

Manual
theServa S110
KNX visualisation



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1 Introduction

This manual serves as a reference guide for the correct usage of our theServa technology.

The manual consists of two parts:

1. The detailed description of the system architecture, listing all hardware devices, and software packages (for more details refer to Chapter 2 **System** architecture).
2. The Configurator, the software used for creating and managing a theServa project.

An accurate reading of the first part is highly recommended to inexperienced users, in order to make yourself familiar with the functioning of the system.

Experienced users can start with the second part and, if they just need to check the function of a specific object, they can focus on the section "System objects".

2 System architecture

theSera is a control and visualisation system for home and building automation. The theSera system is based on a client-server architecture. The server consists of a theSera miniserver, which is the central unit of the system. It communicates with all clients connected to the LAN, such as PCs, Macs, tablets, and smartphones via Ethernet or WiFi. Practical theSera apps for communication with the server and display of the graphical user interface are available for the corresponding operating systems.



The illustration shows a standard installation of theSera system in a KNX installation. The theSera miniserver communicates with KNX via a double-pole KNX interface. Communication with other devices, such as IR transmitters, is performed via Ethernet.

The theSera miniserver controls all devices connected to it and, functioning as a gateway, allows interactions between the connected devices, even if they use different transmission media and protocols.

theSera is a powerful system, allowing integration and control of different devices and applications.

2.1 theSera components

The theSera solution for home and building automation consists of hard- and software. theSera miniserver is the central unit of the control and visualisation system and communicates with theSera clients. The theSera clients consist of hardware (PCs, Macs, tablets, and smartphones) and of the software application (app or player) for various operating systems.

During the setup and projecting phase, the functions and graphical user interfaces are created by using theSera Configurator. Configurator can also be used for defining system settings and services, as well as loading the created project on server and clients.

2.1.1 theSera miniserver

The server is the central unit of the system. It communicates with KNX via a double-pole KNX interface, and with further devices and clients via Ethernet.

The fanless miniserver is designed for continuous operation. Its input power is only about 1 W, on average.

- Internal mass storage on MiroSD (industrial grade)
- Status LEDs für KNX and Ethernet communication, KNX interface with connection via pluggable screw terminal
- Ethernet network port
- Supply voltage: 12-24 V DC - 1 A max.
- Input power: approx. 1 W
- Operating system: embedded Linux

2.1.2 theSera clients

theSera offers a broad range of apps, so tablets, smartphones, Macs, and PCs using different operating systems can be integrated into the system.



theSera Player (Windows, Mac) is available at the Theben website.

theSera apps are available at the appropriate app stores.

theSera Player for Windows

- Building operation via one device with Windows operating system (versions 7.x and 8.x)
- Size of the application window can be changed
- Mouse cursor can be visualised
- App can be set and adapted to the device, for optimising the user interface

theServa Player for Mac

- Building operation via one device with Mac OSX operating system (from version 10.x.)
- Functions (see Windows)

theServa app for iPad

- Building operation via iPad with iOS operating system (from version 6.x)
- Connection to theServa miniserver via Wi-Fi- or 3G connection
- Quick and intuitive project selection allows the control of several buildings

theServa mini app for iPhone

- Building operation via iPhone with iOS operating system (from version 6.x)
- Functions (see iPad)

theServa for Android

- Building operation via tablets and smartphones with Android operating system (from version 4.x)

theServa Configurator for Windows

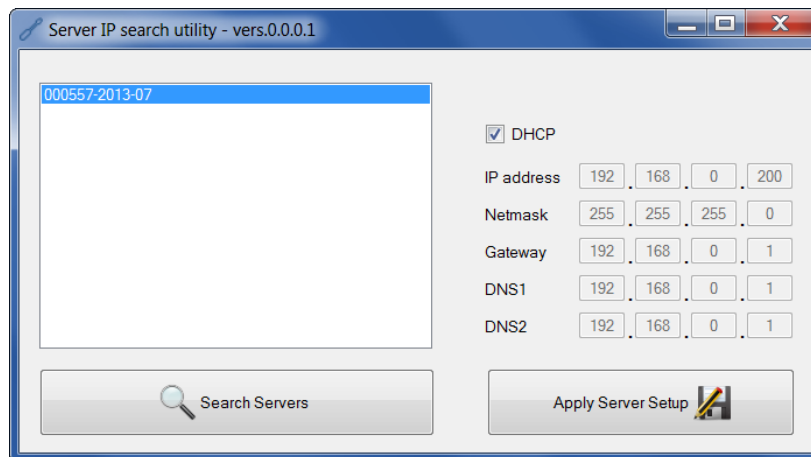
- Tool for creating the functions and graphical user interfaces
- Creating graphical user interfaces and individually adapting them to each client, when desired
- Creating logics and setting up all control elements
- Project upload to the corresponding clients and to theServa miniserver

2.2 How to start

Once the server is connected to the LAN, it acquires an IP address provided from the DHCP service. In order to see the IP address assigned to the server, use the "Servers Manager", which was installed together with theServa Configurator (see figure). The software provides a list of all theServa miniservers (listed by serial number) detected on the LAN and their IP settings. After selecting the installed theServa miniserver, it is possible to disable the DHCP service and to assign a static IP to it.

- Click on the "Apply Server Setup" to confirm the changes.

If the server is connected with a network which is not served by a DHCP service, it has the default address: **192.168.0.200**



Disable the DHCP service and use a static IP address.
Otherwise, connection problems might occur with the clients.

The server can be accessed and configured via its web interface.

- Open the internet browser (Firefox or Chrome are tested browsers) and enter: **http:\serverip:5051**, in order to open the web interface.
 - You will be prompted to login. For first time access, the following login data apply:
Username: **service** (default)
Password: **password**
 - Afterwards, you will be requested to change the password for future access.



Remember or note down your password, since there is no way of retrieving it.

The delivery status can be restored with a hardware reset, which **deletes all user defined settings!**

Hardware reset: Press the push button on the back of the device using a pointed instrument for 10 seconds, or until the pulse LED starts flashing. The IP address will be reset to 192.168.0.200 and DHCP activated.

In addition to port 5051 TCP, which is used for the web interface, clients connect to the server through port 7550 TCP. If the end user wishes remote control of the installation, it is necessary to configure port forwarding at the router.

To allow clients to reach the server from outside the LAN

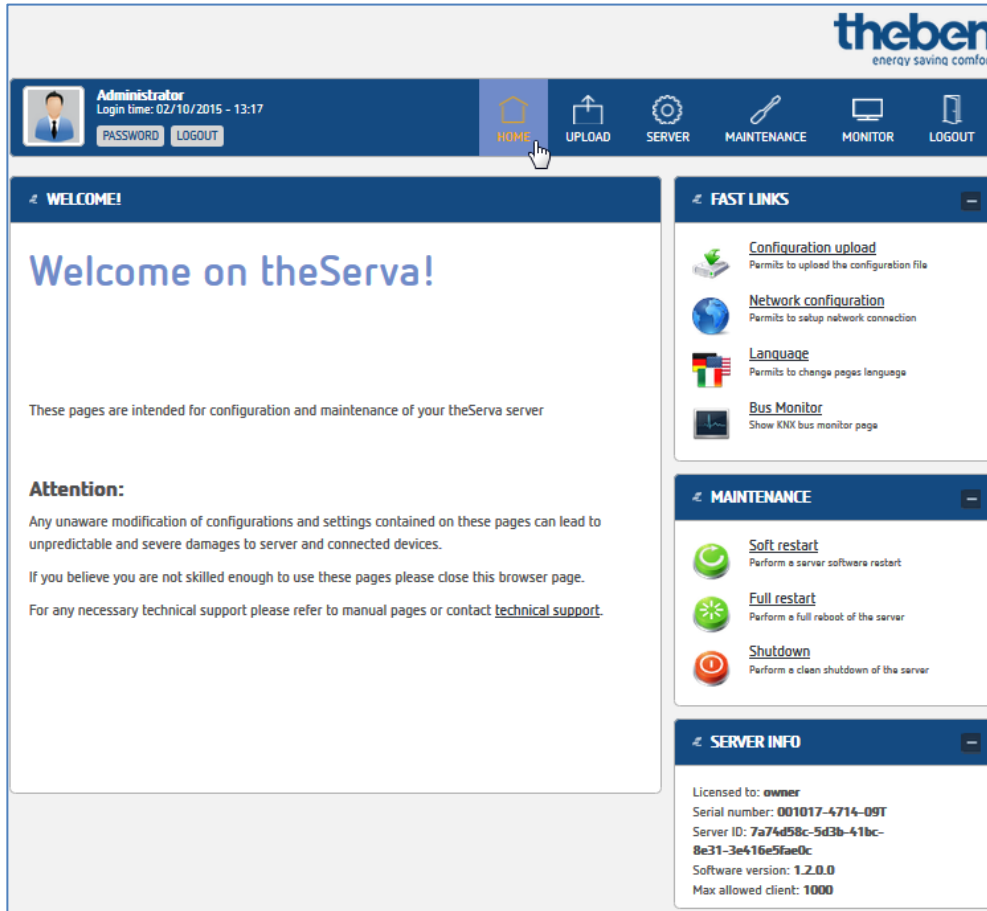
- open port 7550 TCP at the router and forward it to the server IP.

If the user wants to manage the server remotely from his web site, port 5051 must also be opened at the router and forwarded to the server.

2.3 Web interface

2.3.1 "Home" menu

On the following pages you can check and modify the settings of theSera.



2.3.2 „Upload“ menu

Here you can upload a configuration file to theServa miniserver.

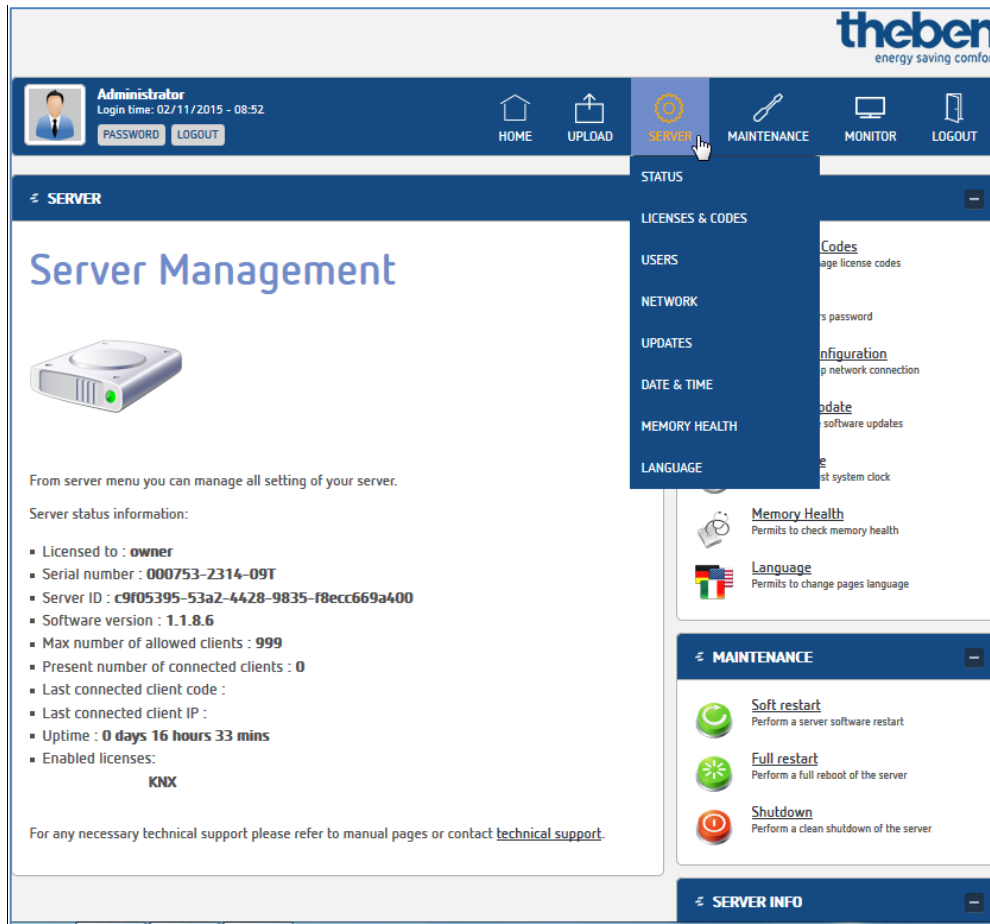
The screenshot shows the theben web interface. At the top right is the logo 'theben energy saving comfort'. Below it is a navigation bar with icons for HOME, UPLOAD (highlighted with a mouse cursor), SERVER, MAINTENANCE, MONITOR, and LOGOUT. The main content area is titled 'UPLOAD' and 'Configuration upload'. It features a green arrow icon pointing to a server icon. Below this is a text box: 'From this page is possible to upload the server configuration file generated by theServa Configurator.' There is a 'Select file' input field and a 'Select File' button. Below that is a large blue 'Upload' button. An 'Instructions:' section lists five steps: 1. Save configuration you are working on theServa configuration, 2. Generate export file with the "Export for Server" command, 3. Save exported file in a well-known path, 4. Click on "Select File" button in this page, 5. Click on "Upload" button in this page, 6. Wait for confirmation message and software restart. At the bottom of the instructions, it says 'For any necessary technical support please refer to manual pages or contact [technical support](#).' On the right side, there are three panels: 'FAST LINKS' with links for Software update, Network configuration, Language, and Bus Monitor; 'MAINTENANCE' with links for Soft restart, Full restart, and Shutdown; and 'SERVER INFO' showing license and version information.

2.3.3 „Server“ menu

Status

From this menu, you can check and change all settings of the Serva miniserver.

Status: Information about the current status.



Clients

Registration of a client (iPad, iPhone etc.)

During initial operation, the client ID will be displayed on the client itself, but also in the menu „Server“, Clients.

The server do not permit connection to this client.
 Client ID: b344e6ac73da6e43814bfd8f343de678f7924db1

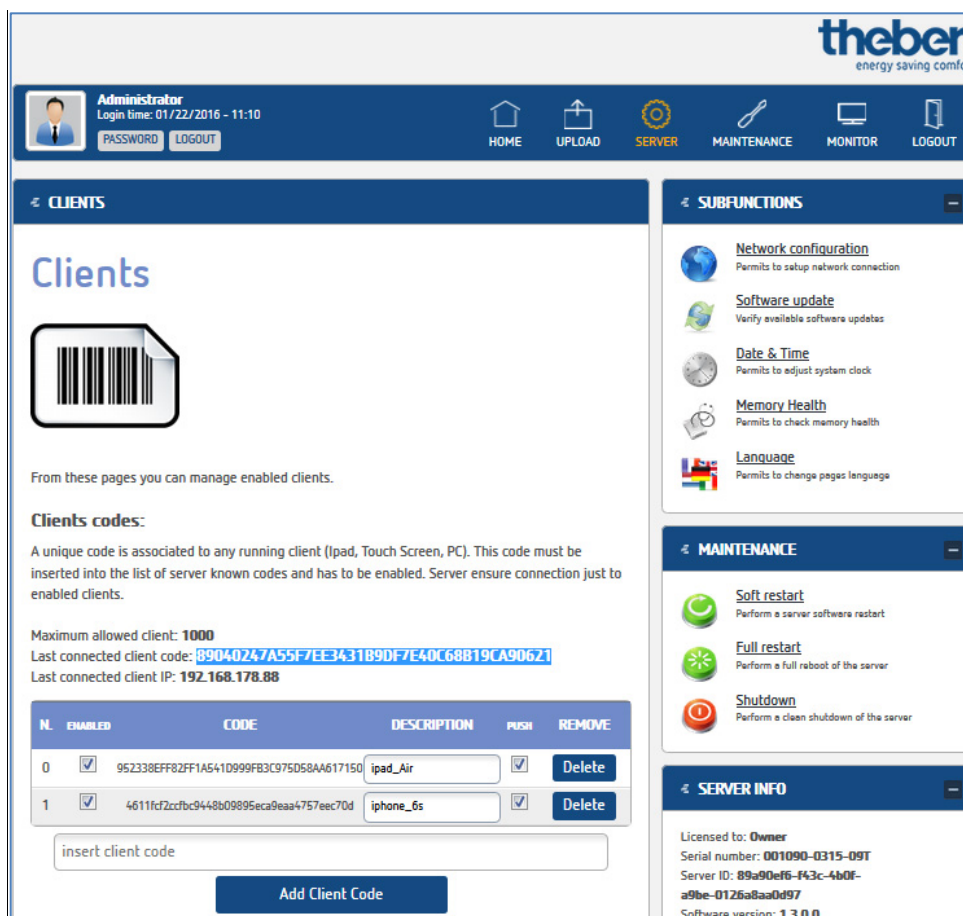
How to register a client

Automatic authentication "Activated"

When connecting for the first time, the client has to login with the user name and password (theServa Cloud password in the authorisations). Afterwards, the client will be identified automatically and will be entered in the client list.

Automatic authentication "Deactivated"

- Go to the page: „Clients“.
- Copy the displayed client ID to the clipboard and paste it into the list: „Clients (devices)“ under „insert client code“.
- Click on „Add client“.



Administrators
Login time: 01/22/2016 - 11:10
PASSWORD LOGOUT

HOME UPLOAD SERVER MAINTENANCE MONITOR LOGOUT

CLIENTS

Clients

From these pages you can manage enabled clients.

Clients codes:
A unique code is associated to any running client (Ipad, Touch Screen, PC). This code must be inserted into the list of server known codes and has to be enabled. Server ensure connection just to enabled clients.

Maximum allowed client: **1000**
Last connected client code: **89040247A55F7EE343189DF7E40C68B19CA90621**
Last connected client IP: **192.168.178.88**

N.	ENABLED	CODE	DESCRIPTION	PUSH	REMOVE
0	<input checked="" type="checkbox"/>	952338EFF82FF1A541D999F83C975D58AA617150	ipad_Air	<input checked="" type="checkbox"/>	Delete
1	<input checked="" type="checkbox"/>	4611fd2ccfbc9448b09895eca9eaa4757eec70d	iphone_6s	<input checked="" type="checkbox"/>	Delete

insert client code

Add Client Code

SUBFUNCTIONS

- Network configuration**
Permits to setup network connection
- Software update**
Verify available software updates
- Date & Time**
Permits to adjust system clock
- Memory Health**
Permits to check memory health
- Language**
Permits to change pages language

MAINTENANCE

- Soft restart**
Perform a server software restart
- Full restart**
Perform a full reboot of the server
- Shutdown**
Perform a clean shutdown of the server

SERVER INFO

Licensed to: **Owner**
Serial number: **001090-0315-09T**
Server ID: **89a90ef6-f43c-4b0f-a9be-0126a8aa0d97**
Software version: **1.3.0.0**

Push Notification

Push Notification:

It is possible to send push notification to iOS clients to communicate project updates or other important messages. Write the text into the following textfield and press the "Send Push Notification" button.

For any necessary technical support please refer to manual pages or contact [technical support](#).



In order to be able to send push notifications, it has to be ensured that "PUSH" is activated for the respective client (at the top of the list). In the iOS settings of the theServa app, "Allow messages" must be activated.

Network

Here, you can check and change the parameters of the network connection.

The screenshot displays the 'theben' web interface for network configuration. At the top, there is a navigation bar with 'HOME', 'UPLOAD', 'SERVER', 'MAINTENANCE', 'MONITOR', and 'LOGOUT' buttons. The 'SERVER' button is highlighted, and a dropdown menu is open, showing options like 'STATUS', 'LICENSES & CODES', 'USERS', 'NETWORK', 'UPDATES', 'DATE & TIME', 'MEMORY HEALTH', and 'LANGUAGE'. The 'NETWORK' option is selected.

The main content area is titled 'Network Configuration' and features a globe icon. Below the title, it states: 'From these page is possible to modify network connection parameters.'

Current settings :

- IP address : 192.168.178.12
- Subnet Mask : 255.255.255.0
- Gateway address : 192.168.178.1
- Primary DNS address : 8.8.8.8
- Secondary DNS address :
- Client DHCP : **Disabled**

New settings :

Client DHCP: Enabled Disabled

IP Address: 192.168.178.12

Subnet Mask: 255.255.255.0

Gateway Address: 192.168.178.1

Primary DNS Address: 8.8.8.8

Secondary DNS Address: [Empty field]

On the right side, there are sections for 'Language' (with a flag icon and text 'Permits to change pages language'), 'MAINTENANCE' (with options for 'Soft restart', 'Full restart', and 'Shutdown'), and 'SERVER INFO' (with details like 'Licensed to: owner', 'Serial number: 000753-2314-09T', 'Server ID: c9f05395-53a2-4428-9835-f8ecc669a400', 'Software version: 1.1.8.6', and 'Max allowed client: 999').



Disable the DHCP service and use a static IP address. Otherwise, connection problems might occur with the clients.

Updates

In this menu, you can update the software of the server.

The screenshot shows the 'theben' web interface. At the top, there is a navigation bar with the logo and the tagline 'energy saving comfort'. Below this, a user profile for 'Administrator' is shown with a login time of '02/11/2015 - 08:52' and buttons for 'PASSWORD' and 'LOGOUT'. The main navigation menu includes 'HOME', 'UPLOAD', 'SERVER', 'MAINTENANCE', 'MONITOR', and 'LOGOUT'. The 'SERVER' menu is expanded, showing options like 'STATUS', 'LICENSES & CODES', 'USERS', 'NETWORK', 'UPDATES', 'DATE & TIME', 'MEMORY HEALTH', and 'LANGUAGE'. The 'UPDATES' option is highlighted. The main content area is titled 'Software update' and features a green circular arrow icon. It contains instructions: 'This page permits to verify if software updates are available for theSera server. Before starting update please verify that a stable internet connection is available and that network connection is properly configured. To check for new updates please click the button that follow.' A large blue button labeled 'Verify for updates' is centered on the page. Below this, it says 'For any necessary technical support please refer to manual pages or contact [technical support](#).' The sidebar on the right contains a 'Language' section with a flag icon and the text 'Permits to change pages language'. Below that is the 'MAINTENANCE' section with three options: 'Soft restart' (Perform a server software restart), 'Full restart' (Perform a full reboot of the server), and 'Shutdown' (Perform a clean shutdown of the server). At the bottom of the sidebar is the 'SERVER INFO' section, which displays: 'Licensed to: owner', 'Serial number: 000753-2314-09T', 'Server ID: c9f05395-53a2-4428-9835-f8ecc669a400', 'Software version: 1.1.8.6', and 'Max allowed client: 999'.



Check if theSera software is up-to-date during start up.

Date & Time

Adjust internal clock and change synchronization settings.

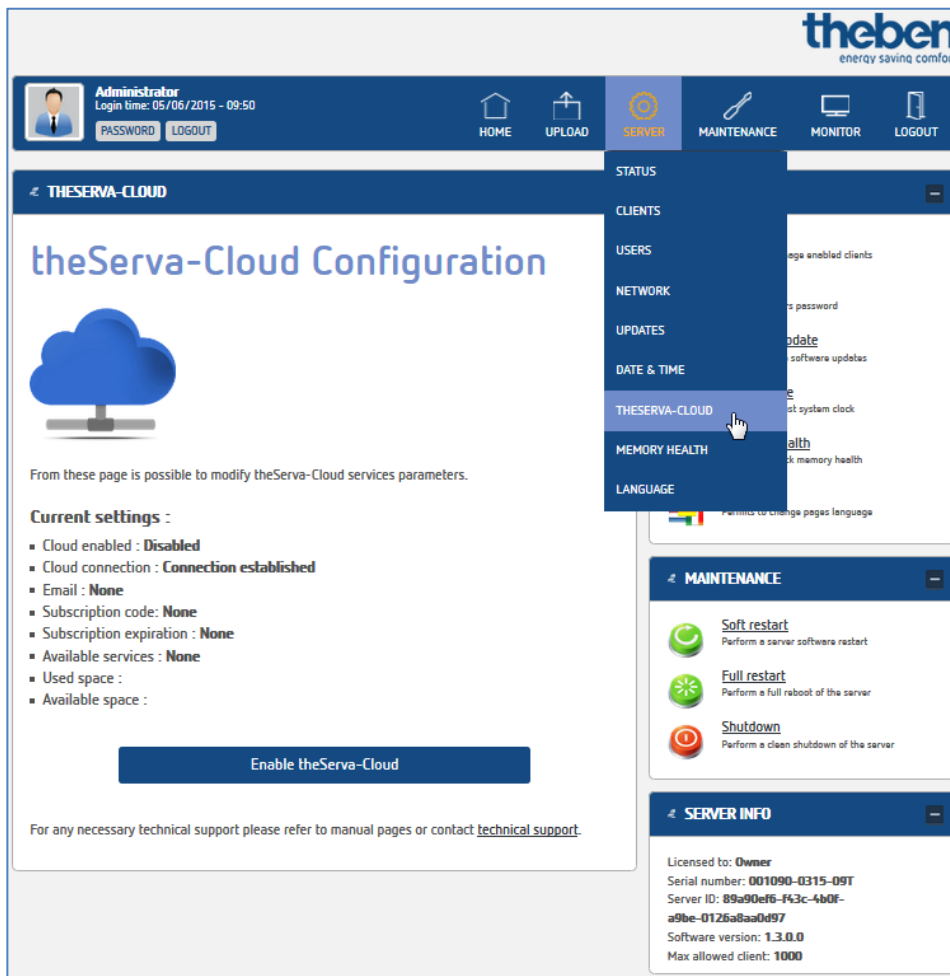
The screenshot displays the 'theben' web interface. At the top, there is a navigation bar with icons for HOME, UPLOAD, SERVER, MAINTENANCE, MONITOR, and LOGOUT. The user is logged in as 'Administrator' with a login time of 02/11/2015 - 08:52. The main content area is titled 'DATE & TIME' and 'Time Configuration'. It features a clock icon and text explaining that the server's internal clock can be adjusted. Below this, there are sections for 'Current settings' and 'New settings'. The 'Current settings' section shows: Time Zone: Europe - Berlin, Current time: 09:10, Current date: 02/11/2015, and Internet synchronization: Disabled. The 'New settings' section includes a toggle for 'Internet synchronization' (currently 'Enabled'), a dropdown for 'Time Zone' (set to 'Europe - Berlin'), and input fields for 'Hours' (9), 'Minutes' (10), 'Day' (11), and 'Month' (2). A sidebar on the right contains a menu with options like STATUS, LICENSES & CODES, USERS, NETWORK, UPDATES, DATE & TIME (highlighted), MEMORY HEALTH, and LANGUAGE. Below the menu is a 'Language' section with a German flag icon and the text 'Permits to change pegas language'. Further down, there is a 'MAINTENANCE' section with options for 'Soft restart', 'Full restart', and 'Shutdown'. At the bottom right, a 'SERVER INFO' section displays license and server details.

theServa Cloud

Serves as a data store for chart display. In order to be able to use the cloud, it must first be activated.



It is not possible to use theServa Cloud without a valid serial number. This number has to be entered in the configurator under "System" > "Serial number".



- Activate theServa Cloud.
- Declare a cloud password and enter a valid email address.
- Once the browser is refreshed, theServa Cloud is active and can be used.



