User Manual

K-BUS® 3.5/5.0 inch Touch Panel Plus_V1.4

CHTF-3.5/20.1.2x (x=1,2,4, Slim)

CHTF-3.5/20.2.2x (x=1,2,4, Classic)

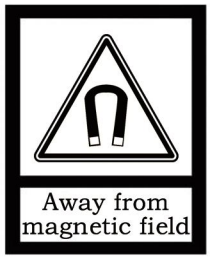
CHTF-5.0/20.1.2x (x=1,2,4, Slim)

(x=0:White;1:Black;2:Silver;3:Gray;4:Gold;5:Orange; 6:Green; 7:Blue; 8:Yellow)

KNX/EIB Home and Building Control System

Attentions

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



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

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

4. **Please do not disassemble the devices.**

Note:

For the 5.0 inch screen, if the auxiliary power supply is power off when the screen is on, the screen may display with a tiny flashing after the power recovery in the next time. At this case, let the device continuously power on for a period of time (maximum around half an hour), the screen will automatically recover to the normal display state.

Contents

Chapter 1 Function Overview

The 3.5/5.0 inch touch panel plus is used to display status and control various KNX devices, and performs preset functions through the graphical buttons on the touch screen. For example, send switch light messages, scene messages, switch curtains, air conditioning control messages, etc. to the bus system to control other devices on the bus.

Compared with ordinary push-button panel, smart touch panel can display pictures and sound prompts through the liquid crystal display, and can be easily an-computer interaction interface.

The Touch Panel is mainly applied in the home and building control system, which can be mounted on a conventional 86 boxes. First, fix the mounted iron bracket into the 86 boxes, and then fix the well-connected Touch Panel to the iron bracket and stick fast by pushing it downward. and clearly operated through the hum If you want to dismantle it, then push it oppositely and pull it out gently. Please NOTE——program the physical address before installation.

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

The Touch Panel is connected to the bus via the KNX connection terminals and need a 24-30V DC additional supply voltage. It is available to assign the physical address and set the parameters by Engineering design tools ETS with .knxprod (higher than edition ETS4). The 3.5/5.0 inch Touch Panels use the same database, so the functions are basically similar, and different places will be described in the following sections. The Touch Panel functions are summarized as following:

- **Color TFT and 320x240 resolution for 3.5 inch, Color IPS and 480x854 resolution for 5 inch, capacitive touch screen design**
- **With switch, dimming, curtains, value send function**
- **Display air quality test value**
- **HVAC control**
- **Air conditioning control, IR Split Unit and Gateway Integrate type air conditioning control**
- **Background music module control, RGB control**
- **Fresh air, floor heating control**
- **8 timing functions**
- **4 event group functions**
- **8 logic functions, support AND, OR, XOR, logic gate forwarding, threshold comparator, conversion of different data types**
- **Home Navigation Features**
- **Time and date display**
- **With password function and screen saver, screen saver with optional Clock, Albums or no use**
- **Proximity sensing**

Chapter 2 Technical Parameters

2.1 CHTF-3.5/20.1.2x（x=1,2,4, Slim）

Power Supply	Operating Voltage	21-30V DC, powered from BUS
	Auxiliary power supply	24-30V DC
	Bus Current	<2.7mA/30V
	Bus Power Consumption	<90mW
	Auxiliary Current	<100mA
	Auxiliary Power Consumption	<3W
Connections	KNX	Via bus connection terminal(red/black)
	Auxiliary power supply	KNX auxiliary power supply terminal (yellow/white)
Operating and Indicating	Red LED and Programming button	For assignment of the physical address
	Green LED flashing	Indicate the device running normally
Temperature	Operation	–5 °C ... + 45 °C
	Storage	–25 °C ... + 55 °C
	Transport	– 25 °C ... + 70 °C
Environment	Humidity	<93%, except for dewing
Installation	Wall-mounted installation, first install the iron bracket on the 86 box, and then install the touch panel on the iron bracket.	
Dimensions	86×86×32mm	
Weight	0.25KG	

2.2 CHTF-3.5/20.2.2x（x=1,2,4, Classic）

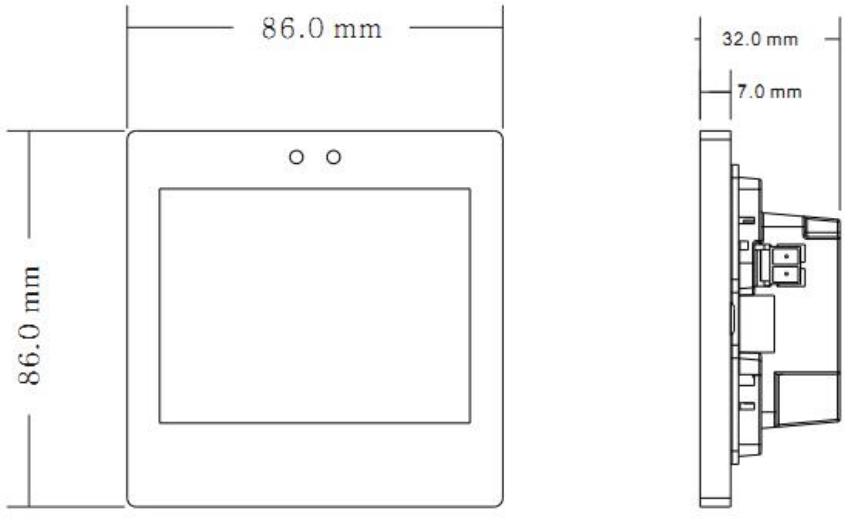
Power Supply	Operating Voltage	21-30V DC, powered from BUS
	Auxiliary power supply	12-30V DC
	Bus Current	<12mA
	Bus Power Consumption	<360mW
	Auxiliary Power Consumption	<3W
Connections	KNX	Via bus connection terminal(red/black)
	Auxiliary power supply	KNX auxiliary power supply terminal (yellow/white)
Operating and Indicating	Red LED and Programming button	For assignment of the physical address
	Green LED flashing	Indicate the device running normally
Temperature	Operation	–5 °C ... + 45 °C
	Storage	–25 °C ... + 55 °C
	Transport	– 25 °C ... + 70 °C
Environment	Humidity	<93%, except for dewing
Installation	Wall-mounted installation in 86 or 60 boxes	
Dimensions	86×86×45.5mm	
Weight	0.25KG	

2.3 CHTF-5.0/20.1.2x（x=1,2,4, Slim）

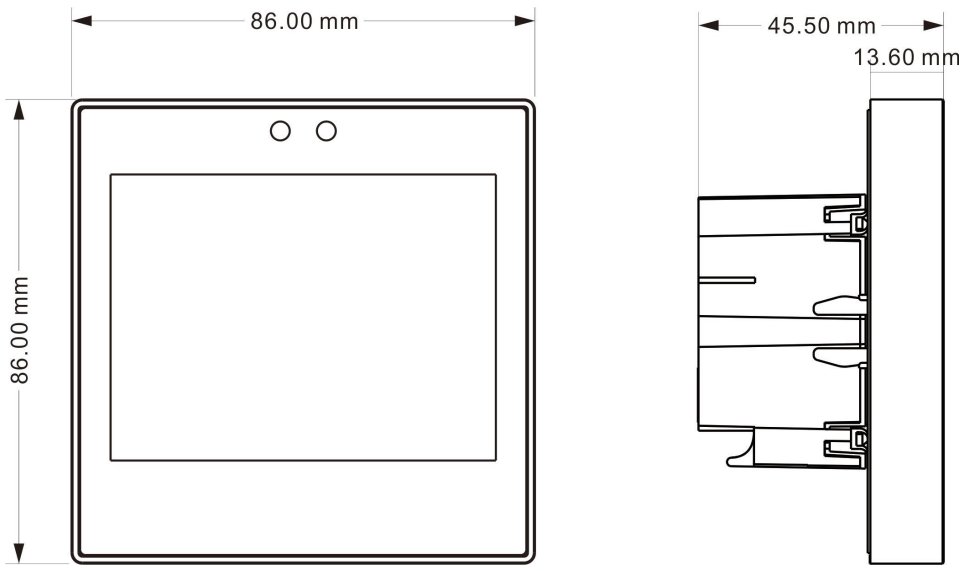
Power Supply	Operating Voltage	21-30V DC, powered from BUS
	Auxiliary power supply	24-30V DC
	Bus Current	<2.7mA/30V
	Bus Power Consumption	<90mW
	Auxiliary Current	<100mA
	Auxiliary Power Consumption	<3W
Connections	KNX	Via bus connection terminal(red/black)
	Auxiliary power supply	KNX auxiliary power supply terminal (yellow/white)
Operating and Indicating	Red LED and Programming button	For assignment of the physical address
	Green LED flashing	Indicate the device running normally
Temperature	Operation	–5 °C ... + 45 °C
	Storage	–25 °C ... + 55 °C
	Transport	– 25 °C ... + 70 °C
Environment	Humidity	<93%, except for dewing
Installation	Wall-mounted installation, first install the iron bracket on the 86 box, and then install the touch panel on the iron bracket.	
Dimensions	87×141.5×33.9mm	
Weight	0.3KG	

Chapter 3 Dimension and Wiring Diagram

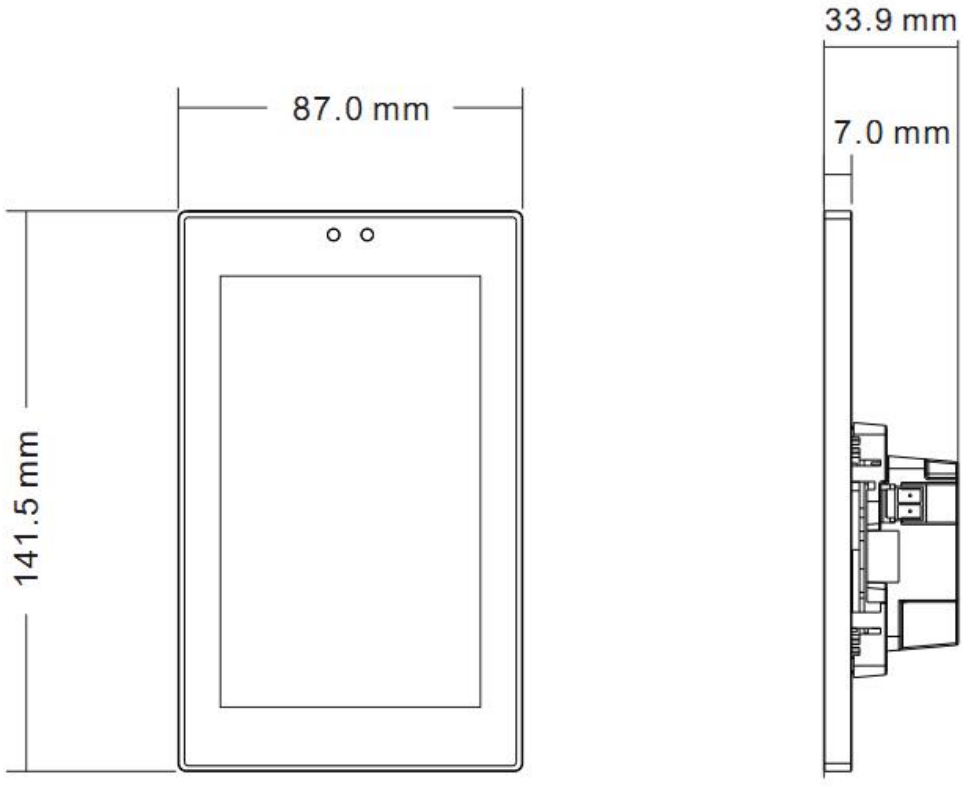
3.1 Dimension



CHTF-3.5/20.1.2x（x=1,2,4, Slim）

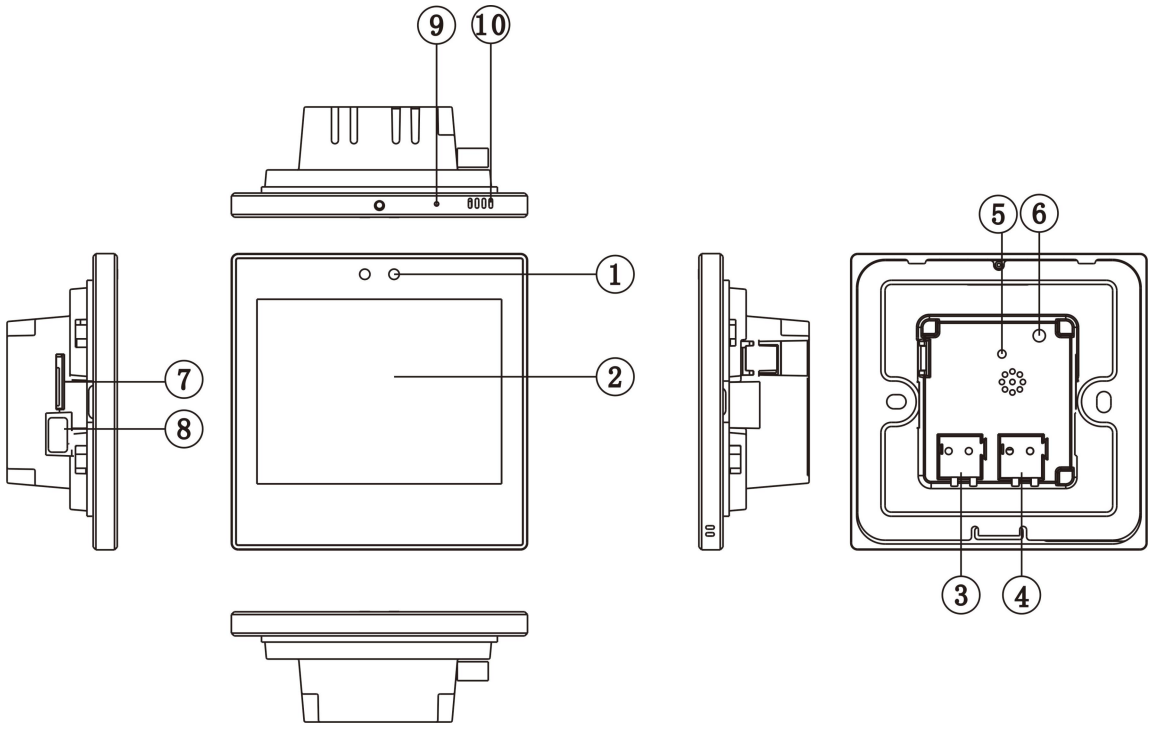


CHTF-3.5/20.2.2x（x=1,2,4, Classic）



CHTF-5.0/20.1.2x（x=1,2,4, Slim）

3.2 Wiring Diagram



CHTF-3.5/20.1.2x（x=1,2,4, Slim）

① Proximity detection sensor

② Touch and display area

③ KNX bus connection terminals

④ Auxiliary power connection terminal

⑤ The red LED indicates entry to the physical address programming state, and the green LED flash indicates that the device application layer is working properly.

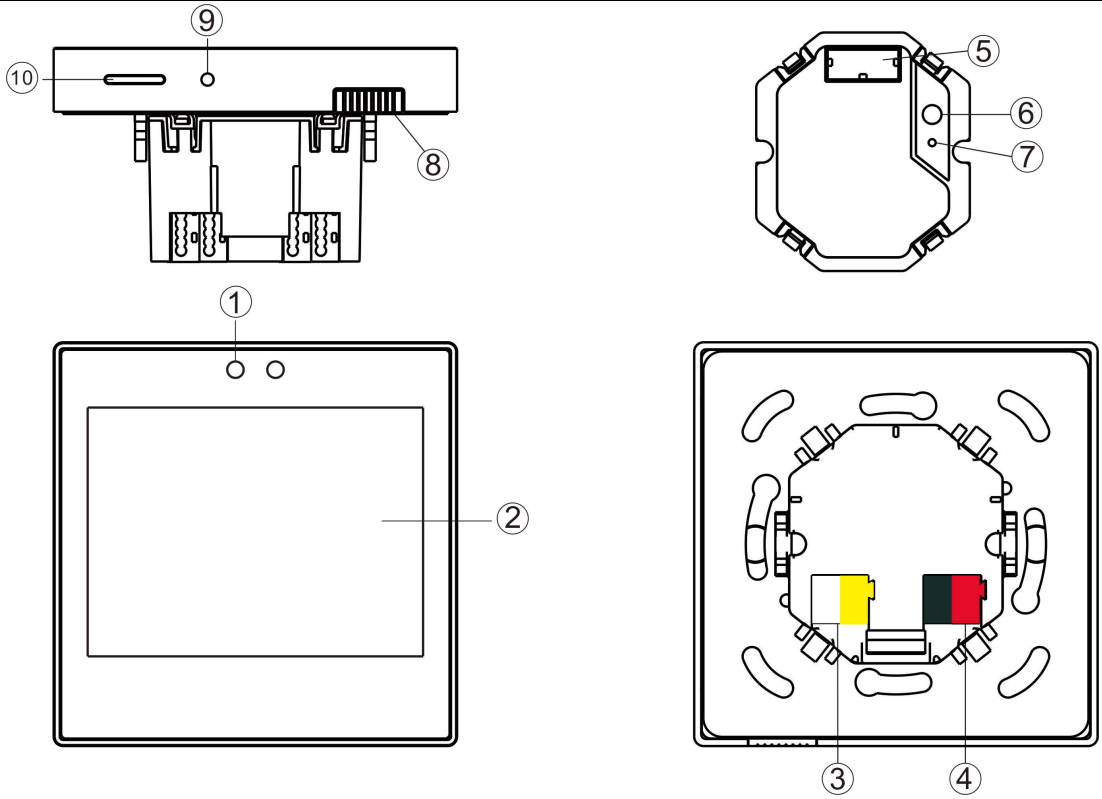
⑥ Programming button

⑦ TF card slot

⑧ Micro USB socket

⑨ Display reset button. This function is not currently supported. It is a reserved function.

⑩ Internal temperature sensor



CHTF-3.5/20.2.2x（x=1,2,4, Classic）

① Proximity detection sensor

② Touch and display area

③ Auxiliary power connection terminal

④ KNX bus connection terminals

⑤ Connection block between application module and coupler

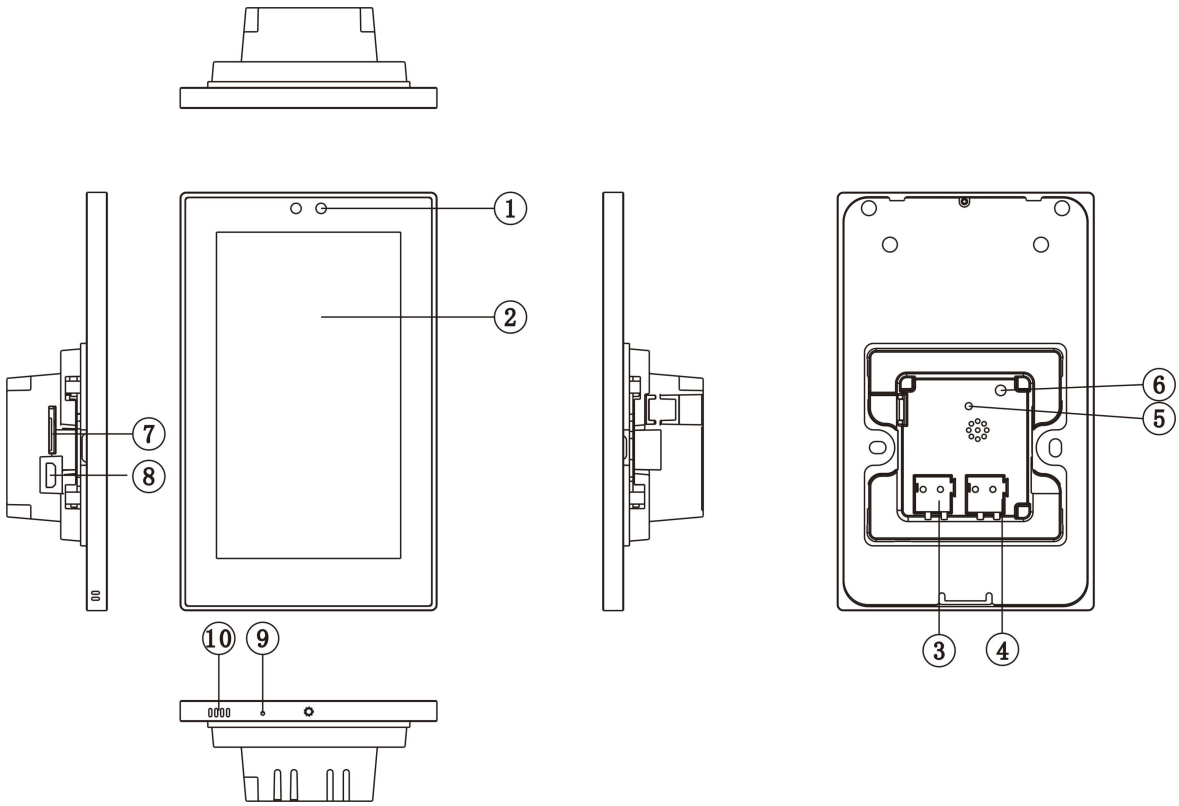
⑥ Programming button

⑦ The red LED indicates entry to the physical address programming state, and the green LED flash indicates that the device application layer is working properly

⑧ Internal temperature sensor

⑨ Restart the device

⑩ TF card slot



CHTF-5.0/20.1.2x（x=1,2,4, Slim）

① Proximity sensor

② Touch and display area

③ KNX bus connection terminal

④ Auxiliary supply connection terminal

⑤ Red LED for entering the physical address, green LED for application process normally running

⑥ Programming button

⑦ TF card slot

⑧ Micro USB socket

⑨ Reset button, reset screen display, but not reset application

⑩ Internal temperature sensor

Chapter 4 Project Design and Application

Applications	Maximum of communication objects	Maximum number of group addresses	Maximum number of joint addresses
3.5/5.0 inch Touch Panel Plus	**496**	**2000**	**2000**

General function

General function include system menu language selection, operation tones, lock screen, screen saver, backlight brightness, date/time display.

In addition, according to the style of the homepage, it can be partially displayed: AQI, temperature, humidity, PM2.5, PM10, VOC, CO2, and illumination.

AQI, humidity, PM2.5, PM10, VOC, CO2, and illuminance are detected by an external sensor, temperature can be selected by internal or external sensor detection.

> **Tip:** Currently 3.5/5.0 inches only supports one style.

Home Navigation Features

Home navigation buttons can be set to quickly jump to the function page.

Lighting control

It is mainly used to switch lighting equipment or dimming lighting equipment. The dimming method uses absolute dimming.

Curtains and shutter control

Switch shutters/curtains and adjust louver angles.

Value sending function

Values can be sent for different data types, including scene calls and storage.

Display air quality test value

AQI, temperature, humidity, PM2.5, PM10, VOC, and CO2 displays can be set and these values are detected by an external sensor.

Up to 4 items can be set in one interface.

HVAC control

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

Supports manual switching of heating/cooling control, three-speed wind speed plus automatic wind speed can be adjusted, four kinds of room work modes: comfortable, standby, night and protection mode.

Temperature settings support absolute and relative settings, as well as adjustable temperature range settings. Supports two points and PI control.

Background music control

Used to control background music playback, such as power on/off, play/pause, previous/next, volume up/down, mute, play mode, and audio source.

Air conditioning control

There are two types of air-conditioning control: split infrared control and air-conditioning gateway.

The split infrared function control is similar to the function on the air conditioner remote control. This function of the panel is to control the air conditioner through the infrared transmitting module on the bus, for example, the panel sends a control message to the infrared transmitting module, the infrared transmitting module and the message The given function code is transmitted to the air conditioner to control the air conditioning switch, mode, air volume and so on.

The air-conditioning gateway control is suitable for controlling, for example, a VRV air-conditioning system, and needs to be controlled with the KNX to VRV air-conditioning gateway.

RGB dimming

Mainly for dimming RGB LED lights, using absolute dimming.

Floor heating control

Two-point control method is used to automatically switch the floor heating according to the temperature difference. In addition, the warm scene and timing functions can be set, and the temperature range can be adjusted.

Fresh air control

Supports three wind speed adjustments, on/off heat exchange, filter life count, filter timeout alarm, filter reset.

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

Timing function

Timing values can send different types of data, provides up to eight timing control.

Event group function

By calling the scene number, eight output messages can be triggered. Each output has three different data types to choose from. There are 4 sets of event functions available for setting.

Logical function

Supports 8 logic inputs with sum, phase, and XOR; supports logic gate forwarding, and can forward one input to one output or multiple outputs;

Supports threshold comparators and conversions between different data types. There are 8 logic functions to set.

Chapter 5 Operation Description

The operation interfaces for 3.5-inch and 5.0-inch Touch Panel Plus are similar, the main difference is that the layout of the function icons. The follow is an example of the 3.5-inch:

5.1 Main page

Fig. 5.1_1

The main page is for quick jumps to function pages. When the interface is on the function page, you can go through the upper right corner Icon, return to homepage.

Right corner 25℃ Icon is the temperature that detected by the sensor inside the product.

Icon is the connection status for the KNX bus.

5.2 General Function Page

Fig. 5.2_1

5.2.1 Switch Control

When the corresponding icon on the touch panel is on, the device sends a message with the Switch value of 1.

When the corresponding icon on the touch panel is off, the device sends a message with the Switch value 0.

Status Feedback

The on and off status of the icon is used to feedback the status of the switch.

The status of the icon can be updated by writing 0/1 to the corresponding object (Switch status) to update the status (1 on, 0 off).

