User Manual

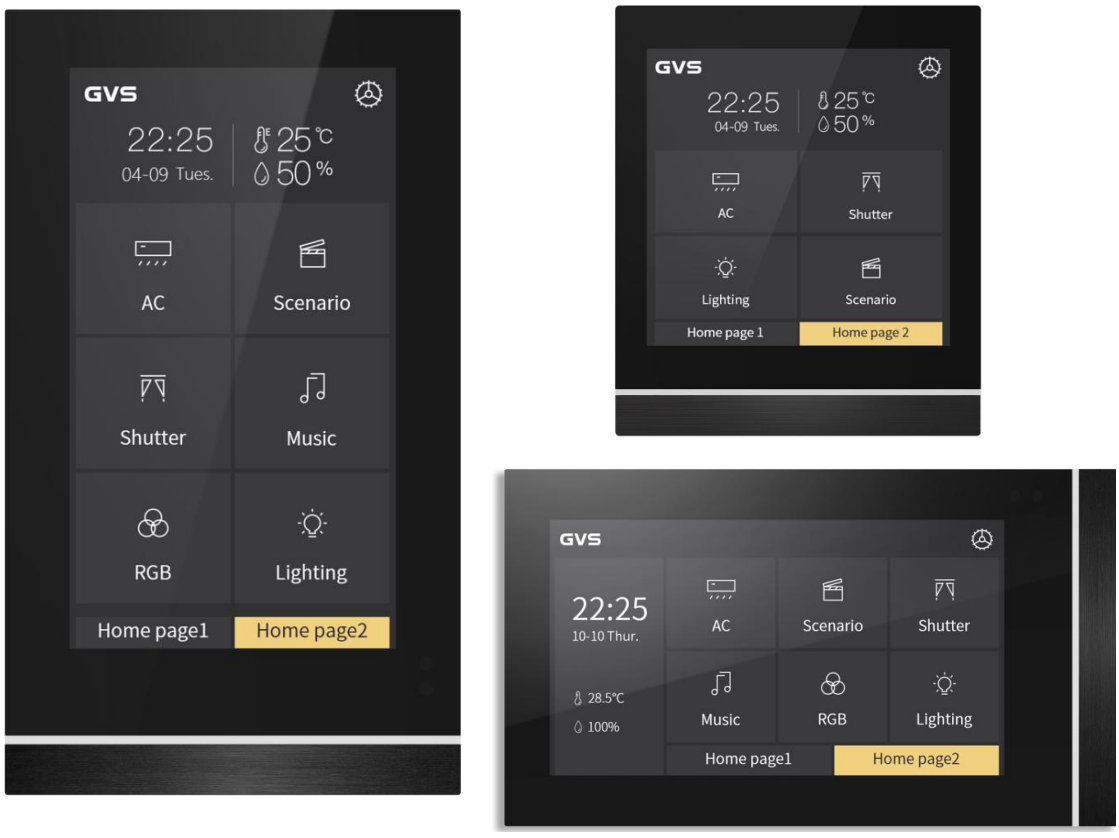
K-BUS® KNX Smart Touch V40&V50_V1.6

CHTF-4.0/15.3.2x

CHTF-5.0/15.3.2x

CHTF-5.0/15.4.2x

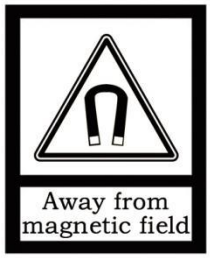
(x=1: Classic black; x=3: Starry grey)



KNX/EIB Home and Building Control System

Attentions

1. **Please keep devices away from strong magnetic field, high temperature, wet environment;**







2. **Do not fall the device to the ground or make them get hard impact;**



3. **Do not use wet cloth or volatile reagent to wipe the device;**



4. **Do not disassemble the devices.**

Focus on the treatment of the following:

(1) Under the process of software upgrade, interrupting the power supply may cause the system to fail to start;

(2) Under the process of using MicroSD card to modify the background picture, electronic photo album picture, home page icon and multifunctional page icon, the power supply may be interrupted, which may cause the system fail to start;

(3) Make sure that the MicroSD card is completely empty before the card is inserted, that is, no data with embedded system firmware is burned, otherwise the system may be damaged;

(4) If the power supply needs to be interrupted after modifying the setting information, it is recommended that the power can be cut off after 6 seconds when complete modifying, otherwise the modification may not be successful;

(5) For the V50, if the auxiliary power supply is power off when the screen is on, the screen may displ ay with a tiny flashing after the power recovery in the next time. At this case, let the device continuous ly power on for a period of time (maximum around half an hour), the screen will automatically recove r to the normal display state.

In the above (1) and (2) cases, the device need to return to the factory for maintenance, please be careful to deal with.

Contents

Chapter 1 Summary---- 1
Chapter 2 Technical Data----2
Chapter 3 Dimension and Structural Diagram---- 3
3.1 Dimension Diagram---- 3
3.1.1 CHTF-4.0/15.3.2x Dimension Diagram---- 3
3.1.2 CHTF-5.0/15.3.2x Dimension Diagram---- 3
3.1.3 CHTF-5.0/15.4.2x Dimension Diagram---- 4
3.2 Structural Diagram---- 5
3.2.1 CHTF-4.0/15.3.2x Structural Diagram----5
3.2.2 CHTF-5.0/15.3.2x Structural Diagram----6
3.2.3 CHTF-5.0/15.4.2x Structural Diagram----6
3.3 Installation and Disassembly instructions----8
3.3.1 CHTF-4.0/15.3.2x Installation and Disassembly instructions---- 8
3.3.2 CHTF-5.0/15.3.2x Installation and Disassembly instructions----10
3.3.3 CHTF-5.0/15.4.2x Installation and Disassembly instructions----13
Chapter 4 Project Design and Programming---- 15
Chapter 5 Parameter setting description in the ETS---- 18
5.1 Parameter window “General”----18
5.1.1 Parameter window “General setting”----18
5.1.2 Parameter window “Summer time setting”----25
5.1.3 Parameter window “Colorful strip setting”---- 27
5.1.4 Parameter window “Proximity setting”---- 30
5.1.5 Parameter window “Password setting”----31
5.1.6 Parameter window “General sensor”---- 33
5.2 Parameter window “Home page”---- 36
5.2.1 Parameter window “Home Page x”---- 36
5.3 Parameter window “Function Page”---- 39
5.3.1 Parameter window “Page Setting”---- 39
5.3.2 Parameter window “Page x-- Multifunction”---- 40
5.3.3 Parameter window “Page x-- HVAC”----44
5.3.4 Parameter window “Page x-- Air conditioner”---- 58
5.3.5 Parameter window “Page x-- Background Music”----65
5.3.6 Parameter window “Page x-- RGB dimming”---- 66
5.3.7 Parameter window “Page x-- Air Quality display”---- 68
5.3.8 Parameter window “Page x-- Floor heating”----70
5.3.9 Parameter window “Page x-- Ventilation System”---- 76

5.3.9.1 Px：Auto. Control---------- 80
5.3.10 Parameter window “Page x-- Energy Metering display”---------- 85
5.4 Parameter window “Time function setting”---------- 86
5.4.1 Parameter window “Time function x”---------- 87
5.5 Parameter window “Event Group function”---------- 88
5.6 Parameter window “Logic function setting”---------- 90
5.6.1 Parameter window “AND/OR/XOR”---------- 91
5.6.2 Parameter window “Gate forwarding”---------- 93
5.6.3 Parameter window “Threshold comparator”---------- 94
5.6.4 Parameter window “Format convert”---------- 96
Chapter 6 Description of Communication Object---------- 97
6.1 “General” Communication Object---------- 97
6.2 “General sensor” Communication Object---------- 99
6.3 Communication Object of Function Page---------- 100
6.3.1 “Multifunction (Lighting/Blind/Scene/Value send)” Communication Object---------- 100
6.3.2 “HVAC” Communication Object---------- 104
6.3.3 “Air conditioner” Communication Object---------- 108
6.3.4 “Background Music” Communication Object---------- 111
6.3.5 “RGB dimming” Communication Object---------- 112
6.3.6 “Air Quality display” Communication Object---------- 114
6.3.7 “Floor heating” Communication Object---------- 116
6.3.8 “Ventilation System” Communication Object---------- 117
6.3.9 “Energy Metering display” Communication Object---------- 119
6.4 “Time Function” Communication Object---------- 120
6.5 “Event Group” Communication Object---------- 121
6.6 “Logic function” Communication Object---------- 122
6.6.1 “AND/OR/XOR” Communication Object---------- 122
6.6.2 “Gate forwarding” Communication Object---------- 123
6.6.3 “Threshold comparator” Communication Object---------- 123
6.6.4 “Format convert” Communication Object---------- 124

Chapter 1 Summary

KNX Smart Touch series product, are used to display status and control a variety of KNX devices, by touching the icons in the interface to perform the preset function. Such as sending switch command, scene command, blind, Air conditioner control command to bus system, control other devices on the bus.

Compare to common button panel, KNX Smart Touch series product display pictures and makes prompt sound through LCD, and can be easily and clearly operated through the friendly interaction interface.

KNX Smart Touch series product are mainly applied in the home and building control system, wall-mounted installation, which can be mounted on a conventional 80 or 86 junction boxes. This product is not only suitable for Chinese-Standard and European-Standard, but also for American-Standard. Details for installation and removal instruction refer to section 3.3.

This manual provides specific technical information about KNX Smart Touch series product for users, as well as assembly and programming details, and explains how to use the Touch Panel by the application examples.

KNX Smart Touch series product powered from KNX bus, and need a 24-30V DC auxiliary supply voltage. It is available to assign the physical address and configure the parameters by engineering design tools ETS with .knxprod (support edition ETS5.7 or higher).

The functions of KNX Smart Touch series product are summarized as followed:

- **Color IPS, 480x854(vertical) and 854x480(horizontal) resolution for 5 inch, capacitance touch screen design(for V50)**
- **Color IPS, 480x480 resolution for 4 inch, capacitance touch screen design(for V40)**
- **With switch, dimming, blind, scene and value sending function**
- **HVAC control**
- **Air conditioner control, supported IR Split Unit and Gateway Integrate**
- **Background music control**
- **RGB, RGBW control and color-temperature adjustment**
- **Ventilation system control and floor-heating control**
- **Display air quality detected value**
- **Display energy metering value**
- **Timing function**
- **Event group functions**
- **Logic functions, support AND, OR, XOR, logic gate forwarding, threshold comparator, conversion of different data types**
- **Home-page navigation function**
- **Display time, date, temperature and humidity, output day/night signal**
- **Proximity sensor, adjustment of screen brightness, colorful strip, vibration feedback when touch**
- **Password function, screen-saver function(clock, album or disable) and panel lock function**

Chapter 2 Technical Data

Power Supply	Operating Voltage	21-30V DC, via the KNX bus
	Current consumption, bus	3.5mA/24V DC, 3.0mA/30V DC
	Power consumption, bus	<90mW
Auxiliary Power Supply	Voltage	24-30V DC
	Current	<130mA/24V DC, <105mA/30V DC (V40) <150mA/24V DC, <120mA/30V DC (V50)
	Power consumption	<3.2W (V40) <3.6W (V50)
Connections	KNX	Via bus connection terminal(red/black)
	Auxiliary power supply	KNX auxiliary power supply terminal (yellow/white)
Temperature	Operation	–5 °C ... + 45 °C
	Storage	–25 °C ... + 55 °C
	Transport	– 25 °C ... + 70 °C
Environment	Humidity	<93%,except for dewing
Proximity sensor	Max. approximately 30cm **Note: This distance is obtained based on human detection, not an obstruction.**	
Installation	Wall-mounted installation, install the metal plate onto the 80 or 86 junction box firstly, and then install the device into metal plate.	
Size	86 x 101.3 x 10.5mm （V40） 86 x 148.8 x 11.5mm (V50 vertical) 148.8 x 86 x 11.5mm (V50 horizontal) (this size is the thickness of the front panel, overall thicknesses of V40&V50 are 32.2mm, 32.5mm)	
Weight	0.2KG(V40); 0.3KG(V50)	

Chapter 3 Dimension and Structural Diagram

3.1 Dimension Diagram

3.1.1 CHTF-4.0/15.3.2x Dimension Diagram

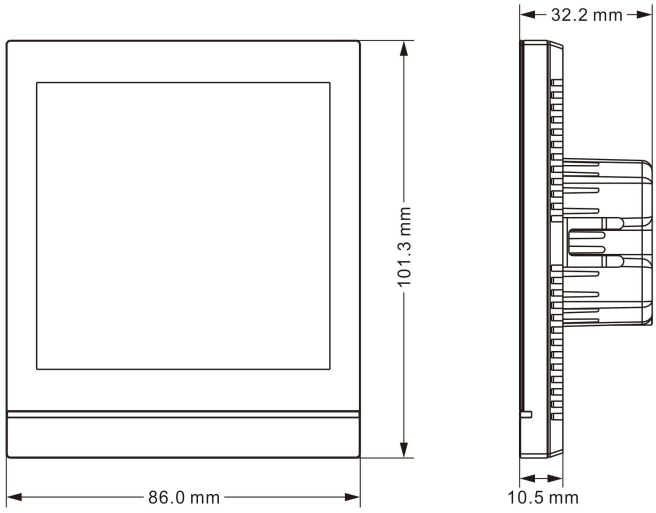


Fig. 3.1.1 Panel dimension of CHTF-4.0/15.3.2x

3.1.2 CHTF-5.0/15.3.2x Dimension Diagram

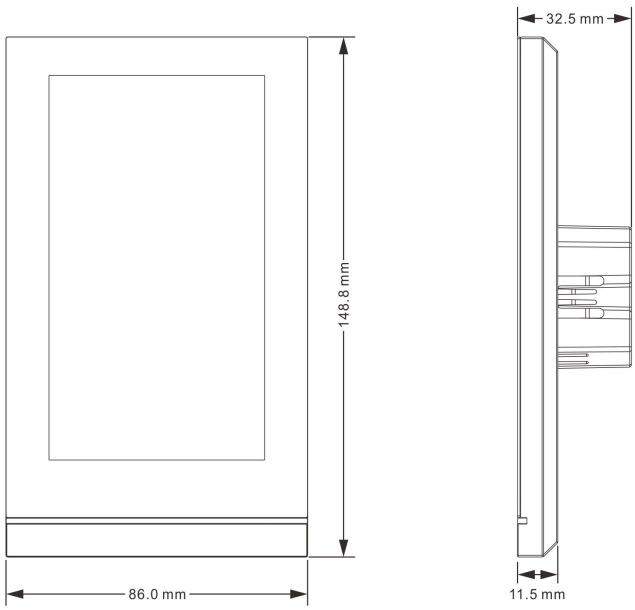


Fig. 3.1.2 Panel dimension of CHTF-5.0/15.3.2x

3.1.3 CHTF-5.0/15.4.2x Dimension Diagram

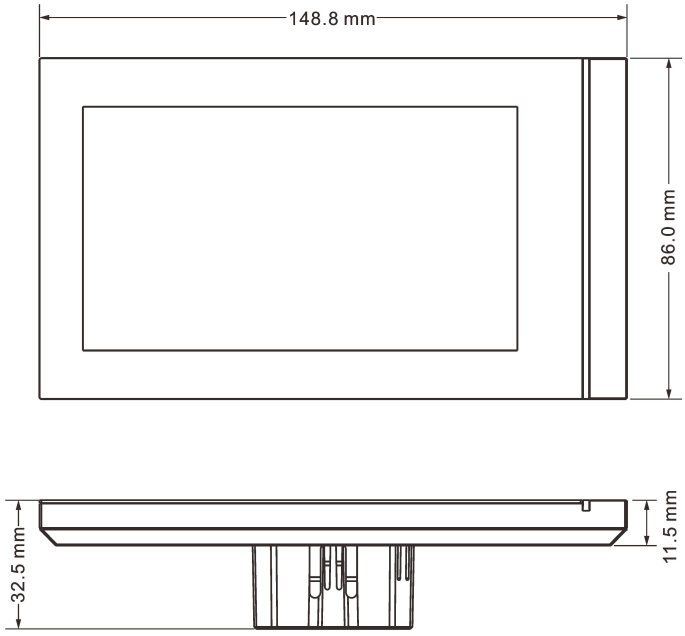


Fig. 3.1.3 Panel dimension of CHTF-5.0/15.4.2x

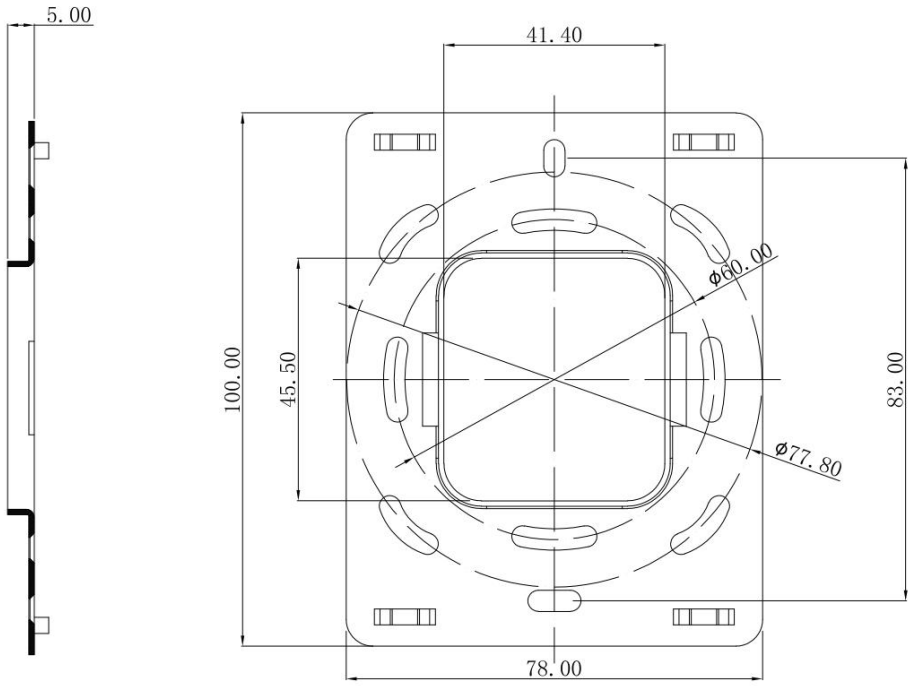


Fig. 3.1.4 Metal plate dimension of CHTF-5.0/15.3.2x & CHTF-5.0/15.4.2x

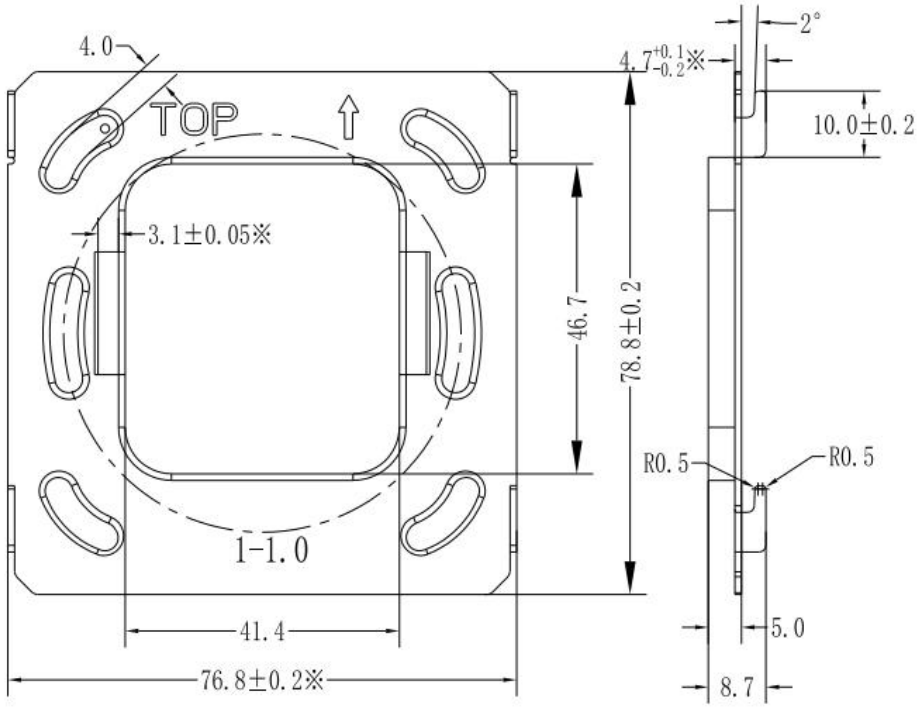


Fig. 3.1.5 Metal plate dimension of CHTF-4.0/15.3.2x

3.2 Structural Diagram

3.2.1 CHTF-4.0/15.3.2x Structural Diagram

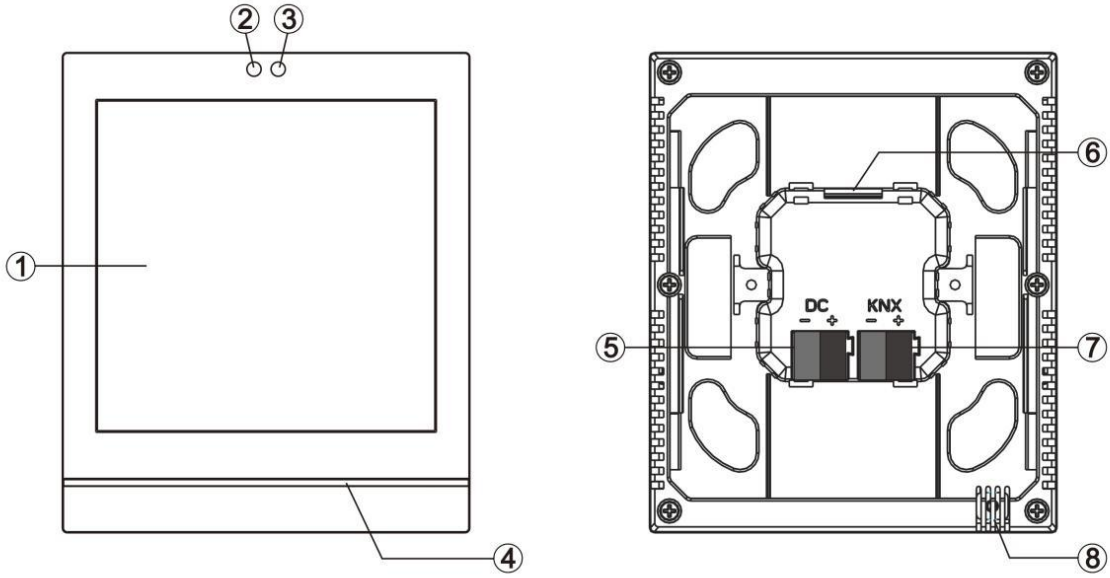


Fig.3.2.1 Structural diagram of CHTF-4.0/15.3.2x

3.2.2 CHTF-5.0/15.3.2x Structural Diagram

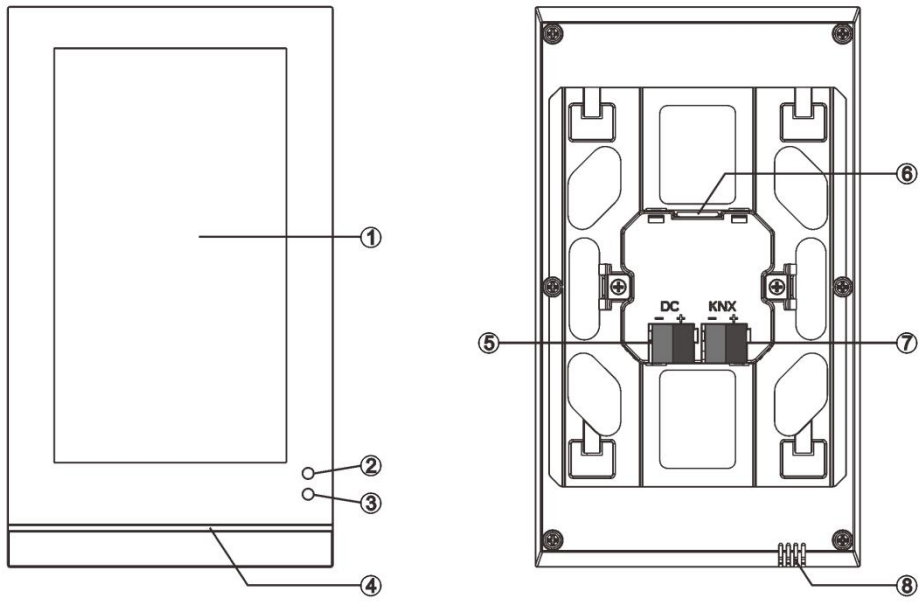


Fig.3.2.2 Structural diagram of CHTF-5.0/15.3.2x

3.2.3 CHTF-5.0/15.4.2x Structural Diagram

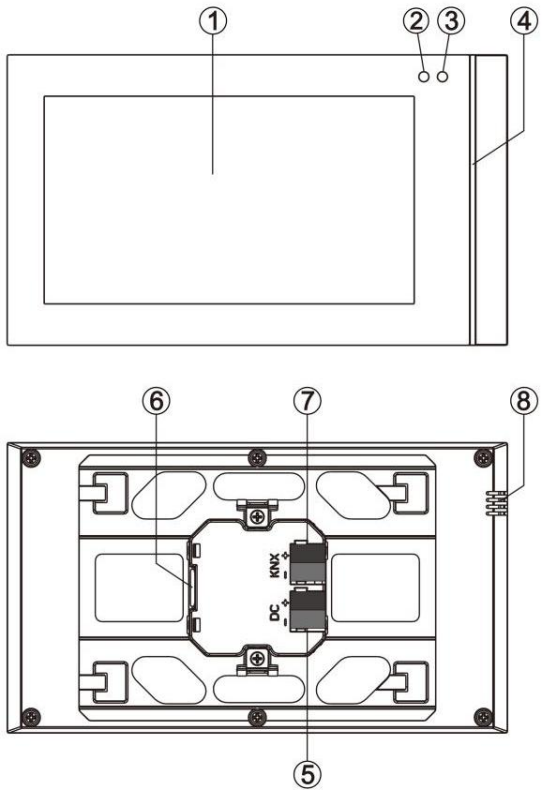


Fig.3.2.3 Structural diagram of CHTF-5.0/15.4.2x

① Touch and display area

②③ Proximity detection: is used to proximity sensor

④ Colorful strip

⑤ Auxiliary power supply connection terminal

⑥ SD card slot

⑦ KNX Bus connection terminal

⑧ Internal temperature sensor

Note: Only when enter the setting interface of the touch panel can user enable programming mode of physical address. Click the icon to enter the setting interface, then click "General para." to enter the general parameter window, where there is an item-"KNX programming", enable or disable the programming mode through the switch button on the right; when enable, colorful strip turns red. After exiting the programming mode, colorful strip returns to the normal indication, and the indication under the normal mode of the colorful strip is configured by parameters.

3.3 Installation and Disassembly instructions

3.3.1 CHTF-4.0/15.3.2x Installation and Disassembly instructions

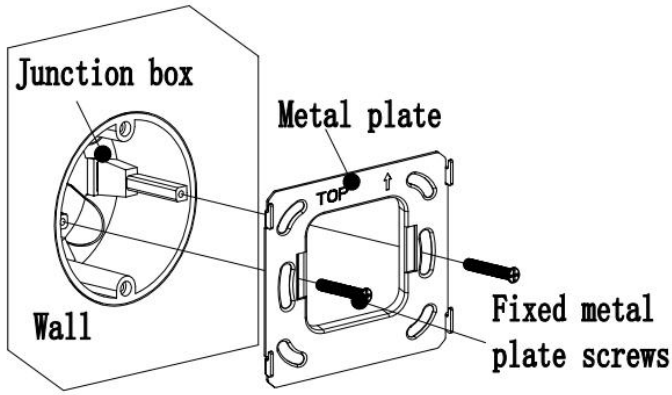


Fig. 3.3.1.1

1. Install metal plate to the junction box on the wall with mounting screws.

Installation specification:

(1) It is suggested that Junction box should be parallel with the wall horizon, shown as Fig.3.3.1.1;

(2) The upper direction is defined where marks with arrow and "TOP" description on the metal plate;

(3) Screwdriver should not drive too strong when installed, otherwise it will result in the deformation of the metal plate. The recommended strength is 0.6 ~ 0.8N.M (6 ~ 8Kgf.cm).

(4) Fixed metal plate screws use M4 special screws matched by our company.

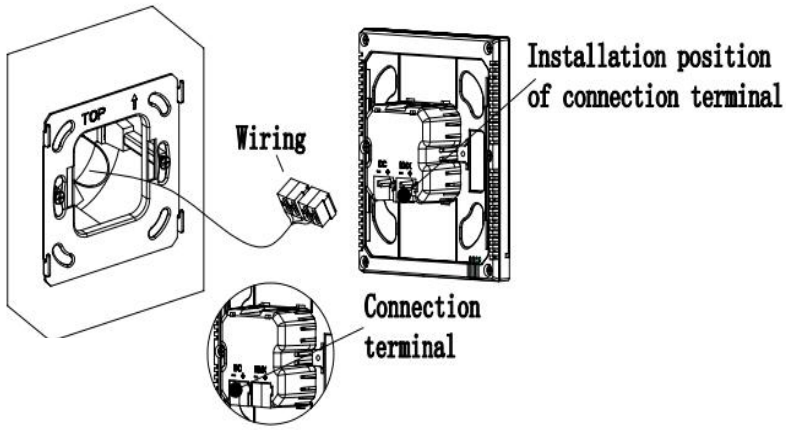


Fig.3.3.1.2

2. Remove the connection terminal on the device and connect it correctly according to the wiring instructions. After wiring, install the terminal to the corresponding position, then the wiring installation is finished, as shown in Fig.3.3.1.2.

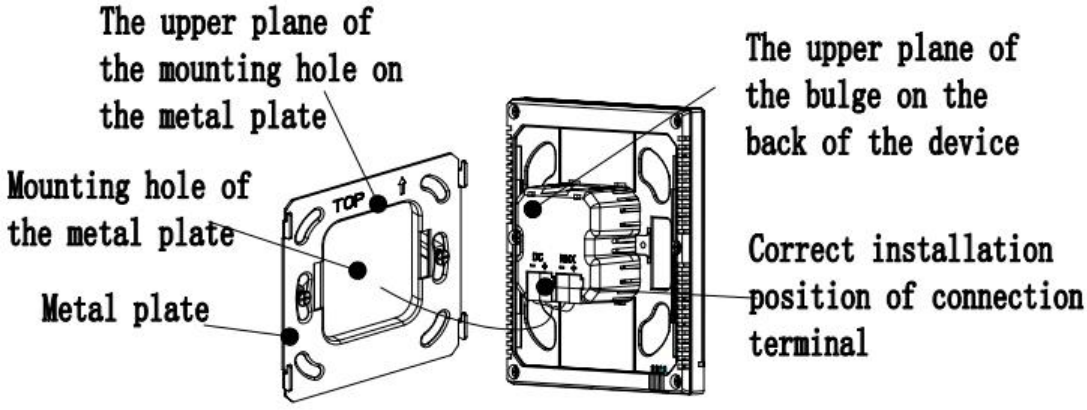


Fig.3.3.1.3

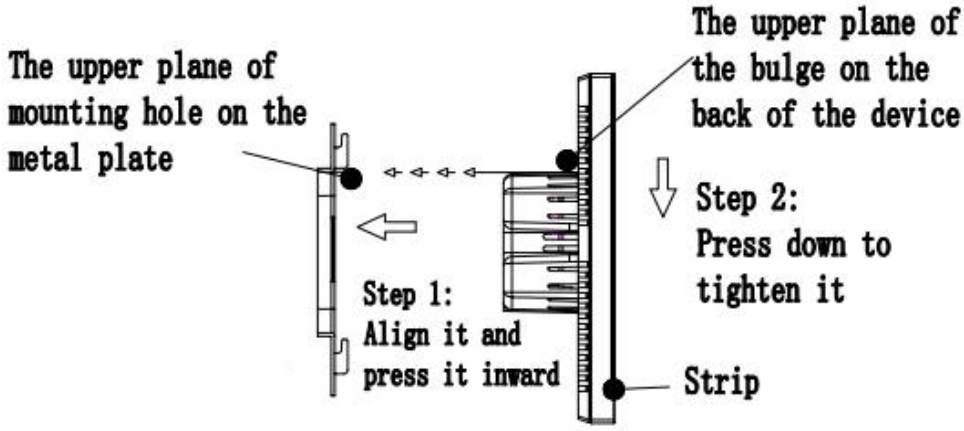


Fig.3.3.1.4

3. After connection of the device complete:

(1)Action 1:Align the back of the device to the mounting hole position of the metal plate, requiring the device to be parallel to the wall or the metal plate;

(2)Action 2:The upper plane of the bulge on the back of the device is aligned to the upper plane of the hole position of the metal plate, and attention should be paid to the shrapnel installation hole of the metal plate. See Fig.3.3.1.3 and Fig.3.3.1.4.

(3)Action 3:After finishing action 1 and action 2, pull the device down (Fig.3.3.1.4), then the installation is finished.

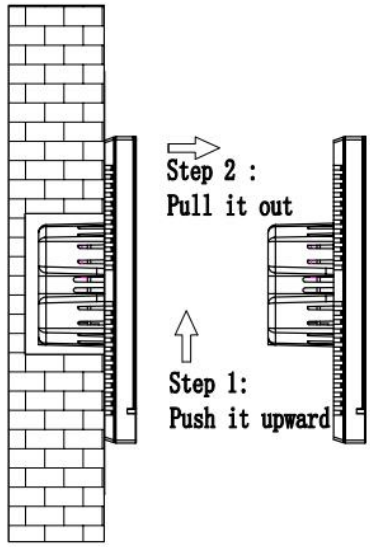


Fig.3.3.1.5

4. **After finishing the installation, if disassembly is required, please perform this step:** Push the device upward, then pull it out toward the horizontal direction when hear a buckle sound or when the device can no longer be moved, then the disassembly is finished，as shown in Fig.3.3.1.5.

3.3.2 CHTF-5.0/15.3.2x Installation and Disassembly instructions

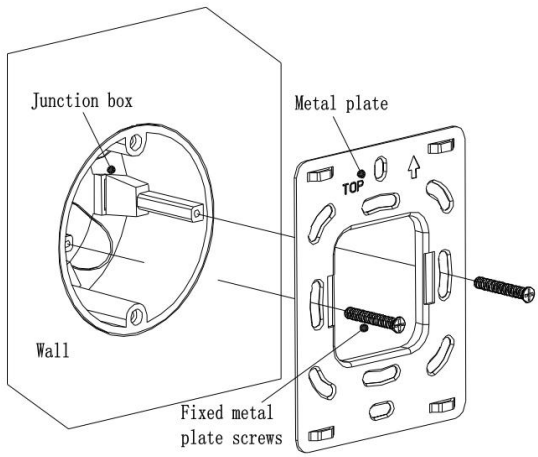


Fig.3.3.2.1

1. Install metal plate to the junction box on the wall with mounting screws.

Installation specification:

(1) It is suggested that Junction box should be parallel with the wall horizon, shown as Fig. 3.3.2.1;

(2) The upper direction is defined where marks with arrow and "TOP" description on the metal plate;

(3) Screwdriver should not drive too strong when installed, otherwise it will result in the deformation of the metal plate. The recommended strength is 0.6~0.8N.M (6~8 Kgf.cm).

(4) Fixed metal plate screws use M4 special screws matched by our company.

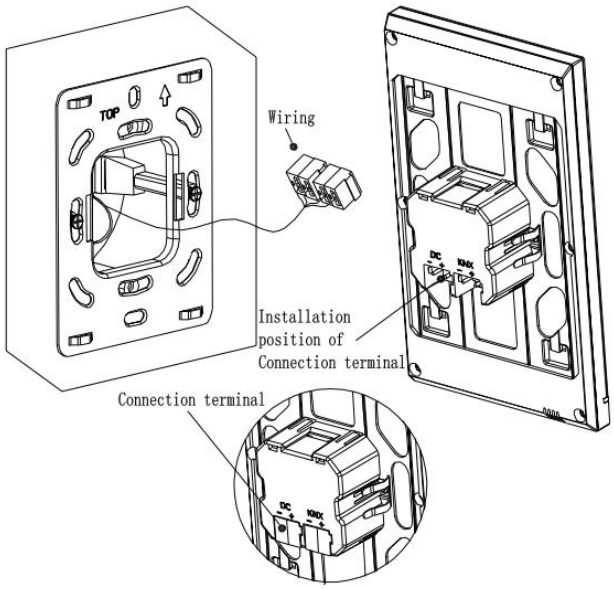


Fig.3.3.2.2

2. Remove the connection terminal on the device and connect it correctly according to the wiring instructions. After wiring, install the terminal to the corresponding position, then the wiring installation is finished, as shown in Fig.3.3.2.2.

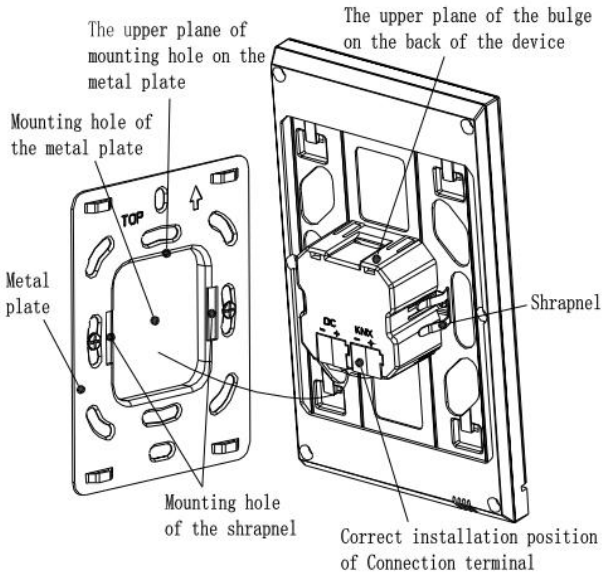


Fig.3.3.2.3

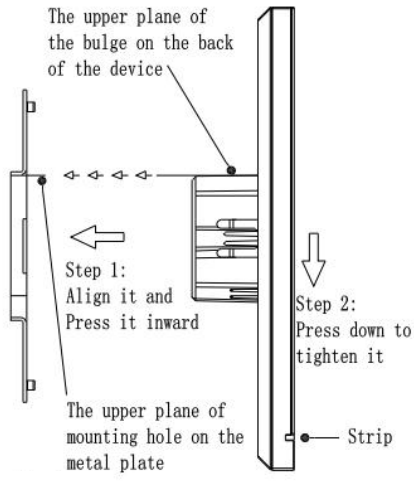


Fig.3.3.2.4

3. After connection of the device complete

(1)Action 1: Align the back of the device to the mounting hole position of the metal plate, requiring the device to be parallel to the wall or the metal plate;

(2)Action 2: The upper plane of the bulge on the back of the device is aligned to the upper plane of the hole position of the metal plate, and attention should be paid to the shrapnel installation hole of the metal plate. See Fig.3.3.2.3 and Fig.3.3.2.4.

