SIEMENS

5WG1205-2AB21

Touch control TC5

Application Guide

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1 Functions

Touch control TC5 (hereinafter refer to as TC5) is a KNX S-Mode multi-functional touch panel for display, operation and control use. The device is equipped with a 5-inch color capacitance touch screen with 480 × 854 resolutions.

The device is powered over KNX together with the DC 24...30 V auxiliary supply voltage.

It is operated directly via touch screen. Totally up to 15 function pages and 2 home pages can be configured via ETS (ETS5.7 or later version).

Functionalities:

- Home page for navigation purpose
  TC5 can set up multiple function pages for control and operation use. To easily navigate to the desired function page, there are max. 2 home pages with up to 8 icons per page. The navigation function can be enabled/disabled. If it is disabled, only one cover page is available showing the date, time and temperature without home page.

- Multi-function page for lighting, blind, scene and value sending function
  Lighting control includes switching and dimming. Blind function covers curtain type open/close blind, roller shutter type up/down blinds and venetian blind with louver angles adjustment. Scene operation such as scene recall via short press the scene icon and storage via long press the scene icon is allowed. Upon demand, up to 120 channels are available for each individual function.

- HVAC control covers several applications:
  - General temperature control applies for many room heating / cooling applications such as FCU, chilled ceiling with 2-point or PI control. It can manage the room temperature with setpoint (absolute or relative), heating / cooling selection, fan operation (2 options: When fan operation is disabled, it is completely invisible; When it is enabled, there are 5 types of fan speed: 3-speed, Off and Auto.), operation mode changes (4 modes: Comfort, Standby, Economy and Protection).
  - VRF (Variable Refrigerant Flow) interface allows TC5 to act as the user interface to operate VRF or VRV (Variable Refrigerant Volume) air conditioning devices with a VRF gateway.
  - Enhanced floor heating control has dedicated timer and scene function. There is indication of heating valve on/off and timer operation on screen.
  - Ventilation control has manual 3-speed fan switchover as well as auto control (demand-based ventilation) via PM2.5 or CO_2 value. It supports opening/closing of heat recovery, filter life counting, alarm for filter change and filter life reset.

  Up to 10 pages can be configured as HVAC control.

- Display air quality value from bus
  This page can display various sensor readings such as temperature, relative humidity, PM2.5, PM10, CO_2, VOC, AQI, brightness and wind speed. Up to 4 parameters can be displayed on one page and totally up to 10 pages can be configured as display page.

- Display energy metering value from bus
  Up to 8 meters can be displayed on one page and totally up to 10 pages can be configured as display page.

- Timer (schedule) function
  Up to 16 schedules can be set. The schedule can be either daily or weekly and it is configured via ETS.

- Event management
  Up to 8 sets of event functions are available for setting. Up to 8 output telegrams can be triggered by calling the scene number. Each output has 3 different data type options.

- Logic functions
  There are up to 8 logic inputs configurable with logic capabilities of doing AND, OR, and XOR, gate forwarding, threshold comparator and format conversion.

- RGB, RGBW control and color-temperature adjustment
TC5 can set up dimming control page for 4 types of color lights, which are 3-color RGB light, 4-color RGBW light, 4-color RGBW light optional with color temperature adjustment or brightness & color temperature adjustment.

- Display time, date, temperature, output day/night signal

- Proximity sensor, adjustment of screen brightness, buzzer

- Administrator function via password
It is configurable. Maximum 3 passwords are available.

- Administrator function via bus
The whole device or selected function pages can be locked to disable user screen operation.

- Multi-usage color strip
The color strip is designed not only as a decoration, but also for multiple indication usage, such as indication of KNX programming mode, seasonal changes and alarm information.

- On site customization possible for theme (wallpaper), screen saver, and configurable icons

2 UI description

2.1 Home Page (Navigation function)

Homepages are configurable via ETS. Max. two pages, with max. eight icons per page, can be configured.

The icons are associated with either pages or individual function.

- Icons associated with pages direct the end users to the desired pages by icon clicking. The associated pages can be multi-function pages for light, blind, scene, value send or single function pages such as HVAC operation pages.

Home page   Multifunction page   Multifunction dimming

Function page, e.g., HVAC   HVAC fan speed
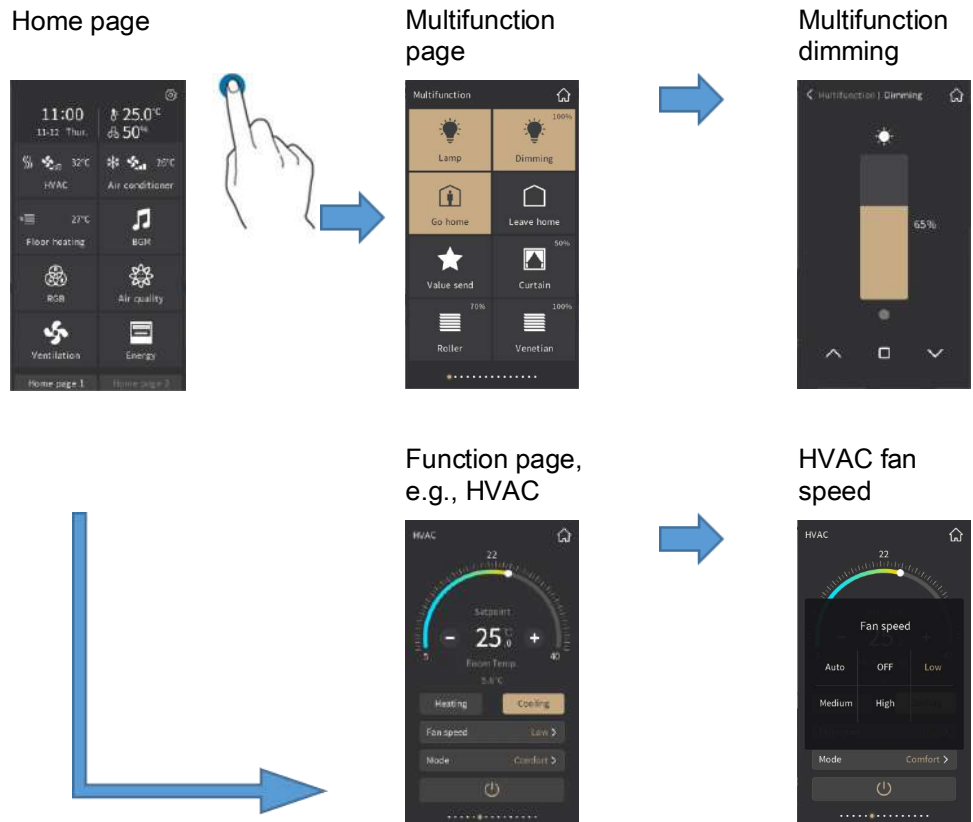
- Icons associated with individual function provide easy access to frequently used operation, such as scenes presentation On/Off for meeting room, go home / leave home for a home use.

Disable home page

Home page navigation function is configurable via ETS.

If navigation function for both pages are disabled, then no home page is available.

Examples:

- Picture on the left: Two home pages are configured in ETS.
- Picture on the right: Home page is disabled and there is only one cover page. User can slide to enter function pages.

Number	Description
①	Page setting icon. See Setting page [➜ 23], for more information.
②	Date (mm-dd) and time; It can be modified on the setting page, or via object.
③	• Icon can be configured using micro SD card. See Home page icons [➜ 115], for more details. • The icon name is defined via ETS. Multiple languages are available and the name is as it's typed. Max. 12 characters are displayed, but only 5 characters for Chinese or 7 characters for Russian/Greek.
④	Name of the home page defined via ETS.

Number	Description
⑤	Temperature value 🌡 : If no temperature or humidity value is received, it is displayed as "---". Temperature unit (Celsius (℃) or Fahrenheit (℉)) can be configured and displayed accordingly.
⑥	◌◌ : Humidity value

2.2 Multifunction page

Multifunction page includes lighting, shading, scene control and sending value. Multifunction page view is configurable via ETS.

Options

Big icons
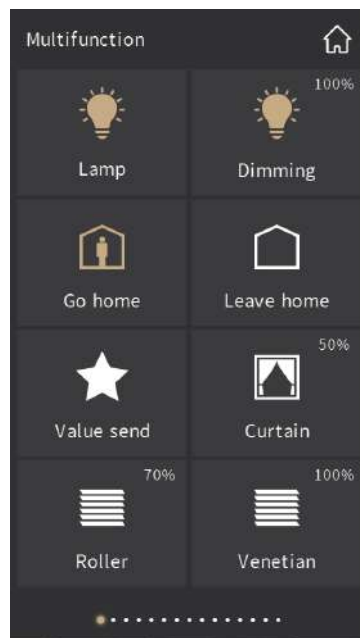
List view
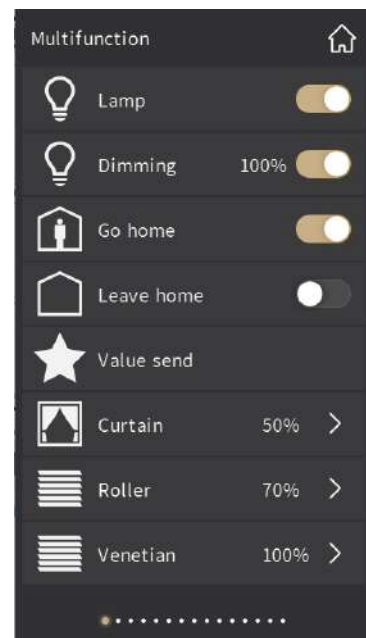
Page layout: The number of icons per page can be configured via ETS.

1 icon per page
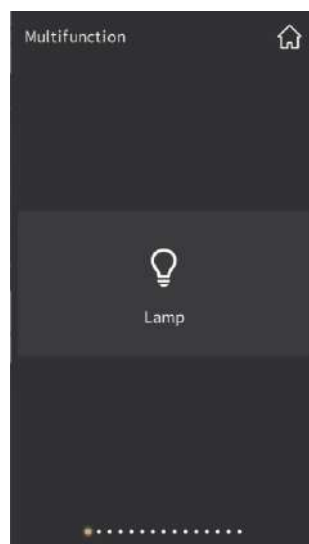
2 icons per page
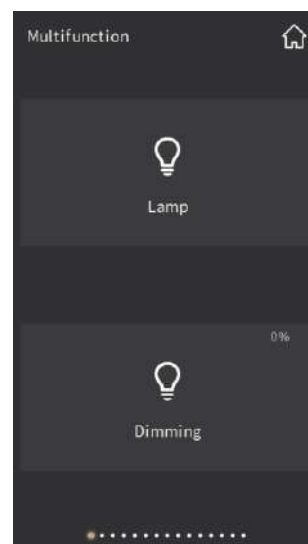
3 icons per page
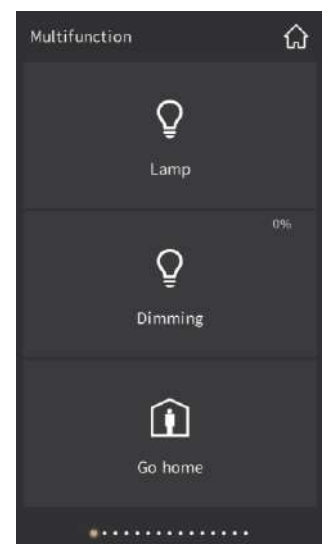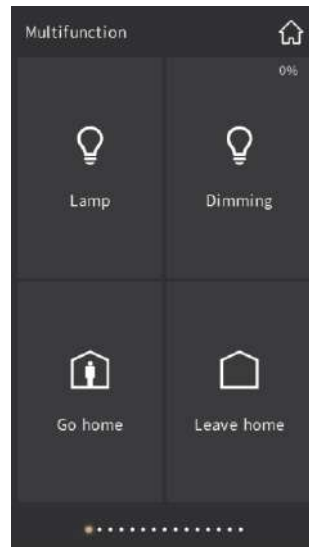
4 icons per page | 6 icons per page | 8 icons per page
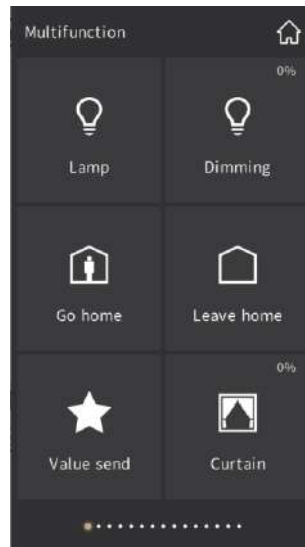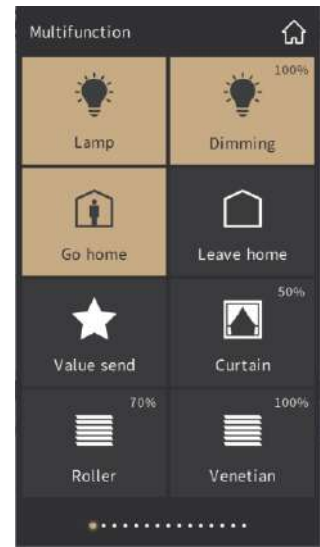
2.2.1 Switch function

The status of the switch function

- Big Icons View:

There are 2 ways to indicate the light on status and this is configurable via ETS.

1. Only icon on (the right figure) indicates the lamp is on and the icon off (left picture) means the lamp is off.
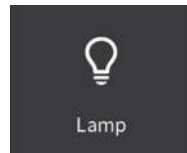
2. The block and icon both on (right figure) indicates the lamp is on, and the block and icon both off (left figure) means the lamp is off.
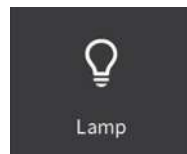
- List View

Dragging the slider to the right indicates the function is on, and dragging the slider to the left (shown in below figure) indicates the function is off. At the same time, it can be updated and displayed according to the switch status of the bus feedback.
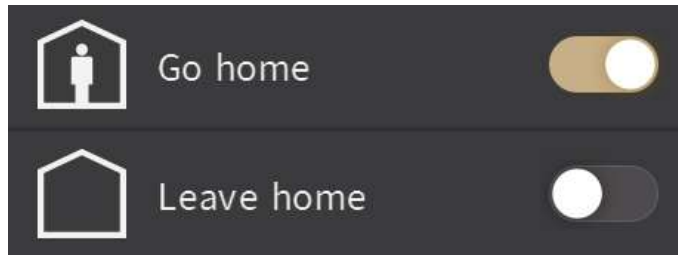
2.2.2 Switch/Dim function

Long press the icon 500 ms to enter the dimming control page.
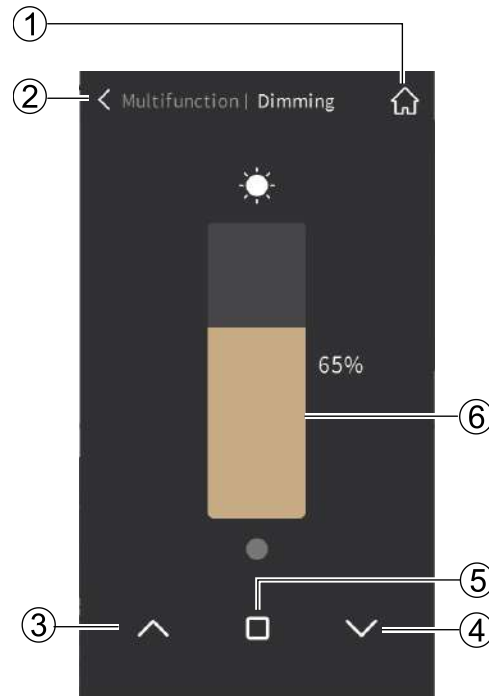
Number	Description	Number	Description
①	Home page	②	Return
③	Relative dimming up to 100 %	④	Relative dimming down to 0 % (off)
⑤	Stop	⑥	Dimming by sliding

2.2.3 Value send function

Tap any icon to send the corresponding telegram to bus. If the icon shakes, it indicates the progress.

2.2.4 Blind function

3 kinds of blind are available: Curtain Blind, Roller shutter (without slat) and Venetian Blinds (with slat).

Curtain Blind with Open/Close/Stop or in percentage
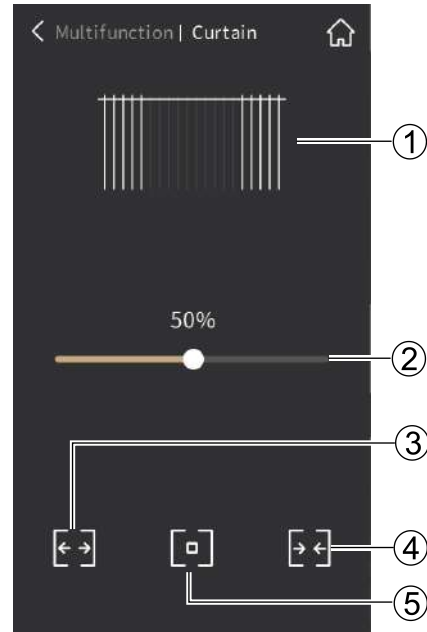
Number	Description	Number	Description
①	The simulation of curtain position	②	Blind by sliding in percentage
③	Open	④	Close
⑤	Stop		

Roller shutter (without slat)
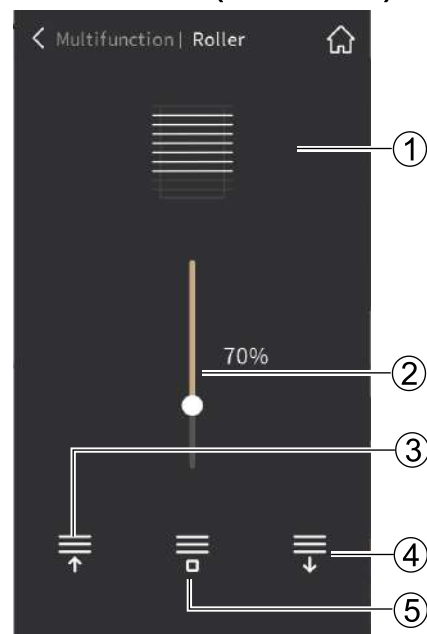
Number	Description	Number	Description
①	The simulation of blind position	②	Sliding position in percentage
③	Up	④	Down
⑤	Stop		

Venetian Blinds (with slat)

Number	Description	Number	Description
①	The simulation of slat angle (Blind)	②	The simulation of blind & louver
③	Sliding position in percentage • 0%: blind fully opened • 100%: blind fully closed	④	Louver angle in percentage • 0%: slat in horizontal position and the light is fully in • 100%: slat in vertical position and no light is in
⑤	Up (Blind & louver)	⑥	Down (Blind & louver)
⑦	Stop (Blind & louver) • Pressing stop button once can stop blinds and louver when it goes up or down. Then the blind slat angle can be adjusted slightly by pressing stop button.		

2.2.5 Scene recall and storage

Tap the assigned scene icon (e.g. ▦) to send corresponding scene telegram to bus.

- Device can recall the scene directly by short pressing scene icon.
- If end user needs to change the scene setting and save changes:
  - Change the scene setting as desired.
  - Long press the scene icon until icon shakes (horizontally) and the scene change is stored to bus.
  - Short press the scene icon to recall the saved scene.

2.3 General temperature control page

General Temp. Control function can be configured for many heating and/or cooling applications, such as fan coil application, chilled ceiling and electrical heating. It can manage the room temperature with setpoint (absolute or relative), heating / cooling selection, fan speed selection (3 speeds, Off and Auto), operation mode changes (4 modes: Comfort, Standby, Economy and Protection).

Number	Description	Number	Description
①	Description, configured in ETS	②	Setpoint by sliding
③	-, +: Setpoint change	④	Room temperature
⑤	Heating/cooling status	⑥	>: Fan speed change
⑦	>: Operation mode change	⑧	Power On/Off

Fan speed change
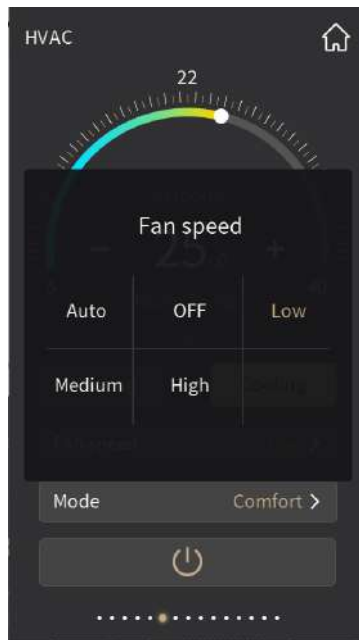
Operation mode change

2.4 VRF air conditioner function page

This function allows the device to act as the interface and operation unit for VRF air conditioners via a KNX to VRF gateway.
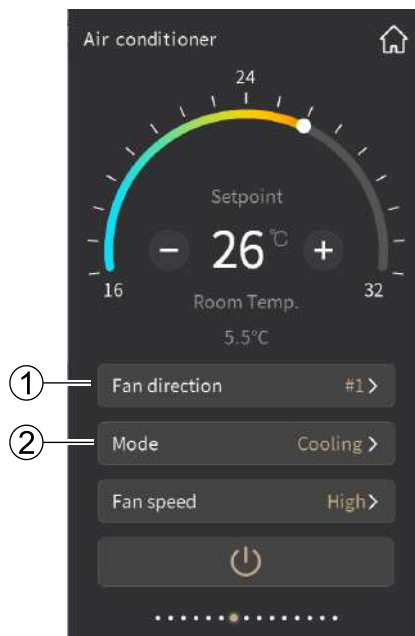
VRF page in °C

VRF page in °F

Number	Description	Number	Description
①	Fan direction adjustment	②	VRF Mode change

2.5 Floor heating function page

- Floor heating control function with 2-point or PI control according to temperature setpoint
- Scene and schedule functions
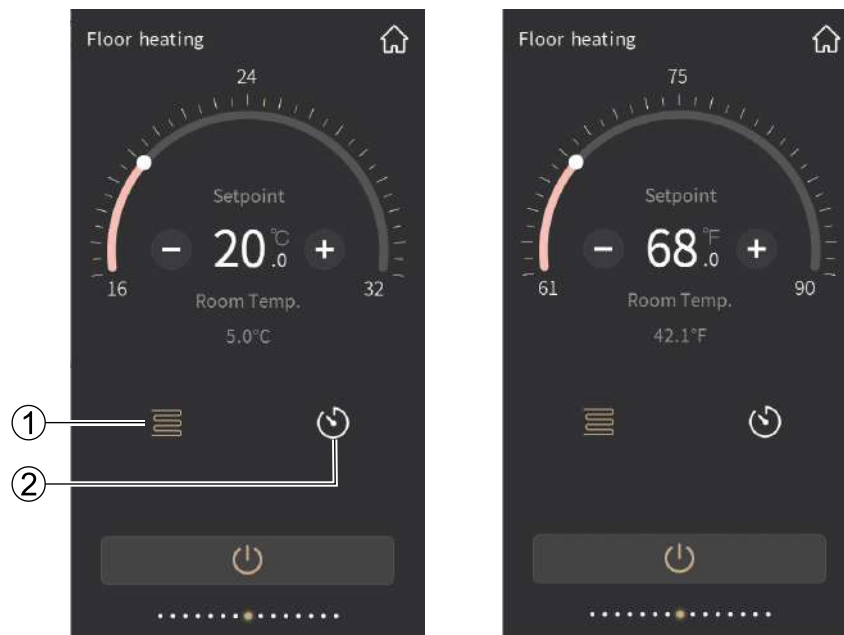
Floor heating page in °C   Floor heating page in °F

Number	Description	Number	Description
①	Heating valve Open/Close indication **Note:** When setpoint is higher than room temperature, the valve is opened to increase the room temperature and vice versa.	②	Timer enable/disable **Note:** This timer is a dedicated one configured via ETS on floor heating function page. The holiday set in setting page has no impact to this timer (see Setting page [→ 23])

2.6 Ventilation system function page

Ventilation system controls:

- 3-speed fan setting, opening/closing of heat recovery, filter life counting, alarm for filter change and filter life reset.
- Auto control (demand based ventilation control) via PM2.5 or CO_2 value
- Scene setting function.

Number	Description	Number	Description
①	Current fan speed	②	+/-: Fan speed change
③	Heat recovery On/Off	④	Filter life time status

The service life of the filter is set via ETS. When the filter usage reaches to the time set, the alarm "Reset filter lifetime?" is issued via bus, and the remaining filter timer value can be displayed as 0%. When alarm is issued, an alarm icon ⌂ is shown on homepage. Touching the icon resets the filter time. After tapping "Confirm", the filter timer value can be reset back to 100%.

Demand based ventilation page

Auto control (Demand-based PM2.5)   Auto control (Demand-based CO₂)
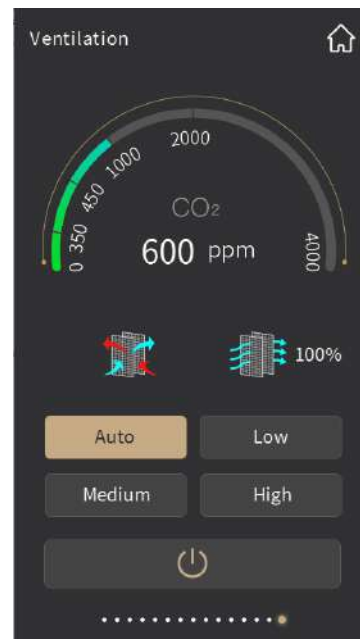
2.7 RGB dimming function page

This function is for RGB or RGBW LED dimming (absolute dimming). RGBW supports color temperature, color temperature and brightness adjustment individually.

4 types of RGB dimming are available and configurable via ETS:

1. RGB: RGB light control
2. RGBW: RGBW light control
3. RGBW + Color Temperature: for RGBW light, or RGB light and color temperature control
4. Brightness + Color Temperature: for light color temperature control

RGB   RGBW   RGBW+Color temperature
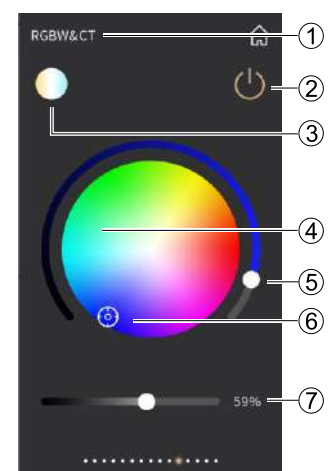
Number	Description	Number	Description
①	Description	②	On/Off button and status
③	Enter Color temp. control	④	Color palette
⑤	Color temp. slider	⑥	Color selection
⑦	Brightness of white light		

Color temperature control

RGBW+Color temperature   Brightness+Color temperature

Number	Description	Number	Description
①	Color temp. control	②	Color temp. slider, 100K / step
③	Temp. up/down	④	Brightness bar

2.8 Energy metering display function page

Energy metering display function page supports current, voltage, power and energy (electricity energy) display. Values are from bus via actuators or metering gateway.

Identity of data ➡

Energy Metering Display interface: current, voltage, power and energy consumption can be displayed via parameter configuration. Up to eight items can be displayed in the interface. The data is updated from bus.