5.2.2 Dimming Control

The touch of the dimming icon can be divided into: short press, long press (2 seconds).

Short press: When the icon is lit by pressing a short time, the device sends a message with a Switch value of 1 and sets the local brightness value to 100%. When the icon is turned off by a short press, the device sends a corresponding message. A packet with a value of 0 for the Switch and the local brightness value is set to 0%.

Long press: Long press the dimming icon on the function page to pop up the interface shown in Figure 5.2_2:

Fig. 5.2_2

By sliding the slider, the device will send a message with a Brightness dimming value every 500 ms interval.

1) Click  icon, the device sends a packet with a luminance object value of 0%.

2) Click  icon, the device sends a packet with a luminance target value of 100%.

3) Click  icon, return to the function page.

Status Feedback

The on and off status of the icon is used to feedback the status of the light.

On indicates that the brightness value of the light is greater than 0, and off means the brightness value of the light is 0.

The value of the slider shown in Fig. 5.2_2 is the luminance value of the light. The brightness value can be written to the corresponding object (Brightness status) to update the status via the bus.

5.2.3 Value send

The following types of numeric values are sent:1bit[On/Off], 2bit[0…3], 4bit[0…15], 1byte[0…255], 1byte[0…100%], 1byte[scene control], 2byte[-32768…32767], 2byte[0…65535].

With the touch icon, the device sends a message with the corresponding object value as the setting value. If “Long operation function” is enabled in the database, press the long or short button and the long/short press will send out the corresponding setting value. This feature has no status feedback.

5.2.4 Curtain

The curtain feature contains 3 types, which are:Curtain with 3 Buttons-Open/close/stop, Curtain with 2 sliders-Move/Adj Percent, Curtain with 1 Slider-Move Percent.

Curtain with 3 Buttons-Open/close/stop

Fig. 5.2_3

The curtain icon of the touch function page pops up as shown in Figure 5.2_3:

1) Touch  icon,The device will send a message with an Open/Close value of 1;

2) Touch  icon,the device sends a message with a Stop value of 1;

3) Touch  icon,The device sends a message with an Open/Close value of 0.

This feature has no status feedback.

Curtain with 2 sliders-Move/Adj Percent

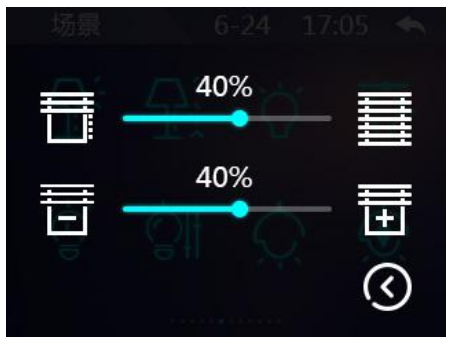


Fig. 5.2_4

The curtain icon on the touch function page pops up as shown in Figure 5.2_4: The first slider is stroke control and the second slider is angle control.

1) Slide the first slider and the device will send a message with the corresponding Shutter

position value as the stroke value every 500ms.

2) Click  icon,The device sends a message with a 0% travel object value. Click  icon, The device sends a message with a target value of 100%.

3) Click  icon,You can return to the function page. The control of the angle control is similar to that of the stroke control;

4) The status display of the slider can be updated by rewriting the position status/Slat position status of the bus.

Curtain with 1 Slider-Move Percent

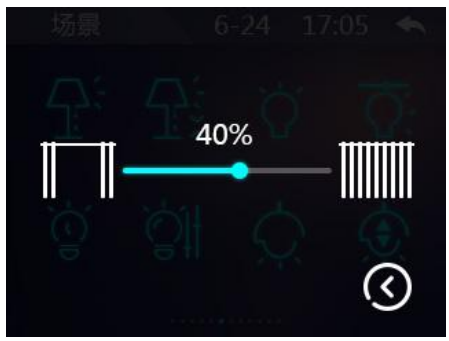


Fig. 5.2_5

The touch function page curtain icon will pop up the interface shown in Figure 5.2_5:

1) Sliding slider, the device will send a message with the corresponding object (Blind position) value as the stroke value every 500ms interval.

2) Click  icon, The device sends a message with a 0% travel object value. Click  icon,The device sends a message with a target value of 100%.

3) Click  icon,You can return to the function page.

4) The status display of the slider can be updated via the bus over the status of the position (Position status).

5.3 Air Quality Feature Page

Fig. 5.3_1

The air quality feature page displays seven parameters, which are: AQI、Temperature、Humidity、PM2.5、PM10、CO2、VOC.

NOTE: Only four of these parameters can be displayed at the same time. The contents of the configuration display can be configured through the database.

Touch the corresponding entry on the right to display the corresponding parameter values and graphics on the left. The update of the displayed value can be achieved by overwriting the object via the bus.

5.4 HVAC Feature Page

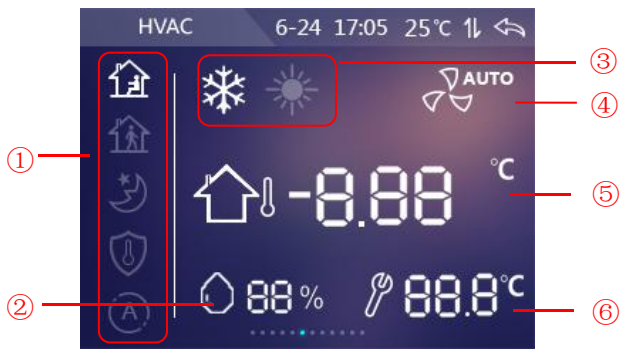


Fig. 5.4_1

①Room mode

Touch control is equivalent to message control.

Touch the corresponding icon to switch to the corresponding mode. If the current mode is night mode, switch to comfort mode, the device will return to night mode according to the time of the database setting (Extended comfort mode*min(0=inactive,1-255 is active)).

If you manually switch to another mode during the time delay, this operation will stop returning to night mode.

NOTE: AUTO mode is a reserved function. At present, this button has no effect.

②Humidity

The humidity display value can be updated by writing a value to the object (Humidity) via the bus.

③Heating/cooling status

For heating/cooling mode switching, when the database HVAC control mode is set to Heating and Cooling, the heating/cooling mode can be switched by touch/message.

④Wind speed

Touch this icon and the wind speed will switch from OFF to AUTO OFF in the current wind speed range.

When switching to the wind speed OFF, 1, 2, and 3, the switching takes effect immediately.

When “3rd gear” is switched to “AUTO”, if there is no new wind speed control operation within 3 seconds, the wind speed will switch to automatic mode after 3 seconds.

In automatic mode, no specific wind speed is displayed, only the automatic icon is displayed. In manual mode, the wind speed status can be updated by the object.

⑤Indoor/outdoor temperature

Touch  icon, The display can be switched between the room temperature and the outdoor temperature.

⑥Setting temperature

Touch  icon, you can enter the temperature setting interface, as shown in Figure 5.4_2:

Fig. 5.4_2

Sliding slider for temperature adjustment, touch  and  icons, a 0.5-degree decrease/increase adjustment can be made.

Icon  , used to determine the set temperature and return to function page.

The adjustment range of the set temperature is limited to 5-40°C by default, and can be modified by the database “Min./Max. set temperature [5...40]°C”.

In the case of a relative set temperature, the adjustment of this set temperature is only applied to this mode in the protection mode, and the relative change in the temperature adjustment of other modes can be applied to the setting temperature of all modes except the protection mode. In the case of an absolutely set temperature, this set temperature adjustment acts only on the current mode.

Tip: The temperature units can be set via the parameter “Temperature display units”in the General window, for °C or °F

5.5 AC Feature page

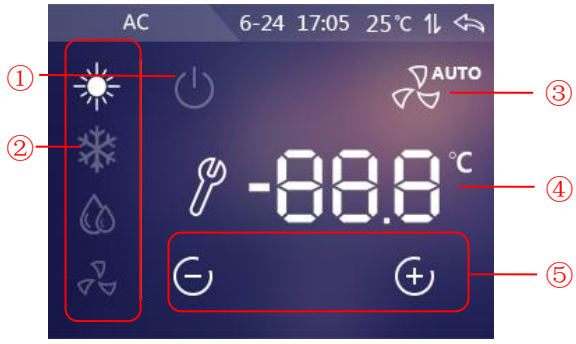


Fig. 5.5_1

①On/off button

Used to turn on/off, 1 is gray after power on, and 1 is bright after shut down.

In the off state, except for the switch state and outdoor temperature that can be updated through the bus, the rest of the icon states cannot be updated via the bus or manually controlled.

In the Gateway Integrate control mode, touch this button and the device will send a message with the value 1/0 (on/off) via the object Power on/off.

In the IR Split Unit control mode, touch this button and the device will send a corresponding command message according to the database configuration through the object IR Split unit command.

If the start up mode is heating or cooling mode, only the corresponding temperature control command message will be sent out. At start up, the corresponding mode, temperature setting, and wind speed will be displayed according to the database configuration.

② AC Mode

The heating, cooling, dry, and fan modes for selecting the air conditioner can be updated by the object.

③Wind speed

Touch this icon, and the wind speed will be switched from 1 to 1 AUTO...1 from the current wind speed level.

In the Gateway Integrate control mode, the boot wind speed does not change; in the IR Split Unit control mode, the boot displays the corresponding wind speed profile according to the configuration.

④Temperature display

Touch  or  icons, the display can be switched between the room temperature and the outdoor temperature.

Units can be selected based on the configuration of the database Temperature display units, select Celsius (°C) or Fahrenheit (°F) to display.

⑤Set temperature adjustment

The touch icon will be +/- 1°C above the current temperature and send a corresponding message

on the bus.

The adjustment range for setting the temperature is limited to 16-32°C by default and can be modified by the database "Min./Max. set temperature [16...32]°C". In the dehumidification and air supply mode, the set temperature is not adjustable.

5.6 Background Music Feature page

Fig. 5.6_1

①On/off button

Touching this button will send the value 1/0 (on/off) message through the object Power on/off.

1 is gray after power on, and 1 is bright after power off.

In the off state, except for the on/off state, the rest of the icon states cannot be updated via the bus or manually controlled.

②Play mode

Play mode for selecting background music: sequential play, single cycle, random play, loop play. Status updates can be made through objects.

③Play source

For playing source selection, touch this icon will pop up the interface as shown in Figure 5.6_2: USB, SD, AUX, FM can be selected.

Touch  icon, you can return to the function page. Status updates can be made through objects.

Fig. 5.6_2

④Previous/Next

The touch icon can select the previous song or the next song.

⑤Play / Pause

Touch icons play or pause songs. Status updates can be made through objects.

5.7 RGB Feature Page

Fig. 5.7_1

①Turn off the light button

When the current RGB brightness value is not 0, touch this button to turn off RGB. The brightness value of R/G/B is 0/0/0.

②Common color values

Short press this icon to issue the currently saved RGB brightness value; long press this icon to save the current RGB value.

③Palette

Used to select the color.

④Darkness adjustment

Used to adjust the depth of the current color. Turn up to light up, down to darken, and adjust to bottom RGB to 0.

5.8 Floor Heating

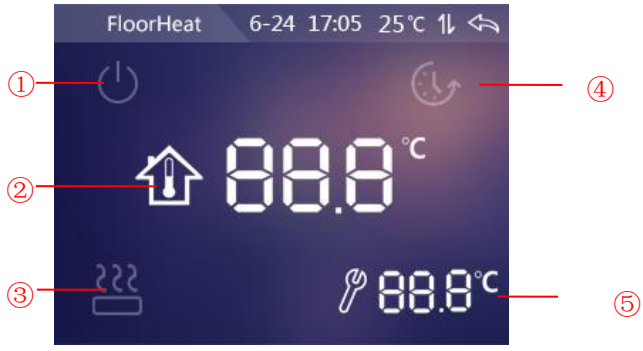


Fig. 5.8_1

① ON/OFF Button

It is used to turn on/off the floor heating, the initial state when powered up is based on the database definition. ① is gray after power on. ①1 is bright and ③④ is gray after power off .

In the off state, except the status of the ON/OFF and the room temperature that can be updated through the bus, the rest of the icon states cannot be updated through the bus or manually controlled.

② Room Temperature

According to the parameter setting of database on ETS, the display unit is configured by “Temperature display units”, you can select to display either Celsius (°C) or Fahrenheit (°F).

③ Heating valve open state

When the icon is bright, it is under heating status. When the icon is dark, the heating is closed. The update status is according to the object feedback.

④ Timer function

It is to enable/disable the timer function. Switching on/off or using scene control function can exit the timer mode.

⑤ Temperature setting

When you press  icon, you can enter the temperature setting interface. Shown as Figure 5.8_2

Fig. 5.8_2

Dragging the slider for temperature adjustment, touch  and  icon for 0.5 degree reduction/increment adjustment.

Touch icon  to save the temperature and back to floor heating interface.

The adjustment range of the set temperature is limited to 5-40°C by default, it can be modified by the parameter “Min./Max. set temperature [5...40]°C”.

According to the parameter setting of database on ETS, you can select to display either Celsius (°C) or Fahrenheit (°F).

5.9 Ventilation

Fig_5.9_1

① ON/OFF BUTTON

It is used to turn on/off Ventilation, the initial state when powered up is based on the database definition.

① is gray after power on. ① is bright and ④ is gray after power off .

In the off state, except the status of ON/OFF, room temperature and filter life reset can be updated through the bus or manually, the rest of the icon states cannot be updated through the bus or manually controlled.

② CO2 concentration

The value is displayed according to the received value with range 0 to 4000 ppm. If the value is above 4000ppm, showing only 4000ppm.

③ PM2.5 concentration

The value is displayed according to the received value with range 0～999ug/m3. If the value is above 999ug/m3, showing only 999ug/m.

④ Hot swap on status

When the icon is bright, it indicates that hot swap is on. When the icon is dark,it indicates that hot swap is off. The default setting is to enable the hot swap function when you turn on the power. Touch this icon to control the on/off of hot swap. You can also control the on and off status by writing the value to the object Heat Recovery. When the object En./Dis. is disabled, the function cannot be enabled by touch/telegram.

⑤ Filter life

It is used to indicate the filter remaining life value. Touching this icon will pop up the interface as shown in Figure 5.9.2:

Fig. 5.9_2

Selecting  will reset the filter life value to 100%. Selecting  to return to the function page. The lifetime value of the filter can be modified by the object.

⑥ Wind Speed

Touch this icon, the wind speed will be switched from the current wind speed level by 1... AUTO...1 cycle. When switching to wind speeds 1, 2 and 3, switching takes effect immediately. When “3” is switched to “AUTO”, if there is no new wind speed control operation within 3 seconds, the wind speed will switch to automatic mode after 3 seconds.

In automatic mode, no specific wind speed is displayed, only the automatic icon is bright. In manual mode, the wind speed status can be updated by the object.

⑦ Room Temperature

It is used to display the room temperature. The value is updated by object (external temperature sensor) or the temperature detected by the built-in sensor.You can select to display either Celsius (°C) or Fahrenheit (°F) to according to the parameter setting “Temperature display units” of database on ETS.

5.10 Setting page

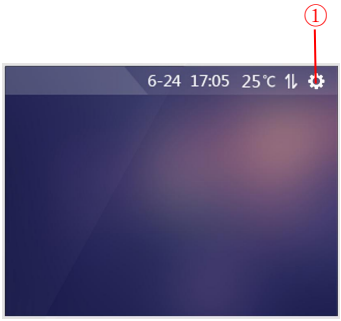


Fig. 5. 10_1

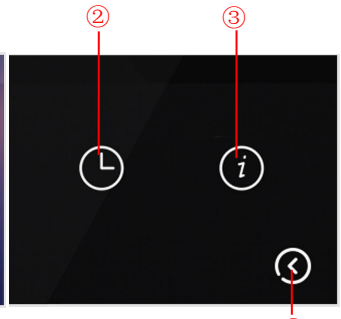


Fig. 5. 10_2

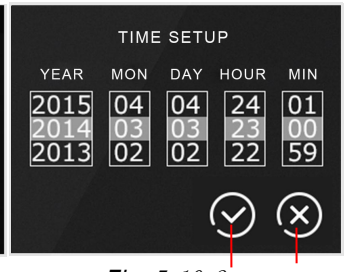


Fig. 5. 10_3

Fig. 5. 10_4

① Set button

Click on the title bar on the main page or any function page and sliding to enter the setting page,as shown in Figure 5.10_1, and then click the icon① to enter the page shown in Figure 5.10_2.

② Time setup

Click the icon② to enter the time setup page, as shown in Figure 5.10_3.

Set the current time via swiping operation, then click icon⑤ to save, and icon⑥ is not saved.

③ Version view

Click the icon③ to enter the software version viewing page, as shown in Figure 5.10_4, you can view the current software and MCU version of the device.

The icon④ is used to return.

Chapter 6 ETS Parameters Configuration

6.1 Parameter window "General "

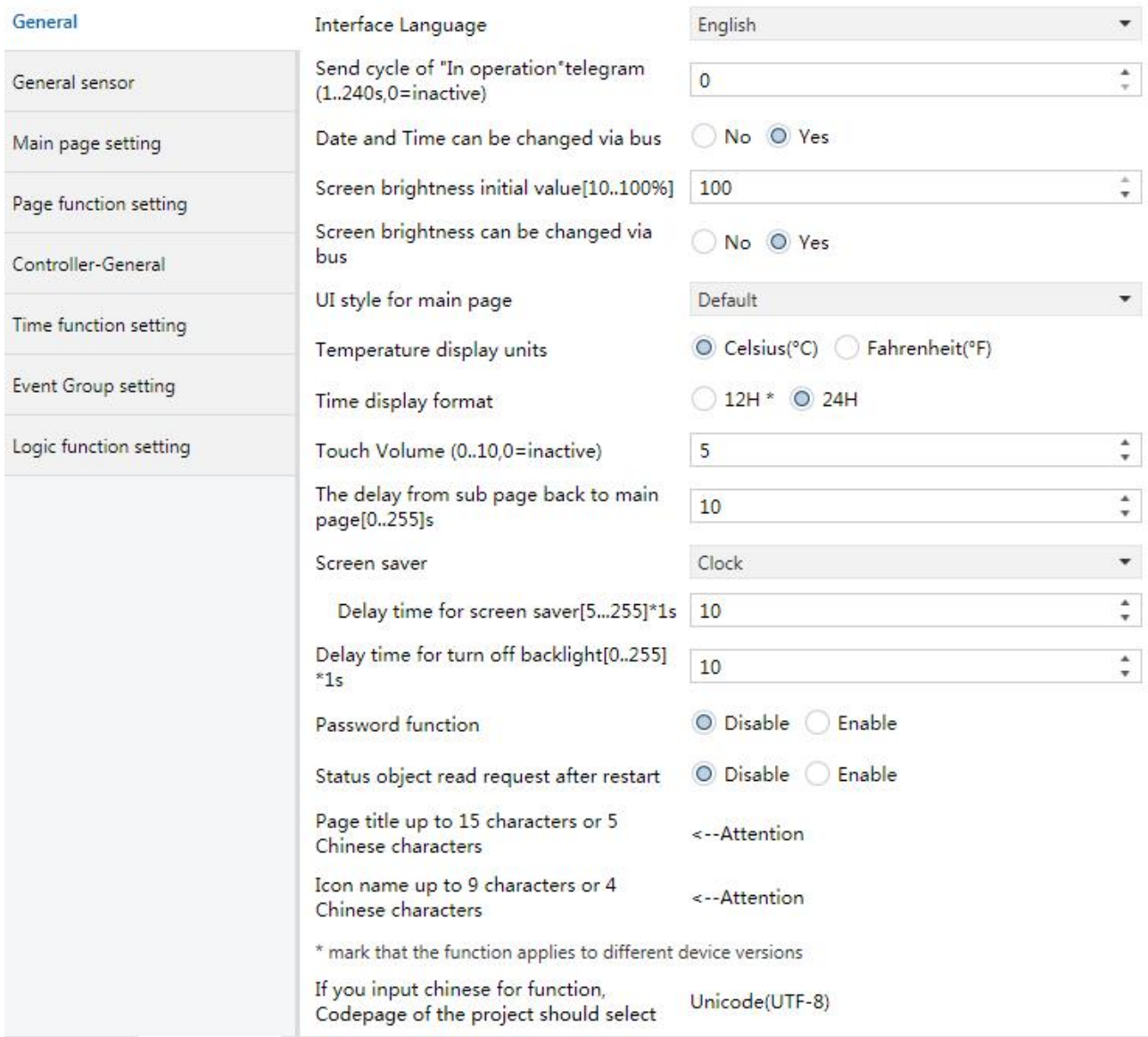


Figure 6.1_1 "General" parameter setting interface

The “General” parameter setting is mainly used to set the general settings of the touch panel, such as time, screen saver, whether the prompt tone is turned on during operation, etc.

Parameter“Interface Language”

To set the language of Touch Panel. Options:

Chinese	**Polish***
English	**Russian***
German*	**Turkish***
Italian*	**Spanish***
French*	**Greek***
Dutch*	**Other***

NOTE: The 3.5/5.0 inch Touch Panel supports Chinese and English only temporally.

——Parameter“Language name * ”

This parameter is visible when you select language “other*” to enter the language name. The device will display the matching language based on the name to the library.When there is no other language found, the default language will be English

Parameter“Sending cycle of “in operation”telegram (1...240s, 0 = inactive):”

This parameter is to set the time interval when cycle send messages through the bus to indicate the normal operation of this module. 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=Cycle transmission is inactive.**

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

Parameter“Date and Time can be changed via bus”

To set whether the display date/time on the screen can be modified via the bus. Options:

NO

YES

If "YES" is selected, the object "Date" and the object "Time" are visible, and the date and time can be modified by the two objects respectively.

Parameter“Screen brightness initial value [10..100]%”

To set the initial brightness value of the screen. Options: **10..100**

Parameter"Screen brightness can be changed via bus"

To set whether the screen brightness can be modified via the bus. Options:

NO

YES

If "YES" is selected, the object "Screen backlight brightness" is visible, which is used to modify the screen brightness.

Parameter"UI style for main page"

To set the UI style of the main page. Options:

Default

1 *

2 *

3 *

NOTE: The 3.5/5.0 inch Touch Panel supports default UI only temporally.

Parameter"Temperature display units"

To set the temperature display units. Options:

Celsius (℃)

Fahrenheit (℉)

Parameter"Time display format"

To set the time display format of the screen, which is a 12-hour clock (with morning/afternoon supplementary display), or a 24-hour clock. Options:

12 H *

24 H

NOTE: The 3.5/5.0 inch Touch Panel supports 24H only temporally.

Parameter"Touch Volume (0..10,0=inactive)"

To set whether the buzzer sounds when the touch screen is operated. Available Options: **0..10**

To set the volume of the prompt tone. 0 is no sound, 1 is the minimum tone, and 10 is the maximum tone.

Parameter"The delay from sub page back to main page[0..255]*1s*"

This parameter is to set the delay time to automatically return to the homepage when there is no operation detected under the function page. Available Options: **0..255s**

NOTE: The 3.5/5.0 inch Touch Panel doesn't support this function temporally.

Parameter"Screen saver"

To set whether to enable the screen saver function of the touch panel. Options:

Disable

Clock

Album

If you select “Clock”,the screen shows the clock when the panel enters to screen saver mode.

If “Album” is selected, after entering the screen saver mode, the screen displays the picture in the “picture” folder of the album in the TF card. If the panel does not detect the existence of the album “picture” in the TF card, the screen saver will display the pictures in the program.

NOTE: Support picture format: pictures with suffixes of .jpg, .bmp, and .tjpg.

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

——Parameter"Delay time for screen saver [5..255]*1s”

This parameter sets the delay time for entering the screen saver mode, countdown starts from the last operation of the screen. Options: **5..255**

Parameter"Delay time for turn off backlight[0..255]*1s”

This parameter sets the delay time for turning off the screen backlight and countdown starts from the touch panel into the screen saver mode. 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 ”

To set whether to enable the password protection function, that is, whether to enter the password when re-operate the screen after the screen saver mode or screen is turned off. Options:

Disable

Enable

——Parameter"Password (only digit number allow)”

This parameter sets the password and it only supports 4 digit passwords.

Parameter"Status object read request after restart”

To set whether the device sends a status request telegram when the device starts. Options:

Disable

Enable

This parameter applies to switch state feedback, dimming state feedback, curtain position feedback, air quality detection display, and outdoor temperature detection on the function page.

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 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.

Parameter"Page title up to 15 characters or 5 Chinese characters"

Parameter"Icon name up to 9 characters or 4 Chinese characters"

This is comment information:

The page title of the screen can display up to 15 characters or 5 Chinese characters.

The icon name can display up to 9 characters or 4 Chinese characters.

***mark that the function applies to different device versions**

The parameter or parameter option function with asterisk * only supports certain devices and does not apply to all versions of the screen.