(3)Action 3:After finishing action 1 and action 2, press the device down and tighten it (Fig.3.3.2.4), then the installation is finished.

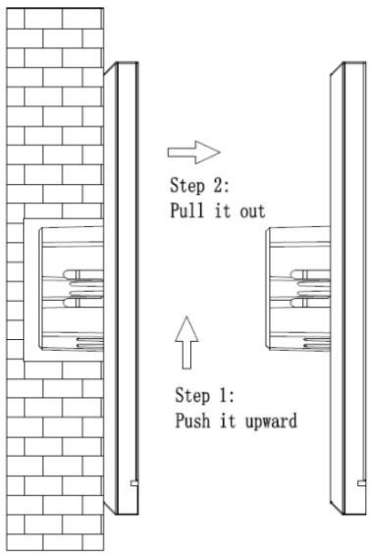


Fig.3.3.2.5

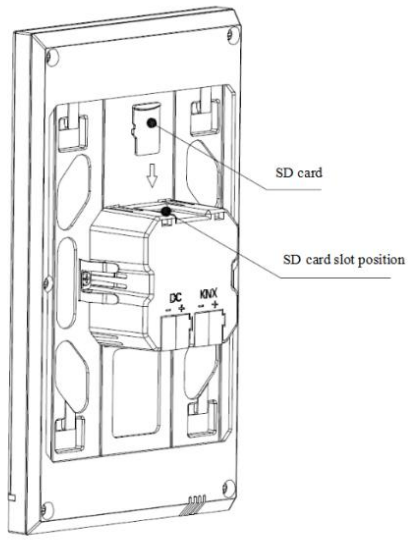


Fig.3.3.2.6

4. After finishing the installation, if disassembly is required, please perform this step:

Push the device upward, then pull it out toward the horizontal direction when hear a buckle sound or when the device can no longer be moved, then the disassembly is finished. As shown in Fig. 3.3.2.5. The disassembly of SD card as shown in Fig.3.3.2.6.

3.3.3 CHTF-5.0/15.4.2x Installation and Disassembly instructions

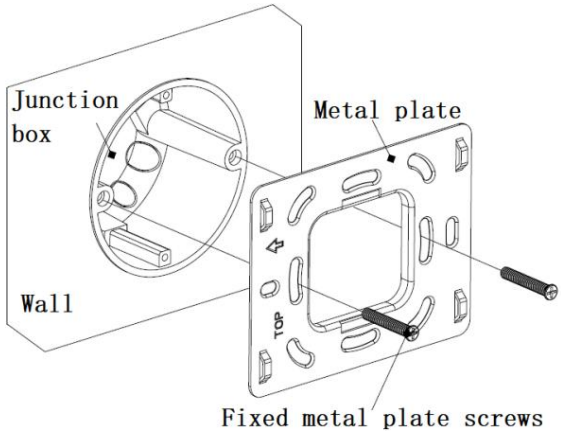


Fig.3.3.3.1

1. Install metal plate to the junction box on the wall with mounting screws.

Installation specification:

(1) It is suggested that Junction box should be parallel with the wall horizon, shown as Fig.3.3.3.1;

(2) The reference direction is defined where marks with arrow and "TOP" description on the metal plate is treated as the left side;

(3) Screwdriver should not drive too strong when installed, otherwise it will result in the deformation of the metal plate. The recommended strength is 0.6~0.8N.M(6~8Kgf.cm).

(4) Fixed metal plate screws use M4 special screws matched by our company.

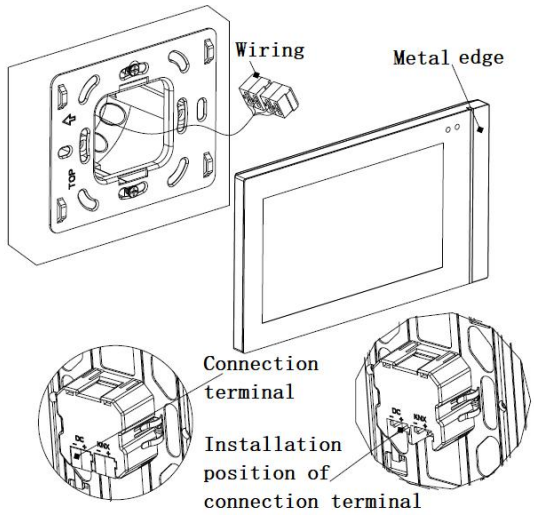


Fig.3.3.3.2

2. (1) Remove the connection terminal on the device and connect it correctly according to the wiring instructions. After wiring, install the terminal to the corresponding position, then the wiring installation is finished, as shown in Fig.3.3.3.2.

(2) Note that the metal edge is on the right side of people when the panel is installed.

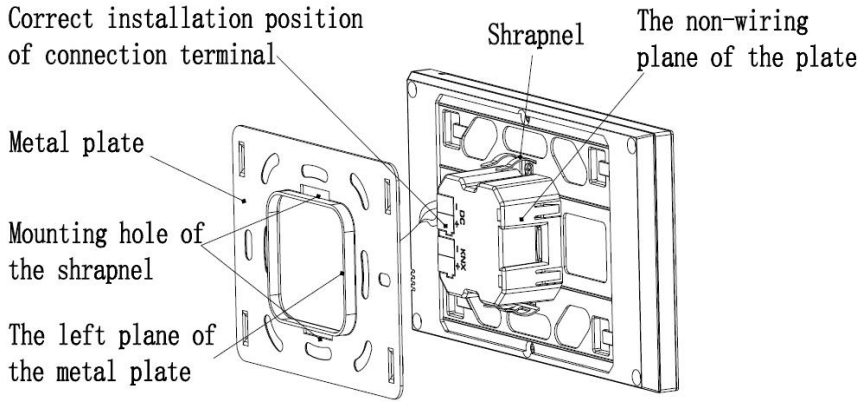


Fig.3.3.3.3

3. After connection of the device complete

(1)Action 1: Align the back of the device to the mounting hole position of the metal plate, requiring the device to be parallel to the wall or the metal plate;

(2)Action 2: The left plane of the bulge on the back of the device is aligned to the left plane of the metal plate (Top side), and attention should be paid to the shrapnel installation hole of the metal plate. See Fig. 3.3.3.3 and Fig.3.3.3.4.

(3)Action 3: After finishing action 1 and action 2, press the device to the right side of people and tighten it (Fig.3.3.3.4), then the installation is finished.

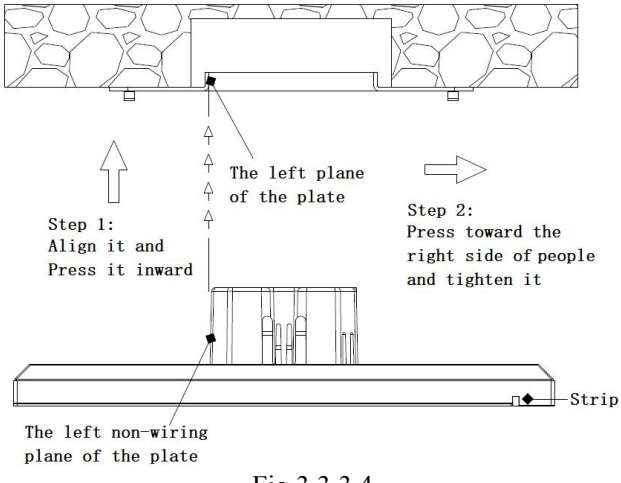


Fig.3.3.3.4

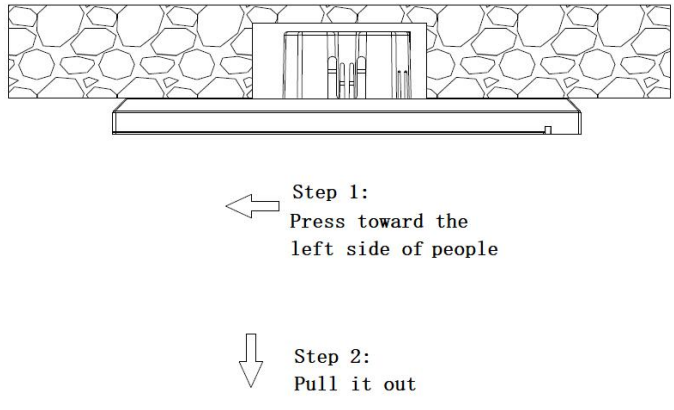


Fig.3.3.3.5

5. After finishing the installation, if disassembly is required, please perform this step:

Push the device to the left side of people, then pull it out to the front direction of people when hear a buckle sound or when the device can no longer be moved, then the disassembly is finished.

Chapter 4 Project Design and Programming

Applications	Maximum of communication objects	Maximum number of group addresses	Maximum number of associations
KNX Smart Touch V40 **KNX Smart Touch V50** **KNX Smart Touch V50, Horizontal**	**688**	**2000**	**2000**

General Function

General function include system interface language selection, operation tones, panel lock, screen saver, screen backlight brightness adjustment, colorful strip indication setting, proximity sensor setting, summer time setting, date/time display, etc.

Besides, user can configure screen background, the UI style of multifunction page, and to send the status of day/night mode.

Homepage Navigation Function

On the homepage, user can configure function-page navigation buttons to quickly jump to the function page, and can also configure multifunction page navigation buttons to quickly perform one of the functions.

Lighting Control

It is mainly used for switching lighting equipment or dimming lighting equipment. Dimming mode can be relative dimming or absolute dimming.

Shutter and Venetian Blind Control

To open/close shutter and Venetian Blind and adjust louver angles.

Value Send Function

Values of different data types can be sent.

Scene Control

Short operation for the scene recall, long operation for the scene storage.

HVAC Control

HVAC is mainly used to control the room temperature, automatically and optimally control the heating and cooling according to the use of the room or the needs of the occupants.

Supports manually switching of heating/cooling control, support options for three-level fan speed and auto fan speed, four operation modes: comfortable, standby, economy and protection mode.

The setting temperature supports absolute and relative settings, as well as adjustable temperature range settings. Supports 2-point and PI control.

Air Conditioner control

There are two types of air-conditioner control: IR Split Unit and Gateway Integrate.

IR Split Unit control is similar to air-conditioner control remoter, the function of this panel is to control the air-conditioner through infrared transmitting module, for example, the panel sends a control telegram to the infrared transmitting module, which at the same time transmits the given function code to the air conditioner, therefore to control the air conditioning switch, mode, air volume and so on.

Gateway Integrate is suitable for controlling like VRV air-conditioning system, and needs to be controlled with the KNX to VRV air-conditioner gateway.

Background Music Control

It is used to control background music playing, for example, power on/off, play/pause, previous song/next song, volume increase/decrease, mute, play modes and play sources.

RGB Dimming

It is mainly used for RGB or RGBW LED dimming in absolute dimming way. RGBW supports color temperature adjustment, besides, supports to adjust color-temperature and brightness individually .

Air Quality Detected Value Display

AQI, temperature, humidity, PM2.5, PM10, VOC, CO2, brightness and wind speed displays can be set and these values are received from external sensor.

Up to 4 items can be set in a function page.

Floor Heating Control

Supporting 2-point control and PI control to automatically switch floor heating according to temperature

difference. In addition, it supports to the scene and timing functions configuration and the setting temperature range adjustment.

Ventilation System Control

Supporting 3-level fan speed adjustment, opening/closing of heat recovery, filter life counter, filter overtime alarm and filter reset.

Auto control according to the concentration of PM2.5 or CO2, in addition to setting scene function.

Energy Metering Value Display

Supporting current, voltage, power and energy(electricity energy) display configuration, these values are received from other actuators or metering gateway.

Timing Function

Supporting to timely send different types of value, provides up to 16 timing control. When enable timing function, weekly timer of the setting interface is operational. In this interface, user can open/close weekly timer and holiday function setting, timing function is automatically close during holiday. In addition,weekly timer can be disable through the bus.

Event Group Function

By calling the scene number, up to eight output telegrams can be triggered. Each output has three different data type options. There are 8 sets of event functions available for setting.

Logic Function

Supporting 8 logic inputs with AND, OR, and XOR; supporting gate forwarding, and can forward one input to one output or multiple outputs;

Supporting threshold comparator and conversions between different data types. There are 8 logic functions to be set.

Chapter 5 Parameter setting description in the ETS

5.1 Parameter window “General”

5.1.1 Parameter window “General setting”

Parameter window “General setting” shown as Fig.5.1.1, it is mainly for the general setting of the device, such as summer time setting, password setting, colorful strip indication setting, proximity setting, screen saver, panel lock and background, etc.

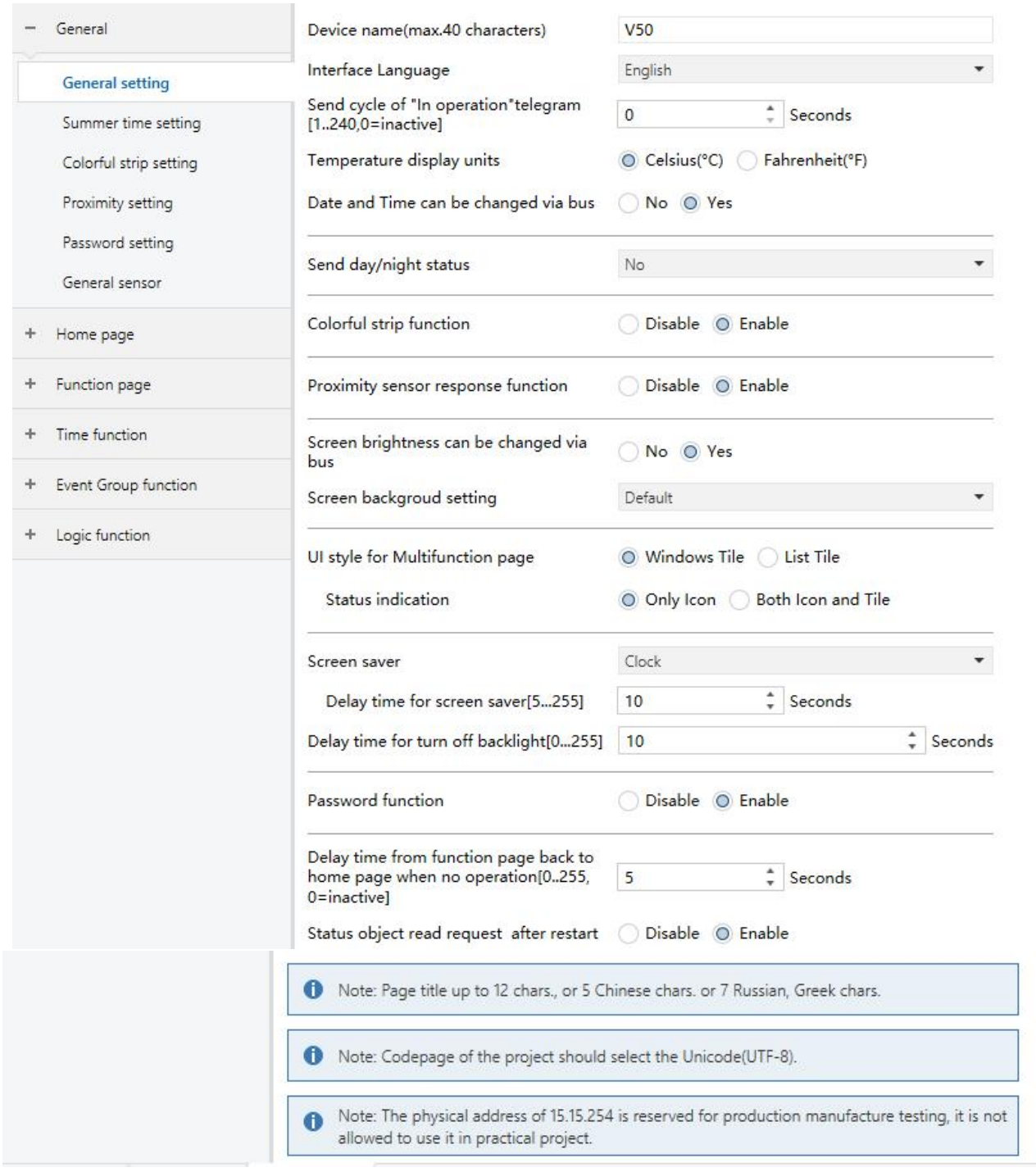


Fig.5.1.1 “General setting” parameter window

Parameter "Device name(max.40 characters)"

Set the device name, no more than 40 bytes, such as **V50**,**V40**.

The name of the device can be viewed in the device settings interface. Please refer to the attachment document for details.

Parameter "Interface Language"

Setting the interface language of the touch panel, options:

Chinese	**Russian**
English	**Italian**
German	**Greek**
French	**Other**
Spanish	

Parameter"Language name"

This parameter is visible to input language name when interface language is selected as "Other".The device will search for the corresponding language in the library according to the name and display it.When no corresponding language is searched, there will be displayed English by default.

Note： When select "Other" language, it is necessary to confirm with the manufacturer whether the language and the corresponding name is supported.

Parameter "Sending cycle of "In operation" telegram [1...240s, 0 = inactive]"

This parameter is for setting the time interval when this module cycle send telegrams through the bus to indicate this module in normal operation. When set to "0", the object " in operation" will not send a telegram. If the setting is not "0", the object "In operation" will send a telegram according to the set period time with logic "1" to the bus. Options: **0...240s,0= inactive**

As to reduce the bus load as much as possible, the maximum time interval should be selected according to actual needs.

Parameter "Temperature display units"

Setting temperature display units. Options:

Celsius(℃)

Fahrenheit(℉)

This parameter setting only apply to the temperature display of the homepage, temperature units of the function page are ℃.

Parameter "Date and Time can be changed via bus"

Setting whether the display of date/time on the interface can be modified by the bus. Options:

No

Yes

If “Yes” is selected, the object “Date” and the object “Time” is visible, date and time can be modified through the two objects respectively.

Note: the accuracy of RTC real-time clock inside the equipment is ± 5ppm.

Parameter “Send day/night status”

Setting transform way of the day/night status. When status changes, status telegram will be sent through object “Day/Night”. Options:

No

Depend to certain time

Depend to sunrise&sunset

No：Do not send and objects is invisible.

Depend to certain time：switch the day/night status based on the specific time. Such as switch 18:30P.M. to the night status, 6:30A.M. to the day status.

Depend to sunrise&sunset： switch the day/night status based on the sunrise and sunset. The coordinate position of the reference point of sunrise and sunset, such as Beijing, China, needs to be defined, with the center located at east longitude 160°20′and north latitude 39°56′.

When “Depend to certain time” is selected, the following 4 parameters are visible, for setting the time to switch to the night or to the day.

-- Parameter “Time for switch to night at: Hours[0..23]”

-- Parameter “Time for switch to night at: Minutes[0..59]”

These two parameters for setting the time point to switch to the night status, accurate to minutes, such as 18h：0min.

-- Parameter “Time for switch to day at: Hours[0..23]”

-- Parameter “Time for switch to day at: Minutes[0..59]”

These two parameters for setting the time point to switch to the day status, accurate to minutes, such as 18h：0min.

When “Depend to sunrise&sunset” is selected, the following parameters are visible, for setting the coordinate position of the reference point of sunrise and sunset.

-- Parameter “Latitude longitude location setting”

Setting the reference point of sunrise and sunset, such as “Beijing, China”.

-- Parameter “Latitude”

Setting whether the reference point of sunrise and sunset is located at south latitude or north latitude. Options:

South

North

-- Parameter "Latitude in degrees[0°..90°]"

-- Parameter "Latitude in minutes[0′..59′]"

These two parameters for setting latitude, such as Beijing located at north latitude 39°56′.

-- Parameter "Longitude"

Setting whether the base point of sunrise and sunset is located at east longitude or west longitude. Options:

East

West

-- Parameter "Longitude in degrees[0°..180°]"

-- Parameter "Longitude in minutes[0′..59′]"

These two parameters for setting longitude, such as Beijing located at east longitude116°20′.

-- Parameter "Time difference from Universal Time[UTC+...]"

This parameter for setting the time difference from Universal Time. Options:

(UTC -12：00) International Date Line West

(UTC -11：00) Samoa

.....

(UTC +11：00) Magadan, Salomon Islands, New Caledonia

(UTC +12：00) Aukland, Wellington, Fiji

Time calibration

-- Parameter "Switching time move to night[-128..127]min"

This parameter for setting the delay time to switch to the night status after reaching to the time point of sunset. Options: **-128..127**

For example, if setting -10min, it will switch to night status 10min earlier before the sunset; if setting 10min, it will switch to night status 10min later after the sunset.

-- Parameter "Switching time move to day[-128..127]min"

This parameter for setting the delay time to switch to the day status after reaching to the time point of sunrise. Options: **-128..127**

For example, if setting -10min, it will switch to day status 10min earlier before the sunrise; if setting 10min, it will switch to day status 10min later after the sunrise.

(Note: if summer time is set, then sunrise and sunset time will automatically adjust according to time interval of summer time. Details refer to section 5.1.2.)

Parameter "Colorful strip function"

This parameter for setting whether to enable the indication function of colorful strip. Options:

Disable

Enable

When enable, parameters setting interface shown as fig.5.1.3.

Note: the indication function of color light bar is applicable to database version 1.3 or above.

Parameter "Proximity sensor response function"

This parameter for setting whether to enable proximity sensor response function.Options:

Disable

Enable

When enable, parameter setting interface shown as fig.5.1.4.

Note: proximity sensor response function is applicable to database version 1.3 or above.

Parameter "Screen brightness can be changed via bus"

This parameter for setting whether to adjust the screen brightness through the bus. Options:

No

Yes

Parameter "Screen background setting"

This parameter for setting the screen background. Options:

Default

1-Church

2-Water droplets

Specific pictures of the corresponding option refer to the appendix.

Tip: Background picture can be replaced manually via device setting page interface.When 1-Default is selected, background picture can be replaced through TF card. Details refer to the appendix.

Parameter "UI style for Multifunction page"

Setting the UI style of the multifunction page(Multifunction(Lighting/Blind/Scene/Value send)). Options：

Windows Tile

List Tile

Display effects of the corresponding option refer to the appendix.

--Parameter "Status indication"

This parameter is visible when option "Windows Tile" is selected in the previous parameter, for setting the indication effect of control status. Options:

Only Icon

Both Icon and Tile

Only Icon：Indicating control status through the on/off status of the icons in the block. For example,the icon on indicates the lamp to turn on and the icon off indicates the lamp to turn off.

Both Icon and Tile： Indicating control status through the on/off status of the icons and the blocks. For example, the block and icon on indicates the lamp to turn on, the block and icon off indicates the lamp to turn off.

Specific effects refer to the appendix.

Parameter "Screen saver"

Setting whether to enable screen saver. Options:

Disable

Clock

Album

If "Clock" is selected, screen will display clock when the panel enters to screen saver mode.

If "Album" is selected, screen will display the three pictures of the program, switching in every 5 seconds.

If "Disable" is selected, the screen saver function is disabled.

Tip: When album is selected, screen-saver picture of the program can be replaced through TF card. Details refer to the appendix.

-- Parameter "Delay time for screen saver [5..255]s"

This parameter for setting the delay time to enter the screen saver, start counting from entering the screen saver. If screen saver is disable, it will start counting from the last operation of screen. Options: **5..255**

Parameter "Delay time for turn off backlight[0..255]s"

This parameter for setting the delay time to turn off the screen backlight, start counting when enter screen saver. If screen saver is disable, it will starting counting from the last operation of the screen. Options: **0..255**

When set to 0, screen keeps on.

Note: It is only recommend that this option is used for demonstration purpose, screen may be damaged when it is on continuously for long time.

Parameter "Password function "

Setting whether to enable password function, that is, when entering screen saver or screen off, whether to input password when re-enter screen operation. Options:

Disable

Enable

Enable: when enable, parameter window are visible as shown in fig.5.1.5.

Note: up to 3 passwords can be set.

Parameter "Delay time from function page back to home page when no operation[0..255,0=inactive] Seconds"

This parameter for setting the delay time from function page back to home page when no operation on the device. Options:**0..255, 0=inactive**

When setting as 0, it will not return to the home page.

Parameter "Status object read request after restart"

Setting whether to send status request telegram when the device starts up. Options:

Disable

Enable

This parameter is suitable for the switch status feedback, dimming status feedback, blind position feedback, air quality display, external temperature detection and energy metering display, etc.

After being enabled, when the device starts up or the bus is powered on again, it will send telegram to the bus to read brightness value status of switching or dimming.

After being enabled, when the device starts up or the bus is powered on again, it will send telegram to the bus to read curtain position status.

After being enabled, when the device starts up or the bus is powered on again, it will send telegram to the bus to read the value of temperature, humidity, CO2, PM2.5 etc. detected by the sensor.

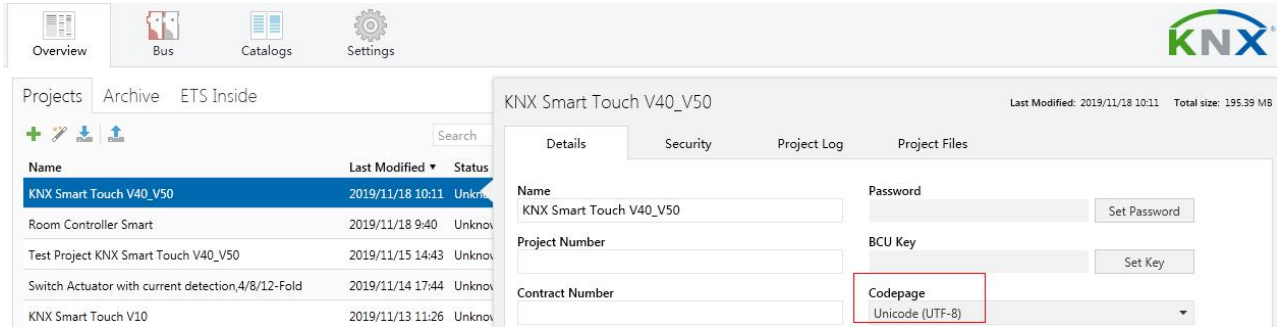
After being enabled, when the device starts up or the bus is powered on again, it will send telegram to the bus to read the value of current, voltage, power, energy, etc. detected by the operator.

Note: Page title up to 12 chars., or 5 Chinese chars, or 7 Russian, Greek chars.

Note: Codepage of the project should select the Unicode(UTF-8)

Note: The physical address of 15.15.254 is reserved for production manufacture testing, it is not allowed to use it in practical project.

The Codepage setting as shown in follow:



5.1.2 Parameter window "Summer time setting"

Parameter window "Summer time setting" shown as fig.5.1.2, it is mainly for setting summer time adjustment and start/end time.

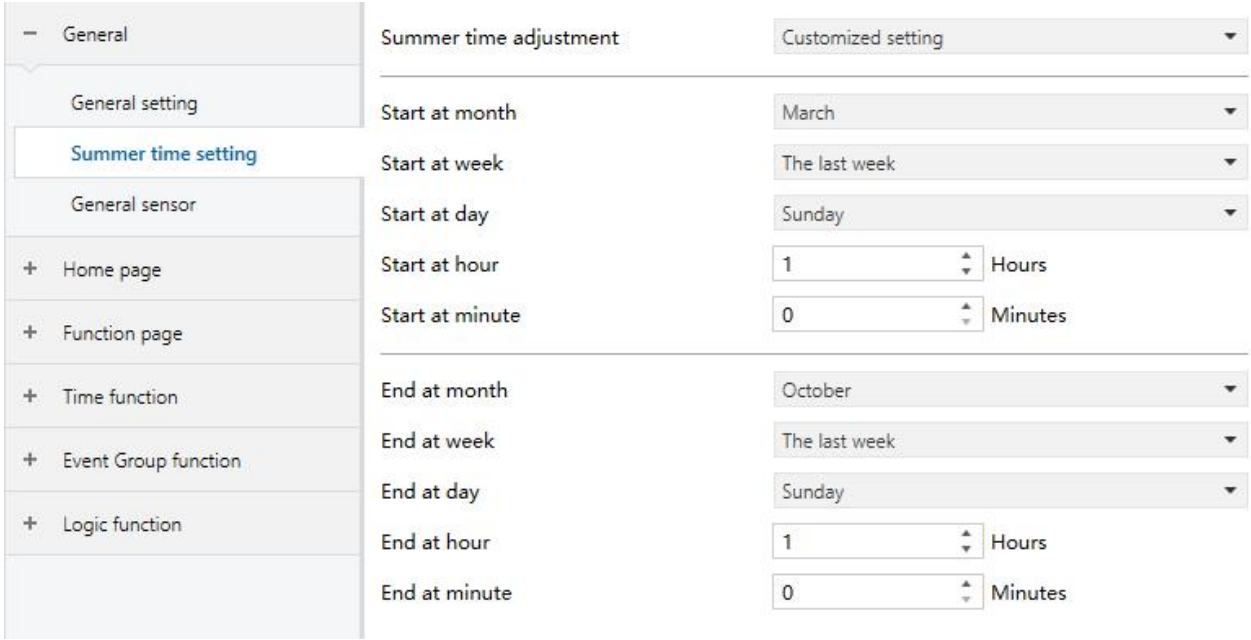


Fig.5.1.2 "Summer time setting" parameter window

Parameter "Summer time adjustment"

This parameter for setting the summer time. Options:

No

Always

Customized setting

No：disable summer time.

Always：always enable summer time.

Customized setting：for customized setting the start/end time of summer time.

When select "Customized setting", the following four parameters are visible, for setting the start and end time of summer time.

——Parameter "Start/End at month"

This parameter for setting summer time start or end at month.Options:

January

February

...

December

——Parameter“Start/End at week”

This parameter for setting summer time start or end at week. Options:

The first week

The second week

...

The last week

——Parameter“Start/End at day”

This parameter for setting summer time start or end at day. Options:

Monday

Tuesday

...

Sunday

——Parameter“Start/End at hour[0..23]”

——Parameter“Start/End at minute[0..59]”

This parameter for setting summer time start or end time, accurate to minutes, such as 18h: 00min.

Take American time for example, setting summer time start from 02h: 00min, the second Sunday of March to 02h: 00min, the first Sunday of November each year, so during this summer time, when it comes to the start time, system default time will be an hour faster, displayed time on the device will be 03h: 00min; when it comes to the end time, system default time will be an hour slower, displayed time on the device will be 01h: 00min.

5.1.3 Parameter window "Colorful strip setting"

Parameter window "Colorful strip setting" shown as fig.5.1.3, it is mainly for setting the brightness of colorful strip and color indication.

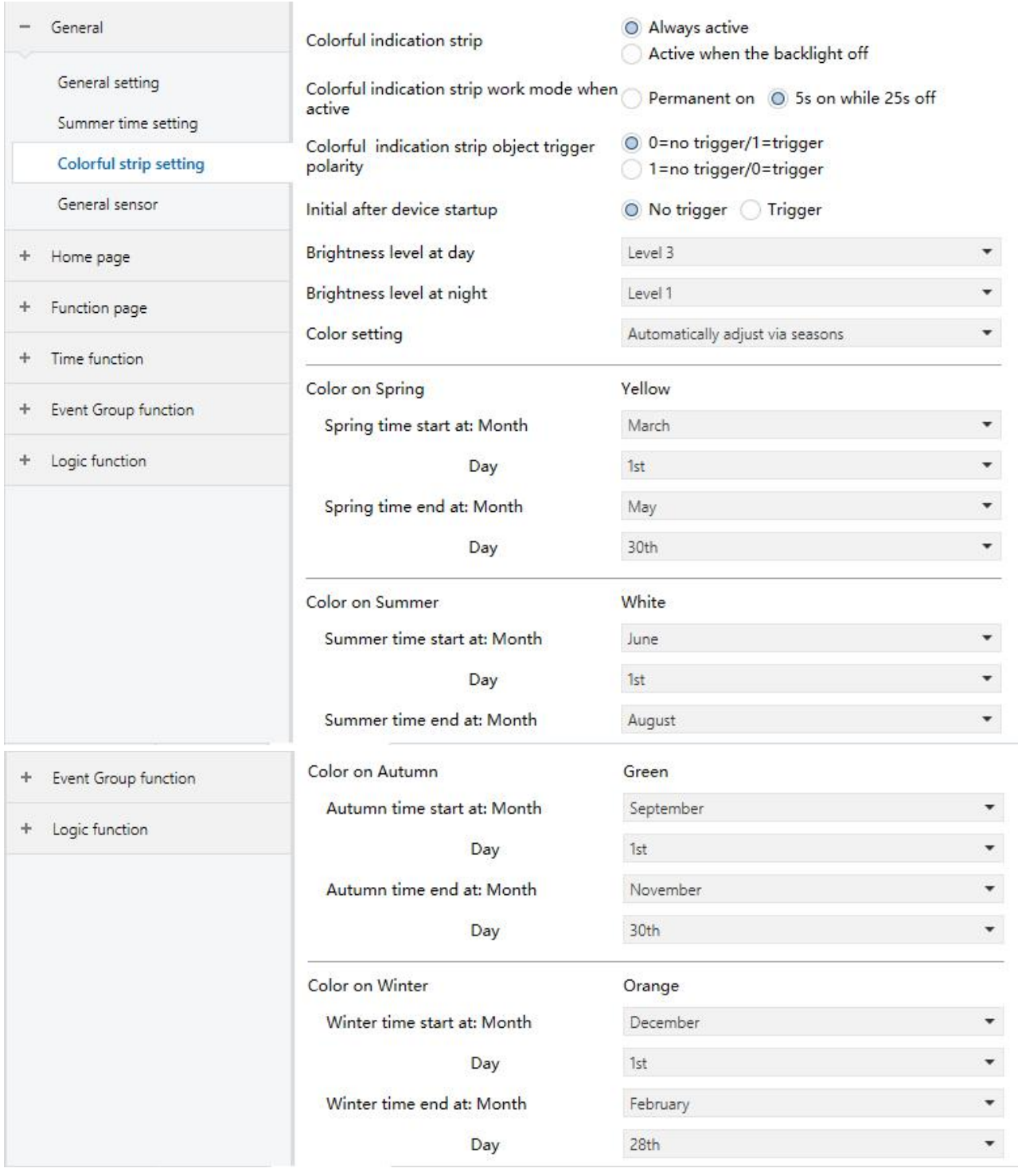


Fig.5.1.3 "Colorful strip setting" parameter window

Parameter "Colorful strip control type"

This parameter for setting the colorful strip control type. Options:

Always active

Active when backlight is off

Always active：there is always indication of colorful strip.

Active when backlight is off：colorful strip only shows the indication effect after the screen is off. When the screen is on, colorful strip exits the indication state.

Parameter "Colorful indication strip work mode when active"

This parameter sets the working mode when the colorful strip indicates.Options:

Permanent on

5s on while 25s off

Permanent on: working mode of the colorful strip indication is permanent on;

Note: In this case, it may affect the precision of internal temperature detection, and the average of total on time should be not more than 8 hours in per day, otherwise it may affect the normal life of RGB led.

5s on while 25s off: working mode of the colorful strip indication is 5 seconds on, 25 seconds off, to prevent the service life from being shortened due to the long-time lighting of the LED.

Parameter "Colorful indication strip object trigger polarity"

This parameter sets the trigger value of the communication object indicated by colorful strip. Options:

0=no trigger/1=trigger

1=no trigger/0= trigger

0=no trigger/1=trigger： when the object "Colorful strip trigger" receives the telegram "1", it will trigger colorful strip indication. When telegram "0" is received, colorful strip has no indication. Vice versa.

Parameter "Initial after device startup"

This parameter sets the initial trigger status when the device is on. Options:

No trigger

Trigger

No trigger: colorful strip is not triggered and there is no indication;

Trigger: after the device is started, colorful strip is triggered and can be indicated.

--Parameter "Brightness level at day"

This parameter for setting brightness level at day. Options:

Level 1

Level 2

Level 3

Level 4

Level 5

Level 1 is the darkest level，Level 5 is the brightest level.

--Parameter "Brightness level at night"

This parameter for setting brightness level at night. Options:

OFF

Level 1

Level 2

Level 3

Level 4

Level 5

OFF is to turn off backlight, Level 1 is the darkest level, Level 5 is the brightest level.

--Parameter "Color setting"

This parameter for setting the indication color of the strip. Options:

Red

Green

Blue

White

Yellow

Cyan

Purple

Orange

Cyan blue

Automatically adjust via seasons

Receive a 3byte value

When "Automatically adjust via seasons" is selected, the following parameters are visible, for setting the starting/ending of the seasons and for setting the strip color of each season.

--Parameter "Color on Spring/Summer/Autumn/Winter"

Indication color of the strip has been specified on every season:Spring-yellow,Summer-white, Autumn-green, Winter-orange.

--Parameter "Spring/Summer/Autumn/Winter time start at: Month/Day"

Setting the starting time and ending time of 4 seasons at month and day.

Note: If it is beyond the setting range, the strip will not indicate any color.

5.1.4 Parameter window “Proximity setting”

Parameter window “Proximity setting” as shown in fig.5.1.4. It is mainly setting proximity function, which can set the telegram when proximity approaching and leaving, and the delay time for sending telegram.

Note: if no proximity approaching is detected when there is touch operation, it will be dealt with proximity approaching.

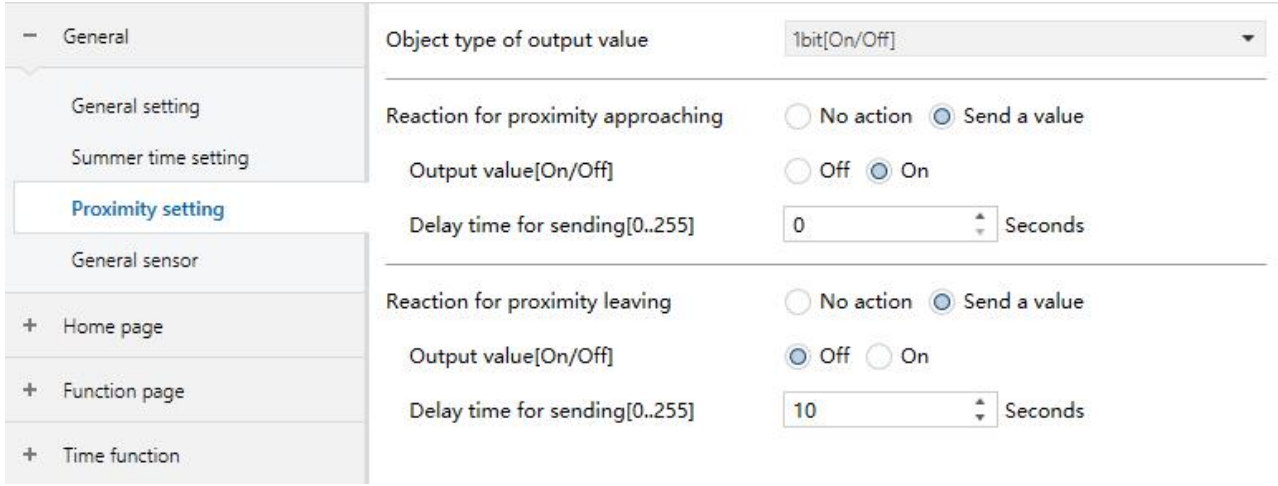


Fig. 5.1.4 “Proximity setting” parameter window

Parameter “Object type of output value”

This parameter for setting the object type of output value to the bus when proximity approaching or leaving. Options:

1bit[On/Off]

1byte scene control

1byte[0..255]

1byte[0..100%]

Parameter “Reaction for approaching/leaving”

This parameter setting whether to send telegram when proximity approaching or leaving. Options:

No send

Send a value

Send a value: the following parameters are visible.

