSTRING>
      + <POSTFIX>

Example 2
In the second example, a value from a received XML document should be selectively extracted and send to a EisBär Net . An entry for querying a Web Services has already been created (Trigger Weatherford). This is e.g. triggered by a button. The answer is diverted to a second data point (InputWeatherTemp) and a data filter has been selected (see following table).
Entries:

Name	Prefix/ Postfix	Filter	Command	Url	Http Method	Forward Answer
TriggerWeather	No	No		http://xoap.weather.com/weather /local/69412?cc=*&dayf=1&unit=m	Get	InputWeatherTemp
InputWeatherTemp	No	FilterWeatherCurrentTemp			Get	

Suppose the expected XML document is the temperature at the desired location and it is the value should be read in the following figure (value in bold):

```
<weather ver="2.0">
    <head>
   <locale>en_US</locale>
   <form>MEDIUM</form>
   <ut>C</ut>
   <ud>km</ud>
   <us>km/h</us>
   <up>mb</up>
   <ur>mm</ur>
  </head>
    <loc id="69412">
   <dnam>Eberbach, BW, Germany</dnam>
   <tm>11:40 AM</tm>
   <lat>49.47</lat>
   <lon>9.01</lon>
   <sunr>6:21 AM</sunr>
   <suns>8:25 PM</suns>
   <zone>2</zone>
  </loc>


   <cc>
   <lsup>4/21/15 11:25 AM CEST</lsup>
   <obst>Michelstadt-Vielbrunn, BW, GM</obst>
     <tmp>14</tmp>
   <flik>14</flik>
   <t>Partly Cloudy</t>
   <icon>30</icon>
.
.
.
.
.
.
   </weather>
```

In the list of this example is in the field "Data Filter" entry FilterWeatherCurrentTemp selected. The next figure shows how a filter entry looks to locate this value of the XML document and then convert into a EisBär internal data type:
Filter:

Name	Filter type	Filter expression	Data type	Condition	Text substitution
FilterWeatherCurrentTemp	XML	/weather/cc/tmp	DPT 14.*		

The highlighted text is the path of the search node in the XML document. The first word is the root node, the second for to search for nodes below this root node, etc.! For a more detailed description also as nodes are addressed with specific attribute values in the chapter Multi-IO-IP\Filter\XML_Filter[425] . Did the component extracted this value after receiving the document , the value is converted into the data type selected in the "Data Type" field. The selectable data types, see the chapter Supported data point types[112] .
If the conversion fails, an error text is send on the output "error messages" of the Multi-IO component. This can be displayed with a value driven text.
If the conversion is successful, then the value is sent to the component that is linked to the data point InputWeatherTemp.

6.10.17.6.2 Example with TCP/UDP

Ein Gerät zum Abspielen von MP3 Dateien soll über TCP bzw. UDP gesteuert werden. Es soll ein Befehl gesendet werden, um einen MP3 Player zum Abspielen bzw. Stoppen einer Playlist zu bewegen.

Es soll eine Zeichenkette von diesem Format verschickt werden:

Befehl:
cmd=play
cmd=stop

IP-Adresse:
192.168.1.100:80

Übertragungsart: TCP
kein Prefix/Postfix
kein Datenfilter
Einstellungen: Ziel IP/Port: 192.168.1.100:80

In der Einträge-Editor werden entweder zwei Einträge angelegt, jeder mit dem speziellen Eintrag im Feld „Befehl" oder nur einen Eintrag und überträgt die Zeichenketten beispielsweise über einen DataPointValue vom Typ String einer Komponente und verbindet den Output mit diesem angelegten

Datenpunkt. In der folgenden Tabelle sind beide Einträge zum Abspielen und zum Stoppen einer Playlist angelegt. Die Kodierung muss der benötigten Kodierung der Gegenstelle angepasst werden. Einträge:

Name	Prefix/Postfix	Daten filter	Befehl	Erwartete Antwort	Nur empfangbar	Kodierung	Antwort umleiten
Play-TCP	kein	kein	cmd=start			Unicode/ASCII	Nein
Stop-TCP	kein	kein	cmd=stop			Unicode/ASCII	Nein

Ein entscheidender Unterschied zur functionalität von Multi-IO-IP bei HTTP ist, dass eine erwartete Antwort im Feld eingestellt werden kann. Schickt das Gerät beispielsweise eine Zeichenkette als positive Bestätigung, so wartet die Komponente nach dem Versand auf ein Telegramm und vergleicht dieses mit den Daten, welche im Feld „Erwartete Antwort" eingetragen sind. Ist hier nichts eingetragen, wird auch nicht auf eine Antwort gewartet, Entsprechen die empfangen Daten im Fall eines Eintrags NICHT den eingetragen, so wird eine Fehlermeldung auf den Output „Fehlermeldungen" ausgegeben. Das folgende Beispiel zeigt einen solche erwartete Antwort, in der außerdem Escape-Sequenzen beispielhaft verwendet werden.
Einträge:

Name	Prefix/Postfix	Daten filter	Befehl	Erwartete Antwort	Nur empfangbar	Kodierung	Antwort umleiten
Play-TCP	kein	kein		<ACK/>\r\n\0		Unicode/ASCII	Nein

Im nächsten Beispiel werden binäre Daten zue Ansteuerung verwendet..
Folgender Bytestrom soll zur Steuerung eines kleinen Embedded Devices gesendet werden (in Hexadezimaler Darstellung):

0xaa 0x01 0x11 0xaa

Es darf dem hexadezimalen Befehl KEIN „0x" vorangestellt (case insensitive) werden. Alle Werte werden durch ein einfaches Leerzeichen voneinander getrennt. Will man eine Reihe von Bytes verschicken, dürfen diese Angaben NICHT mit normalen Zeichenketten oder Escape-Sequenzen vermischt werden. Kann ein Folge von hexadezimalen Werten nicht im Ganzen in einzelne Bytes konvertiert werden, so wird die eingegebene Zeichenkette als ASCII Zeichenkette unkonvertiert versendet:
Einträge:

Name	Prefix/Postfix	Daten filter	Befehl	Erwartete Antwort	Nur empfangbar	Kodierung	Antwort umleiten
Play-TCP	kein	kein	cmd=start	aa 01 11 aa		Unicode	Nein

6.10.17.6.3 Example w ith 2 EisBaer

In dem folgenden Beispiel, werden mit Hilfe der Multi-IO-IP Komponente Zeichenketten zwischen zwei EisBären ausgetauscht. Für eine Bidirectionale Kommunikation muss als Transport-Protokoll **UDP** verwendet werden. Dieses Beispielprojekt kann als "SCADAComp" unter folgendem Link herunter geladen werden: www.busbaer.de Downloadcenter-EisBaer-SCADAComp

Zum Testen, werden zwei EisBär-Editoren auf zwei Rechnern (A,B) gestartet. Beide müssen über Netzwerk miteinander verbunden sein.

Zum erfolgreichen Verbindungsaufbau zwischen den EisBären müssen die Verbindungseinstellungen der Multi-IO-IP Komponente, an die Netzwerkkonfiguration der beiden Rechner angepasst werden:

Transmission method: UDP

Filter:

Name	Filter type	Filter expression	Data type	Condition	Text Substitution
FilterStartStop	SEARCH_PATTERN	Start Element: STRINGSTART Stop Element: STRINGSTOP	String		

Prefix/Postfix

Name	Prefix	Postfix
STRINGSTARTSTOP	STRINGSTART	STRINGSTART

Entries:

Name	Prefix/Post fix	Data filter	Request		Receivin g only	Encoding	Redirect Response
TextSende n	STRINGSTA RTSTOP	kein	cmd=start			Unicode 16 Bit, big-endian	No
TextEmpfa ngen	NO	FilterStartS top	cmd=stop		x	Unicode 16 Bit, big-endian	No

Einstellungen Rechner "A".

Use fixed IP/Port active
Unter "Quell IP/Port" ist die IP-Adresse und der Port des Rechners "A" einzustellen. z.B.
192.168.100.65:6543
Unter "Ziel IP/Port" ist die IP-Adresse und der Port des Rechners "B" einzustellen. z.B.
192.168.100.54:6544

Einstellungen Rechner "B".

Use fixed IP/Port active
Unter "Quell IP/Port" ist die IP-Adresse und der Port des Rechners "B" einzustellen. z.B.
192.168.100.54:6544
Unter "Ziel IP/Port" ist die IP-Adresse und der Port des Rechners "A" einzustellen. z.B.
192.168.100.65:6543

Nach dem starten der Simulation auf beiden Rechnern, sollten Texte zwischen den EisBären ausgetauscht werden können. Falls dies nicht der Fall ist, könnten die Firewall-Einstellungen dafür verantwortlich sein.

6.10.17.6.4 Example UDP ASCII

In the following example, character strings are received with the help of the Multi-IO-IP component. For this purpose, **UDP** must be used as the transport protocol.

To establish a successful connection, the connection setting of the Multi-IO-IP component must be adapted to the network configuration of the sender and the polar bear computer:

Polar bear computer settings
Transmission type: UDP
Enable use of fixed source IP/port
Under "Source IP/Port" set the IP address and port of the polar bear computer. e.g.
192.168.100.65:6543
Under "Destination IP/Port" set the IP address and port of the sender. e.g. 192.168.100.54:6543

In the Windows firewall, the UDP port used must be released.

Filter:

Name	Filter type	Filter expression	Data type	Condition	Text Replacement
Filter001	SEARCH_PATTERN		String		

- The filter expression must be empty.

Prefix/postfix is not required

Channels:

Name	Prefix/Postfix	Data filter	Command	Expected response	Receive only	Encoding	Redirect reply
TextReceive	no	Filter001			yes	ASCII (7-bit)	No

- The data filter must be set
- "Receive only" must be activated.

The received ASCII texts are output at the data point "TextReceive". These can then be evaluated with the text value parser.

6.10.18 Serial

This driver is used for communication with serial devices.

Data points of the component:

Name	Type	Function
Send data (bytes as HEX)	Input	Any (not defined in the commands as a HEX editor) commands (space delimited) directly.
Send data (bytes)	Input	Any (not defined) commands in the Editor Commands as bytes directly.
Send data (text)	Input	Any (not defined) Commands as Text Editor in the commands directly.
Debug (text)	Output	Here, error messages are issued. **Caution: Diagnostic or debug outputs are only in the event of failure. Please use only with consultation with the support team! This can significantly affect the performance when using the service.**
Dynamic	Folder	This folder contains the commands.
Received data (bytes as HEX)	Output	Returns the received data as hex string.
Received data (bytes)	Output	Returns the received data as raw bytes.
Received data (text)	Output	Returns the received data as ASCII text.
Error	Output	If the last transmission is faulty, an on signal is output. No error = Off.
Error trigger	Output	An ON edge is output whenever an error occurs.
Driver On/Off	Bidirectional	Switches the driver on or off
Driver Status	Output	Outputs the driver status.
Driver Gateway - General	Bidirectional	Unidirectional communication interface between this driver and MQTT client[807] .
Cyclic triggering	Bidirectional	(De)Enables cyclic triggering for data polling.

Properties of the component

Name	Default	Function
Driver	ComPort...	The "Driver" editor is used to set which interface is to be used. The reception delay is the time the system waits for further characters before all information is output.
Commands	0	The commands can be predefined here. These can later be sent directly via the SPs.
Append CR		Selection whether a CR is to be transmitted.
Attachment of LF		Select whether an LF is to be transmitted.
Cyclic triggering		(De)Activates cyclic triggering for data request.
Trigger interval [s]		Set the time interval for data retrieval in seconds.
Driver On/Off		Switches the driver on or off

Currently, both physical/virtual COM ports as well as the global cache Flex Ethernet gateways (if there is a serial cable connected and adjusted).

In the event of a normal com port you will need to set the port number as well as the interface parameters can be set.

We are a global cache whose IP Gateway is used, it must be entered. The available serial ports on the "Ports" is queried. The user must now be one of the ports from the list. In this case, the interface parameters are configured within the gateway.

On the one hand, the strings can be defined when triggers are sent, on the other hand, binary commands defined by the HEX representation.

About the properties "attach" and "attach" CR LF can be used to select whether (in the case of a serial cable connected to the gateway) \r and/or \n to the string to be sent to be attached.

In addition, there is a global data point to any (not defined) in the editor to send texts or byte arrays. For received data there are a further 3 data points. For one, the data is interpreted as ASCII text and output, on the second, the raw bytes output and on a third, the raw bytes as a hex string is output.

The transfer of section §, ² and ³ is not possible.

Command Editor:

Name	Freely definable name of the command
Type	Setting for the transmission type (ASCII or bytes)
Command	Command which is to be sent.
Expect response	If the response to a command is to be evaluated, this option must be set. This creates a data point (output) with the addition "Response".
data type	Setting for the data type
Response filter type	Selection of the filter type of the response
Response filter expression	Input for the search pattern from the response
Cyclical transmission	(De)Activate the release for cyclic transmission according to the entries in the properties.

6.11   Energy efficiency

This chapter describes the functions and properties of the components in the category Energy Efficiency.

- Consumption value storage 442
- Consumption value display 446
- Maximum monitor [x500] 448
- Maximum monitor display 468
- Energy Counter 470

- [Solar-Energie-Manager/ -Planer [x200]](#) 475
- [SMARD](#) 482

6.11.1 Consumption value storage

The consumption value store is an unVisiblee server component with the possibility to record the consumption of the created channels.

The component detects the consumption of the channels **every fifteen minutes** in automatic mode. It is also possible to save at other intervals via a separate memory input, but must then be triggered via an external signal. The channels can be grouped. The groups then automatically calculate the sum of all underlying channels. This applies on the one hand to the output of the consumption and cost alarms, on the other hand also for the consumption and cost sums and trends. This information is displayed in a folder in the hierarchy of the group.

To use the consumption storage, at least one consumption value display must be connected, as a Visible Client component. The use of several consumption value displays on the same page or different sides of the project is also possible. This allows multiple keypads to access and display the same consumption value store. So you can also compare different time ranges or values.

Data points of the component

Name	Type	Function
Start data export (csv)	Input	The consumption data is exported via an true edge. Storage path: C:\ProgramData\Alexander Maier GmbH\EisBär3.0\Export\
Data export status	Output	Text output for the export status such as: "Export running!" or "Export finished. All data up to ... have been exported!
Consumption value monitor	Bidirectional	Connection between a consumption storage and one or more consumption monitors.
Master Alarm	Output	An on signal is output here if the defined daily budget value of a channel has been exceeded.
Save Trigger	Input	If an ON signal is applied to this input, the current consumption is saved. This only applies if Auto Save is not activated.
Dynamic	Folder	In the folder Dynamic, the data points for the defined channels are displayed. These must be linked here. Each channel has numerous data points with different functions.
- Channels	Folder	The Channels folder contains the created channel with the input data point, costs and consumption.
- Cost	Folder	The Costs folder displays the outputs of the channel based on cost.
- Amount	Folder	Folder Consumption displays the outputs of the channel in relation to consumptions.

Data Points Cost / Consumption (All channels / Channel specific)

Name	Type	Function
Sum of Today	Output	Here the total is spent for today.
Sum of this Year	Output	Here the sum for the current year is spent.
Sum of this Month	Output	Here the sum for the current month is spent.
Sum of this Week	Output	Here the sum for the current week is spent.
Trend Budget Alarm	Output	Here, an on signal is output when the defined daily budget value has been exceeded.
Trend of Today	Output	Here is the trend for today spent.
Trend of this Year	Output	Here the trend for the current year is spent.
Trend of this Month	Output	This is the trend for the current month.
Trend of this Week	Output	Here the trend for the current week is spent.

Properties

Name		function
Channels		Here the individual channels are defined in a tree structure with groups and channels. These then appear as groups and channels in the data point Folder Dynamic.
Automatic save		If this parameter is set, the consumption is stored every quarter of an hour.
Name and path export file	C:\ProgramData \Alexander Maier GmbH \EisBär3.0\Export\CV_Channels.csv	File name and path for the CSV export file.
Automatic data export		If this option is set, an export will be created automatically every day (approx. 00:15).

Channel definieren

The title bar icons from left to right:

New group:	Adds a new group in the hierarchy. In a group any channels can be added afterwards. The group serves the outline. In addition, it sums up the consumptions and costs of the underlying channels to group totals.
New channel:	Adds a measurement channel to the current marker in the hierarchy.
Clear:	Deletes the current marker. If a channel is marked, it will be deleted. If a group is marked, all channels or groups below it will be deleted.
Import counter values:	An export file (.xml) with meter readings can be re-imported here.
Export counter values:	Here an export file of the current hierarchy can be created. The file is saved on the client PC under "C: \ Users \ USERS \ Documents \ Alexander Maier GmbH \ EisBar \ Export \".

When adding a channel, the following parameters must be set for each channel:

Name:	Name of the channel with up to 255 characters. This is also the name of the data point. With this name, the channel is displayed in the consumption value display for the selection.
Data type:	- **Counter,** if a meter with increasing measured values is available, e.g. electricity meter from the utility company. - **Pulses,** if it is a pulse meter where the pulse per kW/h is known. - **Measured value,** if e.g. a temperature is present). This does **NOT** calculate **consumption**! Only the value at the data point at the quarter hour is stored and shown as an absolute value in the display. No data points for costs and consumption are created here either, as it is not a consumption. The Plotter[153] component is recommended for displaying measured values.
Colour:	Here, the display color for the display is defined in the consumption value display.
Consumption factor:	This factor multiplies the incoming value. If the counter is e.g. Wh supplies these but should be represented as kWh, the factor would be 0.001.
Consumption Unit of measure:	Unit of measure of the measurand, e.g. kWh, liters, m³, ...
Cost factor:	Here the cost factor is entered. This is then multiplied accordingly with the consumption.
Cost Unit of measure:	Unit of cost, e.g. €.
Consumption budget:	Sum of the daily budget. If this value is exceeded in the trend calculation, the output consumption Trend Budget Alarm is set to.
Consumption budget factor:	This factor is used to multiply the displayed value, e.g. to convert from kWh to MWh.
Consumption Budget Unit of Measure:	Unit of measure of the budget
Cost Budget:	Sum of the daily budget. If this value is exceeded in the trend calculation, the output consumption Trend Budget Alarm is set to.
Cost budget factor:	This factor is used to multiply the displayed value, e.g. make a conversion from to t €, or convert the € into $.
Cost Budget Unit of Measure:	Unit of measure of the budget
User:	Here you can select which or which users are allowed to see this channel in the consumption display.

It is possible to add channels to a group at a later date:

1. Export your complete channel list
2. It is best to open the .xml file with the "NotePad++" programme

3. Then search for the entry *Name="Channel name"*in the lines (from the starting point "<ConsumptionValueStorageChannel" in each case)
4. You can now write the folder name before your channel name and then insert a #. The entry then looks like this: *Name="Folder#ChannelName"*

Repeat steps 3 and 4 for each individual channel.
Please do not insert any spaces before or after #.

6.11.2 Consumption value display

The consumption value display is a Visible Client component. It serves to display and operate the consumption value storage.

To use the consumption value display, it must be connected to a consumption value storage. It is possible to connect several consumption value displays with a consumption value store, but not vice versa several consumption value stores with a consumption value display.

Data points of the component

Name	Type	function
Reload	Input	If the input is triggered with any signal, the consumption value display reloads the current view. The behavior corresponds to the operation of the reload button.
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Consumption Value storage connect	Bidirectional	Connection between a consumption value storage and one or more consumption value displays.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component invisible and with an on-signal Visible is switched.
Opacity [0-255] [113]	Input	See component independent data points [113]

Client-View

The icons / menus of the title bar from left to right:

Slide(<):	Show or hide the channel selection list. Here, the channels or groups are selected for display.
Quick selection (for example, today):	Here, the queries are made automatically without further setting of date.
selection (for example daily):	Here, the query of a specific type based on the selected time range takes place.
Time range:	According to the selected selection, the time range for the evaluation is set here.
Consumption / Costs:	This button toggles between consumption display and cost display. The consumption scale is on the left side, the cost scale on the right side in the diagram.
Reload:	Pressing this button triggers the reloading of the data. The data in the diagram are not automatically updated. A query or a reload must be triggered in each case to obtain current measured values..
Gear (Channel editor):	Pressing this button triggers reloading the data. The data in the chart is not automatically updated. In each case a query or a reload must be triggered in order to obtain current measured values.
Slide (>):	Show or hide the chart setting menu. Here the graphic settings of the diagram are selected.

channel Editor

With the button "Channel counter reading import" it is possible to import offline counter readings into the consumption value storage.

With the button "Channel counter status export" it is possible to export all counter readings of a channel. This process takes a long time depending on the number of data points. The file is saved on the Eisbaer client PC in folder **C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\Export**.

IMPORTANT: It is **NOT** possible to import/export from a pulse channel!

In the Channel Editor, some channel settings can be changed in the Polar Bear Client.

Name:	not changeable
Data type:	not changeable
Colour:	Here, the display color for the display is defined in the consumption value display.
Consumption factor:	This factor multiplies the incoming value. If the counter is e.g. Wh supplies these but should be represented as kWh, the factor would be 0.001.
Consumption Unit of measure:	Unit of measure of the measured, e.g. kWh, litres, m³, ...
Cost factor:	Here the cost factor is entered. This is then multiplied accordingly with the consumption.
Cost Unit of measure:	Unit of cost, e.g. €.
Consumption budget:	Sum of the daily budget. If this value is exceeded in the trend calculation, the output consumption Trend Budget Alarm is set to.
Consumption budget factor:	This factor is used to multiply the displayed value, e.g. to convert from kWh to MWh.
Consumption Budget Unit of Measure:	Unit of measure of the budget
Cost Budget:	Sum of the daily budget. If this value is exceeded in the trend calculation, the output consumption Trend Budget Alarm is set to.
Cost budget factor:	This factor is used to multiply the displayed value, e.g. make a conversion from to t €, or convert the € into $.
Cost Budget Unit of Measure:	Unit of measure of the budget
User:	not changeable

6.11.3   Maximum monitor [x500]

The maximum guard is an invisible server component with the possibility to realise load optimisation or load shedding. A more detailed description can be found under <u>Functional Description</u>[451].
If this component is created, it counts as 500 components.

One or more Maximum Monitor displays can be connected as a visible client component to display and operate the Maximum Monitor.

Data points of the component

Name	Type	function
Dynamic	Folder	The data points for the defined channels are displayed in the Dynamic folder. These must be linked here. Each channel has a data point output for the circuit, a data point input for blocking the circuit and an input for emergency shutdown of the channel.
Settings	Folder	Contains data points for changes to the settings at runtime. (see below)
Configuration by E-Mail	Input	This input of the maximum monitor receives new configuration data as a file attachment from the e-mailer.
Cumulated power [kW]	Output	Cumulated power as float in kW.
Lifecheck signal	Output	Life check signal which is sent every second. Can be used for monitoring.
MAX 2 value change over	Input	If an on signal is applied to this input, it is switched to the power setpoint Max 2. (Low tariff)
MAX 3 value change over	Input	If an ON signal is applied to this input, it is switched to the power setpoint Max 3. (Special tariff)
MAX 4 value change over	Input	If an ON signal is applied to this input, it is switched to the power setpoint Max 4. (Special tariff)
MaximumMonitor Display	Bidirectional	Link to one or multiple Maximum Monitor Display.
Maximum Pre warning	Output	Will be set in case of a predicted power overstepping from the Maximumwarning[466] system.
Current power [kW]	Output	Momentary power as float in kW.
Information [Text]	Output	Internal state information will be sent as string on this data point. For example the state information can be send to the E-Mailer component which can send a e-mail in case of power overstepping.
Emergency mode	Bidirectional	This data point indicates the internal state of the "Maximum Monitor". In case of "on" the component is in emergency mode. In case of "off" the component is in normal mode. Furthermore the emergency mode can be triggered external with this data point by sending "on" value to this data point.
Period power [kW]	Output	Current period power as float in kW.
Trend power [kW]	Output	Current trend power as float in kW.
Available period power [kW]	Output	Indicates the remaining period power for the period in kW.
Counter working impulse	Input	This data point receives power values, energy values or energy impulses depending on the operating mode.
Counter Synchronic impulse	Input	Synchronic impulse input from the energy supplier for the synchronisation of the measure period.

Data points from the Settings folder

Name	Type	Function
Calculation Hysteresis	Bidirectional	Input/output of the calculation hysteresis in %.
Calculation interval	Bidirectional	Input/output of the calculation interval in seconds.
Device parameters changed by e-mail	Output	This output gives an on signal when the maximum guard has received new device parameters by e-mail and these have been successfully accepted.
Channel list changed by e-mail	Output	This output emits an ON signal when the maximum monitor has received new channel data by e-mail and these have been successfully accepted.
Configuration by e-mail	Input	Via this input, the maximum controller receives new configuration data as a file attachment [text] (.txt) from the e-mailer.
Max 1 Setpoint	Bidirectional	Input/output of the maximum setpoint for the stage in kW.
Max 2 setpoint	Bidirectional	Input/output of the maximum setpoint for the step in kW.
Max 3 setpoint	Bidirectional	Input/output of the maximum setpoint for the step in kW.
Max 4 setpoint	Bidirectional	Input/output of the maximum setpoint for the step in kW.

Properties

Name		function
Channel List		Here the individual channels (switching stages) of the maximum guard and their parameters are defined. These then appear as channels in the data point Folder Dynamic. Details can be found in the following chapter Switch Channels.[460]
Device Parameter		Here the general parameters for the maximum guard are set. Details can be found in the following chapter Device parameters[462].

6.11.3.1 Function description

The task of the Maximum Monitor is to restrict peak power with a quarter-hour measurement of the utility. The Maximum Monitor has priority-switching outputs that can control the electrical loads. By measuring the instantaneous power of energy it can control the power of the measurement period by selective dismantling or switching of the load to a predetermined power set point control. Loads which should be connected to the Maximum Monitor, for example, are Ventilation systems, boilers,compressors and thermoelectric devices, but not safety-relevant consumer loads such as the lighting.

To determine the expected trend, the calculation algorithm[453] is used, the precise description is in chapter trend calculation algorithm of the Maximum Monitor.

Power set-points
Four adjustable power setpoints[462] are available, to which the maximum controller regulates the power consumption in the measurement period. Max 1 is provided as the standard tariff, Max 2 as the low tariff, Max 3 and Max 4 as the special tariff.

Synchronization of measuring periods
For the correct function of the Maximum Monitor is the parallel operation of the measuring period[457] ,utility and Maximum monitor necessary. The synchronous operation is achieved by a synchronous pulse measurement periods. This is usually available on the respective utilities. If there is no sync pulse the Maximum Monitor has the possibility of generating the internal measuring period time itself.

Maximum Warning
To warn of an impending power overshoot, it is possible to establish a Maximum Warning[466] . If the power trend (result of the trend calculation algorithm) or the cumulative power in a programmed percentage of the power setpoint has been reached, this is indicated through a contact of the Maximum Monitor. This can, for example, be used to start a generator.

Emergency operation
In emergency operation, the outputs are dropped, where the emergency mode is activated. Each Output can be included in the emergency operation. A threat of a set-point overshoot is prevented by
shutting down the outputs in the emergency operation located in the consuming devices.

Faults
In a breakdown of operation the Maximum Monitor goes into emergency operation. A malfunction may be triggered, by lack of the sync pulse or failure of the calculated largest working pulse of the instantaneous power, working value or Instantaneous power value.

Message store
Status messages are displayed on the operating status of a message output and additionally stored in a log file of the maximum monitor.

Switching outputs
The number of outputs of[460] the maximum monitor can be adjusted as desired. To optimise switching operations, system-specific values can be assigned to each output.

Low tariff switching
The Maximum Controller offers the possibility to switch between different tariffs of the electricity supply company. These can be low, high and special tariffs. Switching can be done either directly via a contact of the EVU (data point input Max 2 setpoint switching) or via a defined daily period. When switching tariffs, it is possible to switch between different adjustable power setpoints (Max 1 setpoint and Max 2 setpoint). For special tariffs, "Max 3 setpoint" and "Max 4 setpoint" can be used.

6.11.3.2 Trend calculation algorithm

The task of the algorithm is to calculate the power trend and the power consumption correction . On the basis of consumed power measuring period (cumulative power), the instantaneous power and the measuring period time, the power trend is calculated. The power trend is the expected power at the end of the measurement period. With this power trend a power correction can be calculated. The calculated power correction determines whether devices need to be connected or not.
The calculation is based on each of the readings recorded during the calculated interval. This leads e.g. the number of scheduled intervals for each calculation interval to a different Slope of the trend curve.

The power trend calculation is the projection of the instantaneous power at the end of the Measurement period. Assuming that the power until end of the measurement period does no longer change, this means that the slope remains constant. The following two figures show the power Trend calculation in graphical form:

P in kW

P_Soll = 200 kW

200

P_kor = +30 kW

P_trend = 170 kW

100

P_trend = 75 kW

0

0   5   10   15

t in min

P in kW

P_trend = 230 kW

P_Soll = 200 kW

P_kor = -30 kW

200

100

P_trend = 75 kW

0

0   5   10   15

t in min

With the adjustable calculation interval the reaction speed of the algorithm is set in seconds.

6.11.3.3 Behavior

The calculated power correction power will decide whether devices will be turned on or off. The value can be positive or negative. With a positive correction power, devices can be switched on with negative devices they must be switched off. The dismantling or switching on the devices is conducted in strict accordance with the priorities of the outputs. Devices with a higher priority are switched on first, those which are lower priority are the first off. The number of devices that are switched off or on is calculated from the power correction and the power rating of the individual devices. The power Correction determines the power or to be switched off.

Switching off devices
When turning off at least so many devices have to be turned off that the sum of the power of the devices is greater or equal to the power correction.

Switching on devices
When turning on at least so many devices have to be turned on that the sum of the power of the devices is smaller or equal to the power correction.

Example for the connection and disconnection of devices:
Power Correction = -30 kW

devices 1 = 5 kW
devices 2 = 20 kW
devices 3 = 10 kW
devices 4 = 20 kW
devices 5 = 5 kW

Devices are sorted by priority: 1 is the lowest and 5 the top priority.
When switching off, devices are switched off one to three, starting with the lowest Priority. The sum of their power data is 35 kW and must be greater than or equal to the power correction with its 30 kW. For the switching on of devices are switched on 5-4, starting with the highest priority. The sum of their power data is 25 kW and less or equal to the power correction with 30 kW.

6.11.3.4 Priority control

Procedure of priority
The scheduler controls the switching on and off strictly in accordance with the priorities set at the outputs. The outputs with the lowest priority are shut down first, alternatively with switch on, the highest priority.

Output 3
Prioity 1

Switch on direction

Output 2
Prioity 2

Output 1
Prioity 1

Switch off direction

Circular switching

The priorities of the outputs must not differ mandatory, it can also be that more identical priorities for the outputs will be awarded. If you sort the list, as above, following Priorities in this case it is a problem at a switching action. The outputs with the same priority are in the succession list. Now a switching operation is executed, so the first output occurring with equal priority is given preferential treatment. Since this not may occur, we turn here to Circular switching to solve the problem. The circular switching takes the outputs with the same priority together and allows for a switching

operation always the starting with the longest rest period at. This measure will ensure that none of the outputs of equal priority is given preferential treatment.

Note: When using the circular circuit (more than one output per priority), the settings for the temporal behaviour of the channels no longer apply.

6.11.3.5 Meter period synchronisation

The synchronous pulse input of the maximum monitor is monitored with an edge detection. The measuring period starts either with a falling or with a rising edge of the synchronous pulse. The type of pulse depends on the respective RU and can be defined via the Device parameters dialogue. The measurement pause is started with the triggering edge, rising or falling. After the set time has elapsed, the release for the trend calculation is then given and the power optimisation can begin. This process is repeated continuously with each new measurement period to ensure synchronisation between the utility and the maximum controller.

6.11.3.6 Current power calculation

To calculate the instantaneous power to the maximum monitor work pulses, work values instantaneous power values are made available. In the work values and the Work pulses is a recalculation of instantaneous pulses needed, which is explained in the following two Sections.

Work pulses

The work pulses can be provided by a power counter of the utility. It is energy proportional pulses. The instantaneous power can be calculated from the interval of the pulse of Work pulses. Decreases in the interval of the working pulses, then increases the power. To calculate the instantaneous power from the pulse interval. one still needs the Pulse value of the power meter. The pulse value is information about the number of Pulses per kilowatt hour. Either one can see the power meter directly or calculate from the data of the meter.

Example of the instantaneous power can be calculated work in 1 hour

Measured pulse interval $t_i = 0.5$ s.

From the pulse interval $t_i = 0.5$ s, the number of the pulses is calculated in an hour.

(1)   3600 s / 0.5 s = 7200 pulses / h

With a pulse value of the power meter of 0.1 kWh / Imp.

(2)   Pmom = 7200 pulses / h x 0.1 kWh / pulse

Pmom = 720 kW
Pmom: instantaneous
Imp: Impulse

Example for calculating the pulse value of the power meter

Counter reading

- Provide the counter revolution of 1 kWh (800 U / kWh)
- 6 pulses per revolution
- Current Transformer 2000 / 5A
- Voltage transformer factor = 1

(1) Current transformer factor = 2000 / 5A = 400

$$(2) \; \text{Pulse Value} = \frac{1}{800 \frac{U}{kWh} * 6 \frac{Imp.}{U} * \frac{1}{400}} = 0{,}0833 \text{ kWh/Imp}$$

Work values

Modern power meters will often output work values. The work values can be easily converted to the instantaneous power. This must be the difference between the currently received, and the last received work value and from it you get the instantaneous work. This must then only be divided by the the elapsed time interval input between the two work values.

Example of the calculation instantaneous power calculation work in 1 hour:

Measured input distance of the input work values ti = 5 s.

Wi = 100 kWh.

Wi-1 = 95 kWh.

Wmom = Wi - Wi-1 = 100 kWh - 95 kWh = 5 kWh

Pmom = 5 kWh / 0.5 kW * 3600 s = 5 s / 5 s = 3600 kW

Pmom = 3600 kW

Pmom: instantaneous power
Wmom: instantaneous work
Wi: current received work value
Wi-1: last received work value

6.11.3.7 Logging

The maximum monitor leads a log file in which the status messages with an ID, date and Text information are stored. The ID is a sequential number, the object of which is to impede corruption of the file. Deleting individual entries by ID order is recognized. In addition to the status messages all the parameters can also be changed, which is made at run time of the maximum monitor, and are stored in the log file. This advanced feature of logging can also be disabled if required. With Touch Panel PCs which are equipped with a CF card, it is useful to keep the memory access as low as possible. The log file is always in the project directory of the maximum monitor with the name EventList and the file extension. Log (EventList.log) saved. The log file is used for Error analysis of a fault and for documentation of the maximum monitor.

Example of a log file with activation of the extended logger:

ID	date	information text
206	31/01/2007 16:02:14	Maximum monitor on Internal synchronization changed
207	31/01/2007 16:02:14	Setpoint Max 1 was changed from 0 to .180 kW
208	31/01/2007 16:02:14	Setpoint Max 2 was changed from 0 kW to 0.25 kW
209	31/01/2007 16:02:14	Setpoint Max 3 was changed from 0 kW to 0.25 kW
210	31/01/2007 16:02:14	Setpoint Max 4 has been changed from kW to 0.25 kW
211	31/01/2007 16:02:14	The period was changed from 15 minutes to 1 Min
212	31/01/2007 16:02:14	The measurement pause was changed from 0 sec to 9 sec
213	31/01/2007 16:02:14	Monitoring meter has been disabled
214	31/01/2007 16:02:14	Maximum switched to monitor power

215	31/01/2007 16:02:14	The output new 009 was added to the list
216	31/01/2007 16:02:14	The output new 008 was added to the list
217	31/01/2007 16:02:14	The output new 007 was added to the list
218	31/01/2007 16:02:14	The output new 006 was added to the list
219	31/01/2007 16:02:14	The output new 005 was added to the list
220	31/01/2007 16:02:14	The output new 004 was added to the list
221	31/01/2007 16:02:14	The output new 003 was added to the list
222	31/01/2007 16:02:14	The output new 002 was added to the list
223	31/01/2007 16:02:14	The output new 001 was added to the list

6.11.3.8 Switch channels

Note: Please identify the parameters and values listed below as accurately as possible. They serve as the basis for the internal calculation algorithm. The more exactly the requirements correspond to reality, the more accurate the maximum monitor can calculate.

Channel Editor

Name	Switch Off Impulse is	Switched power [kW]	Usage [%]	Priority	Periods Timeout [min]	Min.
Air Condition	Off	50	60	1	0	
Compressor	Off	20	40	2	0	
Hot Water	Off	10	40	3	0	

Min. Cycle Duration [min]	Min. Off Time [min]	Max. Off Time [min]	Emergency Mode	Block Output
0	5	2	5	☐	☐
0	8	2	3	☐	☐
0	0	0	0	☐	☐

Name

The name of the output and the switching stage.

Switch Off impulse is
With this parameter the switching behavior of the output is set. You can choose between On and Off. Choosing On, is in the case with the cut-off (shedding) of the output, a positive pulse (On) is sent. With Off a negative pulse (off) is sent.

Switched power in [kW]
Here, the nominal power of the entered switching group associated to this device load.

Usage [%]
With the use determines to what percentage of the set power of the output in the correction calculation is received. The use defines the probability of power consumption, if the device load is on.
With a light bulb it is 100%, with a compressor perhaps only 40%.

Priority
Via this parameter, each output is assigned a ranking (priority) for inclusion in the priority sequence[455] (controls switching off and on[455]). The lowest priority is 0.

Note: When using the circular circuit (more than one output per priority), the settings for the temporal behaviour of the channels no longer apply.

Periods time out [min]
The lockout period is started at the beginning of each measurement period. The outputs for which one Blackout periods is set will be activated at the start of the new measurement period. During the blocking time the shutdown of the outputs is prevented, even at an exceeded trend rate of power. The Off-time measuring period will not start if the Minimum switch off time is still running.

Min. Cycle duration [min]
By this time, a minimum period of time after the reconnection of output is defined. In this Time period the output can not be switched off again.

Min.off time [min]
Minimum length of time which an output must be switched off at a power off.Through this Off-time measuring period is an all too frequent switching avoided and thus damage to devices.

Max off time [min]
By this time a maximum switch-off after shutdown of the output is the defined. The Output can be turned off for up to this time.

Emergency stop
Enabling this parameter, the output is added to the emergency stop. The Emergency shutdown is triggered for any disturbance of the maximum monitor. Outputs, in which the Emergency shutdown is enabled, are then switched off immediately. This is in case of a power supply failure, a power limit overshoot is prevented.

Block Output
Enabling this parameter will block this channel and it is not part of the calculation anymore.

6.11.3.9 Device parameter

In the following dialogues the basic device parameters are explained.

6.11.3.9.1 Setpoint / Synchronisation

Power reference value MAX 1
Here is the power set point set to the threshold the maximum monitor should limit.

Power value set points MAX 2 to MAX 4
The power set point values MAX 2 to MAX 4 are required for the low tariff switching. The the power setpoint values for high, low, and special tariffs can then be set here. Switching is done either via an external contact or through a defined day period. The day period switch can only be applied to the power setpoint value MAX 2.

Synchronisation
External
The maximum monitor synchronises itself to the measuring period specified by the utility company with the aid of the external synchronisation pulse.
Internal
If no synchronisation pulse is provided by the utility company, this parameter can be used to switch to internal synchronisation. The maximum monitor then generates the measuring period time itself.

Synchronization pulse
Here is the type of synchronous pulse set provided by the utility. It can be selected with either on- and off-signal. A complete impulse is not required, only the trigger of the inputs with the defined signal.

Period duration
Here the measuring period duration of the maximum monitor is set including measurement pauses. For synchronous operation between utility and maximum monitor must be that measuring period duration prescribed by the utility.

Measuring breaks
This parameter specifies the measurement free period in the measurement period. The measurement free period is available from the utility to synchronize. It is the pulse duration of Synchronous pulses.

Calculation interval
With the adjustable Calculation interval the reaction rate of the maximum monitor is set in seconds. In this interval, the power trend and the calculated Outputs set cyclically.

Hysteresis calculation
On the parameter Hysteresis calculation a hysteresis switch for the open-close switching of the Outputs is produced. This hysteresis is seen as a "internally calculated reduction" of Power setpoint value, ie, for example, adjusted nominal value of 100 kW and a Hysteresis calculation of 3%, is internally determined with a power value of 97 kW.

Off-peak switching
With corresponding tariff regulation must be switched to a off peak rate period. In the Off-peak period, the costs of energy supply are lower. The switch can be through an external contact of the utility, or via an internal timing circuit.

6.11.3.9.2 Counter

Work / power / pulse meter
Depending on the system, the work [kWh], the power [W] or the pulse from the electricity meter can be used for the calculations.

Counter input
This parameter is the input signal type set for the instantaneous power of the maximum monitor. It can choose between pulses, energy values and instantaneous power values. With a decision on impulse, the maximum monitor works with energy proportional energy pulses. With energy values are energy values, and, with instantaneous power values power values are processed.

Counter indication pulse value
Here, the pulse value of the used pulse counter is set. This parameter is only active when the counter is set to input pulses.

Current transformer factor
When using a Current transformer here, the transformer ratio can be specified.

Voltage transformer factor
When using a Voltage transformer here, the transformer ratio can be specified.

Monitoring
Receiving the required readings can be monitored by the maximum monitor. It then checks whether corresponding input values are received within a specified time.

Time Span
When at the meter input of the maximum monitor for the adjustable time span no value is received an error message is output and the maximum monitor goes into emergency operation.

Monitoring period of the meter pulse
With this parameter the day period is set in which the meter monitoring is active.

Note: meter monitoring must be active in low load phase, otherwise, without a "real loss of values", fault messages are issued and the maximum monitor switches to emergency operation.

6.11.3.9.3 Maximum preliminary warning

The pre-warning for the possible reaching of the maximum can be de-/activated.

A warning signal is ...
With this parameter, the switching behavior of Maximum advanced warning is set. One can choose between on and off signal. This signal is sent from outputs when enabling the Maximum advanced warning, or by disabling the inverse signal.

Switching criteria (Ends at, starts at)
These parameters define the triggering of Maximum advanced warning. The triggering of Maximum advanced warning is a percentage of the active setpoint. In reaching this set percent value, the Maximum advanced warning is triggered. The Maximum advanced warning ends on reaching the set available power. The hysteresis switch consists of the switch-on of the specified percent from the active power set point and the Reset point of the indication of the available power, which are least to be available together.

Off- time periods

The periods of prohibition time starts at the beginning of each measurement period. During this time, the Maximum advanced warning is locked.

Minimum duty cycle
The minimum duty cycle determines the minimum disconnection time in the Maximum advanced warning on tripping. This period has a higher priority than the prohibited time periods.

Maximum advanced warning in power trend
The Maximum advanced warning is triggered when the calculated power trend has reached the programmed percentage value of the active power set point (MAX 1 MAX 2 MAX 3 MAX 4).

Maximum advanced warning in cumulative power
The Maximum advanced warning is triggered when the calculated cumulative power has reached the programmed percentage value of the active power set point (MAX 1 MAX 2 MAX 3 MAX 4).

6.11.3.9.4 Special parameter

This parameter activates or deactivates the extended logging. If it is active, all relevant performance values of the maximum monitor are also written to the [standard log](#)⁴⁵⁹ .

Example:

1	03.10.2022 13:48:40	ML 55.6 kW;TL 60.1 kW;VL 50.4 kW;PL 112.0 kW
2	03.10.2022 13:48:50	ML 65.5 kW;TL 62.4 kW;VL 56.4 kW;PL 148.4 kW
3	03.10.2022 13:48:59	Measurement period stop
4	03.10.2022 13:48:59	Measurement period start
5	03.10.2022 13:49:09	ML 62.2 kW;TL 62.7 kW;VL 5.7 kW;PL 70.1 kW
6	03.10.2022 13:49:19	Trend power exceeded
7	03.10.2022 13:49:19	ML 72.0 kW;TL 72.3 kW;VL 12.3 kW;PL 69.2 kW
8	03.10.2022 13:49:29	ML 45.8 kW;TL 50.9 kW;VL 16.5 kW;PL 71.3 kW
9	03.10.2022 13:49:40	ML 58.9 kW;TL 61.2 kW;VL 21.9 kW;PL 72.2 kW

ML = instantaneous power
TL = Trend power
VL = Period power accumulated
PL = Period power available

6.11.4 Maximum monitor display

Using the "Maximum Monitor display" component for the control of the "Maximum Monitor". With an on/off signal at the data point "Visible" the component will be switched visible / invisible in runtime. An on signal switches the component visible, an off signal invisible.

Note: Before you can use the "Maximum Monitor Editor" you must connect it with a "Maximum Monitor" component first.

Data points of the component

Name	Type	Function
Lock operation (display only)	Input	If this input is not used, the component can be operated normally. If the input is connected with an on-signal, the component will be locked can not be operated. It only has display function. The locked state of a component is displayed, with a padlock sign on a slightly gray background.
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Opacity [0-255] [113]	Input	See component independent data points [113]
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
Maximum Monitor	Bidirectional	Data point to link Maximum monitor display and Maximum monitor component bidirectionally.

Client-View

Maximum Monitor Display   0:01:41

Power	kW	
Current	45,8	○ Counterimpuls ○ Sync
Trend	47,6	○ Trend
Period cumulated	9,0	○ Pre-warning
Period available	120,0	○ Alarm

Channel	Mode		
Air Condition	Auto	⬤ Max 1	50.0 kw
Compressor	Auto	○ Max 2	-.- kW
Hot Water	Auto	○ Max 3	-.- kW
		○ Max 4	-.- kW
		● Emergency	

The elements / displays:

Designation	Description
Time indication	Display of the remaining time until the next measuring cycle
Current [458]	Currently measured power in kW
Trend [453]	Indication of the power expected at the end of the 15-minute interval.
Accumulated period	Indication of the average power over the entire 15-minute period.
Period available	Power value that can be drawn in the current period without exceeding the 15-min consumption limit.
Work pulse	Turns green when a work pulse or new value is received.
Sync	Turns green as soon as a sync pulse is received.
Trend	This indicator turns red as soon as the calculated trend [453] exceeds the maximum setpoint.
Prewarning	This display turns red as soon as the set prewarning range [466] has been reached. At the same time, a true is output at the maximum prewarning data point.
Alarm	This display turns red as soon as a failure of the counter signal [464] or the synchronous pulse has been detected.
Channel / Mode	Display of the applied channels [460] and their states at the output. Green = output for the channel is "ON", grey = "OFF". The mode can be changed from "Auto" (automatic load shedding active) to "Stop" (manual load shedding).
Max 1 - Max 4	Indicates which tariff is currently active and the target power [462] for this.
Emergency operation	Display turns red as soon as emergency operation has been activated.

6.11.5 Energy Counter

This invisible component is used to determine electricity consumption. Several main connections and their individual current paths can be considered individually.
The component calculates the power from current and voltage or the current from power and voltage. In addition, the amount of energy is output in kWh.

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	A diagnosis can be output as text here. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	The channels created are displayed in this folder.
Update interval	Bidirectional	Here you can specify the time interval at which the data is to be collected.

Properties of the component

Name	Standard	Function
Main connections	0	The main connections can be defined here, which could represent a sub-distribution, for example.
Channels	0	The individual current paths are created here.
Update interval consumption [s]	60	At the interval of the set time, the current data is recorded and calculated accordingly.

Main connection:

Name	L1 - N [V]	L2 - N [V]	L3 - N [V]	L1 - L2 [V]	L2 - L3 [V]	L3 - L1 [V]
Channel001	230	230	230	400	400	400

Data points from the Dynamic Folder (main connections)

Name	Type	function
Voltage L1-L2 [V]	Input	Input value of the voltage between the conductors
Voltage L1-N [V]	Input	Input value of the voltage between the conductors
Voltage L2-L3 [V]	Input	Input value of the voltage between the conductors
Voltage L2-N [V]	Input	Input value of the voltage between the conductors
Voltage L3-L1 [V]	Input	Input value of the voltage between the conductors
Voltage L3-N [V]	Input	Input value of the voltage between the conductors
Current Sum L1 [A]	Output	Returns the current sum of conductor L1
Current Sum L2 [A]	Output	Returns the current sum of conductor L2
Current Sum L3 [A]	Output	Returns the current sum of conductor L3

Designation	Description
Name	The designation can be adapted for the created channel.
Group	If several channels are to be grouped, a unique group name can be entered here. This creates a new folder in the "Dynamic" folder for the combined group consumptions.
Current path	Selection of current path L1/L2/L3 to N or star delta.
Main connection	The main connection to which the channel belongs must be selected here.
Cos phi	Enter the efficiency as a factor between 0 and 1.
Current Min [A]	If there is a minimum current, it can be defined here. If the current falls below this value, the corresponding data point will output an ON signal.
Current Max [A]	If there is a maximum current, it can be defined here. If it is exceeded, the corresponding data point will output an ON signal.
Current overload [A]	A current for overload can be defined. If this is exceeded, the corresponding data point will output an ON signal.
Power Min [A]	If there is a minimum power, it can be defined here. If the power falls below this value, the corresponding data point will output an ON signal.
Power Max [A]	If there is a maximum power, it can be defined here. If it is exceeded, the corresponding data point will output an ON signal.
Power overload [A]	A power for overload can be defined. If this is exceeded, the corresponding data point will output an ON signal.
On-time threshold [h]	Setting option for the maximum ON time. (e.g. for service interval, ...)

Data points from the dynamic folder (channel)

Name	Type	Function
On-time Total	Output	Outputs the total on-time
Total on-time - threshold reached	Output	If a set threshold value of the switch-on time is exceeded, a signal is output here.
Total on-time [h]	Output	Outputs the total switch-on time in hours
Reset total on-time	Input	Resets the "On time total" values to 0

Name	Type	Function
On-time intermediate counter	Output	Outputs the switch-on time of the intermediate counter.
On-time intermediate counter [h]	Output	Outputs the switch-on time of the intermediate meter in hours.
On-time intermediate counter - threshold reached	Output	If a set threshold value of the switch-on time of the intermediate meter is exceeded, a signal is output here.
Reset on-time intermediate meter	Input	Sets the values "On-time intermediate counter" to 0
Cos Phi	Input	Input for the efficiency value
Energy Total [kWh]	Output	Outputs the calculated energy consumption (total).
Reset Energy Total	Input	Sets the "Energy Total" values to 0
Energy Intermediate Meter [kWh]	Output	Outputs the calculated energy consumption (intermediate meter).
Reset energy intermediate meter	Input	Sets the "Energy intermediate meter" values to 0
Average power [W]	Output	Outputs the average power of the outer conductor
Power [W]	Bidirectional	If the power is measured, it can be fed into the energy meter for calculation (input). The current then serves as a pure output. Power and current must not be used as input at the same time.
Power Maximum [W]	Output	Outputs the maximum power of the phase conductor
Reset power maximum/average	Input	Sets the values "Power maximum and average" to 0
Power upper limit exceeded	Output	If a set power limit is exceeded, a signal is output here
Power below lower limit	Output	If the power falls below a set limit, a signal is output here.
Power overload	Output	If a set power limit is exceeded, a signal is output here.
Current average [A]	Output	Outputs the average current value
Current [A]	Bidirectional	If the current is measured, this can be fed into the energy meter for calculation (input). The power then serves as a pure output. Power and current must not be used as input at the same time!
Current Maximum [A]	Output	Outputs the maximum current value
Reset current maximum/average	Input	Sets the values "Current maximum and average" to 0
Current upper limit exceeded	Output	If a set power limit is exceeded, a signal is output here
Current overload	Output	If a set power limit is exceeded, a signal is output here.
Current below lower limit	Output	If the current falls below a set power limit, a signal is output here.

6.11.6 Solar Energy Manager/Planner [x200]

This component can be used to calculate the expected output of a PV system. It is based on http://forecast.solar/. This makes it possible to schedule loads in such a way that the grid consumption remains as low as possible and the PV power is optimally utilised. The "public account" is used as standard. This contains 12 queries per hour. Each installation group uses its own query. For more queries or better data resolution, http://forecast.solar/ offers cost-effective licences.
We recommend using your own FTP server to store the diagrams if they are to be published. The Eisbär portal server stored in Eisbär only allows a limited number of simultaneous accesses.
An example of the necessary settings can be found at the end of the chapter.

Data points of the component

Name	Type	Function
Update	Input	With any command, the information can be updated. When the day changes, an update is automatically performed.
Update query limit	Output	The maximum number of queries per hour is output at this data point. The limit may vary depending on the licence.
Update response	Output	Output of the update response as text. (For diagnostic purposes only)
Update-remaining queries	Output	Output the remaining update attempts that can be performed.
Update Remaining Queries (period [s])	Output	Time period in which the number of queries (update-remaining queries) are possible.
Update status	Folder	Update information for chart creation
Current Power [W]	Input	The actual measured power of the PV system can be linked here. This allows the target/actual comparison to be displayed in the diagram.
Current period energy	Output	Output of the currently available energy (Wh of the current hour)
Current period power	Output	Output of the currently available power in watts.
Clear All Dates	Input	Any input signal is used to delete all created appointments.
Delete all appointments and regenerate	Input	Via any input signal, all created appointments are deleted, recalculated and set accordingly.
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Diagram path (local file)	Folder	Data points from this folder contain the local storage path of the plotter graph for the expected energy on the specified day. This URL is passed to the image component[123] for display. The graphics are stored under "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www". **The diagram is only displayed if the server and client are running on the same machine.**

Name	Type	Function
Diagram path (URL)	Folder	Here the storage path and file name are sent in URL format for external access (EisBär clients in the network). e.g.: **http**(s)**://IP-ADRESSE:8003/Eisbaer.RESTServices/** This URL is transferred to the image component[123] for display. The display works in the local network.
Dynamic	Folder	For each channel created, several data points are created. See below for explanation
Energy (Day) [Wh]	Folder	Energy values (total day) for up to 6 days in advance
Extended diagnosis	Input	With an on command, the output at the diagnosis output is extended.
Base load [W]	Bidirectional	Expected (average) base consumption, which is subtracted from the available solar power. **Attention: If changed, all dates are recalculated! The value should preferably be static.**
Calendar Editor (channel restriction)	Bidirectional	Connection for a calendar editor. Here, appointments can be entered for which period a switching of channels is permissible. This requires the activation of "Calendar Activation" in the channel editor.
Calendar Editor (Placed Appointments)	Output	Output to the calendar editor. The scheduled appointments are displayed. These appointments cannot be adjusted here. It is purely an information output!
Legend in diagrams display	Bidirectional	Via an ON signal, the legend (channel name and colour) is also displayed in the forecast.
Legend outside the diagram	Bidirectional	Via an ON signal, the legend (channel name and colour) is displayed next to the forecast. For this, the legend must be visible.
Maximum power (day) [W]	Folder	Output of the peak power per day.
Average power (only sunshine hours) (day) [W].	Folder	Output of the averaged power of all sunshine hours per day.
Power average (day) [W]	Folder	Output of the averaged power per day.
Display power sum in diagrams	Bidirectional	Activate (true) if the resulting total power is to be displayed in the diagrams.
Show measured values in diagrams	Bidirectional	Activate (true) if the measured values are to be displayed in the diagrams.
Show original preview in diagrams	Bidirectional	Activate (true) if the original preview is to be displayed in the diagrams.
Location	Output	Outputs the location entered via the coordinates as text. Example: 69412 Eberbach, Rhein-Neckar-Kreis, Baden-Württemberg, DE
Import price list (direct)	Input	Imports the CSV text content from the price list. To do this, set the file selection to "File content" and also use the data point with the same name. The new prices are taken over immediately and a new calculation is performed.

Name	Type	Function
Import price list (delayed until day change)	Input	Imports the CSV text content from the price list. To do this, set the file selection to "File content" and also use the data point with the same name. The new prices are saved and only recalculated at midnight.
Delete dates for today and regenerate	Input	Via any input signal, the created appointments for today are deleted, recalculated and set accordingly.
Show appointments in diagrams	Bidirectional	Activate (true) if the appointments are to be displayed in the diagrams.
Driver On/Off	Bidirectional	Turn driver on or off.
Show elapsed time in charts	Bidirectional	The elapsed time is highlighted in the diagram.
Forecast for today [filename]	Output	The forecast for today is saved as csv under C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www. The outputs are displayed in a 15-minute grid.
Show Y-Grid in diagram	Bidirectional	This can be used to show/hide the Y-axis.
Time zone	Output	Output of the time zone as text. Example: Europe/Berlin

Data points in the Dynamic folder per channel

Name	Type	Function
Request (start delay [min])	Input	Within the specified time in minutes, this channel is to be placed.
Start-up delay [min]	Bidirectional	At runtime, the on-time of the channel can be changed.
Output (appointment active)	Output	If the appointment is active, this output is ON, if not, OFF.
Countdown to start [hh:mm:ss]	Output	Output of the time until the channel is released. If the time is negative, the channel is already active for the displayed time.
May use power supply	Bidirectional	Drawing from the mains can be allowed (on) or denied (off) via this.
Diagram path (local file)	Folder	The local storage path and file name of the plotter graphic for the planned period of this channel is output here. The programme path is passed to the picture component[123] for display. The graphics are stored under "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www". **The graphics are only displayed if the server and client are running on the same machine.**
Graph path (Url)	Folder	The HTTP storage path and file name of the plotter graphic for the scheduled period of this channel is output here. This URL is passed to the image component[123] for display. Example: **http**(s)**://IP-**

Name	Type	Function
		ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/energy_image.png The display works in the local network.
Average power [W]	Bidirectional	Setting option for the average power of the unit. **Attention: No measured value may be linked here!**
Priority	Bidirectional	Specification of the priority level (0-10). The higher the number, the higher the priority.
Lock	Bidirectional	Enables (ON) or disables (OFF) the channel for calculation.
Appointments [Calendar Editor]	Output	Output to the calendar editor. The scheduled appointments are displayed. These appointments cannot be adjusted here. It is purely an information output and has nothing to do with the bidirectional data point.
Delete appointments	Input	Deletes all appointments for this channel

Properties of the component

Name	Standard	Function
Channels	0	Create the loads that can be connected/disconnected. For more information, see below.
Installation groups	0	The installed PV system is entered here. Several systems can also be combined. The **name** is freely definable. **Declination**: Angle of the PV system to the earth; 0 (horizontal) ... 90 (vertical). **Azimuth**: Angle of orientation -180 ... 180 (-180 = north, -90 = east, **0 = south**, 90 = west, 180 = north) **Installed** power: Power rating of the PV system in watts.
Base load [W]	0	Expected (average) base consumption, which is subtracted from the available solar power.
Energy prices	0	Enter energy prices per period
API Key		Personal key, when using a paid http://forecast.solar/ account. Depending on the version, more days of preview (up to 6) are available and the resolution increases from 1h to 15 minutes.
Update interval [min]	15	Interval for data retrieval from the internet.
Query timeout [s]	5	Time in seconds until the query is aborted if there is no response from the service.
Longitude [s]	0	Position of the PV system. Example: 8.989016 (Attention: Use comma)
Latitude	0	Position of the PV system. Example: 49.469249 (Attention: Use comma)

Name	Standard	Function
Diagram colour - background		Setting of the colour to be used in the diagram.
Diagram colour - Axes		Setting of the colour to be used in the diagram.
Chart colour - Prediction		Sets the colour to be used in the chart.
Chart Colour - Power Sum		Sets the colour to be used in the chart.
Chart Colour - Original Prediction		Sets the colour to be used in the chart.
Chart colour - Measurement		Sets the colour to be used in the chart.
Chart colour - Past time	X	Sets the colour to be used in the chart.
Show appointment in diagrams	X	Activate (true) if the dates are to be displayed in the diagrams.
Show power total in diagrams	X	Activate (true) if the resulting total power is to be displayed in the diagrams.
Resolution (X)	1024	Specifies the resolution (pixels) that the image should have in width.
Resolution (Y)	768	Specification of the resolution (pixels) which the image should have in height.
Font size (title)	50	Defines the font size for the title of the diagram.
Font size (text)	30	Defines the font size for the label of the X/Y-axis
Font size (axes and legend)	15	Defines the font size of the values on the X/Y-axis
Offset Label X-Axis	2	Allows the distance between the X-axis text and the X-axis of the diagram to be set between 0 and 10.
Offset Label Y-Axis	3	Allows the distance between the Y-axis text and the Y-axis of the diagram to be set between 0 and 10. If the value is too high, the text may lie outside the display. Then the parameter "Margin left" must be adjusted so that the text is moved back into the visible area.
Margin left (shifting the Y-axis to the right)	12	Here you can set the distance between the left edge of the image and the Y-axis of the diagram between 0 and 50.
Show original preview in diagrams	X	Activate (true) if theoriginal previews are to be displayed in the diagrams.
Show measured values in diagrams	X	Activate (true) if themeasured values are to be displayed in the diagrams.
Show Y-Grid in diagrams	X	Activate (true) if theY-grid is to be displayed in the diagrams.
Show legend in diagrams	X	Activate (true) if thelegend is to be displayed in the diagrams.
Show elapsed time in diagrams	X	Activate (true) if the elapsedtime should be displayed in the diagrams.
Publish diagrams		If enabled, the diagrams will be uploaded to the Polar Bear Portal Server and the corresponding HTTP URL will

Name	Standard	Function
		be generated. If this is not active, the URL for network access is generated.
User-defined FTP connection		With this enabled, the graphs are sent to the custom FTP server. Uploading to the Eisbär Portal Server is disabled.
Add timestamp to uploaded images		Adds the timestamp to the file name of the graphic.
Custom FTP Connection		Entry of the user-defined FTP connection for uploading the graphic.
URL base for user-defined publishing		Entry of the URL for user-defined FTP connection from which the graphic is to be downloaded.
Driver On/Off		Defines whether the driver is automatically activated at the start of the project.

Note on display in different application scenarios:
The generated images are stored in the folder "C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\www" of the EisBär server.
Local operation only: Data point "Diagram image file (local file)" is linked to the image component. -> EisBär server and client run on the same machine. No access via network or internet is possible.
Local network: "Publish images" propertydisabled, "Diagram image file (Http URL)" data pointis connected to the image component. -> EisBär server and client run on different machines or apps in the local network. Access via the local network is possible. No internet access
Internet:Publish Images propertyenabled, data point "Diagram Image File (Diagram Image File (Http URL)" is connected to the image component. -> EisBär server and client can run on different machines, apps, locally or on the internet. The images are cached on our web server. FTP access to "http://eisbaer-scada.net" must be possible.

Channel editor

Name	Function
Name	Freely definable name for the consumer.
Priority	Consumers are scheduled according to priority (0-10). The higher the number, the higher the priority.
Power [W]	Indication of the expected continuous power of the consumer.
Duty cycle [min]	Indication of how long the consumer is to remain switched on.
May use power supply	Activate if an appointment is to be created in any case, even if not enough solar power is available. If Deactivated, an appointment is only created if, after deducting the previously scheduled appointments (all consumers that are allowed to use domestic power and all that are not but have a higher priority), there is still enough solar power available over the switch-on duration.
Calendar restriction	If active, appointments are only created in the periods for which an Allow appointment has been created for the consumer.
Only on request	An appointment is not created automatically, but only on explicit request via the data point provided for this purpose (schedule appointment start within X

Name	Function
	minutes).
Allow day change	Allow whether an appointment goes beyond the day change.
Start in past	Allow appointment start in the past
Allow changes if active	If an appointment is recalculated (e.g. if an appointment is explicitly requested for a consumer or the basic consumption changes or consumers are (de) activated, etc.), a currently running appointment is only moved if this is permitted here (e.g. for chargers or similar). Consumers that are not allowed to be interrupted should deactivate this option here so that running appointments are not interrupted/postponed.
Allow splitting	With this function, the channel can be switched on and off in the course of the day. This distributes the duty cycle over several convenient periods.
Fix current day	If this function is set, the current date for this channel can no longer be changed. Not even if other parameters such as PV power or electricity prices change.
Colour	Colour for the consumer, which is displayed in the diagram and in the calendar.

CSV import file structure:
<Time>,<Price in cents/kWh>

Time,Electricity price in ct./kWh
0:00,3.9
0:15,3.53
0:30,3.125
0:45,2.253
1:00,3.579
1:15,3.095
1:30,2.625
1:45,2.328
2:00,2.993
2:15,2.649
2:30,2.886
...

In this example, the electricity price changes every 15 minutes.

Minimum requirement for the component settings:

Create the installation group(s):
The installation groups are created via the green +. The performance of several installations is combined for the calculation. A separate name can be specified for each installation. The orientation of the PV modules must be specified so that the expected PV power can be calculated correctly. The declination, i.e. the installation angle, and the azimuth orientation (cardinal direction) must be entered. The angle of orientation is specified as -180 to 180. The following applies: -180 = north, -90 = east, **0 = south**, 90 = west, 180 = north.

If a value is entered under**"Base load [W]**", this value is subtracted from the power available (according to the forecast). This means that the base load is always covered by the PV power. This value can also be dynamically adjusted via the data point of the same name. It is important here that **no** measured values may be placed on this data point. Each change to this data point triggers a complete recalculation. If changes are made too quickly, the system may be overloaded.

Creating the channels:
The loads that are to be switched via the Manager are listed in the channel editor. Data points are created for each load in the Dynamic folder. Switching takes place via the "Output (event active)" data point.

The calendar or the screen component can be used to display the planned switching.

6.11.7 SMARD

SMARD - Electricity market data for Germany
The Federal Network Agency's information platform on the German electricity market has been online since 2017. Its name SMARD stands for electricity and gas market data. The data published on SMARD provides an up-to-date and comprehensive overview of what is happening on the electricity market.

The component requests energy volumes and prices from the federal grid agency SMARD (https://www.smard.de/home) and makes them available in EisBär. These can be used directly in the"Solar Energy Manager/Planner[475] " component, for example.

Download link: SMARD sample template
General information on sample templates (SCADAComp):
Download the desired SCADAComp file and unzip the ZIP file in an empty folder if necessary. In the EisBär SCADA Editor, select the "Import components" option in the menu under Project and load the template. If a conversion is necessary because you are using a newer EisBär version, confirm the process with YES. To maintain the functionality, please select the option: "Create new meshes" as a copy rule when inserting.

Data points of the component

Component name	Type	Type Function
Query single	Input	An ON signal at this input triggers a one-off query of the values. Each further ON signal triggers a further query.
Current value	Output	Output for the current price.
Data all (csv) [Text]	Output	Output of all prices found (also for previous days).
Data today (csv) [Text]	Output	Output of the data for today. If prices are output, they can be used directly in the "Solar Energy Manager/Planner"[475] component, for example (import price list (immediately)). Prices can be displayed using the MiniChart[170] component (Display CSV [string]).
Data tomorrow (csv) [Text]	Output	Output of the data for tomorrow, if available. If prices are output, they can be used directly in the "Solar Energy Manager/Planner"[475] component, for example (Import price list (when changing day)). Prices can be displayed using the MiniChart[170] component (Display CSV [string]).
Diagnosis [Text]	Output	A diagnosis can be output as text here. **Attention: Diagnostics or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.**
Extended diagnostics	Input	(De)Activate the extended diagnostics.
Driver On/Off	Bidirectional	(De)Activate the driver
Preview	Folder	Contains the "Today" and "Tomorrow" folders for the prices in the 15-minute grid.

Properties of the component

Component name	Standard	Function
Filter	Market price Germany	Selection of the category from which the information should come.
Region	Region Germany	Select the region
Resolution	Hourly	Selection for the number of results
Factor	1	Conversion factor for the output
Update interval [h]	1	Interval for updating the data via the Federal Network Agency.
Driver on/off		(De)Activating the driver

6.12   E-Mobility

This chapter describes the functions and properties from the Driver category.

Currently the following driver components are available:

- OCPP local Backend [485]
- OCPP Client [511]
- Dynamic Load Management V2 [x2500/x3000] [513]
- Dynamic Load Management [x2500/x3000]
- DLM distribution data [527]
- OCPP charge station data [529]
- Charge History (OCPP/DLM) [533]
- Tesla [x200] [535]
- EVCS [x150] [539]
- wallbe [544]

Connection scheme:

The connections between DLM V2 and OCPP are data points from the Dynamic folder (Station/Connector).

6.12.1   OCPP local Backend [x150]

This invisible server component is used to connect charging stations via the manufacturer-independent protocol OCPP.
Per charging station this driver counts 150 components each!

The connection is established from the charging station to the EisBaer server. It is therefore necessary to release the ports used in the firewall of the EisBaer server. By default, it is port 80 or 443 (wss; Secure) in the [properties]485 --> connection setting.

Depending on the charging station used, a certificate is required for access. This can be created in the [EisBär server configuration console]45 in the TAB Server ports and is then imported in the charging station.

Data points of the component

Name	Type	Function
Enabled Stations [Text]	Output	Comma separated output of the active wards. This can be used for [list selection]196 , for example.
Current ID Tag File [File Name]	Output	Output of the URL for the ID-Tag file (storage path)
Current ID tag list version	Output	Output the ID Tag version (number). The version number is incremented by one with each import.
Send all logs (or only of the month) to Admin	Input	any value (except TRUE) -> Triggers sending **all data** to the admin. TRUE -> Triggers sending all data of the **current month** so far to the administrator.
Send all logs of the last month to admin (and user)	Input	any value (except TRUE) -> Triggers sending all data of the past month **only to the administrator** TRUE -> Triggers sending all data of the past month to the **administrator and users.** The users only receive their data.
Delete all profiles	Input	Charging profiles of all charging stations are deleted
Alternative e-mail address for unknown users	Bidirectional	Change alternative mail address (used if no user address is stored in the channel editor)
Known station names [Text]	Output	Comma separated output of known stations from OCPP.
Export database (file name)	Input	Exports the OCPP database(s) (the transaction database, the user database and various values from the Runtime DB such as the last assigned transaction ID) to corresponding files. The path must be specified in the DP - e.g. via the[file selection component]926 3 files are created. - The transaction data with the specified file name - The user ID data with "_users" appended to the file name

Name	Type	Function
		- The runtime data with "_runtime" appended to the file name
Import database (file name)	Input	Selection or specification of the transaction data file. The other two are searched for in the same folder with the above naming scheme and imported accordingly
Delete database	Input	Deletes the transaction database
Diagnosis (always detailed) [Text]	Output	**Attention: Diagnostics or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.**
Diagnosis (Mail) [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Diagnosis (MQTT) [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! These can significantly affect the performance of the service if used.**
Dynamic	*Folder*	*Contains the data points for the created charging stations[485] (see below).*
Email address of the admin	Bidirectional	The e-mail address of the administrator(s) can be changed via this data point at runtime. Multiple addresses are separated with a ;.
Send e-mails to users (load interruption)	Bidirectional	(De) Enable e-mail notification to the user when the load state changes to "load interruption".
Send e-mails to user (end of transaction)	Bidirectional	(De) Activate e-mail notification to the user when the charging status changes to "transaction end" (finished charging).
Reset energy counters of all stations	Input	Via any signal, the counter readings of all charging stations are set to 0.
Extended diagnosis	Input	The output of the diagnosis can be extended with an An value.
ID cards teach-in mode - added ID tag	Output	Feedback of the last ID tag added by the teach-in mode.
ID card teach-in mode (global)	Input	Teach-in mode is activated with an ON signal. This allows new ID cards to be read in at a charging station. This tag is valid for all charging stations.

Name	Type	Function
ID card teach-in mode (station by station)	Input	Teach-in mode is activated with an ON signal. This allows new ID cards to be read in for the charging station at which the card is held.
ID Tags	*Folder*	This folder contains data points for reading or entering the ID tag configuration.
ID Tags [CSV String]	Output	Outputs the ID Tags as text when the data item *Export ID Tags [CSV String]* is triggered.
Export ID Tags [CSV String] Input	Input	Trigger input to output the ID-TAGs at the *ID-Tags [CSV string]* output.
Export ID Tags [Filename] Input	Input	By specifying the absolute storage path, the ID tags are exported. (See below for the structure of the CSV file)
Import ID tags - Result	Output	Output in text form whether the import was successful or not.
Import ID tags [CSV string] Input	Input	By entering the ID tags as CSV text, the list can be imported here.
Import ID tags [filename] Input	Input	By specifying the absolute storage path of the CSV file, the ID tags are imported. (See below for the structure of the CSV file)
Synchronise ID tags with all stations	Input	The imported ID tags are synchronised with all connected charging stations, if this is possible. There may be restrictions imposed by the charging station itself.
Synchronise ID tags with all stations (progress [%])	Output	Output of the percentage progress of the synchronisation.
Synchronise ID Tags with all stations (Running)	Output	As long as synchronisation is running, an on signal is output. When synchronisation is complete, an off signal is output.
Calendar Editor (User - Global)	Bidirectional	Data point for the calendar editor. For charging stations (with the calendar option activated), appointments can be created in which they may be used.
Calendar Editor (Stations)	Bidirectional	Data point for the calendar editor. For charging stations (with activated calendar option) appointments can be created in which they may be used.
Charging history	Bidirectional	Connection to the charging history[533] component (see also connection diagram[483]).
Loading stations [Text]	Output	Displays the names of the charging stations that are in the "charging" state.
Charging point data	Bidirectional	Data point for the connection to the OCPP charging station data[529] component (see also connection diagram[483]).
Charging station occupied	Output	Number of occupied/used charging stations
Total charging stations	Output	Number of all activated charging stations
Total charging stations (not available)	Output	Number of all inactivated charging stations

Name	Type	Function
Charging points charging	Output	Number of charging stations currently charging a vehicle.
Charging points online	Output	Number of charging points that are currently connected via OCPP.
Charging points available	Outlet	Number of all available (connected and unused) charging stations
Total charging stations	Outlet	Number of all charging stations
Charging stations online	Output	Number of charging stations currently connected via OCPP.
Last rejected ID tag	Output	Output from the RFID tag that was last rejected.
Last accepted ID tag	Output	Output from the RFID tag that was last accepted.
Generate log files from database	Input	Triggers the creation of a log file from the database.
Local IP address	Bidirectional	Data point to be able to change the local IP address of the OCPP server at runtime.
Enable Mail Sending	Bidirectional	(En) activates the sending of e-mails to
Export MQTT Topics	Input	Generates the MQTT Topics from the OCPP settings.
MQTT connected	Output	If there is a connection to the MQTT broker, an on signal is output. Otherwise an off signal.
Messages (reduced) [Text]	Output	Output of the messages received from the charging station or remote backend in text form. The output is reduced to the essentials.
Messages [Text]	Output	Output of received messages from the charging station or remote backend in text form.
Server running	Output	Output whether the backend server is running or not.
Driver On/Off	Bidirectional	Turn driver on or off.
Unknown Stations [Text]	Output	Output the charging station ID that tried to register but were not accepted or are not known.
Connected Stations [Text]	Output	Output the charging station IDs that are known to the OCPP system and are connected.
Available Stations [Text]	Output	Output of the charging station ID which are available, connected and not in use via the OCPP system. are.
Disable cyclic connection test	Input	This data point is used to (de)activate the monitoring of the connection to the wallboxes.

Overview of the station outputs, which build on each other:

Data point	Meaning of the output
Unknown stations	All stations that are trying to connect but are not known (defined in the channel editor).
Known stations	All stations defined in the channel editor that are "used in the project" (use = is considered at all and counts towards the licence size)
Active stations	All known stations additionally with the condition "Station Activated" (Activated=may connect). The setting can be adjusted in the channel editor or via the data point at runtime.
Connected stations	These are all active stations additionally with the condition "Connected " (station has successfully registered).
Available stations	These are connected stations additionally with the condition "Available" (station has sent status "Available" - is therefore not occupied).

Data points of the created charging stations

Name	Type	Function
Connection	Folder	see below
Number of connections	Output	Outputs the number of connections of a wallbox.
Authorisation function active	Bidirectional	Activate/deactivate the authorisation function (see Channel Editor Settings).
Backend - local authorisation (if set)	Bidirectional	(De) activates local authorisation.
Deactivate backend (if set)	Input	An ON signal terminates the connection to the backend.
Backend connected	Output	If a backend is connected, an ON signal is output. Otherwise, an OFF signal is output.
Data transfer request	Output	Text that can be transmitted in manufacturer-specific messages.
FW Update Status	Output	If an update is performed, the current status is output as text.
FW version	Output	Output of the firmware version of the charging station as text.
Overall system	Folder	see below
Heartbeat	Output	If a heartbeat message is received from the station, a TRUE is output here.
Manufacturer	Output	Output of the manufacturer as text.
History (log file)	Output	Output of the storage location of the history (log file) as text.
Calendar Editor	Bidirectional	Data point for the calendar editor. This can be used to limit the access times of users (if activated for them) at the respective charging station. Charging can only be started if there is an active appointment for the user.

Name	Type	Function
Command - Request FW Update [File]	Input	To import an update into the wallbox, the local storage path of the update file is transferred to the data point.
Command - Update local list	Input	Any command is used to load the imported ID tags into the station.
Command - Clear local cache	Input	Any command is used to delete the locally stored ID tags.
Command - Delete profiles	Input	The charging profiles of the charging station are deleted via any command.
Command - Reset (Hard)	Input	Any command resets the charging station.
Command - Reset (Soft)	Input	The charging station is reset via any command.
Command - Request local list version	Input	The version of the local list is requested via any command and output at the data point.
Last rejected ID tag	Output	Output of the user ID that was last rejected.
Last accepted ID tag	Output	Output of the user ID which was last accepted.
Measuring device	Output	Output the name of the measuring device as text.
Measured values	Folder	see below
Model	Output	Output of the model name as text.
Send message [string]	Bidirectional	**Attention: Only intended for diagnostics and only in the event of an error. Please only use after consulting the support team! These can significantly impair the performance of the service if used.**
Messages	Output	Output of all communication from the OCPP.
Serial number	Output	Output of the serial number as text.
Station On/Off	Bidirectional	Activate/deactivate the charging station.
Station ID	Bidirectional	Input/output of the station ID.
Status	Folder	see below
Connected	Output	If the connection to the station is established, an on signal is output.
Local list version	Output	Output of the version number of the local ID tag list.

Data points per connection

Name	Type	Function
Current/Last Transaction - Energy at End	Output	Output of the amount of energy at the end of the transaction. Depending on the station, the value is in Wh.
Current/Last Transaction - Energy at Start	Output	Output of the amount of energy at the start of the transaction. Depending on the station, the value is in Wh.
Current/Last Transaction - Energy Transfer	Output	Output of the amount of energy transferred in the last transaction. The value is the difference between start and end. Depending on the station, the value is in Wh.
Current/Last Transaction - ID	Output	Output of the last transaction ID.
Charge point data to DLM	Bidirectional	Connection for the DLM driver.
Query effective charging profile	Input	The active charging profile is output as text at the diagnostic output.
Command - (De)activate	Input	(De)activates this connector.
Command - Unlock Connector	Input	With any command, the cable can be unlocked at the station.
Command - Reserve(ID tag)	Input	This connector can be reserved for a defined ID tag. The reservation is valid for 1 day.
Command - Reserve (Reservation number)	Input	This port can be reserved for a defined reservation number. The reservation is valid for 1 day.
Command - End Reservation	Input	The reservation of a specific reservation number is terminated.
Command - Start Transaction (ID Tag)	Input	Starts the loading process by entering an ID tag.
Command - Stop Transaction (opt. Transaction ID)	Input	Ends the loading process. Charging can also be stopped by entering the transaction ID.
Maximum charging current [A]	Input	Specifies the maximum current in [A].
Number of phases for charging	Input	Values 1-3 can be used to specify how many phases should be used for charging.
Start temporary free loading	Input	Free charging is activated with an on signal. This means that authentication is no longer necessary.
Total energy counter [Wh] (real)	Bidirectional	Output of the total energy in Watt-hour [Wh] of this connection.
Counter total energy [Wh] (since reset)	Output	Output of the total energy since the last reset in watt-hour [Wh] of this connection.
Reset total energy counter	Input	Via any signal, the counter reading of this charging station is set to 0.