The maximum storage space available for theServa Cloud is 10 MB

Memory Health

In this menu, you can verify the memory status of theServa miniserver.

The screenshot shows the theben web interface. At the top right is the theben logo with the tagline "energy saving comfort". Below it is a navigation bar with a user profile for "Administrator" (login time: 02/11/2015 - 09:49) and buttons for "PASSWORD" and "LOGOUT". The main navigation includes "HOME", "UPLOAD", "SERVER" (highlighted), "MAINTENANCE", "MONITOR", and "LOGOUT".

The "MEMORY HEALTH" section is active, displaying a "Memory health check" title and an image of a stethoscope. The text explains that this page allows verifying the memory health status of the theServa server and that the procedure will also fix most errors, possibly requiring a server reboot. It advises verifying server settings before starting and provides a "Start memory check" button.

The sidebar contains a "MAINTENANCE" section with options for "Soft restart" (server software restart), "Full restart" (full reboot of the server), and "Shutdown" (clean shutdown of the server). Below it is the "SERVER INFO" section, which lists the following details:

- Licensed to: owner
- Serial number: 000753-2314-09T
- Server ID: c9f05395-53a2-4428-9835-f8ecc669a400
- Software version: 1.1.8.6
- Max allowed client: 999



If an error notification is displayed even after restarting the miniserver, please contact the Theben support.

Language

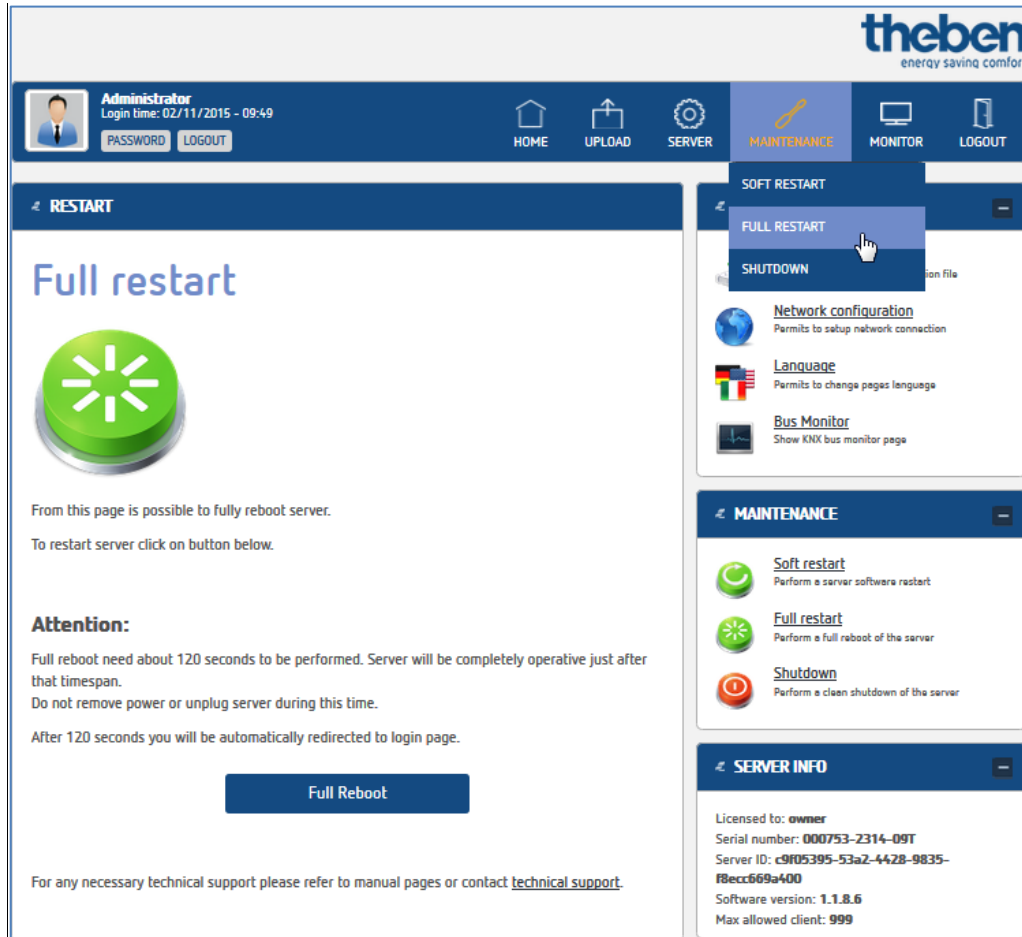
Here you can change the language of the web interface.

The screenshot displays the 'theben' web interface. At the top left, the user is identified as 'Administrator' with a login time of '02/11/2015 - 09:49'. The top navigation bar contains icons for 'HOME', 'UPLOAD', 'SERVER', 'MAINTENANCE', 'MONITOR', and 'LOGOUT'. The main content area is titled 'LANGUAGE' and 'Language settings'. It includes a graphic of three flags (Germany, USA, Italy) and a text box stating: 'Here is possible to change the default language of these pages.' Below this, under 'Available languages:', there are three buttons: 'English', 'Italiano', and 'Deutsch'. A sidebar menu on the right is open, showing options like 'STATUS', 'LICENSES & CODES', 'USERS', 'NETWORK', 'UPDATES', 'DATE & TIME', 'MEMORY HEALTH', and 'LANGUAGE' (which is highlighted). The 'MEMORY HEALTH' section is expanded, showing 'Memory Health' with the description 'Permits to check memory health'. At the bottom right, the 'SERVER INFO' section displays: 'Licensed to: owner', 'Serial number: 000753-2314-09T', 'Server ID: c9f05395-53a2-4428-9835-f8ecc669a400', 'Software version: 1.1.8.6', and 'Max allowed client: 999'.

2.3.4 „Maintenance” menu

In this menu, you can find the functions

- „Soft restart” (restarting theSera software),
- „Full restart” (restarting theSera software and the operating system)
- “Shutdown” (Shutting down theSera miniserver).



2.3.5 "Monitor" menu

KNX bus monitor

In this menu, you will find a "KNX bus monitor" and a "Logs monitor".

KNX bus monitor: On this page, you can check the received telegrams, as well as send and read values.

theben
energy saving comfort

Administrator
Login time: 02/11/2015 - 10:02
PASSWORD LOGOUT

HOME UPLOAD SERVER MAINTENANCE **MONITOR** LOGOUT

MONITOR

Knx bus monitor

From this page is possible to interact with KNX bus. Right menu contains all the options needed to send messages over the bus.

Bus messages:

TIME	SENDER	DESTINATION	DATA
10:03:00.158	1/10/46	0/7/0	0
10:03:00.158	15/15/247	1/4/1	0
10:03:00.158	1/10/46	0/7/1	0
10:03:00.264	15/15/247	1/4/2	0
10:03:00.264	1/10/46	0/7/2	0
10:03:00.989	1/1/100	13/0/0	12
10:03:01.211	1/1/100	15/1/14	11/02/2015
10:03:01.434	1/1/100	15/1/13	10:03:00
10:03:02.399	15/15/248	14/1/0	14417.92

Clear messages from table

Attention - telegrams are refreshed every 1.5 seconds. Internal server buffer contains 500 messages.

SEND TELEGRAM

Send messages on bus

KNX group:

Length:

Data type:

Option:

Value:

Send

Read Group

MAINTENANCE

- Soft restart**
Perform a server software restart
- Full restart**
Perform a full reboot of the server
- Shutdown**
Perform a clean shutdown of the server

SERVER INFO

Licensed to: **owner**
 Serial number: **001017-4714-09T**
 Server ID: **7a74d58c-5d3b-41bc-8e31-3e416e5fae0c**
 Software version: **1.2.0.0**
 Max allowed client: **1000**

„Logs Monitor“ menu

On this page, you can check all received telegrams and messages for diagnostic purposes, and save them if necessary.

You can select the individual data sources by using filters.



Server Logs Monitor

These page reports log messages from server. It is possible to trace server functioning and debug problems with other connected devices.

Log messages:

TIME	SOURCE	DESCRIPTION
02/11/2015-10:03:21	KNX	New value received for group : 14/1/2 - 15124.48
02/11/2015-10:03:22	KNX	Group 14/1/3 not found!
02/11/2015-10:03:25	Calendar	Check Calendar: 28
02/11/2015-10:03:25	Calendar	Calendar exception: 28 - Object reference not set to an instance of an object
02/11/2015-10:03:25	Calendar	Check Calendar: 30
02/11/2015-10:03:25	Calendar	Calendar exception: 30 - Object reference not set to an instance of an object
02/11/2015-10:03:36	KNX	New value received for group : 11/4/1 - 04:06:53
02/11/2015-10:03:36	KNX	New value received for group : 11/4/0 - 15:57:41
02/11/2015-10:03:36	KNX	Group 11/1/13 not found!
02/11/2015-10:03:37	KNX	Group 11/1/12 not found!
02/11/2015-10:03:40	KNX	New value received for group : 14/1/4 - -3.2

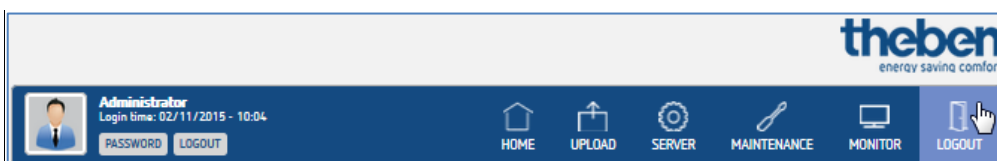
Delete messages

Save messages

Attention - Log messages are refreshed every 1.5 seconds.

2.3.6 "Logout" menu

Logout from theSera web interface.




Administrator
Login time: 02/11/2015 - 10:04

HOME UPLOAD SERVER MAINTENANCE MONITOR **LOGOUT**

3 Project management

A project contains all configuration files related to a specific installation and all settings needed to restore user interface and system logics. New projects can be created directly by using theServa Configurator software. Already existing projects can be imported and edited (they can be renamed, optimized, deleted, etc).

3.1 Creating a project

- Click on the push button  Deutsch on the lower right in Configurator, in order to select the language (German, English, Italian etc.).



Step 1:

- Click on the push button "New" in the toolbar at the top.
- Enter the project name without spaces or special characters (mandatory).

Step 2:

- Enter the local IP address for the connection to the server via the local network
- Enter the external IP address or host name and port, to use a remote connection.

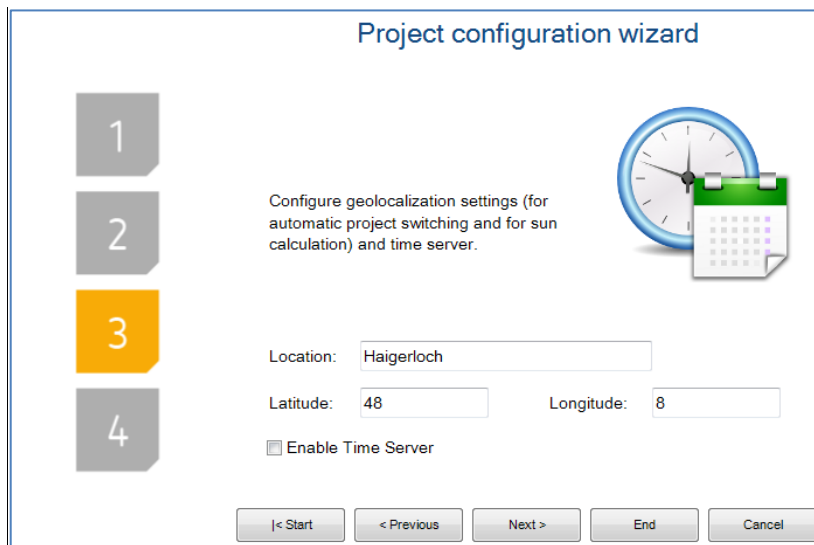
Step 3:

- Enter the name and the geographic coordinates of the location where the server is installed.

These data are required for the sun calculation. These data will also be used for clients, when the geolocalization feature is active.

- Check the checkmark "Enable Time Server", to use the server as time and date source for KNX devices.

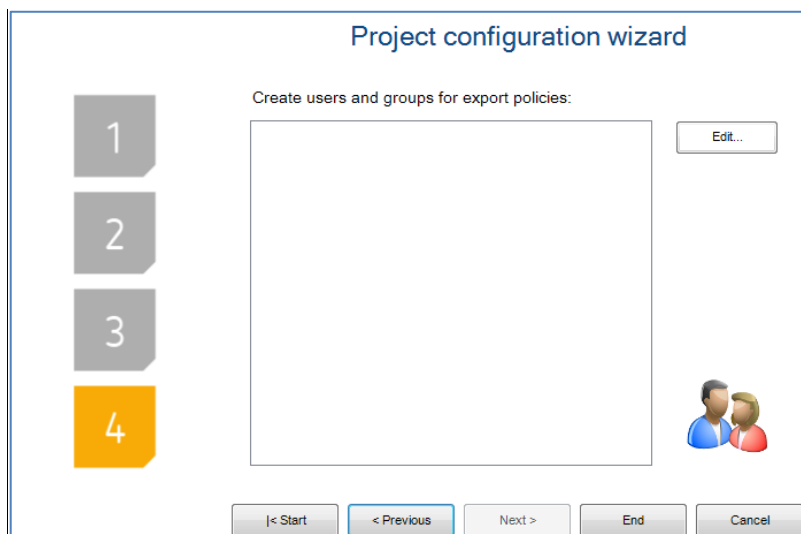
The Server will synchronise with the NTP time server if an internet connection is available.

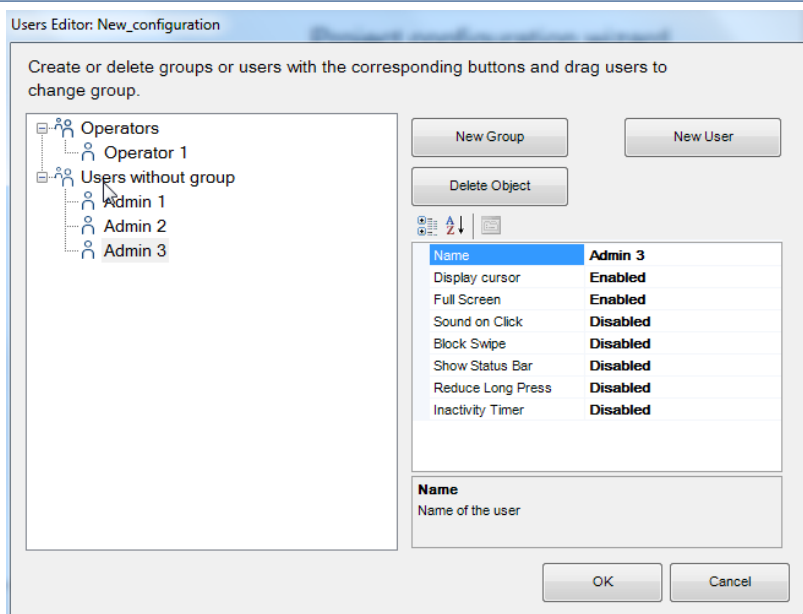


Step 4:

If the installation is managed by different users and a different user interface is intended to be created for each user, it is necessary to use users or groups for the export policies.

By clicking on "Edit", the window of the user editor opens. In this window, groups and users can be created.





Once all users and groups are created and confirmed with "OK", a summary is displayed in the window.

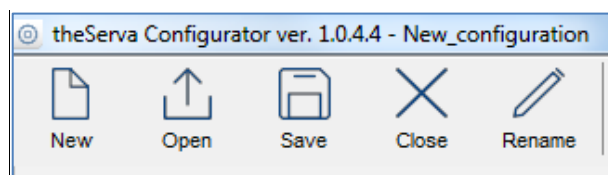
- Click on "End", to complete the process.



Functions which can be assigned to the individual users are described in chapter 4.1.3.

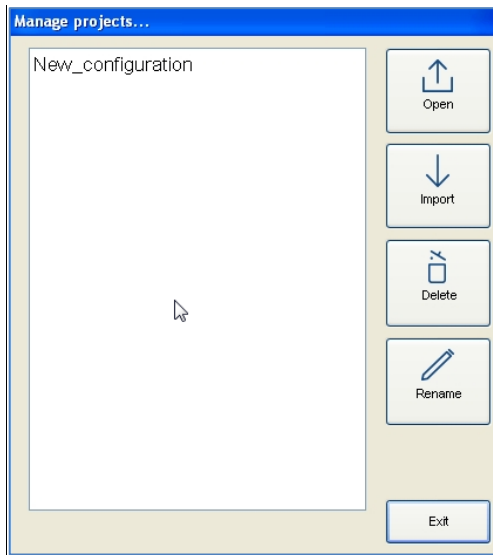
3.2 Managing a project

After a project has been successfully created, it can be edited by using various push buttons in the upper toolbar of the Configurator.



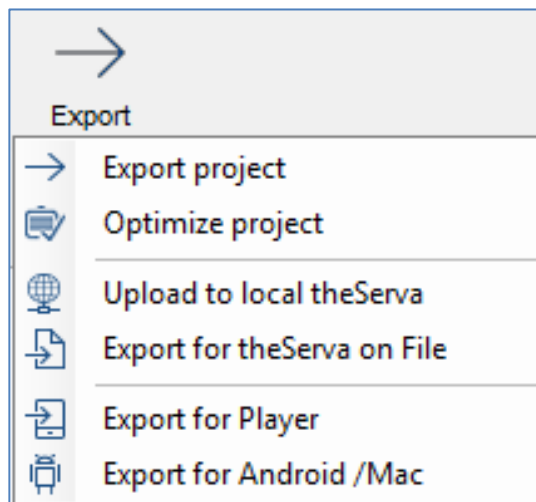
Push button	Function
New	Create a new project
Open	By clicking on this push button, the window "Open an existing project" will be displayed:
Save	Changes applied to the project will be saved.
Close	The current project will be closed, while the Configurator homepage stays open.
Rename	The current project name can be edited

Existing projects can be renamed, opened or deleted. Previously created files can be imported in the Configurator.



3.2.1 Exporting a project

With the export process, a project created with Configurator can be saved as „*.the“ file. This is useful for creating backup copies and exchanging projects among configurators.



3.2.2 Optimise project

Whenever an image or another file is imported in Configurator, it will be automatically copied into a dedicated project folder. After this, the software only works with this copy, so the project is not impaired when the original file is moved or deleted. Files no longer in use might remain in the project folder over time. By clicking on this push button, they will be automatically removed, which significantly improves the performance of the clients.

3.2.3 Upload to local theSera

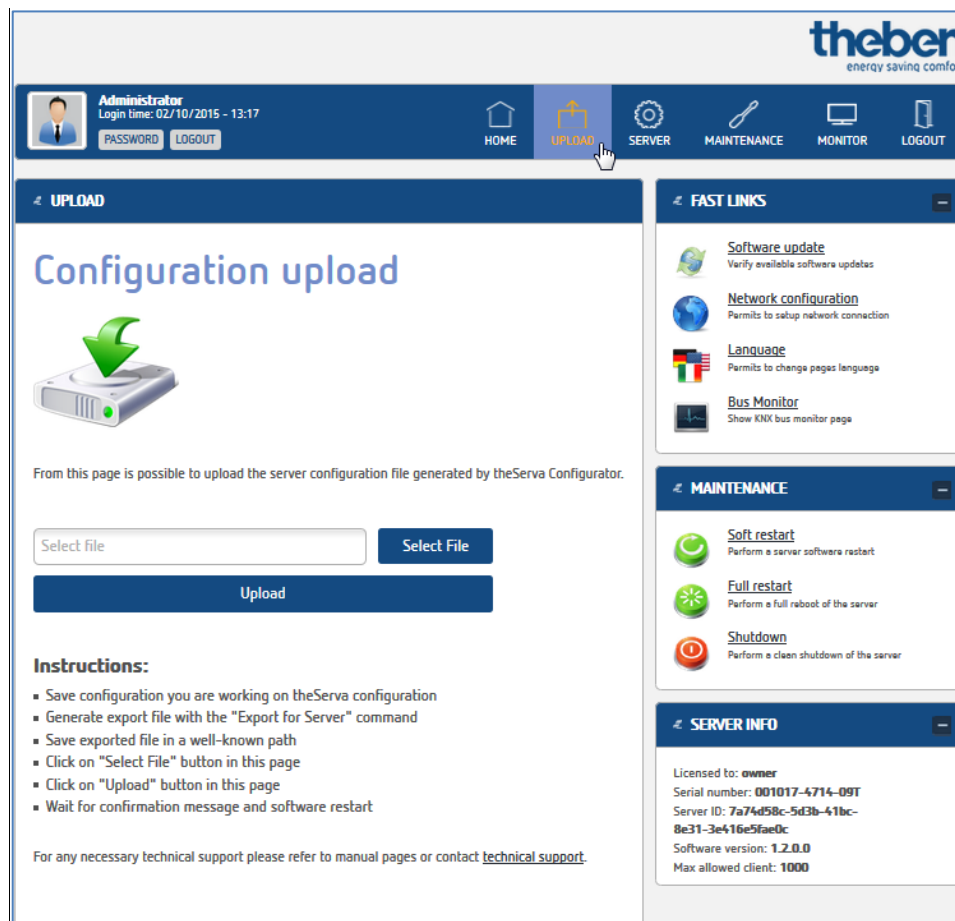
The project will be loaded on the miniserver with the stated local IP address. In this way, configurations can be saved and memory can be allocated for objects that have to be configured by the user

3.2.4 Export for theSera on file

If the PC, on which the Configurator is installed, is not in the same LAN as the miniserver, the software automatically creates an SRV file, which can be manually uploaded to the server's web page.

Uploading an SRV file

- After launching the browser and entering http://external IP':5051, the login page is displayed.
- Login as
User: service
Password: password
- On the homepage, click on the "Upload" push button.



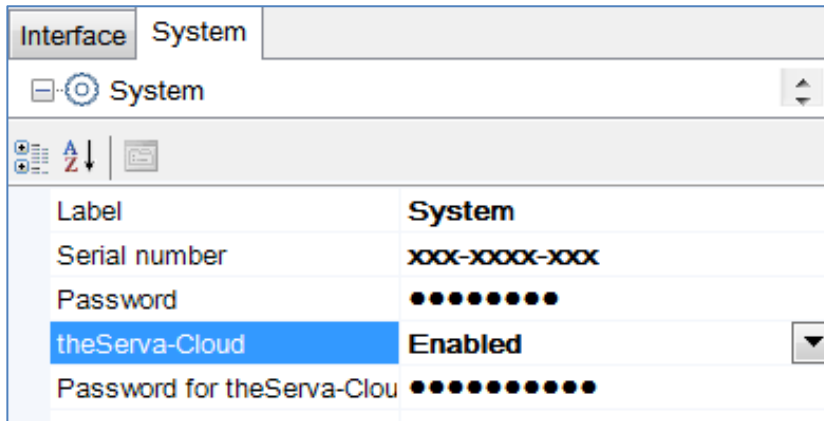
- Click on "Select file" and then "Upload".
 → The server restarts automatically.

3.2.5 Upload to theServa Cloud

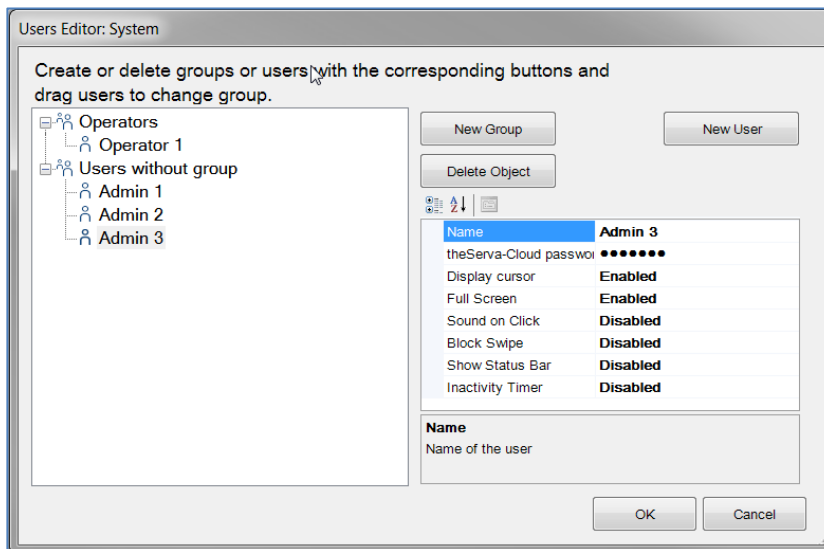
Saves the project in theServa Cloud.

theServa Cloud must be activated and configured via the Web interface on the Server.

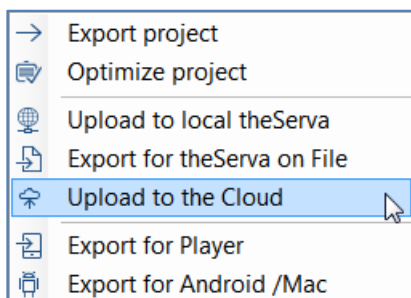
- In Configurator, activate theServa Cloud under "System".
- Enter the password of theServa Cloud.



- Assign a password to each user under "System" "Authorisations".

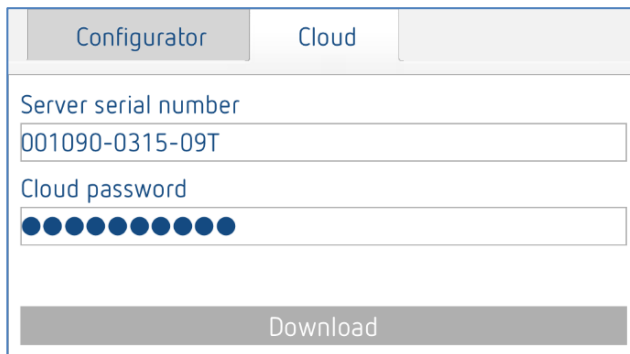


- Select the export "Upload to the cloud".
 - The project will be uploaded to theServa Cloud.



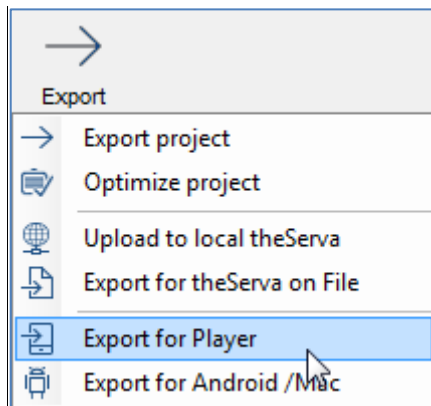
3.2.6 Download project from theServa Cloud (only iOS)

With the user specific password, an iOS client can download the project from theServa Cloud by using the serial number of the server and its password.