--Parameter “Output value [On/Off]”

--Parameter “Output scene NO.[1..64]”

--Parameter “Output value [0..255]”

--Parameter “Output value [0..100%]”

This parameter for setting the output value sending to the bus when proximity approaching or leaving, the range of value is determined by the data type.

--Parameter "Delay time for sending[0..255]"

This parameter setting the delay time for sending telegram. Options: **0..255**

Note: If telegram of proximity leaving need to be sent during the delay time of proximity approaching, then ignore the telegram of proximity approaching, telegram send once when status of proximity approaching has changed.

5.1.5 Parameter window "Password setting"

Parameter window "Password setting" as shown in fig.5.1.5. It is mainly setting password function and the object type of output value sent to the bus after device is activated through password.

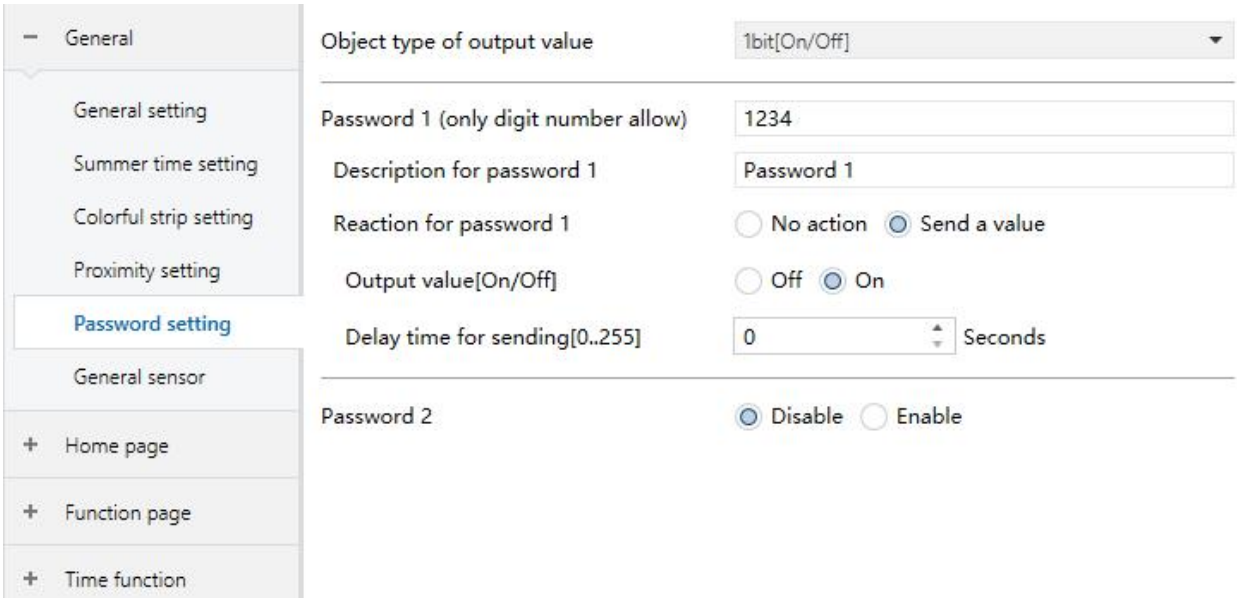


Fig. 5.1.5 "Password setting" parameter window

Parameter"Object type of output value"

This parameter setting the object type of output value sent to the bus after the device activated through password. Options:

1bit[On/Off]

1byte[scene control]

1byte[0..255]

1byte[0..100%]

Parameter "Password 1 (only digit number allow)"

This parameter setting the password, only 4 bytes digit number is allowed.

--Parameter "Description for password 1"

This parameter setting the description for password 1, only 40 bytes characters are allowed.

Parameter "Reaction for password 1"

This parameter setting whether to enable the trigger reaction for password 1. Options:

No action

Send a value

Send a value： when select this options, the following parameter are visible.

--Parameter "Output value[On/Off]"

--Parameter "Output scene NO.[1..64]"

--Parameter "Output value[0..255]"

--Parameter "Output value[0..100%]"

These parameter for setting the output value sent to the bus when password triggered, the range of output value is determined by the selected data type.

--Parameter "Delay time for sending[0..255]"

This parameter setting the delay time for sending. Options: **0..255**

Parameter "Password2"

This parameter setting whether to enable Password 2. Options:

Disable

Enable

Enable: enable Password 2, at the same time, parameters of Password 3 are visible.

Parameter "Password 2 (only digit number allow)"

This parameter setting the password, only 4 bytes digit number are allowed.

Parameter "Password3"

This parameter setting the password. Options:

Disable

Enable

Enable: enable password 3. Parameter settings are similar as above, hereinafter will no longer describe.

Note: up to 3 passwords can be set. If all passwords are set as the same, and send a value to the bus, then it will send the telegram of Password 1 to the bus when device is activated.

5.1.6 Parameter window "General sensor"

Parameter window "General sensor" shown as Fig.5.1.6, it is mainly for setting related parameters of external and internal sensor detection, such as temperature and humidity.

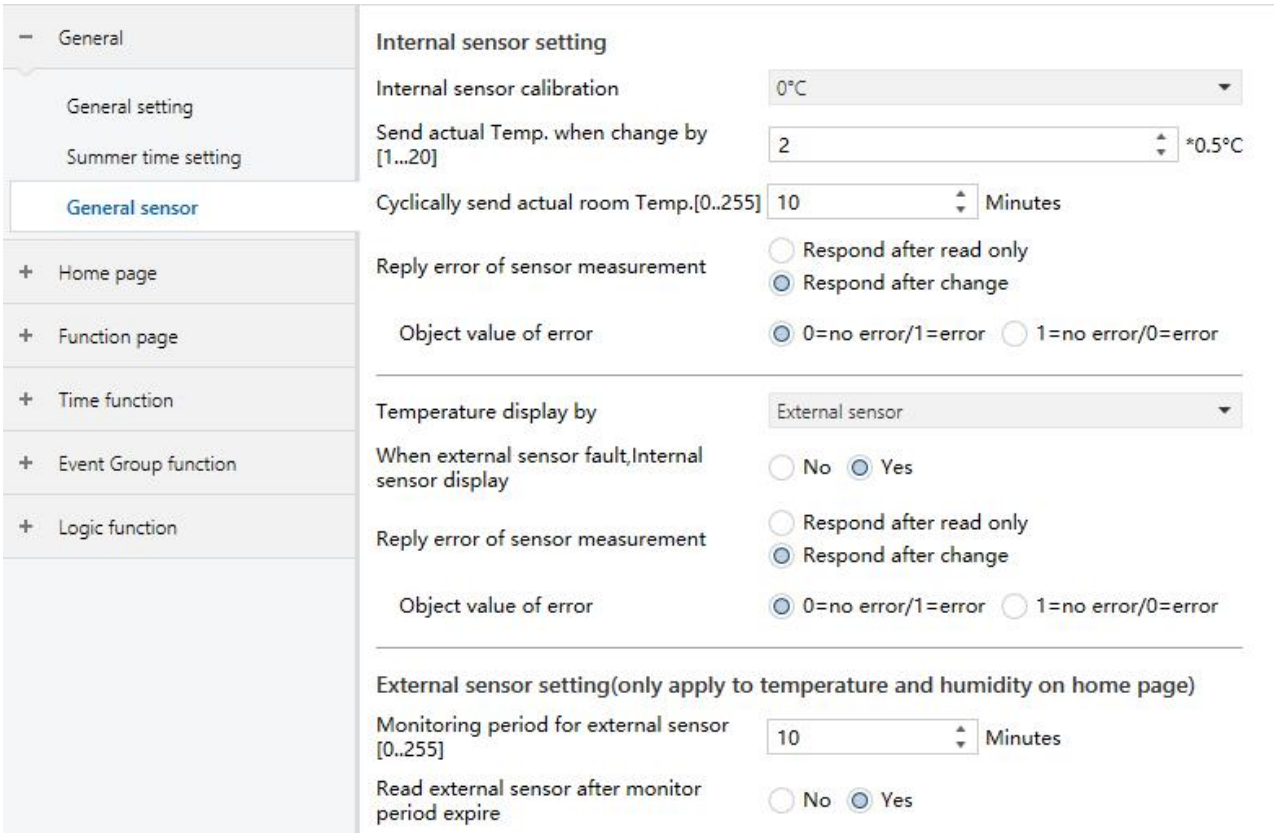


Fig.5.1.6 "General sensor" parameter window

The following parameters is used for setting the calibration value, sending condition and error report of internal sensor. If internal sensor is selected for other functions as well, please refer to this section.

Parameter "Internal sensor calibration"

This parameter for setting the temperature calibration value of the internal sensor, that is, to calibrate the measured value of internal sensor to make it closer to the current ambient temperature. Options:

-5℃

...

0℃

...

5℃

Note: after the device is powered on, the stability time of internal sensor detection will take 30 minutes, therefore, the detected temperature value in the early stage of device work may be inaccurate.

Parameter "Send actual Temp. when change by[1..20]*0.5℃"

This parameter for setting when temperature turns to a certain value, send the actual temperature value to the bus. Options: **1...20**

Parameter "Cyclically send actual room temp.[0...255]min"

Setting the time for cyclically sending the temperature detection value to the bus. Options: **0..255min**

This period is independent and starts time counting after programming completion or reset. Transmission change has no affect on this period.

Parameter "Reply error of sensor measurement"

This parameter for setting the condition of sending error status report when internal sensor error, options:

Respond after read only

Respond after change

Respond after read only： only when the device receives a read error from other bus device or bus will the object "Internal sensor - Temp. Error report" send the error status to the bus;

Respond after change： the object "Internal sensor - Temp. Error report" will immediately send the telegram to the bus to report the error value when the error status has changed.

-- Parameter "Object value of error"

This parameter for defining object value of error. Options:

0=no error/1=error

1=no error/0=error

0=no error/1=error： the object value for which internal sensor no error occurs is 0, and the object value for which internal sensor error occurs is 1;

1=no error/0=error： it has the opposite meaning.

Note: if the internal sensor connection is abnormal or the detected temperature is outside the range of - 20℃ ～60℃, the device will consider the sensor as faulty or wrong .

Parameter "Temperature display by"

Setting the source of the temperature display on the home page. Options:

Disable

Internal sensor

External sensor

Internal sensor： The temperature value measured by internal sensor, and it is sent or read to the bus by the object "Internal sensor - Actual temperature" ;

External sensor：To measure the temperature value through other temperature control devices on the bus and receive the value from the object "External sensor - Temperature"; When the device does not receive the measured value from external sensor, the temperature will be displayed as 0 or the value measured by the internal sensor.

Parameter "When external sensor fault, Internal sensor display"

This parameter is visible when the external sensor is selected. For setting whether to enable internal sensor measurement when external sensor error occurs. Options:

No

Yes

No：When external sensor is in fault, internal sensor display is not enabled. 0 will be displayed by default.

Yes：When the external sensor is in fault, the internal sensor display is enabled.

Parameter "Reply error of sensor measurement"

This parameter is visible when external sensor is selected, setting the condition of sending error status report when external sensor error. Options:

Respond after read only

Respond after change

Respond after read only：only when the device receives a read error from other bus device or bus will the object "External sensor - Temp. Error report" send the error status to the bus;

Respond after change：the object "External sensor - Temp. Error report" will immediately send the telegram to the bus to report the error value when the error status has changed.

-- Parameter "Object value of error"

This parameter for defining object value of error. Options:

0=no error/1=error

1=no error/0=error

0=no error/1=error：the object value for which external sensor no error occurs is 0, and the object value for which external sensor error occurs is 1;

1=no error/0=error：it has the opposite meaning.

The following two parameters for setting the monitoring period for external sensor and humidity sensor. Only suitable for temperature and humidity display of home page on the device:

Parameter "Monitoring period for external sensor [0..255]min"

This parameter for setting the period of device monitoring external sensor. Monitoring period will restart counting when the device receives value. Options: **0...255**

When the monitoring period arrives, if the detection value of the external sensor is not received, it will considered as external sensor fault and display 0, or through parameter "when external sensor fault, internal sensor display" to enable the display of the value measured by the internal sensor.

Note: To prevent missing detection values from bus busy, it is recommended that monitoring period should be at least twice longer the sensor's cyclic transmission period.

Parameter "Read external sensor after monitor period expire"

Setting whether to send read request telegram to external sensors after the monitoring period expires.

Options:

No

Yes

No：Do not send read request telegram.

Yes：After the monitoring period expires, if the screen does not receive the detection value of the external sensor, a read request telegram will be sent to the external sensor.

Note: due to the large heating of LCD screen, if internal sensor is used to detect temperature, the setting time for turning off backlight is recommended to be 5 ~ 15s.

5.2 Parameter window “Home page”

5.2.1 Parameter window “Home Page x”

Parameter window “Home Page x” as shown in Fig.5.2.1, for setting the layout and page navigation function of the home page, up to 2 home pages can be set, and up to 8 pages or icons navigation in the Multifunction page can be set. The parameters for each navigation are the same, and can be linked to the specified function page. The following is an example of a navigation function that describes their parameter settings.

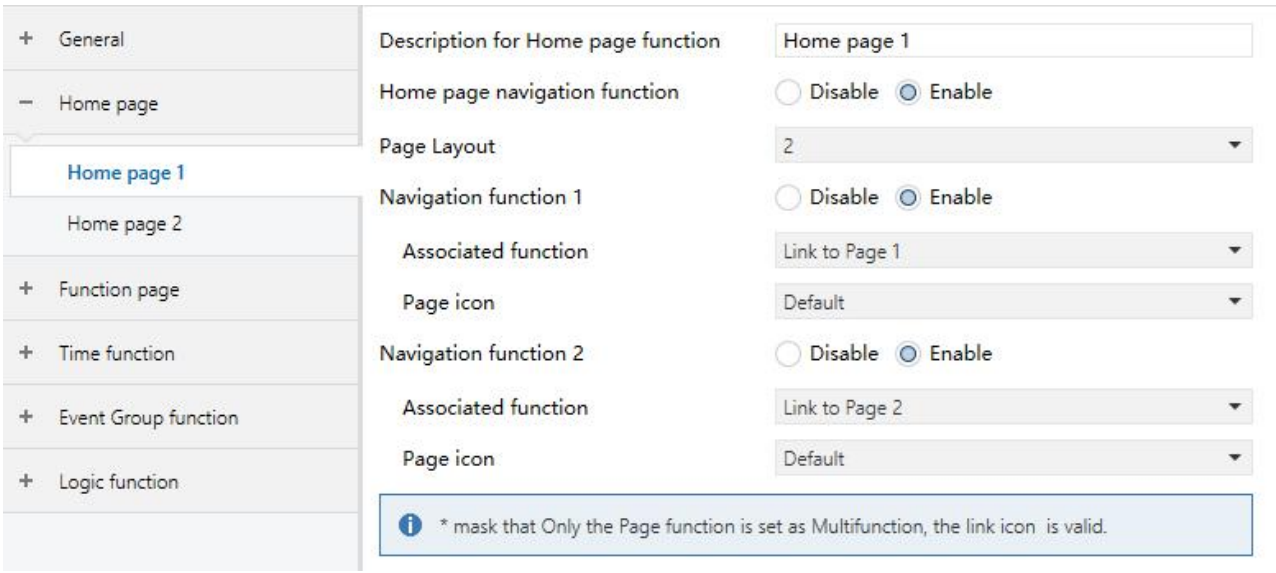


Fig.5.2.1 “Home Page x” parameter window

Parameter “Description for Home page function”

Setting the interface name of the home page, maximum 15 characters, the actual maximum display character is up to 5 Chinese characters.

Parameter "Home page navigation function"

Setting whether to enable homepage navigation function. Options:

Disable

Enable

When "Disable", directly display the function page. Select the specific function page by sliding when there are multiple pages.

When "Enable", the following parameters are visible.

Parameter "Page Layout"

Setting page layout, that is, the displayed page number in homepage. Options:**1/2/3/4/6/8**

Up to 8 navigation function page can be set to display in one homepage. Directly click one of the icons to quickly jump to the selected function control interface.

Note: Up to 6 navigation function page can be set to display in one homepage for V50 horizontal style.

Parameter "Navigation function x, x=1…9"

Setting whether to enable navigation function x. Options:

Disable

Enable

When "Enable" is selected, the following parameters are visible.

– Parameter "Associated function"

Setting the function page or the icons of multifunction page that the navigation function x links to. Options:

Link to Page 1

Link to Page 2

...

Link to Page 15

Link to icon in Page 1 *

...

Link to icon in Page 15 *

The previous 15 options for linking to function page, the last 15 options for linking to one of the icons of the multifunction page.

Note: The linked function page needs to be configured. If it is not configured, the link is invalid. Similarly, the linked multifunction page needs to be configured, and the icons of the page also need to be configured, otherwise they are not valid.

– Parameter "Page icon"

This parameter is visible when the previous parameter linked to the function page, for setting the icons in the function page. Options:

Default

- **Lighting**
- **Scenario**

  ...

- **Reception**

Default：Display an icon based on the linked function page. The default icons corresponding to the function page and the icons corresponding to the options are described in the appendix.

– Parameter "Icon number"

This parameter is visible when parameter "Associated function" linked to the function page, for setting the icon number. Options：**1/2/3/4/5/6/7/8**

Note: For V50 horizontal style, the maximum icon number of multifunction pages that can be linked is 6.

For example, "Link to icon in Page 2 *" in parameter "Associated function" is selected, this icon number is set to be 5, that is, link to the 5th icon of the multifunction page.

***mask that Only the Page function is set as Multifunction, the link icon is valid.**

For example, "Link to icon in Page 6" of the parameter "Associated Navigation", but if Page 6 is not set Multifunction, then the link is not valid.

5.3 Parameter window “Function Page”

5.3.1 Parameter window “Page Setting”

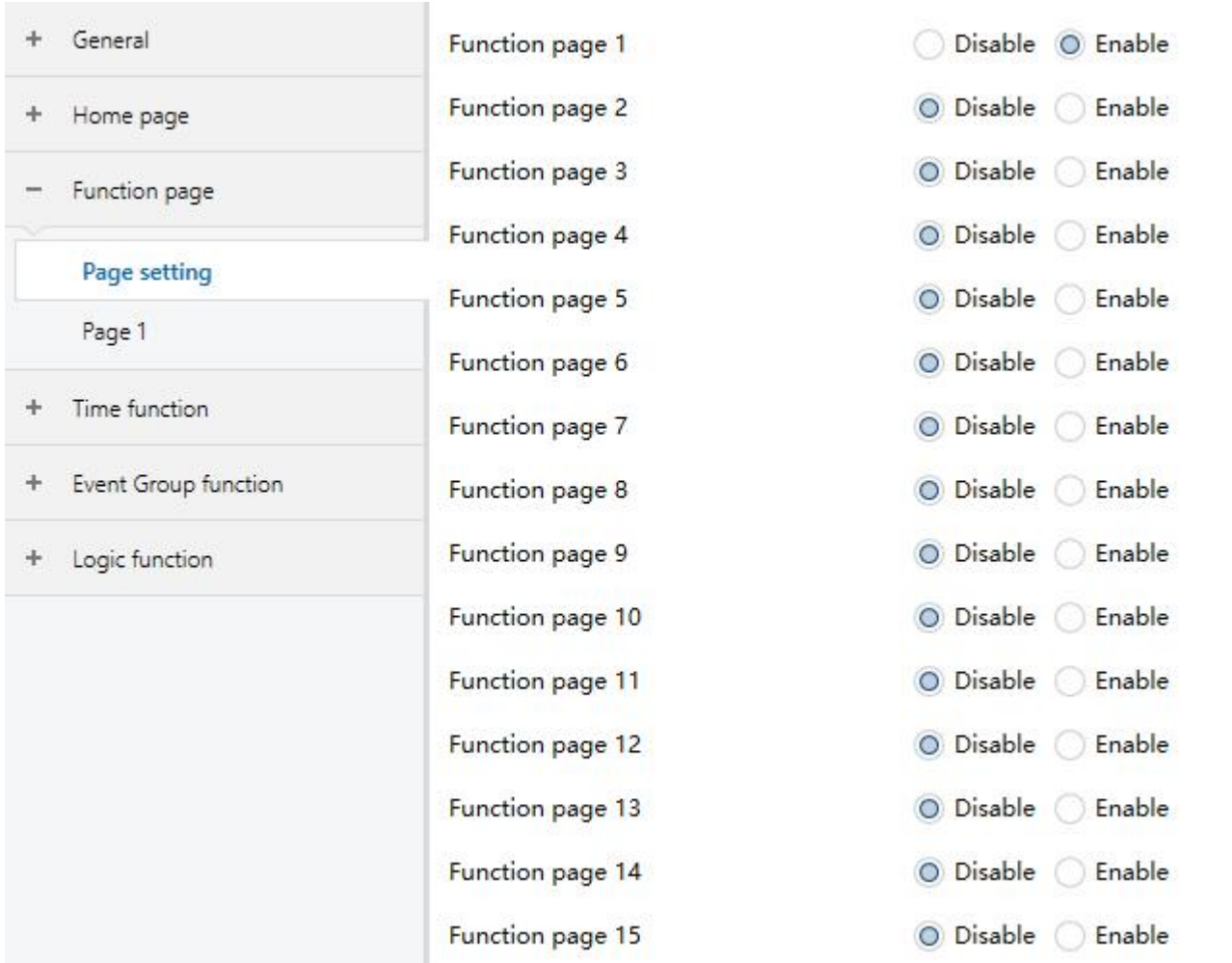


Fig.5.3.1 “Function page setting” parameter window

Parameter “Function page x(x=1..15)”

Setting whether to enable function page x. Options:

Disable

Enable

When select “Enable”, parameter interface “Page x” is visible, as shown in Fig.5.3.2, the function of Page x can be set in this interface.

Up to 15 function page can be set.

Note: The previous 5 function pages can only be configured as Multifunction page control, and the last 10 function pages can be configured as all functions.

5.3.2 Parameter window “Page x-- Multifunction”

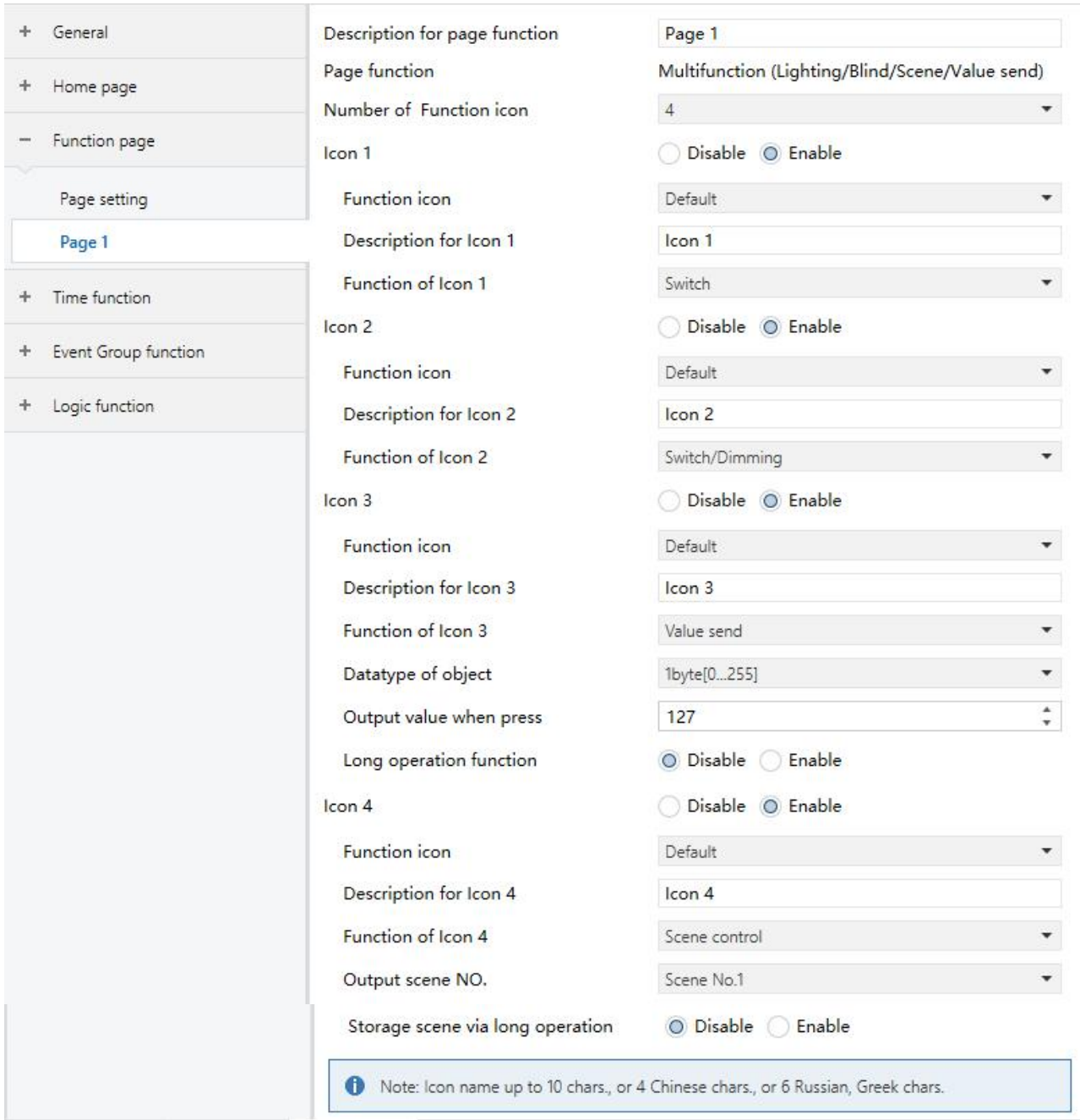


Fig.5.3.2 “Page x -- Multifunction (Lighting/Blind/Scene/Value send)” parameter window

Parameter “Description for page function”

Setting the title name of function page interface, up to 15 characters can be input, the actual displayed characters are up to 5 Chinese characters.

Parameter “Page function”

Setting the function of the page. Options:

Multifunction (Lighting/Blind/Scene/Value send)

HVAC

Air conditioner

Background Music

RGB dimming

Air Quality display

Floor heating

Ventilation System

Energy Metering display

The display of the interface depends on the function selected, page1-5 only for multifunction setting, while page 6-15 for all the functions setting.

The following sections describe the parameter settings for each function.

In this section, the functions of page are mainly about settings for lighting, curtains, scene and value send, as follows:

Parameter "Number of Function icon"

Setting the number of function icon in the multifunction page. Options:**1/2/3/4/6/8**

Note: Up to 6 icons can be set in each multifunction page for V50 horizontal style.

Parameter "Icon x，x=1…8"

Setting whether to enable the function of Icon X. Options:

Disable

Enable

When "Enable" is selected, the following parameters are visible.

– Parameter "Function icon"

Setting icon for using. Options:

Default

No icon, only text

- **Ceiling light**

...

- **General**

Default：Displays the icon based on the selected function. The default icons corresponding to the function page and the icons corresponding to the options are described in the appendix.

– Parameter "Description for Icon x"

Setting the description displayed on the screen for Icon X, up to12 characters can be input.

The actual display is up to 9 characters(or 4 Chinese characters).

– Parameter "Function of Icon x"

Setting the function of Icon X. Options:

Switch

Switch/Dimming

Value send

Open/close Blind

Roller Blind(without slat)

Venetian Blinds(with slat)

Blind(open/close/stop)

Blind(up/down/stop)

Scene control

Switch：the function of icon is for switch controlling. The object "Switch" and the object "Switch status" are visible, in general, the two objects are used in conjunction. For example, "Switch" corresponding to the switch object of the switch actuator, "Switch Status" corresponding to the switch status object, if the object "Switch Status" receives the status feedback of switch actuator, the icon status will also update as well.

Switch/Dimming： the function of icon is for switch and dimming.

Object "Switch", "Brightness dimming", "Brightness status" and "Relative dimming" are visible, short press operation will trigger a command of switch. Long press operation will enable a slider for dimming, which can be slid to dimming. Support three buttons for relative dimming: dimming up, dimming down, stop dimming.

Generally, object "Brightness dimming" and object "Brightness status" are used in conjunction. For instance, "Brightness dimming" corresponding to the brightness dimming object of the dimming actuator, "Brightness Status" corresponding to the brightness status object of the dimming actuator.

Value send: the function of icon is for value sending, to specify sending different types of value.

Open/close Blind： the function of icon is for Open/Close Blind controlling, supports to adjust the curtain position by sliding the slider in percentage, as well as controlling through the three buttons: opening, closing, stop running.

Roller Blind(without slat)： the function of icon is for Roller Blind(without slat) controlling, supports to adjust the curtain position by sliding the slider in percentage, as well as controlling through the three buttons: running up, running down, stop running.

Venetian Blinds(with slat)： the function of icon is for Venetian Blinds(with slat) controlling, supports to adjust the curtain position by sliding the slider in percentage, as well as controlling through the three buttons: running up, running down, stop running.

Blind(open/close/stop) **:** the function of icon is for Open/Close Blind controlling, supports controlling through the three buttons: opening, closing, stop running.

Blind(up/down/stop)： the function of icon is for Roller Blind controlling, supports controlling through the three buttons: running up, running down, stop running.

Scene control： for scene controlling, it will recall scene when touching the scene recall icon, it can also

enable long operation for scene storage.

The following parameters are visible when “Value send” is selected.

-- Parameter “Datatype of object”

Setting data type of object for value sending. Options:

1bit[On/Off]

2bit[0…3]

4bit[0…15]

1byte[0…255]

1byte[0…100%]

1byte[scene control]

2byte[-32768…32767]

2byte[0…65535]

-- Parameter “Output value when press”

Setting the output value sent from object when press, the range of value depends on the selected data type.

-- Parameter “Long operation function”

Setting whether to enable long operation function. Options:

Disable

Enable

When select “Enable”, the following parameters are visible.

-- Parameter “Output value when long operation”

Setting the output value sent from object when long operation, the range of value depends on the selected data type.

The following two parameters are visible when “Scene control” is selected.

-- Parameter “Output scene NO.”

Setting the output scene number when operation. Options: **1..64**

Scene NO.1..64 corresponding to telegram value 0..63.

-- Parameter “Storage scene via long operation”

Setting whether to enable storage scene via long operation. Options:

Disable

Enable

5.3.3 Parameter window “Page x-- HVAC”

Parameter window “Page x-- HVAC” as shown in Fig.5.3.3, it is mainly about fan and HVAC parameter setting.