Name	Type	Function
Timestamp - first transaction	Output	Output of date and time of the first transaction.
Time stamp - last transaction	Output	Output the date and time of the last transaction.

Data points overall system

System name	Type	Function
Query effective charging profile	Input	The active charging profile is output as text at the diagnostic output.
Command - x	Input	Description see "Data points per connection".
Charging point data for DLM	Bidirectional	Connection for the [DLM driver][513] if there is only one charging point or the charging station itself has charging management for several connections.
Charging current plot (http)	Output	For external access (EisBär clients in the network), the URL to the graphics file must be sent to the data point of the [image component][123]: Example: **http://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Charging current plot (local)	Output	Output of the local storage location for the data. This file path can be linked to the [image component][123]. The diagram is only displayed if the server and client are running on the same machine.
Maximum charging current [A]	Input	The maximum charging current for the entire station can be set here in amperes.
Start temporary free charging	Input	Free charging is activated with an on signal. This means that authentication is no longer necessary.

Data points Measured values per connection and for the entire system

Name	Type	Function
Connection x	Output	Output of all measurement data from this port.
Total system	Output	Output of all measurement data from the entire system.

Data point status per connection and for the overall system

Name of	Type	Type Function
Connection status - Connected and locked	Output	An On signal is output when the system has recognised that a vehicle is connected and the connection has been locked.
Connection status - Not connected	Output	Outputs an On signal if no vehicle is connected.
Connection status (no.)	Output	The connection status is also output here as a number. 0 = available

Name of	Type	Type Function
		5 = preparing 7 = charging null = faulted / unavailable
Error - x	Output	Indicates whether a specific error is present (on) or not (off).
Error - manufacturer code	Output	Text output of the manufacturer-specific error code.
Error - manufacturer ID	Output	Text output of the manufacturer-specific ID.
Error (code)	Output	Output of the error code: 0=ConnectorLockFailure 1=EVCommunicationError 2=GroundFailure 3=HighTemperature 4=InternalError 5=LocalListConflict 6=NoError 7=OtherError 8=OverCurrentFailure 9=OverVoltage 10=PowerMeterFailure 11=PowerSwitchFailure 12=ReaderFailure 13=ResetFailure 14=UnderVoltage 15=WeakSignal.
Error (Info)	Output	Depending on the manufacturer, further information is transmitted in the event of an error and output as text at this data point.
Status	Output	The status is also output here as text. Possible output: Available, Preparing, Charging, SuspendedEVSE, SuspendedEV, Finishing, Reserved, Unavailable, Faulted
Status - x	Output	Displays the current status. If a status is active, an on signal is output.
Status (no.)	Output	The status is also output here as a number. 0 = preparing 1 = finished 2 = available 3 = charging 4 = faulted / unavailable 5 = suspended
Status (No) OCPP compliant	Output	0 = available 1 = preparing 2 = charging 3 = suspended by EVSE 4 = suspended by EV

Name of	Type	Type Function
		5 = finished 6 = reserved 7 = unavailable 8 = faulted

Data points in the ID Tags folder

These data points can be used to change the "User/ID tags" settings at runtime.

Input only on the OCPP or only on the DLM. The ID tag import/export is used to synchronise OCPP and DLM.

Name	Type	Type Function
Expiry date	Bidirectional	Expiry date of the ID tag in the format dd.MM.yyyy - Example: 06.06.2025
Limit to charging stations	Bidirectional	If this option is ON, the ID tag is limited to the specified charging stations. Off means that the tag can be used at any station
Known ID tags	Output	Output of all taught-in ID tags so that they can be displayed in the list selection[196] .
Remove authorised charging station	Input	An authorised charging station (station name) for the ID tag can be removed by entering text.
Add authorised charging station	Input	A permitted charging station (station name) can be added to the ID tag by entering text.
Toggle authorised charging station	Input	A charging station can be added via a text entry or list selection[196] . If this station already exists, it is removed.
Allowed charging stations	Bidirectional	Input/output of all permitted charging stations, separated by semicolons
Allowed charging stations - All	Input	With any command, all known charging stations are added to this ID tag.
Allowed charging stations - None	Input	Any command is used to remove all known charging stations for this ID tag.
Allowed charging stations (list view)	Output	Output for display in the list selection[196] .

Name	Type	Type Function
ID	Bidirectional	Input for the selected ID tag from the list [selection][196].
Calendar limitation	Bidirectional	(De)activation of sharing only via calendar entries.
Delete	Input	Delete the ID tag and all settings
Send mail monthly	Bidirectional	(De)Activate the monthly e-mail.
Send mail at end of transaction	Bidirectional	(De)Activate the e-mail at the end of the transaction.
Mail address	Bidirectional	Input/output of the e-mail address for the report
Name	Bidirectional	Input/output for the user name
Quota [kWh]	Bidirectional	The charging limit for this ID tag can be set by entering a value.
Quota reset type	Bidirectional	Switching the reset method: 0 = manual, 1 = monthly and 2 = annual reset.
Quota remaining [kWh]	Output	Output of the remaining possible charging capacity (as a decimal value).
Reset quota	Input	The quota can be reset immediately via any signal, regardless of the reset type.
Save	Input	Trigger to save the changes.

Data points in the External counters folder (if available)

Counter name	Type	Function
Final value last month [kWh]	Bidirectional	Meter reading from the end of the last month. This value is used as the basis for calculating consumption.
Measured value [kWh]	Input	Measured value input from external electricity meter.
Consumption last month [kWh]	Output	Calculated electricity consumption in the previous month.
Consumption current month [kWh]	Output	Calculated electricity consumption in the current month.

Properties of the component

Name	Default	Function
Station	0	Create the charging stations (see "Channel editor" below).
Counter	0	Option to use external electricity meters.
Disable - Configurations	0	Profiles can be created here which tasks are to be performed during deactivation. These can be used in the channel editor for the charging stations.
Global Transaction IDs		If this option is set, a globally unique transaction ID is generated. Without it, each charging station has its own transaction count.
Initialise stations		If this option is active, the charging stations are activated and the current is set when the connection is established.
Delete profiles during initialisation		With this option, the profiles of the wallboxes are deleted and then newly created.
OCPP backends (proxy)	0	**Name**: Unique name, which can be seen in the channel configuration. **URL**: The URL of the backend; "ws:/" and "wss:/" (secure web socket) are supported. **User/password**: The login data of the user defined in the backend (if required) **Transparent proxy**: If this very special option is set, only information from the backend is displayed in the EisBär and there is no control by the EisBär. This is all done by the backend. Local authorisation or setting the maximum flow is then no longer possible. **Local authorisation:** If this parameter is active, the authorisation of loading processes is only carried out locally in the EisBär and not via the backend. **ID as user name:** Is set if the external backend requires a separate user name (box ID) for each box.) This is the default setting. **Backend required:** If the backend is not accessible, the connection to the wallbox is also terminated. **Backend/Client Cert:** It is possible to use a certificate for communication. This is specified via the absolute storage path of the certificate. **Meter update interval:** Setting in seconds for updating the measured values.
Connection setting	0.0.0.0	Global settings of the network parameters. Enter the IP address of the EisBär server here. **ATTENTION: Set ports must be released in the firewall!** An individual name for the system can be entered under *Resource (URL suffix)*. This must match the name in the charging station. The

Name	Default	Function
		timeout is the communication timeout (connection interruption).
Setting for deactivation	...	Setting of the tasks to be carried out when deactivating (connection or entire system). A distinction is made here as to whether the charging station is in the "Standby" or "Charging" state. This is used if none of the configurations created in the channel editor "Deactivate configurations" is set for a charging station.
Default expiry period [d]	10	If no expiration date is defined for an ID tag, a validity of the days set here is transferred from the time during authentication.
User / ID-Tag		Editor for creating users, their associated ID and certain authorisations. This data can also be changed at runtime. The data points for this can be found in the ID tag folder. In addition, a maximum [kWh] per ID tag can be entered, which may be charged. The limit can be reset manually, monthly or annually. If the quota is set to -1, there is no restriction. The data points for resetting and outputting the remaining charging power can be found in the "Charging history (OCPP/DLM)" component.
Activate mail dispatch		(De) Activate the e-mail function.
E-mail server	...	Settings for the SMTP server to be used.
Mail configuration		The e-mail recipients who are to receive a notification from the system are entered here. You can select which information is sent. If there is more than one recipient, separate the addresses with a ;.
End transaction at end of appointment		If active, ongoing transactions are terminated as soon as the appointment of a calendar-restricted station expires. Otherwise, loading is paused by sending a setpoint of 0A to the station.
MQTT connection		Connection setting to the MQTT broker. See below for more information.
MQTT Base-Topic		The BaseTopic is placed in front of all topics in the channel list. BaseTopic 1234 would automatically convert an existing topic "sensor/humidity/value" into "1234/sensor/humidity/value". It is therefore possible, if many clients of buildings, systems or devices must be clearly mapped in the broker, to solve this automatically via the BaseTopic and also to create copies much more quickly and easily, which then only differ via the BaseTopic.
MQTT Retain		Activate if the messages are to be stored temporarily on the broker.

Name	Default	Function
Log - CSV separator	Semicolon	Selection of the separator between the individual values.
Log - Timestamp Format		Format setting for date and time. See also Formatting [109] .
Log - Culture		Country setting for the display of numbers (e.g. thousands separator).
Automatic backup		By setting this property, all data is saved in a backup.
Create consumption plots		If this property is set, a bar chart of the consumption is created.
Consumption plot configuration		Configuration of the display of the consumption plot for the colours and axis labels.
Publish consumption plots		If this function is set, the images are published on the web server (http://eisbaer-scada.net/...).
Use user-defined FTP connection for automatic backup		If this function is activated, the graphics are stored in a user-defined FTP directory.
Custom FTP connection for automatic backup		Entry of the user-defined FTP connection for uploading the graphic.
URL basis for customised publishing		Entry of the URL for user-defined FTP connection from which the graphic is to be downloaded.
Stream ramping interval [s]	10	In the interval set here, the current ramp is increased by the value specified in the advanced settings of the charging stations, provided it is activated for this station.
Driver on/off		Defines whether the driver is activated automatically at the start of the project.

Channel editor:
+: Add a charging station
x: Delete the selected charging station
Import: Imports an XML file containing the channel list.
Export: Exports the channel list and the settings to an XML file (example see below).
Column names with (*): If several rows are marked, the properties can be changed for all of them at the same time.

Name	Function
Name	Freely definable name for the charging station.
Use in project	(De)Activates communication to the charging station.
Station Active	If the selection is set, the charging station can be used.
Version	Selects the OCPP version for this charging station (v1.6 or v2.0.1).
Charging Station ID	**Unique ID/serial number of the charging station (manufacturer's specification) - The ID must always be entered, without entry the connection will not work.**
# Plugs	Number of charging connections (plugs) of the station.
Minimum current [A]	Minimum charging current of the station in A.
Maximum current [A]	Maximum charging current of the station in A. Must be greater than the minimum current.
Authorisation	If this selection is set, only the ID tags (RFID cards) that have been imported (data point: Import ID tags [file name]) are allowed. If this selection is not set, all ID Tags are allowed for this station.
Configure on Connection	If this selection is set, the OCPP configuration data (.cfg) is transferred to the station when a new connection is established. The file is selected in the next column.
Configuration file	File name of the OCPP configuration file (.cfg) to be used. If no file is specified, the configuration of the charging station ID is adopted. The configuration file is created during the first connection and stored under *C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\OCPP*.
Deactivate configuration	Setting of the deactivation profile, if any have been created in "Deactivate - Configurations". If no profile is set, what was set in "Deactivate - Configurations" is automatically executed.
Proxy Backend	Expert setting! If at least one entry exists in the OCPP backend (proxy), an external backend can be assigned to the charging station if required.
Presets	Option to select a ready-made file to import the advanced settings. The advanced settings can then no longer be configured. To be able to create your own preset files, "Manual" must be set here to enable the advanced settings. There is then an export function (storage path: C:\ProgramData\Alexander Maier GmbH\EisBär 3.0 or 4.0\OCPP\ConfigFiles).
<u>**Advanced settings**</u>	Opens the input mask for the advanced (expert) settings, which are described below.
User	User name (optional) for the OCPP connection.

Name	Function
Password	Password (optional) for the OCPP connection.
Request boot/status	If this selection is set, a boot/status message is requested after the connection is established(support trigger message must be set/supported). This is only necessary if a charging station does not send a boot and status message by itself.
Status request per port	Requests the status for each port of a charging station.
Combine connection values	If enabled, the readings from the ports are summed and used for the entire charging station. This can be used for stations that, for example, do not transmit summed currents for the station, but which are needed for DLM.
Combine phase power	If activated, the measured values of the individual connections of the charging station are summed. If the selection "Combine connection values" is active, the sum is calculated for the entire charging station. This can be used for stations that, for example, do not transmit a 3-phase value for the connections/station but are needed for DLM.
Max Current Profile Type	OCPP supports several profile types. These are used by the polar bear to limit the charging current. While most charging stations accept the "MaxProfile" type for this, some expect one of the other types, which can be selected here in such a case.

TxDefaultProfile: In this case, we always limit current/power for all transactions.

ChargePointMaxProfile: Specifies the MaxCurrent for the entire charging station, regardless of the number of connectors.

TxProfile: In this case, we only ever limit the current/power for the current transaction. This limit is also only valid for as long as this transaction is running

TxProfile_DefaultFallback: Here we set the default current to the minimum current. As soon as a transaction starts, we set a (higher - depending on the DLM) limit for this transaction. According to the spec, this is prioritised higher than the default limit and we can therefore specifically load with a higher current than the minimum. In addition, we limit this profile to X seconds and renew the limit cyclically. If the time elapses without updating (e.g. communication failure), the TX profile becomes invalid and the default profile becomes active again and can limit the current to at least the min current. |
Validity period	Setting the time in minutes for the validity in TxProfile_DefaultFallback mode (at least 1 minute).
Fallback limit [A]	Minimum current in amperes to be used in the fallback case.
Stack Level	Expert setting! When setting the maximum charging current, a "StackLevel" (see Spec) must be specified. While most charging stations accept 0 here, some expect a value (0-10), which can be selected here in such a case.
Repeat type	Expert setting! When setting the maximum charging current, a repetition type must be assigned to the profile. OCPP supports both one-time and recurring profiles. While most charging stations accept the type "Absolute" (not set), some expect the type "Recurring" (set), which can be selected here in such a case.

Name	Function
Calendar restriction	If this field is set, the release is only done via the calendar date, otherwise the release is always granted.
Wait for boot message	If this setting is set, a charging process cannot be started until the boot message has been sent by the wallbox.
Start delay [ms]	Setting of the start delay in milliseconds.
Sync ID Tags	If this is set, the station synchronises the ID tags that were taught in the project.
Ramping	If a maximum current is set, the current is gradually increased from min to max in the set value.
Station sends real meter reading	Selection of whether the charging station has an integrated energy meter (on) or not (off).
Send max current in "Prepare" status	Is set to send the maximum charging current to the charging station in the "Prepare" status. This is sometimes required for wallboxes that have more than one connection.
Limit power instead of current	If the charging station requires a maximum power instead of the maximum charging current, this option must be set.
Send DC power	The maximum charging power is sent for AC if this selection is not set. This must be set for DC.
Calc AC Power	Activate or deactivate output of the calculated AC power.
DC -> AC Conversion	Option to output a conversion of the DC power as AC power.
AC/DC efficiency	The AC/DC efficiency for the conversion is entered here.
AC standard voltage	Enter the voltage for the conversion.
DC standard voltage	Enter the voltage for the conversion.
Deactivate smart charging	If this option is set, no current limit data is sent to the wallbox.
Delete profile before update	If this option is active, the current profile is deleted before a new profile is set. This is required if overwriting does not work.
Omit global	Delete all profiles (inc connection / ID) before new profiles are set, but the global settings are retained.
Delete - Omit port-based	Port-based profile data is retained
Delete - Omit ID-based	ID-based profile data is retained
Phase rotation	If supported, the phase is rotated during single-phase charging. This enables an even load on the phase conductors. The selection here relates to the actual connection in the sub-distribution board.

Name	Function
Import / Export	The export creates a preset file with the settings made, which can then be selected directly for the charging stations. The import sets the settings to the states set in the file.

Connection dialogue in the properties window:

Name	Function
Server URL/IP:	IP address or host name of the server to be queried.
Port:	Specification of the communication port to the MQTT broker (default: 1883 or 8883 (TLS)). This port must be entered in the firewall as soon as bidirectional communication is to take place.
User / Password:	If authentication is required for access to the broker, user name and password can be stored (leave blank for anonymous access).
Timeout [s]:	Communication timeout in seconds (default: 5 seconds).
Client ID:	Unique designation for this client, which may only be used once. If the component is copied, a new ID must be generated or a new unique name selected. **The ID for the client, if it is to connect to an EisBär MQTT broker, must be at least 10 characters long for security reasons. Otherwise the connection will be denied.**
Websocket:	Optionally, it can be specified whether the telegram traffic should take place via websockets.
TLS:	Depending on the server, the connection can also be encrypted via TLS. This activates the fields for "Accept all certificates" and "Server certificate".
Server certificate:	Path specification to the server certificate that is to be used for communication. By default, you will find a self-signed certificate in your EisBär installation directory. The standard path incl. certificate for a protected TLS connection between EisBär MQTT client and EisBär MQTT server with this certificate is: *C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\mqttbroker.cer* For the EisBär MQTT broker, the certificate to be used is located as a pfx file in the same path, which does not have to be transferred specifically for the broker.

Structure of the ID tag import file:

Seperator ;

idTag;name;expirationDate;restrictCPs;CP1,...CPN;restrictCalender;MailAddresses;SendMailAfterTransaction;SendMonthly;Priority;MinCurrent;MaxCurrent

Designation	Meaning
ID TAG	String of the ID tag
USER_NAME	User name
EXPIRATION_DATE	Expiry date (empty for no expiry date, otherwise e.g. 2021.11.05 22:11:00)
RESTRICT_TO_SPECIFIC_CHARGE_POINTS	True/False -> Indicates whether the TAG is only valid for stations in the following list
LIST_OF_ALLOWED_CHARGE_POINTS	If above True -> List (separated by ,) of station IDs at which the TAG is allowed.
RESTRICT_BY_CALENDAR	indicates whether the TAG is valid only on dates specified by the calendar editor.
Mail address	E-mail address of the user
SendMailAfterEachTransaction	True/False -> Whether or not to send an email after each transaction.
SendMonthly	True/False -> Whether or not to send an email containing all transactions for the month.
Priority	Specifies the priority (DLM).
MinCurrent	Minimum charging current of the station in A (DLM).
MaxCurrent	Maximum charging current of the station in A (DLM).

Example:

0584AB5C;User1;31.12.2022
00:00:00;True;TACW224291G0050,TACW224291G0051,TACW224291G0052;True;user@yahoo.com,user2
@yahoo.com;True;True;2;6;16

Example of the channel list export:

```
<?xml version="1.0" encoding="utf-8"?>
<OCPPChannelList>
 <OCPPChannel Name="Station001" Id="1" NumberOfConenctors="1" StationId="t.b.d."
MinCurrent="6" MaxCurrent="32" AllowAllIdTags="False"
RequestBootAndStatusOnConnection="True" AbsoluteProfileForMaxProfile="True"
MaxProfileAddStartSchedule="True" MaxProfileStackLevel="0"
MaxCurrentProfileType="TxDefaultProfile" User="a"
Password="EAAAADVEtZ64/F2zreN80cxq8+bUEF5HRM0tP86gorTIvFta" ConfigFile=""
SetConfigurationOnConnection="True" DisableConfigurationId="-1" ProxyBackendId="-1"
StationOnOff="True" ClearProfilesBeforeSet="True" CombineConnectorValues="True"
CombinePhaseValues="True" RestrictByCalendar="True" WaitForBootReqest="True"
DisableSmartCharging="True" ConvertDC2AC="True" AC2DCEfficency="0.92" ACVoltage="230"
SetPower="True" Guid="469FFC30-1184-4266-A793-8B1FD40C56FB" Version="v16J"
ExcludeFromProject="False" IncrementTotalEnergyMeter="False"
SendMaxCurrentOnPreperation="True" StartDelay="600" />
</OCPPChannelList>
```

6.12.1.1 ABB Wallbox

Create login in the Terra Config Portal:

If there is no login yet, the first step is to request one from ABB Switzerland.
Select "Terra Config Portal" in the form, this is mandatory to create OCPP server.
https://forms.abb.com/form-44052/antrag-account-ac-terra-deutschland

Create OCPP Server:

Log in to the TerraConfig Portal: https://abb.installer.chargedot.com/#/login

Go to "OCPP Server Configuration" -> "Third Party Domain Configuration" There top right a new configuration can be created.

Third Party Name	Unique name for this plant (serves for later identification in the app)
Type	select "**WS**://
URL	Enter here the complete URL which was/will be configured in EisBär.
Protocol Type	OCPP
Protocol Version	ocpp16j
Password	Disable password

Afterwards the configuration can be saved, the configuration in the TerraConfig portal is finished.

OCPP configuration in EisBär

The first step is to define the connection settings:

Local IP	IP address of the EisBär server. This should be fixed.
Websocket Port	Port to be used. ATTENTION: Port must be added to the firewall!
Websocket Port (secure)	will be used only if enabled
Resource (URL suffix)	individual name for the system
URL	Here you can see the complete URL for the OCPP server in the Eis- Bär. ATTENTION: This must match the URL defined in the TerraConfig portal!

Now the OCPP Backend's are defined, if this is needed. If the system is only used in local operation without billing via a backend, this step can be omitted. This can also be used to continue using the Charger with the "ChargerSync" portal (excl. charge management).

Name	Unique name which can be seen in the channel configuration afterwards.
URL	The URL of the backend (e.g.: ABB ChargerSync: wss://abb.cdlink.chargedot.com:9043/ocpp)
User	User defined by the backend
Password	password defined by the backend
Transparent proxy	All data is forwarded directly to the higher-level backend (EisBär then does not perform any charge management functions!)
Local Authorization	If this parameter is active, the authorization of the charging processes is only done locally in EisBär and not via the portal.
ID as username	This parameter has to be activated if the backend needs a username for each charging station which corresponds to the identifier of the station. (e.g. backend "Move")

Now the individual channels (charging stations) are created.

Name	The name of the charging station (e.g. parking lot number)
Station Active	Activate / deactivate the station
Version	Here you can choose between OCPP protocol version 1.6 or 2.0. For the ABB AC Terra and ABB DC Charger version 1.6 must be selected.
Charging station ID	Serial number of the charging station. For the ABB DC Charger the serial number must be added as "Name" in the charger configuration.
Ports	Number of connections that the charger has
Minimum current	Minimum current that the charger is allowed to use for charging.
Authorization	Active - RFID authorization is required, which is checked locally / backend Inactive - Each charging process is automatically started/enabled
Configure on connection	Send the configuration from the "configuration file" to the charging station (should be activated)
Configuration file	Enter the configuration file depending on the charger used ABB AC Terra : ABB_Terra_AC.cfg ABB DC Charger : ABB_Terra_DC.cfg for 3rd party charging stations or user specific customization the files in the folder can be adjusted manually (C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\OCPP\ConfigFiles)
Shutdown configuration	Here the appropriate configuration to be used can be selected. Parameters which should be transmitted to the charging station when it is deactivated
Proxy Backend	Select backend (if needed)

Link OCPP & DLM

Only one link is required for the connection between the individual stations (OCPP) and the management (DLM):

Further linkages are optional in each case and to be used depending on the application / requirement:

Feed measured Lx [A]	Here the measurement of the main meter/house connection is connected
Maximum current Lx [A]	Current desired maximum current for charging management
At least one station is charging	As soon as a station is charging, this is output here (e.g. necessary for DLM Master-Slave)
Current available Lx [A]	Current available (difference between current and maximum current)
Sum of other currents Lx[A]	Sum of currents not consumed by the charging stations.
Sum of charging currents Lx[A]	Sum of the currents of all charging stations.

Terra DC connection

In the case of Terra DC, a separate meter should ideally be connected upstream in order to obtain the effective measured values of the individual phases, since only the DC measured values come back from the station via the OCPP communication.
In this case, the links must be made as follows:

If no meter is available or can be installed, the way via calculation can also be realized in a logic, which converts the DC current & voltage values to AC. This is not as accurate as metering, but is sufficient for many applications.

Configuration Terra DC

The Terra DC are all commissioned either by ABB itself or by a certified partner. Accordingly, the configuration will not be discussed in detail here. Basically there are 2 important settings to be made here:
User name: Serial number of the charger
OCPP server: Specification according to configuration EisBär

Configuration AC-Terra

Settings using the "TerraConfig App" directly on the charging station. In the first step, it is recommended to check the firmware version and possibly perform a firmware upgrade during initial

commissioning. The OCPP configuration of the station can then be carried out. To do this, go to the "OCPP Server" setting of the station. Add there your OCPP server via the "+".

Select your OCPP server and download the configuration. Now you have this as a selection and can load it onto the station.

RFID authentication

If the authentication is realized locally in EisBär and not via a backend, this is realized by means of a csv list which can be downloaded or uploaded from the running server.
ATTENTION: Do not store duplicate RFID tags!

#ID-Tag Data defined in Eisbaer. Date = Donnerstag, 13. Januar 2022 14:51:07						
#idTag	name	restrictCPs	CP1,...CPN	restrictCalender	MailAddress	SendMailAfterTransaction
RFID TAG	HansMuster	FALSE		FALSE	hansmuster@muster.ch	TRUE
RFID TAG 2	HansMuster	TRUE	Seriennummer, Seriennummer	FALSE	hansmuster@muster.ch	TRUE

idTag	RFID tag (default for ABB tags e.g. No.00000001234). If external card provider is activated, the effective serial number of the RFID tag must be entered in the charging station.
Name	Name of the card user
RestrictCPs	FALSE: it can be charged at all charging stations TRUE: it can only be charged at specific charging stations (see below)
CP1,...CPN	Specific charging stations where the RFID tag is allowed to charge (serial number)
restrictCalender	ID tag visible in the calendar function
Mail address	Mail address of the user
SendMailAfterTransaction	Shall be sent an email with the loading transaction info to the user at the end of each loading transaction.

6.12.2   OCPP Client [x150]

This invisible server component is used to connect charging stations that cannot establish their own OCPP connection. The Modbus data of the charging station can be forwarded to an OCPP backend via this client. Only one charging station can be connected per OCPP client.

Data points of the component

Name	Type	Function
Backend IP address	Bidirectional	The IP address of the driver can be changed here at runtime.
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Extended Diagnosis	Input	An ON signal is used to extend the diagnostic output.
Modbus Update Duration [ms]	Output	Output of the time in milliseconds until all registers have been read from the Modbus table.
Modbus update in progress	Output	An on signal is output during the update of the Modbus data. If no update is taking place, this output is off.
Modbus update counter (since start)	Output	Number of successful updates since driver start.
Modbus data	Output	Output of raw data for each read register.
Modbus device status	Output	Indicates whether the device is readable (on signal) or not (off signal).
Modbus device warning	Output	If there are read errors, this output is set to On. No error = Off.
Read out Modbus now	Input	An ON signal at this input triggers a single query of the values. Each additional ON signal triggers a further

Name	Type	Function
		query.
Modbus Ping Reachability	<mark>Output</mark>	If the Modbus device can be reached via a ping, an on signal is output.
Modbus Write Duration [ms]	<mark>Output</mark>	Output of the time in milliseconds how long the write took.
Modbus write running	<mark>Output</mark>	As long as writing to the Modbus is in progress, an on signal is output.
Modbus connected	<mark>Output</mark>	Outputs an on signal when a connection to the gateway could be established.
Messages (OCPP) [Text]	<mark>Output</mark>	Output of the communication with the backend as text.
Driver On/Off	<mark>Bidirectional</mark>	Switch driver on or off.
Connection status (OCPP)	<mark>Output</mark>	If there is a connection to the backend, an on signal is output, otherwise an off signal.

Properties of the component

Name	Standard	Function
Channels	51	The Modbus register table of the charging station is located here. The register addresses of the charging station must be entered here. Registers with address 65535 are not used.
Status values	9	Translation of the status values to text. (e.g. 1=idle; 5=charging ect) see manufacturer data.
Error values	16	Translation of error values to text. (e.g. 0=no error; 7=other error) see manufacturer data.
OCPP Connection	0.0.0.0	Settings to be able to connect to the backend.
Modbus Connection	Serial ...	Connection to the Modbus gateway
Modbus device address	1	Specification of the Modbus device address (or also called device ID)
Start delay		Delays the Modbus start by ID*150ms
Modbus Options	...	Settings for reading and writing the Modbus registers
OCPP Connection Check Interval [s]	60	Check interval of the connection to the OCPP backend in seconds.
OCPP Websocket Ping Interval [s]	60	Sending interval of websocket ping messages. 0 = deactivates sending.
OCPP Heartbeat Interval [s]	300	Interval for sending OCPP Heartbeat messages.
OCPP Measurement Interval [s]	10	The current measured values are transmitted to the OCPP backend at the interval set.
OCPP measured value interval [s] (accumulated)	900	At the set interval, the accumulated measured values (average values / interval energy) are transmitted to the OCPP backend.

Name	Standard	Function
Power limitation delay [ms]	0	Delays the setting of the power limitation by the specified time in milliseconds.
Station ID	STATIO10NID	Own name of this station. This does not have to be identical to the serial number, but can be.
Default ID Tag	IdTag	ID Tag to be used when a transaction is started locally (no transmission of the ID Tag from the external system).
Configure Start/Stop Transaction	...	Settings for the transaction abort. The value to start/stop a transaction must be entered at "TX stop value" and "TX start value".
Device information	...	Information about the charging station. At least "Manufacturer" and "Model" must be filled in.
Minimum current	6	according to the manufacturer of the charging station
Maximum current	16	according to charging station manufacturer
Set power		Activate to limit power instead of current.
Minimum power [kW]	1,4	Setting for the minimum charging power.
Maximum power [kW]	11	Setting for the maximum charging power.
Total counter reading available		If the charging station has a total counter reading, this selection can be set.
Driver On/Off		(De)activate the component at server start.

6.12.3   Dynamic load management V2

Dynamic charging management (DLM for short) is used for the automatic charging regulation of several charging stations. If this component is created, it counts as 2000 components and from the 11th station as 3000 components.

The component distributes the maximum available current (set value or smallest value of the 3 phase inputs) - minus a current reserve - evenly to all currently charging stations.

If the current available per station falls below a minimum, e.g. due to the start of charging at another charging station, all stations not currently charging are deactivated.

Data points of the component

Name	Type	Function
Current ID Tag File [filename].	Output	Output the URL for the ID tag file (save path)
Reduce all charging points to the minimum	Input	With an On signal, all charging points are reduced to their minimum charging power.

Name	Type	Function
Send all logs (or only of the month) to Admin	Input	any value (except TRUE) -> Triggers sending **all data** to the administrator TRUE -> Triggers sending all previous data of the **current month** to the administrator
Send all logs of the last month to admin (and user)	Input	any value (except TRUE) -> Triggers sending all data of the past month **only to the administrator** TRUE -> Triggers sending all data of the past month to the **administrator and users.** The users only receive their data.
Alternative e-mail address for unknown users	Bidirectional	Specifies the alternative mail address (used when no user address is stored in the channel editor).
Export database (file name)	Input	Exports the OCPP database(s) (the transaction database, the user database and various values from the Runtime DB such as the last assigned transaction ID) to corresponding files. The path must be specified in the DP - e.g. via the file selection component[926] 3 files are created. - The transaction data with the specified file name - The user ID data with "_users" appended to the file name - The runtime data with "_runtime" appended to the file name
Import database (file name)	Input	Selection or specification of the transaction data file. The other two are searched for in the same folder with the above naming scheme and imported accordingly
Delete database	Input	Deletes the transaction database
Diagnosis (MQTT) [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service if used.**
Diagnostic algorithm (Verbose) [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.** If several drivers are available, the displays can be switchedvia the debugger[932] .

Name	Type	Function
		Extended information on the calculation algorithm of the DLM is displayed here (very detailed).
Diagnostic algorithm [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.** If several drivers are available, the displays can be switchedvia the debugger[932] . Information on the calculation algorithm of the DLM is displayed here.
Dynamic	*Folder*	*See below for description.*
E-mail address of the administrator	Bidirectional	The e-mail address of the administrator(s) can be changed via this data point at runtime. Multiple addresses are separated with a ;.
Send e-mails to users (load interruption)	Bidirectional	(De) Enable e-mail notification to the user when the load state changes to "load interruption".
Send e-mails to user (end of transaction)	Bidirectional	(De) Enable e-mail notification to the user when the charge state changes to "transaction end" (finished charging).
Advanced Diagnostics	Input	With an ON signal, the diagnostic output is extended.
ID Tags	*Folder*	This folder contains data points for reading or entering the ID tag configuration.
ID Tags [CSV String]	Output	Outputs the ID Tags as text when the data item *Export ID Tags [CSV String]* is triggered.
Export ID Tags [CSV String] Input	Input	Trigger input to output the ID-TAGs at the *ID-Tags [CSV string]* output.
Export ID Tags [Filename] Input	Input	By specifying the absolute storage path, the ID tags are exported. (See below for the structure of the CSV file)
Import ID tags - Result	Output	Output in text form whether the import was successful or not.
Import ID tags [CSV string] Input	Input	By entering the ID tags as CSV text, the list can be imported here.
Import ID tags [filename] Input	Input	By specifying the absolute storage path of the CSV file, the ID tags are imported. (See below for the structure of the CSV file)
Load history	Bidirectional	Data point for the connection of the load history[533] component .
Activate mail dispatch	Bidirectional	(De) activates the entire mail dispatch.
At least one station loads	Output	Outputs an on signal when at least one charging station is charging.
Export MQTT Topics	Input	By specifying the storage path, the topics are exported as csv.

Name	Type	Function
MQTT connected	Output	If there is a connection to the MQTT broker, an ON signal is output, otherwise an OFF signal.
Driver On/Off	Bidirectional	(De)Activate the component.
Update trigger	Input	All inputs and outputs are updated with any signal.
Distribute remaining current (delayed)	Input	With an on signal, the distribution of the remaining current is recalculated. If a station has more current available than it needs, the unused current can be redistributed to other stations.
Distributor data	Bidirectional	Data point for the DLM[527] distributor data component (see also connection schema[483])
Distribution names	Output	Output of the distribution name as text.
Time until update [s]	Output	The DLM data is updated after the time has elapsed.

Data points in the Distribution folder

Name	Type	Function
Switch off	Bidirectional	With an ON signal, the distribution is switched off and there is no more management.
Enable	Output	This output indicates whether charging is possible at this station (true) or not (false).
Number of charging points	Output	Output of the number of charging points that are in the "Charging" status. This applies to this and all other sub-distributions.
Number of charging points (local)	Output	Output of the number of charging points which are in the "charging" status. This only applies to this distribution and not to all other sub-distributions.
At least one charging station is charging	Output	As soon as at least one station is in the charging mode, an ON signal is output. This applies to this and all other sub-distributions.
At least one charging station is charging (local)	Output	As soon as at least one station is in the charging mode, an ON signal is emitted. This only applies to this distribution and not to all other sub-distributions.
Priority	Bidirectional	Output or possibility to change the priority of the distribution
Station	*Folder*	*Description see below*
Current (Maximum) [A]	Bidirectional	Output or change possibility of the maximum current of the distribution
Current (Minimum) [A]	Bidirectional	Output or modification possibility of the minimum current of the distribution system
Current (reserve) [A]	Bidirectional	Output or modification possibility of the current reserve
Current (assigned) [A]	Output	Output of the maximum current assigned to the distribution.

Name	Type	Function
Effective current (maximum) [A]	Output	Output of the effective, maximum, available current of the distribution (e.g. if a PV system would also feed in).
Currents [A]	*Folder*	*Description see below*
Transmitted energy (measured) - final value last month [Wh]	Input	Option of specifying the final energy value at the end of the last month. The energy consumption of the current month is derived from this (current total value - final value of last month)
Transmitted energy (measured) - consumption last month [Wh]	Output	Transferred energy of the last monthly period
Transferred energy (measured) - consumption current month [Wh]	Output	Transmitted energy of the current monthly period
Transmitted energy (measured) [Wh]	Input	Sets the total energy output above to a defined value.
Transmitted energy (total) [Wh]	Output	Output for the total transferred energy.

Data points in the Station folder

Name	Type	Function
Switch off	Bidirectional	With an ON signal, the station is disabled and no more management takes place.
Activate	Output	This output indicates whether charging is possible at this station (true) or not (false).
Current user	Output	If a user has logged in, the name is output here.
Current ID tag	Output	If a user has logged in, the ID tag is output here.
Preferred charging point	Output	Due to 1 single-phase charging processes, some charging points can be marked as "Preferred" (true at this output). This provides a more symmetrical load due to the phase rotation of L1, L2 and L3.
Charging point data on OCPP	Bidirectional	Connection to the charging station via EVCS[539] or OCPP[485] or... (see also connection diagram[483])
Charging	Input	Input to start charging
Only self-produced power	Bidirectional	With an ON signal, only self-produced power (for example from a PV system) is used for the charging station.
Priority	Bidirectional	Output or change option of the priority of the distribution (0-10)
Current (maximum) [A]	Bidirectional	Output or modification possibility of the maximum current of the station

Name	Type	Function
Current (minimum) [A]	Bidirectional	Output or change possibility of the minimum current of the station
Current (assigned) [A]	Output	Set maximum current assigned to the charging station.
Current effective (maximum) [A]	Output	Output of the effective, maximum, available current of the station (e.g. if a PV system would additionally feed in).
Effective current (minimum) [A]	Output	Output of the minimum current of the station.
Current [A] (measured) L1/L2/L3	Input	Input for the measured current of the station. Measurement must be set in the channel editor for the data points to be visible.
Currents [A]	*Folder*	Data points for output of currents not used but assigned.
Transmitted Energy (Total) [Wh]	Input	The total transmitted energy of the station is transferred here.
Transmitted energy (session) [Wh] Input	Input	The transmitted energy of the last charge at the station is transferred here.

Data points in the folder Currents [A], each for L1, L2 and L3

Name	Type	Function
Other (total)	Output	Total current not used by charging stations
Other (Total local)	Output	Total current at this distribution which is not used by charging stations
Other (sum sub-distribution)	Output	Total current from other sub-distributions that is not used by charging stations
From Supply	Output	Current drawn from the supply line.
Combined	Output	Sum of power *supply* and power from *additional sources*
Charging stations (sum of sub-distributions)	Output	Current of the charging stations, which is drawn from additional sub-distribution boards.
Charging stations (total)	Output	Current of all charging stations that is drawn at this distributor and also at its sub-distributors.
Charging stations (total local)	Output	Current of all charging stations drawn from this distributor.
Not used (related to maximum)	Output	Output of the currents that are not used.
Not used (based on allocated current)	Output	Output of the currents that are not used by the station after allocation.
Used (phase maximum)	Output	Output of the maximum current used for the charging stations.
Additional sources (total)	Output	Output of the currents that come from additional sources of the distribution and also from further sub-distribution (for example PV system). It is the sum of

Name	Type	Function
		Additional Sources *(Sum Local)* and *Additional Sources (Sum Sub-distribution)*.
Additional sources (sum local)	Output	Output of the currents that originate from additional sources only at this distribution (e.g. PV system).
Additional sources (sum sub-distribution)	Output	Output of the currents that originate from additional sources that are fed in from the sub-distribution.

Data points in the ID Tags folder

These data points can be used to change the "User/ID tags" settings at runtime.

Input only on the OCPP or only on the DLM. The ID tag import/export is used to synchronise OCPP and DLM.

name	Type	Function
Expiry date	Bidirectional	Expiry date of the ID tag in the format dd.MM.yyyy - example: 06/06/2025
Limit to charging stations	Bidirectional	If this option is ON, the ID tag is limited to the specified charging stations. Off means that the tag can be used at any station
Known ID tags	Output	Output of all taught-in ID tags so that they can be displayed in the list selection[196].
Known charging stations (OCPP)	Input	Data point for the connection to the OCPP "Known station names [text]"
Allow PV charging only	Input	Charging is only enabled via an ON signal if there is sufficient PV power.
Remove authorised charging station	Input	A permitted charging station (station name) for the ID tag can be removed via a text entry.
Add authorised charging station	Input	A permitted charging station (station name) can be added to the ID tag by entering text.
Toggle authorised charging station	Input	A charging station can be added via a text entry or list selection[196]. If this station already exists, it is removed.
Allowed charging stations	Bidirectional	Input/output of all permitted charging stations, separated by semicolons
Allowed charging stations - All	Input	With any command, all known charging stations are added to this ID tag.

name	Type	Function
Allowed charging stations - None	Input	Any command is used to remove all known charging stations for this ID tag.
Allowed charging stations (list view)	Output	Output for display in the list selection[196].
ID	Bidirectional	Input for the selected ID tag from the list selection[196].
Calendar limitation	Bidirectional	(De)activation of sharing only via calendar entries.
Delete	Inbox	Delete the ID tag and all settings
Send mail monthly	Bidirectional	(De)Activate the monthly e-mail.
Send mail at end of transaction	Bidirectional	(De)Activate the e-mail at the end of the transaction.
Mail address	Bidirectional	Input/output of the e-mail address for the report
Maximum flow	Bidirectional	Setting option for the maximum charging current.
Minimum current	Bidirectional	Setting option for the minimum charging current.
Name	Bidirectional	Input/output for the user name
Priority	Bidirectional	A priority for the stations can be entered here. "0" the lowest and "10" the highest priority.
Quota [kWh]	Bidirectional	The charging limit for this ID tag can be set by entering a value.
Quota reset type	Bidirectional	Switching the reset method: 0 = manual, 1 = monthly and 2 = annual reset.
Save	Input	Trigger to save the changes to the data points.
Apply temporarily	Input	With any signal, the changes for priority and minimum/maximum charging current are accepted for the next transaction and then discarded.

Properties of the component

Name	Standard	Function
Channels	0	Several distributions can be created in the channel editor. The charging stations are then assigned to the distributions. The description of the columns is listed in the "Channel editor" table.
Define user	0	The users of the system are created here.

Name	Standard	Function
E-mail Server	...	Settings for the e-mail server that sends the messages to the users.
Activate mail dispatch	on	(De) activates the entire e-mail dispatch.
E-mail configuration		Specification of the e-mail addresses and events that trigger an e-mail.
MQTT Connection Settings		Enter the MQTT broker data.
MQTT Base Topic	MyBase/DLM	Setting for the base topic in MQTT.
MQTT Retain		If Retain is active, the last value from the client is retained at the broker. If a client or several clients connect to the broker again and have subscribed to this topic, this value is published immediately.
Cyclical calculation - interval [s]	60	All information and currents are updated at the set interval.
Cyclical calculation after reactivation - interval [s]	10	All information and currents are updated at the set interval.
Validation of external measuring device		Set to use an external measuring device for current measurement. If this measurement fails, a fallback (charging currents of the stations) is used
Reserves only if measurement fails		If deactivated, the reserve current from the channel editor is always used (deducted). Otherwise, the reserve is only used if the external measurement has failed.
Use current measured values		
Offset sharing		If active, the currents of stations with different priorities are increased evenly. Otherwise, the charging station with the highest priority receives the maximum current.
On request, limit to 4kW per station		If active, the power is limited to 4kW per charging point on request (data point of the component). Otherwise, it is limited to the defined minimum current of the charging point.
Minimum change in measured values [mA]	500	Measured values must change by at least the set value for a recalculation to be triggered.
OCPP start delay [s]	120	The distribution of the unused current is activated x seconds after the OCPP Ready signal is received.
Log - CSV separator	Semicolon	Selection of the separator between the individual values.
Log - Timestamp format	dd.MM.yyyy HH:mm:ss	Formatting setting for date and time. See also Formatting[109].
Log - Culture	de-DE	Country setting for the display of numbers (e.g. thousands separator).

Name	Standard	Function
Automatic backup		Activation of the automatic backup function (upload to the EisBaer server with all DLM settings).
Use user-specific FTP connection for automatic backup		Activates or deactivates the user-specific connection.
User-specific FTP connection for automatic backup		Input option for the user-specific FTP connection.
Driver On/Off		Defines whether the driver is activated automatically when the project is started.

Channel editor

Name	Description
Name	Freely definable name for the distribution and the stations
Use (*)	If checked, this distribution/station is used in the project, otherwise it does not contribute to the calculation.
Type	Setting whether this is a distribution, charging station or additional feed (PV or similar).
Maximum current [A] (*)	Specifies the maximum current that can be allocated.
Minimum current [A] (*)	Indication of the minimum current that can be allocated.
Reserve [A] (*)	The current reserve is not distributed among the charging stations. It is deducted from the maximum current.
Distribute unused current (*)	If a station has more electricity available than it needs, the unused electricity can be redistributed to other stations.
Reserve Min Current [A]	With this function, the charging station is always reserved the min current and is not distributed.
PV only (*)	Activate to use only the current of the additional supply.
Measurement	Distinguishes between no measurement, measurement with the additional supply or without measurement in the system.
Setback Threshold [A] (*)	The difference between the set current and the drawn current of a station must be greater than or equal to the setback threshold so that the current can be redistributed.
Minimum difference [A] (*)	If the current in the system changes by the value set here, the set currents for the stations are recalculated.
Priority (*)	A priority of the stations can be entered here. "0" is the lowest priority and "10" the highest priority.
Ignore DLM package	By setting this, the measurement values that are sent via the DLM package are ignored.

Name	Description
measurement	

Charging stations can also be subsequently moved to other (sub-) distributions via "drag & drop". Columns marked with an (*) can be edited together if several rows are selected.

Functionality:
Charging points:
- Station is or remains activated if the current not yet distributed is greater than the minimum current of a charging point
- If charging is currently taking place at the charging point, the assigned minimum current is deducted from the current still available for distribution

Distributions/multiple charging stations:
- Distributions are not deactivated, even if the current not yet distributed is less than the minimum current of a charging point
- If possible, the current currently used by the distribution + the set minimum current is allocated to the distribution
- The allocated current is deducted from the current still available for distribution (exception - the current used is less than the minimum current, in which case only the current currently used is deducted)

With distributions, care should be taken to ensure that the minimum current is high enough (if the supply lines and fuses allow it) so that all stations remain activated as far as possible during the start and initial distribution (it should be noted here that stations could already be charging at this moment and their minimum current is therefore not available for others and the distribution of the residual currents is only activated with a delay, depending on the setting). However, it should not be set too high, as this is then reserved for distribution and is not available for other distributions.
It has proved useful to use a starting point for distributions between 24A..32A. For complex and several parallel sub-distributions, we recommend a test project with simulation of charging points and simulating various charging park situations.

User:

Designation	Description
ID tag	Enter the ID tag
Name	Sets the user name.
Expiry date	Entry of a validity date for the user
Mail address	E-mail address of the user.
Send mail after transaction	If this option is set, an email is sent to the user at the end of the transaction.
Send monthly summary	If this option is set, an email of all transactions in the past month will be sent to the user.
Priority	Specify the charging priority from 0 to 10. The higher the number, the higher the priority.
Minimum Current [A]	Specifies the minimum current that can be assigned.
Maximum current [A]	Indication of the maximum current that may be used.

6.12.3.1 DLM6

DLM projects are always customised to the customer's system.
Documentation is supplied with every DLM project set up!

Example of DLM visualisation

Login

DLM CONTROLLER

SMART CHARGING

Dynamic Load Management

Please log in here with your PIN code ...

Please, select your language ...

DLM 3.0.9722.3910   EISBAER SOFTWARE – SMARTER BUILDINGS – FUTURE PROOF   14.04.2025 | 14:11

Overview

DLM CONTROLLER   Stations extended   Logout

| Charger 1-10 | Charger 11-20 | Charger 21-30 | Charger 31-40 | Details | Plotter | Settings |

Current (available):   L1   0.0 A   L2   0.0 A   L3   0.0 A   Charging current: L1   0.0 A   L2   0.0 A   L3   0.0 A

Charger 1	Charger 2	Charger 3	Charger 4	Charger 5	Charger 6
Status	Status	Status	Status	Status	Status
Power:	Power:	Power:	Power:	Power:	Power:
#0,000 kW	#0,000 kW	#0,000 kW	#0,000 kW	#0,000 kW	#0,000 kW
Added energy	Added energy	Added energy	Added energy	Added energy	Added energy
#0,00 kWh	#0,00 kWh	#0,00 kWh	#0,00 kWh	#0,00 kWh	#0,00 kWh
Meter	Meter	Meter	Meter	Meter	Meter
0.00 kWh	0.00 kWh	0.00 kWh	0.00 kWh	0.00 kWh	0.00 kWh
Current:	Current:	Current:	Current:	Current:	Current:
0.00 A 0.00 A	0.00 A 0.00 A	0.00 A 0.00 A	0.00 A 0.00 A	0.00 A 0.00 A	0.00 A 0.00 A
Release the connector	Release the connector	Release the connector	Release the connector	Release the connector	Release the connector
L1 L2 L3	L1 L2 L3	L1 L2 L3	L1 L2 L3	L1 L2 L3	L1 L2 L3

DLM 3.0.9722.3910   EISBAER SOFTWARE – SMARTER BUILDINGS – FUTURE PROOF   14.04.2025 | 14:12

Detail

Setup

In the centre of the project footer there is an invisible page break to the administrator page of the project. This is only required in the event of an error/malfunction.

Default login for DLM-Controller:

Role	User	Password	Start PIN	Login-string
Administrator	Admin	e0e43cf6f7	69412	Eisbaer@Eisbaer

6.12.4 DLM distribution data

This component is used to be able to connect several DLM v2 drivers in order to facilitate an output of the information of the distributions. The data at the outputs refers to the entire distribution in which the station is located, which is called up via "Station name".

Data points of the component

Name	Type	Function
Activated	Output	Indicates whether the driver is active (on) or not (off).
Number of charging points (incl. sub-distributions)	Output	Shows the number of charging points that are in the "Charging" state.
Number of charging points	Output	Outputs the number of charging points that are in the "Charging" state.
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, they can significantly affect the performance of the service.**
Extended Diagnosis	Input	(De)activate advanced diagnostics.
At least one charging point charges (incl. sub-distribution boards)	Output	Is set to "ON" if any connected charging point is in the "charging" state.
At least one charging point is charging (local)	Output	Is set to "ON" if any connected charging point is in the "charging" state.
Lock	Bidirectional	Option to block a specific sub-distribution. The distribution data is then no longer taken into account.
Current from supply line (L1)	Output	Output for the current from the supply line of the sub-distribution.
Current from supply line (L2)	Output	Output for the current from the supply line of the sub-distribution.
Current from supply line (L3)	Output	Output for the current from the supply line of the sub-distribution.

Name	Type	Function
Current building (L1)	Output	Output for the current used by other consumers (without charging currents) of the distribution.
Current building (L2)	Output	Output for the current used by other consumers (without charging currents) of the distribution.
Current building (L3)	Output	Output for the current used by other consumers (without charging currents) of the distribution.
Measured current (L1)	Output	Output for the measured current on the input side of the distribution.
Measured current (L2)	Output	Output for the measured current upstream of the distribution.
Current measured (L3)	Output	Output for the measured current upstream of the distribution.
Total current (L1)	Output	Output for the current of the sub-distribution including other current sources such as PV system.
Total current (L2)	Output	Output for the current of the sub-distribution including further current sources, e.g. PV system.
Total current (L3)	Output	Output for the current of the sub-distribution including further current sources, e.g. PV system.
Current of charging stations (L1)	Output	Output for the measured current of the station.
Charging station current (L2)	Output	Output for the measured current of the station.
Charging station current (L3)	Output	Output for the measured current of the station.
Current maximum	Bidirectional	Output or change possibility of the maximum current of the distribution.
Current minimum	Bidirectional	Output or modification possibility of the minimum current of the distribution system
Current not used (referred to maximum)	Output	Outputs the current that is not used. This refers to the maximum current available for the distribution.
Current not used (referred to maximum) (L1)	Output	Outputs the current that is not used. This refers to the maximum current on L1 that is available for distribution.
Current not used (referred to maximum) (L2)	Output	Outputs the current that is not used. This refers to the maximum current on L2 that is available for distribution.
Current not used (referred to maximum) (L3)	Output	Outputs the current that is not used. This refers to the maximum current on L3 that is available for distribution.
Current not used (related to allocated current)	Output	Outputs the current that is not used by the charging point. It is the difference between the allocated and used current at the charging point.

Name	Type	Function
Current not used (related to allocated current) (L1)	Output	Outputs the current on L1 that is not used by the charge point. It is the difference between the allocated and used current at the charging point.
Current not used (related to allocated current) (L2)	Output	Outputs the current on L2 that is not used by the charge point. It is the difference between the allocated and used current at the charging point.
Current not used (related to allocated current) (L3)	Output	Outputs the current on L3 that is not used by the charge point. It is the difference between the allocated and used current at the charging point.
Current Reserve	Bidirectional	Output or change possibility of the current reserve that is not distributed to the charging points.
Current used (max)	Output	Output of the maximum current used by one of the 3 phases.
Current assigned	Output	Output of the allocated maximum current of the distribution that can be distributed to the charging points.
Driver On/Off	Bidirectional	Driver On or Off.
Distribution Data (DLM)	Bidirectional	Connection to the DLM data point with the same name.
Distribution name	Bidirectional	A character string can be used to select the connected charging stations and output their information.

Properties of the component

Name	Standard	Function
Distribution name		Charging station name
Driver On/Off		Defines whether the driver is automatically activated at the start of the project.

6.12.5 OCPP charge station data

With this invisible server component, linked data points of a charging station can be duplicated with DLM. The assignment of another station is defined via the station name.

Data points of the component

Name	Type	Function
Enabled	Output	Output whether the charging station is active or not.
Connection number	Bidirectional	Number of the charging point of the wallbox
Authorisation - active	Bidirectional	(De)activate authorisation
Authorisation - last accepted ID tag	Output	Output of the user ID that was last accepted.

Name	Type	Function
Authorisation - last rejected ID tag	Output	Output of the user ID that was last rejected.
Authorisation - last accepted ID tag	Output	Output of the user ID that was last accepted.
Backend defined	Output	If information on the backend is missing, an off signal is output, otherwise an on signal.
Backend connected	Output	If the backend is connected, an ON signal is output.
Command - (de)activate charging point	Input	With an ON signal, the charging point is activated and can be used.
Command - Start transaction	Input	Starts the charging process
Command - Stop transaction	Input	Stops the loading process
Command - Open interlock	Input	Opens the charging socket lock.
Preferred charging point	Output	Due to 1 single-phase charging, some charging points can be marked as "Preferred" (true at this output). This provides a more symmetrical load due to the phase rotation of L1, L2 and L3.
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component"protocol window". **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them in consultation with the support team! If used, these can considerably impair the performance of the service.**
Query effective charging profile	Input	The active charging profile is output as text at the diagnostic output.
Transfer energy (since reset)	Output	Output of the transferred energy since the last reset of the counter reading.
Energy transmitted (total)	Bidirectional	Output of the total transmitted energy
Transmit energy (transaction)	Output	Output of the transmitted energy in the current transaction
Reset energy	Input	Resets the energy counter to 0.
Extended diagnosis	Input	The diagnostic output is extended via an on signal at this input. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, they can considerably impair the performance of the service.**
Error - Number	Output	Error output as number 0-15. Meaning see below.
Error - Text	Output	Output of the error code: 0=ConnectorLockFailure, 1=EVCommunicationError, 2=GroundFailure, 3=HighTemperature, 4=InternalError,

Name	Type	Function
		5=LocalListConflict, 6=NoError, 7=OtherError, 8=OverCurrentFailure, 9=OverVoltage, 10=PowerMeterFailure, 11=PowerSwitchFailure, 12=ReaderFailure, 13=ResetFailure, 14=UnderVoltage and 15=WeakSignal.
In use (OCPP)	Output	If the charging station has connected to the OCPP backend, an on signal is output.
If DC Station	Output	If the charging station is a DC charging station, an on signal is output here.
Calendar editor	Bidirectional	Data point for the calendar
Charging power (requested)	Bidirectional	Setting for the desired charging power for the vehicle.
Charging power plot [filename]	Output	Output for the plotter file name
Charging power plot [URL]	Output	Output of the url for display in an image component[123].
Charging point data (OCPP - local backend)	Bidirectional	Data point for communication with the OCPP component[485]
Charging current (set)	Bidirectional	Possibility to set the charging current in [A]
Measured value - state of charge	Output	Outputs the state of charge in %, if available.
Measured value - power (grid)	Output	Outputs the measured power of the charging station in [W].
Measured value - power (car)	Output	Outputs the measured power of the vehicle in [W].
Measured value - voltage (total vehicle)	Output	Outputs the measured voltage of the vehicle in [V]
Measured value - voltage (L1-N)	Output	Outputs the measured voltage in [V]
Measured value - voltage (L2-N)	Output	Outputs the measured voltage in [V]
Measured value - voltage (L3-N)	Output	Outputs the measured voltage in [V]
Measured value - current (total vehicle)	Output	Outputs the measured current in [A]
Measured value - current (L1)	Output	Outputs the measured current in [A]
Measured value - current (L2)	Output	Outputs the measured current in [A]
Measured value - current (L3)	Output	Outputs the measured current in [A]
Measured value - current (phase maximum)	Output	Output of the highest measured current of all phases

Name	Type	Function
Phase used (L1)	Output	If this phase is used, an ON signal is output. Otherwise an OFF signal.
Phase used (L2)	Output	If this phase is used, an ON signal is output. Otherwise an OFF signal.
Phase used (L3)	Output	If this phase is used, an ON signal is output. Otherwise an OFF signal.
Delete profiles	Input	Use any command to delete the profile data for the charging station.
Serial number	Output	Outputs the serial number of the wallbox
Station - On/Off	Bidirectional	(De)activates the charging station
Station - FW Version	Output	Firmware version of the charging station
Station - ID	Bidirectional	ID of the charging station
Station - Connected	Output	Indicates whether the charging station is connected to a vehicle (on) or not (off).
Station - Restart	Input	The charging station is restarted with an on edge.
Station name	Bidirectional	Name of the charging station
Status - Charging	Output	Charging station is in charging mode (on) or not (off)
Status - Number	Output	Status number: 0 = preparing 1 = finished 2 = available 3 = charging 4 = faulted / unavailable 5 = suspended
Status Number (OCPP)	Output	0 = available 1 = preparing 2 = charging 3 = suspended by EVSE 4 = suspended by EV 5 = finished 6 = reserved 7 = unavailable 8 = faulted
Status - Text	Output	Status output (see status number)
Status - Available	Output	If the station is available, an on signal is output.
Driver On/Off	Bidirectional	(De)activating the component

Properties of the component

Name	Default	Function
Station name	t.b.d	Name of the charging station, which must match the name in the OCPP.
Connection number	1	Number of the charging point of the wallbox
Driver On/Off		Defines whether the driver is automatically activated at the start of the project.

6.12.6   Charge history (OCPP/DLM)

This invisible component can be used to output historical data originating from the OCPP or DLM. The data refers to the specified ID tag.

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Energy - current month	Output	Output of the total energy of the current month in Wh.
Energy - total	Output	Output of the total energy since the start of recording in Wh.
Energy - last transaction	Output	Output of the energy of the last transaction in Wh.
Energy - last month	Output	Output of the total energy of the last month in Wh.
Extended diagnosis	Input	(De)Activate the extended diagnosis.
ID Tag or station name (query)	Bidirectional	An input of the ID tag (string) can be used to output the information stored for the ID tag.
Load History (OCPP/DLM)	Bidirectional	Connection to the OCPP or DLM driver.
Name	Output	Output for the name associated with the ID Tag.
Quota remaining	Output	Output of the remaining possible charging power.
Reset quota	Input	The quota can be reset via any signal.
Transaction - Port Number	Output	Output the port number of the charging station where the selected transaction took place.
Transaction - End	Output	Outputs the date and time for the end of the transaction.
Transaction - End (Formatted)	Output	Outputs the date and time for the end of the transaction as formatted text.
Transaction - ID Tag	Output	Outputs the ID tag as a string.
Transaction - Start	Output	Outputs the date and time for the transaction start.
Transaction - Start (Formatted)	Output	Outputs the date and time for the start of the transaction as formatted text.

Name	Type	Function
Transaction - Station ID	Output	Outputs the charging station ID where the selected transaction took place.
Transaction - Transferred Energy [Wh]	Output	Outputs the transferred energy for the selected transaction.
Transaction - Meter reading start [Wh]	Output	Outputs the counter reading at the beginning of the transaction.
Transaction - Meter reading end [Wh]	Output	Output counter reading at the end of the transaction
Driver On/Off	Bidirectional	Driver On or Off.
Consumption plot current month (file)	Output	Output of the local storage location for the data. This file path can be linked to the image component. The diagram is only displayed if the server and client are running on the same machine.
Consumption plot current month (URL)	Output	For external access (EisBär clients in the network), the URL to the graphic file must be sent to the data point of the image component: Example: **http://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Consumption plot current year (file)	Output	Output of the local storage location for the data. This file path can be linked to the image component. The diagram is only displayed if the server and client are running on the same machine.
Consumption plot current year (URL)	Output	For external access (EisBär clients in the network), the URL to the graphic file must be sent to the data point of the image component: Example: **http://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Consumption plot last month (file)	Output	Output of the local storage location for the data. This file path can be linked to the image component. The diagram is only displayed if the server and client are running on the same machine.
Consumption plot last month (URL)	Output	For external access (EisBär clients in the network), the URL to the graphic file must be sent to the data point of the image component: Example: **http://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
Consumption plot last year (file)	Output	Output of the local storage location for the data. This file path can be linked to the image component. The diagram is only displayed if the server and client are running on the same machine.
Consumption plot last year (URL)	Output	For external access (EisBär clients in the network), the URL to the graphic file must be sent to the data point of the image component: Example: **http://IP-ADRESSE:8003/Eisbaer.RESTServices/CustomWebsite/**
History - Next Transaction	Input	Use any command to enter the next transaction from the history.

Name	Type	Function
History - Transaction ID	Bidirectional	A transaction ID can be used to trigger the data request. This can also be done via the list selection[196] "Selected value".
History - Transaction ID Index (list selection)	Output	Index Output of the transaction for list selection[196] ("Select row")
History - Transaction IDs (List Selection)	Output	Text output of all transaction IDs as a list. This can be combined with the list selection[196] "Import data from string".
History - Previous Transaction	Input	Any command will call up the previous transaction from the history.

Properties of the component

Name	Default	Function
ID Tag		Enter a valid ID tag for output after server start.
Use Station Name		If this option is active, the station name is used as query reference. If not, the ID tag applies.
Driver On/Off		Defines whether the driver is automatically activated at project start.

6.12.7 Tesla [x200]

With the TESLA component it is possible, in connection with a Tesla account in which at least one vehicle is located, to receive current data from the vehicle and also to send commands.

If this component is created, it counts like 200 components.

Data points of the component

Name	Type	function
Single request	Input	Triggers a one-time query of the vehicle data
Cyclic request - autostart	Bidirectional	An on / off command can be used to start / stop the cyclic polling of the vehicle data.
Cyclic request - delay [s]	Bidirectional	Here the cycle time of the query can be set.
Response [Text]	Output	Output of the feedback as text
Diagnosis [Text]	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	Contains the vehicle specific data points
Token Refresh - generate login URL	Input	Trigger to generate the login URL
Token Refresh - Login URL	Output	Output of the login URL as a string
Token Refresh - URL after Login	Input	Transfer of the URL after login in the TESLA account
Token Refresh failed	Output	Output message if token refresh did not work (wrong URL, server access not possible, etc.)
Driver On/Off	Bidirectional	Driver on or off.

Properties

Name	Standard	function
Connection Settings		Enter the TESLA account data, the redirect URL and the access/refresh tokens.
Parkservice - PIN		Entry for the Tesla Valet Parking - PIN
Timeout [s]	5	Setting for the maximum waiting time until a timeout is detected.
Distance Unit	Kilometer	Switch between miles and kilometers
Vehicles	0	Imports the vehicle(s)
Cyclic request - autostart	gesetzt	Setting for cyclical polling of the vehicle data.
Cyclic request - delay [s]	60	Cycle time of the query
Retrigger all SPs - [min]	60	Update interval for all possible vehicle data. Here, the values are reissued at the data points
Driver On/Off		Driver on or off.

Brief instructions for storing the tokens in the TESLA component and the steps for establishing a connection to the vehicle:

Click the "Create and copy login URL" button under "Connection settings" in the TESLA component.

The actual login data (user/password) does not necessarily have to be entered for this. Open a current browser such as Microsoft Edge, Chrome or e.g. Firefox and paste the URL generated from the component from the clipboard into the address line of the browser. You will now be redirected directly to the TESLA login page. If necessary, the login data for the account must now be entered in the dialog of the website. Shortly after, a "Page not found" page is displayed - which is perfectly fine. However, the URL in the address bar has changed and must now be completely copied from it.

Now insert this URL in the component under "Redirect URL" and then click on the "Generate Tokens" button. After a short moment - if the URL works or access is active - the tokens are automatically entered in AccessToken and RefreshToken. After this process close the window with OK and start the import in the properties under vehicles. After importing at least one vehicle, the data connections are listed according to individual categories under a dynamic folder in the communication window.

Notice:
If token generation via the URL does not work, smartphone apps such as Auth for Tesla (iOS), etc. or websites (see below) can alternatively be used for token generation.
The Access and RefreshToken must then be manually transferred to the editor. Retriggering the method described above is additionally possible via data ports.

Web pages (token generators):
https://tesla-info.com/tesla-token.php
https://teslatokengenerator.com/en

6.12.8   EVCS [x150]

This component is used to control and query information from charging stations. If this component is created, it counts as 150 components.
Depending on the model, the connection must be enabled (dip switch in the device 3->ON).

DIP-Switch	Funktion	Abbildung
DSW1.3	UDP-Interface (SmartHome) aktivieren. Nur verfügbar für P30 c-series und x-series. Details siehe "UDP Programmers Guide".	1 2 3 4 5 6 7 8 OFF↓

Translation:
Enable UDP interface (SmartHome). Only available for P30 c-series and x-series.

Currently these charging stations can be controlled with this driver:
- ABB EVLunic Pro S
- ABB EVLunic Pro M
- KEBA c-series
- KEBA x-series

Data points of the component

Name	Type	function
Debug [Text]	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Debug Verbose	Input	To (de) enable advanced debug output. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
DLM	Bidirectional	Connection to the Dynamic load management Component.
Update report history	Input	Manually triggers the saving of the report history to the export file.
Update Reports	Input	Triggers an update of all reports.
Driver On/Off	Bidirectional	(De) Activate the component
Driver state	Output	Returns the on / off status of the driver.
Commands	*Folder*	

Name	Type	function
- Cancle Authorization	Input	Ends the authorization session.
- Send Authorization - Trigger	Input	Starts the authorization request with the previously specified RFID TAG / RFID-CLASS data
- Send Authorization [RFID Class]	Input	Specification of the RFID CLASS (10 byte HEX string) to start a authorization
- Send Authorization [RFID TAG]	Input	Specification of the RFID TAGS (8-byte HEX string) to start an authorization
- Limit Energy [Wh]	Input	Sets the energy limit for the current or next charge session.
- Geräteanschluss entriegeln	Input	Unlocks the device connection (charging must be completed before)
- Limit current (direct) [A]	Input	Limits the charging current.
- Limit current (delayed) - Trigger	Input	Sends the delayed load current limit command
- Limit current (delayed) - current [A]	Input	Specification of the maximum charging current, which becomes active after a delay to be defined
- Limit current (delayed) - Delay [s]	Input	Specification of the delay in seconds
Unlock Device Socket	Input	(De) Activates the charging station (permanent)
X2 Relay Terminal open/close	Input	Opens / closes the X2 terminal relay
History (0-30)	*Folder*	
- Interruption-Reason	Output	0 = charging was not completed, 1 = plug was pulled, 10 = RFID card was de-authorized.
- End (Seconds from System start)	Output	Displays the seconds from system start to end of session.
- End (timestamp)	Output	Returns the end time.
-Total energy at start [kWh]	Output	Returns the total energy value at the start time.
- Maximum current (Hardware) [A]	Output	Returns the maximum device output current in amps.
- RFID Class	Output	Shows the RFID class of this session.

Name	Type	function
- RFID Tag	Output	Displays the RFID tag of this session.
- Session ID	Output	System generated ID for the loading process
- Start (Seconds from System start)	Output	Displays the seconds from the system start to the start of the session.
- Start (timestamp)	Output	Returns the start time
- Transfered energy in session [kWh]	Output	Transferred energy in the session
States	*Folder*	
- Outputs-Value	Output	Setting for X2 relay terminal: 0 = closed, 1 = open,> = 10 = pulse output (number stands for pulse / kWh)
- Authorization required	Output	Indicates whether authorization is needed.
-Authorization function activated	Output	Indicates whether the authorization function is enabled or not.
- Backend present	Output	Indicates whether communication with the backend takes place (1) or not (0).
- Energy to deliver [kWh]	Output	Output of the set energy to be transmitted in kWh.
- Failsafe Timeout [s]	Output	Outputs the timeout for the emergency mode
- Error 1	Output	Internal error from the charging station (for the manufacturer support)
- Error 2	Output	Internal error from the charging station (for the manufacturer support)
- Firmware	Output	Displays the current firmware version.
- Device activated	Output	Indicates the activation state of the device
- Communication module present	Output	Indicates if a communication module exists
- Charging current [A]	Output	Returns the current charging current.
- Charging current after delay [A]	Output	Outputs the charge current after the delay.
- Delay [s]	Output	Returns the set delay in seconds.
- Maximum device current [A]	Output	Returns the maximum device current in amps.
- Maximum current - PWM Duty Cycle [%]	Output	Specifies the% value of the PWM at the maximum current.
- Maximaler Strom [A]	Output	Returns the maximum output current in amps.

Name	Type	function
- Maximum current during Failsafe mode [A]	Output	Outputs the maximum output current in AmpSafe mode in FailSave mode.
- Product name	Output	Returns the product name.
- Serial	Output	Returns the serial number of the charging station.
- System enabled (charging can be activated)	Output	Indicates whether the system is activated or not.
- Uptime [s]	Output	Returns the update time in seconds.
- Time sync quality	Output	At "0" the device is not in sync time. At 1, the sync is good (with NTP, OCPP and Proxy) and at 2 moderate (with web interface and UDP).
- State of the X1-Input	Output	See manufacturer's manual.
Plug State	*Folder*	
-- Cable plugged in station (not locked)	Output	Represents the decoded single state (1).
-- Cable plugged in station (locked)	Output	Represents the decoded single state (3).
-- Cable plugged in station and car (not locked)	Output	Represents the decoded single state (5).
-- Cable plugged in station and car (locked)	Output	Represents the decoded single state (7).
-- No cable plugged	Output	Represents the decoded single state (0).
-- Plug state value	Output	Returns the status as a byte (0, 1, 3, 5, 7).
Measurements	*Folder*	
-- Power [W]	Output	Returns the current MessValue Off.
-- Power factor	Output	Returns the current power factor.
-- Voltage Phase 1 [V]	Output	Returns the current reading in volts.
-- Voltage Phase 2 [V]	Output	Returns the current reading in volts.
-- Voltage Phase 3 [V]	Output	Returns the current reading in volts.
-- Current Phase 1 [A]	Output	Returns the current reading in Amps.
-- Current Phase 2 [A]	Output	Returns the current reading in Amps.

Name	Type	function
-- Current Phase 3 [A]	Output	Returns the current reading in Amps.
-- Transmitted energy during this session [kWh]	Output	Returns the current reading in watt-hours.
-- Transmitted energy (total) [kWh]	Output	Returns the current reading in watt-hours.
State	*Folder*	
-- Ready to charge	Output	Represents the decoded single state (2).
-- Error	Output	Represents the decoded single state (4).
-- Charging	Output	Represents the decoded single state (3).
-- Charging interrupted	Output	Represents the decoded single state (5).
-- Not ready to charge	Output	Represents the decoded single state (1).
-- Startup	Output	Represents the decoded single state (0).
-- State value	Output	The status value DP outputs the status as a byte (0-5).

Properties

Name	Standard	function
Local IP Address		IP address of the local interface to be used (network card)
Device IP Address		IP address of the charging station to be queried
Update Interval Report 1 [s]	3600	Polling interval for Report 1 (static information)
Update Interval Report 2 [s]	10	Polling interval for Report 2 (status information)
Update Interval Report 3 [s]	5	Polling interval for Report 3 (readings during a load). It should be noted that this report is only executed in the specified interval if the status from Report 2 indicates an active loading process.
Connection check Interval [s]	30	Interval for the cyclic connection check.
Reply Timeout [s]	2	Timeout for the response of a query
History Export File		Specification for the storage path of the history data.
Driver On/Off		(DE) Activate the component

6.12.9 wallbe [x150]

This invisible server component is used to connect to wallbe charging stations.

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Dynamic	Folder	Contains the device specific data points.
Advanced Diagnostics	Input	The output of the diagnostics can be extended with an An value.
Driver On/Off	Bidirectional	Driver on or off.

Properties of the component

Name	Default	Function
Connection		Enter walbee credentials.
Channels		Imports all wallboxes registered on the server.
Update interval [s]	10	Time interval for the update in seconds.
Driver On/Off		Switch driver on or off.

6.13 Driver

This chapter describes the functions and properties from the Driver category.

Currently the following driver components are available:

1. Treiber-Gateway [546]
2. KNX [549]
3. Modbus [571] Master [571]
4. Modbus Slave [611]
5. Modbus Gerätetreiber [613]
6. BACnet Server [x2500/x3000] [616]
7. BACnet Client [x2500/x3000] [623]
8. IEC60870 [632] [x500]
9. DMX [636]
10. CAN Bus [638]
11. OPC Client UA, DA und DA (XML) [641]
12. CIM [x2500] [647]
13. Profibus [x200] [648]
14. ESPA 4.4.4 Master [650]

15. ESPA 4.4.4 Slave[655]
16. ESPA-X[658] Host
17. SNMP[660] (Trap-Agent[662] , Trap-Empfänger[664] , MIB-Agent[666] , Manager[667])
18. Casambi[672]
19. EnOcean[673]
20. ZigBee LightLink[675]
21. Z-Wave[678]
22. HomeMatic[682]
23. Home Connect[684]
24. digitalSTROM[685]
25. REST Client[691]

6.13.1 Driver Gateway

The gateway function is used to establish direct bidirectional communication between drivers. This eliminates the need to link individual channels together. The following drivers support this function:

KNX [549]
BACnet Server [616]
BACnet Client [623]
Modbus Master [571]
MQTT Client [807]

Connections:

Link data points

Sending driver	Data point	Data point type	Data point	Receiving driver	Function
KNX	Driver Gateway - MQTT Client	Bidirectional	Driver Gateway - KNX	MQTT Client or Broker	Connection data point between KNX and MQTT
KNX	Driver gateway - BACnet server	Bidirectional	Driver Gateway - KNX	BACnet Server	Connection data point between KNX and BACnet server
BACnet Server	Driver gateway - MQTT client	Bidirectional	Driver gateway - BACnet server	MQTT Client or Broker	Connection data point between BACnet server and MQTT
Modbus Master	Driver Gateway - BACnet Server	Bidirectional	Driver gateway - Modbus master	BACnet Server	Connection data point between Modbus master and BACnet server
Modbus Master	Driver gateway - MQTT client	Bidirectional	Driver gateway - Modbus master	MQTT Client or Broker	Connection data point between Modbus master and MQTT
BACnet Client	Driver gateway - MQTT client	Bidirectional	Gateway driver - BACnet client	MQTT Client or Broker	Connection data point between BACnet client and MQTT

import

Import name	Function name
KNX (CSV)	In order for the KNX data points to be generated in the MQTT or BACnet server, an export as "CSV (TAB)" from the data point list of the KNX driver and subsequent "KNX (CSV)" import in the channel list of the MQTT or BACnet server is required.
KNX (XML)	To generate the KNX data points in the MQTT client or the BACnet server, an XML export from the group address window of the ETS and subsequent "KNX (XML)" import in the channel list of the MQTT client or BACnet server is required.
Modbus master	To generate the Modbus master data points in the MQTT or the BACnet server, an export as xml from the data point list of the Modbus master driver and subsequent "Modbus" import in the channel list of the MQTT or the BACnet server is required.
BACnet server	To generate the BACnet server data points in the MQTT, an export as XML from the data point list of the BACnet server driver and subsequent "BACnet (server)" import in the channel list of the MQTT is required.
BACnet client	In order for the BACnet client data points to be generated in the MQTT, an export as XML from the data point list of the BACnet client driver and subsequent "BACnet (client)" import in the channel list of the MQTT is required.

Example KNX import from EisBär KNX driver export in the Bacnet channel editor:

Example KNX import from ETS group address export in the MQTT channel editor:

Notes:
Data import and / or manual data point input

In the "normal case" (all required objects have been imported and the connection is only made via the gateway data point), control elements can be connected to the KNX component, for example. If a command is triggered there, it goes to the KNX bus on the one hand and is sent to BACnet via the gateway DP on the other. Similarly, the control element could also be connected to the corresponding BACnet data point - in this case, the Bacnet sends the value directly and in parallel to the KNX via the GW.

In the Bacnet channel, there is a "DriverGatewayReference" property that is set with a unique reference of the external system during gateway import. In the case of KNX, this is the physical address (csv) or the name (xml).
If a change is made via the gateway data point, the DriverGatewayReference is used to check which Bacnet channel corresponds to it. This DriverGatewayReference does not have a visible column in the channel editor and can therefore currently only be set via an import. Subsequently manually created Bacnet channels can therefore not be mapped to KNX objects, as the input option is missing (workaround via Export - Edit - Import channel list is possible). If such channels are created manually and have a counterpart on the KNX side, the corresponding data points must be explicitly linked.
If an action is triggered on the KNX side or by a control element that is linked to both data points (KNX and Bacnet), it is only sent once to the respective bus on both the KNX side and the Bacnet side.
If KNX values are sent twice (e.g. once at the trigger input and then back from the bus), this is debounced on the Bacnet side. If the same value is sent cyclically, there must be at least 500ms before it is sent again on the Bacnet side.

