Product manual
Busch-*Comfort*Touch

Busch-*Comfort*Touch

BUSCH-JAEGER
Die Zukunft ist da.

Table of contents

1   Product description

The Busch Comfort Panel is a high-quality 9" touch colour display in 16:9 format with a resolution of 800x480 pixels that also combines the options of LAN/WLAN and KNX.

The Busch Comfort Panel consists of a basic system on a modern computer platform that is also designed for future tasks and is capable of being upgraded. The unit has a fan-free cooling design and does not require a mechanical hard drive for storage of the platform-independent operating system in the unit.

The Busch Comfort Panel offers a compact central switching and monitoring location for the entire building automation with control, monitoring and visualisation functions for numerous devices and media within a building. It bundles services, information and functions from:

Entertainment
Media Player - For playing back audio and video data.

News
Image Messaging – For recording and displaying notes.
Voice Messaging – For recording and playing voice notes.
E-mail – For reading e-mail.
Feed reader – for reading RSS feeds.

Home control
KNX – Control and monitoring of KNx- Bussystem.
Scene Editor – For editing and calling up scenes and sequences.
Weekly Timer – For editing weekly timers.

Security
Camera Surveillance – For displaying Ip cameras images.
Alarm Control Unit – For protection against unwanted visitors.
Simulated Presence – For recording and playing back switching processes.

Tools
Timer – For integrating an egg timer.
Alarm Clock – For integrating an alarm clock.

Einstellungen
IR-Fernbedienung   zum Editieren und Aufrufen von Szenen, Sequenzen und

Bedienfunktionen

*Stör- und Alarmmeldungen*zur Anzeigen und Quittierung von Störungen

Zugriffssteuerung   zum Sperren einzelner Seiten mit Passwortschutz.

The Busch Comfort Panel design allows for connecting to networks via LAN or WLAN. Access to KNX is also possible by means of the optional connection of twisted pair or Powernet modules or via the appropriate IP/KNX router. And the unit can additionally serve as gateway between IP networks and KNX networks.

The touch display can be adapted to the design of the room control panel and the Carat switch series. Real glass black and glass white are available as materials. The associated design bar is available in brushed aluminium and chrome materials.

The device has a background lighting. The integrated speaker can, for example, provide acoustic feedback to operations, be used as an alarm clock or to signal alarms and alerts and can also be used for playing back audio files.

The Busch Comfort Panel has a USB connection and a slot for a multimedia/SD card.

Note:Currently the SDHC-standard of SD-cards will be not supported. It is possible, that a USB stick, that is not equal to the generally [specifications](#), will be not identificated.

The operating system of the Busch Comfort Panel is located on a compact flash card and is located in an appropriate slot on the device. This facilitates an easy update to the Busch Comfort Panel operating system in the future.

The operation and control is done via the text-labeled touch surfaces in a clear menu structure and/or via floor plans and room views. You can assign the touch surfaces to your individual preferences independently of the parameterisation.

2   Technical specification Dimensions

2.1   Dimensions

The dimensions of the Busch-ComfortTouch are displayed in the following drawings. For the assembling of the device is the flush-mounted socket 8136/UP necessary.

200

300

6

13

OBEN / TOP

169

257

60
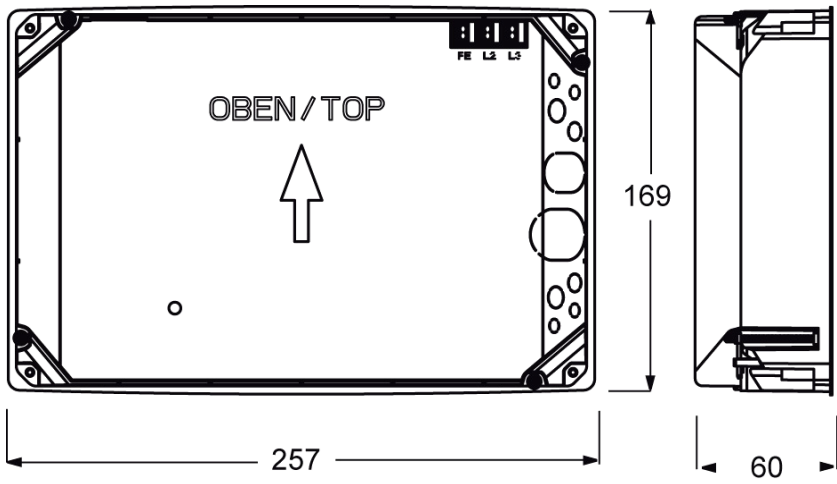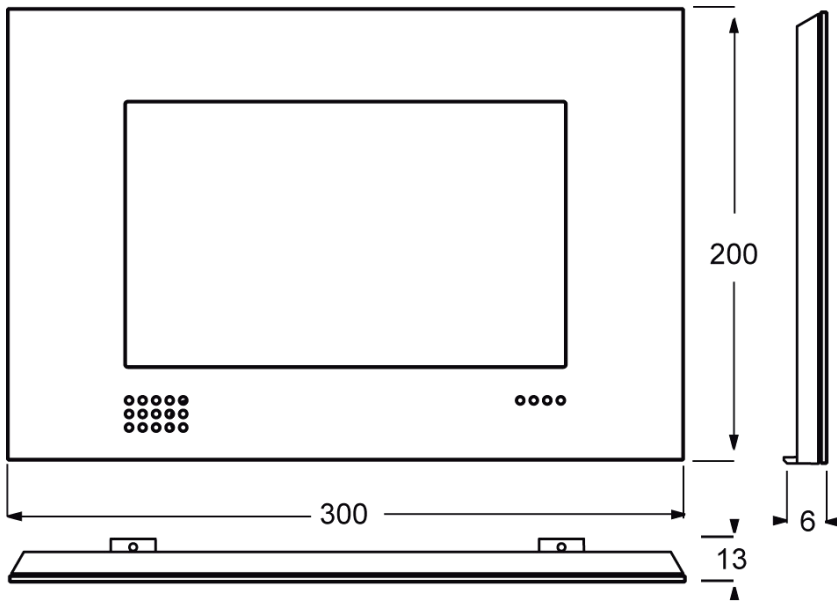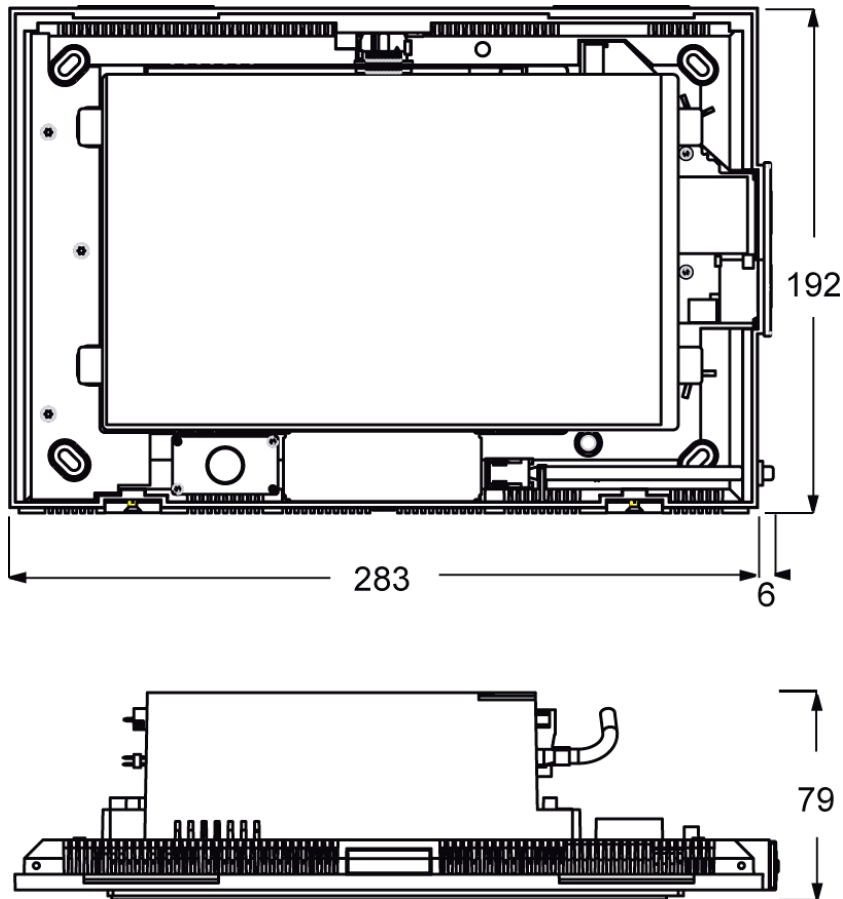
2.2 Technical data of the Busch-*ComfortTouch*

Rated voltage: 90-230 V +/- 10% - 50/60 Hz
Power input: < 25 W
Bus connection: screwless terminal
Line out: screwless terminal 0dB ; 0,775 V_{SS} ; 50 Ohm
Line in: screwless terminal 0dB ; 0,775 V_{SS} ; 10 kOhm
USB connection: USB-socket Typ A ; 5 V/100 mA
Temperature range (device):   -5°C - +45°C
Storage temperature: -25°C - +70°C
Type of protection: IP 20 acc. EN 60529

2.3 Connection diagram

The connection points of the **Busch-*ComfortTouch*** are on the backside of the device.
See the following diagram.
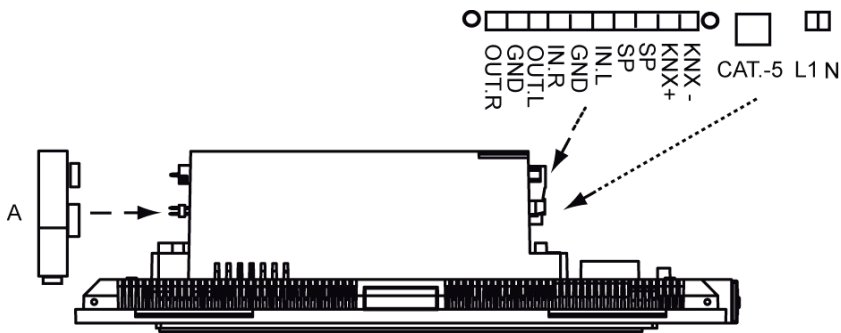
On the left side of the device you can install an optional module (A), which configures the **Busch-*ComfortTouch*** as Twisted –Pair or Powernet device. On the right side there is a 10-pin terminal for the connection to the KNX bus (Twisted-Pair), the terminals for external passive speakers and active components like active speakers, a CAT-5 terminal and the 230V power supply.

3   Colour concept Busch-priOn

The Busch Comfort Panel is based on the Busch-priOn colour concept developed by Busch-Jaeger. A special colour assigned to every comfort area makes the operation easy and user-friendly. For a better overview and fast recognition of functions, the operating elements "Light, Blinds, Air conditioning/Climate control and Scenes" are illuminated in colour code in the following way (colour code on the operating surfaces).

-       Light controls are yelow like the sun

-       Blind functions are blue like the sky

-       Climate control functions are orange like warmth

-       Living scenes are magenta and stand for extravagance
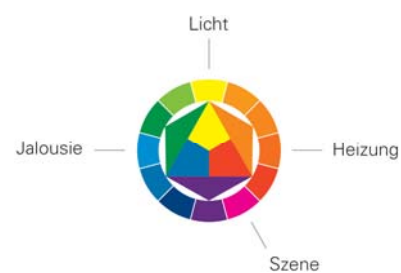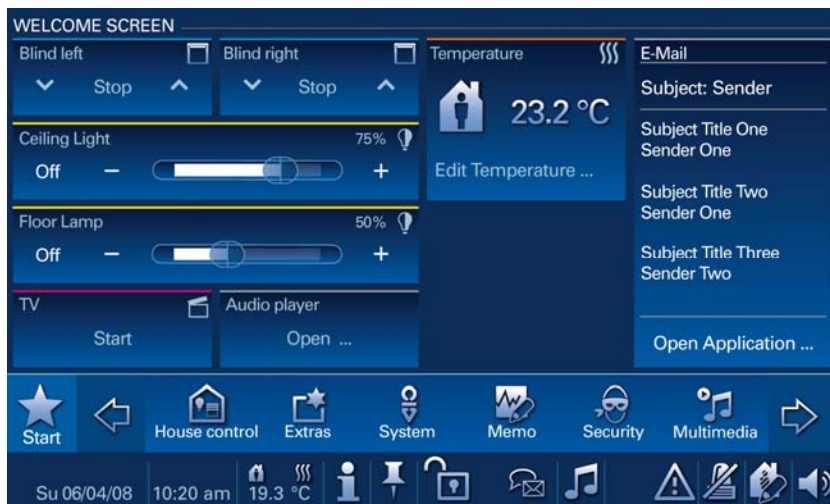
A signposting that is international, independent from speech. Additional you can attach easy function-symbols, so that labelling the touch surfaces is almost unnecessary.

4 Range of functions of the Busch-*Comfort*Touch

4.1 Operating functions

All conventional functions in building automation can be controlled and have their status displayed, i.e. the basic functions of actuating, dimming, blind value , scenes and measured data can be operated and displayed.

4.2 Room temperature control

The Bush Comfort Panel includes a local temperature controller inside the unit.

Furthermore, the temperature of various rooms can be controlled centrally by the unit, i.e. only one actual temperature needs to be available from the various rooms (e.g. external temperature sensor) and the Busch Comfort Panel can then control the temperature.

The control of external room thermostats is also possible.
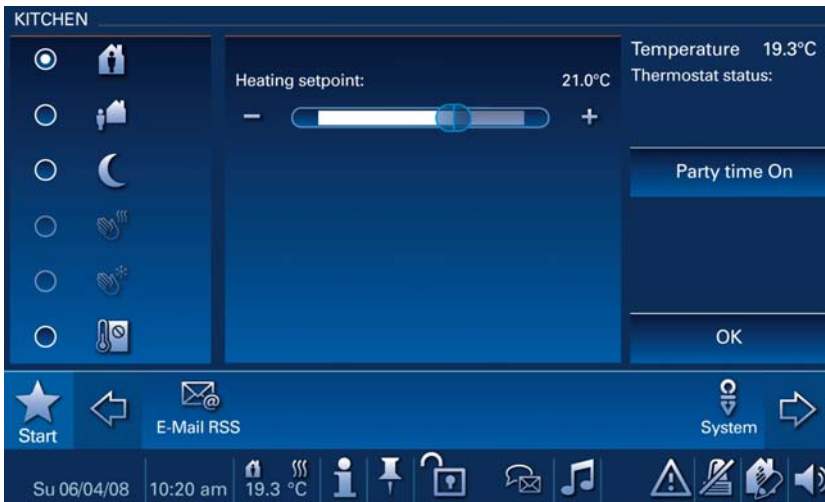
4.3   Time / Date Display

The actual time and date is shown at the status bar on the bottom of the screen. The change between summer- and wintertime happens automaticly.

4.4   Image messages

Users can use the Busch Comfort Panel to leave image messages for other users. A image message is a text message or sketch written on the display by hand with the finger or a stylus.
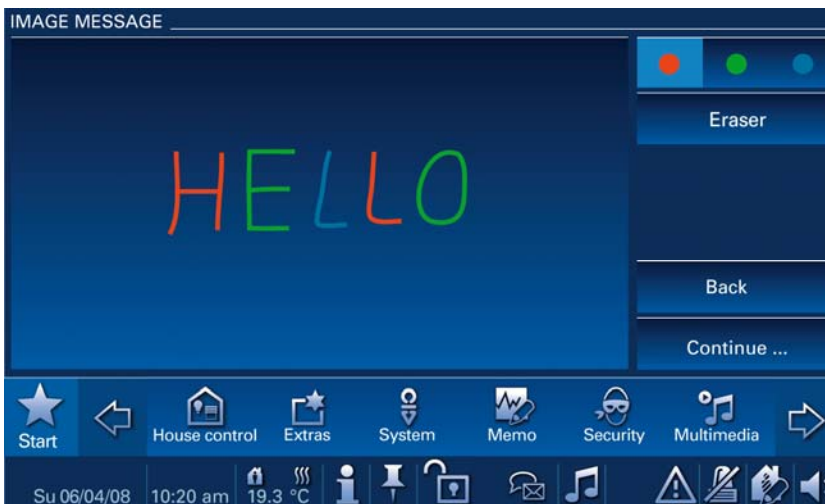
If the image message application is called up, the screen shows an overview of all addressees known to the system. The user can then select an addressee.
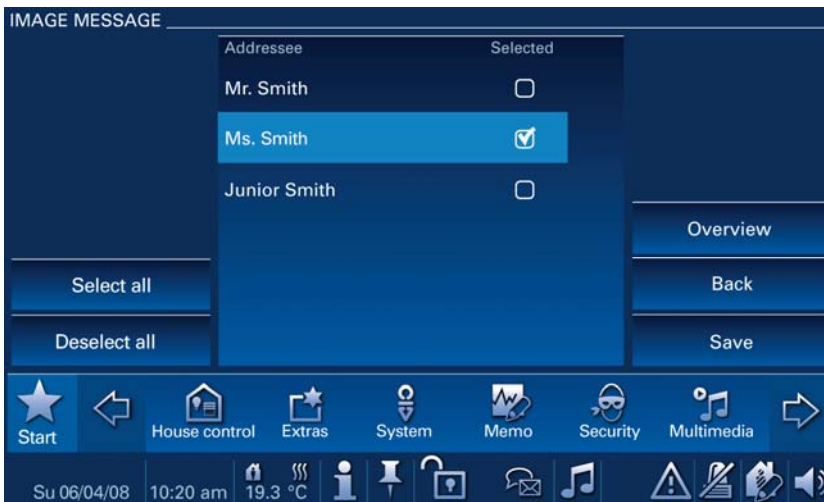
If graphical messages are available that have not been viewed since their creation, it will be indicated to the user by an appropriate symbol which is displayed in the status bar independent of the active application.

4.5 Voice messages

The voice message application can be used to leave voice messages (recorded using the internal microphone) which can be listened to at a later point in time.

If the voice message application is called up, the screen shows an overview of all addressees known to the system. The user can then select a specific recipient for the voice message.
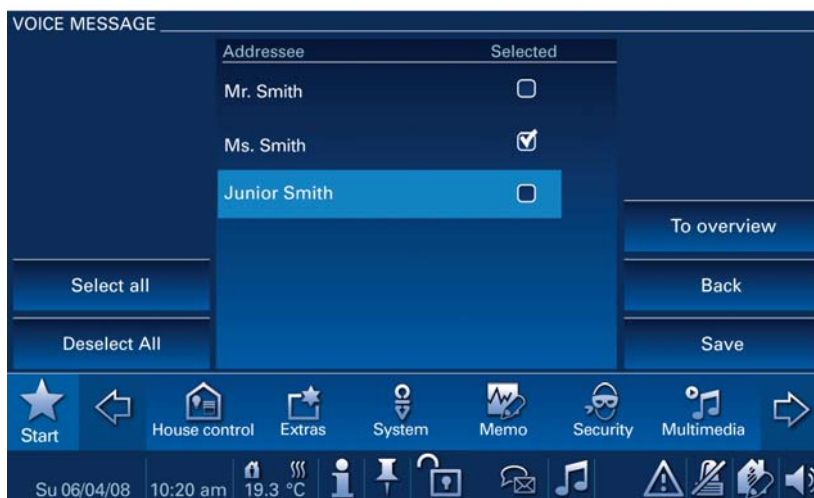
100 storage locations with 60 seconds recording time each are available for voice messages.
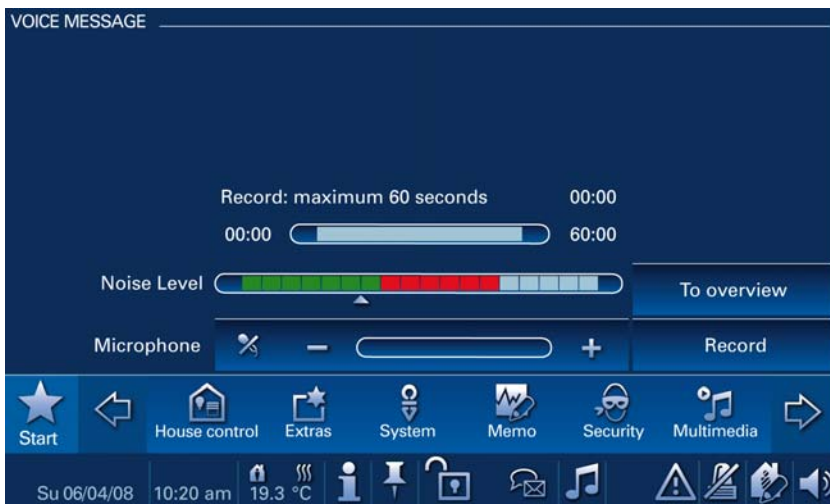
New messages (messages that have not been played since being recorded) are indicated in the status bar by an appropriate symbol.

4.6   Scenes and sequences

Any type of scene and sequence can be compiled which can simultaneously/sequentially in defined intervals call up all KNX- and operating functions made available by the panel. For a better overview scenes can be assigned to different categories.
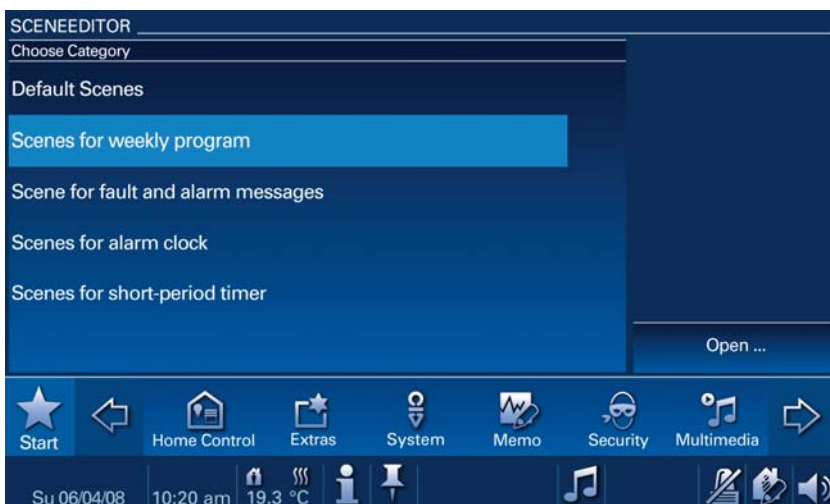
The scenes and sequences are created by using the panel the setup tool IP-Project. The user can carry out the desired arrangement and adaptations on the panel. A total of 64 scenes and sequences are possible.
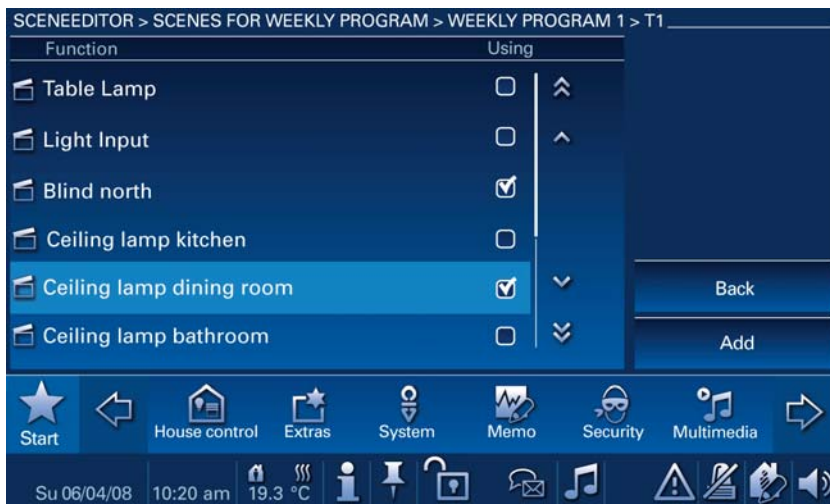
In contrast to scenes, the time-delayed processing of sequential actions is possible with sequences. Different pause times can be inserted between actions for sequences and sequences can also be interrupted or stopped.

4.7　　　Weekly programs

Processes occurring on a weekly basis (scenes and sequences) can be set in a clearly arranged way and automated in any number of weekly programs.

The weekly programs are only be created by the electrician using the panel setup tool. The user can carry out the desired arrangement and adaptations on the panel.

Periods of validity can be allocated to weekly programs (e.g. school holidays), outside of which they are deactivated. In this way, weekly programs can be automatically activated and deactivated. A maximum of 8 periods of validity can be defined.

Via the integrated Astro-function e.g. blinds can be moved every day a few minutes earlier or later, according to the actual season. A lock fuction "not before" and "not after" allows an adaption of the settings to the Astro-function.
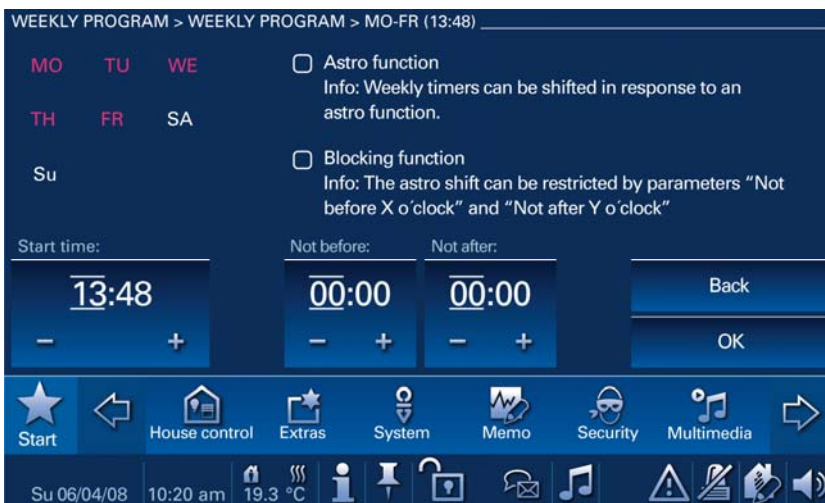
4.8 Presence simulation

The simulated presence of the building occupant can be realistically simulated to a great extent when the occupant is not present. This increases the protection against unauthorised access.

The Busch Comfort Panel records (weekday-specific) up to 20 objects of all actions precisely to the minute and then plays these back true to the original.

4.9   Access control

Different users or user groups can be defined, with a password allocated to each one. This protects specific operating buttons, applications or pages (e.g. video monitoring or operating pages) from unauthorised accessed. The Busch Comfort Panel can manage up to 8 different user groups.

4.10   Malfunction and alarm display

The Busch Comfort Panel offers protection and information during malfunction or inter-ference.

Signal contacts, sensors and their proper function can be monitored. The message is-sued in the event of a malfunction or notification can be set individually. The following can be selected: info, alert, graphical representation on the screen, e-mail and scene for information or prevention.

The malfunction and alarm messages contain a system of acknowledgement by two steps. The 100 latest messages are stored in the **Busch-*ComfortTouch*** and can be displayed.

4.11   Message centre

The Busch Comfort Panel can monitor message circuits/contacts and display their status. This enables the panel to monitor the security of the building and, if necessary, to transmit messages about unauthorized access.

A maximum of 8 message circuits are available for the monitoring whereby the number of the signal contacts is limited on max. 30..

4.12   A/V surveillance

A/V surveillance provides fast, visual information about events occurring within the detection range of connected cameras. The surveillance cameras can be triggered and the transmission signal displayed.

A prerequisite is that the surveillance cameras are IP-capable. The Busch Comfort Panel supports cameras from the manufacturers Mobotix and Axis.

If the camera has got an archive, the **Busch-*ComfortTouch*** can display it.

4.13   Media-Player

The **Busch-*ComfortTouch*** is able to play directly AAC- and MP3 audio files as well as MPEG2 encoded video files via the integrated media-player. For the audio output the integrated speaker or connected (Line out) audio devices can be used.

As source for media files you can use an USB storage device or a SD card. Optional audio and video files can be stored on a network server if it has access to a shared folder/directory.

4.14   Electronic picture frame

Pictures can be presented on the panel display via the integrated screen saver in the Busch Comfort Panel which can be run with different fade-over effects in a type of "slide show". A USB stick, an SD card or any type of network address can serve as source for the image files.

4.15   E-mails

E-mails can be displayed without the need for a separate computer. E-mails can be
easily answered via the image or voice message.
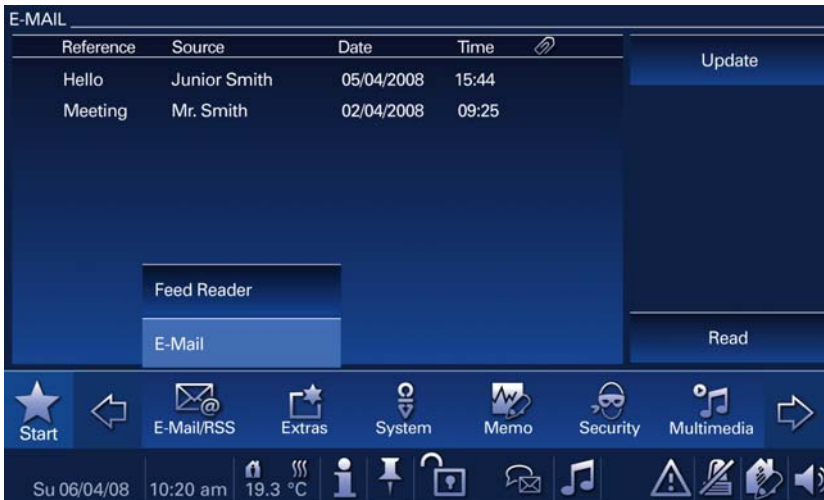
E-mails are only available via a preset account and POP3. Deleting E-mails directly
from the **Busch-*ComfortTouch*** is not possible.
Preferred E-mail addresses can be stored in a list to allow a fast access.

4.16   Feed reader

The feed reader enables users to read up to 10 "news feeds" in a compact form directly
on the Busch Comfort Panel, e.g. the current news, weather, traffic information. The
"feed reader" can be displayed on the start page as a compact application and is thus
immediately visible.

Optional you can open the feed reader with the navigationbar.
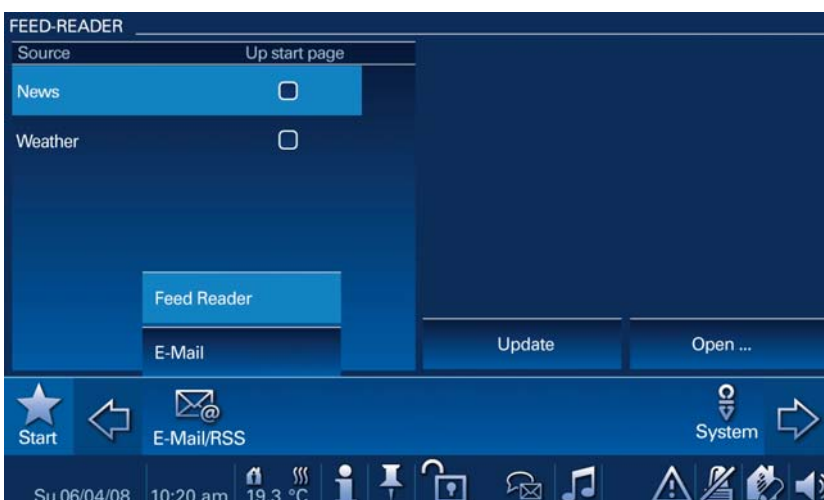
4.17   Short-period timer (egg timer)

Short-period timers are available on the Busch Comfort Panel. In addition, there is also the option of letting automated scenes run at the start or end. A maximum of 5 short-period timers are available to the user.
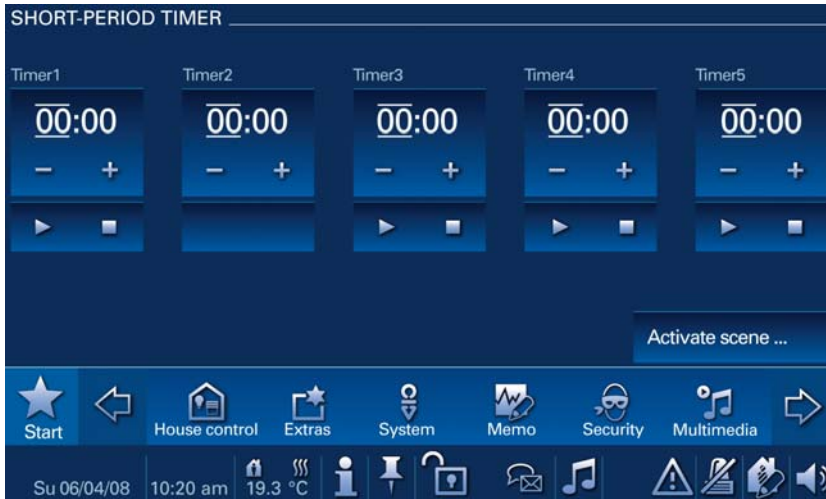
Therefore it is possible e.g. to shut all windows in the building at an specific point in time or switch on the garden lights over a specific period.

4.18   Alarm clock

Specific weekday times can be set for activating a specific scene for waking up (e.g. starting the Media-Player with one's favourite music).

It is also possible to set a scene to precede the alarm, for example to prepare the home environment for its occupants prior to rising (The heating will be turned on one hour before wake up time).
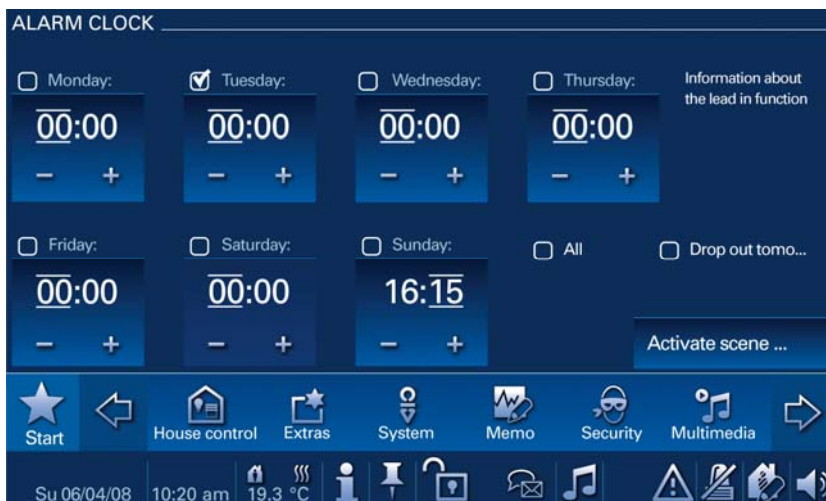
Musical alarm calls especially developed for the Busch-Comfort Panel are available.

For the wake-up call several melodies are available, developed especially fort the **Busch-*ComfortTouch***.
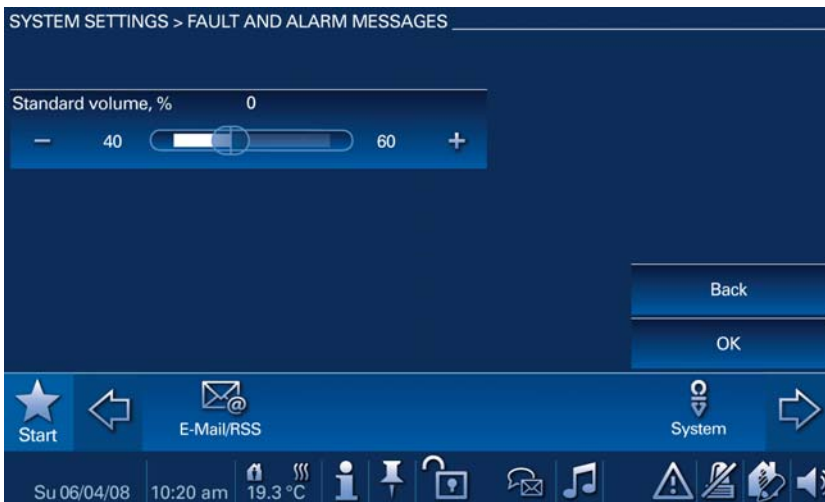
4.19   Remote maintenance

Remote maintenance of the system software of the Busch Comfort Panel is also possible. Importing project files from the set-up tool or changing individual settings of the unit via Web interface is also possible. The access can be made via LAN/Internet, or WLAN. Requirement fort the use is a VPN (virtual private network). This is a technology, that tunnels the network connection of a distant computer (e.g. a Busch-ComfortTouch) to the network connection of a local computer. With this technology you can work on a distant computer like on one in your own network. By the possibility of localising the **Busch-*ComfortTouch*** from IP-Project by UPnP, programming the **Busch-*ComfortTouch*** via Internet is possible.

4.20   Remote operation

The Busch Comfort Panel permits a remote operation (Remote Desktop) and remote visualisation of the building. It can be read and controlled remotely (via Remote Desktop). The user can view the complete user interface of the panel. An access option via LAN/Internet, or WLAN/PDA/WEB-PAD exists.

4.21   IR remote control

The Busch Comfort Panel can be controlled via an RC5 or B&O capable IR remote control. To do this, the panel's functions are programmed to an IR remote control. The available IR functions are defined in the Busch Comfort Panel by the electrician. Programming of a new IR remote control is also additional possible on the unit itself.

4.22   Web interface

Via the web interface, users can also configure the Busch Comfort Panel (via a browser interface) in addition to the configuration settings on the panel itself. The access from the Web interface can be protected by passwords.

The possibilities of configuration for the user do not cover the whole spectrum of the possibilities of the **Busch-*ComfortTouch***.

4.23   Keylock (cleaning lock)

In order that functions are not started accidentally by cleaning the surface of the **Busch-*ComfortTouch***, the control elements can be blocked for a while.
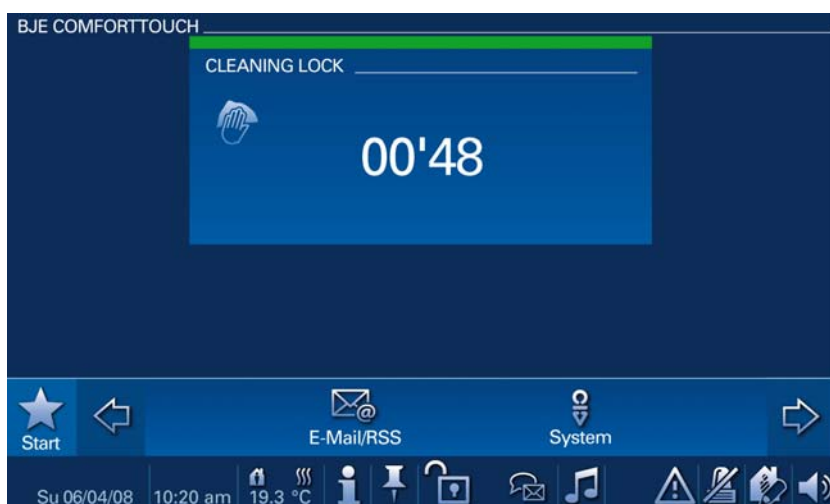
Pressing the start button long time will block the control elements for 60 sec.

5   Operating concept

The specified operating and design concept ensures that each Busch-Comfort Panel can be operated completely intuitively. The user quickly learns how to use it and feels comfortable in its operation.

The option of being able to design operating buttons in different sizes makes it easy to realise operating concepts that allow use by people of all ages. Icons can be selected from one of the supplied comprehensive libraries.

5.1 Status bar

The status line (at the very bottom on the screen) displays the status of the system plus additional information (e.g. date/time). Secondary information can be called up there, which is then displayed in flyout menus.

In turn, applications can then be called up from these menus (e.g. alarm clock settings).

The status bar is permanently displayed (exception: screen saver, you must specify whether the status bar is to be displayed or not displayed while the screen saver is on).

5.2 Navigation bar

The uniform operating concept of the navigation bar facilitates a fast and guided navigation to the operating pages and applications.

The navigation bar is located in a fixed position on the screen (above the Status bar) and is always accessible on the display for the user. A jump function to the start page is permanently available in the navigation bar on the left edge.

Using the buttons on the navigation bar, the user can navigate to operating pages or call up applications directly by touch. The navigation bar can be freely allocated with buttons whereby the number of buttons that fit on a section depends on the length of text for the designation. This allows the number of buttons on a visible section to be varied. The view of the area can be exchanged page-wise via the navigation areas (arrow left/right). A maximum of 4 views are possible.

Jump functions to the operating or application pages can be positioned singly and as functional groups (so-called containers). Single jump functions on the navigation bar are triggered directly by touch. Function groups are shown summarised in a touch-activated opening box where the desired actions can also be triggered by touch. Up to six jump functions can be positioned on a box. The height of a opening box on the screen is variable and is sized on the number of entries.

5.3　　　Busch-Comfort*Touch* page types

There are basically three different page types for display on the Busch Comfort Panel:

Start page (welcome page)

This is used for entry into the system on the first level with the user's favourite functions or for displaying important information.

Operating pages

Navigation to rooms and building sectors with their respective functions is possible by accessing the jump function.

Application pages

Are used for controlling or for settings of the applications and functions by direct selection.

The controlling and setting of applications and functions can be chosen directly.

The controlling or settings of applications and functions happen by direct selection.

5.3.1　　　Start page functions

Operating functions and applications can be called up directly via the start page.

The various operating elements can be arranged in a grid with a maximum of 4x4 elements (depending on the selected button sizes among other things). This grid applies to both the start page as well as all operating pages.

5.3.2　Start page with floor plan

With this start page version, direct navigation to the operating pages of the individual rooms is possible via a floor plan view.

Up to 6 floor plan views (datatype: JPG, PNG or GIF; max. resolution: 598x318 pixel) are possible. Up to two displays for the collective status of consumers per room can be shown on every floor plan view.

Observe, however, that a consumer cannot be switched directly from the floor plan view. To do this you must first branch into the room.

5.3.3　Operating page functions

The user can activate the home control functions using the buttons via the operating pages.
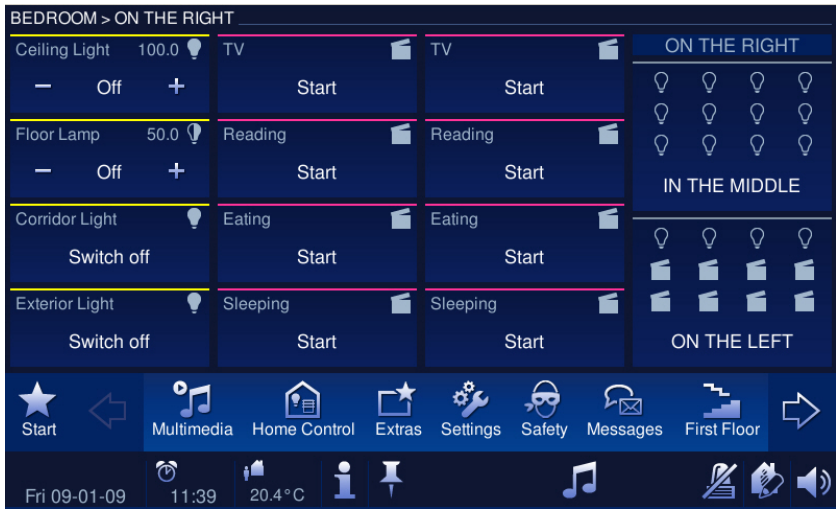
Here too, various operating elements can be arranged in a grid with a maximum of 4x4 elements to a page.