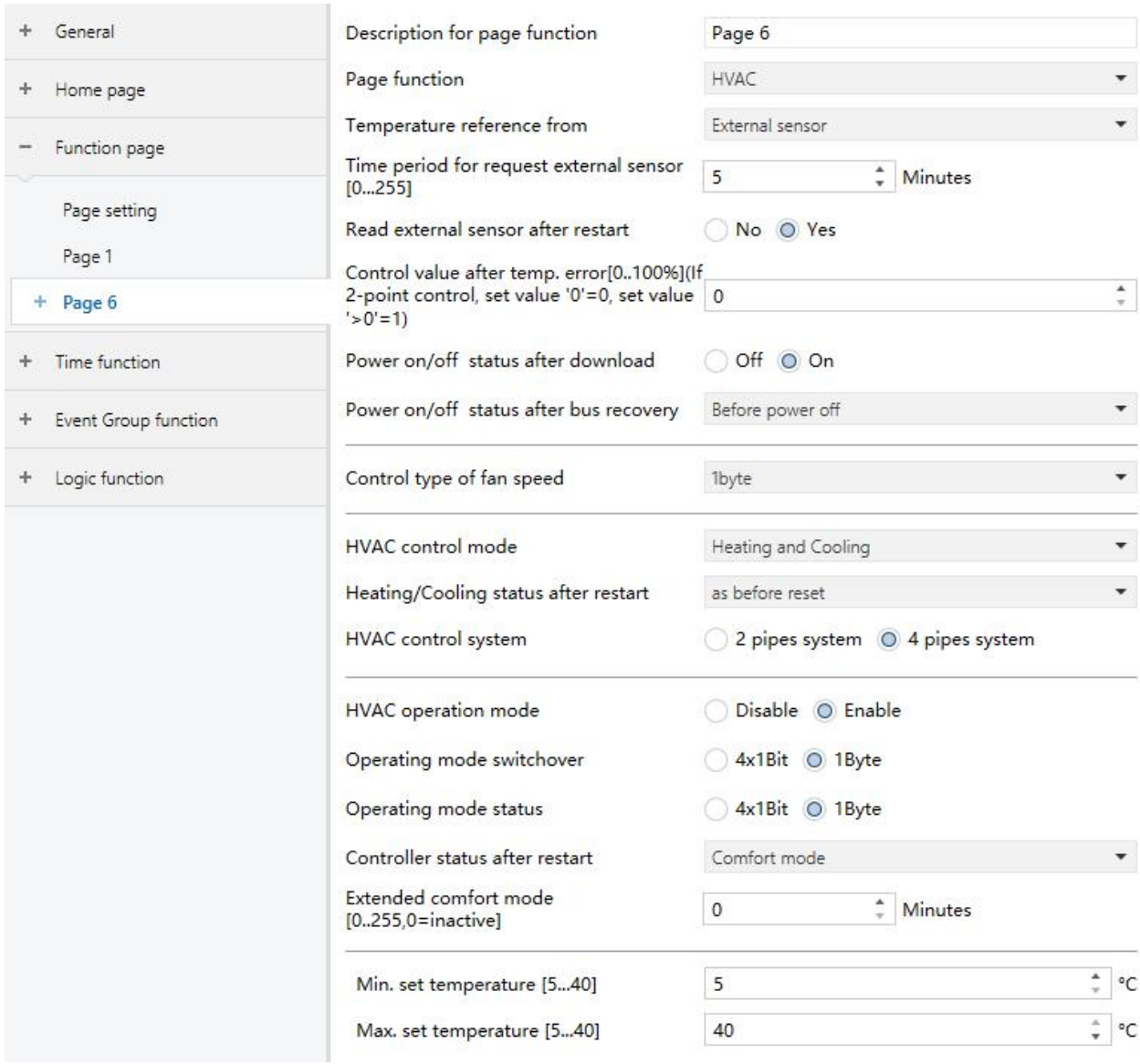


Fig.5.3.3 (1) “Page x -- HVAC General” parameter window

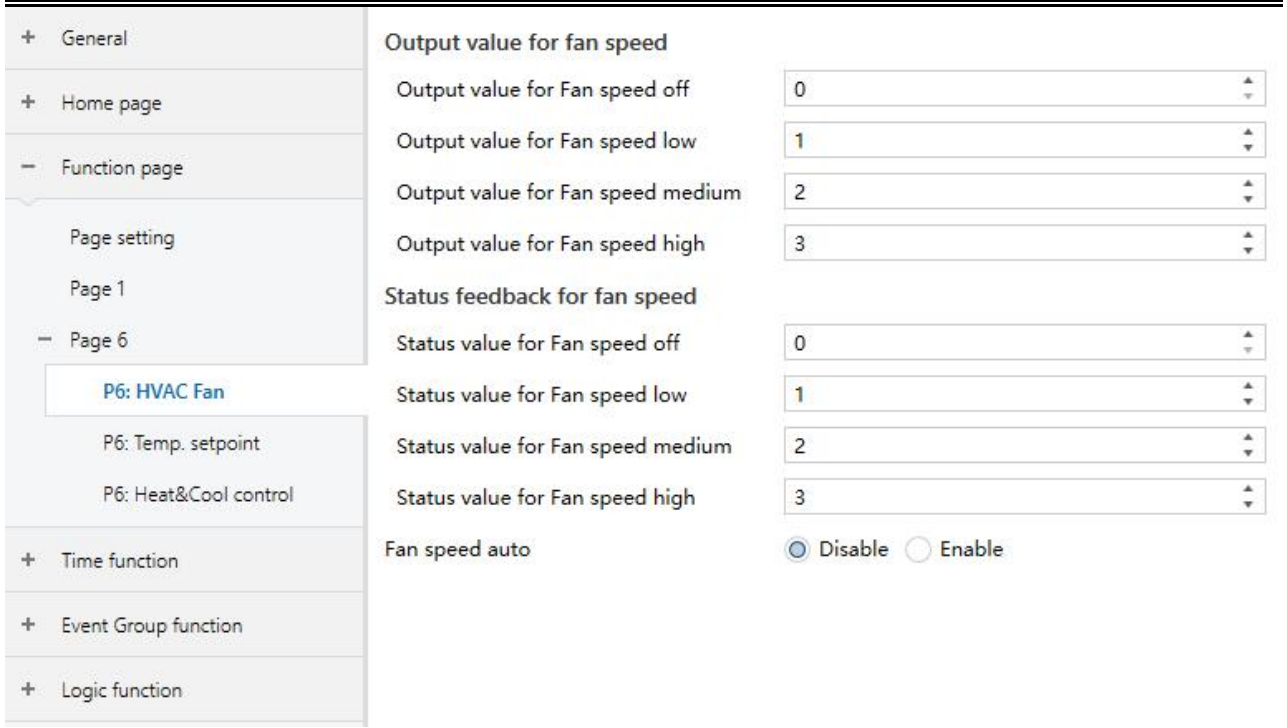


Fig.5.3.3 (2) "P x: HVAC Fan_1byte" parameter window

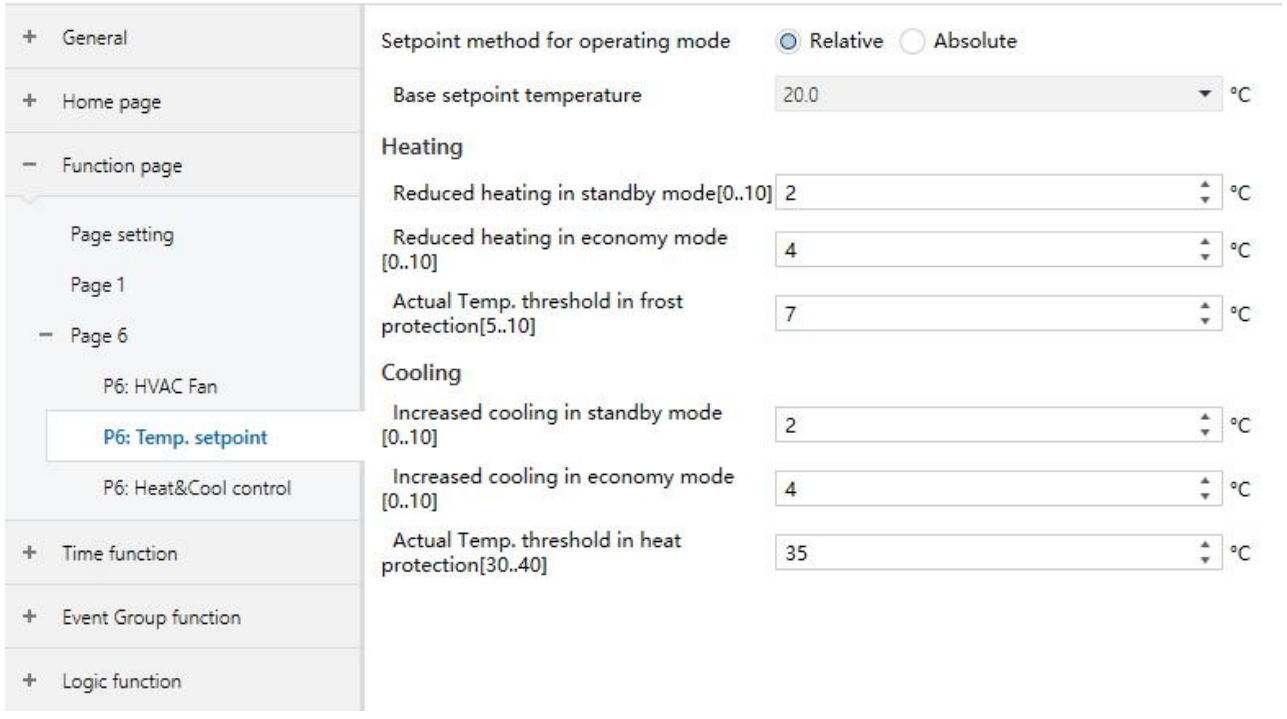


Fig.5.3.3 (3) "P x : Temp. Setpoint_Relative" parameter window

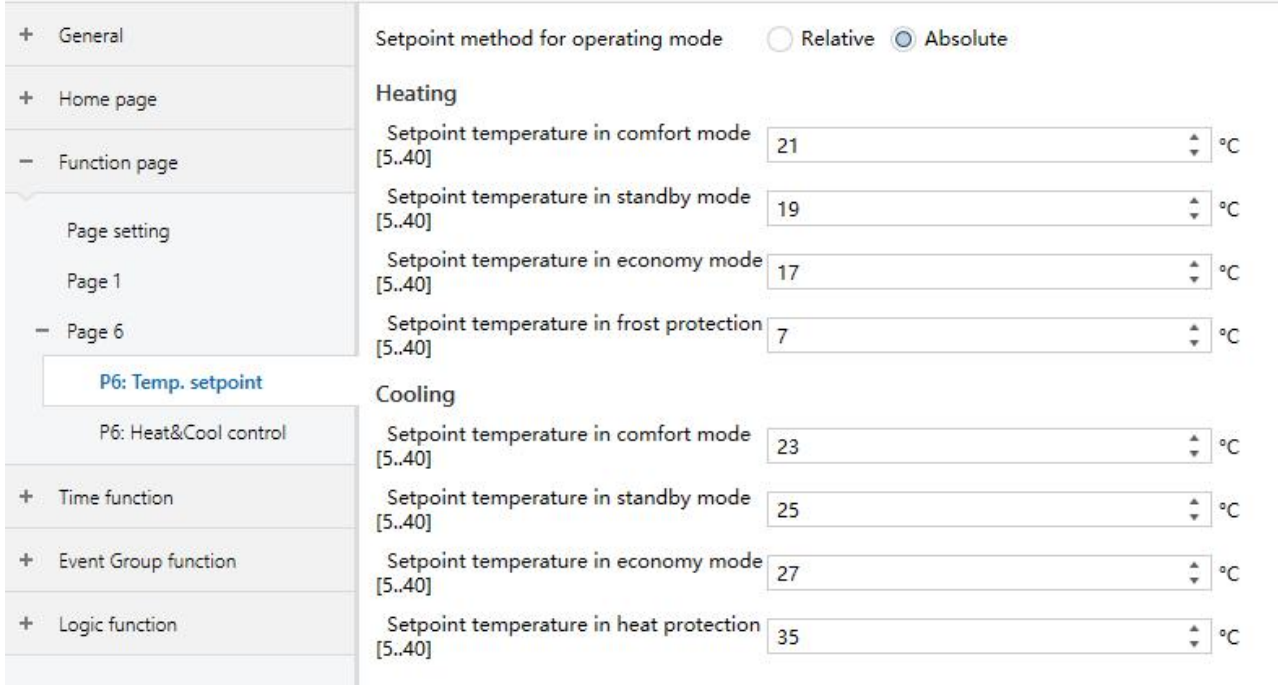


Fig.5.3.3 (4) "P x: Temp. Setpoint_Absolute" parameter window

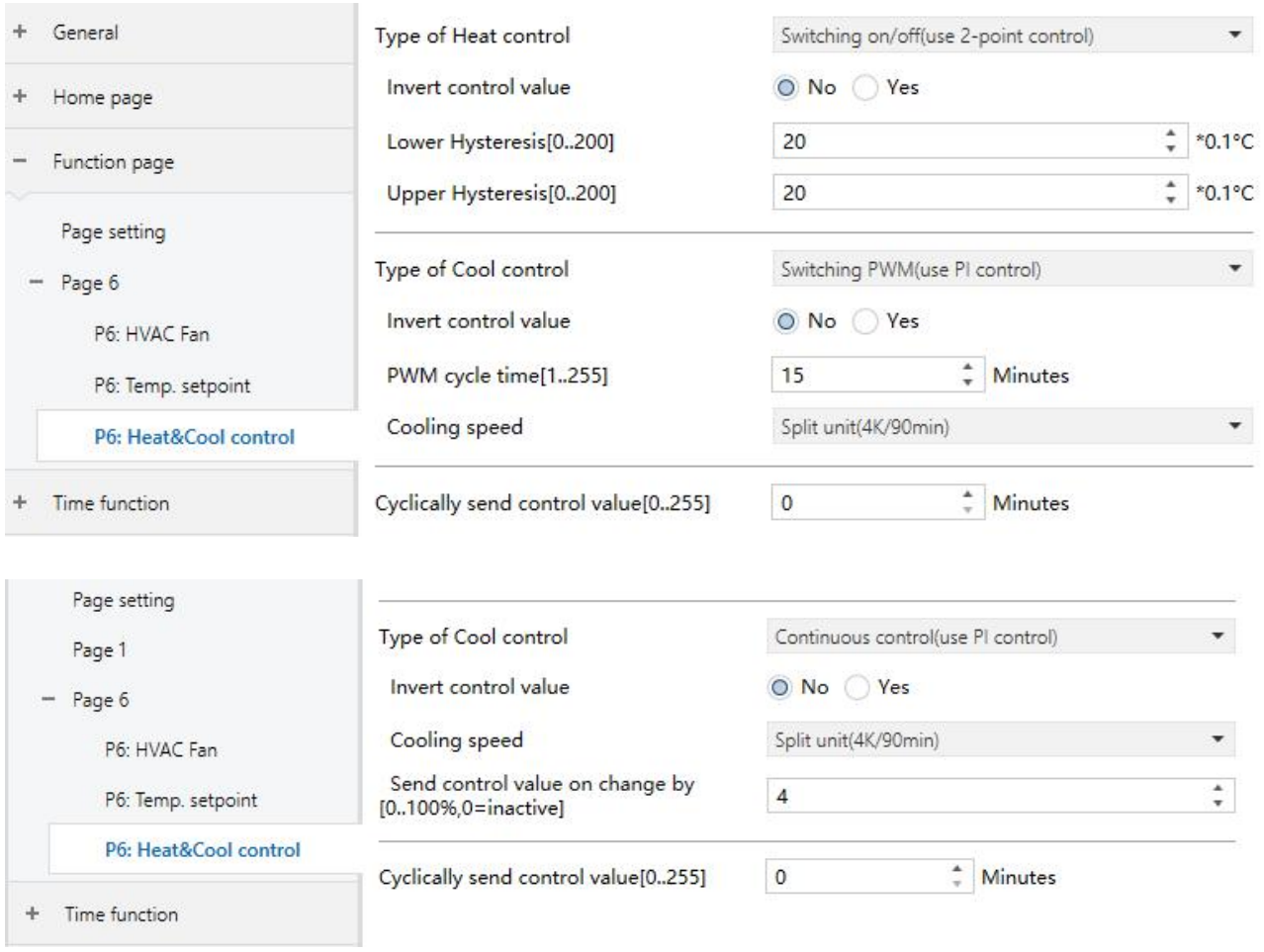


Fig.5.3.3 (5) "P x: Heat&Cool control" parameter window

Parameter "Temperature reference from"

This parameter for setting the resource of the HVAC function temperature reference. Options:

Internal sensor

External sensor

Internal and External sensor combination

When selecting the reference internal sensor, the temperature is determined by the setting of the internal sensor in the parameter interface general sensor.

The following two parameters are visible when External sensor is selected.

-- Parameter "Time period for request external sensor [0..255]min"

This parameter for setting the time period for read request external sensor. Options: **0...255**

-- Parameter "Read external sensor after restart"

Options:

No

Yes

No：When the bus reset or programming is completed, the read request will not occur immediately, but wait until the cycle time to send.

Yes：After the bus is reset or programmed, a read request is sent to the external temperature sensor.

-- Parameter "Combination ratio"

This parameter can be seen when the HVAC temperature is acquired by the internal and external sensor combination. Set the internal sensor and the external sensor to measure the specific gravity of the temperature. Options:

10% Internal to 90% External

20% Internal to 80% External

…

80% Internal to 20% External

90% Internal to 10% External

For example, if the option is "40% internal to 60% external", then the internal sensor accounts for 40%, the external sensor accounts for 60%, and the control temperature = (internal sensor's temperature × 40%) + (external sensor's temperature × 60%), the HVAC function of the device will control and display the temperature according to the calculated temperature.

When two sensors are combined for detection, when one sensor is in error, the temperature value detected by the other sensor is used.

-- Parameter "Control value after temp. error[0..100%](If 2-point control, set value'0'=0,set value'>0'=1)"

This parameter setting for the control value when temperature error occur. Options: **0..100**

If under 2-Point control, then the parameter value is 0, as well as the control value; if the parameter value is more than 0, then the control value will be 1.

Parameter "Power on/off status after download "

Setting power on/off status of HVAC interface after download. Options:

Off

On

Parameter "Power on/off status after bus recovery"

Setting power on/off status of HVAC interface after bus recovery. Options:

On

Off

Before power off

On：HVAC interface is on when device is powered on, this interface is operational, HVAC will calculate internally according to the control type to determine the current controlling status;

Off：HVAC interface is off when device is powered off, this interface is not operational, and HVAC is not going to calculate;

Before power off：HVAC interface will recover to the status before bus power off, if it is on, then HVAC will calculate internally according to the control type to determine the current controlling status.

Parameter "Control type of fan speed"

This parameter for setting the object type of fan speed control. Options:

Disable

1bit

1byte

Disable：fan speed control is disable;

1bit：the object type of fan speed control is 1bit;

1byte： the object type of fan speed control is 1byte, at the same time, parameter window as shown in Fig.5.3.3(2).

-- Parameter "Fan speed auto"

This parameter is visible when the previous parameter is set to be 1bit or 1byte, for setting whether to enable automatically operation of fan speed. Options:

Disable

Enable

Enable：when enable, there will be auto level added in fan speed controlling.

Parameter "HVAC control mode"

This parameter for setting HVAC control mode. Options:

Heating

Cooling

Heating and Cooling

Heating and Cooling： heating and cooling are available. At the same time, the following parameters are visible.

-- Parameter "Heating/Cooling status after restart"

This parameter for setting the heating/cooling status after restart. Options:

Heating

Cooling

As before reset

As before reset: when the bus is reset after power on, the control mode will recover as before reset. If the control mode after the device powered on is uncertain after the application is downloaded, it is necessary to select the control mode artificially.

-- Parameter "HVAC control system"

Setting for the type of HVAC control system, that is, pipe types of fan coil water inlet/outlet. Options:

2 pipes system

4 pipes system

2 pipes system: shares an inlet and outlet pipe for heating and cooling, that is, both hot and cold water are controlled by a valve.

4 pipes system: has its own inlet and outlet pipes for heating and cooling, and two valves are needed to control the entry and exit of hot water and cold water respectively.

Parameter "HVAC operation mode"

This parameter setting whether to enable HVAC operation mode. Options:

Disable

Enable

Enable: when enable, the following 4 parameters are visible.

-- Parameter "Operating mode switchover"

This parameter setting for the object type of operation mode switchover. Options:

4x1bit

1byte

When 1bit is selected, the objects of 4x1bit are visible. The four objects are: HVAC Output--Comfort mode, HVAC Output--Economy mode , HVAC Output--standby mode, and HVAC Output--Frost/Heat protection mode. When one of the modes is active, the corresponding object will send the telegram "1", otherwise the "0".

When 1byte is selected, the object "HVAC Output-- HVAC mode" is visible. The telegrams sent are：“1” for comfort mode, "2" for standby mode, "3" for economy mode , "4" for protection mode.

-- Parameter "Operating mode status"

This parameter setting for the object type of room operating mode status feedback. Options:

4x1bit

1byte

When 1bit is selected, the objects of 4x1bit are visible. The device will update to different mode according to the ON or OFF telegram received from the objects. The four objects are: HVAC Input--Comfort mode, HVAC Input--Economy mode , HVAC Input--Frost/Heat protection mode, HVAC Input--standby mode.

The value of the current 3 objects are 0, operation mode is standby mode.

When 1byte is selected: "1" for comfort mode, "2" for standby mode, "3" for economy mode , "4" for protection mode. The device will update to the corresponding mode according to telegram received.

-- Parameter "Controller status after restart"

This parameter setting for the operation mode when device starts up. Options:

Standby mode

Comfort mode

Economy mode

Frost/heat protection

-- Parameter "Extended comfort mode[0..255,0=inactive]min"

This parameter setting the delay time for comfort mode automatically returning to the economy mode . Options: **0..255**

When the setting value is "0", the function of comfort mode delay time is disable, that is, comfort mode will

not return to the economy mode automatically;

When the setting value is 1-255, when economy modes switches to comfort mode, this function is enable;

Comfort mode will return to economy mode automatically after reaching to the setting delay time;

This parameter only for the switching of economy mode and comfort mode.

-- Parameter "Basic setpoint temperature [℃]"

This parameter is visible when HVAC mode is disable, for setting the basic setpoint temperature. Options:

10

10.5

...

35

The setting value will be modified through object "Setpoint adjustment", then the new value will be stored after the bus power off.

Parameter "Min. /Max. set temperature [5..40]℃"

Setting to limit the adjustable range of the setting temperature, the setting minimum should be less than the setting maximum.

If the setting temperature beyond the limited range, the will output the limited temperature.

The following parameters are visible when fan speed control type is selected to be 1byte, as shown in Fig.5.3.3(2).

Output value for fan speed

Parameter "Output value for Fan speed off/low/medium/high"

These four parameters are visible when fan speed object type is selected to be 1byte, setting the switching value that sent by each fan speed. Options: **0..255**

Status feedback for fan speed

Parameter "Status value for Fan speed off/low/medium/high"

These four parameters are visible when fan speed object type is selected to be 1byte, for setting the status feedback value of each fan speed. The device will update and display the fan speed according to the feedback value. Options:**0..255**

Parameter "Setpoint method for operating mode"

This parameter is visible when enable HVAC operation mode, for setting the adjust method of the setting temperature. Options:

Relative

Absolute

Relative: relative adjustment, the setting temperature of economy mode and standby mode will refer to the defined temperature set point.

Absolute: absolute adjustment, each mode has its independent temperature set point.

The following parameters are visible when enable HVAC operation mode , as shown in Fig.5.3.3(3).

Parameter "Basic setpoint temperature [℃]"

Setting the reference value of the setting temperature, which provide the setting temperature of comfort mode. Options:

10

10.5

..

35

The setting temperature can be modified through object "Setpoint adjustment", then the new value will be stored after the bus power off.

Parameter "Reduced heating in standby mode [0..10]℃"

Parameter "Increased cooling in standby mode [0..10]℃"

For setting the setpoint of standby mode. Options: **0...10 [℃]**

Heating：the setpoint of standby mode is the temperature set point minus the reference value;

Cooling：the setpoint of standby mode is the temperature set point plus the reference value.

Parameter "Reduced heating during economy mode [0..10]℃"

Parameter "Increased cooling during economy mode [0..10]℃"

For setting the setpoint of economy mode . Options: **0...10 [℃]**

Heating：the setpoint of economy mode is the temperature set point minus the reference value;

Cooling：the setpoint of economy mode is the temperature set point plus the reference value.

Parameter "Actual Temp. threshold in frost protection[5..10]℃" (for heating)

For setting the setpoint of frost/heat protection mode of heating function. Options: **5..10 [℃]**

Under the frost/heat protection mode, when ambient temperature reduce to the setpoint, the controller will trigger a control telegram so that related heating controller will output heating control to prevent the temperature from being too low.

Parameter "Actual Temp. threshold in heat protection[30..40]℃" (for cooling)

Setting the actual temperature threshold in heat protection for cooling function. Options: **30...40 [℃]**

Under the heat protection, when the ambient temperature rises to the temperature set point, then the controller will trigger a control telegram so that related cooling controller will output cooling control to prevent the temperature from being to high.

The following parameters are visible when enable HVAC operation mode and using absolute set point method of operating mode, as shown in Fig.5.3.3(4).

Parameter "Setpoint Temp. in comfort mode [5..40]℃"

Parameter "Setpoint Temp. in standby mode [5..40]℃"

Parameter "Setpoint Temp. in economy mode [5..40]℃"

Parameter "Setpoint Temp. in frost protection mode [5..40]℃" (for heating)

Parameter "Setpoint Temp. in heat protection mode [5..40]℃" (for cooling)

These parameters for setting the set point temperature in each mode. Options: **5..40℃**

Parameter "Type of Heat/Cool control"

Setting the type of Heat/Cool control, as shown in Fig.5.3.3(5). Different control types are suitable for controlling different temperature controllers. Options:

Switching on/off (use 2-point control)

Switching PWM (use PI control)

Continuous control (use PI control)

– Parameter "Invert control value"

Setting whether to invert control value or normal sending control value, so that the control value will be suitable for the valve type. Options:

No

Yes

Yes：sending the control value to the bus through objects after inverting the control value.

The following two parameters are suitable for 2 point control:

-- Parameter "Lower Hysteresis [0..200]*0.1℃"

-- Parameter "Upper Hysteresis [0..200]*0.1℃"

These two parameters for setting the lower/upper hysteresis temperature in HVAC Heating or Cooling. Options: **0..200**

Under heating control,

When the actual temperature(T) > the setting temperature + the upper hysteresis temperature, then will stop heating;

When the actual temperature(T) < the setting temperature - the lower hysteresis temperature, then will start heating.

For example, the lower hysteresis temperature is 1℃, the upper hysteresis temperature is 2℃, the setting temperature is 22℃, if T is higher than 24℃, then it will stop heating; if T is lower than 24℃,then it will start heating; if T is between 21~24℃, then it will maintain the previous status.

Under the cooling control,

When the actual temperature (T) < the setting temperature -the lower hysteresis temperature, then will stop cooling;

When the actual temperature (T) > the setting temperature +the upper hysteresis temperature, then will start cooling.

For example, the lower hysteresis temperature is 1℃, the upper hysteresis temperature is 2℃, the setting temperature is 26℃, if T is lower than 25℃, then it will stop cooling; if T is lower than 28℃, then it will start cooling; if T is between 28~25℃, then it will maintain the previous status.

2-point control mode is a very simple control mode. When adopting this control mode, it is necessary to set the upper hysteresis temperature and the lower hysteresis temperature through parameters. When setting the hysteresis temperature, the following effects need to be considered:

1. When hysteresis interval is small, the temperature range will be small, however, frequent sending of control value will bring large load to the bus;

2. When hysteresis interval is large, the switch switching frequency will be low, but it is easy to cause

uncomfortable temperature change.

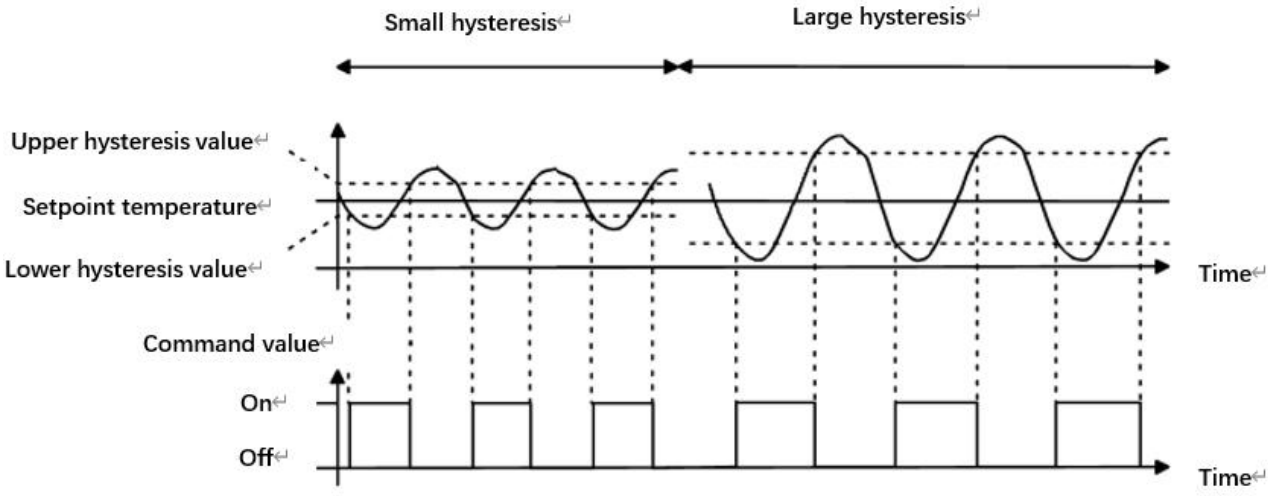


Fig.5.3.3(6) Effects of hysteresis on control value switch action(heating) under2-point control mode

The following two parameters are suitable for PI control:

-- Parameter "Heating speed"

-- Parameter "Cooling speed"

Setting the responding speed of heating or cooling controller. Different responding speeds are suitable for different environments.

Options:

Hot water heating (5K/150min)
Underfloor heating (5K/240 min)
Electrical heating (4K/100min)
Split unit/ Fan coil unit (4K/90min)
User defined

Options:

Cooling ceiling (5K/240min)
Split unit (4K/90min)
Fan coil unit(4K/90min)
User defined

-- Parameter "Proportional range[10..100]*0.1℃"(P value)

-- Parameter "Reset time[0..255]min"(I value)

These two parameters are visible when option "User defined" of parameter "Heating/Cooling speed"is

selected, for setting the PI value of PI controller.

– Parameter "PWM cycle time [1..255] min"

This parameter is only visible when the control type is "Switching PWM(use PI control)". For setting the period of the control object cycle to send the switch value, the object sends the switch value according to the duty cycle of the control value. For example, if the set period is 10 min and the control value is 80%, then the object will send an open telegram for 8 min. If the control value is changed, the time duty ratio of the on/ off telegram of the object will also change, but the period is still the time of parameter setting.

Options：**1...255**

The PI values of "Switching PWM (use PI control)" and "Continuous control (use PI control)" are the same, only different in control objects, the control object of "Continuous control" output PI value(1byte) directly, while the control value of "Switching PWM" output a "on/off" telegram according to the duty cycle of the control value.

– Parameter "Send control value on change by [0..100%, 0=inactive]"

This parameter is visible when control type is "Continuous control (use PI control)", for setting the changing value of the control value to be sent to the bus. Options: **0..100, 0＝inactive**

Parameter "Cyclically send control value [0..255]min"

Setting the period for cyclically sending the control value to the bus. Options: **0..255**

In PI control mode, the predefined control parameters of each PI controller in heating or cooling system are recommended as follows:

(1) Heating

Heating type	P value	I value(integration time)	Recommended PI control type	Recommended PWM period
Hot water Heating	5K	150min	Continuous/PWM	15min
Underfloor heating	5K	240min	PWM	15-20min
Electrical heating	4K	100min	PWM	10-15min
Split unit	4K	90min	PWM	10-15min
Fan coil unit	4K	90min	Continuous	--

(2) Cooling

Cooling type	P value	I value(integration time)	Recommended PI control type	Recommended PWM period
Cooling ceiling	5K	240min	PWM	15-20mIn

Split unit	4K	90min	PWM	10-15min
Fan coil unit	4K	90min	Continuous	--

(3) User defined

When the parameter“Heating/Cooling speed” is set to “User defined”, the parameter value of P (scale factor) and I (integration time) can be set through the parameter. When adjusting the parameters, refer to the fixed PI value mentioned in the above table. Even if the control parameters are adjusted slightly, the control behavior will be significantly different.

In addition, the integration time should be set properly. If the integration time is too long, the adjustment will be slow, and the oscillation will not be obvious; if the integration time is too small, the adjustment will be fast, but the oscillation will occur. 0 means the integral term is not used.

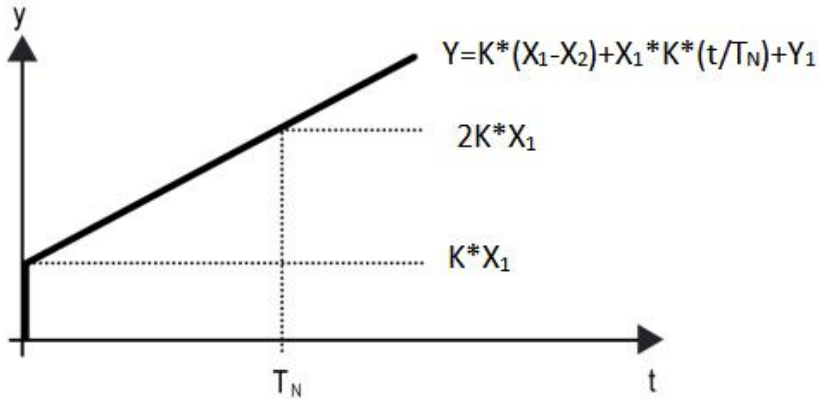


Fig.5.3.3 (7) control value of PI control mode

Y: control value

Y1: last control value

X1: temperature deviation = set temperature - actual temperature

X2: last temperature deviation = set temperature - actual temperature

T_N: integration time

K: scale factor (the scale factor is not zero)

PI control algorithm: $Y = K * (X1-X2) + X1 * K * t / T_N + Y1$

When the integration time is set to zero, the PI control algorithm is: $Y = K (X1-X2) + Y2$

Setting and influence of user-defined parameters:

Parameter setting	Effect
K: If the scale range is too small	Quick adjustment, and overshoot will occur
K: If the scale range is too small	Slow adjustment, but no overshoot
T_N: If the integration time is too short	Quick adjustment, but there will be oscillation

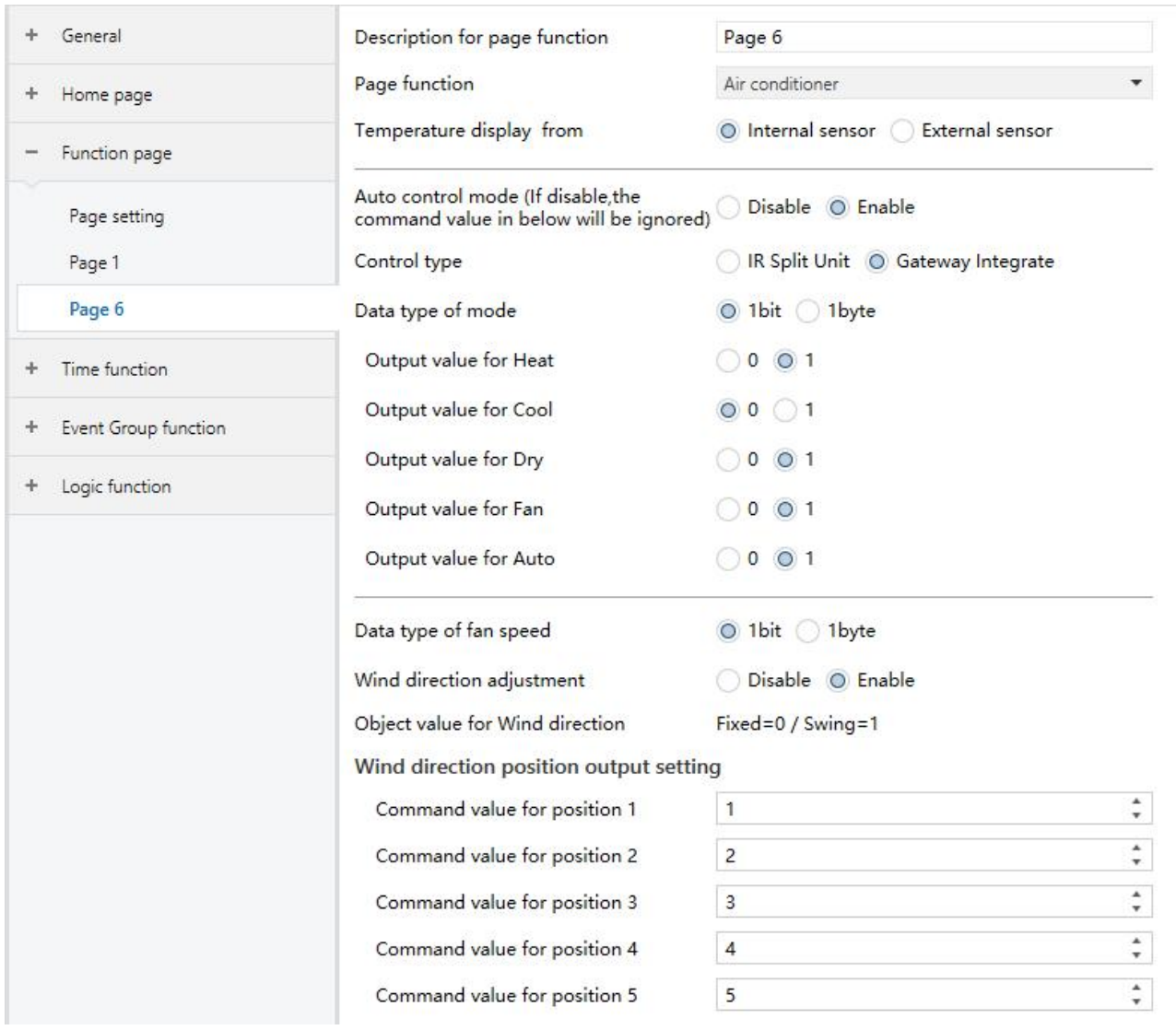
T_N: If the integration time is too long	Slow adjustment, no obvious oscillation

5.3.4 Parameter window "Page x-- Air conditioner"

Parameter window "Page x-- Air conditioner" shown as in Fig.5.3.4, for setting Air-Conditioner control, is suitable for the two Air-Conditioner control type: IR Split Unit and Gateway Integrate.

There are two object types of the Gateway Integrate: 1bit and 1byte.

IR Split Unit is controlled by 1byte object type.



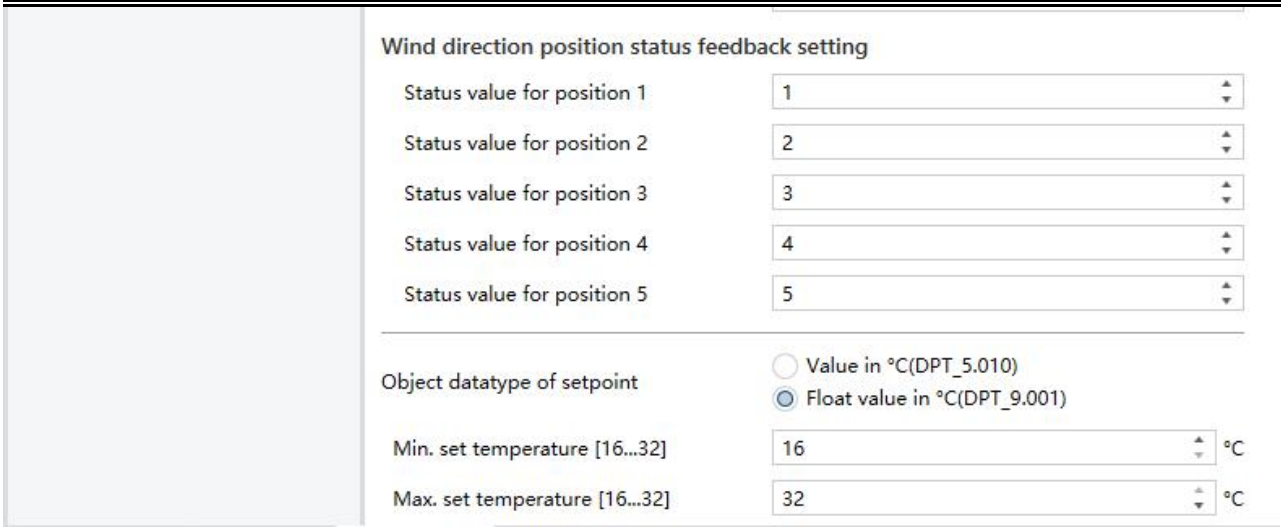
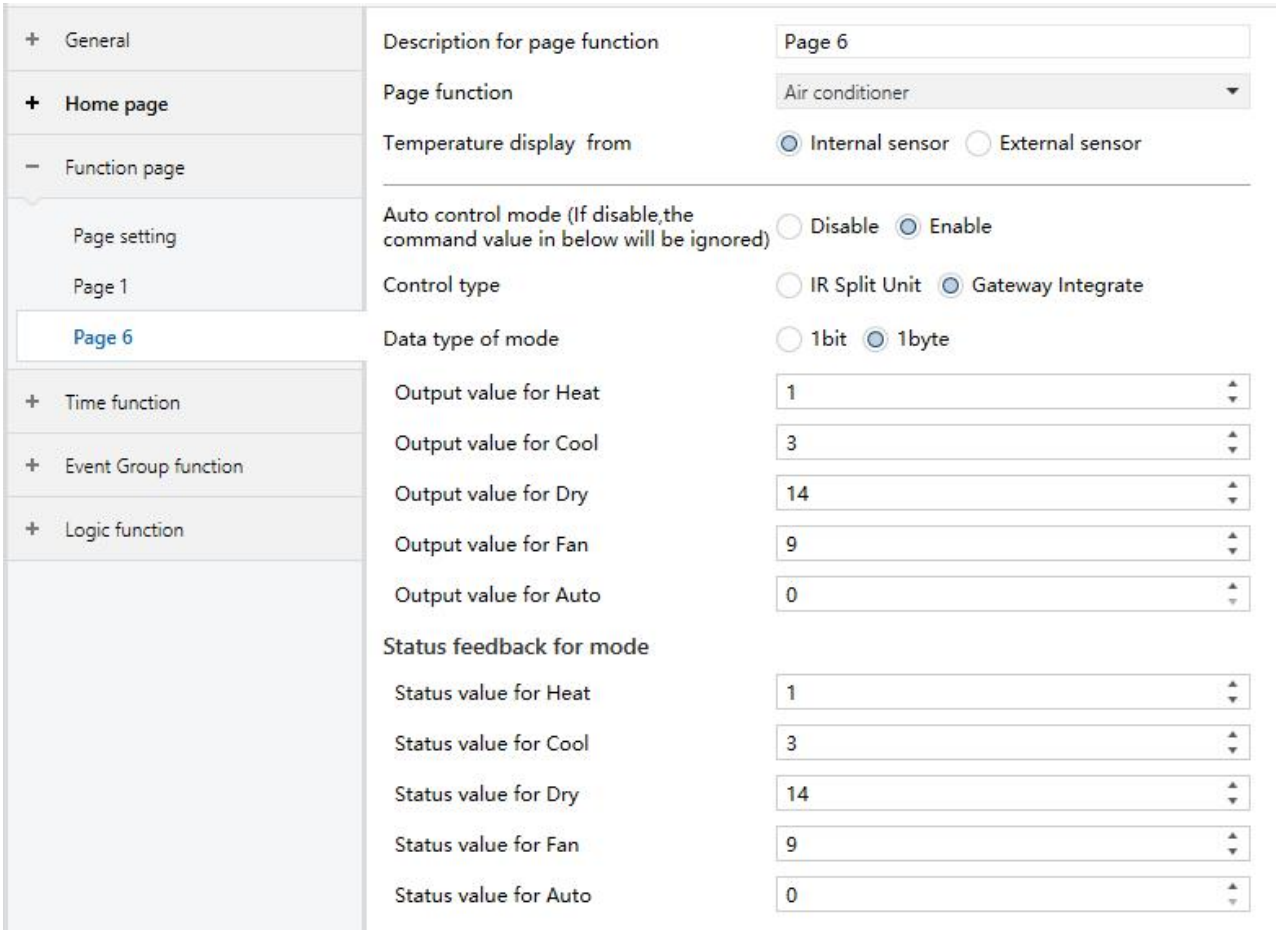


Fig.5.3.4 (1) "Page x -- Air conditioner" Parameter window (Gateway Integrate _ 1bit)



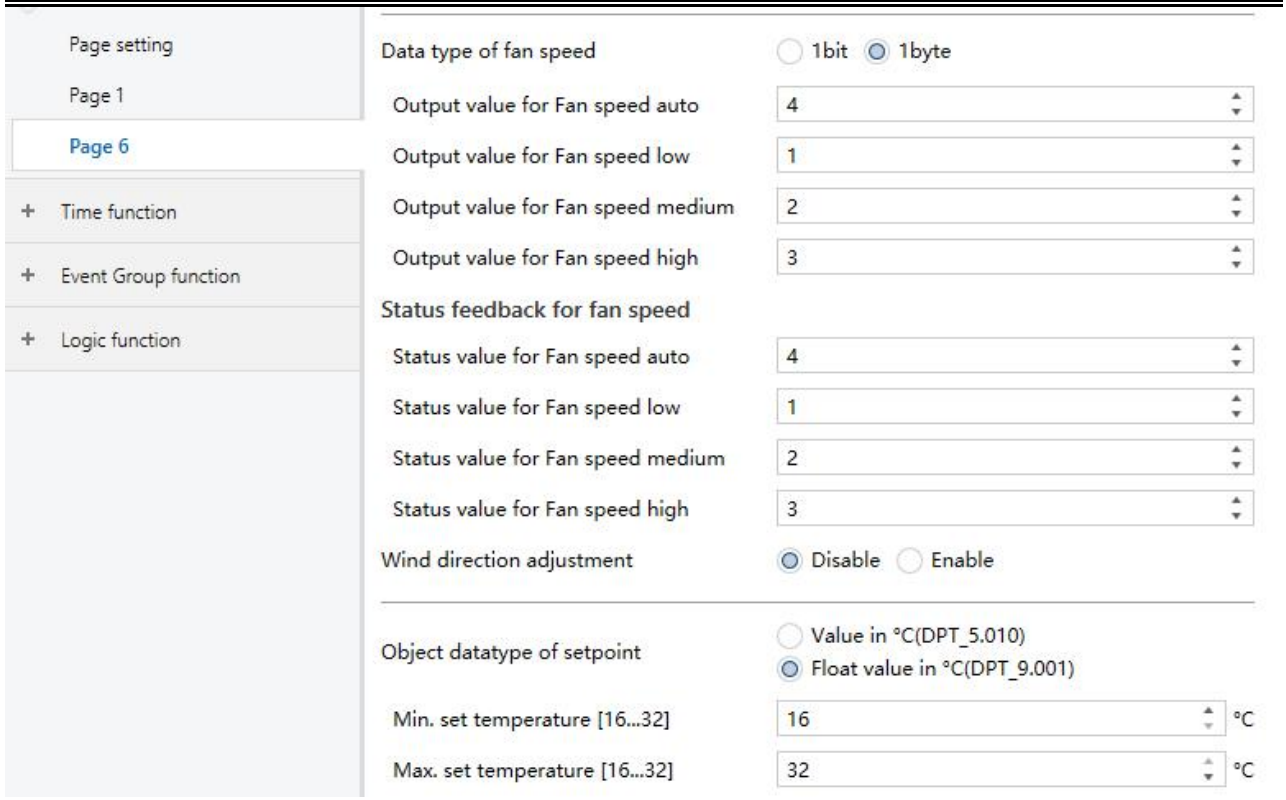


Fig.5.3.4 (2) "Page x -- Air conditioner" Parameter window (Gateway Integrate _1byte)

Parameter "Temperature display from"

Setting the reference resource of the ambient temperature displayed in the AC interface. Options :

Internal sensor

External sensor

Note: The temperature setting parameters of AC are similar to those of the HVAC function (except for the temperature measurement option without combined sensor), details refer to the section 5.3.3.