6.13.2 KNX

The KNX driver is an invisible server component with the possibility to control an EIB/KNX installation.

For each project, a KNX connection for an EIB/KNX installation is inserted on any page. Preferably, the component should be inserted on a separate system page. It is possible to combine several KNX installations, which are not physically connected to each other, in one EisBär visualization. For this purpose, a KNX component is inserted for each installation and set according to the respective ETS project.

Information on using dummy devices for filter table calculation can be found in the chapter KNX Dummy / Filter Table[570]

Before activating the driver, the data points (group addresses and device data) must be imported via the "Data point list" dialog. The dialog also opens by double-clicking on component in the workspace. From Windows 8.1 and higher, these instructions[20] must be observed. I

Import ETS4 data[559]
Import ETS5/ETS6 data[562]

ATTENTION: Deleting the KNX connection results in the loss of all connections in the polar bear project. All connections must be created again by hand.

Note: If the physical address of bus devices is changed, it is necessary to delete the data points with the affected addresses in the KNX driver, since the networking within the project is based on the physical addresses and the device objects. Afterwards, the networking of these data points must be established again.

Driver settings

KNXnet/IP and USB drivers have two integrated driver layers, the KNX Falcon driver and our own driver. The Falcon driver is activated by default. Some older KNX interfaces do not support the Falcon driver; our driver must be set for these.
The KNXnet/IP protocol offers two connection options. A unicast tunnelling connection and a multicast routing connection. With the unicast tunnelling connection, only one KNX/IP interface is accessed at a time. With the multicast routing connection, several remote stations can communicate with each other. These can be several KNX/IP routers, PCs, touch screens, etc. Within a computer, **only one** application is possible at a time, as 2 applications would otherwise access the same network port.

KNXnet/IP tunnel (with and without Falcon):

We recommend the tunnel connection. With this, a connection failure is recognised and reported.
The **IP address and correct KNX address** of the selected KNX/IP interface (or tunnel channel) must be set. The IP address must be entered without a leading "0". The **"Scan interfaces"** button can be used to search for and set all KNX/IP interfaces available in the local network. For secure systems, the correct KNX address and keys must be set, see chapter IP Secure [566] and Data Secure [565]. The connection to the KNX/IP interface is checked with **"Check connection"**. The encryption is also checked for secure connections.
"NAT" is only required for KNX/IP interfaces behind a NAT router. In most cases, it is not required.

The Falcon driver layer, "Scan interface" and Secure are deactivated by unchecking the "Falcon" box. An older driver is activated. This should only be used if a connection via Falcon is not possible.

The interruption of the tunnel connection is recognised by the Falcon driver. In addition, a heartbeat command is sent every minute. If the driver detects an interruption in the network connection or the KNX wiring, the driver goes offline and attempts to re-establish the connection. At the same time, this is signalled via the "Driver status" data point. When the connection is re-established, the driver automatically goes online and queries the statuses if necessary (if "Read values from KNX" is activated).
The interval and the group addresses can be set. Setting the interval to 0 deactivates sending.
The address must be a valid KNX group address (observe address range). By default, an "On" is sent to group address 31/7/255.
*After the set time in seconds for "**Switch to replacement after:**", the system switches to the replacement configuration. The system does not automatically switch back to the main connection. Switching is deactivated with "0".*

A second KNX interface can be created in the "Substitute configuration" tab. The data point in the "Configuration" folder can be used to switch between the standard and replacement configuration via an On signal.

KNXnet/IP routing (with and without Falcon):

The multicast/routing connection is the fastest connection. This is preset and requires the least configuration effort. The standard routing address 224.0.23.12 is preset in all KNXnet/IP routers and in the EisBär. The IP address must be entered without a leading "0". However, multicast is blocked in most managed networks and cannot be used.

A functioning network topology or at least a network crossover cable (fixed IP addresses set) is required to connect the EisBär server PC to the KNX system. A KNXnet/IP router is required as the remote station. The local, fixed IP address must then also be entered in the driver. With the "Scan interface" button, all available KNX routers are listed with the corresponding IP. When the desired interface is selected, all the necessary addresses are entered automatically and can therefore be adopted directly.

The sender address that is entered in the KNX telegrams is entered under "KNX address". This address has no functional effect (e.g. for the filter table check). The addresses correspond to the physical address of a KNX device. By default, the address 15.15.15 is entered here. This makes it easy to recognise which telegram comes from the EisBär during a recording. For secure systems, the correct KNX address and keys must be set, see chapter IP Secure[566] and Data-Secure[565].

The Falcon driver layer, "Scan interface" and Secure are deactivated by unchecking the "Falcon" box.

USB (with and without Falcon):

This driver setting is used to connect KNX USB interfaces. The KNX Windows USB energy-saving fix must be executed before use. The USB interface must be connected for this. Otherwise, the USB connection will be switched off by the Windows energy-saving function.

The Falcon driver is activated by default. This recognises old and new interfaces.
The interface is searched for via "Scan for USB devices". During the search, "Please wait" is displayed. The search is only completed when this display disappears. After a successful search, the corresponding interface appears in the list and must be selected and accepted with "OK".

If the Falcon driver is deactivated, the system switches to our USB driver. With this, the names of the manufacturers are given. This makes it possible to operate several KNX connections with different USB interfaces within an EisBär project.

If the driver detects an interruption in the USB connection or the KNX wiring, the driver goes offline and attempts to re-establish the connection. At the same time, this is signalled via the "Driver status" data point. When the connection is re-established, the driver automatically goes online and queries the statuses if necessary (if "Read values from KNX" is activated).

The KNX connection provides data points for extensive display and diagnostic functions.

*Tip: After connecting the "**Driver status**" data point with the status input of a button or a "Value-dependent text" as a display element, the status of the driver can be displayed. The status is displayed as undefined if the driver is switched off. The on state means that the connection is activated and working.*
When using a USB interface or KNXnet/IP interface, the Off state means that the USB cable or network cable is interrupted or the interface has no bus voltage.

Data points of the component

Component name	Type	Function
Initialise data points (used)	Bidirectional	On if the values of the group addresses are read at driver start.
Initialise data points is active	Output	On while group addresses are being initialised on the KNX. The output is set to Off once the read operations have been completed.
Initialise data points now start/stop	Input	If an On signal is applied to this input, all group addresses with the Read flag are read from the KNX. This process is stopped when an Off signal is applied.
Debug	Output	Error texts are output here. These can be displayed using the "Log window"[931] component, for example. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.** If several drivers are available, the displays can be switched via the debugger[932].
Dynamic	*folder*	The data points (communication objects) for the available KNX devices are made available in the Dynamic folder. They are displayed according to the topology of the system.
ETS Logging (On/Off)	Input	If the box is ticked, all telegrams from the group addresses in the data point list are written to ETS Monitor readable log files. The files are located in the project directory in the "EtsLogging" folder.
KNX telegrams per second	Output	Output of the number of all telegrams per second.
Configuration	*Folder*	The settings of the KNX connection can be set and/or called up via the data points contained here (see below).
Monitor	Output	In conjunction with the protocol window, all bus telegrams are output here. **Attention: The corresponding output is only intended for use in the event of an error. If used, it could significantly impair the performance of the service.**
Send active	Bidirectional	Sending to the KNX can be deactivated with an Off signal.
Driver On/Off	Bidirectional	This is used to activate or deactivate the driver. It is output whether the driver is active.
Gateway driver - BACnet server	Bidirectional	Bidirectional communication interface between KNX and BACnet server. See Gateway[546] driver.
Gateway driver - MQTT client	Bidirectional	Bidirectional communication interface between KNX and MQTT Client. See Gateway[546] driver.
Driver status	Output	Displays the status of the driver. On= Connection OK, Off=Connection faulty, Undefined=Driver off
Unknown group address	Output	If a group address is received from the KNX bus which is not in the data point list of the KNX driver, an ON signal is output.
Unknown group address telegram	Output	If an unknown group address is recognised, it is output as text.
Connection settings	Output	Outputs the current settings of the driver as text. The output includes: Name;Connection type;Secure;IP;Port;KNX address;NAT
Status table	Input	Data connection for the KNX Telegram Player[409] component.

Configuration folder :
Settings can be changed at runtime. However, this does not replace the settings in the KNX driver settings.
IGS settings are not supported.

Name: Name	Type	Type Function
Change generic configuration	Bidirectional	The configuration for the driver can be changed/set via a text. For USB, for example, the text looks like this: Type=Usb;DevicePath=\\? \hid#vid_147b&pid_5120#7&37583c4e&0&0000#{4d1e55b2-f16f-11cf-88cb-001111000030}
Activate routing configuration	Bidirectional	This communication type is used with an ON signal. The connection settings are taken from the "KNXnet/IP Routing" driver settings. If the configuration was changed at runtime, this is used.
Change routing configuration	Bidirectional	Structure of the configuration: Routing;Falcon;Secure:0;IP_Address:224.0.23.12;Port:3671;IA:15.15.15;Local_IP:127.0.0.1
Enable tunnelling replacement configuration	Bidirectional	This communication type is used with an ON signal. The connection settings are taken from the driver settings "KNXnet/IP Tunnel - Substitute configuration". If the configuration was changed at runtime, this is used.
Change tunnelling replacement configuration	Bidirectional	Structure of the configuration: Tunnelling;Falcon;Secure:0;IP_Address:127.0.0.1;Port:3671;IA:15.15.15;NAT:0
Activate tunnelling standard configuration	Bidirectional	This communication type is used with an ON signal. The connection settings are adopted from the "KNXnet/IP Tunnel - Standard configuration" driver settings. If the configuration was changed at runtime, this is used.
Change tunnelling standard configuration	Bidirectional	Structure of the configuration: Tunnelling;Falcon;Secure:0;IP_Address:127.0.0.1;Port:3671;IA:15.15.15;NAT:0
Activate USB configuration	Bidirectional	This communication type is used with an ON signal. The connection settings are taken from the driver settings. If the configuration was changed at runtime, this is used.

Properties of the component

Component name	Standard	Function
Data points from ETS	(0 data points)	Displays the currently available data points (communication objects) in the driver.
Initialise data points (used)		Specifies whether group addresses are read from the KNX when the driver is started. The following conditions must be met: - the data point must be linked in the polar bear project. - the read flag must be set in the KNX device object. - the read priority must not be None.
Send active	X	If the check mark is set, telegrams are sent to the KNX. If the check mark is not set, telegrams are received but not sent.
Telegram delay [ms]	50	Send delay between two telegrams in ms. This delay also applies to "Read values from KNX"
Driver setting	EisBaer;KNXnet/IP routing	Specifies which KNX driver is to be used (KNXnet/IP, USB or IGS).
ETS monitor logging		If the box is ticked, all telegrams from the group addresses in the data point list are written to ETS Monitor readable log files. The file is located in the project directory in the "EtsLogging" folder.
Logging storage interval [min]	5	The telegram log files are written to the data carrier at this interval of 5-10 minutes. In between, the data is only collected in the working memory.
Set components to "Undefined" in case of bus interruption		If the bus connection is interrupted, all components connected to the driver are set to undefined.
Driver on/off	X	Switch driver on or off.

6.13.2.1 KNX Driver Set up

The following section explains in more detail how to set the KNX driver and what needs to be taken into account. The KNX driver component[549] is listed in the component window under Driver. It is created on any page using drag and drop[74] . It is an invisible component. Information on using dummy devices for filter table calculation can be found in the KNX dummy / filter table[570] chapter.

The *data from* the different ETS versions is imported via the *Data points from ETS* field. This is started via the buttons for ETS4/5/6 or the file menu. The correct ETS version must always be selected for the import, as the encryption of the passwords is different, for example.

The group address structure can also be customised. The default is a 3-level address structure. A free or 2-level structure can also be selected.
Group addresses can be created manually using the +. Use the x to delete the selected entries from the driver.

If necessary, the data points or read flags can still be adjusted. First and foremost, however, this should always be done in the ETS in order not to overwrite the changes again during a further import and to fundamentally minimise the sources of error. Always consider the ETS software as the basis - both for your KNX installation and your visualisation projects.

If the data point types have not been set in the ETS:
Not clearly defined data types are indicated by the *red question mark* in the first column. During import, the ETS only outputs the data width of a group address if the data point type has not been defined. For different data types there are different possibilities of interpretation. A right mouse click on the question mark opens a selection of possible data types. Select the desired data type and the question mark disappears.

Note: When importing data, EisBär automatically selects the "common" data types to save you this work. Thus, it is usually only necessary to make these adjustments if, for example, you are working with 2-byte measurement values, date, time or counter measurement data. In these cases, follow the manufacturer's instructions in the device manual. There usually the necessary data type is indicated.

File menu

ETS3 Import	Import possibility of an ETS-3 project.
GA XML Import	Import possibility of the group addresses in XML format. Only the ETS 5 XML format is supported.
Export to Excel	The already imported group addresses are exported to an Excel file.
Export to dummy	The already imported group addresses are exported into a text file. This can be used in the ETS for dummies and filter tables. **Only linked group addresses are exported.**
Export to csv (tab)	The already imported group addresses are exported into a CSV file. This export can be imported again for the drivers MQTT client[807] and BACnet server[616]. This ensures the function Driver Gateway[546]

Import-Dialogue

Browse to the project file you want to import and select with a double-click.
If the import is successful, all the group addresses of the project appear in the data point list.

Example of the ETS5 XML file:

```
<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<GroupAddress-Export xmlns="http://knx.org/xml/ga-export/01">
 <GroupRange Name="Keller" RangeStart="2048" RangeEnd="4095">
 <GroupRange Name="Basement Electricity" RangeStart="2304" RangeEnd="2559">
 <GroupAddress Name="Workshop Srom (A)" Address="1/1/1" DPTs="DPST-1-1" />
 <GroupAddress Name="Basement Circuit (B)" Address="1/1/2" DPTs="DPST-1-1" />
 <GroupAddress Name="Oil storage power/light (C)" Address="1/1/3" DPTs="DPST-1-1" />
```

```
<GroupAddress Name="Basement Circuit (D)" Address="1/1/4" DPTs="DPST-1-1" />
<GroupAddress Name="Central Off Power" Address="1/1/99" DPTs="DPST-1-1" />
</GroupRange>
</GroupRange>
<GroupRange Name="Facade West" RangeStart="4096" RangeEnd="6143" Description="Facade
West">
<GroupRange Name="Ground Floor Shutter" RangeStart="4352" RangeEnd="4607"
Description="Ground Floor Shutter">
<GroupAddress Name="Living room window 1bit stop" Address="2/1/10" Description="Living room
window 1bit stop" />
<GroupAddress Name="Living room window 1bit moving object" Address="2/1/11"
Description="Living room window 1bit moving object" />
</GroupRange>
</GroupRange>
</GroupAddress-Export>
```

6.13.2.1.1 ETS4-Data import

In this paragraph you will learn how to import data from ETS4 into the KNX connection in the Editor.

1. Start Editor.
2. Open your project and add the KNX driver into your project by drag and drop.
3. Highlight the KNX component and open the data point list either by double click or via the the properties window.

4. Open the "ETS4 Import" by clicking the green ETS4-Icon.

5. The import is done in 3 steps.

Step 1

Select the ETS4 project file, which you have to export from the ETS4. Select the project file you want to import with a double-click.

Note: The project can not be password protected.

Step 2

Select the desired project. In most cases, the only existing project is automatically selected . This selection dialog is prepared for future extensions of ETS4 export function.

Step 3

Indicator which group address notation is used: 2- or 3-stage representation or free group address structure.

With the check mark "Overwrite manually changed data point types (EIS types)" it can be defined that data point types manually set in the data point list may not be overwritten. This may be necessary for

a new import. Normally this check mark is not activated. The data types are then adopted as set in the ETS.

Note: For all non-sending group addresses (central 00x), the data types are always overwritten. The "Type locked" property in the data point list has no function for these data points.
If you already set the data point types for the objects/group addresses correctly in the ETS, then these are automatically adopted correctly with each import within the data point list. This is useful, for example, for data from consumption meters or weather stations.

When using KNX devices with collective objects, e.g. with KNX tableaux or dummy applications, it is necessary to solve the concatenation of the addresses in the communication object. For this purpose, an additional dummy address is created in the first position of the communication object. This is not used for any other function. All other addresses are automatically created in the data point list as so-called "central addresses" and can be used normally for linking.

Confirm the dialog by clicking on "Close dialog and import data".

During the import a result window is displayed. Import errors, warnings and information are listed here. This information is also stored in a log file. For example, the devices that do not contain any group addresses are listed.

Confirm the dialog with OK.

The ETS data is now automatically imported into the EisBär editor and displayed in the data point list.

6.13.2.1.2 ETS5/6-Data import

In this paragraph you will learn how to import data from ETS5 into the KNX connection in the Editor.

1. Start Editor.
2. Open your project and add the KNX driver into your project by drag and drop.
3. Highlight the KNX component and open the data point list either by double click or via the the properties window.

4. Open the "ETS5 Import" by clicking the green ETS5-Icon.

5. The import is done in 3 steps.

Step 1
Select the ETS5 project file, which you have to export from the ETS5. Select the project file you want to import with a double-click.

Step 2
Select the desired project. All ETS5 projects of the selected ETS5 project file are displayed under Projects. In most cases, the only existing project is automatically selected here. This selection dialogue is prepared for future extensions of the ETS5 export function.
Note: If necessary, the ETS project password must be entered.

Step 3
The group address notation used is displayed here: 2- or 3-level display or free group address structure.

By ticking "Overwrite manually changed data point types", you can specify that manually set data point types in the data point list must not be overwritten. This may be necessary for a new import. Normally, this tick is not activated. The data types are then adopted as set in the ETS.

Note: The data types are always overwritten for all non-sending group addresses (central 00x). The "Type locked" property in the data point list has no function for these data points.
If you set the data point types for the objects/group addresses correctly in the ETS, they are automatically adopted correctly for each import within the data point list. This is useful for data from consumption meters or weather stations, for example.

When using KNX devices with collective objects, e.g. with KNX panels or dummy applications, it is necessary to resolve the linking of the addresses in the communication object. For this purpose, an additional auxiliary address, e.g. 31/7/0-x, is created in the first position of the communication object. This is not used for any other function. All other addresses are automatically created in the data point list as so-called "central addresses" and can be used as normal for linking.

Confirm the dialogue by clicking on "Close dialogue and import data".

A results window may be displayed during the import. Import errors and warnings are listed here. This information is also saved in a log file. For example, the devices that do not contain any group addresses are listed.

Confirm the dialogue with OK.

The ETS data is now automatically imported into the EisBär editor and displayed in the data point list.

A copy of the ETS project is saved in the project under \PRJ0001\DBs\Import and transferred during uploads and downloads.

6.13.2.1.3 ETS GA XML Import

Import option for ETS group addresses in XML format. Only the [ETS XML format](#)[564] is supported. The XML file does not contain any object-orientated assignments. Status feedback must therefore be used. The "Read flag" must be set manually.

In the ETS, the XML file is exported with a right mouse click in the group address view.

1. Start the editor.
2. Open your project and select the KNX connection.
3. Select the KNX component and click on the right-hand button in the properties window under "Data point list". The data point window opens. Or double-click on the component.
4. Open "GA Xml Import" in the file menu at the top left.
5. The import takes place in 2 steps.

Step 1
Select the ETS5/6 XML file. You must first export this from the ETS.

Step 2
Here you can see which group address notation is used: 2- or 3-level representation or free group address structure.

By ticking "Overwrite manually changed data point types", you can specify that manually set data point types in the data point list may not be overwritten. The data types are then nevertheless adopted as set in the ETS. Normally, this tick is not activated.
Confirm the dialogue by clicking on "Close and import".

The ETS data is now automatically imported into the EisBär editor and displayed in the data point list.

Example ETS5/6 XML-Data:

```xml
<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<GroupAddress-Export xmlns="http://knx.org/xml/ga-export/01">
 <GroupRange Name="Keller" RangeStart="2048" RangeEnd="4095">
  <GroupRange Name="Keller Strom" RangeStart="2304" RangeEnd="2559">
   <GroupAddress Name="Werkstatt Srom (A)" Address="1/1/1" DPTs="DPST-1-1" />
   <GroupAddress Name="Keller Stromkreis (B)" Address="1/1/2" DPTs="DPST-1-1" />
   <GroupAddress Name="Öllager Strom/Licht (C)" Address="1/1/3" DPTs="DPST-1-1" />
   <GroupAddress Name="Keller Stromkreis (D)" Address="1/1/4" DPTs="DPST-1-1" />
   <GroupAddress Name="Zentral Aus Strom" Address="1/1/99" DPTs="DPST-1-1" />
  </GroupRange>
 </GroupRange>
 <GroupRange Name="Fassade West" RangeStart="4096" RangeEnd="6143" Description="Fassade West">
  <GroupRange Name="EG Rolladen" RangeStart="4352" RangeEnd="4607" Description="EG Rollladen">
```

```
    <GroupAddress Name="Wohnzimmer Fenster 1bit Stopp" Address="2/1/10"
Description="Wohnzimmer Fenster 1bit Stopp" />
    <GroupAddress Name="Wohnzimmer Fenster 1bit Bewegobjekt" Address="2/1/11"
Description="Wohnzimmer Fenster 1bit Bewegobjekt" />
    </GroupRange>
</GroupAddress-Export>
```

6.13.2.2 Data Secure

With KNX Data-Secure, communication on the KNX bus and in the IP network is "encrypted".
In order to be able to connect the EisBär to the data secure bus, all the group addresses used must be stored in the ETS6 project for the selected connection. This is implemented directly in the tunnelling channels above when routing with a dummy. The dummy device itself must be secure and be located topologically above the KNX/IP router.

Example:

The project password is required to export the data points and is started from the overview. The export of the key is also required. Select "Details" on the overview page --> Enter password --> Click on "Security". A list of all registered devices is displayed. The "Backup keychain" button is located at the top right. A password must be assigned for the export. The device certificates are not required.

In the EisBär KNX driver

The .knxproj file is imported via the ETS6 import (see Setting up the KNX driver⁵⁵⁶). The .knxkeys file is imported in the driver settings in the connection settings for the interface.
Important: The address of the dummy must be entered as the physical address.

Tunnelling

For the tunnelling connection, the **IP address and correct KNX address** of the selected tunnelling interface must be set.
The **keyring** must be imported. To do this, the **export password** of the ETS6 keyring export must be entered.
The connection can be checked with "Check connection".

Routing
The correct **multicast IP address** must be entered and the keyring (*.knxkeys) must be imported. To do this, the export password from the ETS6 keyring export must be entered.
The connection can be checked with "Check connection".
It is not possible to use the backbone key with Data Secure. This only works with IP Secure[566] .

The keyring file (keyring) is automatically savedin the project under \PRJ0001\DBs\Importduring import and transferred during uploads and downloads.

6.13.2.3 IP Secure via Falcon

With KNX IP-Secure, communication in the IP network is encrypted. The data in the twisted pair wiring is not encrypted.

Preparations in the ETS 5 for a KNX IP Secure connection to work.
- The ETS project must be password protected
- For each KNX IP Secure device the factory key (enclosed with the device) must be entered.
- Secure must be activated in the device properties of the KNX IP Secure Router
- In the topology view, IP Secure (blue shield IP) must be set for "Backbone Medium". These properties can be accessed by clicking on "Topology" (below "Add area").

- When connecting via "tunneling interface", a password must be entered for the interface used.

- Under *Overview \ Projects -> Security*, the keychain for the corresponding project must be exported. Either the whole project (IP routing and all tunneling interfaces) or individual tunneling interfaces can be selected.
- The file must be password protected. This password will be needed later in the Eisbaer.

- All required keys are printed out in the project under Reports \ Project Security.

Settings in the Eisbär KNX driver:

routing

The correct **multicast IP address** must be entered, and with the IP Secure activated, the **backbone key** must be entered from the safety report.

You can also import the keychain (* .knxkeys). For this, the export password of the keychain export of ETS5/6 must be entered.

The connection can be checked with "Check Connection".

tunneling

For the tunneling connection, the IP address and the correct KNX address of the selected tunneling interface must be set.

The **keychain** must be imported. For this, the export password of the keychain export of the ETS5 must be entered.

The connection can be checked with "Check Connection".

6.13.2.4 KNX Dummy/Filter

For a complete visualisation of an ETS installation, it is necessary that the telegrams from the line couplers are allowed through. For this purpose, a dummy device is inserted in the ETS project that contains all the group addresses required by the visualisation. In this way, the ETS can take the group addresses of the dummy device into account when creating the filter tables.

Fill visualisation dummy helps to link a dummy device in the ETS for a visualisation with a list of group addresses. The product data for dummy devices are available for download in the ETS5 online catalogue, from various manufacturers (filter by dummy).

The EisBär export for dummy only takes over the linked data points.

The information about the group addresses is exported within the KNX driver in the EisBär Editor.

For this there is an ETS5 addon which can be purchased at https://my.knx.org/en/shop. Direct link to Fill Visualization dummy.

Excerpt from the ETS Help:
In some projects there are so-called dummy devices which (mostly) are located in the area line, the purpose here is to see this GA only on the area line (ie the telegram), e.g. for visualizations. Through this "artificial" assignment of GA's to GO's, filter tables of the couplers are adjusted accordingly (opened).

6.13.3 Modbus Master

The Modbus TCP driver is an unVisiblee server component with the possibility to connect Modbus gateways.

Specification Modbus TCP
The Modbus protocol was originally developed by the company Modicon (today Schneider Electric) for the traffic with their controllers. Data was transmitted in the form of 16-bit registers (integer format) or as status information in the form of data bytes. Over time, the protocol has been continuously expanded. Modbus TCP is another type of communication.
The Modbus protocol is a single-master protocol. This master controls the entire transmission and monitors any timeouts that occur (no response from the addressed device). The connected devices may only send telegrams if requested by the master.
Modbus TCP is part of the IEC 61158 standard. A specification can be found at:
http://www.modbus.org.

Get supported:
Modbus RTU (Serial), ASCII (Serial)[608],

[TCP, RTU over TCP, ASCII over TCP und UDP-IP](#)[579] (also Secure).

Note: When reading out several devices, there is a 100ms time delay between 2 devices.

Data points of the component

[TCP, RTU over TCP, ASCII over TCP und UDP-IP](#)[579] (also Secure).

Name	Type	Function
Query cyclic - Autostart	Bidirectional	Here it is output whether the cyclic query is active. An off signal deactivates the cyclic query. Activated with an on signal.
Cyclic query - Pause [s]	Bidirectional	The set pause time between 2 queries is output here. If an integer value is sent to the data point, the pause time changes accordingly. This is possible, for example, with a touch value input.
Query once	Input	An ON signal at this input triggers a one-time query of the values. Each further on-signal triggers a further query.
Updating is carried out	Output	An on signal is output at this output for the duration of the update.
Diagnosis [Data]	Output	Output of the raw data for each read register.
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window[931] " .**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can significantly affect the performance of the service.** If several drivers are available, the displays can be switchedvia the debugger[932] .
Dynamic	Folder	The subfolders for unit, unit status, value and value (factor) are created in the Dynamic folder. **Unit**: Text from the "Unit" channel editor. **Unitstatus**: There are 3 data points per unit ID. Unit active for (de)activating the unit query, unit status for the output whether the unit can be read out (true) and unit warning, which outputs *true* if the query failed. **Value**: Data point for the created channel without offsetting with the factor. **Value (factor)**: Data point for the created channel with offsetting of the factor.
Extended diagnostics	Input	The diagnostic output is extended via an on signal at this input. **Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, they can significantly affect the performance of the service.**
Faulty units	Output	Output of the unit ID as text that cannot be read out.
At least one value outside the range	Output	If limits have been entered for a value in the channel editor and this value is exceeded or not reached, an ON signal is output at this data point. Corresponding information is also output at the diagnostic output.
Ping Status	Output	In case of an IP connection, the connection of the device can be additionally checked via a ping check. An on signal shows if a connection exists.
Write cycle is being performed	Output	An on signal is output during the write cycle.
Write cycle time [ms]	Output	Output the time in milliseconds how long the write took.
Send once	Input	An ON signal at this input triggers a one-time sending of the values. Each further ON signal triggers a further transmission.
Send cyclically - Autostart	Bidirectional	This output shows whether cyclical transmission is active. An off signal deactivates cyclical transmission

Properties of the component

Name	Default	Function
Channels[575]		The imported or manually created channels are listed here. These then appear as subfolders in the data point folder Dynamic. The description of the Modbus channel editor follows below.
Connection	Serial ...	The connection type to the Modbus device is set here (slave address). Possible settings are: Modbus RTU (Serial), ASCII (Serial)[608] , TCP, RTU over TCP, ASCII over TCP and UDP-IP[579] (also Secure).
Timeout [ms]	5000	Time to wait for a response after a query. After that an error message is displayed. 50-10000ms can be set.
Cyclic query - Autostart	x	Here the automatic start of the queries is activated. The queries start automatically at simulation start in the editor and at server start.
Cyclic query - Pause [s]	1	Cycle time of the queries. With the default setting "1" a query of all values is started every second.
Send cyclically - Autostart		Automatic sending is activated here. Sending then starts automatically when the server is started and when the simulation is started in the editor.
Send cyclically - pause [s]	1	Cycle time of the transmission. With the default setting "1", sending of all values is started every second.
Write values directly	x	If this selection is set, transmission to Modbus is started directly when an input value changes. If not, not until the next transmission cycle.
Repeat read		If this option is set, another read attempt is made if the first attempt fails.
Terminate connection temporarily		If this property is set, the connection to the device is temporarily terminated during the query pause.
Block read	x	This uses automatic block formation for reading successive registers.
Block write	x	This is used for automatic block formation for writing successive registers.
Maximum block size	120	To set the block size, this value can be changed. Not all devices support the maximum block length.
Linked objects only	x	With this setting, only those registers are read that are also linked in the project.
Number of read errors before unit error	1	If a device cannot be reached, the set number of attempts is carried out before a device error is output.
Use old library		This option realises the processing of Modbus data via a newer API.
Driver On/Off		Switch driver on or off.

In principle, it is possible to forward data from a Modbus master to a Modbus slave.
Here it is important that the two Modbus lines are clearly separated.
Here is a diagram to illustrate this:

EisBaer Software

If a Modbus master is used in the EisBaer, the settings and registers in the instructions must be adopted from the Modbus slave.
If a Modbus slave is used in the EisBaer, you must check what the external Modbus master can do and which other slave devices are available on the Modbus line.
It is recommended that the device ID and the register addresses in the EisBaer slave are set uniquely.
This ensures that no two masters can access one slave. It also helps to better differentiate between the slave components.
In the diagram above, the black bar corresponds to the separation of the two systems. The data points of the driver components are linked 1:1.
Note on the TCP connection: in some cases the Modbus port 502 is blocked by the firewall.

6.13.3.1 Channel

Import / Export
This function simplifies the creation of channels, as each channel does not have to be created individually in the channel editor.
It is important that the document to be imported is an XML file with the correct formatting. The easiest way is to create a channel, export it, edit/add to it and then import it again.

Example XML file structure:
```xml
<?xml version="1.0" encoding="utf-8"?>
<ModbusChannelList>
 <ModbusChannel Name="FC3_22_BIT" Id="31" DeviceId="10" Address="25" Count="1"
ValueType="BIT" Function="SPECIAL_HOLDING_REGISTER_RW_BIT_ACCESS" Factor="1" Offset="0"
Unit="" NullOnReadError="False" TriggerWriteAll="False" StaticRegister="False" MinValidValue="0"
MaxValidValue="0" />
  <ModbusChannel Name="FC3_BIT" Id="25" DeviceId="10" Address="27" Count="1" ValueType="BIT"
Function="SPECIAL_HOLDING_REGISTERS_RO_BIT_ACCESS" Factor="1" Offset="0" Unit=""
NullOnReadError="False" TriggerWriteAll="False" StaticRegister="False" MinValidValue="0"
MaxValidValue="0" />
```

```
<ModbusChannel Name="FC6_BIT" Id="21" DeviceId="10" Address="26" Count="1" ValueType="BIT"
Function="SPECIAL_HOLDING_REGISTER_WO_BIT_ACCESS" Factor="1" Offset="0" Unit=""
NullOnReadError="False" TriggerWriteAll="False" StaticRegister="False" MinValidValue="0"
MaxValidValue="0" />
    ...
    ...
</ModbusChannelList>
```

Channels

Device name	Device ID [0 - 247]	Function	Register Address [decimal]	Data type	Number of registers	Factor	Offset	Min valid value	Max valid value	Unit	Send zero on read error	Triggers "write all"
Channel001	1	Read coil (1)	0	Bit	1	1	0	0	0			
...												

Columns marked with (*) can be edited together. The rows must be selected for this.

Name	Description
Name	Name of the channel which is displayed in the Dynamic folder in the communication window. Subfolders can be created with #, whereby the text before # is the folder name and the text after # is the data point name. This allows data points to be summarised. Example: Current#L1; Current#L2; Current#L3 - A Current folder containing the data points L1; L2; L3 appears in the Dynamic folder.
Device ID [0 - 247]	Device ID assigned in the device settings of the Modbus device, each device must be assigned its own ID so that it can also be uniquely identified. Not applicable for most Modbus-TCP connections. A broadcast is sent to all devices via ID 0.
Function	Various function codes are used to query values. The code is normally given as text and number in brackets. The number code is always unique. The required function code must be selected according to the product manual.
Register Address [decimal]	Address of the start register, from here the values are read or written. The address must be given in decimal, in the assignment tables these are often given in HEX. The conversion can be done e.g. via the Excel function "=hex2dec" or the Windows computer (view\programmer).
Data type	The specific data type for the registers, inputs, outputs, etc. to be read out. If the data to be read out is represented in several registers, the data type must be adapted accordingly.
Number of values	Number of registers to be queried (mostly for texts).
Factor	The read-out values can be directly provided with a factor. The factor also applies to writing to the registers. From master to slave is divided, from slave to master is multiplied.
Offset	An offset can be set for the result, e.g. for temperatures.
Min valid value	Setting to output only permissible values between this minimum value and the maximum value. Invalid values are not output at the data point (only at the diagnostic output). If Min and Max value is 0, the limit value is ignored. The output at the data point also depends on the setting **"Send zero on read error"**.
Max valid value	Setting to output only permissible values between the minimum value and this maximum value. Invalid values are not output at the data point (only at the diagnostic output). If Min and Max value is 0, the limit value is ignored. The output at the data point also depends on the setting **"Send zero on read error"**.
Unit	The unit of the value can be entered here. This is output as text in the folder Dynamic --> Unit.
Send zero on read error	If the specified register cannot be read or can no longer be read, the output is set to undefined.
Write Trigger All	If this option is set for one channel and it is written to, all other writable registers are also rewritten. Without this option, only this one register is written.

Method	Data type	Service	Service code	Access	Remark
Bitwise	Outputs/coils	Read coils	1	Read (read)	Read digital outputs (e.g. relays)
Bit by bit	Outputs	Read discrete input	2	Read (read)	Read digital inputs
Word by word	Output	Read internal register (holding)	3	Read (read)	Read measured values, counter readings, average values, Reading the device configuration
Word by word	Outputs	Read input register (Input)	4	Read (read)	Read analogue inputs
Bit by bit	Inputs/coils	Set coil	5	Write (write)	Writing a digital output (e.g. relay)
Word by word	Inputs/coils	Write register	6	Write (write)	Writing values Writing device configuration
Bit by bit	Inputs	Set multiple coils	15	Write (write)	Write several digital outputs (e.g. relays)
Word by word	Inputs	Write several internal registers	16	Write (write)	Writing multiple values
Word by word	Bidirectional	Read/write internal register	3/6	Read/Write (read/write)	Read and write a value
Word by word	Bidirectional	Read/write multiple internal registers	3/16	Read/Write (read/write)	Read and write multiple values
Bit by bit	Bidirectional	Coil read/write	1/5	Read/Write (read/write)	Read and write a digital output
Read/write coils	Bidirectional	Read/write multiple coils	1/15	Read/Write (read/write)	Read and write from multiple digital inputs/outputs.
Word-by-word/bit access	Outputs	Input register Bit access reading	4	Read (read)	Reading analogue inputs The values are output or set on the EisBär side in individual bits.
Wordwise /bit access	Bidirectional	Internal register Bit access read/write	3/22	Read/Write (read/write)	Reading and writing measured values, counter readings, average values, reading and writing the device configuration The values are output or set on the EisBär side in individual bits.
Bit by bit	Bidirectional	Multiple internal registers Read/write bit access	3/6 3/22	Read/Write (read/write)	Read and write multiple values as bit access

6.13.3.2 Modbus-IP

Modbus TCP / UDP communication requires the establishment of a TCP / UDP connection between a client (eg: PC with EisBär SCADA) and the server (e.g., EisBär TCP / UDP - Modbus-MBUS Gateway). For communication, the Modbus reserved TCP / UDP port 502 is usually used.
As a Modbus master (Modbus TCP / UDP client), the EisBär can retrieve the data of the Modbus devices via a network connection. The remote station is referred to as a Modbus TCP / UDP slave (Modbus TCP / UDP server).

IP: The IP address of the Modbus device is entered in this field.

Port: The port can be set here for communication with the Modbus device.

Mode:
TCP: Modbus / TCP is very similar to RTU, but TCP / IP packets are used to transmit the data. TCP port 502 is reserved for Modbus / TCP.
MBAP (Modbus Application Header) is the "normal" Modbus TCP specification. MBAP has no CRC check value, whereas Modbus RTU contains a CRC check value over TCP / IP.

RTU over TCP: Modbus RTU (RTU: Remote Terminal Unit) transmits the data in binary form. This ensures good data throughput, however, the data can not be evaluated directly by humans, but must first be converted into a readable format. In the "RTU over TCP" variant, the RTU telegrams are packed and sent in TCP packets. Modbus RTU over TCP / IP is typically used by **serial** servers that implement Modbus Ethernet client communication with multiple Modbus RTU RS485 slaves via a serial server. The serial server removes the Ethernet sections and forwards the Modbus RTU message to the serial port or serial ports.

ASCII over TCP: In Modbus ASCII, no binary sequence, but ASCII code is transmitted. As a result, it is directly human readable, but data throughput is lower compared to RTU. In the "ASCII over TCP" variant, the ASCII telegrams are packed and sent in TCP packets.

UDP IP: This mode behaves like the TCP mode, but the UDP packets sent are not controlled. This allows faster communication with a UDP connection.

Ping Check: This option performs a cyclic ping check at the set interval.

Secure: Setting for Modbus devices that support an encrypted network connection. Either all certificates can be accepted or slave-specific certificates can be loaded. For user-defined certificates, the complete storage path of the .cer file must be entered.

6.13.3.2.1 LAN to RS485 Gateway EAP

The Modbus TCP IP gateway is used to connect Modbus slave devices to the Modbus master driver. For this purpose, the IP mode "TCP" is set.

Technical data:
Network connection via RJ45 10/100 Mbps
Serial standard RS485, Data+, Data-, GND
Baud rate from 300 to 230 400bps
Direct (TCP <-> RTU) or inverse (RTU <-> TCP)
15 parallel TCP connections
Power supply 9 to 26V DC
Operating temperature from 0 to 55°C

When delivered, the network settings are set to DHCP. This means that the gateway automatically receives an IP address from the DHCP server. Afterwards, the web interface of the interface can be called up via the assigned IP address. If there is no DHCP server in the network, the interface can be reached with the IP: 192.168.1.3 (subnet mask: 255.255.255.0). The IP address should be statically assigned during commissioning.

Notice:
If the IP address has been changed, the interface is restarted via "Modify / validate settings" and then "Save changes". The changes must then be confirmed again (within 3 minutes of the restart) by establishing the connection with the new IP address, pressing "Modify / validate settings" again and then saving.

gateway TCP/IP - RS485 Modbus RTU
LAN configuration

Setting	Value				Modified
MAC address	e8-eb-1b-37-e8-24				
IP address	192.168.1.3	192.168.100.135			☐
Subnet mask	255.255.255.0	255.255.255.0			☐
Gateway IP address	192.168.1.1	192.168.100.1			☐
Ethernet speed	100M ○	10M ○	Full-Duplex ☐	Auto-negotiate ◉	☐
Configure using DHCP server	☑ (set IP to 0.0.0.0 if no preferred setting)				☐
Settings validated	☑	When not set, the device is waiting for validation after a network setting change			

[Modify / validate settings] [Reset changes] [Save changes*]

After each network settings change, user should apply new settings by pressing the **Modify / validate settings** button firstly and then save them by pressing the **Save changes** button.

After pressing the **Save changes** button, the device will be immediately restarted with new settings and the device will become unavailable with old IP address. In this case, user should use a new IP address to device access.

When the device web interface will be opened from a new IP address, it is necessary to validate new settings by clicking the **Modify / validate settings** button again (**Settings validated** checkbox will become checked and input fields will become active).

New settings validation should be done in 3 minutes starting from pressing **Save changes** button moment. Otherwise, after a 3 minutes timeout, the device will load last validated settings. Thanks to this feature, device will not become unavailable in case of applying incorrect network settings.

This mechanism is not relevant if settings change performed from fail-safe network: 11.22.55.XXX, 255.255.255.XXX (so user should not validate new settings in such case)

Device fail-safe address: 11.22.55.3

Go back to menu page

Set the baud rate, parity and stop bits according to the connected Modbus device.

gateway TCP/IP - RS485 Modbus RTU
Serial configuration

Serial speed	19200
Parity	◉ Even ○ Odd ○ None
Stop bits	◉ 1 ○ 2 ○ Automatic
RTU slave response timeout (ms), 1 ms step	200

[Modify serial port setting]

[Reset changes]

[Save changes]

Automatic stop bits option means that device will send bytes with 2 stop bits, but receive with 1 stop bit.

RTU slave response timeout assigns a time in milliseconds to wait an answer from modbus serial slave after gateway request (counts from start of request to the end of response). Timeout must be set larger than slowest slave response and PLC must use larger timeout than gateway.

*To apply new serial port settings user should click **Modify serial port setting** button. Then if new settings are appropriate and need to be saved permanently, **Save changes** button should be pressed.*

Go back to menu page

Note:
If the number of stop bits is set to "Automatic", the gateway sends with 2 stop bits, but receives with 1 stop bit.

**The port addresses of the interface and the Eisbär driver must be identical, e.g. 502.
To connect to the Eisbär Modbus master, "Gateway direction" must be set to "PLC TCP master - Gateway - RTU slave".**

gateway TCP/IP - RS485 Modbus RTU
Administration page

Modbus TCP port	502
Gateway direction	◉ PLC TCP master - Gateway - RTU slave ○ PLC RTU master - Gateway - TCP slave

Authentication settings

Web interface authentication	☐ Login/password request
Login (max 7 chars)	admin
Password (max 7 chars)	●●●●●●●

Inverse gateway (PLC RTU master - Gateway - TCP slave) settings

RTU slave address	TCP slave IP address	TCP slave port	TCP slave address
1	192.168.1.32	502	255

Desired Action
- ◉ No action
- ○ Modify and save settings
- ○ Restore factory settings
- ○ RESET device
- ○ Start Ethernet loader

[Perform desired action]

Operating		*RESET*	
Running time	0 Days 0:17:21	**Last Reset**	Power-on

To change settings, e.g. TCP port, after changing port value, user should select **Modify and save settings** and click **Perform desired action** button.

To initiate remote firmware update **Start Ethernet loader** should be selected (device reset will be performed and Ethernet loader will be started).

Go back to menu page

On the EisBaer driver setup the mode **TCP** has to be set.

6.13.3.2.2 LAN TCP RTU RS485

The LAN-Mini / R-485 converts between LAN and RS-485 signals.
The device is specially designed for the 2-wire RS-485 bus. The LAN-Mini / R-485 is preferably used stationary in an industrial environment. The scope of delivery includes a clip for the hat-rail mounting. Mounting width only 24 mm, <2PE).

Galvanic isolation protects connected devices from overvoltages (eg lightning strikes) and bridges earth potential differences.

If required, a connector housing is available for the RS-485 terminal, so that the user can build his own connection cable.

Technical specifications
RS-485: 2-wire, up to 32 bus participants
Speed: up to 1.5 Mbps
Cable length: up to 1200 m (at 9600 bit / s)
Current consumption: 400 mA
Galvanically isolated: Yes
galvanic isolation: 2500 V
Dimensions: 24x41x56 mm (without plug)

Connect and set up the hardware according to the enclosed operating instructions.
Set up the IP address / baud rate according to the enclosed instructions.
Set the baud rate, parity and stop bits according to the connected Modbus device.
The port addresses of the interface and the ice bear driver must be identical. e.g. 502

Port setup

ATTENTION: after pressing "OK" or "Apply Settings" you have to wait a bit. before the changes are accepted.

In the polar bear Modbus driver, the IP address and the configured port must be set.

6.13.3.2.3 MBUS Modbus TCP Gateway Manual

Excerpts from the M-Bus - Modbus-TCP Gateway User Guide

A detailed description is included with the device and is available in the download area on
http://www.busbaer.de .

General

The M-Bus (Meter-Bus) is an established interface for automated meter reading. Above all, the
simplicity of the installation (simple two-wire system with power supply through the bus) and the
high degree of robustness distinguish it. These are special properties that are interesting for use in
industrial environments.

The M-Bus is defined in the standard EN 13757. In addition to its own physics, it also defines its own
protocol. For the connection to other systems a translation is necessary.

In the automation environment, Modbus TCP is widely used as a communication standard. With the
products EISBÄR TCP - M20 and EISBÄR TCP - M80 (hereinafter referred to as EISBÄR TCP - MBUS) two
gateways are available which connect the world of the M - Bus with that of the Modbus TCP and thus
the connection of meter data to ours EisBär software enable.

The device supports the operation of 20 or 80 meters (standard loads) on the M-Bus side. For standard
compliant data interpretation, a powerful protocol stack has been implemented on the EISBÄR TCP -
MBUS. With this it is possible, without further configuration effort, to read out all meters available on
the market and to interpret their data. The data can be made available to other systems without any
effort.

The EISBÄR TCP - MBUS has an Ethernet interface that supports Modbus TCP in slave mode (Modbus
TCP Server). As a Modbus master (Modbus TCP client), the EisBär can directly retrieve the data of the
counters via a network connection. These are available in Modbus registers.

Since the gateway EISBÄR TCP - MBUS retrieves the counters autonomously, the initial configuration
of the device is necessary. This is done intuitively via the configuration website of the device. Here is
the full range of functions of the EISBÄR TCP - MBUS Visible. In addition to the basic configuration,
you can also select the values to be provided, perform bus scans and view the current data. Thus, the
remote maintenance is facilitated via a service computer.

The EISBÄR TCP - MBUS is supplied in a 2TE housing (graduation units) and is for the
DIN rail mounting (DIN rail 35mm) provided.

connection

The ports and interfaces of the EISBÄR TCP - MBUS are routed out on different sides of the device.

The following pictures show the device:

Figure: EISBAER TCP - M80

The following connections are available on the EISBAER TCP - MBUS:

connection	Designation	Pin Assignment	Comment
Voltage supply	24VDC, GND	24VDC: Positive connecting cable GND: Negative connecting cable	24 VDC (±5%), Screw connecting cable 2,5mm²
M-Bus-Connection	MBUS+, MBUS-	MBUS+: positive Bus-Cable (2x) MBUS-: negative Bus-Cable (2x)	Screw connecting cable 2,5mm² MBUS+ und MBUS- are each connected to each other
Ethernet-Connection	Ethernet	1: TX+ 2: TX- 3: RX+ 4: 5: 6: RX- 7: 8:	as EIA/TIA-568A/B

commissioning

The EISBÄR TCP - MBUS starts automatically after connection to the supply voltage. By default, the following calls are made at system startup:

Configuration of the network interface (Ethernet) via DHCP or static configuration
Provision of the drive C: (RAMDrive) Relation of system time via SNTP
Start of the main program

The main program then presents the entire functionality u. a. The web interface of the EISBÄR TCP - MBUS is available.

Network configuration and first access

The EISBÄR TCP - MBUS is completely configurable via the network interface. This must therefore be configured according to your network. If necessary, ask your administrator.
The EISBÄR TCP - MBUS is set by default to the IP address 192.168.1.101 (subnet mask: 255.255.0.0, gateway: 192.168.1.254).
For intuitive operation, a configuration website is available on the device, which can be called up via the IP of the EISBÄR TCP - MBUS in a browser.

Website on the EISBÄR TCP - MBUS, z. B .: http://192.168.1.101/ The following page opens in the browser

configuration

The EISBÄR TCP - MBUS is configured via the internal website. Alternatively, a configuration can also be manually created or transmitted based on the configuration files.
On the website, device parameters, meter configuration as well as service services can be displayed or changed.
Upon delivery, the website automatically logs in via the standard access data. If the standard user has already been deactivated in the configuration, the correct access data must be entered. To change an already logged in user (or standard user), the button Logout can be selected in the upper right corner. The standard access data in the delivery state are included below.

Figure 6: Login window

If the logged-in user has write access, it must be logged out again after the configuration has been completed. If the connection remains active, no other workstation can write to the EISBÄR TCP - MBUS.

Tab General

The tab General shows a general overview of the EISBÄR TCP - MBUS. The following values can be viewed or changed here:

Fieldname	Description	write access
Device name	Name of the device (assignment in the CHIPtool)	Yes
Serial number	Serial number of the device	NO
DHCP	Enable automatic network configuration	Yes
IP address	IP address of the device	Yes
Subnet mask	Subnet mask of the device	Yes
Gateway address	Gateway Address	Yes
DNS IP	IP address of the DNS server *	Yes
Free Memory Flash (kB)	Free space on the internal memory of the controller	NO
System date (local)	Current, local system date	Yes
System time (local)	Current, local system time	Yes
SNTP Server	Address of the time server	Yes

* If the DNS server is detected via DHCP, it will not be displayed on the website.

The configuration is saved with the Save button. With Reload, the last saved values are loaded and current changes are reset.

If the network configuration is changed, the EISBÄR TCP - MBUS is available after saving under the new IP. All existing connections will be logged separately or logged in users will be logged out automatically.
Changing the network parameters of the EISBÄR TCP - MBUS can limit the accessibility. If the network parameters have already been set correctly by an administrator, they should not be changed.
By setting the parameters via the Save button, the ICEBAR becomes TCP MBUS automatically reinitialized.
The date and time are always processed in UISBÄR TCP - MBUS as UTC time (without time zone shift). When displayed on the website, the browser converts them according to the locally set time zone of the computer. In Central Europe this is for example the Central European Time or the Central European Summer Time. If a different time zone is set here, the time on the website will be displayed accordingly.

Tab meter

The Meter tab shows an overview of the connected meters and gives the user the ability to automatically search for meters, manually add counters or configure existing meters:

General | Meter | Configuration | Server | Security | User | Service

Connected meters

Interface	S	Serial	MAN	Medium	Version	Link	Value	Scale	Unit	Cycle	User label	Description	Register
+ M-Bus	*	00023872	EMU	Electricity	16	0				0			10
− M-Bus		00389851	EMH	Electricity	10	7				0			220
—							25 541	1E+0	h			On time	230
—							29 298	1E+1	Wh			Energy	240
—							4	1E+0	W			Power	250
—							542	1E+0	None			Reset counter	260
—							4	1E+0	Bin			Error flags (Device type specific)	270
—							No Data	1E+0	None			None [1]	280
+ M-Bus		00000028	WEP	Electricity	1	0				0			0
+ M-Bus		92710335	ELS	Valve (gas or water)	89	0				0			0
+ M-Bus		70125236	PIK	Electricity	2	0				0			0
+ M-Bus		00000098	CGC	Heat cost allocator	85	0				0			0
+ M-Bus		35300749	HYD	Communicati controller	57	235				0			0
− M-Bus		14677789	KAM	Electricity	1	65				0			0
—							368 100	1E+0	Wh			Energy (Forward flow only)	0
—							0	1E+0	Wh			Energy (Backward flow only)	0
—							368 108	1E+0	None			Special supplier information	0
—							0	1E+0	None			Special supplier information	0

Context menu (overlaid):
- Edit
- Add meter
- Add value
- Activate
- Deactivate
- ✕ Delete

Reload | Readout | 🔑 Scan | Add | ✕ Delete | 💾 Save | 🖨 Print

Field name	Description
Interface	Interface to the meter (M-Bus)
S (Status)	Shows the status of the counter or counter value (exclamation mark: counter not readable or counter value not up-to-date, E: counter / counter value edited, A: counter / counter value newly added, asterisk: counter value list limited see parameter Maximum value count in tab Configuration)
Serial	Serial number of the meter (meter number, secondary ID)
MAN	Manufacturer of the meter (abbreviation)
Medium	counter medium
Version	Version number of the meter
Link	Primary address of a counter
Value	Meter reading or measured value
Scale	Scaling factor (scientific notation)
Unit	Unit
Cycle	Read-out interval in seconds (at 0 the general read-out cycle is used)
User label	User-defined description of the counter value - Permissible characters are: A-Z, a-z, 0-9,!, §, $, %, &, /, (,), =,?, + And * A comma is also permitted. Inadmissible are: <,> and ".
Description	Description of the counter value corresponding to the second column in Table 18: Measurement Types. The display of the memory number, tariff, value type and raw data can be configured via the parameter Description mode in the tab Configuration.
Register	Modbus register address with a fixed grid of 10 registers each. Counter values with the address 0 are not transmitted in the Modbus TCP protocol.

Tab Server

The Server tab allows the parameterization of the Modbus interface of the EISBÄR TCP - MBUS. The following
Parameters are available here:

Field name	Description	Write access
Modbus Mode	Operating mode Modbus TCP	No
Modbus Port	Network port to which the remote station (the Modbus TCP client) must connect	Yes

The configuration is saved via the Save button. With Reload, the last saved values are loaded and current changes are reset.
By setting the parameters via the Save button, the EISBÄR TCP - MBUS is automatically reinitialized.

Tab User

In the tab User different users with specific access rights can be created. in the
As delivered, the following users are preconfigured:

User name	Password	Comment
admin	admin	Administrative user who has full access to all services of the EISBÄR TCP - MBUS (HTTP, FTP, Flash update, IP configuration)
web	web	Standard user for the web interface - Is there a user with this name and password, The web interface automatically logs in with these access data. Otherwise, the user is prompted to enter the access data. Upon delivery, this user has full access to the website of the EISBÄR TCP - MBUS
ftp	ftp	User for FTP access to the log directory: C: / log

Upon delivery, the EISBÄR TCP - MBUS contains the three preconfigured users admin, web and ftp.

The user admin can not be changed or deleted in the general user configuration. The administrator password can only be changed via the Change password button if the user admin is logged in himself.
If the administrator password is lost, the EISBÄR TCP - MBUS can only be reset at the company Alexander Maier GmbH. Access to the files on the EISBÄR TCP - MBUS is limited. When resetting, all configuration data is lost.
Only the user admin has full access to the file system of the EISBÄR TCP - MBUS via FTP. The second FTP user can access C: / log.

Specification Modbus TCP

The Modbus protocol was originally developed by the company Modicon (today Schneider Electric) for the traffic with their controllers. Data was transmitted in the form of 16-bit registers (integer format) or as status information in the form of data bytes. Over time, the protocol has been continuously expanded. Modbus TCP is a kind of it.

Modbus TCP is part of the IEC 61158 standard
A specification can be found at: http://www.modbus.org

The Modbus protocol is a single-master protocol. This master controls the entire transmission and monitors any timeouts that occur (no response from the addressed device). The connected devices may only send telegrams if requested by the master.

The EISBÄR TCP - MBUS Gateway is a Modbus TCP server and therefore a Modbus TCP slave.

Modbus communication requires the establishment of a TCP connection between a client (eg: PC with EisBär SCADA) and the server (EISBÄR TCP - MBUS). For communication, the Modbus reserved TCP port from the Server configuration tab is used. This is configured by default to 502.

If there is a firewall between the server and the client, make sure that the configured TCP port is enabled.

functionscodes

The following functionscodes are supported by the EISBAER TCP - MBUS:

Code	Name	Description
0x01	Read Coil	Currently without function
0x03	Read Holding Register	Calling up the meter data
0x05	Write Single Coil	Currently without function
0x06	Write Single Register	Currently without function
0x10	Write Multiple Register	Currently without function
0x0F	Force Multiple Coil	Currently without function
0x2B	Read Device Identification	Retrieve device information with MEI = 0x0E

The function codes marked with "without function" are answered with ILLEGAL DATA ADDRESS (0x02), all others not listed with the error message ILLEGAL FUNCTION (0x01).

If the functionscode 0x2B is used with MEI = 0x03, the device returns an identification packet. The values 0x01 and 0x02 are supported as Device ID code, so the basic device identification and the regular device identification data can be retrieved. The following data can be called up via the device identification:

Object ID	Name	Datatype	Example	Type
0x00	VendorName	String	Alexander Maier GmbH	Basic
0x01	ProductCode	String	1036	Basic
0x02	MajorMinorRevision	String	001	Basic
0x03	VendorUrl	String	www.busbaer.de	Regular
0x04	ProductName	String	EISBÄR TCP – M80*	Regular
0x05	ModelName	String	Standard	Regular
0x06	UserApplicationName	String	Modbus TCP Gateway	Regular

* Corresponds to the configured device name in the General tab

data arrangement

The data arrangement in the Modbus registers corresponds to the usual structure. The big endian representation is used, so in the 16-bit registers the higher byte is sent first, the lower one after that.

Example: Value: 0x1234 is sent: first 0x12, then 0x34

Numbers and data ranges exceeding 16 bits are represented similarly. Again, the most significant 16-bit register is sent first, so it is at the lowest register address.

Example: Value: 0x12345678 is sent: first 0x12, then 0x34, 0x56 and 0x78

The arrangement of the 32- and 64-bit values can be adjusted within the system configuration via the MODBUS_SWAP parameter.

To check the data layout, the transmission of pseudo data can be activated in the tab Server. The following data is then provided via Modbus according to the register assignment:

Address	Value	Description	Decodet Value
0	0x0002	Serial number of the EISBÄR TCP – MBUS, upper Word	0x2993A
1	0x993A	Serial number of the EISBÄR TCP – MBUS, lower Word	
2	0x0001	Version of the communication protocol of the EISBÄR TCP - MBUS	1
3	0x006F	Version of the Software of the EISBÄR TCP – MBUS	0x6F = 111: Version 1.11
4	0x519C	time stamp of the EISBÄR TCP – MBUS, upper Word	0x519CC16D = 1369227629: Wednesday, 22. Mai 2013, 15:00:29 GMT+2
5	0xC16D	time stamp of the EISBÄR TCP – MBUS, lower Word	
6	0x0000	empty	
7	0x0100	Type field of the register file in the upper byte	0x01: Gateway entry
8	0x0000	empty	
9	0x0000	empty	
10	0x00BC	Serial number of the counter, upper Word	0xBC614E = 12345678
11	0x614E	Serial number of the counter, lower Word	
12	0x0443	Manufacturer identification of the meter (see chapter: 6.2.2)	0x0443: ABC
13	0x0102	Version (upper Byte) and Medium (lower Byte) of the counter	0x0102: Version 1, Medium 2 (electricity)
14	0x519C	time stamp of the counter, upper Word	0x519CC164 = 1369227620: Wednesday, 22. May 2013, 15:00:20 GMT+2
15	0xC164	time stamp of the counter, lower Word	
16	0x0000	empty	
17	0x0200	Type field of the register file in the upper byte	0x02: Counter entry
18	0x0000	empty	
19	0x0000	empty	
20	0x0000	Counter value (integer), highest Word	0xBC614E = 12345678 Resulting counter value: 12345678 * 10^-4 = 1234.5678 Wh
21	0x0000	Counter value (integer)	
22	0x00BC	Counter value (integer)	
23	0x614E	Counter value (integer), lowest Word	
24	0x449A	Counter value (floating point), upper Word	0x449A522B = 1234.567800
25	0x52	Counter value (floating point))	

Meter data acquisition and processing

The main task of the EISBAER TCP - MBUS is the processing and forwarding of the recorded counter values. For this, the following points must be fulfilled:

The available counters must be configured correctly in the EISBAER TCP - MBUS (counter configuration). For the transmission of data via Modbus TCP, valid register addresses must be configured for the individual counters or counter values.
The recorded meter data must be transmitted to a controller via Modbus TCP.
The meter data must be processed by the controller (meter data format).

Modbus register layout

This chapter describes the Modbus register specification. These work with a fixed grid of 10 Modbus registers each.

The register addresses are counted starting from the value 0.
For data types that include more than one register, the higher order data word is encoded at the lower address.
The Modbus registers are read out via the function code 0x03 (Read holding register).

In the Modbus protocol, the data is transmitted as an **integer or float value**. Other data formats that are specified for the M-Bus (e.g. BCD) are already converted internally into integer values before transmission. **The 10 Modbus registers of a meter value entry are defined according to the following table**, whereby the offset must be added to the configured Modbus address:

Offset	designation	data width	Description
0 - 3	count	64 Bit	Signed, integer counter value (unscaled)
4 - 5	count	32 Bit	Floating point counter value (scaled to unit in register 7), IEEE 754
6	scaling factor	16 Bit	Signed scaling factor to base 10
7	Type field / unit	16 Bit	The type field (value 0 for counter value entry) is transferred in the higher-order byte. The unit is transmitted in the least significant byte. This is assigned using Table 19: Units in chapter 6.2.1. The transferred value corresponds to the index.
8 - 9	time stamp	32 Bit	Unix-time stamp provided by the counter. If the counter does not transmit time values, this time stamp is 0.

The following figure shows an example configuration of the Modbus addresses via the web interface:

MBus	66600106	LUG	Heat (outlet)	2						10	☑
—					4	1e+0	s	Actuality Duration		0	☐
—					4	1e+0	s	Averaging Duration		0	☐
—					267	1e+3	Wh	Energy		20	☑
—					372876	1e-2	m^3	Volume		0	☐
—					0	1e+2	W	Power		0	☐

The following data is transmitted to the Modbus master in this example.

Address	Value	designation	Decodet Value
18 19	0x0000 0x0000	Reserved	
Counter value entry			
20 21 22 23	0x0000 0x0000 0x0000 0x010B	Counter value (integer)	0x000000000000010B = 267 Resulting counter value: 267 * 10^3 Wh
24 25	0x4882 0x5F00	Counter value (integer)	0x48825F00 = 267000.000000 Wh
26	0x0003	scaling factor	Factor = 10^3
27	0x0005	Type field / unit	Type = 0 → Counter value entry Unit = 5 → Wh
28 29	0x519C 0xBBB3	time stamp	0x519CBBB3 = 1369226163 = Wednesday, 22. May 2013, 14:36:03 GMT+2

6.13.3.2.4 Modbus TCP Wago750 Connection

Visualization with Wago 750

Fieldbus controller used: Wago 750 - 352 with digital inputs, Modbus TCP

Visualization software used: EisBär SCADA 3.0

Important information about the fieldbus controller

Tabelle 66: Grunddatentypen des MODBUS-Protokolls

Datentyp	Länge	Beschreibung
Discrete Inputs	1 Bit	Digitale Eingänge
Coils	1 Bit	Digitale Ausgänge
Input Register	16 Bit	Analoge Eingänge
Holding Register	16 Bit	Analoge Ausgänge

Tabelle 67: Auflistung der in dem Koppler realisierten MODBUS-Funktionen

Funktionscode		Funktionsname	Zugriffsart und -beschreibung	Zugriff auf Ressourcen	
FC1	0x01	Read Coils	Lesen eines einzelnen Bit	R:	Prozessabbild
FC2	0x02	Read Discrete Inputs	Lesen mehrerer Eingangsbits	R:	Prozessabbild
FC3	0x03	Read Holding Registers	Lesen mehrerer Eingangsregister	R:	Prozessabbild, Interne Variablen
FC4	0x04	Read Input Registers	Lesen mehrerer Eingangsregister	R:	Prozessabbild, Interne Variablen
FC5	0x05	Write Single Coil	Schreiben eines einzelnen Ausgangsbits	W:	Prozessabbild
FC6	0x06	Write Single Register	Schreiben eines einzelnen Ausgangsregisters	W:	Prozessabbild, Interne Variablen
FC11	0x0B	Get Comm Event Counters	Kommunikationsereigniszähler	R:	Keine
FC15	0x0F	Write Multiple Coils	Schreiben mehrerer Ausgangsbits	W:	Prozessabbild
FC16	0x10	Write Multiple Registers	Schreiben mehrerer Ausgangsregister	W:	Prozessabbild, Interne Variablen
FC22	0x16	Mask Write Register		W:	Prozessabbild
FC23	0x17	Read/Write Multiple Registers	Lesen und Schreiben mehrerer Ausgangsregister	R/W:	Prozessabbild

Registerzugriff Lesen (mit FC3 und FC4)

Tabelle 104: Registerzugriff Lesen (mit FC3 und FC4)

MODBUS-Adresse		IEC-61131-	Speicherbereich
[dez]	[hex]	Adresse	
0...255	0x0000...0x00FF	%IW0...%IW255	Physical-Input-Area (1) First 256 Words of physical input data
256...511	0x0100...0x01FF	-	MODBUS-Exception: "Illegal data address"
512...767	0x0200...0x02FF	%QW0...%QW255	Physical-Output-Area (1) First 256 Words of physical output data
768...4095	0x0300...0x0FFF	-	MODBUS-Exception: "Illegal data address"
4096...12287	0x1000...0x2FFF	-	Konfigurationsregister (siehe Kapitel „Konfigurationsregister")
12288...24575	0x3000...0x5FFF	-	MODBUS-Exception: "Illegal data address"
24576...25339	0x6000...0x62FB	%IW256...%IW1020	Physical-Input-Area (2) Additional 764 Words physical input data
25340...28671	0x62FC...0x6FFF	-	MODBUS-Exception: "Illegal data address"
28672...29435	0x7000...0x72FB	%QW256...%QW1020	Physical-Output-Area (2) Additional 764 Words physical output data
29436...65535	0x72FC...0xFFFF	-	MODBUS-Exception: "Illegal data address"

1. Create a new project in EisBären
2. Add driver

- Click on "Modbus TCP" driver and click into the working area
- Click on the driver symbol and on the right side select Properties
    o Define IP address
    o Specify port (The Wago has port 502 by default)
    o tick on "polling cyclically"

3. Insert channels
- Click on the [...] behind the channels under the driver properties

- Insert a new channel via the "+"

Driver propertys	parameterization
Name	The channel name
Device-ID	The slave ID does not play with the Wago (Modbus TCP) used Role, since the addressing takes place via the IP address
function	Read digital inputs (bitwise) à Input register Bit access (reading) (4) Read digital input word by word (16-bit value) à Read input register (4)lesen (4)
Address	Addresses will be distributed to the Wago after arrangement of the modules Exception: Analog cards are arranged in front of the digital cards in the process image, this is independent of the arrangement of the modules (page 151 in the manual). The comma is just a placeholder and does not need further attention.
Data Type	Specifies the data type of the information being read should The function "read discrete input (2)" is the data type "UInt16 AB", but a Boolean value is read in
Number	

5. Now the individual channels are in the data point list

6. Select a channel and move it to an object
- Display boolean value (on / off) à Select value on button, select "Switch" and, if necessary, set a check mark in the object properties in "Lock operation (display only)"

- Move non-Boolean values (8 bits, 16 bits, ...) to "Value-dependent text" and select the value display, where the number of "#" stands for the number of digits, the "0" stands for the comma

Maschinenbau-Firma

MODBUS TCP

Schlepperbau

Zum Testgelände

Modell-schreinerei

2

MÜhlenbau

3 Lackiererei

Stanzerei

Altmaterialcontainer

4

Lehrwerkstatt

Dreherei

Konstruk-tionsbüro

Schmiede/ Härterei

Gießerei

Lager

Fräserei

Hof

Pumpenbau

Büro

Elektromotorenbau

Wohnungen Arbeiter

Wohnhaus Hummel

Ausstell raum

Haupt-tor

1

Johannitenstraße

© D. Kolb

Bundesstraße 3

Anlagenzustand

1 Haupttor

Tür ist zu

2 Brandmelder

alles I.O.

3 CO-Warnmelder

Achtung!

Drehmaschine

alles I.O.

Maschinenbau-Firma

Anlagenzustand

1 Haupttor

Tür ist zu

2 Brandmelder

alles i.O.

3 CO-Warnmelder

alles. i. O.

Drehmaschine

alles i.O.

6.13.3.3 Modbus-Serial

Modbus can be used to connect a master (eg a PC) and several slaves (eg measuring and control systems). Each bus user must have a unique address. The address 0 is reserved for a broadcast. Each participant is allowed to send messages via the bus. Usually, however, this is initiated by the master and an addressed slave responds. For the correct driver setting, the operating instructions of the terminal must be observed.

COM port: Selection of the communication port.

Baud rate: Specifies the transmission speed.

Stop bits: select the number of stop bits (1 or 2)

Parity: setting parity (without / even / odd)

ASCII mode
In Modbus ASCII, no binary sequence, but ASCII code is transmitted. As a result, it is directly human readable, but data throughput is lower compared to RTU.

RTU mode
Modbus RTU (RTU: Remote Terminal Unit) transmits the data in binary form. This ensures good data throughput, however, the data can not be evaluated directly by humans, but must first be converted into a readable format.

6.13.3.3.1 EisBär HI-Server 1.9, 3.0, 3.8 Modbus RS485

Instructions for integrating the internal Modbus RS485 interface for the HI servers 1.9, 3.0 and 3.8. Product name and number: EisBär HI-Server RS485 interface (internal mounting) AM-EIS-401-26

The installation of the RS485 interface is done in the factory. For subsequent retrofitting, the HI server must be returned.

After installing the interface card, it will be recognized as an unknown device after booting Windows. In the Windows Device Manager, the drivers (64 bit) of the enclosed CD must be installed via "Update Driver". There are several installation runs.

Then the connected adapter port is created as COM 3. In order to activate the Modbus access, the checkmark for RS-485 must be set in the properties of the COM3 port. In addition, the baud rate (bits per second), parity, etc. must be set in the Device Manager, the Modbus device, and the Polar Bear driver.

The default jumper settings are set to 2-wire RS485 and do not need to be changed.

The Modbus RTU (RS485) line is connected via the Data + and Data- connections of the supplied Terminal Block Adapter. It is important to pay attention to the polarity. Since the designations of the connections on the various Modbus devices vary greatly, it is possible to determine the correct connection assignment by means of probing.

The terminal block adapter is connected directly or via a serial extension cable to the HI server. Use the lower 9 pin SUB-D connector for this purpose.

6.13.4 Modbus Slave

The Modbus slave driver is an invisible server component. Here it is possible to connect to this slave with other Modbus Gateways. All components that refer to the same interface (the COM port for serial or the combination of IP and port for the IP protocols) belong to the same Modbus network. The components must then all have a different device ID. Thus, several components within a network, as well as several components in different networks are supported.

Data points of the component

Name	Type	Function
Debug [Text]	Output	Caution: Diagnostics or debug outputs are only intended for the event of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	The input and output channels are displayed in the folder Dynamic. Depending on the type, different data points are provided. The channels are structured according to register types.
Debug Verbose	Input	Unlocks the extended diagnostics.
Local IP	Bidirectional	The IP address of the driver can be changed here at runtime.
Driver on / off	Bidirectional	Driver on or off.
Driver status	Output	Outputs the connection status. undefined = driver off false = no connection true = connection exists

Properties of the component

Name	Standard	Function
Channels	0	The imported or manually created channels are listed here. These then appear in the data point folder Dynamic. The description of the Modbus channel editor follows below.
Connection	Serial ...	The connection type of the Modbus slave is set here (see below). Possible settings are: Modbus RTU (Serial), ASCII (Serial)[608] , TCP and UDP-IP[579] (also Secure).
Device ID	1	Set Modbus Device ID.
Driver on / off		Driver on or off

Channel Editor

Name	Register Address [dec]	Datatype	Number of registers	Register-Type	Access Type	Bit Access
Channel001	1234	UInt16 AB	1	Input Register	Read/Write	
...						

Name:
Name of the channel which is displayed in the folder Dynamic in the communication window.

Register address [decimal]:
Address of the start register, from here the values are set. The address must be specified in decimal.

Data type:

The specific data type for the registers. If the data to be read is displayed in several registers, the data type must be adapted accordingly.

Number of registers:
Number of registers to be used.

Register type:
No function is specified. A function is only defined in the master and determines there, in which way which register blocks should be accessed. Instead, it indicates here which of the 4 register data sets (coils, discrete inputs, input registers or HoldingRegister) a channel belongs to.

Access type:
In addition to the register type, the access type can be used to define how a register can be accessed (read, write, both - inputs can of course only be accessed by reading)

Bit Access:
For UINT16 data types you can set whether these values should be accessed bitwise.

Import / Export:
When exporting, 2 files are created. Once the export file for the slave itself (.xml) as a data backup and then the xml file that can be imported in the Modbus master (_master.xml).

6.13.5 Modbus Device Driver

This Modbus driver is an invisible server component with the possibility of connecting Modbus devices.

The advantage over the general Modbus component is that the desired gateway can be selected directly here. This automatically creates the data point list with the corresponding names. Thus all channels are directly available. Only the device connection must be set up. The .modbus files are located under **C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\Devices**.

Data points of the component

Name	Type	Function
Query cyclic - Autostart	Bidirectional	This outputs whether the cyclical query is active. An off signal deactivates the cyclic polling. Activated with an on signal.
Cyclic polling - pause [s]	Bidirectional	The set pause time between 2 polls is output here. If an integer value is sent to the data point, the pause time changes accordingly. This is possible, for example, with a touch value input.
Query once	Input	An ON signal at this input triggers a one-time query of the values. Each additional on-signal triggers another query.
Updating is carried out	Output	An ON signal is output at this output for the duration of the update.

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed, for example, with the "protocol window" component. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them in consultation with the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	The Dynamic folder displays the input and output channels. Depending on the type, different data points are made available. The channels are created in the properties window.
Device ID	Bidirectional	The device ID can be changed at runtime. The driver is restarted after a change.
Ping Status	Output	With an IP connection, the connection of the unit can be additionally checked via a ping check. An on signal shows whether a connection exists.
Write cycle is being performed	Output	An on signal is output during the write cycle.
Write cycle time [ms]	Output	Output of the time in milliseconds how long the writing took.
Send once	Input	An On signal at this input triggers a one-time sending of the values. Each additional on-signal triggers a further transmission.
Send cyclically - Autostart	Bidirectional	This output shows whether cyclical transmission is active. An off signal deactivates cyclical transmission. Activated with an on signal.
Cyclical transmission - Pause [s]	Bidirectional	The set pause time between 2 transmission telegrams is output here. If an integer value is sent to the data point, the pause time changes accordingly. This is possible, for example, with a touch value input.
Driver On/Off	Bidirectional	The driver is activated via an on signal. The preset state of the driver from the properties is output when the simulation or server is started.
Update time [ms]	Output	Outputs the time for a device update in milliseconds.
Connection status	Output	If the connection to the Modbus gateway is successful, an on signal is output.

Properties of the component

Name	Standard	Function
Device type		Selection option for the preconfigured devices. The corresponding data sets are located under C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\Devices.
Device ID	1	Defines the device ID.
Connection	Serial ...	The connection type to the Modbus device is set here. Possible settings are: Modbus RTU (Serial), ASCII (Serial)[608] , TCP, RTU over TCP, ASCII over TCP and UDP-IP[579] .
Timeout [ms]	500	Time to wait for a response after a query. Afterwards an error message is displayed. 50-10000ms can be set.
Cyclical query - Autostart	x	Here the automatic start of the queries is activated. The queries then start automatically when the simulation is started in the editor and when the server is started.
Query cyclic - pause [s]	1	Cycle time of the queries. With the default setting "1", a query of all values is started every second.
Send cyclically - Autostart	x	Automatic sending is activated here. Sending then starts automatically when the server is started and when the simulation is started in the editor.
Send cyclically - pause [s]	1	Cycle time of the transmission. With the default setting "1", sending of all values is started every second.
Write values directly	x	If this selection is set, the unit sends directly to Modbus when an input value changes. If not, not until the next transmission cycle.
Block read	x	This uses automatic block formation for reading successive registers.
Block write	x	This uses automatic block formation for writing successive registers.
Maximum block size	120	To set the block size, this value can be changed. Not all units support the maximum block length.
Linked objects only	x	With this setting, only those registers are read that are also linked in the project.
Driver On/Off		Switch driver on or off.

6.13.6 BACnet

The BACnet client component can be used to set and query the values of BACnet servers. The BACnet server can be used to provide data points that can be queried by BACnet clients.

If this component is created, it counts as 2500 components and from 300 channels it counts as 3000 components.

These [instructions](#)[20] must be observedfor Windows 8.1 and higher .

Note:
BACnet/IP Broadcast Management Device (BBMD)
Broadcast messages (Who-Is) can be used to find BACnet devices that are located in the network. These broadcast messages are **only** received **by devices in the local network**, but are not forwarded to other subnets by IP routers.
BBMDs are used so that BACnet devices **outside the local network** can also be searched for. A BBMD (either an additional device or a software application) must be configured for each subnet. This allows the broadcast messages received from the local network via unicasts to be forwarded beyond the local network to BBMDs on other subnets. These BBMDs then distribute the messages within their network.

6.13.6.1 BACnet Server [x2500/x3000]

Properties
The component can be configured via the properties.

Name	Standard	Function
Communication settings	...	Setting the connection via UDP, TCP or Secure.
Channels	0	The individual channels are defined in a list here. These then appear as an output in the Dynamic data point folder.
Properties	23	List of BACnet-specific properties that can be assigned an initial value.
Units	274	This editor can be used to assign corresponding unit texts to the unit IDs. The default BACnet assignment is available at the start. Customised assignments can be imported or changed manually. Unit IDs can be referenced in the BACnet object editor.
Status texts	0	This editor can be used to assign up to 15 status texts to the status text IDs. Status IDs can be referenced in the BACnet object editor.
Use Boolean for binary objects		If this option is set, a true or false is transmitted instead of 0 or 1.
Use UTC time		Set for UTC time, otherwise CET.
Device instance ID	1	The unique instance ID for each server in a BACnet network is defined here.
Device instance Object name	Eisbaer Server	Specify the object name to be able to assign the device more easily (manufacturer information).
Device instance Model name	Eisbaer Dataset Collection	Specify the model name to be able to assign the device more easily (manufacturer information).
CoV support	x	CoV is a subgroup of "Alarm and Event Services" that solves a problem where field devices are passive servers.
Single thread CoV handling		In individual cases, this option can be set to achieve higher performance.
Prioritised property handling		When a client starts a query, this is prioritised to avoid client timeouts.
Only one subscription per client and object		If activated, only one subscription per client and object is permitted. If an object is subscribed to multiple times by a client, older subscriptions are replaced, even if the new one has a different process ID.
KNX Bridge/Gateway - Queue Size		If a send delay is available, the maximum queue size of the telegrams that are to be sent with a delay is specified here.
KNX Bridge/Gateway - Object delay [ms]		Send delay between two telegrams to the KNX gateway.
Start delay [s]	2	Delays the start of the driver to avoid faulty data.
Driver on/off		Switches the driver on or off.