If more than 16 elements are needed on one operating page, you can add up to two additional, subordinated operating pages can be added.

The maximum number of operating elements that can be displayed is reduced to 3x4 due to the space that the swap elements occupy on the screen. Up to a max of 36 operating functions can be stored when all three possible pages for a room are totaled.

For better orientation you can, instead of an subordinated operation page, insert a thumbnail picture af the room (datatype: JPG, PNG or GIF, max. resolution 382x312 pixel).
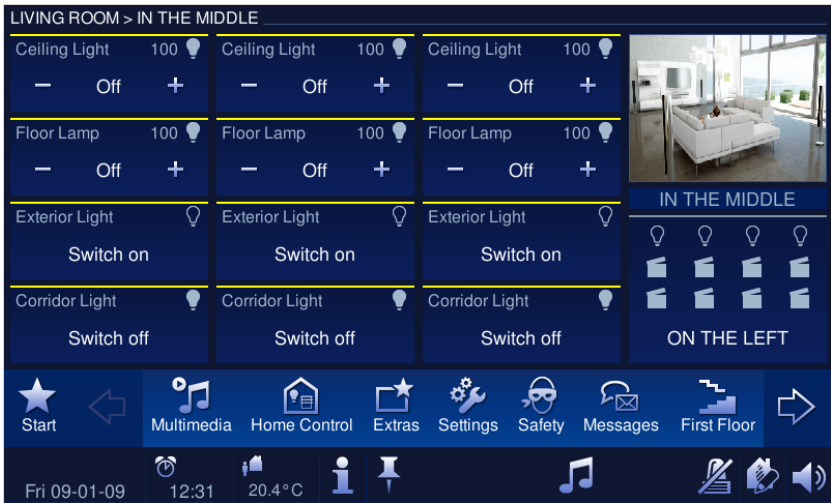
5.3.4   Operating pages with image of room

By means of a stored image of the room (datatype: JPG, PNG or GIF; max. resolution: 1178x636 pixel) the user can see on the operating page which operating functions are available in the respective room, where they are located and the status of each consumer.

It is further possible to operate these consumers directly via stored operating elements. The positioning of the operating element in the background can occur in the 3x4 grid.

To make a variety of views of a room possible, up to 5 further operating pages with a room image can be stored which are then able to be called up via the selection menu on the right edge of the screen.

5.3.5 Application page

Application pages offer the display and operation of application-specific functions of individual applications in full screen mode. In this way, settings for a room thermostat can be made or an Media-Player can be operated
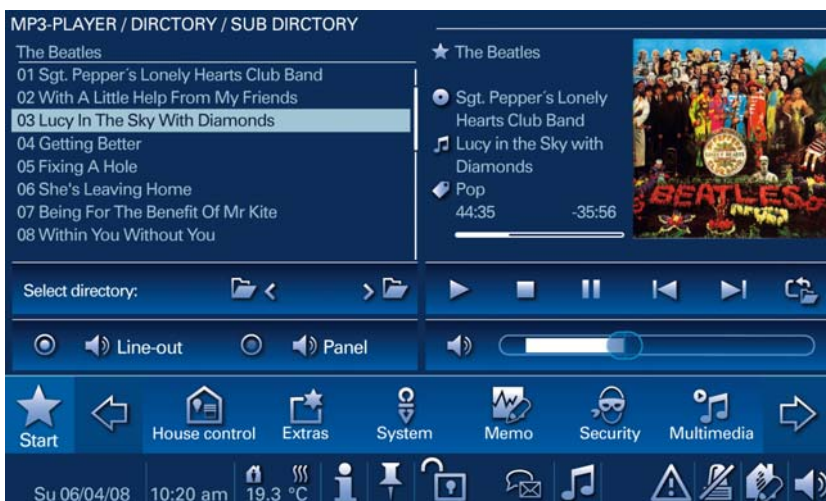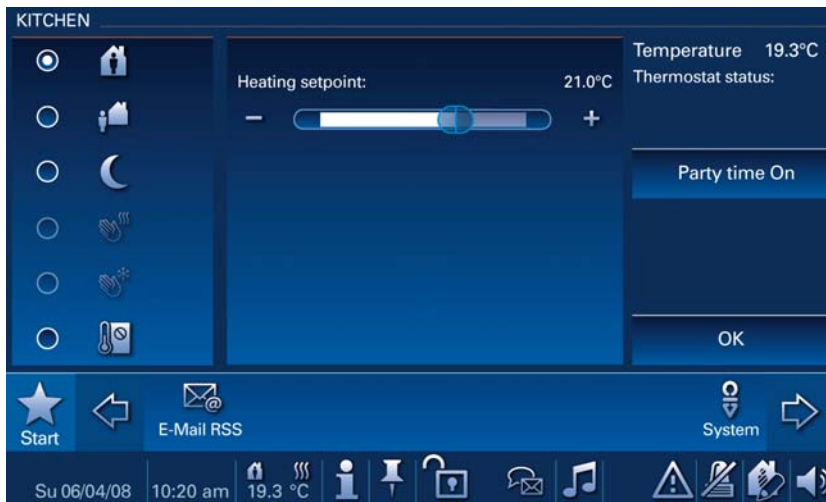
6 Busch Control Panel software

6.1 Installing the Comfort Panel IP Project software

6.1.1 Hardware requirements

For the operation of the **Busch-*ComfortTouch*** the following hard- and softwere environment is recommended:

Windows XP

Processor: 1,6 GHz

Main memory: 1 GB RAM

Operating system: Windows XP with Service Pack 2 or higher

Windows Vista

Processor: 2,0 GHz or Dual Core with 1,6 GHz

Main memory: 2 GB RAM

Operating system: Windows Vista Business Edition

with:
- Support for graphic processor DirectX 9 with WDDM-driver and min. 128 MB graphic storage,
- Pixel Shader 2.0 and 32 Bit per Pixel
- 40 GB hard drive capacity with 15 GB free space
- DVD-ROM-drive
- Possibility for audio output
- Access to the internet

6.1.2   Installation sequence of the IP Project software

The following describes the individual installation steps that are required for the installation of the commissioning IP Project software (IPP) for the Busch Comfort Panel.

Please observe the related hardware and software requirements listed above for a proper installation and function of the software. In particular, you need to have full administrator rights to the operating system.

An installation wizard will assist you with the installation of the IP Project software. This is started by double-clicking on the "Setup_IPP10_BJE.exe" or "Setup_IPP10_ABB.exe" file on the installation-CD and can run in both languages German and English.
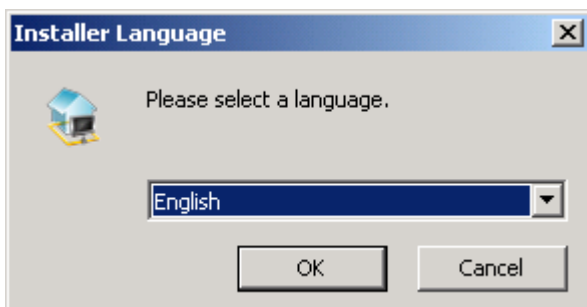
You can find out about the licence conditions for the use of the IP Project software in the following window. Click on the "Accept" button if you agree with the terms and conditions and proceed with the installation. If you click on the "Cancel" button, the installation is ended and the software is not installed.

You have the option of selecting individual software components in the following dialog window. The IP Project files are mandatory for the functioning of the software and are thus not able to be deselected.
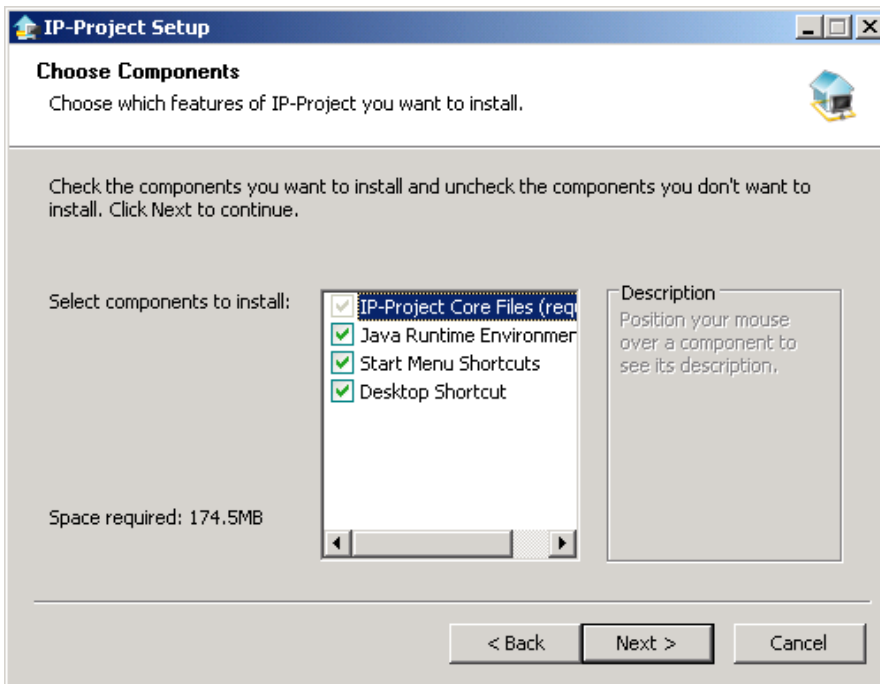
After clicking on the "Next" button you can specify which target directory to use for the program installation. By default, this is: "C:\Programs\IPP".
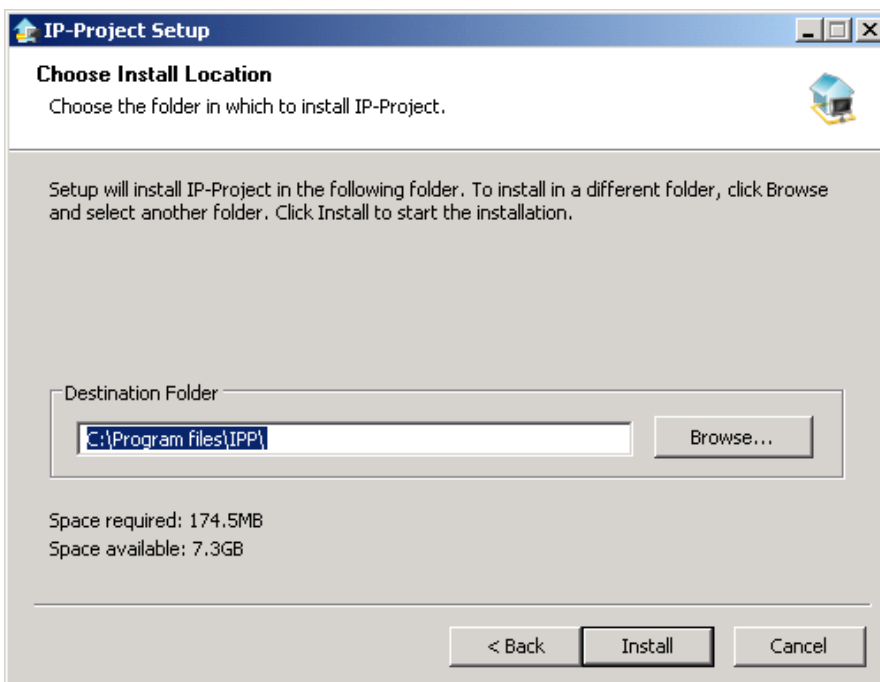
After you have confirmed this dialog with "Install", the installation wizard carries out the installation to the target directory.
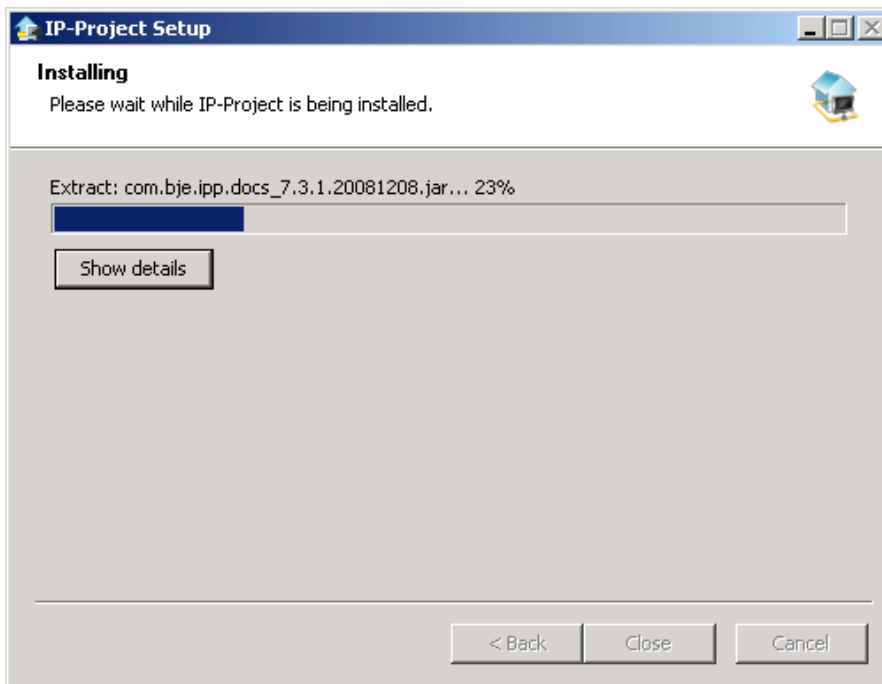
A progress bar is visible for visually monitoring the progress of the installation. When the installation is completed, the installation procedure can be ended by clicking on the active "End" button.

Note:

Please observe the possible software updates (service releases) in the Internet under www.busch-jaeger.de, in order to be up-to-date with the most current software.

6.2 Installation of the Busch Comfort Panel ETS3 macro

For the correct im- and export of group addresses it is necessary to install a special **Busch-*ComfortTouch*** macro. You can start this macro within the ETS3 by an additional button.

6.2.1 Prerequisite

A licensed version of the ETS3 Professional software must be installed on the target computer for the installation.

6.2.2 Installation sequence

An installation wizard will assist you with the installation of the ETS3 macro for the Busch Comfort Panel. This is started by double-clicking on the "Macros.exe" file and can run in either German or English.
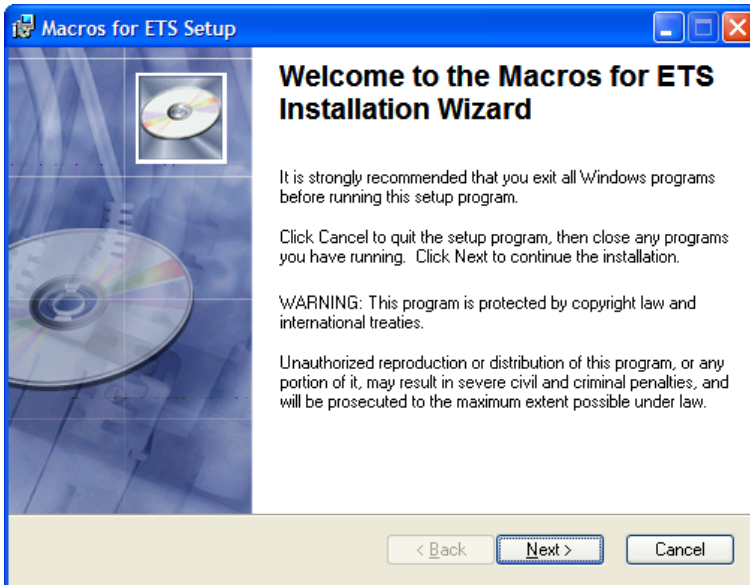
6.2.3 Integration of the Busch Comfort Panel in the ETS3

Start the ETS3 and import the product data of the Busch Comfort Panel ".vd4-file" via the import function of the ETS3 into the project database.

7 Comfort Panel IP Project software

7.1 Recommended sequence of a project planning

The following working sequence (standard workflow) is recommended for working most effectively with the IP Project software:

1. Start the software and create a new project (project info, name panel, ...).

2. If the ETS3 project already exists, import the group addresses already created there into IP Project udn weisen Sie den richtigen Datenpunkttyp (DPT) allen im **Busch-*ComfortTouch*** verwendeten Gruppenadressen zu (z.B. Funktion 1.001 Switch)

3. Configure the panel (basic settings, feed reader, web browser,   …).

4. Specify the navigation structure (insertion of operating and application pages).

5. Configure the operating pages (insert and configure control elements).

6. Configure the application pages (insert and configure applications).

7. Now configure the start page (insert and configure control elements).

8. If additional panels are to be installed, start again at point 2 or duplicate the entries of an already existing panel.

9. If all entries have been carried out, perform a consistency check (test and possible debugging).

10. Transfer the project to the panel and start it up.
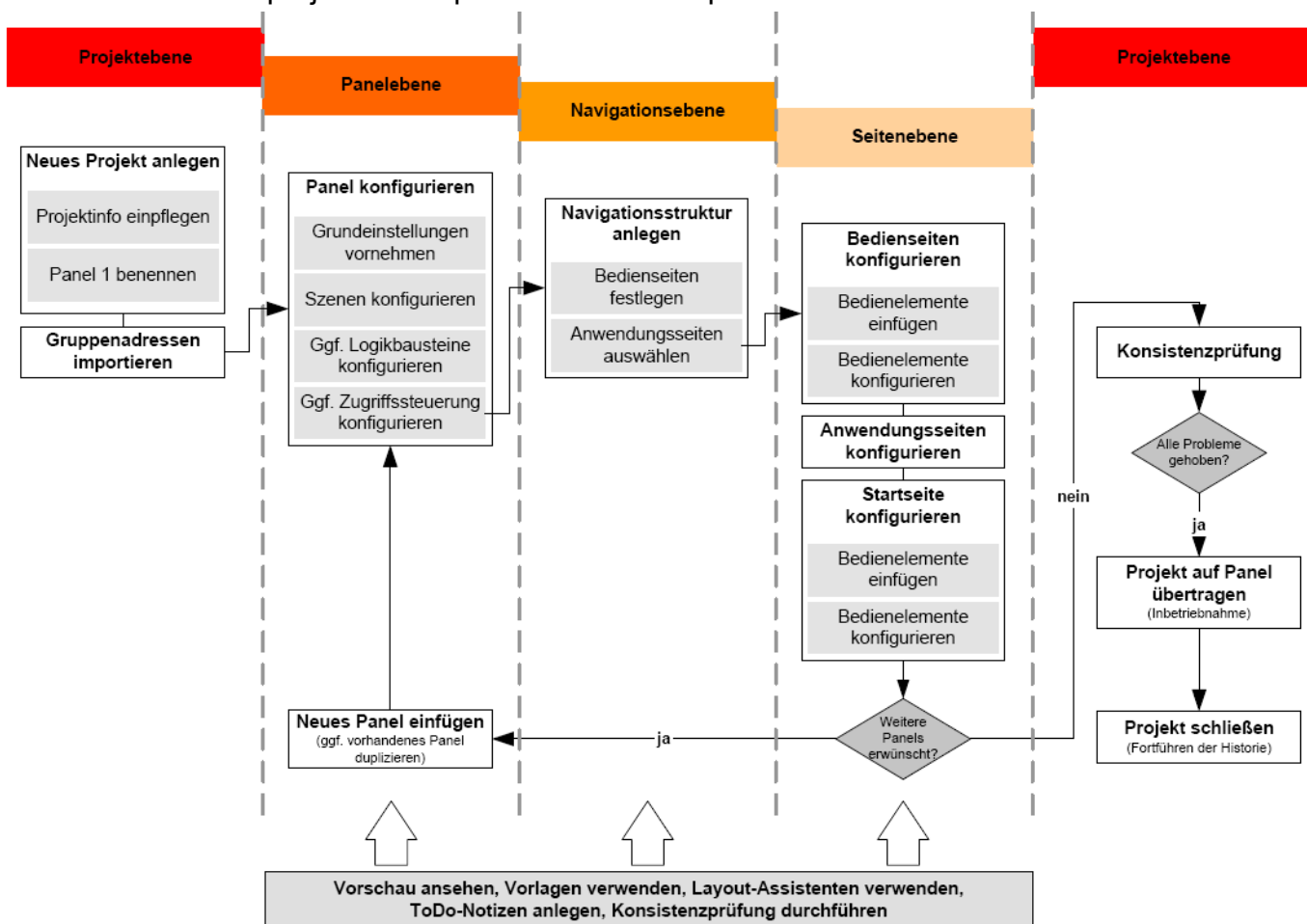
7.2   Screen areas in IP Project

The screen of the IP Project software is divided into multiple areas.
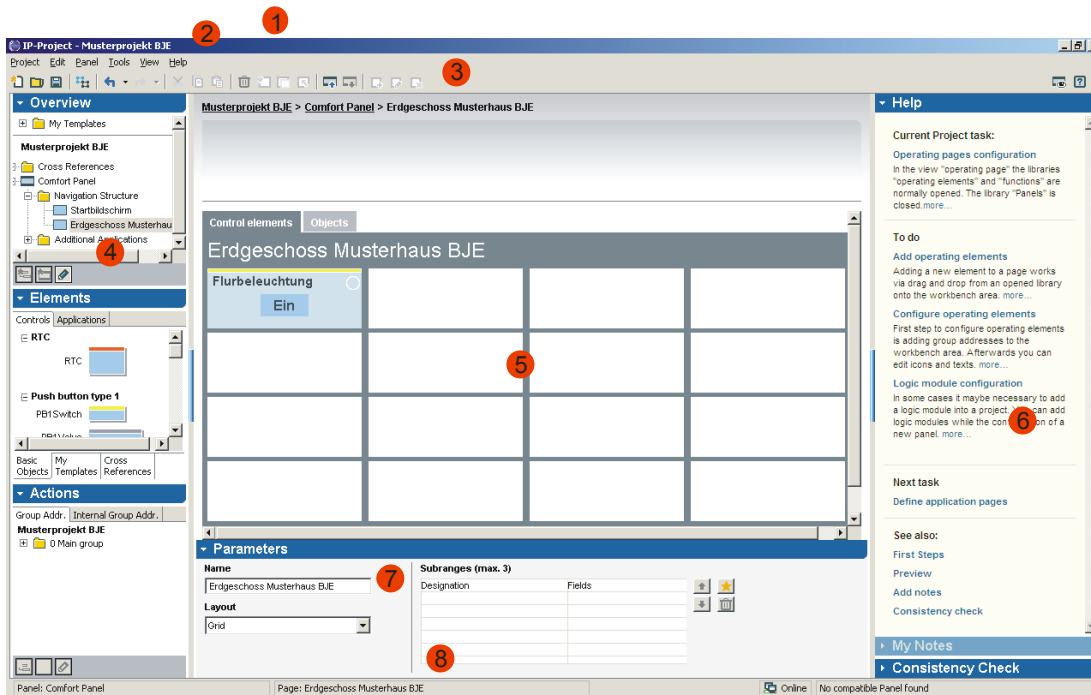
1.   Title bar

-    Shows the project name of the currently opened project

2.   Menu bar

-    Leads to the submenu of the menu bar entries Project, Edit, Panel, Tools, View and Help

3.   Tool bar

-    Allows quick access to different tools of the IP Project software via graphical icons

4.   Library area

-    Contains a tree structure representation of the entire project, administration functions (naming, creating, deleting), a library area

-    for operating elements and applications (availability in dependence on the level currently being edited in the working area) and an area for administering and creating external/internal group addresses

5. Working area

- Facilitates working on panel, navigation and page levels.

- Displays graphically (similar to the Busch Control Panel) (WYSIWYG)

- Facilitates the allocation of free spaces via drag & drop

- Makes a filing sector available in the upper area for "parking" temporary, un used operating elements and pages.

6. Help area

- Makes a context-related excerpt from the online help available

- Contains a to-do list with suggestions and its own to-do notes

- Displays the result of a consistency check of the current view, of the complete panel and of the complete project

7. Parameter area

- Offers context-sensitive (depending on selected element in the working area) input and setting options.

- Parameter settings are shown locally according to layout (left) and separately related to function

- Contains the access to expanded settings and editors of the applications

8. Status bar

- Shows panel and page in which project planning is currently being performed

- Signalises a general LAN connection status (online/offline)

- Contains a compact display of the results of the infrastructure detection ("x compatible panels found"/"No compatible panel found")

The areas 4 (library area) and 6 (help area) can be hidden or unhidden by clicking on the narrow blue fields.

The display of the IP Project software is optimised for a screen resolution with 1280x1024 pixels. Screen resolution with 1024x768 is also possible.

7.3 Operating the IP Project software

7.3.1 Copying a project

To provide multiple panels with the same functionality (creating a duplicate of an already configured panel), right-click in the left overview window on the original panel and select "Copy". This panel is then inserted to the project again and is now available as copy for additional editing.

7.3.2 Moving/copying pages and operating elements

Containers, pages and operating elements can be moved to the upper grey copy area using the mouse and reinserted at a different location in the project. If the Ctrl button is held pressed before moving with the mouse, IP Project creates a copy of this element and places this in the copy area.

Each page and every operating element can be stored as a permanent template. Right-clicking on the corresponding element and selecting the "Save as template" menu copies the corresponding object in the overview "My templates" to the corresponding sub-directory template folder where it is then permanently available.

7.3.3 Cross references

Control elements and pages can be stored as cross referrence.

Therefore you can click with the right mouse button on the element and choose "Convert to cross reference". If you use this elements at several places in one project, you can edit these central from the overview screen in the directory "cross reference". Changes will then be assumed to all related elements.

7.3.4 Consistency check

There is the option to perform a consistency check after completion of all entries. Diese Funktion kann im Hilfebereich aufgerufen werden. Wahlweise kann nur die aktuelle Ansciht, das momentan bearbeitete Panel oder das gesamte Projekt überprüft werden.

All input is tested for plausibility and the result is shown in the help window. By double-clicking on the entries shown there, you can get to the associated screen page of the programming directly.

Detected inconsistencies will be devided into „serious inconsistecies" that have to be removed before transferring the project to a **Busch-*ComfortTouch*** and "less serious inconsistencies", that should be removed, but don't have influence to the functionality.

7.4   Downloading project into panel

If the project with the IP Project software is finished, it can be loaded into the Busch Comfort Panel. You will find the entry "Load project" under the "Project" menu item in the IP Project software. If you select this entry, the following appears on the screen:
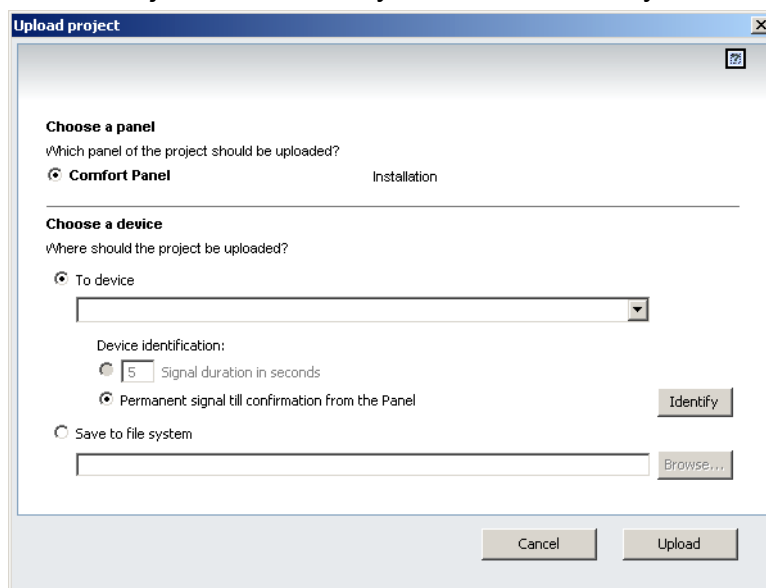
If you have configured multiple panels at the same time in a project file of the IP soft-ware, you can select which of these panels you would like to install first.

You then provide the installation path. If the panel is connected with the PC (USB, LAN, WLAN,…), the data can be transferred directly to the panel after successful iden-tification by the software. Alternatively, an installation via memory card (SD-card or USB stick) is possible. To do this, select the "Save to file system" option and specify the corresponding storage location there.

You can then subsequently read in the exported project data again after clicking on the "System" button and selecting the "Import" option.

8   Getting started - a first project

The following sample project will show you how to work with the IP Project software.

8.1   Project start

First, start the IP Project program on the hard drive of your computer and use the "New project" button to call up the start mask for a new project.

8.2   Importing of group addresses

If group addresses were created in an ETS3 project which are also to be used in the Busch Comfort Panel, you can read these in again here after an export from the ETS3. To do this, you need to specify the corresponding file path in the upper area of the input window.

8.3   Configuring the Busch Comfort Panel

In the start screen of a newly created project, double click on the "Comfort Panel" entry to get to the configuration area.
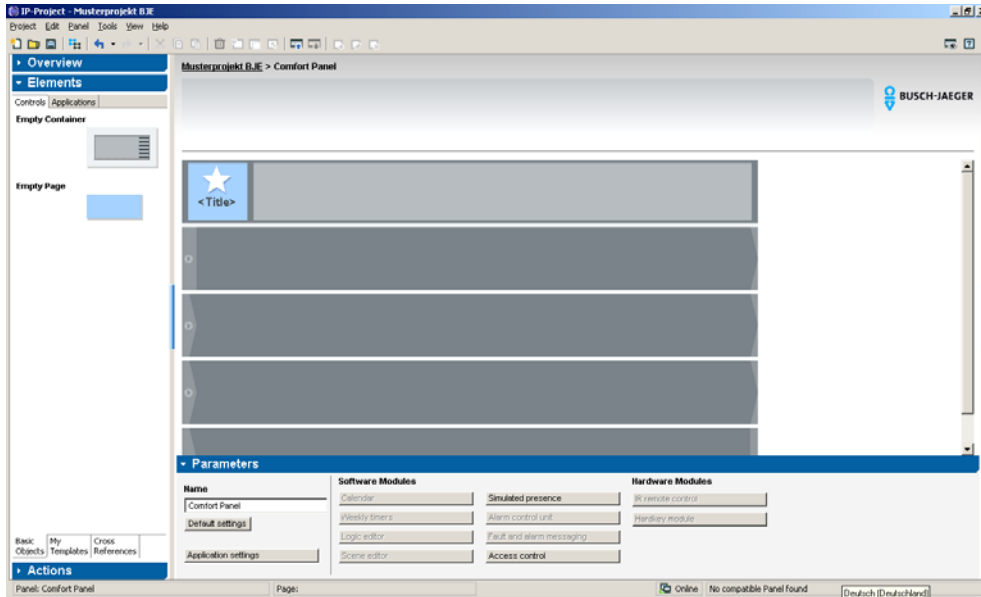
You can make basic settings, such as network settings, in the parameter area by using the "Default settings" button.
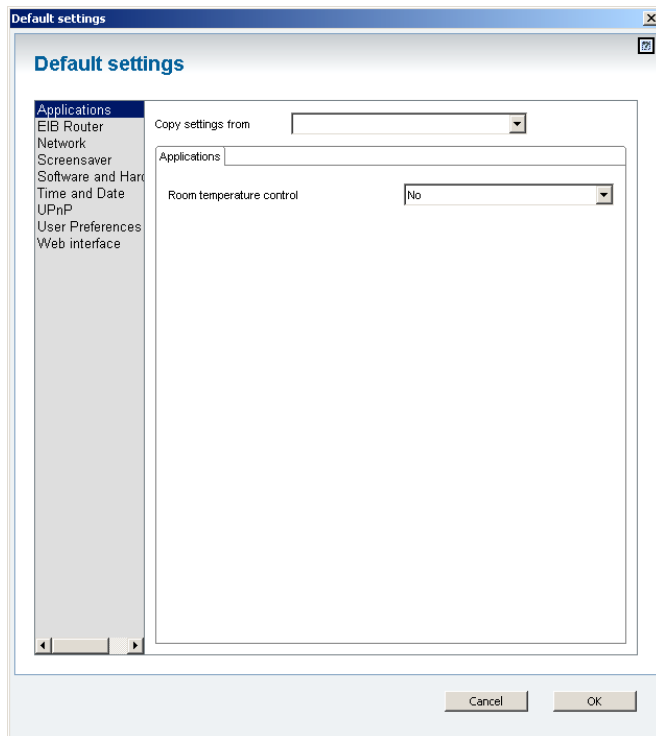
After clicking on the "Application settings" button in the "Parameter" window, you can make settings in a separate window for the use of different applications. Please consider, that some settings are only available, when the according application is projected or placed on the screen.

Note: You can find more detailed information about the different setting options in the online help of the IP Project program.
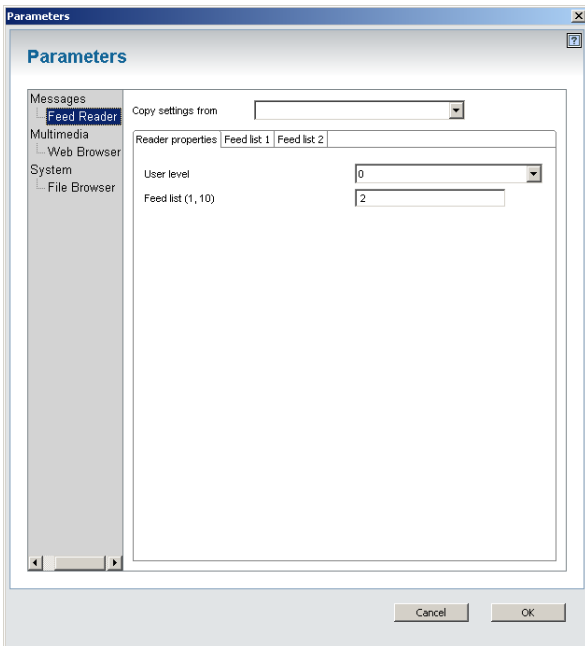
8.4   Navigation structure

You can insert elements in the navigation bar from the "Elements" library window on the left. To do this, drag (using the left mouse button) the corresponding element to the grey bar in the working area and let it drop (drag & drop). Using this method, so-called containers (these can contain additional screen pages), screen pages or applications (from the "Applications" area in the "Elements" window) can be placed on the navigation bar.

In order to fill an empty container with additional sub-pages, you must click on the small arrow on the left side of the corresponding grey bar in the navigation bar. You can then insert up to six additional pages.

If you want to change the order of the entries in the navigation bar, simply use the drag & drop method to do this. In this way, you can create the navigation structure in the navigation bar that the end user will then see.

After clicking, the elements can be labelled and you can also assign them icons for making them easier to identify. Eine entsprechende bibliothek können Si emit dem button "Durchsuchen" im Parameterfenster öffnen.

Note: The upper grey bar in the working area is permanently assigned with the jump button to the Busch Comfort Panel start page and cannot accept any further elements.

The following screenshot shows a possible design of a navigation structure for a small sample project.
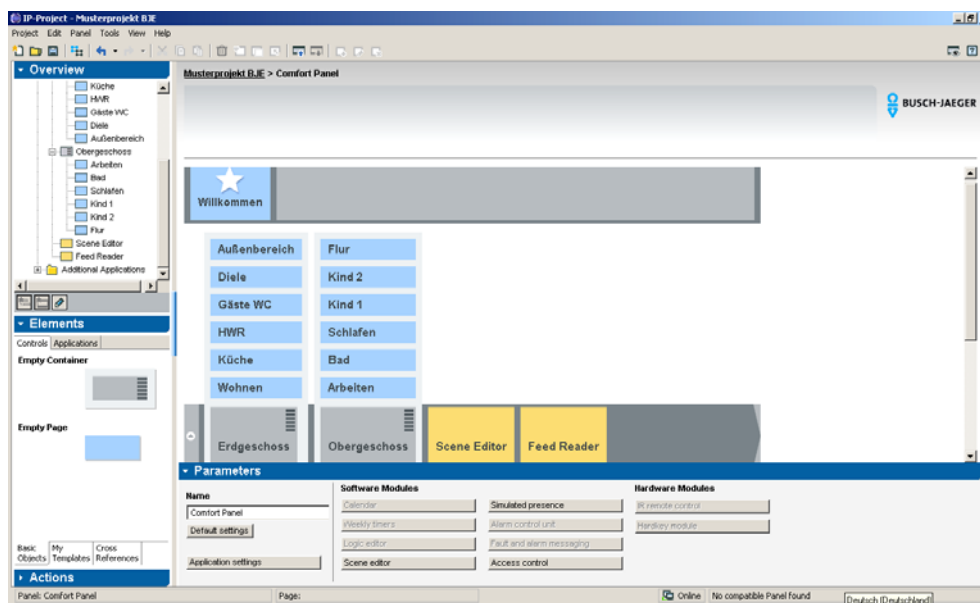
8.5   Configuring the operating pages (functions)

The following shows how a function (here: "Switch ceiling lamp in living room") can be configured.

Call the operating page for the living room via the "Ground floor" container by double-clicking. Alternatively, you can also call up this page by double-clicking in the left win-

dow "Overview" from the navigation structure.
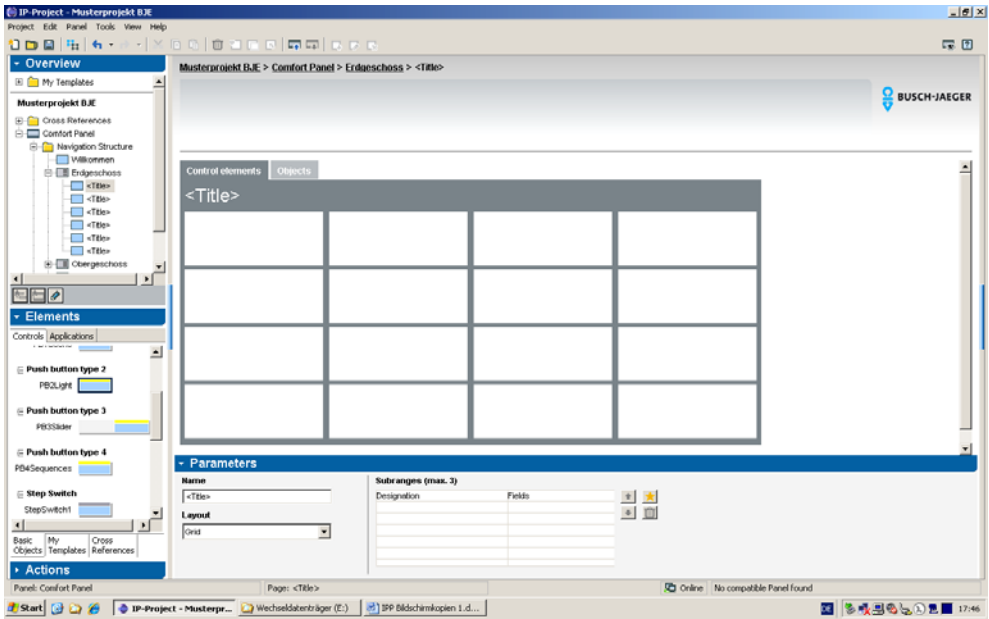
If you require more than the maximum number of displayable elements (4x4) on a page in the basic form, you can add up to two additional sub-pages. These sub-pages are visualised right on the display of the **Busch-*ComfortTouch***.

The sub-pages can be created and labelled in the parameter field by clicking on the star button.
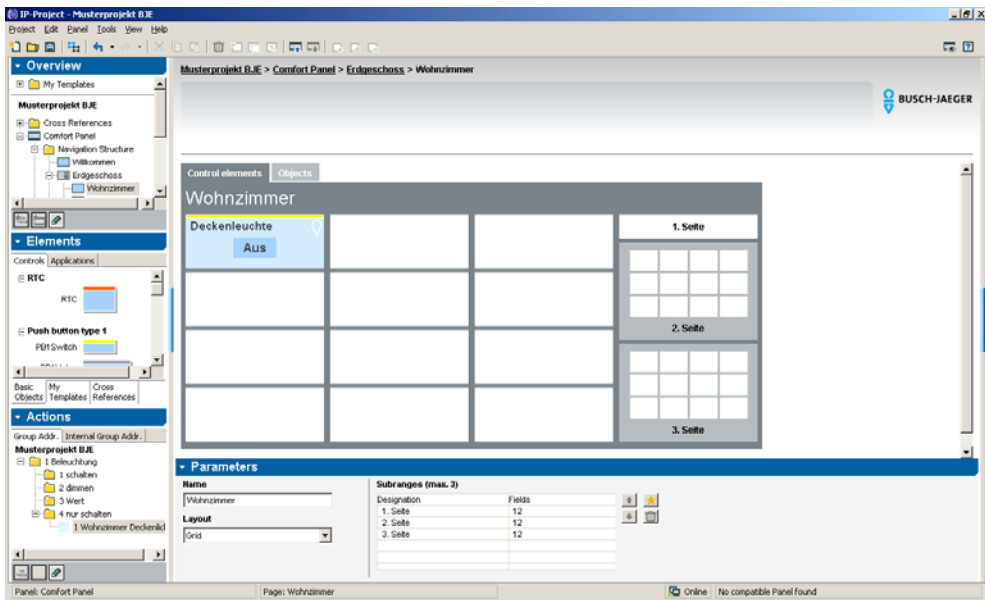
However, you should consider reducing the maximum number of operating elements that can be displayed per screen page to 3x4 due to the space that the swap elements occupy on the screen.

As specified at the beginning, the light in the living room shall be able to be switched on and off using the Busch Comfort Panel. To do this, drag the "Light (toggle)" element using the left mouse button from the left window "Elements" to the desired field on the screen page of the living room.

Note: You can find complete descriptions about the functions, possibilities and parameter settings of the different control elements in the IP Project online help.
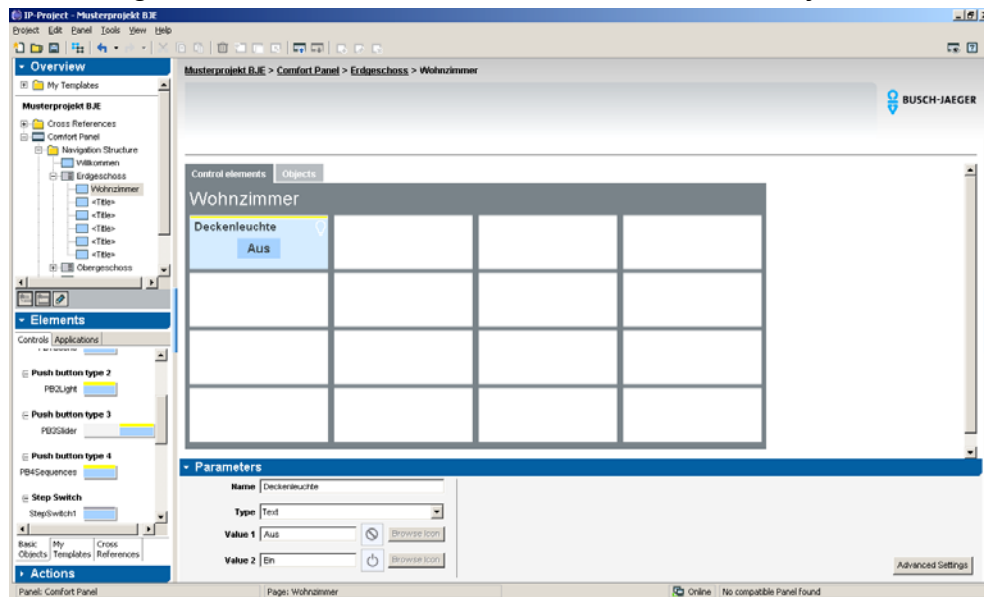
You should now assign an appropriate name to the operating element so that the end user can quickly find his or her way around the Busch Comfort Panel (suggestion: Ceiling lamp). In the operating field for the user, you can also create a note about the executed function from the Busch Comfort Panel for a renewed operation. If, for example, the light is switched on, then the operating field might show the label "Off" as information about the subsequent switching activity. Enter the desired texts in the parameter field under "Value 1" or "Value 2". If you prefer to use icons, this is also possible.