Parameter "Auto control mode(if disable, the command value in below will be ignored)"

This parameter for setting whether to enable Auto control mode of Air-conditioner. Options:

Disable

Enable

Disable: when select this option, there will be no Auto mode in the Air-conditioner interface, the following command value in below will be ignored.

Enable: when enable, there will be Auto mode in the Air-condition interface.

Specific effects please refer to the appendix.

Parameter "Control type"

This parameter setting for the control mode of AC. Options:

IR Split Unit

Gateway Integrate

Gateway Integrate

The following parameters are visible when AC control mode is Gateway Integrate. Its parameter interface as shown in Fig.5.3.4.

Parameter "Data type of mode"

To define the data type of control mode. Options:

1bit

1byte

-- Parameter "Output value for Heat/Cool/Dry/Fan/Auto"

These parameters are visible when data type is"1byte"or "1bit", to define to switch to the value sent by each mode.

Options: **0..255**

Options: **0/1**

Status feedback for mode

The following parameters are visible when data type is "1byte", for setting the status feedback value of each mode.

-- Parameter "Status value for Heat/Cool/Dry/Fan/Auto"

Setting the status feedback value of each mode, the device will update the icon status according to the feedback value received. Options: **0..255**

Parameter "Data type of fan speed"

This parameter for setting the data type of fan speed. Options:

1bit

1byte

-- Parameter "Output value for fan speed auto/low/medium/high"

These parameters are visible when data type of fan speed is "1byte", to define to switch to the value sent by each fan speed. Options: **0..255**

Status feedback for fan speed

The following parameters are visible when data type is "1byte", for setting the status feedback value of each fan speed.

-- Parameter "Status value for fan speed auto/low/medium/high"

These parameters for setting the status feedback value of each fan speed, the device will update fan speed icon status according to the feedback value received. Options:**0..255**

Parameter "Wind direction adjustment"

This parameter for setting whether to enable the wind direction adjustment function. Options:

Disable

Enable

Enable：when enable, the following parameters are visible.

-- Parameter "Object value for wind direction"

This parameter comments on the object value of the wind direction adjustment. Fixed wind direction, object " wind direction fixed/swing, In/Out" sends telegram "0"; Swing wind direction, object sends telegram "1".

There are 5 options for wind direction positions when select fixed wind direction, as follows:

Wind direction position output setting

The following parameters for setting the value sent by object "wind direction position, Out" when switch wind direction position.

-- Parameter "Command value for position 1/2/3/4/5"

These parameters define the corresponding command value of the 5 wind direction positions. Options: **0..255**

Wind direction position status feedback setting

The following parameters setting for the status feedback value of all wind direction.

-- Parameter "Status value for position 1/2/3/4/5"

These parameters setting for the status feedback value of each wind direction, the device will update the icon status of wind direction position according to the feedback value received. Options: **0..255**

Parameter "Object datatype of setpoint""

This parameter setting for the object datatype of the setpoint. Options:

Value in ℃(DPT_5.010)

Float value in ℃(DPT_9.001)

Parameter "Min. /Max. set temperature [16..32]℃"

These two parameters setting the adjustment range for limiting the setting temperature. The setting minimum value should be less than the maximum value.

If the setting temperature beyond the range, then output the limited value.

IR Split Unit

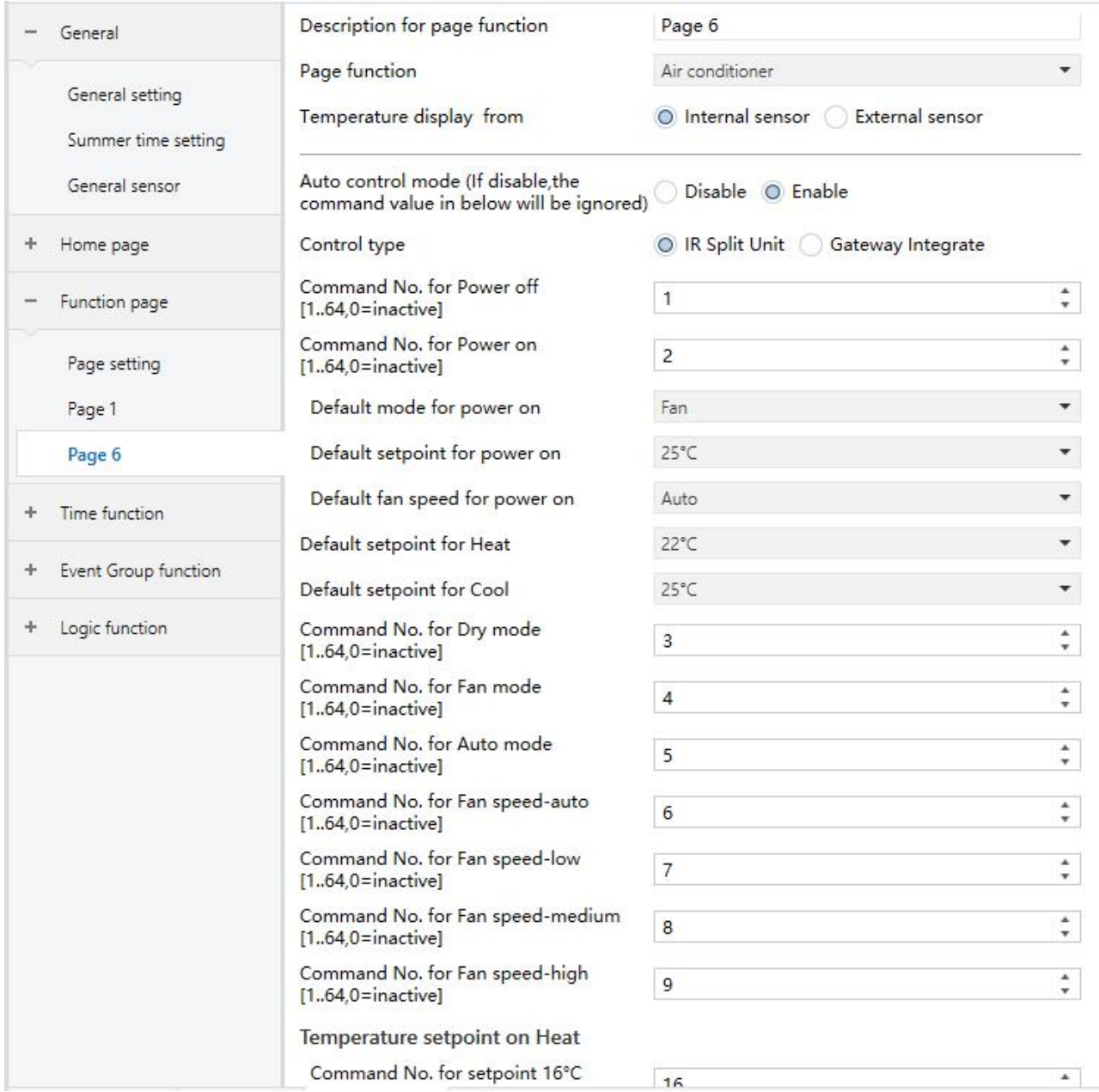


Fig.5.3.4 (3) "Air conditioner"parameter window （IR Split Unit）

The following parameters are visible when air conditioner control mode is IR Split Unit, for setting the value that each function command need to send, the actual telegram is the input value to minus 1. Its parameter interface as shown in Fig.5.3.4(3).

Parameter "Command No. for power on (1..64, 0=inactive)"

Setting for the telegram sent by object "IR Split unit command,Out" when air-conditioner is set to be open. Options: **0..64, 0=inactive**

Parameters similar to this parameter setting will no longer be described herein. When the default mode of air-conditioner is heating or cooling, the telegram that be sent is the telegram corresponding to the default temperature (at this time, this temperature also be limited to the min./max. setting value).

The following three parameters for setting the initiate icon status displayed on the screen when air-conditioner is on.

-- Parameter "Default mode for power on"

Setting the initial mode displayed on the screen when air-conditioner is on. Options:

Heat

Cool

Dry

Fan

Auto

-- Parameter "Default setpoint for power on"

Setting for the initial setpoint temperature displayed on the screen for air conditioner power on. Options:

16℃

...

32℃

-- Parameter "Default fan speed for power on"

Setting the initial fan speed displayed on the screen. Options:

Auto

Low

Medium

High

-- Parameter "Default setpoint for heat/cool"

Setting the initial setpoint temperature when switch to the heating/cooling. Options:

16℃

...

32℃

The sending telegram is the telegram corresponding to the default temperature (at this time, this temperature also be limited to the min./max. setting value).

5.3.5 Parameter window “Page x-- Background Music”

Parameter window “Background Music” as shown in Fig.5.3.5, for setting background music control.

When Background Music function is enable, objects for background music control are visible, such as power on/off, Play/Pause, volume+/volume-, Next song/Previous song, play mode, music source, etc. Through these objects can control background music module.

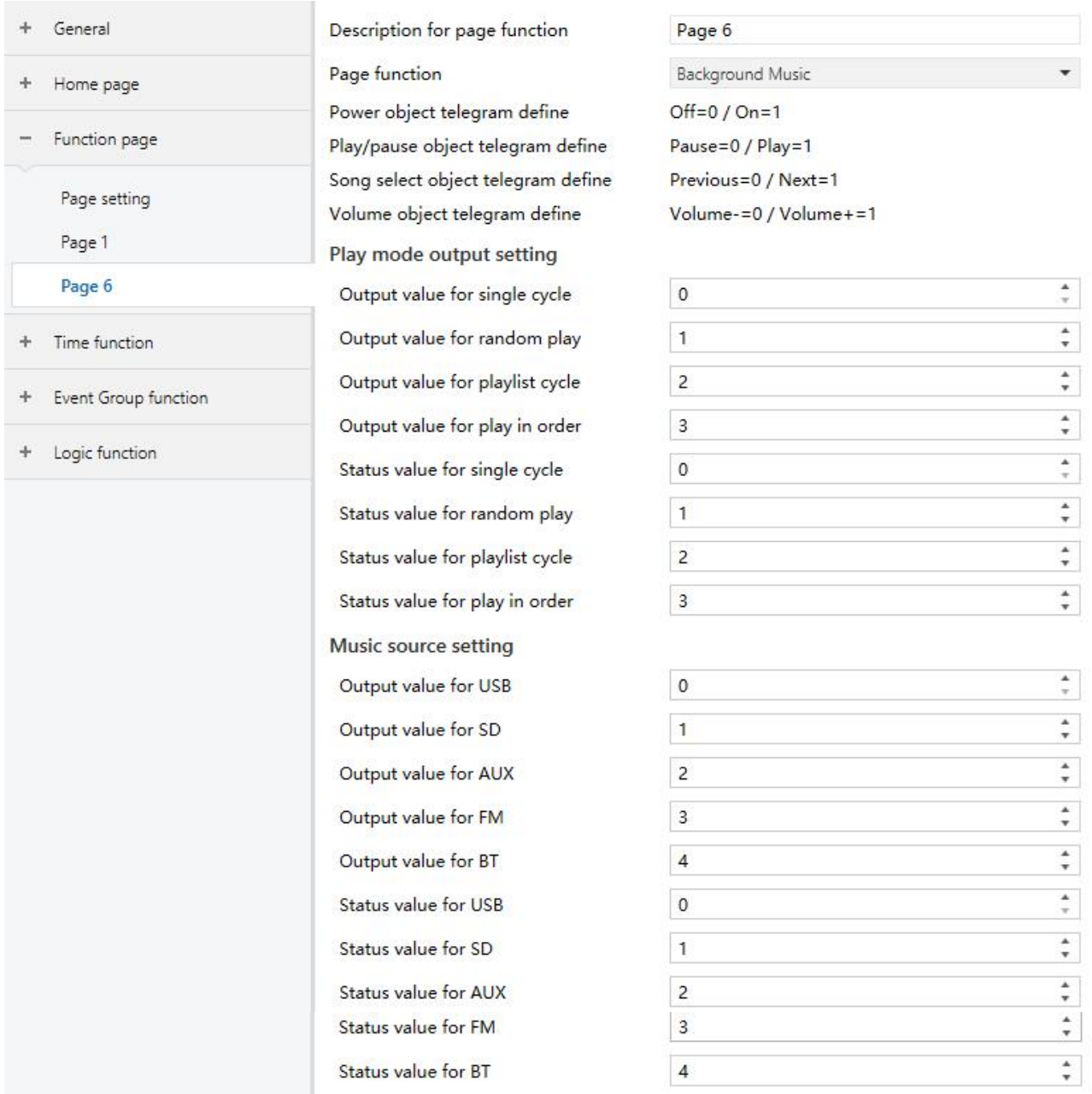


Fig.5.3.5 “Page x -- Background Music” parameter window

Parameter “Power object telegram define”

Parameter “Play/pause object telegram define”

Parameter “Song select object telegram define”

Parameter “Volume object telegram define”

These parameters for define the corresponding objects of background music command.

Play mode output setting

The following parameters setting to define the telegram and feedback value sent when switch to each play mode.

-- Parameter "Output value for single cycle/random play/playlist cycle/play in order"

Setting enable the output value for single cycle play mode. Options: **0..255**

-- Parameter "Status value for single cycle/random play/playlist cycle/play in order"

Setting the status value for single cycle play mode, the device will update the icon status according to the received status feedback value. Options: **0..255**

Music source setting

The following parameters define the telegram and feedback value sent when switch to each music source.

-- Parameter "Output value for USB/SD/AUX/FM/BT"

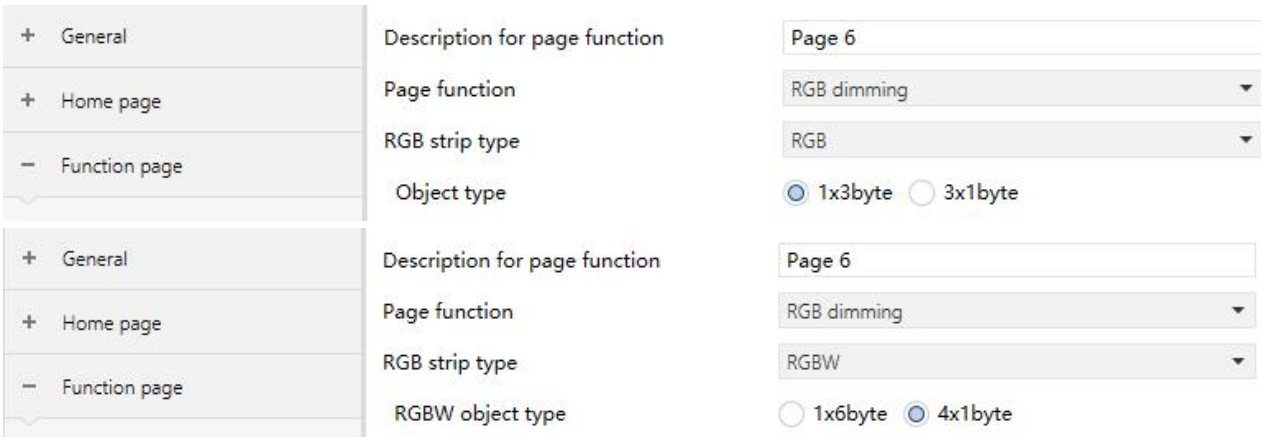
Setting the telegram dent by each music source. Options: **0..255**

-- Parameter "Status value for USB/SD/AUX/FM/BT"

Setting the status feedback value of each music source, the device will update the icon status according to the received feedback value. Options: **0..255**

5.3.6 Parameter window "Page x-- RGB dimming"

Parameter window "Page x -- RGB dimming" as shown in Fig.5.3.6.



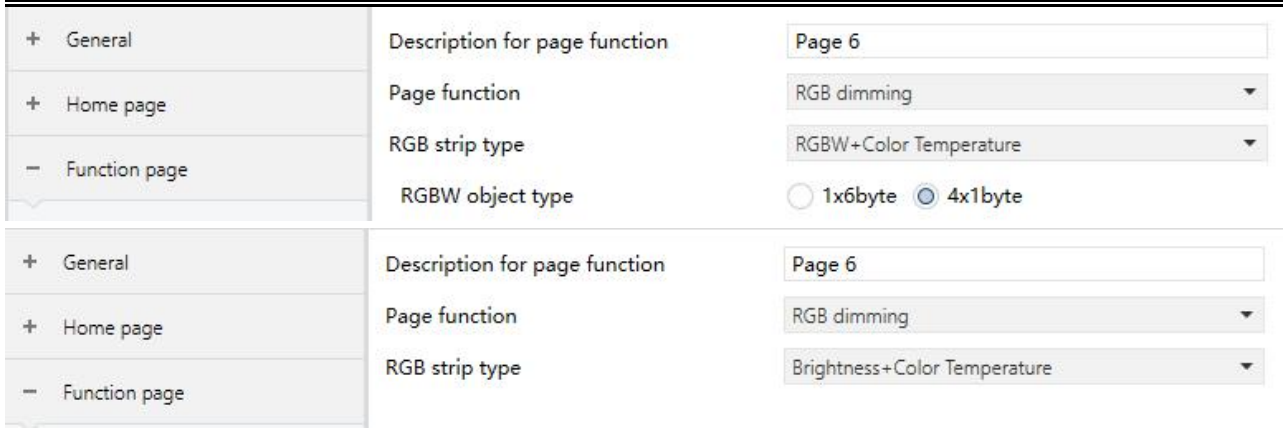


Fig.5.3.6 “Page x -- RGB dimming” parameter window

Parameter “RGB strip type”

Setting for the RGB strip type. Options:

RGB

RGBW

RGBW+Color Temperature

Brightness+Color Temperature

RGB：suitable for adjusting RGB tricolor lamp;

RGBW：suitable for adjusting RGBW four color lamp;

RGBW+Color Temperature：suitable for RGBW four color lamp, color temperature control;

Brightness+Color Temperature：suitable for brightness, color temperature control.

Parameter “Object type”

Setting for the object type of RGB or RGBW. Options:

Suitable for RGB type：

1x3byte

3x1byte

Suitable for RGBW type：

1x6byte

4x1byte

Suitable for RGBW+Color Temperature type：

1x6byte

4x1byte

5.3.7 Parameter window "Page x-- Air Quality display"

Parameter window "Page x--Air Quality display" as shown in Fig.5.3.7, for setting the function of air quality display, AQI, temperature, humidity, PM2.5, PM10, VOC, CO_2, brightness and wind speed can be set to display. Up to 4 items can be displayed in one interface.

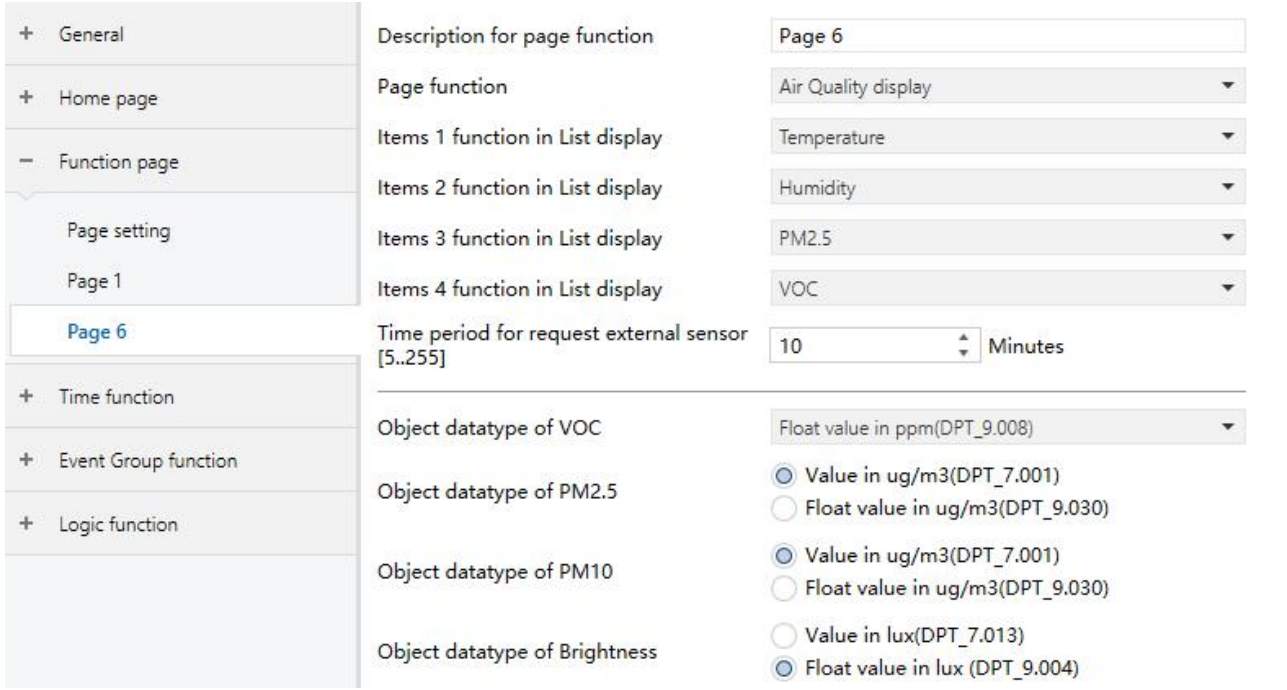


Fig.5.3.7 "Page x -- Air Quality display" parameter window

Parameter "Items x(x=1..4) function in List display"

Setting to display in the list, up to 4 items can be displayed. Options:

Disable

Temperature

Humidity

PM2.5

PM10

CO2

VOC

AQI

Brightness

Wind speed

These values are detected by an external sensor and passed to the screen for display. To enable the display, the screen will appear empty if the detected values are not received. Display range:

Temperature: -40~40 ℃

Humidity: 0~100 %

PM2.5: 0~999 ug/m3

PM10: 0~999 ug/m3

CO2: 0~4000 ppm

VOC: 0~9.99 mg/m3 or 0~4000 ppm

AQI: 0~500

Brightness: 0~5000 lux

Wind speed: 0~50 m/s

Parameter "Time period for request external sensor [5..255]min"

This parameter for setting the period for request that the device sends to the external sensor. Options: **5...255**

Parameter "Object datatype of VOC"

This parameter for setting the data type of VOC. Options:

Value in ug/m3(DPT_7.001)

Float value in ug/m3(DPT_9.030)

Float value in ppm(DPT_9.008)

Parameter "Object datatype of PM2.5"

This parameter for setting the data type of PM2.5. Options:

Value in ug/m3(DPT_7.001)

Float value in ug/m3(DPT_9.030)

Parameter "Object datatype of PM10"

This parameter for setting the data type of PM10. Options:

Value in ug/m3(DPT_7.001)

Float value in ug/m3(DPT_9.030)

Parameter "Object datatype of Brightness"

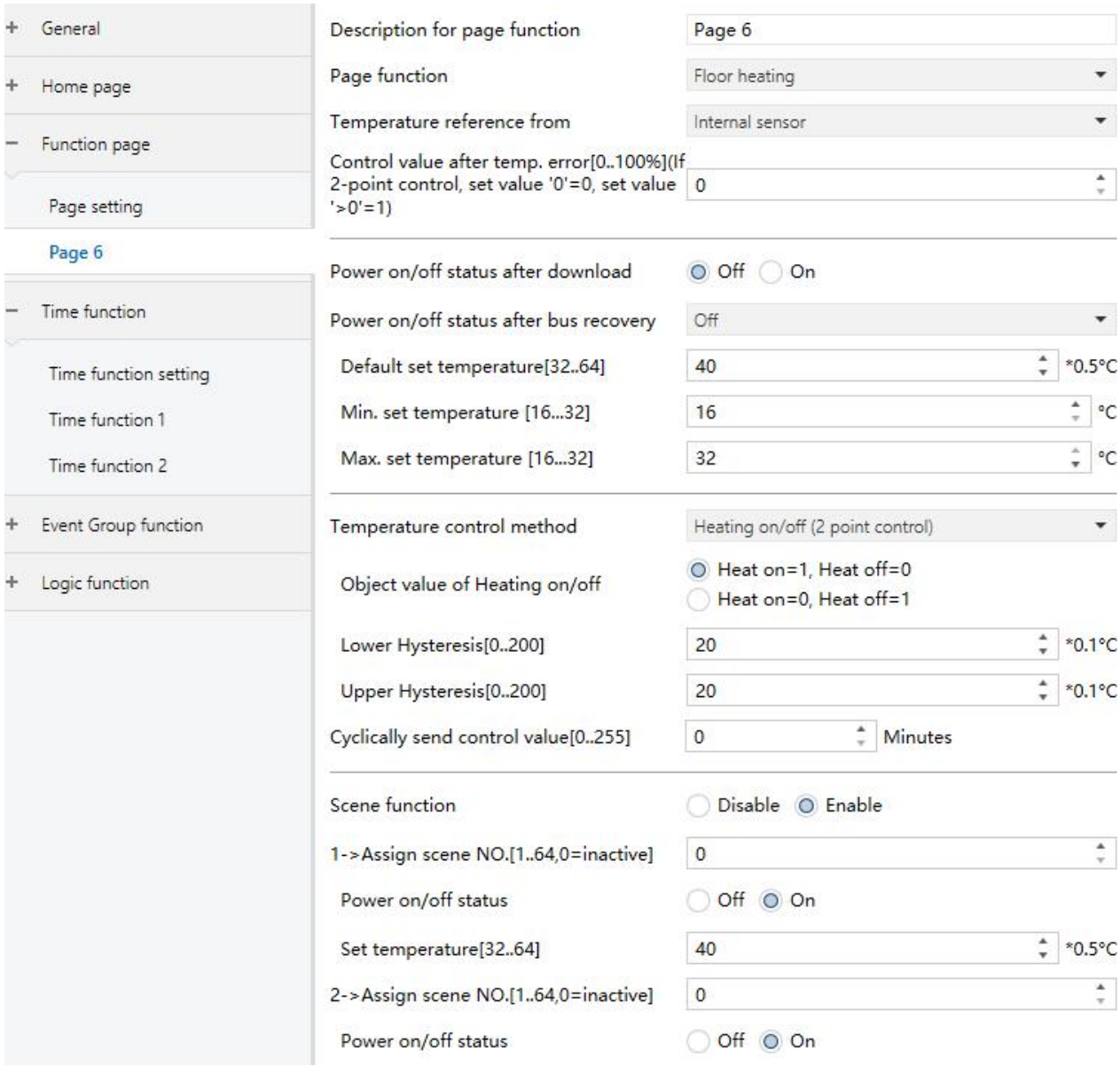
This parameter for setting the data type of Brightness. Options:

Value in lux(DPT_7.013)

Float value in lux(DPT_9.004)

5.3.8 Parameter window "Page x-- Floor heating"

Parameter window "Page x--Floor heating" as shown in Fig.5.3.8, it is mainly for floor heating parameter setting.



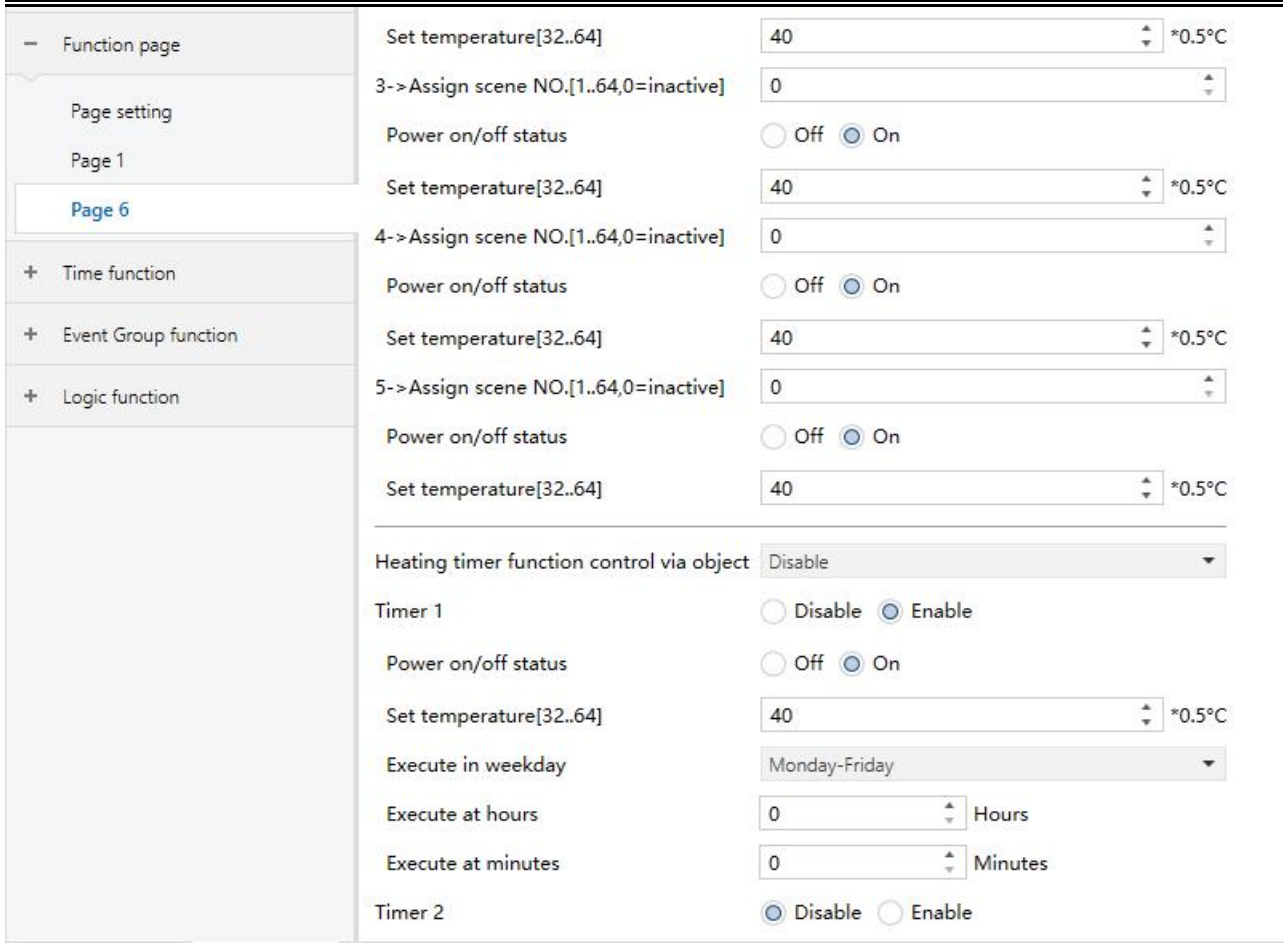


Fig.5.3.8 “Page x -- Floor heating” parameter window

Parameter “Temperature reference from”

This parameter for setting the reference of the temperature of floor heating. Options:

Internal sensor

External sensor

Internal and External sensor combination

Note: Temperature setting of floor heating is similar to that of HVAC, details refer to the section 5.3.3.

Parameter “Power on/off status after download”

Setting for the power on/off status of floor heating interface after application downloaded. Options:

Off

On

Parameter “Power on/off status after bus recovery”

Setting for the power on/off status of floor heating interface after the bus recovery .Options:

On

Off

Before power off

On：floor heating interface is on when device is powered on, this interface is operational, floor heating will calculate internally according to the control type to determine the current controlling status;

Off：floor heating interface is off when device is powered off, other icons in the interface are not operational except for timing and on/off icon;

Before power off：floor heating interface will recover to the status before bus power off, if it is on, then the device will output the heating control status according to the internal calculation.

Parameter "Default set temperature[32..64]*0.5℃"

Setting for the default temperature when floor heating is on. Options: **32..64**

Parameter "Min./Max. set temperature[16..32]℃"

Setting to limit the adjustable range of the setting temperature, the setting minimum should be less than the setting maximum.

If the setting temperature beyond the limited range, is output according to the limit value. Options:**16..32**

Parameter "Temperature control method"

Setting for the temperature control method, different control types are suitable for different temperature controller. Options:

Heating on/off (use 2-point control)

Heating PWM (use PI control)

Heating continuous control (use PI control)

When option "Heating on/off (use 2-point control)" of parameter "Temperature control method" is selected, the following parameters are visible.

Under 2-point control, when the temperature is higher than a certain setting temperature, heating off, below a certain setting temperature, heating on.

-- Parameter "Object value of Heating on/off"

Define the triggered value of floor heating on/off. Options:

Heat on=1, Heat off=0

Heat on=0, Heat off=1

-- Parameter "Lower Hysteresis [0..200]*0.1℃"

-- Parameter "Upper Hysteresis [0..200]*0.1℃"

These two parameters for setting the lower/upper hysteresis setting temperature of floor heating. Options:

0..200

When the actual temperature(T) > the setting temperature + the upper hysteresis temperature, then will stop heating;

When the actual temperature(T) < the setting temperature - the lower hysteresis temperature, then will start heating.

For example, the lower hysteresis temperature is 1℃, the upper hysteresis temperature is 2℃, the setting temperature is 16℃, if T is higher than 18℃, then it will stop heating; if T is lower than 15℃, then it will start heating; if T is between 15~18℃, then it will maintain the previous status.

When option "Heating PWM (use PI control)" or "Heating continuous control (use PI control)" of parameter "Temperature control method" is selected, the following parameters are visible.

When in Heating PWM (use PI control), floor heating will in cyclically switch control to the valve according to the controlling value.

When in Heating continuous control (use PI control), floor heating will control the opening/closing status of the valve according to the controlling value.

-- Parameter "Invert control value"

Setting the control object to send the control value normally, or send the inverted control value, so that the control value can adapt to the type of valve. Options：

No

Yes

Yes：After the control value is reversed, it is sent to the bus through the object.

-- Parameter "PWM cycle time [1..255] min"

This parameter is visible only when the control type is "Heating PWM (use PI control)" and is used to set the cycle of the control object cycle to send the switch value, and the object sends the switch value according to the duty cycle of the control value. For example, assuming the set period is 10 min and the control value is 80%, the object sends an open telegram to the 8min and the 2min sends a closed telegram. If the control value changes, The duty cycle of the object to send the on/off telegram also changes, but the period is still the time of the parameter setting.

Options：**1...255**

-- Parameter "Heating speed"

Setting the response speed of the heating PI controller. Different response speeds apply to different environments.

Options：

Hot water heating (5K/150min)

Underfloor heating (5K/240 min)

Electrical heating (4K/100min)

User defined

-- Parameter "Proportional range[10..100]*0.1℃"(P value)

-- Parameter "Reset time[0..255]min"(I value)

When the parameter "Heating speed" is visible when the "User defined" option is visible and is used to set the PI value of the PI controller.

More descriptions of two-point control mode and PI control mode refer to section 5.3.3.

Parameter "Cyclically send control value [0..255]min"

Setting the time period of cyclically sending control value to the bus. Options: **0..255**

Parameter "Scene function"

Setting for scene functions of the floor heating, a total of 5 scenes are available for setting. Options:

Disable

Enable

-- Parameter "x->Assign scene NO. [1..64,0＝inactive], x=1~5"

Setting scene number. Options: **0..64, 0＝inactive**

-- Parameter "Power on/off status"

Setting the power on/off status of the floor heating interface of scene x. Options:

Off

On

-- Parameter "Set temperature[32..64]*0.5℃"

This parameter is visible when the previous parameter select "On", for setting the setting temperature of scene x. Options:**32..64**

Parameter "Heating timer function control via object"

Setting whether to enable the timing function of floor heating through the object, up to 8 timers can be configured. Options:

Disable

Disable=0/Enable=1

Disable=1/Enable=0

Select the last two options, the object of disable/enable timing function are visible.

At the same time, when the timing function which can be disabled/enabled by the object is selected, the default state is not enabled after the programming or reset is completed.

It will exist the timing state when shut down or recall the scene function configured by floor heating.