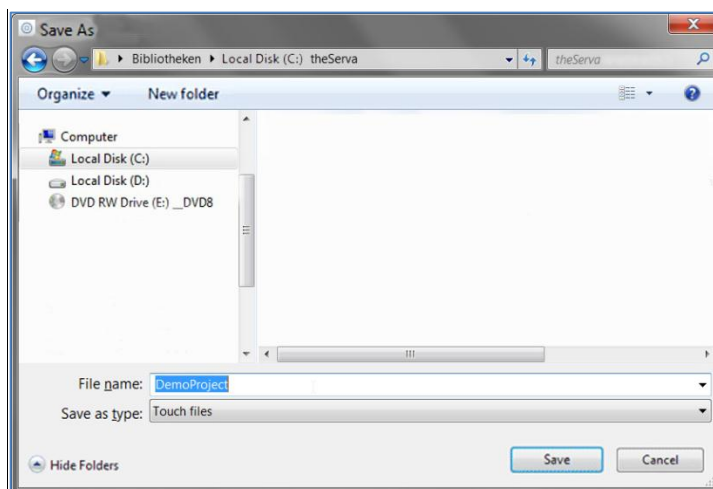


3.2.7 Export for Player

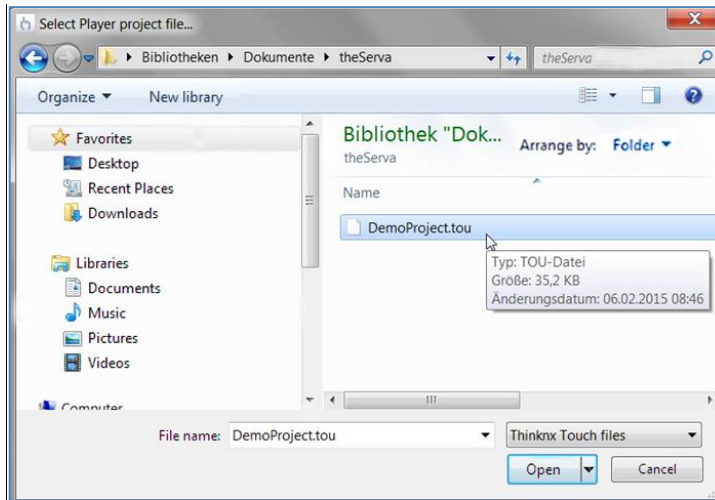
Creates a file with "*.tou" extension, for the "Player for Windows" software.




- Select user.
- Select storage location.



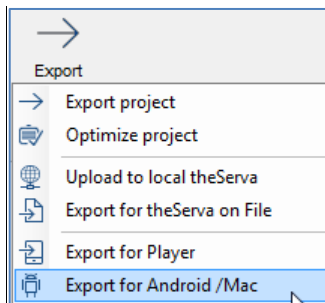
- When starting the Player, the saved file has to be selected.



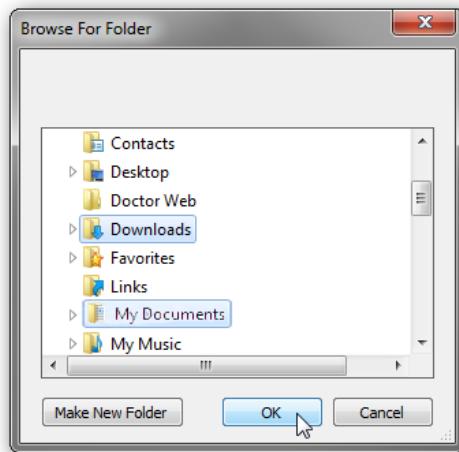
If the Player has already been used with a different or older version of the project file, the application „Reset project“  has to be executed. This deletes the previously loaded file, and the storage location of the new project file is queried when starting the Player.

3.2.8 Export for Android/Mac

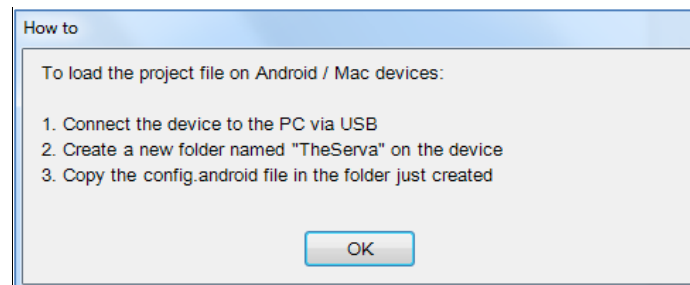
Creates a „config.android“ file for Android devices and computers with OSX operating system (Macs).



- Select user.
- Select storage location.



→ After saving, a pop up window, explaining the client uploading process, will be automatically displayed.



During start-up, theServa app for Android or Mac automatically accesses the project file in the created folder „theServa“.

3.2.9 Export for user

The export for user function allows to configure different versions of the project to be uploaded to clients; the individual characteristics of each version can be defined by setting restrictions for users. If several users have been configured in the project, the Configurator requires to select the user who will be the final recipient of the project export. Select the desired user and click on "OK".

3.2.10 Export process

After selecting an export type, the Configurator automatically checks the system properties to confirm an IP address which is valid for the server; otherwise the export cannot be completed.

If the file is exported for Player, the storage location for the file has to be specified. If the file is exported for iOS, Configurator exports the project directly and launches the web server, so the user can immediately connect.

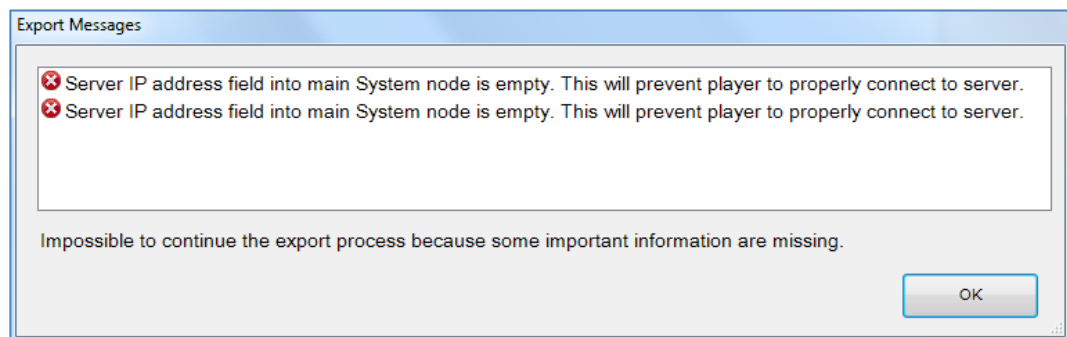
Example

Four clients have to be used for four different functions: three of them share the same requirements, the fourth has fewer functions enabled. First of all, two groups have to be created: the first one contains the three users with similar needs, the other one contains the user with limited functions; once users have

been configured, the restrictions have to be manually set on objects. Assuming that the example project has no external server address and contains the following elements:

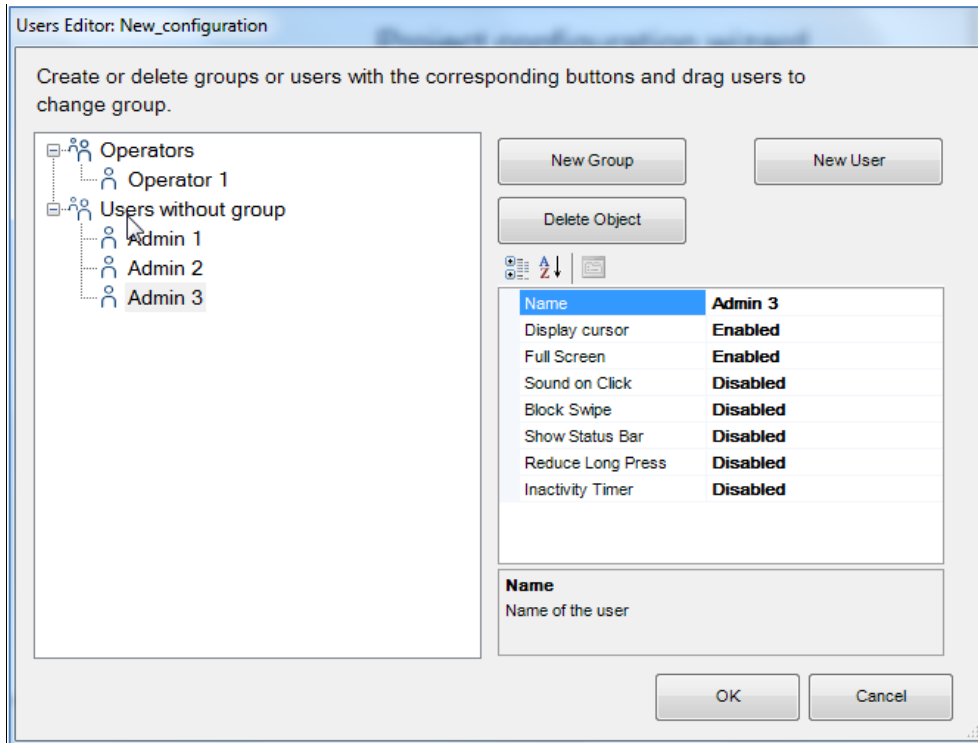
Label	System
Serial number	
Password	
External IP address	
Server client port	7550
Local IP address	
System name	
Location	Haigerloch
Latitude	48
Longitude	8
KNX address	1.1.100
Time server	Disabled
Authorizations	Click to edit...
Protection PINs	(Collection)

When starting the export, Configurator shows the error screen with the following error notifications:



Since the IP address has not been set, the export cannot be continued. To set the IP address, select the menu item "System" from the System tree and enter the external server address in the empty field next to the property name.

If users have been configured in the project, Configurator requires the selection of the user who will be the final recipient of the project export. Select the desired user, for example "Admin 3", and click on "OK".



Once the project has been loaded on the client, for example on an iPad, the client will only be allowed to display a "reduced" project version, which has been exported for the user.

Of all configured functions, the user cannot visualise roller blinds, heating and cameras, since they are restricted.

4 Main concepts and user interface

4.1 Main Concepts

4.1.1 Configurator

The theServa Configurator software is a dedicated software for creating the graphical user interface and configuring the clients and all services and functions of the theServa miniserver.

4.1.2 Project definition

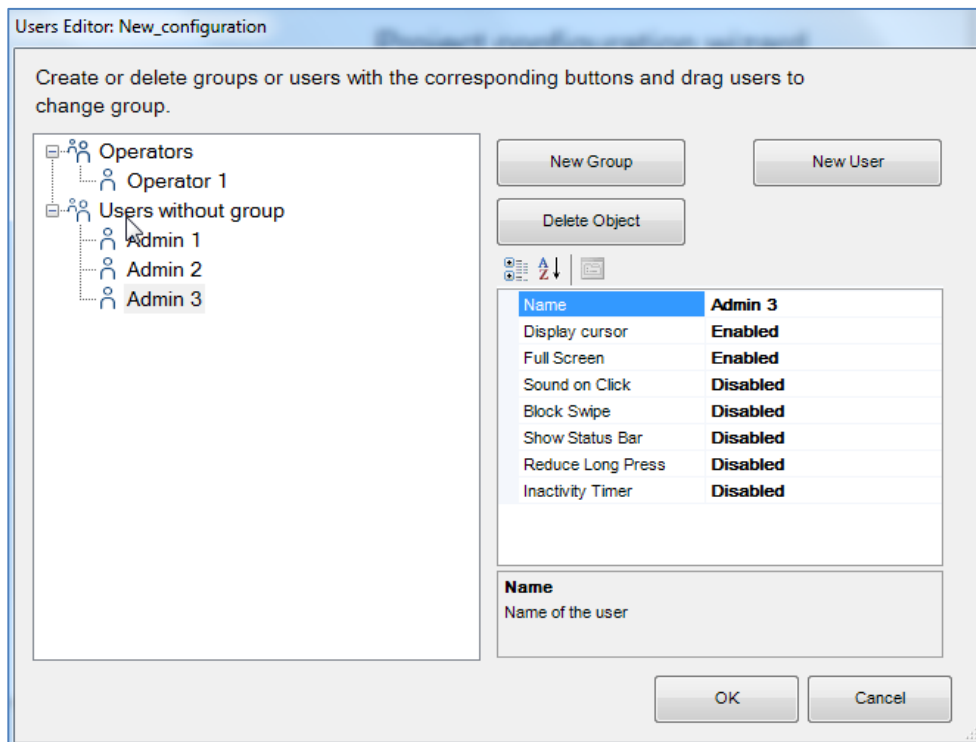
A project contains all configuration files and all settings for a specific installation. All files imported into the project (such as ETS group addresses, images, etc.) are copied and stored in a project folder.

4.1.3 Creating, editing and deleting users

With users and groups, different settings and interface profiles can be created in the same project.

Creating, editing or deleting users or groups

- Select the "System" in the system tree
- Click on the property "Authorizations"
- Click on the push button on the right, to access the editor.



Creating a new group

- Click on the push button **"New Group"**
 - A new item with name will be displayed in the users tree.
- To edit the name, click on the item and adjust the properties on the right.

All properties will be taken over from each user added to the group.

Creating a user already associated to a previously created group

- Select the destination group and click on the **"New User"** push button.
 - By doing so, the user assumes the property values of the group.
- To rename the user, select the user from the users tree and adjust the **"Name"** property on the right.

Creating an independent user

- To create an independent user, click on the **"New User"** push button without selecting a group.

Users can be associated to a group at a later moment by dragging them on the desired group.

Deleting groups or users

- After the selection, click on the **"Delete Object"** push button.
 - Configurator requires you to confirm deleting.
- If the item has to be deleted, click on **"Yes"**.

When deleting a group, all associated users become independent users. If some objects integrated into the installation contain restrictions for the group or user to be deleted, a warning message with the list of objects containing a restriction appears; if deleting is confirmed, the restrictions for the group or user are also deleted.

Name

Group or user name.

theServa Cloud password

Password for accessing theServa Cloud. To be able to export projects to theServa Cloud.

Display cursor

If disabled, the cursor will not be displayed (valid only for Windows/Mac OSX clients).

Full Screen

If enabled, the application will be displayed in full screen (valid only for clients with Windows/Mac OSX operating system).

Sound on Click

If enabled, a beep will sound with every mouse click.

Block Swipe

Determines whether advanced gestures are supported by touch devices (not valid for iOS devices).

Show Status Bar

Determines if a status bar is displayed in client applications (only with iOS clients).

reduce_long_press

If enabled, the time for executing the "response on long press" is reduced to 1.5 s.

Inactivity Timer

If enabled, the client automatically changes to the preset function and page, in case of inactivity.

Standby function

Index of the function which the default page belongs to. (starting from 0)

Inactivity page

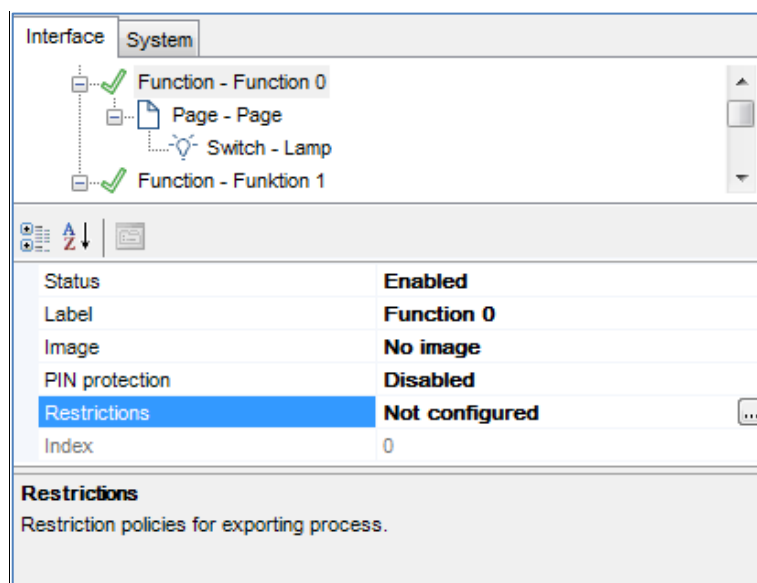
Index of the default page (starting from 0)

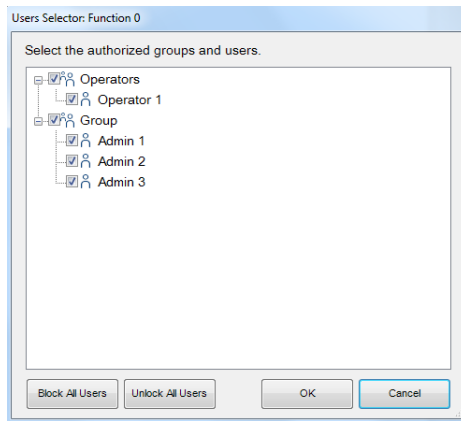
4.1.4 Setting restrictions

Assuming a user group has to be blocked, in order to prevent the visualisation of a specific **function in the Interface tree** on the clients. For instance, a page or an object can be restricted.

- Select the property "Restrictions" in the parameter menu, and click on the push button on the right.

The restrictions can be selected for the selected object.





In the restrictions editor, all previously created users and groups are displayed. As default setting, no object contains restrictions for users, so when the editor is launched for the first time, all items are checked.

If, for instance, all users of the "Operators" group have to be blocked, unchecking the box displayed next to the group name is enough. Then click on the "OK" push button. Doing so, a restriction in the "Operators" group will be set for the selected function, so the selected function will not be visible for the users of the "Operators" group, after the project was exported.

Two more buttons, speeding up the configuration process, can be found in the editor: "Block All Users", which sets a total restriction on the object (removes all checkmarks) and "Unlock All Users", which removes all restriction previously set on the object.

Assuming that user "Administrator 3" can only visualise one page in the selected function. A block on other pages has to be set for "Administrator 3". To do so, place the cursor on individual pages and open the restrictions editor. Set the restriction by unchecking the box next to "Administrator 3".

„Blocks" can be set for all the objects contained in pages. The procedure is as follows: Select the desired object in the Interface tree, select the "Restrictions" property, open the editor and set the "blocks".

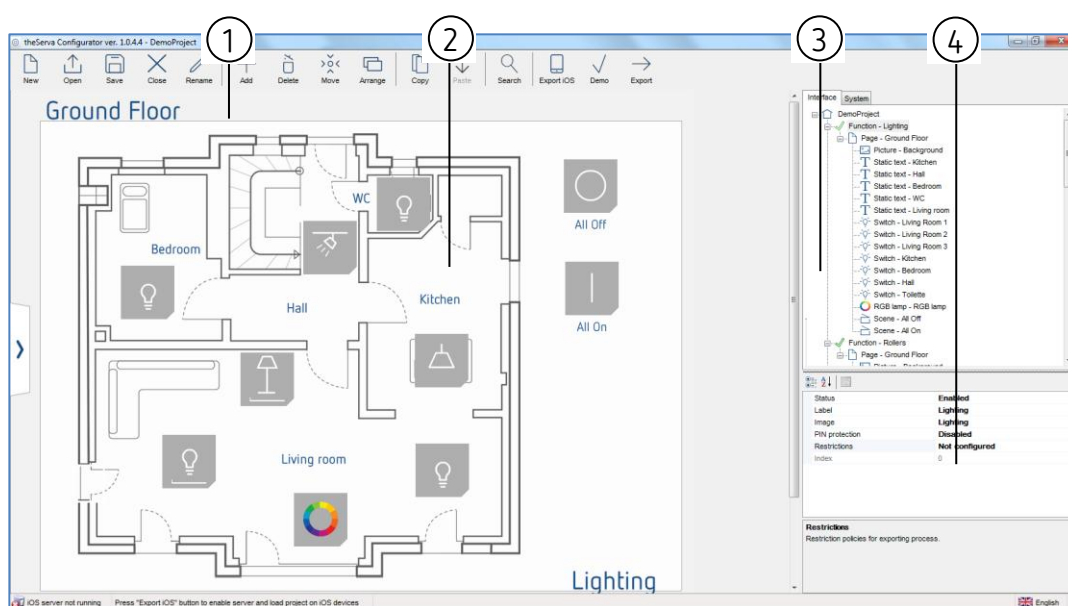


All restrictions have a priority order: function, page, single object. If a restriction for a group of users is set for a function, the whole function will not be exported, even if the same restriction is not set for the objects contained in that function.

4.2 User interface

The main window of the theServa Configurator consists of the following components:

①	The tool bar with the main functions for project management.
②	Workspace, showing the final graphical user interface
③	Tree structure for the management of operating/display and system objects
④	Editor for function, page and object



These components are explained in the following sections.

By clicking on an operating/display object in the the graphical editor in the tree structure, it will be put in the centre. The list of its properties is shown on the right side of the window.

It is possible to select several objects, by clicking on them while pressing the SHIFT button. The first selected object will appear with a dark blue frame, while the following selected objects will have a light blue frame. The first object will always be used as a reference in every arrangement operation.

4.2.1 Toolbar

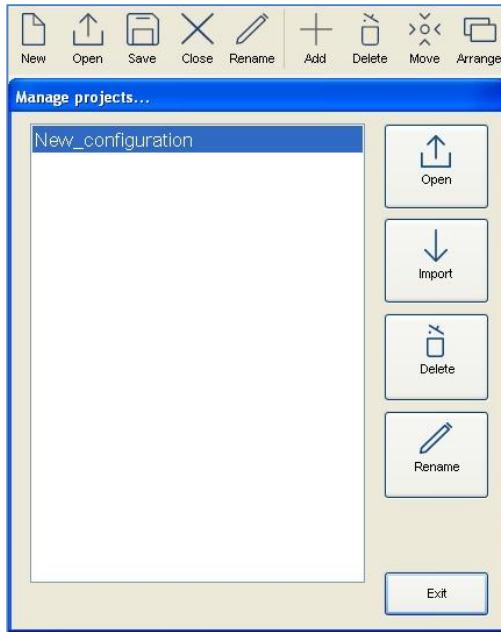
This bar contains all commands for managing and editing the project and the objects, as well as for exporting to clients or server.

New

Create a new project by clicking on this push button, and a wizard will automatically be launched.

Open

By clicking on this push button, a pop up window with the following functions will be displayed:



Push button	Function
Open	Opening the selected project
Import	Importing a previously saved project file (with "*.the" extension)
Delet	Removing the selected project from the list
Rename	Renaming the selected project

Save

Saving the current project.

Close

Closing the current project.

Rename

Renaming the current project.

Add

Adding graphic objects to the project.

Delete

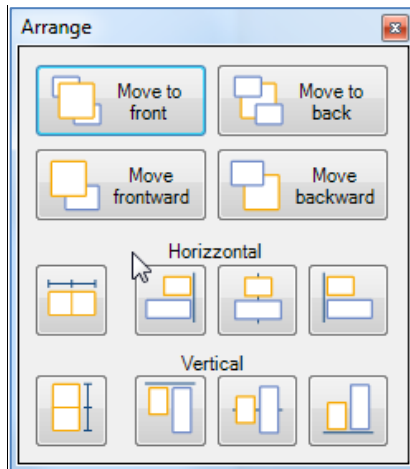
Removing the selected object.

Move

Activating the move function. A selected object can only be moved if this push button is enabled.

Arrange

Arranging graphic objects. This function allows to move groups of selected objects; by clicking on this push button, the following window will be displayed:



Push button	Function
Move to front	Moves an object or a page in front of all others.
Move to back	Moves an object or a page behind all others
Move frontward	Moves an object frontward
Move backward	Moves an object backward.
Horizontal alignment:	Align all objects towards the upper edge of the reference object. Align all objects towards the lower edge of the reference object. Align all objects towards the horizontal centre line of the reference object.
Vertical alignment	Align all objects towards the left edge of the reference object. Align all objects towards the right edge of the reference object. Align all objects towards the vertical centre line of the reference object
Horizontal and vertical spacing:	Equally distribute horizontal space between the first and the last selected object. Equally distribute vertical space between the first and the last selected object.

Some actions require the selection of several objects. To select more than one object, it is necessary to hold the SHIFT button down while clicking on the objects to be selected.



It is important that images, such as floor plans or photographs, are always in the background (they always have to be on the first position of the object list of the function in the Interface tree). This is just to ensure that all command objects, such as light switches or shutter controls, are in the foreground and are

not covered by the picture (if the picture covers the push button you will not be able to use them, even if it is a transparent part of the picture and you can see the push buttons).

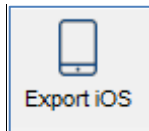
Copy/Paste

Copying or pasting pages or objects. They can be selected (copied) either in the preview or in the Interface tree and pasted to any position. The keyboard shortcuts "Ctrl+C" and "Ctrl+V" can be used instead of the icon in the toolbar or the right click.

Search

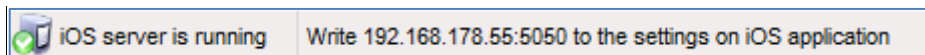
Searching KNX group addresses within the project; display of objects containing a specific KNX group address.

Export iOS

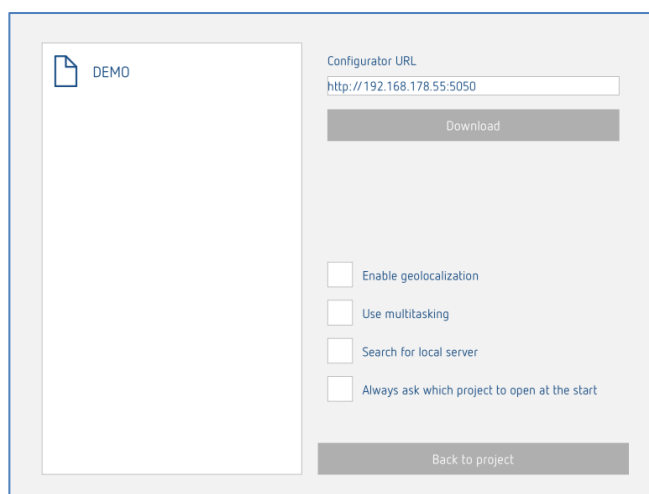


Activating the upload for an iOS device.

- Before exporting the project, save it for a specific user.
 - In the following, Configurator activates the „Server iOS“
 - The project has been saved internally in Configurator.
- Enter the path (see Configurator status bar at the bottom), under „Settings“ in the theServa app.

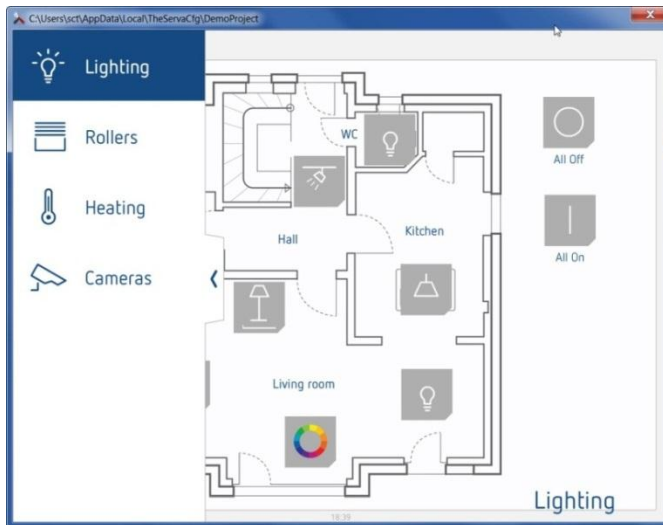


- Press Download.