Now proceed with the parameterisation of the operating element.

Click on "Advanced settings" to get to the parameter window of the operating element currently being edited. You can make different entries here which will then lead to the desired functionality.

The integrated IP Project software online help also provides comprehensive support for the individual settings options.

Confirm your entries with "OK".

If you have already made changes to an identical operating element, you can simply copy these directly. To do this, select the reference operating element in the "Copy settings from" field.
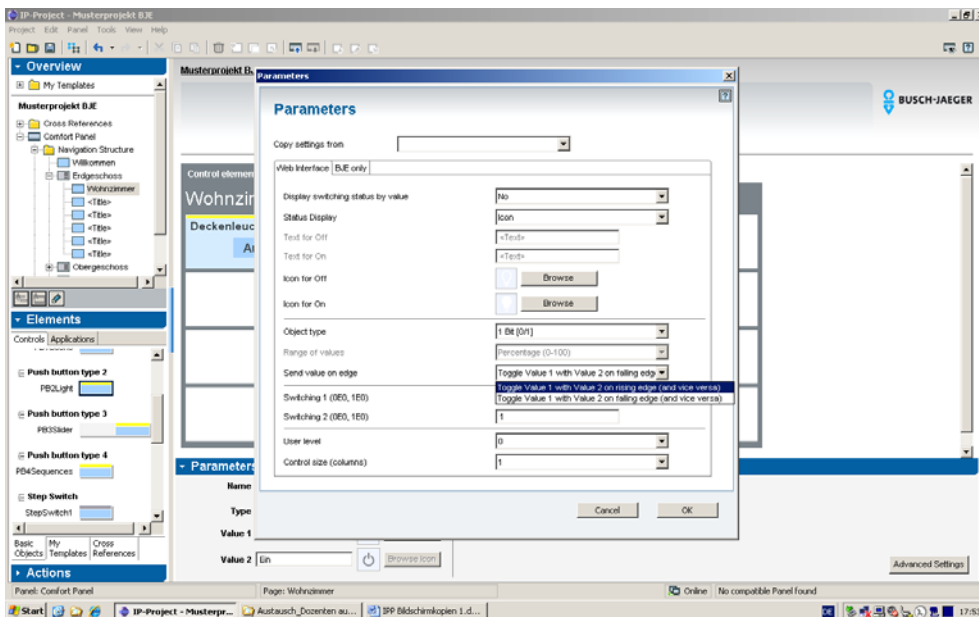
If you have an element active (clicked on), you can make the "Object" entry visible in the upper line of the page of the associated KNX communication object. If you already had imported group addresses from a KNX project, these can now be assigned (appropriate to the task) per drag & drop to the communication objects from the group address window.

If you would like to use new group addresses, you can create main and middle groups using the small left button in the group address field. The sub-groups can then be created using the middle button (important: you have first clicked on the corresponding middle group).

In addition, you can create and use internal group addresses. These are only used for the communication within the Busch Comfort Panel. For a subsequent export of all group addresses, these are not included in the export and are thus also not visible in the ETS3 project.
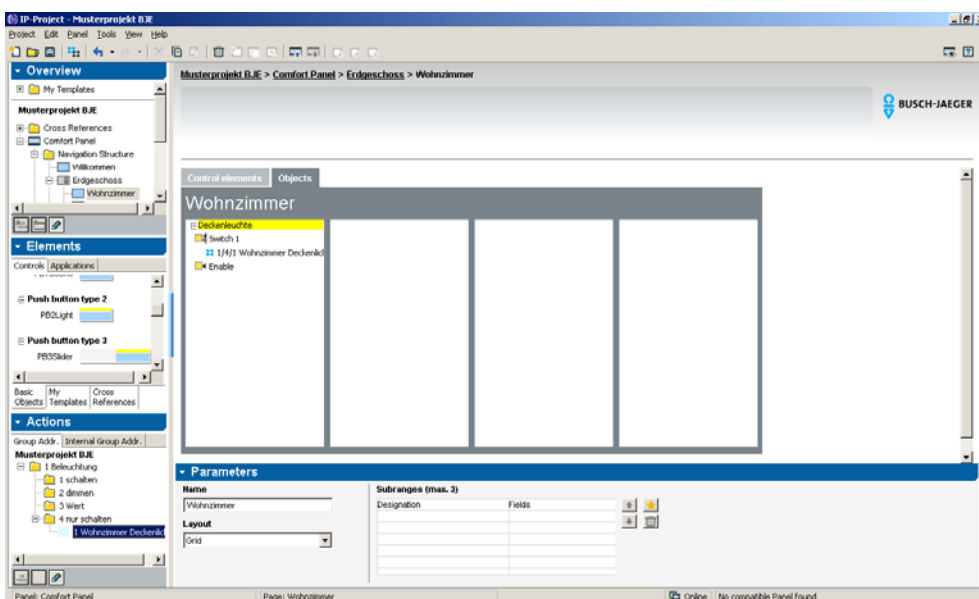
You can check the result in the panel preview after you have performed all settings. The panel preview simulates the Busch Comfort Panel true to the original.

The panel preview window opens after you have clicked on the preview button in the upper right in the working area. Using the mouse, you can now operate the preview as you would using your finger on the Busch Comfort Panel.
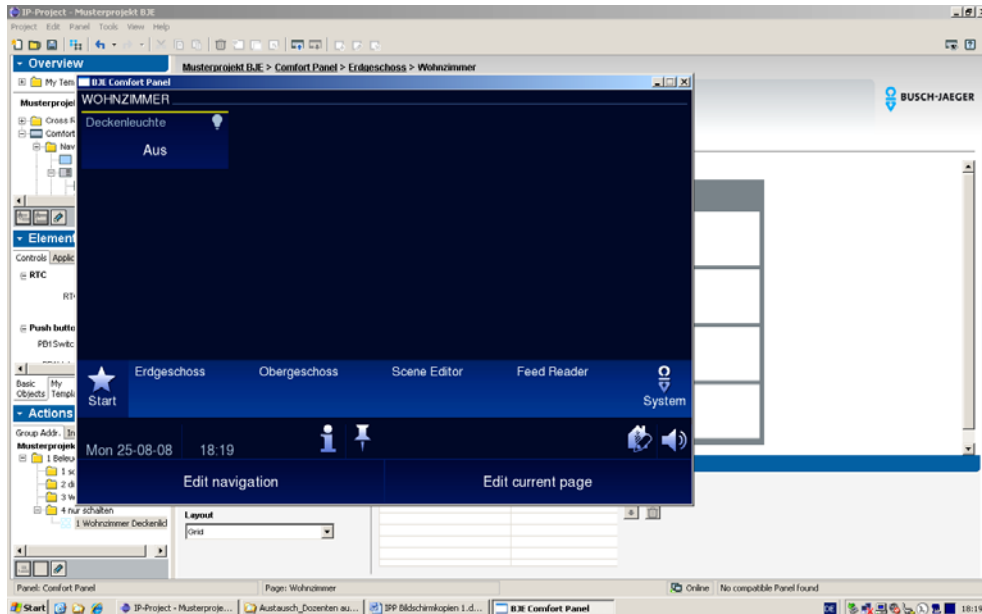
8.6   Start page with floor plan or room image

One characteristic of the start page with floor plan or image is that an object cannot be directly operated through this. The welcome screen is in this case only needed for linking to subordinated pages. Starting e.g. a switching function direct from the welcome screen is only possible in the "raster" view.

Hint: A floor plan or an image on the start page may have a maximum resolution of 589x318 pixels.

As example, the following start page shows a branching has been selected to the different floors of a home.
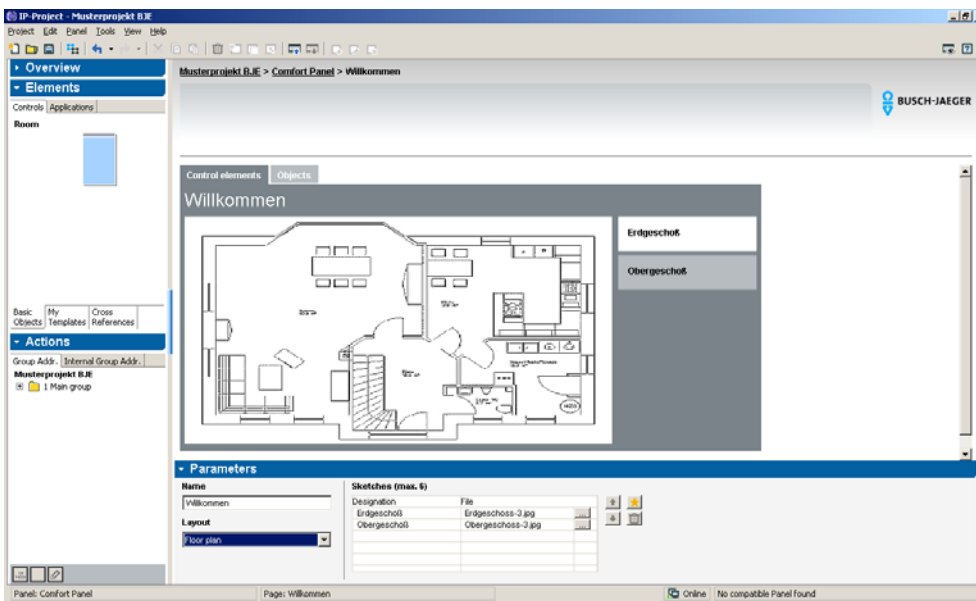
If a floor plan or a room picture is loaded, in the library at the left side of the screen the control element "room" is available in the field "elements". This element can be drawn onto the screen and customised to the picture size. Now you have created a sensitive area for touch control. After clicking on this area you can define the target, where to jump (e.g. Pagename). You can define the target in the lower parameter window via the button "Browse path".
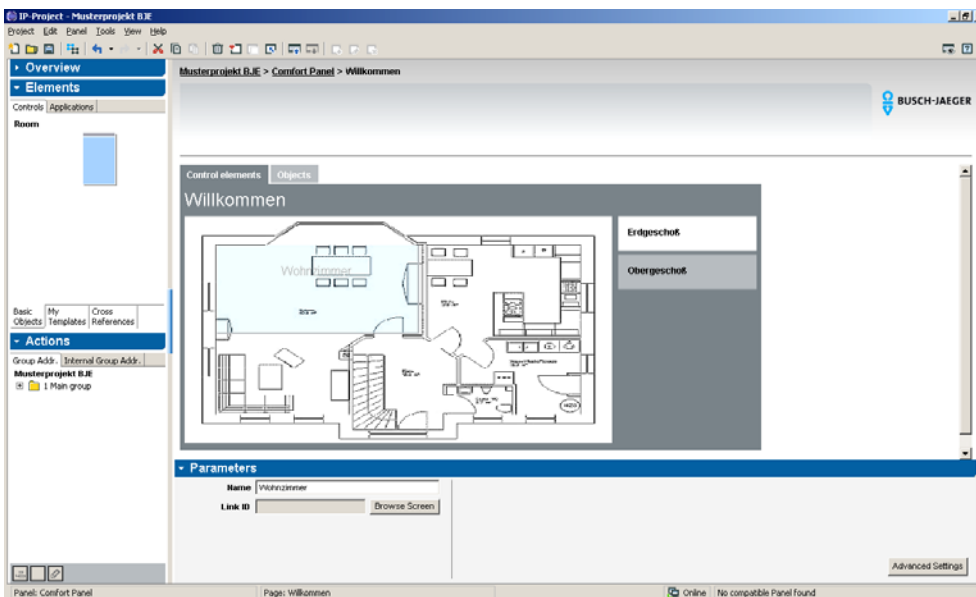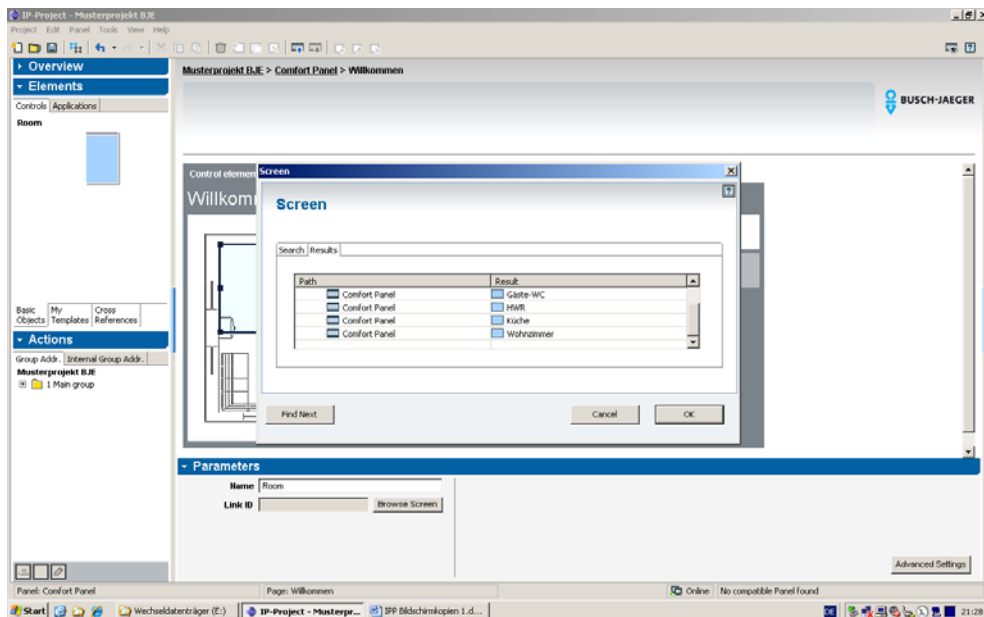
Note: You must have previously created all operating pages that are to be used as jump target first. You can otherwise not enter jump target specifications here (see also chapter: Recommended sequence of a project planning).

By double clicking a sensitive surface or by touching the button "extended settings" while choosing a sensitive surface you are linked to the related configuration page.

Angled rooms can be recorded very well by covering these with multiple sensitive areas with the same jump target (e.g. same operating page).
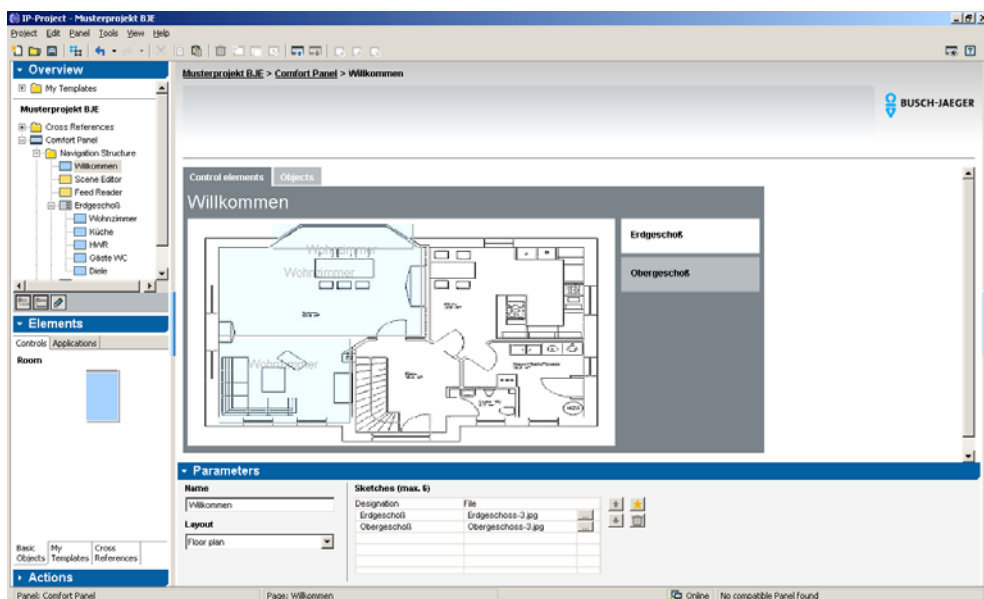
8.6.1   Operating pages with floor plan or room view

If you select the "Room image" view (large view) under "Layout" in the parameters on an operating page, you initially receive only a grey operating page. In this state, i.e. without a room image, you can not yet place any operating elements on the screen.

If you would now like to load a room image (floor plan or room view), add these under "Sketches" by clicking on the star button.

Please observe here that the maximum resolution of the file may not exceed 1178x636 pixels.

Once the room image has been loaded, a 3x4 field grid opens over it which you can now use to place operating elements.
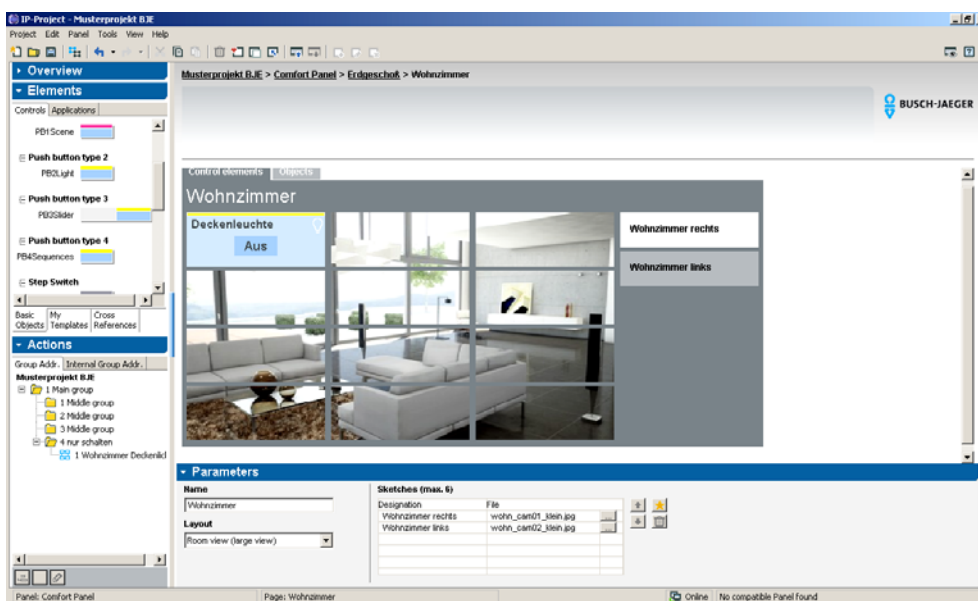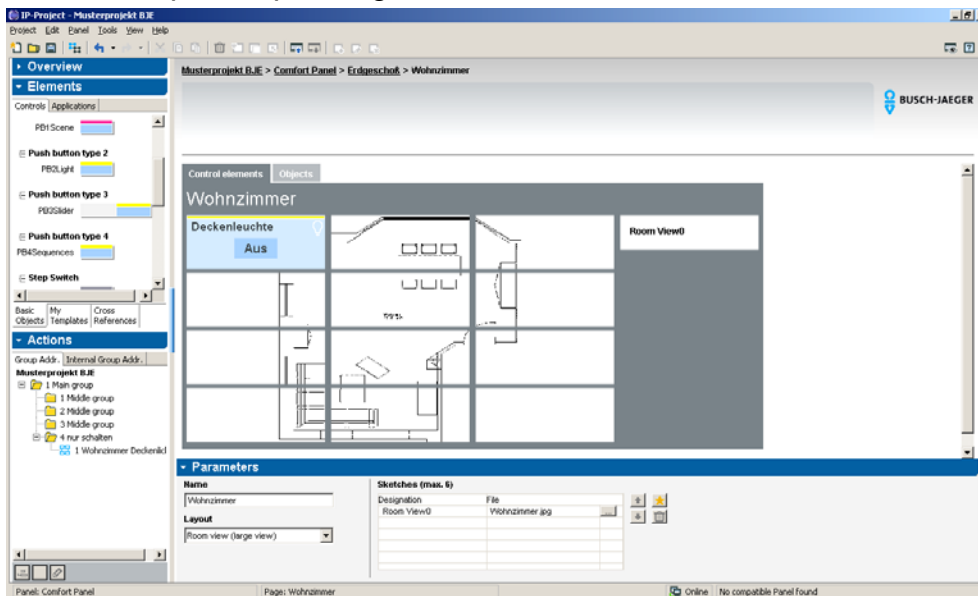
Up to six different room views with 3x4 field can be created on every operating page.

The end user sees the stored operating functions on the Busch Comfort Panel depending on the parameter settings as blue circle (no status), as blue circle with an icon (with status) or with specified text.
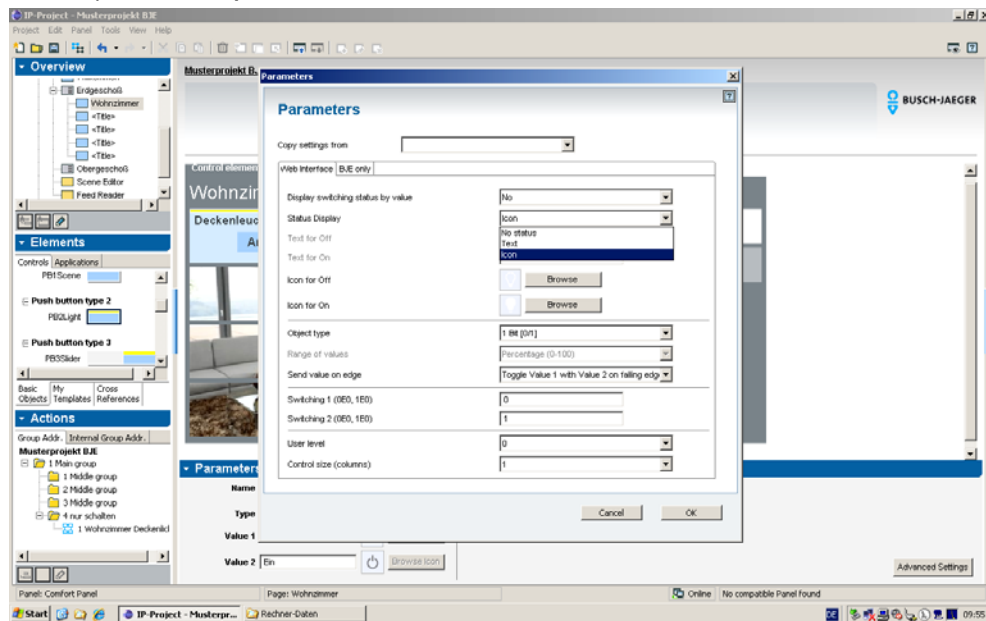
In the following preview image, a representation with icon and status was selected as example.

If the user clicks on an icon on the Busch Comfort Panel, the associated operating element becomes completely visible and operable.

8.7 Operating pages with small image of room

Another way of creating operating pages is by integrating a small room image. To do this, select the page layout "Grid with room view (small view)". Please observe that the upper limit of 382x312 pixels may not be exceeded for the room image.

The room image is fixed in the upper right corner of the operating page. It provides the user with a better orientation and thus increases the clarity.
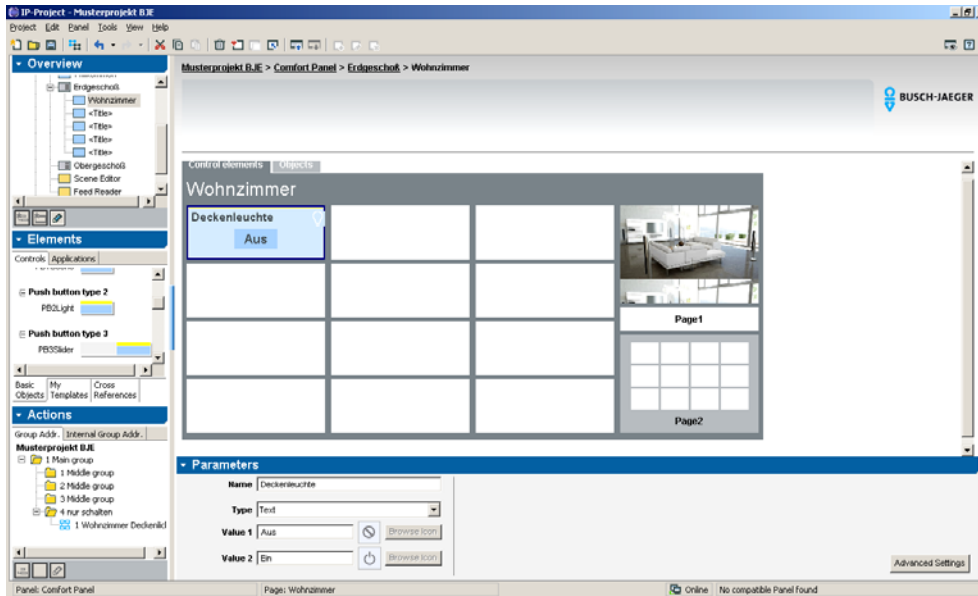
8.8   Integration of applications

You can assign applications (eine deteillierte Beschreibung der verschiedenen An-
wendungen finden Sie im Kapitel 9.9 und in der Onlinehilfe des programms IP-Projct)
to the navigation bar and to a container directly. One exception is the feed reader ap-
plication. You can alternatively place these directly on the start page.

To increase the clarity, you have the option of grouping applications associated by
topic in a common container.
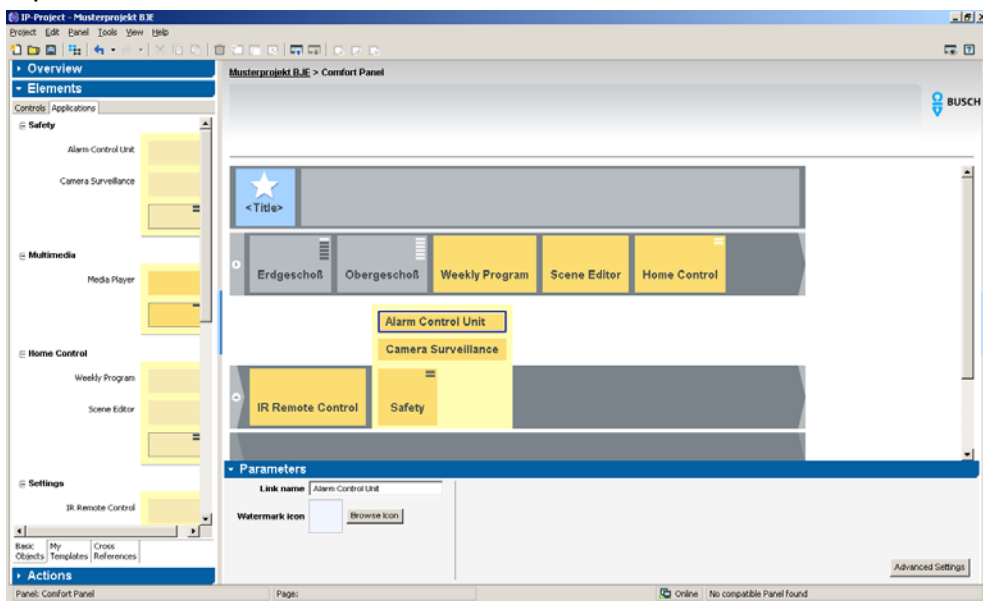
You can set the parameters of these after double-clicking on the respective application.
For more detailed information, please see the IP Project online help.

.

Online help of the program IP-Project

Advice: The following chapters are extracted from the Online help of the configuration software IP-Project.

Advice

Disclaimer

All documents are produced and proved with accurancy. Never the less failings can't be excluded completely. Therefore Busch-Jaeger Elektro GmbH can't take over juristical responsibility according to the content.

Technical modifications remain always feasable!

9 Logic functions

9.1.1 Using logic functions

Complex switching sequences can be realised in the Comfort Panel using so-called *Logic functions* which can be configured in the graphical logic editor of IP Project. *Logic functions* essentially consist of logic modules that are organised into a logic network. Input and output modules are interfaces of the logic network to a KNX or IP-based network (see section Input and output modules).

Notes:

- The logic functions are event-controlled. For every arrival of a telegram at an input module, all logic modules affected by this event are re-calculated.

- If the recalculation of a logic function is triggered by a telegram input, the input modules are allocated with the value of the last telegram to come in.

- Time-controlled logic functions automatically carry out a recalculation after expiry of the specified time.

- Within a logic network, only the five data types *Boolean*, *Number*, *Date*, *Time*, as well as *String* are used instead of the KNX data types.

- The logic engine of the Comfort Panel is a capable and complex tool for a smart and efficient realization of logic networks. However, it must be kept in mind that a logic network is triggered on each arriving telegram. That is, the logic network is re-calculated on each new telegram and new output telegrams are sent. When used in an inappropriate way this may lead to an overload of the KNX bus!
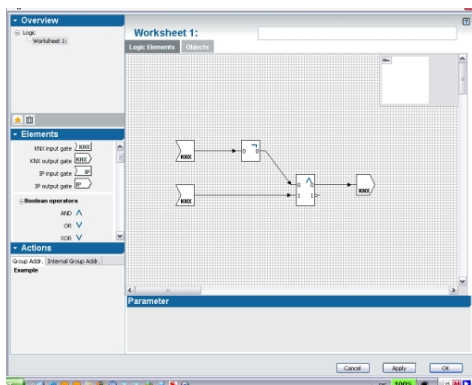
9.1.2   Creating logic functions

The logic editor in IP Project is a graphical editor. Different logic modules can be placed on a worksheet and connected to each other which produces a logic network. Like the IP Project main window, the logic editor consists of a worksheet in the middle, a library area on the left side and a parameter area in the lower area.

Note:
The logic editor can be called up only when this software module has been previously activated (see Activating additional applications).
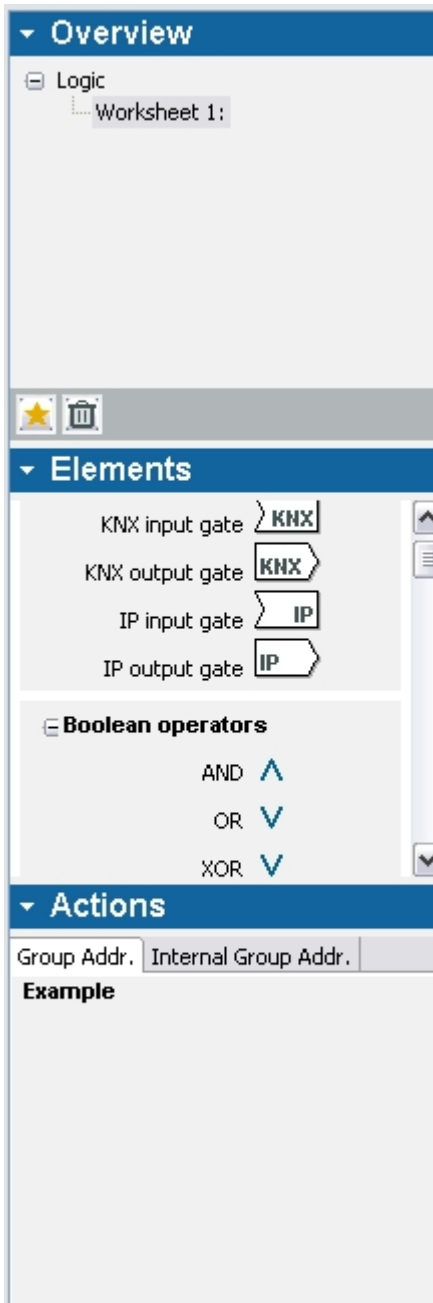
9.1.2.1   Creating logic functions

Normally, one logic network is arranged per worksheet. Therefore, create a new worksheet when you want to create a new logic function. To do this, use the button ⭐in the left library area under *Overview* . You can also call up existing worksheets for editing in this area.

You can give the worksheet - and thus your logic network - a name in the title of the worksheet.

9.1.2.2   Placing and configuring logic modules

In principle, any number of logic modules can be placed and connected with each other on a worksheet. Each module represents an arithmetic operation. In the available logic modules section below, you can read which modules are suitable in your case.

You can find all available logic modules in the left library area under *Elements*. If you want to place such a module, drag it from *Elements* to the worksheet (see Add element from library). For better comprehensibility, you should place inputs on the left side, outputs on the right side and logic modules in the middle of the worksheet. The direction of execution of a logic module in the Comfort Panel then corresponds to the reading direction on the worksheet.

Select a module to rename it. In the parameter area, you can specify (if needed) the number of entries and call up the *Advanced settings* dialog. In the available logic modules section below, you can read which special settings for the individual modules are possible.

Note:
Move the mouse pointer over an input or output of a logic

module to see a tooltip that shows the meaning of the input or output.

9.1.2.3 Linking logic modules with each other

In order for a logic network to function correctly, the logic modules in the worksheet must be linked into to a network. Every logic module contains outputs for this (right of the module), which, using connectors , can be linked to the inputs (left) of other logic modules.

To link two modules to each other, first click on the output of the first module and hold the mouse button pressed. Now drag a connection to the input of the second module.

9.1.2.4 Creating feed-back loops

You can create feed-back modules using a KNX output module and a KNX input module. To do this, provide both modules with identical internal group addresses (see section Input and output modules).

Incoming values are thus transferred from the KNX output module to the KNX input module - however, not until the next calculation cycle! A calculated value can thus flow into the next calculation of the logic again.

9.1.3 Available logic modules

9.1.3.1 Input and output modules

Under *I/O modules* in the library area, you can find modules that make the following connections to actuators and sensors in the network possible:

- **KNX input modules** can receive telegrams from KNX sensors or actuators. Details

- **KNX output modules** can send telegrams to KNX actuators. Details

- **IP input modules** can receive TCP- or UDP-based data from sensors or actuators. Details

- **IP output modules** can send TCP- or UDP-based data to actuators. Details
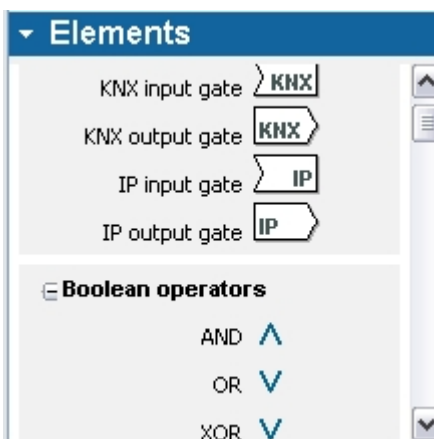
9.1.3.2   Boolean logic modules

Under *Boolean operators* in the library area, you can find modules that make the following logical arithmetic operations possible:

- ∧ **AND modules** offer the option of the AND linking of 2-8 inputs. Details

- ∨ **OR modules** offer the option of the OR linking of 2-8 inputs. Details

- ⊻ **XOR modules** offer the option of the exclusive OR function linking of 2-8 inputs. Details

- ¬ **NOT modules** offer the option of inverting logical values. Details

9.1.3.3   Comparator

Under *Comparator* in the library area, you can find modules that compare or check the values at the inputs:

- = **Equal:** Checks the values of both inputs for compliance. Details

- ≠ **Not equal:** Checks the values of both inputs for inequality. Details

- > **Greater:** Checks whether the one input value is greater than the other input value. Details

- ≥ **Greater or equal:** Checks whether the one input value is greater than or equal to the other input value. Details

- < **Less:** Checks whether the one input value is less than the other input value. Details

- ≤ **Less or equal:** Checks whether the one input value is less than or equal to the other input value. Details

- ⋈ **Area tester (internal)** specifies whether an incoming comparison value lies between two limit values. Details

- ⊳ **Area tester (external)** specifies whether an incoming comparison value lies outside two limit values. Details

- **Threshold values with hysteresis** specifies whether an incoming comparison value lies above or below a threshold. In contrast to the Greater/Less comparator, a certain tolerance range can be defined (hysteresis). Details

9.1.3.4 Algebraic logic modules

Under *Algebraic* in the library area, you can find the following modules for algebraic arithmetic operations:

- **Adder:** The values of the inputs are added and output on the output as result. Details

- **Subtractor:** The value of the *Input 0* is subtracted from the value of the *Input 1* and output on the output as result. Details

- **Multiplier:** The values of the inputs are multiplied and output on the output as result. Details

- **Divider:** The value of the *Input 0* is divided by the value of the *Input 1* and output on the *Output 0* as result. Details

- **Sine:** The sine of the input value is output as result on the output. Details

- **Cosine:** The Cosine of the input value is output as result on the output. Details

- **Root function:** The square root of the input value is output as result on the output. Details

- **Power function (x to the y):** The value of the *Input 0* is raised to the value of the *Input 1* and output on the output as result. Details

- **Logarithm:** Outputs the logarithm base 10 of the input value as result on the output. Details

- **Natural logarithm:** Outputs the logarithm base e of the input value as result on the output. Details

- **Exponential function:** Outputs the exponential function for the input value as result

on the output. Details

9.1.3.5 Additional mathematical logic modules

Under *Advanced math* in the library area, you can find the following modules for additional mathematical arithmetic operations.

- **2-point curve function**: A linear slope is defined with two points that can be used to calculate the function values f(x). Details

- **4-point curve function**: A curve progression is defined with four points that can be used to calculate the function values f(x). Details

- **Minimum value**: The smallest of all received values is output on the output. Details

- **Maximum value**: The largest of all received values is output on the output. Details

- **Absolute value**: Outputs the input value as result without the algebraic sign. Details

- **Random value**: This logic module returns random numbers. Details

- **Arithmetic average (average)**: The arithmetic average of all received values is output on the output. Details

- **Counter**: This logic module counts the number of the received values. Details

9.1.3.6 Signal control logic modules

Under *Signal control* in the library area, you can find the following modules for the signal control:

- **Delayer**: This logic module allows you to realise a delay. Details

- **On/Off delayer**: This logic module allows you to realise two delay times via one binary input value. Details

- **Staircase lighting**: This logic module allows you to combine a switching on with a de-

layed switching off. [Details](#)

- →| **Lock:** This logic module allows you to block the transfer. [Details](#)

- Y **Filter:** This logic module allows you to transfer only certain Boolean values. [Details](#)

- ▽ **Text filter:** This logic module allows you to transfer only certain string values. [Details](#)

- ⚡ **Text divider:** This logic module allows you to divide the string values into preamble, command, parameter and postamble. [Details](#)

- ⫴ **Demultiplexer:** This logic module allows you to convert serial signals into parallel ones. [Details](#)

- ⫴ **Multiplexer:** This logic module allows you to serialise parallel signals. [Details](#)

- ⧈ **Number of input:** This logic module outputs the number of the received input. [Details](#)

- ⫿ **RS-Flip-Flop:** This logic module allows you to realise an on/off switch via two binary inputs. [Details](#)

9.1.3.7 Logic modules for signal generation

Under *Signal generation* in the library area, you can find the following modules for the signal generation:

-

- ⫶ **Constants module:** This logic module always outputs the same fixed value (constant). [Details](#)

- ⌐ **Oscillator:** This logic module generates pulse strings or individual pulses and outputs these. [Details](#)

- ⫶ **Telegram generator:** This logic module allows you to combine multiple values into one telegram. [Details](#)

9.1.3.8 Logic modules for time and

date

Under *Time and Date* in the library area, you can find the following modules for time- and date-dependent arithmetic operations:

- **Operating hours counter:** This logic module counts the number of operating hours of the Comfot Panel and outputs this. Details

- **Sunrise and sunset:** This logic module allows you to output values at the time of the sunrise or sunset. Details

- **Time generator:** This logic module allows you to output the time of day and date. Details

10   Help topics

This section contains information about the fundamentals and tasks of project planning with IP-Project.

10.1   Help pages in this chapter

- **IP-Project fundamentals:**

  - Properties of the Comfort Panel

  - General operation of IP-Project

  - Add and edit elements (pages and control elements)

  - Use Help

- **Project planning with IP-Project:**

  - Manage project

  - Import / export data

  - Edit panel basic settings

  - Create navigation structure (Comfort Panel)

  - Configure pages (Comfort Panel)

  - Configure control elements (Comfort Panel)

  - Use preview

  - Use notes

- o [Perform consistency check](#)

- **Advanced project planning with IP-Project:**

  - o [Search](#)

  - o [Print](#)

  - o [Use templates and references](#)

  - o [Manage group addresses](#)

  - o [Change IP-Project settings](#)

  - o [Read log files](#)

11 IP-Project fundamentals

This section contains information about the general use of IP-Project and this online help.

11.1 Help pages in this chapter

- [Properties of the Comfort Panel](#)

- [General operation of IP-Project](#)

- [Add and edit elements (pages and control elements)](#)

- [Use Help](#)

12 Properties of the Busch Comfort Panel

You can configure a Comfort Panel using IP Project. A Comfort Panel primarily consists of several pages of various types and a navigation bar, which combines the pages into a navigation structure. The following describes which **page types** exist, which **navigation structures** are possible and how you can expand the Comfort Panel based on which **applications** or **modules**.
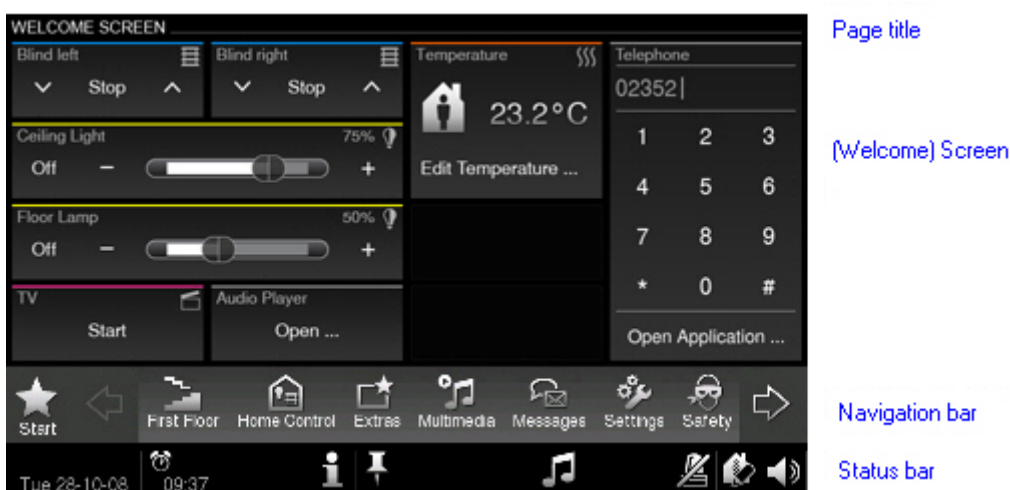
12.1 → Comfort Panel page types

12.1.1 The start page

Each Comfort Panel includes a start page, which is displayed to the user after a certain time interval or after returning from the screensaver. It displays the "face" of the Comfort Panel. You can define the time interval (see Edit Comfort Panel basic settings).
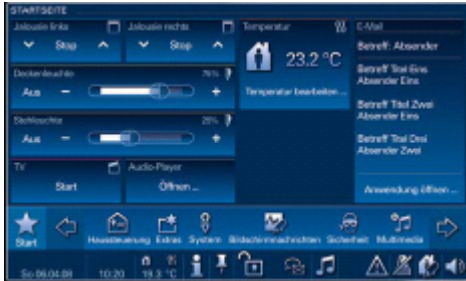
The start page use used as an orientation point for the user because it is the starting point of any navigation. Access to the start page is always provided on the left side of the navigation bar.