Communication settings:

General:

Name	Standard	Function
Timeout	2000	Timeout for the ACK during read/write.
Number of repetitions	2	Number of repetitions if the ACK does not occur.
Window size	20	[1-127] Segmentation is used in BACnet when transmitting large amounts of data. The maximum number of open unconfirmed sent messages is "negotiated" when the connection is established. This parameter determines which "window size" (i.e. the number of unconfirmed messages) is suggested by this device. With the CX8091, this value must be reduced to 4, as otherwise file accesses will not work due to small network memories.
Max Segments	MAX_SEG 65	If this option is active, UDP fragmentation is prevented.

UDP

Name	Default name	Function
Port	47808	The local port to be used by the component is entered here. The BACnet server listens on this port. Port 47808 (0xBAC0) is used by default. 0xBAC0 - 0xBACF are reserved for BACnet. If BACnet devices are on different ports, they are also in different networks and cannot communicate with each other.
Exclusive	X	This defines whether the specified port is used exclusively or shares the port with other BACnet components. Exclusive use must be deactivated if the server and client are running on the same machine or if there is another BACnet server.
Local IP address	127.0.0.1	Setting the local IP address
Direct broadcast		Activate if the source and destination networks are different. See note below [616]
Do not fragment		With this option, the data packets are not split.
Max payload	1472	The specification in [bytes] refers to the raw data, without the 28bytes IP header.

TCP

TCP name	Standard	Function
Network adapter name		Name of the network adapter; example: Ethernet2

Secure (SC)

Network adapter name	Standard	Function Name
UUID		Own unique name
Primary HUB URI		Server address of the primary BACnet HUB
Fallover HUB URI		Server address of the secondary ("fall-back") BACnet HUB
Direct connect		This option must be set if no HUB is available.
Certificate file		Entry of the storage path to the client certificate [.p12]
Certificate password		Enter the password for the certificate
HUB certificate		Enter the storage path to the HUB certificate [.p12]
verify Remote Certificate		Set whether the HUB certificate is to be used or not.

Channels:

Example after a KNX (CSV) import.

New channels can be added using the **+**.

The **x** deletes the selected channel.

Import / Export is used to back up the channel list.

This can be set explicitly via **EDE Seperator**. The separator is normally recognised automatically.

EDE/EPICS Import / Export is for the import/export of EDE files. These can also be imported/exported in the BACnet client. The table of units and status texts are also exported.

The **"Import gateway channels"** button is used to import KNX or Modbus data (see <u>Gateway driver</u>[546]).

Validation Check: This can be used (after an EDE import) to check whether the data set contains errors (duplicates).

Designation	Key description
Key name	Unique key of the channel. This can be numbers or text.
Object name	Name of the channel.
Object instance number	There must be a unique object instance number for each individual object type.
Object type	Specifies which object type is used for this channel.
Description	Additional information about the channel can be entered here.
Status text reference	Selection option for a text reference that can be defined in the "Status texts" settings (separate editor).
Unit	Selection of the unit of the value.
Minimum	Setting for the smallest permissible value.
Maximum	Setting for the highest permissible value.
Lower limit	If the value falls below the set limit, it is recognised as an "error" by BACnet and could trigger another function.
Upper limit	If the set limit is exceeded, it is recognised as an "error" by BACnet and could trigger another function.
Can be set	Object types that can be changed by default on the BACnet side can be protected against changes or enabled.
Default COV increment	The default COV increment defines the minimum value by which an attribute of an object must be changed for a COV notification to be triggered. If the value of the monitored parameter rises or falls by this increment value or more, a notification is sent to the corresponding BACnet participants.
Trend support	Set to create a value history. Otherwise, only one value is stored.

File as object

The File object type provides the three data points required for elementary read and write commands. When writing to data, the transferred bytes are written to the set/current position. With the read trigger, the desired number of bytes is read from the set/current position and output to the data point data. The position is updated accordingly when writing and reading.

Schedule:

A schedule object always includes a set of value objects, as well as zero or more time points for each day of the week, at which all value objects are assigned a value for the time point. The default value is set at 0 o'clock on each day (unless an "appointment" is defined for this time). A schedule has an optional start and end date on which this schedule is valid.

The appointments are coloured according to the values you set. The colour is determined randomly at the start, but is constant at runtime. The default dates are always grey.

If a switching time is to be changed, **ALWAYS** edit **the series**! When changing the time, only the start time (and here only the clock time) is relevant.

The value assigned to the switching point is specified in the event **in the description** and can only be changed there.

If a new switching point is to be added, a **"weekly repetition type" with exactly one day only** must be set.

Data points of the component

Component name	Type	Type Function
Diagnosis [Text]	Output	Outputs a protocol text. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.**
Extended diagnostics	Input	Enables extended diagnostics.
Device instance ID	Bidirectional	The unique instance ID for each server in a BACnet network can be changed here.
KNX Gateway - Number of objects in send queue	Output	Outputs the number of objects in the send queue.
KNX Gateway - Delete send queue	Input	Deletes the entire send queue.
Statistics	*Folder*	Contains data points to obtain statistical data on communication.
Driver On/Off	Bidirectional	Switch driver on or off.
Driver Gateway - KNX	Bidirectional	Bidirectional communication interface between BACnet server and KNX.See Gateway [546] driver.
Gateway driver - Modbus Master	Bidirectional	Bidirectional communication interface between BACnet server and Modbus master.See Gateway [546] driver.
Gateway driver - MQTT client	Bidirectional	Bidirectional communication interface between BACnet server and MQTT client.See Gateway [546] driver.
Dynamic	*Folder*	The data points created in the channel editor are mapped in this folder.
- Unit	Output	If a unit ID is assigned in the EDE file, the corresponding text from the unit editor is displayed here.
- Limit value under-exceeded	Output	If limit values have been created in the EDE file for the corresponding value, this data point triggers when the limit value is exceeded or not reached.
- Text representation	Output	The text corresponding to the status is displayed here if one has been created in the status text editor.
- Value	Output / Bidirectional / Input	The value is displayed here. The type depends on the data point.

The Value Outputs are clearly divided by object Types. All Data Points of the Type Analog Value can be found in the Subfolder "Analog value," all Objects of the Type Of Binary Input are in the Subfolder "Binary input," etc.

File as an Object
It is also possible to create Files on the Server.

Here, the Description Field Specifies the Path of the File. This is then laid out locally on the Computer On which the Server is running. BACnet offers Clients the Ability to access the File with atomic reading and Writing Commands.

Driver Datapoints

The Data Point Window shows all SPs as well as the associated object ID.

6.13.6.2 BACnet Client [x2500/x3000]

Properties

The component can be configured via the properties.

Name	Standard	Function
Communication settings	...	Setting the connection via UDP, TCP or Secure.
Device ID	528	Setting option for the unique device ID.
Channels	0	The individual channels are defined in a list here. These then appear as an output in the Dynamic data point folder.
Devices	0	Displays the connected devices.
Sequential device polling		If active, all devices are polled one after the other, otherwise in parallel.
Poll all objects		If active, unconnected objects are also polled.
COV registration interval [min]	60	The interval in minutes at which the client should repeat its change-of-value registrations is specified here.
Units	418	This editor can be used to assign corresponding unit texts to the unit IDs. The default BACnet assignment is available at the start. Customised assignments can be imported or changed manually. Unit IDs can be referenced in the BACnet object editor.
Status texts	0	This editor can be used to assign up to 15 status texts to the status text IDs. State IDs can be referenced in the BACnet object editor.
Message priority	16	The global write priority that is used if no special priority has been defined for a channel or for the associated device/server.
Use boolean for binary objects		If this option is set, a true or false is transmitted instead of 0 or 1.
Query server status cyclically	X	Here you can specify whether the server status should be queried cyclically (every 30 seconds). This refers to the setting in the "As status indicator" channel list.
Who is interval [min]	0	Sends a broadcast at the specified interval to identify the devices. 0 = deactivated
Cancelled after X errors	3	If the specified error limit is reached (by Who Is request), polling of the device is cancelled.
Confirmed COV notifications		CoV is a subgroup of "Alarm and Event Services" that solves a problem where field devices are passive servers. These are confirmed with this option.
Driver on/off		Switches the driver on or off.

Communication settings:

General:

Name	Standard	Function
Timeout	2000	Timeout for the ACK during read/write.
Number of repetitions	2	Number of repetitions if the ACK does not occur.
Window size	20	[1-127] Segmentation is used in BACnet when transmitting large amounts of data. The maximum number of open unconfirmed sent messages is "negotiated" when the connection is established. This parameter determines which "window size" (i.e. the number of unconfirmed messages) is suggested by this device. With the CX8091, this value must be reduced to 4, as otherwise file accesses will not work due to small network memories.
Max Segments	MAX_SEG 65	If this option is active, UDP fragmentation is prevented.

UDP

Name	Default name	Function
Port	47808	The local port to be used by the component is entered here. The BACnet server listens on this port. Port 47808 (0xBAC0) is used by default. 0xBAC0 - 0xBACF are reserved for BACnet. If BACnet devices are on different ports, they are also in different networks and cannot communicate with each other.
Exclusive	X	This specifies whether the specified port is used exclusively or whether the port is shared with other BACnet components. Exclusive use is necessary if the server and client are running on the same machine or if there is another BACnet server.
Local IP address	127.0.0.1	Setting the local IP address
Direct broadcast		Activate if the source and target networks are different (see note below).
Do not fragment		With this option, the data packets are not split.
Max payload	1472	The specification in [bytes] refers to the raw data, without the 28bytes IP header.

TCP

TCP name	Standard	Function
Network adapter name		Name of the network adapter; example: Ethernet2

Secure (SC)

priority: The priority set here is used, unless -1 is set - then the priority defined for the device is used. If -1 is also set there, the globally defined priority is used.

Search server

Attention: For the Discover, the local IP address to be used (127.0.0.1 does not work here) and the port must be set correctly!

First, the wait time for the server search should be adapted to the local conditions. This time specifies how long to wait for responses from servers to submit the Discover command.
The "object read timeout", on the other hand, specifies the timeout for querying the individual server objects.
By activating "Read Description", the description of the data points is also read out. This results in a longer readout time.
You can also use a broadcast connection for the Discover-function.
Using "Determine server only", only the server responses are evaluated and the list of servers found filled accordingly. These can then be queried by right-clicking or via the button "read objects of the selected server" the objects provided.
The button "Determine servers and objects" automates these steps by first determining the servers (server timeout) and then querying the respective objects for all found servers.
The selection "Preserve existing channels" will leave additional channels that do not exist in the selected server.

equipment

Imported / found BACnet servers are displayed in this editor.
The servers are listed by their unique device instance. Here it can be set independently for each server whether its data points are to be polled via polling or change-of-value. You can also set the

polling interval and the write priority (which are used if they have not been defined channel-specifically in the Channel Editor).

For the priority, if set to -1 here, the globally defined priority is used (unless other priorities have been set in the Channel Editor).

units

Using this editor, unit texts corresponding to the unit IDs can be assigned. Initially, the default BACnet mapping exists. Own assignments can be imported or changed manually. Unit IDs can be referenced in the BACnet object editor.

State texts

Using this editor, status text IDs can be assigned up to 15 status texts. Status IDs can be referenced in the BACnet object editor.

Data points of the component

Component name	Type	Type Function
Query once	Input	The query of all data points can be triggered manually once via "Update".
Query cyclically	Bidirectional	Cyclical query
Enable all values	Input	With "Relinquish All Values", all values on the servers are withdrawn.
Notifications [Text]	Output	Output of all notifications as text.
Diagnosis [Text]	Output	**Attention: Diagnosis or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.**
Display	Bidirectional	Data point for the connection to the BACnet client display. (Currently <u>without function</u>)
Dynamic	*Folder*	*The dynamic data points are created in this folder.*
- Device status	Output	Indicates whether communication with the server is possible (if an object has been selected for the server in the channel editor as "Use as status indicator").
- Withdraw all values	Input	Trigger to withdraw the values for all objects belonging to the server (so that they can be written by other clients with a lower priority if necessary).
-- Device1	Folder	
-- Withdraw all values	Inbox	This withdraws all values on the device.
-- Device status	Output	There is a device status for each server. If cyclical polling of the server status is activated, this data point indicates whether the server is accessible or not.
--- Channel001	Folder	
--- Text Representation	Output	The text corresponding to the status is displayed here if one has been created in the status text editor.
--- Unit	Output	If a unit ID is assigned in the EDE file, the corresponding text from the unit editor is displayed here.
--- Value	Bidirectional	The value is displayed here. The type depends on the SP.
--- Limit value under-exceeded	Output	If limit values have been created in the EDE file for the corresponding value, this data point triggers when the limit value is exceeded or not reached.
--- Withdraw value	Input	Triggers to withdraw the values for all objects belonging to the device (so that they can be written by other clients with a lower priority if necessary).
Extended diagnosis	Input	(De)activate extended debug output
Local IP (UDP)	Bidirectional	The IP address of the driver can be changed here at runtime.
Server status	Output	The data point is true if at least one of the servers can be communicated with.
Query server status cyclically	Bidirectional	Cyclical polling can be switched on/off via a button.
Statistics - number of COV messages	Output	Number of "Change of value" messages since start.
Statistics - Number of poll requests	Output	Number of Who-Is requests since start.
Statistics - Number of poll request errors	Output	Number of Who-Is request errors since start.

The value outputs are subdivided according to servers and object types for the sake of clarity. All data points of the type Analog value can be found in the subfolder "Analogue value", all objects of the type Binary input are in the subfolder "Binary input", etc.

For "commandable" objects (ie the value and output data types of binary, analog and multistate), a "relinquish" SP is also created for canceling written values so that clients with a lower write priority can also set these values on the servers.

6.13.6.3 PICS

BACnet Protocol Implementation Conformance Statement

Date: 02.03.2024
Vendor Name: Alexander Maier GmbH
Vendor ID: 1021
Product Name: EisBaer Software
Application Software Version: V3.0 and V4.0

Product Description:
The EisBaer BACnet Secure Interface enables secure and encrypted communication with BACnet devices using BACnet Secure Connect (BACnet/SC). It is specifically designed to integrate the EisBaer software into existing BACnet networks and enhance their security.

BACnet Standardized Device Profile:
• BACnet Application Specific Controller (B-ASC)

BACnet Interoperability Building Blocks Supported (BIBBs):
1. Data Sharing
• DS-RP-B (ReadProperty-B)
• DS-RPM-B (ReadPropertyMultiple-B)
• DS-WP-B (WriteProperty-B)
• DS-WPM-B (WritePropertyMultiple-B)

2. Alarm and Event Management
• AE-N-I-B (Notification Internal-B)
• AE-ACK-B (Acknowledge Alarm-B)

3. Scheduling
• SCHED-1 (Schedule Internal-B)
• SCHED-2 (Schedule External-B)

Supported Standard Object Types:
• Analog Input
• Analog Output
• Analog Value
• Binary Input

- Binary Output
- Binary Value
- Octet string Value
- Device (implicit)
- Multistate Input
- Multistate Output
- Multistate Value
- Pos. Integer Value
- Integer Value
- Date time Value
- File
- Notification
- Schedule

Every object has 5 dynamic properties:

Value: This is the value of the output. The type depends on the defined object type.

Limit exceeded: If limits have been defined in the Object Editor this Boolean output will be set true when they have been exceeded.

Text representation: This is the output of the State Text as a string, if defined in the State Text editor and referenced in the Object Editor.

Unit: This is the output of the Unit in a format string.

Device State: Output is set true if a cyclical status update has been successfully.

Supported BACnet-Data types:
- BOOLEAN
- REAL
- INTEGER
- UNSIGNED
- CHARACTER_STRING
- DATE
- TIME
- OBJECT_IDENTIFIER

Data Link Layer Options:
- BACnet IP (Annex J)
- BACnet Secure Connect (BACnet/SC)

Character Sets Supported:
- ANSI X3.4
- UTF-8

Networking Options:
- BACnet IP (Annex J)
- BACnet/SC

Segmentation Capability:
- Segmentation of Requests: Supported

• Segmentation of Responses: Supported

Security Options:
• Support for BACnet Secure Connect (BACnet/SC)
• Encryption: AES-128, AES-256
• Certificate-based Authentication
• Support for Role-Based Access Control (RBAC)

Eisbaer software has automatic discovery functionality and can scan the network for Bacnet server and if available get the data points automatically. Furthermore EPIC and EDE are supported import files. The software supports subscription (COV) requests and/or polling and allows other Bacnet devices to read and write to its internal data points.

Supported BACnet-Objectproperties:
• Device:
o Object_Name
o Object_Identifier
o Vendor_Name
o Model_Name
o Protocol_Version
o Protocol_Revision

• AnalogValue:
o Present_Value
o Description
o Units

• BinaryInput:
o Present_Value
o Status_Flags
o Event_State

Product is a communication gateway, following types of non-BACnet equipment/networks(s) are supported:
KNX, C-Bus, DMX, Sonos, BoseSoundTouch, ABB CMS600, ABB M2M, Modbus TCP, Modbus RTU, Modbus UDP, OPC Client UA, OPC Client DA, OPC Client DA (XML), IRTrans, digitalStrom, Sigma i-bus, Philips Hue, Koubachi, Fidelio Opera Hotel , ESPA 4.4.4, ZigBee LightLink, Z-Wave, Revox Voxnet, Lutron, Tesla, SNMP Trap, SNMP Manager, DALI., OCPP, Profibus

6.13.7 IEC60870 Server (Slave) [x500]

IEC 60870- International Electrotechnical Commission - describes a general, open communication standard for industrial automation, which is used in the areas of infrastructure automation (switchgear control technology, telecontrol technology, network control technology). Although the protocol represents a universal standard, it leaves a great deal of room for manoeuvre for specific applications. The telegrams are transmitted via the TCP/IP Internet protocol. The protocol has general capabilities in the context of SCADA applications. (Wikipedia)

If this component is created, it counts as 500 components.

Data points of the component

Component name	Type	Function
Diagnostics (decode raw data)	Input	Off = raw data, On = raw data decoded
Diagnostics (raw data) [Text]	Output	Output of the raw data in (de)coded form.
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.**
Dynamic	Folder	Divided into the categories "From master" and "To master" and the data point types, the created channels and their data points are displayed.
Extended diagnosis	Input	The output of the diagnostics can be extended with an On value.
Reset devices / process [byte]	Output	Reset of a specific command by entering the process number.
Communication OK	Output	Outputs an On signal if communication between master and slave is working.
Driver On/Off	Bidirectional	Switch driver on or off at server start.
Connection interface initialised	Output	An On signal indicates whether the interface is ready for communication.
Time synchronisation - date	Output	The date/time should be synchronised for the correct execution of terminated commands. The date/time receiver [297] component can be used here.
Time synchronisation - time	Output	The date/time should be synchronised for the correct execution of scheduled commands. The date/time receiver [297] component can be used here.

Note on the "Timestamp" data point in the Dynamic folder: Output when a command was executed, not when the command was received.

Properties of the component

Componen t name	Standard	Function
Channels		The communication objects are created in the channel editor. Further information can be found below.
Connection		The parameters that must be known by the master are set in the General tab. The address corresponds to the device ID. For network communication, the IP of the EisBaer server is entered under 104(IP). Port 2404 is entered by default. If necessary, this port must be entered in the **firewall**. For a serial connection, the settings for 101 (Serial) must be entered in accordance with the manufacturer's specifications.
Driver		(De)Activate the component at server start.

Channel editor

Designation	Description Name
Name	Name of the channel which is displayed in the Dynamic folder in the communication window.
IOA3 (MSB)	Unique address for the data point (highest byte)
IOA2	Unique address for the data point (middle byte)
IOA1 (LSB)	Unique address for the data point (least significant byte)
Type	See reference list on the Beckhoff homepage.
Sequence ID	Data transmission can be optimised with an ID. Only data points of the same type can be added to a sequence. (-1 = does not belong to any sequence)
Interrogation Group	A group of measured values or status messages that are retrieved from the master on request (command). It is used to specifically request a defined amount of data. There can be a maximum of 16 groups (0=no assignment).
Counter Group	A group of counter values (e.g. M_IT_NA_1) that contain incremental measured variables such as energy consumption, pulse counters or operating hours. These values are typically sent at certain intervals or on request. 0 = no assignment, 1-4 = standard counter group, 5 = all counter values, 6-63 = unspecific counter values.
High Priority	Only for Serial: The query strategy can be selected here.
Spontaneous	When activated, a new value is transferred to the master as quickly as possible (functions with M_). This can be influenced by the min Dif Factor (abs. or %). At least one of the two difference conditions must be set to >= 0.
Cyclic	With this option, the data is always transferred to the master, even if the value has not changed (functions with M_). The time interval is set in the next field.
Periodicity [s]	Time specification for the cyclical update (if selected).
Factor	Factor for the output of the values.
TH Nominal	Nominal value specified by the energy supply company (e.g. maximum power of the system). The specification must correspond to the unit of the energy supply company (e.g. W, kW, MW, ...). The factor has no influence here.
TH absolute [%]	Specification of the absolute threshold in %. This refers to the specification for TH Nominal. If this threshold is exceeded/fallen short of (for a certain time), the new value is sent.
TH Delay [s]	Specification of how long the absolute TH must be exceeded/fallen below before the value is sent.
TH additive [%]	Specification in % of when a message should be triggered immediately (without delay). This value refers to the "TH absolute" value.
Auto Termination	When activated, the termination is sent automatically in addition to the confirmation of the command. If not, an external logic must initiate the termination.
Short pulse duration [s]	Specification of the pulse duration in seconds. These are special manufacturer-specific settings.
Long pulse duration [s]	Specification of the pulse duration in seconds. These are special manufacturer-specific settings.

Example of TH settings:

TH Nominal	500 kW	This is the maximum value that the system can generate. This specification must be made in the unit that corresponds to the specification of the energy supply company.
TH absolute [%]	1 %	Defines when a change occurs and the value is sent. The starting point is always the last value sent. In this case, the actual value must change by 5kW compared to the last value sent and continue for the specified time.
TH Delay [s]	5 s	If the TH is absolutely below/exceeded, the value must fulfil this condition for the specified time in order to be sent.
TH additive [%]	300%	This specification refers to the absolute TH. This means that three times the absolute TH value triggers an immediate message. In this example, there must be a change of more than 15kW to generate an immediate message. The delay is ignored here.

The import/export function is intended for data backup.
Columns marked with (*) can be edited together. The rows must be selected for this.

6.13.8   DMX

The DMX driver is an invisible server component with the possibility of controlling 512 DMX addresses/channels.
The channels are coded at the DMX fixtures. There are 512 inputs on the component for controlling the DMX addresses.
A maximum of 32 units (better less) can be connected per DMX line. The terminating resistor (DMX terminator) of 120 Ohm is important.

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation with the support team! If used, these can significantly affect the performance of the service.**
Channels	Folder	The 512 data points are made available in the Channels folder. The communication direction can be set in the channel editor.
Connection status	Output	If the connection to the DMX gateway is successful, an on signal is output.
Driver On/Off	Bidirectional	Driver On or Off.

Properties of the component

Name	Default	Function
Channels	512	Here the channels can be edited interms of name and direction of communication (<mark>to gateway</mark>, <mark>from gateway</mark> and <mark>both directions</mark>).
Driver Type	ArtNet	Indicates which DMX protocol is used. Currently only the Artnet protocol is supported.
IP Address (Gateway)	255.255. 255.255	Here the IP address of the DMX gateway is set. The broadcast address is preset. This is used to address all gateways in the network.
UDP Port [No.]	6454	Here the communication port of the DMX gateway is set.
DMX Universe [No.]	0	Here the number of the desired DMX universe (V3 or V4) is set.
Cyclic transmissio n		Sends in a defined time interval.
Transmissio n interval [ms]	1000	Set the time interval for sending.
Send delay [ms]		If the number is greater than 0, the time in milliseconds is waited before a command is sent. In the meantime, other channels can be changed.
Activate receiver		Caution: Only one DMX component may have its receiver activated.
Local IP address		For receiving DMX messages, the local IP address must be set here.
Driver On/Off		Switch driver on or off.

For the connection via Ethernet a "DMX Over Ethernet" interface is needed, which supports the "ArtNet" protocol. We recommend the "DMX Over Ethernet" interfaces of the company Enttec, which can be obtained from us.

Model: ODE (External Power Supply)
Model: ODE with PoE (Power over Ethernet)

Note: To configure the "DMX Over Ethernet" interface, the company provides Enttec, a free tool (Node Management Utility) for download on the website. You should always use the latest version here.

Note: The **R**emote **D**evice **M**anagement or **RDM** protocol is not implemented. Therefore, state information can not be received from DMX bus devices.

6.13.9 CAN Bus

To operate the CAN bus gateways, the corresponding driver must be installed.

Properties of the component

Name		Function
Messages	0	Here the messages to be sent and received are defined.
CAN Device	IXXAT	Currently, the IXXAT converters are supported (tested with USB-to-CAN, USB-to-CAN V2, USB-to-CAN Professional, CAN @ net II Ethernet Gateway).
BAUD Rate	10kBit/s	Here, the BAUD rate is set. If the rate set here does not match the other devices on the bus, no communication is possible and bus errors may be generated.
Frame Format		In addition to the baud rate, the frame format is the second important feature that can be set globally. Here are the two options 11-bit (standard) and 29-bit (Extended) possible. All messages defined in the channel list use this identifier format.
Driver On/Off	x	Driver on or off.

CAN converter
Opens the editor for selecting the CAN converter

Abbildung : Properties - CAN-Umsetzer

The combo box displays all recognized (connected) adapters. If there are several ports on an adapter (such as USB-to-CAN Professional), an entry is created for each channel (channel number in brackets). In addition to the name of the device, its serial number and channel number are also displayed.

messages
The channel editor defines the messages to be sent and received.

Name	Message Identifier	Direction	Datatype	Count	Bit-Access
Message001	0	In	Byte(s)	1	☐
Message002	1	Out	Byte(s)	1	☐
Message003	2	In/Out	Byte(s)	1	☑

Abbildung : Properties - Nachrichteneditor

First, the message identifier (there should be only one transmitter for an ID bus-wide) and the direction (output = write on bus, input = receive from bus, bidirectional) are given.

The data type determines the encoding of the messages. Thus, for all data types that comprise more than one byte, the usual byte orders are selectable.

If byte is selected as the data type, then it is still possible to specify how many bytes (up to 8) belong to the message.

Ultimately, it can be defined per channel whether a separate SP should be created for each bit in order to gain direct access to individual bits.

Data points of the component

Name	Type	function
Debug	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Debug - Messages	Output	Here all sent and received messages are output. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	The Folder Dynamic displays the input and output channels. Depending on the type, different data points are provided. The channels are created in the properties window.
Driver On/Off	Bidirectional	An on signal activates the driver. The default state of the driver from the properties is output at the start of the simulation or the server.
Driver State	Output	If the connection to the Modbus gateway is successful, an on signal is output.

Normally, there are one or two SPs for each message. An SP via which a message can be sent (Bidirectional or Output) or output (Bidirectional or Input) and optionally (for inputs and Bidirectional messages) an input to explicitly request the message over the bus (RequestFrame).

For messages with activated bit access, a subfolder with the SPs for the individual bits (number depends on the selected data type) is also created. If several bytes have been specified for messages of the type Byte, a subfolder with an SP for the ByteValue On is created for each of the bytes. If additional bit access is activated, there is another subfolder with the associated bits for each byte. For outputs (or bidirectional) with multi-byte and bit-access, the message is sent whenever a change is made to one of the associated SPs.

Abbildung : SharedProperties - Bitzugriff

6.13.10 OPC Client

Get the EisBär SCADA AddOns - OPC installer

This installation is <u>no longer necessary</u> since EisBaer version 3.0.9346.3627 or EisBaer 4 version 4.0.9346.3628.

For Windows 8.1 and higher, these [instructions](#)[20] should be followed.

In order to use the EisBär SCADA component OPC Client DA, OPC Client DA (XML) or OPC Client UA, you must first install the "EisBär SCADA - OPC Installer" add-on. The addon is required for the EisBär editor and server. It is not needed for the EisBär client applications (Windows, IOS, Android and Windows Phone).
The AddOn can be downloaded via the DownloadCenter on our homepage (www.busbaer.de), or via a current CD (as of version 2.1.xxx.xxx), which is enclosed with the USB dongles, for example, or informational materials.

Step-by-step installation instructions

Run the "EisBaer-SCADA-OPC-Installer.exe" file. Click on Next in the start screen.
In the following menu select the installation type "Custom install" and click on Next.
Next, confirm the license terms by clicking on the radio button under "I accept the agreement" and continue with Next.
Confirm the two information notes via the Next button.
Take over the proposed installation path for the OPC Toolbox and continue the installation using the Next button.
Set the selection field for the parts of the toolbox to be installed to "Production installation (.NET)" and continue the setup with the button Next.

If a message appears because of the lack of the Microsoft .NET Framework 3.5 SP1, it must be enabled.

Enable .NET Framework 3.5 in Control Panel

The .NET Framework 3.5 must be activated under Programs and functions in the Control Panel. select Turn Windows features on or off (W8 = Features), and then select the .NET Framework 3.5 check box (includes .NET 2.0 and 3.0). This option requires an internet connection. You do not have to select the child activation headers for Windows Communication Foundation (WCF). In Windows 8, 8.1 or 10, open the window in which you search for "Programs and Features" in the search window or right-click on the start button in the desktop interface.

Enable or disable Windows functions in the Control Panel.

Continue with the installation of the OPC client

Apply the default settings in the next window and click Next or Install in each window. If there is an error message shortly before completion, click NO - this will not start the debugger.
At the end of the installation, close the last window of the setup. The required OPC toolbox is now installed on the computer.
Then start the EisBär SCADA editor, create a project folder with a project and a page for the first test.
From the component list in the DRIVER section, drag the OPC-DA, OPC-UA or OPC-DA (XML) component to the Designer. In the properties window, first click on Server and let search for the desired OPC DA server, select it via mouse click and close the dialog. Alternatively, the server address can also be entered directly.
In the Nodes row in the properties window, you can now start the dialog to import the data points of the selected server. After importing the data, these are listed as Dynamice data points after selection of the OPC component in the communication.
Test OPC UA Server[643]

6.13.10.1 OPC-Client-UA

For Windows 8.1 and higher, these instructions[20] should be followed.

Note on the channel editor:

Individual objects can be selected and subscribed to using the + icon. If all nodes are to be subscribed to, the "Import selected sub-nodes" function must be selected. The client uses the timestamp to compare the values in order to avoid duplicate values.

Data points of the component

Component name	Type	Type Function
Number of messages received	Output	Output of the number of messages since driver start.
Diagnosis [Text]	Output	Outputs a log text. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.** If diagnostics is active in the Editor, the import is documented in the log file.
Dynamic	Folder	This folder contains the data points of the subscribed objects.
Extended diagnostics	Input	Enables extended diagnostics.
Driver On/Off	Bidirectional	Switch driver on or off.
Connection status	Output	Outputs the status of the connection: On=connection ok, Off=connection interrupted

Properties of the component

Name		Function
Server Endpoint	...	Settings for the server endpoint.
Node	0	This editor can be used to create the data points.
Internal deadband check		Activate to enable the internal check for minimum value change if the server does not support this.
Connection check interval [s]	30	Time interval for checking whether the end point can still be reached. If this query fails, the connection status is set to "false".
Session Timeout [s]	60	Checking the validity of the session token.
Retry Interval [s]	10	Time interval to (re)establish a session.
Subscribe object individually		This function subscribes to all data individually. This function is only recommended for debugging purposes.
Subscribe to all objects		If this function is active, all objects are subscribed. If the function is not active, only linked objects are subscribed.
Driver On/Off		Switch driver on or off.

Channel Editor

Channel name	Channel Editor Description
Node name	Node name that is created via the import. The name corresponds to the name in the server.
Node ID	Node ID from the OPC server.
Dead zone type	Information about the type of dead zone (none, per cent and absolute).
Dead zone value	A value must change by the specified value in order to be displayed.
Value change trigger	A value change is recognised when one of the pieces of information listed here changes. This is also the trigger to which the filter (deadband) is applied.
Max query interval	Specification in milliseconds for the query cycle of the data point
Data type	Information from the server on how the data point is transmitted.
Direction	Indicator for read, write or read&write. This information comes from the OPC server.
Bit access	Only applies to BYTE, UINT16, UINT32 and UINT64.

Error Codes on the Internet
Status codes on the Internet

Test OPC UA Server via Internet

Endpoint URL	credits
opc.tcp://uademo.prosysopc.com:53530/OPCUA/ SimulationServer	prosys OPC
opc.tcp://opcua.demo-this.com:51210/UA/SampleServer	opclabs
opc.tcp://opcua.demo-this.com:51211/UA/SampleServer	opclabs
opc.tcp://opcua.demo-this.com:51212/UA/SampleServer	opclabs

Endpoint URL	credits
http://advosol.com/xmldademo/xml_sim/OpcXmlDaServer.asmx	advosol

(Connections successfully tested on 30.03.2016)

6.13.10.2 OPC-Client-DA

Data points of the component

Name	Type	function
Connection State	Output	Returns the status of the connection
Driver On/Off	Bidirectional	Driver on or off.
Debug	Output	Returns a log text. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.

Properties

Name		function
Nodes	0	
Server	...	
Driver On/Off		Driver on or off.

6.13.10.3 OPC-Client-DA (XML)

Data points of the component

Name	Type	function
Connection State	Output	Returns the status of the connection
Driver On/Off	Bidirectional	Driver on or off.
Debug	Output	Returns a log text. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.

Properties

Name		function
Nodes	0	
Server	...	
Driver On/Off		Driver on or off.

6.13.11 CIM [x2500]

CIM (Common Interface Model)

The IEC 61968-9 specifies many of the functions related to meter reading and control. Typical uses of the message types include meter reading, controls, events, customer data synchronization and customer switching. Intended primarily for electrical distribution networks, IEC 6 1968-9 can be used for other metering applications, including non-electrical metered quantities necessary to support gas and water networks

Our CIM component implementation is done for controlling service point level smart devices in a distribution network. The interface complies with IEC 61968-9 Standard. Interfaces for Meter Reading and Control.

Data points

Name	Type	Function
Debug [Text]	Output	Error texts are output here. These may e.g. with the "Log window" component. **Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
Debug verbose	Input	(DE) Enables extended debug output. **Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
Dynamic	Folder	The data points of the channels are displayed here.
Driver On/Off	Bidirectional	(De) Activate the component.
Last request	Output	Output for the last request as a text.
Last response	Output	Output for the last answer as a text.
Driver state	Output	Displays the status of the driver.

Properties of the component

Name	Standard	Function
Name/Type Authority		If you are making your own room and group list, then you must use the name of your list.
Device control commands	0	This is where the commands are defined.
Channels	0	The devices can be imported or set here.
Connection	0.0.0.0: 18100	Building Server: EisBaer can act as the "data collection server" for measurement and status information located in the building. The EisBaer server receives control commands and can keep a local database of status information and meter data. EisBaer can be connected to the bus systems used inside the apartments, from which it reads the data and control tasks the equipment. EisBaer is the provider of the CIM interface. Example: http(s)://<EISBÄR-IP>:<PORT>/cim/ Target server: The target server is the subscriber to the CIM interface. It can send requests to EisBaer, which will respond to them. The requests can be different status and measurement requests or control tasks or subscriptions for transmission. Several servers can be connected to the same EisBaer server, and one target server can communicate with several EisBaer servers.
Subscription queue size	10	Setting for the maximum subscription queue size for accelerated transmission.
Driver On/Off		(De) Activate the component.

The Building Server can be reached at: http(s)://<EISBÄR-IP>:<PORT>/cim/

6.13.12 Profibus [x200]

This is an invisible driver component, which is designed for the Profibus DP. Currently, the Ethernet Profibus converter IBHNet S7++ supports the company IBH.
Www.ibhsoftec.com

Data points of the component

Name	Type	Function
Debug	Output	**Caution: Diagnostic or debug outputs are only in the event of failure. Please use only with consultation with the support team! This can significantly affect the performance when using the service.**
Dynamically	Folder	Contains the data points entered under "Register" channels.
Driver on / off	Bi-directional	This allows the device to be activated/deactivated.
Driver Status	Output	Indicates whether the driver is active or not.
Cyclic update	Bi-directional	This can be set from another location, whether the defined channels are read out cyclically.

Properties of the component

Name	Standard	Function
Interface	IBHNet	Selection of the supported devices. (Currently only IBHNet S7++)
Register		In this case, the channels are created.
Cyclic update		This can be used to set whether the channels defined read cyclically.
Pause between updates	5	Defines the interval between the cyclic updates in seconds.
Driver on / off		This can be used to set whether the component at the start of the system should be active.

Currently, the Ethernet Profibus converter IBHNet S7++ supports the company IBH.
Here is the IP address of the adapter as well as the port (by default 1099) must be entered.
Furthermore, the correct MPI address (either directly or through the definition of rack and slot) can be specified.

Channels/Register
In the Channel Editor displays the defined tab that will be accessed.

Figure : - News Editor properties

In addition to a unique name, the type (input/output) of the register/Memory/data block can be specified. If the data block has been selected, the data block must also be specified.
It is the definition of the (first) register address and the access type (read/write).
About the selection of the data type will be set at the same time, how many consecutive byte register per data point must be used.
By clicking on the count value according to a corresponding number of PLC created per channel, the consecutive values represent.
For integer values can also activate the checkbox "Bit access". This will be in addition for each date of the channel 8 Bit PLC created.

In the folder for dynamic plc is a subfolder for each defined channel is created.
The example shows the PLC for the channel. Here, Count=2 is selected, and there are accordingly 2 subfolders in the folder "values" is created. The value of the two data points is via the associated PLC "Value" is output.

In addition, the bit access was enabled, because there is also a folder with the bit-SPs.
In the Data Item window allows the PLC to channel name, data block and register address are grouped together.

6.13.13 ESPA 4.4.4 Master

General
This component can act as ESPA (4.4.4) master, whereby currently only the initiation of pager calls (header type <Call To Pager>) is implemented from this master. The slave polling is also implemented, whereby the master itself (should it be selected by the slave during polling) does not communicate with the slaves (it sends direct NAK when selected by a slave). Other actions (such as

<Status Request> or <Call To Subscriber Line>) are also currently not implemented (for specific needs, please contact us).

It supports initiating calls with a predefined, channel-specific message content as well as attaching dynamizer information to the predefined message. Furthermore, a call can be actively canceled.

Properties of the component

Name		Function
Channels (Alarm Sender)	0	Opens the editor for creating the channels / alarms in case the component is to act as an alarm transmitter. Each channel can be assigned a name and a slave number (id of the associated ESPA slave). Furthermore, the further information of a "Call To Pager" message is defined here. This includes the telephone number, the message content, the beep code (system-specific), the call type, the number of transmissions (including repetitions) and the priority defined.
Channels (Alarm Receiver)	0	Opens the editor for creating the channels / alarms in case the component is to act as alarm receiver. Each channel can be assigned a name, a group and an alarm number.
Slaves		In this editor, the slaves to be polled can be selected.
Slave-Polling Period-Delay	10	Defines the pause between the polling intervals
Polling Timeout	10	If no communication takes place within the period set here during a polling sequence (in which another slave is the temporary master and possibly communicates with other slaves), the master sends an <EOT> and the communication is accepted again.
COM-Port		(Virtual) COM port of the ESPA interface
Baud-Rate	300	BAUD rate of the ESPA interface
Data Bits	8	Number of data bits of the ESPA interface
Stop Bits	1	Number of stop bits of the ESPA interface
Parity	even	Specification of the parity of the ESPA interface
ESPA Address	2	ESPA address of the component (usually 1 for master)
Channel Mapping*	Message Coding	This defines how the assignment of a received ESPA message to one of the defined channels should be performed.
Message on alarm end		If this option is activated and a message about a terminated alarm is received, a message will be displayed on the associated message output that the alarm has ended. If disabled, the message SP is not triggered.
Group triggers channels		Here you can set whether the channel SPs belonging to a group are triggered when a group message is received.
Driver On/Off		This can be used to set whether the component should be active when the system is started.

Channels

Opens the editor for creating the channels. Each channel can be assigned a name and a slave number (id of the associated ESPA slave). Furthermore, the further information of a "Call To Pager" message

is defined here. This includes the telephone number, the message content, the beep code (system-specific), the call type, the number of transmissions (including repetitions) and the priority defined.

Channel Name	Slave Number	Call Address	Display Message (Base)	Beep Code	Call Type	Transmissions	Priority
Channel001	2	1		0	Speech	1	Normal
Channel002	2	2		0	Standard	1	High

Abbildung : Properties – Channels/Teilnehmer

*Channel assignment
The setting **"Receiver -> channel number"** causes the associated channel to be performed by comparing the number set in the channel and receiver of the message. For this, the ESPA master must address receivers using numbers and the projector must ensure that the receivers in the ESPA master match the numbers in the polar bear channel editor.

The setting **"Text -> channel name"** performs the channel assignment based on the comparison of channel name and message text. For this, the project engineer must ensure that the corresponding texts are sent by the ESPA master.

The setting **"Message coding -> Code GGG/MM"** determines the channel according to a code in the message text. The message must consist of any code (without spaces) as well as (separated by a space) a group number and a sensor number (separated from each other by a '/') (example "abcde 12/33"). The channel assignment is made by comparing the group number and the sensor number (must match the channel number). A sensor number of 0 is evaluated as a group broadcast (all channels belonging to the group are triggered).

Data points of the component

Name	Type	function
Debug - Messages	Output	Over it the complete answer of the query is given out as XML text.
Debug Error	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Debug Info	Output	Must be connected to the calendar. Over here, the appointment information is sent to the calendar.
Driver On/Off	Bidirectional	(DE) Activate the component
Dynamic	Folder	
- Alarm Sender	Folder	
- - Channel001	Folder	
- - - Cancel call	Input	Via "Cancel call" a message is sent from the Call-Type = Reset / Cancel to cancel a call if necessary.
- - - Send (as defined)	Input	If a TRUE value On is sent to this SP, the corresponding message is sent to the defined ESPA slave. The message content here corresponds to the value defined in the channel editor
- - - Send (with value)	Input	If a value on this SP is sent, the corresponding message is sent to the defined ESPA slave. The message content here corresponds to the value defined in the channel editor plus the string representation of the value sent to the SP.
Slave Status	Folder	
- Slave 0-9	Folder	
- - Last Online	Output	Indicates when the slave was last available.
- - Online	Output	Indicates if the slave is online.

6.13.14 ESPA 4.4.4.4 Slave

Properties

Name		Function
Channels (Alarm Sender)	0	Opens the editor for creating the channels / alarms in case the component is to act as an alarm transmitter. Each channel can be assigned a name and a slave number (id of the associated ESPA slave). Furthermore, the further information of a "Call To Pager" message is defined here. This includes the telephone number, the message content, the beep code (system-specific), the call type, the number of transmissions (including repetitions) and the priority defined.
Channels (Alarm Receiver)	0	Opens the editor for creating the channels / alarms in case the component is to act as alarm receiver. Each channel can be assigned a name, a group and an alarm number.
Group triggers Channels		Here you can set whether the channel DPs belonging to a group are triggered when a group message is received.
COM-Port		(Virtual) COM port of the ESPA interface
Baud-Rate	300	BAUD rate of the ESPA interface
Data Bits	8	Number of data bits of the ESPA interface
Stop Bits	1	Number of stop bits of the ESPA interface
Parity	even	Specification of the parity of the ESPA interface
ESPA Address	2	ESPA address of the component (usually 1 for master)
Channel Mapping*	Message Coding	This defines how the assignment of a received ESPA message to one of the defined channels should be performed.
Message on alarm end		If this option is activated and a message about a terminated alarm is received, a message will be displayed on the associated message output that the alarm has ended. If the option is deactivated, the message DP is not triggered.
Driver On/Off		This can be used to set whether the component should be active when the system is started.

Channels

* The setting **"Receiver -> Channel number"** causes the corresponding channel to be performed by comparing the number and the recipient of the message set in the channel. To do this, the ESPA Master must address recipients with numbers, and the project engineer must ensure that the recipients in the ESPA Master agree with the numbers in the Polar Bear Channel Editor.
The setting "**Text -> Channel Name**" makes the channel assignment based on the comparison of channel name and message text. To do this, the project developer must ensure that the corresponding texts are sent by the ESPA Master.
The setting "**Message coding -> Code GGG / MM**" determines the channel according to a code in the message text. The message must consist of any code (without spaces) and (separated by a space) a group number and a sensor number (separated by a, / ') (example "abcde 12/33"). The channel assignment is made by comparing the group number and the sensor number (must match the channel number). A sensor number of 0 is counted as a group broadcast (all channels belonging to the group are triggered).

Data points of the component

Name	Type	function
Debug - Messages	Output	Over it the complete answer of the query is given out as XML text.
Debug Error	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Debug Info	Output	Must be connected to the calendar. Over here, the appointment information is sent to the calendar.
Driver On/Off	Bidirectional	(DE) Activate the component
Dynamic	Folder	
- Alarm Receiver	Folder	
- - Group1	Folder	
- - Alarm	Output	"Alarm" is triggered when a message is received for one channel of the group with active alarm state.
- - Alarm ended	Output	"Alarm Complete" is triggered when a message is received for a channel of the alarm terminated group.
- - Message [Raw]	Output	Via "Message", the message text is output when a message for a channel of the group with active alarm status is received. The same applies to a message with the alarm status ended, if the corresponding setting is set.
- - Channel001	Folder	
- - - Alarm	Output	"Alarm" is triggered when a message is received for one channel of the group with active alarm state.
- - - Alarm ended	Output	"Alarm Complete" is triggered when a message is received for a channel of the alarm terminated group.
- - - Message [Raw]	Output	Via "Message", the message text is output when a message for a channel of the group with active alarm status is received. The same applies to a message with the alarm status ended, if the corresponding setting is set.
- Alarm Sender	Folder	
- - Channel001	Folder	
- - - Cancel call	Input	Via "Cancel call" a message is sent from the Call-Type = Reset / Cancel to cancel a call if necessary.
- - - Send (with value)	Input	If a value is sent to this data point, the corresponding message is sent to the defined ESPA slave. The message content here corresponds to the value defined in the channel editor plus the string representation of the value sent to the data point.
- - - Send (as defined)	Input	If a TRUE value is sent to this data point, the corresponding message is sent to the defined ESPA slave. The message content here corresponds to the value defined in the channel editor.

6.13.15 ESPA-X Host

ESPA-X is a message protocol for controlling alarm processes.
This connection was specially designed for alerts in the hospital / nursing service.

Data points of the component

Name	Type	function
Debug-Message (received)	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Debug-Message (send)	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Debug Error	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Debug Info	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	The Folder displays the data points for the channels.
Error indicator	Folder	The folder displays the data points for the error analysis.
- Description	Output	Description of the error
- Code	Output	Code of the error
- Reason	Output	error reason
- Info	Output	Extended information about the error
- Trigger	Output	Boolean output, whether there is an error or not.
Transmission error (Trigger)	Output	Boolean output, whether there is an error or not.
System state	Folder	The folder displays the system status data points.
- Hot Standby	Output	"On" = server is in hot standby, "off" server is in active mode
- load state	Folder	The Folder displays the data points for the load state of the client.
-- High utilization	Output	"On" at high load
-- no active processes	Output	"On" if no active processes are running
-- no load information available	Output	"On" if no load information is available
-- Average utilization	Output	"On" at medium load
-- Low utilization	Output	"On" at low load
-- Normal utilization	Output	"On" at normal load
-- Text	Output	Text output for utilization
-- overload	Output	"On" in case of overload, server can no longer accept orders
-- Full utilization	Output	"On" at full capacity
- server Health	Folder	The Folder displays the data points for the load state of the server.
-- no data	Output	"On" if there is no data
-- not ready	Output	"On" if the server is not ready
-- OK	Output	"On" if the server status is OK
-- Problem detected	Output	"On" if the server has a problem
-- Text	Output	Text output to the server state
Driver On/Off	Bidirectio	Driver on or off.

Properties

Name	Standard	function
Channels	0	Display of the channel list
Server IP	127.0.0.1	Setting the IP address of the ESPA-X server
Server-Port	2023	Setting the server port for communication
Username	User	Input field for the login name
Password	Password	Input field for the login password
Client-Name	ClientX	Input field for the name of the client.
Heaertbeat-Intervall [s]	30	Interval in seconds to query if the server is still reachable.
Driver On/Off		Turns the driver on or off

6.13.16 SNMP

The **Simple Network Management Protocol** (**SNMP**Simple Network Management Protocol ;) is a network protocol that the IETF Designed to network elements (e.g. Routers, servers, switches, printers, computers etc.) from a central station monitoring and control. The protocol controls the communication between the monitored devices and the monitoring station. SNMP describes the structure of the data packets that can be sent, and the communication process. It has been designed in such a way that each network enabled device with included in the monitoring. The tasks of the network management, which are possible with SNMP include:

- Monitoring of power plant components,
- Remote control and configuration of network components,
- Error detection and error notification.

Due to its simplicity, modularity and versatility has developed SNMP to standard, both from most management programs as well as of end devices is supported.

Available Drivers:
- SNMP Trap Agent [662]
- SNMP Trap Receiver [664]
- SNMP MIB Agent [666]
- SNMP Manager [667]

Mode of operation

For monitoring, so-called agents are used. These are programs that run directly on the Monitored Devices, or hardware, the same tasks fulfilled.[1] These programs/devices are able to capture the state of the network device and also self-settings or trigger actions. With the help of SNMP, it is

possible that the central management station can communicate with the agent via a network. There are six different data packets that can be sent to:

How SNMP works.

GET
   To request a management record
GETNEXT
 In order to retrieve the following data record (tables)
GETBULK
   In order to retrieve several records at once, such as multiple rows of a table (available from SNMPv2)
SET
   One or more records in a network element to change. Sometimes a network element the simultaneous change of multiple data sets, in order to verify the consistency. The configuration of an IP address, for example, requires the simultaneous display of the network mask.
   RESPONSE
   The answer to one of the previous packages.
TRAP
   Unsolicited message from the agent to the manager that an event has occurred. Programs such as Wireshark, the decode of protocols such as SNMP used to call this data packet also report. A TRAP can also be sent in a set, if the package(s) described record change(s) could not be carried out(s), and not just a malfunction (for example, a defect of a module of a network element).

The three get-packages (GET, GETNEXT, GETBULK) can be sent to an agent by the manager to request data on the respective station. This responds with a response packet that contains either the requested data or an error message.

With the set-package a manager can change values at the agent. This makes it possible to trigger settings or actions. The agent confirms the transfer of values also with a response package.

If the agent is in the monitoring of the system detects an error, it with the help of a TRAP-package be returned to the management station. These packages are not confirmed by the manager. The agent can therefore not determine whether the sent trap-package the manager arrived.

So that the network load remains low, to send the message the connectionless UDP is used. The agent receives the requests (requests) on port 161, while for the manager of the port 162 to receive the TRAP messages is required.

Source: Wikipedia

6.13.16.1 SNMP Trap-Agent

This component allows asynchronous SNMP traps to be sent to SNMP trap receivers.

Fixed is a trap with the following information:
- EisBaerversion (0)
- Solution (1)
- Project (2)

The object ID of the trap is 1.3.6.1.4.1.44301.1. The 3 variables also have an Object ID. The basic object ID (Enterprise OID) is 1.3.6.1.4.1.44301 (reserved for Alexander Maier GmbH). Attached is a 1 (for the EisBär information) and the number, which is given after each information. The trap number is fixed as 1 (only relevant for V1 traps).
e.g. 1.3.6.1.4.1.44301.1.2 -> project name
In addition, the project engineer can define further traps (with freely selectable object IDs).

Properties

Name		function
Enterprise OID	1.3.6. 1.4.1. 44301	Here you can enter the Enterprise-Object ID. This is used for all traps when trap version 1 is set.
Channels	0	Custom traps can be created here. The specification of the trap number is only relevant if SNMP is set to version 1. Furthermore, the trap-specific object ID and the data type of the trap value can be defined. There are the types: Bool, Double, Int32, UInt32 and String available.
Heartbeat interval [s]	60	Here you can define the interval in which the standard trap (version, solution, project) is sent.
Local IP		Here, the IP address of the local network interface to be used is entered.
Agent Port	161	Here you enter the local port to be used by the agent component.
Manager IP		The IP address of the computer to which the traps are to be sent is specified here. The IP address must be specified.
Manager Port	162	This specifies the port associated with the remote SNMP trap recipient.
SNMP Trap Version	one	Opens the editor for setting the trap version. If V3 is used, the authentication and encryption passwords and the associated protocols can be specified.
V2 Module Identity		Opens the editor for setting the agent identity (only relevant for trap version 2 or 3)
Driver On/Off		This can be used to set whether the component should be active when the system is started.

Shared-Properties

Name	Type	function
Debug [Text]	Output	Error messages are displayed here. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Driver On/Off	Bidirectional	Switch the driver on/off.
Dynamic	Folder	Contains the data points of the created channels
Channel001	Input	Here, the associated value inputs are created for each defined trap. If a value is sent to the component via one of these SPs, a corresponding trap with the received value is generated as content and sent to the defined trap receiver.

Driver Datapoints

The data point window displays all SPs and the corresponding object ID and trap number.

6.13.16.2 SNMP Trap Empfänger

General

This component can be used to receive asynchronous SNMP traps and to output the associated values. The traps can be defined individually. The traps are assigned to "device classes", whereby it can be defined for each class which trap version and, if necessary, credentials are to be used.

Since there can be several devices in the network from one device class (eg an APC UPS), which can all trigger the same trap, an additional SP output is generated for each trap besides the actual SP output, via which the source of the trap (IP address) is output.

Properties

The component can be configured via the properties.

Name		function
Channels	0	Here you can define the traps that should be received and output.
Security Engine ID		For v3 traps, a selectable engine ID is used for encryption. This must be set globally - it may be necessary to ensure that the trap transmitters are adapted accordingly.
Local IP		Here, the IP address of the local network interface to be used is entered.
Local Port	162	Here you enter the local port to be used by the agent component.
Driver On/Off		This can be used to set whether the component should be active when the system is started.

Channels

Picture : Properties – Traps

Here you can define the traps that should be received and output. First, it is important to specify a device class (can be freely named). The assignment of an Enterprise OID belonging to this device class is done via the "Device Class Configuration" - the OID is then also displayed here. In addition to the name of the trap, a description can also be given here. The specification of the trap number is only relevant if SNMP version 1 is set for the corresponding device class. Furthermore, the trap-specific object ID (relevant for trap version v2 / 3) and the data type of the trap value can be defined. For traps that contain multiple variables (such as the TrabAgent's built-in EisBar info trap), you can specify how many variables there are. There are then created correspondingly many SPs.

If traps are defined via an MIB import ("Import MIB"), the names, description and trap number / OID are entered automatically if necessary.

In the dialog for configuring the device classes, the classes can be selected in a list and, if necessary, edited using "Edit". Here you can set the SNMP version and related information and also rename the device class.
The changes must be saved explicitly with "Save" before leaving the dialog.

Shared-Properties

Name	Type	Function
All Trap Messages	Output	All received traps are output here.
Debug [Text]	Output	Error messages are displayed here. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Driver On/Off	Bidirectional	Switch driver On/Off
Dynamic	Folder	Contains the data points of the created channels
- Channel001	Output	Here, the associated value inputs are created for each defined trap. If a value is sent to the component via one of these SPs, a corresponding trap with the received value is generated as content and sent to the defined trap receiver.
- Channel001 Source		The IP address of the transmitter is output here.

Driver Datapoints:
The data point window displays all SPs and the corresponding object ID and trap number.

6.13.16.3 SNMP MIB-Agent

This component can be used to provide data points that can be queried by an SNMP manager.

properties

The component can be configured via the properties.

Name		function
Channel	0	Here the hierarchy of the data points is determined.
Local IP		Here, the IP address of the local network interface to be used is entered.
Agent Port	161	Here, the local port to be used, which is to be used by the component, is entered.
SNMP Version	one	Opens the editor for setting the SNMP version. If V3 is used, the authentication and encryption passwords and the associated protocols can be specified.
V2 Module Identity		Opens the editor for setting the agent identity. (Only relevant for trap version 2 or 3)
.0 add to OID		Depending on the remote station an attached 0 is required.
Driver On/Off		This can be used to set whether the component should be active when the system is started.

channels

Here the hierarchy of the data points is determined. The object ID of the root node can be freely defined. The object IDs of the subitems are derived from the respective parent node and the settable sub-ID.

In addition, the type of the object is also specified here (only the data type "Container" allows substructures).

In order to make a manager aware of the defined data objects, these can be exported to a MIB file.

Datapoints:

Name	Type	Function
Debug	Output	Error messages are displayed here. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Driver On/Off	Bidirectional	Driver on or off.
Dynamic	Folder	Contains the data points of the created channels.
- 1.3.6.1...	Input	Here the corresponding value inputs are created for each defined data point (NOT container!). If a value is sent to the component via the SPs, the internal data structure is updated. The manager must explicitly request this to get the new values. For important messages, the SNMP Trap Agent component should be used, as messages can be sent asynchronously to the manager.

Driver Datapoints
The data point window displays all SPs and the associated object ID.

6.13.16.4 SNMP Manager (x200)

The SNMP Manager allows you to query any number of data points of an SNMP agent - these can be routers, switches and firewalls as well as servers, IP cameras, NAS systems, printers and computers. Using the channel editor of the SNMP manager, the required Management Information Base (MIB) is usually compiled with the standard MIB, as well as additional extensions and manufacturer-specific objects of the agent - a database of the network element.

Hint: When using this component, 200 components are charged per SNMP manager.

Features
The basic settings are stored in the editor via the properties.

Name	Basic setting	Function
Channels	0	Using the channel editor, MIB files of agents can be imported as well as dependent MIB files - either completely new or successively by importing further MIB files. After each successful import, the OID directory is rebuilt and can also be sorted by the respective columns. The object IDs to be queried must be selected in the "Queries" column, from which dynamic communication objects are then generated. The table entries (number of objects) can be increased or decreased to the required number (e.g. number of hard disks in a NAS).
Agent IP		IP address of the SNMP agent to be queried via the previously selected channels. The Agent's specific MIB files should have been imported previously.
Agent Port	161	Port of the agent to be queried.
SNMP version	one	Opens the editor for setting the SNMP version. If V3 is used, the authentication and encryption passwords and the associated protocols can be specified.
SNMP Read Community	public	Access rights of the named community for read-only access (usually "public")
SNMP write community	private	Access rights of the mentioned community for read and write access (mostly "private")
Cyclic updating	Active	This can be used to set whether the cyclical scanning of the selected objects should be activated at project start.
Update pause [s]	60	Pause between updates in seconds
Sequential updating	Inactive	Defines whether the objects should be updated in parallel or sequentially.
Retries	1	Retries of the channels to be queried within the tables
Timeout [ms]	1000	Adjustable timeout for establishing a connection to the agent
Timeout [tables] [ms]	1000	Adjustable timeout for internal table query of OIDs
Query linked channels only	Active	If the selection is active, only linked or used communications objects (KOs) are queried, otherwise all objects in the table
Old implementation		With this option, processing is realised via a newer or older API.
Index of the first table entry	1	Setting for the first entry in a table. Possible values are 0 and 1.
Driver On/Off	Active	Start behaviour of the component at simulation start or EisBär server start

Channels

MIB files can be loaded here. With "Import MIB" one or more MIB files can be selected and imported. Please note that all dependencies must be resolved by the files - if a dependency is not fulfilled by another MIB file, the importer will name the missing MIB file. It is also possible to import several MIB files one after the other by using the button "Re-Import or add more MIB(s)".

In the column "Table entries" you can specify for tables for how many rows (number of objects) the corresponding data points should be created. In the "Queries" column, you can select the objects that are to be queried cyclically and communication objects created for linking.

Data points

Name	Type	Function
Update	Input	A manual query can be initiated here.
Updating is carried out	Output	Status output, whether the update is currently active/inactive
debug [Text]	Output	Error messages are output here. **Attention: Diagnosis or debug outputs are only provided for the case of errors. Please only use them after consulting the support team! If used, these can considerably impair the performance of the service.**
Verbose debug	Input	Turns advanced diagnostics on or off.
Last update time [s]	Output	Duration in seconds of the last update.
Next update [s]	Output	Time in seconds until the next query in the form of a countdown .
Driver On/Off	Bidirectional	Driver On or Off or status output whether driver is switched on or off.
Connection status	Output	Status output of the connection status. However, a ping to the agent is not sent here, but rather an active check is made for accessible data points.
Cyclical update	Bidirectional	Here the cyclic update can be (de)activated during runtime or used as status output.
Dynamic	Folder	Contains the data points of the selected ObjectIDs (OIDs) from the channel editor.
- OID name	Output	Here the corresponding outputs are to be found for every defined activated data point. Here the whole hierarchy is shown as shown in the MIB and in the editor. An easier linking is made possible by the "Driver Data Points" window. The filter function allows a very fast search for objects by OID number or OID name.

SNMP MIB Node Editor

Import MIB(s)   Re-Import or add additional MIB(s)

Name	Object ID
▲ private	1.3.6.1.4
▲ enterprises	1.3.6.1.4.1
▲ synology	1.3.6.1.4.1.6574
▶ synoRaid	1.3.6.1.4.1.6574.3
▶ synoUPS	1.3.6.1.4.1.6574.4
▶ storageIO	1.3.6.1.4.1.6574.101
▶ synologyHA	1.3.6.1.4.1.6574.106
▶ flashCache	1.3.6.1.4.1.6574.103
▶ synologyiSCSILUN	1.3.6.1.4.1.6574.104
▶ spaceIO	1.3.6.1.4.1.6574.102
▲ synoSystem	1.3.6.1.4.1.6574.1
▲ dsmInfo	1.3.6.1.4.1.6574.1.5
upgradeAvailable	1.3.6.1.4.1.6574.1.5.4
modelName	1.3.6.1.4.1.6574.1.5.1
version_	1.3.6.1.4.1.6574.1.5.3
serialNumber	1.3.6.1.4.1.6574.1.5.2
systemStatus	1.3.6.1.4.1.6574.1.1
▶ systemConformance	1.3.6.1.4.1.6574.1.6
temperature	1.3.6.1.4.1.6574.1.2
▲ fan	1.3.6.1.4.1.6574.1.4
cpuFanStatus	1.3.6.1.4.1.6574.1.4.2
systemFanStatus	1.3.6.1.4.1.6574.1.4.1
powerStatus	1.3.6.1.4.1.6574.1.3

▲ Dynamic
  ▲ iso
    ▲ org
      ▲ dod
        ▲ internet
          ▲ private
            ▲ enterprises
              ▲ synology
                ▲ synoSystem
                  ▲ dsmInfo

● modelName	Strings
● serialNumber	Strings
● upgradeAvailable	Number 32-bit
● version	Strings
▲ fan	
● cpuFanStatus	Number 32-bit
● systemFanStatus	Number 32-bit
● powerStatus	Number 32-bit
● systemStatus	Number 32-bit
● temperature	Number 32-bit

6.13.16.5 Beispiel Honeywell MB-Secure (SNMP)

With the SNMP manager it is possible to access data of the Honeywell MB-Secure alarm system.
For this purpose, the "MB-Secure Option SNMP Protocol" license from Honeywell must be activated (article number: 059832).

Extract from the Honeywell product description:

Brief description
Enables monitoring and control of MB-Secure via SNMP (Simple Network Management Protocol). For communication in closed IT networks, if no encryption is needed.

Description
The delivery of extension licenses is done through the licensing portal
https://mb-secure.honeywell.de
This is where the purchased licenses are linked to computer boards using their serial numbers. This generates a license key that can be downloaded or sent by e-mail.
In addition, a certificate will be sent, which serves as proof in case of returns.
After subsequently importing the generated license key (via IQ PanelControl) into the respective computer board, the desired functionality is activated.

Performance features
IP protocol via Ethernet
Community-Based SNMP Version 2 (SNMPv2c)
Programmable filters (areas, detector zones)
100 freely programmable outputs
40 inputs

Scope of delivery
- License through the online portal mb-secure.honeywell.de
- Certificate

6.13.17 Casambi

This invisible driver component is intended for connection to "Casambi".
Casambi is based on low energy Bluetooth technology and is intended for (LED) lighting control. For the connection in the EisBär a cloud access is necessary.
For operation, either a gateway (e.g.Holders Technology BLE gateway) or the Casambi app must always be active . A project must also becreated

Creating a "Site" (Project) via the Casambi App

- Enable the Site feature by selecting More > App Settings > Enable Site Features.
- Create a site account: More > Account > Create account and enter the required details.
- Navigate to More > Change Site (or select Sites on the app home page).
- Select Create new site or press the + in the upper right corner

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window" .**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	The data points of the devices are displayed here. There are subfolders for the functions per device. There are different functions and display options depending on the device.
Extended Diagnosis	Input	(De)Activates the extended debug output. **Attention: Diagnostic or Debug - outputs are only intended for error cases. Please use only with consultation of the support team! If used, they can significantly affect the performance of the service**
Update Status	Input	Trigger input for updating.
Driver On/Off	Bidirectional	(Dis)enable component
Connection status (REST)	Output	Indicates whether the REST connection exists (true) or not (false).
Connection Status (Websocket)	Output	Indicates whether the websocket connection exists (true) or not (false).

Properties of the component

Name	Default	Function
Connection settings		Enter Casambi login data.
Channels	0	All devices are imported and displayed here.
Connection test interval [s]	60	Setting for the connection test in seconds.
Update interval [s]	600	Setting for the update in seconds.
Command pause [ms]	200	Setting the pause time between 2 commands.
Driver On/Off		(De)activate the component.

6.13.18 EnOcean

Driver for the connection of the Smart EnOcean Gateway (DC-GW / EO-IP) of DigitalConcepts.

Enocean refers to a manufacturer-independent standard for battery-free wireless sensor technology used primarily in the monitoring and control of home and building technology.

Data points of the component

Name	Type	function
Debug Messages	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Received Telegrams	Output	Output of received telegrams in text form (JSON).
Dynamic	Folder	The Folder Dynamic displays the data points for the available devices.
Send-Results	Output	Output of the response telegrams when sending commands (JSON).
Driver On/Off	Bidirectional	Driver on or off.
Connection State	Output	Returns the status of the connection.

Properties

Name	Standard	function
Devices	0	In the channel editor "Devices", the individual devices can be imported from the gateway.
Connection	None ...	Opens the editor for setting the EnOcean gateway (currently only the gateway from DigitalConcepts). The IP address of the gateway and the port (8080 by default) user name and password are entered here. In the gateway, a password for Admin and for User (password: user) must be entered in the API description so that both areas can be called up in the EisBaer. Only Admin + Pw is entered in EisBaer itself.
Driver On/Off		Driver on or off.

In the folder "Dynamic" a subfolder is created for the individual devices.

Below the device folders, there is a subfolder for each function group (different from device to device, depending on which "profile" (EEP) is supported) and there the shared properties for the function group specific data points. Within the polar bear no management of the data points belonging to an EEP is carried out. Instead, the information provided by the gateway (function groups and their data points) is used to create the SPs.

Below "FunctionGroup 1" are located e.g. one wall switch each 4 SPs for the 4 buttons. In this case, buttonA0 outputs the state of the A0 button. In this special case, the respective string ("pressed" or "released") is not output, but the Boolean interpretation (true / false). "ButtonA0 pressed" is triggered with true every time the button is pressed. Similarly, this applies to "buttonA0 released".

Each data point also has an SP with the suffix "ValueDescription" - Here the possible outputs (which are provided by the gateway or which the gateway expects for commands) are output. In this case, the strings would be "pressed" and "released" - but as already said, the polar bear interprets these strings in this case and outputs true or false on the SP "buttonA0".

In the case of a switchable socket with support for EEP D2-01-09, 7 subgroups are created for the various "function groups".

In FG1 is the most important data point for switching the socket. In this case, this data point is called "dimValue" and can process values from 0 to 100 (as%) according to its "ValueDescription". For switching off, a 0 can be sent here and a 100 for switching it on.

In FG7 there are 2 more interesting data points showing the energy consumed and the current power. These values are sent cyclically by the gateway. But it is also possible to explicitly trigger the values ? via the FG6. Here is the data point "query". Its ValueDescription tells you that it supports the following values as inputs: power, energy, and status. So if the string "power" is sent to this SP, this triggers the message of the current performance.

About the other function groups u.a. Set the minimum / maximum automatic message interval for power and energy or reset the energy counter.

The "Holter heating thermostat (EEP = A5-20-04)" reports various measured values and the status via FG1. Measurements can be triggered via FG2, the valve can be manually controlled and the setpoint temperature can be set.

It should be noted that the device must have at least once a "Valve" command received before, for example. a "temperatureSetpoint" command is accepted. For specific questions, the documentation of the device manufacturer should be consulted.

6.13.19 ZigBee LightLink

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**
Extended diagnostics	Input	(De)Activate the extended diagnostics.
Transmission response	Output	Output of the response telegrams when sending commands (JSON).
Status output	Output	Output of the transmitted telegrams in text form (JSON).
Status output (formatted)	Output	Output of the transmitted telegrams in text form (JSON) and with line break.
Driver On/Off	Bidirectional	Switch the driver on or off.
Connection status	Output	Outputs the status of the connection.

Properties of the component

Name	Standard	Function
Lights	0	In the channel editor "Lights" the lights/lamps can be imported.
Sensors	0	The sensors/switches can be imported in the "Sensors" channel editor. For remote controls/buttons, the number of buttons must be set.
Groups	0	The luminaire groups can be imported in the "Groups" channel editor.
Scenes	0	The scenes can be imported in the "Scenes" channel editor (if supported by the gateway). These are displayed in the groups as data points.
Connection	deConz ...	Opens the editor for setting the Zigbee Gateway (currently only deCONZ from Dresden-Elektronik). Enter the IP address of the gateway, the port (default 80) and a user name of your choice. Via a user key must be called up. For this purpose the gateway has to be "unlocked" before (via the webfrontend --> Settings --> Gateway --> Advanced --> Allow App-Connection for Thirdparty).
Controlling lamps individually with group command		If activated, the individual lamps concerned are controlled separately when a Group On command is given.
Ignore brightness for lamps that are switched off	X	This prevents lamps from being switched on when the value at the "Brightness" input changes.
Update interval [s]	10	Here you can set the update interval for the status query.
Color change delay [x100ms].	0	Defines the color change time in multiples of 100ms.
Driver On/Off		Here you can set whether the component should be active when the system is started.

In the folder for dynamic plc is a subfolder for the lights, groups, sensors and scenes created. Another subfolder for each light is associated with the name is created. Among these are the following PLC:
- Alarm: Displays the current alarm status
- Alarm (no): Disabled Alarm
- Alarm (lSelect): Sets the alarm mode lSelect
- Alarm (Select): Sets the alarm mode select
- Effect color loop: Starts Collor loop effect
- Distance: Reachability Status
- Color blue: Entering the blue light color value (if supported)

- Color green: Enter the green light color value (if supported)
- Color red: Entering the rotwertes light color (if supported)
- Color mode: The light color mode
- Color temperature: Color temperature of the light current
- Color: Input/output of the Lamp color color tone (if supported)
- Brightness: Output/set the current brightness
- Manufacturer: Output of the manufacturer's name
- Lampen-Typ: Output of the lamp type
- The last effect: Output of the last effect mode
- Model-Id: Output of the model number
- Saturation: Input/output of the Lamp color saturation (if supported)
- Turn off: The lamp on/off (or output of the status)
- SW version: Output from the SW version
- Unique ID: The unique ID of the light output

For each group, another subfolder with the corresponding name is created. Among these are the following PLC:
- Alarm: Displays the current alarm status
- Alarm (no): Disabled Alarm
- Alarm (lSelect): Sets the alarm mode lSelect
- Alarm (Select): Sets the alarm mode select
- Effect color loop: Starts Collor loop effect
- Color blue: Entering the blue light color value (if supported)
- Color green: Enter the green light color value (if supported)
- Color red: Entering the rotwertes light color (if supported)
- Color mode: The light color mode
- Color temperature: Color temperature of the light current
- Color: Input/output of the Lamp color color tone (if supported)
- Brightness: Output/set the current brightness
- The last effect: Output of the last effect mode
- Lights: Output of the associated lamps (if supported)
- Name: Name of the group
- Saturation: Input/output of the Lamp color saturation (if supported)
- Turn off: The lamp on/off (or output of the status)

The PLC for the sensors are currently limited to pure static information, since the gateway no further information about pressing of buttons.

6.13.20 Z-Wave

The Z-Wave driver is an invisible server component and is used to connect to the Fibaro Home Center. All Z-Wave components must be learned and configured in the bridge.

Data points of the component

Name	Type	Function
Disarm Alarm	Input	A string that corresponds to the PIN, which is stored in the FIBA ROHO MECÉ International, the alarm can be turned off for all devices.
Arm Alarm	Input	About any command, the alarm is turned on for all devices
Update all	Input	This data point is triggered, it sets the status of all devices are polled.
Debug	Output	Here, error messages are output. This may, for example, be associated with the component " "Log window willbe displayed. **Caution: Diagnostic or debug outputs are only in the event of failure. Please use only with consultation with the support team! This can significantly affect the performance of the service when using**
Event Messages	Output	The event messages are output as text. For example, the change in temperature or the like.
Device state	Output	The output of the device states are connected
Sent messages	Output	The output of the query commands from the FIBARO.
Driver On/Off	Bidirectional	Drivers on or off.
Connection State	Output	Are the result of the last availability check.

Properties of the component

Name	Standard	Function
Connection settings	FIBARO ...	Opens the editor to configure the gateway. Currently, the Fibaro Home Center as a Z-Wave Gateway supports. This is the IP address, as well as user name, password, and communication timeout.
Devices	0	Opens the editor to import the devices. From the Z-Wave Gateway, the devices are imported and in accordance with the hierarchy in the list. It is important to note that a ZWave device from one entry for the device itself and underlying components. The names are completely by the gateway; and, if necessary, there should have already been fully and meaningfully be named (in the case of the fibaro gateway corresponds to the name of the ID by default). In addition to the number of Sub-Kanale Gerate-Id is also displayed. This information is only relevant for Switch (so-called Central Scene Controller) and provides information about the number of buttons.
Scenes	0	Opens the editor to import the scenes. You can see the scenes, the scene number as well as the name of the scene assigned room number is imported and displayed.
Rooms	0	Opens the editor to import the rooms. It shows the name of room, the room number as well as the number assigned to the room019999 imported and displayed.
Sections	0	Opens the editor to import the sections. The section name and the section number is imported and displayed.
Update interval [s]	10	Here you can set up the intervals by setting the status of all devices (in addition to the independent running explicitly queried event check).
Event check interval [s]	2	Here, you can enter the interval set by the
Driver On/Off		This can be used to set whether the component at the start of the system should be active.

In the folder for dynamic PLC are subfolders for general gateway information (Info and power plant). "Areas" within the folder are subfolders for designated areas and including if necessary for the designated rooms.

Figure : Shared properties - Dynamic

In the folder "scenes" you will find a further folder for the defined scenes and including two inputs to enter and exit of scenes, as well as an output that is triggered each time when the scene is called.

Figure : Shared properties - Scenes

Below the "Devices" folder is another folder per device. There are different depending on the type of PLC hereunder.

Figure : Shared properties - Equipment

If the device from other components (normal case), these are in corresponding subfolders to find, in accordance with the naming of the components are named. In the case of devices and components is at the end of the name of the respective ID number in parentheses.

Below the Components folder will be created in turn typ-spezifische plc. These are always outputs and provide information. In the "Action" folders folder below the device and component type-specific actions can be triggers. The available actions are transmitted from the Gateway.

Note: It is part of the specific device depends on whether the PLC values. For example, it is depending on the device, regardless of whether the current battery status on the device specific SP or one of its sub-components is transferred via the corresponding SP.

Note: Some of the actions require multiple parameters. This is realized by that there are several PLC of the corresponding name exists (with a number at the end). Here it is implemented in such a way that the PLC must be described in turn. The command is triggered when the last parameter is described. The exact meaning of the respective parameter is very device-specific and in the specific case to research.

Note: In the case of switches, several subfolders for each button. In each subfolder there are PLC for "pressed", "held" and "let go". It is the respective device dependent, which the PLC at a certain button is triggered. So, in the case of a manufacturer the PLC in the Folders Key1 and Key3 and Key5 and Key7, with another manufacturer is the assignment in turn completely different. This needs to be said here in the specific case must be examined individually and be linked accordingly.

Figure : Shared properties - Multi-switch

6.13.21 HomeMatic

The HomeMatic driver is an invisible server component. All HomeMatic components must be taught in and configured in the CCU.
A prerequisite for the connection is the installation of the XML API in the CCU. See also the Homematic homepage. To test the installation, the download can be tested via http: // <IP-DER-CCU> /config/xmlapi/devicelist.cgi. In the system settings of the Homatic CCU under *Configure firewall*, the *Homatic XML-RPC API* policy must be set to **Full access.**

HomeMatic XML-API V2:
Version 2 requires a token in addition to the IP of the CCU. This is included in the URL for the Web UI call. Enter this SID in the properties of the component and if necessary (RECOMMENDED!!!) generate a new token. This gives the EisBaer its own registered token for the system.

Data points

Name	Type	Function
Update channels	Input	If this input is triggered, the system will update its values.
Update in progress	Output	If an update is carried out, a true is output at this data point.
Last update duration [ms]	Output	Output of the last update duration in milliseconds.
Debug [Text]	Output	Error texts are output here. These may e.g. with the "Log window" component. **Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
Debug verbose	Input	(DE) Enables extended debug output. **Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
Dynamic	Folder	The data points of the channels are displayed here.
System Notification	Folder	This are global CCU-notifications.
Driver On/Off	Bidirectional	(De) Activate the component.
Connection State	Output	Returns the current connection status as an on / off signal.

Dynamic data points

Subfolders with the device name and their data points are created for each imported device.

Depending on the device, there are several subfolders per device:

Folder 0: contains device-specific data points

Folder 1: Status outputs

Folder 2: Inputs for wiring / setting

Folder 3 - x: Special functions such as limit, lock function, etc.

Properties of the component

Name	Standard	Function
Connection	...	Setting the CCU connection (IP address) and port (80). When using version 2, the SID token must also be inserted.
Import Devices	0	Here the learned devices can be imported or set.
Programs	0	If self-created programs (scenes) are available, they can be imported here.
System variables	0	If self-created system variables exist, they can be imported here.
Update delay (system variables) [s]	1	Setting for the delay between updates for the system variables.
Update delay (states) [s]	10	Setting for the delay between updates for the system states. (Can take a view seconds to update)
Update delay (additional data) [s]	10	Setting for the delay between updates for additional data´s like system notification, RSSI and program states.
Read master values		Check this box, if you want to read all the master values. If this is checked, you can import the master values via "Import devices" (Can take a view seconds)
Update delay (master values) [min]	10	Setting for the delay between updates for the master values. (Also see the setting in "Import Devices")
Master values bulk request		Check this for updating all devices in a single request. If the request fails, you to uncheck this. (Also see the setting in "Import Devices")
Driver On/Off		(De) Activate the component.