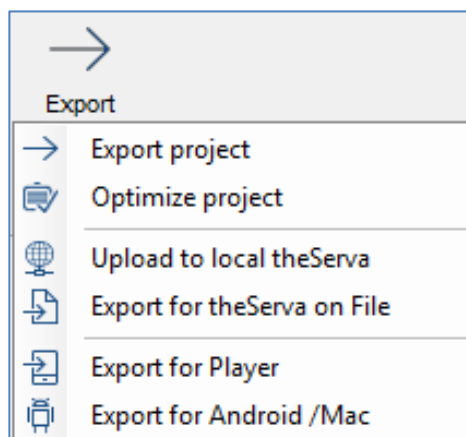
Test

Activates a project preview.



Export

Opens the export menu.



4.2.2 Editor for function, page and object

This editor can be used to graphically design the user interface and to test the later view in the client with a project preview (test). The objects can be selected and moved on the user interface. Each object has its own properties that can be adjusted in the Configurator window on the lower right.

The user interface is composed of the following elements:

Function

The function is a kind of chapter overview with several graphics pages. The name of the selected function is shown on the lower right of the user interface. Properties can be adjusted from the parameter window, which is displayed on the right, when selecting an item:

- **Status:** Allows to disable the function and to hide it from the sidebar.
- **Label:** Name of the function.

- **Image:** The selected icon file is automatically displayed on the left side of the function description, with a standard resolution of 60 x 60 pixels.
- **PIN protection:** Enabled: The function is protected, and the user must enter a PIN code to see it.
- **Restrictions:** Allows to restrict the access to the function for specific users.
- **Index**

Pages


Each function can contain differently editable pages, each labelled by a tab displayed in the upper part of the screen. Each created page automatically appears in the upper bar, beginning from the left. The only limitation of the number of pages that can be created is the number of characters that can be shown in the upper bar. The longer the page names, the less pages can be created. Properties can be adjusted in the parameter window, which is displayed on the right side, when selecting an item:

- **Label:** Name of the page.
- **Restrictions:** Allows to restrict the access to the function for specific users.
- **PIN protection:** Enabled: The function is protected, and the user must enter a PIN code to see it.

Objects

Each page can contain differently editable objects. There is a number of graphical objects, which represent executable standard operations (such as switching on/off lights, controlling blinds, controlling HVAC). Every object has its own properties, which can be adjusted. For further details, please refer to Chapter7 *Function* objects.

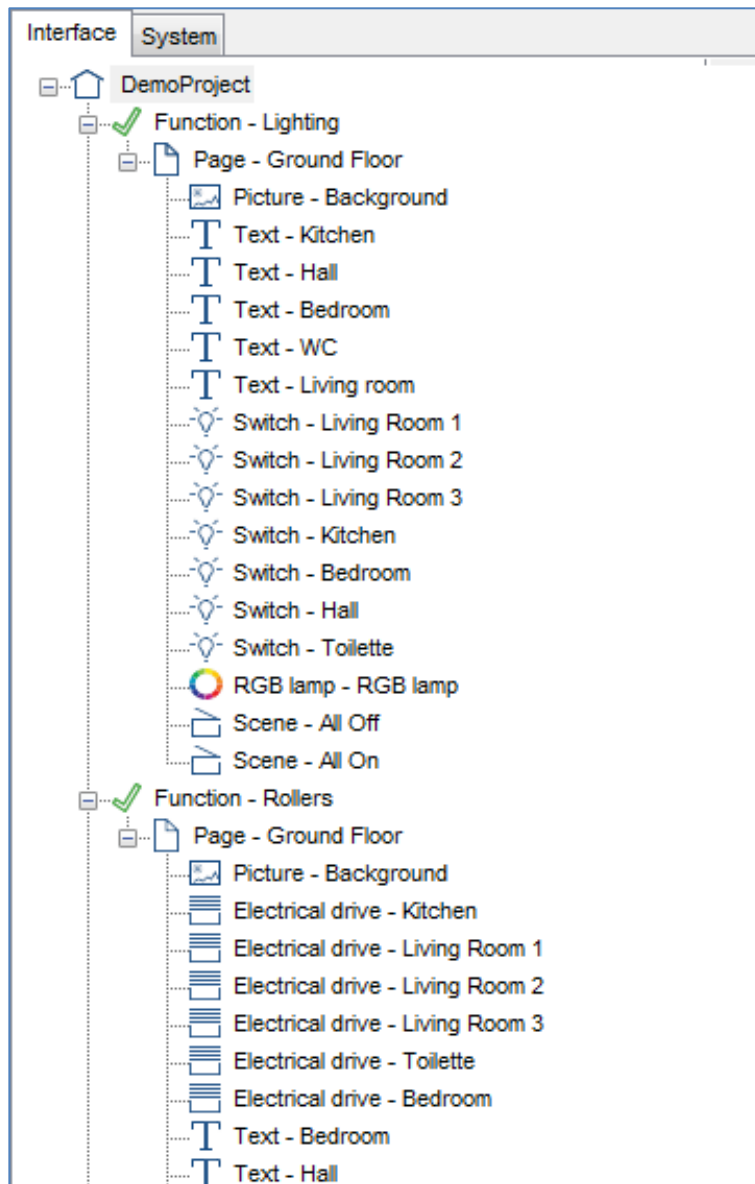
Functions bar

This bar, on the left side of the screen, appears by clicking or dragging the blue arrow to the right ; a list of all functions added to the project is displayed with name and corresponding icon

4.2.3 Interface tree

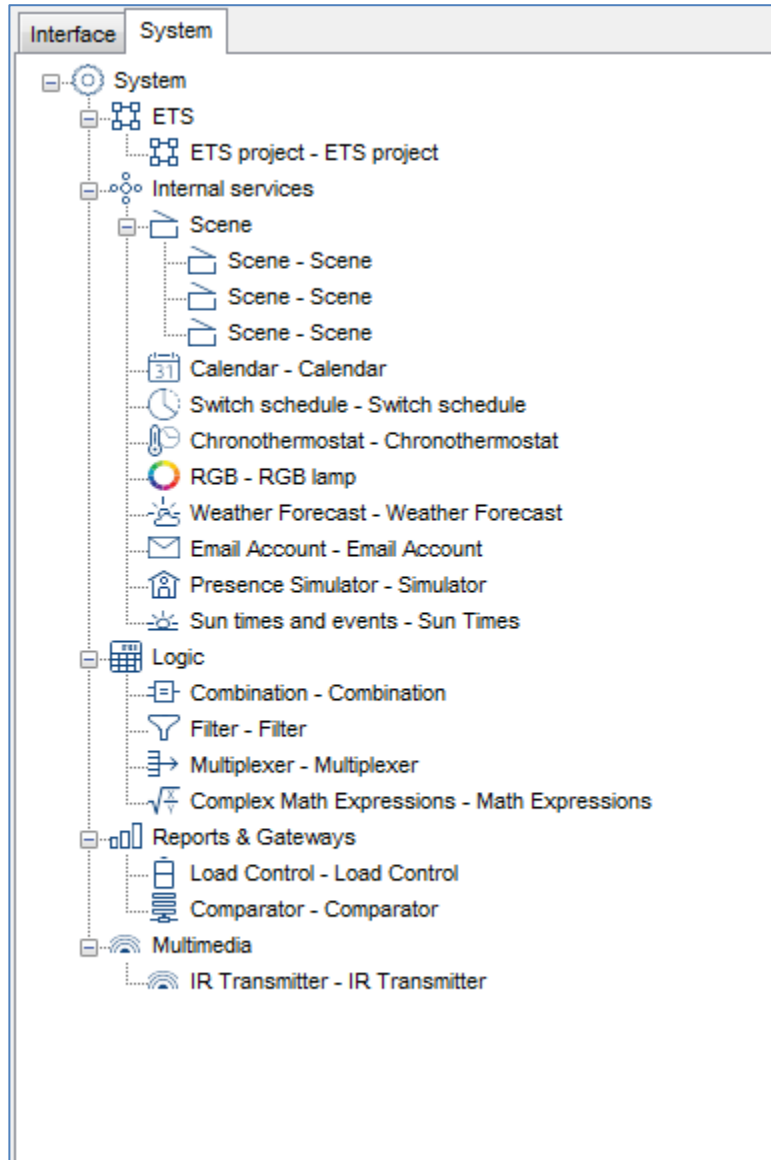
The Interface tree shows all operating/display objects that have been added to the current project in a clearly arranged tree structure. The main node represents the entire user interface, while the functions are arranged on the next level. A function has subordinate pages, while objects are grouped in their parent page. By right-clicking on a node, it is possible to add all other operating/display objects, and to delete, copy, or arrange objects.

When selecting an object from the user interface or Interface tree, all its properties are displayed in the property grid below the tab.



4.2.4 System tree

The main node of the System tree represents the entire system, containing all important data of the project. By right-clicking on it, it is possible to add further system objects, which represent the services provided in the system.



5 System parameters

The "System" is the main node of the System tree and includes all main features and data describing the project. All other system objects, which are provided by the server (and which represent configurable services), can be added by right clicking on this "system page". When selecting the object, the following properties will be displayed below:

Label	System
Serial number	000777-2222-09T
Password	password
External IP address	test.dyndns.org
Server client port	7550
Local IP address	192.168.2.54
System name	
Location	Haigerloch
Latitude	48
Longitude	8
KNX address	1.1.100
Time server	Disabled
Authorizations	Not configured
Protection PINs	(Collection)

Label
Text label to identify the object

Label

Designation of the object

Serial number

Serial number of theServa miniserver (on the housing)

Password

User password for logging into theServa web server

theServa Cloud

For activating and deactivating theServa Cloud.

- Password theServa Cloud: Password assigned in the web interface for theServa Cloud.

Automatic server update

If enabled, the server and each logged in client checks whether there is a new project in the cloud. If this is the case, the project will be automatically updated on the server and on the client.

If disabled, the project has to be transmitted manually to each client after a change

Automatic authentication

If enabled, each client can authenticate with username and password (password theServa Cloud in the authorisations) when accessing theServa for the first time.

If disabled, authentication has to be done via the web user interface, and the client has to be entered in the list manually.

Physical KNX address

Physical address (xx.xx.xxx) assigned to the server; if no address is specified, it will be automatically assigned by the system.

External IP address

IP address (e.g. 74.14.3.108) or hostname (e.g. xxxxx.dyndns.org) of the server, needed to connect with the server by clients that are not operated in the LAN of the server.

Server port

Number of the TCP port needed to connect with the server by clients that are not operated in the LAN of the server. The default port is 7550.

Local IP address

IP address (e.g. 192.168.X.X) of theServa in the local network, required for connecting the clients with the server.

Project name

Name of the project for identification.

Location

Name of the location where the system is installed.

Longitude/Latitude

Geographical coordinates of the location where the Miniserver is installed, which are used for the iOS geolocalization function and the solar position calculation.

Send a command after restart

It is possible to send a command to the bus after a defined time "upon restart" or "upon soft start" of the server. If "soft start" is configured, the command will also be executed after uploading a project to the server.

- **Delay time:** Duration in seconds between the complete restart of the server and the execution of the command
- **Command:** Command to be sent after restart.

Time server

If enabled, theServa receives date and time from an NTP server (Network Time Server) on the Internet and sends them to the KNX bus. The fields for entering the KNX group addresses for time and date are displayed.

Time KNX group address

KNX group address used to send the current time to the KNX bus.

Date KNX group address

KNX group address used to send the current date to the KNX bus.

Authorizations

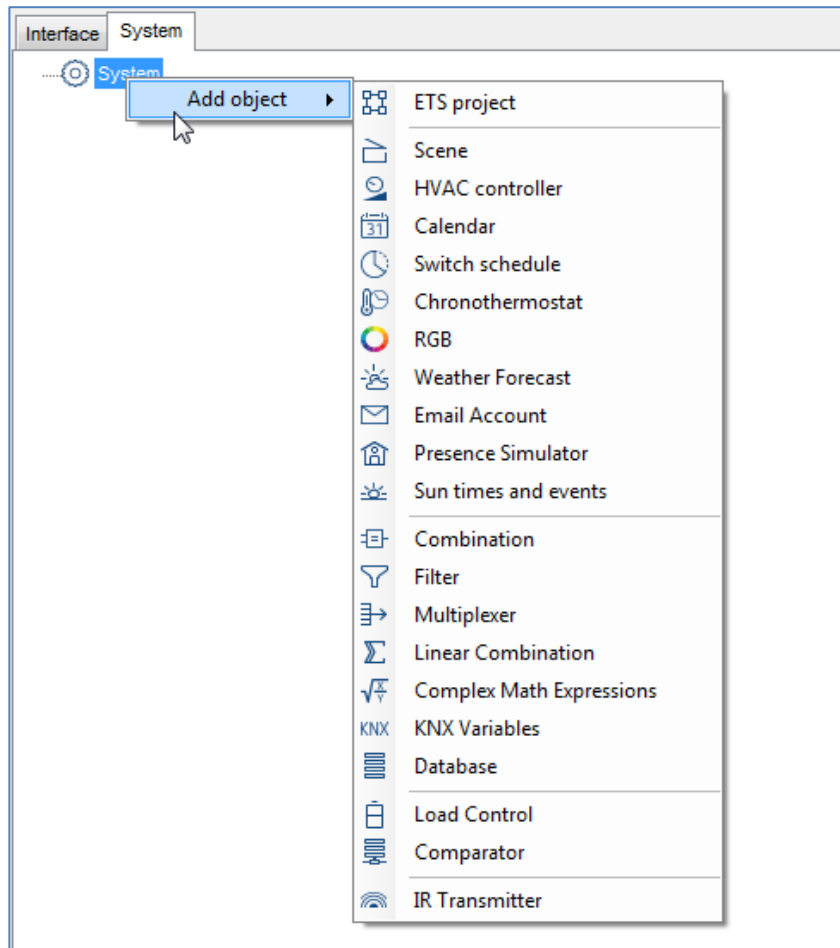
Groups and users for the customised export process

Protection PINs

List of the PINs used for protecting the objects on the user interface.

6 System objects

In the **system**, various system functions can be added by right clicking on „System“. Afterwards, they can be associated with an interface object.



6.1 ETS project

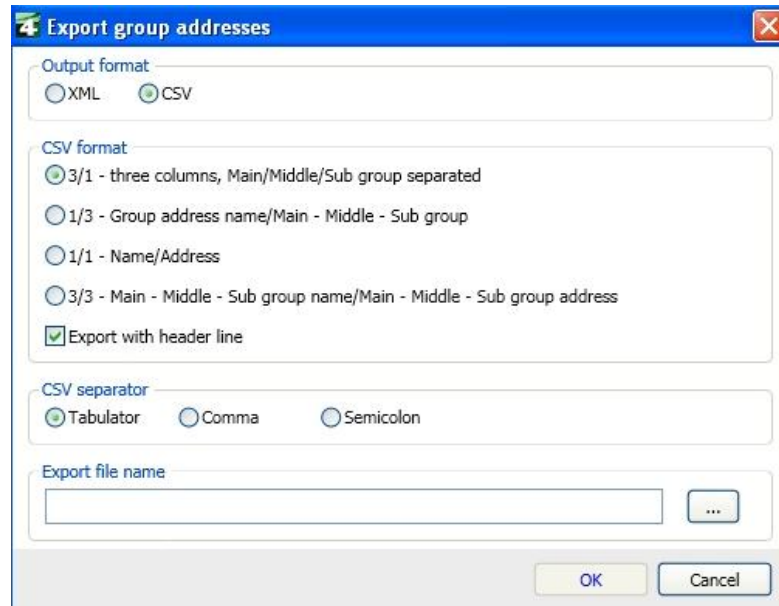
This object contains all KNX group addresses configured in the ETS software. It simplifies display and selection of KNX group addresses in Configurator thanks to its clearly arranged tree structure. The following properties will be displayed below:

- **CSV file**
Path and name of the CSV file to be imported. By clicking the push button shown on the right, windows explorer will be displayed.
- **Label**
Freely selectable name for the object.

- **Exporting CSV file from ETS**

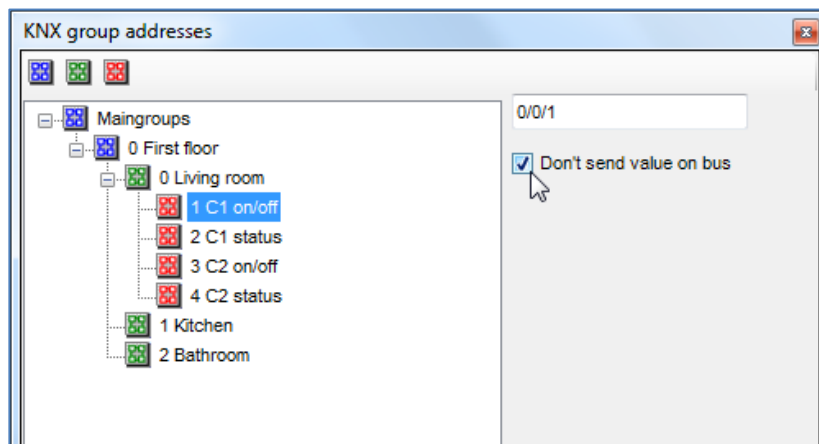
Launch ETS and right click on "Main groups" (ETS3) or "KNX group Addresses" (ETS4 and 5), and select the "Export KNX group addresses" option.

With ETS 3, use default export parameters, with ETS 4 and 5, select CSV format and activate "Export with header".



Assign KNX group address internally

It is possible to prevent the sending of an outgoing group address (from theSera to KNX) and to use it only for internal functions, such as logics.

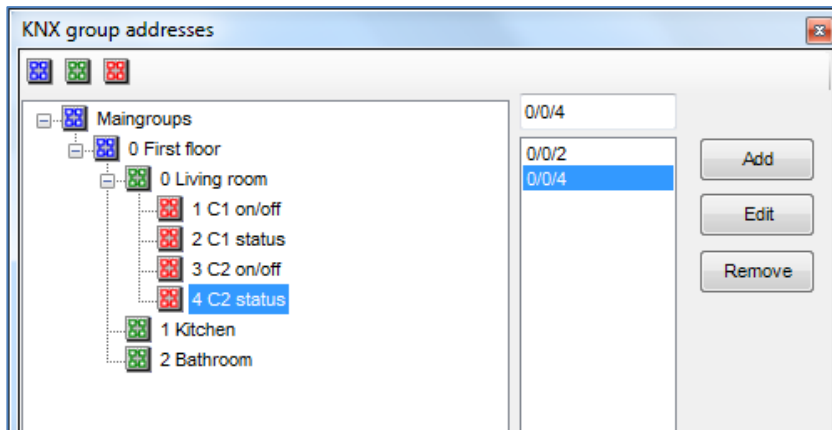


➤ Parameter: "Do not send value on the bus".

→ The address is labelled with (*). Example: *1/1/1

Assign several KNX group addresses

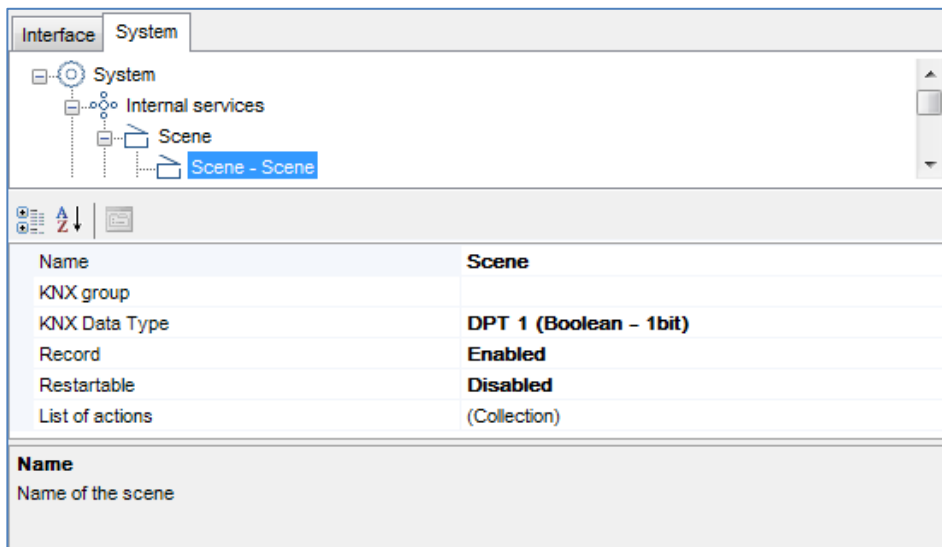
It is possible to assign several group addresses to an input (from KNX to theSera).



By using "Add", several group addresses can be assigned to an input. The group addresses are separated by (;), for example: 1/1/1;2/1/2.

6.2 Scene

This function can be used to define a list of actions, which are executed consecutively after calling up the scene. Scenes can be defined directly in Configurator, or optionally by the user in the client app.



Label

Freely selectable designation for the scene object.

KNX group

KNX group address, used to start a scene

KNX Data Type

KNX Data Type (DPT), used to start a scene; with DPT1 (1 bit), a scene is activated with value „1“, with DPT17-18 (1 byte), the scene number can be entered in the field shown below.

Record

If enabled, the user can create individual scenes in the pop-up menu of the client app by using the „Record“ function.

If disabled, the scene functions defined with Configurator cannot be changed by the user.

Restartable

If enabled, an already started scene can be restarted, e.g. with very long scenes having many breaks. If the scene is started by KNX, this property must be disabled, due to telegram repetitions.

List of actions

By clicking the push button shown on the right, the action editor will be displayed. By clicking on the "Add" push button, the desired number of actions can be added. No longer needed actions can be deleted by clicking on the push button "Remove". With the push buttons „Up“ and „Down“, the sequence of the actions can be changed.

Each action can be named in the field „Name“. The related command can be selected by clicking on the push button to the right of the field "Command".

Object commands in the list

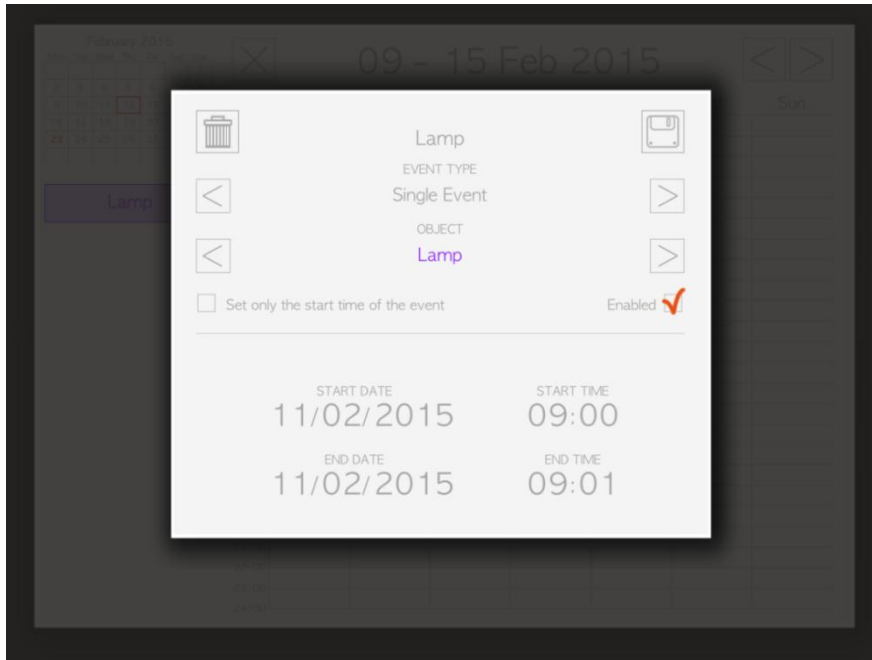
Selecting a command, which is sent when executing the action:

- **Launch scenery**
Starts the selected scene.
- **Stop scenery execution**
Stops the selected scene.

6.3 Calendar

With this system object, the user can program On/Off commands (switching times) by using the client app.

- Opportunity to save the time sequence on the server
- Use of different switches (e.g. lamp), which can be associated with the same calendar.
- Single (date related), weekly, but also switching times on holidays can be programmed.



Label

Freely selectable designation for the calendar object.

Force state

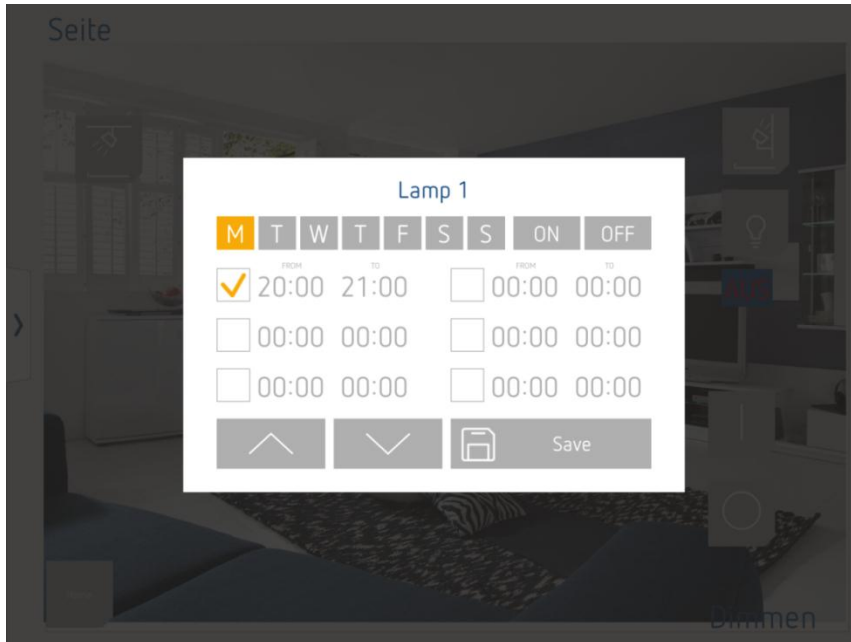
If enabled, the cycle time shown in the field below can be selected freely. Entries are made in seconds, in increments of 15 seconds (15 s, 30 s, 45 s, ...). If disabled, the relevant value is only sent when changed.

Show Saints

If enabled, the holidays in the Gregorian calendar are displayed.

6.4 Switch schedule

With this system object, the user can program up to 6 switching times from Mon – Sun. Depending on the setting, switching on/off can be programmed (e.g. for lamp, universal switch), or percentage values can be defined (e.g. for dimmer, blinds). These settings can be made by the user in the client app.



Label

Freely selectable designation for the switch schedule object.

Force state

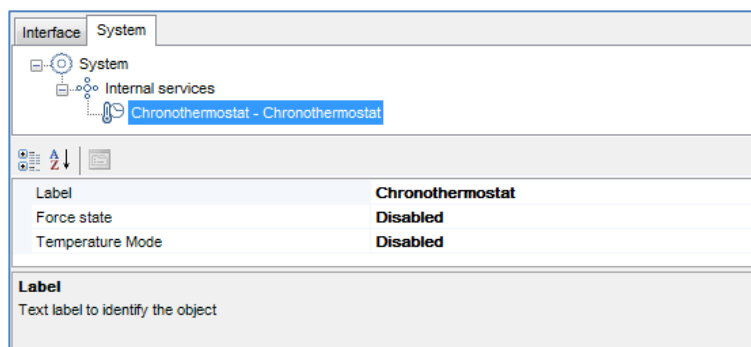
If enabled, the cycle time shown in the field below can be selected freely. Entries are made in seconds, in increments of 15 seconds (15 s, 30 s, 45 s, ...).