The Comfort Panel start page plays another important role: You can add functions that are particularly important to you customer. You can, for instance, add (additional) room lights and shutters in the Comfort Panel to the start page. The user then has direct access to these functions. To integrate such home control functions in the start page, add so-called control elements (see Configure start page).

Alternatively, you can use the start page to offer a second navigation option for such pages that involve functions of an individual room. You can load up to six floor plan graphics of a living room in the start page of the Comfort Panel and create lines (see Configure start page).

12.1.2 Operating pages

You can add nearly any number of operating pages to the Comfort Panel (see Create navigation structure). Each operating page includes access to the navigation bar.

Operating pages can be configured and are used to provide home control functions (lights, shutters, room thermostat, etc.). You can add so-called control elements to an operating page (see Configure operating page). The control element for a light has, for instance, an ON/OFF button.

You can, for instance, add all shutters to an operating page and add all home lights to the next. You could also use the operating page for all functions of one room and the next page for all functions of the next. The type of structuring to use is left to you. You can conform to the wishes of your customers.

12.1.3 Application pages

The Comfort Panel can have a number of applications (e.g. calendar, media player, etc.). You can add so-called application pages to the Comfort Panel (see Create navigation structure). Each application page includes access to the navigation bar.

More information about the applications is available under Applications and modules.

12.2 → Navigation in the Comfort Panel

12.2.1 Navigation bar function

The navigation bar is used exclusively for navigation in a Comfort Panel. An exception are links to the start page, which **also** provides quick access to certain pages in the navigation bar. Each operating or application page is represented by an access in the navigation bar. Or conversely: Each access to the navigation bar stands for exactly one page. Pressing an access takes the user to the respective page.

12.2.2 Layout of the navigation bar

The navigation bar consists of up to four sections, which can include up to approx. 28 elements. The arrow buttons on the left and right are used to page between sections. Access to the start page is provided on the left side of the navigation bar.

The navigation structure can be customised by adding the operating or application pages to the navigation bar or a page group directly (so-called containers). You can customise the order of the elements on the navigation bar (see Create navigation structure).

12.3 → Applications and modules in the Comfort Panel

12.3.1 Applications

The Comfort Panel can have a number of applications. You can add (see Create navigation structure) and configure (see Configure application pages) so-called application pages to the Comfort Panel. The following applications are available:

12.3.1.1 *Multimedia*

- *Media Player* - For playing back audio and video data.

- *Web TV* - For playing back video streams.

- *Web Radio* - For playing back audio streams.

12.3.1.2 *News*

- *Image Messaging* - For recording and displaying [notes](#).

- *Voice message* - For recording and playing [voice messages](#).

- *E-mail* - For reading e-mail.

- *Feed Reader* - For reading [Feed Reader](#) (news ticker).

12.3.1.3 *Telephony*

- *Intercom* - For communicating within the house or to other Comfort Panels.

- *Telephone (VoIP)* - For telephoning using [Voice over IP (VoIP)](#).

12.3.1.4 *Home control*

- *Scene Editor* - For editing and calling up [scenes](#) and [sequences](#).

- *Weekly Timer* - For editing [weekly timers](#).

- *Calendar* - For editing *[Yearly timers](#)*.

12.3.1.5 *Security*

- *Camera Surveillance* - For displaying IP camera images.

- *Alarm Control Unit* - For protection against unwanted visitors.

- *Baby phone* - For monitoring a sleeping child.

12.3.1.6 *Tools*

- *Timer* - For integrating an egg timer.

- *Alarm Clock* - For integrating an alarm clock.

- *Data logger* - For monitoring energy consumption and other data.

12.3.1.7 *Einstellungen*

- *IR remote control* - For editing and calling up [scenes](#), [sequences](#) and operating functions.

- *Fault and alarm messaging* - For displaying and acknowledging faults

12.3.2 Software modules

There are other software modules in addition to the applications. They do not have their own page in the Comfort Panel, but provide helpful functions in the background. You must enable software modules in IPP under Comfort Panel basic settings to have access to them in the Comfort Panel (see Configure additional applications). The following software modules are available:

- *Simulated Presence* - For recording and playing back switching processes.

- *Access Control* - For locking individual pages with password protection.

- *Baby phone* - For monitoring a sleeping infant.

- *Logic editor* - For realising complex switching sequences.

- *Internal camera* - For use in diverse applications (e.g. Baby phone/intercom)

- *Remote control* - For remotely controlling the Comfort Panel.

12.4 → Comfort Panel design

The design of the Comfort Panel can be customised to your customer's taste. You can choose between three design versions (see Set Comfort Panel design):

Blue

Black

Bright

13 General operation of IP-Project

When using IP-Project to plan, you work in several **areas** and on various **levels**. This chapter explains their purpose and how they are used.

13.1 → Areas in IP-Project

13.1.1 Library area

The left side in IP-Project is called the library area because it includes all elements required for project planning (pages, control elements, etc.). The library area consists of the *Overview*, *Elements* and *Actions* parts.
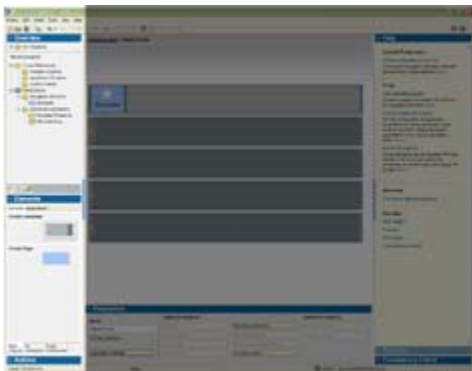
13.1.1.1 *Overview* section

The *Overview* shows you all Comfort Panels in your project based on the ▭ symbol. If you see no Comfort Panels, you have to first add them (see Start project). The pages assigned to a Comfort Panel appear under *Navigation Structure*. If you see no pages, you have to first add them (see Create navigation structure).

You can save pages and control elements as templates in IP-Project so you can reuse them later (see Use templates and references). The templates are then found in the *Overview* under *My Templates*.

You can also find so-called *cross references* in the *Overview* that are explained in detail in the Use templates and references chapter.

13.1.1.2 *Elements* section

The *Elements* section lists the elements for building a

Comfort Panel. Depending on whether you are creating the Comfort Panel navigation or you want to add control elements to a page, the *Elements* section contains the respective elements (see Create navigation structure or Configure pages).

You can save pages and control elements as templates in IP-Project so you can reuse them later (see Use templates and references). The templates are then found in the bottom *My Templates* tab.

You can also find so-called *cross references* in the *Elements* section that are explained in detail in the Use templates and references chapter.

13.1.1.3 *Actions* section

You can manage group addresses in the *Actions* section and link to the communication objects of a control element from there (see Configure control elements). If there are no group addresses, you must either import existing group addresses (see Import / export group addresses) or create new ones (see Manage group addresses).

13.1.2 Working area

13.1.2.1 Clipboard

The top part of the working area is separated by a line. Above the line is the clipboard area in which you can temporarily store elements on the navigation and page level. Drag an element from the bottom part of the working area to the clipboard.

Note:
The elements in the clipboard do not go away even if IP-Project is closed.

13.1.2.2 *Control Elements* tab

The *Control Elements* tab in the working area is the area in which configuration primarily takes place. You combine elements (pages, containers, control elements, etc.) into a Comfort Panel there. All elements are outlined to allow you to assess the appearance of the final Comfort Panel during the configuration.

The configuration of a Comfort Panel in IP-Project stretches over three levels (see Levels in IP-Project). The *Control Elements* tab in the working area adjusts to the

respective level as follows:

1. **Project level:**
   Add Comfort Panel to the project in the top level and make basic settings. The *Control Elements* tab in the working area shows a list of all Comfort Panels added in the project.

2. **Navigation level:**
   Create the navigation structure here by adding pages. The working area shows the four sections of the navigation bar of the selected Comfort Panel (plus another section which only includes the start page).

3. **Page level:**
   Configure pages here by adding control elements or making application settings. The *Control Elements* tab in the working area shows the selected start, operating or application pages.
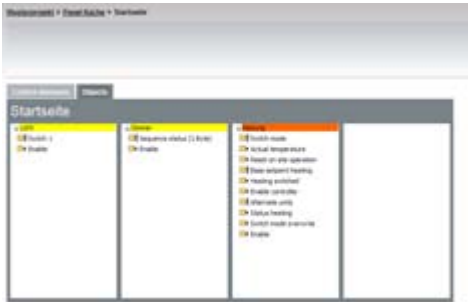
13.1.2.3 *Objects* tab

The *Objects* tab in the working area is effectively the "back" of Comfort Panel and control elements used to establish a connection to actuators. Each Comfort Panel and each control element has a number of so-called communication objects that you can link to group addresses (see Edit Comfort Panel basic settings or Configure control elements).

The configuration of a Comfort Panel in IP-Project stretches over three levels (see Levels in IP-Project). The *Objects* tab in the working area adjusts to the respective level as follows:

1. **Project level:**
   You link Comfort Panel communication objects to group addresses in the top level. The *Objects* tab in the working area shows the communication objects of all Comfort Panels in the project.

2. **Navigation level:**
   There is no *Objects* tab in the working area on the navigation level.

3. **Page level:**
   Here you link the communication objects of an application page or the control elements to group addresses. The *Objects* tab in the working area shows the communication objects of

the application page or all control elements of
a start or operating page.

13.1.3　Parameter area

The parameter area shows the parameters of the elements
you have selected in the working area (marked). If no
element is selected, the parameters of the parent element
are displayed:

- **Comfort Panel selected (project level):**
  Designation of the Comfort Panel, access to
  basic settings, application settings and editors
  Edit Comfort Panel basic settings).

- **Nothing selected (project level):** No pa-
  rameters.

- **Start or operating page selected (navi-
  gation level):** Designation, symbol and lay-
  out of the page Configure page).

- **Application page selected (navigation
  level):** Access to the application settings (see
  Configure pages).

- **Nothing selected (navigation level):** See
  Comfort Panel selected.

- **Control element selected (page level):**
  Designation, symbol and button statuses of
  the control element (see Configure control
  elements).

- **Nothing selected (page level):** See *Start
  or operating page selected* or *Application page
  selected*.
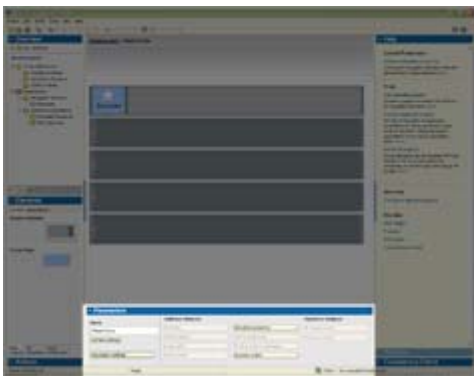
13.1.4　Help area

The help area provides support when carrying out configu-
rations. It is divided in *Help*, *My Notes* and *Consistency
Check* sections.

13.1.4.1 *Help* section

The *Help* section shows you an outline of help topics rela-
ted to the task in IP-Project you are carrying out at the
moment. Clicking a link opens the help system (see Use
help).

13.1.4.2 *Consistency Check* section

The *Consistency Check* section is used to check for inconsistencies in your project. You can check the current view (*Check current view*), the current Comfort Panel (*Check Comfort Panel*) or the overall project (*Check project*).

Any inconsistencies found are listed in the *Consistency Check* section as follows:

- ⚠**Error:**
  Serious inconsistencies that must be resolved before the project is transferred to the Comfort Panel.

- ⓘ**Notes:**
  Less serious inconsistencies that should be resolved, but do not affect functionality.

More information about the consistency check is available under [Perform consistency check]!

13.2 → Levels in IP-Project

The configuration of a Comfort Panel in IP-Project stretches over three levels: **Project level**, **navigation level** and **page level**. Each level is has its own special tasks. Working and library areas therefore adjust based on the respective level.

13.2.1 Project level:

You manage your project in the top level. The working area displays a list of all Comfort Panels in the project. Typical tasks on this level include:

- [Adding and designating new Comfort Panels in the project]

- [Editing Comfort Panel basic settings]

- [Importing group addresses]

- [Transferring from projects to a Comfort Panel]

- [Linking Comfort Panel communication objects to group addresses]

13.2.2 Navigation level:

This level is used to create a Comfort Panel navigation structure. The working area shows the four sections of the navigation bar of the selected Comfort Panel (plus another section which only includes the start page). Typical tasks on this level include:

- [Adding and designating pages and containers](#)

- [Changing page and container symbols](#)

13.2.3 Page level:

This level is used to configure Comfort Panel start, operating and application pages. The working area shows the selected start, operating or application pages. Typical tasks on this level include:

- [Adapting the layout of operating pages](#)

- [Adding and designating control elements on operating pages](#)

- [Changing control element labels on operating pages](#)

- [Setting application parameters on application pages](#)

- [Linking control element communication objects to group addresses](#)

- [Linking application page communication objects to group addresses](#)

13.3 → Navigation in IP-Project

13.3.1 Navigate between levels

The configuration of a Comfort Panel in IP-Project stretches over three levels: **Project level**, **navigation level** and **page level** (see above "Levels in IP Project"). You can switch between these three levels at any time. The path at the top of the working area indicates where you are at the moment.

If you wish to go to **a deeper level** (e.g. from project to navigation level), you have the following options:

1. Double-click the required element.

2. Select *Edit* in the context menu of the required element (right click).

3. Mark the required element and select *Edit Selected* in the menu under *Edit*.

4. Select the required element and press ENTER to confirm your entry.

Use the path at the top of the working area to go to **a higher level** (e.g. from the navigation to project level).
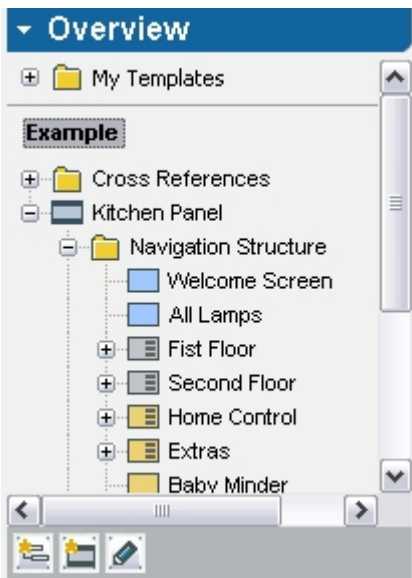
13.3.2 Navigate to other elements

If you wish, for instance, to navigate to another page in another Comfort Panel, use the methods described above for navigating between levels: First navigate up to the project level and then down again to the page level in the new Comfort Panel.

However, the *Overview* section in the library area to the right allows you to navigate directly. You have an overview of all pages and can navigation by double-clicking the link to the respective page directly.

13.3.2.1

13.3.3 Navigating via keypad

You can use the keypad in IP Project to navigate between levels, windows and elements. The keypad focus can be recognised by a framing of the focused element.

If you would like **to navigate between windows**, use the **tab key**. The keypad focus then jumps to the next window, or with **Ctrl+Tab key**, to the previous window. The order of the areas is as follows:

1. *Library: Overview*

2. *Library: Elements*

3. *Library: Actions*

4. *Path*

5. *Working area*

6. *Parameter area*
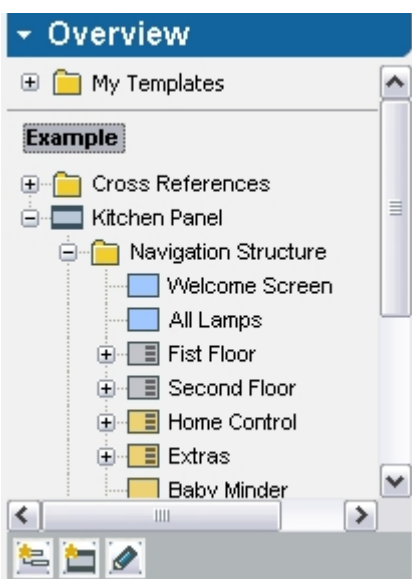
7. *Help area*

You can move from one element to the next **within the areas**, using the **arrow keys** (e.g. between the operating elements on a page).

The **navigation between the levels** in the working area is also possible via keypad: Using the **enter key**, you can go one processing level lower for the highlighted element (e.g. one page on navigation level). You can go one level higher using the **escape key**.
In the library area, the enter key opens a highlighted element in the working area (e.g. for pages in the overview) or opens a dialog for additional settings (e.g. for group addresses). In the help area, the enter key opens help chapters if the keypad focus is on a link.

The **Alt key** shows the abbreviations for the menu access per keypad. Combine the underlined letters with the Alt key to open a menu category.

13.4 → The context menu
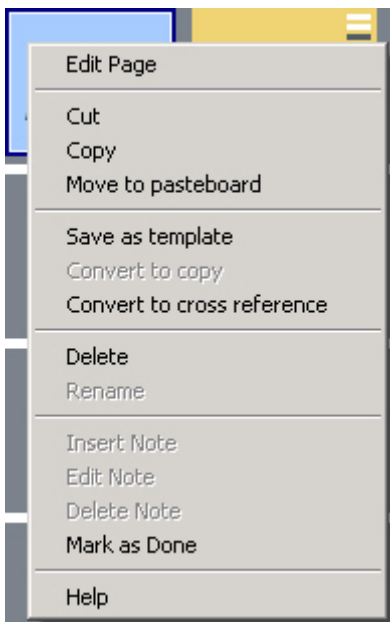
You can call up a context menu for each marked element in IP-Project by right-clicking. The context menu displays all functions allowed for the marked element.

14 Add and edit elements

Drag and Drop is used to a great extent for configuration in IP-Project. You can drag and drop nearly any element (e.g. pages or control elements). This chapter describes the configuration options in IP-Project available to you using this feature.

14.1 → Add elements from the library

14.1.1 Available elements

All available elements are listed in the IP-Project library area.

The *Actions* section lists group addresses that you have to either create yourself or import.

The Elements section lists the elements for building a Comfort Panel. The elements are strictly specified. The list under *Elements* depends on the level in IP-Project you are currently in (see Levels in IP-Project):
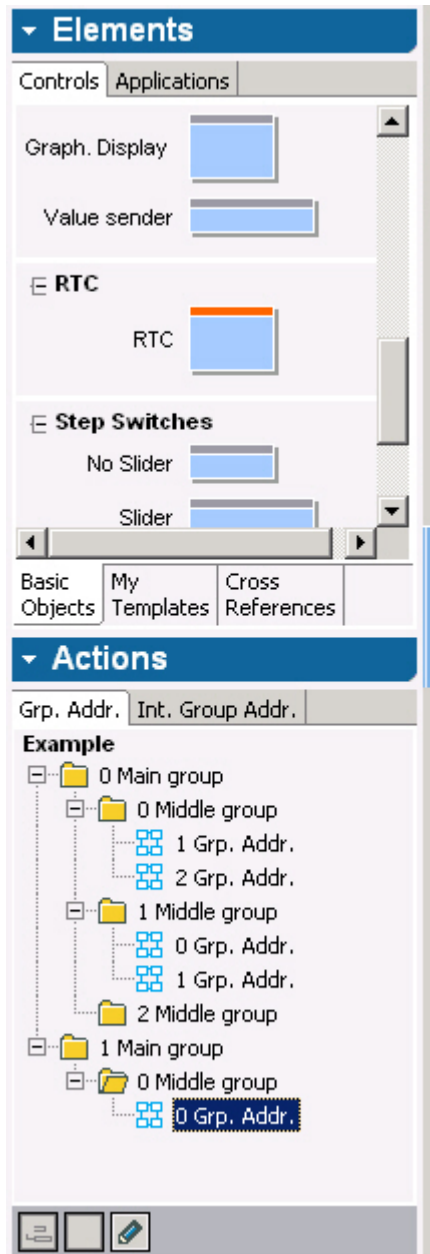
14.1.1.1 Project level:

No elements available. Comfort Panels are added via the menu under *Project > Insert Comfort Panel* (see Manage project).

14.1.1.2 Navigation level:

- **Operating pages** (*Control Elements* tab) - see Add and edit pages.

- **Open containers** (*Control Elements* tab) - see Add and edit containers.

- **Application pages** (*Applications* tab) - see Add and edit pages.

- **Fixed containers** (*Applications* tab) - see Add and edit containers.

14.1.1.3 Page level:

- **Control elements** (*Control Elements* tab) - see Add and edit operating pages.

- **Compact applications** (*Applications* tab, for start pages only) - see Add and edit pages.

- **Links** (for start pages only) - see Add and edit start pages.

14.1.2   Using Drag and Drop to add

Elements are added via Drag and Drop from the library area to the working area.
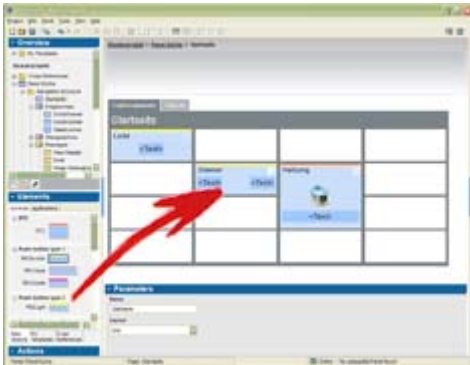
If you wish to add an element, please proceed as follows:

1. Move the mouse over an element in the library area you want to add.

2. Left-click and hold.

3. Drag the element to the position in the working area where you want to put the element.

4. Drop the element.

Note:
For pages and containers, you can drag and drop elements in open fields only. You can put elements anywhere on the navigation bar (even between two other elements).

14.2   → Select (mark) elements
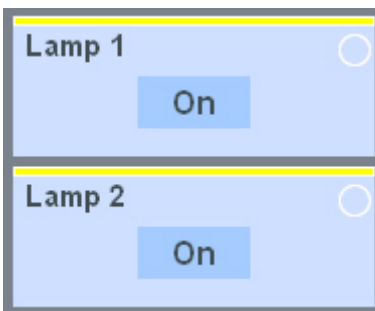
14.2.1   Use and purpose of selecting

Elements are selected by moving your cursor over the required element and clicking once. A blue frame or background then highlights the selected element.

Once you have selected (marked) an element, it is read for other editing steps. The parameter area, for instance, shows the parameters of the element selected in the working area.
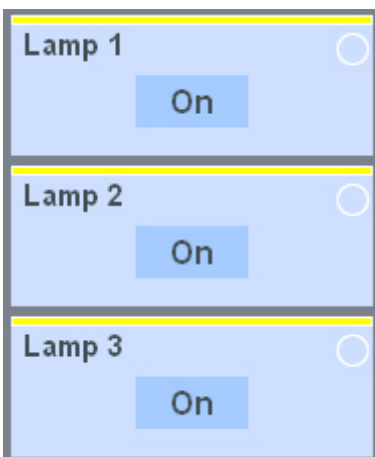
14.2.2   Select several elements

If you wish to select several elements **in a row or column**, please proceed as follows:

1. Select the first element (example shown: *Lamp 1*).

2. Hold down the SHIFT button and select the last element (example shown: *Lamp 3*).
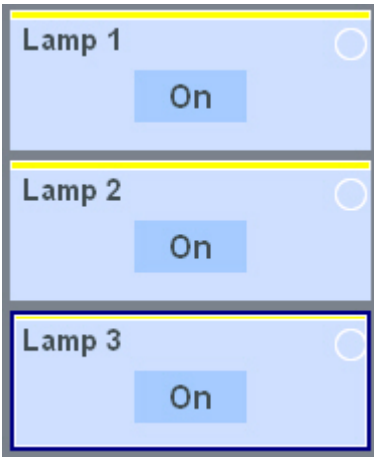
If you wish to add several elements **individually** to the existing selection, hold down the CTRL button and select additional elements (example shown: *Lamp 3*).
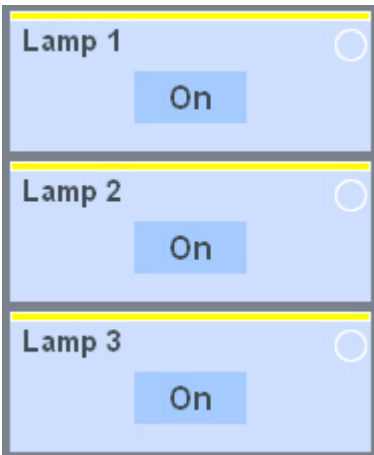
If you wish to select **all** elements in a view, use the shortcut CTRL+A.
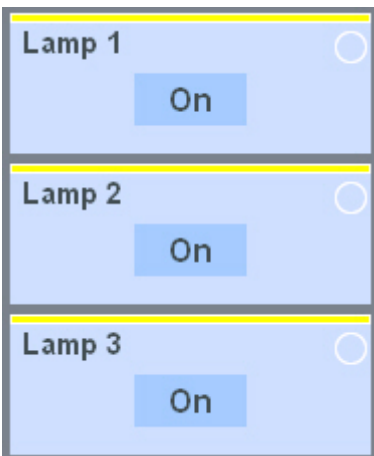
You can also create a frame in the working area to select several elements:

1. Move the cursor to a position where there are no elements (e.g. white area outside a page).

2. Left-click and drag a frame around the desired elements.

3. Drop the frame.

All elements within in the frame are now selected.

14.3 → Move elements

You can drag and drop elements within the working area or within the *Overview* and *Actions* sections (library area).

Please proceed as follows:

1. Move the cursor over the element you want to move.

2. Left-click and hold.

3. Drag the element to the position where you want to put the element.

4. Drop the element.

14.4 → Cut, copy, paste elements

14.4.1 Cut
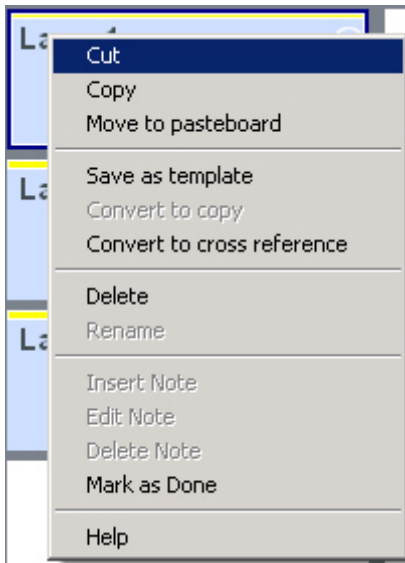
You can use the "cut" function to can delete selected elements and at the same time, copy elements to the Windows clipboard to then reinsert them somewhere else. If you wish to cut an element, please proceed as follows:

1. Select the element you want to cut (see Select elements).

2. Cut the element by...

   o ... Clicking the ✂button in the toolbar, or...

   o ... Selecting the *Cut* option in the context menu (right-click), or...

   o ... Selecting the *Cut* option in the *Edit* menu item, or...

   o ... Using the shortcut CTRL+X.

14.4.2 Copy
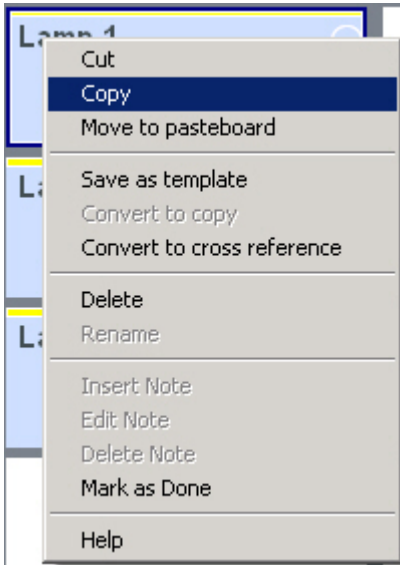
You can use the "Copy" function to copy elements to the Windows clipboard without deleting them. You can then insert them somewhere else and thus duplicate the original element. If you wish to copy an element, please proceed as follows:

1. Select the element you want to copy (see Select elements).

2. Copy the element to the clipboard by...

   o ... Clicking the ✄button in the toolbar, or...

   o ... Selecting the *Copy* option in the context menu (right-click), or...

   o ... Selecting the *Copy* option in the *Edit* menu item, or...

   o ... Using the shortcut CTRL+C.

14.4.3 Paste (from the Windows clipboard)

You can use the "Paste" function to reinsert elements from the Windows clipboard that you previously cut or copied. With the "Paste" function, the element remains in the clipboard and allows you to repeat the function as often as needed.

If you wish to add an element, please proceed as follows:

1. Select the position where you want to paste the element (e.g. empty field of a page).

2. Paste the element from the clipboard by...

   o ... Clicking the ▤button in the toolbar, or...

   o ... Selecting the *Paste* option in the context menu (right-click), or...

   o ... Selecting the *Paste* option in the *Edit* menu item, or...

   o ... Using the shortcut CTRL+V.

Note:
Please note that you can only paste elements to the required position that are allowed. For instance, you cannot copy a compact application from the start page and paste it into an operating page. Compact applications can be inserted in start pages only.

14.5 → Rename elements

You can rename elements in the *Overview* and *Actions* sections (library area).
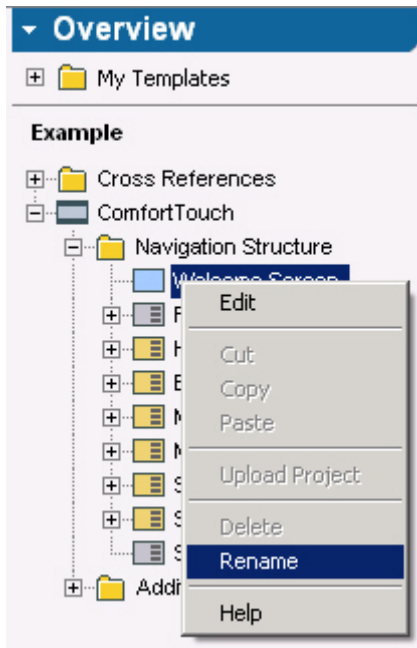
Please proceed as follows:

1. Select the element you want to rename (see Select elements).

2. Rename the element by...

   o ... Clicking the element again after a short delay, or...

   o ... Selecting the *Rename* option in the context menu (right-click), or...

   o ... Selecting the *Rename* option in the *Edit* menu item, or...

   o ... Using the F2 key, or...

   o ... Using the *Name* input field in the parameter area for elements in the working area.

14.6 → Deleting elements

You can delete elements in the working area or in the *Overview* and *Actions* sections (library area).
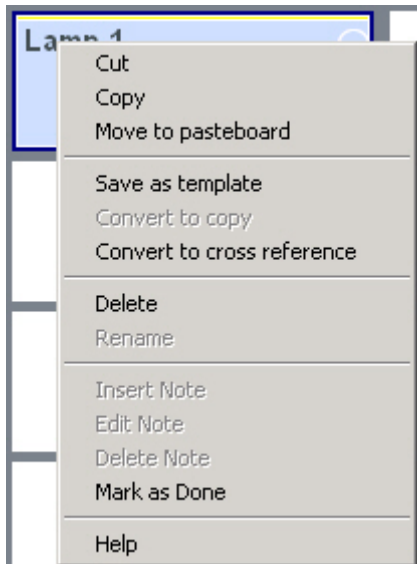
Please proceed as follows:

1. Select the element you want to delete (see Select elements).

2. Delete the element by...

   o ... Clicking the 🗑button in the toolbar, or...

   o ... Selecting the *Delete* option in the context menu (right-click), or...

   o ... Selecting the *Delete* option in the *Edit* menu item, or...

   o ... Using the DEL or BACKSPACE key.

14.7 → Change element symbols

You can change the following symbols:

- **Navigation bar symbol** from operating pages that are not in a container

- **Watermarks** from operating pages in a container (if watermark symbols are enabled, see Set Comfort Panel design)

- **Navigation bar symbols** from open containers

- **Watermarks** from scene control elements (if watermark symbols are enabled, see Set Comfort Panel design)

- **Button symbols** from control elements (if *Symbol* is selected as the label type - see Configure control elements)

You can select symbols in the respective parameter area using the *Browse* button directly or in the dialog for advanced settings. Click the *Advanced Settings* button of the respective parameter area to open.

14.8 → Change element parameters

Each element in the working area has certain parameters. The most important parameters are displayed in the parameter area for the selected element (e.g. the page title of an operating page).

You can change other parameters as follows:
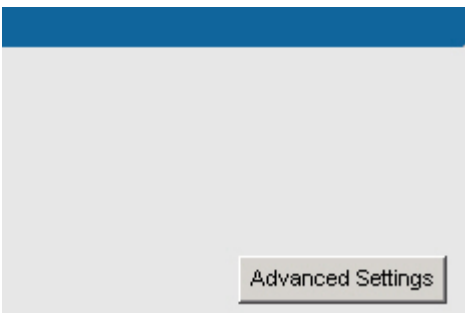
- For the advanced settings of a selected **Comfort Panel,** please click the *Default Settings* button in the parameter area (see Edit Comfort Panel basic settings).

- For the settings of a selected **application page,** please click the *Advanced Settings* button in the parameter area (see Configure application pages).

- For the advanced settings of a selected **control element**, please click the *Advanced Settings* button in the parameter area (see Configure control elements).

15 Use Help

Drag and Drop is used to a great extent for configuration in IP-Project. You can drag and drop nearly any element (e.g. pages or control elements). This chapter describes the configuration options in IP-Project available to you using this feature.

15.1 → Use help area in IP-Project

15.1.1 Open help area

Open the help area by clicking the blue middle area on the right side in IP-Project.
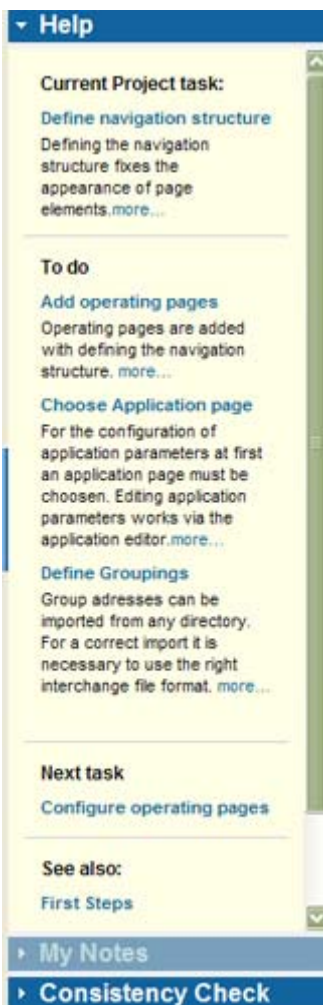
15.1.2 Use *Help* in the help area

You can find a summary of help topics directly related to your current task in configuring a Comfort Panel in IP-Project in the IP-Project help area on the right side under *Help*. You can find the following information:

- *This project planning stage*
  Which configuration step is displayed in the current view of the working area is briefly explained.

- *Tasks in this project planning stage*
  The most important tasks of the current configuration step are listed and briefly explained under *Tasks in this project planning stage*. It is recommended to fully implement these steps.

- *Next project planning stage*
  The next step recommended in configuring a Comfort Panel appears.

- *See also*
  Related topics that may also be of interest to you are listed under *See also*.

If you want to learn more about a topic in the help area, click the *more...* link. This takes you to a complete description within the help system.

15.2 → Use this help system

15.2.1 Contents of the help system

The structure of the IP-Project help appears on the left side of the help window under *Contents*. The help topics are divided as follows:
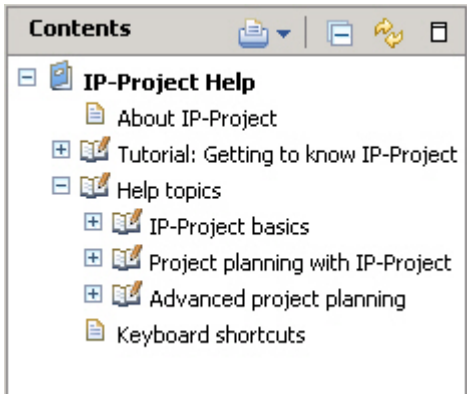
- About IP-Project
  This section displays the manufacturer's contact information and basic information about the purpose of IP-Project.

- Tutorial: Learn to use IP-Project
  If you have not worked with IP-Project before, you can use this tutorial to learn more. Nine steps guide you through creating your first Comfort Panel (approx. 60 minutes).

- Help topics
  This section contains information about the fundamentals and tasks of project planning with IP-Project.

- Shortcuts
  This section lists all shortcuts used in IP-Project.
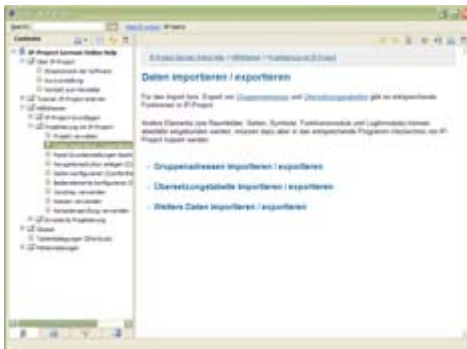
15.2.2 Find the right help page

15.2.2.1 About the table of contents

The content of the IP-Project help is listed on the left side of the help window under *Contents* (see above Structure of the help system). Choose a topic there to display on the left side of the help window.

15.2.2.2 About links in the help pages

The help system contains several links you can use to quickly display more information. They are underlined and have a blue font colour. Examples of links are:

- "[…] go in Working area to […]" - leads to the entry *Working area* in the glossary.

- "[…] (see Use this help system)." - leads to the help page that describes the underlined topic.

You can use the ⇦and ⇨buttons on the top right of the help window to navigate **forward** and **backward** link in a web browser.
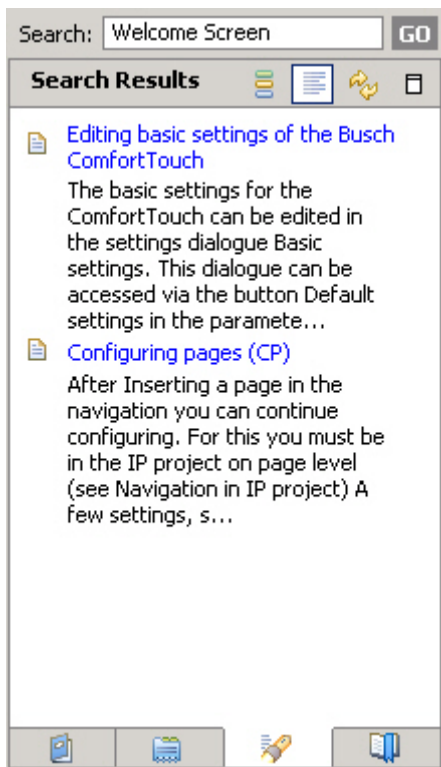
15.2.2.3 About the help system search function

You can use the search function to search in the help system for specific terms.

Enter a term in the search field above the table of contents and click *GO*. The area on the left then switches from the *Contents* tab to the *Search Results* tab. The search results are listed. The top entry corresponds to the best match for your search term. Select a search result.

The area on the right the displays the chapter for the respective search result. If the complete search term is found in the content, it is marked in colour.

Note:
Click the 📖button at the bottom of the area on the left to return to the table of contents.
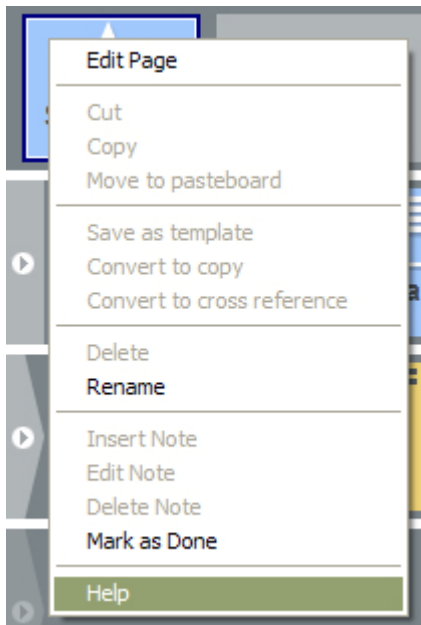
15.2.2.4 About the context menu in IP-Project

The help can be called up for each selectable element (see Select element) in the context menu.

Select the element for which you need help and select *Help*. The help window opens and displays the help page about the selected element.

15.2.3   Use bookmarks

You can bookmark help pages to call them up quickly
again later.

15.2.3.1 Create bookmark

Open the help page for which you want to create a book-
mark and then click the ✚ button on the top right of the
help window. The help page is then listed in your book-
marks.
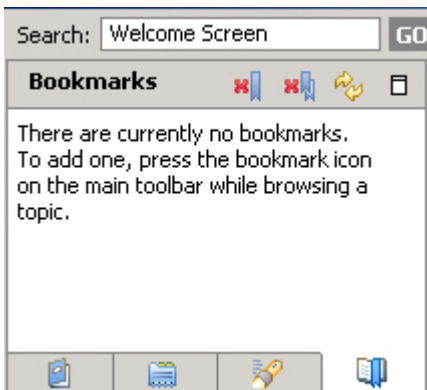
15.2.3.2 Call bookmarks

Use the 📖 button at the bottom of the help window on the
left to display the list of bookmarks. Select a bookmark to
display the bookmarked help page.

15.2.3.3 Delete bookmark

Use the 📖 button at the bottom of the help window on the
left to display the list of bookmarks. Use the ✖ button to
delete a selected bookmark.

Note:
Click the 📖 button at the bottom of the area on the left to
return to the table of contents.

16   Project planning with IP-Project

Find here detailed information about basic project planning activities.

16.1   Help pages in this chapter

- [Manage project](#)

- [Import / export data](#)

- [Edit Comfort Panel basic settings](#)

- [Create navigation structure (Comfort Panel)](#)

- [Configure pages (Comfort Panel)](#)

- [Configure control elements (Comfort Panel)](#)

- [Use preview](#)

- [Use notes](#)

- [Perform consistency check](#)

17   Manage project
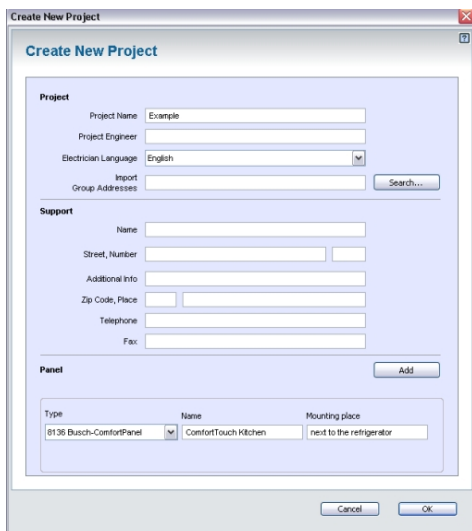
You can define the configuration for one or more Comfort Panels in a project. Only one project can be open in IP-Project at one time.

The online help describes basic project management in IP-Project - from **creating** new projects to **saving** and **transferring** finished projects to a Comfort Panel in the network.

17.1   → Start project

17.1.1   Create new project

Go to *Project > New* in the menu or click in the toolbar to create a new project. Enter a project name in the dialog under *Project*. Because IP-Project suggests this as the file name when saving, a meaningful project name is already suggested.

If you wish, you can save additional information about the project in the *Project* and *Customer* areas. You can also save additional information later (see [Edit project information](#)). Remember that only one project can be open at any one time. If you already have a project open, you are prompted to save the changes.