Parameter "Timer x, x=1~8"

This parameter setting whether to enable timer x. Options:

Disable

Enable

-- Parameter "Power on/off status"

Setting the power on/off status of the floor heating interface of timer x. Options:

Off

On

-- Parameter "Set temperature [32..64]*0.5℃"

This parameter is visible when the previous parameter select "On", for setting the setting temperature of scene x. Options: **32..64**

-- Parameter "Execute in weekday/at hours(h)/at minutes(min)"

Setting the time of timer x, when it reaches the time, will perform timer x. Options:

Weekday:

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

Monday-Friday

Saturday-Sunday

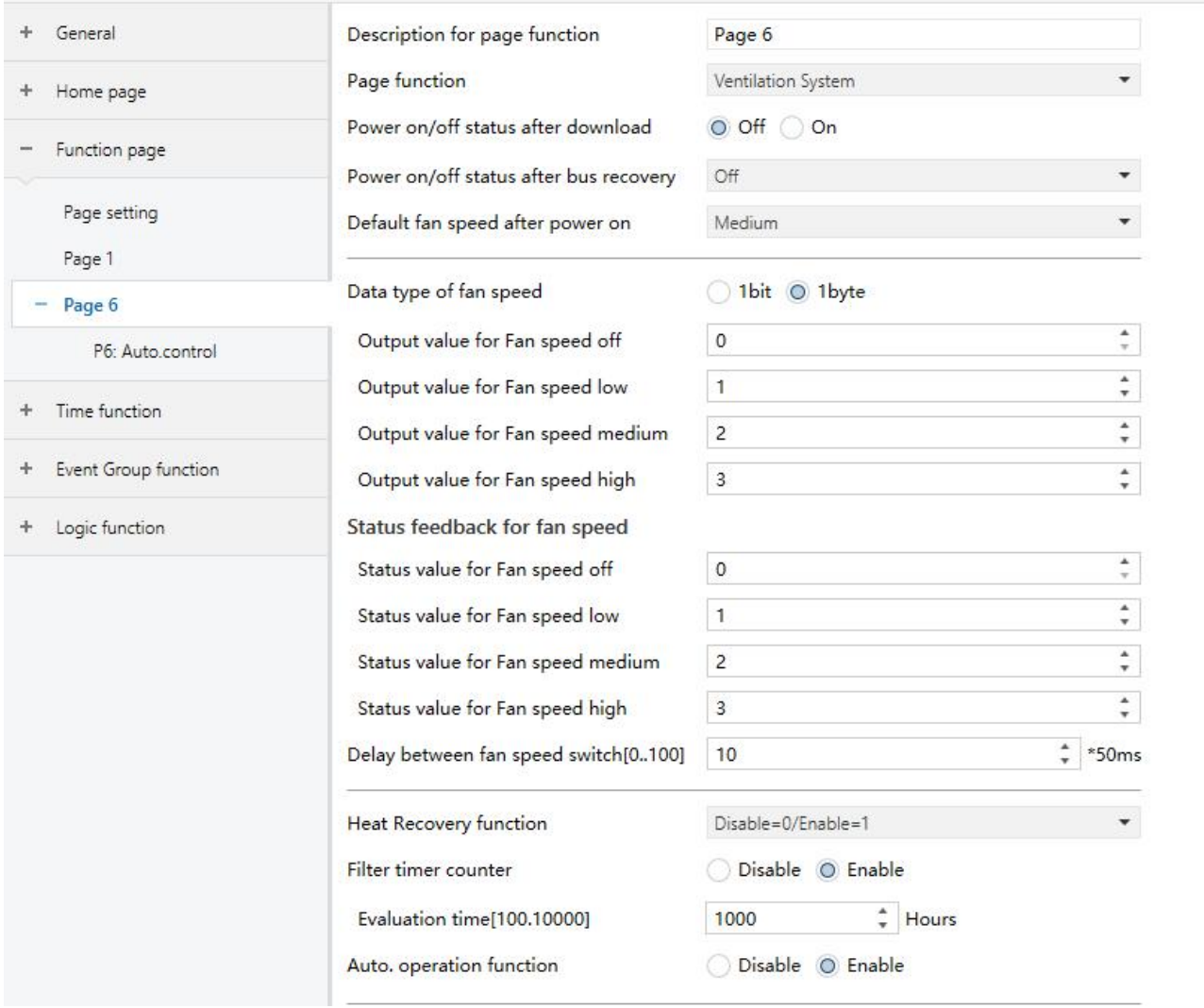
Monday-Sunday

Hours：**0..23**

Minutes：**0..59**

5.3.9 Parameter window “Page x-- Ventilation System”

Parameter window “Page x--Ventilation System” as shown in Fig.5.3.9, for ventilation system parameter setting.



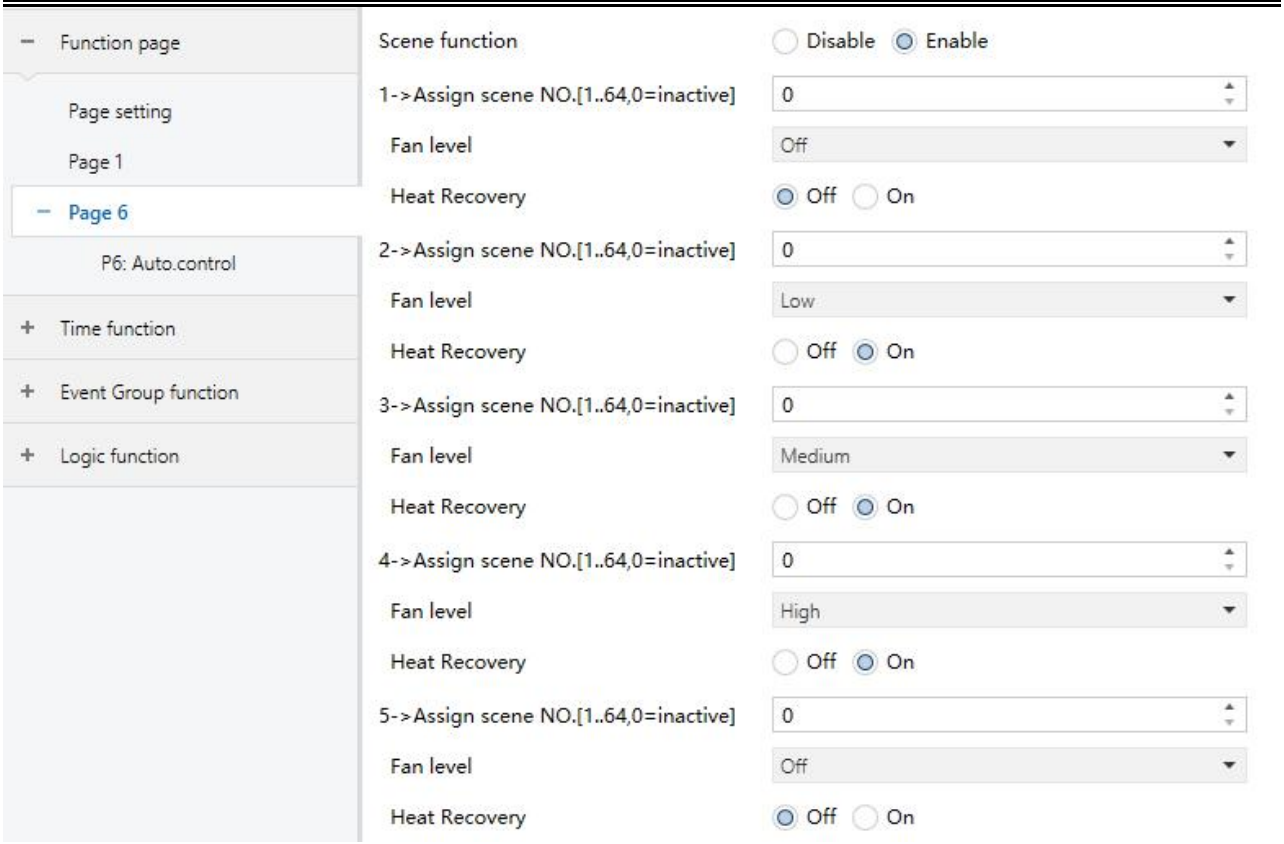


Fig.5.3.9 (1) "Page x -- Ventilation system" parameter window

Parameter "Power on/off status after download"

Setting the power on/off status of the Ventilation system interface after the application is downloaded. Options:

Off

On

Parameter "Power on/off status after bus recovery"

Setting the power on/off status of the ventilation system interface after the application is downloaded. Options:

On

Off

Before power off

On：when device is powered on, this interface is operational;

Off：when device is powered off, other icons in the interface are not operational except for the filter reset and on/off icon;

Before power off：the device will recover to the status of ventilation before bus power off.

Parameter "Default fan speed after power on "

Setting the initial fan speed after power on. Options:

Low

Medium

High

Parameter "Data type of Fan speed"

Setting the data type of fan speed. Options:

1bit

1byte

-- Parameter "Output value for fan speed off/low/medium/high"

When the data type of the fan speed is visible in "1byte", the value sent to each fan speed is defined. Options: **0..255**

Status feedback for fan speed

The following parameters are visible when the fan speed type is "1byte", for setting the status feedback of each fan speed.

-- Parameter "Status value for fan speed off/low/medium/high"

Setting the status feedback of each fan speed, the device will update the icon status of fan speed according to the feedback value received. Options: **0..255**

-- Parameter "Object value for fan speed off/low/medium/high"

This parameter is visible when object type of fan speed is "1bit",defining the switching value sent by each fan speed, the value is sent by three 1bit objects at the same time. Options:

No.1=0, No.2=0, No.3=0

No.1=1, No.2=0, No.3=0

No.1=0, No.2=1, No.3=0

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

-- Parameter "Delay between fan speed switch [0..100]*50ms"

Define the conversion delay time, and it can be considered according to the technical characteristics of the fan. Options: **0…100**

When switch fan speed, first should turn off fan speed, then turn on fan speed after delay time before the telegram can be sent to the bus.

When the delay time is set to 0, it will not be turned off first, but will switch directly to the next fan speed.

Parameter "Heat Recovery function"

Setting whether to enable heat recovery function .Options:

Disable

Disable=0/Enable=1

Disable=1/Enable=0

If the latter two options are selected, heat recovery of ventilation system is default to be enable,i.e.,the function is enable when device power on.

When disable, heat recovery is uncontrollable.

Parameter "Filter timer counter"

Setting whether to enable filter timer counter function. Options:

Disable

Enable

When enable, the following parameter is visible.

-- Parameter "Evaluation time [100..10000]*h"

Setting the service life of the filter. Options:**100..10000**

If the filter takes longer than the setting time, the filter will send an alarm and prompt to clean the filter.

The life length of the filter can be reset through the object "Filter timer reset, In".

The life length of the filter can be counted by the object "Filter timer counter, In/Out". The counting duration is in hours. The counting value will be sent to the bus when it has changed, and the counting duration of filter can be modified through the bus.

Parameter "Auto. operation function"

Setting whether to enable the Auto. Operation function. Options:

Disable

Enable

Parameter "Scene function"

Setting whether to enable the scene function, there are 5 scenes can be set. Options:

Disable

Enable

-- Parameter "x->Assign scene NO.[1..64,0=inactive], x=1~5"

Setting for the scene number. Options:**0..64, 0＝inactive**

-- Parameter "Fan level"

Setting for the fan speed status of scene x. Options:

Off

Low

Medium

High

-- Parameter "Heat Recovery"

This parameter for setting heat recovery status of scene x. Options:

Off

On

When heat recovery is disable, this parameter is in valid.

5.3.9.1 Px：Auto. Control

After automatic operation is activated, ventilation system will automatically adjust fan speed according to the control value.

The following parameters are visible when the automatic control function of ventilation system is enable. The parameter interface for automatic control is shown in the following figures:

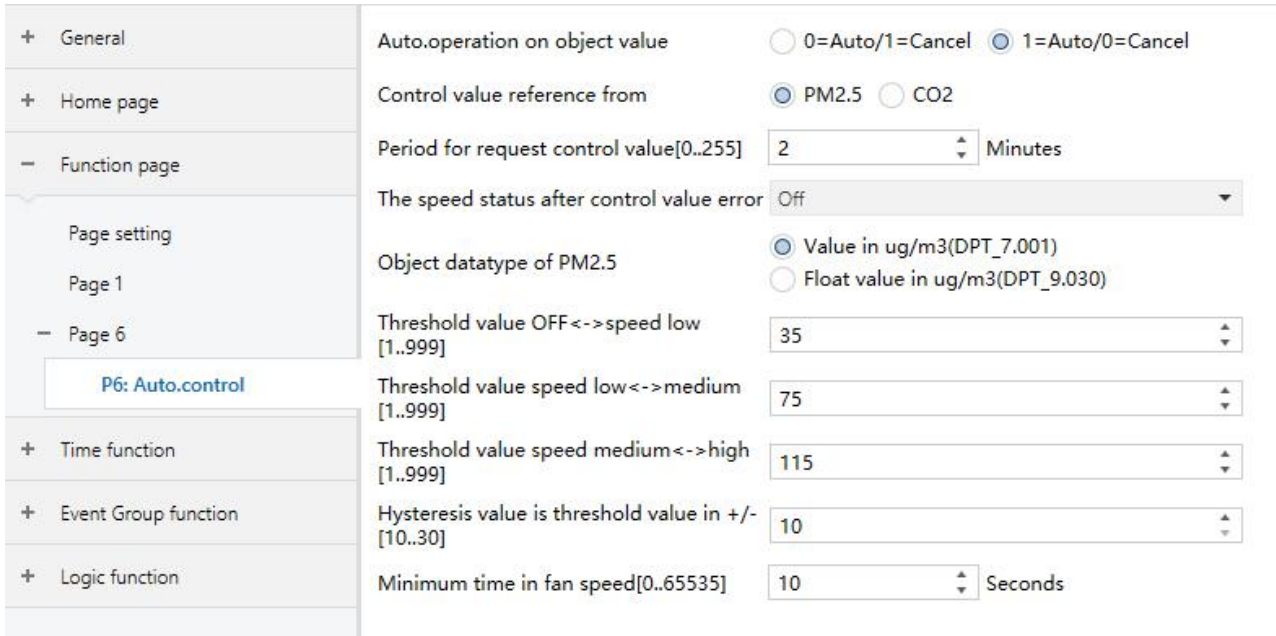


Fig.5.3.9 (2) "Px: Auto. Control_PM2.5"parameter window

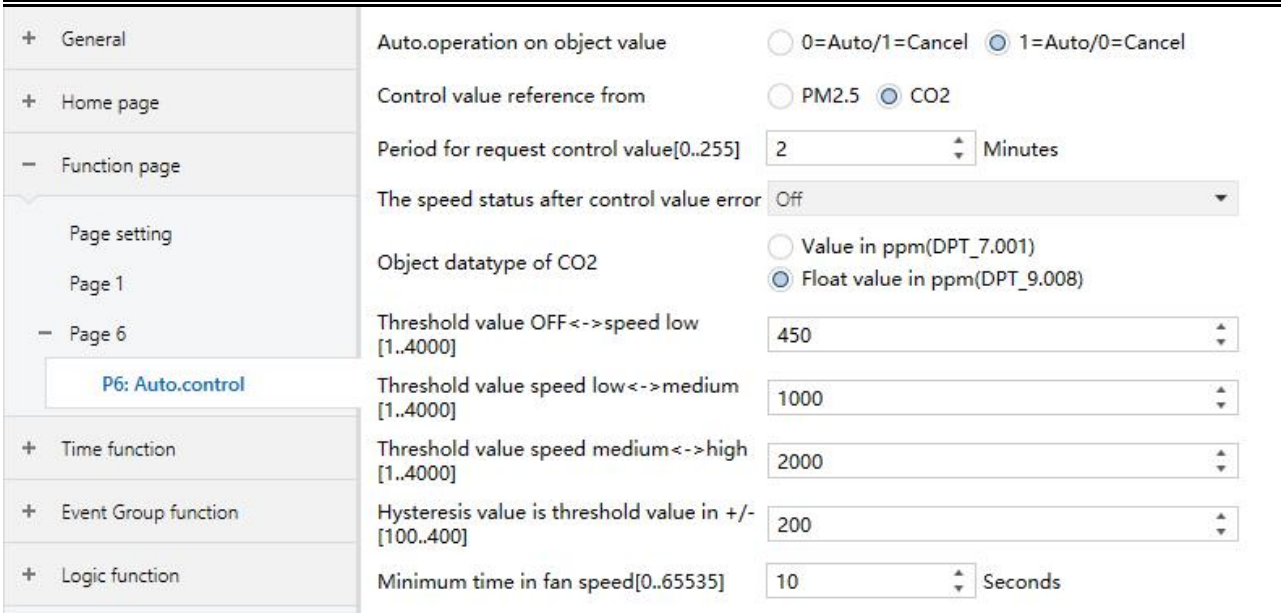


Fig.5.3.9 (3) "Px: Auto. Control_CO2" parameter window

Parameter "Auto. operation on object value"

This parameter for setting the telegram value to active automatic operation. Options:

0=Auto/1=Cancel

1=Auto/0=Cancel

0=Auto/1=Cancel： when the object "Automatic function, In/Out" receives the telegram value "0", activate the automatic operation, when receive "1", exit the automatic operation.

1=Auto/0=Cancel： when the object "Automatic function, In/Out" receives the telegram value "1", activate the automatic operation, when receive "0", exit the automatic operation.

After power-on, automatic operation is not activated by default.

Parameter "Control value reference from"

This parameter for setting the reference of control value under automatic operation. Options:

PM2.5

CO2

Parameter "Period for request control value [0..255] Min"

Setting the time period for device to send a control value read request to external sensor. Options: **0...255**

Parameter "The speed status when the control value error"

This parameter for setting the default fan speed of ventilation system when control value is error. Options:

Off

Low

Medium

High

Note: when reading the control value from external sensor, if there is no response, then it will be considered as external sensor failure and control value error by default.

Parameter "Object datatype of PM2.5"

Setting the data types of PM2.5. Data type determines object type, select it according to the docking PM2.5 sensor data type. Options:

Value in ug/m3(DPT_7.001)

Float value in ug/m3(DPT_9.030)

DPT_7.001：suitable for integrated value.

DPT_9.008：suitable for float value.

Parameter "Object datatype of CO2"

Setting the data types of CO2. Data type determines object type, select it according to the docking CO2 sensor data type. Options:

Value in ppm(DPT_7.001)

Float value in ppm(DPT_9.008)

DPT_7.001：suitable for integrated value.

DPT_9.008：suitable for float value.

Parameter "Threshold value OFF<–>speed Low[1..999]/ [1…4000]"

Define threshold value for off-fan and low-level fan speeds, options:**1…999/1...4000**

If the control value is greater than or equal to this setting threshold value, low-level fan speed will start running; if the control value is less than this setting threshold value, the fan will be turned off..

– Parameter "Threshold value speed low<–>medium[1..999]/ [1…4000]"

Define the threshold value for switching the fan speed to medium fan speed, if the control value is greater than or equal to this setting threshold, the medium fan speed will start running. Options: **1…999/1...4000**

– Parameter "Threshold value speed medium<–>high[1..999]/ [1…4000]"

Define the threshold for switching the fan speed to high fan speed, if the control value is greater than or equal to this setting threshold, the high fan speed will start running. Options: **1...999/1...4000**

Tip: 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,

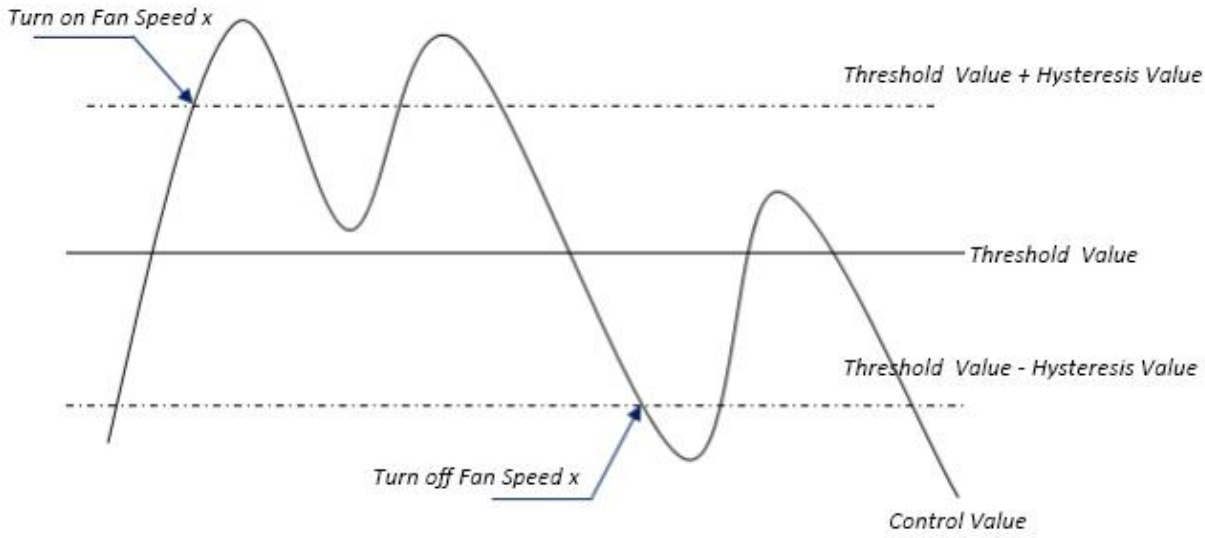
and the threshold of low fan speed <-> medium fan speed is lower than that of medium fan speed <-> high fan speed.

– Parameter "Hysteresis value is threshold value in +/- [10…30]/[100..400]"

Setting the hysteresis value of the threshold value, which can avoid the unnecessary action of the fan when the control value fluctuates near the threshold. Options: **10..30/100..400**

For example, the control type is PM2.5, the Hysteresis value is 10 and the threshold is 35, then the upper limit threshold 45 (Threshold value+Hysteresis value) and the lower limit threshold 25 (Threshold value-Hysteresis value). When the control value is between 25 ~45, fan action will not be caused, and the previous status will still be maintained.

Only less than 25 or greater than or equal to 45 will change the running status of the fan. As shown in the following figure:



Note:

When hysteresis is enabled, if the threshold overlap occurs, fan action is specified as follows:

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

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

For 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

Medium fan speed <-> High fan speed threshold value is 75

Hysteresis value is 25

The fan speed of the fan turbine increases from OFF:

Fan OFF status will change at a control value of 60 (≥25+35), and new fan speed will be 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 fan speed when descending from a high fan speed:

The high fan speed will change at a control value of 50 (<75-25), and new fan speed will be low fan speed (because 50 is between 35 and 55, irrespective of hysteresis), so the fan speed is ignored.

For 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

Medium fan speed <-> High fan speed threshold value is 70

Hysteresis value is 10

When fan speed is increasing from OFF:

The OFF status will be turned when the control value is 30（≥20+10）

When the control value 41 is received, the new speed will be 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 will be 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 will be turned when the control value is 60（<70-10）

When the control value 39 is received, the new speed will be 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 will be off at any circumstances.

– Parameter "Minimum time in fan speed [0…65535]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.

If you need 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. Options: **0…65535**

0: there is no minimum running time, but the delay switching time of fan speed still needs to be considered.

Note: The residence time for this parameter setting is only enabled in Auto mode.

5.3.10 Parameter window "Page x-- Energy Metering display"

Parameter window "Energy Metering display" as shown in Fig.5.3.10, for setting the function of energy metering display, current, voltage, power and energy can be set to display. Up to 8 items can be set to display in the interface.

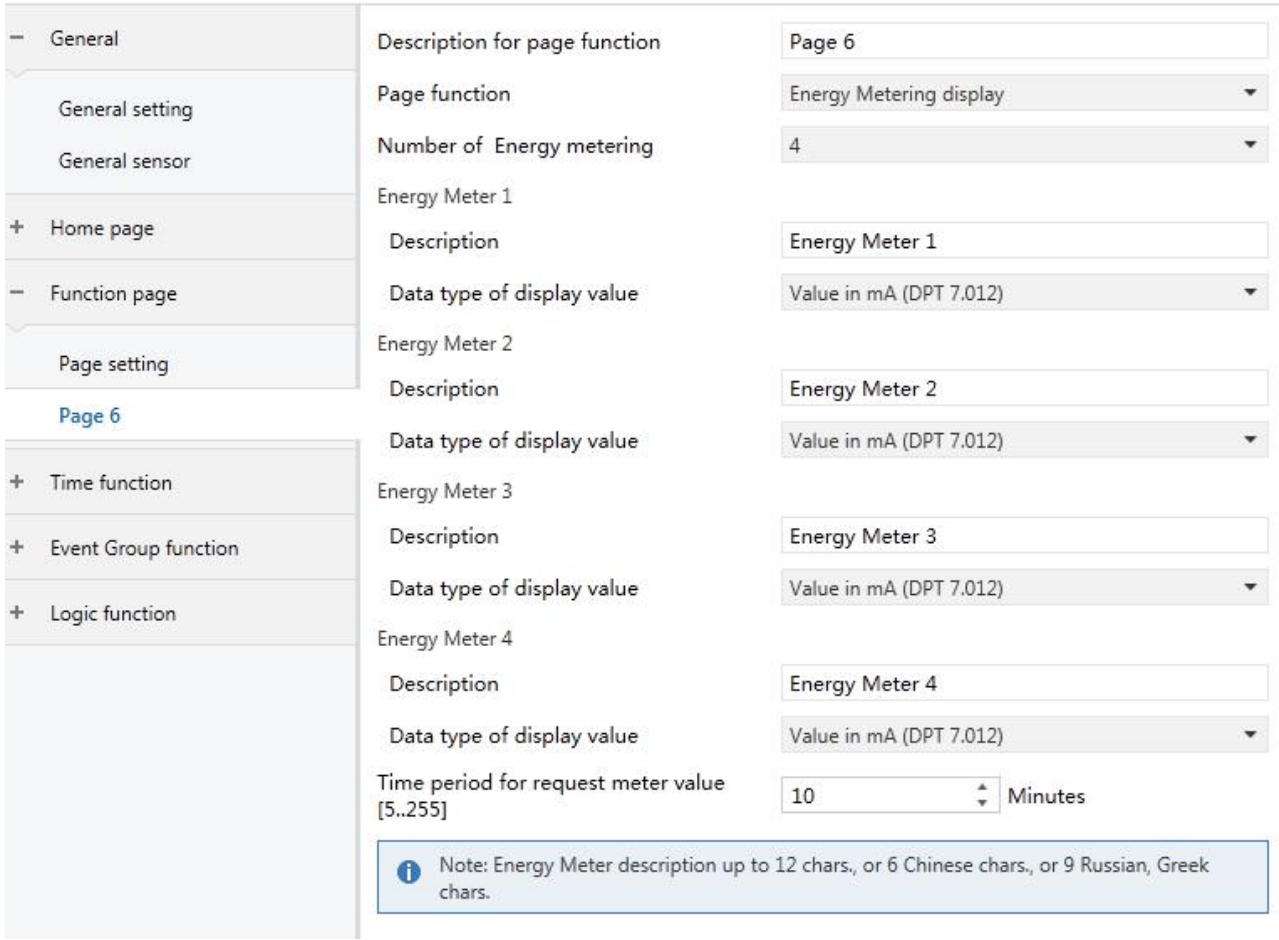


Fig.5.3.10 "Energy Metering display" parameter window

Parameter "Number of Energy metering"

Setting for the number of energy metering in the energy metering display interface. Options：**1/2/3/4/5/6/7/8** Up to 8 items can be set to display.

Energy Meter x[x=1..8]

-- Parameter "Description"

Setting the description of energy display items. Up to 18 characters can be input and up to 6 Chinese characters can be displayed.

-- Parameter "Data type of display value"

Setting the data type of energy metering display items. Options:

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)

Parameter "Time period for request meter value[5..255]Min"

Setting the time period for the request meter value of the device sent to external metering actuator. Options:**5...255**

Note: Energy Meter description up to 12chars.,or 6 Chinese chars.,or 9 Russian,Greek chars.

5.4 Parameter window "Time function setting"

Parameter window "Time function setting" as shown in Fig.5.4.1, up to 16 time functions can be configured.

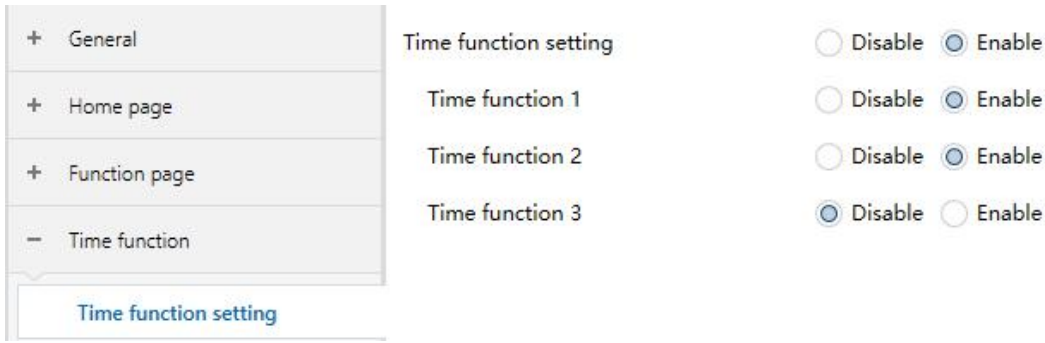


Fig.5.4.1 "Time function setting" parameter window

Parameter "Time function setting"

Setting whether to enable time function. Options:

Disable

Enable

Parameter "Time function x (x:1~16)"

Setting for enable time function x. Options:

Disable

Enable

5.4.1 Parameter window “Time function x”

The parameter window “Time function x (x:1~16)”as shown in Fig.5.4.2, for setting the value sent by each timing and timing time, parameters of each time function are the same. Take a timing setting for example to introduce their parameter settings.

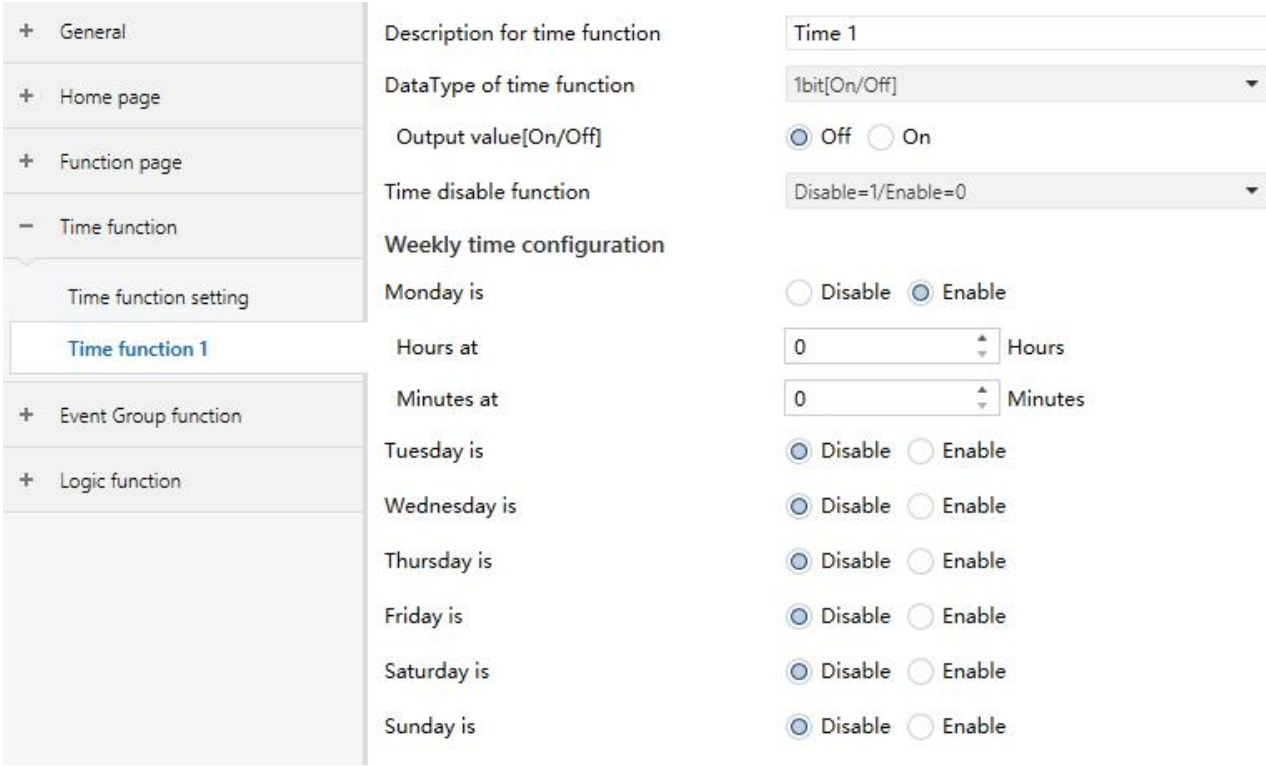


Fig.5.4.2 “Time function x” parameter window

Parameter “Description for time function”

Setting for the description of time function, up to 12 characters can be input (up to 6 Chinese characters are supported).

Parameter “Data Type of time function”

Setting the data type of the sending value when timing time of time x arrives. Options:

1bit [On/Off]

1byte unsigned value

1byte [scene control]

2byte unsigned value

-- Parameter “Output value/ scene No.[...]”

Setting the telegram value to be sent when it reaches the time of time x. The range depends on the options of the previous parameter.

-- Parameter "Time disable function"

Setting whether to enable or disable time function through objects, or setting the trigger value of enable/disable timing. Options:

Disable

Disable=0/Enable=1

Disable=1/Enable=0

Weekly time configuration

The following parameters for setting the time of time x, when time arrives, perform time x.

Parameter"Monday/Tuesday/Wednesday/Thursday/Friday/Saturday/Sunday is"

Configuring the day of a week to enable time x. Options:

Disable

Enable

-- Parameter "Hours at"/ "Minutes at"

Configuring the specific time of time x. Options:

Hours：**0..23**

Minutes：**0..59**

Note: the accuracy of internal RTC real-time clock is ± 5ppm.

5.5 Parameter window "Event Group function"

Parameter window "Event Group function" as shown in Fig.5.5.1, for enable event group setting,up to 8 event group functions can be configures, there are 8 outputs of each group, as shown in Fig.5.5.2.

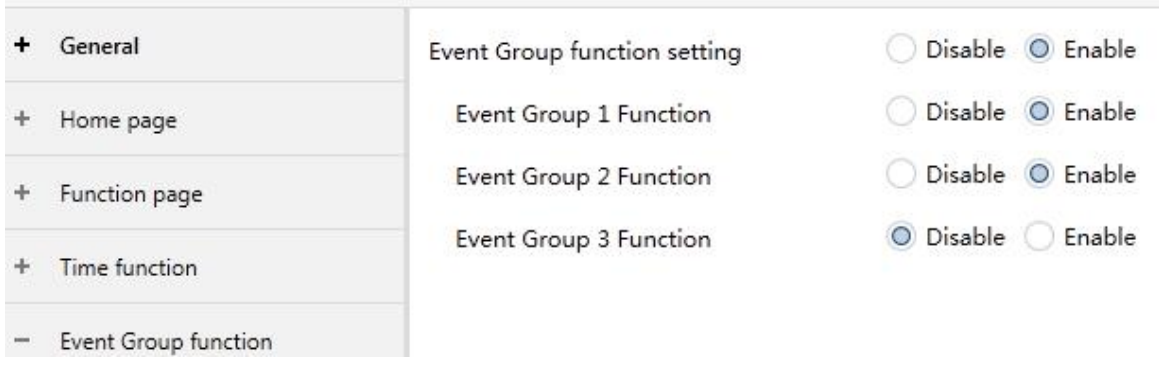


Fig.5.5.1 "Event Group function" parameter window

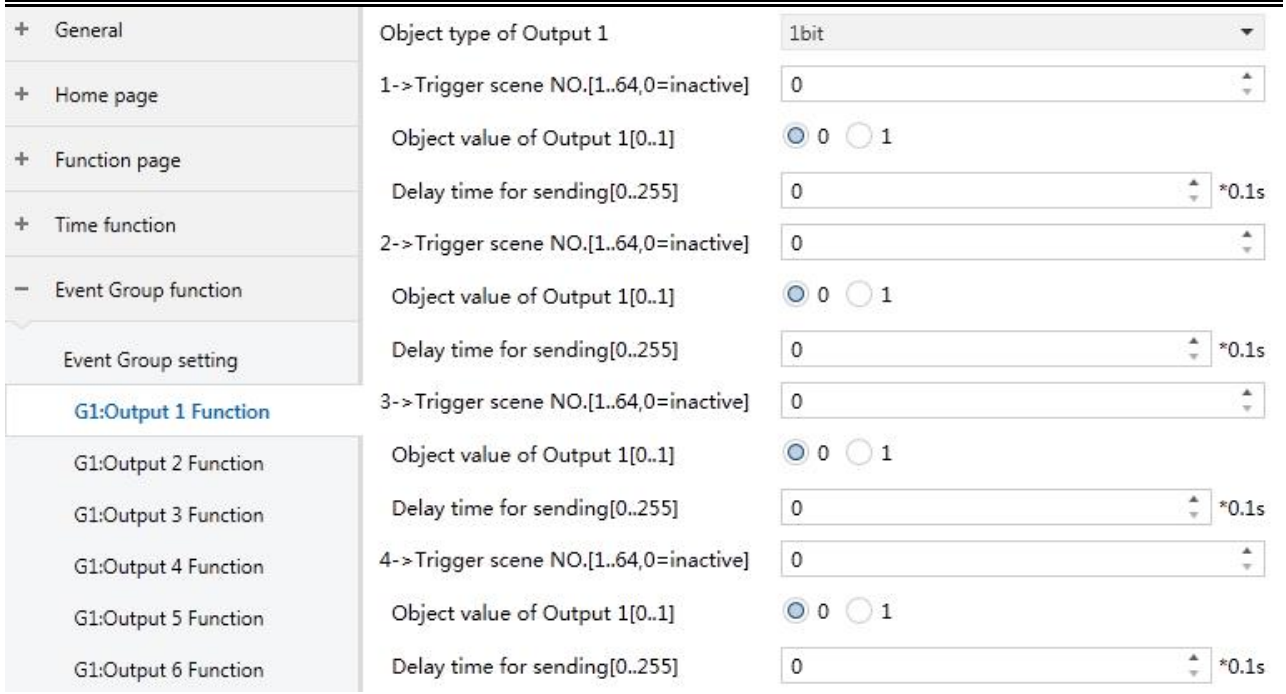


Fig.5.5.2 "Gx: Output y Function" parameter window

Parameter "Event Group x Function (x:1~8)"

Setting to enable event group x function. Options:

Disable

Enable

When enable one of the group functions,8 outputs are visible.

As 8 group functions are the same, and 8 output functions of each group as well, the following description only about one output of a group.

Parameter "Object type of Output y (y:1~8)"

Define the object type of output y of group x. Options:

1bit

1byte

2byte

Parameter "z->Trigger scene NO.[1~64,0=inactive]" (z:1~8)

Define the triggered scene number of output y of group x. Up to 8 triggered scene of each output can be configured. Options:**0..64, 0=inactive**

-- Parameter "Object value of Output y [0..1/0..255/0..65535]"

Setting the output value, the range depends on the data type of output y. **1bit 0..1/1byte 0..255/ 2byte 0..65535**

-- Parameter" Delay time for sending [0...255]*0.1s "

Setting the delay time for sending the output value to the bus. Options: **0..255**

5.6 Parameter window “Logic function setting”

Parameter window “Logic function setting” as shown in Fig.5.6.1, for enable logic function, up to 8 logic functions can be configured.