If disabled, the relevant value is only sent when changed.

6.5 Chronothermostat

Switch programme

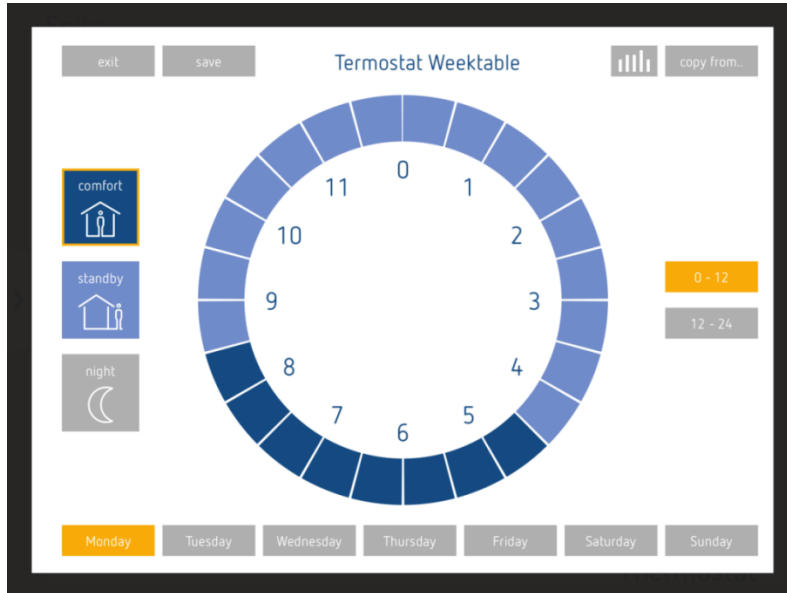
The „Chronothermostat“ system object features two types of switch programmes, which can be selected with the „Temperature Mode“ setting. If Temperature Mode is enabled, the **setpoint value** is used for control. If it is disabled, the **operating mode** is used for control.



Control via operating mode

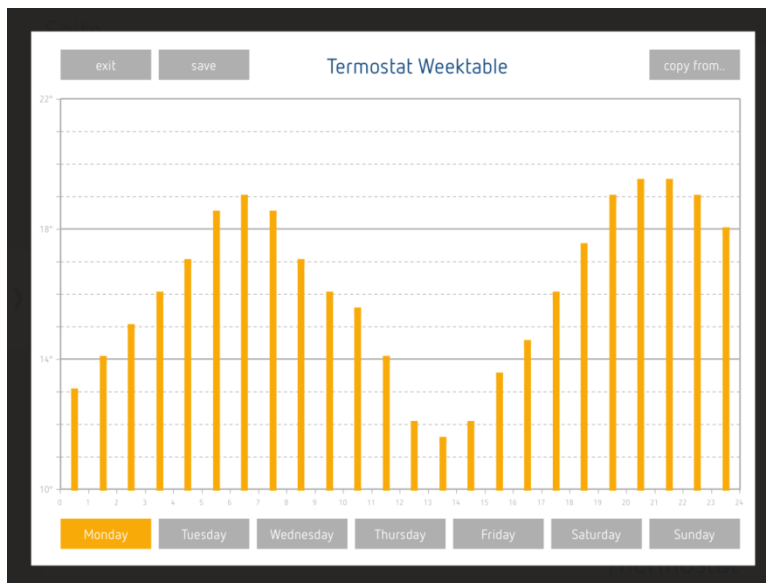
In the client app (e.g. in Player), the desired operating modes Comfort, Standby and Night are associated with the times of day (every half hour). These can be transferred to the days of the week.

With the push button „Save“, the settings are transferred to the server.



Control via setpoint value

In the client app, the desired set temperatures are associated with the times of day (every half hour). These can be transferred to the days of the week. With the push button „Save“, the settings are transferred to the server.



Label

Freely selectable designation for the object.

Force state

If enabled, the temperature/operating mode is repeated every minute.

If disabled, the relevant value is only sent when changed.

Temperature Mode

If enabled, a temperature setpoint value can be assigned at any time of day.

If disabled, an operating mode (Comfort, Standby, Night) can be assigned anytime.

Custom range (using individual intervals)

If disabled, the system uses the standard temperature range (14 °C to 26 °C) for both summer and winter.

If enabled, the settings for "Seasonal ranges", "Winter range", "Winter min. temp." and "Winter max. temp." are displayed:

Season group

If enabled, different temperature ranges can be defined for summer and winter

If disabled, the configured temperature range will be used for both summer and winter.

Winter range

This property allows to select a range width of 6 °C or 12 °C (this options allows to define the maximum temperature).

Winter min. temp.

Adjustable temperature value (for winter).

Winter max. temp

This value is automatically calculated by the system by adding the preconfigured range to the minimum value.

Season group

KNX group address used to switch between heating and cooling mode.

Summer range

This property allows to select a range width of 6 °C or 12 °C (this options allows to define the maximum temperature).

Summer min. temp

Adjustable temperature value (for summer).

Summer max. temp.

This value is automatically calculated by the system by adding the preconfigured range to the minimum value (for summer).

Auto/Manual KNX group address

KNX group address (1 bit DPT1) for feedback of the operating mode.
1 = time-controlled, 0 = manual

6.6 RGB

This object allows the user to control an RGB lamp with KNX.

Label


Freely selectable designation for the RGB object.

RGB data type

1 RGB 1 byte per colour

- **KNX group address**
KNX group address for the red colour (1 byte).
- **Feedback red**
KNX group address red (1 byte) feedback.
- **KNX group address**
KNX group address for the green colour (1 byte).
- **Feedback green**
KNX group address green (1 byte) feedback.
- **KNX group address blue**
KNX group address for the blue colour (1 byte).
- **Feedback blue**
KNX group address blue (1 byte) feedback.

RGB 3 byte

 Only functions if supported by the driver.

RGBW 1 byte per colour

- **KNX group address**
KNX group address for the red colour (1 byte).
- **Feedback red**
KNX group address red (1 byte) feedback.
- **KNX group address**
KNX group address for the green colour (1 byte).
- **Feedback green**
KNX group address green (1 byte) feedback.
- **KNX group address blue**
KNX group address for the blue colour (1 byte).

- Feedback blue
KNX group address blue (1 byte) feedback.
- KNX group address white
KNX group address for white (1 byte).
- Feedback white
KNX group address white (1 byte) feedback.

RGBW 6 byte

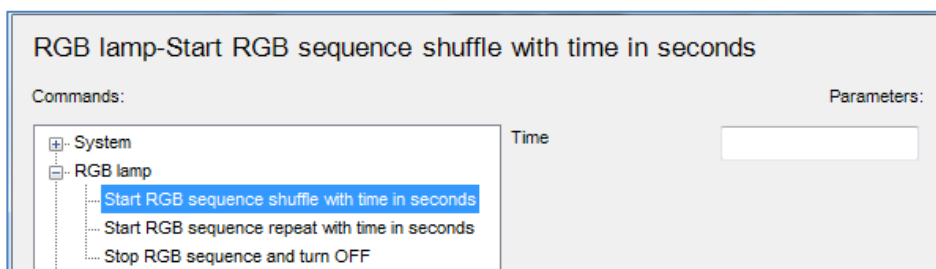
i Only functions if supported by the driver.

White (cool white + warm white)

- Colour temperature KNX group address
KNX group address for the colour temperature (1 byte).
- Feedback colour temperature
Colour temperature KNX group address (1 byte) feedback.
- Light intensity KNX group address
KNX group address for the light intensity (1 byte).
- Feedback green light intensity
KNX group address light intensity (1 byte) feedback.

6.6.1 Object commands in the list

Commands sent to the object and recallable from other objects:



Start RGB sequence, shuffle with time in seconds

Starts the preconfigured colour sequence in a random order;

- Enter the "Time" parameter on the right, to select the time interval between two consecutive colours.

Start RGB sequence, repeat with time in seconds

Repeats the preconfigured colour sequence in a defined order;

- Enter the "Time" parameter on the right, to select the time interval between two consecutive colours.

Stop the RGB sequence and turn off

Stops the repetition of the colour sequence and turns the RGB lamp off.

6.7 Weather Forecast

With this system object, you can use the weather forecast of the Theben Meteodata 139 EFR. Weather forecasts for rain probability, precipitation amount, wind strength and direction, as well as temperature can be visualised via the server.

The 6 h forecast of today, tomorrow, the day after tomorrow, and in 3 days is used.

Label	Weather Forecast
Index group	
Weather scenario group	
Air temperature group	
Precipitation amount group	
Precipitation probability group	
Wind strength group	
Wind direction group	
Wind Measure Unit	km/h

Label

Freely selectable designation for the object.

Index group

KNX group addresses of Meteodata 139 EFR (KNX communication objects 140 to 144, 148 and 176).

In the **Interface tree**, 4 pages have to be created, in order to fully use the weather forecast of Meteodata 139 . The pages are, for instance, labelled as follows:

Page 1: „Today“

Page 2: „Tomorrow“

Page 3: „Day after tomorrow“

Page 4: „In 3 days“

On each page, the function object „Weather forecast“ is added. Then, the following settings are made in the properties:

In the example: Page - Today

The screenshot shows a software configuration interface. At the top, there are tabs for 'Interface' and 'System'. Below the tabs is a tree view showing a hierarchy: 'New_configuration' -> 'Function - Metreodata 139 EFR' -> 'Page - Today' -> 'Weather Forecast - Weather Forecast'. The 'Weather Forecast - Weather Forecast' item is selected and highlighted in blue. Below the tree view is a table with the following properties:

Label	Weather Forecast
Forecast day	Today
Weather Forecast	Weather Forecast
Rotation	0
Position	0, 0
View in list	Enabled
PIN protection	Disabled
Restrictions	Not configured

Forecast day: „Today“

Weather Forecast (system object): "Weather Forecast"

The following 3 pages are continued using the same principle.

Page – Tomorrow: Forecast day: „Tomorrow“ etc.

The screenshot shows a weather forecast table for 'Tomorrow'. The table has columns for time intervals and rows for various weather metrics. The 'Today' tab is selected. The data is as follows:

	00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 24:00
Weather Conditions	Overcast	Mainly Cloudy	Mainly Cloudy	Slightly Cloudy
Average Air Temperature	2 °C	5 °C	6 °C	3 °C
Rainfall	0 l/m ²	0 l/m ²	0 l/m ²	0 l/m ²
Chance of Rain	0 %	0 %	0 %	0 %
Wind Strength	8 km/h	8 km/h	15 km/h	8 km/h
Wind Direction	West	West	Nordwest	Nord

Metreodata 139

6.8 EmailAccount

This object is needed to configure SMTP server parameters for sending email messages from the server (alerts, reports etc.).

Label

Freely selectable designation for the email account.

SMTP server

Host address of the mail server, can be found in the documentation of the email provider.

Server Port

Port, for communication with the mail server, new mail servers often use port 587.

From

Email address of the sender; if the field is empty, noreply@theben.de is used as the sender.

Authentication

If enabled, an authentication will be performed at the mail server.

Username

Username of the email account, can be found in the documentation of the email provider.

Password

Password of the email account, can be found in the documentation of the email provider.

Use SSL

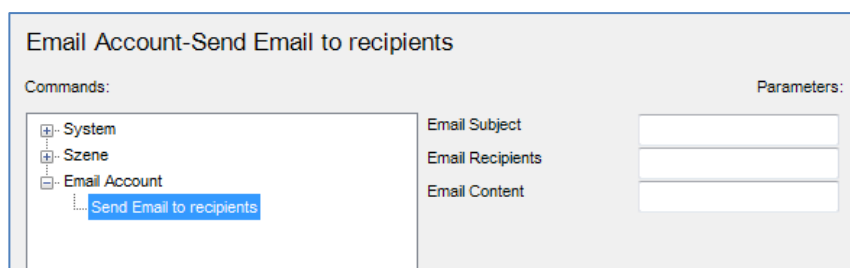
If enabled, the connection with the mail server will be encrypted.

6.8.1 Object commands

The object can be called up by other objects, such as the Generic command or a Scene under „Command“ with „Send Email to recipient“.

Send email to recipients

Allows sending an email message. Enter the email subject, the recipient and the contents in the fields on the right side.



6.9 Presence Simulator

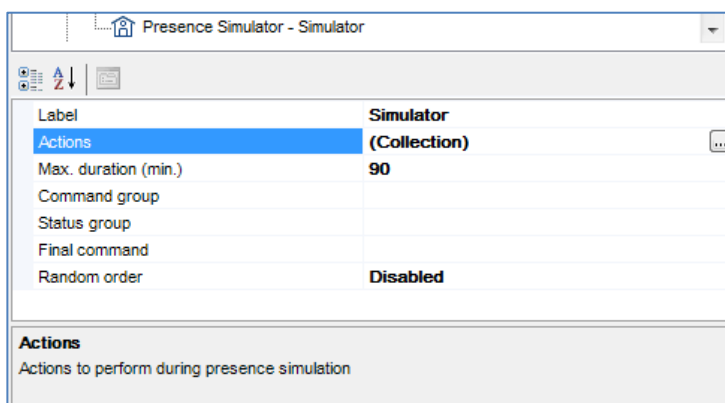
This object allows the simulation of presence in a building by switching on the lighting, starting an audio system etc. To do so, actions will be defined, which are called up consecutively or randomly within a defined time frame.

Label

Freely selectable designation for the object.

Actions (Collection)

- Click on the push button displayed on the right
 - The window of the actions editor is opened
- Click on "Add" and adjust the properties:



Start command

Command sent when starting the action.

Final command

Command sent when finishing the action.

Medium duration

Interval between start and final command (in minutes).

Max. duration

Maximum duration time of the simulation; if it is not manually stopped, it will automatically end after time interval specified here (in minutes).

Command group

KNX group address, which activates or deactivates the presence simulation (1 bit, „1“ starts simulation, „0“ stops simulation)

Status group

KNX group address, via which the status of the simulator is sent cyclically, (1 bit, „1“ simulation active, „0“ simulation deactivated).

Final command

At the end of a simulation, a last command is sent, which, for instance, can be used, to bring all devices involved in the simulation into a defined state. The command is also sent if the simulation is stopped via the „KNX group address command“ function.

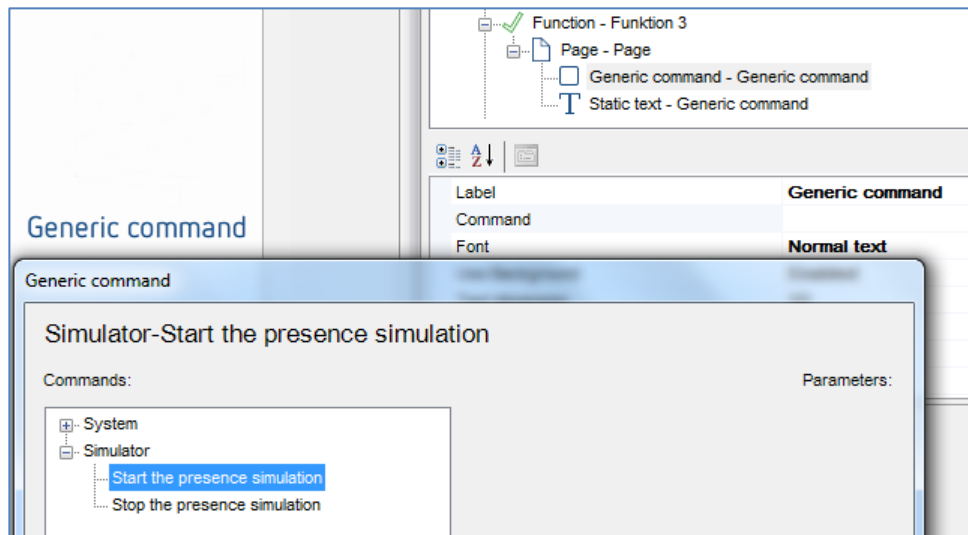
Random order

If enabled, all configured actions will be performed by the system

If disabled, they will follow the pre-set order.

6.9.1 Object commands

Commands which can be linked with a function object, e.g. universal image switches:



Start the presence simulator

Starts the sequence of actions of the presence simulator.

Stop the presence simulator

Ends the sequence of actions of the presence simulator.

6.10 Sun times and events

This service calculates sun position (sunset, sunrise, azimuth and elevation) from the geographic position of the installation. It is also possible to associate actions to sun positions.

Label

Freely selectable designation for the object.

Sun actions

List of actions to be performed depending on the sun position.

Sunrise group

KNX group address used to send the sunrise time (DPT 10).

Sunset group

KNX group address used to send the sunset time (DPT 10).

Azimuth group

KNX group address used to send the azimuth (DPT 9).

Elevation group

KNX group address used to send the elevation angle (elevation) (DPT 9).

6.10.1 Adding actions

Defining an action which is to be performed at a predefined sun event

- Click on the push button to the right of the "Sun Actions" property.
- Click on "Add" and adjust the properties:

Sun event

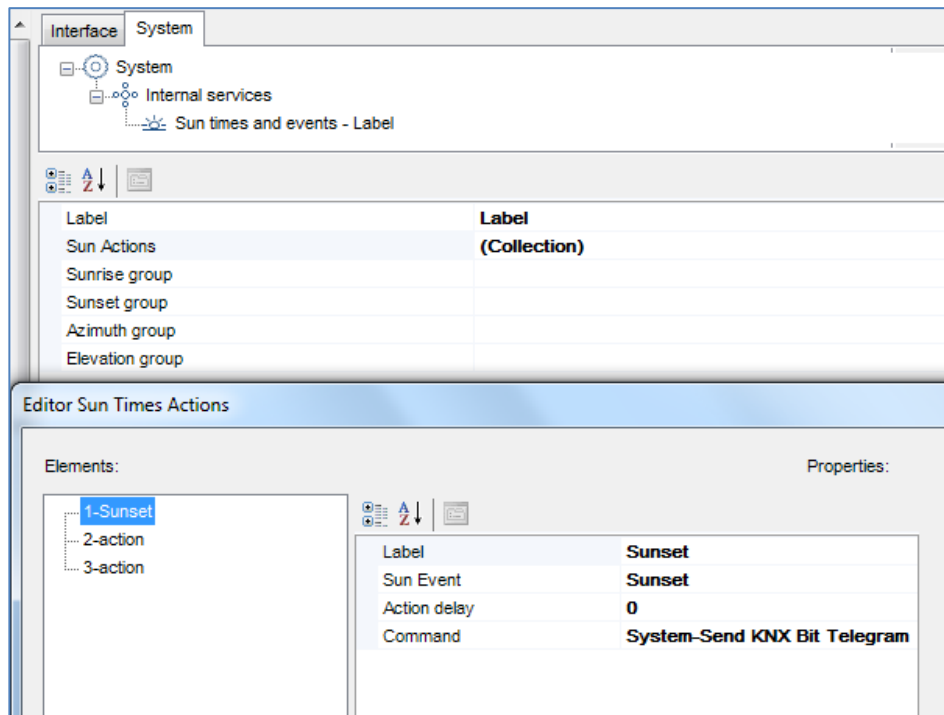
Event, triggering the action. Civil Dawn, Civil Dusk, Noon, Sunrise and Sunset can be selected.

Action delay

Time (in minutes) between the occurrence of the event and launching the action. In case of a negative value, the action is started before the sun event.

Command

Command performed by the server when the sun event occurs.



6.11 Combination

The "Combination" object executes logic operations (AND, OR, XOR), while the input values are received via KNX group addresses and the result is sent to another KNX group address.

Label

Freely selectable designation for the combination.

Combination

Type of desired logical operation:

Operation	
'AND'	outputs „1" if all inputs are „1", otherwise „0"
'OR'	outputs „1" if at least one input is „1", otherwise „0"
'XOR'	outputs „1" if inputs have different states, otherwise „0"

Inputs

List of the input group addresses

Inverted output

If enabled, the result of the logical operation will be inverted

Output sending behaviour

This parameter can be used to define when the result of the operation has to be sent:

- "When a new input telegram is received": The result of the operation is sent when a telegram is received at one of the inputs, even if the output value is not different from the previous one.
- "On result change": The result of the operation is only sent if the output value is different from the previous one.

Output values

This parameter can be used to define whether all results of the operation („1" and „0") should be sent, or only results with „1" or „0".

Output group

KNX group address used to send the result of the operation.

Gate

The logic function can be enabled and disabled via the gate (1 bit).

Inverted Gate

If disabled, the logic function is enabled at „1" and disabled at „0"

If enabled, the logic function is enabled at „0" and disabled at „1"

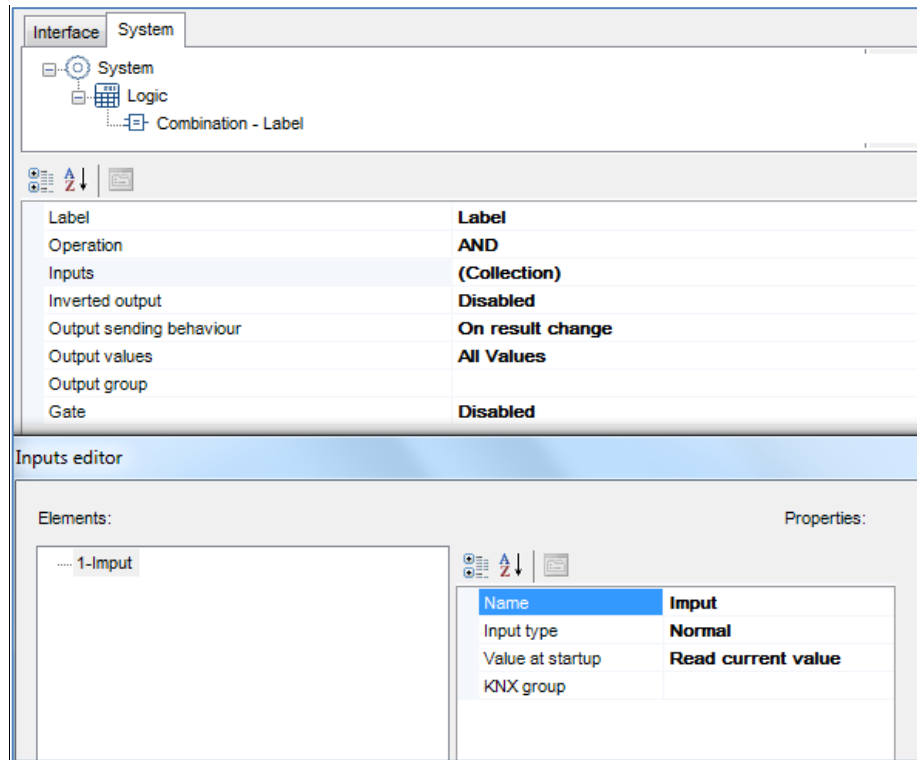
Startup gate status

This parameter can be used to define how the gate behaves after a download or restart:

Parameter	
'0 until first telegram'	the gate has the value „0" until receiving a telegram
'1 until first telegram'	the gate has the value „1" until receiving a telegram
'Read current value'	the gate reads the current value of the KNX group address
'Wait for a new telegram'	the gate waits until receiving a telegram and does not take any value

Gate group

KNX group address assigned to the gate.



6.11.1 Input Configuration

In order to configure inputs, select the "Inputs" property, and click on the push button displayed on the right.

In order to add a new input in the displayed window,

- click on the "Add" push button at the bottom. An "Input" object will be added to the list;
- Select the object and adjust the properties on the right.

Input type

This setting can be used to adjust the value received at the inputs:

Setting	
'Always 0'	the input value is always 0, independent of the value of the KNX group address
'Always 1'	the input value is always 1, independent of the value of the KNX group address
'Normal'	no adjustment is made
'Inverted'	the value coming from the KNX group address will be inverted

Startup value

This parameter can be used to define how the input behaves after a download or restart:

Parameter	
0 until first telegram	the input has the value „0“ until receiving a telegram
‘1 until first telegram’	the input has the value „1“ until receiving a telegram
‘Read current value’	the input reads the current value of the KNX group address.
‘Wait for a new telegram’	the input waits until receiving a telegram and does not take any value

KNX group

KNX group address assigned to the logic input.

6.12 Filter

The “Filter” object can be used to execute filter and inversion operations (1 bit), where the respective input value is received via KNX group addresses and the result is sent to another KNX group address, with an optional delay.

Label

Freely selectable designation for the filter object.

Filter type

This parameter can be used to define the assignment between the input value and the output value.

Parameter	
‘1 -> 1 / 0 -> - (disabled)’	outputs „1“ if the input is „1“; if the input is „0“, no value will be output
‘1 -> 1 / 0 -> 0 (pass all)’	outputs „1“ if the input is „1“; outputs „0“ if the input is „0“ (no filter function)
‘1 -> - / 0 -> - (disabled)’	the input does not forward values to the output
‘1 -> 0 / 0 -> 1’ (inversion)	outputs „0“ if the input is „1“; outputs „1“ if the input is „0“ (inversion)’
‘1 -> - / 0 -> Toggle	inverts the output value if the input receives the value „1“; no values are forwarded from the input to the output if the input is „0“

Input group

KNX group address assigned to the filter input.

Delay

This parameter can be used to define a delay time, at which the output value is sent to the KNX group address.

Parameter	
Do not use	disables the function, there is no delay
Use if input is 1	there is only a delay if the input value is „1“
Use if input is 0	there is only a delay if the input value is „0“
Use always	there is always a delay

Delay base time

Selection of time unit (seconds, minutes or hours) for calculating the delay time.

Delay factor

Factor to be multiplied with the time unit.

Output sending behaviour

This parameter can be used to define when the result of the operation has to be sent:

- “When a new input telegram is received”: The result of the operation is sent when a telegram is received at the input, even if the output value is not different from the previous one.
- “On result change”: The result of the operation is only sent if the output value is different from the previous one.

Output group

KNX group address assigned to the filter output.

Gate

The filter function can be enabled and disabled via the gate (1 bit).

Inverted Gate

If disabled, the filter function is enabled at „1“ and disabled at „0“.

If enabled, the filter function is enabled at „0“ and disabled at „1“.

Startup gate status

This parameter can be used to define how the gate behaves after a download or restart:

Parameter	
0 until first telegram	the gate has the value „0“ until receiving a telegram
1 until first telegram	the gate has the value „1“ until receiving a telegram
Read current value	the gate reads the current value of the KNX group address
Wait for a new telegram	the gate waits until receiving a telegram and does not take any value

Gate group

KNX group address assigned to the gate.

6.13 Multiplexer

The 'Multiplexer' object has one input and two outputs. Via a control input (1 bit), the input can be assigned to one of the two outputs.

Label

Freely selectable designation for the multiplexer.

Group input

KNX group address assigned to the input.

Type

The multiplexer function supports several KNX data types. With the parameter „Input type“, the desired data type (DPT) is selected. The setting is valid for the input as well as for the outputs.

Group output A and Group output B

KNX group addresses assigned to the outputs.

Control group

KNX group address assigned to the control input.