You can create one or more Comfort Panels in the *Comfort Panel* area. Select the Comfort Panel type (e.g. "Comfort Comfort Panel"), enter a Comfort Panel name (e.g. "Comfort Panel Kitchen") and if necessary, information about the installation location (e.g. "next to the refrigerator").

You can use the *Add* button to add additional Comfort Panels. You can also add additional Comfort Panels later (see [Insert Comfort Panel](#)).

17.1.2 Open project
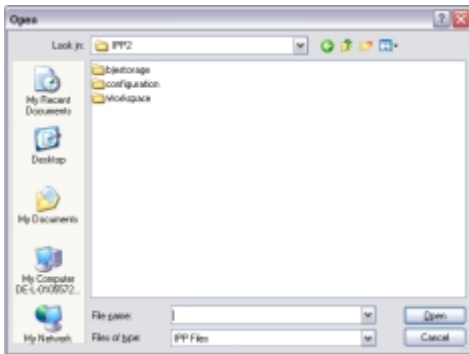
You can open an existing project from any storage medium via *Project > Open...* in the menu or by clicking ◻ in the toolbar. Select an IP-Project file in the dialog (*.ipp* extension) and confirm your selection by clicking *Open*.

Remember that only one project can be open at any one time. If you already have a project open, you are prompted to save the changes.
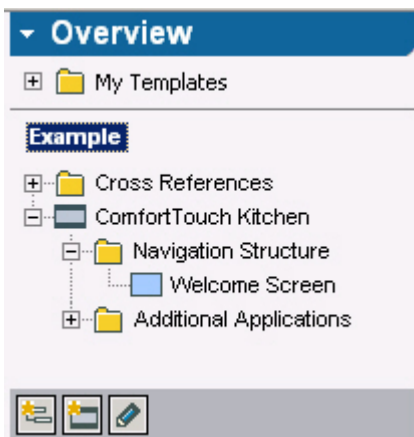
17.1.3 Insert Comfort Panel

You can add additional Comfort Panels at any time via *Project > Insert Comfort Panel* in the menu or by clicking ◻ in the *Overview* section of the library area.

17.1.4 Download project from Comfort Panel (Commissioning)
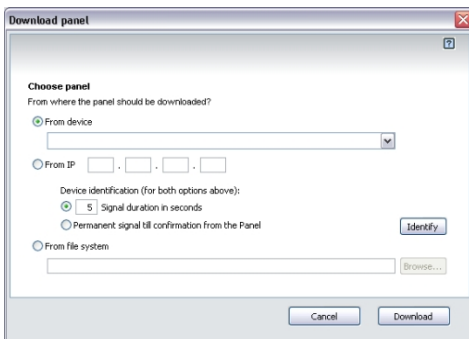
You can download a project from a Comfort Panel via *Project > Download Project* in the menu and by clicking in the toolbar. Select the Comfort Panel that you want to download from your project in the dialog under *Choose a Comfort Panel*. You can then select between downloading from the Comfort Panel via a network connection or a mobile storage medium (USB stick, memory card).

If you want to use the network option, ensure that a network connection to the Comfort Panel exists. Select the *From device* option and then select the device from the list. You can use the identification function to locate the correct Comfort Panel (see Identify Comfort Panel). Click *Download Project* to start the transfer.

If you want to use a storage medium, select the *Load from file system* option and enter a storage location. Click *Download project from ...Upload* to save the file to the

storage medium. For this, you need to have loaded the configuration file from the Comfort Panel. To do this, go do the desired Comfort Panel device and plug in the storage medium. Activate the Comfort Panel and select the export function in the navigation bar under *System > Export*. The configuration for the Comfort Panel is saved as a file with the extension *.zip* to the selected storage location.

Note: The downloading of a configuration may only be done to a newly created, empty project, otherwise, existing group addresses may possibly get lost.

17.2 → Edit project information

You can review and edit information about the project (*Project* tab) and the customer (*Customer* tab) via *Project > Project Information* in the menu.
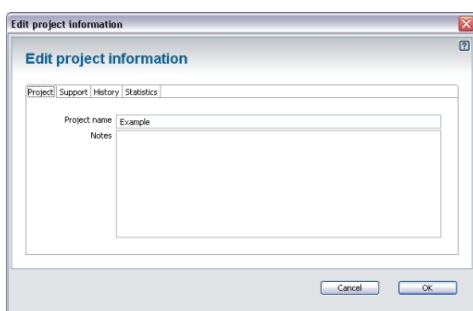
The *History* tab allows you to manually create a change history that you can use to make tracking changes in the project easier. If you want to display the change history when closing a project, enable the checkbox *Show dialog "Project History" on exit*.

IP-Project automatically saves important information, for instance the number of data points, in the *Statistics* tab.

17.3 → Finish project
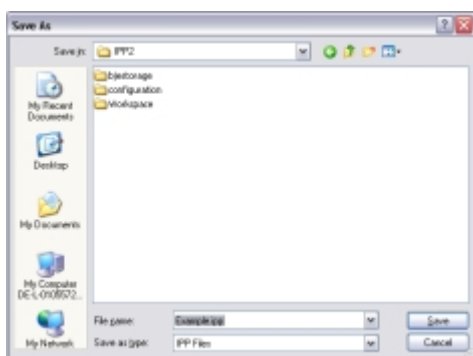
17.3.1 Save project / Save project as

You can save the changes in the open project via *Project > Save* or *Project > Save as...* in the menu. Select a folder and file name in the *Save as* dialog and click *Save*.

17.3.2 Transfer project to Comfort Panel (Commissioning)

You can transfer a project to a Comfort Panel via *Project > Upload Project* in the menu and by clicking ⬆ in the toolbar. Select the Comfort Panel from your project that you want to transfer to in the dialog under *Choose a Comfort Panel*. You can transfer the project to the Comfort Panel using a network connection or a mobile storage medium (USB stick, memory card) under *Choose a device*.
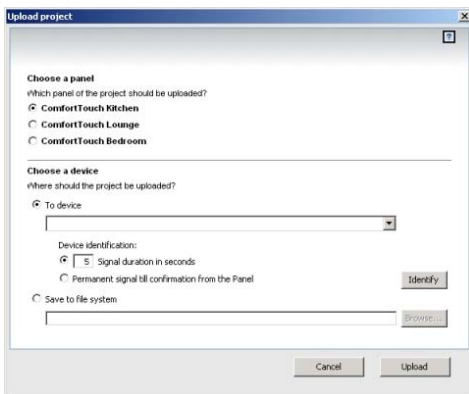
If you want to use the network option, ensure that a network connection to the Comfort Panel exists. Select the *To device* option and then select the device from the list. You can use the identification function to locate the correct Comfort Panel (see [Identify Comfort Panel](#)). Click *Upload* to start the transfer.

If you want to use a storage medium, select the *Save to file system* option and enter a storage location. Click *Upload* to save the file to the storage medium. The configuration for the Comfort Panel is saved as a file with the extension *.zip* to the selected storage location. Then go do the required Comfort Panel device and plug in the storage medium. Activate the Comfort Panel and select the zip file in the navigation bar under *System > Import*.
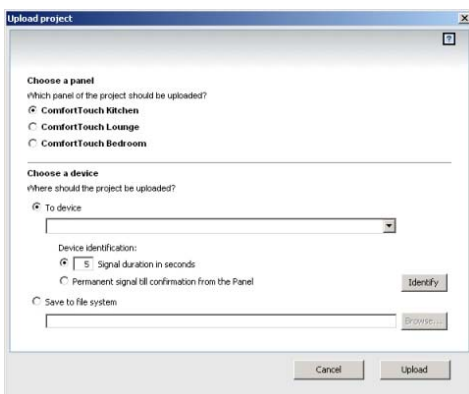
17.3.3 Identify Comfort Panel

The identification function helps you find a specific Comfort Panel in the network. This function is also available when transferring configurations. If you want to use the identification function, please ensure that a network connection to the Comfort Panel exists.

Choose a Comfort Panel from the list that you want to identify. You can play a warning signal either of a certain length or until confirmation at the Comfort Panel. Click *Identify* and you can locate the Comfort Panel on the basis of the warning tone.
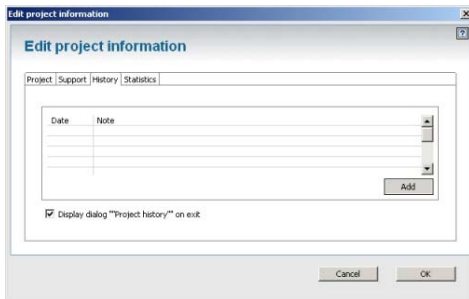
17.3.4   Close Project

Close the open project via *Project > Close project* in the menu, close the entire program via *Project > Close IP-Project*.

If you have enabled the *Show dialog "Project History" on exit* checkbox via *Project > Project Information...* in the *History* tab, you can review and edit the change history when exiting.

18   Import / export data

There are corresponding functions in IP-Project for importing or exporting group addresses and translation tables.

Other elements (e.g. room images, pages, symbols, function modules and logic modules) can also be integrated, but must be copied to the corresponding program directory of IP-Project.

18.1   → Import / export group addresses

18.1.1   Import group addresses

The dialog for importing group addresses is available via *Project > Import group addresses* in the menu. Group addresses can be loaded into IP-Project from any directory or drive.
Select a file in the dialog and load it into IP-project by clicking *Open*.

Please note:

- Unregistered group addresses cannot be imported.

- Imported group addresses cannot be changed in IP-Project.
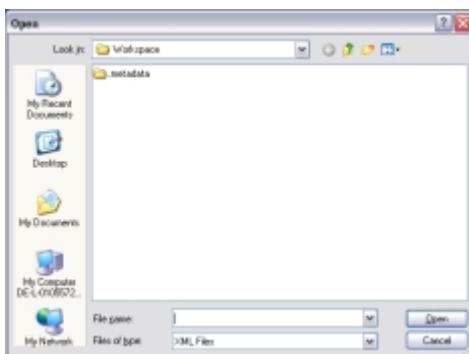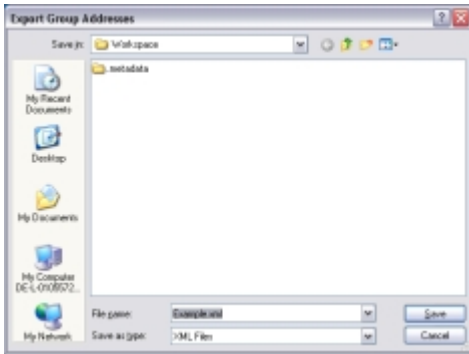
18.1.2 Export translation table

If you would like to export a translation table, select the language you want to export in the *Available languages* list. Add the list of *Selected languages* using the *Add* button. The languages are then sorted in the translation table in a *.txt in ascending order beginning with the language selected first.

18.2 → Import / export translation table
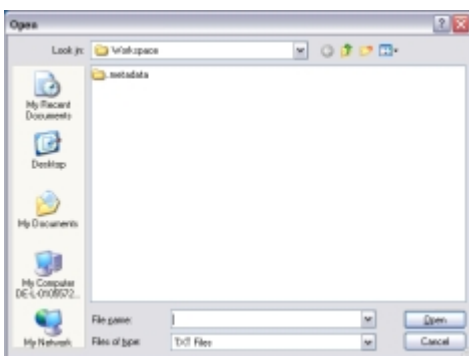
18.2.1 Import translation table

The dialog for importing a translation table is available via *Project > Import Translation Table* in the menu. The translation table must be in the *.txt file format. You can load a translation table from any directory or drive.
Select a file and load it into IP-project by clicking *Open*.

18.2.2 Export translation table
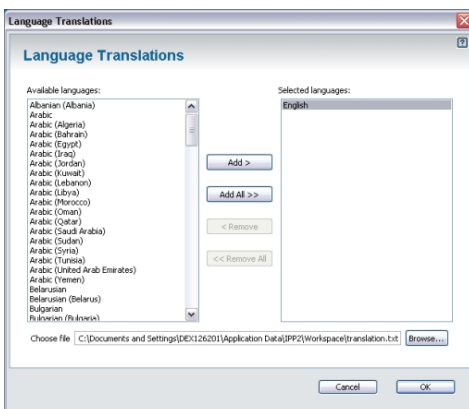
If you wish to export a translation table, you must first select the language in which you have entered the text (page names, button names, etc.) because the language you use may differ from the language installed in IPP. The language must first be selected from the "Available Languages" column and transferred using "Add" in the "Selected Languages" column. Additional languages can be added later in the same way. The languages are then sorted in the translation table in a *.txt in ascending order beginning with the language selected first.

18.3 → Import / export other data

19 Editing the basic settings of the Busch Comfort Panel

The basic settings for the Comfort Panel can be edited in the settings dialogue *Basic settings*. This dialogue can be accessed via the button *Default settings* in the parameter section and via via *Comfort Panel > Default settings* in the menu:

- when the required Comfort Panel is marked in the Project level or

- when no other element is marked on the Navigation level.

19.1 → Setting the design of the Comfort Panel
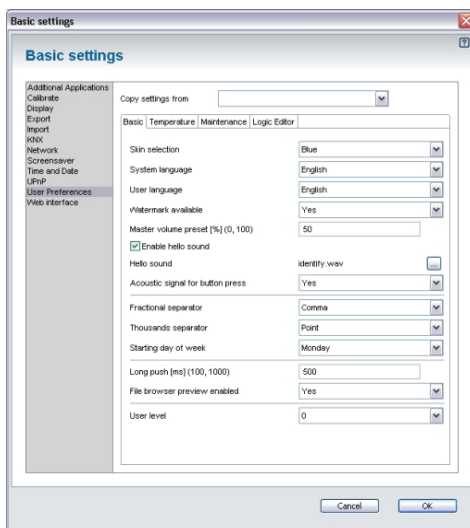
19.1.1 Changing the skin

The appearance of the Comfort Panel surface can be changed via *Design*. Three different designs are available. The presetting of the screen surface is blue. Alternative settings are a black or a bright appearance.

Open the settings dialogue *Basic settings* by selecting the button *Default settings* in the Parameter sector or *Project > Default settings* in the menu. Then select the entry *User preferences* on the left in the dialogue. The field *Design selection* is accessed with tab *Basis*. Here you can select one of the three designs for the Comfort Panel. Confirm your entry with *OK*.

19.1.2 Setting watermarks for scenes on the control element

Watermarks can be added to control and navigation elements. They serve as decoration and highlight the element's overriding application or its intended use for the room.

To set the watermark open the dialogue *Basic settings*. The selection list *Available watermarks* is accessed via *User preferences* and tab *Basis*. Select *Yes* to activate the display of watermarks for the entire Comfort Panel.

The default setting for the display of watermarks is active.

Note:
Watermarks for scenes can only be activated/deactivated for the entire Comfort Panel, not for individual control elements. Nor is it it possible to change the motif of a watermark.

19.2 → Setting the language of the Comfort Panel

19.2.1 Setting the language of the Comfort Panel

19.2.1.1 System languages

The Comfort Panel is supplied with 22 predefined **System languages** in which all fixed system texts are defined. The languages are:
Arabic, Chinese, German, Danish, English, Estonian, Finnish, French, Greek, Hebrew, Italian, Latvian, Lithuanian, Dutch, Norwegian, Polish, Russian, Swedish, Slovakian, Spanish, Czech, Turkish.

The system language of the Comfort Panel is changed in dialogue *Basic settings* and the sector of *User preferences* via tab *Basis* in the selection list *System language*.
It can also be set by the user in the Comfort Panel via *System > System Settings & System Settings* under *System language*.
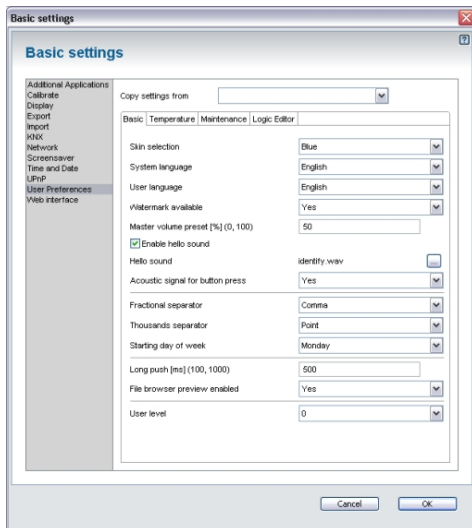
19.2.1.2 User-defined languages

In addition, up to 135 **User-defined languages** can be created. They refer to texts you have defined in your project and have not been supplied by the system (e.g. labelling of buttons, operating pages, etc.). User-defined languages are defined in theTranslation table. There all texts for the above-mentioned system languages and, if required, a further 234 languages are entered (see Editing translation table.

You can change the user-defined language of the Comfort Panel the *User preferences* area via the *Basis* tab in the *User language* selection list.
It can also be set by the user in the Comfort Panel via *System > System Settings & System Settings* under *User language*.

Note:
In contrast to the Comfort Panel the IP project software can only be operated in German or English. The system language is set during the installation of the IP project and cannot be subsequently altered.

19.2.2 Editing the translation table

Translation tables for User-defined languages can be exported from the IP project for editing.

When the editing is completed the file should be imported again to the IP project.

The exchange format for the translation table is text. A translation table to be exported or imported has the file suffix *.txt* and can be edited with any type of editor (e.g. MS Excel, MS Wordpad).

19.2.3 Configuring language switchover via Object

The system language and the <u>user-defined language</u> can be remotely controlled by users via a 1-byte Communication object by sending a Group address to the Comfort Panel. To do this select the Comfort Panel in the work area of the Comfort Panel level and open the *Objects* tab there. Link the communication object *User preferences and user preferences/system language* each with a group address (see <u>Group address assignment</u>).

In this way, a specific language always has the same index and can always be switched to in the same way in every project via data points. If a language such as "ar_AE" (language-country) is selected, and there is no entry for this "language-country combination", the Comfort Panel will at least search for entries with "ar" (language). If such an entry is found, the language used up till now will be switched to "ar". If no such entry exists, the data point ignores the selection.
2. The property for the user language for a selected panel in IPP only offers the available languages. I.e., only the languages for which translations exist in this project are offered.

19.3 → Setting time and date
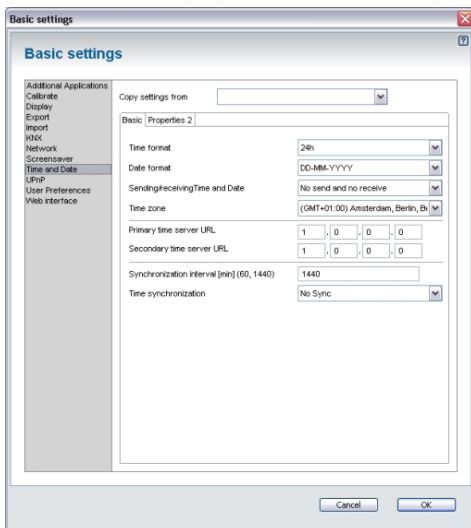
19.3.1 Setting time format

The format for the display of the time can be changed. The German display with hours from 0 to 23 has been preset. A display with 12 hours can also be set as alternative (with or without specifying of "am" or "pm").

These settings can be made in selection list *Time format* which is located in dialogue *Basic settings* under *Time and date*.

19.3.2 Setting the date format

This parameter is used to set the date format. Available for selection are

- DD-MM-YYYY or

- MM/DD/YYYY

where D stands for day, M for month and Y for year.

These settings can be made in selection list *Date format* which is located in dialogue *Basic settings* under *Time and date*.

19.3.3   Send/receive time

The Comfort Panel has an internal Date/Time module. The following can be selected via parameter *Send and receive Time/Date*,

- whether time and date are to be used only internally (no send and no receive),

- whether the Comfort Panel is to synchronize further KNX components in the system (sending, but not receiving) **or**

- whether the Comfort is to be updated with a KNX-DCF module (receiving, but not sending).

If you select one of the last two options you can synchronize the time and date via a Communication object by sending a Group address to or from the Comfort Panel. To do this select the Comfort Panel in the work area of the Comfort Panel level and open the *Objects* tab there. Link the communication objects *Time and date / time* and *Time and date / date* with a group address (see Group address assignment).

These settings can be made in selection list *Send and receive time /date* which is located in dialogue *Basic settings* under *Time and date*.

19.3.4   Setting the time zone

The local time zone (e.g. GMT+1 time zone Berlin, Paris) can be set in the selection list *Time zone* in dialogue *Basic settings* under *Time and date*.

19.3.5   Configuring time synchronisation

The synchronisation can be configured via external time generators in dialogue *Basic settings* under tab *Basis*. This enables you to ensure that all Comfort Panels in one home display the same time.

19.3.5.1 Activating / deactivating synchronisation

Parameter *Time synchronisation* is used for setting whether the date and time of the Comfort Panel are to be synchronised with an external time generator.

Select *KNX* if synchronisation is to take place via a KNX-DCF module. Select *NTP* if synchronisation is to take place via a Time server. in the Internet with the aid of the NTP protocol. If no synchronisation is required please select *No synchronisation*.

19.3.5.2 Setting time server URL

The Time servers for synchronising the date and time of the Comfort Panel is set via parameter *Primary time server URL* and *Secondary time server URL*.

The German institute Physikalisch-Technische Bundesanstalt (PTB) makes two time servers available.

- ptbtime1.ptb.de --> 192.53.103.108

- ptbtime2.ptb.de --> 192.53.103.104

The second time server comes in when the first one fails.

19.3.5.3 Setting the synchronisation interval

The synchronisation interval is set via parameter *Synchronization interval* .

If possible, leave the interval on the maximum value of 1440 minutes unless there are specific reasons for reducing it. This holds the network load to a minimum.

19.3.5.4 Forcing synchronisation

Via parameter *Deviation time* in the *Properties 2* tab, you set the deviation time at which the date and time synchronisation is to be forced even when synchronisation is deactivated. Date and time are synchronised only when the set deviation time has been reached. Any time between 60 and 300 seconds can be selected.

19.3.6   Setting time and date manually (Tab *Properties 2*)

Date and time can be entered manually via parameter *Date* and *Time*. Both parameters can be modified subsequently in the Comfort Panel under *Settings*.

19.3.7   Entering coordinates for the astro function (Tab *Properties 2*)

Via parameter *Longitude* and *Latitude* you can enter the longitude and latitude. This is required for the Astro function of the Weekly timers.

Longitude indicates the longitude of -180° (West) to +180° (East). It is specified in decimal degrees. i.e. minutes and seconds are shown as decimal places. One degree corresponds to 60 minutes and one minute to 60 seconds. The entry is made using the decimal system in the form of ddd.dddddd (e.g. 7.565278).

Latitude indicates the latitude of -90° (South) to +90° (North). It is specified in decimal degrees. i.e. minutes and seconds are shown as decimal places. One degree corresponds to 60 minutes and one minute to 60 seconds. The entry is made using the decimal system in the form of ddd.dddddd (e.g. 51.445833).

19.3.8   Setting the user level (Tab *Properties 2*)

Parameter *User level* is used to set whether every user can modify the time in the Comfort Pa-

nel or whether only selected persons are permitted to do so. If you wish to attach Access protection to the time setting, then select a User level between 1 and 8, with level 8 having the highest access protection.

Note:
Please note that you must first create the user levels in the editor for the Access protection before they can be assigned!

19.4 → Setting screen saver and time intervals

19.4.1 Setting time interval for return to the start page

By default the Comfort Panel automatically returns to the welcome screen 60 seconds after the last press of a button. You can change this time period. You can deactivate this function, which has the effect that the Comfort Panel remains on the current screen view up to the next press of a button.

In dialogue *Basic settings* select the entry *User preferences* and there the tab *Maintenance*. This view contains the checkbox *Activate automatic return to welcome screen*, which is used to set whether the Comfort Panel is to automatically return to the start page after a set time period without an input from the user.
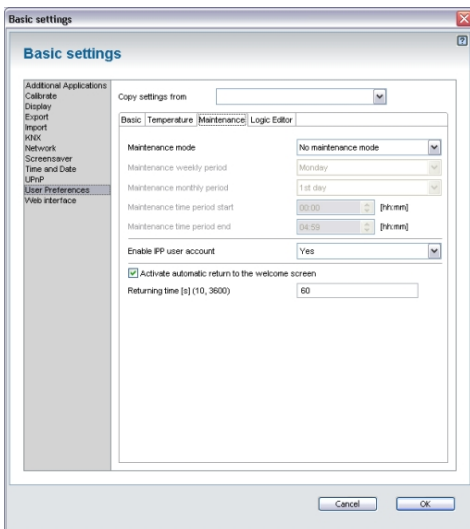
The duration of this period can be set in field *Return after (10, 3600)*. It is specified in seconds.

Note:
The time period for the return to the start page usually receives a lower value than the period for activating the Screen saver; however, both values can be set independently.

19.4.2 Setting time interval for return to the screen saver

You can set whether the screen saver is to switch itself on after a defined time period when the Comfort Panel is activated for this period.

In the dialogue *Basic settings* navigate to the view *Screen saver*. In the selection field *Show screen saver* you can select time intervals from 5 to 120 minutes. If the screen saver should not switch itself on, select *No screen saver*.
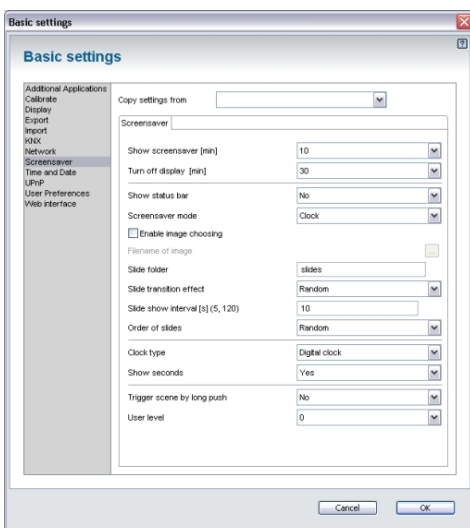
19.4.3 Setting time interval for deactivating the display

After expiry of a specified time the display of the Comfort Panel can be switched off completely. Here a time period from the last actuation of the Comfort Panel up to the deactivation of the display must be set. The two timers for the screen saver (see above) and the deactivation of the display start simultaneously. If the display is deactivated it will turn itself on again after renewed actuation.

Time intervals can be set in dialogue *Basic settings* in view *Screen saver* in the selection list *Stop screen saver and turn off display*.

Note:
It is advisable for the screen saver to activate itself first and then after the expiry of a specified time the display should deactivate itself.

19.4.4 Showing the status bar

While the screen saver is seen on the display, also the status bar can be displayed as on option. The setting can be made in dialogue *Basic settings* in view *Screen saver* in the selection list *Show status bar*.

19.4.5 Selecting the screen saver visualisation

The following visualisations are available as screen saver in the selection list *Screen saver mode*.

- *Slide show* (slide show with single images)

- *Single image* (single image)

- *Clock* (analogue or digital clock)

- *Weather data* (weather data)

Note:
Please observe that images in jpg or png format with a maximum resolution of 1600 * 960 pixels must be present.

19.4.5.1 Settings for the *Slide show*:

- *Slide folder*:
  The folder containing the slide files for the *Slide show* can vary. It can be specified or changed via the setting *Slide folder*.

  Note:
  If several slides are to be displayed in a *Slide show* the respective slide files (in format *.jpg* or *.png*) must be located on an *SD multimedia card* that is plugged into the corresponding slot of the Comfort Panel.

- *Page transition effect*:

If the *Slide show* has been set as screen saver you can specify via *Page transition effect* whether the images are to change with or without transition effect (e.g. *Hide*, *Wipe effect* or *Fly-in*). With setting *Random* the Comfort Panel randomly selects a transition effect from the three options *Hide*, *Wipe effect* and *Fly-in*.

- *Slide show interval*:
  This is used to specify the time how long a slide is shown on the display before transition to a new slide.

- *Order of slides*:
  This determines whether the slides are displayed in the alphabetical order of their file names or to be randomly selected.

- *Trigger scene with long press of button*:
  If the display is in the screen saver mode, a telegram can be triggered with a long press of a button anywhere on the display, to start a welcoming scene, for example.

- *User level*:
  The User level is used to set whether every user has access to the function or whether only selected persons are permitted to do so.
  If you wish to attach Access control to the function, select a User level between 1 and 8, with level 8 having the highest access protection.

  Note:

  Please note that you must first create the user levels in the editor for the Access protection before they can be assigned!

19.4.5.2 Settings for the *Single slide*:

- *Activate slide selection*:
  If you confirm "Activate slide selection", you can select a slide in the specified dialogue that will be stored in the Comfort Panel and is permanently available as screen saver.

- *Trigger scene with long press of button*:
  If the display is in the screen saver mode, a telegram can be triggered with a long press of a button anywhere on the display, to start a welcoming scene, for example.

- *User level*:
  The User level is used to set whether every user has access to the function or whether only selected persons are permitted to do so.
  If you wish to attach Access control to the function, select a User level between 1 and 8, with level 8 having the highest access protection.

  Note:

  Please note that you must first create the user levels in the editor for the Access protection before they can be assigned!

19.4.5.3 Settings for the *Clock*:

- *Clock type*:
  The current time can be displayed analogue or digitally. Almost the entire display is used in both cases.

- *Seconds display*:
  If a seconds hand (for the analogue display) or the seconds (for the digital display) is to be faded in, set the value for *Seconds display* on *Yes*.

- *Trigger scene with long press of button*:
  If the display is in the screen saver mode, a telegram can be triggered with a long press of a button anywhere on the display, to start a welcoming scene, for example.

- *User level*:
  The User level is used to set whether every user has access to the function or whether only selected persons are permitted to do so.
  If you wish to attach Access control to the function, select a User level between 1 and 8, with level 8 having the highest access protection.

  Note:
  Please note that you must first create the user levels in the editor for the Access protection before they can be assigned!

19.4.5.4 Settings for the *Weather data*:

- *Objects for weather data*:
  If you wish to display weather data, environmental data in the screen saver mode, you can have the data for temperature, air pressure, air humidity, wind speed, wind direction, brightness and rain displayed. To do this select the Comfort Panel in the work area of the Comfort Panel level and open the *Objects* tab there. Link the communication object each with one group address (see Group address assignment)

- *Trigger scene with long press of button*:
  If the display is in the screen saver mode, a telegram can be triggered with a long press of a button anywhere on the display, to start a welcoming scene, for example.

- *User level*:
  The User level is used to set whether every user has access to the function or whether only selected persons are permitted to do so.
  If you wish to attach Access control to the function, select a User level between 1 and 8, with level 8 having the highest access protection.

  Note:
  Please note that you must first create the user levels in the editor for the Access protection before they can be assigned!

19.5 → Configuring the KNX router

19.5.1 Activating / deactivating KNX router (Tab *Basis*)

The router function is activated or deactivated via parameter *Activate KNX Bus connection* . The IP router of the Comfort Panel can serve either as interface to programming or as Coupler.

19.5.1.1 Configuration of the media type

You address the Comfort Panel via *Ethernet network (LAN/WLAN)*, a *twisted-pair connection* or a *Powernet connection*.

Depending on which model you have connected to the Comfort Panel, enter the following in the *Media type* field:

- *LAN* for a LAN/WLAN connection

- *TP* for a twisted-pair connection

- *PN* for a Powernet connection
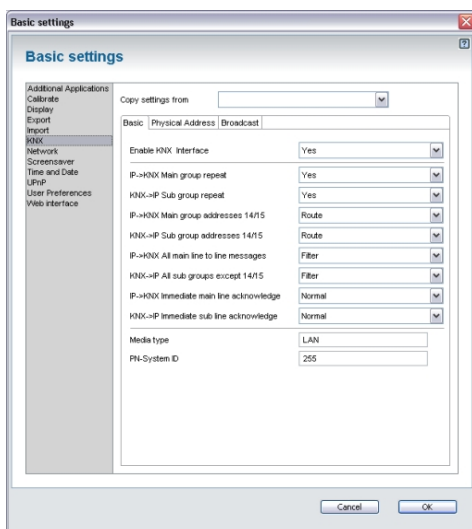
19.5.1.2 Configuration as interface to programming

In its function as interface programming telegrams can be sent via the Ethernet network to TP or PN devices that are connected below the Comfort Panel. Here it is important that the local physical address fits the installation location of the Comfort Panel. This procedure is also termed KNXnet/IP tunneling.

Example:
The Comfort Panel is connected to TP line 2.3. To be able to send programming telegrams to the TP line via the Ethernet the local physical address must start with 2.3.x. The participator number (x) should be an unused physical address in the system. Not the 0, however, since this is reserved for the line coupler. Even then when the Comfort Panel's IP router functions a line coupler.

19.5.1.3 Configuration as line coupler

If the IP router is to function as line coupler, the Ethernet connection is always the Main or Area line and the TP or PN connection always the subordinate side. The IP router

always gets a 0 as participator (e.g. 2.3.0), similar to line or area couplers. When cross-line telegrams are to be sent to other IP routers in the KNX installation, this is done via the multicast address (224.0.23.12) reserved for KNX. This procedure is also termed KNXnet/IP routing. In this case, please select *LAN* as media type.

19.5.2   Repetition of telegrams

19.5.2.1

IP --> KNX Repitition of group telegrams (Tab *Basis*)

The parameter *IP --> KNX Repitition of group telegrams* blocks or enables the repetition of telegrams on Main or Area lines.
If errors occur during the transmission of group addresses on the main or area line, the KNX telegrams are repeated.

19.5.2.2 *KNX --> IP Repitition of group telegrams* (Tab *Basis*)

Via the parameter *KNX --> IP Repetition of group telegrams* , the repetition of telegrams on the subordinate line is blocked or enabled.
If errors occur during the transmission of group addresses on the subordinate line, the KNX telegrams are repeated. At PN (Powernet) only one repetition only occurs, at TP (Twisted Pair) a faulty telegram is repeated up to three times.
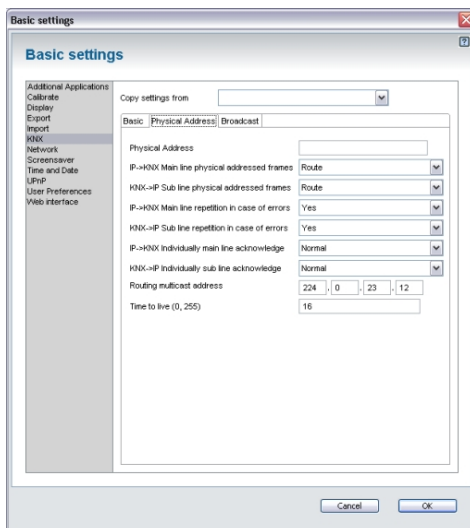
19.5.2.3 *IP --> KNX Repetition of physically addressed telegrams (Tab Physical address)*

Via the *IP --> KNX Repetition of physically addressed telegrams* parameter, the repetition of physically addressed telegrams is blocked or enabled.
If errors occur on the Main or Area line during the transmission of physically addressed telegrams (e.g. programming of an application or for diagnostics purposes during an inquiry of the state of a device), the KNX telegrams are repeated up to three times.

19.5.2.4 *KNX --> IP Repetition of physically addressed telegrams*

(Tab *Physical address*)

Parameter *KNX --> IP Repetition of group telegrams* is used to block or enable the repetition of physically addressed telegrams.
If errors occur on the KNX --> IP Repetition of group telegrams during the transmission of physically addressed telegrams (e.g. programming of an application or for diagnostics purposes during an inquiry of the state of a device), the KNX telegrams are repeated up to three times.

19.5.2.5 *IP --> KNX Repitition of broadcast telegrams* (Tab *Broadcast*)

Parameter *IP --> KNX Repetition of broadcast telegrams* is used to block or enable the repetition of Broadcast telegrams
. If errors occur on the Main or Area line during the transmission of broadcast telegrams (e.g. telegrams that are sent via the KNX multicast address), the KNX telegrams are repeated up to three times.

19.5.2.6 *KNX --> IP Repitition of broadcast telegrams* (Tab *Broadcast*)

Parameter *KNX --> IP Repetition of broadcast telegrams* is used to block or enable the repetition of Broadcast telegrams.
If errors occur on the Sub line during the transmission of broadcast telegrams (e.g. telegrams that are sent via the KNX multicast address), the KNX telegrams are repeated up to three times.

19.5.3 Transfer of telegrams

19.5.3.1

IP --> KNX Group telegrams main group 14+15 (Tab *Basis*)

The parameter *IP --> KNX Group telegrams main group 14+15* is used to block or enable the transfer of group telegrams with the main group addresses 14 and 15 from the main/area line to the sub line.
Under the *Filter* selection, only the telegrams with the main group addresses 14 and 15 are transferred that are in

the filter table.

19.5.3.2 *KNX --> IP Group telegrams main group 14+15*(Tab *Basis*)

Via the *KNX --> IP Group telegrams main group 14+15*, the transfer of group telegrams with main group addresses 14 and 15 from the Sub line to the Main/area line is blocked or enabled. When selecting *Filter*only telegrams with main group addresses 14 and 15 that are listed in the filter table are transferred.

19.5.3.3 *IP --> KNX Group telegrams main group 0-13* (Tab *Basis*)

Via the parameter *IP --> KNX Group telegrams main group 0-13* is used to block or enable the transfer of group telegrams from the Main/area line to the sub line. When selecting *Filter* only telegrams that are listed in the filter table are transferred.

19.5.3.4 *KNX --> IP Group telegrams main group 0-13* (Tab *Basis*)

The parameter *KNX --> IP Group telegrams main group 0-13* blocks or enables the transfer of group telegrams with main group addresses 0 and 13 from the Sub line to the Main/area line. When selecting *Filter*only telegrams with main group addresses 0 and 13 that are listed in the filter table are transferred.

19.5.3.5 *IP --> KNX Physically addressed telegrams* (Tab *Physical address*)

The *IP --> KNX Physically addressed telegrams* parameter is used to set the transfer of physically addressed telegrams from the main/area line to the sub line (e.g. programming an application or for diagnostics purposes during the enquiry of the device state). *Filter*, *Block* and *Transfer* can be set.

With the *Transfer* setting, the IP router only transfers telegrams with a physical address as target address if they match the subordinate side (TP or PN connection of the IP router). The IP router's own physical forms the basis for the synchronisation.
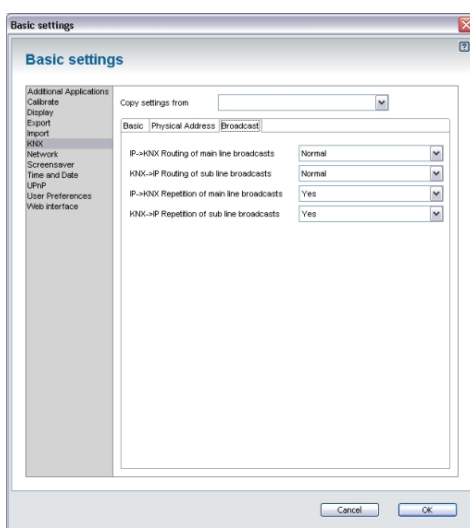
Example:
A programming telegram to a participator 1.2.4 would not pass an IP router with address 2.3.0, since a participator 1.2.4 is not located in a line 2.3.

With setting *Block* , basically all telegrams with a physical address are blocked.

With the *Filter* setting, all telegrams with a physical address are transferred. It does not matter whether they are located in the subordinate line or not (see example above).

19.5.3.6 *IP --> KNX Broadcast telegrams* (Tab *Broadcast*)

The parameter *IP --> KNX Broadcast telegrams* is used to block or enable the transfer of Broadcast telegrams (e.g. telegrams that are transmitted via the KNX multicast address) from the Main/Area line to the Sub line.

19.5.3.7 *KNX --> IP Broadcast telegrams* (Tab *Broadcast*)

The parameter *KNX --> IP Broadcast telegrams* is used to block or enable the transfer of Broadcast telegrams (e.g. telegrams that are transmitted via the KNX multicast address) from the Sub line to the Main/Area line.

19.5.4 Acknowledgement of telegrams

19.5.4.1

IP --> KNX Confirmation group telegrams (Tab *Basis*)

The parameter *IP --> KNX Confirmation group telegram* specifies when an acknowledgement is sent for receipt of a group telegram on the Main-/Area line.

At setting *Normal* an acknowledgement is sent only when the telegrams were transferred to the subordinate side (e.g. because the group address is located in the filter table). At selection *All* acknowledgements are always sent on the main/area line after the receipt of a telegram, irrespective of whether they were transferred to the subordinate side or not.

19.5.4.2 KNX --> IP Confirmation group telegrams (Tab *Basis*)

The parameter *IKNX --> IP Confirmation group telegrams* specifies when an acknowledgement is sent upon receipt of a group telegram on the subordinate side (TP or PN.

At setting *Normal* an acknowledgement is sent only when the telegrams were transferred to the overriding side (e.g. because the group address is located in the filter table). At selection *All* acknowledgements are always sent on the main/area line after the receipt of a telegram, irrespective of whether they were transferred to the overriding side or not.

19.5.4.3 IP --> KNX Confirmation of physically addressed telegrams (Tab *Physical address*)

The parameter *IP --> KNX Confirmation of physically addressed telegrams* specifies when a confirmation is sent, upon receipt of a physically addressed telegram on the Main/Area line.

At setting *Normal* an acknowledgement is sent only when the telegrams were transferred to the subordinate side (e.g. because the addressed device is connected to the subordinate side of the IP router). At selection *All* acknowledgements are always sent on the main/area line after the receipt of each telegram, irrespective of whether they were transferred to the subordinate side or not. An acknowledgement is never sent if the *Answer with confirmation* is selected.

19.5.4.4 KNX --> IP Confirmation of physically addressed telegrams (Tab *Physical address*)

The parameter *KNX --> IP Confirmation of physically addressed telegram* specifies when an acknowledgement is sent upon receipt of a physically addressed telegram on the subordinate side.

With setting *Normal* an acknowledgement is sent only when the telegrams were transferred to the overriding side (e.g. because the addressed Comfort Panel is connected to the subordinate side of the IP router). At selection *All*

acknowledgements are always sent on the main/area line after the receipt of each telegram, irrespective of whether they are located in a different area or not. No acknowledgement is sent if the setting *Answer with confirmation* is selected.

19.5.5 Multicast

19.5.5.1

IP --> KNX Confirmation of physically addressed telegrams (Tab Physical address)

The parameter *IP --> KNX Confirmation of physically addressed telegrams* specifies when a confirmation is sent, upon receipt of a physically addressed telegram on the Main/Area line.

At setting *Normal* an acknowledgement is sent only when the telegrams were transferred to the subordinate side (e.g. because the addressed device is connected to the subordinate side of the IP router). At selection *All* acknowledgements are always sent on the main/area line after the receipt of a telegram, irrespective of whether they were transferred to the subordinate side or not. An acknowledgement is never sent if the *Answer with confirmation* is selected.

19.5.5.2 *Period of validity (Tab Physical address)*

Parameter *Period of validity* functions similar to the routing counter in KNX-TP telegrams. It defines the number of routers that can be passed by a KNXnet/IP telegram before it is no longer transferred. The default value is 16. The KNXnet/IP telegram is sent with this value and each IP router reduces this value by 1, provided the telegram is transferred. On the 16th router the telegram is no longer transferred since the value of the *Period of validity* has been reduced to 0.