2.9 Air quality display function page

Temperature, humidity, PM2.5, PM10, VOC, CO_2, AQI, brightness and wind speed displays can be set and these values are received from bus. Up to four items can be configured on one function page.
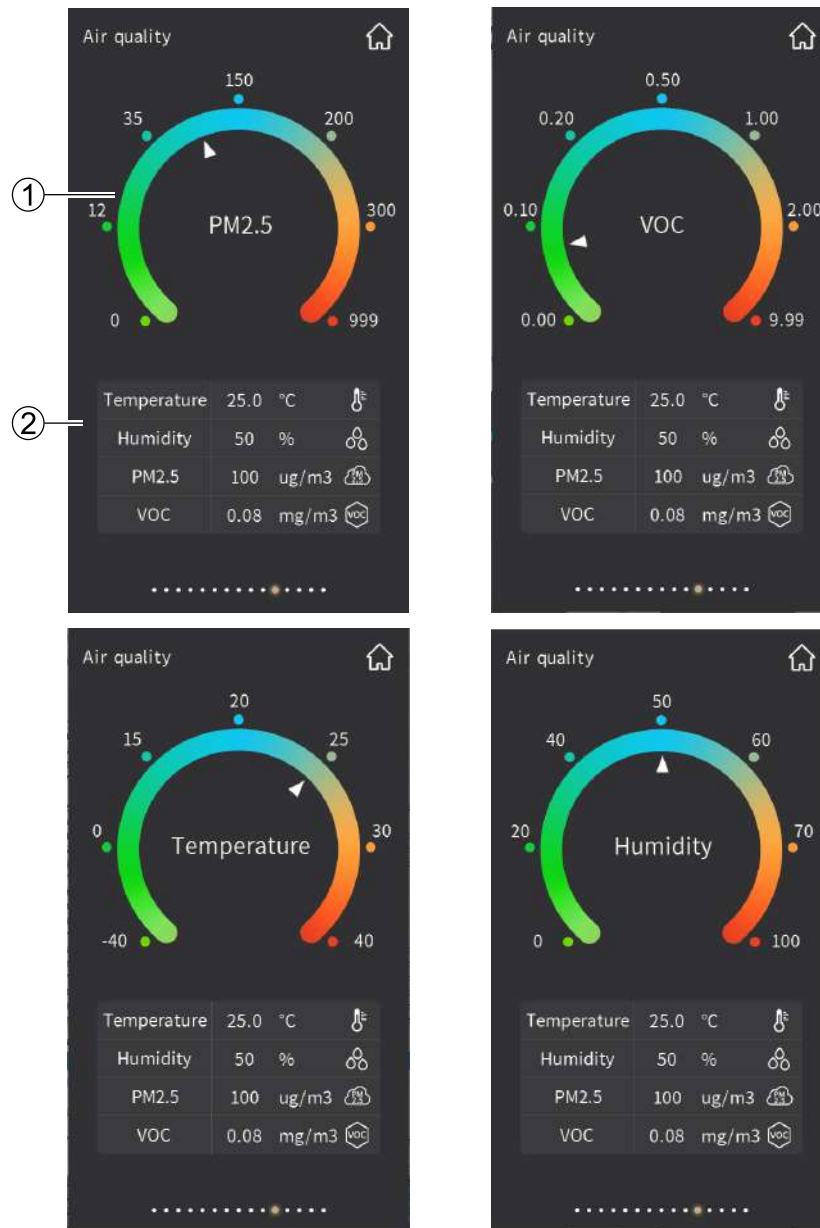
Number	Description	Number	Description
①	Selected range	②	Configured parameters

The value of the configured parameter is shown as below.

Parameter	Description	Parameter	Description
Temperature	-40...40 °C	Humidity	0...100 %
PM2.5	0...999 µg/m^3	PM10	0...999 µg/m^3
CO_2	0...4000 ppm	VOC	0...9.99 mg/m^3
AQI	0...500	Brightness	0…5000 lux
Wind speed	0…50 m/s		

2.10 Background music function page

This function only works via the gateway which converts music control signal to KNX.
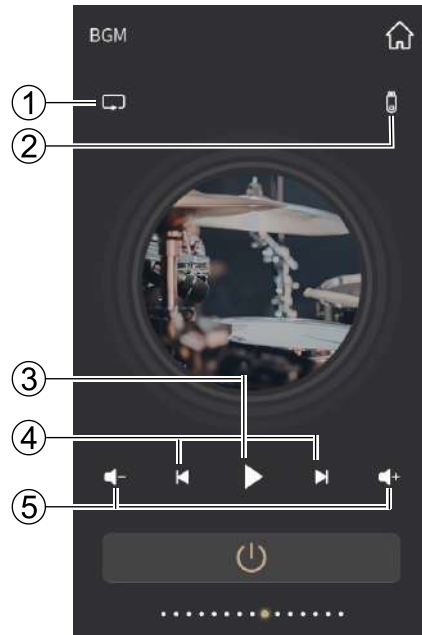
Number	Description	Number	Description
①	Play mode	②	Music source
③	Play / Pause	④	Previous / Next
⑤	Volume + / -		
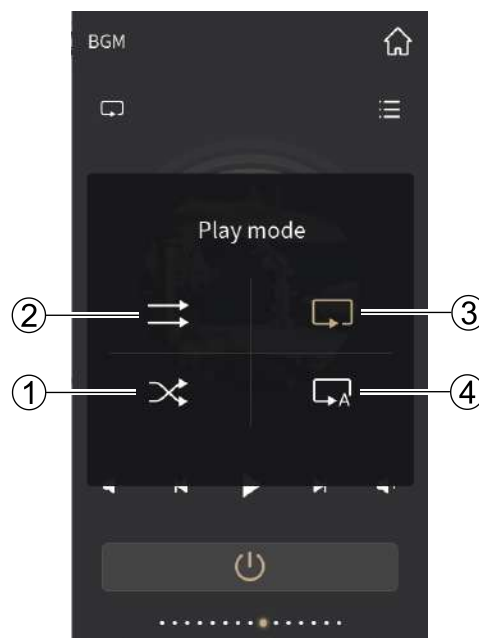
Number	Description	Number	Description
①	Play randomly	②	Play sequentially
③	One request	④	Loop play
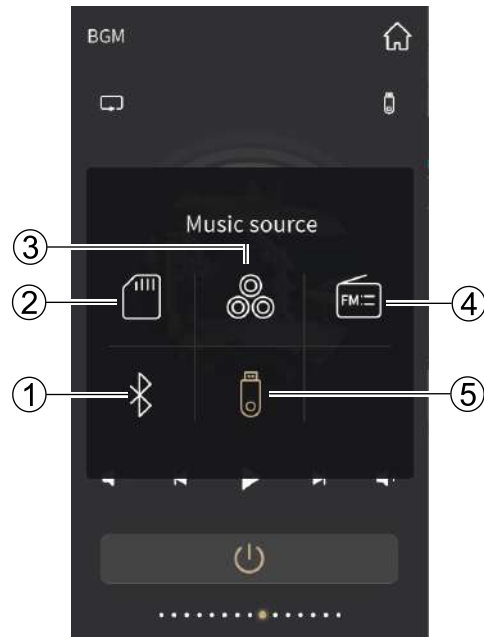
Number	Description	Number	Description
①	Blue tooth	②	SD card
③	AUX audio	④	Radio FM
⑤	USB, current selection		

2.11 Setting page

User can enter setting page by clicking the setting icon ⚙ on home page.
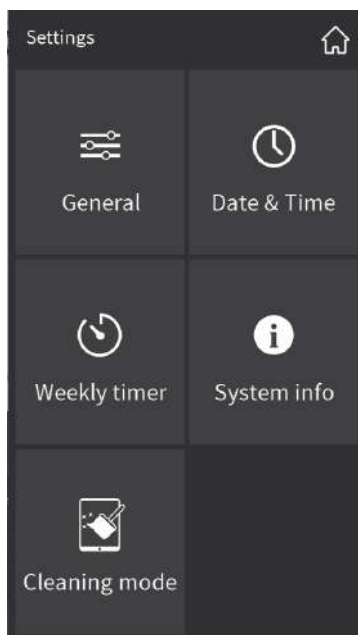
Settings   General home page
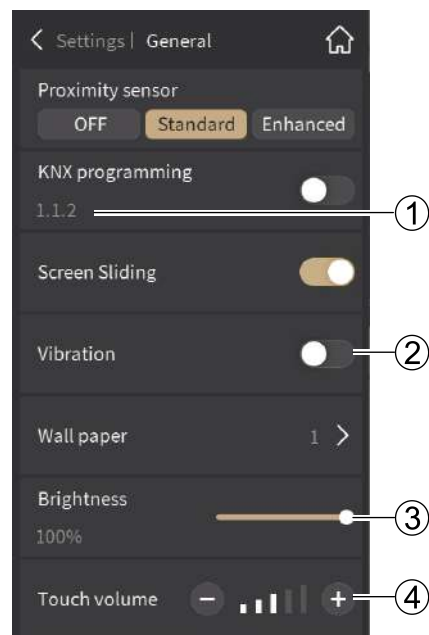
Number	Description	Number	Description
①	Physical address	②	Enable/disable button
③	Screen brightness	④	Keystroke volume

Note

KNX programming should be disabled unless professional engineers need configure the device via ETS.

Proximity sensor: The screen is activated when the sensor detects that someone is approaching.

1. Off
2. Normal: within 15 cm
3. Enhance: within 30 cm

Screen-sliding enable button:

1. Enabled: Function pages can be switched to, by sliding the screen and touching the icons associated.
2. Disabled: Function pages can only be switched to, by touching the icons associated.

Cleaning mode: When this mode is confirmed, the screen will be frozen within a set time.

Cleaning mode
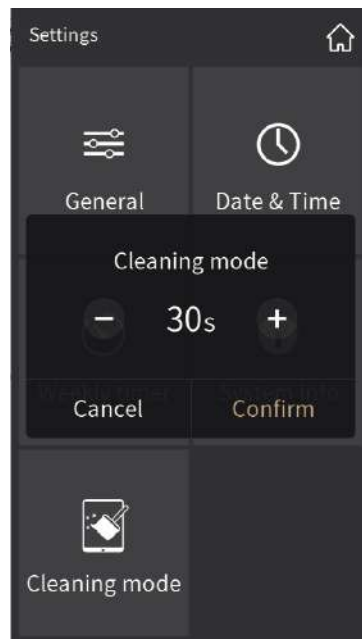
Pages for date & time and system info

Date & time setting page: slide date (Y, M or D) or time (H, M or S) to set
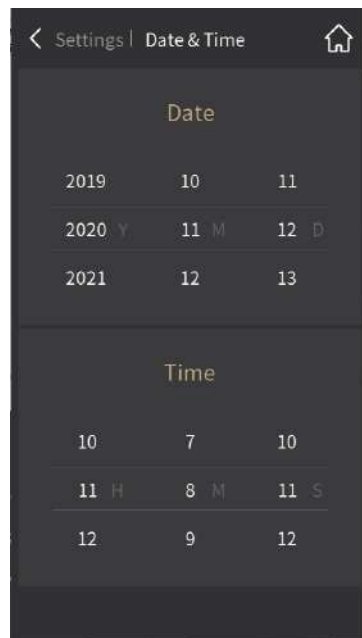
Date & time setting page   System info page

Timer function

Weekly timer - Weekly schedule function

Daily schedule and weekly schedule are configurable in ETS.

Weekly schedule is operational in touch screen or over bus if it's enabled in ETS.

During holiday, the weekly timer is off, but there is no impact for timer dedicated to floor heating function (see Floor heating function page [➜ 16]).
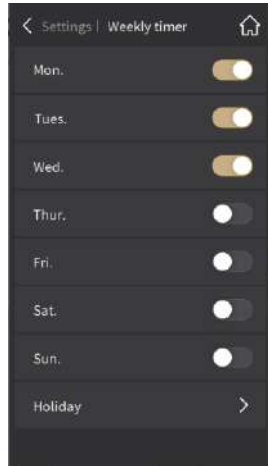
Timer settings:

- Tap icon ⬤ or

  ⬤ to enable or

  disable weekday

- Tap icon > to check holiday

No holiday set
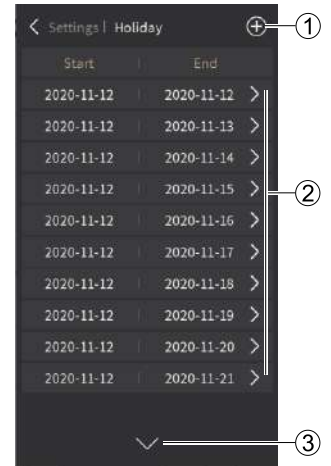
Holiday list:

- Timer is off during holiday.

Confirm new holiday

Conflict setting

Delete holidays

Number	Description	Number	Description
①	Add new holiday	②	Enter holiday details
③	Tap for more		

2.12 Screen

2.12.1 Screen saver

Screen saver is configurable via ETS from the following options:

- **Factory preloaded:** a) Off; b) Clock; c) album (3 pictures: they are auto switched per 5 s when screen saver is activated.)
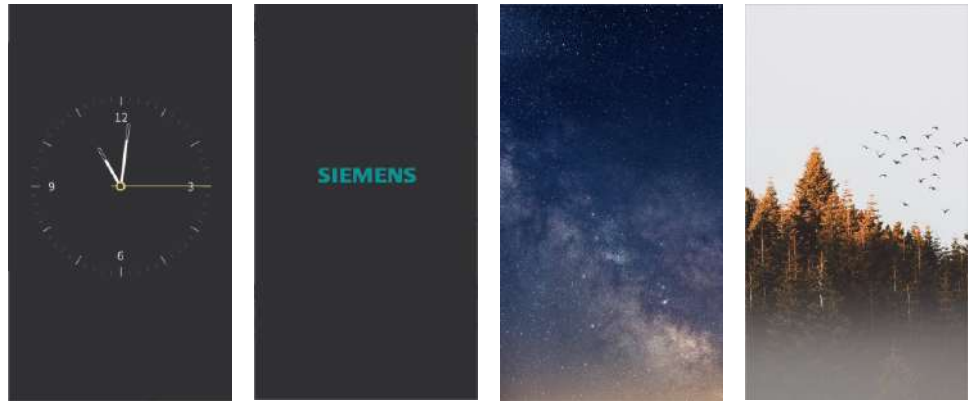
| Clock | Album 1 | Album 2 | Album 3 |

- **Customized pictures from Micro SD card.**
  Insert Micro SD card with the following settings:

1. Create a new folder named "picture" under the root directory of Micro SD card

2. Pictures in the folder "picture" are named as "Album_1", "Album_2", "Album_3"

3. Picture resolution must be 480 * 854 and with the suffix: jpg, bmp, tjpg, png (For "png" picture, background must be opaque.)
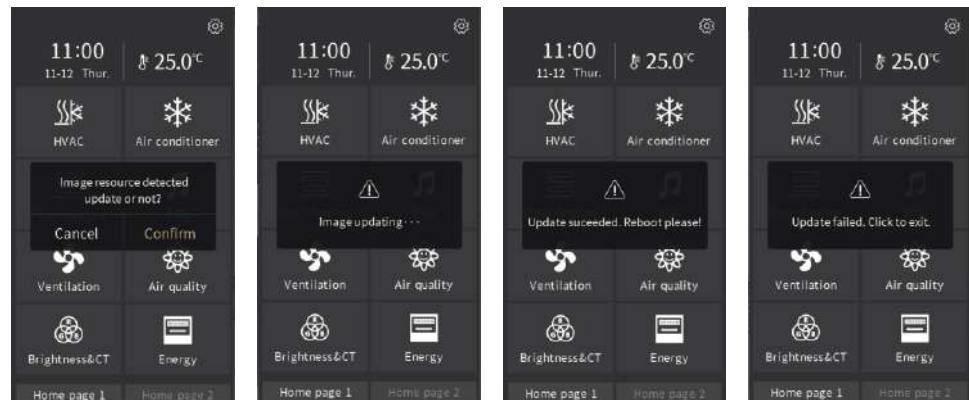
Delete the customized pictures through Micro SD card:

1. Create a folder named "picture" in the Micro SD card but there is not any picture with valid name and format.

2. When insert the SD card, a pop-up window "Image resource detected" "update or not ? " appears, tap "Confirm" to delete the customized pictures

3. Reboot the device to recover original album.

Note	• Only support SDHC card and FAT32 format;
	• Only support Micro SD cards with capacity not greater than 32 GB.
	• The device picture storage size is approximate 4 MB. If the total size of the valid pictures in the Micro SD card is greater than 3.8 MB, message "Invalid image, please check!" pops up.

2.12.2 Theme (Wallpaper)

For home page

There are 3 themes available for home page:1) Dark screen (default); 2) With Siemens logo; 3) Water droplets.

The theme is selectable via ETS configuration and it is also configurable via screen by user.

When default theme is selected via ETS, customizing the theme via Micro SD card is allowed.
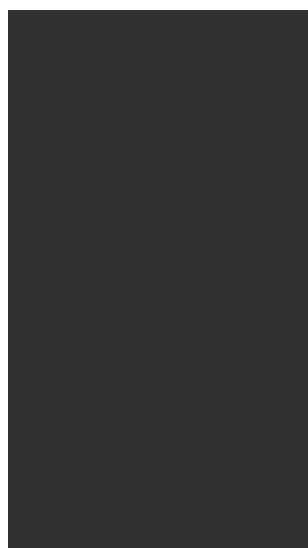
Default   With Siemens logo   Water droplets
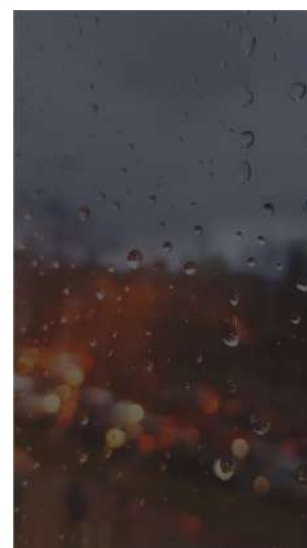
Using SD card for customized themes on home page

Insert Micro SD card with the following settings:

1. Save the pictures in the root directory in Micro SD card and named as "main_bg"
2. Picture resolution must be 480 * 854 and with the suffix: jpg, bmp, tjpg, png (For "png" picture, background must be opaque.)
3. New pictures take effect only when the parameter "Theme or Wallpaper" in the ETS is selected as "Default".

Insert Micro SD card into the device, if valid pictures are detected, the following pop-up window appears.

If upgrade fails, tap any area outside the window to exit.

Note	• Only support SDHC card and FAT32 format;
	• Only support Micro SD cards with capacity not greater than 32 GB.
	• The device picture storage size is approximate 4 MB. If the total size of the valid pictures in the Micro SD card is greater than 3.8 MB, message "Invalid image, please check!" pops up.
For function page	There is only 1 theme available for function page that is Dark screen and it is not selectable.
	When default theme of home page is selected via ETS, customizing the theme via Micro SD card is allowed.

Using SD card for customized themes on function page

Insert Micro SD card with the following settings:

1. Save the pictures in the folder named as "Functionpage" under root directory in Micro SD card
2. Picture resolution must be 480 * 854 with the suffix: jpg, bmp, tjpg, png (For "png" picture, background must be opaque.) and named as "func_bg"

Insert Micro SD card into the device, if valid pictures are detected, the following pop-up window appears.

If upgrade fails, click any area outside the window to exit.

Note

- Only support SDHC card and FAT32 format;
- Only support Micro SD cards with capacity not greater than 32 GB.
- The device picture storage size is approximate 4 MB. If the total size of the valid pictures in the Micro SD card is greater than 3.8 MB, message "Invalid image, please check!" pops up.

Change the themes on function page back to default

1. Create a blank folder without pictures named as "Functionpage" under root directory in Micro SD card

Insert Micro SD card into the device, if no valid pictures are detected, the following pop-up window appears.

If operation fails, click any area outside the window to exit.
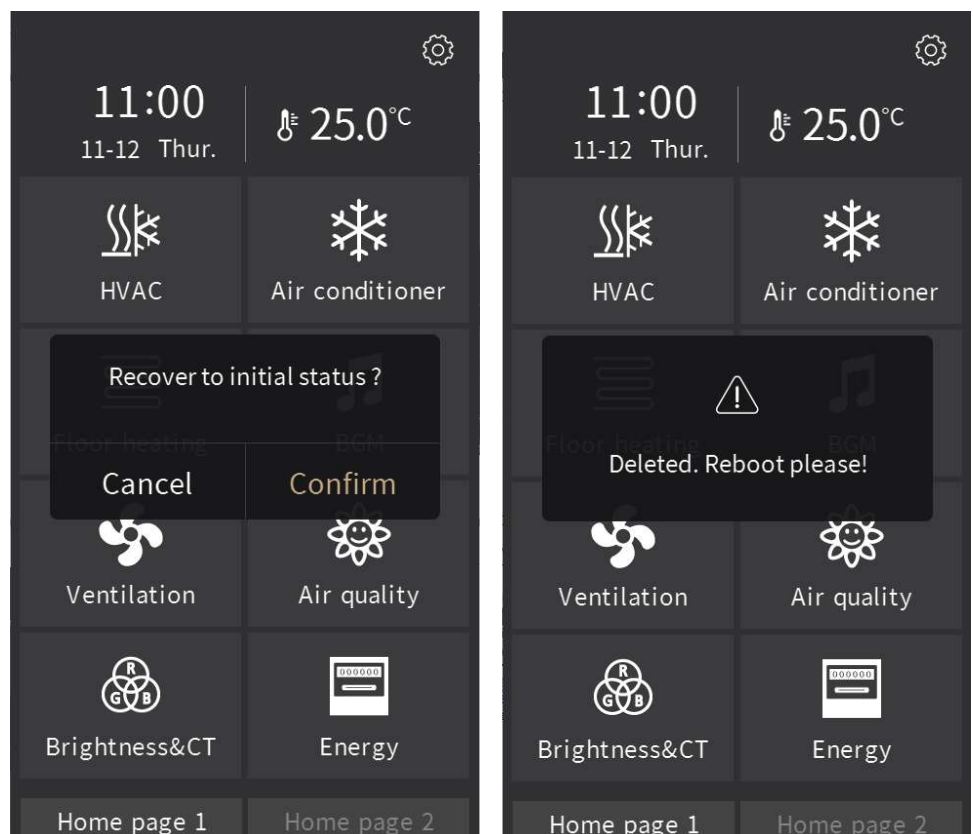
2.13   Administrator function via password

Administrator function is configurable via parameter "Admin via password" in ETS. For parameter details, see "General setting" parameters [➜ 33].

Setting page password

If administrator function is enabled, a 4-digit number password is required to check or edit information in Setting page except cleaning mode. The password can be set via parameter "Set password 1 - setting icon unblocking". For parameter details, see "Password" parameters [➜ 43].

After the setting icon is unlocked, the settings are enabled. Once leaving Settings page by tapping the home icon ⌂, the page is automatically locked again.
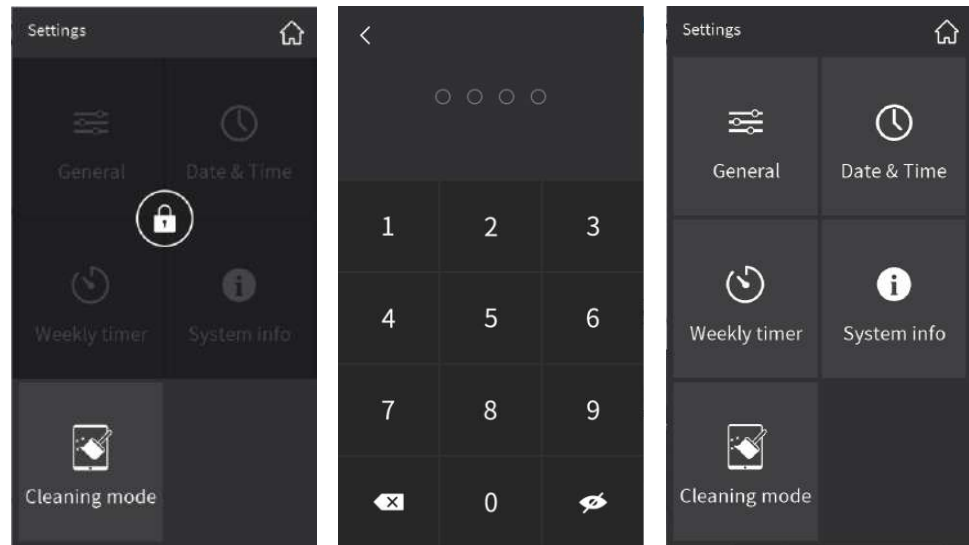
Screen saver password

If administrator function is enabled, screen operation requires password after the screen saver is on or the screen is off. The password is a 4-digit number.

Two passwords are available. They can be set via parameters "Set password 2 - screen waking up" and "Set password 3 - screen waking up". For parameter details, see "Password" parameters [➜ 43].
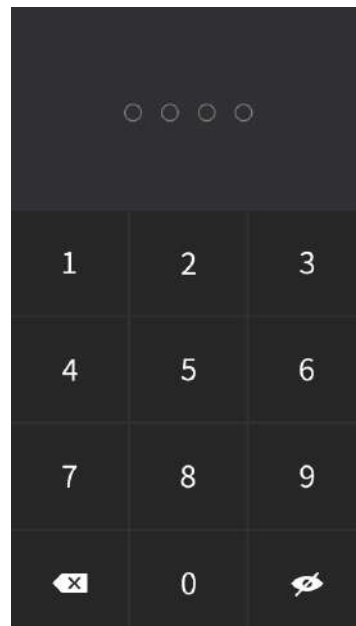
2.14 Administrator function via bus

This command is sent from bus. It can lock either whole panel (left picture) or individual function page (right picture).

- Lock whole panel: Once panel is locked, user cannot perform any operation on device while the panel is still able to receive telegrams from bus. This lock is done via object "General - Admin via bus". For object details, see "General" communication objects [➜ 37].

- Lock individual function page: Only the locked page is not operational, while it's still able to receive telegrams from bus. This function is via object "Function page - Admin via bus". For object details, see "Function page" communication objects [➜ 49].
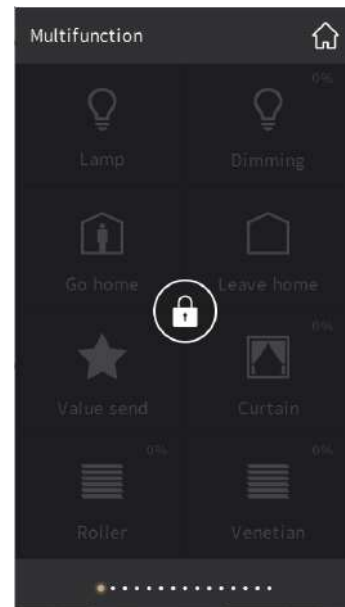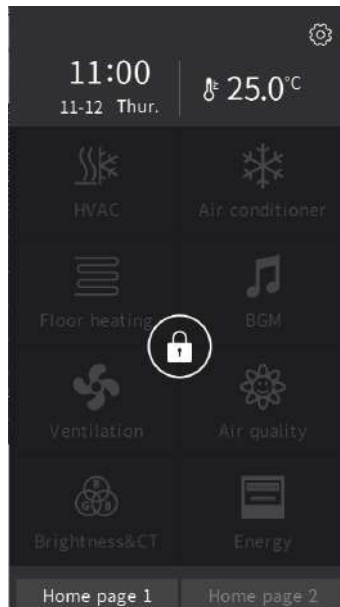
2.15 Other pages

KNX Connection Failure: "KNX Connection Failure" is shown in red when bus connection is abnormal.

ETS configuration loading: when the application download is completed or the device power recovers, the device initializes and loads the parameter configuration of ETS.

| KNX connection failure | ETS configuration loading |
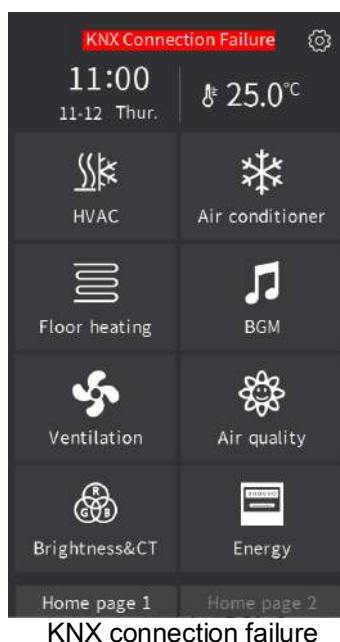
3 Parameters and communication objects

This chapter introduces how the device is configured via ETS by setting the parameters. And the associated communication objects are introduced as well.

The communication object is used to communicate with other devices via bus:

- Max. communication objects: 688
- Max. group addresses: 2000
- Max. associations: 2000

The number and kind of visible objects vary. All objects are never available at the same time.

Note

In "Flag" column for communication objects:

- "C": Enable the communication function of the object
- "W": The value of object can be written from the bus
- "R": The value of the object can be read by other devices
- "T": The object has the transmission function
- "U": The value of the object can be updated

Entering programming mode:

- Tap the setting icon ⚙ in home page;
- Go to "General";
- Enable "KNX programming", then the colorful strip turns red and device can be configured via ETS.