6.2 Parameter window "General sensor"

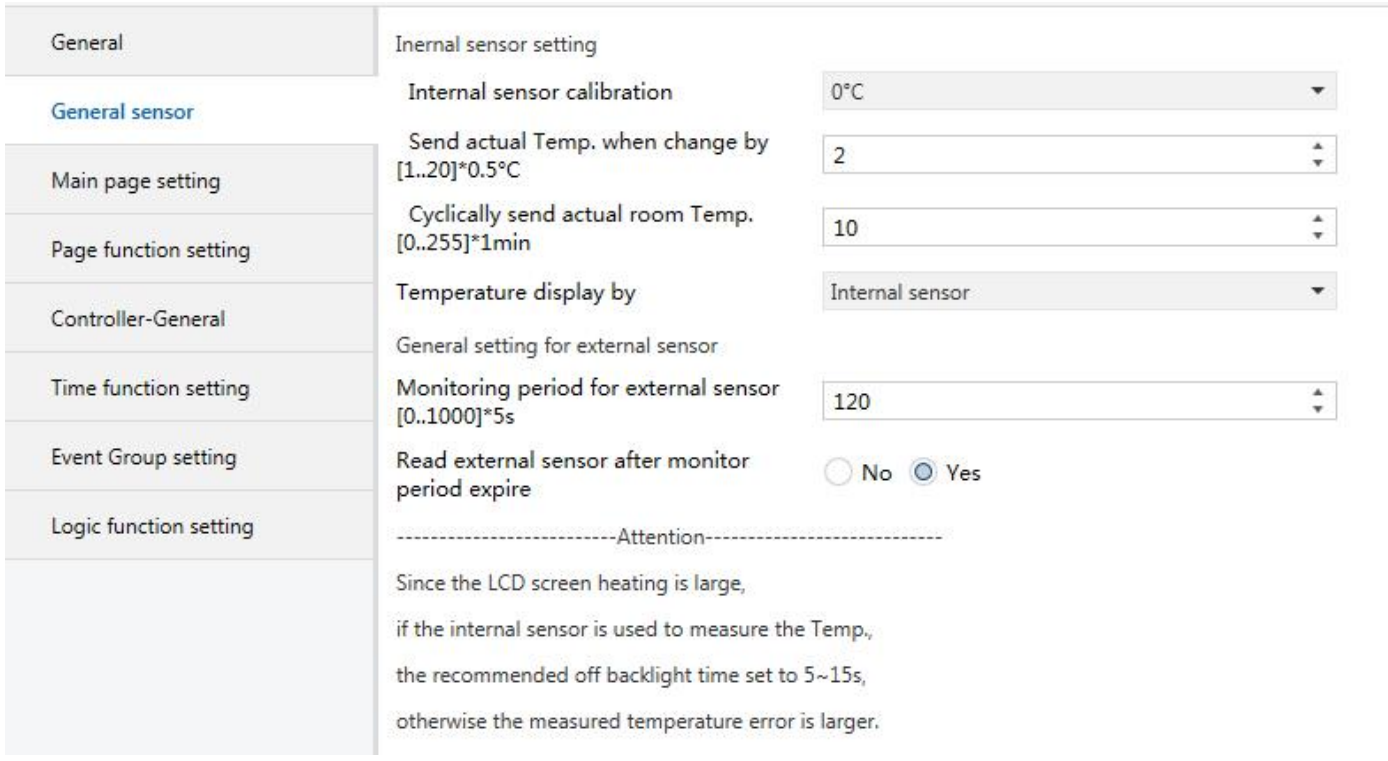


Figure 6.2_1 "General sensor" parameter setting interface

To set the parameters related to temperature detection and external sensor detection such as AQI, CO2, VOC, etc.

This part of the sensor detection value is mainly used to be displayed in the home page of touch panel.

NOTE: The 3.5/5.0 inch Touch Panel doesn't support this function temporally.

The following three parameters are used for correction value and sending setting of the screen's built-in temperature sensor. If other functions choose internal sensors as well, please refer to the settings here.

——Parameter"Internal sensor calibration"

Options:

-5℃

...

0℃

...

5℃

This parameter is to set the temperature correction value of the built-in temperature sensor, that is, to modify the measured value of the built-in temperature sensor to make it closer to the current ambient temperature.

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

This parameter is to set to send the current temperature measurement value to the bus when the temperature changes by a certain amount. Options: **1...20**

——Parameter"Cyclically send actual room temp.[0...255]*1min"

This parameter is to set the time when the temperature measurement value is cyclically sent to the bus. Options: **0..255min**

This cycle is independent and starts timing after the completion of the programming or reset. Change transmission doesn't affect this period.

Parameter"Temperature display by"

It is to set the source of the temperature display in home screen. Options:

Disable

Internal sensor

External sensor

Internal sensor: The temperature value measured by the screen's built-in temperature sensor, and it is sent or read to the bus by the object "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";

When the screen does not receive the measurement value of the external sensor, the temperature will be displayed as 0 or the value detected by the built-in temp. sensor.

——Parameter"When external sensor fault, Internal sensor display"

This parameter is visible when the external temperature sensor is selected. Options:

NO

YES

NO: When the external sensor is in fault and the 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.

General setting for external sensor

The following settings are common settings for external sensors. The external sensors include temperature, AQI, PM2.5, PM10, humidity, VOC, CO2, and illumination (object numbers 366-373).

Parameter"Monitoring period for external sensor [0..1000]*5s"

This parameter is to set the screen monitoring period to the external sensor. Available Options: **0...1000**

When the monitoring period expires, if the external sensor's detection value is not received, the external sensor is considered to be faulty and the display value will be 0.

After receiving the value, the monitoring period will restart.

NOTE: To prevent missing detection values when the bus is busy, it is recommended that the monitoring period should be at least twice as long as the sensor's cyclic transmission period.

——Parameter"Read external sensor after monitor period expire"

To set 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 message will be sent to the external sensor.

Attention: Since the LCD screen heating is large, if the internal sensor is used to measure the temperature, the recommended off backlight time set to 5~15s , otherwise the measured temperature error is larger.

This is comment information.

6.3 Parameter window “Main page setting”

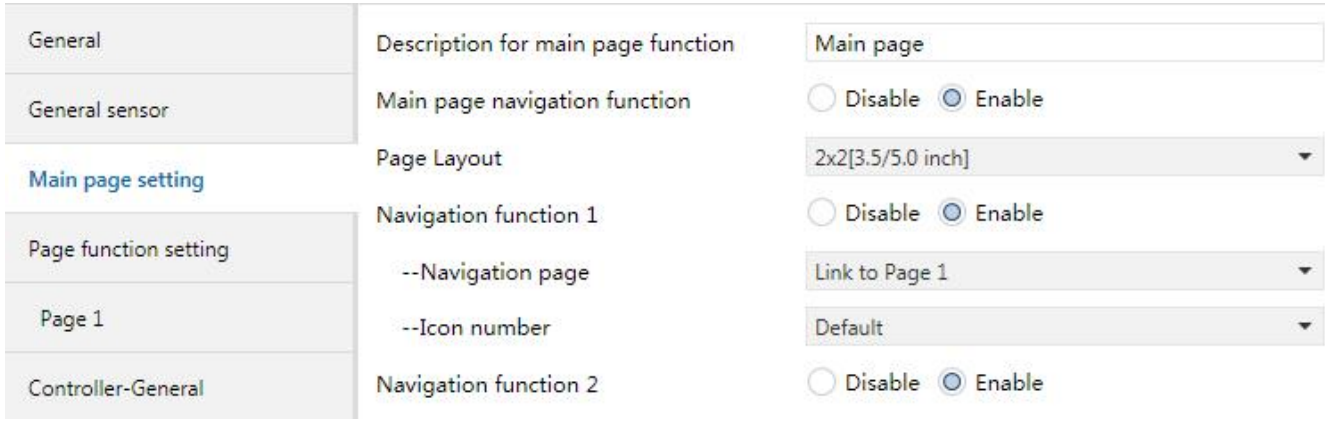


Figure 6.3_1 “Main page setting” parameter setting interface

Used to set the layout and page navigation features of the home page, you can set up to 9 pages of navigation depending on the product type.

The parameters for each navigation are the same, and you can choose to link to the specified feature page. The following is an example of a navigation feature that describes their parameter settings.

Parameter“Description for main page function”

The name of the home page, maximum 15 characters, the actual display of up to 5 Chinese characters.

Parameter“Main page navigation function”

Sets whether the home navigation function is enabled。Available options:

Disable

Enable

When Disable, directly display the function page. Multiple pages by sliding the page to select a specific feature page.

When“Enable”, the following parameters are visible.

Parameter“Page Layout”

Set the layout of the home page. Available options:

1X1[3.5/5.0 inch]

1X2[3.5/5.0_H inch]

1X3[3.5/5.0_H inch]

2X2[3.5/5.0 inch]

2X3[3.5 inch]

2X4[3.5/5.0_H inch]

2X1[5.0_V inch]

3X2[5.0_V inch]

3X3[5.0_V inch]

Definition of layout options: Row X column [applicable device type], such as 2x4[3.5/5.0_h inch] layout 2 lines 4 column can decorate up to 8 navigation page function, apply to 3.5 inch screen,5.0 inch horizontal screen.

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

Sets whether to enable navigation function x. Available options:

Disable

Enable

When"Enable",the following parameters are visible.

——Parameter"Navigation page"

Sets the function page that the navigation feature x links to. Available options:

Link to Page 1

Link to Page 2

...

Link to Page 10

NOTE: The linked function page requires a functional configuration, which is not valid if not configured.

——Parameter"Icon number"

Sets the icon to use, and the different icon numbers represent different icons. Available options:

Default

1 - Multi-Function

...

20 - Air Quality 4

Default: Displays an icon based on the linked feature page. The icon corresponding to the chart is described in the appendix below.

6.4 Parameter window “Page function setting”

“Page function setting”show in Figure 6.4.1, is used to set whether the page is functional.

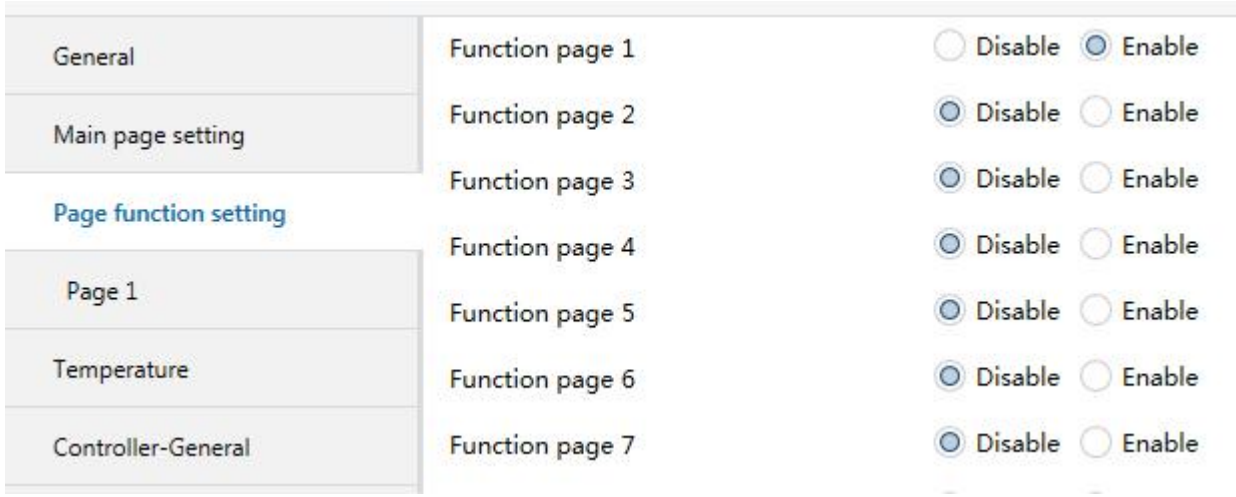


Figure 6.4_1 “Page function setting” parameter setting interface

Parameter“Function page x(x=1..10)”

Set whether to enable the function of page x . Available options:

Disable

Enable

When“Enable”, Parameter interface“Page x” is visible, as shown in Figure 6.4_2, this interface can set the function of page x.

Mam 10 feature pages.

6.4.1 Parameter window “Page x -- Lighting/Curtain/Value send”

Parameter“Page x” setting interface as shown in Figure 6.4_2, is used to set pages functionality.

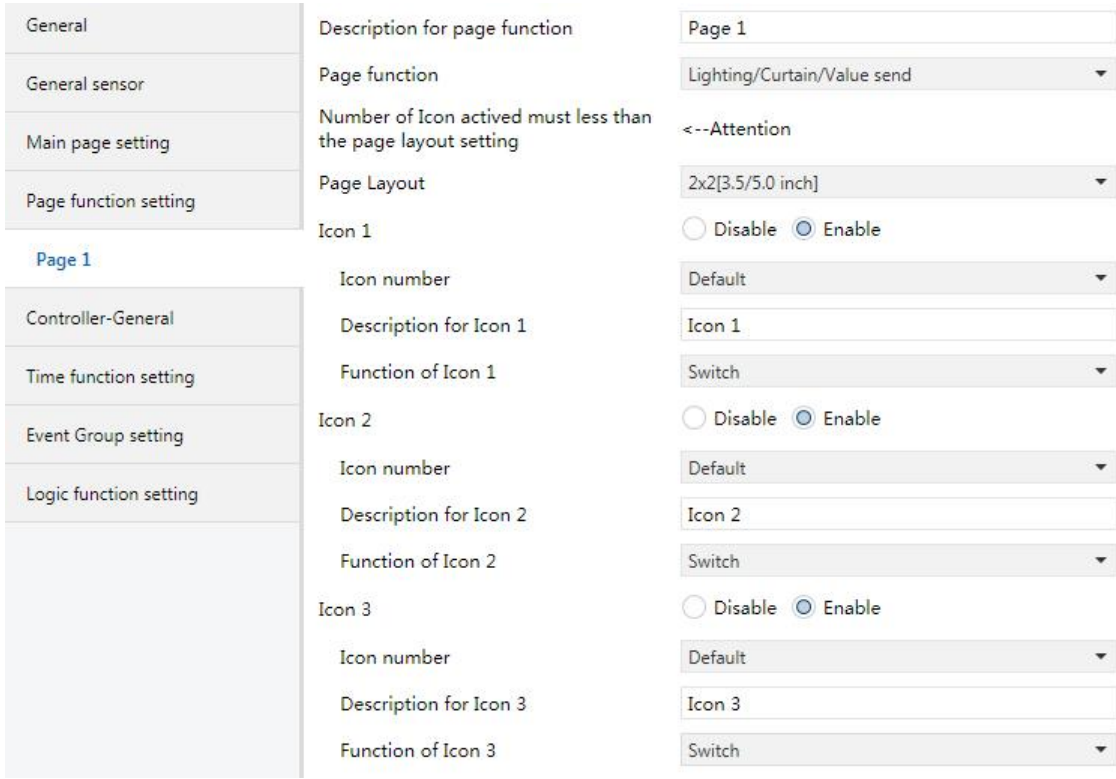


Figure 6.4_2 “Lighting/Curtain/Value send” parameter setting interface

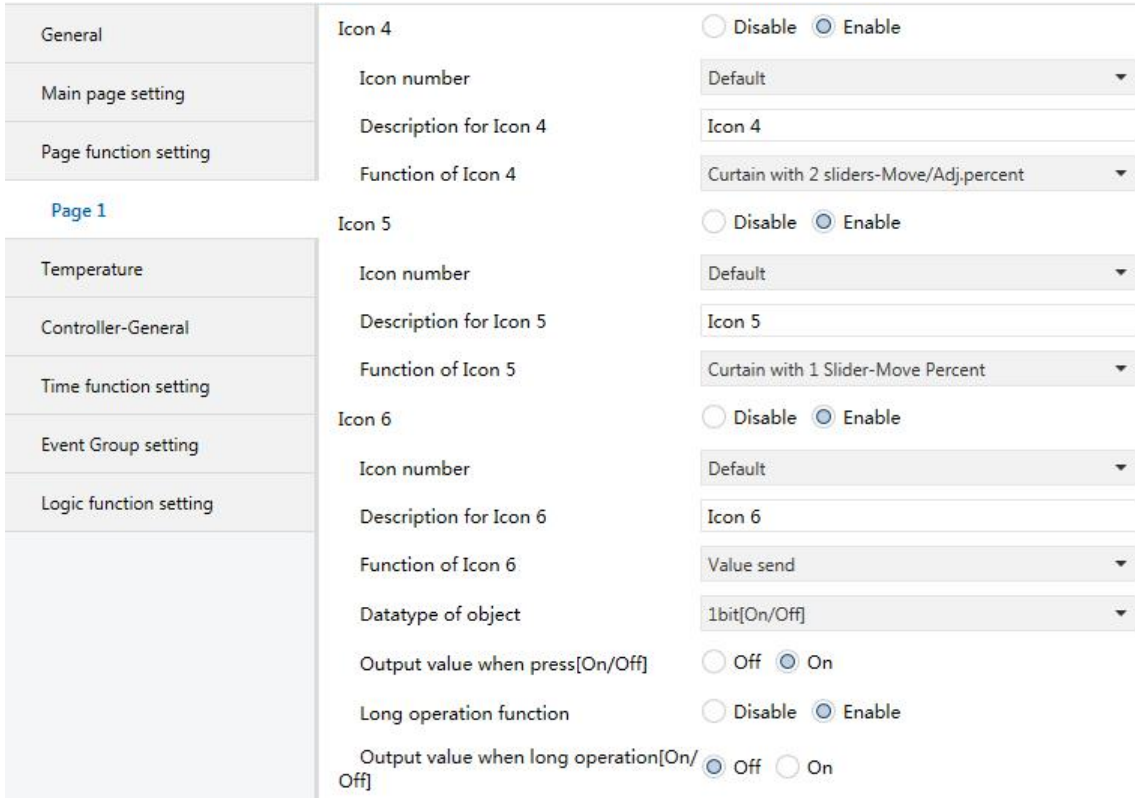


Figure 6.4_2 “Lighting/Curtain/Value send” parameter setting interface

Parameter"Description for page function"

The name of the home page, maximum 15 characters, the actual display of up to 5 Chinese characters.

Parameter"Page function"

Set page functionality. Available options:

Lighting/Curtain/Value send

Air Quality display

HVAC

Air conditioner

Background Music

RGB dimming

Floor heating

Ventilation System

The display of the interface depends on the function selected.

The following sections describe the parameter settings for each feature.

The page features in this section are mainly about lighting, curtains, and parameter settings for sending values, as follows:

Parameter"Page Layout"

Sets the layout of the feature page. Available options:

1X1[3.5/5.0 inch]

1X2[3.5/5.0_H inch]

1X3[3.5/5.0_H inch]

2X2[3.5/5.0 inch]

2X3[3.5 inch]

2X4[3.5/5.0_H inch]

2X1[5.0_V inch]

3X2[5.0_V inch]

3X3[5.0_V inch]

Definition of layout options: Row X column [applicable device type], such as 2x4[3.5/5.0_h inch] layout 2 lines 4 column can decorate up to 8 icons, apply to 3.5 inch screen,5.0 inch horizontal screen.

Parameter"Icon x, x=1...9"

Sets whether to make the function of icon x . Available options:

Disable

Enable

When"Enable",several of the following parameters are visible.

——Parameter"Icon number"

Sets the icon to use, and the different icon numbers represent different icons. Available options:

Default

1 - Dimmer 1

...

20 - Music

Default: Displays the icon based on the selected feature. The icon for the graph label will be described in the appendix below.

——Parameter"Description for Icon x"

Set the name of icon x that is displayed on the screen, which can be entered up to 12 characters (Mam 6 Chinese characters).

Actual maximum display 9 characters (or 4 Chinese characters).

——Parameter"Function of Icon x"

Sets the function of the icon x . Available options:

Switch

Switch/Dimming

Value send

Curtain with 3 Buttons-Open/close/stop

Curtain with 1 Slider-Move Percent

Curtain with 2 sliders-Move/Adj Percent

Switch: The icon is used to control the switch. Object "switch" and object "switch status" are visible, and these two objects are typically used in conjunction.

For example, "switch" corresponds to the switch actuator's switching object, "switch status" corresponds to the switch state object, if the object "switch status" receives the switch actuator state reply, The icon status is also updated accordingly (the selected icon must support two states).

Switch/Dimming: the icon is used for the switch and can be used for dimming.

Object "switch", "brightness dimming" and "brightness Status" are visible, short press action triggers a switch command A long press operation opens a slide bar for dimming, which slides directly on top to adjust the light.

In general, the "brightness dimming" and "brightness Status" objects are used in conjunction.

For example, "brightness dimming" corresponds to the brightness dimming object of the dimmer, "brightness status" corresponds to the Brightness state object of the dimmer.

Value send: value forwarding feature, which specifies the values that send different data types.

Curtain with 3 Button--Open/Close/Stop: apply to shutter control, with three control buttons: Open, close, stop.

This type of control also applies to the lifting curtain control. Message value: Up / open corresponding message "0", bottom / close corresponding message "1"

Curtain with 1 Slider-Move Percent: apply to shutter control, with a sliding bar, as a percentage of the curtain position adjustment.

Curtain with 2 sliders-Move/Adj Percent: Apply to Venetian blinds control, with two slider, adjust the curtain position and Venetian angle in percentage form.

The following parameters are visible when you select a value to send feature.

——Parameter"Datatype of object"

This sets the type of object that sends the value. Available 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 [...]"

Sets the value that the object sends when the action is set, and the range of values is determined by the selected object type.

——Parameter"Long operation function"

Set whether to enable long operation function. Available options:

Disable

Enable

When “Enable”, the following parameters are visible.

——Parameter"Output value when long operation[...]"

The value sent by the object when a long operation is set, and the range of values is determined by the type of object selected.

NOTE: If the value is sent to select the scene type, long operations will be used to save the scene when the long operation is enabled.

6.4.2 Parameter window “Page x -- Air Quality display”

The "Air Quality display" parameter setting interface, as shown in Figure 6.4_3 , is used to set the function of air quality display to set AQI, temperature, humidity,PM2.5 ,PM10,VOC and CO2 display. An interface can be set up to 4 display.

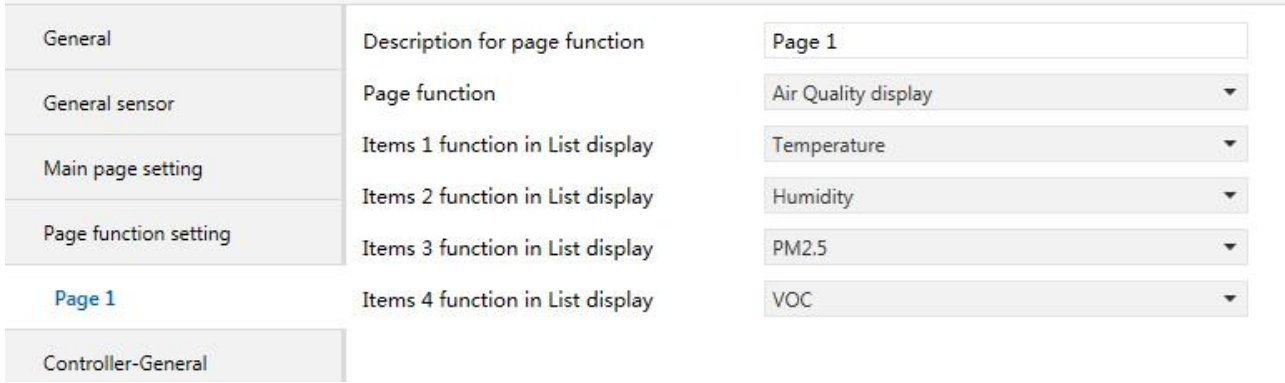


Figure 6.4_3 “Air Quality display” parameter setting interface

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

Sets the contents of each item to display up to 4 items. Available options:

Disable
AQI
Temperature
Humidity
PM2.5
PM10
CO2
VOC

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℃ -40~104℉

Humidity: 0~100%

PM2.5: 0~999ug/m3

PM10: 0~999ug/m3

VOC: 0~9.99mg/m3

AQI: 0~500

CO2: 0~4000ppm

6.4.3 Parameter window “Page x -- HVAC”

The Parameter“HVAC”setting interface shown in Figure 6.4_4, mainly sets the parameters of the fan and some of the HVAC parameters.

HVAC The general parameters of the controller also need to refer to the "controller-general" parameter setting interface.