19.6 → Network settings

19.6.1 DHCP

Setting *DHCP* (Dynamic Host Configuration Protocol, located in dialogue *Basic settings* under *Network*) is used to define whether the network configuration is to be fixed automatically. If this is the case, the Comfort Panel obtains the necessary addresses for its network communication from a DHCP server by itself.

There are three different setting options for *DHCP*:

- *No DHCP*:
  For this setting the **IP address**, the **Subnet mask**, the **Internet gateway** and the **DNS addresses** must be entered manually (see below).

- *obtain IP addresses automatically*:
  DHCP switched off (e.g. if the network has a router with DHCP function).

- *Obtain IP and DNS server addresses automatically* (recommended setting):
  The IP configuration and DNS settings are obtained automatically with this setting. This setting is recommended since the DM server is generally dependent on the Internet provider. If it is changed, no changes to the settings on the Comfort Panel are necessary.
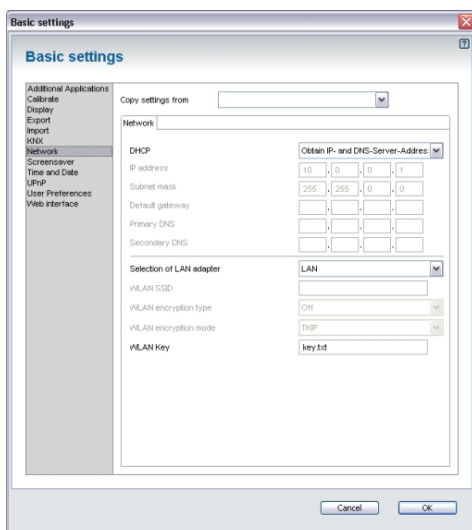
19.6.1.1 Settings for *No DHCP*:

- *IP address*:
  This parameter is used to assign a fixed IP address (physical network address). Certain rules are to be observed here. For private networks the address range from 192.168.0.0. to 192.168.255.255 are used as a rule.

- *Subnet mask*:
  This parameter is used to set the subnet mask. With the subnet mask the data traffic within a network is restricted, thereby preventing the network from being overloaded. The subnet mask to be set is dependent on the network class:

  - Class A - 255.0.0.0
  - Class B - 255.255.0.0

○ Class C - 255.255.255.0

A typical value, for example, is 255.255.255.0.

- *default gateway*:
  This parameter is used to set the IP address
  of the default gateway, which is generally the
  IP address of the Internet gateway (router).
  In larger networks this can also be the router
  of the subnet.

- *Primary DNS*:
  If the Internet is to be accessed, the IP
  address of the DNS server of your Internet
  provider must be entered here.
  A DNS server is required so that web links
  such as www.busch-jaeger.de are turned into
  physical IP addresses and these web sites can
  be called up. If this entry is missing, Internet
  sites cannot be accessed when these are spe-
  cified in the form of URLs such as www.busch-
  jaeger.de.
  To set the correct address you require the IP
  address of the DNS server of you Internet
  provider. This information is usually found on
  the web site of the respective provider.

- *Secondary DNS*:
  Here an IP address of a second DNS server
  can be entered, if this is offered by the Inter-
  net provider. The entry is optional. However, it
  increases safety since web sites can be acces-
  sed if the first DNS server fails.

19.6.1.2 Setting for *Obtain IP addresses automatically*:

- *Primary DNS*:
  If the Internet is to be accessed, the IP
  address of the DNS server of your Internet
  provider must be entered here.
  A DNS server is required so that web links
  such as www.busch-jaeger.de are turned into
  physical IP addresses and these web sites can
  be called up. If this entry is missing, Internet
  sites cannot be accessed when these are spe-
  cified in the form of URLs such as www.busch-
  jaeger.de.
  To set the correct address you require the IP
  address of the DNS server of you Internet
  provider. This information is usually found on

the web site of the respective provider.

- *Secondary DNS*:
  Here an IP address of a second DNS server can be entered, if this is offered by the Internet provider. The entry is optional. However, it increases safety since web sites can be accessed if the first DNS server fails.

Note:

A network administrator should used for these settings. Incorrect or inadequate manual settings lead to malfunctions.

19.6.2   LAN / WLAN settings

Selection of LAN adapter:

This parameter can be used to set if you wish to use a local network, or if it should be available. If yes, here you can set whether you use a cable-connected *LAN* (Local Are Network) or a *WLAN* (wireless LAN, radio network). If not, select *No LAN*.
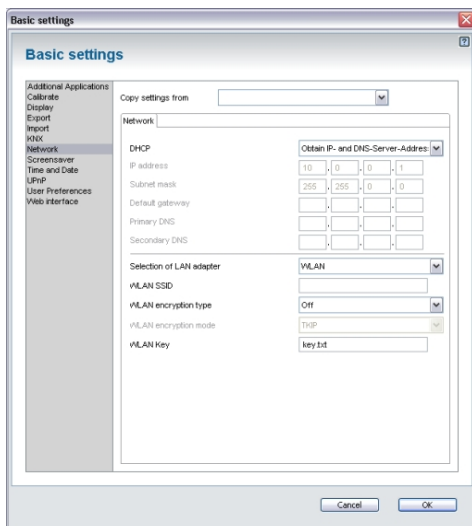
19.6.2.1 Settings for *WLAN*:

- *WLAN SSID*:
  Here the name of the WLAN is entered. If necessary, the configuration menu of the WLAN router must be called up or a network administrator called in.

- *WLAN encryption type*:
  Here the encryption type none, WEP, WPA or WPA2 of the WLAN is entered. If necessary, the configuration menu of the WLAN router must be called up or a network administrator contacted.

- *WLAN key*:
  This parameter can only be set when at *WLAN encryption type Off* has not been selected. The name of the text file that contains the WLAN key is entered here. This an alphanumeric character chain as a rule. The length is dependent on the encryption type. If necessary, the configuration menu of the WLAN router must be called up or the network administra-

tor contacted.

Note:
A WLAN should always be encrypted for security reasons. Otherwise there is the risk of someone gaining access to the network from the outside to cause damage. At present the WPA2 encryption offers the highest protection possible.

Note:
The file with the name that you have selected in the *WLAN key* field -- in most cases "key.txt", will have to be imported later into the WLAN network settings of the Comfort Panel in order for the WLAN key to become effective.

Example:
Using a text editor, create a file with the name that you have selected in the field *WLAN key* -- in most cases "key.txt".

In the case of *WPA/WPA2*, the file must contain the WLAN key as plain text.
Example: "Secret"

There are two options for WEP, with regards to the contents of the file *key.txt*:

- Here, the WLAN key can ether be saved in plain text, however, in this case "S:" must be prepended.
  Example: "S:Secret"

- Alternatively, the WLAN key can be entered as hexadecimal number:
  Example: "536563726574" or "47656865696D6E6973"

19.7   → Activating UPnP
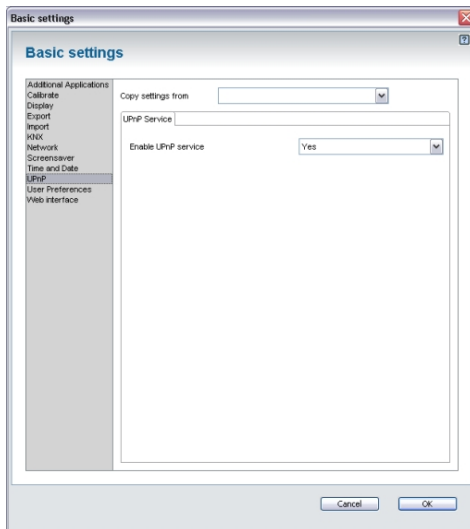
Parameter *Activate UPnP service* in dialogue *Basic settings* under *UPnP* is used to to activate Universal Plug and Play (UPnP).

The Comfort Panel depends on UPnP to open a UPnP port and register itself in the UPnP network. This ability is required for sending and receiving a project from IPP via a network.

19.8   → Activating additional applications

19.8.1   Activating simulated presence
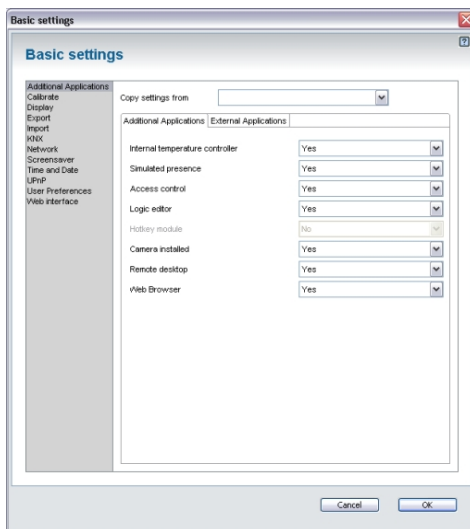
Simulated presence can be used to record processes in the house (e.g. switching of lights, adjusting blinds) while the user is present (recording mode) and then carry them out (playback mode) during the user's absence.

Simulated presence does not have a visual control page on the Comfort Panel but can only be accessed by the user via the status bar. It is therefore activated via dialogue *Basic settings*. This setting is located in view *Additional applications* in field *Simulated presence*. Simulated presence is active when *Yes* is selected.

After activating, you can configure this application in an editor (see Configuring additional applications).

Note:
The default setting for simulated presence is active.

19.9   → Configuring additional applications

19.9.1   Configuring simulated
        presence

If simulated presence has been activated, the user has the option of editing this function directly on the Comfort Panel. It would be practical to pre-configure simulated presence in the IP project. The respective editor can be called up in the parameter section of the Comfort Panel via the
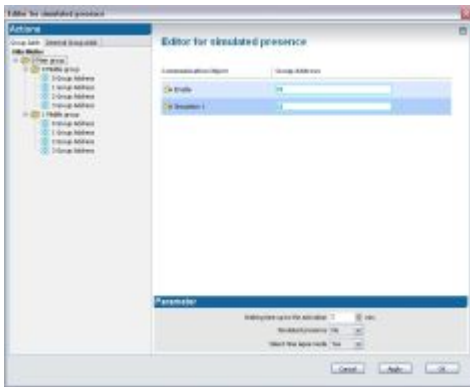
button *Simulated presence* or via the menu under *Comfort Panel > Optional software modules > Simulated presence*.

Note:
The editor for simulated presence can be called up only when this software module has been previously activated (see Activating simulated presence).

In the editor the recording channels can be configured and equipped with group addresses. This defines the processes the Comfort Panel is to record during presence and play back during absence. The editor consists of the following sectors:

- In the **Library sector** the group addresses are handled the same as in the IP main project window; however, they cannot be edited here.

- The **Work area** contains the data points of the presence simulation (enable + channels).

- The **Parameter sector** does no react in the context of the marked elements in the work sector of the editor. It contains additional parameters.

In the work sector the simulated presence can be started and ended via the Bus with the 1-bit communication object *Enable*. An IN telegram activates the simulated presence, an OUT telegram deactivates it again.

With communication objects *Simulation 1* to *Simulation 20* a group address or action can be linked which records a 1-bit value or 1-byte value for the simulated presence. In addition, the Comfort Panel records the telegram interval times. After activating the simulation the stored data are transmitted according to the recorded intervals.

The group addresses from the library sector can be allocated to the data points via drag and drop.

Note:
To correctly allocate the group addresses to the data points you can have additional information displayed about each data point (e.g. data point type). A tool tip appears when you pull the mouse pointer across the data point.

19.9.1.1 Further settings in the parameter sector

- *Waiting time up to activation*:
  Parameter *Waiting time up to activation* in the parameter sector of the editor is used to set

the number of channels to be monitored for the simulated presence. Up to 20 channels are possible. The Comfort Panel makes one 1-bit and one 1-byte communication object available for each channel. This enables group addresses or actions to be received (recorded) and subsequently transmitted again

- *Simulated presence*:
  This parameter is used to activate or deactivate the presence function.

- *Select time lapse mode*:

- The time lapse mode can be selected for test purposes. Here the recorded telegrams are played without time intervals.

19.9.2 Function of the simulated presence

Recording mode:
The simulated presence records the telegrams of 20 objects over the period of one week and stores these with weekday, time, object number and value (1 bit/1 byte). If more than one telegram arrives per object and minute, only the last telegram is tested and stored. Only the change of state is recorded, i.e. with telegrams of the same content only the first one is recorded.

Up to 20 actions per day and object are recorded. If there are more telegrams within a 24-hour period, the oldest telegram is deleted from the memory. The simulated presence operates with one memory per object for the current day and the respective weekdays.

In recording mode the current events of the day are written in the memory. Under no circumstances is the existing day (today a week ago) immediately deleted. During the changeover to the following weekday the current day in place of the day a week ago is stored.

Playback mode:
In the playback mode the values stored after starting time (a week ago today) are transmitted to the Bus precisely to the minute. These are transferred parallel to the relevant current day and, together with the values that have been recorded up to now, form the basis for saving at the changeover of the day.

If during playback no values have been recorded for a day in the first week of recording, the simulated absence searches a stored period and starts the playback. This makes

values for playback available also after the recording peri-
od of one day.

If the playback mode is exited, the function returns to the
recording mode and continues to fill the memory of the
current day.

19.9.3 Activating access control

Access control does not have a visible application page on
the Comfort Panel. It is therefore activated via dialogue
Basic settings. This setting is located in view *Additional
applications* in field *Access control*. Access control is acti-
ve when *Yes* is selected.

Note:
The default setting for access control is active.

19.9.4 Configuring access control

Certain areas of the Comfort Panel can be equipped with
access protection. This is displayed on the Comfort Panel
by means of a small lock icon next to the respective head-
line of the page or the operating element. When actuating
the button the user must first enter a four-digit code to
trigger the function.

Different user levels can be created for the access control
with the editor and the relevant four-digit security number
(PIN) can be set. You can also assign a user level to indi-
vidual pages and control elements in the Comfort panel.
The pages and control elements can then only be operated
with the respective user level.

Note:
As alternative to the central assignment of access rights to
the individual pages and functions (via the editor for ac-
cess control) you can also make these settings directly on
the elements. If, for example, you wish to assign access
protection to an operating element, you can do this by
means of parameter *User level* in the settings dialogue
Extended settings in the parameter sector of the respective
operating element.

19.9.5 Activating the camera module

The Comfort Panel can be expanded with a camera module
offering the user additional areas of application. This al-
lows the *Intercom*, *Video monitoring* and *Baby phone* ap-
plications to be used with a video image.

The camera module is activated via *Basic settings* dialog. This setting is located in the*Additional applications* view in *Camera module* field. The camera module is activated when *Yes* is selected there.

You can use the internal camera in the corresponding applications if the key module is present on the device and the software module with the same name is activated. Additional settings are not required.

Note:
The default setting for access control is deactivated.

19.9.6 Activating the baby phone receiver

Using the *Baby phone* application, cameras and microphones of other Comfort Panels in the network can be used, for example, to monitor a sleeping baby in a children's room. If the sound levels there exceed a set value, the *Baby phone* application establishes an audio/video connection to other selected panels. A panel must be configured as *Baby phone receiver* so that it can receive the audio/video data of a *Baby phone* monitor.

To do this, the additional *Baby phone receiver* application must be activated in the *Basic settings* dialog. This setting is located in *Additional applications* view in the *Baby phone* field. Select *Yes* there.

After activating, you can configure the *Baby phone receiver* (see Configuring a baby phone application page).

Note:
The *Baby phone receiver* is deactivated in the default setting.

19.9.7 Activating logic functions

Complex switching sequences can be realised in the Comfort Panel using so-called *Logic functions*. However, these can only be created in IP Project if the corresponding software module has been activated first.

The logic functions are activated via *Basic settings* dialog. This setting is located in view *Additional applications* in the *Logic editor* field. Logic functions are activated when *Yes* is selected.

After activating, you can configure the logic functions in an editor (see here).

Note:

Logic functions are deactivated by default.

After activation you can configure following parameters in the *Basic Settings* dialog:

The parameter *Queue size* defines the size of the input buffer of the logic engine.

The parameter *Overflow behavior* defines how to proceed if the input buffer is flooded.

- *Skip new events* defines that newly received elements are to be ignored.

- *Remove old elements* defines that on retrieval of new elements old elements are to be removed from the input queue. In this case the parameter *Elements to remove* defines how many of the oldest elements are to be discarded.

The parameter *Sending delay* defines the time in milliseconds the logic engine waits after calculating new values, until these values are sent.

Please note:
Very low sending delay values may lead to a significantly increased CPU load.

19.9.8   Activating Remote Desktop

The Comfort Panel can be controlled remotely via the VNC protocol (Virtual Network Computing). To do this, you simply need to enter the IP address of the Comfort Panel in a browser on a PC in the network. You then get the complete user interface as it is seen on the display of the Comfort Panel.

It is thus possible to trigger all operating functions remotely and see all information that the Comfort Panel displays from a different location. The call-up is also possible through the Internet via VPN, provided that the panel is connected to a router that has Internet access.

The Remote Desktop does not have a visible application page on the Comfort Panel. It is therefore activated via dialogue *Basic settings*. You can find this setting in the *Additional applications* view in the *Remote Desktop* field. The Remote Desktop is active when *Yes* is selected.

After activating, you can configure this application in an editor (see Configuring additional applications).

Note:

The default setting for access control is deactivated.

19.9.9   Activating the web browser

For the use of Internet-based services (feeds, web radio, etc.) connection settings may possibly need to be made. For example, if you use a proxy server, you can enter this using the web browser configuration.

19.9.10 Configuring the web browser

In the list on the left side of the *Parameter* dialog, you can find the following setting options under the *Web browser* entry:

19.9.10.1 Start page

Via the parameter *Homepage URL*, the preferred website can be entered as start page (e.g. http://www.busch-jaeger.de/).
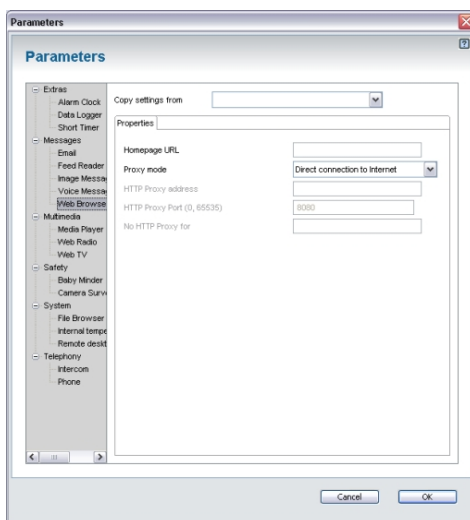
19.9.10.2 Proxy mode

You can select the proxy mode via the *Proxy mode* parameter:

- *Direct Internet connection*
  In this case, the function of the proxy server is not used.

- *Manual proxy settings*
  This setting must be selected if the data for the proxy server is to be entered manually.

In some networks a proxy server is used in order to check Internet traffic or the Internet provider offers a proxy server service. A proxy server is used among other things, to hide IP addresses from the Internet, to connect special devices with the Internet or to check the information from the Internet for security, e.g. viruses.

Your network administrator can help you with the settings if necessary.

19.9.10.3 HTTP proxy address

Via the *HTTP proxy address* parameter, the address of the proxy server is specified, e.g. as IP address or as host name.

You can get this from your network administrator.

This parameter can only be set if the proxy mode was set to *Manual proxy settings*.

19.9.10.4 HTTP proxy port

The required port is specified via the *HTTP proxy port* parameter. In many cases, this is preset to port "8080". You can get the information about the required port from your network administrator.

This parameter can only be set if the proxy mode was set to *Manual proxy settings*.

19.9.10.5 HTTP proxy exceptions

You can create an exception list that is used by some Internet servers that do not support proxy server functions via the *No HTTP proxy for* parameter.

This parameter can only be set if the proxy mode was set to *Manual proxy settings*.

Supported delimiters are semicolon, comma and „|".
Furthermore, you can use "*" as placeholder. Any blanks within the list are ignored.
Example:
205.105.148.*;www.msn.*,212.145.33.22|www.google.com

19.9.11 Using the simulated presence

Simulated presence can be used to record processes in the house (e.g. switching of lights, adjusting blinds) while the user is present (recording mode) and then carry them out (playback mode) during the user's absence.

Recording mode:
The simulated presence records the telegrams of 20 objects over the period of one week and stores these with weekday, time, object number and value (1 bit/1 byte). If more than one telegram arrives per object and minute, only the last telegram is tested and stored. Only the change of state is recorded, i.e. with telegrams of the same content only the first one is recorded.

Up to 20 actions per day and object are recorded. If there are more telegrams within a 24-hour period, the oldest telegram is deleted from the memory. The simulated presence operates with one memory per object for the current day and the respective weekdays.

In recording mode the current events of the day are written in the memory. Under no circumstances is the existing day (today a week ago) immediately deleted. During the changeover to the following weekday the current day in place of the day a week ago is stored.

Playback mode:
In the playback mode the values stored after starting time (a week ago today) are transmitted to the Bus precisely to the minute. These are transferred parallel to the relevant current day and, together with the values that have been recorded up to now, form the basis for saving at the changeover of the day.

If during playback no values have been recorded for a day in the first week of recording, the simulated absence searches a stored period and starts the playback. This makes values for playback available also after the recording period of one day.

If the playback mode is exited, the function returns to the recording mode and continues to fill the memory of the current day.

19.9.12 Setting the simulated presence

If simulated presence has been activated, the user has the option of editing this function directly on the Comfort Panel. It would be practical to pre-configure simulated presence in the IP project. The respective editor can be called up in the parameter section of the Comfort Panel via the button *Simulated presence* or via the menu under *Comfort Panel > Optional software modules > Simulated presence*.

Note:
The editor for simulated presence can only be called up if this software module has been previously activated (see Activating additional applications).

19.9.12.1 Configuring recording channels

In the editor the recording channels can be configured and equipped with group addresses. This defines the processes the Comfort Panel is to record during presence and play back during absence. The editor consists of the following sectors:

- In the **Library sector** the group addresses are handled the same as in the IP main project window; however, they cannot be edited

here.

- The **Work area** contains the data points of the presence simulation (enable + channels).

- The **Parameter sector** does no react in the context of the marked elements in the work sector of the editor. It contains additional parameters.

In the work sector the simulated presence can be started and ended via the Bus with the 1-bit communication object *Enable*. An IN telegram activates the simulated presence, an OUT telegram deactivates it again.

With communication objects *Simulation 1* to *Simulation 20* a group address or action can be linked which records a 1-bit value or 1-byte value for the simulated presence. In addition, the Comfort Panel records the telegram interval times. After activating the simulation the stored data are transmitted according to the recorded intervals.

The group addresses from the library sector can be allocated to the data points via drag and drop.

Note:
To correctly allocate the group addresses to the data points you can have additional information displayed about each data point (e.g. data point type). A tool tip appears when you pull the mouse pointer across the data point.

19.9.12.2 Further settings in the parameter sector

- *Waiting time up to activation*:
  Parameter *Waiting time up to activation* in the parameter sector of the editor is used to set the number of channels to be monitored for the simulated presence. Up to 20 channels are possible. The Comfort Panel makes one 1-bit and one 1-byte communication object available for each channel. This enables group addresses or actions to be received (recorded) and subsequently transmitted again

- *Simulated presence*:
  This parameter is used to activate or deactivate the presence function.

- *Select time lapse mode*:
  The time lapse mode can be selected for testing purposes. Here the recorded telegrams

are played back without time intervals.

19.9.13 Using the access control

Certain areas of the Comfort Panel can be equipped with access protection. This is displayed on the Comfort Panel by means of a small lock icon next to the respective headline of the page or the operating element. When actuating the button the user must first enter a four-digit code to trigger the function.

Different user levels can be created for the access control with the editor and the relevant four-digit security number (PIN) can be set. You can also assign a user level to individual pages and control elements in the Comfort panel. The pages and control elements can then only be operated with the respective user level.

Note:
As alternative to the central assignment of access rights to the individual pages and functions (via the editor for access control) you can also make these settings directly on the elements. If, for example, you wish to assign access protection to an operating element, you can do this by means of parameter *User level* in the settings dialogue *Extended settings* in the parameter sector of the respective operating element.

19.9.13.1

19.9.14 Setting the access control

If access control has been activated, the user has the option of editing this function directly on the Comfort Panel. It would be practical to pre-configure the access control in the IP project. The respective editor can be called up in the parameter section of the Comfort Panel via the button *Access control* or via the menu under *Comfort Panel > Optional software modules > Access control.*

Note:
The editor for access control can only be called up if this software module has been previously activated (see Activating additional applications).

19.9.14.1 Setting the user levels

To activate the user levels, select the entry *Access level* in the left-hand area of the editor's window.
In the view that will be displayed, user levels 1 to 8 are

listed in which you can activate each level individually via the checkbox. Stage 0 (guest) is permanently activated.

For user levels that are activated the PIN, which is 0000 as standard, should be changed.

19.9.14.2 Assigning pages and operating elements to the user levels

With the user levels so defined, you can then configure the access control for single pages and operating elements. Then select the entry *Assignments* in the left window section of the editor. In this view all pages and operating elements are listed that have been created up to now in the Comfort panel. Also displayed is the user level assigned to each element. Standard is level 0, which does not require a PIN. You now have the opportunity to edit the assignment of the access levels.

In view *Default settings* and via the checkbox *Activate blips* you can set whether a blip is to be played. This signal sounds as soon as access is denied by the access control.

19.9.14.3 Time interval for a return to user level 0

You can define a time interval for a return to user level 0. The authorization status of a user on the Comfort Panel is limited timewise. After a correct entry of a PIN an internal timer starts. When the timer has run down, the user's current authorization level is withdrawn and he is again logged in as guest. The timer starts anew each time the user makes an entry on the screen. The length of the time interval can be configured in view *Default settings* via *Automatic block*.
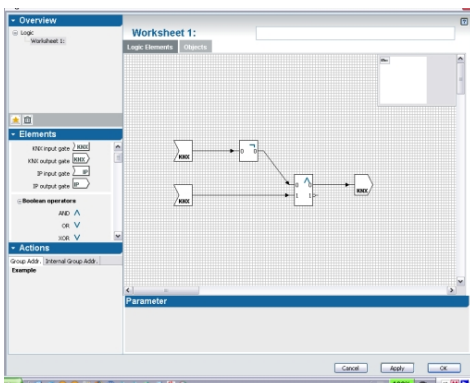
19.9.15 Using logic functions

Please look here.
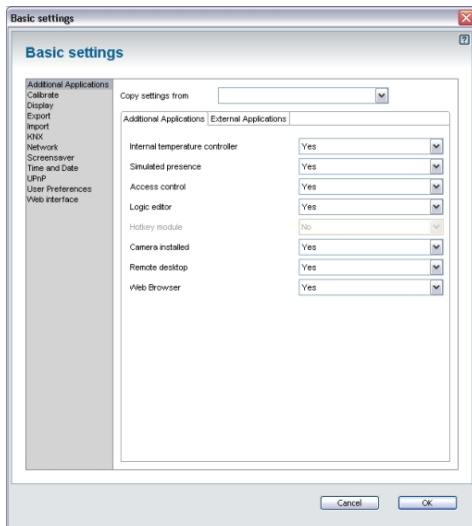
19.9.16 Using the Remote Desktop

The Comfort Panel can be controlled remotely via the VNC protocol (Virtual Network Computing). To do this, you simply need to enter the IP address of the Comfort Panel in a browser on a PC in the network. You then get the complete user interface as it is seen on the display of the Comfort Panel.

It is thus possible to trigger all operating functions remotely and see all information that the Comfort Panel displays from a different location. The call-up is also possible through the Internet via VPN, provided that the panel is connected to a router that has Internet access.

19.9.17 Setting Remote Desktop

If Remote Desktop was activated, you can make settings in the *Application settings* dialog. The dialog can be reached via the parameter section of the respective Comfort Panel using the button *Application settings* or via the menu under *Panel > Application settings*. Select *Remote Desktop* in the left area there.

Note:
The dialog for *Application settings* can only then be called up if the software module Remote Desktop has been previously activated (see Activating additional applications).

19.9.17.1 Specifying user name and password

You specify the user name and password that are required for the access via Remote Desktop via the parameters *User name for remote access* and *Password for remote access*.

19.9.17.2 Setting the time interval for automatic logging off

The *Timeout due to inactivity* parameter specifies the time after which Remote Destop will be ended automatically. Any time interval can be defined here from 1 second to 1440 seconds. It is possible to deactivate this automatic logout function with *No timeout*. For security reasons, the Remote Desktop should, however, be ended automatically.

19.10 → Configuring the acoustic signals of the Comfort Panel

19.10.1 Configuring the welcome signal
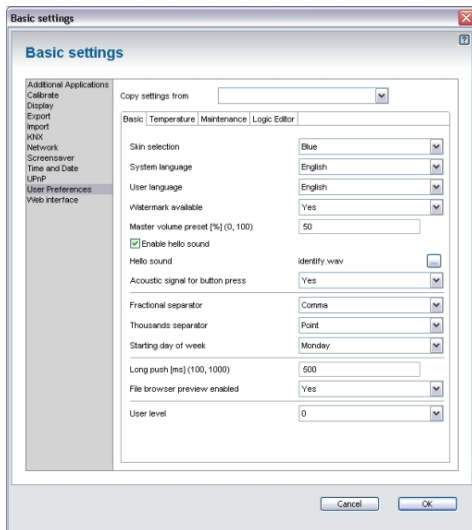
A welcoming signal can be played at the start of the Comfort Panel. To do this go to *User preferences* and in tab *Basis* activate checkbox *Activate welcome signal*.

If you wish to change the welcome signal, select a different one under *Welcome signal*.

19.10.2 Configuring button signal

When actuating a button an acoustic signal can be played by the Comfort Panel.

Any kind of signal tone can be set in the list *Activate acoustic signal for buttons* under *User preferences* in tab *Basis*. This function can be deactivated with *No*.

19.11 → Setting separators

19.11.1 Setting decimal separators
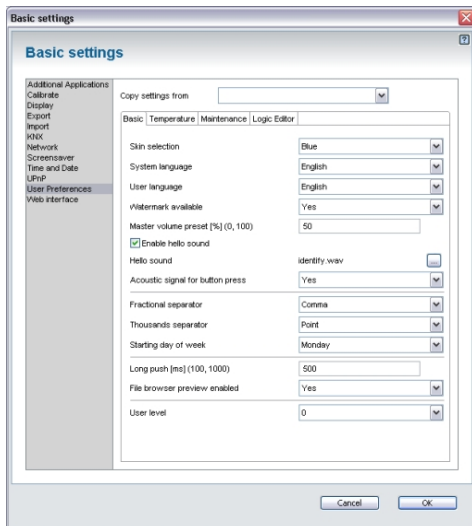
Under *User preferences* in tab *Basis* and by means of parameter *Decimal separators* you can set whether a comma (German separator) or a point (English separator) is to be used as decimal separator.

19.11.2 Setting the thousands separator

Under *User preferences* in tab *Basis* and by means of parameter *Thousands separators* you can set whether thousands are to separated with a comma (English separator) or a point (German separator).

19.12 → Configuring the temperature display in the status bar of the Comfort Panel

19.12.1 Setting the temperature format
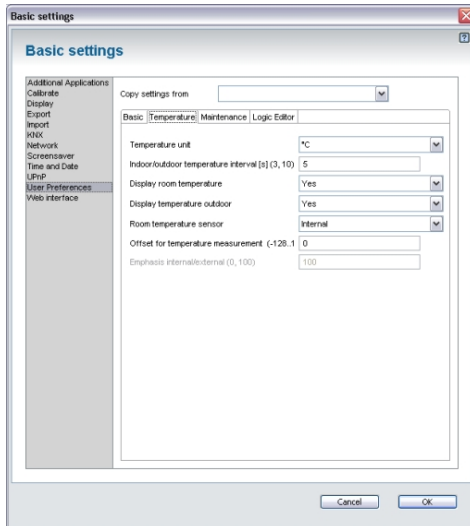
The Comfort Panel has a temperature display in the status bar. Via parameter *Temperature unit* under *User preferences* in tab *Temperature* you can select between temperature units Celsius or Fahrenheit.

19.12.2 Selecting temperature sensor

Under *User preferences* in tab *Basis* and by means of parameter *Room temperature sensor* you can set whether the indoor temperature is to be handled via the internal sensor of the Comfort Panel or via the external KNX temperature sensor.

19.12.3 Activating the temperature display

Parameters *Display room temperature* and *Display outdoor temperature* are used to set whether the indoor or outdoor temperature is to be displayed in the status bar.

Indoor or outdoor temperature share a space in the status line and are shown alternatingly (provided this is configured)!

19.13 → Configuring automatic maintenance

19.13.1 Selecting the maintenance cycle
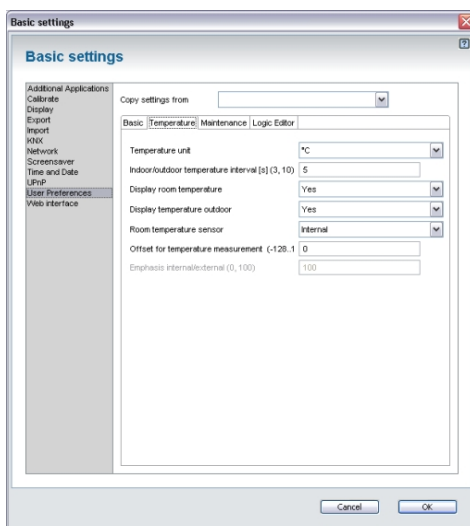
Parameter *Maintenance mode* under *User preferences* in tab *Maintenance* is used to set whether the Comfort Panel is to be cyclically re-started for maintenance purposes. This can be of assistance when a malfunction occurs inside the Comfort Panel. This makes a manual restart unnecessary.

If cyclic restarts are to be carried out, they can be set daily, weekly or monthly.

Note:
Mail and alarm functions are not affected by the mainte-

nance function.

19.13.2 Setting the time for maintenance

19.13.2.1 Day

If maintenance is to be carried out, the day of the week or the month this is to take place is set via parameters *Weekly maintenance period* and *Monthly maintenance period*.

19.13.2.2 Time

If maintenance is to be carried out, the period over which this is to take place is set via parameters *Start of maintenance period* and *End of maintenance period*. Practical is a time interval during which the Comfort Panel is unlikely to be used (e.g. from 1 a.m. to 5 a.m.).

19.14   → Configuring access to the web interface

19.14.1 Defining user names

Via parameter *User name* under *Web interface* you can define a user name with which a user can log himself into the Web interface of the Comfort Panel.

Via parameter *Master user name* you can also define an administrator name with which a user can log himself into the Web interface of the Comfort Panel.
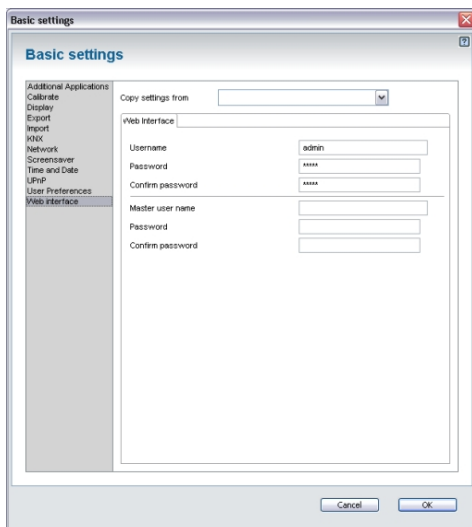
19.14.2 Setting passwords

Via parameters *Password* and *Password* under *Web interface* you can define passwords with which users and administrators can log themselves into the Web interface of the Comfort Panel. You need to enter each password a second time under *Confirm password*.

19.15 → Assigning group addresses (Comfort Panel communication objects)

19.15.1 Using Comfort Panel communication objects

To establish a connection between a comfort Panel and an actuator or sensor you must assign a group address to the Comfort Panel in the IP project. For this purpose each Comfort Panel has several Communication objects.

To do this go to Project level in the work sector and to tab *Objects*. Here you see all communication objects of all Comfort Panels in your project. Now drag a group address from the sector *Actions* in the library sector onto a communication object (see Insert element from library).
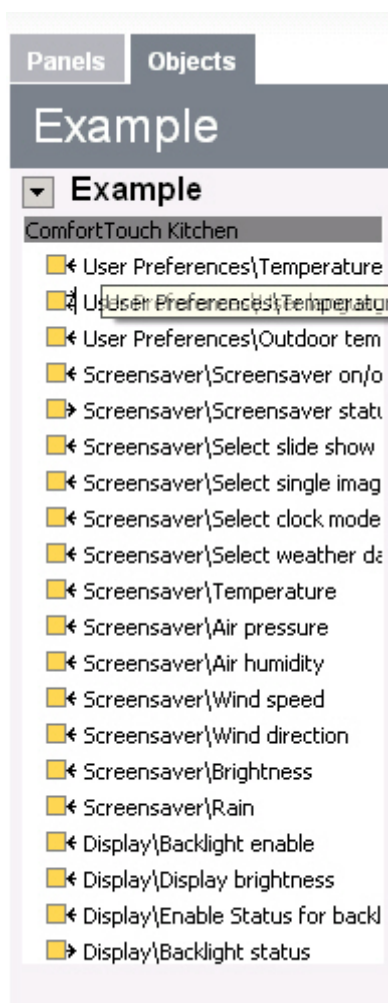
A Comfort Panel can have the following communication objects:

- *User preferences|Temperature unit selection*

- *User preferences|User language*

- *User preferences|Room temperature* (only when indoor sensor is not used)

- *User preferences|Outdoor temperature*

- *Screen saver|Screen saver on/off*

- *Screen saver|Screen saver status*

- *Screen saver/Select slide show mode*

- *Screen saver|Select single image mode*

- *Screen saver|Select clock mode*

- *Screen saver|Select weather data mode*

- *Screen saver|Temperature*

- *Screen saver|Air pressure*

- *Screen saver|Air humidity*

- *Screen saver|Wind speed*

- *Screen saver|Wind direction*

- *Screen saver|Brightness*

- *Screen saver|Rain*

- *Display|Backlight enable*

- *Display|Display brightness*

- *Display|Enable status for backlight*

- *Display|Backlight status*

19.15.2 *User preferences\Temperature unit selection*

This 1-bit communication object can be used to switch the unit for temperature between Celsius and Fahrenheit. A switch-off telegram activates the unit °C and a switch-on telegram the unit F.

19.15.3 *User preferences\User language*

This 1-byte communication object is used to change the User language via the Bus.

19.15.4 *User preferences\Room temperature*

This communication object is available only when the indoor temperature sensor of the Comfort Panel is not to be used and parameter *Room temperature sensor* has been set on *External* (see [Configuring the temperature display in the status bar of the Comfort Panel](#)).

Via this 2-byte communication object the indoor temperature is received from an outdoor temperature sensor.

19.15.5 *User preferences\Outdoor temperature*

Via this 2-byte communication object the temperature is received from an outdoor temperature sensor.

19.15.6 *Screen saver\Screen saver on/off*

This 1-bit communication object is used to switch the scree saver off and on externally. The receipt of a switch-on telegram activates the screen saver and a switch-off telegram deactivates it.

Note:
The time set under parameter *Display screen saver* only expires after the receipt of a switch-on telegram.

19.15.7 *Screen saver\Screen saver status*

When the screen saver is activated the 1-bit communication object sends a telegram with value 1.
When the screen saver ends, the 1-bit communication object sends a telegram with value 0.

19.15.8 *Screen saver\Select slide show mode*
Screen saver\Select single image mode
Screen saver\Select clock mode
Screen saver\Select weather data mode

The respective mode can be activated or deactivated as screen saver via these 1-bit communication objects. A switch-on telegram activates the mode, a switch-off telegram deactivates it.

Note:
The four 1-bit communication objects for activating the various screen savers have different priorities. The object *Screen saver\Select slide show mode* has the highest priority, then follow the objects *Screen saver\select single image mode*, *Screen saver\Select clock mode* and *Screen saver\Select weather data mode*. If two or more objects simultaneously have value 1, the object with the highest priority will assert itself.

19.15.9 *Screen saver\Temperature*

Via this 2-byte communication object telegrams with temperature values can be received and evaluated, e.g. the ones transmitted by a KNX weather station. The 2-byte floating point values are evaluated according to EIS5.

19.15.10 *Screen saver\Air pressure*

Telegrams with air pressure values can be can be received and evaluated via this 2-byte communication object, e.g. the ones transmitted by a KNX weather station. The 2-byte floating point values are evaluated according to EIS5.

19.15.11 *Screen saver\Air humidity*

Via this 1-byte communication object telegrams with air humidity values can be received and evaluated, e.g. the ones transmitted by a KNX weather station.

The value *0* means 0% air humidity and the value *255* means 100% air humidity.

19.15.12 *Screen saver\Wind speed*

Via this 2-byte communication object telegrams with wind speed values can be received and evaluated, e.g. the ones transmitted by a KNX weather station. The 2-byte floating point values are evaluated according to EIS5.

19.15.13 *Screen saver\Wind direction*

Via this 1-byte communication object telegrams with wind direction values can be received and evaluated, e.g. the ones transmitted by a KNX weather station.

The value *0* means 0° and the value *255* means 360°.

19.15.14 *Screen saver\Brightness*

Telegrams with brightness values can be can be received and evaluated via this 2-byte communication object, e.g. the ones transmitted by a KNX weather station. The 2-byte floating point values are evaluated according to EIS5.

19.15.15 *Screen saver\Rain*

Via this 1-bit communication object information about rainfall can be received and evaluated, e.g. the ones transmitted by a KNX weather station. A telegram with value 0 is interpreted as *No rain* and the receipt of a telegram with value 1 is interpreted as *Rain*.

19.15.16 *Screen saver\Backlight enable*

This 1-bit communication object is used to switch the display backlight on and off. The receipt of a switch-on telegram activates the display backlight, the receipt of a switch-off telegram deactivates it.

19.15.17 *Screen saver\Display brightness*

The brightness of the display can be set via this 1-byte communication object.
Value *0* means 0% and value*255* means 100% display brightness.

19.15.18 *Screen saver\Enable status for backlight*

This 1-bit communication object activates or deactivates the *Screen saver\Backlight status* communication object. If a switch-

on telegram is received on *Enable status for backlight*, the object *Screen saver\Backlight status* is active. If a switch-off telegram is received on *Enable status for backlight*, the object *Backlight status* is not active.

19.15.19 *Screen saver\Backlight status*

This 1-bit communication object is used to signal whether the display backlight is switched on or off. When the display backlight is switched on, a telegram with value *1* is sent, and a telegram with value *0* is sent when it is switched off.

Note:
The communication object can be activated or deactivated via the 1-bit communication object *Screen saver\Enable status for backlight*.

20 Configuring additional applications (Comfort Panel)

Comfort Panel applications whose configuration is more complex have a special editor window in IP Project. You can access these via the respective buttons in the parameter area and via *Comfort Panel > Default settings* in the menu:

- when the required Comfort Panel is marked in the Project level or

- when no other element is marked on the Navigation level.

20.1 → Configuring the simulated presence

20.1.1 Using the simulated presence

Simulated presence can be used to record processes in the house (e.g. switching of lights, adjusting blinds) while the user is present (recording mode) and then carry them out (playback mode) during the user's absence.

Recording mode:
The simulated presence records the telegrams of 20 objects over the period of one week and stores these with week-day, time, object number and value (1 bit/1 byte). If more than one telegram arrives per object and minute, only the last telegram is tested and stored. Only the change of state is recorded, i.e. with telegrams of the same content only the first one is recorded.