6.13.22 Home Connect

This invisible driver component is intended for connection to "HomeConnect devices".

Data points of the component

Name	Type	Function
Diagnosis - sent requests [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window" .**Attention: Diagnosis or Debug - Outputs are only intended for error cases. Please use only with consultation of the support team! These can considerably impair the performance of the service when used.**
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**
Dynamic	Folder	The data points of the devices are displayed here. There are subfolders for the functions per device. Depending on the device, there are different functions and display options.
Extended diagnostics	Entrance	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service**
Eventstream Status	Output	Display,
Driver On/Off	Bidirectional	(De)Activating the component
Driver status	Output	Shows whether the driver is On (true) or Off (false).

Properties of the component

Name	Standard	Function
Connection settings		Enter the Home Connect login data.
Channels	0	All devices are imported and displayed here.
Count alive events		Activate to count the events in a statistic (data point in the dynamic folder)
Driver On/Off		(De)Activate the component.

Note: Connection establishment to the server can take up to 1 minute!

6.13.23 digitalSTROM

The digitalSTROM driver is an invisible server component with the Ability To control digitalSTROM Installations. The Driver connects to the digitalSTROM server. This serves as a Data Point Supplier and Interface to the System.

The available Zones, Groups and Devices are read in. The System must be Put into Operation in advance via the Manufacturer's Software.

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	**Warning: Diagnosis or Debug-Outputs are only intended for the Event of an Error. Please use only with Consultation with the Support Team! These can significantly affect the Service's Performance when Used.**
Advanced Diagnosis	Bidirectional	The Output of the Diagnosis can be expanded here with an to value.
Event Expenses	Output	This is where the Answer to a sent Command is issued. The Output is used for Diagnosis in the event of Miscircuits.
Update device values (Bus Query, slow)	Entrance	A One-signal at this Input starts updating the Values from the Devices.
Update meters (Bus Query, slow)	Entrance	A One-signal at this Entrance starts updating the Consumption.
Meter Update Interval (Bus Query, slow)	Bidirectional	In the set Time Interval, the current meter values (selected in the Channel editor) are read out of the Device (0 = disabled). As this is done via the Bus, the individual Queries take a very long time. This Option should only be used if reading out of the Server is not enough.
Sensor Update Interval (Bus Query, slow)	Bidirectional	In the set Time Interval, the current sensor values (selected in the Channel editor) are read out of the Device (0 = disabled). As this is done via the Bus, the individual Queries take a very long time. This Option should only be used if reading out of the Server is not enough.
Update sensors (Bus Query, slow)	Entrance	Trigger to read the current Values of the Devices via the bus (0 = disabled).
Update sensor/meters (Bus Query, slow)	Entrance	Trigger to read the current Values of the Devices via the bus (0 = disabled).
Update sensor/meter (Server)	Entrance	Trigger to read the current Values of the Devices from the Server (0 = disabled).
Sensor/meter Update Interval (Server request) [s]	Bidirectional	In the set Time Interval, the current consumption values of the Devices are read out of the Server (0 = disabled).
Update Scene Names	Entrance	A One-signal at this Entrance starts updating the Scene names.
Update Scene Values (Bus Query, slow)	Entrance	A One-signal at this Input Starts updating the Scene values.

Name	Type	Function
Delete Scene values	Entrance	Deletes All internally stored Scene values. The EisBaer stores the Values of the Devices for each scene called to reduce the bus load. If The Scenes are Changed, either the Scene must be queried, or the Scene must be deleted in order for it to be resaved.
Cyclically update Scene-values	Bidirectional	To update scene values daily at the set Time.
Cyclically Update scene values-Time (Hour)	Bidirectional	Setting the Time (0-23) to Update scene values
Driver An/Aus	Bidirectional	Drivers Turn on or Off.
Connection	Output	If you have a successful Connection to the Server, a One-signal is issued.
Dynamically	Folder	The Dynamic Folder shows the Outputs for the zone/. Groups. Different data Points are provided depending on the Type.
Apartment	Folder	This Order contains all The Scenes that can be configured in the digitalSTROM Interface. In the Subfolders "Call Szene" and "Save Scene," the Scenes are listed individually, which can be configured in the digitalSTROM Interface. The scene name in Bracket corresponds to the Name given by digitalSTROM.

Properties

Name	Standard	Function
Channels	0	Here, the imported Lights are listed. These then appear as Sub-folders in the Dynamic Data-point folder.
Custom Actions	0	In this Window, the custom actions can be imported.
Custom States	0	In this Window, the custom states can be imported.
System states	0	System states can be created in this window. Commands can be sent directly to the digitalSTROM server as text.
Server [IP]		Set the Server's IP address here. When Using the device name, it should be noted that it must not contain Blanks.
Port [No.]	8080	Set the Server's communications port here. Default is "8080."
Login	dssadmin	Username to Access the Server. Default of the "dssadmin" server.
Password	*********	User'S Password to Access the Server.
Accept all certificates		Connection security is not yet guaranteed for older servers. In this case, all types of certificates must be allowed in order to gain access to the device.
Timeout [ms]	15000	If there Is no Response to the Server, the Communication will be canceled after this Time.

Name	Standard	Function
Read Device values at Start (Bus Query, slow)		When the Project is started, all The values of the Device are read out. This Process is time-consuming.
Sensor Update Interval (Bus Query, slow) [min]	0	In the set Time Interval, the current sensor values (selected in the Channel editor) are read out of the Device (0 = disabled). As this is done via the Bus, the individual Queries take a very long time. This Option should only be used if reading out of the Server is not enough.
Meter Update Interval (Bus Query, slow) [min]	0	In the set Time Interval, the current meter values (selected in the Channel editor) are read out of the Device (0 = disabled). As this is done via the Bus, the individual Queries take a very long time. This Option should only be used if reading out of the Server is not enough.
Sensor/Meter update Interval (Server request) [s]	30	In the set Time Interval, the current consumption values of the Devices are read out of the Server (0 = disabled).
Read out Unknown Scene values (Bus Query, slow)		To read the associated values when Receiving Called scenes, if they are not already known.
Cyclically update Scene-values		To update scene values daily at the set Time.
Cyclically Update scene values-Time (Hour)	2	Setting the Time (0-23) to Update scene values
Convert sensor Values	Selected	The Raw Data from the Sensor is automatically converted. For the Conversion, see the Conversion List below.
Reset scene status only with "Undo"		If active, the individual scene data points are only reset if they are canceled via "UndoScene" ("False" on the corresponding scene input). Otherwise, they are reset when another scene is called up.
Reflect scene call		If active, the status is output on the bidirectional scene data point.
Create data points for individual scenes		This option is used to create the individual scenes in addition to the general scene data points.
Create device-specific data		This option is used to create the individual scenes for each device in addition to the general scene data points.

Name	Standard	Function
points for individual scenes		
Driver An/Aus		Here, the Driver An/Aus is switched.

Channels

Import the projected Data from the digitalSTROM server or from a polar bear XML to the Channel List. Finally, when You leave the Editor with OK, the existing Data Points will appear in the Dynamic Folder in the Data point window. It May be necessary to share the Polar Bear's access in the Web Interface of the Digital Power server.

Custom Actions/States

If actions And/or States have been created On the digitalSTROM Website, they can be imported here.

User Defined States

Read from dss-Server   Export to Eisbaer-XML   Import from Eisbaer-XML

Name	Display Name	Set Name	Reset Name

OK   Cancel

Conversion List:

Sensor Type	Description	Unit	Min	12 Bit Max	12 Bit Resolution
4	Active power	Watts (W)	0	4095	1
5	Output current	Ampere (mA)	0	4095	1
6	Electric meter	Watthours (kWh)	0	40,95	0,01
9	Temperature indoors	Kelvin (K)	230	332,375	0,025
10	Temperature outdoors	Kelvin (K)	230	332,375	0,025
11	Brightness indoors	Lux (Lx)	1	131446,795	logarithmic: $lx = 10^{\frac{x}{800}}, x = 800 * \log(lx)$
12	Brightness outdoors	Lux (Lx)	1	131446,795	logarithmic: $lx = 10^{\frac{x}{800}}, x = 800 * \log(lx)$
13	Relative humidity indoors	Percent (%)	0	102,375	0,025
14	Relative humidity outdoors	Percent (%)	0	102,375	0,025
15	Air pressure	Pascal (hPa)	200	1223,75	0,25
18	Wind speed	m/s	0	102,375	0,025
19	Wind direction	degrees	0	511,875	$\frac{0,5}{4}$
20	Precipitation	mm/m2	0	102,375	0,025
21	Carbon Dioxide	ppm	1	131446,795	logarithmic: $ppm = 10^{\frac{x}{800}}, x = 800 * \log(ppm)$
25	Sound pressure level	dB	0	255,938	$\frac{0,25}{4}$
50	Room temperature set point	Kelvin (K)	230	332,375	0,025
51	Room temperature control variable	Percent (%)	0	102,375	0,025
64	Output current (H)	Ampere (mA)	0	16380	4
65	Power consumption	Volt-Ampere (VA)	0	4095	1

Excerpt from the digitalStrom Base concept Of the 19.08.2015

Further Links:

digitalSTROM System Documentaries: https://www.digitalstrom.com/technische-dokumentation/

6.13.24 REST Client

This component is used to query REST API servers

For developers - no free support!

The subchapter contains examples for the connection of [Netatmo](#)[693] , [EcoFlow_River2_Pro](#)[696] and [ChatGPT](#)[699].

Data points of the component:

Name	Type	Type Function
Diagnosis [Text]	Output	Error messages are output here. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.**
Dynamic	Folder	This folder contains the query parameters and the response. The folder for the created channel contains the data points for the endpoint query trigger and for the response status code (see [HTTP error code\)](#).
Extended diagnostics	Input	(De)Activates the extended debug output. **Attention: Diagnostics or debug outputs are only intended for error cases. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service**
Driver On/Off	Bidirectional	Switches the driver on or off

Properties of the component

Component name	Standard	Function
Connection		Settings for the connection to the REST endpoint (see below).
Parameter profiles	0	Using self-defined profiles, it is possible to split JSON strings that are read by a REST server into individual sub-data points according to the hierarchy. A separate JSON parser is therefore no longer necessary. The entire JSON string can be converted automatically using the wizard. A data point is also created for this so that this parameter can also be changed at runtime.
Response profiles	0	Using self-defined profiles, it is possible to split JSON strings that are transmitted in a REST server into individual sub-data points according to the hierarchy. A separate JSON parser is therefore no longer necessary. The entire JSON string can be automatically converted using the wizard. The profile is created automatically via "Channels" --> "Read data points".
Channels	0	Name: own designation Path: Specification of the request path (e.g. /api/device) Request Type: Read, write, delete or set Query Format: Defines the format of the query Parameter-Profile: Selection of the parameter profile Result-Profile: Display of the result from "Read Datapoint" **Read Datapoint: Triggers a query. A response profile can be generated automatically.** Interval: Setting for a cyclical query in seconds.
Driver On/Off		Switches the driver on or off at server start.

Note: Endpoint = base URL from Common + entry for Path

Connection Common

Common Name	Common Name Function
API Base URL:	Specifies the base URL for the query endpoint. Example: https://api.ecoflow.com/iot-service/open
Timeout [s]:	Specification of the time from which a timeout is recognised.
Headers:	Additional information for the query is transferred in the header. The following notation applies: Name=Value and one line corresponds to one parameter.
User:	User name for the login.
Password:	Password for logging in.

Connection OAuth2

Name: Name	Function
Authentication	Selection of the OAuth authentication method (must be known).
Scopes	In OAuth2, scopes denote the authorisations that an application requests in order to access certain resources of a user or an API. if there are several, these can be written one after the other (blank character as separator)
Authorisation path	URL path for authorisation. This is required to be able to log in to the system. Example: /oauth2/authorise (results with the base URL: https://api.domain.com/rest/oauth2/authorize)
Token path	URL to the token endpoint. This gives you the access token. Example: /oauth2/token (results with the base URL: https://api.domain.com/rest/oauth2/token)
Client ID	Identification of the client (user name) for logging on to a backend.
Client Secret	Password/secret key for logging in to the backend.
Perform authentication	This button is used to start a login attempt.
Access token	If the login is successful, the token is set automatically.
Refresh token	The token is set automatically after a successful login.

6.13.24.1 Netatmo

Example of integrating Netatmo devices (weather station) via the REST API. A ScadaComp can be downloaded here.

Netatmo offers an **OAuth2** connection. The documentation for this can be found at https://dev.netatmo.com/apidocumentation.

The base URL must be entered in the connection settings, as well as all fields for the "OAuth2_AuthCodeGrant" authentication.

The scopes can be customised. This is used to restrict data access. At least one scope must be entered. They are separated by spaces.
There are currently 9 scopes: read_station read_thermostat write_thermostat read_camera write_camera access_camera read_presence access_presence read_smokedetector read_homecoach

The client ID and client secret can be obtained by logging in to https://dev.netatmo.com/ --> My Apps --> create.

The access/refresh token is requested by clicking the "Request token" button. A new window for authorisation appears.
Now the URL (already in the clipboard) must be pasted into a web browser (Ctrl + v). You must then log in to the homepage and authorise access via the REST interface. The EisBaer is then granted access to the devices.

A profile can be created for querying temperature sensors, for example:

The response profile can be read out in the channel editor. The query path must be specified for this. In the case of Netatmo, the format "Application_url_encoded" must be selected. The profile set up above is selected for Parameter.

A query of the endpoint can now be carried out via "Query endpoint". To customise the parameters before the query, a window is opened so that values can be changed. If all parameters are available, the response appears as a JSON string. A descriptive name for the query can be entered under Profile name. Click OK to automatically create all data points as a response profile. The data points are also created according to the response profile.

REST API Responses Profil - Editor

Name	Profil Id	Container	Datentyp	Is Array	Anzahl (Array-) Elemente	Factor
api#getstationsdata	api#getstationsdata	✓		☐	1	1
body	api#getstationsdata	✓		☐	1	1
devices	api#getstationsdata	✓		✓	1	1
modules	api#getstationsdata	✓		✓	4	1
data_type	api#getstationsdata	☐	Int64	✓	2	1
firmware	api#getstationsdata	☐	Int64	☐	1	1
last_seen	api#getstationsdata	☐	Int64	☐	1	1
dashboard_data	api#getstationsdata	✓		☐	1	1
date_min_temp	api#getstationsdata	☐	Int64	☐	1	1
Humidity	api#getstationsdata	☐	Int64	☐	1	1
Temperature	api#getstationsdata	☐	Double	☐	1	1
date_max_temp	api#getstationsdata	☐	Int64	☐	1	1
max_temp	api#getstationsdata	☐	Double	☐	1	1
temp_trend	api#getstationsdata	☐	String	☐	1	1
time_utc	api#getstationsdata	☐	Int64	☐	1	1
min_temp	api#getstationsdata	☐	Double	☐	1	1
battery_percent	api#getstationsdata	☐	Int64	☐	1	1
module_name	api#getstationsdata	☐	String	☐	1	1
last_message	api#getstationsdata	☐	Int64	☐	1	1
type	api#getstationsdata	☐	String	☐	1	1
_id	api#getstationsdata	☐	String	☐	1	1
rf_status	api#getstationsdata	☐	Int64	☐	1	1
reachable	api#getstationsdata	☐	Boolean	☐	1	1
battery_vp	api#getstationsdata	☐	Int64	☐	1	1
last_setup	api#getstationsdata	☐	Int64	☐	1	1
type	api#getstationsdata	☐	String	☐	1	1
last_status_store	api#getstationsdata	☐	Int64	☐	1	1
_id	api#getstationsdata	☐	String	☐	1	1
station_name	api#getstationsdata	☐	String	☐	1	1
date_setup	api#getstationsdata	☐	Int64	☐	1	1
last_setup	api#getstationsdata	☐	Int64	☐	1	1
dashboard_data	api#getstationsdata	✓		☐	1	1
Humidity	api#getstationsdata	☐	Int64	☐	1	1
AbsolutePressure	api#getstationsdata	☐	Double	☐	1	1

OK   Abbrechen

6.13.24.2 EcoFlow River2 Pro

Example of integrating the EcoFlow River 2 Pro via the REST API. A ScadaComp can be downloaded [here](#).

The River 2 does not have OAuth2 authentication, so "None/Other" must be selected in the connection settings.
The AppKey and the SecretKey can be requested from EcoFlow Support.

The serial number must be transferred to query the device. A new entry is created in the parameter profile for this purpose. For the String data type, select the string extendet for "Default Value". Then enter the serial number and confirm with OK.

A query is now created in the channel editor. The query path must be specified for this. In the case of EcoFlow, the format "Application_from_url_encoded" must be selected. The profile set up above is selected for Parameter.

A query of the endpoint can now be executed via "Read Datapoint". To customise the parameters before the query, a window is opened so that values can be changed. If all parameters are available, the response appears as a JSON string.

Text eingeben   ✕

{"code":"0","message":"Success","data":
{"soc":98,"remainTime":5999,"wattsOutSum":18,"wattsInSum":18},"eagleEyeTraceId":"xxxxxxxxxxxxxxxxxxxxxxxxxx","tid":""}

Profile Name: #api#device#queryDeviceQuota   OK   Abbrechen

A descriptive name for the query can be entered under Profile name (e.g. EcoFlow). Click OK to automatically create all data points as a response profile.

REST API Responses Profil - Editor   ✕

Import   Export   Import und Hinzufügen   Create Wizzard

Name	Profil Id	Container	Datentyp	Is Array	Anzahl (Array-) Elemente	Factor
⌄ EcoFlow	EcoFlow	✓		☐	1	1
tid	EcoFlow	☐	String	☐	1	1
⌄ data	EcoFlow	✓		☐	1	1
wattsInSum	EcoFlow	☐	Int64	☐	1	1
remainTime	EcoFlow	☐	Int64	☐	1	1
soc	EcoFlow	☐	Int64	☐	1	1
wattsOutSum	EcoFlow	☐	Int64	☐	1	1
code	EcoFlow	☐	String	☐	1	1
message	EcoFlow	☐	String	☐	1	1
eagleEyeTraceId	EcoFlow	☐	String	☐	1	1

OK   Abbrechen

The data points are also created according to the response profile.

6.13.24.3 ChatGPT

Example of the integration of ChatGPT via the REST API. A ScadaComp can be downloaded here. Prerequisite is a paid access.

1. log in to openai at https://platform.openai.com/api-keys
2. press + Create new secret key and request a key
3. copy the key

4. select "None/Other" as authentication in the EisBaer
5. API Base URL = https://api.openai.com/v1/
6. enter "General" in the header "Authorisation=Bearer Space Secretkey" (example: Authorisation=Bearer YourChatGPTSecretKey)

7. create parameter profile:

8. create a channel in the channel editor for the questions to ChatGPT via the path "chat/completions":

9. the response profile is created:

A question can now be sent to ChatGPT via the text input[185] .
To do this, the text is sent to the data point: Dynamic - Query parameters - messages - [0] - content.
The answer is received at the data point: Dynamic - Ask question - Query answer - choices - [0] - message - content

6.14   Manufacturer specific drivers

This chapter describes the functions and properties of the components from the Manufacturer-Specific Driver category.

Currently the following driver components are available:

1. WAGO PFC[703]
2. WAGO PFC e!Cockpit[712]
3. Siemens LOGO![714]
4. Honeywell MB-Secure [x2500][721]

6.14.1 WAGO PFC CODESYS

General Information

Please note that only variables created in the system configuration of the WAGO controller can be imported by Codesys (only these are exported by Codesys to the CSV). Any variables created manually in the various programming languages are not included here.

CAUTION! If complex modules (such as the 0753-0646 KNX module) are installed in the WAGO system, make sure that they are integrated after the other input/output modules. The reason for this is that, if necessary, only one byte output variable is specified, but several (in this example 12) consecutive registers are actually reserved. This would move the following terminals in the address range correspondingly further back than the one byte specified in the CSV file.

If terminals are not inserted at the end, a new WAGO PFC driver must be used in the polar bear. Since the insertion of terminals changes the sequence and address structure and thus destroys the data points in the polar bear driver.

To transfer the networks from the old WAGO PFC driver to the new WAGO PFC driver, select the new WAGO PFC driver in the right part of the communication window. In the left window, select the old WAGO PFC driver. Then transfer the networks from left to right using drag and drop. Finally, the old WAGO PFC driver must be deleted.

Properties

Name	Standard	function
Controller Type	WAGO Ethernet 750-8xx	Combobox for selecting the WAGO type. Currently devices of the series 750-8xx and 750-82xx are supported.
Channels	0	In the channel editor, the variables defined in the WAGO controller and, if necessary, physical inputs / outputs (750-8xx only) are imported.
IP Address	127.0.0.1	IP address of the WAGO controller.
Port	502	Modbus port of the WAGO controller.
Timeout [ms]	5000	Timeout for communication with the controller.
Cyclic ping-check		Activates the cyclic ping check (output of the accessibility on the corresponding data point).
Cyclic ping-check Intervall [s]		Interval of the cyclic ping check.
Mode	TCP	Selection of Modbus mode.
Temporary close connection		Ends the connection after each poll (use only if required by the controller - usually not necessary for WAGO systems)
Cyclic request - Delay [s]	5	Pause between polling cycles in seconds.
Cyclic request - Autostart		Starts the cyclic query when activating the component.
Cyclic sending - Delay [s]	30	Pause between transmission cycles in seconds.
Cyclic sending - Autostart		Starts the cyclical transmission of all variables when activating the component.
Send on value change	active	Sends a value changed in the polar bear individually and directly to the controller.
Use old library		This property can be set to use an older communication type.
Driver On/Off		Enables / disables the driver.

Channels

In the channel editor, the variables defined in the WAGO controller and, if necessary, physical inputs / outputs (750-8xx only) are imported.

Abbildung : Properties - Variablenimport

In the option "Seperator (CSV)" the separator of the CSV file can be specified (Default,; '). The "Import (WAGO-CSV)" button opens the dialog for selecting a system configuration created using CODESYS for import.

The "Import" and "Export" buttons are only for exporting the channels currently imported / configured in the channel editor.

The table shows the name, the description and the object type (physical input / output (register), physical input / output (digital), PFC-in variables, PFC-out variables, flag variables). Furthermore, the WAGO data type is displayed. The associated Modbus data type is also pre-assigned, but can be adjusted if necessary (if a controller uses a different encoding for the 16/32 and 64-bit data types). The index column reflects the number of the variable within its object type. The Modbus address displays the calculated Modbus address.

Bit index and byte index are only relevant for 1-bit and 8-bit variables and indicate the respective position within the 16-bit register.

Data points of the component

Name	Type	function
Single request	Input	Triggers a one-time query of the data
Cyclic request	Bidirectional	An on / off command can be used to start / stop the cyclic polling.
Cyclic request - Delay [s]	Bidirectional	Here the cycle time of the query can be set.
Diagnosis	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	Contains the imported data points
Ping state	Output	Outputs an on signal if the ping check was successful.
Send on value change	Bidirectional	An on / off command can be used to switch transmission on value change on / off.
Single send	Input	Triggers a one-time transmission of the data
Cyclic send	Bidirectional	An on / off command can be used to start / stop the cyclical transmission.
Cyclic send - Delay [s]	Bidirectional	Here the cycle time of the transmission can be set.
Driver On/Off	Bidirectional	Driver on or off.
Driver state	Output	Status display for the driver

In the folder for Dynamice Datapoints a subfolder is created for each variable.

- ∨ 🖼 Dynamisch
  - › 🗔 0750-0402 1.1 (1)
  - › 🗔 0750-0402 1.2 (2)
  - › 🗔 0750-0402 1.3 (3)
  - › 🗔 0750-0402 1.4 (4)
  - › 🗔 0750-0504 2.1 (1)
  - › 🗔 0750-0504 2.2 (2)
  - › 🗔 0750-0504 2.3 (3)
  - › 🗔 0750-0504 2.4 (4)
  - › 🗔 fb_flag0 (2)
  - ∨ 🗔 fb_flag1 (3)
    - ∨ 🗔 BitValues
      - 🔴 Bit<0>   DataPoint8BitUnsigne...
      - 🔴 Bit<1>   DataPoint8BitUnsigne...
      - 🔴 Bit<2>   DataPoint8BitUnsigne...
      - 🔴 Bit<3>   DataPoint8BitUnsigne...
      - 🔴 Bit<4>   DataPoint8BitUnsigne...
      - 🔴 Bit<5>   DataPoint8BitUnsigne...
      - 🔴 Bit<6>   DataPoint8BitUnsigne...
      - 🔴 Bit<7>   DataPoint8BitUnsigne...
    - › 🔷 Value   DataPoint8BitUnsigne...
  - ∨ 🗔 fb_flag2 (4)
    - › 🔷 Value   DataPointBooleanValu...
  - › 🗔 fb_flag3 (6)
  - › 🗔 fb_flag4 (7)

Depending on the variable type, this is an input, output or bidirectional data point. For UINT values, the individual bits are also created in a separate subfolder (outputs only).

6.14.1.1 CoDeSys V2.3

1. Create variables via the PLC configuration. Click path: Resources Tab -> PLC Configuration -> Fieldbus variables -> right click -> Edit

2. Create the required variables (input / output / flags) and confirm with OK

Konfiguration

Variablen

Name	Adresse	Datentyp	EA-Typ	Kommentar
fb_in0	%ID128	DWORD	Input	DWORD
fb_var8	%ID129	DWORD	Input	
fb_in1	%IB520	BYTE	Input	BYTE
fb_in2	%IX260.8	BOOL	Input	BOOL
fb_in3	%IX260.9	BOOL	Input	BOOL
fb_in4	%IX260.10	BOOL	Input	BOOL
fb_in5	%IB522	BYTE	Input	BYTE
fb_in6	%IX261.8	BOOL	Input	BOOL
fb_in7	%IB524	SINT	Input	SINT
fb_in8	%IB525	SINT	Input	SINT
fb_out0	%QD128	DWORD	Output	DWORD
fb_out1	%QB516	BYTE	Output	BYTE
fb_out2	%QX258.8	BOOL	Output	BOOL
fb_out3	%QX258.9	BOOL	Output	BOOL
fb_out4	%QX258.10	BOOL	Output	BOOL
fb_out5	%QB518	BYTE	Output	BYTE
fb_out6	%QX259.8	BOOL	Output	BOOL
fb_out7	%QB520	SINT	Output	SINT
fb_out8	%QB521	SINT	Output	SINT
fb_var0	%IW263	WORD	Input	WORD
fb_var2	%IW264	WORD	Input	WORD
fb_flag_dummy	%MX0.0	BOOL	Flag	BOOL
fb_flag0	%MD1	DWORD	Flag	DWORD
fb_flag1	%MB8	BYTE	Flag	BYTE
fb_flag2	%MX4.8	BOOL	Flag	BOOL
fb_flag_string	%MW5	STRING	Flag	STRING
fb_flag3	%MX45.8	BOOL	Flag	BOOL
fb_flag4	%MX45.9	BOOL	Flag	BOOL
fb_flag5	%MB92	BYTE	Flag	BYTE
fb_flag6	%MX46.8	BOOL	Flag	BOOL
fb_flag7	%MB94	SINT	Flag	SINT
fb_flag8	%MB95	SINT	Flag	SINT
fb_flag_sting63	%MW48	STRING63	Flag	STRING63
fb_flag9	%MW80	INT	Flag	INT
fb_flag10	%MD41	DINT	Flag	DINT
fb_flag11	%MB168	USINT	Flag	USINT
fb_flag12	%MW85	UINT	Flag	UINT
fb_flag13	%MD43	UDINT	Flag	UDINT
fb_flag14	%MD44	REAL	Flag	REAL
fb_flag15	%MW90	WORD	Flag	WORD
fb_var1	%MD46	DWORD	Flag	DWORD

OK   Abbrechen

3. export; in addition Resources Tab -> PLC Configuration -> Hardware Configuration -> Import / Export PFC configuration

The exported config file can now be imported into the polar bear.

	Type	Parent	Name	IO-Type	DataType	Comment	PIAssignment
1	Type	Parent	Name	IO-Type	DataType	Comment	PIAssignment
2	KBUS	0750-0402					PLC
3	KBUS	Elm.1	DI_01	Input	BOOL	Ch_1 Digital input	
4	KBUS	Elm.2	DI_02	Input	BOOL	Ch_2 Digital input	
5	KBUS	Elm.3	DI_03	Input	BOOL	Ch_3 Digital input	
6	KBUS	Elm.4	DI_04	Input	BOOL	Ch_4 Digital input	
7	KBUS	0750-0504					Modbus TCP/
8	KBUS	Elm.1	DO_01	Output	BOOL	Ch_1 Digital output	
9	KBUS	Elm.2	DO_02	Output	BOOL	Ch_2 Digital output	
10	KBUS	Elm.3	DO_03	Output	BOOL	Ch_3 Digital output	
11	KBUS	Elm.4	DO_04	Output	BOOL	Ch_4 Digital output	
12	KBUS	0753-0646					PLC
13	KBUS	Elm.1		Input	BYTE	First Byte of 24	
14	KBUS	Elm.2		Output	BYTE	First Byte of 24	
15	FBVarSlave		fb_in0	Input	DWORD	DWORD	
16	FBVarSlave	bit.0		Input	BOOL	bit0	
17	FBVarSlave	bit.1		Input	BOOL	bit1	
18	FBVarSlave	bit.2		Input	BOOL	bit2	
19	FBVarSlave	bit.3		Input	BOOL	bit3	
20	FBVarSlave	bit.4		Input	BOOL	bit4	
21	FBVarSlave	bit.5		Input	BOOL	bit5	
22	FBVarSlave	bit.6		Input	BOOL	bit6	
23	FBVarSlave	bit.7		Input	BOOL	bit7	
24	FBVarSlave	bit.8		Input	BOOL	bit8	
25	FBVarSlave	bit.9		Input	BOOL	bit9	
26	FBVarSlave	bit.10		Input	BOOL	bit10	
27	FBVarSlave	bit.11		Input	BOOL	bit11	
28	FBVarSlave	bit.12		Input	BOOL	bit12	
29	FBVarSlave	bit.13		Input	BOOL	bit13	
30	FBVarSlave	bit.14		Input	BOOL	bit14	
31	FBVarSlave	bit.15		Input	BOOL	bit15	
32	FBVarSlave	bit.16		Input	BOOL	bit16	
33	FBVarSlave	bit.17		Input	BOOL	bit17	
34	FBVarSlave	bit.18		Input	BOOL	bit18	
35	FBVarSlave	bit.19		Input	BOOL	bit19	
36	FBVarSlave	bit.20		Input	BOOL	bit20	
37	FBVarSlave	bit.21		Input	BOOL	bit21	
38	FBVarSlave	bit.22		Input	BOOL	bit22	
39	FBVarSlave	bit.23		Input	BOOL	bit23	
40	FBVarSlave	bit.24		Input	BOOL	bit24	
41	FBVarSlave	bit.25		Input	BOOL	bit25	
42	FBVarSlave	bit.26		Input	BOOL	bit26	
43	FBVarSlave	bit.27		Input	BOOL	bit27	
44	FBVarSlave	bit.28		Input	BOOL	bit28	
45	FBVarSlave	bit.29		Input	BOOL	bit29	

Konfiguration ⊕

6.14.2 WAGO PFC e!Cockpit

This component behaves exactly like the [WAGO PFC CODESYS](#)[703] . The only difference is the EisBär internal import.
The Eisbär driver is the Modbus master and WAGO is the Modbus slave.

1. A Modbus_Master must be created and connected in e!Cockpit and MODBUS (TCP) must be set.
   This represents the Eisbär Modbus master driver.

2. The IP address of the Wago controller (slave) must be entered in the EisBear

3. Double-click on the controller to display the detailed view.

4. By marking the controller, "MODBUS-SLAVE" is displayed under network functions. Export" exports the e!Cockpit CSV file that can be imported into the Eisbär e!Cockpit driver.

Sample content of an eCockpit CSV export file:

DataPointName;IecDataType;IsExpliciteChannel;WriteFunctionCode;ReadFunctionCode;WriteAddress;ReadAddress;WriteBitPosition;ReadBitPosition
wWatchdogCommand;WORD;True;6;0;64000;0;0;0
wWatchdogTimeOut;WORD;True;6;3;64001;64001;0;0
wWatchdogState;WORD;True;0;3;0;64002;0;0
wWatchdogConfig;WORD;True;6;3;64003;64003;0;0
wWatchdogTcpConn;WORD;True;6;3;64004;64004;0;0
wLEDErrorCode;ARRAY[0..2] OF WORD;True;0;3;0;64010;0;0
wPlcState;WORD;True;0;3;0;64013;0;0
wOrderNumber;ARRAY[0..3] OF WORD;True;0;3;0;64016;0;0
wFirmwareVersion;WORD;True;0;3;0;64020;0;0
wHardwareVersion;WORD;True;0;3;0;64021;0;0
wFirmwareloaderVersion;WORD;True;0;3;0;64022;0;0
wProcessImageVersion;WORD;True;0;3;0;64023;0;0
wLengthProcessimageInput;WORD;True;0;3;0;64064;0;0
wLengthProcessimageAnalogueInput;WORD;True;0;3;0;64065;0;0
wLengthProcessimageDigitalInput;WORD;True;0;3;0;64066;0;0
wLengthProcessimageOutput;WORD;True;0;3;0;64067;0;0

wLengthProcessimageAnalogueOutput;WORD;True;0;3;0;64068;0;0
wLengthProcessimageDigitalOutput;WORD;True;0;3;0;64069;0;0
wMacId1;ARRAY[0..2] OF WORD;True;0;3;0;64032;0;0
wConst1234;WORD;True;0;3;0;64160;0;0
wConstAAAA;WORD;True;0;3;0;64161;0;0
wConst5555;WORD;True;0;3;0;64162;0;0
wLiveRegister;WORD;True;0;3;0;64250;0;0
Application.Wohnung_OG_Licht.S1;BOOL;False;0;3;0;0;0;0
Application.Wohnung_OG_Licht.O1;BOOL;False;0;3;0;0;0;1

6.14.3 Siemens LOGO!

This invisible driver component is intended for connecting the Siemens LOGO! 8.FS4. The PLC communicates via the network using the Modbus TCP protocol. LOGO! software V8.1 or higher is required.

Data points of the component

Name	Type	Function
Unique query	Input	Have an on/Aus-Flanke at this input is a unique query of values is triggered.
Cyclically query	Bidirectional	Here is whether or not the Cyclic query output is active. The Cyclic query about an OFF signal is deactivated. With an ON signal is activated.
Query cyclically - break [s]	Bidirectional	Here is the set interval between two queries. An integer value is sent to the data point changes the pause time accordingly. This is, for example, with a touch input value possible.
Diagnostics [Text]	Output	Here, error messages are output. This may, for example, be associated with the component " "Log window willbe displayed. **Caution: Diagnostic or debug outputs are only in the event of failure. Please use only with consultation with the support team! This can significantly affect the performance when using the service.**
Ping status	Output	Here is an ON signal is output when the last ping check is successful.
Dynamically	Folder	In the Folder dynamically, the input and output channels are displayed. Depending on the type, different data points provided. The number is defined in the Properties window.
Once send	Input	Have an on/Aus-Flanke at this input is a unique send the values is triggered.
Send a value change	Bidirectional	If this data point, it is a true until the LOGO! Sent when a value changes.
Send cyclically	Bidirectional	Spend here is whether or not the cyclic sending is active. The cyclic sending over an OFF signal is deactivated. With an ON signal is activated.
Send cyclically - break [s]	Bidirectional	Here is the set interval time between 2 send telegrams. An integer value is sent to the data point changes the pause time accordingly. This is, for example, with a touch input value possible.
Driver On/Off	Bidirectional	The driver is activated via an ON signal. The default state of the driver from the properties of the server at the start of the simulation or output.
Driver Status	Output	If the connection is successful, the Modbus Gateway is an ON signal is output.

Properties of the component

Name	Standard	Function
IP address	127.0.0.1	This is the IP address of the LOGO! Module.
Device ID	0	Registration of the device ID
Port	502	This is the port address of the LOGO! Module Set. The default address is 502.
Timeout [ms]	5000	After a time, the query is waiting for a response. Then an error message will be displayed.
Cyclic Ping Check		If there is an interruption in the connection after the "Ping Check Interval" time, an error message is output.
Ping Check interval [s]	30	Cycle time for the connection test (Ping Check). There are 1-30 seconds.
Query cyclically - break [s]	5	Cycle time of the queries. The default setting of "5" is started every 5 seconds a query of all values.
Query cyclically - Auto Start	X	This is the automatic start of the queries is activated. The queries then restart automatically at simulation start in the editor and when starting the server.
Send cyclically - break [s]	30	Cycle time of sending. The default setting of "30" appears every 30 seconds started sending all values.
Send cyclically - Auto Start		This is the automatic option is selected. Sending then starts automatically when you start the server and at simulation start in the editor.
Send a value change	X	This selection is set, we directly on the LOGO! Sent when an input value changes.
Number of digital inputs (I)	24	Set the number of digital inputs that are to be used in the project.
Number of digital outputs (Q)	20	Set the number of digital outputs, which are to be used in the project.
Number of digital memory (M)	64	Set the number of digital markers, which are to be used in the project.
Number of variable digital memory (V)	2000	Set the number of variables, the digital markers are to be used in the project.
Number of analog inputs (AI)	8	Set the number of analog inputs to be used in the project.
Number of analog outputs (AQ)	8	Set the number of analog outputs that are to be used in the project.
Number of analog memory (AM)	64	Set the number of analog markers, which are to be used in the project.
Number of variable analog flag (VW)	425	Set the number of variables, the analog markers are to be used in the project.
Use old library		This property can be set to use an older communication type.
Driver On/Off	X	Drivers on or off.

Configuration of the LOGO!

In the Siemens LOGO!Soft Comfort software is first to integrate the logo itself. In the tab "power plant project" is about a double-click the device selection will be opened. In the selection of the LOGO! 8.FS4 must be the correct IP address / Standard gateway of the PLC can be set. (Setting of the device in accordance with the manual p. 70/71 and p. 110/111). The entry is confirmed with "OK".

After confirming the connection in the "Power Plant Project" - view is displayed.

In order to enable the Modbus connection via a right-click on the LOGO! In the selection "Add connection" and "Modbus Server Connect." The interface is inserted.

In the window that opens, then there is no need to entries are made. With a confirmation by clicking "OK", the connection is added.

In the "Power Plant Project" - view is now on the LOGO! A yellow ⊥ is displayed. The project must then be in the LOGO! Transferred and in the RUN mode.

For manual input, a double-click on the yellow icon to return to the Connection view.

Important:

The logo project must be edited below from this link. Not in the "Chart Mode" tab! The diagram should be gray, this editor by double-clicking on the logo is enabled.

6.14.4 Honeywell MB-Secure [x2500]

This is an invisible driver component, which is designed for the Honeywell MB-Secure. Depending on the MB-Secure license, different data points can be used. Honeywell distinguishes 3 license levels:
#1: Area states and events Detector group states and events Macro control.
#2: Area states and events Detector group states and events Detector/input states and events Macro control Outputs directly controllable
#3: Area states and events Detector group states and events Detector/input states and events Macro control Outputs directly controllable Event streaming ZK information (user etc.)

Global Data points

Name	Type	Function
Request all states	Input	An arbitrary signal is used to start a query of all status messages.
Request all states (running)	Output	If a query is active, a true signal is output.
Request all states (last duration [ms])	Output	Output of the last query duration.
Debug [Text]	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Verbose Debug	Input	(De) Activate extended debug output. Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Dynamic	Folder	Contains folders for scopes, devices, and macros. All data points may vary depending on the device.
Debug Events	Input	When activated, additional event outputs are displayed.
System	Folder	Output of system information.
- Description	Output	Display of the device description.
- Serial	Output	Output of the version of the serial number from the bridge.
- Version (Bootloader)	Output	Output of the version of the boot loader.
- Version (Executable)	Output	Output of the version of the application.
Driver On/Off	Bidirectional	(De) Activate the component
Driver State	Output	Boolean output from driver status.
Cyclic state requests	Bidirectional	(De) Activates the cyclic status query

Properties of the component

Name	Standard	Function
IP-Address		Enter the IP address of the Honeywell.
Port	443	Setting for the communication port.
User/Client		Specification of the user name / client name
Password		Input for the password
Connection check interval [s]	30	Time interval to check the connection.
Channels	0	Opens the channel editor
Cyclic state requests	x	(De) Activates the cyclic status query
Status request intervall [s]	60	Setting for the polling interval in seconds.
Driver On/Off		(De) Activate the component

6.14.4.1 Setup MB-Secure

Open IQ PanelControl - Shell

Under <General> select the option <Panels> and create a new panel with the <PLUS> button (select in the combo box "MB-Secure 3000")

Enter or search the IP address (magnifying glass on the right) and Save (diskette symbol)

Use <Receive Configuration> to read out the current configuration from the alarm system.

Switch to the <Configurations> tab and open the IQ PanelControl by double-clicking on the newly downloaded configuration

Change to the <System> tab

Select links under <Remote Applications> "Remote Clients"

There, select the user WINMAG1 and select "Active" below, assign a password and select "OPIF" as <Client type> and save (floppy disk symbol on the left)

Save the entire configuration (floppy disk icon above - specify a comment)
Switch back to the IQ PanelControl shell, select the new configuration (check comment) and write to the system using <Send newest configuration>.

6.14.5 Daikin Air Conditioning

This invisible driver component is intended for connection to "Daikin air conditioners". Depending on the device, individual data points cannot be used.

Global data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**
Extended diagnosis	Input	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service**
Driver On/Off	Bidirectional	(De)Activating the component
Connection status	Output	Shows whether the connection to the device exists (true) or not (false).

Data points of the Daikin air conditioning systems

Name	Type	Function
Fan movement	Bidirectional	The fan movement can be controlled either directly via an on/off signal or via an input at the corresponding data point: 0 = Off 1 = Vertical fan movement 2 = Horizontal fan movement 3 = Horizontal and vertical fan movement
Fan rate	Bidirectional	The fan rate can be controlled either directly via an on/off signal or via an input at the corresponding data point: A = car B = Silent mode (Not supported by Daikin Emura FVXS) 3 = Level 1 4 = Level 2 5 = Level 3 6 = Level 4 7 = Level 5
Mode	Bidirectional	The mode can be controlled either directly by an on/off signal or by an input at the corresponding data point: 0 = Auto (temperature range 18-31°C) 1 = Auto (temperature range 18-31°C) 2 = Dehumidify 3 = Cold (temperature range 18-33°C) 4 = Hot (temperature range 10-31°C) 6 = Ventilation 7 = Auto (temperature range 18-31°C)
Power	Bidirectional	This can be used to switch the air conditioning on and off
Target Humidity	Bidirectional	Possibility to set the target humidity for the current mode (not supported by FTXG-L and FVXS).
Target temperature	Bidirectional	Depending on the mode, the target temperature can be set here. The input range is between 10 and 41°C.

Properties of the component

Name	Standard	Function
IP address		Enter the IP address of the Daikin air conditioner.
Status Check Interval [s]	1800	Setting for the update time in seconds.
Driver On/Off		(De)Activate the component.

Compatible devices:

wireless adapters	device name	device series
BRP069B42	Urura Sarara	FTXZ-N
BRP084A42-1	Stylish	CTXA-A*; FTXA-A*; FTXA-B*
BRP069B41	Emura	FTXJ-M*
BRP069B41	Perfera	CTXM-N; FTXM-N
BRP069B45	Comfora	FTXP-M
BRP069B45	Sensira (Austria)	FTXF-A
BRP069B45	Siesta (Germany)	ATXF-A

6.14.6 Clage

This invisible driver component is designed for connecting Clage instantaneous water heaters.

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window" .**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	The data points of the units are displayed here. There are subfolders for the functions per unit. Depending on the unit, there may be different functions and display options. The different data are combined in folders: • General: Data about the unit itself • Info: Errors, setpoint temperature, etc. • Configuration: Load shedding, maximum flow rate etc. • Status: temperatures, power consumption etc. • Consumption: duration, energy
Extended Diagnosis	Input	(De)Activates the extended debug output. **Attention: Diagnostic or Debug - Outputs are only intended for error cases. Please use only with consultation of the support team! If used, they can significantly affect the performance of the service**
Last response	Output	Outputs the last response from the Clage system.
Driver On/Off	Bidirectional	(De)activates the component
Connection status	Output	Indicates whether the connection exists (true) or not (false).

Properties of the component

Name	Default	Function
Connection		Enter the Clage login data.
Channels	0	All devices are imported and displayed here.
Query interval (status) [s]	10	Setting for the polling interval in seconds.
Polling Interval (Real Time) [s]	1	Setting for the polling interval in seconds in the event that water is drawn off.
Driver On/Off		(De)Activation of the component.

6.14.7 frogblue

This driver is used to connect the frogblue technology.

Data points

Name	Type	Function
Debug [Text]	Output	Error texts are output here. These may e.g. with the "Log window" component. **Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
Debug verbose	Input	(DE) Enables extended debug output. **Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
Dynamic	Folder	The dynamic data points are created in this folder. For all frogs there are 3 inputs: switching, trigger and value. The user has to know for himself which datapoint he can use. The status outputs are located in the Devices folder and are labeled with switching and value. An output is only made after changing the value of the device. There is no polling.
Driver On/Off	Bidirectional	(De) Activate the component.
Connection State	Output	Returns the current connection status as an on / off signal.

Properties of the component

Name	Standard	Function
Connection	...	In this menu the connection is set. For the COM port the interface (USB) is selected. The baud rate must be selected according to the manufacturer's specifications. Same applies to stop bits and parity.
Message	0	Here the messages are imported. These are the different switching commands. Here both the predefined and the self-created commands are displayed.
Devices	0	Here the learned devices are imported.
Driver on / off		Driver on or off

The froglink stick needs to be changed to text mode. (First start the program, then plug in the stick)

frogLink in frogblue Modus erkannt!

Weiter oder Modus ändern?

Text Modus: Dieser Modus sollte zusammen mit seriellen Geräten (FTDI) verwendet werden.

frogblue Modus: Der Standard Modus ermöglicht den Zugang zu und die Konfiguration von frogblue Geräten.

Weiter | Modus ändern / Aktualisieren

In preparation, the devices in the frogblue project must be released and the rooms created. (Configuration)

Then the list is exported as CSV in the device manager

The EisBaer driver then imports the messages from the frogblue stick and the devices from the CSV file.

6.14.8 Loxone

With this driver it is possible to access the LOXONE Smart Home systems (Miniserver Gen. 1 and 2). Note: Remote Connect must not be active

Data points of the component

Name	Type	function
Debug	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Debug Text Messages	Output	All received text message events are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Debug Text State	Output	All received text state events are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Debug Value State	Output	All received value status events are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Dynamic	Folder	see below
Driver On/Off	Bidirectional	(DE) Activate the component
Connection state	Output	Returns the current connection status to the Loxone system as on / off.
Verbose Debug	Input	(DE) Enables extended debug output

Properties

Name	Standard	function
Connection		The settings for communication are made here. The URL of the server, the communication port (e.g. 80 without TLS, 443 with TLS) and the user data (e.g. admin/admin) must be entered. Furthermore, a communication timeout can be defined and a device UUID (for the Eisbär client) can be generated.
Devices	0	In the device dialog, the devices are imported from the specified Loxone system and displayed, including the device hierarchy.
Driver On/Off		(DE) Activate the component

Dynamic Folder:

Below the folder "Dynamic", the data points are created to control the existing devices. Here, the device hierarchy is taken into account, with the top level mapping the rooms. Below the rooms there are two data points, which again reflect the room name and the type. There is also a subfolder with the "Categories" available in this room. The data points of the devices belonging to the various categories are very different and are listed here by way of example for a "Lighting Controller". The structure of the data points is analogous for the other types. For details refer to the Loxone documentation. In the link "Structure File" under https://www.loxone.com/dede/kb/api/ there is a PDF that describes all controls with their properties. These are shown 1: 1 in the EisBaer.

```
▲ 🗔 Dynamic
    ▲ 🗔 Rooms
        ▲ 🗔 Demo Case
            ▲ 🗔 Categories
                ▲ 🗔 Lighting
                    ● Color                                    Strings
                    ▲ 🗔 Controls
                        ▲ 🗔 Lighting Controller
                            ▲ 🗔 Commands
                                ◉ Call Scene                   Number 8-bit
                                ▶ ◈ Next Scene                 Any
                                ▶ ◈ On/Off                     On/Off
                                ▶ ◈ PRevious Scene             Any
                            ● Name                             Strings
                        ▲ 🗔 RGBW Dimmer Dimmer W
                            ▲ 🗔 Commands
                                ▶ ◈ Dim Value (0-100)          Number 8-bit
                                  ◉ Dim Value (0-255)          Number 8-bit
                                ▶ ◈ On/Off                     On/Off
                            ● Name                             Strings
                            ▲ 🗔 States
                                ● Dimming Step Width           Any
                                ▶ ● Dimm-Value (0-100)         Any
                                  ● Dimm-Value (0-255)         Number 8-bit
                                  ● Maximum Dimm Value         Any
                                  ● Minimum Dimm Value         Any
                            ● Value                            Float 64-bit
                        ▲ 🗔 RGBWDimmer Dimmer RGB
                            ▲ 🗔 Commands
                                ▶ ◈ Colortemperature - Brightness    Number 8-bit
                                ▶ ◈ Colortemperature - Temperature   UInt16
                                ▶ ◈ HSV - Hue                  UInt16
                                ▶ ◈ HSV - Saturation           Number 8-bit
                                ▶ ◈ HSV - Value                Number 8-bit
                                ▶ ◈ On/Off                     On/Off
                                  ◉ RGB - Blue                 Number 8-bit
                                  ◉ RGB - Green                Number 8-bit
                                  ◉ RGB - Red                  Number 8-bit
                            ● Name                             Strings
                            ▶ 🗔 States
                            ● Value                            Float 64-bit
```

Below the "Lighting" category is the "Controls" folder. This folder contains all controls of the "Lighting" category that are assigned to the room (in this case, the "Lighting Controller" control). Each control has the subfolders "States" and "Commands" (if available) as well as further subfolders for any associated "Subcontrols" (in this case "Colour"), which in turn are structured analogously.

The "Commands" folder contains data points to perform control-specific actions (e.g. setting a lighting scene).

The "States" folder contains data points that reflect the various control-specific states (in this case, for example, the current lighting mood).

6.14.9   Ozuno RAPIX

This driver is used to connect to RAPIX DALI Ethernet interfaces.

RAPIX also has presence detectors and pushbuttons on DALI. These devices have different profiles, e.g. different overtravel times or functionalities such as fully automatic or semi-automatic.
These profiles can be switched via the so-called XI operating flags. These must be created in the Rapix Integrator and can then be imported into the driver.
The so-called XI flags can be used to block presence detectors or also pushbuttons, e.g. individually or in groups.

Data points of the component

Name	Type	Function
Driver On/Off	Bidirectional	Switch driver on or off.
Dali	*Folder*	The following data points are available for lines 1 to 4:
- Error - Error present	Output	An "on" signal indicates whether an error is present.
- Error - Brightness(es) unknown	Output	An "on" signal indicates that the scan has not been completed and therefore not all data is present.
- Error - OK	Output	An "on" signal indicates that no error occurred during the test.
- Test result	Output	Outputs the test result in DALI format. This data point is linked to the DALI Emergency Light Manager (Dynamic-->Gateway-->Devices).
- Test trigger	Input	Test trigger in DALI format. This data point is linked to the DALI Emergency Lighting Manager (Dynamic-->Gateway-->Devices).
Dynamic	*Folder*	Here the subfolders for flags, properties and zones (see below) are created. Flags and properties are only displayed if they have been created in the RAPIX integrator.
System	*Folder*	General data points are grouped together in this folder.
- Diagnosis [Text]	Output	**Attention: Diagnostic or Debug - Outputs are only for error cases. Please use only after consulting with the support team! If used, these can significantly affect the performance of the service.**
- Event messages Controller [Text]	Output	All events of the controller are output here as text.
- Send Response [Text]	Output	Text output of responses from commands sent from the Polar Bear.
- Query status of all zones	Input	An on or off signal is used to query the status of all zones.
- Driver Status	Output	Shows if there is a connection to the gateway or not.

Data points in the zone

Name	Type	Function
Dimming Dark/bright	Input	Increases / decreases the brightness in the increment corresponding to the number sent on the data point.
Color - (10 data points)	Bidirectional	Set the corresponding color (R=red, G=green, B=blue, W=white, A=amber, F=freecolor, XY(X)=X portion of XY color space, XY(Y)=Y portion of XY color space)
Error - (8 data points)	Output	Outputs an on signal when a corresponding error is detected.
Error code	Output	Output of the error code in DALI format.
Messages [Text]	Output	Text output with all information about the zone sent by the controller.
Switching	Bidirectional	Switches the zone on/off.
Fade time [s]	Input	Possibility to set the fading time in seconds.
Value	Bidirectional	Brightness value setting with fading time.
Value direct	Bidirectional	Brightness value specification without fading time.
Target value	Bidirectional	Brightness value specification without fading time.

Properties of the component

Name	Default	Function
Server		IP address of the server
User name		User name, which was entered in RAPIX-Integrator
Password		Password, which has been entered in the RAPIX-Integrator
Zone / Scene	0	Imports the zones and scenes from the gateway.
Operating properties	0	Imports the operating properties from the gateway.
Flags	0	Imports the flags from the gateway.
Response timeout [s]	3	If no response is received within the specified time, a timeout is detected.
Dali Update Interval [min]	1	The Dali lines are polled at the set interval.
Standard fading time [s]	5	Specifies how long the colour change takes (fading time).
Send fading times at start		If this option is selected, the fading time entered above is transmitted at system startup.
Driver On/Off		(De)Enable Component

Rapix Integrator:

Rapix Integrator Flags:

6.14.10 C-Bus

The C-Bus driver is an invisible server component with the possibility to control C-Bus installations.

The available zones, groups and devices are read. The system must first be commissioned via the manufacturer's software.

Data points of the component

Name	Type	function
Dynamic	Folder	Folder Dynamic displays the outputs for the zones / groups. Depending on the type, different data points are provided.
Debug Output - Received	Output	Here, the received driver information is formatted. The output is used for diagnosis in case of faulty circuits.
Debug Output - Level	Output	Here, the received level information of the driver is output formatted. The output is used for diagnosis in case of faulty circuits.
Debug Output - Status	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Driver On/Off	Bidirectional	Driver on or off.
Connection State	Output	If the connection to the server is successful, an on signal is output.

Properties

Name	standard	function
Channels	0	Here the imported data points are listed. These then appear as sub-folders in the data point Folder Dynamic.
Connection Settings		Set here the IP address and ports for the CGate communication, or the Com-Port when using the USB interface.
CGate Update Interval [ms]	1000	During this time, the current status information is queried via CGate.
Shutter lamella steps open/close	15	Number of control commands required to open or close the slats.
Shutter moving time up/down [s]	60	Set the total travel time of the hangings here. This time is used to determine the approximate height position of the blind.
Driver On/Off		Driver on or off.

Channels

Import the configured data from the C-Gate2 tag file into the channel list. When you finally exit the editor with OK, the existing data points in Folder Dynamic are displayed in the data point window.

6.14.11 free@home

This invisible driver component is intended for connection to "free@home".
The free@home Bridge 2.0 must have at least a firmware version 2.6.x. The API must be enabled via the mobile phone APP: "free@home-Next".
This is located in the hamburger menu (bottom right), Installation Settings and then under Integrations, Enable Local API -->.

NOTE: In EisBär it is mandatory to use the username *"installer"*, even if the username has been changed. Since the free@home API does not accept any other user.
The password of the default user must be entered as password. This must be adjusted in the polar bear when changing in free@home.

Data points of the component

Name	Type	Function
Debug [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window" .**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	The data points of the devices are displayed here. There are subfolders for the functions per device. There are different functions and display options depending on the device.
Verbose Debug	Input	(De)Activates the extended debug output. **Attention: Diagnostic or Debug - outputs are only intended for error cases. Please use only with consultation of the support team! If used, they can significantly affect the performance of the service.**
Eventstream Status	Output	Display,
Driver On/Off	Bidirectional	(De)Activate Component
Connection status	Output	Indicates whether the driver is On (true) or Off (false).

Properties of the component

Name	Default	Function
Connection settings		Enter the Free@Home IP address and the login data for the user**"installer"**.
Channels	0	All devices are imported and displayed here.
Polling interval [s]	60	Setting for the update time in seconds.
Driver On/Off		(De)activates the component.

Channel Editor

Name	Function
Import from SysApp	This reads out the gateway and imports all devices. The amount and scope of the imported devices and functions depends on whether "Hide invalid functions" is set or not.
Import / Export	The imported devices can be saved or loaded with this function.
Delete	**All** devices and functions are deleted.
Hide invalid functions	If this option is not set, all data points are imported, even if no function is stored.

Attention:
The data points do not appear in the "Dynamic" folder until the check mark for "Use" is set.

6.14.12 ABB CMS 600 (Modbus RTU)

Data points of the component

Name	Type	function
Single request	Input	Triggers a single query from the CMS system
Cyclic request	Bidirectional	Starts / stops the cyclical data query.
Cyclic request - delay [s]	Bidirectional	Setting the pause time between 2 queries in seconds
Detailed diagnosis	Bidirectional	(De)Activates the extended debug output. **Attention: Diagnostics or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, these can significantly impair the performance of the service**
Diagnosis [Text]	Output	Attention: Diagnostics or debug outputs are only intended for errors. Please only use after consulting the support team! These can significantly affect the performance of the service when used.
Reset energy groups	Input	Resetting the energy values.
Max values reading interval [min]	Input	Setting the reading interval in minutes for the voltage peaks
Reset min / max values	Input	Reset the min / max values for each channel.
Voltage L1-L2 [V]	Input	Input for the measured voltage on the corresponding path.
Voltage L1-N [V]	Input	Input for the measured voltage on the corresponding path.
Voltage L2-L3 [V]	Input	Input for the measured voltage on the corresponding path.
Voltage L2-N [V]	Input	Input for the measured voltage on the corresponding path.
Voltage L3-L1 [V]	Input	Input for the measured voltage on the corresponding path.
Voltage L3-N [V]	Input	Input for the measured voltage on the corresponding path.
Strom Sum L1 [A]	Output	Returns the total current of the phase
Strom Sum L2 [A]	Output	Returns the total current of the phase
Strom Sum L3 [A]	Output	Returns the total current of the phase
Strom Sum N [A]	Output	Outputs the total current of the neutral conductor
Connection state	Output	Displays whether the connection is established (true) or not (false).
Trigger holding	Input	(De) Activate value storage.

Properties

Name	Standard	function
Channels	0	One channel can be created here for each sensor.
Connection	Serial...	Setup for communication ([Modbus Serial](#) [608] / [Modbus TCP](#) [571])
Cyclic request - delay	1	Setting the pause time between 2 queries in seconds
Cyclic request - Autostart		Starts / stops the cyclical data query.
Voltage L1-N [V]	230	Specify the voltage for the calculation if there are no measured values.
Voltage L2-N [V]	230	Specify the voltage for the calculation if there are no measured values.
Voltage L3-N [V]	230	Specify the voltage for the calculation if there are no measured values.
Voltage L1-L2 [V]	400	Specify the voltage for the calculation if there are no measured values.
Voltage L2-L3 [V]	400	Specify the voltage for the calculation if there are no measured values.
Voltage L3-L1 [V]	400	Specify the voltage for the calculation if there are no measured values.
Max-Value read interval [min]	1	Readout interval in minutes for the voltage peaks
Use old library		This option realises the processing of Modbus data via a newer API.
Output NULL to network in the event of an error	X	Registers that cannot be read or if there is another error, the outputs are set to NULL. This clears the value displays.
Driver On/Off		(De) Activate value storage.

6.14.13 ABB M2M-Modbus RTU

Data points of the component

Name	Type	function
Single request	Input	Trigger input for a single request
Cyclic request	Bidirectional	Turn on/off of Cyclic requests.
Cyclic request - Delay [s]	Bidirectional	Set delay for Cyclic request.
Debug [Text]	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Driver On/Off	Bidirectional	Drivers on or off.
Dynamic	Folder	Contains the data points of the devices
Connection state	Output	If connection is ok, you will get a true, else a false.

Properties

Name	Standard	function
Channels	0	Edit the Devices
Connection	Serial...	Setup for communication (Modbus Serial ^{608} / Modbus TCP ^{571})
Cyclic request - Delay [s]	1	Setting the pause time between 2 queries in seconds
Cyclic request - Autostart	x	Starts / stops the cyclical data query.
Driver On/Off		Switch driver on or off.

6.14.14 ABB M4M

Data points of the component

Name	Type	Function
Single query	Input	Triggers a single query of the M4M system
Query cyclically	Bidirectional	Starts/stops the cyclical polling of data.
Query cyclic - Pause [s]	Bidirectional	Setting the pause time between 2 queries in seconds
Diagnosis [Text]	Output	**Attention: Diagnosis or Debug - outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Extended diagnostics	Entrance	(De)Activate the extended diagnostics.
Driver On/Off	Bidirectional	Switch driver on or off.
Connection status	Output	Indicates whether the connection exists (true) or not (false).

Properties of the component

Component name	Standard	Function
Channels	0	The devices used are created in this editor.
Connection		Selection of the communication type(Modbus-Serial[608] / Modbus-TCP[579])
Read out scaler registers		The registers for scaling are only read out by setting this option.
Query cyclically - Pause [s]	1	Setting the pause time between 2 queries in seconds
Query cyclically - Autostart	set	Starts/stops the cyclical query of the data.
Use old library		This option is used to process the Modbus data via a newer API.
Output NULL to network in case of error	X	Registers that cannot be read or if there is another error, the outputs are set to ZERO. This clears the value displays.
Driver on/off		Switch driver on or off.

6.14.15 ABB Sigma i-Bus

A connection to the SIGMA i-Bus Modular can be established with the aid of the "SIB connection" component. The component is unvisible, d. H. the operator does not see this component in the client.

Data points of the component

Name	Type	function
Release All Outputs	Input	Triggers the release of all outputs.
Release All Groups	Input	Triggers the release of all groups (01-99)
Outputs	Folder	Output 001 - 252; Status is output or switching command sent to output.
Update Outputs	Input	Triggers the update of the groups.
Block Outputs	Folder	Output blocking 001 - 252; Blocking status of the output is output.
Release Outputs	Folder	Output Enable 001 - 252; Output is released.
Debug	Output	Diagnosis output for error analysis. Can be output to a value-dependent text or the log window. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Inputs	Folder	Input 001 - 252; Status is output or switching command sent to input.
Update Inputs	Input	Triggers the update of the inputs.
Groups	Folder	Group 01 - 99; Status is output or switching command sent to group.
Update Groups	Input	Triggers the update of the groups.
Block groups	Folder	Block group 01 - 99; Blocking status of the group is output.
Group release	Folder	Group Release 01 - 99; Group is released.
Monitor	Folder	Monitor 001 - 252; Status of monitor address is output.
Driver On/Off	Bidirectional	Driver status indicator and driver on or off.
Connection State	Output	Displays the status of the SIB driver.
Set Time	Input	This object can be used to set the time of the SIGMA i-Bus control panel.

Properties

Name	Standard	function
COM-Port		This parameter defines the COM interface to which the SIGMA i-Bus central unit is connected.
Driver On/Off		Enables the SIB driver.
Normal Write Delay [ms]	100	Standard write delay
Write Delay 1 [ms]	100	Write delay for the 1. repetition
Write Delay 2 [ms]	100	Write delay for the 2. repetition
Write Delay 3 [ms]	100	Write delay for the 3. repetition
Write Delay 4 [ms]	100	Write delay for the 4. repetition
Write Delay 5 [ms]	100	Write delay for the 5. repetition

6.14.16 Fidelio FIAS [x3000]

Oracle FIAS (Fidelio Interface Application Specification) is a protocol specification that is used by various PMS systems in the hospitality industry for data exchange.
If this component is created, it counts as 3000 components.
The basis is the XML Interface V1.1.0 for Fidelio 8.7.x.

Data points of the component

Name	Type	function
Update Datapoints at startup	Bidirectional	If this option is set, all information about the created rooms will be requested by the PMS system at startup. If not, the last status of the last execution is considered current, and only future messages will affect the status.
Debug	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Resync	Input	Re-sync the driver
Driver On/Off	Bidirectional	Driver on or off.
Connection State	Output	Indicates if the component is connected to the PMS.

Characteristics

name	Standard	Function
Rooms	0	Rooms require a unique room number, a room name and a maximum permitted number of guests. The rooms available in the PMS should be imported (XML file) or created here.
Server IP		IP address of the Fidelio server. The IP address of the Fidelio server via which the PMS system can be reached is entered here. You can obtain this address from the administrator of the respective system.
Server Port	5000	Port of the Fidelio server. You can obtain the port from the administrator of the respective system.
Message coding (code page)	850	Enter the code page to be used here (e.g. 850) or the corresponding name (e.g. ibm850).
Metadata in message text		Determines whether notifications to guests are displayed with the date of receipt and recipient name, or whether only the text of the message appears.
Class-Of-Service data points		Class-Of-Service is a room property that traditionally consists of an enum of four values: 0: Barred 1: Local 2: National 3: No Restrictions
Default language	English	Setting the language.
Set data points at start		If this option is set, all information about the rooms created is requested by the PMS system at startup. If not, the last status of the last execution is considered current and only future messages have an influence on the status.
Time check-in	12	Hour of the day when the check-in should take place.
Time check-out	12	Hour of the day when the check-out should take place.
Driver On/Off	x	Switch driver on or off.

Rooms
Opens the editor for creating / importing rooms into the Fidelio component.

Rooms require a unique room number, a room name and a maximum permitted number of guests. The rooms available in the PMS should be imported or created here.

Virtual rooms and room combinations: Opera allows you to create virtual rooms (409CR ...) and combine rooms to create special units such as Combination Rooms (409CR..)

Opera room data: On the Opera side, rooms are identified by room names and line numbers. These line numbers serve as unique identifiers in the FIAS interface.

FIAS interface: The FIAS interface transfers the room numbers (line numbers) as identifiers, but they must not contain letters but only numbers.

Adaptation of the room numbers: On the Opera side, the line numbers must be adjusted accordingly to ensure that they meet the requirements of the FIAS interface. e.g. for 409CR - 1409.

When checking in, all rooms belonging to this "virtual room" will still be checked in, but at the same time room 409CR will also be checked in, which can then be used as a logical link on the EisBaer side in order to be able to group the rooms together for control purposes.

In the Class of Service Editor, you can freely configure which events should occur when the Class Of Service is notified by configuring the values when a corresponding Class Of Service is received.

In the above case, if 0 (Barred) is received on the corresponding SP of the room, a Boolean On would be sent, and if another Class Of Service is set, an Off would be sent. Accordingly, the SP "National" belonging to the room would send the unsigned value 20 when the Class Of Service is set to 2 (National), or 0 if another Class Of Service is set.

Shared Properties
The shared properties (SP) can be used to connect the component to other polar bear components (displays, buttons, other bus systems, etc.).
The basic structure of the SPs can be seen in Figure 1.

Dynamic
Below Dynamic, the individual rooms created / imported in the Room Editor are listed. Each room in turn has its own shared properties, which are explained below.

Class of Service

Class of Service contains the four SPs that have been configured in the Class Of Service Editor. If e.g. for the room "Lobby" Class of Service set to "National", the value 20 is sent on the SP National.
Guests

The guests are created under Guests. The number of guests available per room depends on the number of rooms per Room Editor. If it is a room-based system, one guest per room is sufficient, but then only one (main) guest can send messages, and only one person can be located.

• The existing SPs per guest are:

- Check-In Date: Check-in Date
- Check-out date: Check-out date
- First Name: First name of the guest
- -Language: language of the guest. Can be used to change the polar bear client language.
- Location Request: A request for the whereabouts of this guest can be executed. If an up-to-date information is available in the PMS, it will be displayed.
- Location Response: This is the SP where the guest's location is displayed when a request is triggered.
- Locator Off: With Locator Off, information about the location of the guest in the PMS can be deleted.
- Locator On: By setting a string to this SP, the PMS is informed that the guest is at the location that was sent to that SP. e.g. By sending "in the room" to this SP in the PMS the string "in the room" is stored in the field of the guest's location.
- Name: Last name of the guest
- Reservation Number: This is a unique ID of the guest shared by the PMS.

Message

```
∨ 🖥 Dynamic
   > 🖥 Bar
   ∨ 🖥 Lobby
      > 🖥 Class Of Service
      ∨ 🖥 Guests
         > 🖥 Guest 1
         > 🖥 Guest 2
      ∨ 🖥 Message
         🟢 Delete              On/Off, DataPointBooleanValue
         🔴 Receiver            Strings
         🔴 Text                Strings
         🔴 Timestamp Date      DataPointDateValue
         🔴 Timestamp Time      DataPointTimeValue
      > 🖥 RoomMaidState
   > 🖥 Raum 001
   > 🖥 Raum 002
```

The Eisbär Fidelio component supports receiving messages from the PMS. Each room has a display for messages listed in chronological order. As soon as a message is acknowledged, the next message is displayed.

- Delete: If pressed, the currently displayed message is acknowledged and the next one displayed, if there are more.
- Receiver: recipient of the message
- Text: text of the message
- Timestamp Date: Date of receipt
- Timestamp Time: time of reception

RoomMaidState

Under RoomMaidState the state of the room can be set / viewed.

The Maid State "State" is a standardized enum. The possible values and their meaning are:

1: Dirty/Vacant

2: Dirty/Occupied

3: Clean/Vacant

4: Clean/Occupied

5: Inspected/Vacant

6: Inspected/Occupied

- DoNotDisturb: Indicates whether the Do not Disturb flag is set in the PMS
- Maid: Maid is an optional ID that can be specified when setting the room condition. This can for example identify who has cleaned / inspected the room.
- State: This displays the current state of the room according to the enum. By offering the guest the option to set the state to dirty / occupied, a make Uo room function can be realized.

6.14.16.1 Beispiel Sporthalle

This is a minimal demo that shows how to use the Class of Service to set the illuminance. It is assumed that the lighting is set via a controller.

As an example, a room called "Gymnasium" has been created in the Room Editor:

In this room you can according to the booking system guests check in and out. Since it is assumed that an organizer books the sports hall, the maximum number of guests checked in has been set to 1.

The default is that you can set the lighting depending on the booking on 300 lux, or 500 lux. In order to realize this, the Class of Service SPs have been adapted for this application. Here, Barred was used

for out, National for 300 lux, and No Restrictions for 500 lux. The off-value has been set to no value, so no value is triggered by the old class of service if it changes.

Class Of Service	Datapoint Name	On Value	Off Value
Barred	Barred	0	
Local	Local		
National	National	300	
No Restrictions	No Restrictions	500	

Class Of Service Editor ... OK / Cancel

Now the corresponding SPs can be connected to the controller one after the other:

If the PMS receives notification that room number 0 (sports hall) has Class of Service 0 (Barred), then the controller is set to 0. If Class of Service 2 (National) comes up, the controller is set to 300. If Class of Service is 3 (No Restrictions), the slider is set to 500. Class of Service 1 (Local) was not used for this and is available for other applications.

6.14.17 Fidelio Room Info [x3000]

This component is used to read out appointments for the different rooms of a Fidelio system.

Data points of the component

Name	Type	function
Sync Response	Output	Over it the complete answer of the query is given out as XML text.
Debug	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Calendar CSV Import	Output	Must be connected to the calendar. Over here, the appointment information is sent to the calendar.
Sync now	Input	Starts a manual query directly.
Driver On/Off	Bidirectional	(DE) Activate the component

Properties of the component

Name	Default	Function
Room mapping	0	In this editor the mappings between the Fidelio room ids and the corresponding calendar outputs (names) can be made. Normally a 1:1 match is performed (Fidelioname = output name). However, if the option "Add event name to calendar output name" is enabled, the calendar output name must match the convention "Fidelio room name_event name". This makes it possible to divide a Fidelio room (e.g. gym) into separately controllable individual areas (e.g. Field1, Field2, ect.).
Add event name to calendar output name		If enabled, the event name separated by "_" is added to the room ID to determine the calendar output to be switched.
Adjust start time [hour]	4	Defines the start time (hour of the day) from which automatic synchronization with the Fidelio system should occur.
Adjustment end time [hour]	20	Defines the end time (hour of the day) at which the automatic adjustment with the Fidelio system should end.
Adjustment Interval [min]	10	Defines the polling interval (in minutes) at which the automatic adjustment with the Fidelio system should take place.
Adjustment period [days]	1	Defines the query period (how many days should be included in each query).
Check-In Time [hour]	16	Hour of the day when the check-in should take place.
Check-Out Time [hour]	11	Hour of the day when the check-out should take place.
FIAS User		Enter the FIAS user name
FIAS Password		Enter the FIAS user password
FIAS Server URL		Enter the complete FIAS Server URL
Include events	X	
Include guest reservations		
Reply language format	de-DE	Selection option for the language used by the system to communicate with the Fidelio.
Add Event Info Board	X	Option to add this information to the description in the calendar. (see example below)
Add Event ID	X	Option to add this information to the description in the calendar. (see example below)
Add number of participants	X	Option to add this information to the description in the calendar. (see example below)
Add profile name	X	Option to add this information to the description in the calendar. (see example below)
Add status	X	Option to add this information to the description in the calendar. (see example below)
Add Room ID	X	Option to add this information to the description in the calendar. (see example below)
Add timestamp	X	Option to add this information to the description in the calendar. (see example below)
Driver On/Off	X	(De)activate the component

Example calendar entry with Description:

Betreff:	Wettkampf - Judo Club Wohlen ...
Start-Datum:	10.01.2019 11:00:00
End-Datum:	10.01.2019 18:00:00
Start-/End-Wert:	✓ Start-Wert senden ✓ End-Wert senden
Kanal:	☐ (Keine) ∨
Beschreibung:	Info = Judo Club Wohlen ...

Ok   Wiederholung   Zurück in Serie   Abbrechen   Löschen

Info = Judo Club Wohlen
EvenId = 164494
Pax = 32
Profilename = Judo Club Wohlen
Status = Definitve
RoomId = 1101
Timestamp = 10.01.2019 14:46:32

6.14.18 Lutron [x200]

If this component is created, it counts as 200 components.

Properties

Name		function
Devices	0	Opens the editor for creating the devices. This is not a complete device, but for the sake of flexibility, individual components (A device usually consists of several components) configured. Each component must have a (unique) name, the Lutron Integration ID of the associated device, the component number, and the type of component. At the moment, only key-panel components are supported.
Connection	Telnet...	Setting the Lutron connection. At the moment, only Telnet is supported.
Driver On/Off		This can be used to set whether the component should be active when the system is started.

Data points of the component

Name	Type	function
Update	Input	Triggers a new query.
Debug	Output	General debug. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Debug - Sent Messages	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	In the folder "Dynamic", a sub-folder is created for each component defined in the channels.
- Device (Type Panel-Button)		
-- Button pressed/released	Bidirectional	Pressing "switch / released" displays the current status according to the messages received, provided that this is a Pressed / Released message. In addition, a Pressed and Released message can be sent here (depending on the Boolean value sent to the component via the SP).
-- Button hold/released	Bidirectional	"Hold / Release switch" displays the current status according to the messages received, provided it is a Hold / Hold Released message. In addition, a Hold and Hold-Released message can be sent over this (depending on the Boolean value sent to the component via the SP).
-- Button Multi Tap	Bidirectional	The "Multi-operation switch" displays the current status according to the messages received, provided that it is a multitap message. In addition, a multitap message can be sent if a true is sent via the SP to the component.
- Device (Type Panel-LED)		
-- Led on/off	Bidirectional	"LED on / off" displays the current status of the LED according to the received messages, provided it is an LED message. The SP is set to true if the LED status is set to 1 (on), 2 (flash), or 3 (fast flash). In addition, the associated LED can be switched on / off (status 0 or 1).
-- Led flash	Bidirectional	"LED blink" displays the current status of the LED according to the received messages, provided that this is an LED message. The SP will be true if the LED status 2 (flash) is set, otherwise the SP will be set to false. In addition, the associated LED can be set to the flashing mode (status 2).
-- Led flash (rapid)	Bidirectional	"LED flashing (fast)" displays the current status of the LED according to the received messages, as long as it is an LED message. The SP is set true if the LED status 3 (fast flash) is set, otherwise the SP is set to false. In addition, the associated LED can be set to fast-blink mode (status 3).
Driver On/Off	Bidirectional	Activate component at runtime
Connection state	Output	Returns the driver state.

6.14.19 EVIS

This driver is used to connect the EVIS system to the EisBär.

Data points of the component:

Name	Type	Function
Export user (file name)	Input	Specifies a file name -> the currently known users are exported to the specified file.
Import user (file name)	Input	Specification of a file name -> users are imported from the specified file (CSV).
Diagnosis [Text]	Output	Error messages are output here. **Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation with the support team! If used, these can significantly affect the performance of the service.**
Last access denial (user)	Output	The user name of the last access denial is output here (see User Administration).
Last access denied (user ID from card)	Output	see above only output of the corresponding User ID as stored on the card
Last access denied (User ID)	Output	see above only output of the corresponding User-ID, as defined in the user administration.
Last access denial (card ID)	Output	see above only output of the corresponding Unique-ID, as stored on the card
Last access denial (Reader)	Output	see above only output of the name of the reader where the card was used.
Last access (user)	Output	The user name of the last **access permission** is output here (see User Administration) .
Last access (user ID from card)	Output	see above only output of the corresponding User-ID, as stored on the card
Last access (User ID internal)	Output	see above only output of the corresponding User-ID, as defined in the user administration.
Last access (card ID)	Output	see above only output of the corresponding Unique-ID, as stored on the card
Last access (reader)	Output	see above only output of the name of the reader where the card was used.
Export log data (All)	Input	All access data (log) are exported to a file.
Export log data (internal user ID)	Input	All access data concerning the specified internal user number are exported to a file.
Export log data (card user ID)	Input	All access data concerning the specified card user number will be exported to a file.
Export log data (card ID)	Input	All access data concerning the given card ID will be exported to a file.
Driver On/Off	Bidirectional	Turns the driver on/off
Access denied Trigger (global)	Output	A TRUE is output here if a card was denied at any reader (See User Management)
Access trigger (global)	Output	A TRUE is output here, if a card was accepted at any reader (see user administration).

For each defined reader a subfolder (named after the assigned name of the reader) with reader-specific data points is created.