Note

Only professional engineers can operate the KNX programming function. Make sure this function is disabled during daily operation and if it is enabled:
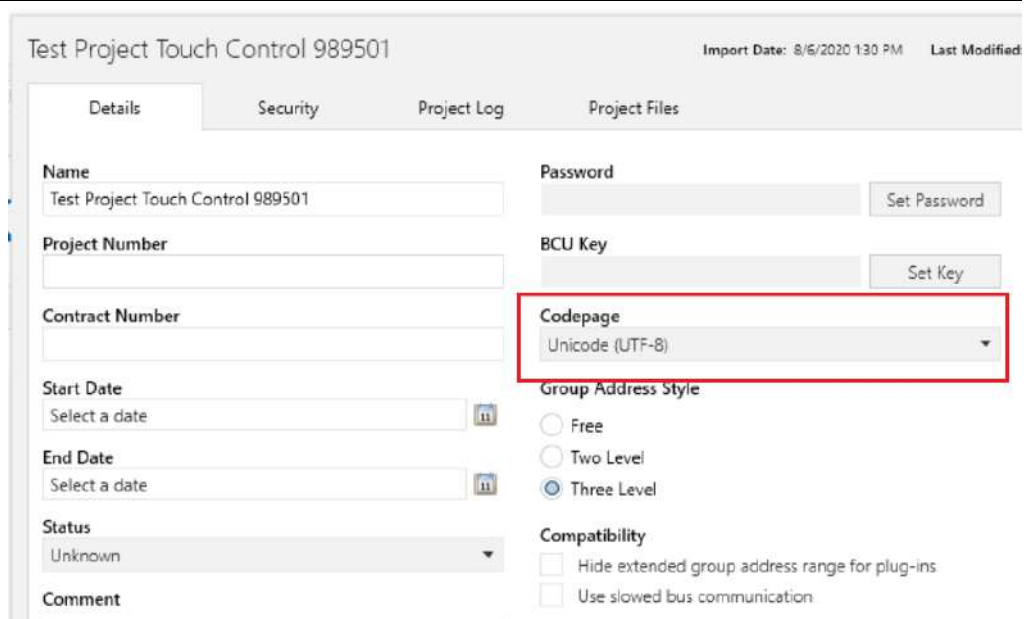
- The device can operate normally.
- The color strip is constant red and it affects the strip life span.

Physical address exception:

The physical address of 15.15.254 is reserved for product manufacture test, so it is not allowed to be used in practical project.

Language in display:

!	NOTICE
	The device supports multiple languages including English, German, Chinese, Spanish, Italian, French, etc. To properly display the desired language, the "Codepage" should be set as "Unicode (UTF-8)".

3.1 "General" interface

3.1.1 "General setting" parameters

Parameter "General setting" is used to configure language, temperature unit, screen saver, panel lock, background, etc.
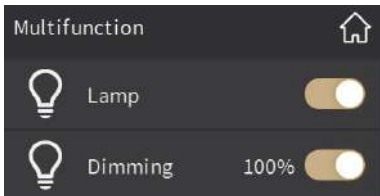
Name	Description	Range
Device name (max.40 characters)	Sets device name **Note**: This name is not displayed on TC5. It's only visible via ETS.	TC5 (default name)
Display operator language	Selects the interface language of the function pages, such as the page for HVAC control, system info. etc.	English (default) Chinese German French Spanish Italian Russian Greek Others
The following parameter is visible only when "Others" is selected.		

Name		Description	Range
{	Language name	The required language can be typed as "Language name". If the language typed is not available in the library, English is displayed. **Note**: These additional languages are only available on devices with system firmware version 2.00.05 or higher. **Important**: The set "Display operator language" can only be displayed on TC5 after the updated database is downloaded to the device.	Hungarian Polish Portuguese Turkish
Cycle time for sending status "In operation"[0...240, 0=disabled]		Sets the time interval for sending telegrams to bus to indicate this module operates properly. If: • "0" is selected, the object "In operation" does not send any telegram. (0= inactive) • None-zero (1...240s) is selected, the object "In operation" sends a telegram, according to the interval set, with value "1" to the bus. To reduce the bus load as much as possible, the maximum time interval should be selected according to actual needs.	0...240 s
Display temperature in		Sets temperature unit This applies to the temperature displayed on homepage, HVAC and Air conditioning function pages.	Degree Celsius (default) Degree Fahrenheit
Date and time changeable via bus		To determine if the display of "date/time" on home or cover page can be modified from bus If "Yes" is selected, the objects "Date" and "Time" are visible. Both can be modified.	No Yes (default)
Send daytime/nighttime status		To determine how the "day/night" status is defined. If status changes, a telegram is sent via object "Day/Night". Options: • **No**: Do not send telegram and objects • **According to user specified time**: Switch the day/night based on the specific time configured. E.g., switch Economy mode @18:30P.M. to Day mode @6:30A.M. • **According to sunrise & sunset**: Switch the day/night status based on the sunrise and sunset of a specific location. The geographical coordinate point of the location should be defined	No According to user specified time According to sunrise & sunset
The following parameters are visible when "According to user specified time" is selected.			
{	Time for switch to night at: Hour [0...23]	Switches day to night at specified hour	0...23 h
	Time for switch to night at: Minute [0...59]	Switches day to night at specified minute	0...59 min
	Time for switch to day at: Hour [0...23]	Switches night to day at specified hour	0...23 h
	Time for switch to day at: Minute [0...59]	Switches night to day at specified minute	0...59 min
The following parameters are visible when "According to sunrise & sunset" is selected.			
{	Coordinates location settings	No necessary action	-
	Location [city, country]	Sets the reference point of sunrise and sunset Example: Berlin, Germany	-
	Latitude	Sets latitude	North South
	Latitude in degrees [0°...90°]	Sets latitude in degrees	0...90°
	Latitude in minutes [0'...59']	Sets latitude in minutes	0...59'
	Longitude	Sets longitude	East West
	Longitude in degrees [0°...180°]	Sets longitude in degrees	0...180°

Name		Description	Range
▪ ▪ ▪	Longitude in minutes [0'...59']	Sets longitude in minutes	0...59'
	Time difference from Universal Time [UTC+...]	Sets the time difference from universal time	(UTC -12:00) International Date Line West; (UTC -11:00) Samoa; (UTC -10:00) Hawaii; (UTC -09:00) Alaska; (UTC -08:00) Pacific (USA,Canada); (UTC -07:00) Arizona, Denver, Calgary; (UTC -06:00) Chicago, Dallas, Mexico City; (UTC -05:00) New York, Miami, Atlanta, Detroit; (UTC -04:30) Caracas; (UTC -04:00) Atlantic (Canada), Manaus, Santiago; (UTC -03:30) Newfoundland; (UTC -03:00) Brasilia, Buenos Aires, Greenland; (UTC -02:00) Median Atlantic; (UTC -01:00) Azores, Cape Verde Islands; (UTC) Dublin, Edinburgh, Lisbon, London; (UTC +01:00) Amsterdam, Berlin, Bern, Rome, Vienna; (UTC +02:00) Athens, Istanbul, Kiev, Sofia, Cairo; (UTC +03:00) Baghdad, Moscow, St.Petersburg; (UTC +03:30) Tehran; (UTC +04:00) Abu Dhabi, Port Louis, Tiflis; (UTC +04:30) Kabul; (UTC +05:00) Islamabad, Karachi, Tashkent; (UTC +05:30) Chennai, Kolkata, Mumbai, New Delhi; (UTC +05:45) Kathmandu; (UTC +06:00) Astana, Dakka, Novosibirsk; (UTC +06:30) Yangon (Rangun); (UTC +07:00) Bankok, Hanoi, Jakarta, Kasnoyarsk; (UTC +08:00) Singapore, Beijing, Hong Kong, Taipei; (UTC +09:00) Osaka, Sapporo, Tokyo, Seoul; (UTC +09:30) Adelaide, Darwin; (UTC +10:00) Brisbane, Canberra, Melbourne, Sydney; (UTC +11:00) Magadan,Solomon Islands,New Caledonia; (UTC +12:00) Aukland, Wellington, Fiji
	Day & Night configuration	Sets the time delay of the night/day switching moment of the location configured	-
	Switch to nighttime after sunset in [-128…127]	Sets the time delay of the night switching moment of the location configured	-128...127 min
	Switch to daytime after sunrise in [-128…127]	Sets the time delay of the day switching moment of the location configured	-128...127 min
Color strip usage		Enables or disables color strip function When this is enabled, a separate setting page is visible under "General". Refer to "Color strip" parameters [➔ 40].	Disable (default) Enable

Name	Description	Range
Proximity sensor response function	Enables or disables the use of proximity sensor When this is enabled, a separate setting page is visible under "General". Refer to "Proximity sensor" parameters [➜ 42].	Disable Enable (default)
Screen brightness changeable via bus	Defines if the screen brightness can be changed via bus	No Yes (default)
Wallpaper - homepage	Sets the screen theme or wallpaper Only with default setting, the theme customization is allowed via micro SD card.	Dark screen - default 1-With Siemens logo 2-Water droplets
Select page style for Multi-function page	Selects the page style for multifunction pages Big Icons List 	Big Icons (default) List
The following parameter is visible when "Big Icons" is selected.		
Indicate the control status through	Indicates the control status via icon only or both icon and block icon Icon only Both Icon and block 	Icon only Both Icon and block
Screen saver	Selects screen saver Refer to **Screen saver** in Screen [➜ 26]	Disable Clock Album
The following parameter is visible when "Clock" or "Album" is selected.		
Activate screen saver after [5...255]	Time delay set in seconds from the last operation of screen to enter screen saving mode	5…255 s (default: 30 s)

Name	Description	Range
Turn off backlight after [0...255] (0 = backlight never off)	The time delay in seconds from the start of screen saving mode to turn off the screen backlight **Note**: "0" means the backlight is never off. It is only recommended for demonstration purpose. It shortens the product lifetime dramatically if the backlight is never off.	0...255 s (default: 10 s)
Admin via password	Enables or disables administrator function via password There are two types of password: • **Setting page password**: This parameter determines if the password is necessary during checking or editing information on setting page. When it is enabled, a separate page appears after tapping the setting icon ⚙ in home page. Refer to "Password" parameters [➔ 43]. • **Screen saver password**: This parameter determines if the password is necessary during daily operation after the screen saver is on or the screen is off. When it is enabled, a separate page appears under "General" for password settings. Refer to "Password" parameters [➔ 43].	Disable (default) Enable
Auto return to homepage from function page if no operation in [0...255, 0=disabled]	The time delay in seconds from function page automatically back to homepage even original page is cover page.	0...255 s (default: 60 s)
Send status objects after restart	Defines if a status request telegram is sent once the device is restarted.	Disable Enable

3.1.2 "General" communication objects

Number ▲	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
678	General - Admin via bus	Dis./En. screen operation, - All pages			1 bit	C	-	W	-	-	enable	Low
679	General	In operation			1 bit	C	-	-	T	-	switch	Low
680	General	Date			3 bytes	C	-	W	-	-	date	Low
681	General	Time			3 bytes	C	-	W	-	-	time of day	Low
682	General	Day/Night			1 bit	C	-	W	T	-	day/night	Low
683	General	Screen backlight brightness			1 byte	C	-	W	-	-	percentage (0..100%)	Low
684	General	Color strip trigger			1 bit	C	-	W	-	-	trigger	Low
685	General	Color strip setting			3 bytes	C	-	W	-	-	RGB value 3x(0..255)	Low
686	General	Proximity sensor, 1bit value			1 bit	C	-	W	T	-	switch	Low
687	General	Password trigger, 1bit value			1 bit	C	-	-	T	-	switch	Low
688	General	Summer time status			1 bit	C	R	-	T	-	enable	Low
686	General	Proximity sensor, 1byte value			1 byte	C	-	W	T	-	percentage (0..100%)	Low
687	General	Password trigger, 1byte value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
686	General	Proximity sensor, scene NO.			1 byte	C	-	W	T	-	scene number	Low
687	General	Password trigger, scene NO.			1 byte	C	-	-	T	-	scene number	Low
686	General	Proximity sensor, 1byte value			1 byte	C	-	W	T	-	counter pulses (0..255)	Low
687	General	Password trigger, 1byte value			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

No.	Name	Object function	Length	Flag	Data type
678	General - Admin via bus	Dis./En. screen operation, - All pages	1 bit	CW	1.003 enable
This communication object is used to lock the panel function via bus. After panel is locked, the operation on the panel is not responded but device still can receive the bus telegram. See Administrator function via bus [➔ 31] for details. Telegram value 0: Unlock 1: Lock					
679	General	In operation	1 bit	CT	1.001 switch
This communication object is used to periodically send a telegram "1" to the bus to indicate that the device works properly.					
680	General	Date	3 bytes	CW	11.001 date
The communication object is used to modify the display date on the screen via bus.					
681	General	Time	3 bytes	CW	10.001 time of day

No.	Name	Object function	Length	Flag	Data type
The communication object is used to modify the display time on the screen via bus.
682	General	Day/Night	1 bit	CWT	1.024 day/night

The communication object is used to modify the display time on the screen via bus.

| 682 | General | Day/Night | 1 bit | CWT | 1.024 day/night |

This communication object is used to send day/night status to the bus.

The day/night state can be switched according to the time point, sunrise and sunset time or the telegram value that can be switched via bus. Telegram value:
0: Day
1: Night

| 683 | General | Screen backlight brightness | 1 byte | CW | 5.001 percentage (0...100 %) |

The communication object is used to modify the backlight brightness of the screen. Brightness output range: 10...100 %

When the telegram value is less than 10 %, device directly outputs 10 % brightness. This object is visible when the parameter "Screen brightness changeable via bus" is set as "Yes".

| 684 | General | Color strip trigger | 1 bit | CW | 1.017 trigger |

The communication object is used to trigger color strip via bus. It is visible when color strip is enabled.

| 685 | General | Color strip setting | 3 bytes | CW | 232.600 RGB value 3x (0...255) |

The communication object is used to receive 3 bytes value. It is visible when parameter "Color strip usage" is enabled.

686	General	Proximity sensor,1bit value	1 bit	CWT	1.001 switch
		Proximity sensor,1byte value	1 byte		17.001 scene number
		Proximity sensor,scene NO.	1 byte		5.010 counter pulses (0...255) / 5.001 percentage (0...100 %)

The communication object is visible when parameter "Proximity sensor response function" is enabled and readable when value is sent.

When human is detected during approaching or leaving sensor detection range, it sends telegram value to bus. The value range depends on selected data type.

687	General	Password trigger,1bit value	1 bit	CT	1.001 switch
		Password trigger, 1byte value	1 byte		17.001 scene number
		Password trigger, scene NO.	1 byte		5.010 counter pulses (0...255) / 5.001 percentage(0...100 %)

The communication object is visible when parameter "Admin via password" is enabled and readable when value is sent.

It sends telegram value to bus. The value range depends on selected data type.

| 688 | General | Summer time status | 1 bit | CRT | 1.003 enable |

This communication object is used to send telegram value of summer time status via bus. Telegram value:
0: Not summer time
1: Summer time

3.1.3 "Summer time" parameters

Name	Description	Range
Summer time adjustment	Sets summer time (Daylight Saving Time), options: • No: Summer time cannot be used • Always: Summer time is always used • Customized settings: User customized setting of summer time starts and ends	No (default) Always Customized settings
The following parameters are visible when "Customized settings" is selected.		
Start at month	The month that summer time starts in	January...December (default: March)
Start at week	The week that summer time starts at	The first week The second week The third week The fourth week The last week (default)
Start at day	The day that summer time starts on	Monday...Sunday (default: Sunday)
Start at hour [0...23]	The hour that summer time starts at	0...23 h (default: 1h)
Start at minute [0...59]	The minute that summer time starts at	0...59 min (default: 0 min)
End at month	The month that summer time ends in	January...December (default: October)
End at week	The week that summer time ends at	The first week; The second week; The third week; The fourth week; The last week (default)
End at day	The day that summer time ends on	Monday...Sunday (default: Sunday)
End at hour [0...23]	The hour that summer time ends at	0...23 h (default: 1h)
End at minute [0...59]	The minute that summer time ends at	0...59 min (default: 0 min)

Note

If the end time is set earlier than start time by mistake, then end time is in next year.

For example:

• "Start at month": May
• "End at month": March

Then, the summer time starts in May this year and ends in March next year.

3.1.4 "Color strip" parameters

Name	Description	Range
Color strip	Defines when color strip is active **Note**: Color strip is used to indicate: • Entering programming mode, see Parameters and communication objects [➜ 32] • Configuration via ETS	Always active Only active when backlight is off (default)
Color strip working mode	Sets operation mode of color strip **Note**: Color strip "permanent on" impacts the internal temp. sensor measurement. The average of "Switch On" time should not be more than 8 hours per day because it affects the lifetime of strip dramatically.	Permanent on 5s on while 25s off
"Color strip trigger" object meaning	Sets trigger value for color strip activating	0=no trigger/1=trigger (default) 1=no trigger/0=trigger
Initial setting after device startup	Sets the initial device setting after startup	No trigger (default) Trigger
Brightness level at daytime [Level1-darkest; Level5 - brightest]	Sets the brightness level of color strip at day time **Note**: Level1 - darkest; Level5 – brightest	Level 1 (default)...Level 5

Name	Description	Range
Brightness level at nighttime	Sets the brightness level of color strip at night time **Note**: Level1 - darkest; Level5 – brightest	OFF (default), Level 1...Level 5
Color setting	Sets the color of color strip	Red; Green; Blue; White (default); Yellow; Cyan; Purple; Orange; Cyan blue; Automatic adjustment per season; Receive a 3byte value
The following parameters are visible when "Automatic adjustment per season" is sleeted.		
Color in Spring	The color of strip in Spring is fixed to "Yellow"	Yellow
Spring begins at: Month	The start month of Spring	January...December
Day	The definite day of the start month	1st...31st
Spring ends at: Month	The end month of Spring	January...December
Day	The definite day of the end month	1st...31st
Color in Summer	The color of strip in Summer	White
Summer begins at: Month	The start month of Summer	January...December
Day	The definite day of the start month	1st...31st
Summer ends at: Month	The end month of Summer	January...December
Day	The definite day of the end month	1st...31st
Color in Autumn	The color of strip in Autumn	Green
Autumn begins at: Month	The start month of Autumn	January...December
Day	The definite day of the start month	1st...31st
Autumn ends at: Month	The end month of Autumn	January...December
Day	The definite day of the end month	1st...31st
Color in Winter	The color of strip in Winter	Orange
Winter begins at: Month	The start month of Winter	January...December
Day	The definite day of the start month	1st...31st
Winter ends at: Month	The end month of Winter	January...December
Day	The definite day of the end month	1st...31st

3.1.5 "Proximity sensor" parameters

When human is detected during approaching or leaving sensor detection range, device sends telegram value to bus.

Name	Description	Range
Data type of output value	The data type of telegram sent to bus	1bit [On/Off] 1byte [scene control] 1byte [0...255] 1byte [0...100%]
Action when people approaching, Action when people leaving,	The parameters define whether the telegram is sent or not when someone is approaching or leaving. **Note**: If there is touch operation without approaching detection, it is recognized as approaching detection.	No action Send a value
The following parameters are visible when "Send value" is selected. Which parameter is visible also depends on the selected "Data type of output value".		
Output value [On/Off]	The data type and related range value sent to bus	Off On
Output scene No. [1...64]	The data type and related range value sent to bus	1...64
Output value [0...255]	The data type and related range value sent to bus	0...255
Output value [0...100%]	The data type and related range value sent to bus	0...100
Send value after [0...255]	The delay time of sending telegram	0...255 s

3.1.6 "Password" parameters

This parameter is used to set password and data type sent to bus. This parameter page is enabled/disabled in "General" via parameter "Admin via password".

Totally 3 passwords are allowed.

Name	Description	Range
Data type of output value	The data type of telegram sent to bus	1bit [On/Off] (default) 1byte [scene control] 1byte [0...255] 1byte [0...100%]
Set password 1 - setting icon unblocking	Set 4-digit password for entering Setting page.	4byte text (default: 1234)
Description	Description of password, max. 40 characters	40 characters (default: Password 1, 2 or 3)
Action after being unlocked	Whether sending telegram to bus after device is unlocked.	No action (default) Send a value
The following parameters are visible when "Send a value" is selected.		
Output value [On/Off]	Only one "Output" type is visible, and it is determined by the selection of parameter "Data type of output value". This determines the value sent to bus after the screen is unlocked.	Off On
Output scene No. [1...64]		Scene No.1...Scene No.64
Output value [0...255]		0...255
Output value [0...100%]		0...100
Send value after [0...255]	The delay time of sending telegram	0...255 s (default: 0 s)
Set password 2 - screen waking up	Enables or disables the password for waking up the screen. If enabled: • Set password: 4byte text (default: 2345) • Description: Max. 40 characters • Action after being unlocked: same options as "Action after being unlocked" of "Set password 1 - setting icon unblocking"	Enable Disable (default)
Set password 3 - screen waking up	Enables or disables the 2nd password for waking up the screen. If enabled: • Set password: 4byte text (default: 3456) • Description: Max. 40 characters • Action after being unlocked: same options as "Action after being unlocked" of "Set password 1 - setting icon unblocking"	Enable Disable (default)

3.1.7 "General sensor" parameters and communication objects

Parameters for Sensors

They are used to configure the internal sensor (built-in temperature sensor) and/or external sensor (sensor value over bus).

The built-in temperature sensor:

- Element used is NTC100K
- The sensor locates at the bottom of the device inside the metal frame.
- Self-heating compensation in firmware with an accuracy of max. +/-1 °C @ parameter "Turn off backlight after [0...255] (0 = backlight never off)" that is set within 5…15 s

It's highly recommended to configure built-in temperature sensor, even if the temperature value from bus is used. Built-in sensor could be used for several functions, such as temperature display on homepage, temperature control, floor heating, etc.

Name	Description	Range
Internal sensor	Built-in temperature sensor configuration	
Offset to measured value	This parameter allows user to do on-site temperature adjustment to synchronize with reference.	-5 K; -4.5 K; -4 K; -3.5 K; -3 K; -2.5 K; -2 K; -1.5 K; -1 K; -0.5 K; 0 K; 0.5 K ; 1 K; 1.5 K; 2 K; 2.5 K ; 3 K; 3.5 K; 4 K; 4.5 K; 5 K
Change of actual temperature value for automatic sending [1...20]	This parameter configures range the temperature changes in, the device should send the temperature value to bus. E.g. when "1" is selected, the temperature value is sent once delta T is higher than 0.5 °C (1x 0.5 °C). The temperature value sent is the value after the on-side adjustment.	1…20*0.5K
Cycle time for automatic sending of the actual temperature value [0...255]	This parameter configures the time interval in minutes that device sends Temp. value to the bus. For the temperature change, this action is independent from the sending value defined in previous parameter. It starts immediately after the completion of the programming or resetting.	0...255 min
Send error status of internal sensor	This parameter defines how the error status is reported when built-in sensor fails.	Send status on request Send status on change of status

Name	Description	Range
"Temp. error report" object meaning	Defines the meaning of the object value Built-in sensor failure definition: ● When the temperature value exceeds the range of -20 ℃ …+ 60 ℃, it's considered as sensor failure. ● Connection failure	0=no error/1=error 1=no error/0=error
Temperature value from	Determines the temperature value source for the temperature display in the homepage.	Disable Internal sensor External sensor
The following parameters are visible when "External sensor" is selected for temperature.		
When external sensor fault occurs, display internal sensor value	Defines whether internal sensor value is displayed or not when the external sensor is in fault.	No Yes
Send error status of external sensor	Defines how the error status is reported when external sensor fails.	Send status on request Send status on change of status
"Temp. error report" object meaning	Defines the temperature error value	0=no error/1=error 1=no error/0=error
External sensor setting (only apply to temperature and humidity on home page)		
Cycle time for polling of external temperature sensor [0...255]	Monitors if the device receives the remote sensor values over bus in a given time of period, in minute. The counting starts each time when the device receives the value. If no value is received when the monitoring period ends, it is considered that the remote sensor value sending fails and the value is 0. For temperature display, it switches to the built-in Temperature value if this function is enabled via parameter "When external sensor fault occurs, display internal sensor value". Note: In case missing the remote values when bus is busy, it is recommended to set the monitoring period minimum twice as long as the sensor's cyclic transmission period.	0...255 min
Read external sensor after polling time expires	Determines whether a read request is sent for remote sensor value after the monitoring period expires.	No Yes

Communication objects

	Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
	672	Internal sensor	Temperature value (℃)			2 bytes	C	R	-	T	-	temperature (℃)	Low
	673	Internal sensor	Temp. correction(-10..10)℃			2 bytes	C	-	W	-	-	temperature (℃)	Low
	674	Internal sensor	Temp. error report			1 bit	C	R	-	T	-	alarm	Low
	675	External sensor	Temperature value (℃)			2 bytes	C	-	W	T	U	temperature (℃)	Low
	676	External sensor	Temp. error report			1 bit	C	R	-	T	-	alarm	Low
	677	External sensor	Humidity value (%)			2 bytes	C	-	W	T	U	humidity (%)	Low

No.	Name	Object function	Length	Flag	Data type
672	Internal sensor	Temperature value (℃)	2 bytes	CRT	9.001 temperature (℃)
The communication object is used to transmit the temperature value detected by the built-in temperature sensor to bus. Range: -50...99.8 ℃					
673	Internal sensor	Temp. correction (-10...10)℃	2 bytes	CW	9.001 temperature (℃)
The communication object is used to correct the temperature measurement value of the built-in temperature sensor via bus correction device.					
674	Internal sensor	Temp. error report	1 bit	CRT	1.005 alarm
The communication object is used to send the error report of the built-in temperature sensor, and the object value is defined according to the parameters.					

No.	Name	Object function	Length	Flag	Data type
675	External sensor	Temperature value (℃)	2 bytes	CWTU	9.001 temperature (℃)
The communication object is used to receive a temperature measurement value sent from a temperature sensor on bus. Range: -50...99.8 ℃					
676	External sensor	Temp. error report	1 bit	CRT	1.005 alarm
The communication object is used to send reports of external temperature sensor errors, and the object value is defined according to the parameters.					
677	External sensor	Humidity value (%)	2 bytes	CWTU	9.007 humidity (%)
The communication object is used to receive humidity measurements sent from the humidity sensor on bus. Range: 0...100 %					

3.2 "Home page" interface

3.2.1 "Home page x" parameters

Home page is for navigation function:
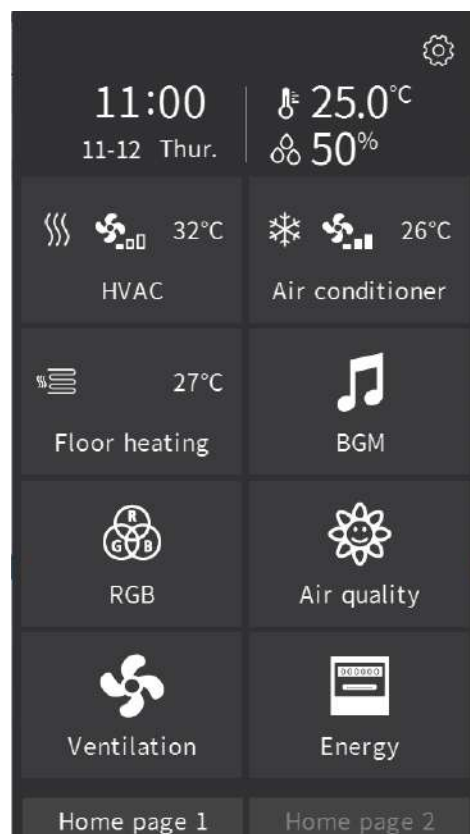
- Maximum two home pages allowed
- Maximum eight icons allowed per page

When navigation function is enabled, the icons can be linked to defined function page. When navigation function for both pages are disabled, only a cover page is available.