Up to 20 actions per day and object are recorded. If there are more telegrams within a 24-hour period, the oldest

telegram is deleted from the memory. The simulated presence operates with one memory per object for the current day and the respective weekdays.

In recording mode the current events of the day are written in the memory. Under no circumstances is the existing day (today a week ago) immediately deleted. During the changeover to the following weekday the current day in place of the day a week ago is stored.

Playback mode:
In the playback mode the values stored after starting time (a week ago today) are transmitted to the Bus precisely to the minute. These are transferred parallel to the relevant current day and, together with the values that have been recorded up to now, form the basis for saving at the changeover of the day.

If during playback no values have been recorded for a day in the first week of recording, the simulated absence searches a stored period and starts the playback. This makes values for playback available also after the recording period of one day.

If the playback mode is exited, the function returns to the recording mode and continues to fill the memory of the current day.

20.1.2 Setting the simulated presence

If simulated presence has been activated, the user has the option of editing this function directly on the Comfort Panel. It would be practical to pre-configure simulated presence in the IP project. The respective editor can be called up in the parameter section of the Comfort Panel via the button *Simulated presence* or via the menu under *Comfort Panel > Optional software modules > Simulated presence*.

Note:
The editor for simulated presence can only be called up if this software module has been previously activated (see Activating additional applications).

20.1.2.1 Configuring recording channels

In the editor the recording channels can be configured and equipped with group addresses. This defines the processes the Comfort Panel is to record during presence and play back during absence. The editor consists of the following sectors:

- In the **Library sector** the group addresses are handled the same as in the IP main pro-

ject window; however, they cannot be edited here.

- The **Work area** contains the data points of the presence simulation (enable + channels).

- The **Parameter sector** does no react in the context of the marked elements in the work sector of the editor. It contains additional parameters.

In the work sector the simulated presence can be started and ended via the Bus with the 1-bit communication object *Enable*. An IN telegram activates the simulated presence, an OUT telegram deactivates it again.

With communication objects *Simulation 1* to *Simulation 20* a group address or action can be linked which records a 1-bit value or 1-byte value for the simulated presence. In addition, the Comfort Panel records the telegram interval times. After activating the simulation the stored data are transmitted according to the recorded intervals.

The group addresses from the library sector can be allocated to the data points via drag and drop.

Note:
To correctly allocate the group addresses to the data points you can have additional information displayed about each data point (e.g. data point type). A tool tip appears when you pull the mouse pointer across the data point.

20.1.2.2 Further settings in the parameter sector

- *Waiting time up to activation*:
  Parameter *Waiting time up to activation* in the parameter sector of the editor is used to set the number of channels to be monitored for the simulated presence. Up to 20 channels are possible. The Comfort Panel makes one 1-bit and one 1-byte communication object available for each channel. This enables group addresses or actions to be received (recorded) and subsequently transmitted again

- *Simulated presence*:
  This parameter is used to activate or deactivate the presence function.

- *Select time lapse mode*:
  The time lapse mode can be selected for testing purposes. Here the recorded telegrams

are played back without time intervals.

20.2 → Configuring access control

20.2.1 Using the access control

Certain areas of the Comfort Panel can be equipped with access protection. This is displayed on the Comfort Panel by means of a small lock icon next to the respective headline of the page or the operating element. When actuating the button the user must first enter a four-digit code to trigger the function.

Different user levels can be created for the access control with the editor and the relevant four-digit security number (PIN) can be set. You can also assign a user level to individual pages and control elements in the Comfort panel. The pages and control elements can then only be operated with the respective user level.

Note:
As alternative to the central assignment of access rights to the individual pages and functions (via the editor for access control) you can also make these settings directly on the elements. If, for example, you wish to assign access protection to an operating element, you can do this by means of parameter *User level* in the settings dialogue *Extended settings* in the parameter sector of the respective operating element.

20.2.1.1

20.2.2 Setting the access control

If access control has been activated, the user has the option of editing this function directly on the Comfort Panel. It would be practical to pre-configure the access control in the IP project. The respective editor can be called up in the parameter section of the Comfort Panel via the button *Access control* or via the menu under *Comfort Panel > Optional software modules > Access control*.

Note:
The editor for access control can only be called up if this software module has been previously activated (see Activating additional applications).

20.2.2.1 Setting the user levels

To activate the user levels, select the entry *Access level* in

the left-hand area of the editor's window.
In the view that will be displayed, user levels 1 to 8 are listed in which you can activate each level individually via the checkbox. Stage 0 (guest) is permanently activated.

For user levels that are activated the PIN, which is 0000 as standard, should be changed.

20.2.2.2 Assigning pages and operating elements to the user levels

With the user levels so defined, you can then configure the access control for single pages and operating elements. Then select the entry *Assignments* in the left window section of the editor. In this view all pages and operating elements are listed that have been created up to now in the Comfort panel. Also displayed is the user level assigned to each element. Standard is level 0, which does not require a PIN. You now have the opportunity to edit the assignment of the access levels.

In view *Default settings* and via the checkbox *Activate blips* you can set whether a blip is to be played. This signal sounds as soon as access is denied by the access control.

20.2.2.3 Time interval for a return to user level 0

You can define a time interval for a return to user level 0. The authorization status of a user on the Comfort Panel is limited timewise. After a correct entry of a PIN an internal timer starts. When the timer has run down, the user's current authorization level is withdrawn and he is again logged in as guest. The timer starts anew each time the user makes an entry on the screen. The length of the time interval can be configured in view *Default settings* via *Automatic block*.

20.3   → Configuring Remote Desktop
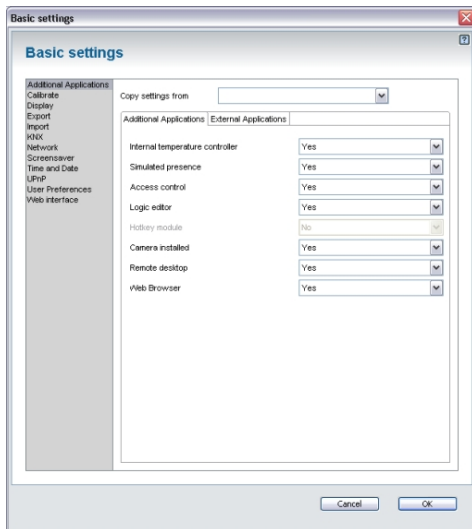
20.3.1   Using the Remote Desktop

The Comfort Panel can be controlled remotely via the VNC protocol (Virtual Network Computing). To do this, you simply need to enter the IP address of the Comfort Panel in a browser on a PC in the network. You then get the complete user interface as it is seen on the display of the Comfort Panel.

It is thus possible to trigger all operating functions remotely and see all information that the Comfort Panel displays from a different location. The call-up is also possible through the Internet via VPN, provided that the panel is connected to a router that has Internet access.

20.3.2   Setting Remote Desktop

If Remote Desktop was activated, you can make settings in the *Application settings* dialog. The dialog can be reached via the parameter section of the respective Comfort Panel using the button *Application settings* or via the menu under *Panel > Application settings*. Select *Remote Desktop* in the left area there.

Note:
The dialog for *Application settings* can only then be called up if the software module Remote Desktop has been previously activated (see Activating additional applications).

20.3.2.1 Specifying user name and password

You specify the user name and password that are required for the access via Remote Desktop via the parameters *User name for remote access* and *Password for remote access*.

20.3.2.2 Setting the time interval for automatic logging off

The *Timeout due to inactivity* parameter specifies the time after which Remote Destop will be ended automatically. Any time interval can be defined here from 1 second to 1440 seconds. It is possible to deactivate this automatic logout function with *No timeout*. For security reasons, the Remote Desktop should, however, be ended automatically.

[03_03_09_00_EN.html - Logikbausteine](03_03_09_00_EN.html)

20.3.3   KNX input module details
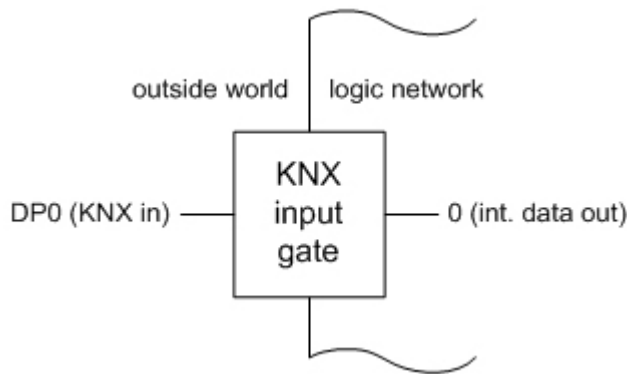
20.3.3.1 Behaviour

Upon receipt of an input telegram from the KNX network via the communication object *DP0*, the KNX input module outputs the value of the received telegram to the logical-sided *Output 0*.

The data type of the incoming telegram is automatically converted to the corresponding internal data type (see conversion table below).

20.3.3.2 Linking with group addresses

Every KNX input module can be linked with one or multiple group addresses. For this purpose, it has a *DP0* communication object.

In order to link the communication object with group addresses, go to the *Objects* tab in the worksheet. Here you will see the communication objects of all input and output modules of your logic Drag a group address from the *Actions* area in the library area to the communication object (see Add element from library).

Note:
As data type of the incoming telegram, the data type of the first linked group address on the *DP0* communication object is always adopted. If values outside of the defined data range are received on the other group addresses, the KNX input module ingnores these values.

20.3.3.3 Extended settings

You can specify the initial value to be used of the KNX input module according to the type of the linked group address (see above) via the *Input value* parameter.

Note:
This value is only then used if a logic module linked with the KNX input module is recalculated, at the KNX input module, however, a KNX telegram was still not received.

20.3.3.4 Conversion table

KNX data type	Data point type	Range of values	Internal data type

1 bit	1.xxx		Boolean
2 bit	2.xxx		Number (long)
4 bit	3.xxx		Number (long)
1-byte unsigned	5.001	{0..100}	Number (long)
	5.003	{0..360}	Number (long)
	5.004	{0..255}	Number (long)
	5.010	{0..255}	Number (long)
1-byte signed	6.xxx	{-128..127}	Number (long)
2-byte unsigned	7.xxx	{0.. 65535}	Number (long)
2-byte signed	8.xxx	{-32768..32767}	Number (long)
2-byte float	9.xxx	{-671088.64..670760.96}	Number (double)
3 byte	10.xxx		Time
	11.xxx		Date
4-byte unsigned	12.xxx	{0..4294967295}	Number (long)
4-byte signed	13.xxx	{-2147483648..2147483647}	Number (long)
4-byte float	14.xxx	{-Float.MAX..Float.MAX }	Number (double)
Local ASCII	231.001		String
string	16.xxx		String

20.3.4   KNX output module details

20.3.4.1 Behaviour

Upon receipt of a value via the logic-sided input *data in*, the KNX output module sends a telegram with the incoming value via the *DP0* communication object into the KNX network.

The internal data type of the KNX output module is converted into the data type of the communication object. If a carryover arises, a telegram with the value 1 (1-bit) is sent out via the *DP1* communication object.

20.3.4.2 Linking with group addresses

Every KNX output module can be linked with one or multiple group addresses. For this purpose, it has communication objects.

In order to link a communication object with group addresses, go to the *Objects* tab in the worksheet. Here you will see the communication objects of all input and output modules of your logic Drag a group address from the *Actions* area in the library area to the communication object (see Add element from library).

Note:
Although the editor generally does allow multiple group addresses to be linked with a communication object, in the case of the KNX output module, only the first group address is used for sending!

20.3.4.3 Extended settings

Via the *Only send with change* parameter, you can specify whether a KNX telegram shall only be sent if a logic-sided received value is different to the previously received value.

20.3.4.4 Conversion table

KNX data type	Data point type	Range of values	Internal data type
1 bit	1.xxx		Boolean

2 bit	2.xxx		Number (long)
4 bit	3.xxx		Number (long)
1-byte unsigned	5.001	{0..100}	Number (long)
	5.003	{0..360}	Number (long)
	5.004	{0..255}	Number (long)
	5.010	{0..255}	Number (long)
1-byte signed	6.xxx	{-128..127}	Number (long)
2-byte unsigned	7.xxx	{0.. 65535}	Number (long)
2-byte signed	8.xxx	{-32768..32767}	Number (long)
2-byte float	9.xxx	{-671088.64..670760.96}	Number (double)
3 byte	10.xxx		Time
	11.xxx		Date
4-byte unsigned	12.xxx	{0..4294967295}	Number (long)
4-byte signed	13.xxx	{-2147483648..2147483647}	Number (long)
4-byte float	14.xxx	{-Float.MAX..Float.MAX }	Number (double)
Local ASCII	231.001		String
string	16.xxx		String

03_03_09_00_EN.html - Logikbausteine

03_03_09_00_EN.html - Logikbausteine

20.3.5   IP input module details
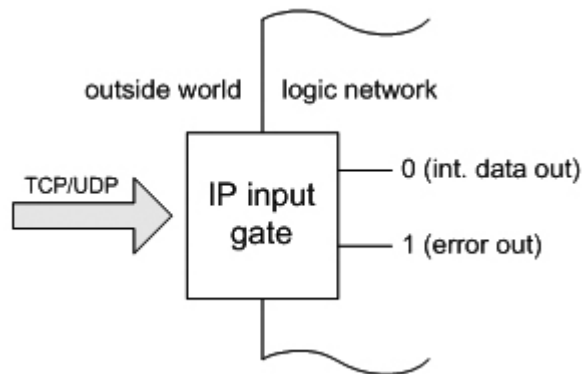
20.3.5.1 Behaviour

Upon receipt of TCP-based data from a network, the IP input module outputs the incoming data packet to the logic-sided *Output 0*as soon as the sender ends the connection. Alternatively, for existing connection, individual values can be output in dependence on user-defined data block sizes or in dependence on user-defined separators (see below).

Incoming UDP-based data packets are immediately output to the logic-sided *Output 0*.

The data type of the incoming data is automatically converted to the set KNX-conform data type and finally, as with the*KNX input module*, converted to an internal data type. If errors occur, the value 1 is output on the logic-sided *Output 1* (logical "true").

20.3.5.2 Extended settings

- Via the *Protocol* parameter, you can specify whether TCP- or UDP-based data shall be received.

- Via the *Port No.* parameter, you can specify on which port data shall be received.

- Via the *Limit type* parameter, you can manually specify, in the case of a TCP-based communication, the point in time of the output on *Output 0*:

    o Select *Symbol* as limit type. In this way, you can specify characters in hexadecimal notation (e.g. 0x01) *Limit bytes*. If these characters are received, the IP input module outputs the data of the current data block.

    o Select *Block* as limit type. In this way, you can specify under *Block size* the number of characters (in bytes) that belong to a data block. If this number of characters are received, the IP input module outputs the received data as data block.

- Using the *Preamble block size* and *Postambel block size* parameters, you can specify by how many bytes a received data package shall be truncated:

    o For UDP at the beginning and end of every UDP data package.

- For TCP at the beginning and end of the complete TCP data stream received.

- Via the *KNX data type* or *Value format* parameter, you can specify to which KNX-compliant data type the received data blocks shall be converted before they are converted to the corresponding internal data type.

[03_03_09_00_EN.html - Logikbausteine](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Logikbausteine](03_03_09_00_EN.html)

20.3.6   IP output module details
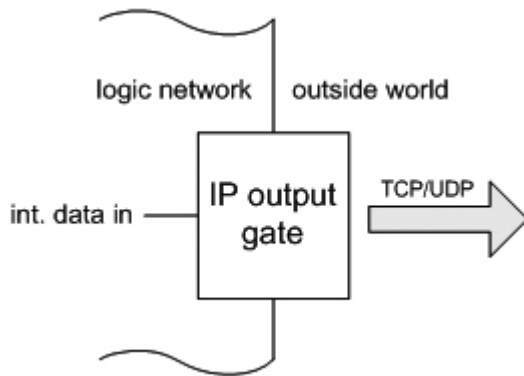
20.3.6.1 Behaviour

Upon receipt of a value via the logic-sided input *data in*, the IP output module sends TCP- or UDP-based data with the incoming value to a specific IP address using a specific port.

The sent data corresponds to the selected KNX-compliant data type of the IP output module.

20.3.6.2 Extended settings

- Via the *Only send with change* parameter, you can specify whether a date shall only be sent if a logic-sided received value is different to the previously received value.

- Via the *Protocol* parameter, you can specify whether TCP- or UDP-based data shall be sent.

- Via the *Port* parameter, you can specify on which port data shall be sent.

- Via the *IP address* parameter, you can specify on which IP address port data shall be sent (e.g. "192.168.1.113").

- Via the *Terminate connection after sending a date* parameter, you can specify whether the connection shall remain open after the sending of data (in the case of a TCP-based communication).
  In this case, via the *Limit bytes* parameter, you can specify characters in hexa-decimal notation (e.g. 0x01) that are added to every data packet sent.

- Using the *Preamble* and *Postambel* parameters, you can specify characters that are to be inserted to the data to be sent:

  - o For UDP at the beginning and end of every UDP data package.

  - o For TCP at the beginning and end of the complete transmission.

- Via the *KNX data type* or *Value format* parameter, you can specify to which KNX-compliant data type the data received on the logic-sided *data in* shall be converted to before it is sent per IP.

03_03_09_00_EN.html - Logikbausteine

03_03_09_00_EN.html - Boolean

20.3.7 AND module details
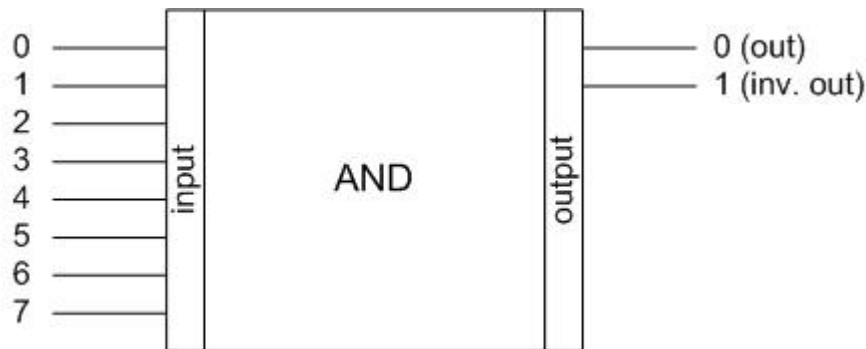
20.3.7.1 Behaviour

If the value 1 is present on all inputs of the module (logical "true"), the result 1 is output (logical "true") on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

The internal data type of the AND module is Boolean. Incoming values are thus converted into this data type (see conversion table below).

20.3.7.2 Truth table

Input 0	Input 1	Output 0	Output 1
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

20.3.7.3 Extended settings

- Via the *Number of inputs* parameter, the number of the inputs of the AND module can be specified between 2 and 8.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.7.4 Conversion table

Boolean converted

Boolean   ---

Number	0	→ 1 (logical "true")
	≠ 0	→ 0 (logical "false")

DPTTime every value → 1 (logical "true")

DPTDate every value → 1 (logical "true")

String	"0" or ""	→ 0 (logical "false")
	other values	→ 1 (logical "true")

[03_03_09_00_EN.html - Boolean](#)

20.3.8   OR module details
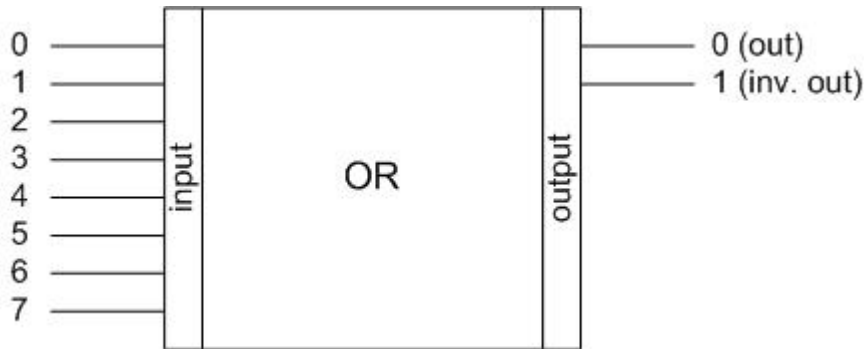
20.3.8.1 Behaviour

If the value 1 is present on at least one inputs of the module (logical "true"), the result 1 is output (logical "true") on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

The internal data type of the OR module is Boolean. Incoming values are thus converted into this data type (see conversion table below).

20.3.8.2 Truth table

Input 0	Input 1	Output 0	Output 1
0	0	0	1
0	1	1	0
1	0	1	0
1	1	1	0

20.3.8.3 Extended settings

- Via the *Number of inputs* parameter, the number of the inputs of the OR module can be specified between 2 and 8.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.8.4 Conversion table

Boolean converted

Boolean	---	
Number	0	→ 1 (logical "true")
	≠ 0	→ 0 (logical "false")
DPTTime	every value	→ 1 (logical "true")
DPTDate	every value	→ 1 (logical "true")
String	"0" or ""	→ 0 (logical "false")
	other values	→ 1 (logical "true")

[03_03_09_00_EN.html - Boolean](#)

[03_03_09_00_EN.html - Boolean](#)

20.3.9　XOR module details
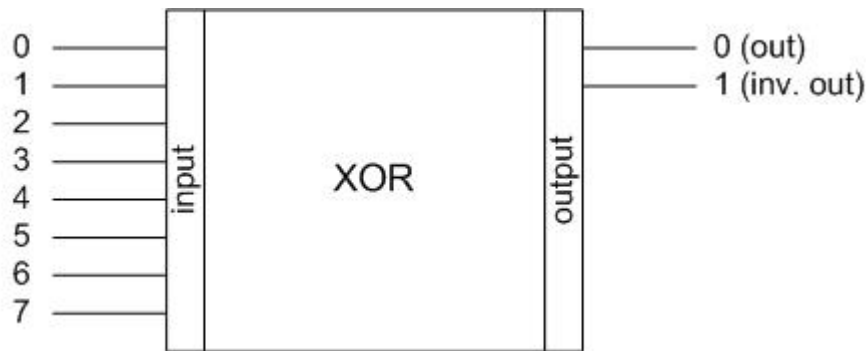
20.3.9.1 Behaviour

If the value 1 is present on an odd number of inputs (logical "true"), the result 1 is output (logical "true") on the*Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

The internal data type of the XOR module is Boolean. Incoming values are thus converted into this data type (see conversion table below).

20.3.9.2 Truth table

Input 0	Input 1	Output 0	Output 1
0	0	0	1
0	1	1	0
1	0	1	0
1	1	0	1

20.3.9.3 Extended settings

- Via the *Number of inputs* parameter, the number of the inputs of the XOR module can be specified between 2 and 8.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.9.4 Conversion table

Boolean converted

Boolean   ---

Number	0	→ 1 (logical "true")
	≠ 0	→ 0 (logical "false")

DPTTime every value → 1 (logical "true")

DPTDate every value → 1 (logical "true")

String	"0" or ""	→ 0 (logical "false")
	other values	→ 1 (logical "true")

[03_03_09_00_EN.html - Boolean](#)

[03_03_09_00_EN.html - Boolean](#)

20.3.10 NOT module details
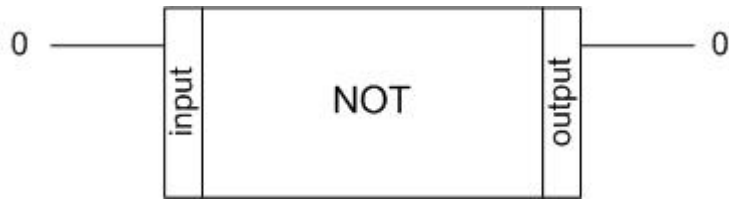
20.3.10.1 Behaviour

If the value 1 is present on the *Input 0* (logical "true"), the result 0 is output (logical "false") on the *Output 0* . If the value 0 is present on the input (logical "false"), the result 1 is output (logical "true").

The internal data type of the NOT module is Boolean. Incoming values are thus converted into this data type (see conversion table below).

20.3.10.2 Truth table

Input 0	Output 0
0	1
1	0

20.3.10.3
Extended settings

Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.10.4 Conversion table

		Boolean converted
Boolean		---
Number	0	→ 1 (logical "true")
	≠ 0	→ 0 (logical "false")
DPTTime	every value	→ 1 (logical "true")
DPTDate	every value	→ 1 (logical "true")
String	"0" or ""	→ 0 (logical "false")

other values → 1 (logical "true")

20.3.11 "Equal" module details

0 — 1 — input | Equal to | output — 0 (out) — 1 (inv. out)
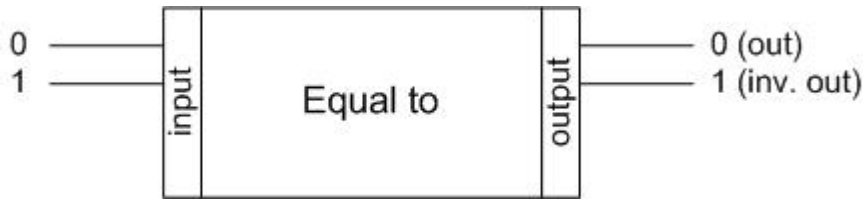
20.3.11.1 Behaviour

The module compares the values at both of the inputs. If the values are identical, the result 1 (logical "true") is output on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

20.3.11.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.11.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true → 1, false → 0	every value → Current time	Current date	true → "1", false → "0"
Number	0 → true, ≠ 0 → false	---	every value (as millisecond since 1.1.1970) → Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---	1.1.1970	Text analogue to time of

					day
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Vergleicher](03_03_09_00_EN.html)

20.3.12 "Not equal" module details
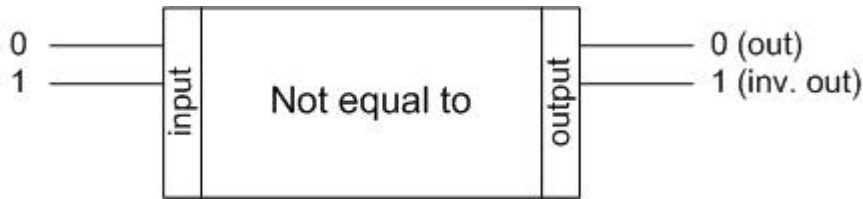
20.3.12.1 Behaviour

The module compares the values at the inputs. If the values are not identical, the result 1 (logical "true") is output on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

20.3.12.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.12.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→ Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---		1.1.1970	Text analogue to time of

					day
DPTDate true		Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Vergleicher](#)

[03_03_09_00_EN.html - Vergleicher](#)

20.3.13 "Greater" module details
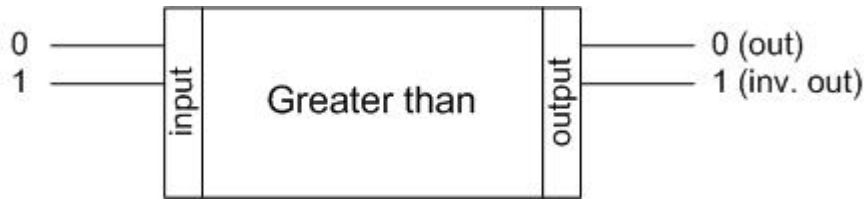
20.3.13.1 Behaviour

The module compares the values at the inputs. If the value of the *Input 0* is greater than the value of the *Input 1*, the result 1 (logical "true") is output on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Comparison rule	Example	
Number	Nummer comparison	5 > 3	→ true
Time	Time comparison	16:00 > 15:30	→ true
Date	Date comparison	17.07.2009 > 1.1.1970	→ true
String	String length comparison	"ComfortPanel" > "priOn"	→ true

20.3.13.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.13.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"

Type	Boolean	Number	Time	Date	Text
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970) → Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---	1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

20.3.14 "Greater or equal" module details
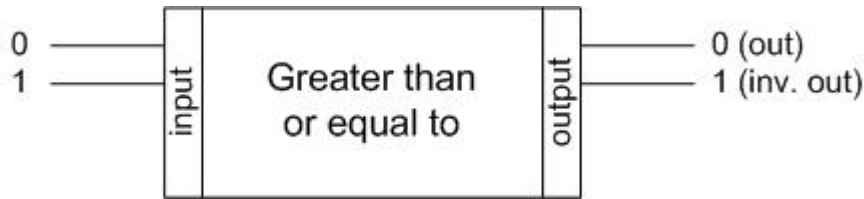
20.3.14.1 Behaviour

The module compares the values at the inputs. If the value of the *Input 0* is greater than or identical to the value of the *Input 1,* the result 1 (logical "true") is output on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Comparison rule	Example	
Number	Nummer comparison	$5 \geq 3$	$\rightarrow$ true
Time	Time comparison	$16:00 \geq 15:30$	$\rightarrow$ true
Date	Date comparison	$17.07.2009 \geq 1.1.1970$	$\rightarrow$ true
String	String length comparison	"ComfortPanel" $\geq$ "priOn"	$\rightarrow$ true

20.3.14.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.14.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true $\rightarrow$ 1 false $\rightarrow$ 0	every value	-- Current - time	Current date	true $\rightarrow$ "1" false $\rightarrow$ "0"

Source	Boolean	Number	Time of day	Date	Text
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970) → Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---	1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

03_03_09_00_EN.html - Vergleicher

03_03_09_00_EN.html - Vergleicher

20.3.15 "Less" module details
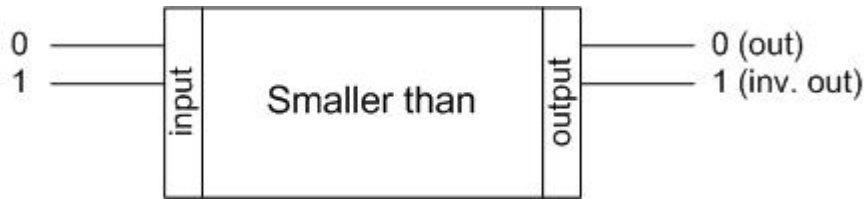
20.3.15.1 Behaviour

The module compares the values at the inputs. If the value of the *Input 0* is less than the value of the *Input 1*, the result 1 (logical "true") is output on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Comparison rule	Example	
Number	Nummer comparison	5 < 3	→ false
Time	Time comparison	16:00 < 15:30	→ false
Date	Date comparison	17.07.2009 < 1.1.1970	→ false
String	String length comparison	"ComfortPanel" < "priOn"	→ false

20.3.15.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.15.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"

Type	Boolean	Number	Time	Date	Text
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970) →	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---		1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Vergleicher](03_03_09_00_EN.html)

20.3.16 "Less or equal" module details
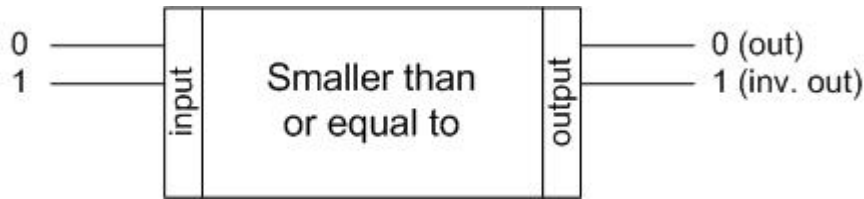
20.3.16.1 Behaviour

The module compares the values at the inputs. If the value of the *Input 0* is less than or identical to the value of the *Input 1*, the result 1 (logical "true") is output on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Comparison rule	Example	
Number	Nummer comparison	$5 \leq 3$	$\rightarrow$ false
Time	Time comparison	$16:00 \leq 15:30$	$\rightarrow$ false
Date	Date comparison	$17.07.2009 \leq 1.1.1970$	$\rightarrow$ false
String	String length comparison	"ComfortPanel" $\leq$ "priOn"	$\rightarrow$ false

20.3.16.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

### 20.3.16.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"

	Boolean	Number	Time of day	Date	Text
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970) → Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---	1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

20.3.17 Area tester (internal) module details
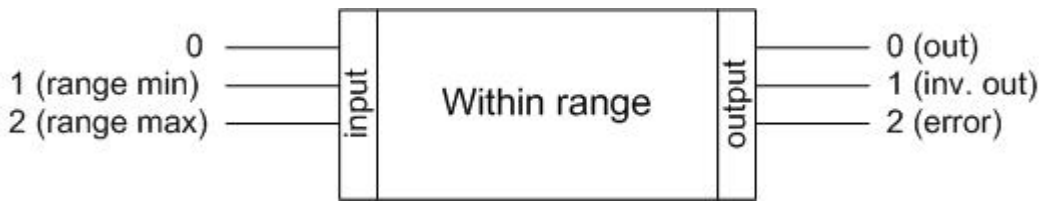
20.3.17.1 Behaviour

The module checks whether the incoming comparison value on *Input 0* lies between two limit values. The limit values are defined by the *Input 1* and the *Input 2*. If the comparison value is between the limit values, the result 1 (logical "true") is output on *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted. If the limit values are invalidly configured (e.g. upper limit less than lower limit) the result 1 (logical "true") is output on *Output 2*.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Comparison rule	Example	
Number	Nummer comparison	$3 \leq 5 \leq 7$	→ true
Time	Time comparison	$15:30 \leq 16:00 \leq 19:00$	→ true
Date	Date comparison	$1.1.1970 \leq 19.2.1985 \leq 17.5.2009$	→ true
String	String length comparison	"priOn" $\leq$ "priOn" $\leq$ "ComfortPanel"	→ true

20.3.17.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.17.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value --- Current time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970) → Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---	1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

20.3.18 Area tester (external) module details

20.3.18.1 Behaviour

The module checks whether the incoming comparison value on *Input 0* lies outside two limit values. The limit values are defined by the *Input 1* and the *Input 2*. If the comparison value is outside the limit values, the result 1 (logical "true") is output on *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted. If the limit values are invalidly configured (e.g. upper limit less than lower limit) the result 1 (logical "true") is output on *Output 2*.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Comparison rule	Example	
Number	Nummer comparison	$3 \leq 9 \leq 7$	→ false
Time	Time comparison	$15:30 \leq 21:10 \leq 19:00$	→ false
Date	Date comparison	$1.1.1970 \leq 29.12.2009 \leq 17.5.2009$	→ false
String	String length comparison	"priOn" $\leq$ "" $\leq$ "ComfortPanel"	→ false

20.3.18.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.18.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value → Current time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970) → Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---	1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

20.3.19 Details about threshold values with hysteresis
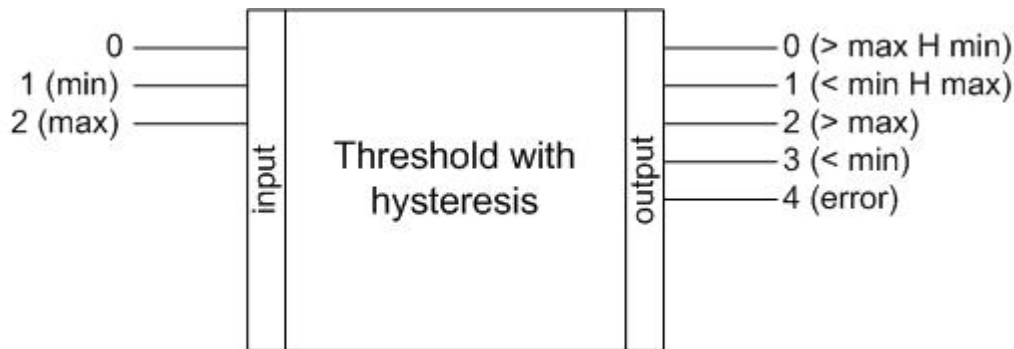
20.3.19.1 Behaviour

The module checks whether the incoming comparison value on *Input 0* lies above or below a threshold value. In contrast to the Greater/Less comparator, a certain tolerance range can be defined (hysteresis). The approach direction of the comparison values (from above or below) to the threshold is also taken into account. This logic module can be used to generate exact logic signals from slowly executing processes, for example, for the switching signal of a thermostat-controlled heating control.

A lower and upper threshold are required for this logic module. The thresholds are defined via *Input 1* and *Input 2* .

Results are output as follows on the outputs (see also the graphic below):

- If the comparison value first exceeds the lower and then the upper threshold, thus crossing the tolerance range from **below to above**, the result 1 (logical "true") is output on the *Output 0*. If the comparison value subsequently falls below the lower threshold again, the output *Pin 3* is reset to 0 (condition for *Output 1*, see below).

- If the comparison value first falls below the upper and then the lower threshold, thus crossing the tolerance range from **above to below**, the result 1 (logical "true") is output on the *Output 1*. If the comparison value subsequently exceeds the upper threshold again, the *Output 1* is reset to 0 (condition for *Output 0*, see above).

- On the *Output 2* the result 1 is output (logical "true"), as soon as the comparison value generally exceeds the upper threshold (without condition). Otherwise the output value is 0 (logical "false").

- On the *Output 3* the result 1 is output (logical "true"), as soon as the comparison value generally falls below the lower threshold (without condition). Otherwise the output value is 0 (logical "false").

If the limit values are invalidly configured (e.g. upper limit less than lower limit) the result 1 (logical "true") is output on *Output 4*.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

20.3.19.2 Truth table
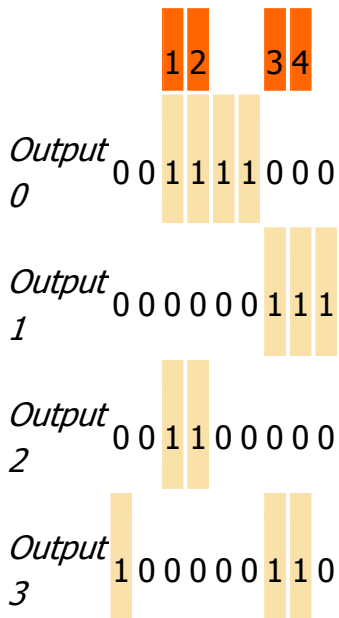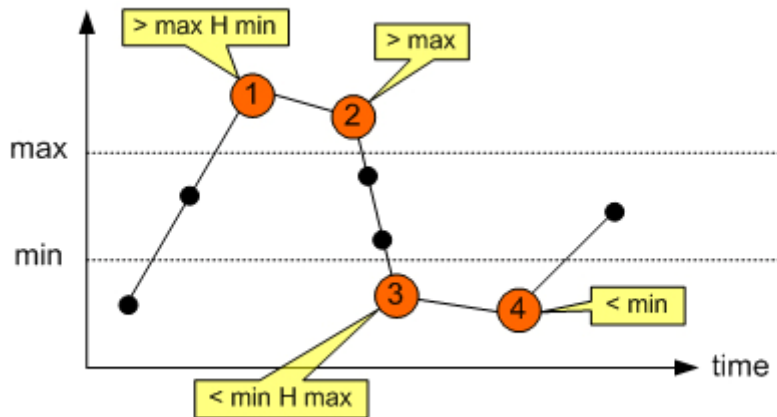
20.3.19.3 Extended settings

Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.19.4 Conversion table

		Number (converted)
Boolean	true →	1
	false →	0
Number	---	

DPTTime	Milliseconds since 1.1.1970
DPTDate	Number
String	Number, if possible; otherwise 0

[03_03_09_00_EN.html - Vergleicher](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

20.3.20 Adder details
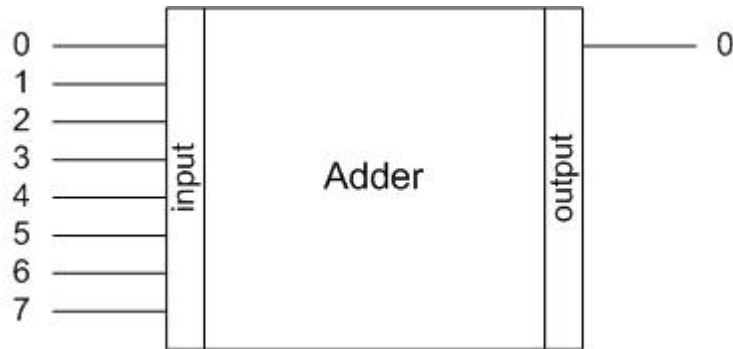
20.3.20.1 Behaviour

The module adds the values of the inputs and outputs the result on the *Output 0* .

If necessary, incoming values are converted into the internal data type of the module before the addition (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Procedure	Example	
Number	Mathematical addition	1 + 2	= 3
Time	Calendrical addition	15:30 + 01:10	= 16:40
Date	Calendrical addition	05.02.2009 + 03.00.0000	= 08.02.2009
String	Concatenation of the strings	"ComfortPanel " + "is not a priOn"	= "ComfortPanel is not a priOn"

20.3.20.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Number of inputs* parameter, you can specify the number of inputs.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.20.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→ Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---		1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM		---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours		Date, if possible; otherwise 1.1.1970	---

20.3.21 Subtractor details
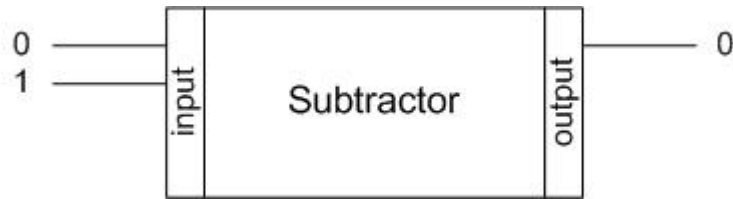
20.3.21.1 Behaviour

The module subtracts the value of the *Input 1* from the value of the *Input 0* and outputs the result on the *Output 0* (*Input 0 - Input 1 = Output 0*).

If necessary, incoming values are converted into the internal data type of the module before the subtraction (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Procedure	Example	
Number	Mathematical addition	3 - 2	= 1
Time	Calendrical addition	16:40 - 01:10	= 15:30
Date	Calendrical addition	08.02.2009 - 03.00.0000	= 05.02.2009

20.3.21.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

## 20.3.21.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"
Number	0 → true	---	every value	→ Time of	Date, if	Text analo-

	≠ 0 → false	lue (as millisecond since 1.1.1970)	day, if possible; otherwise 00:00 Hours	possible; otherwise 1.1.1970	gue to number
DPTTime	true	Milliseconds since 1.1.1970	---	1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

20.3.22 Multiplier details
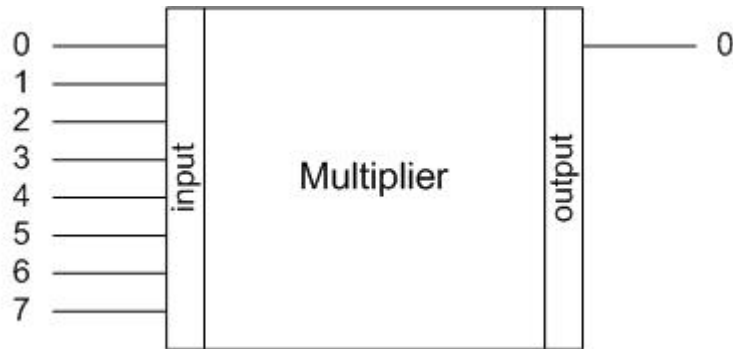
20.3.22.1 Behaviour

The module multiplies the values of the inputs and outputs the result on the *Output 0* .

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the multiplication (see conversion table below).