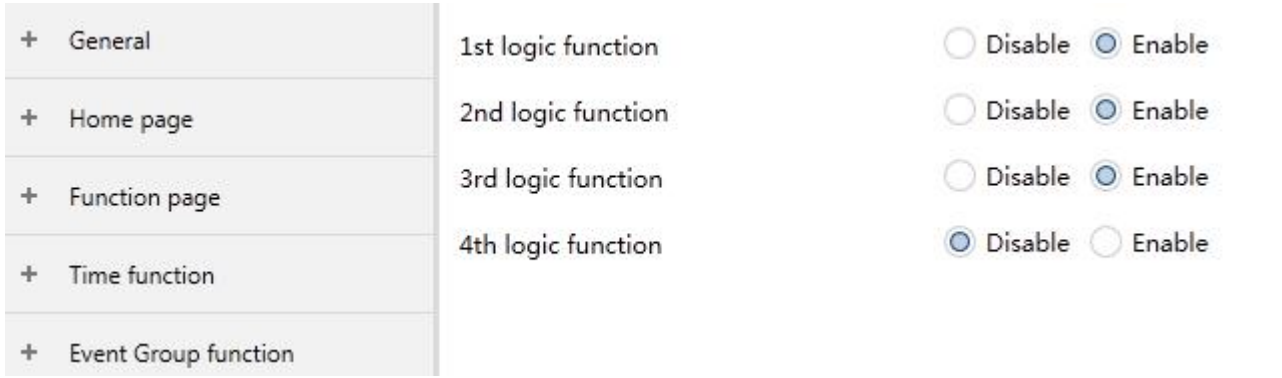


Fig.5.6.1 “Logic function setting” parameter window

Parameter “Function of channel”

Setting for the logic function of channel, as shown in Fig.5.6.2. Options：

AND

OR

XOR

Gate forwarding

Threshold comparator

Format convert

AND/OR/XOR： as the parameter is similar to the communication object (only the logic algorithm is different), the following parameters taking one options for example.

5.6.1 Parameter window "AND/OR/XOR"

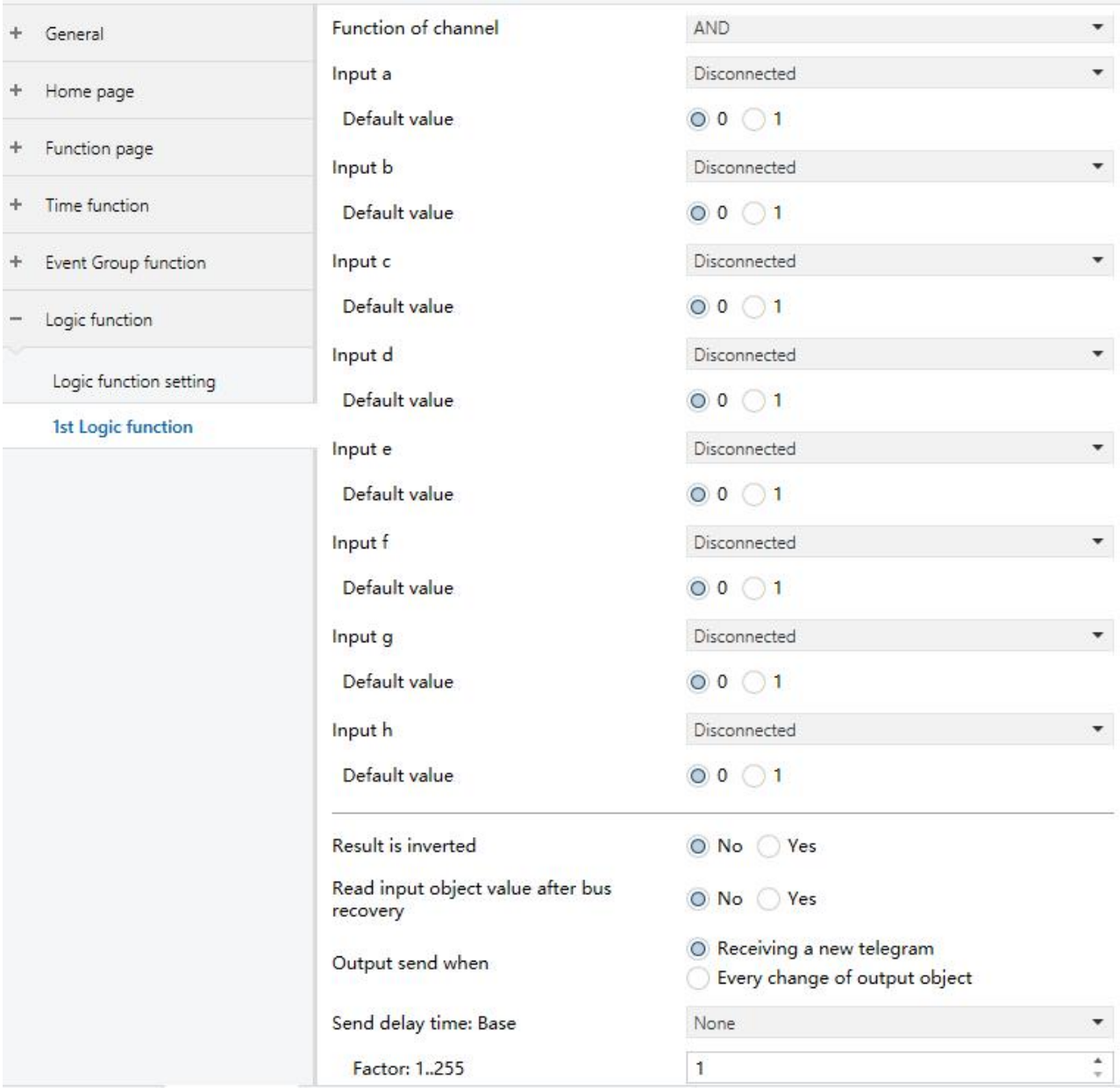


Fig.5.6.2 "Logic function_AND/OR/XOR" parameter window

Parameter"Input a/b/c/d/e/f/g/h"

Setting whether input x to calculate, whether to normally calculate or inverted calculate.Options:

Disconnected

Normal

Inverted

Disconnected：not to calculate;

Normal：to directly calculate the input value;

Inverted：invert the input value, then to calculate. **Note: not to invert the initiate value.**

-- Parameter“Default value”

Setting the initial value of logic input x. Options:

0

1

Parameter“Result is inverted”

Setting whether to invert the logic calculation result. Options:

No

Yes

No：output directly;

Yes：output after inverting.

Parameter“Read input object value after bus voltage recovery”

Setting whether to send the read request to the logic input object after bus voltage recovery or programming. Options:

No

Yes

Parameter“Output send when”

Setting the condition of sending logic result. Options:

Receiving a new telegram

Every change of output object

Receiving a new telegram：every time the object received a new input value will the logic result be sent to the bus;

Every change of output object：only when logic result has changed will it be sent to the bus.

Tip: when in the first time to logic calculate, the logic result will be sent even if it has no change.

Parameter “Send delay time”

Base:

None

0.1s

1s

...

10s

25s

Factor: 1..255

Setting for the delay time for sending the logic calculation result to the bus. Delay time＝Base x Factor, if option “None” of Base is selected, then there is no delay.

5.6.2 Parameter window “Gate forwarding”

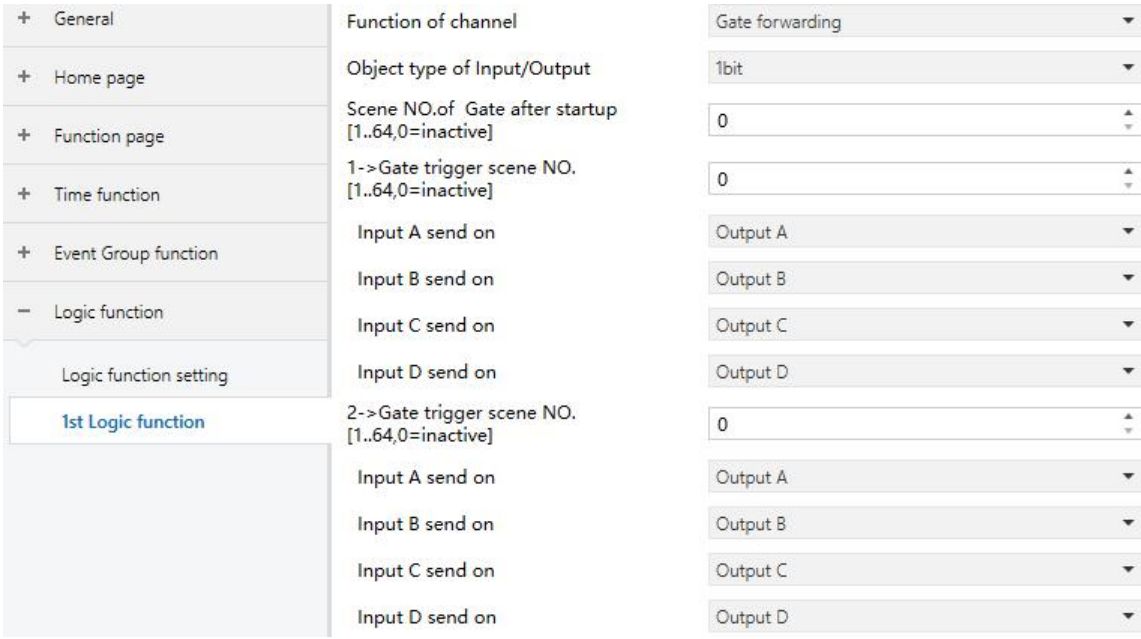


Fig.5.6.3 “Logic function_Gate forwarding” parameter window

Parameter “Object type of Input /Output”

Setting the object type of input/output. Options:

1bit

4bit

1byte

Parameter “Scene NO. of Gate after startup [1..64, 0=inactive]”

Setting the initial scene where logical gate forwarding can be performed by default after device starts, which needs to be configured in the parameters. Options：**1..64, 0=inactive**

Note: gate scene is recommended to be selected before operating, or it will enable the initiate scene by default.

Parameter “z->Gate trigger scene NO.[1..64,0=inactive]” (z:1~8)

Setting scene number of logic gate forwarding. Up to 8 trigger scene number can be set for each logic. Options: **1..64, 0=inactive**

-- Parameter“Input A/B/C/D send on”

Setting the output of input X (X=A/B/C/D) after gate forwarding. Options:

Output A

Output B

...

Output B,C,D

According to the options, one input can be forwarded into one or more outputs, the output value is the same as the input value.

5.6.3 Parameter window "Threshold comparator"

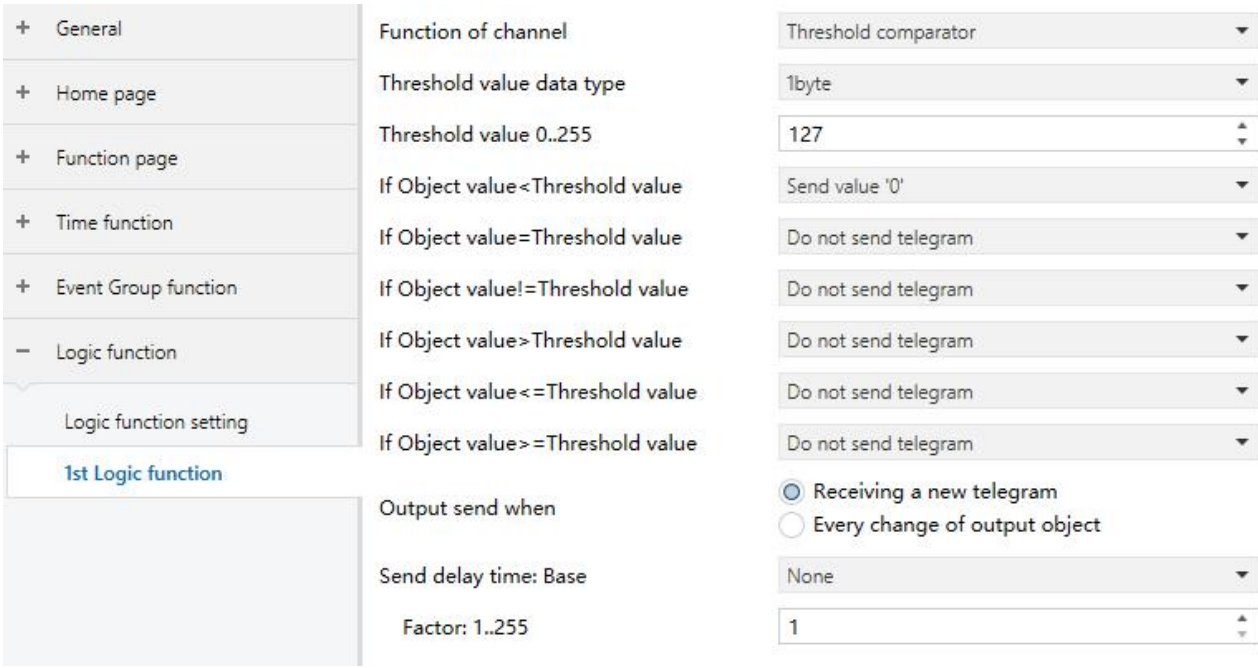


Fig.5.6.4 "Logic function_Threshold comparator" parameter window

Parameter"Threshold value data byte"

Setting the threshold value data type. Options:

4bit

1byte

2byte

4byte

-- Parameter"Threshold value 0..255"

Setting threshold value, the range depends on the data type. **4bit 0..15/1byte 0..255/ 2byte 0..65535 /4byte 0..4294967295**

Parameter "If Object value<Threshold value"

Parameter "If Object value=Threshold value"

Parameter "If Object value!=Threshold value"

Parameter "If Object value>Threshold value"

Parameter "If Object value<=Threshold value"

Parameter "If Object value>=Threshold value"

Setting for setting the logic result value that should be sent when threshold value Less than, equal to, not equal to, greater than, less than or equal to the setting valve. Options:

Do not send telegram

Send value "0"

Send value "1"

Do not send telegram: not consider to select this option;

Send value "0"/"1": when condition is satisfied, send telegram 0 or1.

If there is a conflict between the setting options between parameters, the base on the value that should be sent when reach the final parameter condition. **For example: parameter "If Object value=Threshold value" is set to be "Send value "0" "; parameter "If Object value<=Threshold value" is set to be "Send value "1" "; when object value is equal to the threshold value, then the logic result will send "1".**

Parameter"Output send when"

Setting the condition of sending logic result. Options:

Receiving a new telegram

Every change of output object

Receiving a new telegram: every time the object received a new input value will the logic result be sent to the bus;

Every change of output object: only when logic result has changed will it be sent to the bus.

Tip: when in the first time to logic algorithm, the logic result will be sent even if it has no change.

Parameter"Send delay time: Base"

Base:

None

0.1s

1s

...

25s

Factor: **1..255**

Setting for the delay time for sending the logic algorithm result to the bus. Delay time = Base x Factor, if option "None" of Base is selected, then there is no delay.

5.6.4 Parameter window "Format convert"

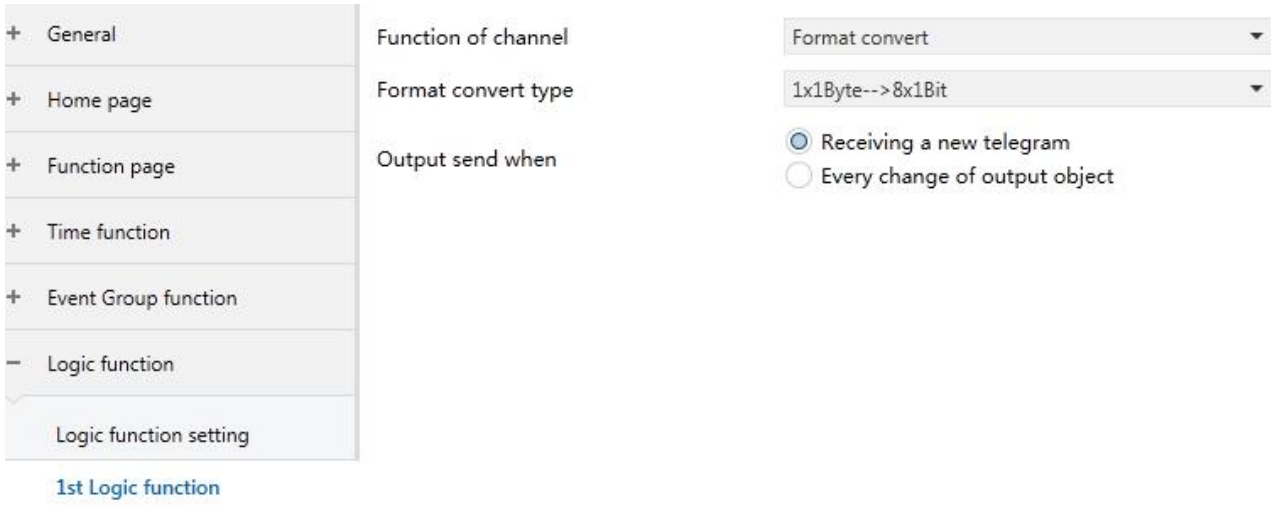


Fig.5.6.5 "Logic function _Format convert" parameter window

Parameter"Format convert type"

Setting the format convert type. Options:

2x1bit-->1x2bit

8x1bit-->1x1byte

1x1byte-->1x2byte

2x1byte-->1x2byte

2x2byte-->1x4byte

1x1byte-->8x1bit

1x2byte-->2x1byte

1x4byte-->2x2byte

1x3byte-->3x1byte

3x1byte-->1x3byte

Parameter"Output send when"

Setting the condition of sending logic result. Options:

Receiving a new telegram

Every change of output object

Receiving a new telegram：every time the object received a new input value will the logic result be sent to the bus;

Every change of output object：only when logic result has changed will it be sent to the bus.

Tip: when in the first time to logic algorithm, the logic result will be sent even if it has no change.

Chapter 6 Description of Communication Object

The communication object is the medium to communicate other device on the bus, namely only the communication object can communicate with the bus.

NOTE: "C" in "Flag" column in the below table means enable the communication function of the object; "W" means value of object can be written from the bus; "R" means the value of the object can be read by the other devices; "T" means the object has the transmission function; "U" means the value of the object can be updated.

6.1 "General" Communication Object

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
678	General	Panel block			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	Colorful strip trigger			1 bit	C	-	W	-	-	trigger	Low
685	General	Colorful strip setting			3 bytes	C	-	W	-	-	RGB value 3x(0..255)	Low
686	General	Proximity sense, scene NO.			1 byte	C	-	W	T	-	scene number	Low
686	General	Proximity sense, 1bit value			1 bit	C	-	W	T	-	switch	Low
686	General	Proximity sense, 1byte value			1 byte	C	-	W	T	-	counter pulses (0..255)	Low
686	General	Proximity sense, 1byte value			1 byte	C	-	W	T	-	percentage (0..100%)	Low

Fig.6.1 "General" communication object

NO.	Object Function	Name	Data Type	Flag	DPT
678	**Panel block**	**General**	**1bit**	**C,W**	**1.003 enable**
The communication object is used to lock the panel. After panel locked, the operation on the panel will not be responded, but can still receive the bus telegram. Telegram value: 0 ——Lock 1 ——Unlock					
679	**In operation**	**General**	**1bit**	**C,T**	**1.001 switch**
This communication object is used to periodically send a telegram "1" to the bus to indicate that the device is working properly.					
680	**Date**	**General**	**3bytes**	**C,W**	**11.001 date**
The communication object is used to modify the display date on the screen through the bus.					
681	**Time**	**General**	**3bytes**	**C,W**	**10.001 time of day**
The communication object is used to modify the display time on the screen through the bus.					
682	**Day/Night**	**General**	**1bit**	**C,W, T**	**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 or sunrise and sunset time, or the telegram value can be switched through the bus. Telegram value:					

0 —— Day 1 —— Night					
683	**Screen backlight brightness**	**General**	**1byte**	**C,W**	**5.001percentage(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%, directly output 10% brightness. Object is visible when the parameter “Screen brightness can be changed via bus” selects “Yes”.					
684	**Colorful strip trigger**	**General**	**1bit**	**C,W**	**1.017 trigger**
The communication object is visible when the colorful strip is enable, and is used to trigger the indication function of the colorful strip through the bus.					
685	**Colorful strip setting**	**General**	**1bit**	**C,W**	**232.600 RGB value 3x(0..255)**
The communication object is visible when option “Receive a 3byte value” of parameter“Color setting” is selected, for receiving 3byte value.					
686	**Proximity sense, 1bit value** **Proximity sense, 1scene NO.** **Proximity sense, 1byte value**	**General**	**1bit**	**C,W,T**	**1.001 switch** **17.001 scene number** **5.010 counter pulses(0..255)** **5.001 percentage(0..100%)**
The communication object is visible when status feedback of proximity sensor is enable and output value is selected. When proximity approaching or leaving, it will send telegram to the bus. The range of value is determined by the selected data type.					
687	**Password trigger, 1bit value** **Password trigger, scene NO.** **Password trigger, 1 byte value**	**General**	**1bit** **1byte**	**C,T**	**1.001 switch** **17.001 scene number** **5.010 counter pulses(0..255)** **5.001 percentage(0..100%)**
The communication object is visible when password function is enable and output value is selected. The range of value is determined by the selected data type.					
688	**Summer time status**	**General**	**1bit**	**C,R,T**	**1.003enable**
The communication object is used to send the status telegrams of the summer time to the bus. Telegrams: 1 —— Summer time enable 0 ——Summer time disable					

Table 6.1 “General ”communication object table

6.2 “General sensor” Communication Object

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

Fig.6.2 “General sensor” communication object

NO.	Object Function	Name	Data Type	Flag	DPT
672	**Actual temperature**	**Internal sensor**	**2Bytes**	**C,R,T**	**9.001 temperature(℃)**
The communication object is used for transmitting the temperature value detected by the built-in temperature sensor of the device to the bus. Range:-50~99.8℃					
673	**Temp.correction (-10_10)℃**	**Internal sensor**	**2Bytes**	**C,W**	**9.001 temperature(℃)**
The communication object is used for correcting the temperature measurement value of the built-in temperature sensor through the bus correction device.					
674	**Temp.error report**	**Internal sensor**	**1bit**	**C,R,T**	**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.					
675	**Temperature**	**External sensor**	**2bytes**	**C,W,T,U**	**9.001 temperature(℃)**
The communication object is used for receiving a temperature measurement value sent from a temperature sensor on the bus. Range:-50~99.8℃					
676	**Temp.error report**	**External sensor**	**1bit**	**C,R,T**	**1.005alarm**
The communication object is used to send reports of external temperature sensor errors, and the object value is defined according to the parameters.					
677	**Humidity**	**External sensor**	**2bytes**	**C,W,T,U**	**9.007 humidity(%)**
The communication object is used to receive humidity measurements sent from the humidity sensor on the bus. Range:0~100%					

Table 6.2 “General sensor” communication object table

6.3 Communication Object of Function Page

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

Fig.6.3. Function page communication object

NO.	Object Function	Name	Data Type	Flag	DPT
657..671	**Dis./En. Page 1..15**	**Page function**	**1bit**	**C,W**	**1.003 enable**
The communication object is used to disable/enable the operation of the corresponding function page. After disable, the function page is locked and can no longer be operated, but the bus telegram can still be received.					

Table 6.3. Function page communication object table

6.3.1 "Multifunction (Lighting/Blind/Scene/Value send)" Communication Object

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	Page 1-Icon 1	Switch			1 bit	C	-	-	T	-	switch	Low
3	Page 1-Icon 1	Switch status			1 bit	C	-	W	T	U	switch	Low

Switch

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	Page 1-Icon 1	Switch			1 bit	C	-	-	T	-	switch	Low
2	Page 1-Icon 1	Brightness dimming			1 byte	C	-	-	T	-	percentage (0..100%)	Low
3	Page 1-Icon 1	Brightness status			1 byte	C	-	W	T	U	percentage (0..100%)	Low
4	Page 1-Icon 1	Relative dimming			4 bit	C	-	W	T	-	dimming control	Low

Switch/Dimming

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

Value send

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			1 byte	C	-	W	T	U	percentage (0..100%)	Low

Open/Close Blind

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
3	Page 1-Icon 1	Blind position/status			1 byte	C	-	W	T	U	percentage (0..100%)	Low

Roller Blind (without slat)

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/Slat adj.			1 bit	C	-	-	T	-	step	Low
3	Page 1-Icon 1	Blind position/status			1 byte	C	-	W	T	U	percentage (0..100%)	Low
4	Page 1-Icon 1	Slat position/status			1 byte	C	-	W	T	U	percentage (0..100%)	Low

Venetian Blinds (with slat)

Number	Name	Object Function	De	Gr	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

Blind(open/close/stop)

Number	Name	Object Function	De	Gr	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

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	Recall/storage scene No.			1 byte	C	-	W	T	-	scene control	Low

Scene control

Fig.6.3.1 “Multifunction (Lighting/Blind/Scene/Value send)”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
1	**Switch**	**Page x-Icon y**	**1bit**	**C, T**	**1.001 switch**
The communication object is used to send the on / off telegram to the bus and control the on /off of the lamp. Telegram value: 1——On 0——Off					
3	**Switch Status**	**Page x-Icon y**	**1bit**	**C,W,T,U**	**1.001 switch**
The communication object is used to receive the on / off status from other bus devices, such as Dimmer and Switch actuator.					
2	**Brightness dimming**	**Page x-Icon y**	**1byte**	**C,T**	**5.001 percentage(0..100%)**
The communication object is used to send dimming telegram to the bus, that is, to send brightness values. Telegram: 0…100%					
3	**Brightness Status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**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	**Relative dimming**	**Page x-Icon y**	**4 bit**	**C,W,T**	**3.007 dimming control**
The communication object is used for sending the relative dimming telegram to the bus, such as brighter, darker, or stop-dimming telegram.					
1	**Send 1bit/2bit/4bit/ 1byte/2byte value**	**Page x-Icon y**	**1bit on/off** **2bit 0..3** **4bit 0..15** **1byte 0..255**	**C,T**	**1.001 switch** **2.001 switch control** **3.007 dimming control** **5.010 counter pulses(0..255)**

			1byte 0..100% **2byte -32768..32767** **2byte 0..65535**		**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, and if the long press operation is distinguished from the short press operation, only the output value of the short press operation is sent. The object type and value range are determined by the data type set by the parameter.

2	**Send 1bit/2bit/4bit/ 1byte/2byte value, long**	**Page x-Icon y**	**1bit on/off** **2bit 0..3** **4bit 0..15** **1byte 0..255** **1byte 0..100%** **2byte -32768..32767** **2byte 0..65535**	**C,T**	**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, and if the long press operation is distinguished from the short press operation, only the output value of the short press operation is sent. The object type and value range are determined by the data type set by the parameter.

1	**Open/Close**	**Page x-Icon y**	**1bit**	**C,W, T**	**1.009 open/close**
2	**Stop**	**Page x-Icon y**	**1bit**	**C, T**	**1.007 step**
3	**Blind position/status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**5.001 percentage(0..100%)**

Open/Close Blind: is suitable for opening and closing curtains.

The object description is as follows:

Obj.1: the communication object is used to send the open / close telegram to the bus. Telegram value:

1——Close the curtain

0——Open the curtain

Obj.2: The communication object is used to send a telegram for stopping the curtain movement to the bus.

Telegram value:

1——Stop

Obj.3: The communication object is used to send a telegram to control the position of the curtain to the bus or to receive a curtain position status in response to the window curtain actuator on the bus. Telegram value: 0..100%

1	**Up/Down**	**Page x-Icon y**	**1bit**	**C,W, T**	**1.008 up/down**
2	**Stop**	**Page x-Icon y**	**1bit**	**C, T**	**1.007 step**
3	**Blind position/status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**5.001 percentage(0..100%)**

Roller Bind: Applies to a roller blind without slat. The object description is as follows:

Obj.1: The communication object is used to send a telegram value to the bus to control the opening/closing of the Roller blind.

Telegram value:

1——Move down

0——Move up

Obj.2 and Obj.3 are the same as above.

1	**Up/Down**	**Page x-Icon y**	**1bit**	**C, T**	**1.008 up/down**
2	**Stop/Slat adj.**	**Page x-Icon y**	**1bit**	**C, T**	**1.007 step**
3	**Blind position/status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**5.001 percentage(0..100%)**
4	**Slat position/status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**5.001 percentage(0..100%)**

Venetian Blinds: Applies to a blind, with a slat angle adjustment. The object description is as follows:

Obj.1 and Obj.3 are the same as above.

Obj.2: the communication object is used to send a telegram to the bus to stop the curtain movement or adjust the slat angle.Telegram value:

1——Stop/Slat adj. Down
0——Stop/Slat adj. Up

Obj.4: the communication object is used to send a telegram controlling the angle position of the shutter to or from the bus to receive the shutter actuator response to the slat angle position state. Telegram value: 0. 100%

1	**Open/Close**	**Page x-Icon y**	**1bit**	**C,W, T**	**1.009 open/close**
2	**Stop**	**Page x-Icon y**	**1bit**	**C, T**	**1.007 step**

Blind(open/close/stop): is suitable for opening and closing curtains.

The object description is as follows:

Obj.1: the communication object is used to send the open / close telegram to the bus. Telegram value:

1——Close the curtain
0——Open the curtain

Obj.2: The communication object is used to send a telegram for stopping the curtain movement to the bus.

1	**Up/Down**	**Page x-Icon y**	**1bit**	**C, T**	**1.008 up/down**
2	**Stop**	**Page x-Icon y**	**1bit**	**C, T**	**1.007 step**

Blind(up/down/stop)：is suitable for roller blind. The object description is as follows:

Obj.1: The communication object is used to send a telegram value to the bus to control the opening/closing of the Roller blind.

Telegram value:

1——Move down
0——Move up

Obj.2 is the same as above.

1	**Recall/storage scene No.**	**Page x-Icon y**	**1byte**	**C, T**	**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.

Table 6.3.1 “Multifunction (Lighting/Blind/Scene/Value send)”communication object table

6.3.2 "HVAC" Communication Object

Number	Name	Object Function	De	Gr	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-HVAC Input	External temperature sensor			2 bytes	C	-	W	T	U	temperature (°C)	Low
162	Page 6-HVAC Input	Setpoint adjustment			2 bytes	C	-	W	-	-	temperature (°C)	Low
163	Page 6-HVAC Input	Switch Heating/Cooling mode			1 bit	C	-	W	-	U	cooling/heating	Low
164	Page 6-HVAC Input	Comfort mode			1 bit	C	-	W	-	-	enable	Low
165	Page 6-HVAC Input	Standby mode			1 bit	C	-	W	-	-	enable	Low
166	Page 6-HVAC Input	Night mode			1 bit	C	-	W	-	-	enable	Low
167	Page 6-HVAC Input	Frost/Heat protection mode			1 bit	C	-	W	-	-	enable	Low
168	Page 6-HVAC Input	Fan speed low			1 bit	C	-	W	-	U	switch	Low
169	Page 6-HVAC Input	Fan speed medium			1 bit	C	-	W	-	U	switch	Low
170	Page 6-HVAC Input	Fan speed high			1 bit	C	-	W	-	U	switch	Low
171	Page 6-HVAC Input	Fan speed off			1 bit	C	-	W	-	U	switch	Low
172	Page 6-HVAC Input	Fan Automatic operation			1 bit	C	-	W	-	U	enable	Low
173	Page 6-HVAC Output	Instantaneous setpoint			2 bytes	C	R	-	T	-	temperature (°C)	Low
174	Page 6-HVAC Output	Heating/Cooling mode			1 bit	C	R	-	T	-	cooling/heating	Low
175	Page 6-HVAC Output	Comfort mode			1 bit	C	-	-	T	-	enable	Low
176	Page 6-HVAC Output	Standby mode			1 bit	C	-	-	T	-	enable	Low
177	Page 6-HVAC Output	Night mode			1 bit	C	-	-	T	-	enable	Low
178	Page 6-HVAC Output	Frost/Heat protection mode			1 bit	C	-	-	T	-	enable	Low
179	Page 6-HVAC Output	Heating control value			1 bit	C	-	-	T	-	switch	Low
180	Page 6-HVAC Output	Cooling control value			1 bit	C	-	-	T	-	switch	Low
181	Page 6-HVAC Output	Fan speed low			1 bit	C	-	-	T	-	switch	Low
182	Page 6-HVAC Output	Fan speed medium			1 bit	C	-	-	T	-	switch	Low
183	Page 6-HVAC Output	Fan speed high			1 bit	C	-	-	T	-	switch	Low
184	Page 6-HVAC Output	Fan speed off			1 bit	C	-	-	T	-	switch	Low
185	Page 6-HVAC Output	Fan Automatic operation			1 bit	C	-	-	T	-	enable	Low
186	Page 6-HVAC Output	HVAC on/off			1 bit	C	-	W	T	U	switch	Low
187	Page 6-HVAC Output	Base setpoint temperature			2 bytes	C	R	-	T	-	temperature (°C)	Low

179	Page 6-HVAC Output	Heating control value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
180	Page 6-HVAC Output	Cooling control value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
164	Page 6-HVAC Input	HVAC mode			1 byte	C	-	W	-	-	HVAC mode	Low
168	Page 6-HVAC Input	Fan speed			1 byte	C	-	W	-	U	percentage (0..100%)	Low
175	Page 6-HVAC Output	HVAC mode			1 byte	C	R	-	T	-	HVAC mode	Low
179	Page 6-HVAC Output	Heating/cooling control value			1 bit	C	-	-	T	-	switch	Low
181	Page 6-HVAC Output	Fan speed			1 byte	C	-	-	T	-	percentage (0..100%)	Low
179	Page 6-HVAC Output	Heating/cooling control value			1 byte	C	-	-	T	-	percentage (0..100%)	Low

Fig.6.3.2 "HVAC" communication object

NO.	Object Function	Name	Data Type	Flag	DPT
161	**External temperature sensor**	**Page x- HVAC Input**	**2byte**	**C,W,T,U**	**9.001 temperature(℃)**
The communication object is used for receiving a temperature measurement value sent from a temperature sensor on the bus. Range:-50~99.8℃					
162	**Setpoint adjustment**	**Page x- HVAC Input**	**2byte**	**C,W**	**9.001 temperature(℃)**
When HVAC mode is not enabled, the communication object is used to modify the base value of the set temperature. When HVAC operation mode is enabled and the temperature is set to be relatively adjusted, the communication object is used to modify the base value of the set temperature, that is, the temperature setting value of the comfort mode, and the setting temperature of the standby mode and the economy mode changes according to					

the relative change. In the protection mode, only the temperature setting value of the protection mode is modified.

When HVAC operation mode is enabled and the temperature is set to absolute adjustment, the communication object is used to modify the temperature setting value of the current room operation mode.

163	**Switch Heating/Cooling mode**	**Page x- HVAC Input**	**1bit**	**C,W,U**	**1.100 cooling/heating**

The communication object is used for receiving the status feedback from the heating and cooling on the bus, and the screen will update the icon display according to the received telegram value, and the telegram value is as follows:

1 ——Heating

0 ——Cooling

164	**HVAC mode**	**Page x- HVAC Input**	**1byte**	**C,W**	**20.102 HVAC mode**
164	**Comfort mode**	**Page x- HVAC Input**	**1bit**	**C,W**	**1.003 enable**
165	**Standby mode**	**Page x- HVAC Input**	**1bit**	**C,W**	**1.003 enable**
166	**Economy mode**	**Page x- HVAC Input**	**1bit**	**C,W**	**1.003 enable**
167	**Frost/heat protection mode**	**Page x- HVAC Input**	**1bit**	**C,W**	**1.003 enable**

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

When 1bit:

Object 164—— Comfort mode

Object 165—— Standby mode

Object 166—— Economy mode

Object 167—— Protection mode

When the object receives the telegram “1”, the corresponding mode is activated and the display status of the mode on the screen will also be updated to the corresponding mode.

When 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.

168	**Fan speed**	**Page x- HVAC Input**	**1byte**	**C,W ,U**	**5.001 percentage(0..100%)**
168	**Fan speed low**	**Page x- HVAC Input**	**1bit**	**C,W ,U**	**1.001 switch**

169	**Fan speed medium**	**Page x- HVAC Input**	**1bit**	**C,W ,U**	**1.001 switch**
170	**Fan speed high**	**Page x- HVAC Input**	**1bit**	**C,W ,U**	**1.001 switch**
171	**Fan speed off**	**Page x- HVAC Input**	**1bit**	**C,W ,U**	**1.001 switch**

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

When 1bit:

Object 168——Low fan speed

Object 169——Medium fan speed

Object 170——High fan speed

Object 171——Fan speed off

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.

172	**Fan Automatic operation**	**Page x- HVAC Input**	**1bit**	**C,W,U**	**1.003 enable**

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

1——Automatic

0——Cancel automatic

173	**Instantaneous setpoint**	**Page x- HVAC output**	**2bytes**	**C,R,T**	**9.001 temperature(℃)**

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

174	**Heating/Cooling mode**	**Page x- HVAC output**	**1bit**	**C,R,T**	**1.100 cooling/heating**

The communication object is used to send telegrams from switching cooling and heating functions to the bus. Telegram value:

1 ——Heating

0 ——Cooling

175	**HVAC mode** **Comfort mode**	**Page x- HVAC output**	**1byte** **1bit**	**C,R,T** **C,T**	**20.102 DPT_HVAC Mode** **1.003enable**
176	**Standby mode**	**Page x- HVAC output**	**1bit**	**C,T**	**1.003enable**
177	**Economy mode**	**Page x- HVAC output**	**1bit**	**C,T**	**1.003enable**
178	**Frost/Heat protection mode**	**Page x- HVAC output**	**1bit**	**C,T**	**1.003enable**

The communication objects are used to send the telegram of the room operation mode to the 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: Frost protection/ over-heat protection

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

179	**Heating /cooling control value**	**Page x- HVAC output**	**1byte** **1bit**	**C,T**	**5.001 percentage(0..100%)** **1.001 switch**
179	**Heating control value**	**Page x- HVAC output**	**1byte** **1bit**	**C,T**	**5.001 percentage(0..100%)** **1.001 switch**
180	**Cooling control value**	**Page x- HVAC output**	**1byte** **1bit**	**C,T**	**5.001 percentage(0..100%)** **1.001 switch**

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(switch on/off use-2-point control)：on/off

Send telegram value (switch PWM-use PI control): on/off

Send telegram value (continuous control-use PI control): 0...100%

181	**Fan speed** **Fan speed low**	**Page x- HVAC output**	**1byte** **1bit**	**C,T**	**5.001 percentage(0..100%)** **1.001 switch**
182	**Fan speed medium**	**Page x- HVAC output**	**1bit**	**C,T**	**1.001 switch**
183	**Fan speed high**	**Page x- HVAC output**	**1bit**	**C,T**	**1.001 switch**
184	**Fan speed off**	**Page x- HVAC output**	**1bit**	**C,T**	**1.001 switch**

The communication objects are used to send control telegrams of the fan speed to the bus.