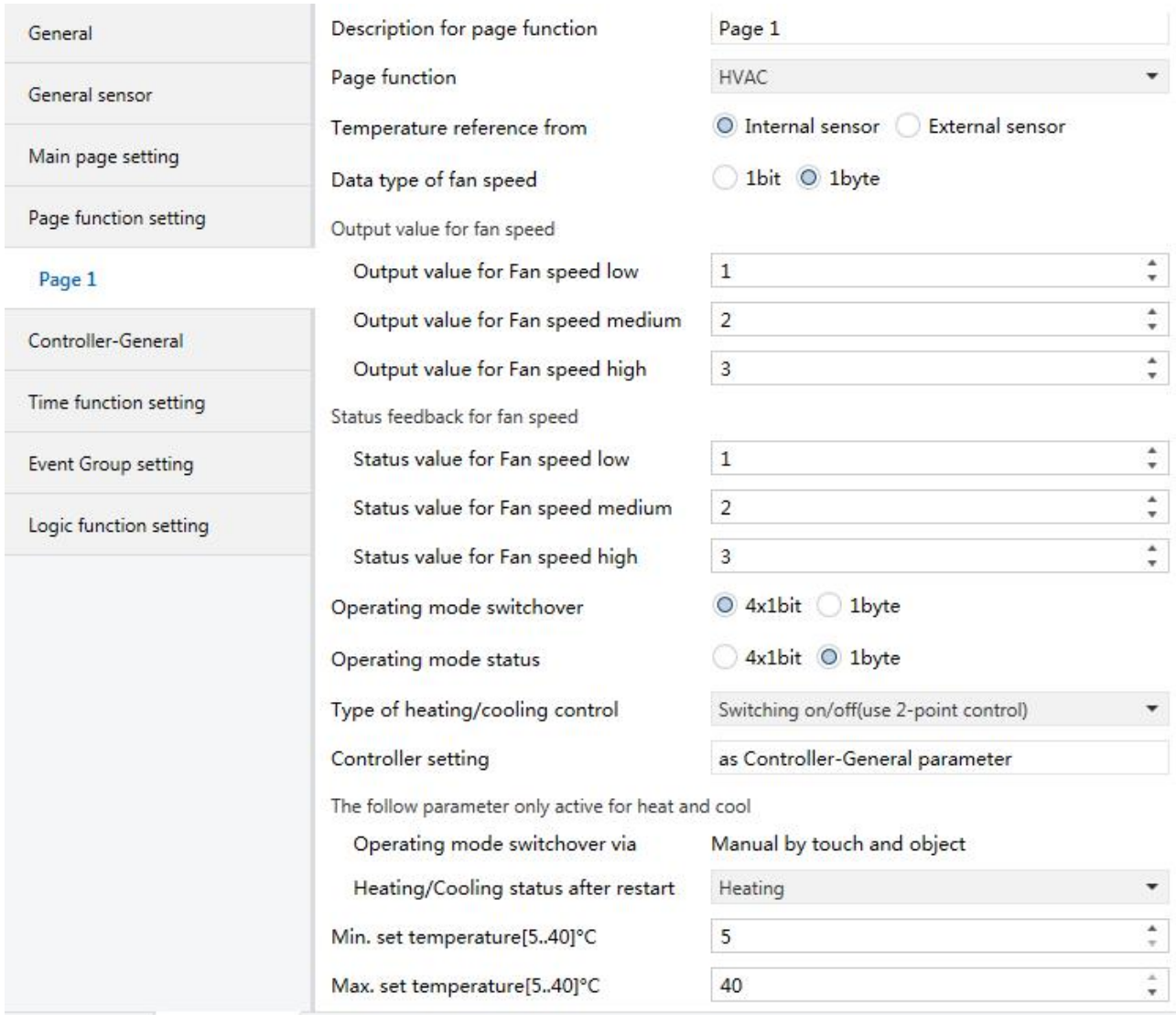


Figure 6.4_4 “HVAC” parameter setting interface

Parameter“Temperature reference from”

This parameter sets the source of the HVAC function temperature reference. Available options::

Internal sensor

External sensor

When selecting the reference internal sensor, the temperature is determined by the setting of the built-in sensor for the "General sensor " of the parameter interface.

The following three parameters are visible when selecting an external temperature sensor:

——Parameter"When external sensor fault, Internal sensor display"

The parameter annotation is in the external sensor Read when the temperature is not answered, the external sensor is considered to be faulty, at which time the temperature is measured by the built-in sensor.

——Parameter"Time period for requesting external sensor [0..255]"1min"

This parameter is used to set the time period for the screen to send a read request to an external temperature sensor. Options:**0...255**

——Parameter"Read external sensor after restart"

Available 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"Object type of fan speed"

This parameter is used to set the data type of wind speed. Available options:

1bit

1byte

Output value for fan speed

——Parameter"Output value for fan speed low/medium/high"

These three parameters are visible when the wind speed object type is "1byte", and define the values that are sent to each wind speed. Options:**0..255**

Status feedback for fan speed

——Parameter"Status value for fan speed low/medium/high"

The three parameters are visible when the wind speed object type is "1byte", and the state feedback value of each wind speed is set. The screen will be updated to show the wind speed according to the feedback value. Options:**0..255**

Parameter"Operating mode switchover"

This parameter sets the object type of the room operation mode switch. Available options:

4x1bit

1byte

When you select 1bit ,4 1bit objects are visible. Four objects are:HVAC output--comfort mode (Comfort mode), HVAC output--night mode (Night mode), HVAC Output--standby mode (Standby mode)

and HVAC output--frost/heat protection mode.

When a mode is activated, the corresponding object sends the message "1" or "0".

When you select 1byte , the object "HVAC output -- HVAC mode" is visible, the message value sent: "1" for comfort mode, "2" for Standby mode, " 3"means night Mode,"4"for protection mode.

Parameter "Operating mode status"

This parameter sets the object type of the status feedback under room operation mode. Options:

4x1bit

1byte

When 1 bit is selected, four 1 bit objects are visible, and the screen updates to different modes according to the ON or OFF telegram received by the object.

The four objects are: HVAC Input--Comfort mode, HVAC Input--Night mode, HVAC Input--Frost/heat protection mode, and HVAC Input-standby mode.

When the value of previous three objects is 0, the operation mode is in standby mode.

When 1byte is selected, 1 indicates comfort mode, 2 indicates standby mode, 3 indicates night mode, and 4 indicates protection mode. The screen will update to the corresponding mode according to the received telegram value.

Parameter "Type of heating/cooling control"

To set the control type of heating/cooling function. Different control types are used to control different thermostats. Options:

Switching on/off (use 2-point control)

Switching PWM (use PI control)

Continuous control (use PI control)

Parameter "Controller setting"

The parameter explains that the parameter"Controller setting"should refer to the parameter setting of "Controller -General".

The following 2 parameters is valid only when selecting heating and cooling function.

——Parameter "Operating mode switchover via"

NOTE: Heating and cooling are switched manually by the touch panel or via object.

——Parameter "Heating/Cooling status after restart"

To set the heating/cooling state after system reset. Options:

Heating

Cooling

As before reset

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

It is used to limit the adjustable range of temperature settings. The minimum value must be lower than the maximum value.

If the temperature setting value exceeds the limit range, it will be output as the limit value.

6.4.4 Parameter window "Page x -- Air conditioner"

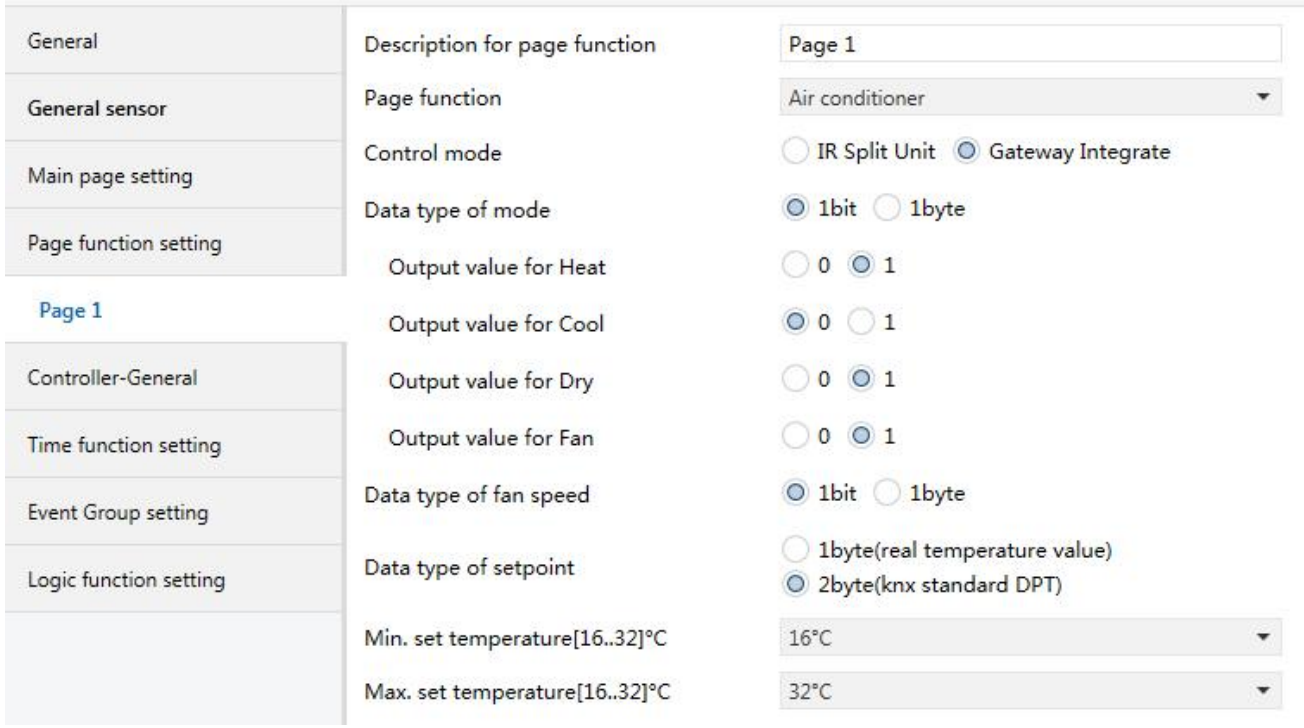


Figure 6.4_5 "Air conditioner" parameter setting interface (Gateway Integrate _1bit)

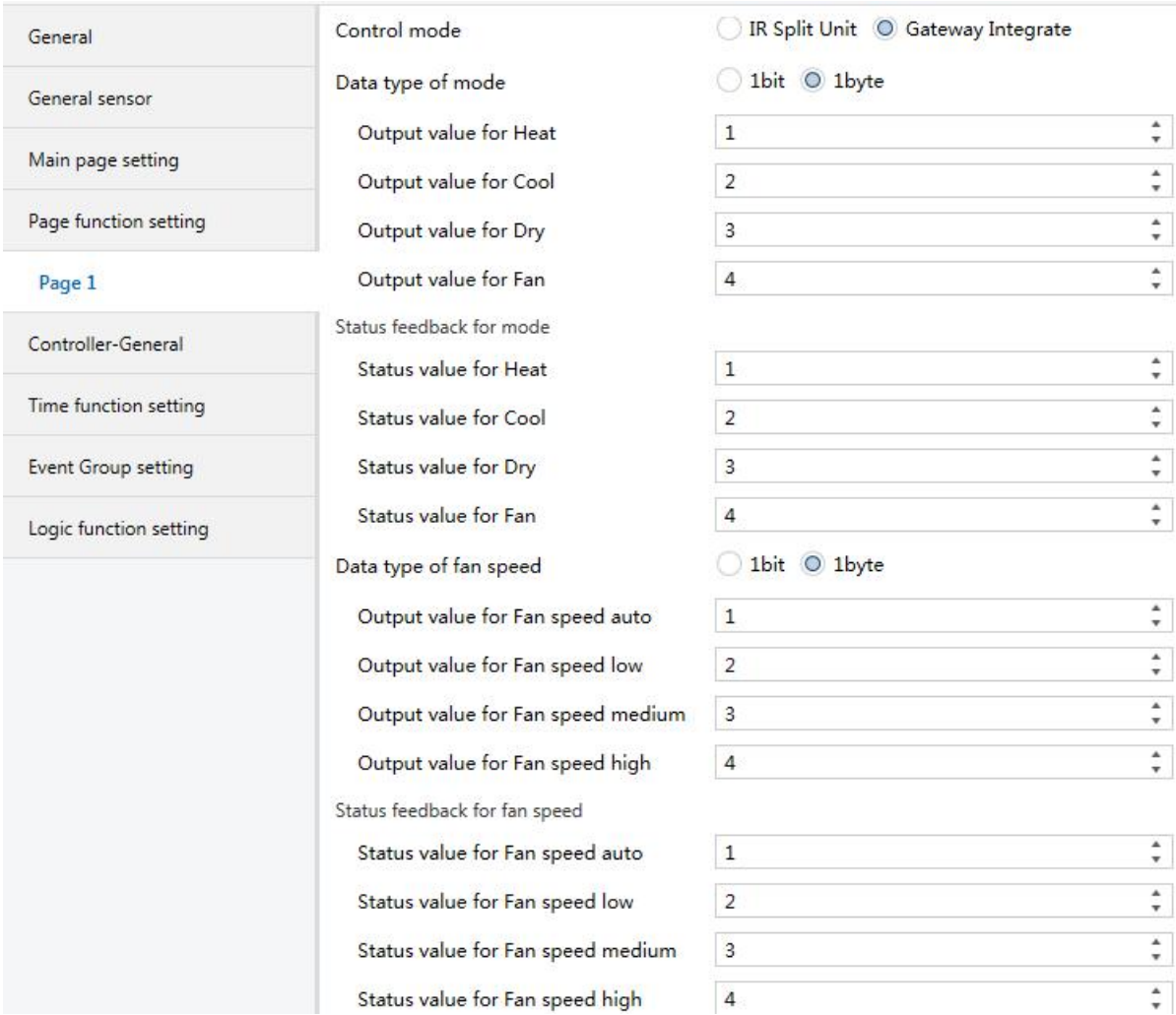


Figure 6.4_5 Air conditioner parameter setting interface (Gateway Integrate _1byte)

It is used to set AC control of two types of air conditioning : IR Split Unit and Gateway Integrate. The gateway integrate has two types of objects: 1 bit and 1 byte. IR air conditioning is controlled by 1byte object.

Parameter "Control mode"

This parameter is used to set the control mode of the air conditioner. Options:

IR Split Unit

Gateway Integrate

Air-conditioning gateway

The following parameters are visible when the air conditioning mode is set to gateway integrate. The parameter interface of the gateway integrate is shown in Figure 6.4.5.

Parameter "Data type of mode"

It is to define the object type that controls the air conditioning mode. Options:

1bit

1byte

——Parameter "Output value for Heat/Cool/Dry/Fan"

These parameters are visible when the air conditioning mode object type is "1byte" or "1bit", to define the values to be sent to each mode.

Available Options: **0..255**

Available Options: **0/1**

Status feedback for mode

The following parameters are visible when the air conditioning mode object type is "1byte", to set the status feedback value of each mode.

——Parameter"Status value for Heat/Cool/Dry/Fan"

These parameters are used to set the status feedback value of each mode, and the touch panel will update the icon status of the mode according to the received feedback value. Available Options: 0-255

Parameter "Date type of fan speed"

This parameter is used to set the data type of fan speed. Options:

1bit

1byte

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

These parameters are visible when the fan speed object type is "1byte", to define the value to be sent to each fan speed. Available Options: **0..255**

Status feedback for fan speed

The following parameters are visible when the fan speed object type is "1byte", to set the state value of each fan speed is set.

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

These parameters are used to set the status value of each fan speed, and the touch panel will update the status of the fan speed icon according to the received feedback value. Available Options: **0-255**

Parameter"Data type of setpoint"

This parameter is used to set the data type of the temperature setpoint. Options:

1byte (real temperature value)

2byte (knx standard DPT)

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

These two parameters are used to limit the adjustable range of the temperature setpoint. The minimum value must be lower than the maximum value.

If the temperature setting value exceeds the limit range, it will be output as the limit value.

Split Infrared (IR) air conditioner

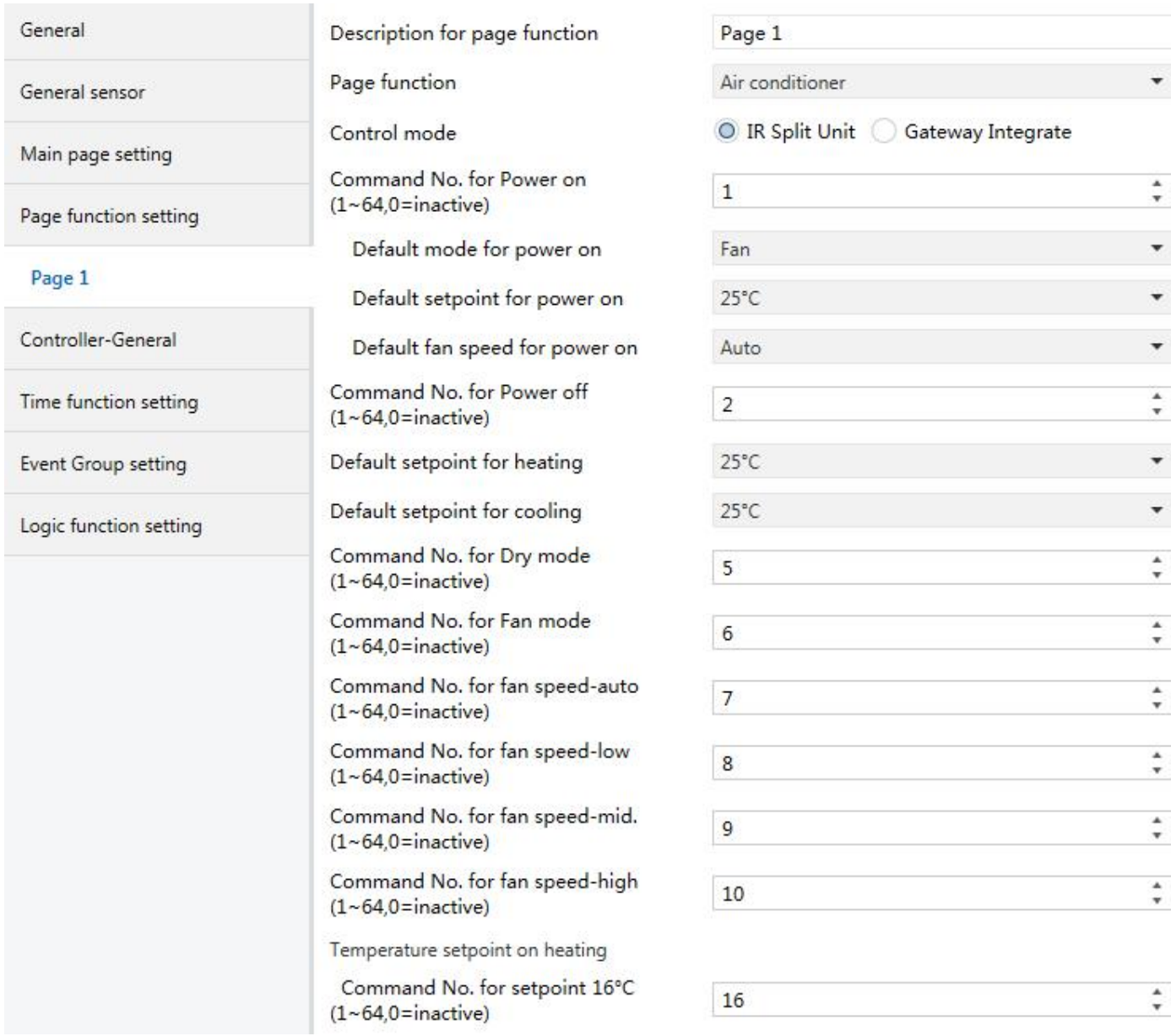


Figure 6.4_6 "Air conditioner" parameter setting interface (IR Split Unit)

The following parameters are visible when the air conditioning mode is set to Split Infrared and are used to set the values to be sent for each function command.

The actual telegram value is the entered value -1. The setting interface is shown as Figure 6.4_6.

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

It is to set the telegram value of object “IR Split Unit Command” to be sent when AC is powered on. Available Options: **0...64, 0=inactive**

Other parameters settings which are similar to this parameter will not be described anymore. When the default mode of the air conditioner is heating or cooling, the telegram value sent is same as the value of default temperature (the temperature at this time is also limited to the maximum/minimum value).

The following parameters is to set the initial icon status displayed on the touch panel when power on.

——Parameter "Default mode for power on"

To set initial mode displayed on the touch panel when power on. Options:

Heating

Cooling

Dry

Fan

——Parameter"Default setpoint for power on"

To set initial temperature displayed on the touch panel when power on. Options:

16℃

...

32℃

——Parameter "Default fan speed for power on"

To set the initial fan speed displayed on the touch panel when power on. Options:

Auto

Low

Medium

High

——Parameter "Default setpoint for heating/cooling"

To set the initial temperature displayed on the touch panel when switching to heating/cooling. Options:

16℃

...

32℃

The telegram value to be sent is same as the value of default temperature (the temperature at this time is also limited by the maximum/minimum value).

6.4.5 Parameter window “Page x -- Background Music”

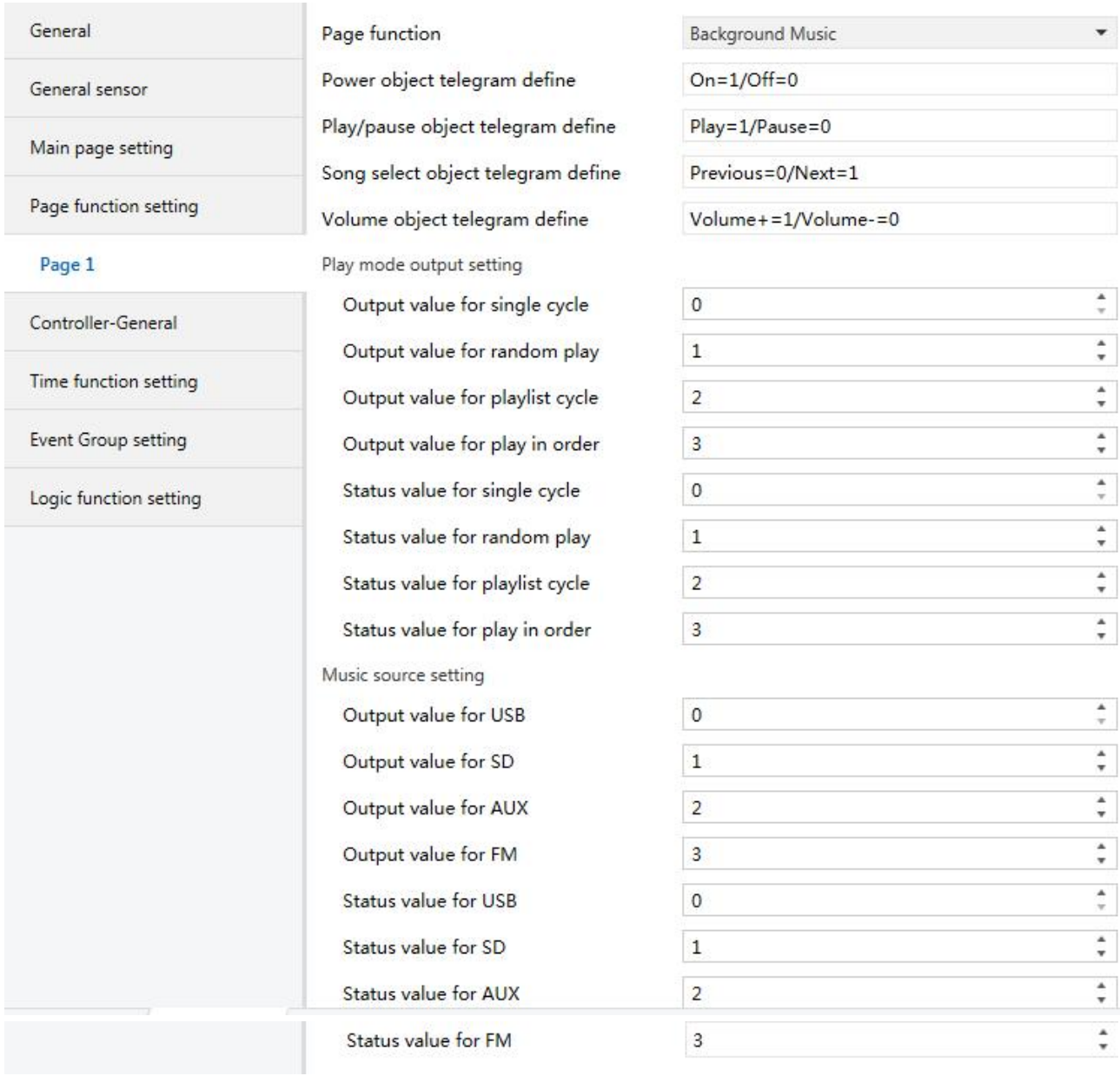


Figure 6.4_7 "Background Music" parameter setting interface

The “Background Music” parameter setting interface is shown in Figure 6.4_7. It is used to set the background music control.

When the function is enabled, the object used to control the music playback will be visible. Such as on/off, play/stop, volume control, previous/next, play mode, audio source, etc., the background music module can be controlled directly through these objects.

Parameter "Power object telegram define"

Parameter "Play/pause object telegram define"

Parameter "Song select object telegram define"

Parameter "Volume object telegram define"

These parameters describe the object value corresponding to the specific command of the background music.

Play mode output setting

The following parameters define the telegram value and feedback value that are sent to each play mode.

Parameter "Output value for single cycle"

It is to set the output value when single cycle play mode is enabled. Available Options: **0..255**

Parameter "Output value for random play"

It is to set the output value when random play mode is enabled. Available Options: **0..255**

Parameter "Output value for playlist cycle"

It is to set the output value when playlist cycle play mode is enabled. Available Options: **0..255**

Parameter "Output value for play in order"

It is to set the output value when play in order play mode is enabled. Available Options: **0..255**

Parameter "Status value for single cycle"

It is to set the status feedback value of single cycle play mode. The screen will update the icon status according to the received feedback value. Available Options: **0..255**

Parameter "Status value for random play"

It is to set the status feedback value of the random play mode, the screen will update the icon status according to the received feedback value. Available Options: **0..255**

Parameter "Status value for playlist cycle"

It is to set the status feedback value of the playlist cycle play mode. The screen will update the icon status according to the received feedback value. Available Options: **0..255**

Parameter "Status value for play in order"

It is to set the status feedback value of the play in order play mode. The screen will update the icon status according to the received feedback value. Available Options: **0..255**

Music source setting

The following parameters define the telegram value and feedback value when switching to each sound source.