Type for 0 and Type for 1

This parameter is used to define which action has to be executed if the control input has the value „0“ or „1“.

Parameter	
No transmission	the input is not assigned to any output
From input to output A	the input is assigned to output A
From input to output B	the input is assigned to output B
From input to both outputs	the input is assigned to both outputs at the same time

Startup value

This parameter can be used to define how the control input behaves after a download or restart:

Parameter	
0 until first telegram	the input has the value „0“ until receiving a telegram
1 until first telegram	the input has the value „1“ until receiving a telegram
Read current value	the input reads the current value of the KNX group address
Wait for a new telegram	the input waits until receiving a telegram and does not take any value

Gate

The multiplexer function can be enabled and disabled via the gate (1 bit).

Inverted Gate

If disabled, the multiplexer function is enabled at „1“ and disabled at „0“

If enabled, the multiplexer function is enabled at „0“ and disabled at „1“

Startup gate status

This parameter can be used to define how the gate behaves after a download or restart:

Parameter	
0 until first telegram	the gate has the value „0“ until receiving a telegram
1 until first telegram	the gate has the value „1“ until receiving a telegram
Read current value	the gate reads the current value of the KNX group address
Wait for a new telegram	the gate waits until receiving a telegram and does not take any value

Gate group

KNX group address assigned to the gate.

6.14 Logic matrix

The 'Logic Matrix' object has a maximum of 256 inputs and outputs each. One input can be assigned to one or more outputs via two control inputs (1 byte).

Label

Freely selectable designation for the logic matrix object.

KNX data type

KNX data type (DPT) of the inputs and outputs.

Inputs

List of the input group addresses.

Outputs

List of the output group addresses.

Input selection KNX group address

KNX group addresses (1 byte, 0-255) for selecting the input.

Preset input

Selection of the preset input.

Output selection KNX group address

KNX group addresses (1 byte, 0-255) for selecting the outputs

Preset output

Control value of the preset outputs (0-255).

Update with each input selection

If enabled, the output is updated upon each received control telegram of the input selection.

If disabled, the output will only be updated if a new telegram is received at the selected input.

Update with each output selection

If enabled, the output is updated upon each received control telegram of the output selection.

If disabled, the output will only be updated if a new telegram is received at the selected input.

Gate

The logic matrix function can be enabled and disabled via the gate (1 bit).

Inverted gate

If disabled, the logic matrix function is enabled at "1" and disabled at "0".

If enabled, the logic matrix function is enabled at "0" and disabled at "1".

Startup gate status

This parameter can be used to define how the gate behaves after a download or restart:

Parameter	→
0 until first telegram	the gate has the value "0" until receiving a telegram
1 until first telegram	the gate has the value "1" until receiving a telegram
Read current value	the gate reads the current value of the KNX group address
Wait for a new telegram	the gate waits until receiving a telegram and does not take any value

Gate KNX group address

KNX group address assigned to the gate.

6.14.1 Add inputs

- Click on the push button displayed on the right, to open the actions editor window.
- Click on "Add" and adjust the properties:

Label

Freely selectable designation of the input.

Control value

Control value for selecting the input, each control value must only be assigned to one input.

Startup value

This parameter can be used to define how the control input behaves after a download or restart:

Parameter	→
0 until first telegram	the gate has the value "0" until receiving a telegram
1 until first telegram	the gate has the value "1" until receiving a telegram
Read current value	the gate reads the current value of the KNX group address
Wait for a new telegram	the gate waits until receiving a telegram and does not take any value

KNX group address

KNX group address of the input.

6.14.2 Add outputs

- Click on the push button displayed on the right, to open the actions editor window.
- Click on "Add" and adjust the properties:

Label

Freely selectable designation of the output.

Control value

Control value for selecting the output, a control value can be assigned to several outputs.

KNX group address

KNX group address of the output.

6.15 Linear combination

The 'Linear combination' object allows the calculation of weighted sums. For this purpose, the 1 bit input values (v_1, v_2, \dots) are multiplied with a factor (p_1, p_2, \dots), added up, and the result („C") is output as a byte value at the output:

$$C = p_1 \cdot v_1 + p_2 \cdot v_2 + \dots + p_k \cdot v_k.$$

The factor (Load) can be entered in the range from 0 to 255.

The 'Linear combination' function can be useful, in order to weigh different states (alarm and error notifications).

Addends

Configuring inputs and factors

- Select the 'Addends' property and click on the push button displayed on the right.

Output sending behaviour

This parameter can be used to define when the result of the operation has to be sent:

- **“When a new input telegram is received”:**
The result of the operation is sent when a telegram is received at one of the inputs, even if the output value is not different from the previous one.
- **“On result change”:** The result of the operation is only sent if the output value is different from the previous one.

Output group

KNX group address used to send the result of the operation.

Addends configuration

- Select the „Addends” property and click on the push button displayed on the right.
- In order to add a new addend in the displayed window, click on the 'Add' push button at the bottom.
 - An 'Addend' will be added to the list.
- Select the object and adjust the properties on the right.

Name

Freely selectable designation for the input.

Load

The value entered here (0 to 255) is multiplied with the corresponding input value of the KNX group address (1 bit).

KNX group

KNX group address assigned to the input.

6.16 Complex Math Expressions

The "Complex Math Expressions" object represents a collection of logical and arithmetical operations, which can be used to make complex calculations by using values from KNX group addresses.

It is thus possible to create expressions for the calculation of sums, balances, mean and absolute values, root and angle calculations, bit selections etc.

Expression

List of the created mathematical operations.

6.16.1 Configuring an expression

- Click on the "Add" push button in the displayed window.
 - An "Expression" object will be added to the list
- Select the object and adjust the properties on the right.

Output group

KNX group address used to send the result of the operation.

Output sending behaviour

This parameter can be used to define when the result of the operation has to be sent:

- **"When a new input telegram is received":**
The result of the operation is sent when a telegram is received at one of the inputs, even if the output value is not different from the previous one.
- **"On result change":** The result of the operation is only sent if the output value is different from the previous one.

Expressions (Collection)

The list editor contains the syntax of the mathematical expressions.

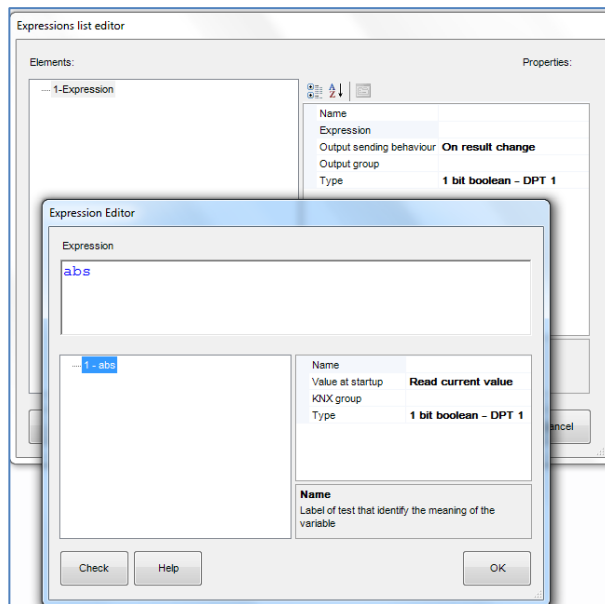
- Click on the selection symbol on the right side of the list.
 - The list editor will be opened.
- Select it and click on the push button displayed on the right.
- In the displayed window, enter the text of the expression in the text box above and click on the "Check" push button.

The check is used to test the expression accuracy and to create the variables. Each variable represents an input that is a value of a KNX group address.



Whenever the text of the expression is changed, click on the "Check" push button before clicking on "OK". If you do not do this, the variables will not be generated, and the expression will not be saved.

In order to set up the variables, select them from the list and adjust the properties in the grid on the right.



Startup value

This parameter can be used to define how the startup value behaves after a download or restart:

Parameter	
'0 until first telegram'	the variable has the value „0“ until receiving a telegram
'1 until first telegram'	the variable has the value „1“ until receiving a telegram
'Read current value'	the input reads the current value of the KNX group address
'Wait for a new telegram'	the input waits until receiving a telegram and does not take any value

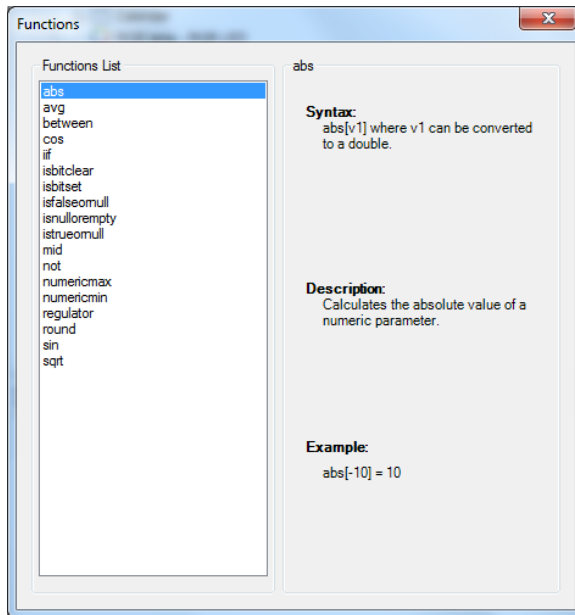
KNX group

KNX group address the variable is associated with.



The change of the expression does not involve the previously set properties of the variable. Renaming a variable involves the cancellation of the old one and the creation of a new one: The new variable does not acquire the properties of the old one.

The expression can contain mathematical operands, such as +, -, *, /, > (greater than), < (less than), = (equal), := (assignment), <> (different) and logical operands, such as "AND" and "OR". Decimals have to be expressed with a point "." for instance 0.9, 1.5, 20.05. Each line must end with a comma ",". It is possible to include mathematical functions, such as mean, absolute value and rounding. For a complete list of functions with related syntax, click on "Help" push button below.



6.16.2 Importing and exporting expressions

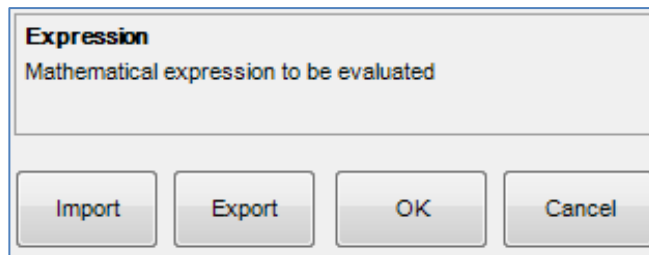
This feature allows to export a list of expressions previously created in a project and import it in another project.

Exporting list of expressions

- Click on the push button to the right of the "Expressions" property.
 - The list editor for the list of expressions is opened.
- Click on the "Export" push button and select the path for the xml file which will be created.
 - In this way, the list of expressions will be saved outside Configurator.

Importing the list of expressions into a project

- Click on the push button to the right of the "Expressions" property.
 - The editor window for the list of expressions is opened.
- Click on the "Import" push button and select the previously saved xml file.
- Click on OK to confirm.
 - A list of expressions will appear in the editor window.



6.17 Load control

The 'Load control' object can be used to switch off certain parts of the installation via KNX group addresses, depending on the current energy consumption. Based on the set thresholds, the function switches off loads for a definable time interval, or informs the user when reaching a warning threshold.

Label

Freely selectable designation for the object.

Type

The input supports several KNX data types. With the parameter „Type“, the desired data type (DPT) is selected.

Maximum power [W]

Maximum contractual power supported by the entire installation expressed in Watt.

Warning threshold [W]

Threshold (in Watt), at which a warning is sent to the set KNX group address if the value is exceeded.

Power value group

KNX group address used to receive the current power value.

Warning group

KNX group address, to which the value „1“ is sent when the warning threshold is exceeded.

Reconnection time

Time delay, before the system tries to reconnect the switched off load

Disconnection time

Time delay, before the load is switched off if the threshold is exceeded (time after warning).

Time between loads disconnection

Interval between two load disconnections. The time to be set depends on the speed of the power measurement. The value should be greater than the interval of the power indication.

Loads

Loads related to the part of the installation which is controlled by this object; if the warning threshold is reached, they are automatically disconnected by the system. If no load is configured, the system will only make a data reading and send a warning message if the warning group has been previously set.

Adding loads

- Click on the push button displayed on the right.

→ The window of the loads editor is opened.

- Click on "Add" and adjust the properties in the grid.

Name

Freely selectable designation for the input.

Load KNX group

The KNX group address associated with the load to be disconnected.

Load KNX status group

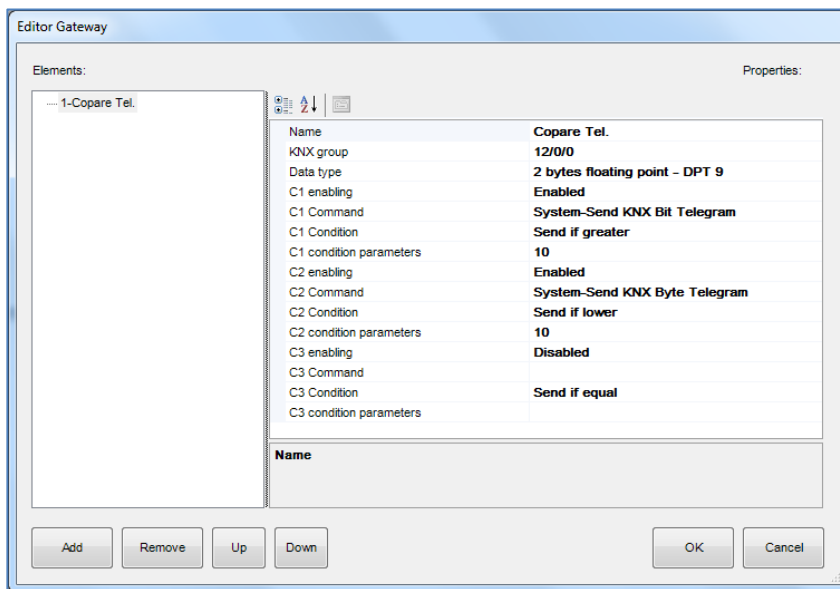
KNX group address for the feedback.

6.18 Comparator

The 'Comparator' object has one input and three comparing functions (comparators C1, C2, C3). Depending on the selectable conditions and parameters, extensive actions can be executed.

Adding actions

- Click on the push button displayed on the right.
 - The window of the editor is opened.
- Click on "Add" and adjust the properties in the field on the right side.



KNX group

KNX group addresses assigned to the output.

Data type

The comparator function supports several KNX data types. With the parameter „type“, the desired data type (DPT) is selected.

Cx enabling

Enables or disables the corresponding comparator.

Cx Command

Command, which is sent if the following condition is met.

Cx Condition

Condition, which must be met for the previously defined command to be executed.

Cx condition parameters

Value, which is used for fulfilling the previously defined condition.

6.19 IR Transmitter

This object can be used to control other devices with infrared receiver via an IR transmitter in the LAN. theServa supports the WLAN, Ethernet and Ethernet-PoE module from IR-Trans. The object can be called up by other objects, such as the universal image switch or a scene.

For the description for creating the necessary REM file with the IR commands, please refer to the IR-Trans website (<http://www.irtrans.de>).

IR commands

List of the infrared commands, which can be assigned to objects.

Remotes directory

Path and name of the REM file with the IR commands. By clicking the push button shown on the right, windows explorer will be displayed.

Copy in project

If enabled, Configurator copies the remote file automatically into the project folder.

Check for update

If enabled, the system checks if the remote files are up-to-date and updates them if necessary.

IP address

IP address of the IR transmitter in the LAN.

6.19.1 Adding IR commands

- Click on the push button displayed on the right, to open the actions editor window.
- Click on "Add" and adjust the properties:

Alias

Alternative name used to recall the IR command.

Remote

Selection of the REM file with the IR commands

Command

Selection of the desired IR command

6.19.2 Importing and exporting IR commands

This function allows to export IR commands and to import them into another project.

Exporting list of commands

- Click on the push button to the right of the "IR commands" property.
 - The commands editor window is opened.
- Click on the "Export" push button and select the path for the xml file.
 - The list of IR commands will be saved outside Configurator.

Importing the list of commands into a project

- Click on the push button to the right of the "IR commands" property.
 - The commands editor window is opened.
- Click on the "Import" push button, select the previously saved xml file and click on OK.
 - A list of commands will appear in the editor window.



During the import process, if the "Remote" property of the "IR transmitter" object is not set up, the commands will be added to the list with the prefix "****" in the name, and only the command alias will be set up.

6.19.3 Object commands

The object can be called up by other objects, such as the universal image switch or a scene, under „Command“ with „Send IP transmitter selected commands to the selected remote control“.

Send the selected command for the selected remote control

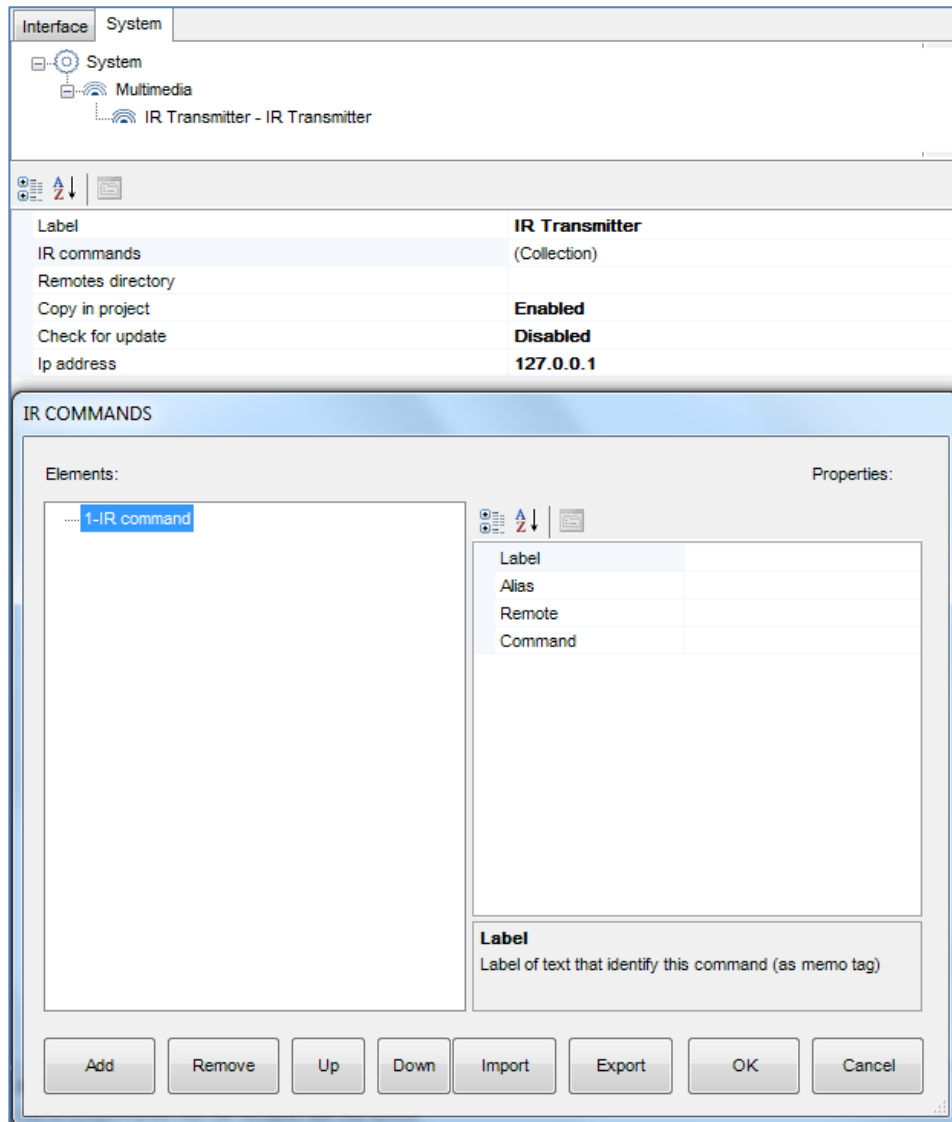
Allows to create sequences using the commands previously configured in the related system object properties.

To create a sequence,

- select the desired command from the list and the click on "Enqueue"; the "Make pause" item can be added to the sequence, in order to include a

break between the commands and to grant a better communication to the devices.

The sequence displayed in the field at the bottom can be edited by deleting individual items or moving them by clicking on the "Up" and "Down" push buttons. With the item "Output option", the IR command can be associated with different outputs of the same IR transmitter. This function is used, when external transmission LEDs are connected to an IR transmitter, which are associated with individual devices.



6.20 Database

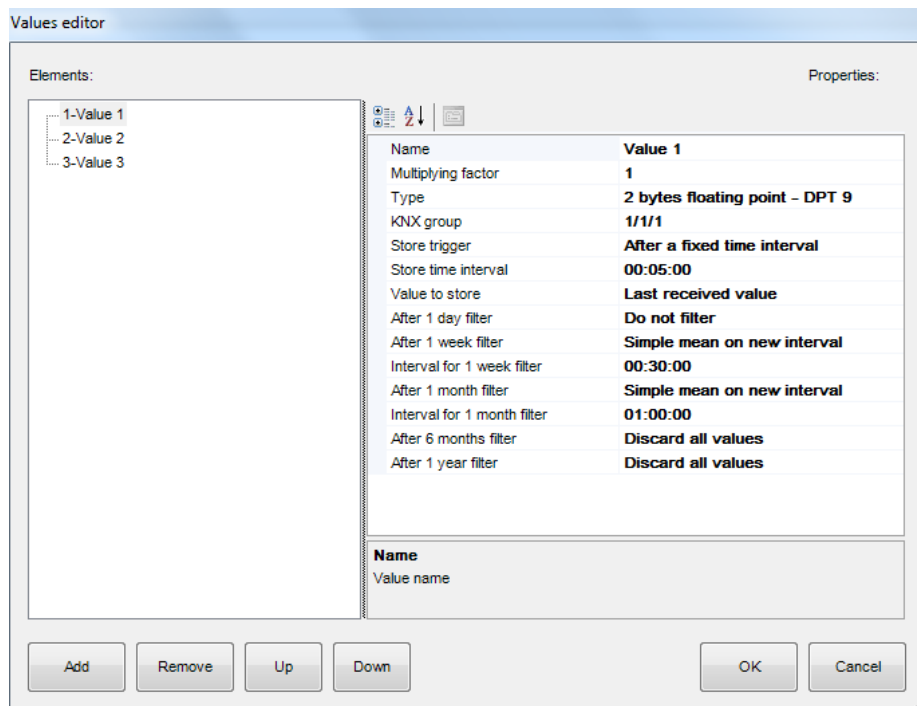
This object defines the values that are to be displayed and plotted in a chart. Up to 30 data items (values) can be created in the database. Only one data type can be displayed in a chart. The database object can only be created once.

Label

Freely selectable designation for the chart database.

Value list

Definition and properties of the values that are to be used in the charts.



Label

Designation of the variables. Specify a unique designation here so that it can be identified later in Chart > Data series > Variable clearly without ambiguity.

Multiplier

Multiplication factor by which the data plotted are multiplied.

Data type

Selection of the KNX data type (DPT) for plotting the graph.

KNX group address

KNX group address where the values for displaying the graph are received.

Storage properties

The storage properties for plotting the data can be defined here:

- After new data are received:
All data are plotted
- After a fixed time interval:
Data are stored after a clearly defined period of time.
- After exceeding a threshold:
If a change in percent is greater than the threshold entered, the data are plotted.
- After exceeding a threshold and after a fixed time interval

Storage type

Storage method by which the data are to be stored:

Last value received

- Value as weighted average
The sum of the individual performance data plotted irrespective of time is divided by the number of data. This value is displayed in the chart.
Example: $1 \text{ kW} + 2 \text{ kW} + 3 \text{ kW}$ (sum of data) / 3 (number of values)
- Value as moving average
The sum of the individual performance data plotted, multiplied by the length of time of the performance run, is divided by the total length of time examined
Example: $(1 \text{ kW} * 2 \text{ min} + 2 \text{ kW} * 3 \text{ min} + 3 \text{ kW} * 10 \text{ min}) / 15 \text{ min}$
- Value as mathematical integral value
Describes the energy that is developed during the time selected. It is calculated by multiplying the individual performance values by the respective time.
Example: $(1 \text{ kW} * 2 \text{ h}) + (2 \text{ kW} * 3 \text{ h}) + (3 \text{ kW} * 10 \text{ h})$
- Value from mathematical derivation
Describes the tangential gradient in a value selected from the performance curve.

Filter according to...

There are several filtering methods available for data that are older than 1 day, 1 week, 1 month, 6 months, or 1 year.

Do not filter:

All data are available after a defined period of time.

Delete all data:

All data are deleted after a defined period of time.

Form weighted average:

After the desired period of time, data are stored as a weighted average only

Form moving average:

After the desired period of time, data are stored as a moving average only.

6.21 KNX variables

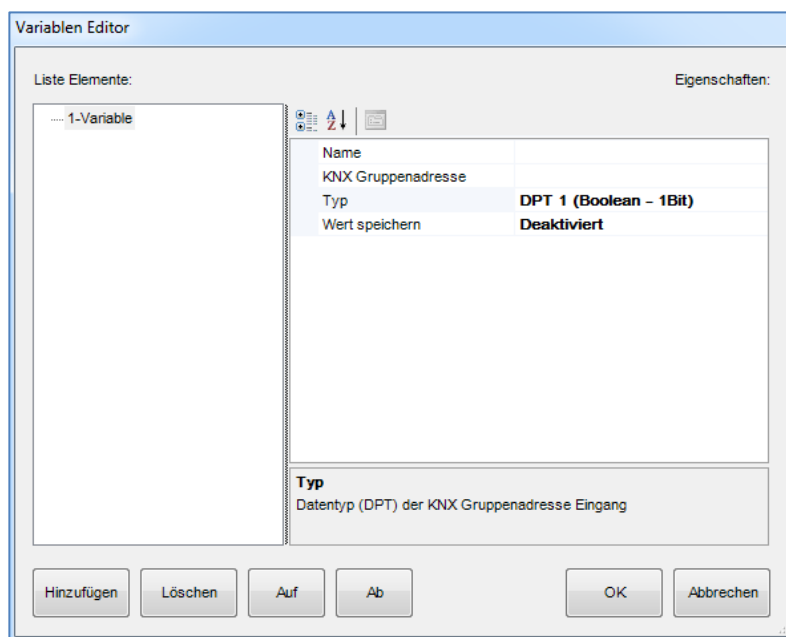
This object is used to save and call up states and values.

Label

Freely selectable designation for the system object.

Variables

List of the created KNX variables. Here, the variable to be saved is created and configured.



- Name
Freely selectable designation for the variable.
- KNX group address
KNX group address for receiving the value to be saved.
- Type
Selection of the data type.
- Save value
If enabled, the value of the variable will be written into the memory of the server. After a failure of the server, it will be preserved and sent to the bus after the restart of the server.

If disabled, the saved state of the variable will only be preserved until the restart of the server.

Triggering

If the function is enabled, the saved variables can be called up manually from the server any time.

- **Trigger KNX group address**
KNX group address (1 bit) for calling up the KNX variable.
- **Trigger value**
Selection of the value used for calling up the KNX variable.