Name	Type	Function
Cash data da	Output	Flag from Status Byte (contact EVIS for details)
Data carrier present	Output	Flag from status byte (contact EVIS for details)
Data carrier stuck	Output	Flag from Status Byte (contact EVIS for details)
Data carrier move OK	Output	Flag from status byte (contact EVIS for details)
EVIS Passive	Output	Flag from Status Byte (contact EVIS for details)
FW version	Output	FW version of the reader
Valid card inserted	Output	Shows whether a valid (see user administration) card is currently "inserted" for this reader.
Valid card inserted (Last user ID from card)	Output	User ID (stored in card) of the last valid card
Valid card inserted (Last internal user ID)	Output	User ID (internal according to user administration) of the last valid card
Valid card inserted (Last card ID)	Output	Card ID (stored in card) of the last valid card
Valid card inserted (Last internal user name)	Output	User name (internal according to user administration) of the last valid card
Valid card inserted (Trigger)	Output	Triggered with TRUE, if a valid card was detected.
Export log data (all)	Input	All access data (log) (concerning this reader) are exported to a file.
Export log data (for internal user ID)	Inbox	All access data (concerning this reader) regarding the specified internal user number are exported to a file.
Export log data (for internal card user ID)	Inbox	All access data (concerning this reader) regarding the given card user number will be exported to a file.
Export log data (for card ID)	Inbox	All access data (concerning this reader) regarding the given card ID will be exported to a file.
Spec. application da	Output	Flag from Status Byte (contact EVIS for details)
Status Info Byte	Output	Status Info Byte (as value)
Status Info Text	Output	Status Info Byte (evaluated as text)
Synced	Output	Indicates whether the system is synchronized with the reader.
Key pressed	Output	Flag off Status Byte (contact EVIS for details)
Invalid card inserted	Output	Indicates whether an invalid (see user administration) card is currently "inserted" for this reader.
Invalid card inserted (Last user ID from card)	Output	User ID (stored in card) of the last invalid card
Invalid card inserted (Last internal user ID)	Output	User ID (internal according to user administration) of the last invalid card
Invalid card inserted (Last card ID)	Output	Card ID (stored in card) of the last invalid card
Invalid card inserted (Last internal user name)	Output	User name (internal according to user management) of the last invalid card
Invalid card/PIN (Trigger)	Output	Triggered with TRUE, if an invalid card was detected.
Time/Access Data there	Output	Flag from status byte (contact EVIS for details)

Properties:

Name	Standard	function
Scanner	0	Here the scanners connected to the system are defined. Here a name can be assigned and the Modbus address of the scanner (DIP switch on the device) can be set.
COM Port	1	Setting for the communication port
BAUD Rate	9600	Setting for the transmission speed
Timeout [ms]	500	Timeout time
Polling Delay [ms]	200	Time offset for data transmission
Protocol	EVIS Frame	transfer protocol
Driver On/Off		Turns the driver on or off

User management:

The users should be able to be managed at runtime. Accordingly, we can not create user-specific data points because they can not be linked at runtime.

Therefore, the access control takes place at the reader level. Thus, there is an SP for each reader which is triggered when a valid card (or PIN entry) has been recognized on the respective reader.

In user administration, users can now be defined and specified for which readers the user has access.

e.g. 3 readers defined (R1, R2 and R3), which are e.g. Grant access to 3 different rooms

User 1 - Card Number ABCFEF1111 - Access for Reader 1 and 2

User 2 - card number ABCFEF2222 - access for Reader 2 and 3

If user 1 now holds his card to reader R1, then he gains access - the data entry "valid card inserted" is activated as long as the card is created. In addition, the data points are updated to indicate who has successfully gained access (globally and at the reader level).

If user 1 now holds his card to reader R3, he will not be allowed to enter and the data entry "valid card inserted" from reader 3 will not be set to TRUE (but the data item "invalid card inserted" should also be triggered here)

The user administration can be done with any program that can generate CSV files. Comments are supported (indicated by #). Seperator is the semicolon. A user line looks like this:

<Username>; <card number / PIN>; <internaluser number>; <list of allowed reader addresses separated by comma>

Examples:

John Doe; E0051000018178868; 101; 1,2,3 # Allowed for Reader 1, 2 and 3

-> The card with the number E0051000018178868 belongs to Max Mustermann with the internal user number 101 and has access to all 3 readers

Moriz man; E0051000018178867; 102; 1 # Allowed for Reader 1

-> The map with the number E0051000018178867 belongs to Moritz Mann with the internal user number 102 has access only to Reader 1

Guest; 12345; 500; 1 # Allowed for Reader 1

-> The PIN 12345 can be made available to guests, so that they have access to Reader 1

6.14.20 ekey

This driver is an invisible server component and is used to connect the ekey system to the EisBär.

Properties

Name	Standard	function
Scanner	0	Opens the editor for creating the scanners. An ekey controller currently supports up to 4 scanners. In the polar bear editor you can create more scanners, in case the controllers can control more scanners later. For each scanner a name and its serial number (via which the messages of the controller are assigned to a scanner) can be specified.
User names	0	Here the names for up to 100 users or fingerprints (the ekey controller can store up to 100 fingerprints) can be stored.
Local UDP Port	56000	The ekey controller sends the messages asynchronously to the computer set in the system via UDP to the port also specified in the ekey system. This port must also be set accordingly here. A back channel for communication with the controller is currently not supported by ekey.
Protocol	multi	ekey supports multiple transmission protocols. Currently the protocols "multi" and "home" are implemented. The protocol to be used must be set uniformly both in the ekey Controller and here.
Delimiter	;	The delimiter used in the protocol must be set uniformly in the controller and here.
Driver On/Off		This can be used to set whether the component should be active when the system is started.
Controller serial		Here, the serial number of the controller must be set. This is needed because there are messages that are specific to the controller and not to one of the scanners.

Data points of the component:

Name	Type	function
Debug	Output	Error messages are displayed here. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	In the folder for Dynamice SPs, a subfolder is created for each defined scanner.
- User	Folder	In the subfolder "user" for all up to a maximum of 100 users (if only one finger is trained for each user - limitation of the controller) another folder is created in which 10 SPs (one for each possible finger) can be found. When a message is received with a detected finger, the corresponding SP is triggered.
- Digital Inputs	Folder	The subfolder "Digital Inputs" (or "Relay" in the case of the "home" protocol) contains 4 SPs which are triggered when a message is received for the corresponding digital input.
- Keys	Folder	The subfolder "Key" contains 4 SPs that are assigned in the controller to the 4 virtual keys (which can be assigned to multiple fingerprints) and are triggered when an associated message is received.
Protocol	Output	Output of all received messages.
Driver On/Off	Bidirectional	Turns the driver on / off

Data point --> Scanner --> User (1-100):

Name	Type	Function
Code	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Left thumb	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Left little finger	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Left middle finger	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Left ring finger	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Left index finger	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Right thumb	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Right little finger	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Right middle finger	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Right ring finger	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Right index finger	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
RFID	Output	If a message is received with a recognized finger, the corresponding data point is triggered.

Data point --> Scanner --> Digital Input:

Name	Type	Function
Digital Input 1	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Digital Input 2	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Digital Input 3	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Digital Input 4	Output	If a message is received with a recognized finger, the corresponding data point is triggered.

Data point --> Scanner --> Key:

Name	Type	Function
Key 1	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Key 2	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Key 3	Output	If a message is received with a recognized finger, the corresponding data point is triggered.
Key 4	Output	If a message is received with a recognized finger, the corresponding data point is triggered.

6.14.21 Feig

This driver is an invisible server component and is used to connect the Feig-myAXXESS system with the EisBär.

Properties of the component

Component name	Standard	Function
Scanner	0	The scanners are created in this editor. - The reader name is freely definable. - The scanner address corresponds to the IP address of the respective scanner. - The notification port is used to receive the scan notifications from the individual readers. The ports must be different. "Separate notification ports" must be active in the settings for the individual notification. The IP addresses and ports must be configured in the Feig software.
User	0	Users can be created here and assigned to the card numbers. If available, several users can be assigned to a group.
Groups	0	Create groups to be able to use them in the user list.
Communication port	10001	Port for TCP communication to the scanner (input polling). This receive port of the scanner must be set in the scanner.
Separate notification ports	X	If this option is active, the port specified in the channel editor is used for each scanner. This deactivates the shared notification port.
Shared notification port	10005	Port for receiving scan notifications for all scanners.
Polling pause [ms]	1000	The scanners are read out at the set time interval.
Reconnect pause [s]	10	Pause after an unsuccessful connection attempt.
Confirm notifications		If this option is activated, new notifications from a reader are only sent once the previous one has been confirmed.
Relay activation time [s]	2	Activation time for the door relay in seconds.
Driver On/Off		(De)activation of the component.

Global data points of the component

Name	Type	Function
Export user (CSV string)	Output	Output of the user list as text if the trigger input was triggered.
Export User Trigger (CSV String)	Input	Trigger for the output of the users.
Import User (CSV String)	Input	Import the users via a string.
Export user (file name)	Input	By specifying an absolute save path, the user list can be exported and saved as a CSV.
Import user (file name)	Input	By specifying an absolute storage path, the user list can be imported as CSV.
Diagnosis [Text]	Output	Error texts are output here. These can be displayed, for example, with the"Protocol Window" component. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them in consultation with the support team! If used, these can considerably impair the performance of the service.**
Extended diagnosis	Input	(De)Activates the extended debug output. **Caution: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, they can significantly affect the performance of the service.**
Extended Diagnosis (Reader Status)	Input	(De)Activates the extended debug output for the reader. **Caution: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Dynamic	Folder	The dynamic data points for each reader are created in this folder (see below).
Calendar Editor (User)	Bidirectional	The Calendar Editor can be used to define the authorisation times for each user.
Calendar Editor (groups)	Bidirectional	The Calendar Editor can be used to define the authorisation times for each user group.
Export Log Data (All)	Input	All log data is saved in a file.
Export Log Data (User ID)	Input	All log data concerning the specified internal user number are exported to a file.
Export Log Data (Card ID)	Input	All access data concerning the specified card ID are exported to a file.
Driver On/Off	Bidirectional	(Dis)Enable Component
Access granted (User)	Output	The user name of the last access permission is output here.
Access granted (user ID)	Output	The user ID of the last access authorisation is output here.
Access granted (Card ID)	Output	The card ID of the last access authorisation is output here.
Access granted (Reader)	Output	The name of the reader that last granted access is output here.
Access granted (Trigger)	Output	An ON signal is output here when access is granted.
Access denied (user)	Output	The user name of the last access denied is output here.
Access denied (user ID)	Output	The user ID of the last access denied is output here.

Example user CSV:

#userName;cardId;userId;Reader1,...ReaderN;restrictAccess
Markus Müller;2D28AF95;123;Door Down;false

UserName = freely selectable name
cardID = card ID*
UserID = Number of the user (freely definable)
Reader1, ... = Name of the card reader to be assigned to the user (enumeration comma-separated possible). The name of the reader must match one of the scanner names in the scanner editor list.
restrictAccess = Release via calendar true/false

* Byte swap may occur when reading out the card ID via alternative readers. The card ID should therefore be read out with the Feig software or the EisBär.

Data points per reader

Name	Type	Function
Input 1-4	Output	Current status of up to 4 (depending on the reader) inputs. If the value of an input has changed and changed back during the query pause, this will be detected during the query and the output will also be set to active for a short time and inactive again.
Calendar Editor	Bidirectional	Data point for linking with the calendar editor. This allows access authorizations to be controlled by time. The created users are displayed in the calendar as channels. Only in the active area is it possible for the user to authenticate himself.
Last error code	Output	Output of the last reader error code.
Export log data (All)	Input	All log data from this reader is exported to a file.
Export log data (for internal user ID)	Input	All log data concerning the specified user ID and this reader are exported to a file.
Export log data (for card ID)	Input	All log data concerning the specified card ID and this reader are exported to a file.
Deactivate Reader	Input	The reader can be deactivated with an on signal.
Actuate relay	Input	The door relay can be activated by any signal.
Status code	Output	Output of the current status code of the reader.
Status text	Output	Output of the current status text of the reader.
Connection status	Output	If the connection is successful, an ON signal is output.
Access granted (user ID)	Output	The user ID of the last access authorization is displayed here.
Access granted (user name)	Output	The user name of the last access authorization is displayed here.
Access granted (card ID)	Output	The card ID of the last access authorisation is issued here.
Access granted (trigger)	Output	Here an ON signal is issued when access is granted.
Access denied (user ID)	Output	The user ID of the last access refusal is displayed here.
Access denied (user name)	Output	The user name of the last access refusal is displayed here.
Access denied (card ID)	Output	The card ID of the last access refusal is displayed here.
Access denied (trigger)	Output	Here an ON signal is issued when access is denied.

Note:
The EisBär server data must be entered in the CPRStart fig software under "Configuration" --> "CFG49".

6.14.22 Salto

The invisible Salto driver allows access to the door control. This allows the imported devices to be monitored and controlled.

Data points of the component

Name	Type	Function
Synchronize user	Input	Here the readout of the users created in Salto can be triggered. Otherwise, it is performed at the start and cyclically at the set interval.
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only with consultation of the support team! If used, they can significantly affect the performance of the service.**
Extended Diagnosis	Input	(De)Activates the extended debug output. **Attention: Diagnostic or debug - outputs are only intended for error cases. Please use only after consulting with the support team! If used, they can significantly affect the performance of the service.**
Event Log	Output	Output of the transmitted raw data.
Dynamic	Folder	Contains the imported devices and their data points.
Last Event	Folder	Output of the last event, divided into the different data points.
Export Log Events (All)	Input	All stored events will be exported. **C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\SALTO\Logs*.csv**
Export Log Events (User)	Input	Events of a specific user are exported.
Export Log Events (Keys)	Input	Events of a specific key are exported.
Driver On/Off	Bidirectional	Switch driver on or off.

Properties of the component

Name	Default	Function
Connection	0.0.0.0	Enter the connection settings. See below for details.
Cyclic user synchronization [h]	1	Readout interval of the users created in Salto, in hours.
Salto Entities	0	Opens the import dialog for the Salto devices.
Driver On/Off		(De)activates the component.

Connection:

SHIP Server IP	IP of the Salto SHIP server (software installed on a PC)
Port (STP)	Communication port of the SHIP server (default: 9999)
Encoding	Switching between ISO and UTF
Event polling interval [s]	Specifies the refresh interval of the event history in seconds.
Use event stream	If the event stream is licensed via Salto, the event server can be activated. A local interface (IP on the polar bear PC) must then be specified here, on which the events are retrieved from Salto. If the textbox remains empty, the event receiver listens on all interfaces
Local server IP	EisBaer server IP on which the event server is active.
Local event server port	Communication port for the event server (default 8889).

6.14.23 Philips Hue

The Philips Hue driver is an invisible server component with the possibility to control lights from the Philips hue range.
The available lights are read from the Philips Hue Bridge. The commissioning of the system must first be carried out on the manufacturer's software.

Data points of the component

Name	Type	Function
Advanced diagnostics	Input	(De)Activates the extended debug output. **Attention: Diagnostic or Debug - outputs are only for error case. Please use only with consultation of the support team! These can significantly affect the performance of the service when used**
Request Configuration	Input	If this input is triggered, displays information about the configuration group, and the bridge is queried.
Dynamically	Folder	In the Folder dynamically, the outputs are available for the lights. These are divided into groups, lights, sensors and scenes.
Info	Folder	Here, all information about the Philips HUE Bridge output.
Set Response	Output	Here is the response to a transmitted command is issued. The output is used for the diagnosis in the case of incorrect circuits in the bridge.
Debug Status output	Output	Here, the status outputs of the Hue Bridge as a raw data is output. The output is used for the diagnosis in the case of incorrect circuits in the bridge.
Debug Status output (formatted)	Output	Here, the status outputs of the Hue Bridge formatted output. The output is used for the diagnosis in the case of incorrect circuits in the bridge.
Driver On/Off	Bi-directional	Drivers on or off.
Connection State	Output	If the connection is successful, the bridge is an ON signal is output.

Properties of the component

Name	Standard	Function
Lights	0	Opens the import window for the lamps. With "Import" the lamps connected to the Bridge are imported. "Color Support" shows whether the lamp is a colored or a white lamp.
Sensors	0	Opens the import window for the sensors. Imports the stored sensors.
Groups	0	Opens the import window for the groups. Imports the stored groups.
Scenes	0	Opens the import window for the scenes. Imports the set scenes. The displayed ID is generated by the system.
Server [IP]	127.0.0.1	Set the IP address of the Hue-Bridge here. When using the device name, please note that it must not contain any spaces.
Controlling lamps individually with group command		If activated, the individual lamps concerned are controlled separately when a Group On command is given.
Ignore brightness for switched off lamps	X	This prevents lamps from being switched on when the value at the "Brightness" input changes.
Feedback on bidirectional data points		Output feedback on the bidirectional data point or only on the status output.
Timeout [ms]	3000	If there is no response from the bridge, the communication is aborted after this time.
Update interval [s]	10	The current values of all lamps are read out from the Hue Bridge at the set interval.
Color change delay [x100ms]	0	Delay time for sending between two color commands.
Driver On/Off		Switches the driver On or Off

When importing, individually for the lights/sensors/groups and scenes data points in the folder "Dynamic" is created.

6.14.24 Gardena Smart System

The invisible Gardena driver provides access to Gardena's smart devices. This allows the imported devices to be monitored and controlled.

Data points of the component

Name	Type	function
Single request	Input	A flank on this input starts a one-time polling of the devices.
Update interval [h]	Bidirectional	A query of the integrated devices takes place every x hours. It can be set from 1 to 24 hours. **Attention: The query is limited to 3000 requests per month!**
Debug	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	Contains the imported devices and their data points.
- Class of Device	Folder	The imported devices are sorted according to device classes (gateway, sensor, ...).
- - Device	Folder	Subfolder for each device (named after the device name - note that these must be unique within the Gardena Smart system for proper display).
- - - function group	Folder	These subfolders are grouped by function. Battery-powered devices always have a function group / sub-folder for battery data ect.
Driver On/Off	Bidirectional	Driver on or off.
Cyclic Update	Bidirectional	Enables / disables the cyclic update

Properties

Name	Standard	function
Channels	0	Once the access data has been entered, the devices and the gateway can be imported here.
Account-Credentials		Here the Gardena access data are entered. The access code is generated with the selection "Get id".
Cyclic Update	x	Activates / deactivates the cyclic update in the set interval
Update interval [h]	5	In this case, a query of the integrated units takes place every 5 hours. A time of 1 to 24 hours can be set. **Attention: The query is limited to 3000 requests per month!**
renew Websockets		If the websocket is to be updated during a query, this option must be set. This is only necessary if websocket connections fail in the debug output.
Driver On/Off		Driver on or off.

Most data points are information (e.g., battery state of charge). For each of these data points, there is another one that indicates the time stamp at which the value was determined (e.g., the sensors

measure only every x minutes). However, some devices provide the ability to send commands or parameters to the device. The corresponding data points are located in the subfolder "Command". The exception here are the commands to initiate a sensor measurement in the devices. These SPs can be found in the "Command" subfolder of the respective sensor folder (for example, "Measure soil moisture").

Examples of commands:
To manually control an irrigation computer, the stored (configured within the Gardena Smart System) scheduling can be override. For this, a value in minutes can be sent to the SP "Start Override (Duration)".
To exit the manual mode, the SP "End Override" SP can be triggered with any value.

Troubleshooting:

{"message": "forbidden"} = API was not added in the portal (connected)
{"error": "invalid_grant" ... } = Wrong username and/or password
{"error": "invalid_client" ... } = APP Key incorrect
{"message": "Limit Exceeded"} = Maximum request of 3000 has been reached. This will be reset at the turn of the month.

6.14.25 Gardena Smart System (V2)

This driver is used to connect newer Gardena devices.

To use this driver, an application key must be created in the developer portal: https://developer.husqvarnagroup.cloud/.

ATTENTION:
Only a maximum of 3000 queries per month and not faster than once per 15 minutes are possible!

Register/Logon:

Registration, if no account has been created yet

Create the applications key:

Create a name for the application:

Create application

Name

Mein Gardena-Mähroboter

Enter the name of your application

Description (Optional)

Redirect URIs (Optional)

Select...

Press tab or enter to create

Cancel   Create

If a "Redirect URI" is required, enter it here: https://api.authentication.husqvarnagroup.dev/v1

After the creation, the application key is displayed below the window. The APIs for this key must now be added.
This key is also required in the Gardena Smart System (V2) driver in the login data.

Cancel   Save

Application key:

9e02743b-7c11-4150-aa16-fbd273b0634e

Application secret:

●●●●●●●●●●●●●●●●●●●●●●●●●

↻ Renew API key

+ Connect new API

Several APIs are displayed via "Connect new API". The APIs listed below must at least be selected in order to be able to control the Gardena devices:

Authentication API
GARDENA smart system API

Troubleshooting:

{"message": "forbidden"} = API was not added in the portal (connected)
{"error": "invalid_grant" ... } = Wrong username and/or password
{"error": "invalid_client" ... } = APP Key incorrect
{"message": "Limit Exceeded"} = Maximum request of 3000 has been reached. This will be reset at the turn of the month.

6.14.26 Husqvarna

This component is used to connect Husqvarna lawn mowers.
To be able to use this driver, an application keymust be createdin the Developer Portal:
https://developer.husqvarnagroup.cloud/. See Gardena[784] .

Data points of the component

Name	Type	Function
Query once	Input	A one-time query of the devices is started via an edge at this input.
Poll cyclically - pause [s]	Bidirectional	A query of the integrated devices takes place every x seconds.
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, they can significantly affect the performance of the service.**
Dynamic	Folder	Contains the imported devices and their data points.
- Devices	Folder	Subfolder for each device, containing the general data points for the device.
- Command	Folder	Subfolder where the data points for controlling the device are located.
- Shedule	Folder	For all 5 possible tasks, the settings at the data points are output. Time settings are given in minutes.
Extended Diagnosis	Input	(De)Activates the extended debug output. **Attention: Diagnostic or Debug - Outputs are only intended for error cases. Please use only after consulting the support team! If used, these can significantly affect the performance of the service**
Driver On/Off	Bidirectional	Driver On or Off.
Cyclic Update	Bidirectional	Enables/disables the cyclic update.

Properties of the component

Name	Default	Function
Access data		The access data is entered here.
Channels	0	Displays the sum of the imported schedules
Cyclic update	x	Activates/deactivates cyclic updating at the set interval
Query cyclic - pause [s]	5	A query of the included devices in seconds.
Driver On/Off		Switch driver on or off.

6.14.27 Netatmo

With this component the weather station of Netatmo can be integrated. All measured values of the different devices are available here.

Data points of the component

Name	Type	function
Update Data	Input	Manual update via on or off signal
Debug	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Dynamic	Folder	This folder contains the global data point of the device as well as all connected modules.
- <Name of the base station>	Folder	Folder with the name of the imported device
- CO2 [ppm]	Output	Returns the CO2 value off.
- Firmware	Output	Returns the firmware as a number.
- Noise [dB]	Output	Returns the ambient volume.
- Pressure [mbar]	Output	Outputs the air pressure.
- Pressure absolute [mbar]	Output	Returns the absolute air pressure.
- Pressure Trend	Output	Returns the air pressure trend.
-- Module	Folder	see below
- Humidity [%]	Output	Gives the humidity in%.
- Temperature [°C]	Output	Returns the temperature.
- Temperature Maximum [°C]	Output	Returns the maximum temperature.
- Temperature Maximum Date	Output	Returns the time of the maximum temperature.
- Temperature Minimum [°C]	Output	Returns the lowest temperature.
- Temperature Minimum Date	Output	Returns the time of the lowest temperature.
- Temperature Trend	Output	Returns the temperature trend.
- WiFi Status	Output	Returns the WiFi status (see below). Higher values correspond to poorer reception
- Last Upgrade	Output	Returns the time of the last update of the station. (Configuration of the station)
Driver On/Off	Bidirectional	(DE) Activate the component
State	Output	Status of communication with the Netatmo server

Properties

Name	Standard	function
Devices	0	Import devices via the "Device Editor"
User		Netatmo account name
Password		Netatmo account password
Update Interval [Min]	5	Time in minutes for the data query interval
Driver On/Off		(DE) Activate the component

The "Dynamic" folder displays all base stations assigned to the account. Below this folder are the data points of the base station and, if necessary, a folder "modules" under which all the base station associated modules can be found. Import = download from the internet portal!
The data points available in the individual module folders depend on the type of module.

Example:

- Dynamic
  - Maier-Netatmo (70:ee:50:2c:fb:10)
    - CO2 [ppm]   DataPoint4OctetUnsignedValue
    - Firmware   DataPoint2OctetSignedValue
    - Humidity [%]   DataPoint2OctetUnsignedValue
    - Last Upgrade   DateTime
    - Module
      - Modul (02:00:00:2c:71:98)
      - Regensensor (05:00:00:03...
        - Battery capacity   DataPoint2OctetSignedValue
        - Battery State   DataPoint2OctetSignedValue
        - Firmware   DataPoint2OctetSignedValue
        - Last seen   DateTime
        - Rain - last 24 hours [mm]   DataPoint4OctetFloatValue
        - Rain - last hour [mm]   DataPoint4OctetFloatValue
        - Rain [mm]   DataPoint4OctetFloatValue
        - RF-Status   DataPoint2OctetSignedValue
      - Windsensor (06:00:00:02:b...
        - Battery capacity   DataPoint2OctetSignedValue
        - Battery State   DataPoint2OctetSignedValue
        - Firmware   DataPoint2OctetSignedValue
        - Gust Angle [°]   DataPoint2OctetSignedValue
        - Gust Strength [km/h]   DataPoint2OctetUnsignedValue
        - Last seen   DateTime
        - RF-Status   DataPoint2OctetSignedValue
        - Wind Angle [°]   DataPoint2OctetSignedValue
        - Wind Angle Maximum [°]   DataPoint2OctetSignedValue
        - Wind Strength [km/h]   DataPoint2OctetUnsignedValue
        - Wind Strength [km/h]   DataPoint2OctetUnsignedValue
        - Wind Strength Date   DateTime
    - Noise [dB]   DataPoint2OctetUnsignedValue
    - Pressure [mbar]   DataPoint4OctetFloatValue
    - Pressure absolute [mbar]   DataPoint4OctetFloatValue
    - Pressure Trend   Strings
    - Temperature [°C]   DataPoint4OctetFloatValue
    - Temperature Maximum [°C]   DataPoint4OctetFloatValue
    - Temperature Maximum Date   DateTime
    - Temperature Minimum [°C]   DataPoint4OctetFloatValue
    - Temperature Minimum Date   DateTime
    - Temperature Trend   Strings
    - WiFi Status   DataPoint2OctetSignedValue

Information:
The Battery Status values are for ads, and according to Netatmo, the following areas apply:

Wind Gauge battery status	Description
6000	max
5590	full
5180	high
4770	medium
4360	low
<4360	very low

Outdoor Module and Rain Gauge battery status	Description
6000	Max
5500	full
5000	high
4500	medium
4000	low
<4000	very low

Indoor module battery status	Description
6000	max
5640	full
5280	high
4920	medium
4560	low
<4560	very low

Wifi_status	Signal quality
86	Bad
71	Average
56	Good

Also stated here are the WiFi status areas. Higher values correspond to poorer reception!

6.14.28 POWERSHADES

With this driver it is possible to access POWERSHADES devices (motorized shading control).

Data points of the component

Name	Type	function
Debug [Text]	Output	Error texts are output here. These may e.g. with the "Log window" component. Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Debug verbose	Input	(DE) Enables extended debug output. Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used
Dynamic	Folder	In this folder, the dynamic data points are created for each group and each shade.
Gateway Serial	Output	Output the serial number of the connected gateway.
Driver On/Off	Bidirectional	(DE) Activate the component
Driver State	Output	Returns the current connection status as an on / off signal.

Dynamic Data points of the single shade

Name	Type	function
Down	Input	The Shade is shut down with any command.
Up	Input	With any command, the shade is raised.
Up/Down	Input	With a changing command (true = ab and false = up) the shade is moved up or down.
Battery voltage [V]	Output	Output of battery voltage in volts.
Paring - Activate Feedback	Input	Activate to get a feedback of a Shade.
Paring - Pair	Input	Connects a shade to the gateway.
Paring - Un-Pair	Input	Resolves the connection of a shade from the gateway.
Position [%]	Bidirectional	Position in the value range between 0 and 100. Here the value can be sent and received.
Position (0-255)	Bidirectional	Position in the value range between 0 and 255. Here the value can be sent and received.
Stop	Input	With any command, the shade is stopped.
Temperature [°C]	Output	Output of the measured temperature at the shade. (Product specific)

Dynamic Data points of the group

Name	Type	function
Down	Input	With any command all shades of the group are shut down.
Up	Input	With any command all shades of the group are driven up.
Up/Down	Input	With a changing command (true = ab and false = on) all shades of the group are driven up or down.
Position [%]	Input	Position all shades of the group approach by means of value between 0 and 100.
Position (0-255)	Input	Position all shades of the group approach by means of value between 0 and 255.
Stop	Input	With any command all shades of the group are stopped.

Properties

Name	Standard	function
Channels	0	Here, either the devices are imported from the gateway (search) or devices added (+). If shades are removed here, they are also deleted on the gateway.
Groups	0	If several shades are to be grouped, the groups can be created here. The assignment of the shades to the groups is done in the channel editor (see picture below).
IP Address (local)	0.0.0.0	Enter the local IP address of the EisBaer server.
IP Address (remote)	0.0.0.0	Here the IP address of the POWERSHADE gateway is entered. When using an IP scanner, the gateway will be displayed as "Wideband Labs".
Port (remote)	42	Setting for the communication port.
Update intervall [s]	10	Setting for the cyclical query of the position.
Command delay [ms]	200	Minimum wait time between multiple commands in milliseconds.
Driver On/Off		(DE) Activate the component

Adding a Shade (Drive):

1. Setting IP addresses (A fixed IP address must be set in the Powershade RF Gateway)
2. Open channel editor
3. Press green plus (Add)
4. In the new window select a channel number (1-30). Already assigned numbers are no longer displayed.
5. Press and hold the connect button on the shade for 2 seconds until the motor starts and beeps once.
6. Within 10 seconds press the Connect button in the EisBaer.
7. After successful addition, the Shade shakes twice and beeps three times
8. The channel list shows the learned devices.

ATTENTION: There must be no entries with identical serial numbers, otherwise malfunctions will occur.

9. For group assignment, the groups are created in the group editor and assigned in the channel editor.

6.14.29 Miele@home

This invisible driver component is intended for connection to "Miele@Home devices".

Data points of the component

Name	Type	Function
State response [JSON]	Output	JSON formatted output of the status messages.
Debug [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**
Extended diagnostics	Entrance	(De)Activates the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided in case of errors. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service**
Dynamic	Folder	The data points of the devices are displayed here. For each device there are subfolders for the functions. Depending on the device, there are different functions and display options.
Driver On/Off	Bidirectional	(De)Activate the component
Connection status	Output	Output whether a connection exists (true) or not (false).

Properties of the component

Name	Standard	Function
Connection settings		Enter the Miele@Home login data.
Channels	0	All devices are imported and displayed here.
Cyclical update	set	Determines whether the update should be carried out at the set interval.
Update interval [s]	30	Setting for the update time in seconds.
Driver On/Off		(De)Activate the component.

Values set to -32768 are not available!

Status:
1 = OFF
2 = ON
3 = PROGRAMMED
4 = PROGRAMMED WAITING TO START
5 = RUNNING
6 = PAUSE

7 = END PROGRAMMED
8 = FAILURE
9 = PROGRAM INTERRUPTED
10 = IDLE
11 = RINSE HOLD
12 = SERVICE
13 = SUPERFREEZING
14 = SUPERCOOLING
15 = SUPERHEATING
146 = SUPERCOOLING_SUPERFREEZING
255 = NOT_CONNECTED

Program Type:
0 = Normal operation mode
1 = Own program
2 = Automatic program
3 = Cleaning/Care program

6.14.30 iKettle

This invisible driver component is designed to connect iKettle kettle.

Data points of the component

Name	Type	Function
Diagnostics [Text]	Output	Error texts are output here. These can be displayed e.g. with the component"Protocol window". **Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	The data points of the devices are displayed here. There are subfolders per device for the functions. Depending on the device, there may be different functions and display options.
Extended Diagnosis	Input	(De)Activates the extended debug output. **Attention: Diagnostic or Debug - Outputs are only intended for error cases. Please use only with consultation of the support team! If used, they can significantly affect the performance of the service.**
Status	Folder	This folder contains the data points for the output of the status messages.
Driver On/Off	Bidirectional	(De)Activate the component
Interrupt	Input	Any signal is used to interrupt the heating process.
Boil water	Input	Any signal is used to start the heating process to boil the water.
Heat water (temperature + trigger)	Input	If a temperature is entered, the heating process starts up to the entered temperature.
Heat water (heating time minutes)	Input	Time preset in minutes, for keeping the water warm.

Properties of the component

Name	Default	Function
IP		The IP address of the iKettle kettle must be entered here.
Port	2081	Communication port of the iKettle.
Status Readout interval [s]	5	Time interval in seconds for status update.
Water Sensor Raw Value Minimum	2048	Sensor value when no water is filled in. The value must be determined in order to calculate the fill level.
Water sensor raw value maximum	4096	Sensor value when the water is filled to the maximum. The value must be determined in order to calculate the fill level.
Driver On/Off		(Dis)enable the component.

6.14.31 AVM home automation

The AVM driver is an invisible server component with the possibility to control the connection of the Fritz Home Automation devices. To use this driver, the AVM devices must be taught-in on the Fritz!Box.

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	**Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Dynamic	Folder	Contains the data points of the connected devices. These vary depending on the type of device.
Advanced Diagnostics	Input	Extends the output at the diagnosis data point to include further information. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Driver On/Off	Bidirectional	Turn driver on or off.
Connection status	Output	If the connection to the FritzBox was established, an ON signal is output. If the connection is interrupted, an OFF signal is output.

Properties of the component

Name	Standard	Function
Connection		Enter the IP address of the device on which the AVM Smart Home devices are registered and the account data. The update interval is set in seconds.
Channels		In the Channel Editor, the Smart Home devices are imported from the Fritz!Box and displayed.
Driver On/Off	OFF	Defines whether the driver is automatically activated at the start of the project.

Note:
The feedback for colour temperature is only output if it is also in Colortemp mode. The same applies to saturation.
Current colour mode: current_mode: string 1(HueSaturation), 4 (colour temperature) or ""(empty → unknown)

Supported functions:
AVM Button
AVM radiator controller

AVM energy meter
Temperature sensor
AVM switchable socket
Device/socket/lamp/actuator that can be switched on/off
Device with adjustable dimming, height or level
Lamp with adjustable colour/colour temperature
Roller shutter (blind) - up, down, stop and level 0% to 100%

6.14.32 Nanoleaf

The RGBW luminaires from Nanoleaf can be controlled with this driver.

Data points of the component

Name	Type	Function
Command	Folder	These data points can be used to centrally control the entire installation.
Blink Interval [100ms]	Bidirectional	Setting option for the blinking speed of the panels.
Diagnosis [Text]	Output	Error texts are output here. These can be displayed, for example, with the "Protocol window" component. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them in consultation with the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	This is where the data points for the imported effects and the panels are created. The effects are selected via an on signal. The individual panels have data points for the RGB values (0-255) and flashing (on/off). *Note: The colour white is automatically generated by the panels and has no data point of its own.*
Advanced Diagnostics	Input	(De)Activates the extended debug output. **Caution: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, they can significantly affect the performance of the service.**
Info	Folder	Information about the Nanoleaf system is output to the data points in this folder.
Status	Folder	This folder contains the data points for outputting the status messages of the entire installation.
Driver On/Off	Bidirectional	(De)activates the component at service start.
Connection status	Output	If there is a connection to the Nanoleaf, an on signal is output. If the connection is interrupted, an off signal is output (after the set time-out time).

Properties of the component

Name	Standard	Function
Connection		The IP address of the Nanoleaf is entered here. To establish the connection, it must be authorised. Pairing mode must be active for this.
Effects		Taught-in effects can be imported here.
Panels		All connected LED panels are imported here with their name, ID and position. The name can be freely defined. The position information can help to determine where a panel is actually located so that it can be controlled directly.
Blink Interval [100ms]	5	Setting option for the blinking speed of the panels.
Driver On/Off		(De)activates the component.

6.14.33 Commeo ccuHV

This driver is used to connect to the intelligent battery storage units from Commeo.

Data points of the component

Name	Type	Function
Operating error (flags)	Output	Output of the operating flag as a numerical value (see manufacturer's table)
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component"protocol window". **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them in consultation with the support team! If used, these can considerably impair the performance of the service.**
Extended diagnosis	Input	(De)Activates the extended debug output. **Caution: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, they can significantly affect the performance of the service.**
Information (Flags)	Output	Output of the information flag as a numerical value (see manufacturer's table)
Critical errors (flags)	Output	Output of the error flag as a numerical value (see manufacturer's table)
State of charge	Output	The SoC (State of Charge) value gives the current available system capacity as a percentage of the maximum capacity when the system is fully charged.
Power	Output	Power indicates the current actual value of the power flow into or out of the system. Positive power is defined as charging power, negative power is defined as discharging power.

Name	Type	Function
Maximum charging current	Output	The maximum charge current is equal to the SoP charge divided by the system voltage.
Relay	Bidirectional	Opening and closing of the relay.
Relay status	Output	0 - Relay locked (standby) 1 - Relay unlocked and switched off (standby) 2 - Relay unlocked and switched on (on) 3 - Block error 4 - Hardware error 5 - Pre-charge active 6 - Pre-charge error 7 - ON error (error detected but relay not confirmed as OFF)
SoP Discharge	Output	Maximum power available for discharging
SoP Charging	Output	Maximum available power for charging
Voltage	Output	The voltage value indicates the system voltage and the current value indicates the system current as a result of the configuration of the system. Positive values are defined as charging current, negative values as discharging current from the battery's point of view.
Current	Output	The voltage value indicates the system voltage and the current value indicates the system current as a result of the configuration of the system. Positive values are defined as charging current, negative values as discharging current from the battery's point of view.
System status	Output	1 - Idle 2 - Configuring 3 - Charging 4 - Discharging 5 - Error
Temperature (Avg)	Output	Average temperature of all blocks in °C with one decimal place.
Temperature (Max)	Output	Maximum block temperature value in the system in °C with one decimal place.
Temperature (Min)	Output	Minimum block temperature value in the system in °C with one decimal place.
Driver On/Off	Bidirectional	(De)activate the component at service start.
Connection status	Output	If there is a connection to the unit, an on signal is output. If the connection is interrupted, an off signal is output (after the set time-out time).
Warnings (Flags)	Output	Output of the warning flag as a numerical value (see manufacturer's table).

Properties of the component

Name	Standard	Function
IP Address		The IP address of the Commeo ccuHV is entered here. Communication is established via port 504.
Driver On/Off		(De)activates the component.

6.14.34 Assa Abloy FT-Connect

This driver can be used to integrate the FT-Connect security and access control system.

Data points of the component

Component name	Type	Type Function
Dynamic	Folder	Contains the data points created under "Channels".
Diagnosis [Text]	Output	Error texts are output here. These can be displayed using the"Log window" component, for example. **Attention: Diagnostic or debug outputs are only intended for errors. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service**
Extended diagnostics	Input	(De)Activates the extended debug output. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service**
Messages [Text]	Output	Output of communication messages in text form.
Driver On/Off	Bidirectional	(De)activation of the component at service start.
Connection status	Output	If there is a connection to the device, an On signal is output. If the connection is interrupted, an Off signal is output (after the set time-out time).

Properties of the component

Component name	Standard	Standard Function
Connection		Connection settings to the gateway with IP and login data. Only FTCUser1 or FTCUser2 can be used as the user. There are 2 IP ports, which are preset to 1100. The port (remote) is used for access from the EisBär to the Assa Abloy FT-Connect (outgoing connection). The port (local) is used for the connection from the Assa Abloy FT-Connect to the EisBär (incoming connection). Depending on the network, the firewall rules may need to be adjusted. The TSB controller must be accessible in order to import the SSH host key.
Channels	0	The devices are imported from the server and displayed in the channel list. **The names must be unique.**
Update pause [s]	5	Pause time between 2 system queries.
Driver On/Off		(De)Activation of the component at service start.

Access only works with FTCUsers
A password must be set for these. To do this, the FT-Manager is called up with a web browser via the IP address. (Factory setting: https:\\1.1.1.1)

1. To activate the corresponding function (extended view), switch off automatic login under User administration / Users / User data.
The default settings for the administrator are
User: Administrator
Password: Admin or admin
Confirm the entry with "Apply". Then press "Log out" in the top right-hand corner
2. Enter a new login to the system with the user (e.g. FTCUser1) without a password.
3. The password for FTCUser1 is set during the logout process: Log out and enter the password.
4. The function is now active

Note: After the user logs out, the dialogue for assigning a new password is always displayed.

Control via the console (cmd):
plink -v -batch -ssh -2 -4 -C -N -P 22 -l {user} -pw {password} -L {localPort}:{localIp}:{remotePort} {remoteIp}

The {...} must be replaced by your own data.

Example:
plink -v -batch -ssh -2 -4 -C -N -P 22 -l FTCUser1 -pw Eisbaer -L 1100:192.168.178.123:1100 192.168.178.234

Note:
If the following error message appears, SSH transmission is not possible. In this case, the function must be enabled via Putty.

Connection abandoned.
Cannot confirm a host key in batch mode
FATAL ERROR: Cannot confirm a host key in batch mode

Further test via the browser:
http://127.0.0.1:1100/GET_DEV_STATUS
If there is a connection (driver is on), an output will appear in the browser (e.g. 1=1).

6.15   IoT

This chapter describes the functions and properties of the components from the Internet of Things (IoT) category.

The following components and services are currently available:

MQTT (Message Queuing Telemetry Transport) - standard protocol for the IoT or M2M communication of devices and applications.
- MQTT General [806]
- MQTT Client [807]
- MQTT Broker [817]
- MQTT Bridge [827]

Azure IoT Hub provides a cloud-hosted solution back-end to which virtually any device can connect
- Azure IoT Hub Service [828]

The Things Network (TTN) is a global, community-funded, open, free and decentralized Internet of Things (IoT) for LoRa devices.
- The Things Network [829] (TTN)

LoRBaer LoRaWAN (Low Range Wide Area Network) - LoRaWAN ECOSystem of Alexander Maier GmbH
- LoRBaer - LoRaWAN [833]

6.15.1 MQTT

MQTT (Message Queuing Telemetry Transport)

Message Queuing Telemetry Transport (MQTT) is an open network protocol for machine-to-machine (M2M) communication that enables the transmission of telemetry data in the form of messages between devices, despite high delays or limited networks. Corresponding devices range from sensors and actuators, mobile phones, embedded systems in vehicles or laptops to fully developed computers. The MQTT protocol is also known by older names such as "WebSphere MQTT" (WMQTT), "SCADA Protocol" or "MQ Integrator SCADA Device Protocol" (MQIsdp). The Internet Assigned Numbers Authority (IANA) reserves ports 1883 and 8883 for MQTT, and MQTT messages can be encrypted using the TLS protocol.

Interestingly, an MQTT server ("broker") holds the entire data state of its communication partners, and thus can be used as a state database. Thus, it is possible to connect small unperformant MQTT devices to an MQTT broker, where the devices collect data and/or receive commands, while a complex state picture is only created on the MQTT broker and can be evaluated here or by a powerful communication partner. Thus, location interventions can be transmitted from one or more powerful instances to the MQTT broker and propagated to the individual devices. As a result, MQTT is very well suited for automation solutions and is widely used in the field of IoT due to its ease of use.

MQTT is a client-server protocol. After establishing a connection, clients send messages to the server ("broker") with a topic that classifies the message hierarchically; for example, building/floor/room/temperature or socket/room/11/momentary power. Clients can subscribe to these topics, and the server forwards the received messages to the corresponding subscribers.

Messages always consist of a topic and the message content. Messages are sent with a definable Quality of Service (QoS): at most once (0 = the message is sent once and may not arrive if the connection is interrupted), at least once (1 = the message is sent until reception is confirmed and may arrive at the recipient several times) and exactly once (2 = this ensures that the message arrives exactly once even if the connection is interrupted). In addition, the retain flag can be used to instruct the server to temporarily store the message for this topic. Clients that subscribe to this topic will receive the cached message first.

When connecting, clients can define a "last will and testament" in the form of a message (will). If the connection to the client is lost unexpectedly, this message is published and sent to the corresponding subscribers in the process.

o [EisBär MQTT Client](#)[807]

o [EisBär MQTT Broker](#)[817]

o [EisBär MQTT Bridge](#)[827]

6.15.1.1 MQTT Client [x200]

The MQTT client can be used for bidirectional communication with one MQTT broker (publish / subscribe) - and as a special feature of the EisBär MQTT client - to several - of course, only one sending or receiving is possible.

In general, data points (topics) can be subscribed to from a broker, as well as data can be sent back to the broker in order to make them available to other clients/brokers or to process them further. Interesting is the very low bandwidth for telegram transmission and its performance. In the further components [MQTT-Bridge](#)[827] and [MQTT-Broker](#)[817] even more connection and data transfer possibilities are shown and can be realized - special features . Information can be transferred to the broker. Changes to the topics on the broker side are transmitted to the client. Wildcards (#) are supported for discovery in the client's channel editor.

Data points of the component

Name	Type	Function
Current master broker	Output	The name of the current master broker is output as text.
Publish all topics	Input	This input can be used to force the publishing of the MQTT client. All cached network contents are published via the Topics. For example, if the broker

Name	Type	Function
		was unreachable, the last states could be sent to the broker on reconnect.
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window" .**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can considerably impair the performance of the service.**
Advanced Diagnostics	Input	(De)Activates the extended debug output. The extended diagnostics can be controlled here over different levels output-technically (e.g. at a protocol window to the output). Values of 0, 1 and 2 can be sent to this input via 8Bit and thus the outputs can be made clearer. 0 = Deactivates the extended diagnostic output 1 = Activates the output of relevant events (e.g. connect, disconnect, limit outputs) without further details. 2 = Activates the complete log output incl. publish/subscribe messages of all users/clients/$SYS, provided that the subscription/publish messages have not been switched off in the component settings.
KNX Gateway - Number of objects in send queue	Output	Outputs the number of objects in the send queue.
KNX Gateway - Delete send queue	Input	Deletes the entire send queue.
Dynamic	Folder	In this folder the dynamic data points are created from the channels (Topics).
Driver Gateway - KNX	Bidirectional	Bidirectional communication interface between KNX and MQTT Client. See Driver Gateway[546] .
Driver Gateway - BACnet Server	Bidirectional	Bidirectional communication interface between BACnet Server and MQTT Client. See Driver Gateway[546] .
Driver Gateway - BACnet Client	Bidirectional	Bidirectional communication interface between BACnet Client and MQTT Client. See Driver Gateway[546] .
Driver Gateway - Modbus Master	Bidirectional	Bidirectional communication interface between Modbus Master and MQTT Client. See Driver Gateway[546] .

Name	Type	Function
Driver Gateway - General	Bidirectional	Unidirectional communication interface between this driver and the serial driver [438] .
Primary Broker is Master Broker	Output	Output status, if the primary broker is the current master broker or not.
Statistics	Folder	Via the data points, messages received and sent in real time, as well as data amounts per minute/hour/day and since start can be output and analyzed. A reset at runtime is also possible.
Driver On/Off	Bidirectional	(De)Activate the component
Uptime	Output	Runtime of the MQTT client from start.
Uptime [s]	Output	Runtime of the MQTT client from start in seconds.
Connection status	Output	Outputs the current connection status as "On/Off/Undefined" signal. On=Connection OK, Off=Connection disturbed/not registered, Undefined=Client is off.

Dynamic data points per topic

Name	Type	Function
Payload [bytes]	Bidirectional	Payload is the actual transported raw data (without MQTT header) in the form of a byte array.
Payload Profile	Folder	If payload profiles have been created and assigned to a topic (data type: string), an additional subfolder is created in which the inputs/outputs of the payload profile fields can be found. See **below for an example of** the payload profiles.
Payload Profile (Publish JSON)	Output	Output of the data to be published for the set profile.
Payload Profile (Publish Trigger)	Input	Triggers the publishing of the data for the set profile. Note: The port is only available if a profile has also been assigned in the Topic Channel Editor.
QoS	Output	The Quality of Service (QoS) level is an agreement between the sender of a message and the receiver of a message that defines the delivery guarantee for a particular message. There are 3 QoS levels in MQTT: • 0: "Fire-and-forget" - the packet is sent exactly once. Arrives, maybe not sometimes, analogous to the UDP protocol. Delivery: enormously fast.

Name	Type	Function
		• 1: "Acknowledgement" - the receiver confirms to the sender that the packet has been received. It is possible for a packet to arrive more than once. Delivery: very fast. • 2: "Synchronised" - the parcel is guaranteed to reach the destination, and only once, but this variant generates slightly more "traffic". Delivery: somewhat slower.
Value	Bidirectional	Value of the topic taking into account the defined factor in the corresponding channel editor. Please note the Publish/Subscribe setting in the channel editor for each topic.
Timestamp	Output	Timestamp of the last received value.

Properties of the component

Name	Default	Function
Connection	...	Enter the connection data to the MQTT broker - see below.
Further Broker Connections	0	Additional brokers can be created here, which should also receive the data simultaneously. With this function it is possible to publish topics to several brokers and/or to subscribe to them - a redundancy solution can be built up here.
Payload Profile [824]	...	Using self-defined payload profiles, it is possible to split JSON strings that are transmitted in a topic into individual sub-data points of the respective topic according to the hierarchy (see example below).
Channels [824]	0	For each channel, the MQTT topic to be subscribed to must be specified, as well as the associated data type. Optionally, a descriptive name can be specified, which is also taken into account when creating the data points and is displayed there. Additionally, the QoS level, whether the message should be retained and whether the topic should be published and/or subscribed can be set.
Last Will	...	Often referred to as a will. The purpose of this special function is mainly to tell the connected MQTT broker when the client is unexpectedly offline (e.g. connection lost). The corresponding content for this state is stored in the payload and defined with its own topic.
Publish all topics on Reconnect	Disabled	This property can be used to force the MQTT client to publish on reconnect of the broker. All cached network contents are published via the Topics. If the broker was unreachable, for example, the last states could be sent to the broker on reconnect.
Basetopic	empty	The BaseTopic is prepended to all Topics in the channel list. BaseTopic 1234 would automatically convert an existing Topic "sensor/humidity/value" into "1234/sensor/humidity/value". It is therefore possible, if many clients of buildings, plants or devices have to be mapped uniquely in the broker, to solve this automatically via the BaseTopic and also to create copies much faster and easier, which then only differ via the BaseTopic.

Name	Default	Function
Append name to topic	Disabled	Here you can select whether the name (label) of the topic is additionally appended to the topic as defined in the channel editor. Accordingly, there is a new additional export mechanism (Channel Editor - Export Details) to output the topics including all settings and data type definitions as a list.
Disable cyclic heartbeat	Deactivates	The cyclic heartbeat message is no longer published to the broker if the option is set to active.
Ignore messages at start (duration [s])	0	Ignores incoming messages such as retained topics for the specified duration when starting the client. Default value: 0
Do not display subscription messages	Disabled	Subscription messages are not output in LogLevel 2 of the extended diagnosis, if activated.
Do not output publish messages	Disabled	Publish messages are not output in LogLevel 2 of the extended diagnosis, if enabled.
Do not output messages received	Disabled	Messages received are not output in LogLevel 2 of the extended diagnostics, if enabled.
Driver On/Off	Disabled	(De)activate the component

Connection dialog in the properties window:

Name	Function
Server URL/IP:	IP address or hostname of the server to be queried.
Port:	Specification of the communication port to the MQTT broker (default: 1883 or 8883 (TLS)). This port must be entered in the firewall as soon as bidirectional communication is to take place.
User / Password:	If authentication is required to access the broker, user name and password can be stored (leave blank for anonymous access).
Timeout [s]:	Communication timeout in seconds (default: 5 seconds).
Client ID:	Unique name for this client, which may only be used once. If the component is copied, a new ID must be generated or a new unique name selected.

Name	Function
	The ID for the client, if it is to connect to an EisBär MQTT broker, must be at least 10 characters long for security reasons. Otherwise the connection will be denied.
Websocket :	Optionally, it can be specified whether the telegram traffic should take place via websockets.
TLS:	Depending on the server, the connection can also be encrypted via TLS. This makes the fields for "Accept all certificates" and "Server certificate" active.
Server certificate:	Path specification to the server certificate that is to be used for communication. By default, you will find a self-signed certificate in your EisBär installation directory. The default path incl. certificate for a protected TLS connection between EisBär MQTT client and EisBär MQTT server with this certificate is: *C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\mqttbroker.cer* For the EisBär MQTT broker, the certificate to be used is located as a pfx file in the same path, which does not have to be transferred specifically for the broker.

Via the**"Test"** button, an attempt to log in to the broker is carried out and the result is output behind it.

6.15.1.1.1 Example MQTTBox

Prerequisite: MQTTBox (This is free software that can be downloaded from the Win10 AppStore)

Creating the MQTT component in the EisBear Editor.
Creating a channel: Topic = Eisbaer _ Test, name = freely definable, type = STRING

Communication settings:
         Server (Broker): test.mosquitto.org
         Port: 1883
         Devices ID: Free to choose but unique

Link the data points from the Dynamic folder to the "Value-driven Text" component

Start the app "MQTTBox"
Connecting the Server/Client connection:

Once saved, the connection is automatically established.

Topic to publish:	Eisbaer _ Test (the same name as in the EisBaer channel editor)
QoS:	0 (in this case, the transfer is always QoSizes 0)
Payload Type:	String / JSON / XML / Characters
Payload:	Entry of the text to be transmitted

With the "Publish" button, the registered text is transmitted to the server (broker).
The EisBaer MQTT client retrieves this data and displays it.

6.15.1.1.2 Example KNX2MQTT

KNX2MQTT:

By means of the new internal, bidirectional connection interface "KNX driver gateway" at our KNX driver, as well as at our MQTT client, it is possible to connect these two components quickly and easily. After the export/import process, all existing KNX communication objects are mapped as topics in the MQTT client, which are already connected internally - without any linking work. The topics are therefore 1:1 mappings of the existing KNX data points. In the MQTT Client channel editor, the automatically generated topics can be set in such a way that the data can either be sent from KNX to MQTT or in the other direction and/or also received - depending on the application.

The application areas here include the cross-location connection and networking of the KNX system(s) via an encrypted SSL connection to a remote MQTT broker or clients connected to this, a connection of several autonomous KNX systems of a property to one or even several MQTT brokers (redundancy), whose individual buildings, however, are not networked via a dedicated line, in order to centrally manage fault messages, for example. Being able to collect meter data, consumption and temperature values or to execute single/central commands, scenes and the like across locations is another main focus for such an implementation.

In a single building, messages and states from the KNX world can thus be communicated quickly and efficiently to other systems that also work with the MQTT protocol, and of course vice versa.

Procedure:
In the respective KNX driver under Settings - Data points, an export is first executed with the option "(Export CSV (Tab))" via the file menu in order to save all existing communication objects of the driver in a CSV file. The created export file is then imported into an MQTT client driver component. In

the channel editor of the client, the driver source "KNX" is selected for the import in the upper menu bar and the desired file is accepted and imported via the following dialog. Thereupon, all existing communication objects are automatically converted into topics in the channel editor and are then internally connected between KNX driver and MQTT client without having to link the KNX data points with the MQTT topics. The mapping of the KNX data points is then the physical address including object number and group address name per communication object.

Topic structure
The physical address + object number + GA name e.g. "01.11.001.010 Demo system.Switched.corridor on/off" is thenconverted as topic into the form "01/11/001/010and the data type setting is also defined automatically.The retain and publish flags are automatically set. For a necessary bidirectionality, the topics can be individually provided with the subscribe flag.

Fig. 1: Export KNX data points to CSV (Tab)

Fig. 2: KNX import in the MQTT Client Channel Editor

Fig. 3: Channel editor after KNX data import (CSV tab)

Multiple KNX connections / BaseTopic

If there are several KNX connections, e.g. from several buildings, it is useful to work with the BaseTopic function, which can be defined in the properties of the MQTT Client. The BaseTopic is then prepended to each topic during the publish and/or subscribe process.

This makes it easier to assign the topics to the MQTT broker or to subscribe them more clearly from other MQTT clients - this can consist of numbers and/or letters - this makes it easier to map building numbers, postal codes and the like. The only thing to keep in mind is that the BaseTopic is not "visible" in the channel editor. In order to get a detailed topic description from the client, a "detail export" is possible in the channel editor.

Fig. 4 +5: BaseTopic naming in different variations

```
Base    Topic   FullTopic       Name    Datatype        Factor QoS    Retain Publish Subscribe
Gebäude-01  01/11/013/030   Gebäude-01/01/11/013/030<Demoanlage.DALI RGB.-->     Demoanlage.DALI RGB.-- BOOLEAN_STRING 1     1     True    True    False
Gebäude-01  01/11/006/035   Gebäude-01/01/11/006/035<Demoanlage.Messungen.SE|S Zwischenzähler Gesamt Trigger 2 1bit>    Demoanlage.Messungen.SE|S Zwischenzähler Gesamt Trigger 2 1bit  BOOLEAN_STRING 1     1     True
Gebäude-01  01/11/008/034   Gebäude-01/01/11/008/034<Demoanlage.Messungen.ZS|S Wirkleistung 4Byte>  Demoanlage.Messungen.ZS|S Wirkleistung 4Byte    SINGLE_STRING  1     1     True    True    False
Gebäude-01  01/11/002/010   Gebäude-01/01/11/002/010<Demoanlage.Gedimmt.Pausenbereich ein|aus 1bit> Demoanlage.Gedimmt.Pausenbereich ein|aus 1bit   BOOLEAN_STRING 1     1     True    True    False
Gebäude-01  01/11/002/012   Gebäude-01/01/11/002/012<Demoanlage.Gedimmt.Pausenbereich rel. dimmen 4bit>  Demoanlage.Gedimmt.Pausenbereich rel. dimmen 4bit   BYTE_STRING    1     1     False   True    False
```
Fig. 6: Extract from a CSV-generated "detail export

Using the user/client control of the EisBär MQTT broker or our MQTT EisCloud (for a fee), any scenarios for managing the data situation from one or more systems can then be mapped - in dependencies of clients, users with specific authorization and authentication.

A special feature of our EisBär MQTT client also allows data to be sent or received not only to one, but to several brokers simultaneously (redundancy). Perfect interaction for system coupling via mobile radio, Internet or leased lines is always achieved in the combination: EisBär MQTT client and EisBär MQTT broker or EisBär MQTT EisCloud, since in this case there is not only a primary broker (master), but also at least one or more secondary brokers (slaves). The data location and connections are completely regulated in the EisBär MQTT client, the data management via the broker.

6.15.1.2 MQTT Broker [x200]

As a special feature compared to other brokers, the EisBär MQTT broker contains an integrated MQTT client as well as a scalable authentication and authorization level that can be applied to the individual topic. With the integrated client, it is now possible to directly access and publish the topics of the broker without having to use an additional internal client.
However, a discovery function is not available for the internal client, since the broker must be running for the discovery. If you need this feature, you should use an EisBär MQTT client [807] that can connect to one or more externally running MQTT brokers that run redundantly, for example.

If a reliable, independently running MQTT broker is needed for a customer or a larger customer project, which should be externally accessible via a TLS connection, we have hosted a special, highly available redundant MQTT cluster.

Note on connections:
The IP communication ports used must be **released in the firewall**. By default, this is port 1883 (unencrypted) and 8883 (encrypted).

Note on licensing:
The component is charged with 200 components in the licensing (default: standard 200 topics that can be published in the broker = 200 components).
Further Topics correspond to an equal weighting as the number of components. Maximum in the calculation are 10.000 components by entering 10000 or -1 or >10000 - both for unlimited number of topics (project license Enterprise required).

Data points of the component

Name	Type	Function
Number of subscribed topics (with duplicates)	Output	Output of the subscribed topics incl. duplicates (multiple subscribed topic) as a number.
Number of subscribed topics (without duplicates)	Output	Output of the subscribed topics without duplicates as number.
Number of known Topics	Output	Output of all known topics of the respective broker.
Number of messages in retain memory	Output	Outputs the number of retain messages held in the broker.
Number of connected clients	Output	Outputs the currently connected clients as a number.
Reset number of published messages	Input	By any command, the counter for the published messages is reset.
Broker Status	Output	The current status of the broker (online/offline) is output here as a boolean value.
Client List	Output	Output of a list of connected clients by name, if "Output client list" was triggered.
Driver Gateway - KNX	Bidirectional	Bidirectional communication interface between KNX and MQTT Broker. See Driver Gateway [546] .
Driver Gateway - BACnet Server	Bidirectional	Bidirectional communication interface between BACnet Server and MQTT Broker. See Driver Gateway [546] .
Driver Gateway - BACnet Client	Bidirectional	Bidirectional communication interface between BACnet Client and MQTT Client. See Driver Gateway [546] .
Driver Gateway - Modbus Master	Bidirectional	Bidirectional communication interface between Modbus Master and MQTT Client. See Driver Gateway [546] .
Output client list	Input	Trigger input to output the currently connected client names at the "Client List" datapoint.

Name	Type	Function
Output Client List (extended)	Input	Trigger input to output the currently connected clients at the datapoint "Client List". Here, in addition to the client name and their topics are output.
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Log window" .**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can significantly affect the performance of the service.**
Dynamic	*Folder*	*The generated dynamic data points from the channel editor are created in this folder.*
Advanced Diagnostics	Input	(De)Activates the extended debug output. The extended diagnostics can be controlled here over different levels output-technically (e.g. at a protocol window to the output). Values of 0, 1 and 2 can be sent to this input via 8Bit and thus the outputs can be made clearer. 0 = Deactivates the extended diagnostic output 1 = Activates the output of relevant events (e.g. Connect, Disconnect, Limit outputs) without further details. Display of the IP addresses of the connected clients. 2 = Activates the complete log output incl. publish/subscribe messages of all users/clients/$SYS, if the subscription/publish messages have not been disabled in the component settings. Display of the IP addresses of the connected clients.
Last message	*Folder*	*Here all information about the last received message (most recent topic) is displayed in an itemized form as individual data points with all details.*
List of known topics	Output	Outputs the names of the known topics. The list is only filled as soon as a topic changes its value.
Management	*Folder*	*For EisBaer-Support only*
Plotter - Selected Topic	Input	Connection to the "Selected value" list selection[196]
Plotter - Data (csv)	Output	The values can be displayed using the MiniChart[170] component (Display CSV [string]).
Plotter - List of known topics (list view)	Output	Connection to the list selection[196] "Import data from string"
Clear Retain Memory	Input	When this input is triggered, all retained messages are deleted.

Name	Type	Function
Driver On/Off	Bidirectional	(Dis)enable the component.
Driver Gateway - KNX	Bidirectional	Bidirectional communication interface between KNX and MQTT broker.See [Gateway driver](#)[546] .
Gateway driver - BACnet server	Bidirectional	Bidirectional communication interface between BACnet server and MQTT broker. See [Gateway driver](#)[546] .
Gateway driver - BACnet client	Bidirectional	Bidirectional communication interface between BACnet client and MQTT broker. See [Gateway driver](#)[546] .
Gateway driver - Modbus Master	Bidirectional	Bidirectional communication interface between Modbus master and MQTT broker. See [Gateway driver](#)[546] .
Unencrypted endpoint valid	Output	Status output whether the unencrypted endpoint (IP/port) is enabled and valid.
Uptime (Bridge)	Output	Runtime of the MQTT bridge connection from start as a string in the format day.hours:minutes:seconds (00.00:00:00).
Uptime (Bridge) [s]	Output	Runtime as a number in seconds, how long the bridge connection is online.
Uptime (Broker)	Output	Runtime of the MQTT broker from start as a string in the format day.hours:minutes:seconds (00.00:00:00).
Uptime (Broker) [s]	Output	Runtime of the broker from start as a number in seconds.
Connection Status (Bridge)	Output	Outputs the current connection status as an on/off signal.
Published messages	*Folder*	*The number of messages per specified time unit is displayed here - current minute(s)/last minute(s)/hour/day/week/month/year. Quota per hour and total are also saved and reloaded at startup.*
Encrypted endpoint valid	Output	Status output whether the encrypted endpoint (IP/port) is enabled and valid.
$SYS	*Folder*	*SYS topics (META topics) that can be used additionally for monitoring the broker. These are automatically generated in the broker if the "Publish system statistics" property has been activated and can be called up as outputs at the component.*

Dynamic data points per topic

Name	Type	Function
Payload [bytes]	Bidirectional	Payload is the actual transported raw data (without MQTT header) in the form of a byte array.
Payload Profile	*Folder*	*If payload profiles have been created and assigned to a topic (data type: string), an additional subfolder is created in which the inputs/outputs of the payload profile fields can be found. See **below for an example of** the payload profiles.*
Payload Profile (Publish JSON)	Output	Output of the data to be published for the set profile.
Payload Profile (Publish Trigger)	Input	Triggers the publishing of the data for the set profile. Note: The port is only available if a profile has also been assigned in the Topic Channel Editor.
QoS	Output	The Quality of Service (QoS) level is an agreement between the sender of a message and the receiver of a message that defines the delivery guarantee for a particular message. There are 3 QoS levels in MQTT: • 0: "Fire-and-forget" - the packet is sent exactly once. Arrives, maybe not sometimes, analogous to the UDP protocol. Delivery: enormously fast. • 1: "Acknowledgement" - the receiver confirms to the sender that the packet has been received. It is possible for a packet to arrive more than once. Delivery: very fast. • 2: "Synchronised" - the parcel is guaranteed to reach the destination, and only once, but this variant generates slightly more "traffic". Delivery: somewhat slower.
Value	Bidirectional	Value of the topic taking into account the defined factor in the corresponding channel editor. Please note the Publish/Subscribe setting in the channel editor for each topic.
Timestamp	Output	Timestamp of the last received value.

Properties of the component

Name	Default	Function
Connection (Broker)	...	Parameter settings for Broker and Client. Detailed description see below - **Connection (Broker)**
Payload Profile [824]	0	Using self-defined payload profiles it is possible to split JSON strings transmitted in a topic into individual sub-data points of the respective topic according to the hierarchy. A separate JSON parser is therefore no longer necessary.
Channels (Broker) [824]	0	Since the EisBär MQTT broker has integrated its own internal MQTT client as a special feature, the topic to be subscribed/published as well as the associated data type can be specified here for each channel. Optionally, a descriptive name can be specified, which is also displayed when the data

Name	Default	Function
		points are created. For each topic, access can also be restricted to specific clients, provided they are present in the client list. The clients that have been entered under "Users" are displayed for selection.
Authentication (Clients)	0	For additional, controlled access - controlled under Authentication/Authorization (Users) - the corresponding IDs of the authorized MQTT clients can be created.
Authentication / Authorization (Users)	0	Controlled access control of clients can be defined via a specific user login as in the actual broker connection. Thus it is possible, for example, if there are defined clients (ID), to explicitly allow the respective user to access them. The option "Allow on every client" must then be deselected. Herewith an access control to the topics can be realized.
Authorization (Client Permissions)	0	In the client permission, the access of the clients can be defined for each individual topic or via wildcard (#). By default, all clients are allowed to subscribe and publish to all topics. As soon as the options are deselected, the authorization of the individual clients can be set for the respective Topics or also BaseTopics. There are use cases where certain clients are only allowed to publish but not to subscribe and vice versa.
Connection (Bridge)	...	The login data of the external broker with which a bridge connection is to be established is entered here.
Bridge Topics	0	Here the topics of the external broker are subscribed, which should be forwarded to the EisBär broker and vice versa. If all topics are to be forwarded, this can be achieved with the wildcard "#".
Publish system statistics	Deactivated	SYS-Topics (META-Topics), which can be used additionally for monitoring the broker. If the property "Publish system statistics" has been activated, these are automatically generated in the broker and can be called up as outputs at the component.
Maximum number of topics	200	Set the maximum number of topics that can be published on the broker. This is also the EisBär licensing factor. Standard 200 Topics = 200 components. Further Topics correspond to an equal weighting as the number of components. Maximum in the calculation is 10.000 components by entering >=10000 or -1 - both for unlimited number of topics (project license Enterprise required).
Activate topic plotter		If activated, the last X values are saved for each topic with a supported data point (numerical values that can be displayed as a double and transferred as a string) and displayed graphically when the topic is selected
Number of data points to be saved	100	Number of data points to be saved with activated topic plotter
Driver On/Off	Disabled	(De)activate the component.

Connection (Broker)

Designation	Standard	Function
Client ID	Any	Unique ID or designation of the internal MQTT client of the broker. Client ID must contain at least 10 characters.
Maximum running messages per client	512	Limitation of the maximum messages that can be pending per client at the broker (max. 10000).
Timeout [s]	5	Time until a failed connection is detected.
Allow Persistent Session	Enabled	Allow static and persistent sessions from clients.
Clear retain memory at startup	Disabled	Retain data is not deleted when the broker is restarted. There is a special communication object for manual triggering for deletion, if necessary.
Support Retain Message Storage	Enabled	This option enables the storage of retain data.
Check Authentication	Disabled	(De)Enables client login. If this option is enabled, clients must authenticate to the broker using these login credentials.
Check Authorization	Disabled	(En)Enables client authorization. If this option is enabled, the settings defined a) under Authentication/Authorization (Users) and b) under Authorization (Client Permissions) take effect. If this is deactivated, the set user and client authorizations are ignored.
Admin / Password		Username and password for (main administrator) access to the broker.
Enable unencrypted endpoint	Enabled	Communication between client and broker is unencrypted.
Local Interface IP		Local IP address of the Broker.
Port	1883	Communication port for the unencrypted connection (default: 1883). **This port must be entered in the firewall for bidirectional transmissions.**
Enable encrypted endpoint	Enabled	Communication is SSL/TLS encrypted.
Local interface IP		Local IP address of the broker.
Port	8883	Communication port for the encrypted connection (default 8883). **This port must be entered in the firewall for bidirectional transmissions.**

6.15.1.3 Channeleditors

Payload profiles / device profiles (applies to MQTT client / broker, TTN and LoRBaer device profiles): The advantage of a payload profile is primarily that if you want to evaluate several topics with the same content (JSON strings) from different sensors/actuators, the profile only has to be defined once, but can be assigned to the different topics for evaluation - this saves a lot of work and thus also time. In addition, it is no longer necessary to parse the topic through the additional component "JSON/XML parser".

In the example, the defined topic: "sp111_1/tele/sp111_1/SENSOR" contains instead of raw data, values or strings, i.e. a JSON string with several values, the content of which is structured as follows: {"Time": "2020-11-11T06:01:52", "ENERGY":{"TotalStartTime": "2020-03-01T00:00:00", "Total":154.219,"Yesterday":0.366,"Today":0.043,"Period":0,"Power":6,"ApparentPower":21,"Reactive Power":20,"Factor":0.30,"Voltage":232,"Current":0.091}}.

In a nicer representation of the JSON string, the hierarchy is a little clearer to be able to reproduce it correctly:

```
{
"Time":"2020-11-11T06:01:52",
"ENERGY":{
            "TotalStartTime":"2020-03-01T00:00:00",
            "Total":154.219,
            "Yesterday":0.366,
            "Today":0.043,
            "Period":0,
            "Power":6,
            "ApparentPower":21,
            "ReactivePower":20,
            "Factor":0.30,
            "Voltage":232,
            "Current":0.091
        }
}
```

In the payload profile editor, this hierarchy is reproduced in the same way via the main and sub-entries. It is important that the names of the entries correspond exactly to the JSON content entries and that a unique profile ID is assigned. The main entry thus contains Time and ENERGY, whereby the latter is subdivided into separate subentries (TotalStartTime, Total, etc.). In addition, settings for direction, data type and further subdivisions in the form of arrays, if available, must be made. By clicking OK, this structure is adopted for further use. Various import and export functions are also included, as well as a **wizard** for automatically generating the profiles directly from a JSON.

Note: When importing JSON, the data type must be checked!

Name	Description
Name	Name of the main and sub entries of the hierarchy
Profile ID	Unique profile ID

Name	Description
Container	With this selection, a channel becomes a container, which can have further sub-entries.
Direction	Setting of the communication direction
Data type	The data type of the channel must be set.
Is Array	If the data point has more than one piece of information, "Is Array" must be set.
Number of (Array) Elements	Specify how much data the array contains.
Use as trigger	(for MQTT/LoRBaer) If this option is set, the data is published immediately. Otherwise only when
Auto trigger when all fields are written	(with MQTT/LoRBaer) If all data points of a group have received values, the entire group is published.
Discard field values after trigger	(with MQTT/LoRBaer) Deletes the value from the transmission protocol so that this must always be reset and can no longer contain old data.
Factor	Factors the number with the set value.
Default Value	Describes the topic with a default value.
Output Default Value	Determines whether the default value is to be used or not.

In the **channel editor of** the MQTT client/broker, the respective defined payload profiles can now be assigned to the topic(s). After accepting the new settings, the "Dynamic" folder is automatically updated in the communication window and now reflects 1:1 the data point structure for tapping the actual JSON string. Do not forget to set the topic data type to string when working with payload profiles.

Channel settings (Topics):
The discovery function only works if the connection settings to the MQTT broker have been entered correctly beforehand. Columns marked with (*) can be edited simultaneously via the multi-select function.

Options in the channel editor:

+	Add a topic.
x	Delete the selected topic.
Import (CSV)	Imports a topic list from a CSV file. Existing topics will be deleted!
Import and Add (CSV)	Imports a topic list from a CSV file. The imported topics are added to the existing ones.
Export (CSV)	The created topics can be exported as a CSV file. There are 3 possibilities: CSV: Exports the created topics. This file can also be imported into the MQTT Broker[817] . CSV with basetopic: If a basetopic was defined in the properties of the component, it is inserted before the topic name. This file can also be imported in the MQTT Broker[817] . Details: This export is for documentation purposes only.
Collect Topics	*(MQTT client ONLY)* With this function topics can be searched and added.
Import selection	This function can be used to generate topics based on other driver exports. See Driver Gateway[546]
Edit Selected Topics	With this function the topic names can be changed.

Name	**Function**
Topic	Structure or topic of the topic, e.g. geaeude/gebaeudeteil/raum/sensor/temperatur/wert.
Name (*)	Freely definable name for the topic.
Data type (*)	Type of data as it is transmitted/translated from/to the broker.
To Value (*)	Default: True (Bool). This column is only valid in connection with data type "Boolean" and is intended for a replacement rule, if e.g. a Topic does not contain or should not contain True, but ON / ON / OPEN / UP / etc..
Off Value (*)	Default: False (Bool). This column is only valid in connection with data type "Boolean" and is intended for a replacement rule, if e.g. a topic does not contain or should not contain False, but OFF / OFF / CLOSE / DOWN / etc.
Factor (*)	Factor for numeric values.
QoS Level (*)	Setting of the "Quality of Service" level.
Retain (*)	If Retain is active, the last value from the client is retained at the broker. If a client or several clients connect to the broker again and have subscribed to this topic, this value is published immediately.
Publish (*)	Activates the sending of data to the broker (publish).
Subscribe (*)	Activates the receiving of data from the broker (subscribe).
Profile	Uses the set profile (see Payload Profiles below). Payload profiles are used if the topic contains a JSON string. The data type of the topic must then be set to String.

6.15.1.4 MQTT Bridge [x200]

The MQTT-Bridge is used to exchange information between 2 MQTT-Brokers. The functionality of the bridge corresponds to two MQTT clients. Therefore, the access to topics can be set accordingly in the broker under "Allowed Clients".

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service.**
Extended diagnosis	Input	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Driver On/Off	Bidirectional	(De)Activate the component.
uptime bridge	Output	Runtime, how long the bridge connection between 2 brokers is online.
Uptime Client A	Output	Term, how long the Broker A connection is online.
Uptime Client B	Output	Runtime, how long the Broker B connection is online.
Connection status Bridge	Output	Outputs the current connection status of the bridge as on/off signal.
Connection status Client A	Output	Outputs the current connection status of Client-A as an on/off signal.
Client B connection status	Output	Outputs the current connection status of client B as an on/off signal.

Properties of the component

Name	Standard	Function
Channels	0	The topic to be transferred is entered here. If only # is entered, all topics are forwarded.
Connection A	...	Editor for specifying the connection data to MQTT Broker A.
Connection B	...	Editor for specifying the connection data to MQTT Broker B.
Driver On/Off		(De)Activating the component

Connection A/B (to the broker):

Designation	Function
Server URL/IP	Specification of the MQTT server (broker) to be queried.
Port	Specifying the communication port (1883 or 8883(TLS)). This port must be entered in the firewall.
User / Password	For authentication, the user name and password are required (leave blank for anonymous access).
Timeout	Communication timeout in seconds.
Client ID	Name for the client (this EisBär component). This may only be used once. If the component is copied, a new ID must be generated. The ID must be at least 10 characters long.
Websocket	Optionally, you can specify whether the connection should be established via web socket.
TLS	Depending on the server, the connection can also be encrypted with TLS. This will activate the fields for "Accept all certificates" and "Server certificate".
Accept all certificates	The client accepts all server certificates.
Server certificate	Path specification to the server certificate that is to be used for communication. Example: C:\Program Files (x86)\Alexander Maier GmbH\EisBär SCADA 3.0\mqttbroker.cer

6.15.2 Azure IoT Hub Service [x500]

This component enables interaction with devices configured within Azure IOT Hub. It is possible to receive and evaluate/output complex data structures (JSON format) sent asynchronously by the device, as well as to send commands (strings or JSON objects) to devices. It is possible to define the possible data structures (structure of the sent JSON objects of the different device types) in a separate editor and to assign these structures in the device editor to the respective devices (a data structure can be several similar devices).

The possible commands are also defined in a separate editor and determines which types of devices support the respective commands (a command can be assigned to multiple device types).

Component data points

Name	Type	Function
Debug [text]	Output	Error texts are output here. These can be displayed, for example, with the "Log Window" component. **Attention: Diagnosis or debug - outputs are only intended for the error case. Please use only with consultation with the support team! these may significantly affect the performance of the service when used**
Advanced diagnostics	Input	(De) Mr President, I would like to thank Enables advanced debug output. **Attention: Diagnosis or debug - outputs are only intended for the error case. Please use only with consultation with the support team! these may significantly affect the performance of the service when used**

Name	Type	Function
Dynamic	Folder	The dynamic data points are created in this folder.
Driver On/Off	Bidirectional	(De) Activate the component.
Connection state	Output	Boolean display for the connection status.

Properties of the component

Name	Standard	Function
Connection	…	The Connection String can be copied in the IOT Hub via Settings - Shared Access Policies - <user with Access> - Shared Access Key - Connection String - Primary Key. Specifying a protocol gateway is only required if one is used.
Types	0	Editor for creating the different device structures. Here you can create different device types and define the structure (hierarchy, name and data type of the values) of the JSON data that the device sends
Commands	0	In this editor, the various commands that can be sent to devices can be defined. These can be simple, static strings (sent on triggers) or strings that dynamically include a value (the <VALUE> wildcard is then replaced by the value sent to the data point). In addition, it is necessary to specify which types of devices (defined in the previous editor) support this command (multiple selection possible).
Devices	0	Here, the devices can be imported from Azure IOT Hub and assigned to each device one of the defined device types.
Driver On/Off		(De) Mr President, I would like to thank Activate the component.

6.15.3   The Things Network [x500]

This special driver enables the connection to a TTN network (e.g. LoRaWAN - Long Range Wide Area Network) to receive data.