Parameter "Output value for USB"

Parameter "Output value for SD"

Parameter "Output value for AUX"

Parameter "Output value for FM"

It is to set the telegram value sent by each sound source. Available Options: **0..255**

Parameter "Status value for USB"

Parameter "Status value for SD"

Parameter "Status value for AUX"

Parameter "Status value for FM"

It is to set the status feedback value of each sound source, and the screen will update the icon status according to the received feedback value. Available Options: **0..255**

6.4.6 Parameter window "Page x -- RGB dimming"

The "RGB dimming" parameter setting interface is shown in Figure 6.4_8.

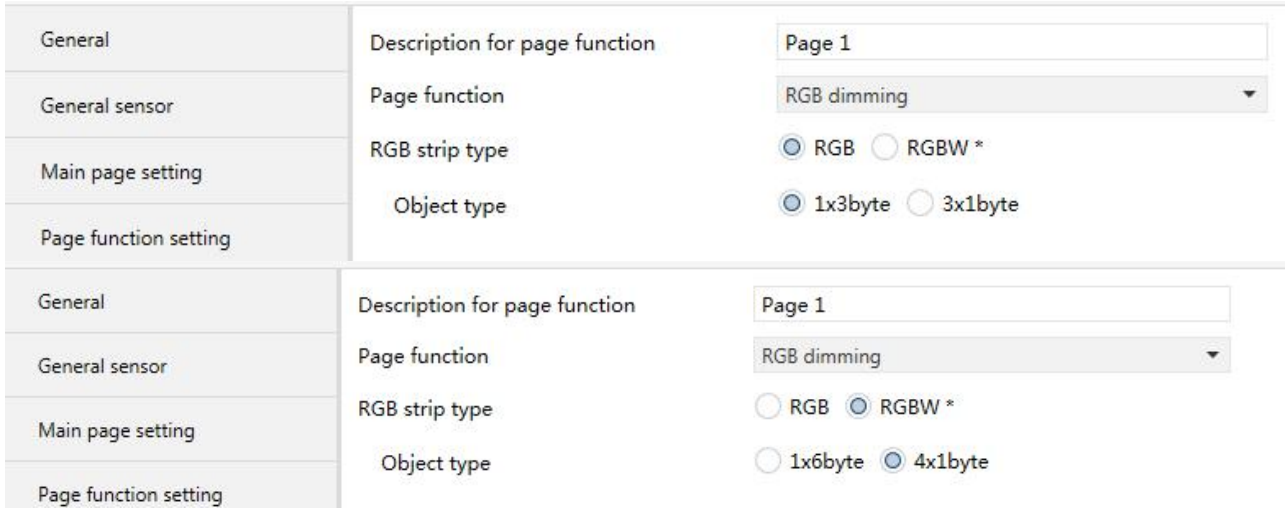


Figure 6.4_8 "RGB dimming" parameter setting interface

Parameter "RGB strip type"

To set the type of RGB strip, options:

RGB

RGBW *

RGB: Suitable for adjusting RGB tricolor lamps;

RGBW: Suitable for adjusting RGBW four-color lights

NOTE: The 3.5/5.0 inch touch panel supports RGB types only temporally.

Parameter "object type"

It is used to set the object type. Options:

Suitable for RGB types:

1x3byte

3x1byte

Suitable for RGBW type:

1x6byte

4x1byte

1x3byte: RGB dimming via a 3byte object

3x1byte: RGB dimming with three 1-byte objects

1x6byte: RGBW dimming with a 6byte object

4x1byte: RGBW dimming with four 1byte objects

6.4.7 Parameter window "Page x -- Floor heating"

"Floor heating" parameter setting interface is shown in Figure 6.4_9.

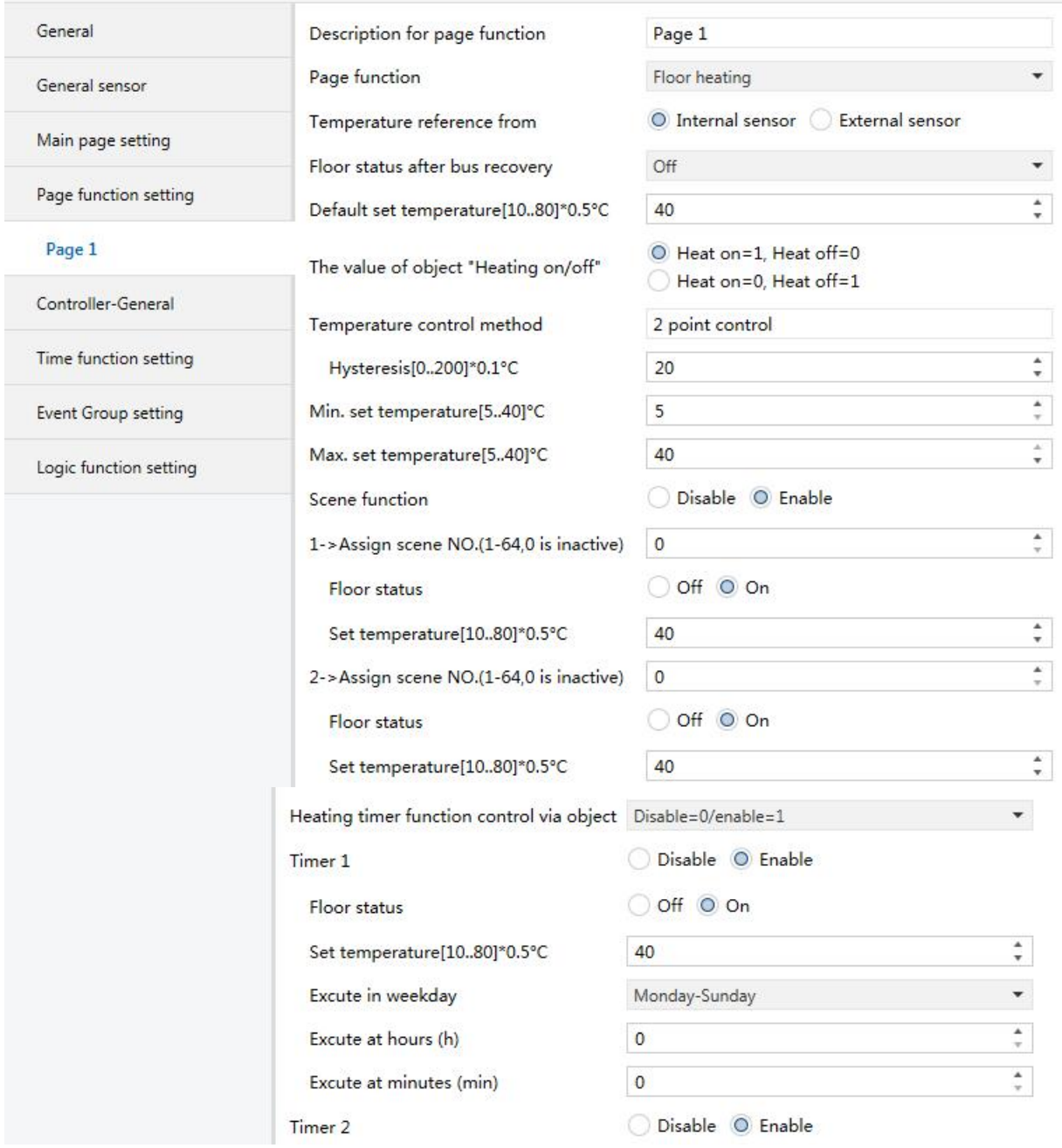


Figure 6.4_9 "Floor heating" parameter setting interface

Parameter "Temperature reference from"

This parameter sets the source of the referential temperature of floor heating function. Options:

Internal sensor

External sensor

NOTE: The floor heating temperature setting parameter is similar to the HVAC function. Please refer to section 6.4.3 for details.

Parameter "Floor status after bus recovery"

This parameter is used to set the Floor Status after bus recovery. Options:

No action

On

Off

Before bus power off *

If "Off" is selected, the Icon window are no operable, expect "Timing", "On" and "Off"; If "On" is selected, the Icon window is operable, the Radiant Floor Heating will do 2 Point operation according to Set Value and real temperature to determine whether the Heating is On or Off.

NOTE: The Function Before bus power off does not support restore the state before power off currently.

Parameter"Default set temperature[10..80]*0.5℃"

This parameter is used to set the initial temperature while the Heating is On. Options: **10..80（5~40℃)**

Parameter"The value of object "Heating on/off""

The value of object "Heating on/off". Options:

Heat on=1, Heat off=0

Heat on=0, Heat off=1

Parameter "Temperature control method"

The temperature control is via 2-Point Control.

While the real temperature is higher than Setting Value, the heating is Off, while below the setting value, the heating is On.

Parameter "Hysteresis[0..200]*0.1℃"

This parameter is used to set the hysteresis of Set Value. Options: **0..100**

While the real temperature is higher than setting temperature, the heating is off; while the temperature is below or equal to the setting temperature-hysteresis, the heating is on.

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

This parameter is used to limit the adjustable range of temperature settings. The Minimum value should below the Maximum value.

It will sent as Limit value while the temperature setting value exceeds the limit range.

Parameter "Scene function"

This parameter is used to enable the Scene function of Heating, total 5 Scenes optional. Options:

Disable

Enable

——Parameter "x->Assign scene NO. (1..64,0 is inactive), x=1~5"

This parameter is used to set the scene number. Options: **0..64,0=inactive**

——Parameter "Floor status"

This parameter is used to set the status of Heating windows about Scene x. Options:

Off

On

NOTE: While "Floor status" is "Off", Temperature Setting is meaningless.

——Parameter "Set temperature[10..80]*0.5℃"

This parameter is used to set the temperature setting of Scene x. Options: **10..80（5~40℃).**

Parameter "Heating timer function control via object"

This parameter is used to enable the Heating Timer function, with total 8 timers available. Options:

No

Disable=0/Enable=1

Disable=1/Enable=0

While the last two options are selected, the object used to disable/enable the timing function is visible.

It can disable/enable the Heating Timer function through object. After completed program or bus recovery, the default statue is "Disable"

Switching on/off or choosing the scene can exit the timer.

——Parameter "Timer x, x=1~8"

This parameter is used to enable Timer x. Options:

Disable

Enable

——Parameter "Floor status"

This parameter is used to set the Floor status windows of Timer x. Options:

Off

On

When it is "off", setting the temperature is meaningless.

——Parameter "Set temperature [10..80]*0.5℃"

This parameter is used to set the Temperature Setting of Timer x. Options:**10..80 (5~40°C)**

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

This parameter is used to set the Time Point of Timer x. It will execute the timer x while the time is up. Options:

Weekday:

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

Monday-Friday

Saturday-Sunday

Monday-Sunday

Hours(h): 0..23

Minutes(min): 0..59

6.4.8 Parameter window “Page x--Ventilation System”

Parameter Window “Ventilation System” can be shown in Figure 6.4_10, which is mainly to set the parameter of ventilation system

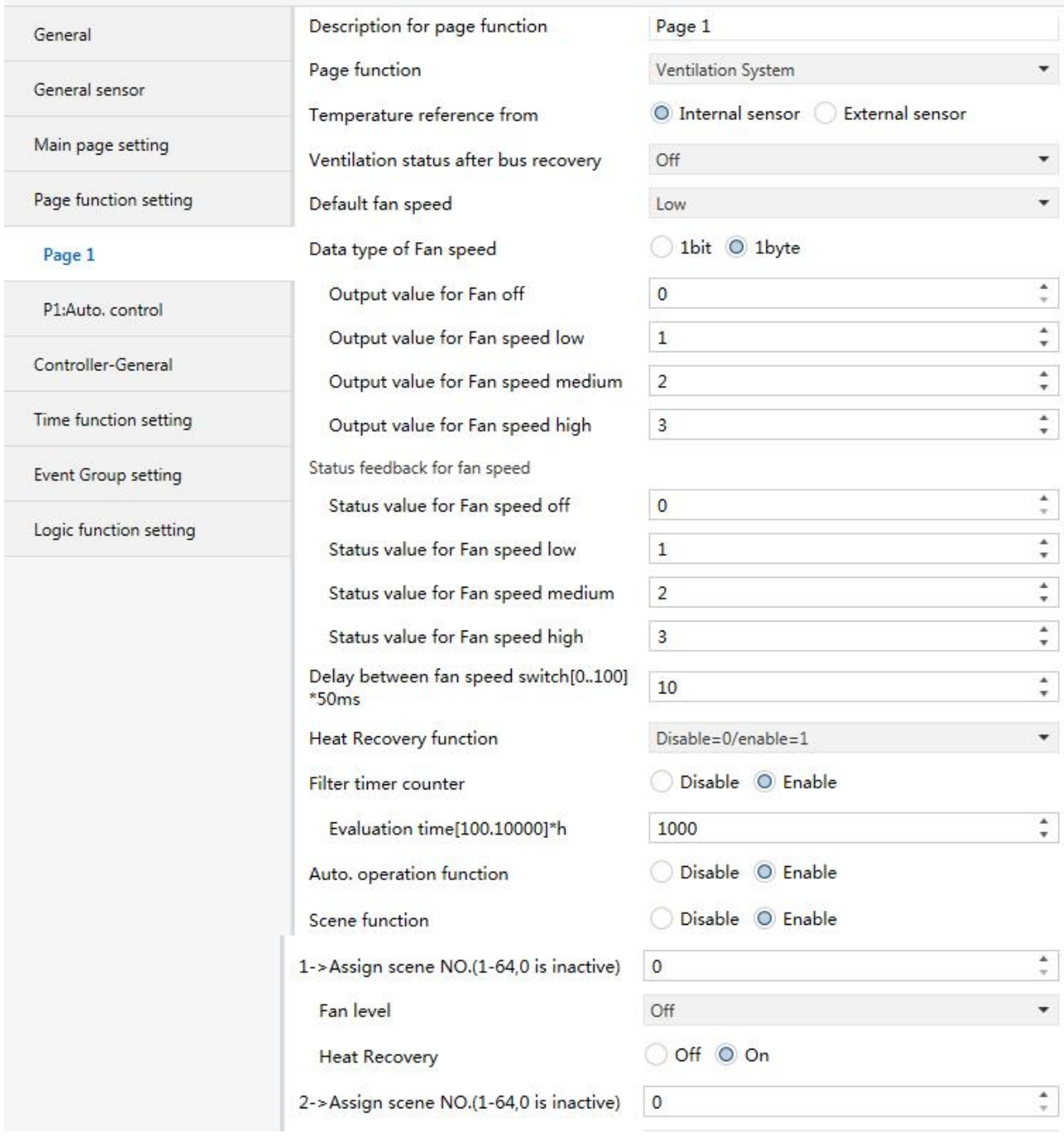


Figure 6.4_10 “Ventilation system” parameter setting interface

Parameter "Temperature reference from"

This parameter is used to set temperature reference from for ventilation. Options:

Internal sensor

External sensor

NOTE: The parameter setting of Radiant Floor Heating is similar to HVAC, please refer to Section 6.4.3.

Parameter "Ventilation status after bus recovery"

This parameter is used set the ventilation status after bus recovery. Options:

No action

On

Off

Before bus power off *

If "Off" is selected, the Icon window are no operable, expect "New Filter", "On" and "Off"; If "On" is selected, the Icon window is operable.

NOTE: The Ventilation function of the 3.5/5.0 inch Touch Panel does not support restore the state before power off currently.

Parameter "Default fan speed"

This parameter is used to set the default fan speed while the ventilation is turn on. Options:

Low

Medium

High

Parameter "Data type of Fan speed"

This parameter is used to set the data type of Fan speed. Options:

1bit

1byte

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

It is visible while the data type of Fan speed is "1 byte", defining the output value of fan speed off/low/medium/high. Options: **0..255**

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

It is visible while the data of Fan speed is "1 bit". defining the object value for fan speed off/low/medium/high and sent by three 1 bit object 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"

While the define turns to Delay, the time can be considered based on technical characteristics of the fan. Options: **0...100**

When the wind speed is switched, the wind speed is turned off firstly, and then the wind speed is re-opened after the delay time to send the telegram to the bus.

Status feedback for fan speed

The following parameters are visible when the wind speed object is "1byte", to set the status value for fan speed off/low/medium/high.

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

This parameter is used to set the status value for fan speed off/low/medium/high. The touch panel will update the Icon status of the fan speed according to the received value. Options: **0-255**

Parameter "Heat Recovery function"

This parameter is used to set whether to enable Heat recovery function. Options:

No

Disable=0/Enable=1

Disable=1/Enable=0

If the last two options are selected, the Heat Recovery is enabled by default, that is, it is enable once boots.

While "No" is selected, the heat recovery is not controllable

Parameter "Filter timer counter"

This parameter is used to set whether to enable the filter timer counter function. Options:

Disable

Enable

While it is "Enable", the next parameter is visible

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

This parameter is used to set the evaluation time of filter. Options: **100..10000**

If longer than the set time, the filter will send out a warning of prompting to clean the filter.

The Evaluation time can be reset via object "Filter timer reset, In".

The Evaluation time can be counted by the object "Filter timer counter, In/Out" and the timing is changed will send to the bus once 1h.

Parameter "Auto. operation function"

This parameter is used to enable Auto. Operation function. Options:

Disable

Enable

Parameter "Scene function"

This parameter is used to enable scene function of ventilation with total 5 scenes optional. Options:

Disable

Enable

——Parameter "x->Assign scene NO. (1..64,0 is inactive), x=1~5"

This parameter is used to set the scene number. Options: 0..64,0=inactive

——Parameter "Fan level"

This parameter is used to s et the Fan level of scene x. Options:

Off

Low

Medium

High

——Parameter "Heat Recovery"

This parameter is used to set the Heat recovery of Scene x. Options:

Off

On

This parameter is invalid when the heat recovery is disabled.

Px: Auto. Control

After the Auto. Control is activated, the ventilation system will automatically adjust the Fan level according to the control value.

The following parameters are visible when the Auto. control function of the ventilation system is enabled. The window of Auto. Control is shown in Figure 6.4_11:

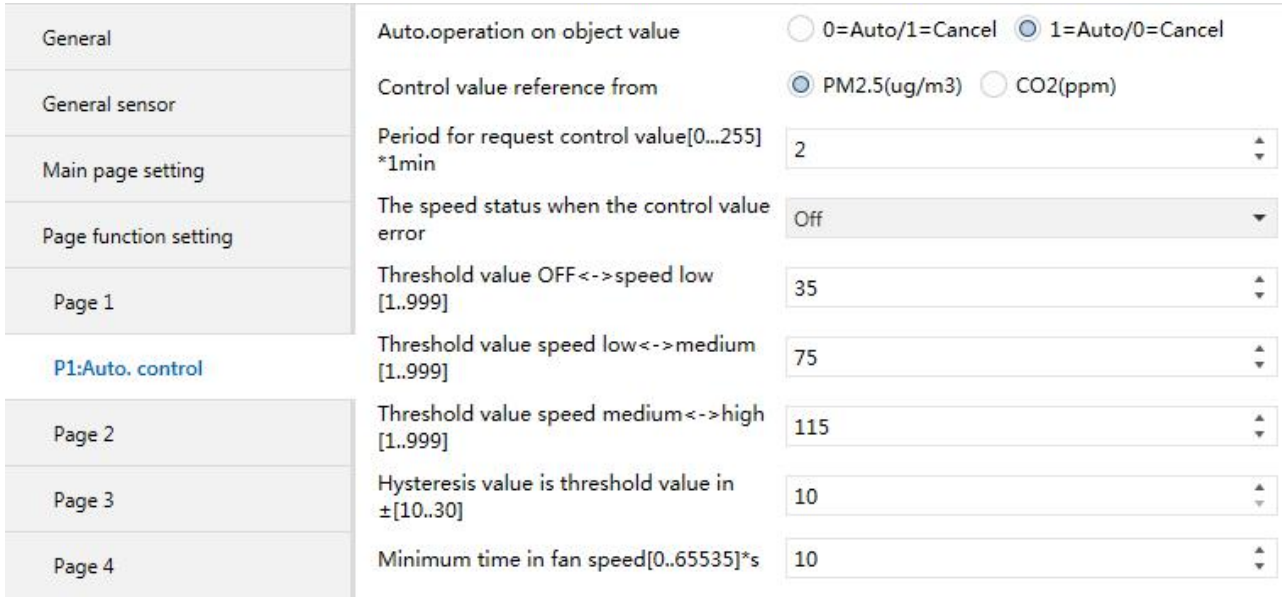


Figure 6.4_11 "Px: Auto. control" parameter setting interface

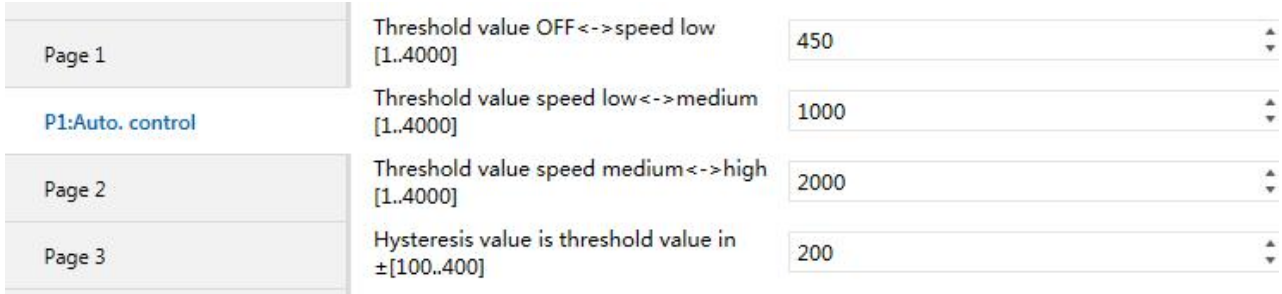


Figure 6.4_11 "Px: Auto. control" parameter setting interface

Parameter "Auto. Operation on object value"

This parameter is used to set the telegram value for activating the Auto. Operation. Options:

0=Auto/1=Cancel

1=Auto/0=Cancel

0=Auto/1=Cancel: *Auto. Operation is activated when the object "Automatic function, In/Out" receiving the telegram value "0".*

When receiving "1", the Auto. Operation exit;

1=Auto/0=Cancel: *Auto. Operation is activated when the object "Automatic function, In/Out" receiving the telegram value "1".*

When receiving "0", the Auto. Operation exit.

After bus voltage recovery or reset, Auto. Operation is not activated by default.

Parameter "Control value reference from"

This parameter is used to set the Control value reference from of Auto. Operation. Options:

PM2.5 (ug/m3)

CO2 (ppm)

Parameter "Period for request control value [0..255]*1min"

This parameter is used to set the period for request control value to external sensor. Options: **0...255**

Parameter "The speed status when the control value error"

This parameter is used to set the speed status when the control value error. Options:

Off

Low

Medium

High

Tip: When reading the control value from an external sensor, if there is no response, the external sensor is faulty by default, the control value error.

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

This parameter is used to define the threshold value OFF<->speed Low. Options: **1...999/1...4000**

If the control value is larger than or equal to the setting threshold value, the low Fan lever is run; if the control value is lower than the setting threshold value, the blower is turned off.

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

This parameter is used to switch the threshold value to low<->medium. If the control value is larger than or equal to the setting threshold value, the mid-range fan lever is run.

Options: **1...999/1...4000**

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

This parameter is used to switch the threshold value to medium<->high. If the control value is larger than or equal to the setting threshold value, the high-range fan lever is run.

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 function execution is guaranteed only in this situation:

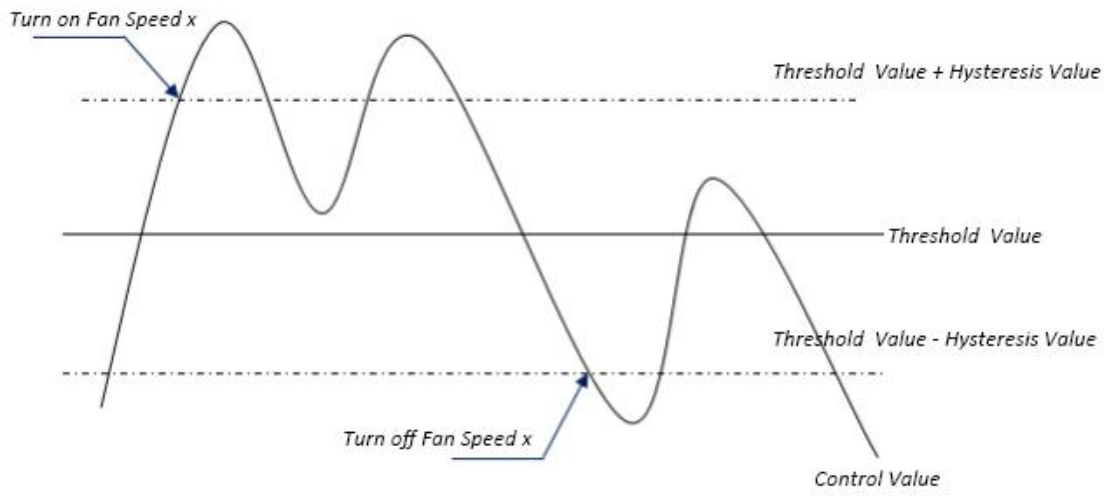
——Parameter "Hysteresis value is threshold value in +/- [10...30]/[100..400]"

This parameter is used to set the hysteresis value is threshold value. The hysteresis can prevent the fan from causing unnecessary actions when the control value fluctuates near the threshold value.

Options: **10...30/100..400**

For example, the control value is PM2.5, the hysteresis is 10, the threshold is 35, the upper threshold is 45 (threshold + hysteresis), and the lower threshold is 25 (threshold-hysteresis). When the control value is between 25 and 45, it will not Caused by the fan's action, still maintain the previous state.