Examples:

- Picture on the left: two homepages are configured.
- Picture on the right: It is a cover page instead of home page.

Name	Description	Range
Description/ Headline of the page	Sets the name of the home page shown on screen. **Note**: ● It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [➜ 32]. ● Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	Max. 15 byte text
Home page navigation function	Enables or disables the homepage navigation function.	Disable Enable
The following parameters are visible when "Enable" is selected.		
Page Layout - icons per page	Determines how many icons in one homepage. ● How the page looks like with different number of icons, refer to Multifunction page [➜ 9] ● After configuration, user can directly tap one of the icons to jump to the selected function page defined or operate the operation.	1 / 2 / 3 / 4 / 6 / 8
Icon x - navigation function	Enables or disables the navigation function for ICON x. x=1…8	Disable Enable
The following parameters are visible when "Icon x - navigation function" is enabled.		
Link to	Defines function page or icon in multifunction page that the navigation ICON x links to. ● Page 1...Page 15: Link to function page selected ● Icon in page 1...Icon in page 15: Link to the selected icon in the specified multifunction page **Note**: Make sure that all the target (function pages or icons) links should be configured. Otherwise, the links are invalid.	Page 1...Page 15 Icon in page 1...Icon in page 15
Icon No. associated	This parameter is visible only when "Link to" is configured to the "Icon in page x*". Page x must be multifunction page, otherwise this link is invalid. E.g., "Icon in Page 2 *" is selected for parameter "Link to", this icon number is set to 5, that is, link to the 5th icon of the multifunction page.	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8

Name	Description	Range
Select page icon	This is visible only when "Link to" is configured as the "Page x". This parameter links the Navigation icon on homepage to the function (page or icon) associated. **Note**: Default: This option automatically selects the matched icon out of the default icons. See Home page icons [➜ 115] The default icons for homepage are icons with ID 70...73 and 75...78: • Icon 70: Multi-function_default • Icon 71: Temperature control_default • Icon 72: VRF device_default • Icon 73: Floor heating_default • Icon 75: Air Quality_default • Icon 76 RGB dimming_default • Icon 77: Ventilation_default • Icon 78: Energy display_default	Default Lighting Scenario ... Reception

3.3 "Function page" interface

3.3.1 "Page settings" parameters

Name	Description	Range
Function page 1...Function page 15	Enables or disables function page x. Totally 15 pages are configurable. When "Function page x" is enabled, parameter "Page x" is visible and the Page x (x=1…15) can be configured. **Note**: The first 5 pages can only be Multifunction page, and starting from page 6, the pages can be configured as either multifunction or single function page such as Ventilation system, Air quality display, etc.	Disable Enable

3.3.2 "Function page" communication objects

Number ▲	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
657	Function page - Admin via bus	Dis./En. screen operation, Page 1			1 bit	C	-	W	-	-	enable	Low
658	Function page - Admin via bus	Dis./En. screen operation, Page 2			1 bit	C	-	W	-	-	enable	Low
659	Function page - Admin via bus	Dis./En. screen operation, Page 3			1 bit	C	-	W	-	-	enable	Low
660	Function page - Admin via bus	Dis./En. screen operation, Page 4			1 bit	C	-	W	-	-	enable	Low
661	Function page - Admin via bus	Dis./En. screen operation, Page 5			1 bit	C	-	W	-	-	enable	Low
662	Function page - Admin via bus	Dis./En. screen operation, Page 6			1 bit	C	-	W	-	-	enable	Low
663	Function page - Admin via bus	Dis./En. screen operation, Page 7			1 bit	C	-	W	-	-	enable	Low
664	Function page - Admin via bus	Dis./En. screen operation, Page 8			1 bit	C	-	W	-	-	enable	Low
665	Function page - Admin via bus	Dis./En. screen operation, Page 9			1 bit	C	-	W	-	-	enable	Low
666	Function page - Admin via bus	Dis./En. screen operation, Page 10			1 bit	C	-	W	-	-	enable	Low
667	Function page - Admin via bus	Dis./En. screen operation, Page 11			1 bit	C	-	W	-	-	enable	Low
668	Function page - Admin via bus	Dis./En. screen operation, Page 12			1 bit	C	-	W	-	-	enable	Low
669	Function page - Admin via bus	Dis./En. screen operation, Page 13			1 bit	C	-	W	-	-	enable	Low
670	Function page - Admin via bus	Dis./En. screen operation, Page 14			1 bit	C	-	W	-	-	enable	Low
671	Function page - Admin via bus	Dis./En. screen operation, Page 15			1 bit	C	-	W	-	-	enable	Low

No.	Name	Object function	Length	Flag	Data type
657...671	Function page - Admin via bus	Dis./En. screen operation, page 1...Dis./En. screen operation, page 15	1 bit	CW	1.003 enable

The communication objects are used to disable / enable the screen operation of the corresponding function page via bus. Once disabled, the function page is locked and can no longer be operated, but the bus telegram can still be received. See Administrator function via bus [➙ 31] for details.

3.3.3   "Page x - Multifunction (Lighting/Blind/Scene/Value send)" parameters and communication objects

Parameters

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [→ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	Configures the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send)
Number of icons	Determines the page layout in this multifunction page. • How the page looks like with different number of icons, refer to Multifunction page [→ 9] • After configuration, user can directly click one of the icons to operate the operation.	1 / 2 / 3 / 4 / 6 / 8
Icon x	Enables or disables the function of Icon x. x=1...8	Disable Enable

Name	Description	Range
The following parameters are visible when Icon x is enabled.		

Select icon	Determines which icon is used in display.
	
	Note:
	
	• Default: This option automatically selects the matched icon out of the following default icons.
	    💡 : Switch_default (ID: 0)
	    💡 : Switch/Dim_default (ID: 0)
	    ⭐ : Send value _default (ID: 1)
	    🎬 : Scene control_default (ID: 2)
	    ⬛ : Curtain_default (ID: 3)
	    ☰ : Roller shutter_default (ID: 4)
	    ☰ : Venetian blind_default (ID: 5)
	
	• No icon, only text: This option allows the display without icon but using only text. The text is the name defined via parameter "Description of Icon x". For icons info, see Functional page icons [➜ 111]
		Default
		No icon, only text
		Ceiling light
		Downlight
		...
		Fresh air
		Setting

Description of Icon x	Sets the name of the Icon x. Maximum display on screen: 9 characters/letters but only 4 for Chinese, 6 for Russian or Greek.	12byte text
Function of icon x	Sets the function of Icon x. • Switch: Light switch on/off • Switch/dim: Light dimming and on/off • Send value: Send defined value to bus • Curtain blind: Open/close/stop and sliding 0…100 % • Roller shutter: Up/down/stop/ sliding 0…100 %, no slat • Venetian blind: Up/down/stop/ sliding 0…100 %, with slat • Blind (open/close/stop): Open/close/stop blind • Blind (up/down/stop): Up/down/stop blind no slat • Scene control: Recall scene and store scene by long pressing Note: When curtain blind function is used, the device should be connected to the actuator of kind "shutter".	Switch Switch/ dim Send value Curtain blind Roller shutter Venetian blind Blind (open/close/stop) Blind (up/down/stop) Scene control
The following parameters are visible when "Send a value" is selected.		
Data type of object	Sets data type of object used for value sending.	1bit [On/Off] 2bit [0…3] 4bit [0…15] 1byte [0…255] 1byte [0…100%] 2byte [0…65535] 2byte [-32768…32767]
Send value when short press	Sets the output value sent by object when short pressing the icon. The range of value depends on the data type selected.	On Off
Send value when long press	Sets the output value sent by object when long pressing the icon. The range of value depends on the data type selected. When "Long press operation" is enabled, this parameter is visible. (Long press means pressing longer than 0.5 second)	On Off
Long press operation	Determines whether long operation is enabled or disabled.	Disable Enable
The following parameters are visible when "Scene control" is selected.		
Send scene No. when short press	Determines the Scene No. sent when short pressing the icon. Scene No.1…64 are corresponding to telegram value 0…63.	Scene No. 1…Scene No.64
Long press for scene storage	Configures whether enable scene storage via long press operation. (Long press means pressing longer than 0.5 second)	Disable Enable

Communication objects

Note Page number x range: 1...15, Icon number y range: 1...8

Switch

No.	Name	Object function	Length	Flag	Data type
1	Page x-Icon y	Switching	1 bit	CT	1.001 switch
The communication object is used to send the on / off telegram to bus and control the on /off of the lamp. Telegram value: 0: Off 1: On					
3	Page x-Icon y	Status switching	1 bit	CWTU	1.001 switch
The communication object is used to receive the on / off status from other bus devices, such as Dimmer and Switch actuator.					

Switch/dim

No.	Name	Object function	Length	Flag	Data type
1	Page x-Icon y	Switching	1 bit	CT	1.001 switch
The communication object is used to send the on / off telegram to bus and control the on /off of the lamp. Telegram value: 0: Off 1: On					
2	Page x-Icon y	Dim value	1 byte	CT	5.001 percentage (0...100 %)
The communication object is used to send dimming telegram to the bus, i.e., to send brightness values. Telegram: 0…100 %					
3	Page x-Icon y	Status dim value	1 byte	CWTU	5.001 percentage (0...100 %)
The communication object is used to receive the brightness status of the light in response to the dimmer. Telegram: 0…100 %					
4	Page x-Icon y	Dimming	4 bit	CWT	3.007 dimming control
The communication object is used to send the relative dimming telegram to bus, such as brighter, darker, or stop-dimming telegram.					

Send value

	Number *	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
	1	Page 1-Icon 1	Send 1bit value			1 bit	C	-	-	T	-	switch	Low
	2	Page 1-Icon 1	Send 1bit value, long			1 bit	C	-	-	T	-	switch	Low

No.	Name	Object function	Length	Flag	Data type
2	Page x-Icon y	Send 1bit/2bit/4bit value Send 1byte /2byte unsigned value Send 1byte percent value Send 2byte signed value	1bit on/off 2bit 0...3 4bit 0...15 1byte 0...255 1byte 0...100% 2byte -32768...32767 2byte 0...65535	CT	1.001 switch 2.001 switch control 3.007 dimming control 5.010 counter pulses (0...255) 5.001 percentage (0...100%) 8.001 pulses difference 7.001 pulses
The communication object is used to send the preset output value of the parameter. The object type and value range are determined by the data type set by the parameter.					
2	Page x-Icon y	Send 1bit/2bit/4bit value, long Send 1byte /2byte unsigned value, long Send 1byte percent value, long Send 2byte signed value, long	1bit on/off 2bit 0...3 4bit 0...15 1byte 0...255 1byte 0...100% 2byte -32768...32767 2byte 0...65535	CT	1.001 switch 2.001 switch control 3.007 dimming control 5.010 counter pulses (0...255) 5.001 percentage (0...100%) 8.001 pulses difference 7.001 pulses
The communication object is used to send the preset output value of the parameter. It is visible when "long press operation" is enabled and only for sending the output value of long press operation. The object type and value range are determined by the data type set by the parameter.					

Curtain blind

	Number *	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
	1	Page 1-Icon 1	Open / Close			1 bit	C	-	W	T	-	open/close	Low
	2	Page 1-Icon 1	Stop			1 bit	C	-	-	T	-	step	Low
	3	Page 1-Icon 1	Blind position / Status blind position			1 byte	C	-	W	T	U	percentage (0..100%)	Low

No.	Name	Object function	Length	Flag	Data type
1	Page x-Icon y	Open / Close	1 bit	CWT	1.009 open/close
The communication object is used to send the open / close telegram to bus. Telegram value: 0: Open the curtain 1: Close the curtain					
2	Page x-Icon y	Stop	1 bit	CT	1.007 step
The communication object is used to send a telegram for stopping the curtain movement to bus. Telegram value: 1: Stop					
3	Page x-Icon y	Blind position / Status blind position	1 byte	CWTU	5.001 percentage (0...100 %)
The communication object is used to send a telegram to control the position of the curtain to bus or to receive a curtain position status in response to the window curtain actuator on bus. Telegram value: 0...100 %					

Roller shutter

No.	Name	Object function	Length	Flag	Data type
1	Page x-Icon y	Up / Down	1 bit	CWT	1.008 up/down
The communication object is used to send a telegram value to bus to control the opening/closing of the Roller shutter. Telegram value: 0: Move up 1: Move down					
2	Page x-Icon y	Stop	1 bit	CT	1.007 step
The communication object is used to send a telegram for stopping the roller shutter movement to bus. Telegram value: 1: Stop					
3	Page x-Icon y	Blind position / Status blind position	1 byte	CWTU	5.001 percentage (0...100 %)
The communication object is used to send a telegram to control the position of the roller shutter to bus or to receive a roller shutter position status in response to the roller shutter actuator on bus. Telegram value: 0...100 %					

Venetian blind

No.	Name	Object function	Length	Flag	Data type
1	Page x-Icon y	Up / Down	1 bit	CWT	1.008 up/down
The communication object is used to send a telegram value to bus to control the opening/closing of the venetian blind. Telegram value: 0: Move up 1: Move down					
2	Page x-Icon y	Stop / Slat adj.	1 bit	CT	1.007 step
The communication object is used to send a telegram to bus to stop the venetian blind movement or adjust the slat angle. Telegram value: 0: Stop/Slat adj. Up 1: Stop/Slat adj. Down					
3	Page x-Icon y	Blind position / Status blind position	1 byte	CWTU	5.001 percentage (0...100 %)
The communication object is used to send a telegram to control the position of the venetian blind to bus or to receive a venetian blind position status in response to the venetian blind actuator on bus. Telegram value: 0...100 %					
4	Page x-Icon y	Slat position / Status slat position	1 byte	CWTU	5.001 percentage (0...100 %)
The communication object is used to send a telegram controlling the angle position of the slats to bus or to receive the slat angle position state from bus. Telegram value: 0...100 %					

Blind (open/close/stop)

No.	Name	Object function	Length	Flag	Data type
1	Page x-Icon y	Open / Close	1 bit	CWT	1.009 open/close
The communication object is used to send the open / close telegram to bus. Telegram value: 0: Open the curtain 1: Close the curtain					
2	Page x-Icon y	Stop	1 bit	CT	1.007 step
The communication object is used to send a telegram for stopping the blind movement to bus. Telegram value: 1: Stop					

Blind (up/down/stop)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	Page 1-Icon 1	Up / Down			1 bit	C	-	W	T	-	up/down	Low
2	Page 1-Icon 1	Stop			1 bit	C	-	-	T	-	step	Low

No.	Name	Object function	Length	Flag	Data type
1	Page x-Icon y	Up / Down	1 bit	CWT	1.008 up/down
The communication object is used to send a telegram value to bus to control the opening/closing of the Roller shutter. Telegram value: 0: Move up 1: Move down					
2	Page x-Icon y	Stop	1 bit	CT	1.007 step
The communication object is used to send a telegram for stopping the blind movement to bus. Telegram value: 1: Stop					

Scene control

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	Page 1-Icon 1	Recall / Save scene			1 byte	C	-	W	T	-	scene control	Low

No.	Name	Object function	Length	Flag	Data type
1	Page x-Icon y	Recall / Save scene	1 byte	CWT	18.001 scene control
The communication object is used to send a telegram of scene recall or scene storage. The highest bit 1 is the scene storage, and the highest bit 0 is the scene recall.					

3.3.4 "Page x - General Temp. Control" parameters and communication objects

Parameters

Assign "Page x" as single function –"General Temp. Control" page. General temperature control could manage the followings:

- Heating / Cooling separately or Heating and Cooling for 2-pipe/4-pipe system
- Temperature setpoint adjustment absolutely or relatively
- 4 operation mode selectable (Comfort, Economy, Standby, Protection)
- PI loop selectable for On/Off, PWM and modulating (continuous) control
- With or without fan speed control

Therefore, it could be configured for many heating and/or cooling applications, such as fan coil application, chilled ceiling, electrical heating.

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [➔ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	Configures the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send); General Temp. Control; Enhanced Floor Heating; VRF Interface & Operation; Ventilation System; Air Quality Display; Energy Metering Display; RGB Dimming; Background Music.
Temperature value from	Sets the resource of the temperature reference. • Internal sensor: Built-in temperature sensor. The configuration refers to "General sensor" parameters and communication objects [➔ 44] • External sensor: Temperature value over bus • Internal and External sensor weighting: Using calculated value	Internal sensor External sensor Internal and External sensor weighting
The following parameters is visible when "Internal and External sensor weighting" is selected.		

Name	Description	Range
Weighting of internal and external value	Defines the exact weighting in percentage.	10% internal, 90% external; 20% internal, 80% external; 30% internal, 70% external; 40% internal, 60% external; 50% internal, 50% external; 60% internal, 40% external; 70% internal, 30% external; 80% internal, 30% external; 90% internal, 10% external
The following parameters are visible when "External sensor" or "Internal and External sensor weighting" is selected.		
Cycle time for polling of external temperature sensor [0...255]	Sets the time period for request external sensor.	0…255 min
Read external sensor after polling time expires	After the bus is reset or programmed, a read request is sent or not.	No Yes
Control value after temp. error [0…100%] (For 2-level control, the value '0'=0%, value '>0'=100%)"	Setting for the control value when temperature error occurs. If under 2-Point control, the parameter value is 0, as well as the control value; if the parameter value is more than 0, the control value is 1.	0...100 %
Device behavior after download	Indicates if the controlled HVAC device or system is powered on/off after download.	Off On
Device behavior at voltage recovery	Indicates if the controlled HVAC device or system is powered on/off after recovery.	On Off as before voltage failure
Data type of fan speed	Sets control type of fan speed. • Disable: No fan operation • 1bit: With fan speed operation • 1byte: With fan speed operation and a separate page appears for configuration	Disable 1bit 1byte
This parameter is visible for both 1bit and 1byte. However, for 1byte option, this parameter is configured in separate page.		
Fan speed auto	Enables / disables auto fan speed option	Disable Enable
Control mode	Sets control mode.	Heating Cooling Heating & cooling
The following parameters are visible when "Heating &cooling" is selected.		
Behavior of Control mode at voltage recovery	Sets the heating/cooling status after restart.	Heating Cooling as before voltage failure
Plant type	Sets the type of HVAC control system, i.e., pipe types of fan coil water inlet/outlet.	2-pipe 4-pipe
Room operation mode	Sets whether to enable HVAC operation mode.	Disable Enable
Option: Enable	The following 4 parameters are visible when "Enable" is selected.	
Room operation mode switchover	Sets the object type of operation mode switchover.	4x1 Bit 1 Byte
Status room operation mode	Sets the object type of the feedback status of the room operating mode.	4x1 Bit 1 Byte
Room operation mode after voltage recovery	Sets the operation mode when device starts up.	Comfort mode Standby mode Economy mode Protection mode (default)
Duration for extended comfort mode [0…255, 0=disabled]	Sets the time delay in minutes for comfort mode automatically returning to the Economy mode. • 0=disabled, this mean "Comfort mode" will not automatically go to "Economy mode".	0…255 min (default: 0 min)

Name	Description	Range
Temperature setpoint is configured in a separate page. Refer to "Temp. setpoint" parameters [➜ 63]		
Option: Disable	The following parameter is visible when "Room operation mode" is disabled.	
Base setpoint (°C)	Sets initial value of the temperature. The setting temperature can be modified via object "Base setpoint (°C)", the new value is stored after the bus powers off.	10.0 / 10.5 /11.0 / 11.5 / … / 34.0 / 34.5 / 35.0 °C (default: 22 °C)
Minimal possible setpoint value [5...40]*	Configures the allowed minimum range for temperature setpoint.	5...40 °C (default: 5 °C)
Maximal possible setpoint value [5...40]*	Configures the allowed maximum range for temperature setpoint.	5...40 °C (default: 40 °C)

Note

* Minimum and maximum setpoint value:

The minimum set point value should not be higher than the maximum value. If the temperature setpoint exceeds the range, output is the upper/lower limits value.

Communication objects

Number ^	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-Temp. Cntrl. (receive)	External temperature			2 bytes	C	-	W	T	U	temperature (°C)	Low
162	Page 6-Temp. Cntrl. (receive)	Setpoint (°C), base or absolute			2 bytes	C	-	W	-	-	temperature (°C)	Low
163	Page 6-Temp. Cntrl. (receive)	Control mode (0 = Cooling / 1 = Heating)			1 bit	C	-	W	-	U	cooling/heating	Low
164	Page 6-Temp. Cntrl. (receive)	Comfort mode			1 bit	C	-	W	-	-	enable	Low
165	Page 6-Temp. Cntrl. (receive)	Standby mode			1 bit	C	-	W	-	-	enable	Low
166	Page 6-Temp. Cntrl. (receive)	Economy mode			1 bit	C	-	W	-	-	enable	Low
167	Page 6-Temp. Cntrl. (receive)	Protection mode			1 bit	C	-	W	-	-	enable	Low
168	Page 6-Temp. Cntrl. (receive)	Fan speed low			1 bit	C	-	W	-	U	switch	Low
169	Page 6-Temp. Cntrl. (receive)	Fan speed medium			1 bit	C	-	W	-	U	switch	Low
170	Page 6-Temp. Cntrl. (receive)	Fan speed high			1 bit	C	-	W	-	U	switch	Low
171	Page 6-Temp. Cntrl. (receive)	Fan speed off			1 bit	C	-	W	-	U	switch	Low
172	Page 6-Temp. Cntrl. (receive)	Fan speed auto			1 bit	C	-	W	-	U	enable	Low
173	Page 6-Temp. Cntrl. (send)	Effective setpoint			2 bytes	C	R	-	T	-	temperature (°C)	Low
174	Page 6-Temp. Cntrl. (send)	Control mode (0 = Cooling / 1 = Heating)			1 bit	C	R	-	T	-	cooling/heating	Low
175	Page 6-Temp. Cntrl. (send)	Comfort mode			1 bit	C	-	-	T	-	enable	Low
176	Page 6-Temp. Cntrl. (send)	Standby mode			1 bit	C	-	-	T	-	enable	Low
177	Page 6-Temp. Cntrl. (send)	Economy mode			1 bit	C	-	-	T	-	enable	Low
178	Page 6-Temp. Cntrl. (send)	Protection mode			1 bit	C	-	-	T	-	enable	Low
179	Page 6-Temp. Cntrl. (send)	Heating control value			1 bit	C	-	-	T	-	switch	Low
180	Page 6-Temp. Cntrl. (send)	Cooling control value			1 bit	C	-	-	T	-	switch	Low
181	Page 6-Temp. Cntrl. (send)	Fan speed low			1 bit	C	-	-	T	-	switch	Low
182	Page 6-Temp. Cntrl. (send)	Fan speed medium			1 bit	C	-	-	T	-	switch	Low
183	Page 6-Temp. Cntrl. (send)	Fan speed high			1 bit	C	-	-	T	-	switch	Low
184	Page 6-Temp. Cntrl. (send)	Fan speed off			1 bit	C	-	-	T	-	switch	Low
185	Page 6-Temp. Cntrl. (send)	Fan speed auto			1 bit	C	-	-	T	-	enable	Low
186	Page 6-Temp. Cntrl. (send / receive)	Power On/Off			1 bit	C	-	W	T	U	switch	Low
187	Page 6-Temp. Cntrl. (send)	Base setpoint (°C)			2 bytes	C	R	-	T	-	temperature (°C)	Low
164	Page 6-Temp. Cntrl. (receive)	Operation mode			1 byte	C	-	W	-	-	HVAC mode	Low
168	Page 6-Temp. Cntrl. (receive)	Fan speed			1 byte	C	-	W	-	U	percentage (0..100%)	Low
175	Page 6-Temp. Cntrl. (send)	Operation mode			1 byte	C	R	-	T	-	HVAC mode	Low
179	Page 6-Temp. Cntrl. (send)	Heating control value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
180	Page 6-Temp. Cntrl. (send)	Cooling control value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
181	Page 6-Temp. Cntrl. (send)	Fan speed			1 byte	C	-	-	T	-	percentage (0..100%)	Low
179	Page 6-Temp. Cntrl. (send)	Heating/cooling control value			1 bit	C	-	-	T	-	switch	Low
179	Page 6-Temp. Cntrl. (send)	Heating/cooling control value			1 byte	C	-	-	T	-	percentage (0..100%)	Low

Note

Page number x range: 1...15

No.	Name	Object function	Length	Flag	Data type
161	Page x-Temp. Cntrl. (receive)	External temperature	2 bytes	CWTU	9.001 temperature (°C)
The communication object is used for receiving a temperature measurement value sent from a temperature sensor on bus. Range: -50...99.8 °C					

No.	Name	Object function	Length	Flag	Data type
162	Page x-Temp. Cntrl. (receive)	Setpoint (°C), base or absolute	2 bytes	CW	9.001 temperature (°C)

- Room operation is disabled, the communication object is used to modify the base value of the set temperature.
- Room operation is enabled and
  - The temperature is set to "Base setpoint + setpoint shifting", the communication object is used to modify the base value of the set temperature, that is, the temperature setting value of Comfort mode, and the setting temperature of Standby mode and Economy mode changes according to the relative change. In Protection mode, only the temperature setting value of Protection mode is modified.
  - The temperature is set to "Absolute setpoints", the communication object is used to modify the temperature setting value of the current room operation mode.

No.	Name	Object function	Length	Flag	Data type
163	Page x-Temp. Cntrl. (receive)	Control mode (0 = Cooling / 1 = Heating)	1 bit	CWU	1.100 cooling/heating

The communication object is used for receiving the status feedback from the heating and cooling on bus, and the icon display is updated on screen according to the received telegram value. The telegram value is as follows:
0: Cooling
1: Heating

No.	Name	Object function	Length	Flag	Data type
164	Page x-Temp. Cntrl. (receive)	Comfort mode Operation mode	1 bit 1 byte	CW	1.003 enable 20.102 HVAC mode

Room operation mode can receive status feedback via four 1bit objects (objects 164,165,166,167) or one 1byte object (Operation mode).

1bit: When the object receives the telegram "1", the corresponding mode is activated and the display status of the mode on the screen is updated to the corresponding mode.

1 byte: The relationship between the input value and the operation mode is as follows: 0: Reserved; 1: Comfort mode; 2: Standby mode; 3: Economy mode; 4: Protection mode; 5...255: Reserved, unused.

No.	Name	Object function	Length	Flag	Data type
165	Page x-Temp. Cntrl. (receive)	Standby mode	1 bit	CW	1.003 enable

The communication object is used to activate Standby mode.

No.	Name	Object function	Length	Flag	Data type
166	Page x-Temp. Cntrl. (receive)	Economy mode	1 bit	CW	1.003 enable

The communication object is used to activate Economy mode.

No.	Name	Object function	Length	Flag	Data type
167	Page x-Temp. Cntrl. (receive)	Protection mode	1 bit	CW	1.003 enable

The communication object is used to activate Protection mode.

No.	Name	Object function	Length	Flag	Data type
168	Page x-Temp. Cntrl. (receive)	Fan speed low Fan speed	1 bit 1 byte	CWU	1.001 switch 5.001 percentage (0...100%)

Fan speed can receive state feedback via four 1bit objects (objects 168,169,170,171) or one 1byte object "Fan speed".

1bit: When the object receives telegram "1", the corresponding fan speed is activated, and the display status of the fan speed on the screen is also updated to the corresponding fan speed. When the fan speed is turned off, the telegram value of all fan speed must be 0.

1byte: The fan speed status value is defined by the parameter. When the object receives the specified value, the display status of fan speed on the screen is updated to the corresponding fan speed.

No.	Name	Object function	Length	Flag	Data type
169	Page x-Temp. Cntrl. (receive)	Fan speed medium	1 bit	CWU	1.001 switch

The communication object is used to activate Fan speed medium.

No.	Name	Object function	Length	Flag	Data type
170	Page x-Temp. Cntrl. (receive)	Fan speed high	1 bit	CWU	1.001 switch

The communication object is used to activate Fan speed high.

No.	Name	Object function	Length	Flag	Data type
171	Page x-Temp. Cntrl. (receive)	Fan speed off	1 bit	CWU	1.001 switch

The communication object is used to activate Fan speed off.