Global data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These canbe displayed e.g.with the component "Protocol window" .**Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**
Extended diagnosis	Input	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service**
Dynamic	Folder	The dynamic data points are created in this folder.
Driver On/Off	Bidirectional	(De)Activating the component
Connection status	Output	Outputs the current connection status as on/off signal.

Dynamic data points per device created

Name	Type	Function
Json Data Downlink	Input	Downlink request of the data in the form of a JSON data packet.
Port Set Downlink	Input	Request of the data packet via the transferred port.
Raw data downlink	Input	Downlink request of the data in raw data format [bytes].
Field Trigger Downlink	Input	Downlink request for the field data points via this trigger input.
Payload [bytes]	Output	Output of the transported raw data as a byte array of the last data packet.
QoS	Output	Output of the QoS (Quality of Service) of the last data packet.
Fields	Folder	If a device profile has been created, these data points are mapped in this dynamic folder.
TTN	Folder	Output of specific data of the respective device such as payload, port, metadata, gateway information, etc.
Value	Output	Output of the value of the last data packet.
Time stamp	Output	Timestamp of the last data packet.

Properties of the component

Name	Standard	Function
Device profiles	0	Creation of device profiles with main entry and individual or multiple subentries. Further processing, e.g. via an additional JSON/XML parser, is thus no longer necessary, as the individual data can be output directly.
Channels	0	In the channel list, the individual LoRa devices are created according to their assigned TTN ID (online in the TTN portal account) and a profile can also be assigned for each device that was previously created in the device profile editor.
Connection	...	Editor for specifying the connection data to the server (see below).
Driver On/Off		(De)Activating the component

Connection:

Server URL/IP:	IP address or host name of the server to be queried (default: eu.thethings.network).
port:	Specification of the communication port 1883 or 8883 (TLS).
TTN Application ID:	Enter the generated application ID from the portal account at TTN (online).
TTN Application Access Key:	Enter the generated Application Access Key of the application from the portal account at TTN (online).
Timeout [s]:	Communication timeout in seconds.
Client ID:	Unique designation for this client, which may only be used once. If the component is copied, a new ID must be generated or a new unique name selected. The ID must be at least 10 characters long.
TLS:	Depending on the server, the connection can also be encrypted via TLS. This activates the fields for "Accept all certificates" and "Server certificate".
Server certificate:	If not all certificates should be accepted, the absolute path to a certificate can be entered here.

Device profiles (profile editor):

In the device profile editor, corresponding subentries of a LoRa device or for a complete device series can be created.

Channels (Device Editor):

In the device editor, the devices required for data exchange can be created and additionally provided with the practical device profiles, which of course must be created beforehand.

Name	TTN ID	Geräteprofil
Temp-Humidity-01	xxxxxxxxxxxxxxxx	Temp-Humidity (LoRBaer-THO-01)
Temp-Humidity-02	xxxxxxxxxxxxxxxx	Temp-Humidity (LoRBaer-THO-01)
Parking Sensor	xxxxxxxxxxxxxxxx	n.a.

TTN Geräte-Editor — Export CSV Import CSV — OK Abbrechen

Example (data points of a LoRa sensor/actuator with active device profile) from the communication window:

- Temp-Humidity-01 (xxxxxxxxxxxxxxxx)
  - Downlink JSON [Text] — Zeichenketten
  - Downlink Port — UInt32
  - Downlink Roh-Daten [Bytes] — DataPointByteArrayValue
  - Downlink Trigger (Felder Datenpunkte) — Beliebig
  - Felder
    - Battery — UInt32
    - Firmware — Zeichenketten
    - Humidity — UInt32
    - Temperatur — UInt32
  - Payload [Bytes] — DataPointByteArrayValue
  - QoS — Zahl 8bit
  - TTN
    - Anwendungs-Id — Zeichenketten
    - Geräte-ID — Zeichenketten
    - Hardware Seriennummer — Zeichenketten
    - Metadaten
    - Payload (Bytes) — DataPointByteArrayValue
    - Payload (String) — Zeichenketten
    - Payload Felder (JSON) — Zeichenketten
    - Port — Zahl 32bit
  - Wert — Zeichenketten
  - Zeitstempel — DateTime

6.15.4 LoRBaer

LoRaWAN®

LoRaWAN® is a Low Power Wide Area Network (LPWAN) protocol that allows predominantly battery-powered "things" to be wirelessly connected to the Internet in regional, national or global networks, targeting key Internet of Things (IoT) requirements such as bidirectional communication, end-to-end security, mobility and localization services.

LoRBaer

LoRBaer is our LoRaWAN ECO system, which provides the LoRa network server and its services for the 868MHz (EU), as well as 915MHz (US) frequency bands. LoRa gateways and devices can be created, managed and administered easily and clearly in a web interface. The access to the received data is enabled via the component "LoRBaer-LoRaWAN", as well as the sending to the LoRa device, if supported.

LoRBaer LoRaWAN

LoRBaer LoRaWAN ECOSystem

- o [LoRBaer - LoRaWAN (Component)](#) [834]
- o [LoRBaer LoRaWAN Network](#) [838]

6.15.4.1 LoRBaer - LoRaWAN [x500]

The LoRBaer - LoRaWAN component allows access to our LoRBaer LoRaWAN Network Server (LNS) for EU868 or US915 frequency bands.

To use our LoRaWAN network server "LoRBaer" a paid account is required, which can be created on our homepage https://www.lorbaer.io. For access to our LoRBaer network server individual account data will be sent to you and you can then create your own LoRa devices and gateways.

Via the EisBär LoRBaer LoRaWAN component the incoming data can be retrieved and processed at the network server of the own account. Depending on the device specification, uplinks are also possible, e.g. to query a device status, to switch relays or to reset them.

Data points of the component

Name	Type	Function
Debug [Text]	Output	Error texts are output here. These canbe displayed e.g.with the component "Protocol window" .**Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**
Verbose debug	Input	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service**
Dynamic	Folder	This folder contains the dynamic data points from the imported LoRa gateways and devices.
Last message [Text]	Output	Output of the last telegram message from the LoRBaer network server.
Status (overall)	Output	General status display of the active connection.
Status (API)	Output	Status display for the API of the active connection.
Status (message reception)	Output	Status display of message reception of the active connection.
Driver On/Off	Bidirectional	(De)Activating the component
Uptime	Output	Output of the uptime as text in the format dd.HH:mm:ss
Uptame [s]	Output	Output of the uptime as a number in seconds.

Properties of the component

Name	Standard	Function
Connection	...	The connection property contains the data of the personal user account, which will be sent after the initial order. The server address is by default: **lora.lorbaer.io**
Device Profiles[824]	0	Existing device profiles can be imported from the personal user account, edited and also created manually.
Devices	0	The button "Import from server" opens a separate device browser, which allows to select and import all or only single devices from the account. After accepting with OK, the selected devices are taken over in the list and mapped in the "Dynamic" folder in the "Devices" category. Details on this can be found in the following section under "Devices".
Gateways	0	The "Import from Server" button opens a separate gateway browser, which makes it possible to select and import all or individual gateways from the account. After accepting with OK, the gateway(s) in the list are taken over and mapped in the folder "Dynamic" in the category "Gateways". At the same time, the global statistics data points for all imported gateways within this folder are also created. Details on this can be found in the following section under "Gateways".
Driver On/Off		(De)activating the component.

Connection:

Preset	Selection for transmission frequency European/American
Server	Default: **lora.lorbaer.io**
Port (REST API)	Default: 8080
Port (MQTT)	Default: 1883
User (E-Mail)	Email address used when creating the account.
Password	Password sent after account creation.
Timeout	Default: 2 seconds
Test	This button is used to test the connection to the server.

Gateways:

After the gateway browser has opened, the organization's gateways can be selected and imported using the "Import from server" icon. The name of the gateway can be changed later - the gateway name and ID cannot be changed, as these were clearly created in the LoRBaer server.

Device Browser & Device Editor:

As with the import of gateways, the same function is also provided for devices. Via the icon *"Import from server"*, all or individual devices can be imported from the LoRBaer server of the organisation via the device browser. Here, too, the names of the devices can be adjusted again. All other fields, except for the profile ID, cannot be changed. The profile ID can be imported once from the server via the device profile editor or own profiles can be created. As long as no unique profile has been assigned to the device, it is marked with *_unknown* in the profile ID.

LoRBaer Geräte-Editor

Importieren Exportieren

	Name	Geräte-Name	Geräte-EUID		Anwendungs-Id	Profil-Id	
▶	comtac-lpn-modbus-001	comtac-lpn-modbus-001	7(	9	34	_unknown_ (e9	86)
	DRAGINO-LGT-92-C	DRAGINO-LGT-92-C	a	6	28	_unknown_ (9a	ad)
	DRAGINO-LGT-92-D	DRAGINO-LGT-92-D	a	b	28	_unknown_ (9a	ad)
	dragino-lht65	dragino-lht65	a	8	5	_unknown_ (5b	ec)
	elsys-ers-eye-01	elsys-ers-eye-01	a	2	23	_unknown_ (6f	23)
	klax-energy	klax-energy	b	f	6	_unknown_ (23	e3)
	Parkplatz-06	Parkplatz-06	f	4	20	_unknown_ (65	a8)
	tbdw100	tbdw100	5	9	7	_unknown_ (02	c7)
	tbol100-01	tbol100-01	5	D	7	_unknown_ (e6	c1)

OK   Abbrechen

Device profiles:

Via the device profiles, the values that have been stored in the decoder of the corresponding device or device group in the LoRBaer server can be integrated directly. Via the import, the created device profiles are loaded from the LoRBaer server account and can then be supplemented with the decoder values that are required. Make sure that the data fields are written correctly.

For each device group it is thus possible to create a profile including the data fields once and finally assign it to the devices in the device editor. For each device, the corresponding data connections are automatically created in the dynamic "Devices" folder in the communication and data point windows.

LoRBaer Profil - Editor

Importieren Exportieren Importieren und Hinzufügen

Name	Profil Id	Container	Richtung	Datentyp	Anzahl (Array-) Elemente	Als Trigger verwenden	Auto-Trigger wenn alle Felder beschrieben	Feldwerte nach Trigger verwerfen	LORA Port
▶ ⊿ pls-data	722651c1-f1a4-...	✓			1				0
bytes	722651c1-f1a4-...		Vom Gerät	Object	1				3
occupied	722651c1-f1a4-...		Vom Gerät	Boolean	1				3
packet_type	722651c1-f1a4-...		Vom Gerät	String	1				3
port	722651c1-f1a4-...		Vom Gerät	Double	1				3

OK   Abbrechen

In the device editor, the created device profiles can be quickly and easily assigned in the "Profile ID" column - if there are a large number of identical devices in a device group, this new option saves a lot of work and time. An automatic readout of the decoder is unfortunately not possible, as there are a lot of devices which, depending on the LoRa port setting, output different values on the data fields or which are too complex and too extensive to automatically integrate this into profiles.

LoRBaer Geräte-Editor   ×

Importieren   Exportieren

Name	Geräte-Name	Gerät...	Anw...	Profil-Id
Truck-Stop-01	BATC_Space_1	fcd6b...	21	pls-data (722651c1-f1a4-4c71-a844-ab5d1887bd05)
Truck-Stop-02	Truck-Stop-02	fcd6b...	22	pls-data (722651c1-f1a4-4c71-a844-ab5d1887bd05)
Truck-Stop-03	Truck-Stop-Ex...	fcd6b...	25	pls-data (722651c1-f1a4-4c71-a844-ab5d1887bd05)
Truck-Stop-04	Truck-Stop-04	fcd6b...	26	pls-data (722651c1-f1a4-4c71-a844-ab5d1887bd05)
Truck-Stop-05	Truck-Stop-05	fcd6b...	27	pls-data (722651c1-f1a4-4c71-a844-ab5d1887bd05)

OK   Abbrechen

6.15.4.2 LoRBaer LoRaWAN network

LoRaWAN®

LoRaWAN® is a Low Power Wide Area Network (LPWAN) protocol that allows predominantly battery-powered "things" to be wirelessly connected to the Internet in regional, national or global networks, targeting key Internet of Things (IoT) requirements such as bidirectional communication, end-to-end security, mobility and localization services.

LoRBaer LoRaWAN

Information about our LoRBaer LoRaWAN network

With our LoRBaer LoRaWAN - ECOSystem LoRa gateways, LoRa sensors and actuators can be integrated and administrated under a user-friendly web interface for device management. By means of the special EisBär - LoRBaer LoRaWAN component, both data traffic and status of the integrated gateways, as well as each individual LoRa device, can be used via the personal access account. The LoRa operating modes for Class A, B and C operation are supported and is LoRaWAN 1.0 and 1.1 compatible.

 Further information on the technology, LoRa gateways and devicescan be found on thespecially created website https://www.lorbaer.io.

6.16   Multimedia

This chapter describes the functions and properties of the components in the Multimedia category.

The following driver components are currently available:

- [Sonos](#)[840]
- [Bose SoundTouch](#)[842]
- [Denon HEOS](#)[854]
- [Revox Voxnet [x200]](#)[857]
- [Yamaha MusicCast](#)[867]
- [AUDAC AMP](#)[872]
- [Panasonic TV](#)[873]
- [Lightware MX2](#)[874]
- [Lightware VINX](#)[877]
- [UPNP](#)[878]
- [PJLink](#)[879]
- [IRTrans](#)[881]
- [Global Caché](#)[891]
- [Media player](#)[896]

6.16.1 SONOS

The SONOS driver is an invisible server component with the possibility to control SONOS PLAYER. Under Busbaer.de In the *Download tab - EisBear SCADA COMP* there is also a template with four players, whereby the first player is fully internally is linked.

Note: The Windows network settings must be set to "**private**" or "**work**".
These are for Windows 8.1 and higher Notes[20] To be observed.

The basic setup of the SONOS system via the SONOS app or the SONOS Desktop Controller. Then, the individual player, each with a EisBear SONOS component as well.

Data points of the component

Name	Type	Function
Add to Playlist	Input	Adds a selected title to the standard playlist from the SONOS device - ideal in combination with the component: "File selection".
Album	Output	Specifies the name of the album from
Artist	Output	Outputs the name of the interpreter
Clear playlist	Input	To the current playlist is deleted. The input does not respond to.
Composer	Output	Specifies the name of the composers from
Debug	Output	**Caution: Diagnostic or debug outputs are only in the event of failure. Please use only with consultation with the support team! This can significantly affect the performance when using the service.**
Driver On/Off	Bidirectional	Enables or disables the SONOS-driver in the polar bear.
Join Group (Master UUID) [String].	Input	By entering the UUID of the master Sonos, this player is added to the other (grouping).
Mute	Bidirectional	Via an ON or OFF, the mute is enabled or disabled.
Next	Input	An ON will advance one track in the current playlist. The input does not react to OFF.
Pause	Input	This data point can be paused the playback. In the Radio Mode This such as stop responding.
Play	Input	To begin playback. The input does not respond to.
Play Media File	Input	A string is a song or play list. The playback begins immediately. Here is the exact path of the file to be played UMC must be entered. It is important to note that this path must be known to the SONOS, so in the music library of the SONOS.
Play media file and return	Input	A title or a playlist is transferred via a character string. Playback begins immediately. The exact UMC path of the file to be played must be entered here. Please note that this path must be known to the SONOS, i.e. it must be available in the SONOS music library. If the media

Name	Type	Function
		file has been played, the player automatically switches back to the last known source.
Play radio channel	Bidirectional	A character string is an internet radio station. The playback begins immediately. There are streams with the extension *.m3u, *.pls, or *.asx allowed. Http:// At the beginning.
Previous	Input	A program will be the current playlist a title jumped back.
Sonos device offline	Output	Specifies whether the SONOS is online or offline. Here is a an-signal is issued, this could the Sonos device cannot be reached.
Source - URI	Output	Output from the storage path of the source
Start playlist	Input	Via an ON or OFF, the current playlist plays.
Start / Stop	Bidirectional	About a ON/OFF the playback is stopped or restarted.
Stop	Input	To the playback is stopped. The input does not respond to.
Title / Information	Output	Displays the title or information to
UUID	Output	Output of the unique ID of the SONOS player.
Volume	Bidirectional	Sets the volume about values from 0 to 100. e.g. via the controller component or direct values or value entries.
Volume down	Input	To the volume by 10%. The input does not respond to.
Volume up	Input	A, the volume increased by 10%. The input does not respond to.

Properties of the component

Name	Standard	Function
IP address	127.0.0.1	IP address of the player. **It must be entered 127.0.0.1 If the search is used.** If the search via the property "SONOS PLAYER" does not work, then you must enter the IP address of the SONOS PLAYER must be entered.
Driver On/Off		Switch driver on or off.
Show Player Status		If this setting is set, the information from the Sonos is output at the bidirectional data points.
Query status cyclically (polling)		With this selection, the status of the connected SONOS player is read out cyclically every 30 seconds.
Sonos Player		Search dialogue for the search of SONOS players in the local network. They must **not** be in the same group when they are first integrated.

If the search function does not yield a result (e.g. due to blocked ports) is the connection via the IP address. The IP addresses of the SONOS player in the Sonos Desktop Controller/App, in the Help

menu under "About my Sonos System" is displayed. It is important to note that the IP address of the SONOS PLAYER then in the DHCP server to assign the lease time is or should be increased accordingly, otherwise the connection can be lost to the player, since the player does not with a fixed IP address.

At the moment to search must be twice the "Search" button.
The list displays all the available SONOS PLAYER. Select the desired player is and will be in accordance with the "Accept Selection".

Possible radio stations can be found at https://rrradio.de/radiosender/

6.16.2 Bose SoundTouch

The Bose® SoundTouch® driver is an unVisiblee server component that provides the ability to control and display Bose® SoundTouch® audio devices (such as Soundtouch 10, Soundtouch 20, etc.). It is also possible to merge them into zones and to dissolve them again.

Under busbaer.de in the register *Download - EisBär SCADA - SCADAComp* there is also a sample templateDirect.

Annotation:
Depending on the state of the Bose® API for sound-touch players, new functions are added or may even be omitted. Please understand, if we can only play the functionstand of the API. Of course, we endeavor to map the functionality 1: 1, but can not fully guarantee this. Special functions have now been implemented deviating or for required reasons, especially in the component that is not or not yet documented in the API.

The basic setup of the audio device is via the Bose® app or the Bose® desktop controller from Bose®. After commissioning, you can integrate a player into the EisBären with one component each and thus not only directly via the visualization but also via other connected systems, eg. KNX / Z-Wave / etc. control.

For Windows 8.1 and higher, these [instructions](#)[20] should be followed.

Data points of the component (general):

General or Global Communication Ports (SPs)

Name	Type	function
Refresh ARP-Liste	Input	To add a slave to a zone, the zone master must be given the ID and the IP of the slave. If the IP address changes frequently and can therefore be sent to the "add slave to zone" data point, the component will try to determine the IP address based on the ID (corresponding to the primary MAC address of the device). This is done by searching a list kept by the computer. If there is no matching entry for this MAC address, there are two options: A) the device has not yet been found by the system - here the data point "update ARP list" helps. The then carried out network scan can take some time B) The device ID does not match the MAC address of the interface used by the BOSE system (WLAN / Ethernet). In this case, the query of the IP address based on the device ID will not work and the IP address is mandatory when calling the data point additionally specify (MAC; IP)
Bass	Bidirectional	Output / setting of the bass value (possible values depend on the device and are output via the two following connections (SPs).
Bass Maximum	Output	Maximum possible setting for the bass
Bass Minimum	Output	Minimum possible setting for the bass
Notification Volume	Bidirectional	Adjust the volume level on the player for notifications.
Use current volume for notification	Bidirectional	Status output and / or activating / deactivating the volume on the player playing for notifications received at the "File Play (URL)" input.
Play File (URL)	Input	Plays the file at the specified URL (including http: //) with the volume specified in the properties (or the current, if set) volume and then returns to the current status
Debug	Output	Diagnosis or DebugOutput. This connection is intended for analysis only in the event of a fault or during initial startup.
Device On/Off	Bidirectional	Turns the Bose® player on / off. Output of the values defined in the properties (can be overwritten at runtime)
Mute	Output	Output of the current mute state (mute)
Volume	Bidirectional	Output and adjustment of the volume
Request state	Input	Manual trigger for status query
Driver On/Off	Bidirectional	Component on or off. Output of the values defined in the properties (can be overwritten at runtime).
Connection State (REST)	Input	Status of the connection to the command interface of the device
Connection State (Websocket)	Input	Status of the connection to the asynchronous event interface of the device
Status update (cyclic)	Bidirectional	Activation / deactivation of the cyclical output of the status values or output of the values defined in the properties (can be overwritten at runtime)
Status update delay [s]	Bidirectional	Delay in seconds between the update status cycles or output of the values defined in the properties (can be overwritten at runtime)

Subfolder - Device info (Data points):

The Device Info folder contains additional SPs with device-specific information

Name	Type	function
Account UUID	Output	Output of the account to which the learned player has been registered (Bose® account)
ID	Output	Output of the ID or MAC address of the player. This is needed if e.g. other players (SLAVES) should be added to the group / zone where this player is the MASTER
Country code	Output	Output of the country code to which the player has been set
Modul type	Output	Output of the sound module type of the player
Name	Output	Output of the player name given to the player at the setup
ID (MAC Addresse/IPs)	Output	Output of the MAC addresses / IP addresses of the player
Region code	Output	Output of the region code to which the player has been set
Type	Output	Output of the player type e.g. Soundtouch 20
Variant	Output	Output of the device variant
Variant modus	Output	Output of the additional type specification of the player

Subfolder - Now runs:

Please note that depending on the source selection, the function / label of the outputs should be adjusted individually in the visualization. The outputs are generalized and not explicitly assigned to a source. Keep in mind that we have no influence over the output at the individual SPs - these are mostly source-dependent.

Name	Type	function
Album	Output	Name of the album
Album/Track Art-URL	Output	Image URL of the current track / album
Content Blob (Text)	Output	ContentItem - Output (Source, Location, Account, etc.), which can be used for special functions / analyzes (see below: Analysis)
Content Name	Output	Name of the title / podcast sequence / interpreter / sender
Content Source	Output	Unique ID of the source e.g. 0 = Amazon, 6 = NAS, 7 = AUX, 10 = OFF / StandBy, 15 = Bluetooth, 16 = TuneIn
Content Source (Account) [Text]	Output	Unique name / ID of the source e.g. NAS = ID string, TuneIn
Content Source (Location) [Text]	Output	Location of the source, e.g. NAS = unique ID of the track
Content Source [Text]	Output	Content / location of the source
Content Source Art-URL	Output	Image URL of the sender / source /
Artist	Output	Name of the artist / interpreter
Station Name	Output	Name of the selected station
Station Location	Output	Location of the selected station, depending on source
Status	Output	Current status of the player as text over the playing source (1 = Play; 2 = Pause; 3 = Stop; 4 = Buffering [Skip])
Status [Text]	Output	Current status output as ID of the player from the source being played (1 = Play; 2 = pause; 3 = stop; 4 = buffering [Skip]
Track	Output	Issue of the title name
Repeat Mode	Output	Repeat active / inactive
Repeat Mode [Text]	Output	Repetition as text output
Time Current	Output	Previous runtime in seconds
Time Current [hh:mm:ss]	Output	Previous run time in hours: minutes: seconds
Time progress	Output	Progress output of current title in percent, depending on source
Time Total	Output	Total running time in seconds, depending on source
Time Total [hh:mm:ss]	Output	Total track length / podcast sequence in hours: minutes: seconds, depending on source
Time Remaining [hh:mm:ss]	Output	Output the remaining time of the current track in hours: minutes: seconds, depending on source
Shuffle Mode	Output	Output whether the random mode is active or not (true / false), depending on source
Shuffle Mode [Text]	Output	Output of random mode in text form (ON / OFF), depending on source

Subfolder - Presets:

So far, Bose® has provided six assignable preset memories that can be accessed via buttons and remote control. These locations are recorded in the Soundtouch app or in the Soundtouch desktop software. For reasons of space, only the data point description for the first preset was listed. The other five presets are identical.

Name	Type	function
Preset Art-URL	Output	Output of the image of the stored preset, if available
Preset Active	Output	Output of the current status of the preset (on / off)
Preset Name	Output	Output of the preset name
Preset Number	Output	Output of the preset number
Preset Source	Output	Output of the preset source

Subfolder - Source:

The following 10 sources can currently be selected directly in the "Source" folder - but must be populated with additional information (text content), for example. with the desired station ID, playlist on a NAS, etc. - see analysis / tools at the end of the data points.

Name	Type	function
Amazon	Input	Switches to the specified source: Amazon and returns the contents of the string that you have determined through the analysis and send to this input
AUX	Input	Switches to the specified source: AUX (depending on the device, several are available.) Without specification the default source "AUX" is used automatically.
Buetooth	Input	Switches to the Bluetooth input (no further information required)
ContentItemBlob [XML]	Input	Switches to the specified source: ContentItemBlob and returns the contents of the string that you have determined through the analysis and send to this input
Deezer	Input	Switches to the specified source: Deezer and returns the contents of the string that you have determined through the analysis and send to this input
Deezer source type	Input	Pass the source type to Deezer via this data point. It is important that Deezer and Deezer source types are triggered shortly after each other.
Internet Radio	Input	Switches to the specified source: Internet Radio and plays the content of the string that you have determined through the analysis and send to this input
NAS	Input	Switches to the specified source: NAS and returns the content of the string that you have determined through the analysis and send to this input
RadioPlayer	Input	Switches to the specified source: RadioPlayer and returns the content of the string that you have determined through the analysis and send to this input
Spotify	Input	Switches to the specified source: Spotify and plays back the contents of the string that you have determined through the analysis and send to this input
TuneIn	Input	Tune to the given provider "TuneIn" with over 120,000 radio stations and podcasts and play back the content of the string that you've identified through the analysis and send to this input. On the website http://www.tunein.com can be searched for channels and when crossing the logos in the status bar, the ID of the sender, for example. s78373 be learned. These codes are needed when you use e.g. want to create more presets.

Subfolder - Key:

In Folder keys, there is one SP (shared property) for each possible key / function. This can be used to illustrate the functionality of a remote control and / or the basic functions of the larger players.

Name	Type	function
Power	Input	Switches the selected player ON / OFF
AUX	Input	Switches to the source AUX
Thumbs up	Input	Evaluation of a track / title with thumbs up
Thumbs down	Input	Evaluation of a track / title with thumbs down
Add Favorite	Input	Title / station / podcast / mark path as favorite (heart symbol in the app)
Remove Favorite	Input	Selected track / channel / podcast / path to remove favorite status (heart icon in the app)
Mute	Input	Switches the player silently (mute)
Volume up	Input	Increase the volume with a trigger
Volume down	Input	Decrease the volume with a trigger
Bookmark	Input	Bookmark the selected track / station / podcast
Pause	Input	Pause playback of the current source
Preset 1	Input	Recall the stored preset # 1
Preset 2	Input	Recall the stored preset # 2
Preset 3	Input	Recall the stored preset # 3
Preset 4	Input	Recall the stored preset # 4
Preset 5	Input	Recall the stored preset # 5
Preset 6	Input	Recall the stored preset # 6
Play	Input	Playback of the selected source
Play/Pause	Input	Start / pause playback of the selected source (toggle)
Stop	Input	Stop playback of the selected source
Track next	Input	Jump one more title
Track previous	Input	Jump back one title
Repeat all	Input	Repeat all titles (mainly playlists)
Repeat off	Input	Switch off repetition (concerns mainly playlists)
Repeat Track	Input	Repeat the selected / running title (mainly playlists)
Shuffle on	Input	Activate shuffle play (mainly affects playlists)
Shuffle off	Input	Disable random play (mainly affects playlists)

Subfolder - Zone:

These communication ports allow you to designate Bose® SoundTouch® players as Zone Masters, as well as assign the members (players) to the created zones and remove them from the zones via the corresponding MAC address of the players.

Name	Type	function
Remove Slave (enter Slave MAC)	Input	If this port is triggered and the ID [MAC address] of the desired player is passed through a string, it is removed from the zone and is currently in standby mode
Add Slave (enter Slave MAC)	Input	If the ID [MAC address] of a player is passed as a character string via this port, this will be added as a slave to the zone.
Create Zone	Input	This input activates the player as zone master, after which additional players can be added via the corresponding inputs and also removed again
Is Zone Master	Output	Status output of the zone master - active / inactive
Zone Master [ID]	Output	Output of the zone master incl. IP address and MAC address
Is Zone Member	Output	Status output of the zone member (s) - active / inactive
Zone Member(s) [IDs]	Output	Issue of the zone member (s) incl. IP address and MAC address

Properties:
Basic settings for each Bose® SoundTouch® player through the Properties window.

Name	Standard	function
Player		Enter the IP address of the desired player here. About the Bose® SoundTouch® app can be these in the "Settings - About About" quickly determine
Timeout [s]	5	Timeout for communication in seconds
Status update (cyclic)	set	Defines whether the status - current title information, volume, etc. - should be polled cyclically or not
Status update delay [s]	60	Defines the pause in seconds between the individual status requests of the player
Use current volume for notification	not set	Accepts the already set volume of the player to play a music file via the input "File play (URL), if activated. If the option is not set, the following notification volume is adopted, which can also be changed via an SP
Notification Volume	50	Preset playback volume for the SP input "Play File (URL)". As a rule, the volume value is minimum = 0 and maximum = 100
Account-ID for NAS	not set	Enter the ID of your NAS device after analysis via XML retrieval via browser or via the corresponding component outputs (see below: Analysis) (must be announced beforehand via the Soundtouch app)
Account-ID for Amazon	not set	Post the ID of your Amazon account after analyzing via an XML-request via browser or via the corresponding component outputs (see below: Analysis) (must be announced in advance via the Soundtouch app)
Account-ID for Deezer	not set	Post the ID of your Deezer account here after analysis via an XML query via browser or via the corresponding component outputs (see below: Analysis) (must be announced beforehand via the Soundtouch app)
Account-ID for Spotify	not set	Post the ID of your Spotify account after analysis via an XML-request via browser or via the corresponding component outputs (see below: Analysis) (must be announced beforehand via the Soundtouch app)
Driver On/Off	not set	This can be used to set whether or not the component should be active when the system is started. This can also be triggered via a communication port.

Analysis of source names / locations and account data:

1. **Possibility via browser (Firefox / Chrome / Edge / etc.) Via XML-retrieval**
   Start your desired source on the app, which is not available directly from EisBär SCADA. a playlist from your NAS or a special TuneIn station. Open a browser on your computer and enter the following URL in the input window: http: // IP-address of the player: 8090 / now_playing. An XML will be displayed in the browser window, from which you can copy out the required data and continue to use it in the EisBär. In the entry source = "", scourceAccount = "", location = "" etc. you can copy the required data to fill the source inputs individually. You enter the account data of the individual sources in the properties window of the player. On the source inputs send the location content by string.

In the following example, a special track is to be played from the NAS via a Bose® SoundTouch® player. The Source name is "STORED_MUSIC" after analysis (see above), "SOURCE-ACCOUNT" is the source ID for the NAS (each NAS has its own ID !!!) and the title is the content text of "LOCATION ".

Enter the source ID for NAS in the properties and send the location to the special NAS source Input via a string. Most quickly implemented via a button, select "Value (ON) Press", select value setting "String Extended" and fill with the content "1 $ @ 39574 TRACK" - connect value (push) to the SourceInput "NAS" - activate simulation - test. By pressing the button the registered title will be played. With this or as described in Variant 2, you can send any other source / title / playlist / sound effect via IceBear SCADA to the Bose player. Create your own presets or start individual playlists at different times of the day.

Sample output of an XML retrieval (NAS):

```xml
<nowPlaying deviceID="B0D5CC14A36F" source="STORED_MUSIC" sourceAccount="00113233-        -0deb33321100/0">
  <ContentItem source="STORED_MUSIC" location="1$@39574 TRACK" sourceAccount="00113233-        -0deb33321100/0" isPresetable="true">
    <itemName>06 - Heavy/Linkin Park Kiiara - One More Light</itemName>
  </ContentItem>
  <track>06 - Heavy/Linkin Park Kiiara - One More Light</track>
  <artist>Linkin Park Kiiara</artist>
  <album>One More Light</album>
  <art artImageStatus="IMAGE_PRESENT">
    http://192.168.        :50002/transcoder/jpegtnscaler.cgi/ebdart/39574.jpg
  </art>
  <time total="169">37</time>
  <playStatus>PLAY_STATE</playStatus>
  <shuffleSetting>SHUFFLE_ON</shuffleSetting>
  <repeatSetting>REPEAT_OFF</repeatSetting>
  <skipPreviousEnabled/>
</nowPlaying>
```

2. Possibility via special outputs of the component

Similar to the example above, you also get the information you need via special outputs in the component. For example, under the "Content Blob [Text]" output, you will get the most important data from the query above, and if you just need the id of the running station, the output "content source location [text]" will help you. You can use the Bose app to make special playlists / sources / podcast selections and to start the outputs of the component you want to connect to, for example, the File Logger component to start a detailed recording for further use, e.g. Use scene blocks, sequences or other preset keys to expand the scope of functions for source playback - with or without zone formation.

▲ 🗔 Now Playing

🔴 Album	Strings
🔴 Album/Track Art-URL	Strings
🔴 Artist	Strings
🔴 Content Blob [Text]	Strings
🔴 Content Name	Strings
🔴 Content Source	DataPoint8BitUnsignedValue
🔴 Content Source (Account) [Text]	Strings
🔴 Content Source (Location) [Text]	Strings
🔴 Content Source [Text]	Strings
🔴 Content Source Art-URL	Strings
🔴 Repeat Mode	DataPoint8BitUnsignedValue
🔴 Repeat Mode [Text]	Strings
🔴 Shuffle Mode	On/Off
🔴 Shuffle Mode [Text]	Strings
🔴 Station Location	Strings
🔴 Station Name	Strings
🔴 Status	DataPoint8BitUnsignedValue
🔴 Status [Text]	Strings
🔴 Time Remaining [hh:mm:ss]	Strings
🔴 Time Current	UInt32
🔴 Time Current [hh:mm:ss]	Strings
🔴 Time Total	UInt32
🔴 Time Total [hh:mm:ss]	Strings
🔴 Track	Strings
🔴 Zeit Fortschritt	Number 8-bit

▲ 🗔 Now Playing

6.16.3 Denon HEOS

Data points of the component

Name	Type	function
Debug	Output	Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	Folder Dynamic displays the outputs for the available lights. Depending on the type and luminaire, the channels below are provided.
Request state	Input	An arbitrary signal at this input triggers a query of the data. Each additional signal triggers another query.
Driver On/Off	Bidirectional	Driver on or off.
Cyclic Status-Update	Bidirectional	(De-) Activate the cyclic status update
Cyclic Status-Update delay [s]	Bidirectional	Status update delay / interval in [s].

Properties

Name	Standard	function
Device IP		IP address of the HEOS device
Port	1255	The default telnet port is 1255
Player	0	Opens the editor to import the players. The HEOS device can also offer access to other players as a "master"
Groups	0	Opens the editor for importing groups (if HEOS groups have been created)
Timeout [s]	5	Communication timeout in [s].
Cyclic Status-Update	gesetzt	(De-) Activate the cyclic status update
Cyclic Status-Update delay [s]	5	Status update delay / interval in [s].
Driver On/Off		This can be used to set whether the component should be active when the system is started.

To import a player, the following window appears:

At the group level, there are only SPs for group-based volume control.

For each player there are SPs for displaying and changing the play mode (repeat all, repeat one, repeat off as well as shuffle.
Furthermore, the status (Play, Pause, Stop) can be displayed / changed. Via "Play - Next" and "Play - Previous" the next / previous track can be played.

The volume can be influenced by different SPs. A direct bet on a value (0-100) is possible as well as the increase / decrease by a certain amount.

As a value over the SP - is triggered without a valid amount, 1 is used as a step size. In addition, the output can be directly (de) activated via the SP Mute. The output can be activated (de) alternately via toggle mute.

Various information about the currently playing piece of music is output via the "Now Playing" SPs.

▸ Denon HEOS1		
● Cyclic Status-Update	DataPointBooleanV...	
● Cyclic Status-Update delay [s]	DataPoint8BitUnsig...	
● Debug	Strings	
● Driver On/Off	DataPointBooleanV...	
▾ Dynamic		
▾ Player		
▾ Büro(-892128722)		
● Mode - Repeat all	On/Off	
● Mode - Repeat off	On/Off	
● Mode - Repeat one	On/Off	
● Mode - Shuffle	On/Off	
● Now Playing - Album	Strings	
● Now Playing - Album-Id	Number 32-bit	
● Now Playing - Artist	Strings	
● Now Playing - Image (URL)	Strings	
● Now Playing - Media-Id	Number 32-bit	
● Now Playing - Progress	Number 32-bit	
● Now Playing - Progress Total	Number 32-bit	
● Now Playing - Queue-Id	Number 32-bit	
● Now Playing - Song	Strings	
● Now Playing - Source-Id	Number 32-bit	
● Now Playing - Station	Strings	
● Now Playing - Type	Strings	
● Play - Next	On/Off	
● Play - Previous	On/Off	
● State - Pause	On/Off	
● State - Play	On/Off	
● State - Stop	On/Off	
● Volume - Down	On/Off	
● Volume - Level	Number 8-bit	
● Volume - Mute	On/Off	
● Volume - Mute toggle	On/Off	
● Volume - Up	On/Off	
● Request state	Any	

6.16.4 Revox Voxnet [x200]

If this invisible server component is created, it counts like 200 components and is used to connect the Revox Voxnet system.

Properties

Name	Standard	function
Server		IP address of the menu server. Currently manual input - if necessary (additionally) expandable by discovery-functionality (selection as Combo-Box)
Port	11224	Port of the menu server
Resource Items		Opens editor to import the "resource items". These include the room amplifiers, the users as well as the sources. The editor displays the resources reported by the menu server, editing is not possible
Zones		Zones can be created via the zone editor. These can be named accordingly and the zone ID can be specified. The project engineer must ensure that the zone IDs match those of the zones configured in the menu server (there is no function to read the configured zones).
Driver On/Off		This can be used to set whether the component should be active when the system is started.

Resource-Items (Example)

Resource Items

Import Delete

Resource Item Name	Resource Item Id	Resource Item Type
Badezimmer	#R0004A3D26B770	Amplifier
Flur	#R0004A3D29B180	Amplifier
My Music 1	#S00113236BCF10	Source
My Music 2	#S00113236BCF11	Source
S0004A3D26B770	#S0004A3D26B770	Source
S0004A3D29B180	#S0004A3D29B180	Source
User 1	#U00113236BCF10	User
User 2	#U00113236BCF11	User

OK   Cancel

Data points of the component

Name	Type	function
Debug	Output	Debug messages are output here. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic		This folder contains the "dynamic" SPs, which are created depending on the imported resources.
Events [Text]	Output	At this data point all telegrams (incoming and outgoing) are output as text.
Send Messages	Output	Output of the sent commands.
Request State	Input	This can be manually triggered a query all information (currently only for the "currently selected room / user").
Driver On/Off	Bidirectional	This allows the component to be switched on and off at runtime.

Below the folder "Rooms" a folder for the imported room amplifiers is created. The designation here corresponds to <amplifier name (amplifier ID)>

Below the room folders are the room-specific SPs, some of which are grouped in further subfolders (see Figure 2).

ent/Datapoint	Type	GA
⌄ 🗔 Rooms		
⌄ 🗔 Badezimmer (R0004A3D26B770)		
🟢 Balance (load)	DataPoint8Bit...	
🟢 Balance (minus)	DataPointBool...	
🟢 Balance (plus)	DataPointBool...	
🟢 Balance (save)	DataPoint8Bit...	
🔵 Balance (set)	DataPoint8Bit...	
🟢 Bass (load)	DataPoint8Bit...	
🟢 Bass (minus)	DataPointBool...	
🟢 Bass (plus)	DataPointBool...	
🟢 Bass (save)	DataPoint8Bit...	
🔵 Bass (set)	DataPoint8Bit...	
🟢 Mute	On/Off	
🟢 Mute (toggle)	On/Off	
🟢 Off (System)	Any	
> 🔵 On/Off	DataPointBool...	
⌄ 🗔 Play Control		
🟢 Next Track	Any	
🟢 Play (Track Number)	DataPoint8Bit...	
🟢 Previous Track	Any	
⌄ 🗔 Refer (Rooms)		
⌄ 🗔 Badezimmer (R0004A3D26B770)		
🟢 Refer to room	Any	
🟢 Refer to user	Any	
> 🗔 Flur (R0004A3D29B180)		
🟢 Refer to room (Text)	Strings	
🟢 Refer to User (Text)	Strings	
🟢 Revert Source	Any	
🟢 Revert Source (if Text)	Strings	
🟢 Select (Text)	Strings	
⌄ 🗔 Sources (Current User)		
🟢 Local (analog)	Any	
🟢 Local (coaxial)	Any	
🟢 Local (optical)	Any	
> 🔵 My Music 1 (S00113236BCF10)	Any	
> 🔵 My Music 2 (S00113236BCF11)	Any	
🟢 S0004A3D26B770 (S0004A3D26B770)	Any	
🟢 S0004A3D29B180 (S0004A3D29B180)	Any	
⌄ 🗔 Sources (Room)		
🟢 Local (analog)	Any	
🟢 Local (coaxial)	Any	
🟢 Local (optical)	Any	
⌄ 🗔 My Music 1 (S00113236BCF10)		
🟢 Revert Source (if source selected)	Any	
> 🔵 Select	Any	
> 🗔 My Music 2 (S00113236BCF11)		
> 🗔 S0004A3D26B770 (S0004A3D26B770)		
> 🗔 S0004A3D29B180 (S0004A3D29B180)		
🟢 Treble (load)	DataPoint8Bit...	
🟢 Treble (minus)	DataPointBool...	
🟢 Treble (plus)	DataPointBool...	
🟢 Treble (save)	DataPoint8Bit...	
🔵 Treble (set)	DataPoint8Bit...	
⌄ 🗔 User		
⌄ 🗔 User 1 (U00113236BCF10)		
> 🔵 Refer to room	Any	

Figure: SPs below the room folder

- For the sound settings (volume, balance, bass, treble) 5 SPs are created (set value, save value, load value, increase value, decrease value). The SPs for set, load and save accept numeric values and send this value as a storage location to the Voxnet system.
- Refer to room (text): assign a resource to the respective room. This SP can be used to specify text that is appended to the <RoomId: room: refer: TEXT> command. The texts can be deposited on buttons, for example, or later can come from a combobox created dynamically, which at runtime can be linked with e.g. RaumIDs is filled.
- Refer to User (Text): analogous to above - except that the assignment is not made to the room but to its current user (<RoomId: user: refer: TEXT>)
- Revert Source: Last room source is selected (<RoomId: user: revert>)
- Revert Source (if Text): last space source is selected if the "text condition" is correct (if the text is a user ID, then the last source is only selected if the specified user is the current user) (<RoomId: user: revert: TEXT>)
- Select (text): Selects the resource specified by the text (user or source) for the respective room (<RoomId: select: TEXT>)

Folder Play Control

- Next Track: select the next track for the room (<RoomId: next>)
- Previous Track: selects the previous track for the room (<RoomId: previous>)
- Play (Track Number): selects the specified track for the room (<RoomId: play: TRACKNUMBER>)

Subfolder Refer (Rooms)

> Play Control
∨ Refer (Rooms)
   ∨ Badezimmer (R0004A...)
      ○ Refer to room   Any
      ○ Refer to user   Any
   ∨ Flur (R0004A3D29B180)
      ○ Refer to room   Any
      ○ Refer to user   Any
  ○ Refer to room (Text)   Strings
  ○ Refer to User (Text)   Strings

Within this folder all room amplifiers are listed again (in their own folders).
Refer to room: this SP assigns the user / source of the room selected in the subfolder to the room in whose hierarchy we are located. (<RoomId: room: refer: RAUMID>)
Refer to user: analogous to above - but the room source is referenced to the current user of the room (<RoomId: user: refer: RAUMID>)

Folder Sources (Current User)

  ○ Revert Source (if Text)   Strings
  ○ Select (Text)   Strings
∨ Sources (Current User)
  ○ Local (analog)   Any
  ○ Local (coaxial)   Any
  ○ Local (optical)   Any
  > My Music 1 (S001132...   Any
  > My Music 2 (S001132...   Any
  ○ S0004A3D26B770 (S0...   Any
  ○ S0004A3D29B180 (S0...   Any
> Sources (Room)

- This sub-folder lists the available sources (communicated by the menu server and additionally the local space sources). If one of these SPs is triggered, the current room user is assigned this source (<RoomId: user: select: SOURCEID> or <RoomId: user: select: @local; stream: LOCALSOURCE> in the case of local sources)

Folder Sources (Current User)

This folder lists the available sources (communicated by the menu server and additionally the local sources). For the local sources there is only one selection-SP (<RoomId: room: select: SOURCEID> or <RoomId: room: select: @local; stream: LOCALSOURCE> in the case of the local sources) while the (in their own subfolders) Remote sources also have a revert SP. If this is triggered, the last source for the room is selected if the current source is equal to the source whose Revert-SP was triggered (<RoomId: room: revert: SOURCEID>).

Subfolder user
In this folder you can find subfolders for all submitted users.
Refer to room: Refers this user to the room in whose hierarchy we are. (<RoomId: room: refer: USERID>)
Refer to user: Refers this user to the current user of the room in whose hierarchy we are located. (<RoomId: user: refer: USERID>)
Revert source (if user selected): Sets the last source of the room, if the user corresponds to the current room user (<RoomId: room: revert: USERID>)
Select: Selects the user as the current room user (<RoomId: room: select: USERID>)

Sources:
Below the folder "Sources" a folder is created for the imported sources. Below that are SPs for controlling each source

Next Track: select the next track for the source (<SourceId: next>)
Previous Track: selects the previous track for the source (<SourceId: previous>)
Play (Track Number): selects the specified track for the source (<SourceId: play: TRACKNUMBER>)

User
Below the Folder "User" a folder is created for the imported users. Essentially, the SPs are the same as those for the rooms, except that the SPs control the users (e.g., adjust the volume for each user, regardless of the room he is in)
The "refer" SPs refer the respective source to the user.

User
- User 1 (U00113236BCF10)
  - Balance (load) — DataPoint8Bit...
  - Balance (minus) — DataPointBool...
  - Balance (plus) — DataPointBool...
  - Balance (save) — DataPoint8Bit...
  - Balance (set) — DataPoint8Bit...
  - Bass (load) — DataPoint8Bit...
  - Bass (minus) — DataPointBool...
  - Bass (plus) — DataPointBool...
  - Bass (save) — DataPoint8Bit...
  - Bass (set) — DataPoint8Bit...
  - Mute — DataPointBool...
  - Mute (toggle) — DataPointBool...
  - Off (System) — On/Off
  - Off (User) — On/Off
  - Play Control
    - Next Track — Any
    - Play (Track Number) — DataPoint8Bit...
    - Previous Track — Any
  - Refer (Rooms)
    - Badezimmer (R0004A3D26B770) — Any
    - Flur (R0004A3D29B180) — Any
  - Refer (Users)
    - User 1 (U00113236BCF10) — Any
    - User 2 (U00113236BCF11) — Any
    - Refer to room (Text) — Strings
    - Refer to User (Text) — Strings
    - Revert Source — Any
    - Revert Source (if Text) — Strings
    - Select (Text) — Strings
  - Sources
    - My Music 1 (S00113236BCF10)
      - Revert Source (if source selected) — Any
      - Select — Any
    - My Music 2 (S00113236BCF11)
    - S0004A3D26B770 (S0004A3D26B770)
    - S0004A3D29B180 (S0004A3D29B180)
  - Treble (load) — DataPoint8Bit...
  - Treble (minus) — DataPointBool...
  - Treble (plus) — DataPointBool...
  - Treble (save) — DataPoint8Bit...
  - Treble (set) — DataPoint8Bit...
  - Volume (load) — DataPoint8Bit...
  - Volume (minus) — DataPointBool...
  - Volume (plus) — DataPointBool...
  - Volume (save) — DataPoint8Bit...
  - Volume (set) — DataPoint8Bit...
- User 2 (U00113236BCF11)
- Zones

Zones
Below the folder "Zones" a folder is created for the defined zones. Essentially, the SPs are the same as those for the rooms, except that the SPs affect all rooms assigned to a zone.

○ Volume (save)	DataPoint8Bit...
› ◆ Volume (set)	DataPoint8Bit...
› ▦ User 2 (U00113236BCF11)	
▾ ▦ Zones	
▾ ▦ Zone001(1)	
○ Balance (load)	DataPoint8Bit...
○ Balance (minus)	DataPointBool...
○ Balance (plus)	DataPointBool...
○ Balance (save)	DataPoint8Bit...
● Balance (set)	DataPoint8Bit...
○ Bass (load)	DataPoint8Bit...
○ Bass (minus)	DataPointBool...
○ Bass (plus)	DataPointBool...
○ Bass (save)	DataPoint8Bit...
● Bass (set)	DataPoint8Bit...
○ Mute	DataPointBool...
○ Mute (toggle)	DataPointBool...
› ◆ On/Off	DataPointBool...
▾ ▦ Refer (Rooms)	
▾ ▦ Badezimmer (R0004A3D26B770)	
○ Refer to room	Any
○ Refer to user	Any
› ▦ Flur (R0004A3D29B180)	
○ Refer to room (Text)	Strings
○ Refer to User (Text)	Strings
○ Revert Source	Any
○ Revert Source (if Text)	Strings
○ Select (Text)	Strings
▾ ▦ Sources (Current User)	
○ My Music 1 (S00113236BCF10)	Any
○ My Music 2 (S00113236BCF11)	Any
○ S0004A3D26B770 (S0004A3D26B770)	Any
○ S0004A3D29B180 (S0004A3D29B180)	Any
▾ ▦ Sources (Room)	
▾ ▦ My Music 1 (S00113236BCF10)	
○ Revert Source (if source selected)	Any
› ◆ Select	Any
› ▦ My Music 2 (S00113236BCF11)	
› ▦ S0004A3D26B770 (S0004A3D26B770)	
› ▦ S0004A3D29B180 (S0004A3D29B180)	
○ Treble (load)	DataPoint8Bit...
○ Treble (minus)	DataPointBool...
○ Treble (plus)	DataPointBool...
○ Treble (save)	DataPoint8Bit...
● Treble (set)	DataPoint8Bit...
▾ ▦ User	
▾ ▦ User 1 (U00113236BCF10)	
› ◆ Refer to room	Any
○ Refer to user	Any
○ Revert Source(if user selected)	Any
○ Select	Any
› ▦ User 2 (U00113236BCF11)	
○ Volume (load)	DataPoint8Bit...
○ Volume (minus)	DataPointBool...
○ Volume (plus)	DataPointBool...
○ Volume (save)	DataPoint8Bit...
› ◆ Volume (set)	DataPoint8Bit...

6.16.5 Yamaha MusicCast

This driver is for communication with Yamaha MusicCast devices. **Some features depend on the connected device and the streaming service.**

Global data points of the component:

Name	Type	Function
Commands	Folder	Here the data points for the general operation of the device are stored.
Diagnose [Text]	Output	Error messages are displayed here. Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Device Info	Folder	Provides the device-specific information.
Net/USB Play Info	Folder	Playback information such as album, artist, title and more. are issued here.
Network Status	Folder	Provision of all relevant network information.
Location Info	Folder	Returns information about the ID, name, and stereo pair status.
Status update	Input	Triggers a single status query.
Status update (delay) [s]	Bidirectional	Pause between the cyclic status requests.
Status update (cyclic)	Bidirectional	Setting whether the cyclic query is used.
Driver On/Off	Bidirectional	Turns the driver on or off
Connection state	Output	Returns the connection status "On / Off".
Zones	Folder	Does the zone provide specific data points with which, e.g. Volume or sleep timer can be set / recalled.

Properties

Name	Standard	Function
Player [IP-Address or hostname]		Specification of the IP or hostname of the MusicCast.
Inputs (Sources)	0	This will import the connections from the MusicCast. Depending on the device, these can be different.
Timeout [s]	5	Timeout time for communication.
Status update (cyclic)	active	Setting whether the cyclic query is used.
Status update (delay) [s]	60	Pause between the cyclic status requests.
Driver On/Off		Turns the driver on or off by default

Commands

Name	Type	Function
Auto-Standby	Input	Turn on/off the automatic standby feature.
DAB Service (next)	Input	Moves to the next DAB service.
DAB Service (previous)	Input	Switches to the previous DAB service.
Network/USB - Playback (next)	Input	A on or off signal plays the next track.
Network/USB - Start playback	Input	An on or off signal starts playback.
Network/USB - Stop playback	Input	An on or off signal stops playback.
Network/USB - Playback (previous)	Input	An on or off signal plays the previous track.
Mains/USB - Playback (pre-rewind)	Input	This is the best way to use a button (press, let go). It is spooled as long as the button is pressed.
Mains/USB - Playback (rewind)	Input	This is the best way to use a button (press, let go). It is spooled as long as the button is pressed.
Network/USB - Pause playback	Input	Pauses playback
Network/USB - Save preset	Input	Entering a number (1, 2, ...) saves the set radio stream to that number.
Mains/USB - Repeat (Toggle)	Input	Turns on the 3 retry settings. 0=no repetition, 1=only repeat the current track, 2=all repeat
Network/USB - Random (Toggle)	Input	Turns random playback on/off.
Tuner - Set Frequency (AM)	Input	Entering the frequency in kHz.
Tuner - Set Frequency (DAB)	Input	Entering the frequency in kHz.

Name	Type	Function
Tuner - Set Frequency (FM)	Input	Entering the frequency in kHz.
Tuner - Preset (next)	Input	Moves to the next saved radio station.
Tuner - Preset (previous)	Input	Moves to the previous saved radio station.

Device Info

Name	Type	Function
Api-Version	Output	Outputs the current version of the API.
Mode	Output	Reserved
Device ID	Output	Output of the device ID as text.
Model	Output	Output of the model label as text.
System-ID	Output	Output of the system ID as text.
System-Version	Output	Output of the system version as text.
Update error code	Output	Reserved

Network/USB Play info

Name	Type	Function
Album	Output	Album-Name
Album image [ID]	Output	Internal image number
album image [URL]	Output	Path to album image.
Attribute	Output	Reserved
Automatically stopped	Output	Returns whether an automatic stop has been initiated.
Input/Source	Output	Outputs the source as text.
Artists	Output	Outputs the artist as text.
Playback	Output	Numeric display for player status. 0=Stop, 1=Playback, 2= Pause, 3=Rewind, 4=Pre-coil
Playback - pause	Output	Boolean display for pause active or not.
Playback - start	Output	Boolean display for playback active or not.
Playback - stop	Output	Boolean display for stop active or not.
playback [text]	Output	Player status as text (play, stop, pause, ...)
Title	Output	Song titles as lyrics
USB device type	Output	Output of the device type. Possible display: msc, ipod and unknown (no USB device connected).
queue [type]	Output	Reserved
Repetition	Output	Display of the repetition type. 0=no repetition, 1=only repeat the current track, 2=all repeat
Repetition (All)	Output	Boolean display whether the replay is active for all tracks or not.

Name	Type	Function
Repetition (song)	Output	Boolean display whether the replay is active for this track or not.
Time - Progress [0-100%]	Output	Shows how much percent the title was played. This is not available for all sources/services.
Time - Remaining time [hh:mm:ss]	Output	Indication of the remaining time until the title ends. This is not available for all sources/services.
Time - Game time [hh:mm:ss]	Output	Indication of the previous playing time.
Time - Game time [s]	Output	Indication of the previous playing time.
Time - Total [hh:mm:ss]	Output	Indication of the total playing time (playlist). This is not available for all sources/services.
Time - Total [s]	Output	Indication of the total playing time (playlist). This is not available for all sources/services.
Shuffle	Output	Boolean display whether random playback is active or not.

Network Status

Name	Type	Function
Airplay PIN	Output	Output of the Airplay PIN, if available/available.
DHCP	Output	Boolean display whether DHCP is active or not.
DNS	Output	Output of DNS IP
Gateway	Output	Output of gateway IP
IP	Output	Output of devices IP
MAC	Folder	Output of the MAC address as text for the LAN, WLAN and WLAN (direct) adapters.
MusicCast	Folder	
- *Number of sub-participants*	Output	Shows how many devices are connected to this MusicCast.
- *Ready*	Output	Boolean display whether MusicCast is available.
- *Device type*	Output	Returns the type of MusicCast network. Returns "unknown" if it hasn't joined a MusicCast network yet. Values: "root" / "node" / "leaf" / "standard" / "unknown"
- *Initial connection*	Output	Boolean display
- *Channel*	Output	Client number of the connected device.
Netzwerkname	Output	Room name
Connection	Output	Text output for the device's current connection
vTuner ID	Output	Reserved
WLAN	Folder	
- *Signal strength*	Output	Indication of Wi-Fi signal strength
- *SSID*	Output	Output of the network name
Wi-Fi (direct)	Folder	
- *SSID*	Output	network name from the device itself for a direct

Location Info

Name	Type	Function
ID	Output	A unit of MusicCast Network. The site is specified as the 32-character site ID.
Name	Output	Name of the site.
Stereo Pair Status	Output	Reserved

Zone 1-4 commands (Zone1 = main zone)

Name	Type	Function
Inputs/sources	Folder	Switching the different media source.
Mute	Input	Switching Silent/last set volume
Volume	Input	Setting the volume. (Note maximum volume)
Increase volume (increment)	Input	For a step-by-step change in volume, a number (increment) is entered here.
Reduce volume (increment)	Input	For a step-by-step change in volume, a number (increment) is entered here.
Network/USB - Call preset	Input	Entering a number calls the deposited preset.
Power - On/Off	Input	An An signal turns the device on, a off signal.
Power - Toggle	Input	The device is switched on and off by means of a switching edge.
Breaking off sleep timers	Input	Cancel sleep function.
Setting sleep timers	Input	Possible inputs are 0 / 30 / 60 / 90 / 120 minutes.
Tuner - Preset recall (AM)	Input	Calling the saved radio station.
Tuner - Preset recall (DAB)	Input	Calling the saved radio station.
Tuner - Preset recall (FM)	Input	Calling the saved radio station.

Zone 1-4 Status (Zone1 = main zone)

Name	Type	Function
Input/Source	Output	Display of the source currently in use as text.
Equalizer Heights	Output	Output of the currently set values.
Equalizer Mitten	Output	Output of the currently set values.
Equalizer Mode	Output	Output of the currently set equalizer mode.
Equalizer Depths	Output	Output of the currently set values.
silent	Output	Boolean display, whether silently active or not.
Volume	Output	Volume currently set.

Name	Type	Function
Link-Control	Output	Link-Control Status (speed, standard und stability)
Max Volume	Output	Outputs the maximum adjustable volume.
Device On/Off	Output	Boolean output whether the device is turned on or not.
Sleepmode	Output	Indication of whether and which sleeptimer is set.
Distribution Active	Output	Boolean output, whether the distribution is turned on or not.

6.16.6 AUDAC AMP

This driver is for communication with AUDAC AMP devices.
This driver was developed on Baisis of the AMP523 MK2. The compatibility for other products from this series is given. There are more data points available than needed by the AMP523 MK2.

Global data points of the component:

Name	Type	Function
Debug [Text]	Output	**Error messages are displayed here. Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
Dynamic	Folder	For each output / zone, the data points for the controller are created here.
Volume - WLI Input	Output	Output of the current volume at the WLI input.
Volume - WMI/MIC Input	Output	Output of the current volume at the WMI / MIC input.
Driver On/Off	Bidirectional	Turns the driver on or off.
Driver State	Output	Returns the connection status "On / Off".

Commands (Global):

Name	Type	Function
Custom command	Input	To send a custom command (e.g. #|R001|F001|GSA|0|U|)
Custom command - Response	Output	System response to the user-defined command
Load default settings	Input	Resets the device to the factory settings.
Select input (All outputs)	Input	All outputs (zones) get the same input - the same source is played everywhere. This is not supported on the AMP523 MK2 model!
Save settings	Input	If this input is triggered, the device saves the current settings as a preset.
Mute (All outputs)	Input	This will silence all outputs. This is not supported on the AMP523 MK2 model!
Volume - WLI Input	Input	Adjust the volume when WLI is used.
Volume - WMI/MIC Input	Input	Adjust the volume when WMI / MIC is used.
Volume (All outputs)	Input	Adjust the volume for all outputs. This is not supported on the AMP523 MK2 model!
Line-Input (Output 9)	Input	Special setting for the line input (output 9). This is not supported on the AMP523 MK2 model!

Properties

Name	Standard	Function
IP-Address AMP		Enter the device IP address
Outputs/Zones	0	The outputs can be created in this editor.
Device-Address	R001	Device specific address.
Address	F001	Input of the local address (EisBär) for the communication.
Driver On/Off		Turns the driver on or off by default.

6.16.7 Panasonic TV

This driver allows connection to Panasonic TVs.
Supported are the 2019 models, which support the current PAC specification:
GX800, GX820, GX830, GX900, GZ940, GZ942, GZ950, GZ1000, GZ1500, GZ2000

Global data points of the component

Name	Type	Function
Debug [Text]	Output	Error texts are output here. These may e.g. with the "Log window" component. **Attention: Diagnostics or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.**
State Update	Input	If this input is triggered, the system will update its values.
Driver On/Off	Bidirectional	(De) Activate the component.
Show URL	Input	To display a website, the URL can be entered here.
Connection State	Output	Returns the current connection status as an on / off signal.

data points

The data points represent the remote control and are named accordingly.

At the Inputs there are 3 types of data:

1. Any -> Any input signal triggers the corresponding command
2. Number 32bit -> a number must be entered (for example, when selecting a channel)
3. On / Off -> A boolean command is expected.

For the Outputs (Folder Status), some information is also output as a string (for example, the media source)

Properties of the component

Name	Standard	Function
Discover	...	Selection of the screen to be controlled.
HbbTV channels	0	Creation of channels for html access.
Update Interval	10	Specify the time interval for the update.
Driver On/Off		(De) Activate the component.

6.16.8   Lightware MX2

This driver is used to connect the Lightware MX2 devices.

Global data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**
Extended diagnosis	Entrance	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service**
Driver On/Off	Bidirectional	(De)Activate the component
Connection status	Output	Shows the connection status as On/Off.
Send/Delete Queue	Entrance	If switching commands are queued (see below), they can be sent together (for simultaneous switching of the outputs). For this purpose, a TRUE must be sent to this input. If a FALSE is sent to the input, the queue is deleted.

Dynamic data points of the component (input)

Name	Type	Function
Output to all outputs	Input	If this input is triggered, the input is output on all outputs.
Current output	Folder	For status output, on which output(s) this input (X) is output.
Output	Output	Number of the output on which this input is displayed (Attention: As an input can be displayed on several outputs, only the first output on which input X is displayed is output here)
Output 1, ...	Output	There is one such data point for each defined output. This data point is used to determine whether input X is output to output Y.
Select output	Folder	to specify the output to which the input is to be output (Attention: Since an input can be output to several outputs, old specifications remain active unless they are explicitly overwritten. If, for example, input 1 is first switched to output 1 and then to output 2, the first circuit on output 1 remains active)
Output	Entrance	Number of the output on which input X is to be output
Output (queue)	Entrance	see below
Output 1, ...	Entrance	If this data point is triggered, input X is (additionally) output to output Y
Output 1, ... (queue)	Entrance	see below

Dynamic data points of the component (output)

Name	Type	Function
Current input	Folder	For status output ,which input is output on this output Y)
Entrance	Output	Number of the input that is output on this output Y
Input 1...	Output	For each defined input there is one such data point. This data point is used to determine whether input X is output on this output Y.
Select input	Folder	to determine which input should be output to this output Y
Entrance	Entrance	Number of the input to be output to this output Y
Input (queue)	Entrance	see below
Input 1...	Entrance	If this data point is triggered, input X is output on this output Y
Input 1, ... (queue)	Input	see below
Lock	Entrance	The input (number) currently output on this output can no longer be changed.
lock status	Output	Status, whether the input is blocked or not
Mute	Entrance	Switches the output (number) silently.
Mute Status	Output	Status, whether the output is silent or not.

Queue:

If a data point marked with (queue) is used, the respective switchover is not performed directly, but is stored in a queue which is only sent to the device when explicitly triggered (send/delete global data point queue). This is used for simultaneous switching of the outputs to avoid visible delays of the individual outputs.

Properties of the component

Name	Standard	Function
number of inputs	0	Specifying the number of media inputs
number of outputs	0	Specifying the number of media outlets
Server		The IP address of the Lightware MX2 device is entered here
Port	10001	Setting for the communication port
Protocol	LW2	Selection between protocol "LW2" and "LW3"
Status query Interval	10	Specifies the time interval for the update.
Driver On/Off		(De)Activate the component.

6.16.9   Lightware VINX

This driver is used to connect the Lightware VINX devices and works with the LW3 protocol.

Global data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window" .**Attention: Diagnostic or debug outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	The data points of the devices are displayed here.
Advanced Diagnostics	Input	(De)Activates the extended debug output. **Attention: Diagnostic or Debug - outputs are only intended for error cases. Please use only with consultation of the support team! If used, these can significantly affect the performance of the service**
Driver On/Off	Bidirectional	(De)Activate the component

Dynamic data points of the component

Name	Type	Function
Input (Video Channel)	Input	Selects the channel number for the input.
Input Status (Video Channel)	Output	Status output of the channel number.
Device*	Input	Direct selection of the input device.
Device* connected	Output	Status output whether the input device is connected (on) or not (off).
Connected	Output	Indicates whether the device itself is connected (on), or not (off).

* Device = Name of the device specified in the device list.

Properties of the component

Name	Default	Function
Devices	0	Device editor to create the input and output devices.
Driver On/Off		(De)activates the component.

6.16.10 UPNP

Data points of the component

Name	Type	Function
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service**
Verbose Diagnosis	Input	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service**
Dynamic	Folder	The data points of the channels are displayed here.
Update now	Input	The update is triggered by any input.
Driver On/Off	Bidirectional	(De)Activating the component
Driver status	Output	Shows whether the driver is On (true) or Off (false).

Properties of the component

Name	Standard	Function
Channels	0	Opens the channel editor in which the devices are created.
Synchronous call	set	Defines whether the commands should be called synchronously or not.
Driver On/Off		(De)Activate the component.

Channel Editor Functions

Name	Function
Import	XML files can be read here.
Export	The created connections can be exported to an XML file here.
Discover	The device search scans the entire network and displays the results in a table. If a device is selected and accepted, it is created in the channel editor.
Collapse	Depending on the selected device, there are several sub-items. These can be closed here.
Expand	This will unfold all subitems of the devices.
Clear	Delete all entries in the list.

Channel Editor Columns

Name	Function
Name	Name of the function
Function	Specifying the function type
URN	A Uniform Resource Name is a Uniform Resource Identifier (URI) with the scheme urn , which serves as a permanent, location-independent identifier for a resource.
UUID	Displays the "Universally Unique Identifier" combination.
device type	
Data type	Specifies which data type is used here. This is also specified at the data points.
MAC	Specifies the MAC address of the network card.
Instance Count	
Channels	
default value	
trigger action	
Service	Shows the function path.
Action	Shows which command is sent here.
Argument Index	
Argument Direction	Specifies whether data can only be read (out) or can also be set (in).

6.16.11 PJLink

This driver is used to connect beamers that support PJLink communication.

Data points of the component

Name	Type	Function
Commands	Folder	This folder contains all data points for controlling the beamer. To select a media input, a number must be sent to the corresponding data point. This refers to the selection of the source if several identical inputs are available (HDMI-1, HDMI-2, ...).
Diagnosis [Text]	Output	Error texts are output here. These can be displayed e.g. with the component "Protocol window". **Attention: Diagnosis or debug outputs are only provided for the case of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service.**
Extended diagnosis	Input	(De)Enables the extended debug output. **Attention: Diagnosis or Debug - outputs are only provided for the case of error. Please use only after consultation with the support team! If used, these can significantly affect the performance of the service.**
Device accessible	Output	Shows whether commands can be sent to the device (true) or not (false).
Status	Folder	The status messages of the device are output here.
Update status	Input	The update is triggered by any input.
Driver On/Off	Bidirectional	(De)Activate the component.
UDP Receiver Status	Output	Shows whether a UDP connection exists (true) or not (false).
Cyclic status request	Bidirectional	(De)Activates the cyclic status request.

Properties of the component

Name	Standard	Function
Device IP	0.0.0.0	Enter the device IP address of the beamer.
Class 2 Device		Class 1 devices can process fewer commands than class 2 devices (see manufacturer data).
Password		If a device password has been set up, the password must be entered here.
Activate UDP receiver	X	(De)Activates the UDP connection. Depending on the device, status messages are sent cyclically from the beamer. If this is the case, this option must be selected.
Local IP	0.0.0.0	Enter the EisBär server IP address.
Cyclic status request	X	Allows cyclical updating at the set interval.
Status check Interval [s]	10	Time setting for the cyclic update in seconds.
Driver On/Off		(De)Activate the component.

6.16.12 IRTrans

The IRTrans driver is an unVisiblee server component with the ability to control any device that can be operated via IR remote control. The driver connects to the IRTrans server. This serves as an interface to the IRTrans modules. The connection is bidirectional. This allows you to send commands to the interface via the existing remote controls.
Using this component requires the installation of the IR Trans server on the server PC.
The data point / commands can be created or read manually.

Data points of the component

Name	Type	function
Driver On/Off	Bidirectional	Driver on or off.
Connection State	Output	If the connection to the server is successful, an on signal is output.
Dynamic	Folder	Folder Dynamic displays the data points for the commands. Depending on the type, outputs or inputs are provided.
Last received	Output	Here, the received commands are output formatted. The output is used to diagnose circuits.

Properties

Name		function
Channels		Here the imported or manually created channels are listed. These then appear as sub-folders in the data point Folder Dynamic.
Server	localhost	Set the IP address of the server here. When using the device name, please note that it must not contain any spaces.
Driver On/Off		This can be used to set whether the component should be active when the system is started.

Channels

IRTrans Channel Editor

Import

Name	Address	Remote	Command	Receive	Value
Channel001 (send)	0	home2	snooze	✓	On
Channel001 (receive)	0	home2	snooze	✓	

OK   Cancel

Import the configured data from the remote file from IRTrans into the channel list. When you finally exit the editor with OK, the existing data points in Folder Dynamic are displayed in the data point window.

------------------ OLD_TEXT ??? --------------------

Purpose

Using "IR Trans" gives you the ability to control every usual infrared device from the EisBaer. IR Trans can send and receive IR signals. The component is invisible, ie, the operator cannot see it in Runtime.

Properties

Name	Editor	Function
Channel		Create the individual data points by importing the IRTRans code file. (rem) Dynamically created IR-Outputs
Server		IP address or host name of then IRTrans server on which the IRTrans Tray is running. For details refer to the IRTrans software documentation.
Driver On/Off		The driver default status at system start up.

Introduction

Before you make a first test, you should first install the latest drivers and the software for your IRTrans device installed on the PC. Then you learn a few IR codes your remote control and check the device and the code to function (send / receive). The short course is described below in detail. Use for the installation the current software version from IRTrans home page or the included CD-ROM. The software is available free for download www.irtrans.de to the download area - it is there constantly updated. It is worthwhile now and again to surf there.

IRTrans Windows Software Complete installer with USB drivers

The appropriate driver will be installed automatically. With the installation is a dynamic setup that during the installation of any other install files Website / CD are loaded. An Internet connection should be given. Take care when installing the USB driver please note the following sequence: before connecting the IRTrans device first install the software (Setup.exe).
Here, the correct USB driver is installed automatically. If you after installation are asked to reboot the computer, you should necessarily follow. After restarting, connect the USB device IRTrans. The driver is automatically installed during the device detection. If the device IRTrans already is connected or installed, the driver via the device manager is updated. Now start on START - PROGRAMS - IRTrans - IR TRANSTRAY USB. In the Systray (in the taskbar to the left of the clock) you will see the red IRTrans icon. Using the right mouse button to access the functions of the device, such as send codes, diagnosis, etc.

IR-Trans server configuration

The following sub section describes the configuration of the IR-Trans server which is important for a subsequent EisBaer connection. The self learning of the remote command as well the database flashing in case of a IR-Trans DB is used, will be explained.

IR-Trans self learning of IR codes

Start from Start - programs - IRTrans the IRTrans GUI client. Go over the menu item Mode and select commands to learn. Use only the GUI client IRTrans to teach the IR commands.

Tip: If you are running the GUI client will receive an error message, it is possible that the IRTrans tray (USB / LAN) or IRTrans server is not running. Through programs - IRTrans Tray, you can always start them manually.

This opens a dialog box with which you can program the IR codes for your remote control.

Assign a name, open the first remote control / create, for example, the remote, or the device to be controlled because it is possible to teach, multiple remotes and IRTrans to operate simultaneously. There are several codes in the IRTrans server load - and this is already brilliant - only one transmitter / receiver for many different IR codes of manufacturers for this to send or receive information via, for example, Eisbaer KNX. *Note: Make sure that the spelling of the name and the remote commands, as these later in the EisBaer have to be absolutely identical.* Click once on the command get to learn timing. Then you begin to learn the necessary Keys in succession.

In the following example, we learn the remote control of the iP27 (Portable Travel Alarm Clock for iPhone and an iPod from iHome) to later remotely control a travel alarm clock by Eisbaer KNX. The second remote control we get a standard remote control to switch via infrared to EIB / KNX functions and Elements of the visualization, and a stereo system. Decide teach at making you aware of what

kind of IR-Code/remote control you want. In the example we used the setting command to learn timing. Enter now in the shared field the name of the command or the button on the Remote control and click on learn command. Press the button on the remote control - in this example, this is the PLAY / PAUSE.

Note: *Avoid during the naming of commands, special characters.*

Once the command is programmed, you can proceed directly to the next, until all required codes, are stored in remotefile. To finish, click on Learn Exit the Teach stop. It has now created a new remotefile, including the IR codes and command names. When the IRTrans server is started these remote files are loaded later automatically.

Note: *Each learned remote control is found as a file in the folder C: | Program Files | IRTrans | remotes to see name.rem. Also, there are already some pre-defined remote files for common devices to be found.*   For the subsequent creation of the commands in the EisBaer is the exact file name and the names of individual commands necessary.

Flashing IRTrans LAN DB

The IRTrans LAN modules with DB have another advantage - the programmed codes may be stored directly in the device. For this purpose, the corresponding remote file, which you see described above, is stored in internal memory of the device by flash function*Note*: *The flash process you*

only need when you are later on the touch panel, or the visualisation computer where IRTrans software can not be installed, or working with several LAN modules and various remote files via LAN. In Eisbaers, you need then later the component "MULTI-IO-IP" to send and receive the codes (see chapter IR commands using Multi-IO-IP via LAN / WLAN 🗋42*)*

First, create, as described above, the required remote file for your remote control / device on the IRTrans tray and then start on START-PROGRAMS-IRTrans IRTrans the GUI Client. You can also use theGUI client for learning.

Now the following program window appears:

Select from the menu bar under Mode the menu item Device database. Shortly thereafter, opens a new window with a list of available remote control codes. With this window, you can now flash in the corresponding remote control or the created remote file of the IRTrans device.

Select from the list above to get your remote control. Now click with the right mouse button on the selection and then in the context menu, select. In our case This is ihome27. The corresponding remote control will now be bold and with an asterisk shown in square brackets. You can also choose to repeat multiple remote controls (see figure). Now type in the lowest field first a name for the flash file if, for example, MyFB and click the Save
button. To now transfer the codes of the selected remote controls in the unit, please click on the button flashing.

Wait a moment, until the message window after the flash process appears. This can take several seconds to complete. The window (see figure) can now, if the line Remotes and Commands corresponding Values are, be
closed with the OK button. If the values do not agree, simply repeat the process again.

IR-Trans client configuration

As client we use the IR-Trans component of the EisBaer. Therefore you have to drag it on the EisBaer designer, first. For the configuration please open the configuration dialog by clicking on at the command list property at the property window. Within this dialog you can add and remove IR commands.

Add new infrared commands
To create a new infrared command, click in the toolbar . Now in the dialog appears a new line where you can configure the infrared command.

Name
Define a name for the command.

Address
Device address of the IR-Trans. This is only needed in case of serial connection of more than one IR-Trans. Default value is "0".

Remote
Name of the remote control eg Loewe, Samsung, LG,...

Command
Please enter here the desired IR-Trans command.

Received
If you like to receive commands you must activate this checkbox.

Value
Here you define the value which is sent on a EisBaer net in case a value is received from the IR-Transceiver.

Define IR-Codes in EisBaer Editor

There are several ways to send and receive the IR codes via KNX EisBaer depending on which IR-Trans device is used and the conditions are met. The next section explains how to do this with the previous devices in various ways. The fastest and easiest solution is the use of IR-Trans USB/LAN - products, a locally IR-Trans server installed and finished EisBaers-IR-Trans component. The IR-Trans LAN devices

without the IR-Trans server codes are purely sent and received on telegrams in the network - you can not, however, use the IRTrans component in Eisbaers That are available in the Eisbaers, but must, for example, use for the input the multi-IO-IP component. The transmission
itself is implemented relatively fast with simple HTTP commands, for which also the multi-IO-IP component can be used.

Define IR-Codes

Start Editor and open a blank page for the first test of a project. Place the IRTrans component found in the component list in connections to this page. Add a few more button switches as active components. You can immediately correctly name them, for example, with the appropriate commands, which should be sent, as in the example below. We recommend that if you teach the IRTrans component the IR codes, with a normal Text editor such
as Notepad to keep open the remote file created for you to incorporate codes easier. Open directory in c: \ Program Files \ IRTrans \ remote your created Remotefile with a Text editor,
before continuing in the Eisbaer. In our example, we open the file iHome iP27.rem, the content looks like.

denon-dvd.rem		3 KB	REM-Datei
dream.rem		13 KB	REM-Datei
iHome iP27.rem		1 KB	REM-Datei
irtrans.rem		2 KB	REM-Datei
mce-keyboard.rem		3 KB	REM-Datei
mce-mouse.rem		1 KB	REM-Datei
mediacenter.rem		3 KB	REM-Datei

Important now are the messages that are listed red. You need one time the exact name of the remote name and the individual commands (commands) in the brackets. This you must now enter into the component as follows: mark the IRTrans component and open the Command List window with dialogue button fromthe Properties window in the Eisbaer. Click once on the top left of the + symbol to create a new command. Give this command a unique name such as Play / Pause - depending on what make the command does later. Set address at 0 and then enter the remote name, as indicated in the rem-file. Under command you type the appropriate
command as specified in the rem-file, but without brackets. If a command is to be sent, simply remove the checkmark in the column Receive. If the command is received, however, you can set the check mark and arrange the incoming command to a value. This can be a KNX-value (EIS type), but also a string, or a hex value. You can use any existing KNX-like Eisbaer types. Following the transfer of commands, the contents should look like this in the configurator:

IRTrans1	
Connection State	On/Off
Driver On/Off	DataPointBooleanValu...
Dynamic	
HOME - Auto (receive)	DataPointValue
HOME - Auto (send)	Any
HOME - Cool (receive)	DataPointValue
HOME - Cool (send)	Any
HOME - Dry (receive)	DataPointValue
HOME - Dry (send)	Any
HOME - Fan (receive)	DataPointValue
HOME - Fan (send)	Any
HOME - Heat (receive)	DataPointValue
HOME - Heat (send)	Any
HOME - Off (receive)	DataPointValue
HOME - Off (send)	Any

You do not need to take more care about the code in the Eisbaer. In the communications window at the activated IRTrans component, you can now see the relevant data points, as these have been named.