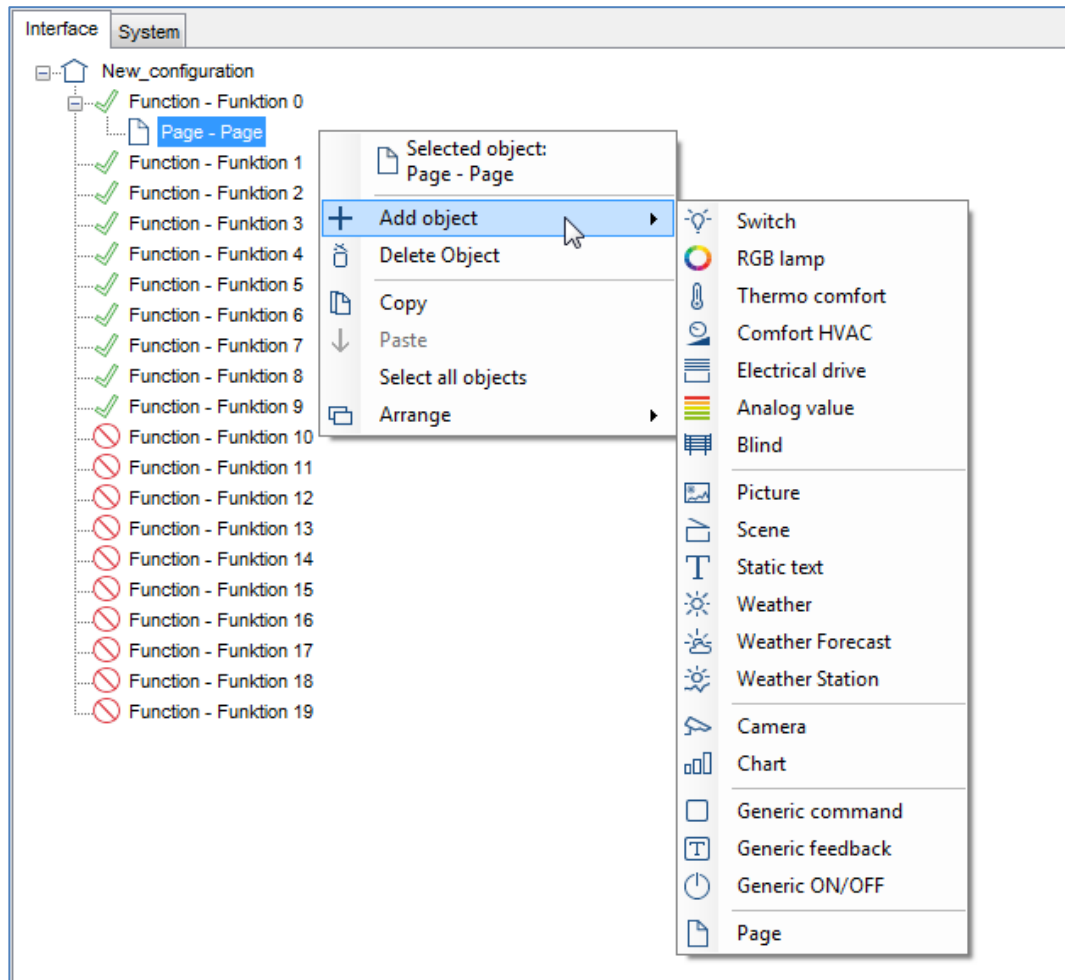
Time-controlled triggering

If enabled, the server sends the KNX variable to the bus cyclically, at a configurable interval.

- **Trigger time interval**
Time interval in seconds

7 Function objects

The graphical user interface of the client app is divided into functions, pages and objects (see section "User interface").



Before a function object is added, a „Page“ has to be included in the desired function (as presetting, functions 0 – 9 are already enabled).

The following properties are the same for each function object:

- **Label**
Freely selectable designation for the scene object.
- **Scale**
Allows to adjust the object size.
- **Rotation**
Allows to rotate the object.
- **Position**
Allows to enter coordinates, to place the object exactly on the page.

The displayable area is between 0 und 958 in X direction (horizontal) and between 0 und 702 in Y direction (vertical).

- **View in list**
If enabled, the object is displayed in list view (upright format).
- **PIN protection**
If enabled, the access on the object is protected. The user must enter a PIN code, in order to execute actions.

PIN protection	Enabled
PIN code	
Restrictions	Admin

- **PIN code**
Pin code assigned to the object, which was generated earlier in the system (safety PINs).

Sicherheits-PINs (Auflistung)

Pin protection editor

Kennung	Eigenschaften:
1-Admin	Admin
	Deaktiviert

Kennung
Zum PIN-Code zugehörige Kennung

Buttons: Hinzufügen, Löschen, Auf, Ab, OK, Abbrechen

Sicherheits-PINs
PINs zum Schutz der Objekte innerhalb der Interfacegrafik

- **Reactivation interval**
If the entered PIN is enabled, it will be valid for a certain time, and will not be queried again within this interval. This time interval can be adjusted in the parameter window „Retrigger“.
- **Retrigger**
If enabled, every action at a PIN protected object will be extended by the set time.



The default PIN is **12345**, and will be entered in the client application - if PIN protection is enabled. On the client user interface, the PIN code can be changed.

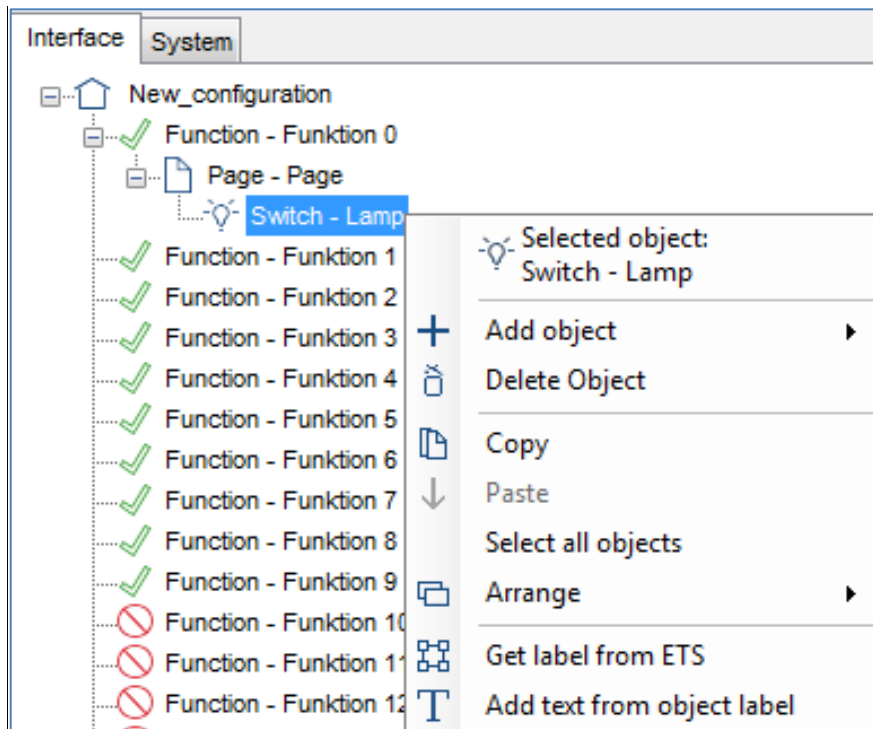
Restrictions

This property allows to define whether the object is available for a specific user profile. By default, all objects are visible for all user accounts.



Drop-down menu

By right clicking on the icons of objects, the following items will be visible in the drop-down menu:



Add object

A new system object can be selected from the list.

Delete Object

The selected object will be removed from the project.

Copy

Copies the selected object.

Paste

Pastes the selected object.

Select all objects

Selects all objects on the page.

Arrange

Arranges the objects according to various criteria.

Pasting label from ETS

The selected object will be renamed according to the KNX group name configured in the ETS project.

Adding text from object label

A "Static text" object with the object label will be automatically added next to the current function object icon.

7.1 Switch

This object is used for lighting control (switching and dimming) and enables the functions: change over, dimming, "send 1", "send 0", "send 1 on pression and 0 on release" etc. The „Switch" object can be associated with the object "Switch schedule" and "Calendar".

Switching type

This parameter defines the function of the object:

Setting	
Dimmer	If this option is selected, the selected brightness value is sent as a 1 byte telegram.
OFF on pression	when pressed, „0" will be sent.
OFF on pression, ON on release	when pressed, „0" will be sent, when released „1".
On on pression	when pressed, „1" will be sent.
ON on pression, OFF on release	when pressed, „1" will be sent, when released „0".
ON/OFF norm. closed	„0" will be sent for ON, „1" for OFF.
ON/OFF norm. open	„1" will be sent for ON, „0" for OFF.

If user defined values are desired, they can be freely entered.

- Value on pression: The entered value is sent on pression.
- Value on pression and on release: On pression, the entered values will be sent.
- Value on release: The entered value is sent on release.

Value on pression

Value sent on pression to the KNX group address.

(1 byte)

Value on release

Value sent on release to the KNX group address.

(1 byte)

Label	Switch
Switching type	OFF on pression, ON on release
Image	Image selected
Use Background	Disabled
Visualization	Turned off
Time schedule	Enabled
Schedule object type	Chrono Switch
Time schedule object	
Use pop-up	Disabled
ON/OFF group	
ON/OFF group feedback	
Scale	100
Rotation	0
Position	0, 0
View in list	Enabled
PIN protection	Enabled
PIN code	
Restrictions	Not configured

Graphic

An icon can be selected.

Display

Preview of the possible object status:

- **Off**
The icon is displayed grey for the OFF switching status.
- **On**
The icon is displayed yellow for the ON switching status.
- **Dimmed**
The icon is displayed yellow for the ON switching status, but with a brightness value of 50 %.

Time schedule

If enabled, the selection box "Schedule object type" will displayed additionally:

Schedule object type

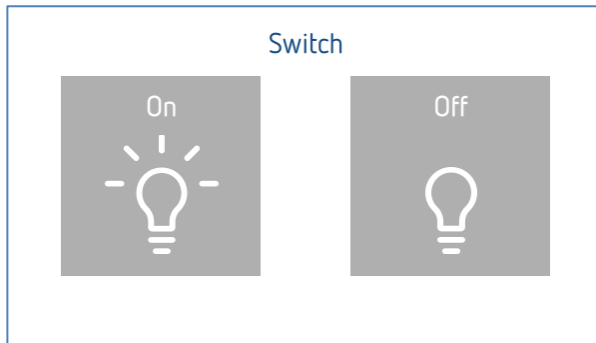
If the option "Calendar" is selected, a calendar object, previously created in the system menu, can be selected in the field below.

If the option "Time schedule" is selected, a time schedule object, previously created in the system menu, can be selected in the field below.

Use pop-up (only with switch functions)

If disabled, the command is executed immediately.

If enabled, a pop-up menu will be displayed, which can be used to execute the command. This function can be useful, e.g. with central commands, in order to avoid accidental operating errors. With some functions, e.g. dimming, a pop-up menu will always be displayed.

**ON/OFF group**

KNX group address used to send the 1 bit value.

ON/OFF group feedback

KNX group address used to receive the 1 bit feedback value.

Group value

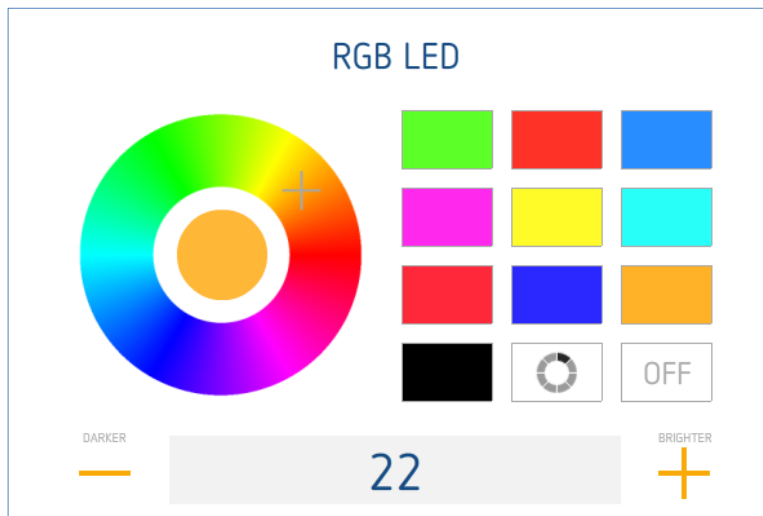
KNX group address, to which the set 1 byte brightness value is sent.

Group value for feedback

KNX group address used to receive the 1 byte feedback value.

7.2 RGB lamp

This object allows the user to control an RGB lamp via the client user interface.



RGB object

Selection of the RGB LED object, previously created in the system menu

Use Background

Using a background can be enabled or disabled

Visualization

Preview of the possible object status:

Off

The icon is displayed grey for the OFF switching status.

On

The icon is displayed multi-coloured for the ON switching status.

Dimmed

The icon is displayed multi-coloured for the ON switching status.

7.3 Thermo comfort

The thermo comfort object allows the user manually controlled or time controlled operation of a room temperature controller in the KNX installation.

Use control via operating mode

This property allows to select the function mode of the object.

If enabled, the user can set the temperature using predefined operating modes (comfort, standby, night, frost protection).

If disabled, the user can either manually set the temperature using a pop-up, or use time sequences created with the thermostat.

Use chronothermostat

This property allows the use of the chronothermostat.



The corresponding system object "Chronothermostat" must be set according to the desired function.

In the parameter „**Temperature mode**“

- if the parameter is enabled: „Control via setpoint“
- if the parameter is disabled: „Control via operating mode“

Chronothermostat Obj.

Selection of the "Chronothermostat", previously created in the system menu.

Actual temp. group

KNX group address used to receive the actual temperature value
(2 byte float).

FB setpoint temp. group

KNX group address used to receive the current setpoint value
(2 byte float).

Setpoint temp. group

KNX group address used to send the setpoint value
(2 byte float).

Group for cooling

KNX group address used to activate the cooling in a KNX controller or to control a cooling valve (1 bit).

Group for heating

KNX group address used to activate the heating in a KNX controller or to control a heating valve (1 bit).

Mode group

KNX group address, used to change the operating mode.

Fan control

This property allows the control of fan stages (fan coil).

Selection of the KNX data type

If 1 bit is selected, each fan stage is controlled via the respective KNX group addresses. (Assignment of group addresses and values under "List"). If 1 byte is selected, the fan speed is controlled via a KNX group address (1 byte unsigned).

Force/auto KNX group address

KNX group address for setting forced operation (0=AUTO, 1=Manual)

Forced operation feedback

KNX group address for the feedback of forced operation (0=AUTO, 1=Manual)

Fan stage in forced operation KNX group address

KNX group address for controlling the fan stages in forced operation

Feedback of current fan stage

KNX group address for the feedback of the current fan stage

Preselection of operating mode KNX group address

KNX group address, used to change the operating mode.

7.4 Comfort HVAC

This object allows to control an air conditioning device with KNX interface.

HVAC controller

Selection of the "HVAC controller" object, previously created in the system menu.

HVAC device

Selection of the HVAC device created in the "HVAC controller" object.

7.5 Electrical drive

This object allows the user to control roller blinds and other electrical drives.

Visualization

Preview of the possible object status:

- **Image for close**
The icon is displayed for the "Close" status.
- **Image for open**

The icon is displayed for the "Open" status.

- **Image for half**

The icon is displayed for the "Half open" status.

Graphic

An icon can be selected.

Move group

KNX group address used to control the roller blinds.

If the roller blinds are moved up, the value „0" will be sent; if the roller blinds are moved down, the value „1" will be sent.

Stop group

KNX group address, used to stop and start a movement.

When the movement is started, value „1" will be sent; when the movement is stopped, value „0" will be sent.

Value group

KNX group address, which can be used to predefine the position of roller blinds, this value represents the closed part of the hanging. (1 byte).

Value feedback group

KNX group address used to receive the current position of the roller blinds (1 byte).

Inverted functioning

If enabled, the direction of movement will be reversed.

Time switch function

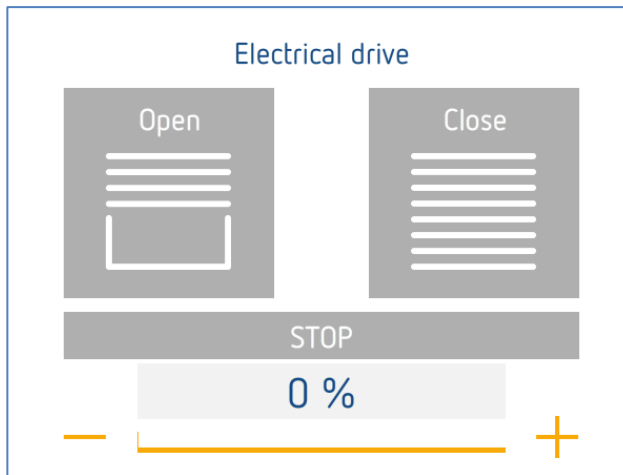
If enabled, the selection box "Time switch object" will be displayed additionally:

Time switch object

Here, a time switch object, which was previously created in the system menu, can be selected



Correctly connect the lines at the actuator, so inverted functioning does not have to be used.



In the client user interface, the electrical drives are always controlled via a pop-up window. The roller blinds control UP/DOWN is performed by the two push buttons. The drive is stopped by clicking on „STOP“.

7.6 Analog value

This object can be used to visualize a numeric value on the graphical user interface in various views.

Visualization

Graphical display of the object as „Straight icon“, „Triangle icon“ or as „Numbers“.

Send value

If enabled, an additional analog value can be sent on a separate KNX group address.

Step for slider

This parameter can be used to change the increment of the slider in the pop-up window.

Max value

Displayed maximum value.

Min value

Displayed minimum value.

Factor

Factor to be multiplied with the received values.

KNX data type

DPT of the received analog value.

Value group

KNX group address used to receive the values.

Value send group

KNX group address used to send a value (if enabled).

7.7 Blinds

This object allows the user to control the height and slat position of blinds.

.....
.....
.....

Inverted function

If enabled, the direction of movement will be reversed.

Time switch function

If enabled, the selection box "Time switch object" will be displayed additionally:

Time switch object

Here, a time switch object, which was previously created in the system menu, can be selected.

7.8 Blind

This object allows the user to control the slat position of blinds.

Graphic

An icon can be selected.

Move group

KNX group address used to control the slat position of blinds.

If the slats are opened, value „0“ is sent; if the slats are closed, value „1“ is sent.

Stop group

KNX group address, used to stop and start a movement of the slats.

When the movement is started, value „1“ will be sent; when the movement is stopped, value „0“ will be sent.

Value group

KNX group address, which can be used to predefine the position of slats; this value represents the closed part (1 byte).

Value feedback group

KNX group address used to receive the current position of the slats (1 byte).

Inverted functioning

If enabled, the direction of movement will be reversed.



Correctly connect the lines at the actuator, so inverted functioning does not have to be used.

7.9 Picture

This object can be used to show a picture on the user interface (e.g. as background image) in PNG, GIF or JPG format.

At a scale of 100 %, the pictures will be displayed with the maximum number of 958 x 702 pixels.

File

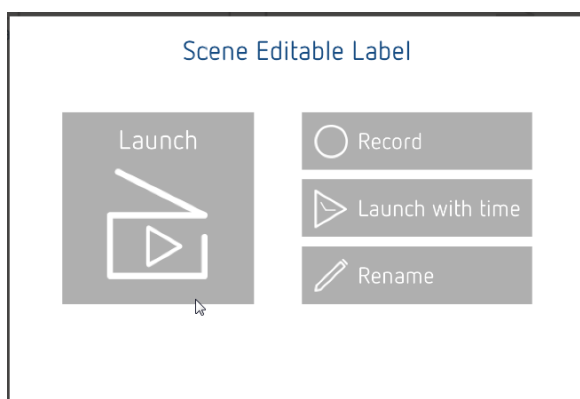
Path and name of the image file. By clicking the push button shown on the right, windows explorer will be displayed.



Adjust the resolution and size of the images as accurate as possible to the display of the user interface before the import.
For background images, file sizes of less than 1 MB are sufficient.

7.10 Scene

This object allows the user to launch, to record or to configure a scene directly from the client.



Launch

Scene is being executed

Record

Recording of the scene; in order to stop the recording, press the red dot in the lower left of the screen. The recording will be saved.

Launch with time

Execute the scene via time program; a window is opened, in which several days of the week and times can be defined.

Rename

The name of the scene can be changed in the window that is opened.

Label Option

This parameter defines, whether the label of the scene should be editable, fixed, or hidden.

Scenery object

Selection of the "Scene" object, previously created in the system menu.

7.11 Static text

This object can be used to enter text, e.g. for labelling graphic items.

Text dimension

Size of the text in pt, defined in the "Text" property.

Text color

The text colour can be defined in the window that is opened.

In the field „User defined colours“, the theServa colour range is already provided. If desired, further colours can be supplemented.

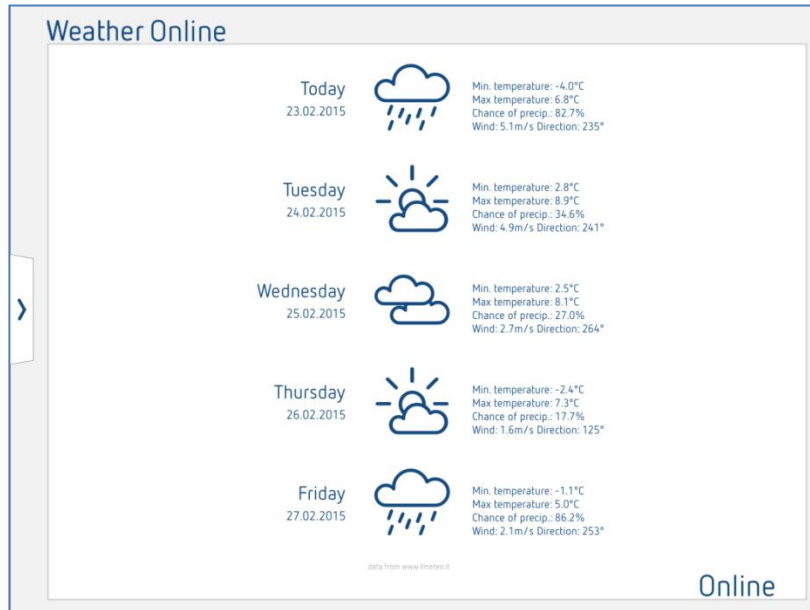
Line break

If enabled, an automatic line break is generated when exceeding the maximum line width.

- Maximum width
Maximum width of the text line.
- Text alignment
Side, at which the text has to be aligned.

7.12 Weather (online)

This object can be used to show a web-based weather forecast for 5 days.



City

Enter the name of the city for the weather forecast.

7.13 Weather Forecast (with Theben Meteodata 139 EFR)

See Chapter 6.7.

7.14 Weather Station (with Theben Meteodata 140)

By adding the „Weather Station“ function object the following weather data of the Theben Meteodata 140 can be received and displayed:

- Temperature,
- Brightness of all 3 sensors,
- Wind force,
- Rain
- Sun position.






Interface System

Function - Funktion 0
Page - Page
Weather Station - Weather Station

Label	Weather Station
Temperature Group	
Brightness Left Sensor Group	
Brightness Front Sensor Group	
Brightness Right Sensor Group	
Wind Group	
Rain Group	
Sun Elevation Group	
Sun Azimuth Group	
Custom Sensors Text	Disabled
Wind Measure Unit	km/h
Rotation	0
Position	0, 0
View in list	Enabled
Restrictions	Not configured

Player view of weather station page

Weatherstation

Temperature		6 °C		
Brightness		22958 lx Front Sensor	103875 lx Left Sensor	87327 lx Right Sensor
Wind		2 km/h		
Rain				
Sun Position		34.60 ° Elevation	151.50 ° Azimuth	

Local Weather

Label

Freely selectable name for the object.

Groups

KNX group address used to receive the corresponding values.

DPT formats used:

- Temperature in DPT 9.001 format (2 byte)
- Brightness in DPT 9.004 format (2 byte)
- Wind strength in DPT 9.005 format (2 byte)
- Rainfall in DPT 1.001 format (1 bit)
- Elevation and azimuth in DPT 14.007 format (4 byte)

Custom sensors text

If enabled, designations for the orientations (front sensor, left sensor, right sensor) can be specified in the fields below.

Wind Measure Unit

Selection between display in „km/h“ or „m/s“

7.15 Camera

This object allows the user to integrate the stream of an IP camera into the user interface.

Label

Freely selectable name for the object.

Type

Selection of the camera type. If the desired type of camera is not included in list, select the option "Generic Camera".

Use RTSP

If enabled, the system will communicate with the selected camera using the RTSP (rtsp://) streaming protocol; this option is used for H264 streaming. If an MJPG streaming is intended to be used, this property has to be disabled.

Image path

Image path in which live images are saved in the camera, in JPEG format.

External address

IP or DynDNS address, over which the camera can be accessed from the Internet. The information is needed if the camera images are intended to be displayed outside the LAN in which the miniserver is installed, or if camera and miniserver are located in different networks.

The information is given without the prefix „<http://>“.

External port

External port of the camera. The presetting is „80“

Use local connection

If enabled, the system first tries to establish the connection via the local IP address in the LAN. If the connection fails, the external connection will be used automatically.

Local address

IP address of the camera in the LAN.

Username

Username for login of the IP camera (needed for some camera types).

Password

Password for login of the IP camera (needed for some camera types).

Image dimension

Selection of the resolution of the camera image.

Add timestamp

If enabled, a time stamp will be added to the URL, in order to avoid buffering (disabling is not recommended).

7.16 Chart



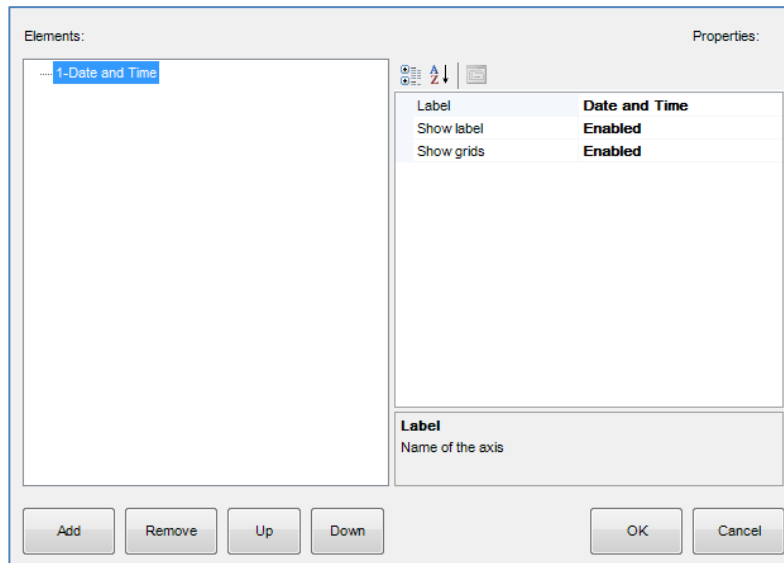
It is not possible to use the chart function unless theServa Cloud was activated first. (see theServa Cloud).