No.	Name	Object function	Length	Flag	Data type
172	Page x-Temp. Cntrl. (receive)	Fan speed auto	1 bit	CWU	1.003 enable

The object is used to receive status feedback from automatic fan speed control. Telegram value:
0: Cancel automatic
1: Automatic

No.	Name	Object function	Length	Flag	Data type
173	Page x-Temp. Cntrl (send)	Effective setpoint	2 bytes	CRT	9.001 temperature (℃)

The communication object is used for transmitting the temperature set value of the current operation mode to bus.

| 174 | Page x-Temp. Cntrl (send) | Control mode (0 = Cooling / 1 = Heating) | 1 bit | CRT | 1.100 cooling/heating |

The communication object is used to send telegrams from switching cooling and heating functions to bus. Telegram value:
0: Cooling
1: Heating

| 175 | Page x-Temp. Cntrl (send) | Comfort mode Operation mode | 1 bit 1 byte | CT | 1.003 enable 20.102 DPT_HVAC Mode |

The communication objects are used to send the telegram of the room operation mode to bus.

When the object type is a "1byte", different telegrams mean different working modes, as follows: 0: Reserved 1: Comfort mode; 2: Standby mode; 3: Economy mode; 4: Protection mode; 5...255: Reserved, not used

When the object type is a "1bit", switch to the corresponding mode, and the object of the corresponding mode sends the telegram "1" to the bus.

| 176 | Page x-Temp. Cntrl (send) | Standby mode | 1 bit | CT | 1.003 enable |

The communication object is used to send the telegram of the Standby mode to bus.

| 177 | Page x-Temp. Cntrl (send) | Economy mode | 1 bit | CT | 1.003 enable |

The communication object is used to send the telegram of the Economy mode to bus.

| 178 | Page x-Temp. Cntrl (send) | Protection mode | 1 bit | CT | 1.003 enable |

The communication object is used to send the telegram of the Protection mode to bus.

| 179 | Page x-Temp. Cntrl (send) | Heating control value Heating/cooling control value | 1 bit / 1 byte 1 bit / 1 byte | CT | 1.001 switch / 5.001 percentage (0...100 %) 1.001 switch / 5.001 percentage (0...100 %) |

The communication object is used to send the control value of cooling or heating function to control the switch of HVAC valve and adjust the indoor temperature.
Send telegram value (On/Off - two level control) : on/off
Send telegram value (PWM - PI control switching (1 bit)): on/off
Send telegram value (Modulating - PI control continuous (8 bit)): 0...100%

| 180 | Page x-Temp. Cntrl (send) | Cooling control value | 1 bit 1 byte | CT | 1.001 switch 5.001 percentage (0...100 %) |

The communication object is used to send the control value of cooling function to control the switch of HVAC valve and adjust the indoor temperature.
Send telegram value (On/Off - two level control) : On/Off
Send telegram value (PWM - PI control switching (1 bit)): On/Off
Send telegram value (Modulating - PI control continuous (8 bit)): 0...100%

No.	Name	Object function	Length	Flag	Data type
181	Page x-Temp. Cntrl (send)	Fan speed low Fan speed	1 bit 1 byte	CT	1.001 switch 5.001 percentage (0...100 %)

Fan speed can send control telegrams of the fan speed to bus via four 1bit objects (objects 181,182,183,184) or one 1byte object "Fan speed".

1 bit: The corresponding fan speed is activated on the screen, and the corresponding object sends telegram "1" to the bus, except for the telegram sending 0 of the fan speed.

1byte: The corresponding telegram value of each fan speed is defined by the parameter. Activate the corresponding fan speed on the screen, and object 181 sends the corresponding telegram value of the fan speed to bus.

| 182 | Page x-Temp. Cntrl (send) | Fan speed medium | 1 bit | CT | 1.001 switch |

The communication object sends control telegrams of the fan speed medium to bus.

| 183 | Page x-Temp. Cntrl (send) | Fan speed high | 1 bit | CT | 1.001 switch |

The communication object sends control telegrams of the fan speed high to bus.

| 184 | Page x-Temp. Cntrl (send) | Fan speed off | 1 bit | CT | 1.001 switch |

The communication object sends control telegrams of the fan speed off to bus.

| 185 | Page x-Temp. Cntrl (send) | Fan speed auto | 1 bit | CT | 1.003 enable |

The communication object is used for sending the automatic control telegram of the fan speed to bus. Telegram value:
0: Cancel automatic
1: Automatic

| 186 | Page x-Temp. Cntrl (send / receive) | Power On/Off | 1 bit | CWTU | 1.001 switch |

The communication object is used to switch and control the HVAC function of the device, and the corresponding control is turned off when the HVAC is turned off.

| 187 | Page x-Temp. Cntrl (send) | Base setpoint (°C) | 2 bytes | CRT | 9.001 temperature (℃) |

- Room operation mode is disabled, the communication object is used to send the base value of the set temperature.
- Room operation is enabled and
  - The temperature is set to "Base setpoint + setpoint shifting", the communication object is used to send the base value of the set temperature, i.e., the temperature setting value of Comfort mode, and the setting temperature of Standby mode and Economy mode changes according to the relative change. In Protection mode, only the temperature setting value of the protection mode is modified.
  - The temperature is set to "Absolute setpoints", the communication object is used to send the temperature setting value of the current room operation mode.

3.3.4.1 "Fan Speed" parameters

Note: The following parameters are visible when "Data type of fan speed" is set as 1byte.

Name	Description	Range
Fan speed - Off	Defines the value of Fan speed - Off	0…255 (default: 0)
Fan speed - Low	Defines the value of Fan speed - Low	0…255 (default: 1)
Fan speed - Medium	Defines the value of Fan speed - Medium	0…255 (default: 2)
Fan speed - High	Defines the value of Fan speed - High	0…255 (default: 3)
Status value for fan speed - Off	Sets the status feedback value of fan speed off	0…255 (default: 0)
Status value for fan speed - Low	Sets the status feedback value of fan speed low	0…255 (default: 1)
Status value for fan speed - Medium	Sets the status feedback value of fan speed medium	0…255 (default: 2)
Status value for fan speed - High	Sets the status feedback value of fan speed high	0…255 (default: 3)
Fan speed auto	Sets whether to enable automatic operation of fan speed	Disable Enable (default)

3.3.4.2   "Temp. setpoint" parameters

Absolute setpoints

Basic setpoint + setpoint shifting

Note: The page is visible when "Room operation mode" is enabled.

Important: All selected setpoints must be in the range configured by the parameters "Minimal possible setpoint value [5...40]" and "Maximal possible setpoint value [5...40]" on the "General Temp. Control" page (see "Page x - General Temp. Control" parameters and communication objects [→ 55]).

Name	Description	Range
Setpoint configuration by	This parameter is visible when Room operation mode is enabled to set the adjust method of the setting temperature.	Absolute setpoints Base setpoint + setpoint shifting (default)
The following parameters are visible when Heating, Heating & Cooling and Absolute setpoints are selected.		
Comfort mode: Setpoint heating [5...40]	Sets the setpoint of Comfort mode	5...40 °C (default: 22 °C)
Standby mode: Setpoint heating [5...40]	Sets the setpoint of Standby mode	5...40 °C (default: 20 °C)
Economy mode: Setpoint heating [5...40]	Sets the setpoint of Economy mode	5...40 °C (default: 18 °C)
Protection mode: Setpoint heating [5...40]	Sets the setpoint of Protection mode	5...40 °C (default: 7 °C)

Name	Description	Range
The following parameters are visible when Cooling, Heating & Cooling and Absolute setpoints are selected.		
Comfort mode: Setpoint cooling [5...40]	Sets the setpoint of Comfort mode	5...40 °C (default: 22 °C)
Standby mode: Setpoint cooling [5...40]	Sets the setpoint of Standby mode	5...40 °C (default: 24 °C)
Economy mode: Setpoint cooling [5...40]	Sets the setpoint of Economy mode	5...40 °C (default: 26 °C)
Protection mode: Setpoint cooling [5...40]	Sets the setpoint of Protection mode	5...40 °C (default: 35 °C)
The following parameters are visible when Heating, Heating & Cooling and "Base setpoint + setpoint shifting" are selected.		
Standby mode: Setpoint shifting heating [0...10]	Sets the setpoint of Standby mode The setpoint of Standby mode is the temperature setpoint minus the reference value.	0...10 *(-1)K
Economy mode: Setpoint shifting heating [0...10]	Sets the setpoint of Economy mode	0...10 *(-1)K
Protection mode: Setpoint heating [5...10]	Sets the setpoint of Protection mode Under the frost protection, when ambient temperature reduces to the setpoint, the controller triggers a control telegram to prevent the temperature from being too low.	5...10 °C (default: 7 °C)
The following parameters are visible when Cooling, Heating & Cooling and "Base setpoint + setpoint shifting" are selected.		
Standby mode: Setpoint shifting cooling [0...10]	Sets the setpoint of Standby mode The setpoint of Standby mode is the temperature set point plus the reference value.	0...10 K
Economy mode: Setpoint shifting cooling [0...10]	Sets the setpoint of Economy mode	0...10 K
Protection mode: Setpoint cooling [30...40]	Sets the setpoint of Protection mode Under the heat protection, when the ambient temperature rises to the temperature setpoint, the controller triggers a control telegram to prevent the temperature from being too high.	30...40 °C (default: 35 °C)
Base setpoint (°C)	Sets the reference value of the set temperature, which provides the setting temperature of Comfort mode. The setting temperature can be modified via object "Base setpoint (°C)", the new value is stored after the bus powers off.	10.0 / 10.5 /11.0 / 11.5 / … / 34.0 / 34.5 /35.0 °C (default: 22 °C)

3.3.4.3   "Heating & cooling ctrl" parameters

Name	Description	Range
Command Type	Sets the control logic/method for Heat/Cool application.	On/Off - two level control PWM - PI control switching (1 bit) Modulating - PI control continuous (8 bit)
Invert control value	Sets whether to invert control value in order to meet the requirement of different type of valves.	No Yes
The following two parameters are visible when "On/Off - two level control" is selected.		
Lower Hysteresis [0...200]	Sets the lower hysteresis temperature in HVAC Heating or Cooling.	0...200*0.1 °C
Upper Hysteresis [0...200]	Sets the upper hysteresis temperature in HVAC Heating or Cooling.	0...200*0.1 °C
Note: Under the heating control: • When the actual temperature (T) > the temperature setpoint + the upper hysteresis temperature, device stops heating • When the actual temperature(T) < the temperature setpoint - the lower hysteresis temperature, device starts heating. For example, the lower hysteresis temperature is 1℃, the upper hysteresis temperature is 2℃, the temperature setpoint is 22℃, if T > 24℃, then heating stops; if T < 24℃,then heating starts; if T is between 21~24℃, then it maintains the previous status. Under the cooling control: • When the actual temperature (T) < the temperature setpoint -the lower hysteresis temperature, device stops cooling. • When the actual temperature (T) > the temperature setpoint +the upper hysteresis temperature, device starts cooling. For example, the lower hysteresis temperature is 1 ℃, the upper hysteresis temperature is 2 ℃, the temperature setpoint is 26 ℃, if T < 25 ℃, then stops cooling; if T > 28 ℃, then starts cooling; if T is between 28~25 ℃, then it maintains the previous status.		
The following parameters are visible when "PWM - PI control switching (1 bit)" or "Modulating - PI control continuous (8 bit)" is selected.		
Pulse width modulation period time [1...255]	Sets how frequent the control object sends the switch on/off value. The object sends the switch on/off value according to the duty cycle of the control value. For example, if the cycle time is set to 10 min and the control value is 80%, then the object sends an "ON" telegram in 8 min. If the control value is changed, the duty cycle of the on/ off telegram changes accordingly, but the period is still the time of parameter setting.	1…255 min
Heating Loop	Sets the responding speed of heating or cooling controller	Hot water heating (5K/150min) Floor heating (5K/240min) Electrical heating (4K/100min) Split unit / Fan coil (4K/90min) User defined
Cooling Loop	Sets the responding speed of heating or cooling controller	Chilled ceiling (5K/240min) Split unit or VRF (4K/90min) Fan coil (4K/90min) User defined
The following parameters are visible when "User defined" is selected.		
Proportional range [10...100]	Customizes the P value.	10...100 *0.1K
Integration time [0...255]	Customizes the I value.	0…255 min
Send value on change of control value by [0...100, 0=disabled]	This parameter is visible when "Modulating - PI control continuous (8 bit)" is selected. The control value is sent to bus if the value change reaches the set percentage.	0…100 %

Name	Description	Range
Send control value cyclically [0...255]	Sets the period for cyclically sending the control value to bus.	0…255 min

3.3.5 "Page x - Enhanced Floor Heating" parameters and communication objects

Parameters

Assign "Page x" as single function –"Enhanced Floor Heating" page for floor heating application.

+ Logic function	Scene function	○ Disable ● Enable
	1: Assign scene No.[0..64, 0=inactive]	0
	Floor heating state for scene	○ Off ● On
	Temp. Setpoint [32...64]	40 *0.5°C
	2: Assign scene No.[0..64, 0=inactive]	0
	Floor heating state for scene	○ Off ● On
	Temp. Setpoint [32...64]	40 *0.5°C
	3: Assign scene No.[0..64, 0=inactive]	0
	Floor heating state for scene	○ Off ● On
	Temp. Setpoint [32...64]	40 *0.5°C
	4: Assign scene No.[0..64, 0=inactive]	0
	Floor heating state for scene	○ Off ● On
	Temp. Setpoint [32...64]	40 *0.5°C
	5: Assign scene No.[0..64, 0=inactive]	0
	Floor heating state for scene	○ Off ● On
	Temp. Setpoint [32...64]	40 *0.5°C
	Timer change via bus	Disable
	Timer 1	○ Disable ● Enable
	Floor heating state for timer	○ Off ● On
	Temp. Setpoint [32...64]	40 *0.5°C
	Weekday	Monday-Friday
	Hour	0 Hours
	Minute	0 Minutes
	Timer 2	● Disable ○ Enable

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [➜ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	Configures the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send); General Temp. Control; Enhanced Floor Heating; VRF Interface & Operation; Ventilation System; Air Quality Display; Energy Metering Display; RGB Dimming; Background Music.
Temperature value from	This parameter is for setting the resource of the temperature reference. • Internal sensor, built-in temperature sensor. The configuration refers to "General sensor" parameters and communication objects [➜ 44] • External sensor, temperature value over bus • Internal and External sensor weighting: using calculated value	Internal sensor External sensor Internal and External sensor weighting
The following parameters is visible when "Internal and External sensor weighting" is selected.		
Weighting of internal and external value	This is used to define the exact weighting in percentage.	10% internal, 90% external; 20% internal, 80% external; 30% internal, 70% external; 40% internal, 60% external; 50% internal, 50% external; 60% internal, 40% external; 70% internal, 30% external; 80% internal, 30% external; 90% internal, 10% external
The following parameters are visible when "External sensor" or "Internal and External sensor weighting" is selected.		
Cycle time for polling of external temperature sensor [0...255]	This parameter is for setting the time period for request external sensor.	0…255 min
Read external sensor after polling time expires	After the bus is reset or programmed, a read request is sent or not.	No Yes
Control value after temp. error [0…100%] (For 2-level control, the value '0'=0%, value '>0'=100%)"	This parameter setting is for the control value when temperature error occurs. If under 2-Point control, the parameter value is 0, as well as the control value; if the parameter value is more than 0, then the control value is 1.	0...100 %
Behavior floor heating after download	Sets if the floor heating is powered on / off after application downloaded.	Off On
Behavior floor heating at voltage recovery	Sets if the floor heating is powered on/off after the bus recovery.	On Off as before voltage failure
Default Temp. Setpoint [16…32]	This is the default temperature setpoint when floor heating is on.	16...32 °C (default: 22 °C)

Name	Description	Range
Command Type	Sets the temperature control logic / method.	On/Off - two level control PWM - PI control switching (1 bit) Modulating - PI control continuous (8 bit)
Object value of Heating on/off	Defines the triggered of floor heating on/off.	Heat on=1, Heat off=0 Heat on=0, Heat off=1
Invert control value	This is used to determine if the control value should be inverted value in order to meet the requirement of different type of valves.	No Yes
The following two parameters are visible when "On/Off - two level control" is selected.		
Lower Hysteresis [0...200]	Sets the lower hysteresis temperature setpoint of floor heating.	0...200 *0.1 °C
Upper Hysteresis [0...200]	Sets the upper hysteresis temperature setpoint of floor heating.	0...200 *0.1 °C
Note: Under the heating control: • When the actual temperature (T) > the temperature setpoint + the upper hysteresis temperature, then device stops heating • When the actual temperature(T) < the temperature setpoint - the lower hysteresis temperature, then device starts heating. For example, the lower hysteresis temperature is 1 °C, the upper hysteresis temperature is 2 °C, the temperature setpoint is 22 °C, if T > 24 °C, then heating stops; if T < 24 °C,then heating starts; if T is between 21~24 °C, then it maintains the previous status.		
The following parameters are visible when "PWM - PI control switching (1 bit)" or "Modulating - PI control continuous (8 bit)" is selected.		
Pulse width modulation period time [1...255]	It's used to define how frequent the control object sends the switching value. And the object sends the switch value according to the duty cycle of the control value. E.g., assuming the period set is 10 minutes and the control value is 80 %, the object sends a "switch on" telegram in 8 minutes and sends a "switch off" telegram in 2 minutes.	1…255 min
Heating Loop	Sets the response speed of the heating PI controller.	Floor heating P & I value settings
Proportional range [10...100]	Customizes the P value.	10...100 *0.1K (default: 50)
Integration time [0...255]	Customizes the I value.	0…255 min (default: 240 min)
Send control value cyclically [0...255]	Sets the time period of cyclically sending control value to the bus.	0…255 min (default: 15 min)
Minimal possible setpoint value [16...32]*	This parameter is used to configure the allowed minimum range for temperature setpoint.	16...32 °C (default: 16 °C)
Maximal possible setpoint value [16...32]*	This parameter is used to configure the allowed maximum range for temperature setpoint.	16...32 °C (default: 32 °C)
Scene function	Setting for scene functions of the floor heating, a total of 5 scenes are available for setting.	Disable Enable
x: Assign scene No. [0…64, 0=inactive]	Sets scene number. x=1...5	0…64
Floor heating state for scene	Sets the power on/off status of the floor heating interface of scene x.	Off On
Temp. Setpoint [32...64]	Sets the temperature setpoint of scene x.	32...64 *0.5 °C
Timer change via bus	Sets whether to enable the timer function through the object, up to 8 timers can be configured. When the timer function is disabled / enabled by the object, the default state is not enabled after the programming or reset is completed. It keeps the timer state when shut down the device or recall the scene function configured for floor heating.	Disable disable=0/enable=1 disable=1/enable=0
Timer x	This parameter is for setting whether to enable timer x. x=1...8	Disable Enable

Name	Description	Range
The following parameters are visible when "Enable" is selected.		
Floor heating state for timer	Sets the power on/off status of the floor heating interface of timer x.	Off On
Temp. Setpoint [32...64]	This parameter is visible when "Floor heating state for timer" is selected as "On". It's to set the temperature setpoint of timer x.	32...64 *0.5 ℃
Weekday Hour Minute	These parameters are used to set the implementation moment of timer x including weekday, hour and minute. When it reaches the moment, timer x is performed.	Monday; Tuesday; Wednesday; Thursday; Friday; Saturday; Sunday; Monday-Friday; Saturday-Sunday; Monday-Sunday 0…23 h 0...59 min

* Minimum and maximum setpoint value:

The minimum set point value should not be higher than the maximum value. If the temperature setpoint exceeds the range, then output is the upper/lower limits value.

Communication objects

Number ^	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-Enhanced FH	FH: External temperature (receive)			2 bytes	C	-	W	T	U	temperature (℃)	Low
162	Page 6-Enhanced FH	Power On/Off (receive/send)			1 bit	C	-	W	T	U	switch	Low
163	Page 6-Enhanced FH	Heating On/Off (receive/send)			1 bit	C	-	W	T	U	switch	Low
164	Page 6-Enhanced FH	FH Temperature setpoint (receive/send)			2 bytes	C	-	W	T	U	temperature (℃)	Low
165	Page 6-Enhanced FH	Timer enable/disable (receive)			1 bit	C	-	W	-	-	enable	Low
166	Page 6-Enhanced FH	Scene (receive)			1 byte	C	-	W	-	-	scene control	Low
163	Page 6-Enhanced FH	Heating control value (send)			1 byte	C	-	W	T	U	percentage (0..100%)	Low

Note   Page number x range: 1...15

No.	Name	Object function	Length	Flag	Data type
161	Pagex- Enhanced FH	FH: External temperature (receive)	2 bytes	CWTU	9.001 temperature (℃)
The communication object is visible when the temperature reference selects the external sensor and is used to receive the temperature measurement value sent from the temperature sensor on bus. Range: -50...99.8 ℃					
162	Pagex- Enhanced FH	Power On/Off (receive/send)	1 bit	CWTU	1.001 switch
The communication object is used to send the switching telegram of floor heating control, and it can also receive feedback from the status of floor heating control. Telegram value: 0: The control interface of floor heating is off and the interface is not operational. 1: The control interface of floor heating is on and the interface is operational.					
163	Pagex- Enhanced FH	Heating On/Off (receive/send) Heating control value (send)	1 bit 1 byte	CWTU	1.001 switch 5.001 percentage (0...100 %)
The communication object is used to send the control value of floor heating to control the switch of floor heating valve. Send telegram value (On/Off - two level control) : On/Off Send telegram value (PWM - PI control switching (1 bit)): On/Off Send telegram value (Modulating - PI control continuous (8 bit)): 0...100%					
164	Pagex- Enhanced FH	FH:Temperature setpoint (receive/send)	2 bytes	CWTU	9.001 temperature (℃)
The communication object is used to send the temperature setting value to bus, and the temperature setting value of the feedback can also be received. Range: 5...40 ℃					

No.	Name	Object function	Length	Flag	Data type
165	Pagex- Enhanced FH	Timer enable/disable (receive)	1 bit	CW	1.003 enable
The communication object is used to disable/ enable the timing function of the floor heating. The disable / enable telegram value is specifically defined by the parameter.					
166	Pagex- Enhanced FH	Scene (receive)	1 byte	CW	18.001 scene control
The communication object is used to recall the scene control of floor heating. The parameter is set to the scene No.1...64 and the actual corresponding telegram value is 0...63.					

3.3.6   "Page x - VRF interface & Operation" parameters and communication objects

Parameters

Assign "Page x" as single function –"VRF Interface & Operation" page. It works as an interface & Operation unit for VRF air conditioning system. (VRF refers to variable Refrigerant Flow HVAC technology). To work with VRF device, it should connect with a gateway.

Data type of operation mode: 1bit

Data type of fan speed: 1bit

General		
Home page	Page function	VRF Interface & Operation
Home page 1	Temperature value from	○ Internal sensor ○ External sensor
Home page 2	Auto control mode (if disabled, then "Operation mode-Auto" is ignored by the system)	○ Disable ● Enable
Function page	VRF interface & operation	via Gateway
Page settings	Data type of operation mode	● 1bit ○ 1byte
Page 1	Operation mode - Heat	○ 0 ● 1
Page 6	Operation mode - Cool	● 0 ○ 1
Timer function	Operation mode - Dry	○ 0 ● 1
Event Group function	Operation mode - Fan	○ 0 ● 1
Logic function	Operation mode - Auto	○ 0 ● 1
	Data type of fan speed	● 1bit ○ 1byte
	Fan direction adjustment	○ Disable ● Enable
	Object value for fan direction	Fixed=0 / Swinging =1
	Fan direction position	
	Position 1	1
	Position 2	2
	Position 3	3
	Position 4	4
	Position 5	5
	Status of fan direction position	
	Status value for position 1	1
	Status value for position 2	2
	Status value for position 3	3
	Status value for position 4	4
	Status value for position 5	5
	Object datatype of setpoint	○ Value in °C(DPT_5.010) ● Float value in °C(DPT_9.001)
	Minimal possible setpoint value [16...32]	16 °C
	Maximal possible setpoint value [16...32]	32 °C

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [➜ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	This is used to configure the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send); General Temp. Control; Enhanced Floor Heating; VRF Interface & Operation; Ventilation System; Air Quality Display; Energy Metering Display; RGB Dimming; Background Music.
Temperature value from	This is used to determine the Temperature reference used.	Internal sensor External sensor
The following two parameters are visible when "External sensor" is selected.		
Cycle time for polling of external temperature sensor [0...255]	This parameter is for setting the time period for request external sensor.	0…255 min
Read external sensor after polling time expires	After the bus is reset or programmed, a read request is sent or not.	No Yes
Auto control mode (if disabled, then "Operation mode-Auto" is ignored by the system)	Enables or disables Auto control mode of VRF.	Disable Enable (default)
VRF interface & operation	No necessary action. VRF device requests a Gateway to connect to KNX system.	via Gateway
Data type of operation mode	To define the data type of operation mode	1bit 1byte (default)
1bit		
Operation mode - Heat Operation mode - Cool Operation mode - Dry Operation mode - Fan Operation mode - Auto	Operation mode is Heat, Cool, Dry, Fan or Auto	0/1
1byte		
Operation mode - Heat Operation mode - Cool Operation mode - Dry Operation mode - Fan Operation mode - Auto	Operation mode is Heat, Cool, Dry, Fan or Auto	0...255
Status of operation mode	It's status feedback for operation mode.	-
Status value for operation mode - Heat Status value for operation mode - Cool Status value for operation mode - Dry Status value for operation mode - Fan Status value for operation mode - Auto	It's status feedback for operation mode: Heat, Cool, Dry, Fan or Auto.	0...255

Name	Description	Range
Data type of fan speed	This parameter is for setting the data type of fan speed.	1bit 1byte
1byte		
Fan speed - Auto Fan speed - Low Fan speed - Medium Fan speed - High	These parameters are used to define different fan speed value.	0...255
Status of fan speed	It's status feedback for fan speed. The device updates fan speed icon status according to the feedback value received.	-
Status value for fan speed - Auto Status value for fan speed - Low Status value for fan speed - Medium Status value for fan speed - High	It's status feedback for fan speed: Auto, Low, Medium or High.	0...255
1bit		
Fan direction adjustment	This parameter is used to enable or disable the function for fan direction adjustment.	Disable Enable
Enabled		
Object value for fan direction	Defines the value of fan direction	Fixed=0 / Swinging =1
Fan direction position Position 1 Position 2 Position 3 Position 4 Position 5	These parameters define the corresponding control value of the fan positions.	0...255 Default: • Position 1: 1 • Position 2: 2 • Position 3: 3 • Position 4: 4 • Position 5: 5
Status of fan direction position Status value for position 1 Status value for position 2 Status value for position 3 Status value for position 4 Status value for position 5	These parameters define the status feedback of each fan direction. The device updates the icon status of fan direction position according to the feedback value received.	0...255 Default: • Status value for position 1: 1 • Status value for position 2: 2 • Status value for position 3: 3 • Status value for position 4: 4 • Status value for position 5: 5
Object datatype of setpoint	This parameter is used to set for the data type of the set point.	Value in °C (DPT_5.010) Float value in °C (DPT_9.001)
Minimal possible setpoint value[16...32]*	This parameter is used to configure the allowed minimum range for temperature setpoint.	16...32 °C (default: 16 °C)
Maximal possible setpoint value[16...32]*	This parameter is used to configure the allowed maximum range for temperature setpoint.	16...32 °C (default: 32 °C)

* Minimum and maximum setpoint value:

The minimum set point value should not be higher than the maximum value. If the temperature setpoint exceeds the range, then output is the upper/lower limits value.