Only less than 25 or larger than or equal to 45, the fan will change. As the following pictures show.



NOTE:

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

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

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

For example (1):

Take PM2.5 as an example

OFF <-> Low fan speed threshold value is 35

The threshold value of fan speed in low fan speed <-> is 55

The medium fan speed <-> high fan speed threshold value is 75

Hysteresis value is 25

The fan speed of the fan turbine increases from OFF:

The fan OFF state will change at a control value of 60 (≥25+35), and the 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 the fan's fan speed when descending from a high fan speed:

The fan's high fan speed will change at a control value of 50 (<75-25), and the 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<-> the threshold value of fan speed 1 is 20

Fan speed 1<-> the threshold of fan speed 2 is 40

Speed 2 <-> Speed 3 the threshold value is 70

Delay 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 delay is ignored when the value 41 is between 40 to 70),therefore the low speed is ignored.

When the control value 39 is received,the new speed will be at low(because the delay is ignored when the value 39 is between 20 to 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 delay is ignored when the value 39 is between 20 to 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"

It is used to define the stay time from current speed to higher or lower;it's the minimum time of fan speed switching.

Only when the stay time is over,can we switch the fan speed.

If the current speed is running long enough,the fan speed can be switched instantly.

Options:0…65535

0:stands for no minimum time in fan speed switching,but the delay time during the speed switching should be taken into consideration.

NOTE: The stay time in this parameter can only be enabled at the auto mode.

The minimum running time should be taken into consideration at every fan speed(including off) under the auto mode.

For example,when the current speed is at low while the target speed is high,the speed will be increasing gradually from low to medium and then finally to high.

And the speed will be switched only after the minimum time is over.The delay time for speed switching should also be taken into account.

6.5 Parameter window “Controller-General”

This is the general parameter setting for coil part of HVAC.

The parameters for fan and coil are separate.If the panel is used to control the Fan Coil unit,both fan and coil parameter should be taken into consideration to get the best control effect.

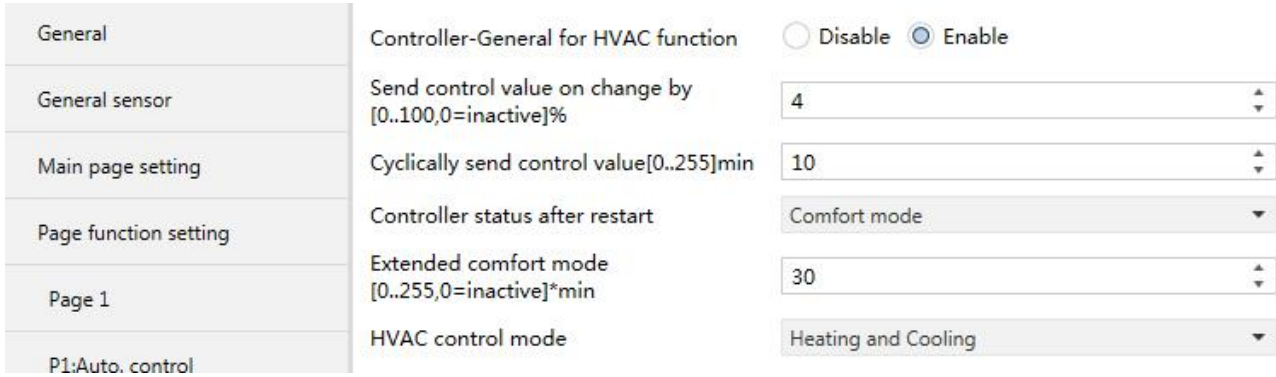
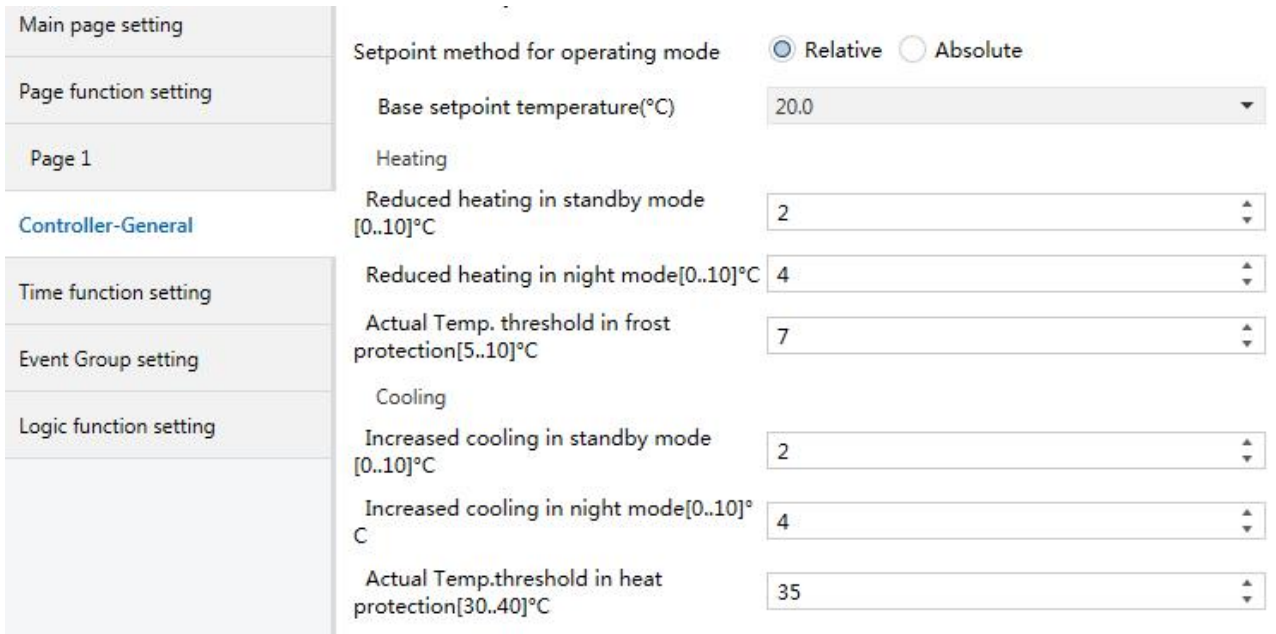


Fig. 6.5_1 “Controller-General” parameter setting interface



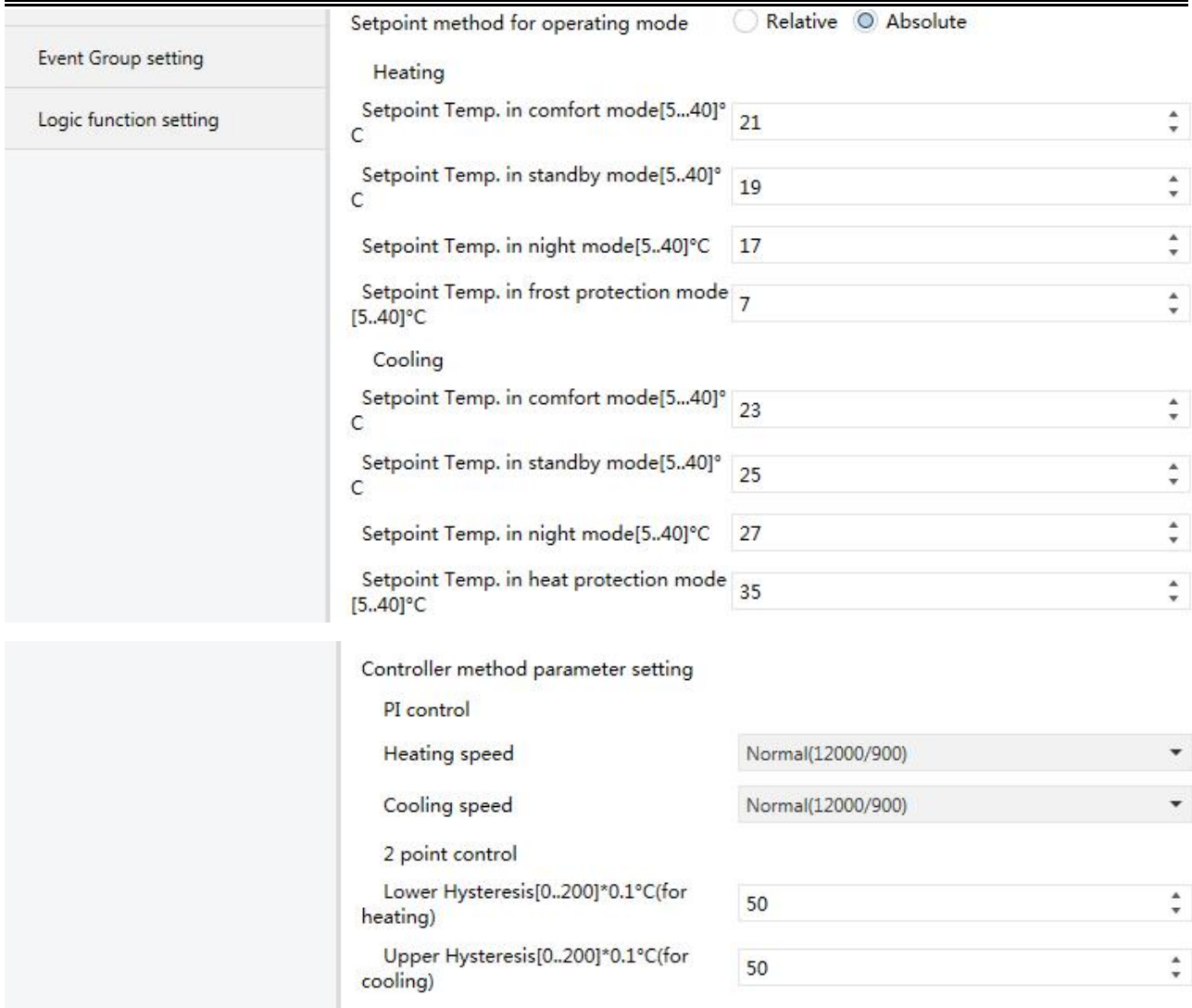


Fig. 6.5_2 "Controller-General"parameter setting interface

Parameter "Controller-General for HVAC function"

This parameter is used for enable and disable the HVAC in the page function.Options:

Disable

Enable

If the HVAC function is not used on the page function,choose "Disable".

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

This parameter is used to set how many value changed can the telegram be sent to the bus. Available from 0..100, 0 means no telegram sent to bus.

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

This parameter is used to set the time period of cyclically sending control value to the bus.Options:**0..255**

Parameter"Controller status after restart"

This parameter is used to set the operation mode when the device is rebooted.Options:

Standby mode

Comfort mode

Night mode

Frost/heat protection

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

This parameter is used to set the delay time of the confirm mode. Options: **0..255.**

When the setting value is “0”,the comfort mode is disabled.

When the setting value is from 1-255 and the room mode is switching from night to comfort,the comfort mode is enabled.

The comfort mode will be switch to night mode automatically when the delay time is over.

This parameter is only for the mode switch between comfort and night.

Parameter"HVAC Control mode"

This parameter is used to set the HVAC control mode. options:

Heating

Cooling

Heating and Cooling

Heating and cooling: Both heating and cooling can be fulfilled.The following parameter is available.

——Parameter “HVAC control system”

This parameter is used to control the HVAC control system(the water pipe type). Options:

2 pipes system

4 pipes system

2 pipes system: The 2-pipe version consists of a single water circulation loop for both hot and cold water. It is achieved only by connecting one fold valve to control flow of hot and cold water.

4 pipes system: The 4-pipe version has separate water circulation loops for both hot and cold water.2 separate valve is needed to control the flow of hot and cold water.

Parameter"Setpoint method for operation mode"

This parameter is used to set operation mode of temperature setpoint. Options:

Relative

Absolute

Relative: The night and standby mode temperature setpoint will be adjusted based on the defined basic temperature setpoint.

Absolute: Each mode have it’s own temperature Setpoint.

Enable “Relative”,the following parameters are available,which are used to set the temperature setpoint under Relative operation mode.

——Parameter“Basic setpoint temperature [℃]”

This parameter is used to set the basic temperature value.The setpoint temperature for the comfort mode is generated based on this value.Options:

10℃

10.5℃

..

35℃

This setpoint can be changed by the bus object“Setpoint adjustment”,and this value can be memorized when the bus power is off.

——Parameter“Reduced heating in standby mode [0..10]℃”

——Parameter“Increased cooling in standby mode [0..10]℃”

This parameter is used to set the temperature setpoint under standby mode.Options:**0...10 [℃]**

Heating:The temperature setpoint in the standby mode becomes the value,which the basic value reduce the set value here.

Cooling: The temperature setpoint in the standby mode becomes the value,which the basic value plus the set value here.

——Parameter“Reduced heating during night mode [0..10]℃”

——Parameter“Increased cooling during night mode [0..10]℃”

This parameter is used to set the temperature setpoint under night mode.Options:**0...10 [℃]**

Heating: The temperature setpoint in the night mode becomes the value,which the basic value reduce the set value here.

Cooling: The temperature setpoint in the night mode becomes the value,which the basic value plus the set value here.

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

This parameter is used to set heating function temperature setpoint under frost protection mode. Options: **5...10 [℃]**

When the room temperature is lower than the set value here,the controller will send a control telegram to the bus to active the relevant heating actuator to avoid low temperature in the room.

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

This parameter is used to set cooling function temperature setpoint under heat protection mode. Options:**30...40 [℃]**

When the room temperature is higher than the set value here,the controller will send a control telegram to the bus to active the relevant cooling actuator to avoid high temperature in the room.

Enable “Absolute”,the following parameters are available,which are used to set the temperature setpoint under Absolute operation mode.

——Parameter“Setpoint Temp. in comfort mode [5..40]℃”

——Parameter“Setpoint Temp. in standby mode [5..40]℃”

——Parameter“Setpoint Temp. in night 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)

This parameters is used to set the temperature setpoint of each mode. Options: **5-40**℃

Control method parameter setting:

The Following two parameters is used for the PI control method.

——Parameter“Heating speed”

——Parameter“Cooling speed”

This parameter is used to set the responding speed of the heating or cooling PI controller.Options:

Slow（12000/1800）

Normal（12000/900）

Fast（12000/450）

User defined

——Parameter“Proportional range (P value) 0...65,535”

——Parameter“Readjust time (I value) (0...65,535)*s ”

This two parameters are available when the option “User defined”is selected under the “Heating /Cooling speed”and used to set the PI value of the PI controller.

The following two parameters is used for 2 point control method:

——Parameter“Lower Hysteresis [0..200]*0.1℃” （For heating）

——Parameter“Upper Hysteresis [0..200]*0.1℃” （For cooling）

The parameter is used to set the delay value of the HVAC heating or cooling.Options:0..200

Under heating status,when the actual temperature(T)>setpoint temperature,stop heating.

When the actual temperature<=setpoint temperature-Delay value,start to heat.

For example,when the delay is 3℃,setpoint temperature is 22℃,T is higher than 22℃,then stop heating.

When T lower than 19℃,start to heat;When T is the range of 19-22℃,maintain the current running status.

Under cooling status,when the actual temperature(T)<setpoint temperature,stop cooling.

When the actual temperature>=setpoint temperature+Delay value,start to cool.

For example,when the delay is 3℃,setpoint temperature is 26℃,T is higher than 26℃,then stop cooling.

When T lower than 29℃,start to cool;When T is the range of 29-26℃,maintain the current running status.

6.6 Parameter window “Time function setting”

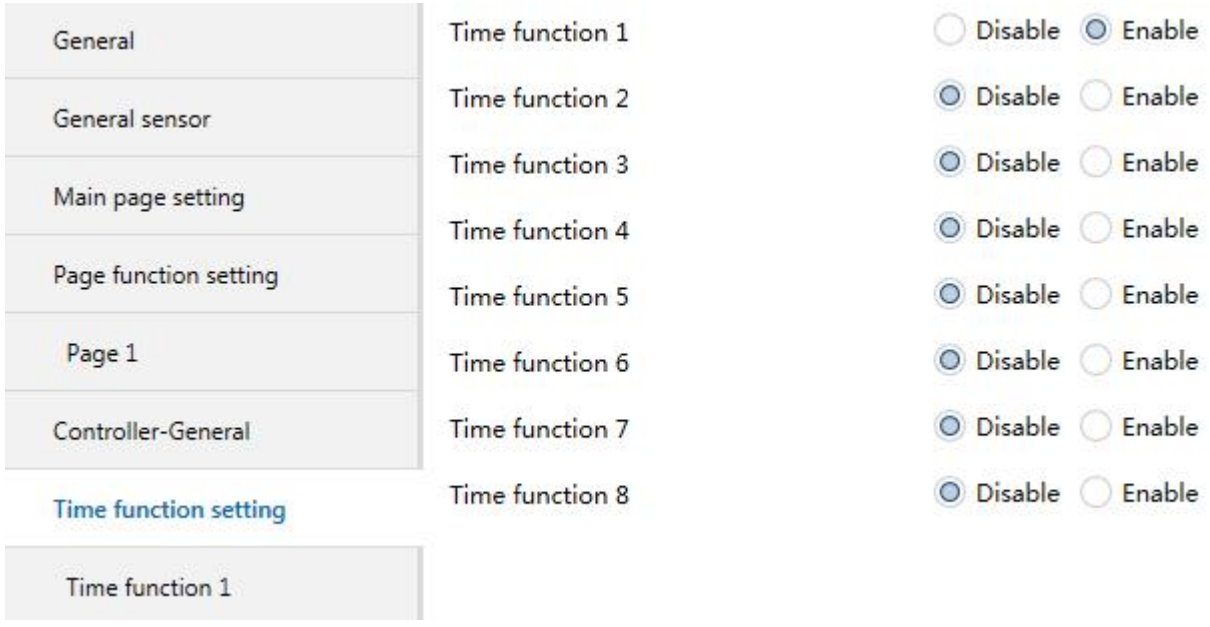


Fig 6.6_1“Time function setting--disable/enable” parameter setting interface

“Time function setting”parameter setting window is shown in Fig.6.6_1,it can enable at most 8 time function.

“Time function x (x=1..8)”parameter setting window is shown as the Fig,.6.6_2,it is used to set the timing and output value of every Timing etc.

Every Time function parameter is the same,so we just take one of them for example to explain everything setting.

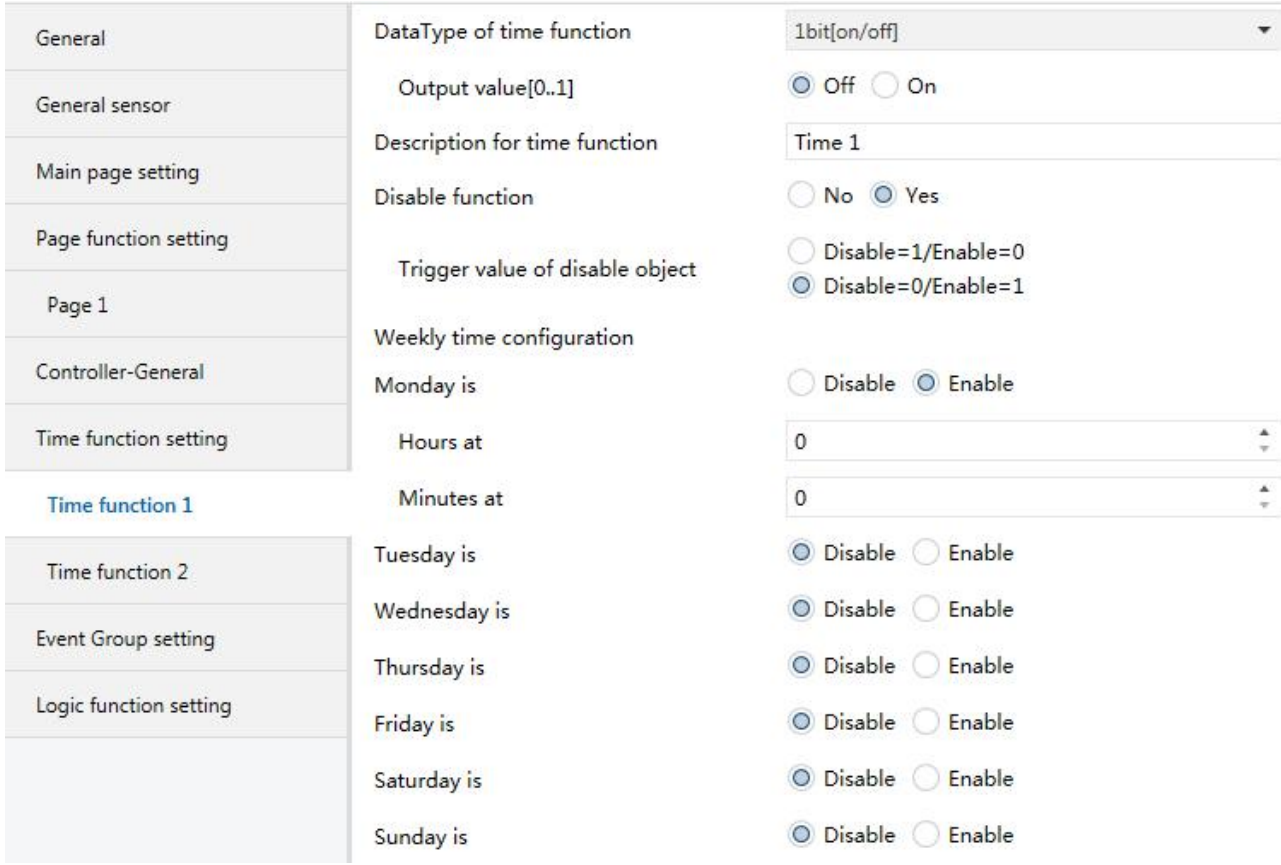


Fig 6.6_2"Time function x" parameter setting interface

Parameter"Time function x（x:1~8）"

This parameter is used to enable set the Time X Function.Options:

Disable

Enable

Parameter"DataType of time function"

This parameter is used to set the value database type, which is generated when the real time get to Time X. Options

1bit [on/off]

1byte unsigned value

1byte [scene control]

2byte unsigned value

——Parameter"Output value/scene No. ..."

This parameter is used to set the value , which is generated when the real time get to Time X.The value range is determined on the above database type.

Parameter"Description for Time function"

This parameter is used to set the Time x name,it support maximum 12 characters(6 Chinese characters).

Parameter"Disable function"

This parameter is used to set whether to set the disable object or enable the time function.The Options:

No

Yes

If choose yes,the default setting is enable.

——Parameter "Trigger value of disable object"

This parameter is used to set the trigger value of disable/enable

Disable=1/enable=0

Disable=0/enable=1

Weekly time configuration

The following parameters is are used to set the time of the Timing x,when it get to the set time,the action will be triggered.

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

This parameter is used to set the enable day of the week.The options:

Disable

Enable

——Parameter"Hours at"/ "Minutes at"

This parameter is used to set the accurate time of the day.The options:

Hour: **0..23**

Minute: **0..59**

6.7 Parameter window "Event Group setting"

"Event Group setting"parameter setting window is shown as Fig.6.7_1,it is used to enable the event group setting.There are 4 groups and each group have 8 output.See as the Fig.6.7_2.

Fig 6.7_1 "Event Group setting -- disable/enable" parameter setting interface

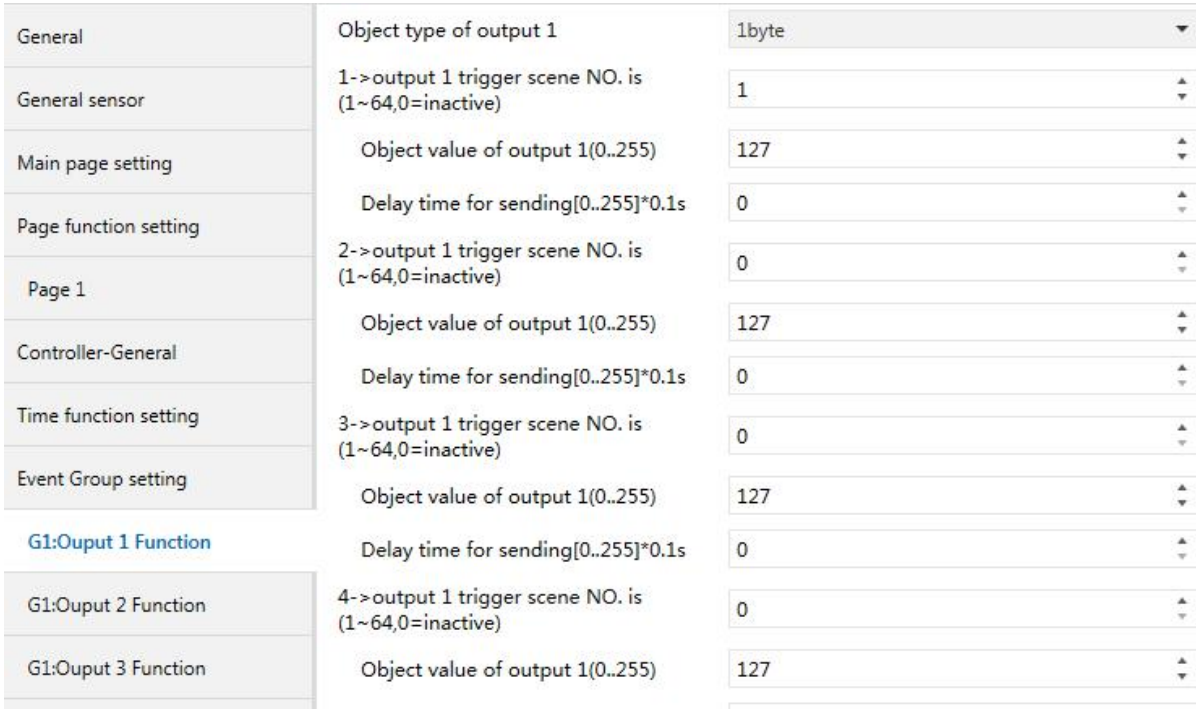


Fig 6.7_2 "G x: Output y Function" parameter setting interface

Parameter"Event Group x Function (x:1~4)"

This parameter is used to enable the event group.The options:

Disable

Enable

The 8 output is available when the certain group is enabled.