This object is used for the graphical representation of a plotted value.

Label	Chart
X axis	(Collection)
Y axis	(Collection)
Series	(Collection)
Show navigation bar	Disabled
Timespan	Last day
Scale	100
Rotation	0
Position	30, 30
View in list	Enabled
Restrictions	Not configured

X axis

Parameters of the chart's X axis



Label

Freely selected text can be entered here (chart's time axis).

Display label

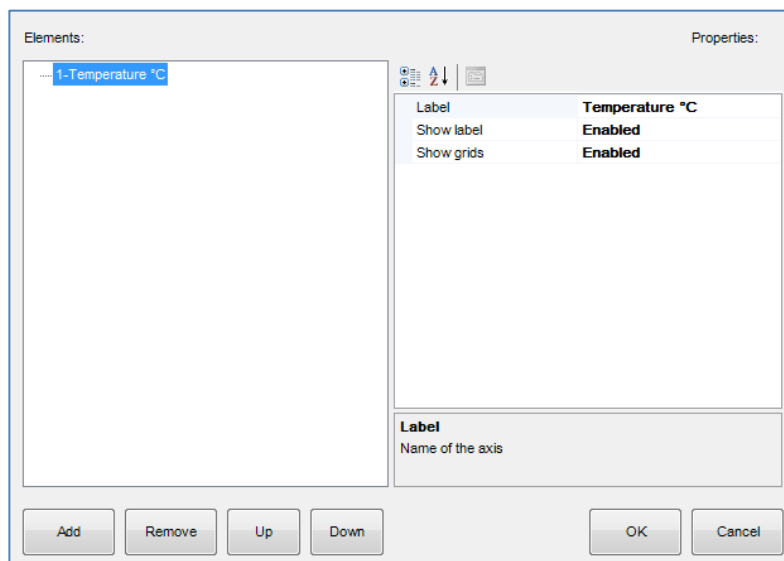
The label display can be activated or deactivated in the chart.

Display grid

This can be used to set the display of a grid in the chart.

Y axis

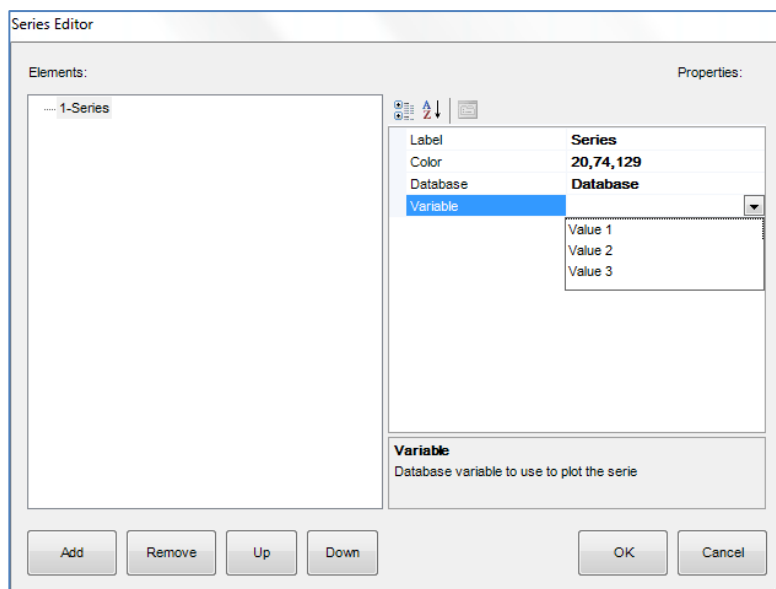
Parameters of the chart's Y axis



- **Label**
Freely selected text can be entered here, usually a dimensional unit or the physical value that is to be plotted.
- **Display label**
The label display can be activated or deactivated in the chart.
- **Display grid**
This can be used to set the display of a grid in the chart.
- **User-defined scaling of the Y axis**
If enabled, the Y axis has a fixed scaling.
- **Minimum and maximum value of Y axis**
- **Y axis interval**
Increment of Y axis scaling

Data series

Properties of the data series displayed in the chart. One data series can be created per chart.

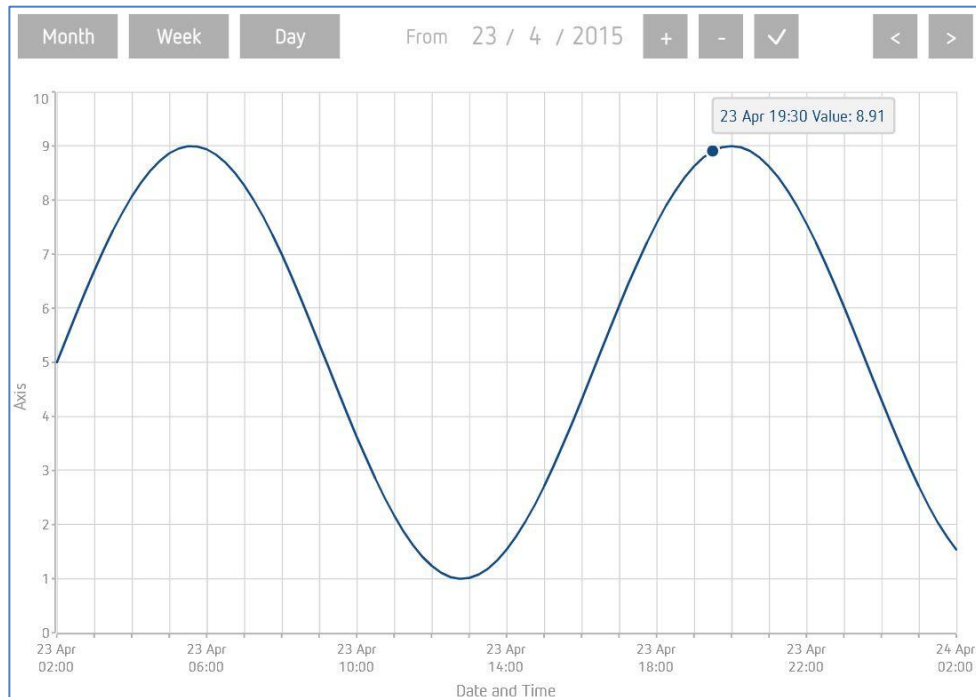


- **Label**
Freely selected text can be entered here
- **Colour**
Colour of the data series in the chart
- **Database**
Selection of the "Database" system object that contains the values and the properties of the data plotted.
- **Variable**
Selection of the desired variable, which was created in the database earlier.

Show navigation bar

When enabled, the plot time interval can be selected right in the chart. A day, week or month view can be selected. The date is displayed as well.

- Using the +,- buttons, the date can be set by day, month, or year.
- Using the arrow buttons, the current time (day, week, month) can be put forward or back.



When disabled, the time span for displaying the values plotted can be set as a fixed value:

Time span:

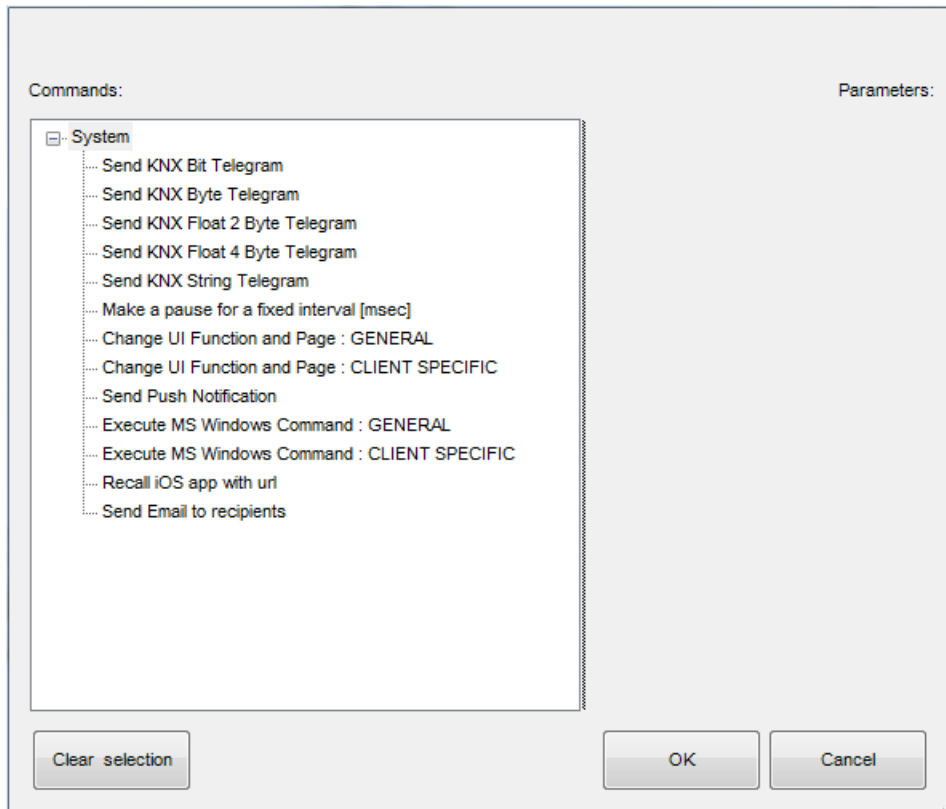
- Last week
- Last month
- Last day
- Last year

7.17 Generic command

This push button is universally configurable, in order to execute a variety of actions. For instance, messages can be sent, or scenes directly launched or stopped.

Command

Command to be executed on pression.



Custom graphic

Activation/deactivation of custom graphic

- **Graphic**
Allows the selection of own graphics.

Type

Indicates whether the object is a text or a graphic:

- **Graphic symbols:** An icon can be added to the push button
The field "Graphic" will be displayed additionally.
- **Normal text:** Text can be added to the push button.
The fields "Text size" and "Extra text" are displayed additionally.

Text colour

Colour of the icon or user defined text.

Extra text

User defined text.

Graphic

Icon, shown on the user interface. By clicking the push button shown on the right, the desired icon can be selected.

7.18 Generic feedback

This object is used for the universal display of status. Depending on the displayed status, it is furthermore possible to execute actions when pressing the icon, e.g. for acknowledging an alarm.

Label

Freely selectable name for the object.

Type

Graphic:

- The states are represented by icons.
- The states are represented by user defined texts.

Use Background

If enabled, a background colour is added to the object.

KNX Data Type

Data type (DPT) of the KNX telegram, used to receive the status.

KNX Group

KNX group address used to receive the states.

Feedback states (Collection)

Object states defined by the user.

Visualization

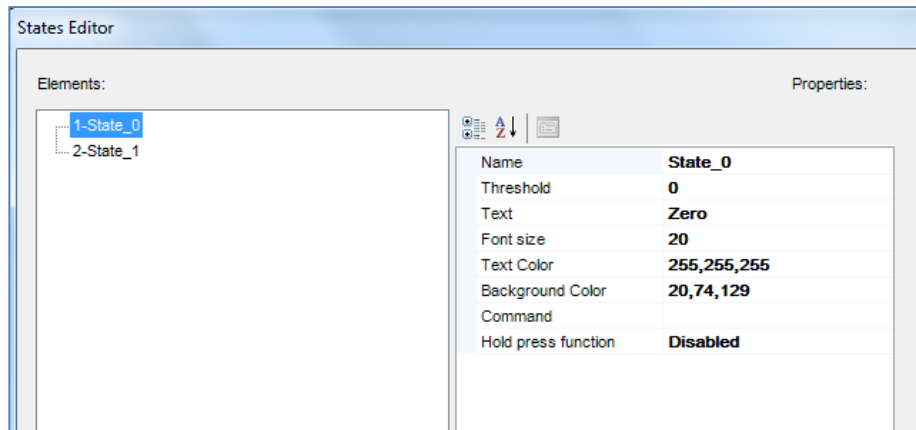
Preview of the parameterised states.

7.18.1 Adding states

Defining states of advanced commands,

- Click on the push button to the right of the property "Collection".
 - The editor window is opened.
- Click on the „State“, in order to edit it.

If "KNX Data Type" DPT 10, 11 or 16 has been selected, the following properties will be displayed:



Display KNX String

If enabled, the object will display the data received from KNX bus.
 If disabled, the following properties will be displayed:

Threshold

Comparison value, compared with the string value (character string) received from the KNX.

Criteria

Defines the comparison criteria used to check the string read by KNX:

- **KNX String is Equal to Threshold:** The comparison result is positive if the value read by KNX is equal to the comparison value (threshold).
- **KNX String contains Threshold:** The comparison result is positive if the value read by KNX contains a substring which is equal to the comparison value (threshold).

If "KNX Data Type" is set to one another data type than DPT 10, 11 or 16, the following property will be displayed:

Threshold

Defines the minimum comparison value.

If data type DPT 1 (1 bit) is selected, two states are displayed, one with threshold „0" and one with threshold „1".

If the data type is an unsigned integer of 1 byte (0 - 255), three states with the following thresholds are displayed:

States threshold	positive result if KNX-Wert
State 10	0-89
State 290	90-179
State 3180	180-255

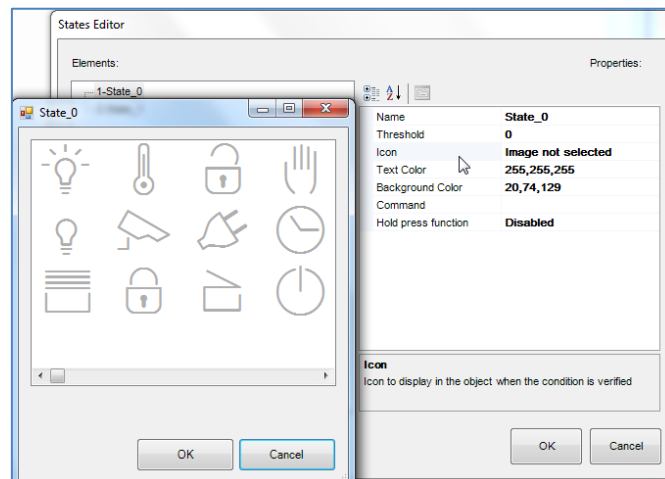
Further properties (depending on parameter „Type“):

Type Text

- **Text**
Text, which is displayed if the comparison with the “threshold” returns a positive result.
- **Font size**
Size of the text in pt, defined in the “Text” property.
- **Text Color**
Colour of the text defined in the “Text” property.

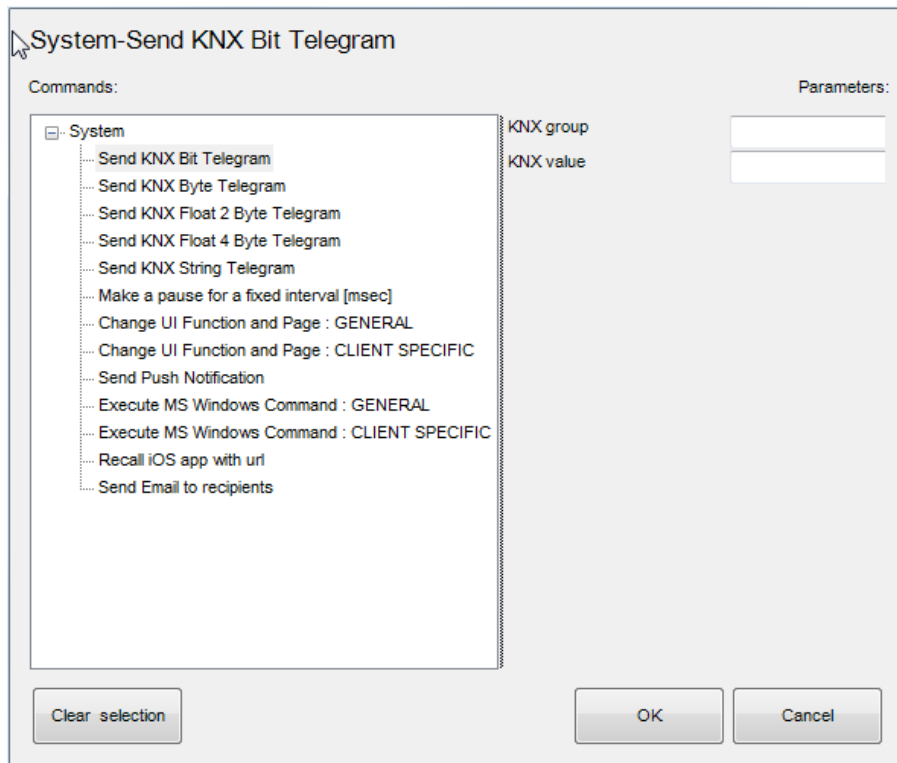
Type Graphic

- **Icon**
Enables the selection of an icon for the corresponding state by clicking on the push button displayed on the right.
- **Background Color**
Background colour of the object if the “Use background” property is enabled.



Command

System command, which will be executed when the object is pressed. The command is only executed if the comparison has returned a positive result.



Hold press function

Enabling or disabling the „Hold press function“.

Hold press

If enabled, an additional system command can be executed when pressing the object for a longer time. The command is only executed if the comparison has returned a positive result. For instance, the function can be used to temporarily or permanently acknowledge an alarm.

7.19 Generic ON/OFF

The Generic ON/OFF object is used for generic switch functions. It can be associated with the object "Switch schedule" and "Calendar" and allows the use of different icons for the ON and OFF state.

Label

Freely selectable name for the object.

Switching type

This parameter defines the function of the object:

Parameters	
OFF on pression	when pressed, „0“ will be sent.
OFF on pression, ON on release	when pressed, „0“ will be sent, when released „1“.
On on pression	when pressed, „1“ will be sent.

ON on pression, OFF on release	when pressed, „1“ will be sent, when released „0“.
ON/OFF norm. closed	„0“ will be sent for ON, „1“ for OFF.

Use background

If enabled, a background colour is added to the object.

Graphic for ON

An icon for the ON state can be selected. By clicking the push button shown on the right, the desired icon can be selected.

Graphic for OFF

An icon for the OFF state can be selected. By clicking the push button shown on the right, the desired icon can be selected.

Visualization

Preview of the possible object status:

- **Off**
The icon is displayed grey for the OFF switching status.
- **On**
The icon is displayed yellow for the ON switching status.

Time schedule

If enabled, the selection box "Schedule object type" will displayed additionally:

Schedule object type

If the option "Calendar" is selected, a calendar object, previously created in the system menu, can be selected in the field below.

If the option "Time schedule" is selected, a time schedule object, previously created in the system menu, can be selected in the field below.

Use pop-up

If disabled, the command is executed immediately.

If enabled, a pop-up menu will be displayed, which can be used to execute the command. This function can be useful, e.g. with central commands, in order to avoid accidental operating errors.

ON/OFF group

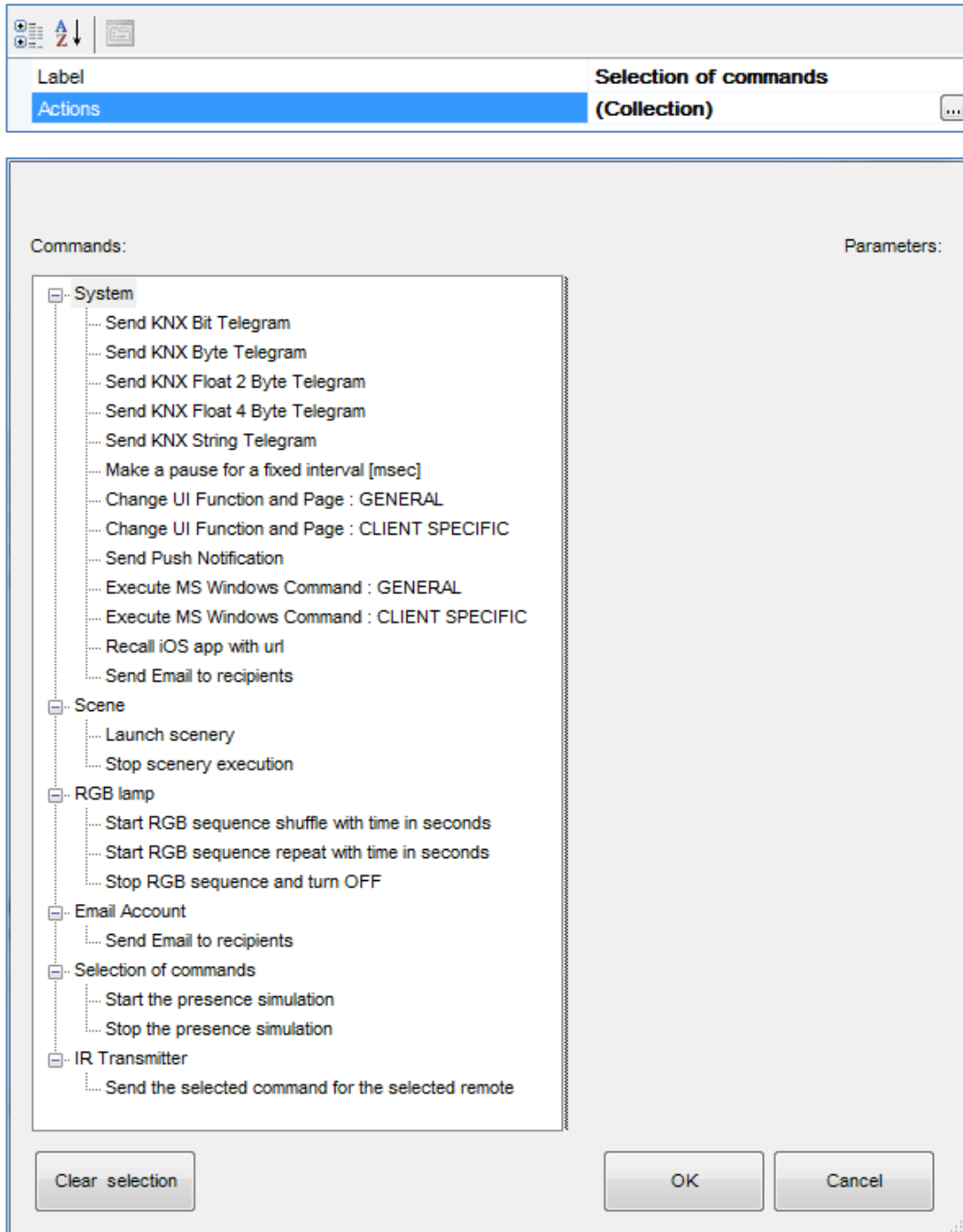
KNX group address used to send the 1 bit value.

ON/OFF group feedback

KNX group address used to receive the 1 bit feedback value.

8 Object commands of states (in the listing)

Commands which can be associated with a system object (comparator) or a function object (only Generic command – feedback).



8.1 List of the system elements

Send KNX Bit Telegram

This command is used to send a bit value; enter the "KNX group" and "KNX value" (0 or 1) parameters.

Send KNX Byte Telegram

Sending a byte value; enter the "KNX group" and "KNX value" (0 to 255) parameters.

Send KNX Float 2 Byte Telegram

Sending a float 2 byte value; enter the "KNX group" and "KNX value" parameters.

Send KNX 4 Byte Telegram

Sending a 4 byte value; enter the "KNX group" and "KNX value" parameters.

Send KNX String Telegram

Sending a string value; enter the "KNX group" and "KNX value" parameters.

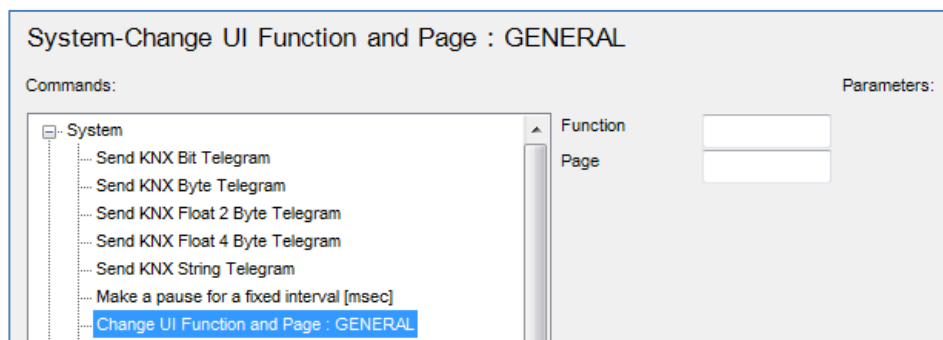
Make a pause for a fixed interval [msec]

The system pauses for a defined interval; enter the „Interval“ in milliseconds.

Change UI Function and Page

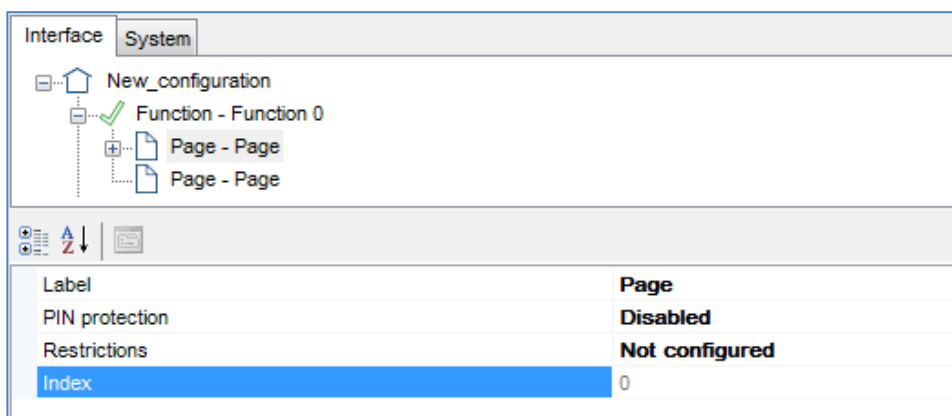
GENERAL: This command allows all clients to change to a specific project page. Enter the parameters "Function" and "Page"

Parameters:



- Function: Enter the index number of the „Function“.
- Page: Enter the index number of the „Page“.

Index:



This index can be found at each function and page at the end of the parameter list.

Change UI Function and Page

CLIENT SPECIFIC: This command only allows one specific client to change to a specific project page. Enter the parameters "Function" and "Page".

Send Push Notification

This command allows sending a push notification (message) to all iOS clients; enter the parameters "Message" with the message text.

Execute MS Windows Command

GENERAL: This command allows to launch an EXE file from the theServa app, which is simultaneously displayed on all Windows Players; enter the parameter "Command" with name and path of the EXE file, and the start parameters under „Parameters“ if necessary.

Execute MS Windows Command

CLIENT SPECIFIC: This command allows to launch an EXE file from the theServa app, which is displayed on only one Windows Player; enter the parameter "Command" with name and path of the EXE file, and - if necessary- the start parameters under „Parameters“.

Recall iOS app with url

This command allows to launch a specific app on iOS devices from the theServa app; enter the related URL in the parameter "URL used to recall iOS app" (i.e. http:// for safari, sonos:// for sonos).

Send Email to recipients

This command allows sending a message via the standard theServa Email account; enter the parameters for Email Subject, Email Content and Email Recipients. As sender, the Email address: noreply@theben.de will be used.

9 Imprint

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