Data type of operation mode: 1byte
Data type of fan speed: 1byte

+ General	
− Home page	
Home page 1	
Home page 2	
− Function page	
Page settings	
Page 1	
Page 6	
+ Timer function	
+ Event Group function	
+ Logic function	

Description / Headline of the page	Page 6
Page function	VRF Interface & Operation ▾
Temperature value from	◉ Internal sensor ◯ External sensor
Auto control mode (if disabled, then "Operation mode-Auto" is ignored by the system)	◯ Disable ◉ Enable
VRF interface & operation	via Gateway
Data type of operation mode	◯ 1bit ◉ 1byte
Operation mode - Heat	1
Operation mode - Cool	3
Operation mode - Dry	14
Operation mode - Fan	9
Operation mode - Auto	0

Status of opeation mode

Status value for operation mode - Heat	1
Status value for operation mode - Cool	3
Status value for operation mode - Dry	14
Status value for operation mode - Fan	9
Status value for operation mode - Auto	0
Data type of fan speed	◯ 1bit ◉ 1byte
Fan speed - Auto	4
Fan speed - Low	1
Fan speed - Medium	2
Fan speed - High	3

Status of fan speed

Status value for fan speed - Auto	4
Status value for fan speed - Low	1
Status value for fan speed - Medium	2
Status value for fan speed - High	3
Fan direction adjustment	◯ Disable ◉ Enable
Object value for fan direction	Fixed=0 / Swinging =1

Fan direction position

Position 1	1
Position 2	2
Position 3	3
Position 4	4
Position 5	5

Status of fan direction position

Status value for position 1	1
Status value for position 2	2
Status value for position 3	3
Status value for position 4	4
Status value for position 5	5
Object datatype of setpoint	◯ Value in °C(DPT_5.010) ◉ Float value in °C(DPT_9.001)
Minimal possible setpoint value [16...32]	16 °C
Maximal possible setpoint value [16...32]	32 °C

Communication objects

Gateway_1byte

Number *	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-VRF	VRF: External temperature (receive)			2 bytes	C	-	W	T	U	temperature (°C)	Low
162	Page 6-VRF	Power On/Off (send)			1 bit	C	-	-	T	-	switch	Low
163	Page 6-VRF	Status power On/Off (receive)			1 bit	C	-	W	T	U	switch	Low
164	Page 6-VRF	Operation mode (send)			1 byte	C	-	-	T	-	HVAC control mode	Low
165	Page 6-VRF	Status for operation mode (receive)			1 byte	C	-	W	T	U	HVAC control mode	Low
169	Page 6-VRF	Fan speed (send)			1 byte	C	-	-	T	-	percentage (0..100%)	Low
170	Page 6-VRF	Status fan speed (receive)			1 byte	C	-	W	T	U	percentage (0..100%)	Low
173	Page 6-VRF	Fan direction fixed/swinging (receive/send)			1 bit	C	-	W	T	U	trigger	Low
174	Page 6-VRF	Fan direction position (send)			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
175	Page 6-VRF	Status fan direction position (receive)			1 byte	C	-	W	T	U	counter pulses (0..255)	Low
176	Page 6-VRF	VRF: Temperature setpoint (receive/send)			2 bytes	C	-	W	T	U	temperature (°C)	Low

Gateway_1bit

Number *	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-VRF	VRF: External temperature (receive)			2 bytes	C	-	W	T	U	temperature (°C)	Low
162	Page 6-VRF	Power On/Off (send)			1 bit	C	-	-	T	-	switch	Low
163	Page 6-VRF	Status power On/Off (receive)			1 bit	C	-	W	T	U	switch	Low
164	Page 6-VRF	Heating mode (receive/send)			1 bit	C	-	W	T	U	enable	Low
165	Page 6-VRF	Cooling mode (receive/send)			1 bit	C	-	W	T	U	enable	Low
166	Page 6-VRF	Dry mode (receive/send)			1 bit	C	-	W	T	U	enable	Low
167	Page 6-VRF	Fan mode (receive/send)			1 bit	C	-	W	T	U	enable	Low
168	Page 6-VRF	Auto mode (receive/send)			1 bit	C	-	W	T	U	enable	Low
169	Page 6-VRF	Fan speed low (receive/send)			1 bit	C	-	W	T	U	switch	Low
170	Page 6-VRF	Fan speed medium(receive/send)			1 bit	C	-	W	T	U	switch	Low
171	Page 6-VRF	Fan speed high (receive/send)			1 bit	C	-	W	T	U	switch	Low
172	Page 6-VRF	Fan speed Auto (receive/send)			1 bit	C	-	W	T	U	switch	Low
173	Page 6-VRF	Fan direction fixed/swinging (receive/send)			1 bit	C	-	W	T	U	trigger	Low
174	Page 6-VRF	Fan direction position (send)			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
175	Page 6-VRF	Status fan direction position (receive)			1 byte	C	-	W	T	U	counter pulses (0..255)	Low
176	Page 6-VRF	VRF: Temperature setpoint (receive/send)			2 bytes	C	-	W	T	U	temperature (°C)	Low

Note Page number x range: 1...15

No.	Name	Object function	Length	Flag	Data type
161	Page x - VRF	VRF: External temperature (receive)	2 bytes	CWTU	9.001 temperature (℃)
The communication object is used for receiving the temperature measurement value sent by the external temperature sensor on bus and displaying the indoor temperature on the screen.					
162	Page x - VRF	Power On/Off (send)	1 bit	CT	1.001 switch
This communication object is visible in Gateway Integrate mode and is used to send air conditioning switch telegrams.					
163	Page x - VRF	Status power On/Off (receive)	1 bit	CWTU	1.001 switch
This communication object is visible in the Gateway Integrate mode and is used to receive feedback from the status of the air-conditioning switch.					
164	Page x - VRF	Operation mode (send) Heating mode (receive/send)	1 byte 1 bit	CT CWTU	5.010 counter pluses (0...255) 1.003 enable
Operation mode (send): This communication object is visible when the "Data type of operation mode" is 1byte, which is used to send the control telegram of each mode of air conditioning.					
Heating mode (receive/send): This communication object is visible when the "Data type of operation mode" is 1bit. It is used to send air conditioning mode heating control telegram, and can also receive status feedback.					
165	Page x - VRF	Statusfor operation mode (receive) Cooling mode (receive/send)	1 byte 1 bit	CWTU	5.010 counter pluses (0...255) 1.003 enable
Status for operation mode (receive): This communication object is visible when the "Data type of operation mode" is 1byte, which is used to receive the status feedback telegram of each mode of air conditioning.					
Cooling mode (receive/send): This communication object is visible when the "Data type of operation mode" is 1bit. It can be used to send the control telegram of air conditioning mode-Cool, and can also receive status feedback.					
166	Page x - VRF	Dry mode (receive/send)	1 bit	CWTU	1.003 enable
This communication object is visible when the "Data type of operation mode" is 1bit. It is used to send air conditioning mode - Dry control telegram and receive status feedback.					

No.	Name	Object function	Length	Flag	Data type
167	Page x - VRF	Fan mode (receive/send)	1 bit	CWTU	1.003 enable
This communication object is visible when the "Data type of operation mode" is 1bit. It is used to send air conditioning mode - Fan control telegram and receive status feedback.					
168	Page x - VRF	Auto mode (receive/send)	1 bit	CWTU	1.003 enable
This communication object is visible when the "Data type of operation mode" is 1bit.It is used to send air conditioning mode - Auto control telegram and receive status feedback.					
169	Page x - VRF	Fan speed (send) Fan speed low (receive/send)	1 byte 1 bit	CT CWTU	5.001 percentage (0...100 %) 1.001 switch
Fan speed (send): this communication object is visible when the "Data type of operation mode" is 1byte, which is used to send the control telegram of each fan speed. Fan speed low (receive/send): This communication object is visible when the "Data type of operation mode" is 1bit. It is used to send Fan speed low control telegram and receive state feedback.					
170	Page x - VRF	Status fan speed (receive) Fan speed medium(receive/send)	1 byte 1 bit	CWTU	5.001 percentage (0...100 %) 1.001 switch
Status fan speed (receive): This communication object is visible when the "Data type of operation mode" is 1byte, which is used to receive the status feedback telegram of each wind speed. Fan speed medium(receive/send): This communication object is visible when the "Data type of operation mode" is 1bit. It is used to send the Fan speed medium control telegram and can also receive status feedback.					
171	Page x - VRF	Fan speed high (receive/send)	1 bit	CWTU	1.001 switch
This communication object is visible when the "Data type of operation mode" is 1bit. It is used to send Fan speed high control telegram and can also receive status feedback.					
172	Page x - VRF	Fan speed Auto (receive/send)	1 bit	CWTU	1.001 switch
This communication object is visible when the "Data type of operation mode" is 1bit. It is used to send Fan speed Auto control telegram and can also receive status feedback.					
173	Page x - VRF	Fan direction fixed/swinging (receive/send)	1 bit	CWTU	1.017 trigger
This communication object is visible in Gateway Integrate mode and when the fan direction adjustment is enabled, and is used to send the control telegram of the fan direction. Telegram value: 0: Fixed fan direction 1: Swing fan direction					
174	Page x - VRF	Fan direction position (send)	1 byte	CT	5.010 counter pulses (0...255)
The communication object is in the Gateway Integrate mode and is visible when the fan direction adjustment is enabled, and is used to send the control telegram of the fixed fan direction position 1..5.					
175	Page x - VRF	Status fan direction position (receive)	1 byte	CWTU	5.010 counter pulses (0...255)
The communication object is in the Gateway Integrate mode and is visible when the fan direction adjustment is enabled, and is used to receive the status feedback telegram of the fixed fan direction position 1..5.					
176	Page x - VRF	VRF: Temperature setpoint (receive/send)	2 bytes	CWTU	5.010 counter pulses (0...255)
This communication object is visible in Gateway Integrate mode and is used to send and receive the setting temperature of the air conditioner. **Note**: The object type is set by parameters, 2byte is suitable for KNX standard, 1byte is KNX non-standard, usually suitable for some custom control classes, the telegram value is the actual temperature value, such as 17 °C message value is 17 (decimal number).					

3.3.7 "Page x - Ventilation System" parameters and communication objects

Parameters

Assign "Page x" as single function –"Ventilation System" page.

+ General	Description / Headline of the page — Page 6
+ Home page	Page function — Ventilation System
− Function page	Behavior ventilation after download — ◉ Off ◯ On
	Behavior ventilation after voltage recovery — On
Page settings	Default fan speed after ventilation on — Medium
Page 1	
+ Page 6	Data type of fan speed — ◯ 1bit ◉ 1byte
	Fan speed - Off — 0
+ Timer function	Fan speed - Low — 1
+ Event Group function	Fan speed - Medium — 2
+ Logic function	Fan speed - High — 3

Status of fan speed

Status value for fan speed - Off — 0

Status value for fan speed - Low — 1

Status value for fan speed - Medium — 2

Status value for fan speed - High — 3

Time delay between fan speed switching [0...100] — 10 *50ms

Heat Recovery function — Disable=0/Enable=1

Filter lifetime counting — ◯ Disable ◉ Enable

Filter life time [100...10000] — 1000 Hours

Auto Operation (Demand based ventilation) — ◯ Disable ◉ Enable

Scene function — ◯ Disable ◉ Enable

1: Assign scene No.[0..64, 0=inactive] — 0

Fan speed for scene — Off

Heat Recovery — ◉ Off ◯ On

2: Assign scene No.[0..64, 0=inactive] — 0

Fan speed for scene — Low

Heat Recovery — ◯ Off ◉ On

3: Assign scene No.[0..64, 0=inactive] — 0

Fan speed for scene — Medium

Heat Recovery — ◯ Off ◉ On

4: Assign scene No.[0..64, 0=inactive] — 0

Fan speed for scene — High

Heat Recovery — ◯ Off ◉ On

5: Assign scene No.[0..64, 0=inactive] — 0

Fan speed for scene — Off

Heat Recovery — ◉ Off ◯ On

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [→ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	This is used to configure the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send); General Temp. Control; Enhanced Floor Heating; VRF Interface & Operation; Ventilation System; Air Quality Display; Energy Metering Display; RGB Dimming; Background Music.
Behavior ventilation after download	Sets if the Ventilation system is powered on/off after the application is downloaded	Off On
Behavior ventilation after voltage recovery	Sets if the Ventilation system is powered on/off after the bus is recovered.	Off On As before voltage failure
Default fan speed after power on	Sets the default fan speed after power on.	Low (default) Medium High
Data type of fan speed	Sets the data type of fan speed	1 bit 1 byte
1bit		
Object value: Fan speed - Off	Defines the value sent by switching to each fan speed, which is sent by three 1bit objects at the same time. Appears only if "1 bit" is chosen for "Data type of fan speed"	No.1=0, No.2=0, No.3=0
Object value: Fan speed - Low		No.1=1, No.2=0, No.3=0
Object value: Fan speed - Medium		No.1=0, No.2=1, No.3=0
Object value: Fan speed - High		No.1=1, No.2=1, No.3=0
		No.1=0, No.2=0, No.3=1
		No.1=1, No.2=0, No.3=1
		No.1=0, No.2=1, No.3=1
		No.1=1, No.2=1, No.3=1
1byte		
Fan speed - Off	Defines the value to be sent when switching fan speed to off/low/medium/high	0...255 (default: 0)
Fan speed - Low		0...255 (default : 1)
Fan speed - Medium		0...255 (default: 2)
Fan speed - High		0...255 (default: 3)
Status of fan speed	Headline of status feedback of each fan speed.	0...255
Status value for fan speed - Off	Status feedback of each fan speed. The device updates the icon status of fan speed according to the feedback value received.	0...255 (default: 0)
Status value for fan speed - Low		0...255 (default : 1)
Status value for fan speed - Medium		0...255 (default: 2)
Status value for fan speed - High		0...255 (default: 3)

Name	Description	Range
Time delay between fan speed switching [0...100]	Determines the time delay of the switching process in milliseconds. This time setting should take the technical specification of the fan into consideration. If a value of 1…100 is chosen, proceed as follows when switching the fan speed from A to B: 1. Turn off the fan 2. Pause (time delay defined) 3. Switch to a new speed 4. Send the telegram to bus. When the delay time is set to "0", the fan speed will be switched directly from A to B.	[0...100]*50ms
Heat Recovery function	Sets whether to enable heat recovery function. If disable=0/enable=1 or disable=1/enable=0 is selected, the heat recovery function is enabled as default, that is, when the device is power-on, this function is enabled. If **Disable** is selected, the heat recovery function is disabled, the heat recovery is uncontrollable.	Disable disable=0/enable=1 disable=1/enable=0
Filter lifetime counting	Sets whether to enable the filter timer function.	Enable Disable
Filter life time [100...10,000]	Appears only if **Enable** is selected for Filter lifetime counting. It sets the life span of the filter. When the life time is counted down to 0, an alarm will be triggered. This alarm is to inform that the filter should be changed or cleaned. This value is counted by the object "Filter timer counter, In/Out". It can be modified via bus. During operation, the changes in value will be sent to bus. The options of 100...10000 can be reset via bus through object "Filter timer reset, In" or in screen operation.	100...10000
Auto Operation (Demand based ventilation)	Sets whether the Demand based Ventilation function is enabled. When this option is enabled, the ventilation is operated automatically by the air quality status and the defined set point.	Enable Disable
Scene function	Sets whether to enable the scene function. Five scenes can be set if the option is enabled.	Enable Disable
The following parameters are visible when "Enable" is selected.		
x: Assign scene No. [0...64, 0=inactive]	Sets the scene number. x=1...5	0...64, 0 = inactive
Fan speed for scene	Fan speed status of a specific scene	Off Low Medium High
Heat Recovery	Status of heat recovery of a specific scene	On Off

Communication objects

Number *	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
162	Page 6-Ventilation	Power On/Off (receive/send)			1 bit	C	-	W	T	U	switch	Low
163	Page 6-Ventilation	Heat recovery enable/disable (receive)			1 bit	C	-	W	-	-	enable	Low
164	Page 6-Ventilation	Heat recovery (receive/send)			1 bit	C	-	W	T	U	switch	Low
165	Page 6-Ventilation	Filter timer reset (receive)			1 bit	C	-	W	-	-	reset	Low
166	Page 6-Ventilation	Filter timer counter (receive/send)			2 bytes	C	-	W	T	U	time (h)	Low
167	Page 6-Ventilation	Filter alarm (send)			1 bit	C	-	-	T	-	alarm	Low
168	Page 6-Ventilation	Fan speed No.1 (receive/send)			1 bit	C	-	W	T	U	switch	Low
169	Page 6-Ventilation	Fan speed No.2 (receive/send)			1 bit	C	-	W	T	U	switch	Low
170	Page 6-Ventilation	Fan speed No.3 (receive/send)			1 bit	C	-	W	T	U	switch	Low
171	Page 6-Ventilation	Automatic function (receive/send)			1 bit	C	-	W	T	U	enable	Low
172	Page 6-Ventilation	CO2 (receive)			2 bytes	C	-	W	T	U	parts/million (ppm)	Low
174	Page 6-Ventilation	Scene (receive)			1 byte	C	-	W	-	-	scene control	Low
168	Page 6-Ventilation	Fan speed (send)			1 byte	C	-	-	T	-	percentage (0..100%)	Low
169	Page 6-Ventilation	Status fan speed (receive)			1 byte	C	-	W	T	U	percentage (0..100%)	Low
172	Page 6-Ventilation	CO2 (receive)			2 bytes	C	-	W	T	U	parts/million (ppm)	Low
173	Page 6-Ventilation	PM2.5 (receive)			2 bytes	C	-	W	T	U	pulses	Low
173	Page 6-Ventilation	PM2.5 (receive)			2 bytes	C	-	W	T	U	concentration (µg/m³)	Low

Note Page number x range: 1...15

No.	Name	Object function	Length	Flag	Data type
162	Page x-Ventilation	Power On/Off (receive/send)	1 bit	CWTU	1.001 switch
The communication object is used for sending a ventilation system control switch telegram, and can also receive the feedback of the ventilation system control status. Telegram value: 0: the ventilation system control interface is off and the interface is not operational 1: the ventilation system control interface is on and the interface is operational					
163	Page x-Ventilation	Heat recovery enable/disable (receive)	1 bit	CW	1.003 enable
The communication object is used to disable / enable the heat recovery function of ventilation system. The disabled/ enabled telegram value is specifically defined by the parameter. When disable, the heat recovery is turned off and cannot be controlled.					
164	Page x-Ventilation	Heat recovery(receive/send)	1 bit	CWTU	1.001 switch
The communication object is used to send the control command of on/off ventilation system heat recovery, and the status feedback value can also be received. Telegram value: 0: Off 1: On					
165	Page x-Ventilation	Filter timer reset (receive)	1 bit	CW	1.015 reset
The communication object is used to reset the filter time, and after the filter is reset, the filter time is used to start counting again. Telegram value: 1:Reset					
166	Page x-Ventilation	Filter timer counter (receive/send)	2 bytes	CWTU	7.001 pluses
The communication object is used to count the lifetime of the filter. When the count value changes, it can be sent to the bus, and the time can also be modified by the bus. The unit of filter time counter is in hours.					
167	Page x-Ventilation	Filter alarm (send)	1 bit	CT	1.005 alarm
When the filter is used for longer than the set value, the communication object issues an alarm to remind the user to replace the filter. Telegram value: 1: Alarm					
168	Page x-Ventilation	Fan speed No.1 (receive/send) Fan speed (send)	1 bit 1 byte	CWTU CT	5.010 percentage (0...100 %) 1.001 switch
Fan speed (send): The communication object is visible when the fan speed type is "1byte" and is used to send a telegram to the bus to control the fan speed. The specific telegram value corresponding to each fan speed is defined by the parameters. Fan speed No.1 (receive/send): The communication object can be seen when the fan speed type is "1bit", the fan speed is controlled by the three objects at the same time, and the specific telegram value corresponding to each fan speed is defined by the parameters. Status feedback can be received, but the feedback value also needs to correspond to the parameter definition value to update the display on the screen.					

No.	Name	Object function	Length	Flag	Data type
169	Page x-Ventilation	Fan speed No.2 (receive/send) Status fan speed (receive)	1 bit 1 byte	CWTU	5.010 percentage (0...100 %) 1.001 switch

Status fan speed (receive): The communication object is visible when the fan speed type is "1byte" and is used to receive the status feedback of the fan speed. The specific telegram value corresponding to each fan speed is defined by the parameter.

Fan speed No.2 (receive/send): The communication object can be seen when the fan speed type is "1bit", the fan speed is controlled by the three objects at the same time, and the specific telegram value corresponding to each fan speed is defined by the parameters. Status feedback can be received, but the feedback value also needs to correspond to the parameter definition value to update the display on the screen.

No.	Name	Object function	Length	Flag	Data type
170	Page x-Ventilation	Fan speed No.3 (receive/send)	1 bit	CWTU	1.001 switch

The communication object can be seen when the fan speed type is "1bit", the fan speed is controlled by the three objects at the same time, and the specific telegram value corresponding to each fan speed is defined by the parameters. Status feedback can be received, but the feedback value also needs to correspond to the parameter definition value to update the display on the screen.

No.	Name	Object function	Length	Flag	Data type
171	Page x-Ventilation	Automatic function (receive/send)	1 bit	CWTU	1.003 enable

The communication object is used to enable the automatic operation of ventilation system. After the bus is reset or programmed, the automatic operation is not enabled by default. Turn off the machine and manually adjust the fan speed. The scene can exit the automatic operation.

No.	Name	Object function	Length	Flag	Data type
172	Page x-Ventilation	CO2 (receive)	2 bytes	CWTU	9.008 parts/million (ppm) 7.001 pulses

The communication object is used to receive the input of the CO_2 value and get the corresponding value from the bus to be updated to the display in ppm. Range: 0...4000 ppm If the control value of the automatic operation is CO_2, the ventilation system can be set to automatically adjust the fan speed according to the concentration of CO_2. The data type of the object is set by the parameter.

No.	Name	Object function	Length	Flag	Data type
173	Page x-Ventilation	PM2.5 (receive)	2 bytes	CWTU	9.008 parts/million (ppm) 7.001 pulses

The communication object is used to receive the input of PM2.5 value and get the corresponding value from the bus to be updated to display in ug/m3. Range: 0...999 ug/m^3 If the control value of the automatic operation is PM2.5, the ventilation system can be set to automatically adjust the fan speed according to the concentration of PM2.5. The data type of the object is set by the parameter.

No.	Name	Object function	Length	Flag	Data type
174	Page x-Ventilation	Scene (receive)	1 byte	CW	18.001 scene control

The communication object is used to recall the scene control of the ventilation system. The parameter is set to 1...64, and the actual corresponding telegram value is 0...63.

3.3.7.1 "Auto Operation" parameters

CO₂

PM2.5

Note   The following parameters are visible when "Auto Operation (Demand based ventilation)" is enabled.

| Name	Description	Range
Object value - activate/exit auto operation	Sets the telegram value to active automatic operation.	0=Activated/1=exit 1=Activated/0=exit
Control via	The source of the control value is used to set the automatic operation.	PM2.5 CO₂
Cycle time for polling of external value [0...255]	It's used to determine the interval of sending the read request for the remote sensor value from the device.	0...255 min
The default speed when remote sensor error	This is used to set the default fan speed when there is failure of reading the remote sensor value. **Note**: If there is no response when reading the remote sensor value, it is considered as external sensor failure.	Off Low (default) Medium High
CO₂		
⎧ Object datatype of CO2	This is used to determine the data types of CO₂. The selection is based on the docking CO₂ sensor data type.	Value in ppm (DPT_7.001) Float value in ppm (DPT_9.008)
⎨ Threshold for fan speed: from Off to Low	Defines thresholds for off-fan and low-level fan speeds If the control value is greater than or equal to the threshold set by this parameter, the low-level fan speed is on; if the remote sensor value is less than the threshold, the fan is turned off.	1...4000 ppm (default: 800 ppm)
⎩ ...		

Name		Description	Range
	Threshold for fan speed: from Low to Medium	Defines the threshold for switching the fan speed to the middle fan speed, if the control value is greater than or equal to the threshold set by this parameter, then the middle fan speed is running.	1...4000 ppm (default: 1500 ppm)
	Threshold for fan speed: from Medium to High	Defines the threshold of switching fan speed to high fan speed, if the control value is greater than or equal to the threshold set by this parameter, the high fan speed is running.	1...4000 ppm (default: 2000 ppm)
		The controller evaluates the threshold in ascending order. First check →OFF <->low fan speed threshold →low fan speed <->medium fan speed →medium fan speed <->high fan speed.	
		The correctness of functional execution is guaranteed only in this case: The threshold of OFF <-> low fan speed is lower than that of low fan speed <-> medium fan speed, and the threshold of low fan speed <-> medium fan speed is lower than that of medium fan speed <-> high fan speed.	
	Hysteresis of threshold value in +/-[100...400]	Sets the hysteresis value (dead band) of the threshold can avoid the unnecessary action of the fan when the control value fluctuates near the threshold. *	100...400 ppm
PM2.5			
	Object datatype of PM2.5	This is used to determine the data types of PM2.5. The selection is based on the docking PM2.5 sensor data type.	Value in ug/m3 (DPT_7.001) Float value in ug/m3 (DPT_9.030)
	Threshold for fan speed: from Low to Medium	Defines thresholds for off-fan and low-level fan speeds	1...999 µg/m^3
		If the control value is greater than or equal to the threshold set by this parameter, the low-level fan speed is on; if the remote sensor value is less than the threshold, the fan is turned off.	
	Threshold for fan speed: from Low to Medium	Defines the threshold for switching the fan speed to the middle fan speed. If the control value is greater than or equal to the threshold set by this parameter, then the middle fan speed is running.	1...999 µg/m^3
	Threshold for fan speed: from Medium to High	Defines the threshold of switching fan speed to high fan speed, if the control value is greater than or equal to the threshold set by this parameter, the high fan speed is running.	1...999 µg/m^3
		The controller evaluates the threshold in ascending order. First check →OFF <->low fan speed threshold →low fan speed <->medium fan speed →medium fan speed <->high fan speed.	
		The correctness of functional execution is guaranteed only in this case: The threshold of OFF <-> low fan speed is lower than that of low fan speed <-> medium fan speed, and the threshold of low fan speed <-> medium fan speed is lower than that of medium fan speed <-> high fan speed.	
	Hysteresis of threshold value in +/-[10...30]	Sets the hysteresis value (dead band) of the threshold can avoid the unnecessary action of the fan when the control value fluctuates near the threshold.	10...30 µg/m^3
Min. running time before fan speed switching [s]		Defines the residence time of the fan from the current fan speed to a higher fan speed or lower fan speed, that is, the minimum time for a fan speed operation.	0...65535 s
		If user needs to switch to another fan speed, you need to wait for this period of time before switching. If the current fan speed has been running long enough, the fan speed can be changed quickly.	