You have now to link the data points of IRTrans component with the appropriate button switches to Image switches and can then immediately control live from the editor via infrared. So, for example, drag the data point OFF and drop to the respective switching element and release. In the context menu pop up, then connect for example with the output of a switching button or switching image - finished.

Now press the CTL key and click to select the simulation mode and click on the switching element with the left mouse button to send the command.

Observe the LED on the top of the IRTrans - these must be red flash (send). When you receive this lights green.

Tip: *If it does not work immediately, first check whether the IRServer is running. This must be in operation before the start of Eisbaers, or access is not possible.*

Save the project and quit the editor. Start the IRTrans tray manually then open your project with the Eisbaers editor or Runtime. With the IRTrans tray, you can through the function Detected IR Commands monitor and read as

done. You see immediately whether the telegrams are sent and received correctly. You see - this is easy to deploy and very fast and you can control within minutes your complete media

technology via infrared over the visualisation.

6.16.13 GlobalCaché

This driver is used to transmit IR commands over the network / RS232.

Data points of the component:

Name	Type	function
Debug	Output	Error messages are displayed here. Attention: Diagnosis or debug outputs are only intended for the case of an error. Please use only after consultation with the support team! These may significantly affect the performance of the service when used.
Dynamic	Folder	This folder contains the created devices.
Driver On/Off	Bidirectional	Turns the driver on or off
Driver State	Output	Returns the driver state.

In addition to the data points for debug messages, the driver state and the input for (de) activating the driver, a subfolder is created for each available port.
If the port is a serial cable, 2 data points are created. Values that arrive via the data point "Serial data" are sent as they are as a string to the serial interface.
At values received via the alternative data item "Serial data with CR / LF", a CR and / or LF is appended depending on the setting.

Properties

Name		function
IP Address	0.0.0.0	The IP address of the GlobalCache Gateway must be specified.
Connectors	0	The ports editor reads out the ports provided by the gateway.
IR-Code Import	0	Imports the codes that were exported via the iLearn tool.
Add CR	x	(carriage return) Here you can select whether (in the case of a serial cable connected to the gateway) a \ r and / or \ n should be added to the string to be sent if the string is sent to the component via the alternative data point ,
Add LF	x	(line feed) Here you can select whether (in the case of a serial cable connected to the gateway) a \ r and / or \ n should be added to the string to be sent if the string is sent to the component via the alternative data point ,
Driver On/Off		Turns the driver on or off

In the "Ir-Code Import" editor, learned IR codes (using the Global-Cache iLearn tool - storing in Flex-JSON format) can be imported into the file.

If the port is a serial cable, 2 data points are created. Values that arrive via the data point "Serial data" are sent as they are as a string to the serial interface.

At values received via the alternative data item "Serial data with CR / LF", a CR and / or LF is appended depending on the setting.

If the connection is an IR transmitter, below the folder all imported IR codes are displayed, which can be triggered by means of arbitrary values.

iLearn-Tool and set up the interface:

To set up the interface, connect the device and call the IP address of the device in the browser.
Attention: an ad may be browser dependent.

Settings for infrared transmission

Serial transmission settings

Settings in the iLearn for transmitting the IR signals

For the connection the "Flex Learner" has to be selected. Then enter the IP address of the module and click on "Connect".
Now the IR signals can be read out.

After successful IR evaluation:

Select the format "Flex JSON (HTTP)" and click "Edit".
Finally, enter a "Button Name" and press "Save". The .txt file is now ready for import into EisBär.

6.16.14 Media Player

With this component media files can be played. This media player is based on the Windows Media Player and can also play the appropriate formats such as mp3, wav, mpg, mp4. To play radio streams, you need to open a .m3u file containing the stream information.

For video playback, clicking the video will display a volume slider.

For playback, the page with the Media Player component must be called once.
After a page change to another page, e.g. an audio playback on.

This component is not available on the app version.

Data points of the component

Name	Type	function
Volume	Input	The volume is changed via this input. The adjustable value range is from 0-100.
Mouseover	Output	Via this output "ON" is sent when the object is moved with the mouseover. When the mouse pointer leaves the media player, "OFF" is sent.
Media Source	Input	This input sets the media file to be played (for example, via the file selection component or as the path in the text input). The media file set via the properties is temporarily overwritten until the next load of the project.
Pause	Input	An on signal pauses the playback. On Off Signals will not respond.
Visible	Input	With an off-signal, the component unVisible and switched with an on-signal Visible.
Start	Input	An on signal starts the playback. On Off Signals will not respond.
Stop	Input	An on signal stops playback. On Off Signals will not respond..
Mute	Input	An on signal will mute the sound. The sound is switched on again via an off signal.
Opacity [0-255] [113]	Input	See component independent data points [113]

Properties

Name	Standard	function
Media Source		Here, the media file (absolute path) is set. The file must be in the same folder path on each client, or accessed via a network UNC path.
AutoStart		If this option is set, the media file is played immediately when the project is loaded.

Possible radio stations can be found at http://www.radio-browser.info/gui/#!/countries

6.17   DALI Emergency Lighting

This chapter describes the functions and properties of the category DALI emergency.

- DALI Emergeny Lighting Manager [x3000] [899]
- DALI Emergeny Lighting Display [909]
- DALI Emergeny Lighting Grafical Display [916]

6.17.1   DALI EM Manager [x2500/x3000]

DALI emergency light is an unVisiblee server component for monitoring, checking and logging emergency lighting systems with single battery lights.
If this component is inserted, it counts as 2500 components and from 100 channels it counts as 3000 components.

Safety lighting must be checked according to legal requirements before commissioning and then at regular intervals on their ability to function. In addition, all components of the system must be constantly maintained and the results of inspection and maintenance appointments documented in writing.

The software module fulfills the following tasks:
- Triggering emergency light tests for one, or groups of emergency lights via buttons or calendars (via data points)
  - Functional exam, usually weekly
  - Duration test (complete battery discharge, at least 90 minutes running time), usually every 6-12 months
  - Partial duration test (intern duration test but shortened), usually monthly, time can be set in minutes (1-90 min.)
  - battery search
- Automatic reading of a csv file with the luminaire information
- Storage of all test data (date, time, luminaire status, test result) of all luminaires
- Status display running tests
- Display of test results including individual error messages
- Display of tests including test result
- E-mail the test results as a csv file
- Possibility of manual triggering of tests by light
- Connection of the DALI emergency light Graphic display Component for individual luminaires for presentation in the building floor plan.
- The following messages of the self-contained luminaire are shown in the DALI emergency luminaire display:

function test:
- Location of each luminaire in plain text
- Converter defective, yes / no
- Battery defective, battery fault, yes / no
- Failure emergency light, yes / no
- Function test passed, yes / no
- function-check was triggered, but could not be started in the given time

Endurance test:
- Installation location of each luminaire in plain text
- Converter defective, yes / no
- Battery defective, battery fault, yes / no
- Failure emergency light, yes / no

- Time until battery is discharged in minutes
- Duration test was triggered, but could not be started in the specified time
- Duration test passed, yes / no

Battery check (battery capacity):
- State of charge of the battery in minutes or percent depending on the test or query
- The function query battery capacity is an optional function according to DALI emergency standard IEC 3868 - 202. the query (the test) does not have to be supported or answered by every emergency light converter.
- Depending on the test carried out, the following different results are output in the 4th byte of the communication object 33 "Emergency test result":

* For function tests there are no further details.

* For endurance tests, the operating time in emergency lighting mode up to the complete discharge of the battery specified. (the object value corresponds the time in 2 x minutes)

* For a partial duration test, the residual charge of the battery after reaching the Rated duration in emergency mode. State of charge of the battery (0 ... 254 = 0 ... 100%, 255 = no info)

* After a battery check, the currently determined battery level will be displayed here output. Battery charge state (0 ... 254 = 0 ... 100%; 255 = no info) If no result Present (because optional) n. d. displayed.

The course of the tests and the test results are stored in an internal database.
The component is not visible on the interface in the client.

Global data points of the component

Name	Type	Function
DALI Emergency Light Manager Display	Bidirectional	Connection between a DALI Emergency Light and one or more DALI Emergency Light Managers.
Diagnosis [Text]	Output	Error texts are output here. These can be displayedwith the "Log window"component, for example.
Dynamic	*Folder*	*See below*
E-mail	*Folder*	*see below*
Trigger export	Input	Via any signal at this input the complete test results of all luminaires are exported to a csv file in the project directory.
Device delay [s]	Bidirectional	Here the time interval between the start of the tests of the individual luminaires within a group can be selected and entered in seconds. If nothing is linked here, the default from the properties of the component applies.
Group delay [s]	Bidirectional	Here the time interval between the start of the individual test groups can be selected and entered in seconds. If nothing is linked here, the default from the properties of the component applies.
Collective messages	*Folder*	*see below*
Status	*Folder*	*see below*
Test Actions	*Folder*	*see below*
Test result log [Text]	Output	This output shows the test results of all tests in text form.

Data points in the "Dynamic" folder per gateway

Name	Type	Function
Test request	Bidirectional	Requests the test for all devices connected to the gateway.
Test result	Bidirectional	Outputs the test result.
Test state	Bidirectional	Output about the current test state.

Data points in the "Dynamic" --> "Gateway" --> Device folder.
Depending on the set Dali device type the data points vary

Name	Type	Function
DALI Emergency light Graphical display	Bidirectional	This data point is used to connect the DALI Emergency Lighting Graphic Display component for individual luminaires for display in the building floor plan. This data point transmits all test and result signals in compressed form. It is also used to transmit control signals from the graphic display to the invisible component.
Start - Function test	Input	A function test is triggered by any signal at this input.
Test successful (total)	Output	This output is active (1) if the overall test result is positive.
Test protocol [Text]	Output	This output gives the result of all tests of the luminaire in text form.
Output test protocol	Input	Any signal at this input outputs the result of all tests of the luminaire as text at the output of the same name.
Battery discharge time [min.]	Output	This output provides the battery discharge time as the test result of the endurance test in minutes as a floating point number.
Battery state of charge [%] Output	Output	This output provides the battery state of charge after a battery scan or a function test as an integer.
Battery state of charge test active	Output	This output is active (1) if a battery state of charge test is active for the luminaire.
Operating time [h]	Bidirectional	This output shows the operating time of the light in hours. This is the time for which the light is installed in the system, not the time of emergency operation. The time can also be sent to this datapoint to set the value, e.g. to set the value to 0 after a replacement.
Continuous test active	Output	This output is active (1) if a duration test is active for the luminaire.
Function test active	Output	This output is active(1) when a function test for the luminaire is active.
Info [Text]	Output	This output shows the result of the last test in text form.
Start - Test battery charge	Input	A battery charge status query is triggered by any signal at this input.
Start - Continuous test	Input	A continuous test is triggered by any signal at this input.
Start - duration test	Input	A partial duration test is triggered by any signal at this input.
Stop	Input	The currently running test is stopped via any signal at this input.
Partial duration test active	Output	This output is active (1) if a partial duration test is active for the light.
Test result - battery defective	Output	This output isactive (1) if the battery is defective.
Test result - Rated duration or battery insufficient	Output	This output isactive (1) if the battery runtime was too short during the duration test.
Test result - Endurance test not started	Output	This output isactive (1) if the duration test could not be started. This can mean, for example, that the battery was not fully charged.
Test result - Function test not started	Output	This output isactive (1) if the function test could notbe started.
Test result - Converter	Output	This output isactive (1) if the converter is defective.

Data points in the "E-mail" folder

Name	Type	Function
Send blind copy to (BCC)	Bidirectional	E-mail address to be used can be sent as text on this data point.
Send copy to (BC)	Bidirectional	E-mail address to be used can be sent as text on this data point.
Send mail to	Bidirectional	E-mail address to be used can be sent as text to this data point.

Data points in the "Collective messages" folder

Name	Type	Function
Collective error message - Emergency lighting converter	Output	This output isactive (1) if any fault is present inone or more emergency lighting converters.
Group error message - emergency sign	Output	This output isactive (1) if any fault is present in one ormore emergency signs.
Group error message - emergency luminaire	Output	This output isactive (1) if any fault is present in one or moreemergency luminaires.
Group alarm	Output	This output is active(1) if one or more collective error messages(emergency lighting converter, escape sign or safety light) are active.
Collective acknowledgement	Input	All messages are acknowledged via an ON signal at this input. The output of the collective audible alarm is switched off.
Collective visual indicator	Output	This output isactive (1) if one or more collective error messages(emergency lighting converter, escape sign or emergency luminaire) are active. If a new message is received, a flashing signal is output. If all messages are acknowledged, the signal changes to the static active (1) state.

Data points in the "Status" folder

Name	Type	Function
Current battery charge status query [Text]	Output	This output gives the date/time and the current running battery level checks as text.
Current endurance test [Text]	Output	This output shows the date/time and the currently running endurance tests as text.
Current function test [Text]	Output	This output shows the date/time and the currently running function tests as text.
Current partial endurance test [Text]	Output	This output provides date/time and the currently running partial endurance tests as text.
Battery state-of-charge query batch active	Output	This output is active (1) when a battery level query batch is active. If the test batch is completely processed with all test groups, the output is inactive.
Continuous test batch active	Output	This output is active (1) when a continuous test batch is active. If the test batch is completely processed with all test groups, the output is inactive.
Function test batch active	Output	This output is active (1) when a function test batch is active. If the test batch is completely processed with all test groups, the output is inactive.
Partial duration test batch active	Output	This output is active (1) when a partial continuous test batch is active. If the test batch is completely processed with all test groups, the output is inactive.

Data points in the "Test actions" folder

Name	Type	Function
Stop all tests	Input	Any signal at this input will stop all running tests of all test groups and luminaires. Stop commands are sent to all luminaires to stop any test that may be in progress.
Start battery state of charge tests [All]	Input	Any signal on this input will start battery level polls for all test groups.
Start battery level polls [Group] Input	Input	Entering an integer number at this input starts battery level interrogations for the luminaires of the group with this number.
Start Continuous Tests [All] Input	Input	Any signal at this input will start duration tests for all test groups.
Start Endurance Tests [Group]	Input	Entering an integer at this input starts duration tests for the luminaires of the group with this number.
Start functional tests [All]	Input	Any signal at this input starts function tests for all test groups.
Start function tests [Group]	Input	Entering an integer at this input starts functional tests for the luminaires of the group with this number.
Start partial duration tests [All]	Input	Any signal at this input starts partial duration tests for all test groups.
Start partial endurance tests [Group]	Input	Entering an integer at this input starts partial duration tests for the luminaires of the group with this number.

Properties of the component

Name	Standard	Function
Dali emergency light Channels	0	The individual emergency lights are defined in a list here. These then appear in the data point folder Dynamic.
CSV separator	Tabulator	Setting for the separator to be used when the log file is exported via the data point "Trigger export".
E-mail Settings		Here the settings of the mail server for sending e-mails are made.
E-mail Encoding	System Default	Setting option for the character set to be used: UTF8, UTF7, UTF32, Unicode (UTF16), System Default (e.g. ISO-8859-1), Unicode big endian (UTF16BE) and ASCII.
Send e-mail to		Here the recipient for the e-mail with the test results is defined. Multiple recipients are entered with ";" semicolon.
Send e-mail to (CC)		The recipient for the e-mail copy with the test results is defined here. Multiple recipients are entered separated by ";". Semicolon separated.
Send e-mail to (BCC)		Here the recipient for the e-mail blind copy with the test results is defined. Several recipients are entered separated by ";". Semicolon separated.
E-mail with each result		If this parameter is set, an e-mail is sent with each result of any test.
Device delay [s]	10	The time interval between the start of the tests of the individual luminaires within a group, in seconds, is defined here.
Group delay [s]	60	This defines the time interval between the start of the tests of the individual test groups, in seconds.
Stop all tests at start	X	If this parameter is set, stop commands are sent to all luminaires when the server is started or when the simulation is started in the editor, in order to stop all tests that may be running.
Query all test statuses at start-up		Activate to query the current test status of all units at start-up. This is only active if "Stop all tests at start" is not activated.
Query all test results at start-up		Enable to query the last test results of all units at start-up.
Status query interval [min]	1	Setting for the status query interval in minutes.
Status query device delay [ms]	100	The time interval between the start of the status query of the individual luminaires within a group, in milliseconds, is defined here.
End status query after test start		If this parameter is set, stop commands are sent to all luminaires when the server is started or when the simulation is started in the Editor in order to stop all status queries that may be running.
First endurance test Minimum runtime	120	Specifies the minimum runtime for the first valid test run in minutes.

Dali Notlicht Channels definieren

Add a message

Device ID
Current ID of the emergency light channel. The ID starts with 1 and is automatically incremented when new channels are inserted. The ID is unique and unique. If a channel is deleted from the list, the deleted ID can not be reused.

Phys. device
Designation of the physical Dali device to which the light is connected. For KNX devices it is recommended to enter the physical address of the device here. The subfolders for the devices in the Dynamic folder are created from this designation and the 3 data points for communication are created.

A unique name must be assigned for each DALI Gateway.

Different designations must be used for the unit types (status) or (fault).

DALI device type
Selection of the DALI device type. Depending on the manufacturer and device type, the appropriate algorithms and data points are chosen internally.

Example emergency lighting DG/S x.64.1.1 or DG/S x.64.5.1
- In the EisBär, the DALI device type ABB DGN/S 1.16.1 must be set.
- Example designation column "phys. Address": gateway
- In the ETS, the DGN/S1.16.1 format must be activated in the emergency lighting converter group, not for the individual emergency luminaires.
 Objects 58, 59 u. 60 are used for the "Output A" for the emergency light check.

DALI Emergency Light Manager data point in the Dynamic Lighting Gateway folder	ETS object
Test request 2Octed Unsigned Value	Start emergency lighting test adr. (DGN/S) 2byte
Test status 2Octed Unsigned Value	Emergency lighting test status adr. 2Byte
Test result 4Octed Unsigned Value	Emergency light test result adr. 4Byte

Example DPT_237.600 Diagnostics.

- Example description Column "phys. Address": Fault
The EisBär DALI device type DPT_237.600 (diagnostics) is used to evaluate DALI status and fault messages. These have nothing to do with emergency lighting. If necessary, the data type must be set. A channel must be created for each Dali address to be monitored.

DALI Emergency Light Manager data point in the folder Dynamic lighting faults.	ETS object ABB (parameter: output/fault/enable "status byte output X")	ETS object Siemens (parameter: general/channel, activate status error)
Test result 4 Octed Unsigned Value - 0/0/102(0/0/101)	Object 23 or 2045 Fault addressed 2byte (DPT 237.600) - 0/0/102(0/0/101)	Object 37 or 1062 Channel, error status 2byte (DPT 237.600) - 0/0/102(0/0/101)
Test request 2Octed Unsigned Value - 0/0/101		

The messages can be actively received (set in the KNX Daligateway) or polled.
When the polar bear is actively receiving (actively sending the Dali gateway), only one group address is used. This is connected to the data point test request.
For queries, 2 group addresses must be used in the communication object. The sending address sends the test result to the emergency lighting manager and an additional address receives the test request from the emergency lighting manager.
It is important that the correct data types are set in the ETS. At the moment, the DPT237.600 is not yet automatically recognised. DPT "7.* 2-byte unsigned" must be set.

Example Status ABB DG/S x.

The EisBär DALI device type x64.x.1 (status) is used to evaluate the DALI status messages for ABB Dali gateways. This type only works with ABB Dali gateways.
In the ETS, the "Status byte" parameter must be enabled under Group/EVGx template Status / or Status. In addition, send "on change" must be activated. The messages are only actively received by the Dali Emergency Lighting Manager.
Depending on the ETS parameters "Use group x" or "Use ECG x" the following objects are used: 48, 59... resp. 224, 235...
In the ETS, DPT "7.* 2-byte unsigned" must be set . The communication objects send a 2-byte telegram**(2Octed Unsigned Value)**.
The status must be linked for each luminaire or each group.
Evaluated is:

Bit 8:	1 = ECG has lamp malfunction 0 = ECG has no lamp fault For group: 1, if at least 1 participant of the group has a lamp fault. 0, no participant of the group has a lamp fault.
Bit 9:	1 = ECG has ECG fault 0 = ECG has no ECG malfunction. For group: 1, if at least 1 participant of the group has an ECG fault. 0, no participant of the group has an ECG fault.

DALI address
Dali short address of the light. This will be awarded as part of the Dali commissioning. The address may only be used once on a physical device.

Light type
There are three types of luminaires for selection: emergency light converter, emergency light and escape sign. This selection determines the display on the component Dali Emergency Light Graphical Display.

designation
Any alphanumeric name for the luminaire. The information is automatically transferred to the Dali Emergency Light Graphical Display component and displayed there.

floor
Any alphanumeric indication of the floor for the luminaire. The information is automatically transferred to the Dali Emergency Light Graphical Display component and displayed there.

installation
Any alphanumeric indication of the installation location for the luminaire. The information is automatically transferred to the Dali Emergency Light Graphical Display component and displayed there.

Partial time time [min.]
Defines the time of the partial duration test in minutes. During the partial duration test, a duration test is started and stopped by the system after the set partial time. Thereafter, the query of the battery state of charge takes place.

Partial battery min. [%]
Defines the minimum load after a partial endurance test required to pass the test. During the partial duration test, a duration test is started and stopped by the system after the set partial time. Thereafter, the query of the battery state of charge takes place. This must be above the defined minimum in percent and pass the test.

test group
Defines the test group to which the luminaire belongs. It will never start the tests of all lights of a building at a time. This ensures that not all emergency lights are discharged at the same time. If several test groups are used, these are staggered in terms of group delay [s].

6.17.2 DALI Emergency Lighting display

The DALI Emergency Lighting display is a visible client component. It is used for display and operation of a luminaire of the DALI emergency manager in table format. It allows to trigger all needed test and display current and past results. With drag and drop you can create your own report and print or send by email. Retesting individual or groiup of fittings, if the failed the test.

The software module performs the following tasks:

- Triggering emergency tests for groups or the entire installation of emergency lights via buttons.
  - Functional testing
  - Duration test (full discharge, at least 90 minutes running time), usually every 6-12 months
  - Partial duration test (short internal discharge test), usually monthly, time in minutes adjustable (1-90 min.) NOTE: Not part of a standard in every country !
  - Battery test

- Status display running tests
- Display the test results incl. Individual error messages
- Possibility of manual re triggering of tests per lamp or group of lamps
- Print of test reports, email test report as pdf

Link to the Dali Emergency manager with only one shared property.

Data points of the component

Name	Type	Function
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Opacity [0-255]	Input	Over a 1-byte value of 0-255, the Opacity [0-255] of the component can be changed. 0 is complete transparency. A value of 255 corresponds to the value that was set on the transparency in the properties of the component. If for example, the transparency in the properties of the component is set to 80%, this will be the level if you send a value off 255 to this data point.
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.
SPInOutDaliComponent	Bidirectional	Link between Display and Dali manager.

Display

Battery Tests (All) Discharge Tests (All) Partial Discharge Tests (All) Function Tests (All)

Pending Tests | Trigger Batch Tests | Test History | Batch Test History

Save Layout Restore Layout

Drag a column header here to group by that column

ID	Gateway	Name	Test Group	Floor	Position	Device Type	Started	Test Type

Display Operation

Name	Function
Battery Test (All)	Trigger of Battery request for all fittings in the Dali Emergency lighting manager [899]
Discharge Test (All)	Trigger of Discharge Test for all fittings in the Dali Emergency lighting manager [899]
Partial Discharge Test (All)	Trigger of Partial Discharge Test for all fittings in the Dali Emergency lighting manager [899] NOTE: Not needed in Australia !
Function Test (All)	Trigger of Function Test for all fittings in the Dali Emergency lighting manager [899]
Arrow button	Customise the Menu tab to show and hide Test Button
Pending Test	Display of individual activ running tests
Trigger Batch Test	Test trigger per group
Test History	Testreport
Batch Test History	History of triggered Batch Tests

Pending Tests

	ID	Gateway	Name	Test Group	Floor	Position	Device Type	Started	Test Type
	3	1.0.1	1.0.1 - 35	1		Main Aisle	Emergency Light Converter	9/5/2016 7:31 PM	Function Test
	4	1.0.1	1.0.1 - 36	1		Crane East Area	Emergency Light Converter	9/5/2016 7:32 PM	Function Test
	1	1.0.1	1.0.1 - 33	1		DB2 Row 1	Emergency Light Converter	9/5/2016 7:32 PM	Function Test
	2	1.0.1	1.0.1 - 34	1		Crane East Area	Emergency Light Converter	9/5/2016 7:32 PM	Function Test

Trigger Batch Tests

Test Group	Battery Test	Function Test	Discharge Test
1	🔋	FT	90
2	🔋	FT	90
3	🔋	FT	90

Batch Test History

Test Group	Started TimeStamp	Test Typ	Finished TimeStamp	Test Stopped	Fail Rate
1	9/5/2016 7:31 PM	Function Test	Still Running	☐	0
1	8/31/2016 11:32 AM	Discharge Test	Still Running	☐	0
1	6/21/2015 12:15 PM	Discharge Test	Still Running	☐	0
2	8/31/2016 11:37 AM	Discharge Test	Still Running	☐	0
2	8/31/2016 11:11 AM	Function Test	8/31/2016 11:12 AM	☐	0.1666667
2	6/21/2015 12:14 PM	Discharge Test	Still Running	☐	0

Test History

Every table can be customised by drag and drop. Just drag a column to the disired position. You can also drop columns off, if you don't want to have them in your report. By dragging a column into the header the list will be grouped by that column. Every coloum also provides filter capability. In the logbook you can record maintanance per fitting incl. maintenance history. (If user management is enabled the the records in the logbook are stamp with time and user)

Filter (Funnel symbol right beside column name)

Drop column to customise table and report

Right click in any column header will open up menu to bring back dropped columns

Layout Restore Layout

Drag a column header here to group by that column

	Test Type	▲	Test Result	Circuit Error	Lamp Error	Battery Dis
AM	Function Test		Passed	☐	☐	n.d.
AM			Passed	☐	☐	n.d.
AM	Functi		Passed	☐	☐	n.d.
AM	Functi		Passed	☐	☐	n.d.
AM	Fun		Passed			
AM	Fu		Passed			
AM	Fu		Passed			
AM	F		Passed			
AM	Fu		Passed			
AM	Fun		Passed			
AM	Functi		Passed			
AM	Function					
AM	Function Test					
AM	Function Test		Passed			
AM	Function Test		Passed			
AM	Function Test		Passed			
AM	Function Test		Passed			
AM	Function Test		Passed			n.d.
AM	Function Test		Passed	☐	☐	n.d.
AM	Function Test		Passed	☐	☐	n.d.
AM	Function Test		Passed	☐	☐	n.d.
AM	Function Test		Passed	☐	☐	n.d.
AM	Function Test		Passed	☐	☐	n.d.
AM	Function Test		Passed	☐	☐	n.d.

Column Chooser ✕

Battery Discharge Time...
Battery Insufficient
Device Type (Icon)
Floor
ID
Log Book
Position
Result (Popup)

Print Preview

100%

Gateway	Name	Position	Device Type	Started	Finished Time	Test Type	Test Result	Circuit Error	Lamp Error	Battery Discharge Tin	Battery Percent
1.0.2	1.0.2 - 3	DB2 Row 1	Emergency Light Con	8/31/2016 11:11	8/31/2016 11:12	Function Test	Passed	☐	☐		
1.0.2	1.0.2 - 3	Aisle E	Emergency Light Con	8/31/2016 11:11	8/31/2016 11:12	Function Test	Passed	☐	☐		
1.0.2	1.0.2 - 3	Exit West	Exit Sign	8/31/2016 11:11	8/31/2016 11:11	Function Test	Passed	☐	☐		
1.0.2	1.0.2 - 4	Crane East Area	Emergency Light Con	8/31/2016 11:11	8/31/2016 11:11	Function Test	Passed	☐	☐		
1.0.2	1.0.2 - 4	Exit S	Exit Sign	8/31/2016 11:11	8/31/2016 11:12	Function Test	Passed	☐	☐		
1.0.2	1.0.2 - 4	Exit South East	Exit Sign	1/1/0001 12:00	6/30/2015 11:46	Function Test	Passed	☐	☐		
1.0.2	1.0.2 - 4	Exit South East	Exit Sign	1/1/0001 12:00	7/29/2015 3:14	Function Test	Passed	☐	☐		
1.0.2	1.0.2 - 4	Exit South East	Exit Sign	1/1/0001 12:00	7/30/2015 8:31	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 3	Fire Stairs 2	Emergency Light Con	8/31/2016 11:00	8/31/2016 11:00	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 3	Fire Stairs 2	Emergency Light Con	1/1/0001 12:00	8/31/2016 11:00	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 3	Fire Stairs 2	Emergency Light Con	8/31/2016 10:58	8/31/2016 10:59	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 3	Fire Stairs 2	Emergency Light Con	1/1/0001 12:00	8/31/2016 10:59	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Receiving	Emergency Light Con	8/31/2016 10:58	8/31/2016 10:58	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Receiving	Emergency Light Con	1/1/0001 12:00	8/31/2016 10:58	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	8/31/2016 11:13	8/31/2016 1:13	Discharge Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	8/31/2016 10:57	8/31/2016 10:57	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	6/21/2015 12:33	6/21/2015 2:33	Discharge Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	1/1/0001 12:00	6/21/2015 2:33	Discharge Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	1/1/0001 12:00	6/21/2015 11:04	Discharge Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	1/1/0001 12:00	6/21/2015 11:04	Discharge Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	1/1/0001 12:00	6/21/2015 11:04	Discharge Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	1/1/0001 12:00	8/31/2016 10:57	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	1/1/0001 12:00	8/31/2016 1:13	Discharge Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Emergency Light Con	8/31/2016 10:59	8/31/2016 11:00	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Emergency Light Con	1/1/0001 12:00	8/31/2016 11:00	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Receiving	Emergency Light Con	8/31/2016 10:58	8/31/2016 10:59	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Receiving	Emergency Light Con	1/1/0001 12:00	8/31/2016 10:59	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	8/31/2016 10:59	8/31/2016 11:00	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Exit Sign	1/1/0001 12:00	8/31/2016 11:00	Function Test	Passed	☐	☐		
1.1.1	1.1.1 - 4	Fire Stairs 2	Emergency Light Con	8/31/2016 10:58	8/31/2016 10:58	Function Test	Passed	☐	☐		

Page: 1 / 32

Zoom: 100%

Log book

6.17.3 DALI Emergency lighting graphical display

The DALI Emergency Light Graphical Display is a Visible Client component. It is used to display and operate a luminaire of the DALI emergency lighting manager. The display is an icon, depending on the type of light. Pressing opens or closes the display and operating popup. The automatic closing of the popup can be activated via the propertiesn. (see below)

To use the DALI Emergency Light Graphical Display, it must be connected to a Dali Emergency Light Channel on the DALI Emergency Light Manager. For this, a channel must be created in the DALI Emergency Light Manager. It is possible to connect several displays to the data point of an emergency light. The display and operation then takes place in parallel.

Data points of the component

Name	Type	function
DALI Notlicht Channel	Bidirectional	Connection between a luminaire of the DALI Emergency Light Manager and the graphic display.
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255] [113]	Input	See component independent data points [113]

Properties

Name	Standard	function
Close popup automatically [s]	0	Time after the pop-up opens automatically. If the default value 0 is set, the popup must always be closed by pressing the icon.

Display and operating popup

1. display block
The upper part of the component displays the alphanumeric data of the luminaire.
The test group to which the luminaire is assigned is displayed at the top right. The test group can be adjusted here by the user. Only groups that have been defined in the DALI Emergency Lighting Manager are available for selection.

2. display block
The test result of the last function test is displayed here.
Date and time indicate the end of the test.
The LEDs indicate the good status of the respective detail in green and the bad status in red.
A function test can be triggered manually with the blue key FT.

3. display block
The test result of the last endurance test is displayed here.
Date and time indicate the end of the test.
The LEDs indicate the good status of the respective detail in green and the bad status in red.
A duration test/discharge test can be triggered manually with the green key 90.

4. display block
With the red key IO all running tests can be stopped.
The organic Batt. key can be used to manually trigger a battery charge status query.
Here the operating time of the lamp is displayed in hours (calculated by the EisBär).
The Report key triggers the output of all test results as an E-Mai for the luminaire.

6.18 System

This chapter describes the functions and properties from the System category.

Currently the following components are available:

- Change user[919]
- APP List View[919]
- QR Code Encoder[923]
- File Picker[926]
- File Logger[927]
- Log Window[931]
- Debugger[932]
- Folder-Mirror FTP[934]
- Start Program[940]
- Hardware Monitor[945]
- System info[946]
- EisTouch 6G RGB[948]
- Client Control[949]
- Macro Panel[949]

6.18.1 Change User

This component is used to perform user switching and to switch to associated user groups and rights. Users and passwords are set and user administration[82] .

The user change is triggered by clicking on the button "Change User" or via the data point "User @ Password". A text with the formatting Username @ Password is sent via this data point. For this, e.g. the code lock or the button can be used.

If the user change is triggered by a Visible component, the user is only changed at the respective client.

If the user switch is triggered by an unVisible component, the change is made to all clients with a linked user switch component Visible.

Via "WPF-Theme[218] " the appearance of this component can be varied.

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
User@Password	Input	(Character string) Externally triggered user change with <user> @ <password>
Username	Output	Returns the current username.
Group	Output	Returns the current group name.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255][113]	Input	See component independent data points[113]

6.18.2 App List view

The APP list view is an invisible server component with the option of creating an operating menu for a smartphone.

The menu view is programmed as a tree structure in the "App list view structure" editor.

Important:
This component must be located on a page to which the set user also has access rights.

Data points of the component

Name	Type	function
Lock operation (display only)	Bidirectional	If this input is not used or is connected with an off signal, the commands are sent to the polar bear server. If the input is connected with an on signal, no commands are sent to the server. Since only the connection is interrupted, the app list view may show incorrect states after operation. All messages from the server are displayed.
Dynamic	Folder	Folder Dynamic displays the data points of the controls. Depending on the type, different data points are provided. Link here

Properties of the component

Name	Standard	Function
Visible		If this parameter is set, the component is visible on the user interface.
App list view Structure		The operating menu is configured here.

Structure of nested list

After opening the editor, there is already an entry, the root of the tree. This entry can not be deleted. You can call the root. The name then appears in the app in the title bar.

The icons in the title bar allow you to perform the following functions, from left to right. Please note the displayed tool tips.
- Add an entry in the current hierarchy level.
- Add a sub-entry to the current hierarchy level.
- Move the selected entry up.
- Move the selected entry down.
- Delete the current entry and, if necessary, all sub-entries.

Node name
Caption of the entry. This appears in the app as plain text.

page
Here you select the page which is automatically changed when you turn the app from the app list view to the graphical landscape mode. If you e.g. in the menu on the ground floor and operate there, appears after the rotation of the smart client, the graphical representation of the EC. If no page is selected, the start page of the project is called up.

node type
There can be only one base entry of the root type. Others can not be added.
The type group leads to a branch in the tree. It is used to structure the menu in building areas and / or trades. The structuring is arbitrary.
The type of control defines the actual operating and display functions. Select the desired function.

settings
If the node type control is selected and further settings exist for this type, they can be set in this column editor.

user
In this column you select in the line root the user who should use this app list view. You can choose from all configured users in the pull-down list. In this way, you can configure several app list view components in the project and thus make different functions available to different users. Be sure to only use a user once per app list view. Otherwise, the system would randomly select and display one of the AppLists.

NOTE:

*- A valid user **must** be set in the root!*

- To display percentage values with the Dimmer control element, the factor 2.55 must be set under Settings (example Dimmer: Min: 0, Max: 100, F: 2.55).

- The rules apply to the display in the value-dependent text: Formatting[109] *.*

- To display a camera stream, the url to the stream must be entered, e.g. for a Mobotix camera http://IPADRESSE/control/fastream.jpg?stream=full. It is also possible to enter the URL of an image, for example from the mini-plotter.

- This component should not be created on a page that contains a plotter. Otherwise the display may be delayed. The instructions[80] *must be observed.*

When you finally exit the editor with OK, the existing data points in the Dynamic folder are displayed in the data point window. The data points are displayed according to the configured app list view structure. Connect the external data points to the corresponding channels here.

Properties

Element	Name	Typ	function
Action Control	Value On	Output	Sends the set value.
ColorShow Control	ColorShow	Bidirectional	Connection to the unVisible ColorShow component
Dimmer Control	StatusInput	Input	This input can be used to change the state of the component.
	Value	Bidirectional	Sends the set value.
RTR-Control	Nominal temperature	Input	Input for the current setpoint temperature
	Current temperature	Input	Input for the measured temperature
	Base nominal temperature	Bidirectional	Input / output of the base setpoint temperature
	Comfort - Value On	Output	Specifies the set data type[114] / value for this input / output.
	Comfort - Value Off	Output	Specifies the set data type[114] / value for this input / output.
	Night - Value On	Output	Specifies the set data type[114] / value for this input / output.
	Night - Value Off	Output	Specifies the set data type[114] / value for this input / output.
	Standby - Value On	Output	Specifies the set data type[114] / value for this input / output.
	Standby - Value Off	Output	Specifies the set data type[114] / value for this input / output.
	Status Value	Bidirectional	This data point is used to send and / or receive the current value.
Shutter Control	Up / Down	Output	Returns a 1bit move command
	Stop	Output	Returns a 1bit stop command
Switch Control	Switch	Bidirectional	Returns an On or Off command
	Statusinput	Input	This input can be used to change the Boolean state (on / off) of the component. Here is e.g. the signal of an active feedback switched on.
Value driven Text	Statusinput	Input	This input can be used to change the Boolean state (on / off) of the component.
	Value	Input	Receives the value that is displayed. e.g. Temperature, power, text, etc.
Weekly Timer	SimpleCalendar	Bidirectional	Connection to the unVisible Calendar component

Launch local apps from the EisBär:

If it is planned to launch other apps out of the polar bear, so-called "Scheme" will be needed. These can be obtained from the corresponding manufacturer (if available!).

Possible schemes can be searched on the internet. Keyword: handleOpenURL

To create an action button, the following entries are required:

- Node type: control
- Control Type: Action
- Settings: String Extended -> URL Scheme from the manufacturer

Example of a URL Scheme for opening "www.YouTube.com":

Appel IOS: ios: http://www.youtube.com/
Android android: com.google.android.youtube
Other: external: <URL>

The app list view displays only the controls that are available for that device. With "external:" apps can be opened that have registered a URI scheme. If there is no suitable app, the URI is opened in the browser. This control appears in all platforms.

To start apps from the project view, the Start Program component is used. see chapter Program Start. [940]

6.18.3   QR Code Encoder

The QR Code Encoder is a Visible Client component. It is used for coded display of freely definable texts.

The encoder is already pre-set for use with the smart clients. It facilitates the setting of the server settings because the user does not have to enter the necessary data manually. He can enter these by scanning the QR code.

The component can encode any text. This could e.g. also be the company homepage or phone number.

Data points of the component

Name	Type	function
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Use portal server	Bidirectional	Here, the use of the portal can be defined at runtime. No does not use the portal (local operation, or via VPN). Yes, only access via portal. Auto uses local access first, depending on availability.
Portal username	Bidirectional	Here the user name for the login to the portal can be defined.

Name	Type	function
Polling Interval	Bidirectional	Here the update time can be set.
Portal password	Bidirectional	Here you can define the password for login to the portal.
Set net value as server account settings	Bidirectional	A trigger at this data point is used to update the QR with the values created at the other data points and to encode the new data.
Server account username	Bidirectional	Here the user name can be defined for logging on to the EisBär server.
http port	Bidirectional	Here the http port can be defined for communication with EisBär server.
Server name	Bidirectional	Here the name of the EisBär server can be defined. This is displayed as a header in the smart clients in NestedList mode.
Server account password	Bidirectional	Here you can define the password for logging in to the EisBär server.
Server Url	Bidirectional	Here, Url / IP can be defined as the destination for communication with EisBär server
Server Websocket Port	Bidirectional	Here the Websocket port can be defined for communication with EisBär server.
Portal server account expiration date	Bidirectional	Here the expiration date for the access of the smart clients to the EisBär server can be defined. The following format applies: yyyymmdds for yearmonthdayhour.
Visible	Input	If this input is not used, the component is Visible. When used, the unvisible component is switched with an off signal and a Visible on signal.
Text to encode	Bidirectional	Here you can enter a text that can be read after triggering "Update QR". If the option "Server coded access data" is selected, the text with the settings will be displayed here.
Opacity [0-255][113]	Input	See component independent data points[113]
Use encryption	Bidirectional	With "1" the login passwords and the expiration date are encrypted. With "0" the content could be read out as plaintext.

If the parameters are set via the data points, <u>all</u> data points must always be set before the QR code is updated via the data point "Update QR".

Properties

Name		function
Server Account Settings		Registration of server access data such as server name, IP address, port etc.
Text to encode		If the QR code is used as an information display, you can enter text that will be displayed when you scan it. No server data is transmitted.
Server account settings mode		If this field is active, the server access data is generated as a QR code. This can be used to establish a connection to the visualization. If this field is inactive, only the text under "QR Code Text" is converted.
Use Encryption		If enabled, the passwords and the expiration date are encrypted. Thus, readout as plain text can be prevented.

The QR Code Encoder is a visible client component. It is used to display of user-defined coded text.

The encoder is already preset for use with the Smart Client. It facilitates the setting of the Server Settings, since the user does not have to enter manually the required data. He can enter it by scanning the QR code.
The component can encode any texts. This could, for example, also be the company's website or phone number.

Here is an example of the data format for use with the **Smart Client with 5 hours validity**:
cfg:name=Lokal,ip=192.168.2.220,port=8003,wsport=8004,tls=0,interval=500,user=Gast,pass=,portal=no,puser=eisbaer,ppass=eisbaer,**valid=+300**

Here is an explanation of the data format for use with the smart clients:

cfg: Identifies the following data as access data for the smart clients.
name=   This text is displayed in the app in the title bar when NestedList is displayed.
ip=   URL or IP address of the EisBär server to which the smart client should connect.
port=8003   DefaultHttp communication port on the EisBär server. If you change this on the server, you must adjust it here accordingly.
wsport=8004   Default websocket communication port on the EisBär server. If you change this on the server, you must adjust it here accordingly.
tls=0   With "1" the login passwords and the expiry date are encrypted. With "0", the content could be read out as plain text.
interval=500   Shows the set polling interval in milliseconds.
user=Gast   Enter the desired name of the user here. Guest is the default value.
pass=   Enter the password for the user here. Standard users without a password can be used by default.
portal=   No does not use the portal (local operation or via VPN). Yes only uses access via portal. Auto uses local access first, depending on availability. If this does not work, an attempt is made to establish the connection via the portal.

puser=   Shows the user name for portal access.

ppass=   Shows the password for portal access.

valid=   Indicates the validity of the QR code. From this point onwards, the smart client will no longer connect to the server and the server will be deleted from the list.

6.18.4 File Picker

With the help of the component 'file selection' it is possible to select files and pass this information as a string to other components.
As a receiver for the string z. As the media player or the browser in question.

Data points of the component

Name	Type	function
File content	Output	If a text file was selected, the text content of the file is output. To do this, the property "Send file content" must be hooked on.
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Opacity [0-255][113]	Input	See component independent data points[113]
Send URL	Output	Sends the selected path and filename.

Properties

Name		function
Initial Directory	[...]	This is where the startup path is set, which the Open dialog should call by default.
File filter		Filters for the selection of the file set
Lock operation (display only)		If this parameter is set, the component can not be operated. It then only has display function.
Send file content		If this option is set, output to the "File contents" output is enabled.
File Save Dialog		Property to be able to call up a "Save file" dialogue.

Note: With the file filter, the desired file formats are preselected. Via the start path, the folder with the media files will be referenced to avoid unnecessary navigation.

Example filter for mp3 files and m3u playlists
(MP3 files * .mp3) | * .mp3 | (playlists * .m3u) | * .m3u

or
csv files (* .csv) | * .csv | all files (*. *) | *. *

6.18.5   File logger

The file logger is an invisible server component with the ability to log any text, values, events or switching commands in a file.

The log file is written in csv format. It is possible to change the file extension as you like. However, this does not affect the file format.
The values are then entered chronologically.
The individual lines are written in dependence of the parameter 'memory trigger' and then possibly via the input 'memory pulse'.

There are 2 types of storage. If the Logging Type property is set to 'All Channels in Each Line', all values are written to one line for each channel receive or trigger. When the file is opened in Excel the values for each channel are displayed in one column. The column header is the channel name. Each line stores number, date, time and values. Each event writes all channels.
If the Logging Type property is 'One Line Per Channel', the number, channel name, date, time and value are written line by line. There is only one value on each line. This format is particularly suitable for further evaluating the values with automated programs.

Describing the log file can always be switched on or off via the data point 'Active'.
Caution: If a lot of information is received at short intervals, the log file can become very large.

The log file is archived via "Backup Impuls". After triggering the "backup impulse", the log file is saved under the path and name specified under "Backup file name". A date and time stamp is attached to the file name. This is defined under "Backup file date format".
The actual log file is then deleted.

Note: For recording at least 1 channel must be created, the filename defined and the component 'Active' switched.

Data points of the component

Name	Type	function
Activ	Bidirectional	Indicates whether the recording is active (On) or inactive (Off). The recording can be activated (On) and deactivated (Off) via the data point.
Backup done	Output	If the file was created successfully, it will be "true".
Backup filename	Output	Returns the storage path and filename of the backup file.
Backup Impulse	Input	A backup signal is created with an ON signal. When a backup is created, the actual log file is deleted.
Diagnosis [Text]	Output	The status outputs are formatted as text here. The output is used for diagnosis in the event of a malfunction. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service.**
Dynamic	Folder	Here, the channels defined in the channel list are displayed and made available as data points for linking to the networks.
Gateway (data input)	Input	Direct connection to a driver gateway [546] data point to log all channels automatically (e.g. from the Modbus master). For this,**"One line per channel"** must be selected!
last log entry	Output	Here the last recorded value is published
Change log file name	Bidirectional	The name of the log file can be adapted via a character string or file selection [926] .
Save impulse	Input	If the memory pulse is triggered, the current values are written to the log file. The logger must be active in any case.

Properties

Name	Default	function
Channels	0	Call the channel list in which the data points to be stored are created.
Log-Typ	All channels in each line	Here you can choose between two recording methods. 'All channels in each line' or 'One line per channel'.
Append values to file	x	If this entry is set, all incoming data are written to one another in the file. If this entry is not set, the incoming values are always written on the first line. Existing data will be overwritten.
Separator	Semicolon	Selection of the line separator. Possible are semicolon, comma or tabulator
Date Format	dd.MM.yyyy	Format of the date in the log file. see also formatting[109]
Time format	HH:mm:ss	Format of the time in the log file. see also formatting[109]
Culture Setting	German (Germany) (de-DE)	Here the country is determined for which the stored files are intended. Depending on this, time, date and value entries are stored country-specifically. e.g. 24 or 12 hour format; Comma or dot as separator
Active		Indicates whether the incoming data should be recorded.
Save trigger	Save immediatly on channel event	If the setting 'Save immediately on channel reception' is selected, the values are written to the log file individually on reception. The 'Save at' settings refer to the save impulse input. If the memory pulse receives a value and this is identical to the setting, all values are written to the log file. Alternatively, storage can be carried out every 15/30/60 minutes or once a day (at midnight).
Filename		Here, the name of the file in which the log messages are stored must be specified. With a mouse click on, "...", open the file "Save As" dialog and specify a storage path and filename.
Backup filename		Here the name of the backup file in which the log messages are stored can be defined. With a mouse click on, "...", open the file "Save As" dialog and specify a storage path and filename.
Backup file date format	yyyyMMddHHmmss	Format of the time specification appended to the filename
Zip backup		Set to zip the backup file.
Auto Backup	never	A backup routine can be set for the selected period.
Log header	x	If this entry is set, the column name (number, date, time and channel name) is entered.
Log number	x	If this entry is set, the current line number will be logged in each line.
Log date	x	If this entry is set, the date will be logged in each line.
Log time	x	If this entry is set, the time is logged in each line.

Channels (Example)

Name	Faktor	Formatstring
Power	1	
Temperature	0,001	#0,0 °C see also [formatting][109]

Name
This name of the input is displayed as a data point name on the component and in the file.

factor
For incoming values these are multiplied by the factor. It is possible, e.g. Wh in kWh by setting the factor 0.001.
The factor must not be set to 0, because then 0 is always logged.

format string
By default, no format string is entered. The received value is saved in raw format.
By using the format string, it is possible to round values and store additional characters with the value.
Examples:
#0,00 kWh
#0,0 °C
#0 W

Import (CSV)
Channels can also be imported with a CSV file. The following structure applies here:
unique channel name; factor as a number; format string.
Example: Name;2,5;FormatString

Example of the logging type "All channels in each line

No.	Date	Time	Channel001	Channel002
1	28.09.2021	14:35:04	1	
2	28.09.2021	14:35:05	1	1
3	28.09.2021	14:35:06	0	1
4	28.09.2021	14:35:07	0	0

Example for the logging type "One line per channel

No.	Name	Date	Time	Value
1	Channel001	28.09.2021	14:35:04	1
2	Channel002	28.09.2021	14:35:05	1
3	Channel001	28.09.2021	14:35:06	0
4	Channel002	28.09.2021	14:35:07	0

6.18.6 Log Window

The log window is a visible client component. It is used to display messages of any kind in a text format line by line. In addition, the input can be stored in a separate database. If the contents of the log window should be stored even during a power failure, a "Save" command must be triggered via the data point "Save" after each reception of a message at the input. By a text input in the top (set off) line, the content is filtered in the protocol window.

In contrast to the value driven text, can only display the current message, the log window can display the progress of an input signal line by line in a list.

Via "WPF-Theme [218] " the appearance of this component can be varied.

Note: After deleting the database entries, the project must be restarted. Without this operation, the last entries would still be visible in the log window.

Data points of the component

Name	Type	function
Clear window	Input	An on signal at this input clears the contents of the log window.
Delete DB entries	Input	An on signal at this input clears the contents of the database file.
Input log	Input	An arbitrary signal for logging can be created at this input.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Pause	Input	Incoming signals are stored, but the display does not change. After resuming, a change to the input is required to re-display all signals that arrived during the pause time in the log window.
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Save [in DB]	Input	An on signal at this input writes the contents of the log window into the database file. When the server is closed, it is saved automatically.
Text colore [ARGB-HEX]	Input	See component independent data points [113]
Opacity [0-255] [113]	Input	See component independent data points [113]

Properties

Name		function
Add time stamp	x	Set parameter will stamp every incoming telegram with date and time.
Append line on top	x	If this parameter is set, the newly arriving log lines are added at the top. The display is thus shown in descending order.

6.18.7 Debugger

With this invisible server component it is possible to switch several diagnostic outputs of drivers on a protocol window. The components list selection[196] and protocol[931] window (or another text display) are required for this.
The "Search components mode" must be deactivated for the list selection.

These drivers can be connected directly via Debug In without having to create a channel:
DLMv2[513]
OCPP Backend[641] and Client[511]
Modbus Master[571]
BACnet Server[616] and Client[623]
LUA[255]
MQTT Broker[817] and Client[807]

One channel must be created for all other components with diagnostic outputs

Data points of the component

Name	Type	Function
Current component	Output	Output of the component name that is currently selected for output.
Clear display (protocol window)	Output	Connection to the protocol window[931] "Delete display", if this component is used.
Known components (list selection)	Output	Connection to the list selection[196] "Import data from string
Debug output (entries of the selected component)	Output	Connection to the protocol window[931] "Input (Signal)" (recommended) or another component that can display text.
Debug input	Input	Connection to the diagnostic outputs of the components listed above. All components use the same network.
Dynamic	Folder	Diagnostic outputs of any components are linked here. An entry must first be created under Channels for each diagnostic output. Each component must be linked with its own network.
Messages received per second (averaged over 10s)	Output	Number of messages received from all linked drivers per second, averaged over 10 seconds.
Messages sent per second (averaged over 10s)	Output	Number of messages sent by the selected driver, averaged over 10 seconds.
Select component	Input	Link to the "Selected value" list selection[196]
Delete (All messages)	Input	Deletes all debug messages from all drivers.
Delete (messages of the current component)	Input	Deletes all debug messages from the currently selected driver.
Save messages in files	Bidirectional	If this is set, the logs of all components are saved automatically. Storage location: *C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\Debugger*

Properties of the component

Name	Default	Function
Channels	0	A channel must be created for each diagnostic output that is to be switched via the debugger.
Number of messages per channel	100	It can be defined how many messages are to be kept per driver.
Add timestamp	X	To be able to output the real time of the information, the time stamp of the message is added. The time stamp should then be deactivated in the protocol window.
Save messages to file		If this selection is set, the protocols of all drivers are automatically saved.
Storage path		Default storage location: *C:\ProgramData\Alexander Maier GmbH\EisBär 3.0\Debugger*
Auto Backup	never	A backup routine can be set for the selected period.
Zip Backup		Set to zip the backup file.
Send all messages as a unit (on receipt)		If active, when a new message is received for the currently selected sender, all associated messages are sent as one string if no log window is used for display.
Send all messages as a unit (on change of station)		If active, all associated messages are sent as one string when the sender is changed, if no protocol window is used for display.

6.18.8 Folder mirror FTP

With the invisible server component "Directory Mirroring FTP" it is possible to backup any directories of the EisBär server computer as well as e.g. USB sticks which are plugged into the computer to a remote FTP server.

Basically, the backup of the running EisBär project including all its data, such as the actual project including databases, camera images, log files, as well as all other files belonging to the visualization project, should be seen as the main purpose for using the component - a point that is often neglected.

The remote terminal can be located in the local network (file server, NAS, etc.), directly on the Internet (web server) or at a remote location connected to the Internet. In the current versions, additional encryption options have been added - such as FTP(S) with explicit or implicit TLS, as well as SFTP (SSH-FTP). In the directory editor of the component any directories to be backed up can be specified. As an additional option, it is possible to cache folders to be backed up locally on the computer, e.g. to transfer files that are currently being accessed. This local copy can be automatically deleted after a transfer or it can remain in place. When using this option, make sure that sufficient memory space is available. The update interval per backup job can be set between 1 - 168 hours and you can specify whether the backup should start immediately when the EisBär server is started or only at the set interval, e.g. to avoid unnecessarily loading the computer when EisBär starts up for large projects. If several directories are selected for FTP backup, the backup will be processed

sequentially. It is now also possible to pack files or directories as a ZIP file before transferring and to include or exclude desired subfolders and files (file name and/or extensions) from selected directories. The amount of data to be transferred can thus be further reduced or optimised.

It is also possible to test whether the credentials for the FTP server have been entered correctly in the component properties. If the credentials or the FTP address (IP/name/domain) are not correct, after the check period - please wait a little - another window will be displayed which will provide appropriate information. If the correct information has been entered, a new window will also appear shortly afterwards to confirm access and to display the directory for this FTP user, depending on the directory settings.

Data points of the component

Name	Type	Function
Update	Input	An on signal at this input causes a mirroring to be executed immediately.
Cyclic Update	Bidirectional	Via an on-signal at this input, mirroring is performed cyclically. The waiting time between two mirrorings can be set separately.
Update interval [h]	Bidirectional	Here the input/output of the pause between two cyclic requests takes place.
Current file	Output	Output of the current file, which is mirrored.
Clear file cache	Input	An on signal at this input clears the file cache and re-mirrors the data to the target. Otherwise, only new and changed files are transferred.
Debug [Text]	Output	The status outputs are formatted as text here. The output is used for diagnosis in case of malfunction. **Attention: Diagnosis or debug outputs are only provided for the case of error. Please use only after consultation with the support team! If used, these can considerably impair the performance of the service.**
Driver On/Off	Bidirectional	(De)activate the component.
Extended diagnostics	Input	Via this additional input, the output "Diagnostics [Text]" allows a detailed output.
Dynamic	Folder	In the folder "Dynamic" the data points of the directories are displayed. At the outputs it is displayed at each check which of the files in the directory have been changed and are mirrored.
Statistics	Folder	see below
Status	Folder	see below
Cancel uploads	Input	An on or off command at this input cancels the current mirroring.
Connection status	Output	Outputs the current connection status to the target system as an on/off signal.

Subfolder - Statistics (data points):

The Statistics folder contains data points for further control and analysis functions

Name	Type	Function
Total - Number of uploaded files	Output	Output of the number of uploaded files.
Total - Number of different files	Output	Output of the number of different files.
Total - amount of data [MB]	Output	Output of the data volume in megabyte [MB].
Total - Reset statistics	Input	Reset all statistical values.
Last synchronization - number of files	Output	Output the number of synchronized files from the last mirroring.
Last Synchronization - Amount of data [MB]	Output	Output the amount of data in megabytes [MB] of the synchronized files from the last mirror.
Last Synchronization - Duration	Output	Output of the duration of the last mirroring as text in 00h:00m:00s.
Last Synchronization - Successful [%].	Output	Output, how many % of the files were uploaded successfully.
Last Synchronization - Error [%]	Output	Output how many % of the files were not uploaded.

Subfolders - Status (data points):

The folder Status contains further data points for status messages during mirroring

Name	Type	Function
Error	Output	The output is set to On when an error occurs during the mirroring process.
Ready	Output	The output is set to On when the mirroring operation completes successfully.
Progress [%] (all directories)	Output	The output shows the progress of the mirroring process (all files/directories) as a value in percent.
Progress Info (all directories)	Output	The output shows the progress of the mirroring process (all files/directories) as text (e.g. 112/2500).
Upload Progress [%] (current directory)	Output	The output shows the progress of the upload (of the current directory/channel) as a value in percent.
Upload progress info (current directory)	Output	The output shows the progress of the upload (of the current directory/channel) as text (e.g. 50/150).
Upload in progress (current directory)	Output	The output shows the progress of the upload (of the current directory/channel) as value ON/OFF.
In progress	Output	The output is set to On while the mirroring process is in progress.
Copy Progress [%] (current directory)	Output	The output shows the copy progress (of the current directory/channel) as a value in percent.
Copy Progress Info (current directory)	Output	The output shows the progress of copying (of the current directory/channel) as text (e.g. 50/150).
Copy in progress (current directory)	Output	The output shows the progress of copying (of the current directory/channel) as value ON/OFF.
Next synchronization	Output	Duration until next mirroring as text output in format: 00h:00m.
Packing progress [%] (current directory)	Output	The output shows the progress of the packing (of the current directory/channel) as a value in percent.
Packing Progress Info (current directory)	Output	The output shows the progress of the copy (of the current directory/channel) as text (e.g. 50/150).
Packing in process (current directory)	Output	The output shows the progress of copying (of the current directory/channel) as value ON/OFF.

Properties of the component

Name	Standard	Function
Directories	0	The directories to be mirrored are configured here. **Attention**: the path details always refer to the EisBär server computer.
FTP Settings		see below
Update interval [h]	12	The directories are mirrored to the FTP server at the set hourly interval (1 to max. 168 hours)
Updating cyclically	x	If this parameter is set, the directories are saved cyclically at the set hourly interval.
Update at startup	x	This parameter is used to select the startup behavior of the directory mirroring on EisBär server startup. If updating is activated, the backup is started immediately and then follows the update interval. Otherwise, the first backup is only started after a set time in hours, which can relieve the load on the EisBär server startup depending on the amount of data to be backed up.
Driver On/Off		(De)activate the component at start-up.

Directories (channel editor)

| Name	Function
Name	Freely definable name
Directory path	Absolute path for the directory to be mirrored.
Ignore timestamp	Activate if the timestamp of the last change is to be ignored
Create local copy	With the "Create local copy" option, the directory to be backed up is copied to the specified location and then transferred to the FTP server. Files that are in use, for example (databases, log files, etc.), can also be backed up in this way. It is essential to ensure that appropriate read and write permissions are assigned for the directories/files.
Path for local copy	Absolute path for the storage location of the local copy.
Delete copy	Deletes the local copy after the upload is complete.
Pack files before upload	Packs the directory into a ZIP file and then uploads the ZIP to the destination.
Add timestamp	Adds a timestamp to the ZIP file.
Files to be included	Individual files or types can be entered. Example: *.txt all text files or EisBaer.txt only this one text file. Multiple files are separated with a comma or semicolon.
Files to be excluded	Individual files or types can be entered. Example: *.txt all text files or EisBaer.txt only this one text file. Multiple files are separated with a comma or a semicolon.
Directories to be included	Individual files or types can be entered. Example: *.txt all text files or EisBaer.txt only this one text file. Multiple files are separated with a comma or a semicolon.
Directories to be excluded	Individual files or types can be entered. Example: *.txt all text files or EisBaer.txt only this one text file. Multiple files are separated with a comma or semicolon.

FTP settings:

Name	Function
Server	Name or IP address of the FTP server
Port	Communication port for data transmission
Directory	File path at the mirroring location
User	User name for the login
Password	Password for login
FTP(S)	Use of the FTP Secure protocol (File Transfer Protocol over SSL/TLS). If required, set the encryption type additionally.
- None	Without encryption
- Explicit TLS	Request TLS encryption explicitly (FTPES)
- Implicit TLS	Request TLS encryption implicitly (FTPS)
SFTP	Using the SFTP protocol (SSH File Transfer Protocol or Secure File Transfer Protocol)
Accept all certificates	If this setting is active, all certificates, even unsigned ones, are accepted.
Test [Button]	Test the credentials (server / user data) or connection settings

6.18.9 Start Program

This component can be used to start programs on the EisBär server PC or the Windows client.

Data points of the component

Name	Type	function
Lock operation (display only)	Input	If this input is not used, the component can basically be operated. If the input is connected with an on signal, the component can not be operated. It then only has display function.
Mouseover	Output	This output can be used to start an event when the object is moved by mouseover.
Parameters	Input	Transfer of the path to be executed
Visible	Input	With an off-signal the component unVisible and with an on-signal Visible is switched.
Trigger	Input	Starts the program via an on-impulse.
Opacity [0-255][113]	Input	See component independent data points[113]

Properties

Name		function
Application	[...]	selection for the application to be started or file e.g. notepad.exe
Parameters		Parameters entered here are appended to the application call as start parameters. e.g. test.txt
Execute on server	selection	If this selection is set, the selected programme starts on the server. This does not apply to programmes that have an interface. This means that it is not possible, for example, to open Internet Explorer on the server from a client. If the selection is not set, the programme starts on the client. Here it is possible to open programmes with an interface.
Execute on mobil device	selection	If this selection is set, the selected programme starts on the mobile device. If it is not set, the component is not displayed in the app. If it is intended to start other apps from the polar bear, so-called "schemes" are required. These can be obtained from the corresponding manufacturer (if available!) and entered under "Application". Possible schemes can be searched for on the Internet: Search term handleOpenURL.
Confirmation message		Text content of the notification popup. If a text is entered, a window appears with which the program can be accepted or rejected.
Confirmation title		Title bar of the notification popup. If a text is entered, a window appears with which the program can be accepted or rejected.
Automatic start	selection	If this selection is active, the stored program starts immediately after the page with the component is called. Here the confirmation query is ignored.
Shut down on close	selection	When exiting the Windows client, the program started by this component is also terminated.
Lock operation (display only)	selection	If this parameter is set, the component can not be operated. Only the activation via the data point "Trigger" is possible.

Example Notepad:

If the application notepad.exe is called as an application, the file to be called can be set via the command line parameter. e.g. test.txt. Then the file test.txt is opened in the program Notepad.

Example Win screen keyboard:

The Windows screen keyboard *"osk.exe"* cannot be called until the files *"osk.exe"* and the *"oskSupport.dll"* are copied to *"C:\Windows\SysWOW64"* . In the programme start component, the path *"C:\Windows\System32\osk.exe"* iscalled up as before.

Starting other apps from the EisBär Smart Client:
To start an app from the Project view, use the Start Program components. If it is planned to launch other apps out of the polar bear, so-called "Scheme" will be needed. These can be obtained from the corresponding manufacturer (if available!) And entered under "Application".
Possible schemes can be searched on the Internet: search term handleOpenURL.

Example of a URL Scheme for opening "www.YouTube.com":

Appel IOS: ios: http://www.youtube.com/
Android android: com.google.android.youtube
Other: external: <URL>

Attention: The schemes are subject to constant change by the manufacturers!

Scheme Overview:

App	Android	IOS
Philips HUE	android:com.philips.lighting.hue2	ios:phiosappl://
BOSE SoundTouch	android:com.bose.soundtouch	ios:com.bose.SoundTouch://
REVOX MultiRoom	android:revox.voxnet	
DENON Heos	android:com.dnm.heos.phone	ios:HEOSbyDenon://
SONOS S1	android:com.sonos.acr	ios:sonos:// Hinweis: Wenn beide Apps installiert sind kann nur eine der beiden Apps aufgerufen werden
SONOS S2	android:com.sonos.acr2	ios:sonos:// Hinweis: Wenn beide Apps installiert sind kann nur eine der beiden Apps aufgerufen werden
Doorbird	android:com.doorbird://	ios:doorbird://
Alexa		ios:alexa://
Amazon Prime Video		ios:aiv://
Amazon Music		ios:amznmp3://
Deezer		ios:deezer://
Ecobee		ios:ecobee://
Facebook		ios:fb://
Flickr		ios:flickr://
Google		ios:google://

App	Android	IOS
Google Chrome		ios:googlechrome://url
Gmail		ios:googlemail://
HBO Go		ios:hbogo://
HBO Now		ios:hbonow://
Hulu		ios:hulu://
IMDb		ios:imdb://
Instagram		ios:instagram://
Kaleidescape		ios:kscape2://
Lift Master		ios:myliftmaster://
Lutron		ios:lutronhomecontrol://
Lutron		ios:lutronconnect://
Lutron		ios:lutroncaseta://
Messenger		ios:fb-messenger://
Movie Pass		ios:moviepass://
Musicast		ios:jp.co.yamaha.avkk.musiccastcontroller://
My Canal		ios:cplus://
Nest		ios:nestmobile://
Netatmo		ios:netatmo://
Netflix		ios:nflx://
NFL		ios:nflmobile://
Nuvo		ios:nuvoplayer:// App URL Scheme
Onkyo Remote		ios:oremote://
Orange		ios:otvp://
Pandora		ios:pandora://
Pinterest		ios:pinterest://
Philips Hue		ios:hue2://
Plex		ios:plex://
ProControl		ios:propanel://
Pyng		ios:crestron-pyng://
Rachio		ios:rachio://
Ring		ios:ring://
Roku		ios:roku://
RTI		ios:rtipanel://
Samsung Smart Things		ios:smartthings://
Skype		ios:skype://
Sling Player		ios:spm-iphone://
Snapchat		ios:snapchat://
Spotify		ios:spotify://

App	Android	IOS
Sports Center		ios:sportscenter://
Tidal		ios:tidal://
Tumblr		ios:tumblr://
Tivo		ios:tivo://
Twitter		ios:twitter://
Vimeo		ios:vimeo://
Waze		ios:waze://
WhatsApp		ios:whatsapp://
Wyrestorm Network HD Touch		ios:nhdtouch://
XBMC		ios:sybu-xbmc://
Xfinity TV Remote		ios:xfinitytv://
Youtube		ios:youtube://
Zappiti 4K		ios:zmc4kremote://
Zappiti Old		ios:zmc://
Calendar		ios:calshow://
Clips		ios:clips://
Contacts		ios:contacts://
Diagnostics		ios:diagnostics://
Facetime		ios:facetime://user@example.com
Facetime Audio		ios:Facetime-audio: //user@example.com
Find My Friends		ios:findmyfriends://
Find My Phone		ios:fmip1://
Game Center		ios:gamecenter://
Garageband		garageband://
iBooks		ibooks://
iCloud		Drive:appleiclouddrive://
iMovie		imovie://
iTunes Remote		remote://
iTunes Store		itms://
iTunes University		itms-itunesu://
Mail		message://
Mail to		mailto://user@example.com
vMaps		maps://
Message		sms:// App URL Scheme
Message		to:sms://user@example.com
Music		music://

App	Android	IOS
News		applenews://
Notes		mobilenotes://
Phone		tel://phonenumber
Photos		photos-redirect://
Podcast		feed://
Podcast		pcast://
Radio		itsradio://
Reminders		x-apple-reminder://
Safari		safari://
Safari Search		x-web-search://
Safari FTP File		ftp://location-to-ftp-file
Safari HHTP Site		http://website URL
Safari HTTPS		https://website URL
Shortcuts		shortcuts://
TV		videos://
Videos		videos://
Voice Memo		voicememos://
Wallet		shoebox://
Watch		itms-watch://
Workflow		workflow://

Attention: The Scheme are subject to constant change by the manufacturer!

6.18.10 Hardware Monitor

This component displays the current information of the running system, such as hard drive capacity, utilisation, CPU, GPU, temperature and much more.
The display may vary depending on the system.

Data points of the component

Component name	Type	Function
CPU/GPU/HDD/Memory/Network	Folder	The subfolders contain the data points corresponding to the category.
Mouse over	output	This output can be used to start an event when the mouse is moved over the object.
Refresh	Input	Updates the output values via an external control
Reset min/max	input	Resets the stored data for the minimum and maximum values
Visible	Input	The component is switched invisible with an Off signal and visible with an On signal.
Opacity [113]	Input	See component independent data points [113]

Properties of the component

Component name	Standard	Function
Update interval [s]	1	Specifies the interval at which the data is updated.
Display server hardware	x	Specifies whether the server hardware should be displayed or that of the client.

6.18.11 System info

This invisible server component is used to output performance information from the system in use and that required by the EisBär.

Data points of the component

Component name	Type	Type Function
Diagnosis [Text]	Output	The status outputs are formatted as text here. The output is used for diagnostics in the event of a malfunction. **Attention: Diagnostic or debug outputs are only intended for use in the event of an error. Please only use them after consulting the support team! If used, they can significantly impair the performance of the service.**
EisBär - installed version	Output	Output of the currently installed EisBaer version number
EisBär - new version available	Output	Output whether a newer EisBaer version is available (On) or not (Off).
EisBaer - available version	Output	Output of the currently available EisBaer version number
EisBär Client - CPU	Output	Output in % for the CPU utilisation of the EisBaer Client.
EisBaer Client - CPU (average value)	Output	Output in % for the average CPU utilisation of the EisBaer Client.

Component name	Type	Type Function
EisBär Client - RAM	Output	Output in megabytes for the RAM required by the EisBaer.
EisBär Service - CPU	Output	Output in % for the CPU utilisation of the EisBaer service.
EisBär Service - CPU (average value)	Output	Output in % for the average CPU utilisation of the EisBaer service.
EisBär Service - RAM	Output	Output in megabytes for the RAM required by EisBaer.
EisBär Service - RAM Warning	Output	If the set threshold value is exceeded, an ON signal is output.
EisBär Service - Threads	Output	Output of the individual processes
EisBär Service - Uptime [s]	Output	Output of the time in seconds how long this component has been switched on.
EisBär Service - Uptime [Text]	Output	Output of the time in text, how long this component has been switched on.
Extended diagnosis	Input	This additional input enables a detailed output in the "Diagnostics [Text]" output.
IPv4 address list (list selection)	Output	Output of all IP addresses as a list for list selection[196] .
IPv4 - first address	Output	Text output of the first IP-V 4 address (by metric number).
IPv4 - second address	Output	Text output of the second IP-V 4 address (by metric number).
Licence valid	Output	Outputs an On signal if the dongle licence is valid. Otherwise, an Off signal is issued.
MongoDB Service - CPU	Output	Output in % for the CPU utilisation of the database service.
MongoDB Service - Running	Output	Outputs an On signal if the Mongo database is running. Otherwise an Off is output.
MongoDB Service - RAM	Output	Output in megabytes for the RAM required by the database service.
MongoDB Service - RAM Warning	Output	If the set threshold value is exceeded, an ON signal is output.
Messages sent	Output	Output of the number of internal network communication messages that have been processed since EisBaer was started. Is reset at every start.
Messages per second	Output	Output of the number of messages per second that are processed in EisBaer.
Portal connection	Output	Outputs an On signal if the portal connection is established. Otherwise, an Off signal is output.
System CPU utilisation	Output	Output in % for the CPU utilisation of the entire system.
System CPU utilisation (average value)	Output	Output in % for the average CPU utilisation of the entire system.

Component name	Type	Type Function
System CPU warning	Output	If the set threshold value is exceeded, an ON signal is output.
System RAM total [MB]	Output	Output in megabytes for the RAM of the entire system.
System RAM available [%]	Output	Output in % for the RAM still available for the entire system.
System RAM available [MB]	Output	Output in megabytes for the RAM still available for the entire system.
System RAM used [%]	Output	Output in % for the RAM already used by the entire system.
System RAM used [MB]	Output	Output in megabytes for the RAM already used by the entire system.
System RAM warning	Output	If the set threshold value is exceeded, an ON signal is output.
Driver On/Off	Bidirectional	Switch driver on or off.
Windows updates	Output	Available Windows updates are output here as text.

Properties of the component

Component name	Standard	Function
CPU Average value Time window [s]	60	Period for calculating the mean value.
CPU mean value Threshold value [%]	40	Threshold value for the mean value of the CPU utilisation, which issues a warning at the "CPU (total) warning" data point if exceeded.
RAM (total) threshold [MB]	3000	Threshold value for the total RAM utilisation, which issues a warning at the "RAM (total) warning" data point if exceeded.
RAM (polar bear service) threshold [MB]	800	Threshold value for the RAM utilisation of the EisBär service, which issues a warning at the "RAM (EisBär service) warning" data point if exceeded.
RAM (MongoDB service) threshold [MB]	800	Threshold value for the RAM utilisation of the Mongo database service, which issues a warning at the "System RAM warning" data point if exceeded.
Driver on/off		Defines whether the driver is activated automatically at project start.

6.18.12 EisTouch-6G-RGB

This component is used to control the RGB lighting on the EisTouch 6G panels.

To be able to use the RGB lighting, the function for the EisTouch 6G RGB control must be activated on each client under File --> Options --> Extra settings.

<u>The default settings are</u>
Baud rate: **9600**
COM port: **COM3**

Data points of the component

Component name	Type	Type Function
Dynamic	Folder	Contains the data points created under "Channels", which can be triggered with any signal.

Properties of the component

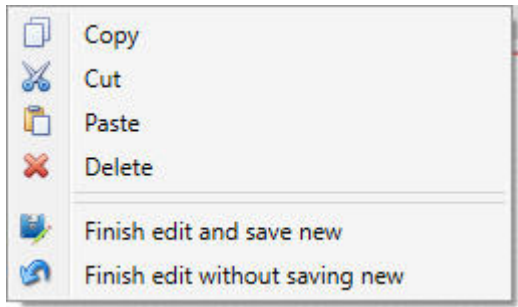| Component name	Standard	Function
Channels	0	The colours are set in the channel list.
Client computer	0	Specification of the PC names to be addressed. These names can be found in the network environment.

6.18.13 Client Control

This invisible server component is used to control other client PCs.
The screen saver can be (de)activated and the screen can be switched on/off.

Data points of the component

Component name	Type	Type Function
Dynamic	Folder	Contains the data points created under "Channels", which can be triggered with any signal.

Properties of the component

Component name	Standard	Function
Channels	0	The name of the function, the computer names and the function are created in the channel list.
Client computer	0	Specification of the PC names to be addressed. These names can be found in the network environment.

6.18.14 Macro Panel

The macro panel is used to create function blocks. Only the data points of the macro panel are displayed in the editor. And only these have to be linked. Only components within the panel or its channels can be linked when the edit mode is active.

Creating a macro:
1. Creating the macro panel in the editor (editing mode is active)
2. Creating the channels / components / links
3. Finally, right-click on the panel -> Exit editing mode and save
4. In order for the macro panel to be displayed in the component list, the EisBaer editor must be restarted. For this there is then the new category "macros".

A macro has now been created. Storage path: C:\Users\UserName\Documents\Alexander Maier GmbH\EisBär 3.0\Macros**.**

In addition, the created macro is displayed as a component in the EisBaer component list. It is possible to change the macro via right click --> edit mode.

After saving the changes, a new macro will be created and will be available again as a component after the editor restart.

Note: If the macro panel is copied, "Create new nets" must be selected. Otherwise the internal nets will also be lost.

Data points of the component

Name	Type	Function
Dynamic	Folder	Contains the data points created under "Channels".
Mouseover	Output	Sends out an On signal, if you hover over the component with the mouse pointer.
Opacity [0-255][113]	Input	See component independent data points[113]
Visible	Input	If this input is not used, the component is always visible. The component can be made invisible with an off signal on this datapoint and visible with an on-signal on this data point.

Properties of the component

Name		Function
Channel	0	Here, the channels for the component are created. The type of channel (input, output and bidirectional) serves only as an editing aid and has no influence on the communication direction.
Password	*	A password can be used to protect the processing of the component. The editing mode will then be unlocked after password entry.

6.19   Macros

The macros that were created with a [macro panel][949] are displayed here. These must be in the directory: "C: \ Users \ UserName \ Documents \ Alexander Maier GmbH \ EisBär 3.0 \ Macros." lying down.
For better clarity, appropriate names should be assigned to the panels. These are also the names displayed in the list.
The created macros can be dragged onto the editing area like a component.

6.20   ScadaComps

To display [ScadaComp][35] component templates in the component list, the Scadacomp export file must be saved under "C: \ Users \ UserName \ Documents \ Alexander Maier GmbH \ EisBär 3.0 \ ScadaComp".
These ScadaComp templates can be dragged onto the editing surface like a component.

Note the message for older ScadaComp files:
If "Yes", the .ScadaComp file itself is also converted.
If "No", the .ScadaComp file is retained in the original version. The components are only converted in the project.
With "Cancel" the import is canceled.

6.21   Sample templates

Download link:

1. [Blind push-button]

2. [Relative dimmer (start/stop)]

3. [SMARD] electricity market prices with solar/energy manager

4. e!Sankey: private house_1

5. Panel switching

6. REST client: Netatmo, EcoFlow River 2 Pro, ChatGPT

7. List selection: List selection (unzip CSV file into the folder c:\Eisbaer)

General information on sample templates (SCADAComp):
Download the desired SCADAComp file and unzip the ZIP file in an empty folder. Start the "Import components" option in the EisBär Editor ribbon under Project and load the template. If a conversion is necessary because the EisBär version is newer, confirm the process with YES. To maintain the functionality, select the option: "Create new nets" as a copy rule when pasting.

Index

- A -

- B -

- C -

- D -

- E -

- F -

- G -

- H -

- I -

- K -