When 1bit:

Object 181——Low fan speed

Object 182——Medium fan speed

Object 183——High fan speed

Object 184——Fan speed off

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 the bus.

185	**Fan Automatic operation**	**Page x- HVAC output**	**1bit**	**C,T**	**1.003 enable**
The communication object is used for sending the automatic control telegram of the fan speed to the bus. Telegram value: 1——Automatic 0——Cancel automatic					
186	**HVAC on/off**	**Page x- HVAC output**	**1bit**	**C,W,T,U**	**1.001 switch**
The communication object is used to switch and control the HVAC function of the device, and the corresponding control will be turned off when the HVAC is turned off.					
187	**Base setpoint temperature**	**Page x- HVAC output**	**2bytes**	**C,R,T**	**9.001 temperature(℃)**
This communication object is visible when enable HVAC control mode, and setpoint method for operating mode is set as relative, is used to send the base setpoint temperature.					

Table6.3.2 “HVAC”communication object table

6.3.3 “Air conditioner” Communication Object

Number	Name	Object Function	De	Gr	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-AC	External temperature sensor, In			2 bytes	C	-	W	T	U	temperature (°C)	Low
162	Page 6-AC	Power on/off, Out			1 bit	C	-	-	T	-	switch	Low
163	Page 6-AC	Status of Power, In			1 bit	C	-	W	T	U	switch	Low
164	Page 6-AC	Control mode, Out			1 byte	C	-	-	T	-	HVAC control mode	Low
165	Page 6-AC	Status of control mode, In			1 byte	C	-	W	T	U	HVAC control mode	Low
169	Page 6-AC	Fan speed, Out			1 byte	C	-	-	T	-	percentage (0..100%)	Low
170	Page 6-AC	Stauts of Fan speed, In			1 byte	C	-	W	T	U	percentage (0..100%)	Low
173	Page 6-AC	Wind direction fixed/swing, In/Out			1 bit	C	-	W	T	U	trigger	Low
174	Page 6-AC	Wind direction position, Out			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
175	Page 6-AC	Status of Wind direction position, In			1 byte	C	-	W	T	U	counter pulses (0..255)	Low
176	Page 6-AC	Temperature setpoint, In/Out			2 bytes	C	-	W	T	U	temperature (°C)	Low

Fig.6.3.3 (1) “Air conditioner”communication object（Gateway Integrate_1byte）

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-AC	External temperature sensor, In			2 bytes	C	-	W	T	U	temperature (°C)	Low
162	Page 6-AC	Power on/off, Out			1 bit	C	-	-	T	-	switch	Low
163	Page 6-AC	Status of Power, In			1 bit	C	-	W	T	U	switch	Low
164	Page 6-AC	Heat mode, In/Out			1 bit	C	-	W	T	U	enable	Low
165	Page 6-AC	Cool mode, In/Out			1 bit	C	-	W	T	U	enable	Low
166	Page 6-AC	Dry mode, In/Out			1 bit	C	-	W	T	U	enable	Low
167	Page 6-AC	Fan mode, In/Out			1 bit	C	-	W	T	U	enable	Low
168	Page 6-AC	Auto mode, In/Out			1 bit	C	-	W	T	U	enable	Low
169	Page 6-AC	Fan speed low, In/Out			1 bit	C	-	W	T	U	switch	Low
170	Page 6-AC	Fan speed medium, In/Out			1 bit	C	-	W	T	U	switch	Low
171	Page 6-AC	Fan speed high, In/Out			1 bit	C	-	W	T	U	switch	Low
172	Page 6-AC	Fan speed Auto, In/Out			1 bit	C	-	W	T	U	switch	Low
173	Page 6-AC	Wind direction fixed/swing, In/Out			1 bit	C	-	W	T	U	trigger	Low
174	Page 6-AC	Wind direction position, Out			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
175	Page 6-AC	Status of Wind direction position, In			1 byte	C	-	W	T	U	counter pulses (0..255)	Low
176	Page 6-AC	Temperature setpoint, In/Out			2 bytes	C	-	W	T	U	temperature (°C)	Low

Fig.6.3.3 (2) “Air conditioner”communication object（Gateway Integrate_1bit）

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-AC	External temperature sensor, In			2 bytes	C	-	W	T	U	temperature (°C)	Low
162	Page 6-AC	IR Split unit command, Out			1 byte	C	-	-	T	-	scene number	Low

Fig.6.3.3 (3) "Air conditioner"communication object（IR Split Unit）

NO.	Object Function	Name	Data Type	Flag	DPT
161	**External temperature sensor, In**	**Page x-AC**	**2bytes**	**C,W,T,U**	**9.001 temperature(℃)**
The communication object is used for receiving the temperature measurement value sent by the indoor temperature sensor on the bus and displaying the indoor temperature on the screen.					
162	**Power on/off,Out**	**Page x-AC**	**1bit**	**C,T**	**1.001 switch**
162	**IR Split unit command,Out**	**Page x-AC**	**1byte**	**C,T**	**17.001 scene number**
Power on/off: this communication object is visible in Gateway Integrate mode and is used to send air conditioning switch telegrams. IR Split unit command: this communication object is visible in IR Split Unit mode and is used to send air conditioning control telegrams. The parameter can be set to control telegram 1~ 64, and the actual telegram value on the bus should be 0~ 63.					
163	**Status of Power,In**	**Page x-AC**	**1bit**	**C,W,T,U**	**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	**Control mode,Out**	**Page x-AC**	**1byte**	**C,T**	**20.105 HAVC control mode**
164	**Heat mode,In/Out**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.003 enable**
Control mode, Out: this communication object is visible when the Gateway Integrate mode, and the mode type is 1byte and the mode type is 1byte, which is used to send the control telegram of each mode of air conditioning. Heat mode, In/Out: this communication object is visible in Gateway Integrate mode, and the mode type is 1bit. It is used to send air conditioning mode heating control telegram, and can also receive status feedback.					
165	**Status of control mode,In**	**Page x-AC**	**1byte**	**C,W,T,U**	**20.105 HAVC control mode**
165	**Cool mode,In/Out**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.003 enable**
Status of control mode, In: this communication object is visible in Gateway Integrate mode and the mode type is 1byte, which is used to receive the status feedback telegram of each mode of air conditioning. Cool mode, In/Out: this communication object can be seen in Gateway Integrate mode, and the mode type is 1bit. It can be used to send the control telegram of air conditioning mode-Cool, and can also receive status feedback.					
166	**Dry mode,In/Out**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.003 enable**
This communication object is visible in Gateway Integrate mode and the mode type is 1bit. It is used to send					

air conditioning mode -Dry control telegram and receive status feedback.

167	**Fan mode,In/Out**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.003 enable**

This communication object is visible in Gateway Integrate mode and the fan speed type is 1bit. It is used to send air conditioning mode -Fan control telegram and receive status feedback.

168	**Auto mode,In/Out**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.003 enable**

This communication object is visible in Gateway Integrate mode and the fan speed type is 1bit.It is used to send air conditioning mode -Auto control telegram and receive status feedback.

169	**Fan speed,Out**	**Page x-AC**	**1byte**	**C,T**	**5.001 percentage(0..100%)**
169	**Fan speed low,In/Out**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.001 switch**

Fan speed Out: this communication object is visible when the Gateway Integrate mode and the fan speed type is 1byte, which is used to send the control telegram of each fan speed.

Fan speed low, In/Out: this communication object is visible in Gateway Integrate mode and the fan speed type is 1bit. It is used to send Fan speed low control telegram and receive state feedback.

170	**Status of Fan speed,In**	**Page x-AC**	**1byte**	**C,W,T,U**	**5.001 percentage(0..100%)**
170	**Fan speed medium**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.001 switch**

Status of Fan speed, In: this communication object is visible when the Gateway Integrate mode and the fan speed type is 1byte, which is used to receive the status feedback telegram of each wind speed.

Fan speed medium: this communication object is visible when the Gateway Integrate mode and the fan speed type is 1bit. It is used to send the Fan speed medium control telegram and can also receive status feedback.

171	**Fan speed high**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.001 switch**

This communication object is visible in Gateway Integrate mode and the fan speed type is 1bit. It is used to send Fan speed high control telegram and can also receive status feedback.

172	**Fan speed Auto,In/Out**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.001 switch**

This communication object is visible in Gateway Integrate mode and the fan speed type is 1bit. It is used to send Fan speed Auto control telegram and can also receive status feedback.

173	**Wind direction fixed/swing,In/Out**	**Page x-AC**	**1bit**	**C,W,T,U**	**1.017 trigger**

This communication object is visible in Gateway Integrate mode and when the wind direction adjustment is enabled, and is used to send the control telegram of the wind direction. Telegram value:

1——Swing wind direction
0——Fixed wind direction.

174	**Wind direction position,Out**	**Page x-AC**	**1byte**	**C,T**	**5.010 counter pulses(0..255)**

The communication object is in the Gateway Integrate mode and is visible when the wind direction

adjustment is enabled, and is used to send the control telegram of the fixed wind direction position 1..5.					
175	**Status of wind direction position,In**	**Page x-AC**	**1byte**	**C,W,T,U**	**5.010 counter pulses(0..255)**
The communication object is in the Gateway Integrate mode and is visible when the wind direction adjustment is enabled, and is used to receive the status feedback telegram of the fixed wind direction position 1..5.					
176	**Temperature setpoint,In/Out**	**Page x-AC**	**1byte** **2byte**	**C,W,T,U**	**5.010 counter pulses(0..255)** **9.001 temperature(℃)**
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 ℃ telegram value is 17 (decimal number).**					

Table 6.3.3 “Air conditioner”communication object table

6.3.4 “Background Music” Communication Object

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-BgMusic	Power on/off, In/Out			1 bit	C	-	W	T	U	switch	Low
162	Page 6-BgMusic	Play/Pause, In/Out			1 bit	C	-	W	T	U	start/stop	Low
163	Page 6-BgMusic	Next song/Previous song, Out			1 bit	C	-	-	T	-	step	Low
164	Page 6-BgMusic	Volume+/Volume-, Out			1 bit	C	-	-	T	-	step	Low
165	Page 6-BgMusic	Play mode, Out			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
166	Page 6-BgMusic	Play mode status, In			1 byte	C	-	W	T	U	counter pulses (0..255)	Low
167	Page 6-BgMusic	Music source, Out			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
168	Page 6-BgMusic	Music source status, In			1 byte	C	-	W	T	U	counter pulses (0..255)	Low

Fig.6.3.4 “Background Music”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
161	**Power on/off,In/Out**	**Page x- BgMusic**	**1bit**	**C,W,T,U**	**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: 1——On 0——Off					
162	**Play/Pause,In/Out**	**Page x- BgMusic**	**1bit**	**C,W,T,U**	**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: 1——Play music 0——Pause playing music					

163	**Next song/Previous song,Out**	**Page x- BgMusic**	**1bit**	**C,T**	**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: 1——Play the next song 0——Play the previous song					
164	**Volume+/Volume-,Out**	**Page x- BgMusic**	**1bit**	**C,T**	**1.007 step**
The communication object is used to adjust the volume of the background music module. Telegram value: 1——Increase volume 0——Decrease volume					
165	**Play mode,Out**	**Page x- BgMusic**	**1byte**	**C,T**	**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	**Play mode status,In**	**Page x- BgMusic**	**1byte**	**C,W,T,U**	**5.010 counter pluses(0..255)**
The communication object is used for receiving 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	**Music source,Out**	**Page x- BgMusic**	**1byte**	**C,T**	**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	**Music source status,In**	**Page x-BgMusic**	**1byte**	**C,W,T,U**	**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.					

Table 6.3.4 “Background Music”communication object table

6.3.5 “RGB dimming” Communication Object

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-RGB Dimming	Red dimming value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
162	Page 6-RGB Dimming	Green dimming value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
163	Page 6-RGB Dimming	Blue dimming value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
161	Page 6-RGB Dimming	RGB dimming value			3 bytes	C	-	-	T	-	RGB value 3x(0..255)	Low

RGB

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-RGB Dimming	Red dimming value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
162	Page 6-RGB Dimming	Green dimming value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
163	Page 6-RGB Dimming	Blue dimming value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
164	Page 6-RGB Dimming	White dimming value			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
161	Page 6-RGB Dimming	RGBW dimming value			6 bytes	C	-	-	T	-	RGB value 4x(0..255)	Low

RGBW+Color Temperature

Number	Name	Object Function	Description	Group Address	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

Brightness+Color Temperature

Fig.6.3.5 “RGB dimming”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
161	**Red dimming value**	**Page x-RGB Dimming**	**1byte**	**C,T**	**5.001 percentage(0..100%)**
The communication object is used to send the brightness value of the control R (red) channel to the bus. Telegram value：0..100%					
162	**Green dimming value**	**Page x-RGB Dimming**	**1byte**	**C,T**	**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	**Blue dimming value**	**Page x-RGB Dimming**	**1byte**	**C,T**	**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	**White dimming value**	**Page x-RGB Dimming**	**1byte**	**C,W,T**	**5.001 percentage(0..100%)**
164	**Brightness**	**Page x-RGB Dimming**	**1byte**	**C,W,T**	**5.001 percentage(0..100%)**
Under the type “RGBW” and “RGBW Color Temperature” , 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% Under the type “Brightness + Color Temperature” , the communication object is used to send the brightness value to the bus or to receive the brightness feedback.Telegram value：0..100%					
165	**Color Temperature setting**	**Page x-RGB Dimming**	**2 bytes**	**C,W,T**	**7.600 absolute colour temperature(K)**
The communication object is used to send color temperature control telegram to bus. Telegram value：1000K..10000K					
161	**RGB dimming value**	**Page x-RGB Dimming**	**3bytes**	**C, T**	**232.600 RGB value 3x(0..255)**
This 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:					

3MSB	2	1LSB
R	G	B
UUUUUUUU	UUUUUUUU	UUUUUUUU

R: red dimming value;

G: green dimming value;

B: blue dimming value.

161	RGBW dimming value	Page x-RGB Dimming	6byte	C, T	251.600 RGB value 4x(0..255)

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:

6MSB	5	4	3	2	1LSB
R	G	B	W	Reserve	r r r r mR mG mB mW
UUUUUUUU	UUUUUUUU	UUUUUUUU	UUUUUUUU	00000000	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.

Table 6.3.5 “RGB dimming”communication object table

6.3.6 “Air Quality display” Communication Object

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

162	Page 6-Air Quality	PM2.5, In			2 bytes	C	-	W	T	U	concentration (µg/m³)	Low
163	Page 6-Air Quality	PM10, In			2 bytes	C	-	W	T	U	concentration (µg/m³)	Low
166	Page 6-Air Quality	VOC, In			2 bytes	C	-	W	T	U	concentration (µg/m³)	Low
168	Page 6-Air Quality	Brightness, In			2 bytes	C	-	W	T	U	lux (Lux)	Low

Fig.6.3.6 “Air Quality display”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
161	**AQI,In**	**Page x-Air Quality**	**2bytes**	**C,W,T,U**	**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	**PM2.5,In**	**Page x-Air Quality**	**2bytes**	**C,W,T,U**	**9.030 concentration(ug/m³)** **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 μg/m³. Range: 0~999ug/m³, the data type of the object is set by the parameter.					
163	**PM10,In**	**Page x-Air Quality**	**2bytes**	**C,W,T,U**	**9.030 concentration(ug/m³)** **7.001 pulses**
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:0~999ug/m³, the data type of the object is set by the parameter.					
164	**Temperature,In**	**Page x-Air Quality**	**2Bytes**	**C,W,T,U**	**9.001 temperature(℃)**
The communication object is used to receive temperature measurements sent from the temperature sensor on the bus. Range:-40~40℃					
165	**Humidity,In**	**Page x-Air Quality**	**2bytes**	**C,W,T,U**	**9.007 humidity(%)**
The communication object is used to receive a humidity measurement sent from a humidity sensor on a bus. Range：0~100%					
166	**VOC,In**	**Page x-Air Quality**	**2bytes**	**C,W,T,U**	**9.008 parts/million(ppm)** **7.001 pulses** **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: 0~9.99mg/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, for example, the receiving value is 5000 ug/m³ and the actual display value is 5.00mg/m³.					
167	**CO2,In**	**Page x-Air Quality**	**2bytes**	**C,W,T,U**	**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:0~4000ppm					
168	**Brightness,In**	**Page x-Air Quality**	**2bytes**	**C,W,T,U**	**7.013 brightness(lux)** **9.004 lux(Lux)**
This communication object is used to receive the input of brightness value, get the corresponding value update to display from bus, the unit is lux. Range:0~5000lux, the data type of the object is set by the parameter.					
169	**Windspeed**	**Page x-Air Quality**	**2bytes**	**C,W,T,U**	**9.005 speed(m/s)**
This communication object is used to receive the input of windspeed value, get the corresponding value update to display from bus, the unit is m/s. Range:0~50m/s.					

Table6.3.6 “Air Quality display”communication object table

6.3.7 “Floor heating” Communication Object

Numb	Name	Object Function	Des	Group	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-Floor heating	External temperature sensor, In			2 bytes	C	-	W	T	U	temperature (°C)	Low
162	Page 6-Floor heating	Power on/off, In/Out			1 bit	C	-	W	T	U	switch	Low
163	Page 6-Floor heating	Heating on/off, In/Out			1 bit	C	-	W	T	U	switch	Low
164	Page 6-Floor heating	Setpoint, In/Out			2 bytes	C	-	W	T	U	temperature (°C)	Low
165	Page 6-Floor heating	En./Dis. timer, In			1 bit	C	-	W	-	-	enable	Low
166	Page 6-Floor heating	Scene, In			1 byte	C	-	W	-	-	scene control	Low
163	Page 6-Floor heating	Heating control value, Out			1 byte	C	-	W	T	U	percentage (0..100%)	Low

Fig.6.3.7 “Floor heating”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
161	**External temperature sensor, In**	**Page x-Floor heating**	**2bytes**	**C,W,T,U**	**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 the bus.Range: -50~99.8℃					
162	**Power on/off, In/Out**	**Page x-Floor heating**	**1bit**	**C,W,T,U**	**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: 1 ——the control interface of floor heating is on and the interface is operable. 0 ——the control interface of floor heating is off and the interface is not operational.					
163	**Heating on/off, In/Out**	**Page x-Floor heating**	**1bit**	**C,W,T,U**	**1.001 switch**
163	**Heating control value, Out**	**Page x-Floor heating**	**1byte**	**C,W,T,U**	**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 (Heating on/off - 2-point control): on/off) Send telegram value (Heating PWM - use PI control): on/off Send telegram value (Heating continuous control - use PI control): 0. 100%					
164	**Setpoint , In/Out**	**Page x-Floor heating**	**2bytes**	**C,W,T,U**	**9.001 temperature(℃)**
The communication object is used to send the temperature setting value to the bus, and the temperature setting value of the feedback can also be received. Range:5~40℃					
165	**En./Dis. Timer, In**	**Page x-Floor heating**	**1bit**	**C,W**	**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	**Scene, In**	**Page x-Floor heating**	**1byte**	**C,W**	**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.					

Table 6.3.7 “Floor heating”communication object table

6.3.8 "Ventilation System" Communication Object

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
162	Page 6-Ventilation	Power on/off, In/Out			1 bit	C	-	W	T	U	switch	Low
163	Page 6-Ventilation	En./Dis. Heat Recovery, In			1 bit	C	-	W	-	-	enable	Low
164	Page 6-Ventilation	Heat Recovery, In/Out			1 bit	C	-	W	T	U	switch	Low
165	Page 6-Ventilation	Filter timer reset, In			1 bit	C	-	W	-	-	reset	Low
166	Page 6-Ventilation	Filter timer counter, In/Out			2 bytes	C	-	W	T	U	time (h)	Low
167	Page 6-Ventilation	Filter alarm, Out			1 bit	C	-	-	T	-	alarm	Low
168	Page 6-Ventilation	Fan Speed No.1 1Bit, In/Out			1 bit	C	-	W	T	U	switch	Low
169	Page 6-Ventilation	Fan Speed No.2 1Bit, In/Out			1 bit	C	-	W	T	U	switch	Low
170	Page 6-Ventilation	Fan Speed No.3 1Bit, In/Out			1 bit	C	-	W	T	U	switch	Low
171	Page 6-Ventilation	Automatic function, In/Out			1 bit	C	-	W	T	U	enable	Low
172	Page 6-Ventilation	CO2,In			2 bytes	C	-	W	T	U	pulses	Low
174	Page 6-Ventilation	Scene, In			1 byte	C	-	W	-	-	scene control	Low
172	Page 6-Ventilation	CO2,In			2 bytes	C	-	W	T	U	parts/million (ppm)	Low
168	Page 6-Ventilation	Fan speed, Out			1 byte	C	-	-	T	-	percentage (0..100%)	Low
169	Page 6-Ventilation	Stauts of Fan speed, In			1 byte	C	-	W	T	U	percentage (0..100%)	Low
173	Page 6-Ventilation	PM2.5, In			2 bytes	C	-	W	T	U	concentration (µg/m³)	Low
173	Page 6-Ventilation	PM2.5, In			2 bytes	C	-	W	T	U	pulses	Low

Fig.6.3.8 "Ventilation system"communication object

NO.	Object Function	Name	Data Type	Flag	DPT
162	**Power on/off,In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**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: 1—— the ventilation system control interface is on and the interface is operational 0—— the ventilation system control interface is off and the interface is not operational					
163	**En./Dis. Heat Recovery,In**	**Page x-Ventilation**	**1bit**	**C,W**	**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	**Heat Recovery, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**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: 1 ——On 0 ——Off					
165	**Filter time reset, In**	**Page x-Ventilation**	**1bit**	**C,W**	**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	**Filter time counter, In/Out**	**Page x-Ventilation**	**2byte**	**C,W,T,U**	**7.001 pluses**
The communication object is used to count the length 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	**Filter alarm, Out**	**Page x-Ventilation**	**1bit**	**C,T**	**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	**Fan speed, Out**	**Page x-Ventilation**	**1byte**	**C,T**	**5.010 percentage(0..100%)**

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.

169	**Status of Fan speed, In**	**Page x-Ventilation**	**1byte**	**C,W,T,U**	**5.010 percentage(0..100%)**

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.

168	**Fan Speed No.1 1Bit, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**1.001 switch**
169	**Fan Speed No.2 1Bit, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**1.001 switch**
170	**Fan Speed No.3 1Bit, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**1.001 switch**

The three communication objects 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.

171	**Automatic function, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**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.

172	**CO2, In**	**Page x-Ventilation**	**2byte**	**C,W,T,U**	**9.008 parts/million(ppm)** **7.001 pulses**

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: 0~4000ppm

If the control value of the automatic operation is CO2, the ventilation system can be set to automatically adjust the fan speed according to the concentration of CO2.

The data type of the object is set by the parameter.

173	**PM2.5, In**	**Page x-Ventilation**	**2byte**	**C,W,T,U**	**9.030 concentration(ug/m^3)** **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: 0~999ug/m3

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.					
174	**Scene, In**	**Page x-Ventilation**	**1byte**	**C,W**	**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.					

Table 6.3.8 “Ventilation System”communication object table

6.3.9 “Energy Metering display” Communication Object

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
161	Page 6-Energy Meter 1	Current in mA (DPT 7.012)			2 bytes	C	-	W	T	U	current (mA)	Low
162	Page 6-Energy Meter 2	Current in mA (DPT 9.021)			2 bytes	C	-	W	T	U	current (mA)	Low
163	Page 6-Energy Meter 3	Current in A (DPT 14.019)			4 bytes	C	-	W	T	U	electric current (A)	Low
164	Page 6-Energy Meter 4	Voltage in mV (DPT 9.020)			2 bytes	C	-	W	T	U	voltage (mV)	Low
165	Page 6-Energy Meter 5	Voltage in V (DPT 14.027)			4 bytes	C	-	W	T	U	electric potential (V)	Low
166	Page 6-Energy Meter 6	Power in W (DPT 14.056)			4 bytes	C	-	W	T	U	power (W)	Low
167	Page 6-Energy Meter 7	Power in kW (DPT 9.024)			2 bytes	C	-	W	T	U	power (kW)	Low
168	Page 6-Energy Meter 8	Active energy in Wh (DPT 13.010)			4 bytes	C	-	W	T	U	active energy (Wh)	Low
193	Page 7-Energy Meter 1	Active energy in kWh (DPT 13.013)			4 bytes	C	-	W	T	U	active energy (kWh)	Low

Fig.6.3.9 “Energy Metering display”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
161	**Current in mA(DPT 7.012)**	**Page x-Energy Meter y**	**2bytes**	**C,W,T,U**	**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	**Current in mA(DPT 9.021)**	**Page x-Energy Meter y**	**2bytes**	**C,W,T,U**	**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 -670760~670760mA, and the resolution is 0.01mA.					
163	**Current in A(DPT 14.019)**	**Page x-Energy Meter y**	**4bytes**	**C,W,T,U**	**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 -99999999.9~99999999.9A, and the resolution is 0.1A.					
164	**Voltage in mV(DPT 9.020)**	**Page x-Energy Meter y**	**2bytes**	**C,W,T,U**	**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~670760mV, and the resolution is 0.01mV.					
165	**Voltage in V(DPT 14.027)**	**Page x-Energy Meter y**	**4bytes**	**C,W,T,U**	**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：-99999999.9~99999999.9V, and the resolution is 0.1V.					
166	**Power in W(DPT 14.056)**	**Page x-Energy Meter y**	**4bytes**	**C,W,T,U**	**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 ~ 99999999.9W, and the resolution is 0.1W.					
167	**Power in kW(DPT 9.024)**	**Page x-Energy Meter y**	**2bytes**	**C,W,T,U**	**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：-670760~670760kW, and the resolution is 0.01kW.					
168	**Active energy in Wh(DPT 13.010)**	**Page x-Energy Meter y**	**4bytes**	**C,W,T,U**	**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：-2147483648~2147483647Wh, and the resolution is 1Wh.					
193	**Active energy in kWh(DPT 13.013)**	**Page x-Energy Meter y**	**4bytes**	**C,W,T,U**	**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：-2147483648~2147483647kWh, and the resolution is 1kWh.					

Table 6.3.9 “Energy Metering display”communication object table

6.4 “Time Function” Communication Object

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

Fig.6.4.1 “Time function”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
481	**On/Off**	**Time function x**	**1bit**	**C,T**	**1.001 switch**
483	**1byte unsigned value**	**Time function x**	**1byte**	**C,T**	**5.010 counter pulses(0..255)**
485	**Scene control**	**Time function x**	**1byte**	**C,T**	**17.001 scene number**
487	**2byte unsigned value**	**Time function x**	**2byte**	**C,T**	**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 are 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 .					
482	**En./Dis. Timer**	**Time function x**	**1bit**	**C,W**	**1.003 enable**
The communication object is 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 disable.					
513	**Dis./En. Monday Time**	**Time function**	**1bit**	**C,W**	**1.003 enable**
514	**Dis./En. Tuesday Time**	**Time function**	**1bit**	**C,W**	**1.003 enable**
515	**Dis./En. Wednesday Time**	**Time function**	**1bit**	**C,W**	**1.003 enable**
516	**Dis./En. Thursday Time**	**Time function**	**1bit**	**C,W**	**1.003 enable**
517	**Dis./En. Friday Time**	**Time function**	**1bit**	**C,W**	**1.003 enable**
518	**Dis./En. Saturday Time**	**Time function**	**1bit**	**C,W**	**1.003 enable**
519	**Dis./En. Sunday Time**	**Time function**	**1bit**	**C,W**	**1.003 enable**
The communication object is used to enable or disable the cycle timer through the bus, that is, to enable or disable the timing of a day of the week through the bus.					

Table 6.4.1“Time function”communication object table

6.5 “Event Group” Communication Object

Number	Name	Object Function	Descriptio	Group Ad	Length	C	R	W	T	U	Data Type	Priority
520	Event	Main scene recall			1 byte	C	-	W	-	-	scene number	Low
521	1st Event Group	Sub event Output 1			1 bit	C	-	-	T	-	switch	Low
522	1st Event Group	Sub event Output 2			1 bit	C	-	-	T	-	switch	Low
523	1st Event Group	Sub event Output 3			1 bit	C	-	-	T	-	switch	Low
524	1st Event Group	Sub event Output 4			1 bit	C	-	-	T	-	switch	Low
525	1st Event Group	Sub event Output 5			1 bit	C	-	-	T	-	switch	Low
526	1st Event Group	Sub event Output 6			1 bit	C	-	-	T	-	switch	Low
527	1st Event Group	Sub event Output 7			1 bit	C	-	-	T	-	switch	Low
528	1st Event Group	Sub event Output 8			1 bit	C	-	-	T	-	switch	Low

Fig.6.5.1“Event Group”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
520	**Main scene recall**	**Event**	**1byte**	**C,W**	**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/...	**Sub event Output 1..8**	**1st /.../8th Event Group**	**1bit** **1byte** **2byte**	**C,T**	**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 will not be sent. A total of 8 event groups can be set up, with 8 outputs per group.					

Table 6.5.1 “Event Group”communication object table

6.6 “Logic function” Communication Object

6.6.1 “AND/OR/XOR” Communication Object

Number	Name	Object Function	Descriptio	Group Adc	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input a			1 bit	C	-	W	T	U	boolean	Low
586	1st Logic	Input b			1 bit	C	-	W	T	U	boolean	Low
587	1st Logic	Input c			1 bit	C	-	W	T	U	boolean	Low
588	1st Logic	Input d			1 bit	C	-	W	T	U	boolean	Low
589	1st Logic	Input e			1 bit	C	-	W	T	U	boolean	Low
590	1st Logic	Input f			1 bit	C	-	W	T	U	boolean	Low
591	1st Logic	Input g			1 bit	C	-	W	T	U	boolean	Low
592	1st Logic	Input h			1 bit	C	-	W	T	U	boolean	Low
593	1st Logic	Logic result			1 bit	C	-	-	T	-	boolean	Low

Fig.6.6.1 “Logic function_AND/OR/XOR”communication object

NO.	Object Function	Name	Data Type	Flag	DPT
585/...	**Input x**	**1st /.../8th Logic**	**1bit**	**C,W,T,U**	**1.002 boolean**
The communication object is used to receive the value of logical input Input x.					
593	**Logic result**	**1st /.../8th Logic**	**1bit**	**C,T**	**1.002 boolean**
The communication object is used to send the results of logical operation.					

Table 6.6.1 “Logic function_AND/OR/XOR”communication object table

6.6.2 "Gate forwarding" Communication Object

Number	Name	Object Function	Descriptio	Group Ad	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Gate value select			1 byte	C	-	W	-	-	scene number	Low
586	1st Logic	Input A			1 bit	C	-	W	-	-	switch	Low
587	1st Logic	Input B			1 bit	C	-	W	-	-	switch	Low
588	1st Logic	Input C			1 bit	C	-	W	-	-	switch	Low
589	1st Logic	Input D			1 bit	C	-	W	-	-	switch	Low
590	1st Logic	Output A			1 bit	C	-	-	T	-	switch	Low
591	1st Logic	Output B			1 bit	C	-	-	T	-	switch	Low
592	1st Logic	Output C			1 bit	C	-	-	T	-	switch	Low
593	1st Logic	Output D			1 bit	C	-	-	T	-	switch	Low

Fig.6.6.2 "Logic function_Gate forwarding"communication object

NO.	Object Function	Name	Data Type	Flag	DPT
585	**Gate value select**	**1st /.../8th Logic**	**1byte**	**C,W**	**17.001 scene number**
The communication object is used to select the scene of logical gate forwarding.					
586/../589	**Input x**	**1st /.../8th Logic**	**1bit** **4bit** **1byte**	**C,W**	**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 x.					
590/../593	**Output x**	**1st /.../8th Logic**	**1bit** **4bit** **1byte**	**C,T**	**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.					

Table 6.6.2 "Logic function_Gate forwarding"communication object table

6.6.3 "Threshold comparator" Communication Object

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Threshold value input			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
593	1st Logic	Logic result			1 bit	C	-	-	T	-	boolean	Low

Fig.6.6.3"Logic function_Threshold comparator"communication object

NO.	Object Function	Name	Data Type	Flag	DPT
585	**Threshold value input**	**1st /.../8th Logic**	**4bit** **1byte** **2byte** **4byte**	**C,W, U**	**3.007 Dimming control** **5.010 counter pulses(0..255)** **7.001 pulses** **12.001 counter pulses**
The communication object is used to input threshold value.					

593	Logic result	1st /.../8th Logic	1bit	C,T	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 is compared with the setting threshold value.					

Table 6.6.3“Logic function_Threshold comparator”communication object table

6.6.4 “Format convert” Communication Object

Number	Name	Object Function	Descriptio	Group Adc	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 1bit-bit0			1 bit	C	-	W	-	U	switch	Low
586	1st Logic	Input 1bit-bit1			1 bit	C	-	W	-	U	switch	Low
593	1st Logic	Output 2bit			2 bit	C	-	-	T	-	switch control	Low

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

Number	Name	Object Function	Descriptio	Group Adc	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 1bit-bit0			1 bit	C	-	W	-	U	switch	Low
586	1st Logic	Input 1bit-bit1			1 bit	C	-	W	-	U	switch	Low
587	1st Logic	Input 1bit-bit2			1 bit	C	-	W	-	U	switch	Low
588	1st Logic	Input 1bit-bit3			1 bit	C	-	W	-	U	switch	Low
589	1st Logic	Input 1bit-bit4			1 bit	C	-	W	-	U	switch	Low
590	1st Logic	Input 1bit-bit5			1 bit	C	-	W	-	U	switch	Low
591	1st Logic	Input 1bit-bit6			1 bit	C	-	W	-	U	switch	Low
592	1st Logic	Input 1bit-bit7			1 bit	C	-	W	-	U	switch	Low
593	1st Logic	Output 1byte			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

“8x1bit --> 1x1byte”function: converts eight 1bit values to a 1byte value, such asInput bit2=1, bit1=1, bit0=1,other bits are 0--> Output 1byte=7

Number	Name	Object Function	Descriptio	Group Adc	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 1byte			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
593	1st Logic	Output 2byte			2 bytes	C	-	-	T	-	pulses	Low

“1x1byte --> 1x2byte”function: converts one 1byte values to a 2byte value, such as Input 1byte=125--> Output 2byte=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	1st Logic	Input 1byte-low			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
586	1st Logic	Input 1byte-high			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
593	1st Logic	Output 2byte			2 bytes	C	-	-	T	-	pulses	Low

“2x1byte --> 1x2byte”function: converts two 1byte values to a 2byte value, such as Input 1byte-low = 255 ($FF), Input 1byte-high = 100 ($64) --> Output 2byte = 25855 ($64 FF)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 2byte-low			2 bytes	C	-	W	-	U	pulses	Low
586	1st Logic	Input 2byte-high			2 bytes	C	-	W	-	U	pulses	Low
593	1st Logic	Output 4byte			4 bytes	C	-	-	T	-	counter pulses (unsigned)	Low

“2x2byte --> 1x4byte”function: converts two 2 byte values to a 4byte value, such as Input 2byte-low = 65530 ($FF FA), Input 2byte-high = 32768 ($80 00)--> Output 2byte = 2147549178 ($80 00 FF FA)

Number	Name	Object Function	Descriptio	Group Adc	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 1byte			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
586	1st Logic	Output 1bit-bit0			1 bit	C	-	-	T	-	switch	Low
587	1st Logic	Output 1bit-bit1			1 bit	C	-	-	T	-	switch	Low
588	1st Logic	Output 1bit-bit2			1 bit	C	-	-	T	-	switch	Low
589	1st Logic	Output 1bit-bit3			1 bit	C	-	-	T	-	switch	Low
590	1st Logic	Output 1bit-bit4			1 bit	C	-	-	T	-	switch	Low
591	1st Logic	Output 1bit-bit5			1 bit	C	-	-	T	-	switch	Low
592	1st Logic	Output 1bit-bit6			1 bit	C	-	-	T	-	switch	Low
593	1st Logic	Output 1bit-bit7			1 bit	C	-	-	T	-	switch	Low

"1x1byte --> 8x1bit" function: converts one 1byte values to eight 1but value, such as Input 1byte=200 --> Output bit0=0, bit1=0, bit2=0, bit3=1, bit4=0, bit5=0, bit6=1, bit7=1

Number	Name	Object Function	Descriptio	Group Adc	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 2byte			2 bytes	C	-	W	-	U	pulses	Low
593	1st Logic	Output 1byte-high			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
592	1st Logic	Output 1byte-low			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

"1x2byte --> 2x1byte"function: converts one 2byte values to two 2byte value, such as Input 2byte = 55500 ($D8 CC) --> Output 1byte-low = 204 ($CC), Output 1byte-high =216 ($D8)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 4byte			4 bytes	C	-	W	-	U	counter pulses (unsigned)	Low
592	1st Logic	Output 2byte-low			2 bytes	C	-	-	T	-	pulses	Low
593	1st Logic	Output 2byte-high			2 bytes	C	-	-	T	-	pulses	Low

"1x4byte --> 2x2byte"function: converts one 4byte values to two 2byte value, such asInput 4byte = 78009500 ($04 A6 54 9C) --> Output 2byte-low = 21660 ($54 9C), Output 2byte-high =1190 ($04 A6)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 3byte			3 bytes	C	-	W	-	U	RGB value 3x(0..255)	Low
591	1st Logic	Output 1byte-low			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
592	1st Logic	Output 1byte-middle			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
593	1st Logic	Output 1byte-high			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

"1x3byte --> 3x1byte"function: converts one 3byte values to three 1byte value, such as Input 3byte = $78 64 C8--> Output 1byte-low = 200 ($C8) , Output 1byte-middle = 100 ($64) , Output 1byte-high =120 ($78)

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
585	1st Logic	Input 1byte-low			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
586	1st Logic	Input 1byte-middle			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
587	1st Logic	Input 1byte-high			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
593	1st Logic	Output 3byte			3 bytes	C	-	-	T	-	RGB value 3x(0..255)	Low

"3x1byte --> 1x3byte"function: converts three 1byte values to a 3byte value, such as Input 1byte-low = 150 ($96), Input 1byte-middle = 100 ($64), Input 1byte-high = 50 ($32)--> Output 3byte = $32 64 96

NO.	Object Function	Name	Data Type	Flag	DPT
585	**Input ...**	**1st /.../8th Logic**	**1bit** **1byte** **2byte** **3byte** **4byte**	**C,W,U**	**1.001 switch** **5.010 counter pulses(0..255)** **7.001 pulses** **232.600 RGB value 3x(0..255)** **12.001 counter pulses**
The communication object is used to input a value that needs to be converted.					

593	**Output ...**	**1st /.../8th Logic**	**1bit** **2bit** **1byte** **2byte** **3byte** **4byte**	**C,T**	**1.001 switch** **2.001 switch control** **5.010 counter pulses(0..255)** **7.001 pulses** **232.600 RGB value 3x(0..255)** **12.001 counter pulses**
The communication object is used to output the converted value.					

Table 6.6.4 “Logic function_Format convert”communication object table