* For example, it's controlled via PM2.5. The hysteresis is 10 and the threshold is 35, then the upper limit threshold is 45 (Threshold value+Hysteresis value) and the lower limit threshold is 25 (Threshold value-Hysteresis value). When the control value is between 25 ...45, the action of the fan is not activated, and the previous

state is maintained. Only less than 25 or greater than or equal to 45 changes the running state of the fan. As shown in the following figure:
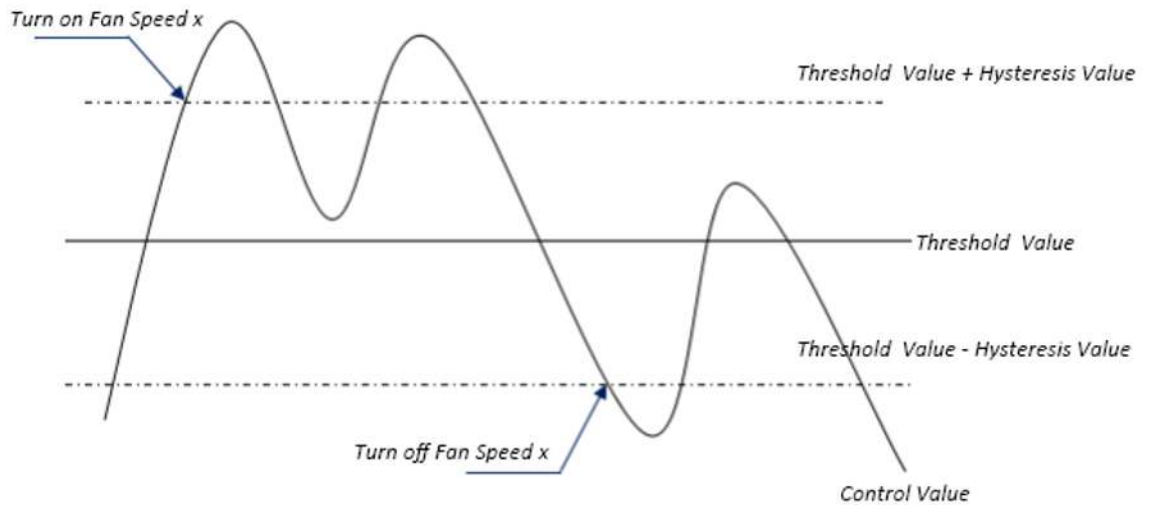
Note: When hysteresis is enabled, if the threshold overlap occurs, the fan's action is specified as follows:

1) Hysteresis determines the control point where Fan speed conversion occurs;

2) If Fan speed conversion occurs, the new fan speed is determined by the control value and the threshold value, irrespective of hysteresis

Example 1

Take PM2.5 as an example:

- OFF <-> Low fan speed threshold value is 35
- Low fan speed <->Medium fan speed threshold value is 55
- The medium fan speed <-> High fan speed threshold value is 75
- Hysteresis value is 25

The fan speed of the fan turbine increases from OFF: The fan OFF state changes at a control value of 60 (≥25+35), and the new fan speed is the mid-fan speed (because 60 is between 55 and 75, irrespective of hysteresis at this time), so the low fan speed is ignored;

The behavior of the fan speed when descending from a high fan speed: The fan's high fan speed changes at a control value of 50 (<75-25), and the new fan speed is low fan speed (because 50 is between 35 and 55, irrespective of hysteresis), so the medium fan speed is ignored.

Example 2

Take PM2.5 as an example

- OFF <-> Low fan speed threshold value is 20
- Low fan speed <->Medium fan speed threshold value is 40
- The medium fan speed <-> High fan speed threshold value is 70
- Hysteresis value is 10

When fan speed is increasing from OFF: The low fan speed is turned on when the control value is 30 (≥20+10). When the control value 41 is received, the new speed is at medium (because the hysteresis is ignored when the value 41 is between 40 and 70), therefore the low speed is ignored. When the control value 39 is received, the new speed is at low (because the hysteresis is ignored when the value 39 is between 20 and 40)

When Fan Speed decreasing from high: The high speed is turned on when the control value is 60 (<70-10) When the control value 39 is received, the new speed is at low (because the hysteresis is ignored when the value 39 is between 20 and 40), therefore the medium speed is ignored.

3) When the control value is 0, the fan is off at any circumstances.

3.3.8 "Page x - Air Quality display" parameters and communication objects

Parameters

Assign "Page x" as single function –"Air Quality Display" page.

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [➜ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	This is used to configure the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send); General Temp. Control; Enhanced Floor Heating; VRF Interface & Operation; Ventilation System; Air Quality Display; Energy Metering Display; RGB Dimming; Background Music.
Display item 1...Display item 4	Selects up to 4 items for display out of the list. All values are from bus.	Disable Temperature Humidity PM2.5 PM10 CO2 VOC AQI Brightness Windspeed
Cycle time for polling of external value [5...255]	Determines the period in minutes to request the value over bus	5...255

Name	Description	Range
Object datatype of VOC	Sets the data type of VOC	Value in ug/m3 (DPT_7.001)
		Float value in ug/m3 (DPT_9.030)
		Float value in ppm (DPT_9.008)
Object datatype of PM2.5	Sets the data type of PM2.5	Value in ug/m3 (DPT_7.001)
		Float value in ug/m3 (DPT_9.030)
Object datatype of PM10	Sets the data type of PM10	Value in ug/m3 (DPT_7.001)
		Float value in ug/m3 (DPT_9.030)
Object datatype of Brightness	Sets the data type of brightness	Value in lux (DPT_7.013)
		Float value in lux (DPT_9.004)

Communication objects

Number * Name		Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-Air Quality (receive)	AQI (receive)			2 bytes	C	-	W	T	U	pulses	Low
162	Page 6-Air Quality (receive)	PM2.5 (receive)			2 bytes	C	-	W	T	U	pulses	Low
163	Page 6-Air Quality (receive)	PM10 (receive)			2 bytes	C	-	W	T	U	pulses	Low
164	Page 6-Air Quality (receive)	Temperature (receive)			2 bytes	C	-	W	T	U	temperature (°C)	Low
165	Page 6-Air Quality (receive)	Humidity (receive)			2 bytes	C	-	W	T	U	humidity (%)	Low
166	Page 6-Air Quality (receive)	VOC (receive)			2 bytes	C	-	W	T	U	pulses	Low
167	Page 6-Air Quality (receive)	CO2 (receive)			2 bytes	C	-	W	T	U	parts/million (ppm)	Low
168	Page 6-Air Quality (receive)	Brightness (receive)			2 bytes	C	-	W	T	U	lux (Lux)	Low
169	Page 6-Air Quality (receive)	Windspeed (receive)			2 bytes	C	-	W	T	U	speed (m/s)	Low
162	Page 6-Air Quality (receive)	PM2.5 (receive)			2 bytes	C	-	W	T	U	concentration (µg/m³)	Low
163	Page 6-Air Quality (receive)	PM10 (receive)			2 bytes	C	-	W	T	U	concentration (µg/m³)	Low
166	Page 6-Air Quality (receive)	VOC (receive)			2 bytes	C	-	W	T	U	concentration (µg/m³)	Low
166	Page 6-Air Quality (receive)	VOC (receive)			2 bytes	C	-	W	T	U	parts/million (ppm)	Low
168	Page 6-Air Quality (receive)	Brightness (receive)			2 bytes	C	-	W	T	U	lux (Lux)	Low

Note   Page number x range: 1...15

No.	Name	Object function	Length	Flag	Data type
161	Page x-Air Quality (receive)	AQI (receive)	2 bytes	CWTU	7.001 pulses
The communication object is used to receive the input of AQI value and update the corresponding value from the bus to display. Range : 0...500					
162	Page x-Air Quality (receive)	PM2.5 (receive)	2 bytes	CWTU	7.001 pulses 9.008 parts/million (ppm)
The communication object is used to receive the input of PM2.5 value and get the corresponding value from the bus to be updated to display in µg/m³. Range: 0...999ug/m³, the data type of the object is set by the parameter.					
163	Page x-Air Quality (receive)	PM10 (receive)	2 bytes	CWTU	7.001 pulses 9.008 parts/million (ppm)
This communication object is used to receive the input of pm10 value, get the corresponding value update to display from bus, the unit is µg/m³. Range:0...999 ug/m³, the data type of the object is set by the parameter.					
164	Page x-Air Quality (receive)	temperature (receive)	2 bytes	CWTU	9.001 temperature (°C)
The communication object is used to receive temperature measurements sent from the temperature sensor on the bus. Range: -40...40 °C					
165	Page x-Air Quality (receive)	humidity (receive)	2 bytes	CWTU	9.007 humidity (%)
The communication object is used to receive a humidity measurement sent from a humidity sensor on a bus. Range : 0...100 %					

No.	Name	Object function	Length	Flag	Data type
166	Page x-Air Quality (receive)	VOC (receive)	2 bytes	CWTU	7.001 pulses 9.008 parts/million (ppm) 9.030 concentration (ug/m³)
The communication object is used to receive the input of the VOC value and get the corresponding value from the bus to be updated to the display in mg/m3.Range: 0...9.99 mg/m³, the data type of the object is set by the parameter. When the object data type is selected for 7.001 pulses, the percentile ratio is reduced on the basis of the DPT 7.001 pulses, e.g., the receiving value is 5000 ug/m3 and the actual display value is 5.00 mg/m³.					
167	Page x-Air Quality (receive)	CO2 (receive)	2 bytes	CWTU	9.008 parts/million (ppm)
The communication object is used to receive the input of the CO₂ value and get the corresponding value from the bus to be updated to the display in ppm. Range:0...4000 ppm					
168	Page x-Air Quality (receive)	Brightness (receive)	2 bytes	CWTU	7.013 brightness (lux) 9.004 lux (Lux)
The communication object is used to receive the input of the brightness value and get the corresponding value from the bus to be updated to the display in lux. Range:0...5000 lux. The data type of the object is set by the parameter.					
169	Page x-Air Quality (receive)	Windspeed (receive)	2 bytes	CWTU	9.005 speed (m/s)
The communication object is used to receive the input of the wind speed value and get the corresponding value from the bus to be updated to the display in m/s. Range:0...50 m/s					

3.3.9   "Page x - Energy Metering Display" parameters and communication objects

Parameters

Assign "Page x" as single function –"Energy Metering Display" page.

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [➜ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	This is to configure the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send); General Temp. Control; Enhanced Floor Heating; VRF Interface & Operation; Ventilation System; Air Quality Display; Energy Metering Display; RGB Dimming; Background Music.
No. of Energy meters used	Sets the number of energy metering.	1...8
Energy Meter 1...Energy Meter 8	Energy Meter name	-
Description	Description of the energy display item. **Note**: Up to 18 characters can be keyed in and up to 12 characters can be displayed (6 characters for Chinese, 9 characters for Russian or Greek).	18byte text
Data type of display value	Sets the data type of energy metering display.	Value in mA (DPT 7.012) Float value in mA (DPT 9.021) Float value in A (DPT 14.019) Float value in mV (DPT 9.020) Float value in V (DPT 14.027) Float value in W (DPT 14.056) Float value in kW (DPT 9.024) Value in Wh (DPT 13.010) Value in kWh (DPT 13.013)
Cycle time for polling of external value [5...255]	Sets the time interval in minutes that the device sends the reading request to the external metering actuator.	5...255

Communication objects

Note   Page number x range: 1...15, energy meter number range 1...8

No.	Name	Object function	Length	Flag	Data type
161	Page x-Energy Meter 1	Current in mA (DPT 7.012)	2 bytes	CWTU	7.012 current (mA)
The communication object is used to receive the current value from the bus and update it to the screen display. The display range is 0...65535 mA, and the resolution is 1 mA.					
162	Pagex-Energy Meter 2	Current in mA (DPT 9.021)	2 bytes	CWTU	9.021 current (mA)
The communication object is used to receive the current value from the bus and update it to the screen display. The display range is -670760...670760 mA, and the resolution is 0.01 mA.					
163	Pagex-Energy Meter 3	Current in A (DPT 14.019)	4 bytes	CWTU	14.019 electric current (A)
The communication object is used to receive the current value from the bus and update it to the screen display. The display range is -99999999.9...99999999.9 A, and the resolution is 0.1 A.					
164	Pagex-Energy Meter 4	Voltage in mV (DPT 9.020)	2 bytes	CWTU	9.020 voltage (mV)
The communication object is used to receive voltage values from the bus and update them to the screen display. The display range is-670760mV...670760 mV, and the resolution is 0.01 mV.					
165	Pagex-Energy Meter 5	Voltage in V (DPT 14.027)	4 bytes	CWTU	14.027 electric potential (V)
The communication object is used to receive voltage values from the bus and update them to the screen display. The display range is : -99999999.9...99999999.9 V, and the resolution is 0.1 V.					
166	Pagex-Energy Meter 6	Power in W (DPT 14.056)	4 bytes	CWTU	14.056 power (W)
The communication object is used to receive the power values from the bus and update them to the screen display. The display range is-99999999.9... 99999999.9 W, and the resolution is 0.1 W.					
167	Pagex-Energy Meter 7	Power in kW (DPT 9.024)	2 bytes	CWTU	9.024 power (kW)
The communication object is used to receive the power values from the bus and update them to the screen display. The display range is-670760...670760 kW, and the resolution is 0.01 kW.					
168	Pagex-Energy Meter 8	Active energy in Wh (DPT 13.010)	4 bytes	CWTU	13.010 active energy (Wh)
The communication object is used to receive the electrical values from the bus and update them to the screen display. The display range is : -2147483648...2147483647 Wh, and the resolution is 1 Wh.					
193	Page x-Energy Meter 1	Active energy in kWh (DPT 13.013)	4 bytes	CWTU	13.013 active energy (kWh)
The communication object is used to receive the electrical values from the bus and update them to the screen display. The display range is : -2147483648...2147483647 kWh, and the resolution is 1 kWh.					

3.3.10 "Page x - RGB Dimming" parameters and communication objects

Parameters

Assign "Page x" as single function –"RGB Dimming" page.

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [➜ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	This is used to configure the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send); General Temp. Control; Enhanced Floor Heating; VRF Interface & Operation; Ventilation System; Air Quality Display; Energy Metering Display; RGB Dimming; Background Music.
RGB strip type	Sets the RGB strip type **Note**: R: red; G: green; B: blue; W: white	RGB RGBW RGBW+Color Temperature Brightness+Color Temperature
Data type	Sets the object type of RGB or RGBW.	1X3byte 3X1byte 1X6byte 4X1byte

Communication objects

RGB & RGBW

No.	Name	Object function	Length	Flag	Data type
161	Page x-RGB Dimming	Red dimming value RGB dimming value	1 byte 3 bytes	CT	5.001 percentage (0...100%) 232.600 RGB value 3x (0...255)

1 byte: The communication object is used to send the brightness value of the control R (red) channel to the bus. Telegram value : 0...100 %

3 bytes: The communication object is visible when you select 1x3byte for the RGB object type, and is used to send the brightness value of the RGB three-color lamp. 3-Byte Code for RGB Dimming Object Data Type: U8 U8 U8, as follows:

		3_{MSB} R UUUUUUUU	2 G UUUUUUUU	1_{LSB} B UUUUUUUU	

R: red dimming value; G: green dimming value; B: blue dimming value.

162	Page x-RGB Dimming	Green dimming value	1 byte	CT	5.001 percentage (0...100%)

The communication object is used to send the brightness value of the control G (green) channel to the bus. Telegram value : 0...100 %

163	Page x-RGB Dimming	Blue dimming value	1 byte	CT	5.001 percentage (0...100%)

The communication object is used to send the brightness value of the control B (blue) channel to the bus. Telegram value : 0...100 %

RGBW+Color Temperature

No.	Name	Object function	Length	Flag	Data type
161	Page x-RGB Dimming	Red dimming value RGBW dimming value	1 byte 6 bytes	CT	5.001 percentage (0...100%) 251.600 RGB value 4x (0...255)

1 byte: The communication object is used to send the brightness value of the control R (red) channel to the bus. Telegram value : 0...100 %

6 bytes: The communication object is visible when you select 1x6byte on the RGBW object type, and is used to send the brightness value of the RGBW four-color lamp. Encoding of the data type of the 6-byte RGBW dimming object: U8 U8 U8 U8 R8 R4 B4, as follows:

6_{MSB} R UUUUUUUU	5 G UUUUU UUU	4 B UUUUU UUU	3 W UUUUUUUU	2 Reserve 00000000	1_{LSB} r r r r mR mG mB mW 0000BBBB

R: red dimming value; G: green dimming value; B: blue dimming value; W: white dimming value; mR: determines whether the red dimming value is valid, 0 = invalid, 1 = valid; mG: determines whether the green dimming value is valid, 0 = invalid, 1 = valid; mB: determines whether the blue dimming value is valid, 0 = invalid, 1 = valid; mW: Determines whether the white dimming value is valid,0 = invalid,1 =valid.

162	Page x-RGB Dimming	Green dimming value	1 byte	CT	5.001 percentage (0...100%)

The communication object is used to send the brightness value of the control G (green) channel to the bus. Telegram value : 0...100 %

No.	Name	Object function	Length	Flag	Data type
163	Page x-RGB Dimming	Blue dimming value	1 byte	CT	5.001 percentage (0...100%)
The communication object is used to send the brightness value of the control B (blue) channel to the bus. Telegram value : 0...100 %					
164	Page x-RGB Dimming	White dimming value	1 byte	CWT	5.001 percentage (0...100%)
The communication object is used to send the brightness value of the control W (white) channel to the bus, and the brightness feedback can also be received. Telegram value : 0...100 %					
165	Page x-RGB Dimming	Color temperature setting & status	2 bytes	CWT	7.600 absolute color temperature (K)
The communication object is used to send color temperature control telegram to bus. Telegram value : 1000...10000K					

Brightness+Color Temperature

Number ▲	Name	Object Function	Description	Gr.	Length	C	R	W	T	U	Data Type	Priority
‡164	Page 6-RGB Dimming	Brightness setting & status			1 byte	C	-	W	T	-	percentage (0..100%)	Low
‡165	Page 6-RGB Dimming	Color Temperaturer setting & status			2 bytes	C	-	W	T	-	absolute colour temperature (K)	Low

No.	Name	Object function	Length	Flag	Data type
164	Page x-RGB Dimming	Brightness setting & status	1 byte	CWT	5.001 percentage (0...100%)
The communication object is used to send the brightness value to the bus or to receive the brightness feedback. Telegram value : 0...100 %					
165	Page x-RGB Dimming	Color temperature setting & status	2 bytes	CWT	7.600 absolute color temperature (K)
The communication object is used to send color temperature control telegram to bus. Telegram value : 1000...10000K					

3.3.11 "Page x - Background Music" parameters and communication objects

Parameters

Assign "Page x" as single function –"Background Music" page.

When function is enabled, the objects for background music control are visible, such as Off/On, play/pause, volume, previous song/next song, play mode, music source, etc. The music could be source from USB/SD/AUX/FM/BT. For some of the music source, a gateway is needed.

General		Description / Headline of the page	Page 6
− Home page		Page function	Background Music ▼
		Object value: Power On/ Off	Off=0 / On=1
Home page 1		Object value: Play/ Pause	Pause=0 / Play=1
Home page 2		Object value: Song Selection	Previous=0 / Next=1
− Function page		Object value: Volume	Volume-=0 / Volume+=1
		Play mode settings	
Page settings		One-repeat	0
Page 1		Play randomly	1
Page 6		Loop Play	2
+ Timer function		Play sequentially	3
		Status: One-repeat	0
+ Event Group function		Status: Play randomly	1
+ Logic function		Status: Loop Play	2
		Status: Play sequentially	3
		Music source settings	
		USB	0
		SD card	1
		AUX	2
		Radio FM	3
		BT (blue tooth)	4
		Status: USB	0
		Status: SD card	1
		Status: AUX	2
		Status: Radio FM	3
		Status: BT	4

Name	Description	Range
Description/ Headline of the page	Names the "Function page x". **Note**: • It supports multiple languages. In order to display it properly on screen, the "Codepage" should be set as "Unicode (UTF-8)". Refer to **Language in display** in Parameters and communication objects [→ 32]. • Maximum 12 characters displayed for upper case letter and 15 characters displayed for lower case letter, but only 5 characters for Chinese, 7 characters for Russian or Greek	15byte text
Page function	This is to configure the type of this function page. **Note**: Page 1...5 can only be multifunction, while page 6...15 can be either multifunction or single functions.	Multifunction (Lighting/Blind/Scene/Value send); General Temp. Control; Enhanced Floor Heating; VRF Interface & Operation; Ventilation System; Air Quality Display; Energy Metering Display; RGB Dimming; Background Music.
Object value: Power On/ Off	This parameter is used to select power on or off.	off=0 on=1
Object value: Play/ Pause	This parameter is used to select play or pause.	Pause=0 Play=1
Object value: Song Selection	This parameter is used to change the song selection.	Previous=0 Next=1
Object value: Volume	This parameter is used to change the volume.	Volume-=0 Volume+=1
Play mode settings		0…255
One- repeat	The parameters are used to define the send value of related play mode to bus.	0…255
Play randomly		0…255
Loop Play		0…255
Play sequentially		0…255
Status: One-repeat	The parameters are used to define the feedback value of related play mode from bus.	0…255
Status: Play randomly		0…255
Status: Loop Play		0…255
Status: Play sequentially		0…255
Music source settings		0…255
USB	The parameters are used to define the send value of music source to bus.	0…255
SD card		0…255
AUX		0…255
Radio FM		0…255
BT (blue tooth)		0…255
Status: USB	The parameters are used to define the feedback value of music source from bus.	0…255
Status: SD card		0…255
Status: AUX		0…255
Status: Radio FM		0…255
Status: BT		0…255

Communication objects

Page number x range: 1...15

No.	Name	Object function	Length	Flag	Data type
161	Page x-BgMusic	Power On/Off (receive/send)	1 bit	CWTU	1.001 switch
The communication object is used to send the background music on / off controlling telegram to the bus, to control the power of the background music module, and to receive feedback from the switch status of the background music on the bus. Telegram value: 0——Off 1——On					
162	Page x-BgMusic	Play/Pause (receive/send)	1 bit	CWTU	1.010 start/stop
The communication object is used to play/stop the music in the background music module and can also receive status feedback. Telegram value: 0——Pause playing music 1——Play music					
163	Page x-BgMusic	Next song/Previous song (send)	1 bit	CT	1.007 step
The communication object is used to switch the playing song of the background music module to the previous song / the next song. Telegram value: 0——Play the previous song 1——Play the next song					
164	Page x-BgMusic	Volume+/Volume- (send)	1 bit	CT	1.007 step
The communication object is used to adjust the volume of the background music module. Telegram value: 0——Decrease volume 1——Increase volume					
165	Page x-BgMusic	Play mode (send)	1 byte	CT	5.010 counter pluses (0...255)
The communication object is used to send the control telegram of the background music playing mode, and the telegram of different mode is preset by the parameter.					
166	Page x-BgMusic	Status play mode (receive)	1 byte	CWTU	5.010 counter pluses (0...255)
The communication object is used to receive the status feedback telegram of the background music playing mode, and the received telegram needs to be the telegram specified by the parameter to update the display status on the screen.					
167	Page x-BgMusic	Music source (send)	1 byte	CT	5.010 counter pluses (0...255)
The communication object is used to send the telegram selected by the background music sound source, and the telegram of different sound source is preset by the parameter.					
168	Page x-BgMusic	Status music source (receive)	1 byte	CWTU	5.010 counter pluses (0...255)
The communication object is used to receive the feedback telegram of the background music source status, and the received telegram must be the telegram specified by the parameter so that to update the display status.					

3.4 "Timer function" interface

3.4.1 "Timer function" parameters

Name	Description	Range
Timer function	This is used to set timer function.	Enable Disable
Timer 1...Timer 5	If Timer function is enabled, a separate page timer options appear. You can set the timer function that is used for each specific timer.	Enable Disable

3.4.2 "Time Function x" parameters and communication objects

Parameters

Name	Description	Range
Description of timer function	Names this function. Totally up to 12 characters can be input (max. six Chinese characters).	-
Data type of timer function	This is used to select the data type of the value sent when it reaches to the trigger moment of timer x.	1bit [on/off] 1byte unsigned value 1byte [scene control] 2byte unsigned value
Output value: On / Off	This is used to set the telegram value sent when it reaches the trigger moment of timer x. The value range is determined upon the data type selected (previous parameter).	On Off

Name	Description	Range
Timer disable function	This is used to determine whether to enable or disable time function via objects and the trigger value of enabling/disabling the function.	Disable disable=0/enable disable=1/enable
Weekly time configuration	Triggers moment of timer x.	Monday...Sunday
Monday...Sunday	Configures the day of a week to enable timer x.	Enable Disable
The following parameters are visible when "Enable" is selected.		
Hours	Configures the specific time of timer x.	0...23
Minutes		0...59

Communication objects

	Number *	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
	481	Timer 1	On/Off			1 bit	C	-	-	T	-	switch	Low
	482	Timer 1	Disable/Enable			1 bit	C	-	W	-	-	enable	Low
	483	Timer 2	1byte unsigned value			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
	484	Timer 2	Disable/Enable			1 bit	C	-	W	-	-	enable	Low
	485	Timer 3	Scene control			1 byte	C	-	-	T	-	scene number	Low
	486	Timer 3	Disable/Enable			1 bit	C	-	W	-	-	enable	Low
	487	Timer 4	2byte unsigned value			2 bytes	C	-	-	T	-	pulses	Low
	488	Timer 4	Disable/Enable			1 bit	C	-	W	-	-	enable	Low
	513	Timer	Enable/Disable Monday			1 bit	C	-	W	-	-	enable	Low
	514	Timer	Enable/Disable Tuesday			1 bit	C	-	W	-	-	enable	Low
	515	Timer	Enable/Disable Wednesday			1 bit	C	-	W	-	-	enable	Low
	516	Timer	Enable/Disable Thursday			1 bit	C	-	W	-	-	enable	Low
	517	Timer	Enable/Disable Friday			1 bit	C	-	W	-	-	enable	Low
	518	Timer	Enable/Disable Saturday			1 bit	C	-	W	-	-	enable	Low
	519	Timer	Enable/Disable Sunday			1 bit	C	-	W	-	-	enable	Low

No.	Name	Object function	Length	Flag	Data type
481	Timer 1	On/Off	1 bit	CT	1.001 switch
The communication object is used to send the preset telegram value of the time function to the bus. And the time function, default value and object type are set by the parameters. A total of 16 timing (x = 16) can be set.					
482 484 486 488	Timer 1	Disable/Enable	1 bit	CW	1.003 enable
The communication objects are used to disable / enable time function x. The disable/enable telegram value is specifically defined by the parameter. When disable, time x function will be disabled.					
483	Timer 1	1byte unsigned value	1 byte	CT	5.010 counter pulses (0...255)
The communication object is used to send the preset telegram value of the time function to the bus, and the time function, default value and object type set by the parameters. The time is up to send the default telegram value to the bus. A total of 16 timing (x = 16) can be set.					
485	Timer 1	Scene control	1 byte	CT	17.001 scene number
The communication object is used to send the preset telegram value of the time function to the bus, and the time function, default value and object type by the parameters. The time is up to send the default telegram value to the bus. A total of 16 timing (x = 16) can be set.					

No.	Name	Object function	Length	Flag	Data type
487	Timer 1	2byte unsigned value	2 bytes	CT	7.001 pulses
The communication object is used to send the preset telegram value of the time function to the bus, and the time function, default value and object type set by the parameters. The time is up to send the default telegram value to the bus. A total of 16 timing (x = 16) can be set.					
513 514 515 516 517 518 519	Timer	Enable/Disable Monday Enable/Disable Tuesday Enable/Disable Wednesday Enable/Disable Thursday Enable/Disable Friday Enable/Disable Saturday Enable/Disable Sunday	1 bit	CW	1.003 enable
The communication objects are used to enable or disable the cycle timer via bus, i.e., to enable or disable the timing of a day of the week via bus.					

3.5 "Event Group function" interface

3.5.1 "Event Group Function" parameters and communication objects
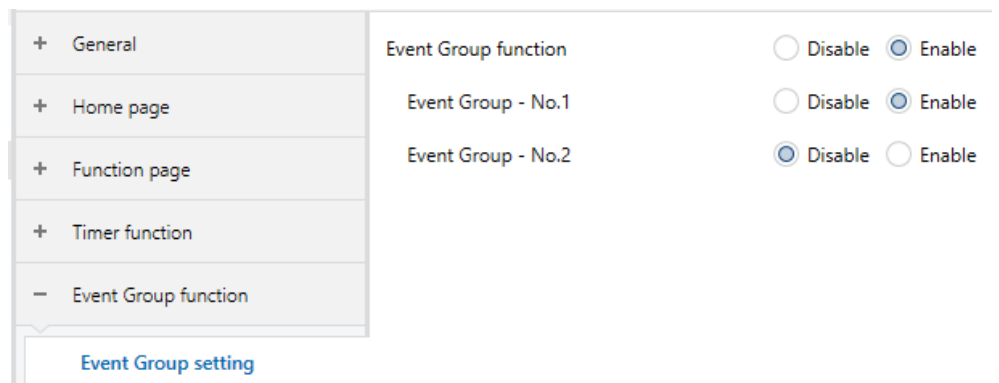
Parameters

Parameter setting "Event Group setting" is used to define and process event tasks. An event opening can trigger the sending of several telegrams on the bus, open various functions and make various settings concurrently. Totally up to 8 event groups can be configured. For each group, there are up to 8 outputs per event group and 8 scenes to be triggered per output. They are all configurable. The event group also can be recalled by other devices from bus.