20.3.22.2 Extended settings

- Via the *Number of inputs* parameter, you can specify the number of inputs.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.22.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→ Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---		1.1.1970	Text analogue to time of

						day
DPTDate	true		Number	12:00:00 AM	---	Text analo-gue to date
String	"0" or "" → false other → true		Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

03_03_09_00_EN.html - Algebraisch

03_03_09_00_EN.html - Algebraisch

20.3.23 Divider details

input: 0, 1 — **Divider** — **output:** 0 (out), 1 (div. by 0)

20.3.23.1 Behaviour

The module divides the value of the *Input 0* by the value of the *Input 1* and outputs the result on the *Output 0* (*Input 0 ÷ Input 1 = Output 0*).

If a division by zero occurs, the value 1 (logical "true") is output on the *Output 1* . In this case, no value is output on the *Output 1*.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the division (see conversion table below).

20.3.23.2 Extended settings

Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.23.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)	DPTDate (converted)	String (converted)
Boolean	---	true → 1, false → 0	every value → Current time	Current date	true → "1", false → "0"
Number	0 → true, ≠ 0 → false	---	every value (as millisecond since 1.1.1970) → Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---	1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM	---	Text analo-

					gue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

03_03_09_00_EN.html - Algebraisch

03_03_09_00_EN.html - Algebraisch

20.3.24 Sine details

20.3.24.1 Behaviour

The module calculates the sine for the input value and outputs it as result on the *Output 0* .

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.24.2 Extended settings

- Using the *Angle representation* parameter, you can specify whether the input value is interpreted as radian measure or degree.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.24.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→ Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime true		Milliseconds since 1.1.1970	---		1.1.1970	Text analogue to time of day
DPTDate true		Number	12:00:00 AM		---	Text analo-

					gue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

20.3.25 Cosine details

```
0 ──────── │ input │   Sine   │ output │ ──────── 0
```
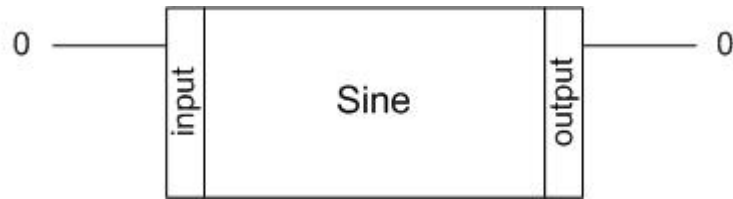
20.3.25.1 Behaviour

The module calculates the Cosine for the input value and outputs it as result on the *Output 0* .

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.25.2 Extended settings

- Using the *Angle representation* parameter, you can specify whether the input value is interpreted as radian measure or degree.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.25.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- -	Current time	Current date
						true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---			1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM			---	Text analo-

					gue to date
String	"0" or "" other	→ false → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

20.3.26 Root function details
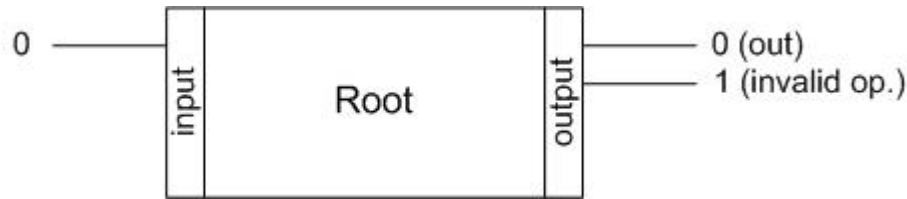
20.3.26.1 Behaviour

The module calculates the nth root of the input value and outputs it as result on the *Output 0* .

If a negative input value is present on the input, the value 1 (logical "true") is output on the *Output 1* . In this case, no value is output on the *Output 0*.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.26.2 Extended settings

- You can specify to which exponent the root shall be calculated (e.g. 2 for square root) using the *Root exponent* parameter.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.26.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- -	Current time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---			1.1.1970	Text analogue to time of day

DPTDate	true		Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true		Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

20.3.27 Details about the Power function (x to the y)
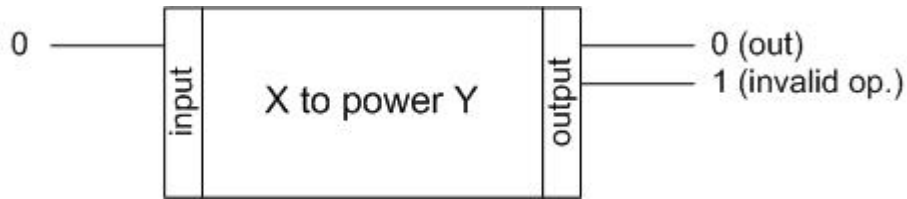
20.3.27.1 Behaviour

The module calculates a specific power of the input value and outputs it as result on the *Output 0* .

If the result of the calculation is invalid, the value 1 (logical "true") is output on the *Output 1*. In this case, no value is output on the *Output 0*.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.27.2 Extended settings

- You can specify to which exponent the power shall be calculated (e.g. 2 for x^2) using the *Exponent* parameter.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.
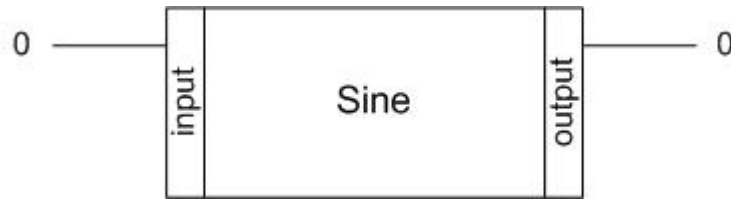
20.3.27.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- -	Current time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---			1.1.1970	Text analogue to time of

day

					Text analogue to date
DPTDate	true	Number	12:00:00 AM	---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Algebraisch](#)

20.3.28 Logarithm details
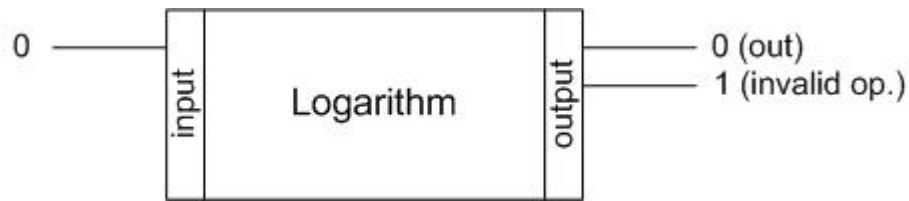
20.3.28.1 Behaviour

The module calculates the logarithm base 10 of the input value and outputs the result on the *Output 0* .

If an input value ≤ 0 is present on the input, the value 1 (logical "true") is output on the *Output 1* . In this case, no value is output on the *Output 0*.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.28.2 Extended settings

Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.28.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- -	Current time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---			1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM			---	Text analo-

						gue to date
String	"0" or "" → false other → true		Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

20.3.29 Natural logarithm details

20.3.29.1 Behaviour

The module calculates the logarithm base e of the input value and outputs the result on the *Output 0* .

If an input value ≤ 0 is present on the input, the value 1 (logical "true") is output on the *Output 1* . In this case, no value is output on the *Output 1*.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.29.2 Extended settings

Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.29.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)			DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- --	Current time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---			1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM			---	Text analo-

201/240

gue to date

String	"0" or "" → false / other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

20.3.30 Exponential function details

20.3.30.1 Behaviour

The module calculates the exponential function of the input value and outputs the result on the *Output 0* .

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.30.2 Extended settings

Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.30.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→ Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---		1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM		---	Text analogue to date

203/240

| String | "0" or "" → false
other → true | Number, if possible; otherwise 0 | Time of day, if possible; otherwise 00:00 Hours | Date, if possible; otherwise 1.1.1970 | --- |

[03_03_09_00_EN.html - Algebraisch](03_03_09_00_EN.html)

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

20.3.31 Details about the 2-point curve function
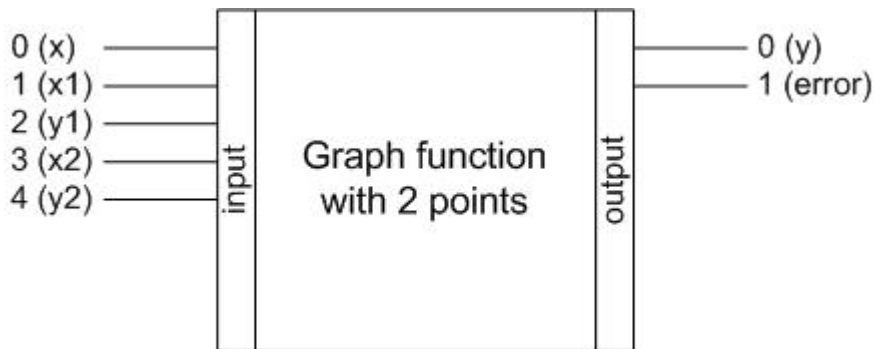
20.3.31.1 Behaviour

The module calculates the function value of the vale on *Input 0* using a 2-point curve progression and outputs the result (f(*Input 0*) = y = *Output 0*)on the *Output 0*. The curve progression is determined as linear slope between two points as follows (see also the graphic below):

- The first point results from the values of the *Input 1* (x-coordinate) and of the *Input 2* (y-coordinate).

- Analogue to this, the second point is defined by the values of the *Input 3* (x-coordinate) and of the *Input 4* (y-coordinate).

If the point coordinates are invalidly configured (e.g. x-values identical) the result 1 (logical "true") is output on *Output 1*.

The internal data type of the module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).
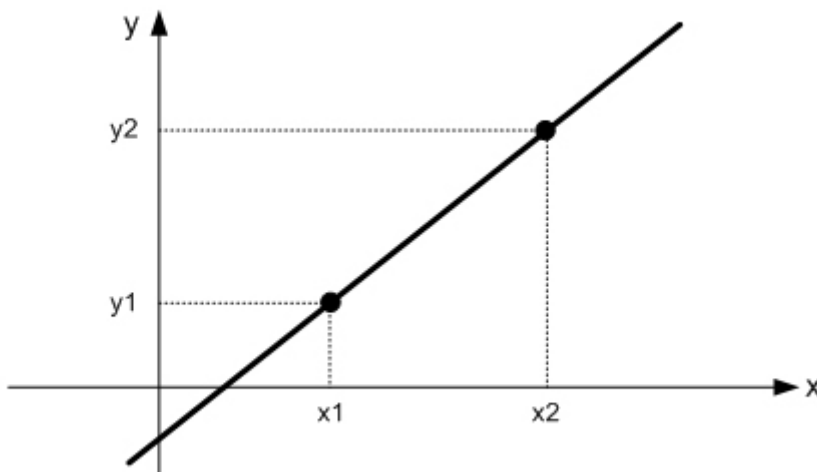
20.3.31.2 Extended settings

This module has no additional setting options.

20.3.31.3 Conversion table

	Number (converted)
Boolean	true → 1 false → 0
Number	---
DPTTime	Milliseconds since 1.1.1970
DPTDate	Number
String	Number, if possible; otherwise 0

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

20.3.32 Details about the 4-point curve function
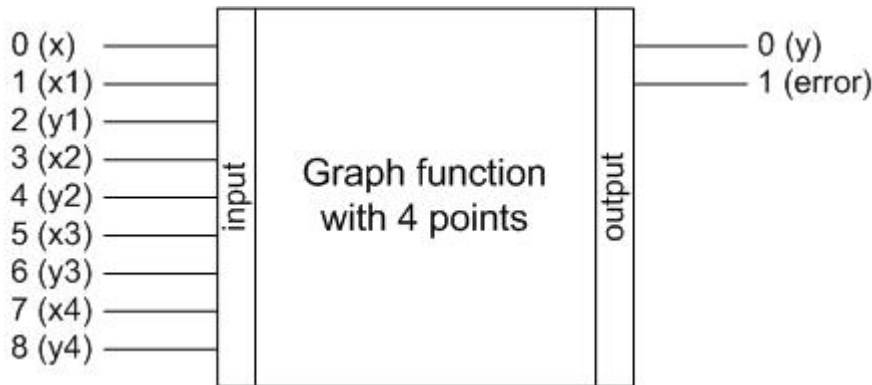
20.3.32.1 Behaviour

The module calculates the function value of the vale on *Input 0* using a 4-point curve progression and outputs the result (f(*Input 0*) = y = *Output 0*)on the *Output 0*. The curve progression is determined as linear curve by four points as follows (see also the graphic below):

- The first point results from the values of the *Input 1* (x-coordinate) and of the *Input 2* (y-coordinate).

- Analogue to this, the additional points are defined via the values of the *Inputs 3* and *4, 5* and *6* as well as *7* and *8* (each with x- and y-coordinate).

Observe that the x-coordinates of the points must have increasing values. Equal or decreasing x-coordinates are not allowed. If the point coordinates are invalidly configured (e.g. x-values identical) the result 1 (logical "true") is output on *Output 1*.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).
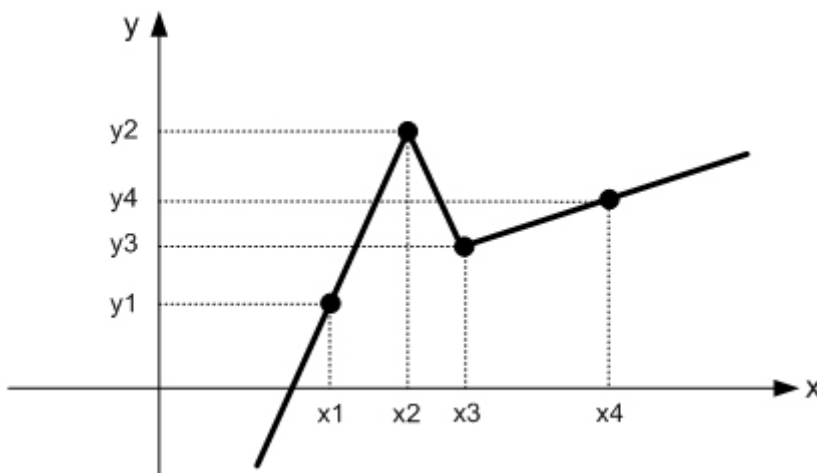
20.3.32.2 Extended settings

This module has no additional setting options.

20.3.32.3 Conversion table

	Number (converted)
Boolean	true → 1 false → 0
Number	---
DPTTime	Milliseconds since 1.1.1970
DPTDate	Number
String	Number, if possible; otherwise 0

[03_03_09_00_EN.html - weitere_math](#)

[03_03_09_00_EN.html - weitere_math](#)

20.3.33 Minimum value details
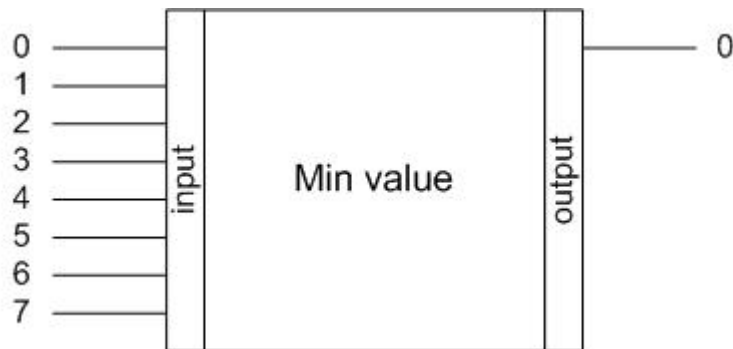
20.3.33.1 Behaviour

The module compares the values at the inputs and outputs the smallest value on the *Output 0* as result.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Comparison rule	Example	
Number	Nummer comparison	5, 3	→ *Output 0* = 3
Time	Time comparison	16:00, 15:30	→ *Output 0* = 15:30
Date	Date comparison	17.07.2009, 1.1.1970	→ *Output 0* = 1.1.1970
String	String length comparison	"ComfortPanel", "priOn"	→ *Output 0* = "priOn"

20.3.33.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Number of inputs* parameter, you can specify the number of inputs.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.33.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→ Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---		1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM		---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours		Date, if possible; otherwise 1.1.1970	---

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

20.3.34 Maximum value details
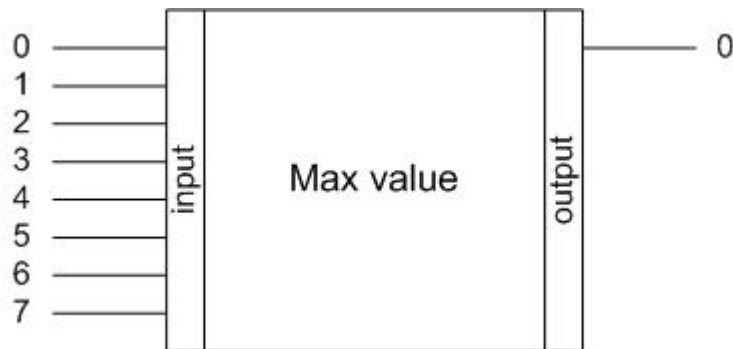
20.3.34.1 Behaviour

The module compares the values at the inputs and outputs the largest value on the *Output 0* as result.

If necessary, incoming values are converted into the internal data type of the module before the comparison (see conversion table below). Thus, observe the selection of a correct internal data type!

The comparison is dependent on the internal data type of the module and is executed in the following way:

Internal data type	Comparison rule	Example	
Number	Nummer comparison	5, 3	→ *Output 0* = 5
Time	Time comparison	16:00, 15:30	→ *Output 0* = 04:00:00 PM
Date	Date comparison	17.07.2009, 1.1.1970	→ *Output 0* = 17.07.09
String	String length comparison	"ComfortPanel", "priOn"	→ *Output 0* = "Comfort-Panel"

20.3.34.2 Extended settings

- Via the *Internal data type* parameter, you can specify the internal data type of the module.

- Via the *Number of inputs* parameter, you can specify the number of inputs.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.34.3 Conversion table

	Boolean (converted)	Number (converted)	DPTTime (converted)		DPTDate (converted)	String (converted)
Boolean	---	true → 1 false → 0	every value	-- Current - time	Current date	true → "1" false → "0"
Number	0 → true ≠ 0 → false	---	every value (as millisecond since 1.1.1970)	→ Time of day, if possible; otherwise 00:00 Hours	Date, if possible; otherwise 1.1.1970	Text analogue to number
DPTTime	true	Milliseconds since 1.1.1970	---		1.1.1970	Text analogue to time of day
DPTDate	true	Number	12:00:00 AM		---	Text analogue to date
String	"0" or "" → false other → true	Number, if possible; otherwise 0	Time of day, if possible; otherwise 00:00 Hours		Date, if possible; otherwise 1.1.1970	---

20.3.35 Absolute value details
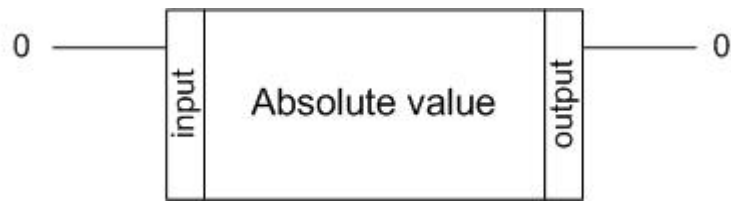
20.3.35.1 Behaviour

The module calculates the absolute value of the value on *Input 0* and outputs it to the *Output 0* as result.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.35.2 Extended settings

Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.35.3 Conversion table

	Number (converted)
Boolean	true → 1 false → 0
Number	---
DPTTime	Milliseconds since 1.1.1970
DPTDate	Number
String	Number, if possible; otherwise 0

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

20.3.36 Random value details
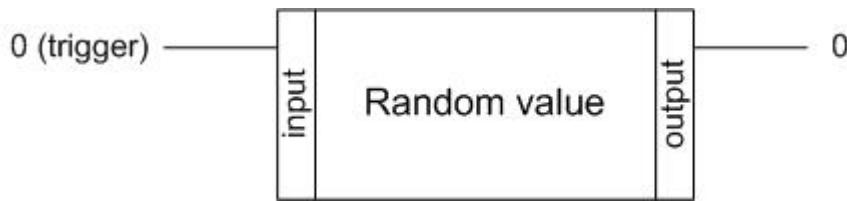
20.3.36.1 Behaviour

The module outputs random values from a specific value range on the *Output 0*. This can occur cyclically or upon receipt of the value 1 (logical "true") on *Input 0* .

The data type of the *Input 0* is Boolean. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.36.2 Extended settings

* Via the *Internal data type* parameter, you can specify the internal data type of the module. The data type of the random values to be output is also defined by this.

* Via the *Cycle time* parameter, you can specify in which intervals (seconds) random values shall be sent. Deactivate the associated control field if the values are not to be sent out cyclically.

* Via the *Lower limit* and *Upper limit* parameters, you can specify the value range from which the random values shall originate.

* Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.36.3 Conversion table

	Boolean (converted)
Boolean	---
Number	0 → true ≠ 0 → false
DPTTime	true
DPTDate	true

String	"0" or "" → false
	other → true

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

20.3.37 Arithmetic mean details
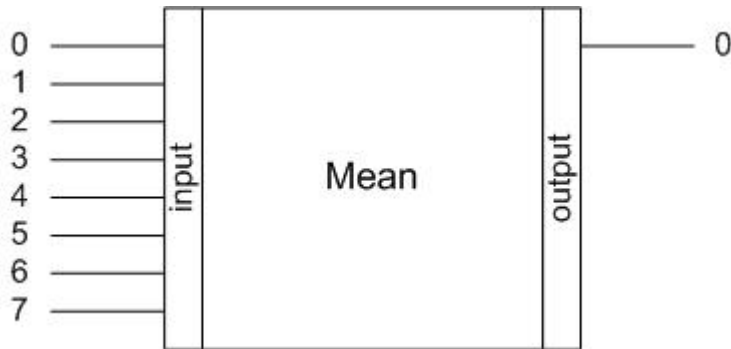
20.3.37.1 Behaviour

The module calculates the arithmetic mean (average) from the values at the inputs and outputs the result on the *Output 0*.

The internal data type of this module is Number. If necessary, incoming values are converted into the internal data type before the calculation (see conversion table below).

20.3.37.2 Extended settings

- Via the *Number of inputs* parameter, you can specify the number of inputs.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.37.3 Conversion table

	Number (converted)
Boolean	true → 1 false → 0
Number	---
DPTTime	Milliseconds since 1.1.1970
DPTDate	Number
String	Number, if possible; otherwise 0

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

20.3.38 Counter details
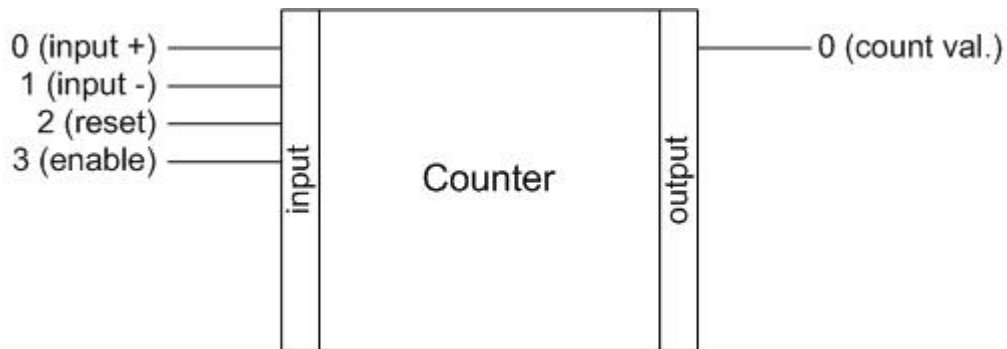
20.3.38.1 Behaviour

The module counts the number of received values and outputs the result on the *Output 0*:

- Evey value that is received via *Input 0* increases the output value of the counter.

- Evey value that is received via *Input 1* reduces the output value of the counter.

- If the value 1 (logical "true") is received on *Input 2*, the counter is reset to the default value.

- If the value 0 (logical "false") is received on *Input 3*, the incoming values on *Input 0* or *Input 1* are ignored.

The data type of the *Inputs 2* and *3* is Boolean. If necessary, incoming values are converted before the calculation (see conversion table below).

The internal data type of the module is Number.

20.3.38.2 Extended settings

Via the *Initial value* parameter, you can specify the default value of the counter.

20.3.38.3 Conversion table

	Boolean (converted)
Boolean	---
Number	0 → true ≠ 0 → false
DPTTime	true

DPTDate true

| String | "0" or "" → false |
| | other   → true |

[03_03_09_00_EN.html - weitere_math](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.39 Delayer details

20.3.39.1 Behaviour

The module outputs every received value of the *Input 0* again after expiry of a specific delay time on the *Output 0*. The delay time (in seconds) is defined via the *Input 1*. If an invalid delay time is specified (e.g. -1), the result 1 (logical "true") is output on the *Output 1*.

The data type of the *Input 1* is Number. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.39.2 Extended settings

This module has no additional setting options.

20.3.39.3 Conversion table

|	Number (converted)
Boolean	true → 1 false → 0
Number	---
DPTTime	Milliseconds since 1.1.1970
DPTDate	Number
String	Number, if possible; otherwise 0

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.40 On/Off delayer details

20.3.40.1 Behaviour

The module is a special case of the delayer for binary input values. If a value is received via the *Input 0*, this value is output on the *Output 0* after a delay time. The delay time (in seconds) is dependent on the binary input value:

- If the value 1 (logical "true") is received via the *Input 0*, the delay time is defined via the value at *Input 1*.

- If the value 0 (logical "false") is received via the *Input 0*, the delay time is defined via the value at *Input 2*.

If invalid delay times are specified (e.g. -1), the result 1 (logical "true") is output on the *Output 1*.

The data type of the *Input 0* is Boolean, the data types of the *Inputs 1* and *2* are Number. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.40.2 Extended settings

This module has no additional setting options.

20.3.40.3 Conversion table

	Boolean (converted)	Number (converted)
Boolean	---	true → 1 false → 0
Number	0 → true ≠ 0 → false	---
DPTTime	true	Milliseconds since 1.1.1970
DPTDate	true	Number
String	"0" or "" → false	Number, if possible;

other   → true otherwise 0

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.41 Staircase lighting details

20.3.41.1 Behaviour

If this module receives the value 1 (logical "true") via the *Input 0*, it immediately outputs it on the *Output 0*. After expiry of a delay time, the value 0 (logical "false") is output on the *Output 0*. The delay time (in seconds) is dependent on the value at *Input 1*.

Via a value at *Input 2* , a number of pulses can be defined that are output before expiry of the delay time on the *Output 0*. A pulse consists of a 0-1 combination with an interval of 0.5 seconds between the values 0 an 1.

If invalid values are specified for the delay time or number of pulses (e.g. -1), the result 1 (logical "true") is output on the *Output 1*.

The data type of the *Input 0* is Boolean, the data types of the *Inputs 1* and *2* are Number. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.41.2 Extended settings

Via the *Restart timer* parameter, you can specify whether the delay time shall always be reset by the receipt of the value 1 via the *Input 0*.

20.3.41.3 Conversion table

	Boolean (converted)	Number (converted)
Boolean	---	true → 1 false → 0
Number	0 → true ≠ 0 → false	---
DPTTime	true	Milliseconds since 1.1.1970
DPTDate	true	Number
String	"0" or "" → false →	Number, if possible;

other   true otherwise 0

03_03_09_00_EN.html - Signalkontrolle

20.3.42 Lock details
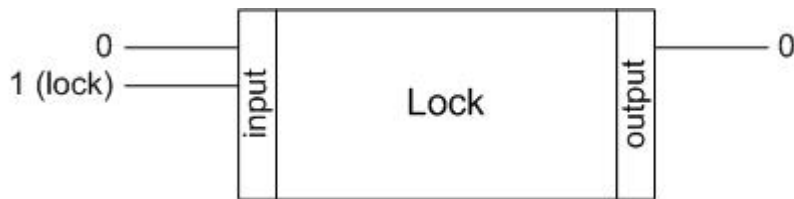
20.3.42.1 Behaviour

Every value (regardless of which data type) received via the *Input 0*, is immediately output again on *Output 0* by this module, provided it is not locked. If the module is locked, received values are blocked until the module is opened again. When the module is opened the last received value is output. The lock can be activated and cancelled via the *Input 1* .

The data type of the *Input 1* is Boolean. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.42.2 Extended settings

- Via the *Operating mode* parameter, you can specify whether the lock shall be activated by receipt of the value 0 or via the *Input 1*.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the current input value is different from the previously received input value.

20.3.42.3 Conversion table

	Boolean (converted)
Boolean	---
Number	0 → true ≠ 0 → false
DPTTime	true
DPTDate	true
String	"0" or "" → false other → true

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.43 Filter details

20.3.43.1 Behaviour

The module can transfer Boolean values or lock those received via the *Input 0*. Lock means that the value at the *Output 0* is not reset.

The behaviour can be set as follows via the *Operating mode* parameter:

- The value 1 (logical "true") is transferred, the value 0 (logical "false") is locked.

- The value 0 (logical "false") is transferred, the value 1 (logical "true") is locked.

- Both the value 1 (logical "true") as well as the value 0 (logical "false") are transferred.

- The value 1 (logical "true") changes the value at the *Output 0* (from 0 to 1 or vice versa), the value 0 (logical "false") is locked.

- The value 0 (logical "false") changes the value at the *Output 0* (from 0 to 1 or vice versa), the value 1 (logical "true") is locked.

- Both the value 1 (logical "true"), as well as the value 0 (logical "false") change the value at the *Output 0* (from 0 to 1 or vice versa).

The internal data type of the module is Boolean. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.43.2 Extended settings

Via the *Operating mode* parameter, you can specify how the module should behave (see above).

20.3.43.3 Conversion table

	Boolean (converted)
Boolean	---
Number	0 → true ≠ 0 → false
DPTTime	true

DPTDate true

| String | "0" or "" → false |
| | other → true |

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.44 Text filter details
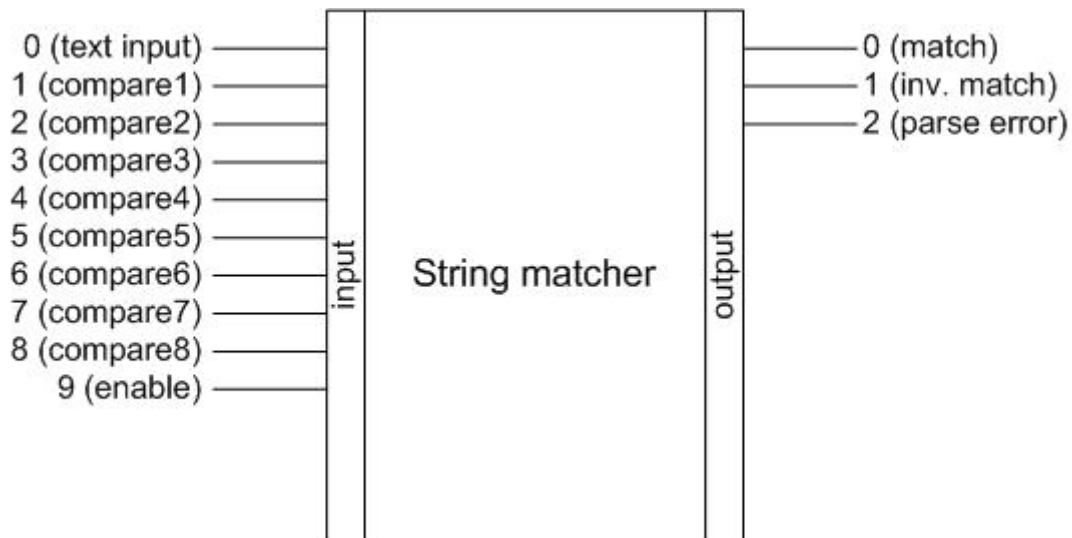
20.3.44.1 Behaviour

This module can receive string values via the *Output 0* and compare these using a LDAP filter string with the values at the *Inputs 1* to *8*. Using the key word "<compare_n">" in the LDAP filter string, the input can be selected with which the compare shall be executed (n: from 1 to 8).

If the incoming value and the comparison value are identical, the result 1 (logical "true") is output on the *Output 0*. Otherwise the output value is 0 (logical "false"). *Output 1* always outputs the result inverted.

If the value 0 (logical "false") is received via the *Input 9*, the module is deactivated. The value 1 (logical "true") activates it again.

If there is a processing error (e.g. invalid LDAP filter string) the value 1 (logical "true") is output on the *Output 2*.

The internal data type of the module and of the *Inputs 1* to *8* is String, the data type of the *Input 9* is Boolean. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.44.2 Extended settings

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

- You can define the LDAP filter string for the comparison using the *Filter alphanumeric character chain* parameter.

- Via the *Number of* parameter, you can specify how many comparison values you want to allow. With the selection of different values, the number of inputs of the module changes similarly.

20.3.44.3 Conversion table

|	Boolean (converted)	String (converted)
Boolean	---	true → "1" false → "0"
Number	0 → true ≠ 0 → false	Text analogue to number
DPTTime	true	Text analogue to time of day
DPTDate	true	Text analogue to date
String	"0" or "" → false other → true	---

[03_03_09_00_EN.html - Signalkontrolle](#)

[03_03_09_00_EN.html - Signalkontrolle](#)

20.3.45 Text divider details
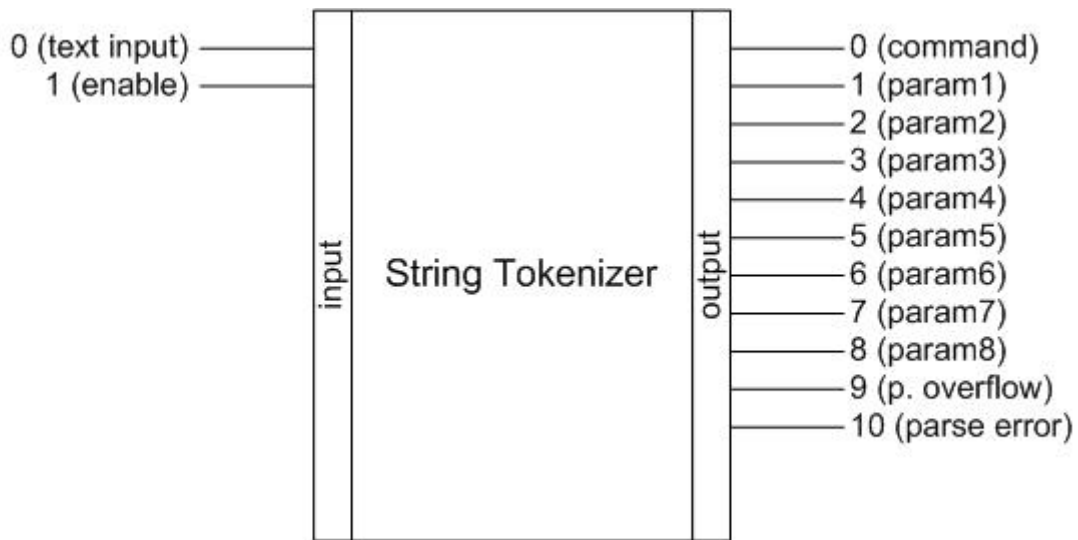
20.3.45.1 Behaviour

This module can receive string values via the *Input 0* and divide these into partial strings . Its purpose is the division into the format:

- Command +

- Preamble +

- Parameter 1 + Separator +

- Parameter 2 + Separator +

- ...

- Parameter 8 +

- Postambel

The command is output via the *Output 0* and the parameter (up to eight) via the *Outputs 1* to *8*. For this, the preamble, postamble and separator must be specified (see below).

If the value 0 (logical "false") is received via the *Input 1*, the module is deactivated. The value 1 (logical "true") activates it again.

If the logic module finds more than eight parameters in an incoming string, it outputs the value 1 (logical "true") on the *Output 9* . If a en error occurs during the text division, the value 1 (logical "true") is output on the *Output 10*.

The internal data type of the module and of the *Input 0* is String, the data type of the *Input 1* is Boolean. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.45.2 Extended settings

- Via the parameters *Preamble, Postambel* and *Separator,* you can specify which

character strings shall serve as preamble, postamble and separator.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.45.3 Conversion table

	Boolean (converted)	String (converted)
Boolean	---	true → "1" false → "0"
Number	0 → true ≠ 0 → false	Text analogue to number
DPTTime	true	Text analogue to time of day
DPTDate	true	Text analogue to date
String	"0" or "" → false other → true	---

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.46 Demultiplexer details
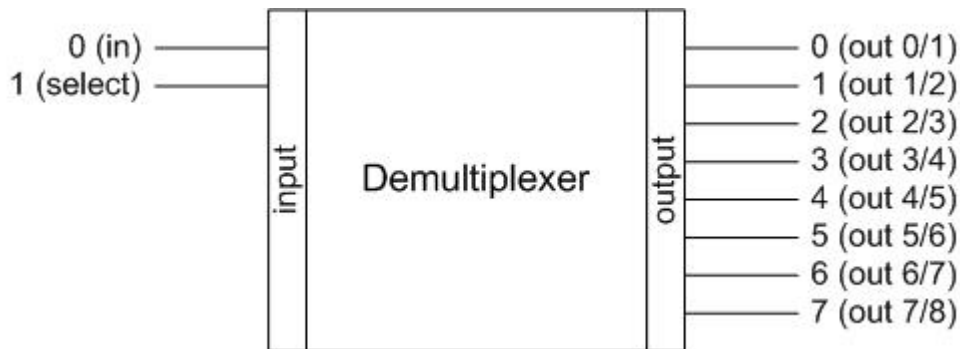
20.3.46.1 Behaviour

If this module receives a value via the *Input 0*, it on one of up to eight outputs (*Outputs 0 to 7*. The value of the *Input 1* specifies which output is to be selected. If an invalid value is received on *Input 1*, no new output is selected.

The data type of the *Input 1* is Number. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.46.2 Extended settings

- Via the *Smallest Index* parameter, you can specify whether the numbering of the outputs should start with 0 or with 1.

- Via the *Number of outputs* parameter, you can specify how many outputs shall be available.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the current input value is different from the previously received input value.

20.3.46.3 Conversion table

	Number (converted)
Boolean	true → 1 false → 0
Number	---
DPTTime	Milliseconds since 1.1.1970
DPTDate	Number

| String | Number, if possible; otherwise 0 |

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.47 Multiplexer details
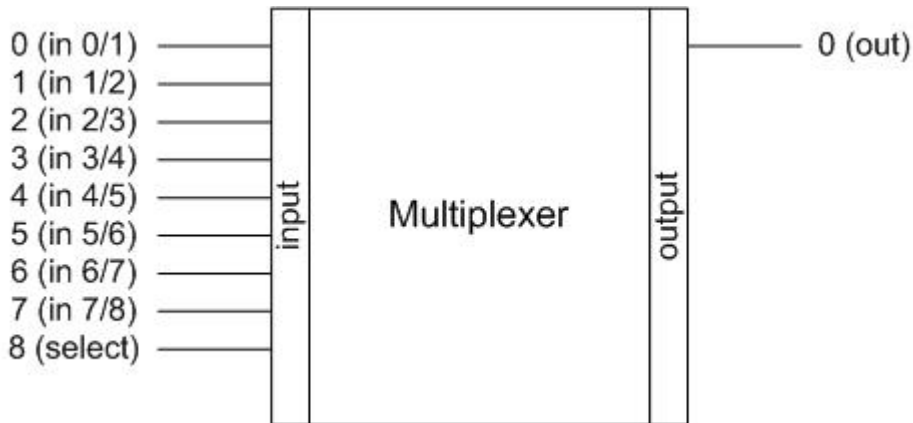
20.3.47.1 Behaviour

If this module receives a value via one of the up to eight inputs (*Input 0* to *7*), it outputs this value on the *Output 0*. The value of the *Input 8* specifies which input is to react to incoming values. If an invalid value is received on *Input 8*, no new input is selected. Once a new input is selected, the last received value there is output on *Output 0*.

The data type of the *Input 8* is Number. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.47.2 Extended settings

- Via the *Smallest Index* parameter, you can specify whether the numbering of the outputs should start with 0 or with 1.

- Via the *Number of inputs* parameter, you can specify how many inputs shall be available.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the current input value is different from the previously received input value.

20.3.47.3 Conversion table

		Number (converted)
Boolean	true	→ 1
	false	→ 0
Number	---	
DPTTime Milliseconds		

since 1.1.1970
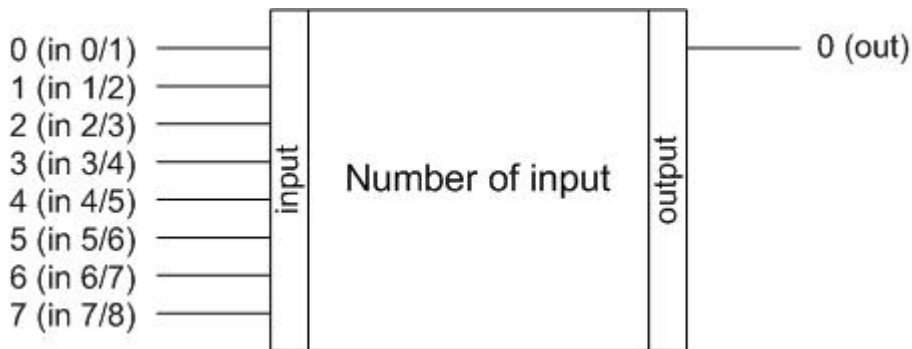
DPTDate Number

String   Number, if possible;
          otherwise 0

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.48 Number of input details

20.3.48.1 Behaviour

If this module receives a value (regardless of which data type) via one of the up to eight inputs (*Input 0* to *7*), it outputs the index number of the received input on the *Output 0*. If the module receives values on multiple inputs simultaneously, the highest index number is output.

The internal data type of the module is Number. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.48.2 Extended settings

- Via the *Smallest Index* parameter, you can specify whether the numbering of the outputs should start with 0 or with 1.

- Via the *Number of inputs* parameter, you can specify how many inputs shall be available.

- Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.48.3 Conversion table

	Number (converted)	
Boolean	true	→	1
	false	→	0
Number	---		
DPTTime	Milliseconds since 1.1.1970		
DPTDate	Number		

237/240

| String | Number, if possible; otherwise 0 |

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

20.3.49 RS-Flip-Flop details

20.3.49.1 Behaviour

The RS-Flip-Flop behaves as follows:

- If this module receives the value 1 (logical "true") via *Input 0* and simultaneously via *Input 1* the value 0 (logical "false"), it outputs the value 1 (logical "true") on the *Ausgang 0*.

- If this module receives the value 0 (logical "false") via *Input 0* and simultaneously via *Input 1* the value 1 (logical "true"), the *Ausgang 0* is reset to the value 0 (logical "false").

- *Output 1* always outputs the result inverted.

- If this module receives the value 1 (logical "true") via both *Input 0* and *Input 1*, no change of the output values occurs (illegal state). In this case, the value 1 (logical "true") is sent on the *Output 2*.

The internal data type of the module is Boolean. If necessary, incoming values are converted before the calculation (see conversion table below).

20.3.49.2 Truth table

Input 0	Input 1	Output 0	Output 1	Behaviour
0	0	Q	Q'	Hold status
0	1	0	1	Reset
1	0	1	0	Set
1	1	---	---	Not allowed

20.3.49.3 Extended settings

Via the *Only send with change* parameter, you can specify whether an output value shall only be sent if the result of the calculation is different to the previously calculated result.

20.3.49.4 Conversion table

Boolean
(converted)

Boolean ---

Number | 0 | → true
| ≠ 0 | → false

DPTTime true

DPTDate true

String | "0" or "" → false
| other | → true

[03_03_09_00_EN.html - Signalkontrolle](03_03_09_00_EN.html)

21