As the function of each 4 groups and each 8 output is the same,so we just take one of them for example to explain everything setting.

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

It is used to set the object type of output y.The options:

1bit

1byte

2byte

Parameter"z->Output y trigger scene NO. is(1~64,0=inactive)" (z:1~8)

This parameter is used to set the scene No.,which can trigger the output y.It support maximum 8 scenes of each output.The options: **0..64, 0=disable.**

The range of output value is determined by the data type of output y. **1bit 0..1/1byte 0..255/ 2byte 0..65535**

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

This parameter is used to set the delay time for sending to the bus.The options: **0..255**

6.8 Parameter window “Logic function setting”

“Logic function”parameter setting window is shown in Fig.6.8_1,it is used to enable the Logic function and at most 8 logic functions can be used.

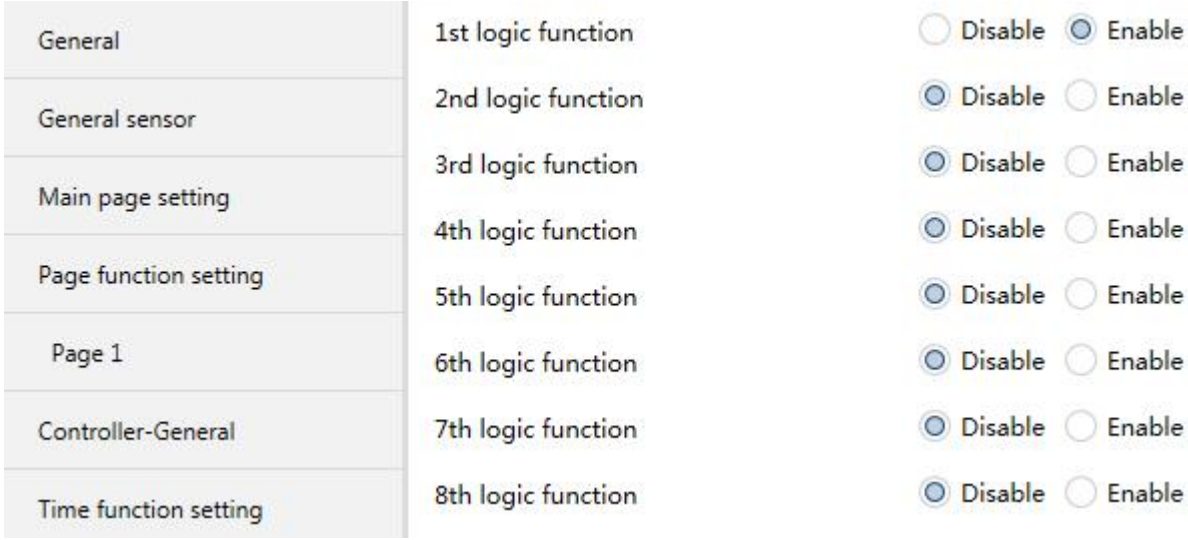


Fig 6.8_1 “Logic function -- disable/enable” parameter setting interface

Parameter“Function of channel”

This parameter is used to set the logic function of the channel.The options:

AND
OR
XOR
Gate forwarding
Threshold comparator
Format convert

As the parameter is similar to telecommunication object(only the logic algorithm is different),so we just choose one of them to explain.

6.8.1 “AND/OR/XOR”Function Parameter

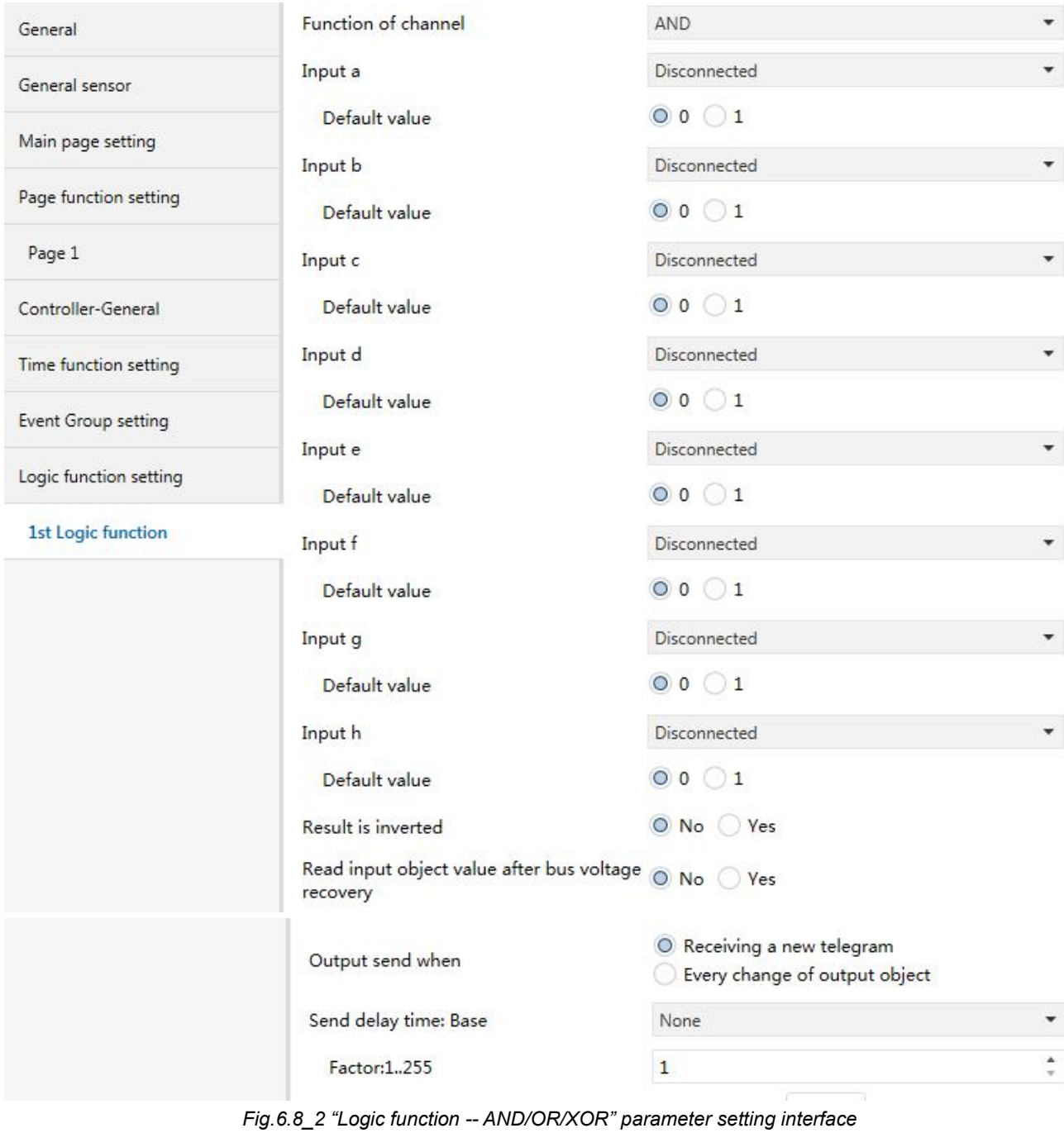


Fig.6.8_2 “Logic function -- AND/OR/XOR” parameter setting interface

Parameter“Input a/b/c/d/e/f/g//h”

This parameter is used to set whether and in which way the logic input x is involved in the operation.Options:

Disconnected

Normal

Inverted

Disconnected:Not involved in the operation.

Normal: Involved in the operation directly.

Inverted: Involved in the operation with inverted input.

NOTE: The initial value will not be inverted.

Parameter"Default value"

This parameter is used to set the initial input value of the logic input x.The options:

0

1

Parameter"Result is inverted"

This parameter is used to set whether to invert the logic operation result.The options:

No

Yes

No: Output directly.

Yes: Output the inverted output.

Parameter"Read input object value after bus voltage recovery"

This parameter is used to set whether to send read request to the logic input object after the bus recovered or programmed.

No

Yes

Parameter"Output send when"

This parameter is used to set the condition of sending the logic operation result.

Receiving a new telegram

Every change of output object

Receiving a new telegram:when a new logic input value is received,the logic operation result will always be sent to the bus.

Every change of output object:when the logic operation result changes,it will be sent to the bus.

NOTE: Although the logic operation result is not changed when doing the first logic operation,it also will be sent to the bus.

Parameter"Send delay time"

Base:

None

0.1s

1s

...

10s

25s

Factor: **1..255**

This parameter is used to set the delay time of the logic operation result sending to the bus.

Delay=Base x Factor,for example,when the base is “None”,there is no delay.

6.8.2 “Gate forwarding”function parameter

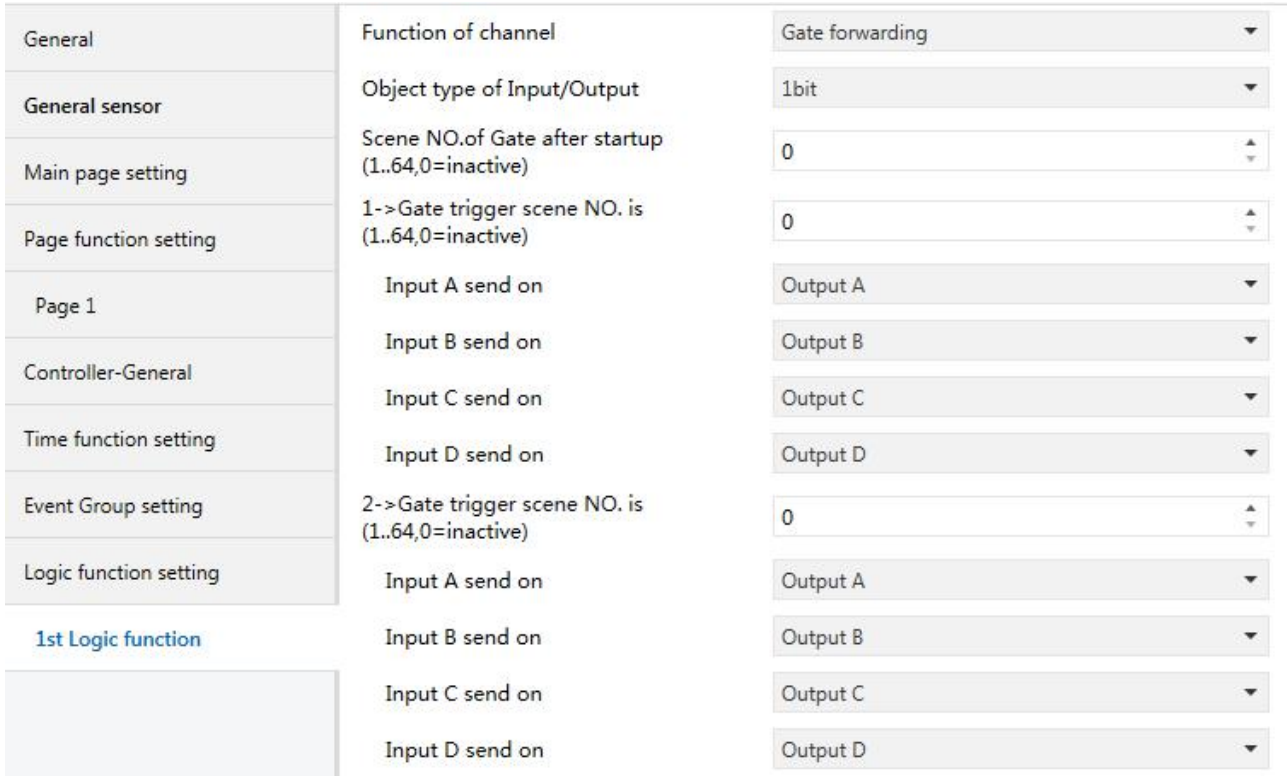


Fig.6.8_3“Logic function -- Gate forwarding” parameter setting interface

Parameter“Object type of Input/Output”

This parameter is used to set the data type of the input/output object.The options:

1bit

4bit

1byte

Parameter“Scene NO. Of Gate after startup (1..64, 0=inactive)”

This parameter is used to set the default activated Scene No. Of the logic Gate after device startup.This scene should be configured in the relevant parameter.

The options:**1..64,0＝inactive**

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

This parameter is used to set the gate triggered scene No..Each logic can support Maximum 8 scenes.The options: **1..64, 0=inactive.**

Parameter“Input A/B/C/D send on”

This parameter is used to set the output after the input getting through logic gate

Output A

Output B

..

Output B,C,D

Normally the input value is the same with the output value.But according to the options,one input can have 1 or more outputs.

NOTE: Before operation,the logic gate scene No.should be activated,or the default scene will be activated.

6.8.3 "Threshold comparator"function parameter

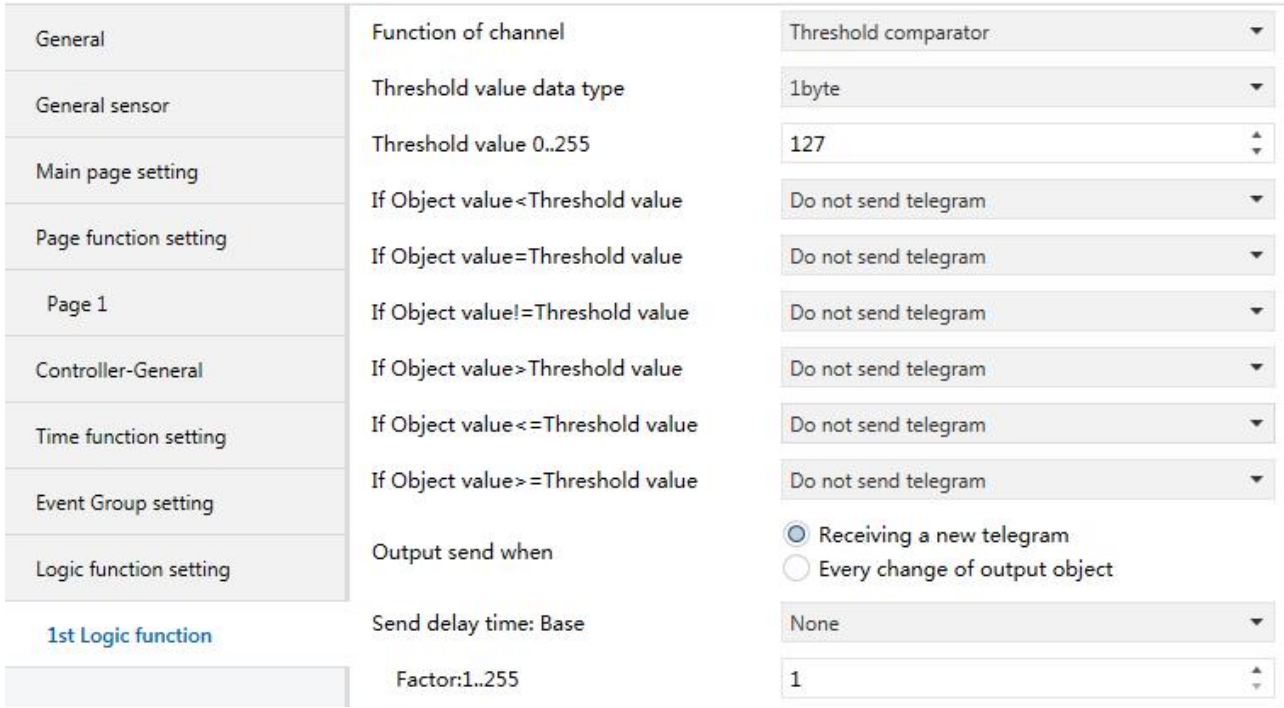


Fig.6.8_4"Logic function -- Threshold comparator" parameter setting interface

Parameter"Threshold value data byte"

This parameter is used to set the threshold value data type.The options are:

4bit

1byte

2byte

4byte

Parameter"Threshold value..."

This parameter is used to set the threshold value.The range is determined by 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"

This parameter is used to set the logic operation value which will be sent to the bus,when the input threshold is less than,equal to,not equal to,more than,no more than,no less than the preset value.The options:

Do not send telegram

Send value "0"

Send value "1"

Do not send telegram: The object value is ignored.

Send value "0"/"1":Send value 0 or 1 to the bus.

If there is conflict between each setting,the logic value will be sent according to the last condition.

For example:parameter"If Object value=Threshold value",Set Send value "0", Parameter"If Object value<=Threshold value",Set Send value "1", When the object is equals to the threshold value,the logic operation result 1 will be sent to the bus.

Parameter"Output send when"

This parameter is used to set the condition of sending the logic operation result.The options:

Receiving a new telegram

Every change of output object

Receiving a new telegram:when a new logic input value is received,the logic operation result will always be sent to the bus.

Every change of output object:When the logic operation result changes,it will be sent to the bus.

NOTE:Although the logic operation result is not changed when doing the first logic operation,it also will be sent to the bus.

Parameter"Send delay time"

Base:

None

0.1s

1s

...

25s

Factor: **1..255**

This parameter is used to set the delay time of the logic operation result sending to the bus. Delay=Base x Factor,for example,when the base is “None”,there is no delay.

6.8.4 “Format convert”function parameter

Fig.6.8_5 “Logic function -- Format convert” parameter setting interface

Parameter“Function”

This parameter is used to set the data convert format.The 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”

This parameter is used to set the condition of sending the logic operation result.The options:

Receiving a new telegram

Every change of output object

Receiving a new telegram:when a new logic input value is received,the logic operation result will always be sent to the bus.

Every change of output object:when the logic operation result changes,it will be sent to the bus.

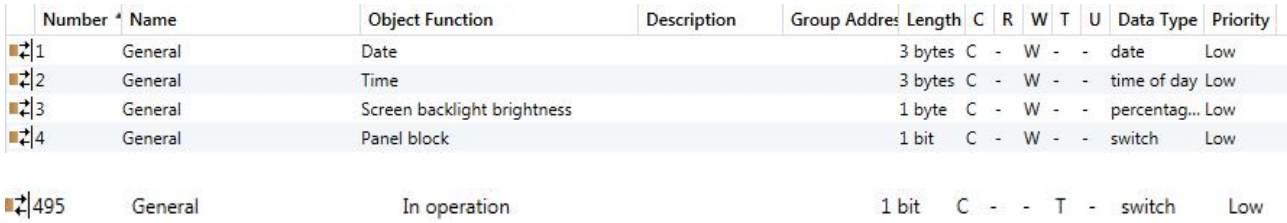
NOTE:Although the logic operation result is not changed when doing the first logic operation,it also will be sent to the bus.

Chapter 7 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.

7.1 Communication object "General Setting"



Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
1	General	Date			3 bytes	C	-	W	-	-	date	Low
2	General	Time			3 bytes	C	-	W	-	-	time of day	Low
3	General	Screen backlight brightness			1 byte	C	-	W	-	-	percentag...	Low
4	General	Panel block			1 bit	C	-	W	-	-	switch	Low
495	General	In operation			1 bit	C	-	-	T	-	switch	Low

Fig.7.1 communication object "General Setting"

No.	Object Function	Name	Data Type	Flags	DPT
1	**Date**	**General**	**3Byte**	**C,W**	**11.001 date**
The communication object is used to modify show date in TFT system via receiving a telegram with date.					
2	**Time**	**General**	**3Byte**	**C,W**	**10.001 time of day**
The communication object is used to modify show time in TFT system via receiving a telegram with time.					
3	**Screen backlight brightness**	**General**	**1byte**	**C,W**	**5.001 percentage**
The communication object is used to modify the brightness of the panel.The brightness output range:10~100%;When the telegram value is less than 10%,the TFT brightness is always be 10%.					
4	**Panel block**	**General**	**1bit**	**C,W**	**1.001 switch**
The communication object is used to lock the panel.After panel locked,the operation on the panel will not be responded and nor record for these operations.The telegrams: 0 —— Unlock 1 —— Lock					
495	**In operation**	**General**	**1bit**	**C,T**	**1.001 switch**
The communication object is used to send the telegram 1 to the bus cyclically,which indicate the device is running properly.					

Table. 7.1 "General "communication object table

7.2 Communication object “General sensor”

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
365	Internal sensor	Actual temperature			2 bytes	C	R	-	T	-	temperatu...	Low
367	External sensor	AQI			2 bytes	C	-	W	T	U		Low
368	External sensor	PM2.5			2 bytes	C	-	W	T	U		Low
369	External sensor	PM10			2 bytes	C	-	W	T	U		Low
370	External sensor	Humidity			2 bytes	C	-	W	T	U	humidity (...	Low
371	External sensor	VOC			2 bytes	C	-	W	T	U		Low
372	External sensor	CO2			2 bytes	C	-	W	T	U	parts/milli...	Low
373	External sensor	Illumination			2 bytes	C	-	W	T	U	lux (Lux)	Low
496	Internal sensor	Temp.correction(-10..10)°C			2 bytes	C	-	W	-	-	temperatu...	Low

Fig.7.2 “General sensor”communication object

No.	Function	Name	Data Type	Flags	DPT
365	**Actual temperature**	**Internal sensor**	**2Byte**	**C,R,T**	**9.001 temperature**
The communication object is used to send the temperature value of internal sensor to the bus.The value ranges:-50~99.8℃					
366	**Temperature**	**External sensor**	**2Byte**	**C,W,T,U**	**9.001 temperature**
The communication object is used to send the temperature value which is sent from the bus.The value ranges:-50~99.8℃					
367	**AQI**	**External sensor**	**2byte**	**C,W,T,U**	**7.001 pulses**
The communication object is used to receive the AQI value from the bus and update it to the panel.The value ranges:0~500 **NOTE: Currently the object is reserved.**					
368	**PM2.5**	**External sensor**	**2byte**	**C,W,T,U**	**7.001 pulses**
The communication object is used to receive the PM2.5 value from the bus and update it to the panel.Unit is ug/m^3. The value ranges:0~999ug/m^3 **NOTE: Currently the object is reserved.**					
369	**PM10**	**External sensor**	**2byte**	**C,W,T,U**	**7.001 pulses**
The communication object is used to receive the PM10 value from the bus and update it to the panel.Unit is ug/m^3. The value ranges:0~999ug/m^3 **NOTE: Currently the object is reserved.**					
370	**Humidity**	**External sensor**	**2byte**	**C,W,T,U**	**9.007 humidity**
The communication object is used to receive the humidity value from humidity sensor in the bus. The value ranges:0~100% **NOTE: Currently the object is reserved.**					
371	**VOC**	**External sensor**	**2byte**	**C,W,T,U**	
The communication object is used to receive the VOC value from the bus and update it to the panel.Unit is mg/m^3. The value ranges:0~9.99mg/m^3 **NOTE: Currently the object is reserved.**					

372	**CO2**	**External sensor**	**2byte**	**C,W,T,U**	**9.008 DPT_Value_AirQuality**
The communication object is used to receive the CO2 value from the bus and update it to the panel.Unit is ppm The value ranges:0~4000ppm. **NOTE: Currently the object is reserved.**					
373	**Illuminance**	**External sensor**	**2byte**	**C,W,T,U**	**9.004 Lux**
The communication object is used to receive the illuminance value from the bus and update it to the panel.Unit is lux. The value ranges:0~65535lux **NOTE: Currently the object is reserved.**					
496	**Temp.correction(-10..10)℃**	**Internal sensor**	**2Byte**	**C,W**	**9.001 temperature**
The communication object is used to modify the temperature value measured by internal sensor based on the bus.					