Name	Description	Range
Event Group function	This is used to determine whether Event Group x is enabled or disabled.	-
Event Group - NO. x	When Event Group - NO. x is enabled, then 8 outputs are visible.	Disable Enable

Communication objects

No.	Name	Object function	Length	Flag	Data type
520	Event	Event recall	1 byte	CW	17.001 scene number
This communication object triggers each output in the event group to send a specific value to the bus by recalling the scene number. Telegram: 0…63					
521...528	Event Group - NO.1...Event Group - NO.8	Sub event output 1...Sub event output 8	1bit 1byte 2byte	CT	1.001 switch 5.010 counter pulses (0...255) 7.001 pulses
When a scene is recalled, the communication object is used to send the corresponding output value of the scene to the bus. If the output is not set to this scene, it is not sent. A total of 8 event groups can be set up, with 8 outputs per group.					

3.5.2   "Gx:Output y Function" parameters

Name	Description	Range
Data type of Output 1	This is used to define the object type of Output y of Event Group x. x: the number of Event Group, x=1...8 y: the number of Output, y=1…8	1bit 1byte 2byte
1: Trigger scene No. [0...64, 0=inactive]	This is used to define the scene number triggered. Up to 8 triggered scenes of each output can be configured.	0...64
Object value of Output 1[0...1]	This is used to determine the output value. The value range depends on the data type of output y.	Data type of Output 1 = 1bit: 0 / 1 Data type of Output 1 = 1byte: 0...255 Data type of Output 1 = 2byte: 0...65535
Send after [0...255]	This is used to set the time delay for sending the output value to bus.	0...255*0.1 s

3.6 "Logic function" interface

3.6.1 "Logic operations" parameters

Parameter setting "Logic operations" is for enabling the logic calculation. Totally up to 8 logic function can be configured.

- AND, OR and XOR
- Gate forwarding, it can turn one input into another output or multiple outputs
- Threshold comparator
- Conversions between different data types

Name	Description	Range
Logic-No.1...Logic-No.8	Enable or disable the logic function.	Disable Enable

3.6.2   "AND/OR/XOR" parameters and communication objects

Parameters

Name	Description	Range
Logic operation	Sets the logic operation AND/OR/XOR	-
Input a...Input h	This is used to set whether input x participates the calculation. If yes, it defines which format is used in the calculation.	Disconnected Normal Inverted
Default value	This is used to set the default value of input x.	0 1
Invert logical output	This is used to determine whether the logic calculation result is to be inverted.	No Yes
Read input value after bus recovery	This is used to set whether to send the read request to the logic input object after the bus recovery or in programming.	No Yes
Send result when	This is used to configure the condition of sending the result. **Note**: For the first logic calculation, the result is sent even if it has no change.	New input received Object value changes
Time delay of sending: base [s]	This is used to set the time delay for sending the logic result to bus. Time delay = Base [s] Factor If option "None" is selected, then there is no time delay.	None 0.1s 1s 2s 5s 10s 25s
Time delay of sending: factor [1...255]	This is used to set the time delay for sending the logic result to bus. Time delay = Base [s] Factor	1...255

Communication objects

Number ^	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input a			1 bit	C	-	W	T	U	boolean	Low
586	Logic -No.1	Input b			1 bit	C	-	W	T	U	boolean	Low
587	Logic -No.1	Input c			1 bit	C	-	W	T	U	boolean	Low
588	Logic -No.1	Input d			1 bit	C	-	W	T	U	boolean	Low
589	Logic -No.1	Input e			1 bit	C	-	W	T	U	boolean	Low
590	Logic -No.1	Input f			1 bit	C	-	W	T	U	boolean	Low
591	Logic -No.1	Input g			1 bit	C	-	W	T	U	boolean	Low
592	Logic -No.1	Input h			1 bit	C	-	W	T	U	boolean	Low
593	Logic -No.1	Logic result			1 bit	C	-	-	T	-	boolean	Low

No.	Name	Object function	Length	Flag	Data type
585...592	Logic -No.1...Logic -No.8	Input a...Input h	1 bit	CWTU	1.002 boolean
The communication objects are used to receive the value of logical input Input a...Input h.					
593	Logic -No.1...Logic -No.8	Logic result	1bit	CT	1.002 boolean
The communication object is used to send the results of logical operation.					

3.6.3   "Gate forwarding" parameters and communication objects

Parameters

General	Logic operation	Gate forwarding
Home page	Date type of Input/Output object	1bit
Function page	Scene No. to be forwarded at startup [0...64, 0=inactive]	0
Timer function	1: Gate trigger scene No. [1...64, 0=inactive]	0
Event Group function	Define Output for Input A	Output A
Logic function	Define Output for Input B	Output B
Logic operations	Define Output for Input C	Output C
Logic -No.1	Define Output for Input D	Output D
	2: Gate trigger scene No. [0...64, 0=inactive]	0
	Define Output for Input A	Output A
	Define Output for Input B	Output B
	Define Output for Input C	Output C
	Define Output for Input D	Output D

Name	Description	Range
Logic operation	Sets the logic operation Gate forwarding	-
Date type of Input/Output object	This is used to set the object type of input/output.	1bit 4bit 1byte
Scene No. to be forwarded at startup [0...64, 0=inactive]	After the device is activated, by default, it triggers the initial scene/ scenario, which is forwarded by logical gate. This is configured with parameters.	0...64
1: Gate trigger scene No. [1...64, 0=inactive]	This is used to configure scene number to be triggered by gate forwarding. Up to 8 numbers of scenes can be triggered for each logic gate.	0...64
Define Output for Input A Define Output for Input B Define Output for Input C Define Output for Input D	This is used to set the output of the input X (X=A/B/C/D) after gate forwarding. According to the options, one input can be forwarded into one or more outputs. The output value equals to the input value.	Disable Output A Output B Output C Output D Output A,B Output A,C Output A,D Output A,B,C Output A,B,D Output A,C,D Output A,B,C,D Output B,C Output B,D Output C,D Output B,C,D

Communication objects

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Gate value select			1 byte	C	-	W	-	-	scene number	Low
586	Logic -No.1	Input A			1 bit	C	-	W	-	-	switch	Low
587	Logic -No.1	Input B			1 bit	C	-	W	-	-	switch	Low
588	Logic -No.1	Input C			1 bit	C	-	W	-	-	switch	Low
589	Logic -No.1	Input D			1 bit	C	-	W	-	-	switch	Low
590	Logic -No.1	Output A			1 bit	C	-	-	T	-	switch	Low
591	Logic -No.1	Output B			1 bit	C	-	-	T	-	switch	Low
592	Logic -No.1	Output C			1 bit	C	-	-	T	-	switch	Low
593	Logic -No.1	Output D			1 bit	C	-	-	T	-	switch	Low

No.	Name	Object function	Length	Flag	Data type
585	Logic -No.1...Logic -No.8	Gate value select	1 byte	CW	17.001 scene number
The communication object is used to select the scene of logical gate forwarding.					
586...589	Logic -No.1...Logic -No.8	Input A...Input D	1bit	CW	1.001 switch 3.007 Dimming control 5.010 counter pulses (0...255)
The communication object is used to receive the value of the logic gate input Input A...Input D.					
590...593	Logic -No.1...Logic -No.8	Output A...Output D	1bit	CT	1.001 switch 3.007 Dimming control 5.010 counter pulses (0...255)
The communication object is used to output the value forwarded by the logic gate. The output value is the same as the input value, but one input can be forwarded into one or more outputs, set by parameters.					

3.6.4 "Threshold comparator" parameters and communication objects

Parameters

Name	Description	Range
Logic operation	Sets the logic operation Threshold comparator	-
Data type of output value	This is used to set the data type of the threshold value.	4bit 1byte 2byte 4byte
Threshold value [0...255]	This is used to set threshold value. The value range is determined by the data type selected.	Data type of output value = 4bit: 0...15 Data type of output value = 1byte: 0...255 Data type of output value = 2byte: 0...65535 Data type of output value = 4byte: 0...4294967295
If Object value<Threshold value If Object value=Threshold value If Object value!=Threshold value If Object value>Threshold value If Object value<=Threshold value If Object value>=Threshold value	These parameters are used for setting the sending value at different scenarios between Object value and threshold value. If there is a conflict between the commands, the value sent should be the one which fulfill the last scenario. E.g.: if the parameters are set as follows: • "If Object value=Threshold value" is set to "Send value 0"; • "If Object value<=Threshold value" is set to "Send value 1" • when the object value = threshold value, then the logic result sends "1"	Do not send telegram Send value '0' Send value '1'
Send result when	This is used to set the trigger of sending the logic result. **Note**: For the first logic calculation, the result is sent even if it has no change.	New input received Object value changes
Time delay of sending: base [s]	This is used to set the time delay for sending the logic result to bus. Time delay = Base [s] Factor If option "None" is selected, then there is no time delay.	None 0.1s 1s 2s 5s 10s 25s
Time delay of sending: factor [1...255]	This is used to set the time delay for sending the logic result to bus. Time delay = Base [s] Factor	1...255

Communication objects

No.	Name	Object function	Length	Flag	Data type
585	Logic -No.1...Logic -No.8	Threshold value input	4 bit 1 byte 2 bytes 4 bytes	CWU	3.007 Dimming control 5.010 counter pulses (0...255) 7.001 pulses 12.001 counter pulses
The communication object is used as input value for threshold comparator.					
593	Logic -No.1...Logic -No.8	Logic1_Threshold result	1bit	CT	1.002 boolean
The communication object is used to send the results of logical operation. That is, the value that should be sent after the object input threshold (object 585) is compared with the setting threshold value of the device.					

3.6.5   "Format convert" parameters and communication objects

Parameters

Name	Description	Range
Logic operation	Sets the logic operation Format convert	-
Format convert	This is used to select the format convert type.	2x1Bit-->1x2Bit 8x1Bit-->1x1Byte 1x1Byte-->1x2Byte 2x1Byte-->1x2Byte 2x2Byte-->1x4Byte 1x1Byte-->8x1Bit 1x2Byte-->2x1Byte 1x4Byte-->2x2Byte 1x3Byte-->3x1Byte 3x1Byte-->1x3Byte
Send result when	This is used to set the trigger of sending the logic result. **Note**: For the first logic calculation, the result is sent even if it has no change.	New input received Object value changes

Communication objects

2×1Bit-->1×2Bit

"2x1bit --> 1x2bit" function: converts two 1bit values to one 2bit value, such as Input bit1=1, bit0=0--> Output 2bit=2

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 1bit-bit0			1 bit	C	-	W	-	U	switch	Low
586	Logic -No.1	Input 1bit-bit1			1 bit	C	-	W	-	U	switch	Low
593	Logic -No.1	Output 2bit			2 bit	C	-	-	T	-	switch control	Low

No.	Name	Object function	Length	Flag	Data type
585 586	Logic -No.1...Logic -No.8	Input 1bit-bit0 Input 1bit-bit1	1 bit	CWU	1.001 switch
The communication object is used to input a value that needs to be converted.					
593	Logic -No.1...Logic -No.8	Output 2bit	2 bit	CT	2.001 switch control
The communication object is used to output the converted value.					

8×1Bit-->1×1Byte

"8x1bit --> 1x1-byte" function: converts eight 1bit values to one 1-byte value, such as Input bit2=1, bit1=1, bit0=1, other bits are 0--> Output 1-byte=7

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 1bit-bit0			1 bit	C	-	W	-	U	switch	Low
586	Logic -No.1	Input 1bit-bit1			1 bit	C	-	W	-	U	switch	Low
587	Logic -No.1	Input 1bit-bit2			1 bit	C	-	W	-	U	switch	Low
588	Logic -No.1	Input 1bit-bit3			1 bit	C	-	W	-	U	switch	Low
589	Logic -No.1	Input 1bit-bit4			1 bit	C	-	W	-	U	switch	Low
590	Logic -No.1	Input 1bit-bit5			1 bit	C	-	W	-	U	switch	Low
591	Logic -No.1	Input 1bit-bit6			1 bit	C	-	W	-	U	switch	Low
592	Logic -No.1	Input 1bit-bit7			1 bit	C	-	W	-	U	switch	Low
593	Logic -No.1	Output 1byte			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

No.	Name	Object function	Length	Flag	Data type
585...592	Logic -No.1...Logic -No.8	Input 1bit-bit0...Input 1bit-bit7	1 bit	CWU	1.001 switch
The communication object is used to input a value that needs to be converted.					
593	Logic -No.1...Logic -No.8	Output 1byte	1 byte	CT	5.010 counter pulses (0...255)
The communication object is used to output the converted value.					

1×1Byte-->1×2Byte

"1x1-byte --> 1x2-byte" function: converts one 1-byte value to a 2-byte value, such as Input 1-byte=125--> Output 2-byte=125.Although the value remains the same, the data type of the value is different.

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 1byte			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
593	Logic -No.1	Output 2byte			2 bytes	C	-	-	T	-	pulses	Low

No.	Name	Object function	Length	Flag	Data type
585	Logic -No.1...Logic -No.8	Input 1byte	1 byte	CWU	5.010 counter pulses (0...255)
The communication object is used to input a value that needs to be converted.					
593	Logic -No.1...Logic -No.8	Output 2byte	2 bytes	CT	7.001 pulses
The communication object is used to output the converted value.					

2×1Byte–>1×2Byte

"2x1-byte --> 1x2-byte" function: converts two 1-byte values to one 2-byte value, such as Input 1-byte-low = 255 ($FF), Input 1-byte-high = 100 ($64) --> Output 2-byte = 25855 ($64 FF)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 1byte-low			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
586	Logic -No.1	Input 1byte-high			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
593	Logic -No.1	Output 2byte			2 bytes	C	-	-	T	-	pulses	Low

No.	Name	Object function	Length	Flag	Data type
585 586	Logic -No.1...Logic -No.8	Input 1byte-low Input 1byte-high	1 byte	CWU	5.010 counter pulses (0...255)
The communication object is used to input a value that needs to be converted.					
593	Logic -No.1...Logic -No.8	Output 2byte	2 bytes	CT	7.001 pulses
The communication object is used to output the converted value.					

2×2Byte–>1×4Byte

"2x2-byte --> 1x4-byte" function: converts two 2-byte values to one 4-byte value, such as Input 2-byte-low = 65530 ($FF FA), Input 2-byte-high = 32768 ($80 00)--> Output 4-byte = 2147549178 ($80 00 FF FA)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 2byte-low			2 bytes	C	-	W	-	U	pulses	Low
586	Logic -No.1	Input 2byte-high			2 bytes	C	-	W	-	U	pulses	Low
593	Logic -No.1	Output 4byte			4 bytes	C	-	-	T	-	counter pulses (unsign...	Low

No.	Name	Object function	Length	Flag	Data type
585 586	Logic -No.1...Logic -No.8	Input 2byte-low Input 2byte-high	2 bytes	CWU	7.001 pulses
The communication object is used to input a value that needs to be converted.					
593	Logic -No.1...Logic -No.8	Output 4byte	4 bytes	CT	12.001 counter pulses
The communication object is used to output the converted value.					

1×1Byte–>8×1Bit

"1x1-byte --> 8x1bit" function: converts one 1-byte value to eight 1but values, such as Input 1-byte=200 --> Output bit0=0, bit1=0, bit2=0, bit3=1, bit4=0, bit5=0, bit6=1, bit7=1

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 1byte			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
586	Logic -No.1	Output 1bit-bit0			1 bit	C	-	-	T	-	switch	Low
587	Logic -No.1	Output 1bit-bit1			1 bit	C	-	-	T	-	switch	Low
588	Logic -No.1	Output 1bit-bit2			1 bit	C	-	-	T	-	switch	Low
589	Logic -No.1	Output 1bit-bit3			1 bit	C	-	-	T	-	switch	Low
590	Logic -No.1	Output 1bit-bit4			1 bit	C	-	-	T	-	switch	Low
591	Logic -No.1	Output 1bit-bit5			1 bit	C	-	-	T	-	switch	Low
592	Logic -No.1	Output 1bit-bit6			1 bit	C	-	-	T	-	switch	Low
593	Logic -No.1	Output 1bit-bit7			1 bit	C	-	-	T	-	switch	Low

No.	Name	Object function	Length	Flag	Data type
585	Logic -No.1...Logic -No.8	Input 1byte	1 byte	CWU	5.010 counter pulses (0...255)
The communication object is used to input a value that needs to be converted.					
586...593	Logic -No.1...Logic -No.8	Output 1bit-bit0...Output 1bit-bit7	1 bit	CT	1.001 switch
The communication object is used to output the converted value.					

1×2Byte-->2×1Byte

"1x2-byte --> 2x1-byte" function: converts one 2-byte value to two 1-byte values, such as Input 2-byte = 55500 ($D8 CC) --> Output 1-byte-low = 204 ($CC), Output 1-byte-high =216 ($D8)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 2byte			2 bytes	C	-	W	-	U	pulses	Low
592	Logic -No.1	Output 1byte-low			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
593	Logic -No.1	Output 1byte-high			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

No.	Name	Object function	Length	Flag	Data type
585	Logic -No.1...Logic -No.8	Input 2byte	2 bytes	CWU	7.001 pulses
The communication object is used to input a value that needs to be converted.					
592 593	Logic -No.1...Logic -No.8	Output 1byte-low Output 1byte-high	1 byte	CT	5.010 counter pulses (0...255)
The communication object is used to output the converted value.					

1×4Byte-->2×2Byte

"1x4-byte --> 2x2-byte" function: converts one 4-byte value to two 2-byte values, such as Input 4-byte = 78009500 ($04 A6 54 9C) --> Output 2-byte-low = 21660 ($54 9C), Output 2-byte-high =1190 ($04 A6)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 4byte			4 bytes	C	-	W	-	U	counter pulses (unsign...	Low
592	Logic -No.1	Output 2byte-low			2 bytes	C	-	-	T	-	pulses	Low
593	Logic -No.1	Output 2byte-high			2 bytes	C	-	-	T	-	pulses	Low

No.	Name	Object function	Length	Flag	Data type
585	Logic -No.1...Logic -No.8	Input 4byte	4 bytes	CWU	12.001 counter pulses
The communication object is used to input a value that needs to be converted.					
592 593	Logic -No.1...Logic -No.8	Output 2byte-low Output 2byte-high	2 bytes	CT	7.001 pulses
The communication object is used to output the converted value.					

1×3Byte-->3×1Byte

"1x3-byte --> 3x1-byte" function: converts one 3-byte value to three 1-byte values, such as Input 3-byte = $78 64 C8--> Output 1-byte-low = 200 ($C8) , Output 1-byte-middle = 100 ($64) , Output 1-byte-high =120 ($78)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 3byte			3 bytes	C	-	W	-	U	RGB value 3x(0..255)	Low
591	Logic -No.1	Output 1byte-low			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
592	Logic -No.1	Output 1byte-middle			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
593	Logic -No.1	Output 1byte-high			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

No.	Name	Object function	Length	Flag	Data type
585	Logic -No.1...Logic -No.8	Input 3byte	3 bytes	CWU	232.600 RGB value 3x(0...255)
The communication object is used to input a value that needs to be converted.					
591 592 593	Logic -No.1...Logic -No.8	Output 1byte-low Output 1byte-middle Output 1byte-high	1 byte	CT	5.010 counter pulses (0...255)
The communication object is used to output the converted value.					

3×1Byte-->1×3Byte

"3x1-byte --> 1x3-byte" function: converts three 1-byte values to one 3-byte value, such as Input 1-byte-low = 150 ($96), Input 1-byte-middle = 100 ($64), Input 1-byte-high = 50 ($32)--> Output 3-byte = $32 64 96

Number * Name		Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	Logic -No.1	Input 1byte-low			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
586	Logic -No.1	Input 1byte-middle			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
587	Logic -No.1	Input 1byte-high			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
593	Logic -No.1	Output 3byte			3 bytes	C	-	-	T	-	RGB value 3x(0..255)	Low

No.	Name	Object function	Length	Flag	Data type
585 586 587	Logic -No.1...Logic -No.8	Input 1byte-low Input 1byte-middle Input 1byte-high	1 byte	CWU	5.010 counter pulses (0...255)
The communication object is used to input a value that needs to be converted.					
593	Logic -No.1...Logic -No.8	Output 3byte	3 bytes	CT	232.600 RGB value 3x(0...255)
The communication object is used to output the converted value.					

4 Icons

4.1 Functional page icons

4.1.1 Icon list for function page

Replacement ID	ETS options	Icon	Replacement ID	ETS options	Icon
0	Switch_default		0	Switch/Dim_default	
1	Send value _default		2	Scene control_default	
3	Curtain_default		4	Roller shutter_default	
5	Venetian blind_default		11	No icon, only text	No specific icon, only display text
12	Ceiling light		13	Downlight	
14	Wall light		15	Spotlight	
16	Chandelier		22	On	
23	Off		24	Occupied 1	
25	Unoccupied 1		26	Occupied 2	
27	Unoccupied 2		28	Welcome	
29	Visiting		30	Dinner	

Replacement ID	ETS options	Icon	Replacement ID	ETS options	Icon
31	Party		32	Meeting	
33	Sleeping		34	Reading	
35	Media		36	Cleaning	
37	TV		38	Audio	
39	Socket (CHN)		40	Socket (EU)	
41	Fan		42	Door lock	
43	Door access		44	Power supply	
45	Window 1		46	Window 2	
47	Alarm		48	Timer	
49	Projector		50	Multimedia	
51	Electric heating		52	Air conditioner 1	
53	Air conditioner 2		54	Fresh air	
55	Setting				

4.1.2 Icon replacement for function page via Micro SD card

Insert Micro SD card with the following settings:

1. Create a folder named **Functionicon** under the root directory in Micro SD card;
2. Put icon files in folder with the identical name of the one to be replaced.
   - All icons must be named following the naming rule below;
   - For each Icon ID number (see Icon list for function page [→ 111]), "Off" status icon is mandatory. i.e. for ID=n icons, "icon_n_a.png" is mandatory
3. Picture resolution must not exceed 80*80 with png as the suffix.

Naming rule

	icon	_1	_a	.png
Title of icon files (Fixed)				
Replacing ID No.	0...5, 12...55: Function page icons For icon list, see Icon list for function page [→ 111]			
Icon status	1. Off status 2. On status (both the bottom and icon are on) 3. On status (only the icon is on)			
Format of icon files (Fixed)				

Example: the following 3 icons are default for lighting On/ Off status and their ID=0.

To replace them, the new icons in folder **Functionicon** with following combination are accepted:

	a: Off status	b: On status	c: On status
Combination 1	icon_0_a.png	icon_0_b.png	icon_0_c.png
Combination 2	icon_0_a.png	-	icon_0_c.png
Combination 3	icon_0_a.png	icon_0_b.png	-
Combination 4	icon_0_a.png	-	-

Insert Micro SD card to upload the customized icons:

Insert Micro SD card to delete the customized icons:

1. Create a folder named **Functionicon** under the root directory in Micro SD card;
2. Do not put any icon files with correct name in folder
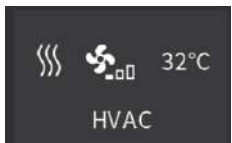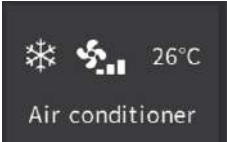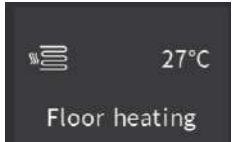
Note

- Only support SDHC card and FAT32 format;
- Only support Micro SD cards with capacity not greater than 32 GB.
- The device picture storage size is approximate 4 MB. If the total size of the valid pictures in the Micro SD card is greater than 3.8 MB, message "Invalid image, please check!" pops up.

4.2 Home page icons

4.2.1 Icon list for home page

Replacement ID	ETS options	Icon	Replacement ID	ETS options	Icon
70	Multi-function_default	▪▪ ▪▪	71	Temperature control_default e.g.	No specific icon Display current settings, such as heating /cooling, fan speed, tempera-ture
72	VRF device_default e.g.	No specific icon Display current settings, such as heating /cooling, fan speed, tempera-ture	73	Floor heating_default e.g.	No specific icon Display current settings, such as tempera-ture, floor heating valve on/off
74	Background Music_default	♫	75	Air Quality_default	✿
76	RGB dimming_default	RGB	77	Ventilation_default	✺
78	Energy display_default		91	Lighting	💡
92	Scenario		94	Shading	
100	Floor heating		101	Water heating - radiator	
106	Ventilation	✺	107	Power meter	W

Replacement ID	ETS options	Icon	Replacement ID	ETS options	Icon
108	Current monitor		109	Heating	
110	Cooling		111	Heating / Cooling	
112	Temperature		113	AV system	
114	Security		115	Bedroom 1	
116	Bedroom 2		117	Living room 1	
118	Living room 2		119	Dining room	
121	Study room		122	Gym	
123	Basement		124	Office	
125	Meeting room		126	Exhibition hall	
127	Training room		128	Warehouse	
129	Building		130	Recreation	
131	Reception				

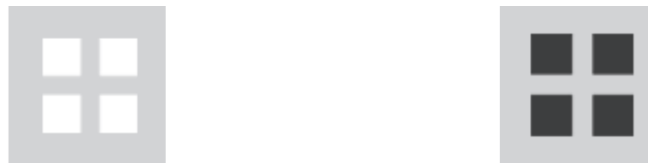## 4.2.2 Icon replacement for home page via Micro SD card

Insert Micro SD card with the following settings:

1. Create a folder named **Pageicon** under the root directory in Micro SD card;
2. Put icon files in folder with the identical name of the one to be replaced.
   - All icons must be named following the naming rule below;
   - For each Icon ID number (see Icon list for home page [→ 115]), "Off" status icon is mandatory. i.e. for ID=n icons, "icon_n_a.png" is mandatory
3. Picture resolution must not exceed 80*80 with png as the suffix.

Naming rule in Pageicon **folder**

	icon	_70	_a	.png
Title of icon files (Fixed)				
Replacing ID No.	70...78, 91...131: Home page icons For icon list, see Icon list for home page [→ 115]			
Icon status	1. Off status 2. On status (both the bottom and icon are on)			
Format of icon files (Fixed)				

Example: the following 2 icons are default for Multi-function and their ID=70.

To replace them, the new icons in folder **Pageicon** with following combination are accepted:

	a: Off status	b: On status
Combination 1	icon_70_a.png	icon_70_b.png
Combination 2	icon_70_a.png	-

Insert Micro SD card to upload the customized icons:

Insert Micro SD card to delete the customized icons:

1. Create a folder named **Pageicon** under the root directory in Micro SD card;

2. Do not put any icon files with correct name in folder

Note	• Only support SDHC card and FAT32 format;
	• Only support Micro SD cards with capacity not greater than 32 GB.
	• The device picture storage size is approximate 4 MB. If the total size of the valid pictures in the Micro SD card is greater than 3.8 MB, message "Invalid image, please check!" pops up.

5 Appendix

5.1 Cyber security disclaimer

Siemens provides a portfolio of products, solutions, systems and services that includes security functions that support the secure operation of plants, systems, machines and networks. In the field of Building Technologies, this includes building automation and control, fire safety, security management as well as physical security systems. In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art security concept. Siemens' portfolio only forms one element of such a concept.

You are responsible for preventing unauthorized access to your plants, systems, machines and networks which should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place. Additionally, Siemens' guidance on appropriate security measures should be taken into account. For additional information, please contact your Siemens sales representative or visit https://www.siemens.com/global/en/home/company/topic-areas/future-of-manufacturing/industrial-security.html.

Siemens' portfolio undergoes continuous development to make it more secure. Siemens strongly recommends that updates are applied as soon as they are available and that the latest versions are used. Use of versions that are no longer supported, and failure to apply the latest updates may increase your exposure to cyber threats. Siemens strongly recommends to comply with security advisories on the latest security threats, patches and other related measures, published, among others, under https://www.siemens.com/cert/en/cert-security-advisories.htm.