Table.7.2"General sensor"general communication object table

7.3 Communication object of function page

7.3.1 "Lighting" communication object

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-Icon 1	Switch			1 bit	C	-	-	T	-	switch	Low
7	Page 1-Icon 1	Switch status			1 bit	C	-	W	T	U	switch	Low
9	Page 1-Icon 2	Switch			1 bit	C	-	-	T	-	switch	Low
10	Page 1-Icon 2	Brightness dimming			1 byte	C	-	-	T	-	percentag...	Low
11	Page 1-Icon 2	Brightness status			1 byte	C	-	W	T	U	percentag...	Low

Fig.7.3_1 "Lighting"communication object

No.	Object Function	Name	Data Type	Flags	DPT
5/9	**Switch**	**Page x-Icon y**	**1bit**	**C, T**	**1.001 switch**
The communication object is used to send out an ON telegram or an OFF telegram to the bus to turn on or off lighting. Telegram value: 1——ON 0——OFF					
7	**Switch Status**	**Page x-Icon y**	**1bit**	**C,W,T,U**	**1.001 switch**
The communication object is used to receive a telegram with on/off status response from dimmer or other bus device, and in the TFT system display the current status via graphic button.					
10	**Brightness dimming**	**Page x-Icon y**	**1byte**	**C,T**	**5.001 percentage**
The communication object is used to send out a telegram with the brightness value to the bus. Telegram value: 0…100%					
11	**Brightness Status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**5.001 percentage**
The communication object is used to receive a telegram with lighting brightness status response from dimmer or other bus device.Telegram value:0…100%					

Table 7.3_1 "Lighting"communication object

7.3.2 "Blind/Shutter" communication object

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-Icon 1	Open/Close			1 bit	C	-	-	T	-	open/close	Low
6	Page 1-Icon 1	Stop			1 bit	C	-	-	T	-	step	Low
9	Page 1-Icon 2	Blind position			1 byte	C	-	-	T	-	percentag...	Low
11	Page 1-Icon 2	Position status			1 byte	C	-	W	T	U	percentag...	Low
13	Page 1-Icon 3	Shutter position			1 byte	C	-	-	T	-	percentag...	Low
14	Page 1-Icon 3	Slat position			1 byte	C	-	-	T	-	percentag...	Low
15	Page 1-Icon 3	Position status			1 byte	C	-	W	T	U	percentag...	Low
16	Page 1-Icon 3	Slat position status			1 byte	C	-	W	T	U	percentag...	Low

Fig.7.3_2 "Curtain"communication object

No.	Object Function	Name	Data type	Flags	DPT
5	**Open/Close**	**Page x-Icon y**	**1bit**	**C, T**	**1.009 open/close**
6	**Stop**	**Page x-Icon y**	**1bit**	**C, T**	**1.007 step**

Curtain with 3 Buttons-Open/Close/Stop is used for the open/close or up/down curtain,the following is the relevant object:

Obj.5:the communication object is used to send the control telegram(open/close)to the bus to control the open/close or up/down curtain.The telegram value:

1——Close the curtain or down the curtain

0—— open the curtain or up the curtain

Obj.6:The communication object is used to send the stop telegram to the bus to stop the curtain movement. Telegram value:1——STOP

9	**Blind position**	**Page x-Icon y**	**1byte**	**C,T**	**5.001 percentage**
11	**Position status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**5.001 percentage**

Curtain with 1Slider-Move Percentage is suitable for open/close curtain, which is controlled by percentage. Object illustration as listed below:

Obj.9: The communication object is used to send messages of controlling curtain position to the BUS. Message 0…100%

Obj.11: The communication object is used to receive response from curtain controller about the position status of curtain. Message 0…100%

13	**Shutter position**	**Page x-Icon y**	**1byte**	**C,T**	**5.001 percentage**
14	**Slat position**	**Page x-Icon y**	**1byte**	**C,T**	**5.001 percentage**
15	**Position status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**5.001 percentage**
16	**Slat position status**	**Page x-Icon y**	**1byte**	**C,W,T,U**	**5.001 percentage**

Curtain with 2 Sliders-Move/Adj. Percentage is suitable for blinds, which is controlled by percentage. Object illustration as listed below:

Obj.13: The communication object is used to send messages of controlling the position of curtain to the BUS. Message 0…100%.

Obj.14: The communication object is used to send messages of controlling the angle position of curtain to the BUS. Message 0…100%.

Obj.15: The communication object is used to receive response from curtain actuator about the

status of the curtain position. Message 0…100%.

Obj.16: The communication object is used to receive response from curtain actuator about the status of the curtain angle position. Message 0…100%.

Table 7.3_2 "Curtain" communication object Table

7.3.3 "Value send" communication object

There are many data types & communication objects about this function, hence,not every example will be listed in Figure 7.3.

The realized operation for communication objects of different data types are the same, which is to deliver parameter preset value, while the only difference is the range of the delivering value.

It can distinguish long press and short press, or not distinguish, when distinguishing,

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-Icon 1	Send 1bit value			1 bit	C	-	-	T	-	switch	Low
6	Page 1-Icon 1	Send 1bit value, long			1 bit	C	-	-	T	-	switch	Low
9	Page 1-Icon 2	Send 2bits value			2 bit	C	-	-	T	-	switch con...	Low
10	Page 1-Icon 2	Send 2bits value, long			2 bit	C	-	-	T	-	switch con...	Low

Fig. 7.3_3 "Curtain" communication object

No.	Object Function	Name	Data Type	Flags	DPT
5/9...	**Send 1bit/2bit/4bit/ 1byte/2byte value**	**Page x-Icon y**	**1bit 2bit 4bit 1byte 0..255 1byte 0..100% 1byte scene 2byte -32768..32767 2byte 0..65535**	**C,T**	**1.001 switch 2.001 switch control 3.007 dimming control 5.010 counter pulses 5.001 percentage 18.001 scene control 8.001 pulses difference 7.001 pulses**
The communication object is used to send input value of object. When distinguishing long press & short press, only object input value of short press operation will be transmit. The range of numerical value is decided by data type. Different data type of communication object will lead to different range of settable object value. Data type is decided by parameter.					
6/10...	**Send 1bit/2bit/4bit/ 1byte/2byte value, long**	**Page x-Icon y**	**1bit 2bit 4bit 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 5.001 percentage 8.001 pulses difference 7.001 pulses**
When distinguishing long press and short press, the communication object will be visible, which is used to transmit object input value for long press operation.					

Table 7.3_3"Value send" communication object Table

7.3.4 “Air Quality display” communication object

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-Air Quality	AQI			2 bytes	C	-	W	T	U		Low
6	Page 1-Air Quality	PM2.5			2 bytes	C	-	W	T	U		Low
7	Page 1-Air Quality	PM10			2 bytes	C	-	W	T	U		Low
8	Page 1-Air Quality	Temperature			2 bytes	C	-	W	T	U	temperatu...	Low
9	Page 1-Air Quality	Humidity			2 bytes	C	-	W	T	U	humidity (...	Low
10	Page 1-Air Quality	VOC			2 bytes	C	-	W	T	U		Low
11	Page 1-Air Quality	CO2			2 bytes	C	-	W	T	U	parts/milli...	Low

Fig. 7.3_4 “Air Quality display” communication object

No.	Object Function	Name	Data Type	Flags	DPT
5	**AQI**	**Page x-Air Quality**	**2byte**	**C,W,T,U**	**7.001 pulses**
The communication object is used to receive input value of AQI, acquire corresponding value from the BUS and update to display. Range: 0~500					
6	**PM2.5**	**Page x-Air Quality**	**2byte**	**C,W,T,U**	**7.001 pulses**
The communication object is used to receive input value of PM2.5, acquire corresponding value from the BUS and update to display. The unit is ug/m^3. Range: 0~999ug/m^3.					
7	**PM10**	**Page x-Air Quality**	**2byte**	**C,W,T,U**	**7.001 pulses**
The communication is used to receive input value of PM10, acquiring corresponding value from the BUS and updating to display. The unit is ug/m^3. Range: 0~999ug/m^3.					
8	**Temperature**	**Page x-Air Quality**	**2Byte**	**C,W,T,U**	**9.001 temperature**
The communication object is used to receive temperature measurement value sent by the temperature sensor from the BUS. Range: -40~40℃.					
9	**Humidity**	**Page x-Air Quality**	**2byte**	**C,W,T,U**	**9.007 humidity**
The communication object is used to receive humidity measurement value sent by the humidity sensor from the BUS. Range: 0~100%					
10	**VOC**	**Page x-Air Quality**	**2byte**	**C,W,T,U**	
The communication object is used to receive input value of VOC, acquiring corresponding value from the BUS and updating to display. The unit is mg/m^3. Range: 0~9.99mg/m^3. The object uses a non-standard data type, and the value is reduced based on the data point type 7.001 pulses. For example, the received value is 500, and the actual display value is 5.00 mg/m3.					
11	**CO2**	**Page x-Air Quality**	**2byte**	**C,W,T,U**	**9.008 DPT_Value_AirQuality**
The communication object is used to receive input value of CO2, acquiring corresponding value from the BUS and updating to display. The unit is ppm. The range: 0~4000ppm.					

Table 7.3_4“Air Quality display” communication object Table

7.3.5 "HVAC" communication object

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-HVAC Input	Humidity			2 bytes	C	-	W	T	U	humidity (...	Low
6	Page 1-HVAC Input	External temperature sensor			2 bytes	C	-	W	T	U	temperatu...	Low
7	Page 1-HVAC Input	Setpoint adjustment			2 bytes	C	-	W	-	-	temperatu...	Low
8	Page 1-HVAC Input	Switch Heating/Cooling mode			1 bit	C	-	W	-	U	cooling/h...	Low
9	Page 1-HVAC Input	Comfort mode			1 bit	C	-	W	-	-	switch	Low
10	Page 1-HVAC Input	Night mode			1 bit	C	-	W	-	-	switch	Low
11	Page 1-HVAC Input	Frost/Heat protection mode			1 bit	C	-	W	-	-	switch	Low
12	Page 1-HVAC Input	Standby mode			1 bit	C	-	W	-	-	switch	Low
13	Page 1-HVAC Input	Fan speed low			1 bit	C	-	W	T	U	switch	Low
14	Page 1-HVAC Input	Fan speed medium			1 bit	C	-	W	T	U	switch	Low
15	Page 1-HVAC Input	Fan speed high			1 bit	C	-	W	T	U	switch	Low
16	Page 1-HVAC Input	Fan Automatic operation			1 bit	C	-	W	T	U	switch	Low
17	Page 1-HVAC Output	Instantaneous setpoint			2 bytes	C	R	-	T	-	temperatu...	Low
18	Page 1-HVAC Output	Heating/Cooling mode			1 bit	C	R	-	T	-	cooling/h...	Low
19	Page 1-HVAC Output	Comfort mode			1 bit	C	-	-	T	-	switch	Low
20	Page 1-HVAC Output	Night mode			1 bit	C	-	-	T	-	switch	Low
21	Page 1-HVAC Output	Frost/heat protection mode			1 bit	C	-	-	T	-	switch	Low
22	Page 1-HVAC Output	Standby mode			1 bit	C	-	-	T	-	switch	Low
23	Page 1-HVAC Output	Heating control value			1 bit	C	-	-	T	-	switch	Low
24	Page 1-HVAC Output	Cooling control value			1 bit	C	-	-	T	-	switch	Low
25	Page 1-HVAC Output	Fan speed low			1 bit	C	-	-	T	-	switch	Low
26	Page 1-HVAC Output	Fan speed medium			1 bit	C	-	-	T	-	switch	Low
27	Page 1-HVAC Output	Fan speed high			1 bit	C	-	-	T	-	switch	Low
28	Page 1-HVAC Output	Fan Automatic operation			1 bit	C	-	-	T	-	switch	Low
29	Page 1-HVAC Input	Outdoor temperature			2 bytes	C	-	W	T	U	temperatu...	Low
9	Page 1-HVAC Input	HVAC mode			1 byte	C	-	W	-	-		Low
13	Page 1-HVAC Input	Fan speed			1 byte	C	-	W	T	U	counter p...	Low
19	Page 1-HVAC Output	HVAC mode			1 byte	C	R	-	T	-		Low
25	Page 1-HVAC Output	Fan speed			1 byte	C	-	-	T	-	counter p...	Low
23	Page 1-HVAC Output	Heating control value			1 byte	C	-	-	T	-	percentag...	Low
24	Page 1-HVAC Output	Cooling control value			1 byte	C	-	-	T	-	percentag...	Low

Fig. 7.3_5 "HVAC" communication object

No.	Object Function	Name	Data Type	Flags	DPT
5	**Humidity**	**Page x- HVAC Input**	**2byte**	**C,W,T,U**	**9.007 humidity**
The communication object is used to receive humidity measurement value sent by the humidity sensor from the BUS. The range: 0~100%					
6	**External temperature sensor**	**Page x- HVAC Input**	**2byte**	**C,W,T,U**	**9.001 temperature**
The communication object is used to receive temperature measurement value sent by the temperature sensor from the BUS. Range: -50~99.8℃.					
7	**Setpoint adjustment**	**Page x- HVAC Input**	**2byte**	**C,W**	**9.001 temperature**
When the set temperature is opposite adjustment, the adjustment of set temperature is only applied for the mode itself under protection mode. Opposite changes of temperature adjustment of other mode could be applied to set temperature of all modes(except the protection mode). Under the circumstance of definite set temperature, the adjustment of set temperature is only used for all current modes.					

When the set temperature is for definite adjustment, the communication object is used for temperature set value of modifying current room operation mode.

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

The communication object is used to receive status feedback of heating and cooling from the BUS. The touch panel will update icon display according to the received message value. Message value:

1——Heating
0——Cooling

9	**HVAC mode Comfort mode**	**Page x-HVAC Input**	**1byte 1bit**	**C,W**	**20.102 DPT_HVAC Mode 1.001 switch**
10	**Night mode**	**Page x-HVAC Input**	**1bit**	**C,W**	**1.001 switch**
11	**Frost/heat protection mode**	**Page x-HVAC Input**	**1bit**	**C,W**	**1.001 switch**
12	**Standby mode**	**Page x-HVAC Input**	**1bit**	**C,W**	**1.001 switch**

Room operation mode can receive status feedback via 4 1bit object(object 9.10.11.12) or1 1byte object(HVAC mode).

When it's 1bit: object 9: comfort mode, object 10: night mode, object 11: protection mode, object 12: standby mode.

When the object receives message 1, corresponding mode will be activated, and the mode display status will also update to relative mode on the panel.

When it's 1byte: the relation between input value and operation mode is as following:no:0: unused

1: Comfort mode

2: Standby mode

3: Night mode

4: Protection mode

5-255: Unused

13	**Fan speed Fan speed low**	**Page x-HVAC Input**	**1byte 1bit**	**C,W,T,U**	**5.010 counter pulses 1.001 switch**
14	**Fan speed medium**	**Page x-HVAC Input**	**1bit**	**C,W,T,U**	**1.001 switch**
15	**Fan speed high**	**Page x-HVAC Input**	**1bit**	**C,W,T,U**	**1.001 switch**

Wind speed can receive status feedback via object of 3 1bit(object 13.14.15) or object of 1 1byte.

When it's 1bit: object 13: low speed, object 14: middle wind speed, object15: high speed.

When the object receives message 1, corresponding wind speed will be activated, and wind display status will also update to relative wind speed on the panel.

When it's 1byte: wind speed status value will be defined by parameter. When object receive appointed value, and wind speed display status will also update to relative wind speed on the panel.

16	**Fan automatic operation**	**Page x-HVAC Input**	**1bit**	**C,W,T,U**	**1.001 switch**

The object is used to receive status feedback of automatic controlled wind speed.

17	**Instantaneous setpoint**	**Page x-HVAC output**	**2byte**	**C,R,T**	**9.001 temperature**
The communication object is used to send temperature set value of current operation mode to BUS.					
18	**Heating/Cooling mode**	**Page x-HVAC output**	**1bit**	**C,R,T**	**1.100 cooling/heating**
The communication object is used to send messages of switching cooling and heating function to the BUS. Message“1”——heating Message“0”——cooling					
19	**HVAC mode Comfort mode**	**Page x-HVAC output**	**1byte 1bit**	**C,R,T C,T**	**20.102 DPT_HVACMode 1.001 switch**
20	**Night mode**	**Page x-HVAC output**	**1bit**	**C,T**	**1.001 switch**
21	**Frost/heat protection mode**	**Page x-HVAC output**	**1bit**	**C,T**	**1.001 switch**
22	**Standby mode**	**Page x-HVAC output**	**1bit**	**C,T**	**1.001 switch**
The communication object is used to send message of reporting room operation mode to the BUS. When object type is “1byte”, different message means different work mode, such as: 0: remaining, 1: comfort mode, 2: standby mode, 3: night mode, 4: freezing protection/heating protection, 5~255: remaining, unused. When the object type is 1bit, switching to corresponding mode, object of corresponding mode sends message “1” to the BUS.					
23	**Heating control value**	**Page x-HVAC output**	**1byte/1bit**	**C,T**	**5.001 percentage 1.001 switch**
24	**Cooling control value**	**Page x-HVAC output**	**1byte/1bit**	**C,T**	
The communication object is used to send controlling value of heating or cooling function, to control the switch of HVAC valve, and adjust internal temperature. Sending message value（switch on/off with 2-point control）: on/off Sending message value（switch PWM with PI control）: on/off Sending message value（continuous control with PI control）: 0…100%					
25	**Fan speed Fan speed low**	**Page x-HVAC output**	**1byte 1bit**	**C,T**	**5.010 counter pulses 1.001 switch**
26	**Fan speed medium**	**Page x-HVAC output**	**1bit**	**C,T**	**1.001 switch**
27	**Fan speed high**	**Page x-HVAC output**	**1bit**	**C,T**	**1.001 switch**
The communication object is used to send message of controlling wind speed to the BUS. When it’s 1bit: object 25: low wind speed, object 26: middle wind speed, object 27: high wind speed. Activating corresponding wind speed on the panel, corresponding object send message “1” to the BUS. When 1byte: corresponding message value of each wind speed will be defined by parameter. When activating corresponding wind speed on the panel, object 25 will send corresponding message value of wind speed to the BUS.					

28	Fan Automatic operation	Page x-HVAC output	1bit	C,T	1.001 switch
The communication object is used to send automatic controlling message of wind speed to the BUS.					
29	Outdoor temperature	Page x-HVAC Input	2byte	C,W,T,U	9.001 temperature
The communication object is used to receive temperature measurement value sent by the outside temperature sensor from the BUS, and display outside temperature on the panel.					

Table 7.3_5 "HVAC" communication object Table

7.3.6 "Air conditioner" communication object

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-AC	Power on/off			1 bit	C	-	-	T	-	switch	Low
6	Page 1-AC	Status of Power			1 bit	C	-	W	T	U	switch	Low
7	Page 1-AC	Control mode			1 byte	C	-	-	T	-	counter p...	Low
8	Page 1-AC	Status of control mode			1 byte	C	-	W	T	U	counter p...	Low
11	Page 1-AC	Fan speed			1 byte	C	-	-	T	-	counter p...	Low
12	Page 1-AC	Stauts of Fan speed			1 byte	C	-	W	T	U	counter p...	Low
15	Page 1-AC	Temperature setpoint			2 bytes	C	-	W	T	U	temperatu...	Low
16	Page 1-AC	Outdoor temperature			2 bytes	C	-	W	T	U	temperatu...	Low

Fig. 7.3_6 "Air conditioner" communication object（VRV Unit _1byte）

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-AC	Power on/off			1 bit	C	-	-	T	-	switch	Low
6	Page 1-AC	Status of Power			1 bit	C	-	W	T	U	switch	Low
7	Page 1-AC	Heating mode			1 bit	C	-	W	T	U	switch	Low
8	Page 1-AC	Cooling mode			1 bit	C	-	W	T	U	switch	Low
9	Page 1-AC	Dry mode			1 bit	C	-	W	T	U	switch	Low
10	Page 1-AC	Fan mode			1 bit	C	-	W	T	U	switch	Low
11	Page 1-AC	Fan speed Auto			1 bit	C	-	W	T	U	switch	Low
12	Page 1-AC	Fan speed low			1 bit	C	-	W	T	U	switch	Low
13	Page 1-AC	Fan speed medium			1 bit	C	-	W	T	U	switch	Low
14	Page 1-AC	Fan speed high			1 bit	C	-	W	T	U	switch	Low
15	Page 1-AC	Temperature setpoint			1 byte	C	-	W	T	U		Low
16	Page 1-AC	Outdoor temperature			2 bytes	C	-	W	T	U	temperatu...	Low

Fig. 7.3_6 "Air conditioner" communication object（VRV Unit _1bit）

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-AC	IR Split unit command			1 byte	C	-	-	T	-		Low
16	Page 1-AC	Outdoor temperature			2 bytes	C	-	W	T	U	temperatu...	Low

Fig. 7.3_6 "Air conditioner" communication object（IR Split Unit）

No.	Object Function	Name	Type	Flags	DPT
5	**Power on/off**	**Page x-AC**	**1bit**	**C,T**	**1.001 switch**
5	**IR Split unit command**	**Page x-AC**	**1byte**	**C,T**	**17.001 scene number**
Power on/off: The communication object is visible in VRV air-conditioner mode, which is used to send messages of air-conditioner on/off. IR Split unit command: The communication object is visible in split infrared mode, which is used to send messages of air-conditioner control. The parameter can set controlling telegram 1~64, while the actual message value on the BUS is corresponding to 0~63.					

6	Status of Power	Page x-AC	1bit	C,W,T,U	1.001 switch
The communication object is visible in VRV air-conditioner mode, which is used to receive feedback of air-conditioner on/off status.					
7	Control mode	Page x-AC	1byte	C,T	5.010 counter pluses
7	Heating mode	Page x-AC	1bit	C,W,T,U	1.001 switch
1byte: The communication object will be visible when it's in VRV AC mode & the mode type is 1byte, which is used to send controlling message of all AC mode. 1bit: The communication object will be visible when it's in VRV AC mode & the mode type is 1bit, which is used to send controlling message of AC mode - heating.					
8	Status of control mode	Page x-AC	1byte	C,W,T,U	5.010 counter pulses
8	Cooling mode	Page x-AC	1bit	C,W,T,U	1.001 switch
1byte: The communication object will be visible when it's in VRV AC mode & the mode type is 1byte, which is used to receive status feedback message of various modes of AC. 1bit: The communication object will be visible when it's in VRV AC mode & the mode type is 1bit, which is used to send controlling message of AC mode - cooling, which can also receive status feedback.					
9	Dry mode	Page x-AC	1bit	C,W,T,U	1.001 switch
The communication object will be visible when it's in VRV AC mode & the mode type is 1bit, which is used to send controlling message of AC mode - dehumidification, which can also receive status feedback.					
10	Fan mode	Page x-AC	1bit	C,W,T,U	1.001 switch
The communication object will be visible when it's in VRV AC mode & the mode type is 1bit, which is used to send controlling message of AC mode - air supply, which can also receive status feedback.					
11	Fan speed	Page x-AC	1byte	C,T	5.010 counter pulses
11	Fan speed Auto	Page x-AC	1bit	C,W,T,U	1.001 switch
1byte: The communication object will be visible when it's in VRV AC mode & the mode type of wind speed is 1byte, which is used to send controlling message of different level of wind speed. 1bit: The communication object will be visible when it's in VRV AC mode & the mode type of wind speed is 1bit, which is used to send controlling message of wind speed - automatic, which can also receive status feedback.					
12	Status of Fan speed	Page x-AC	1byte	C,W,T,U	5.010 counter pulses
12	Fan speed low	Page x-AC	1bit	C,W,T,U	1.001 switch
1byte: The communication object will be visible when it's in VRV AC mode & the mode type of wind speed is 1byte, which is used to receive of status feedback message of different level of wind speed. 1bit: The communication object will be visible when it's in VRV AC mode & the mode type of wind speed is 1bit, which is used to send controlling message of wind speed - low gears, which can also receive status feedback.					
13	Fan speed medium	Page x-AC	1bit	C,W,T,U	1.001 switch
The communication object will be visible when it's in VRV AC mode & the mode type of wind speed is 1bit, which is used to send controlling message of wind speed - middle gears, which can also receive status feedback.					
14	Fan speed high	Page x-AC	1bit	C,W,T,U	1.001 switch
The communication object will be visible when it's in VRV AC mode & the mode type of wind speed is 1bit, which is used to send controlling message of wind speed - high gears, which can also receive status feedback.					

15	Temperature setpoint	Page x-AC	2byte 1byte	C,W,T,U	9.001 temperature No-DPT
The communication object will be visible when it's in VRV AC mode, which is used to send and receive set temperature of AC. **NOTE: Object type is set by parameter, 2byte is suitable for KNX standard, 1byte is non-KNX-standard, which is usually suitable for controlling type of self-definition. The message value is actual temperature value, such as, message of 17℃ is 17(decimal number).**					
16	**Outdoor temperature**	**Page x-AC**	**2byte**	**C,W,T,U**	**9.001 temperature**
The communication object is used to receive temperature measurement value sent by the outside temperature sensor on the BUS, as well as displaying outside temperature on the touch panel.					

Table 7.3_6"Air conditioner" communication object Table

7.3.7 "Background Music" communication object

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-BgMusic	Power on/off			1 bit	C	-	W	T	U	switch	Low
6	Page 1-BgMusic	Play/Pause			1 bit	C	-	W	T	U	start/stop	Low
7	Page 1-BgMusic	Next song/Previous song			1 bit	C	-	-	T	-	step	Low
8	Page 1-BgMusic	Volume+/Volume-			1 bit	C	-	-	T	-	step	Low
9	Page 1-BgMusic	Play mode			1 byte	C	-	-	T	-	counter p...	Low
10	Page 1-BgMusic	Play mode status			1 byte	C	-	W	T	U	counter p...	Low
11	Page 1-BgMusic	Music source			1 byte	C	-	-	T	-	counter p...	Low
12	Page 1-BgMusic	Music source status			1 byte	C	-	W	T	U	counter p...	Low

Fig. 7.3_7 "Background Music" communication object

No.	Object Function	Name	Type	Flags	DPT
5	**Power on/off**	**Page x-BgMusic**	**1bit**	**C,W,T,U**	**1.001 switch**
The communication object is used to send controlling command of background music on/off to the BUS, to control on/off of background music on/off, as well as receiving status feedback of background music on/off from the BUS. Message value: 1——On 0——Off					
6	**Play/Pause**	**Page x-BgMusic**	**1bit**	**C,W,T,U**	**1.010 start/stop**
The communication object is used to play/pause music from background music module, as well as receiving status feedback. Message value: 1——Play music 0——Pause music					
7	**Next song/Previous song**	**Page x-BgMusic**	**1bit**	**C,T**	**1.007 step**
The communication object is used to switch songs from the background music module, switching to last/next song. Message value: 1——Play next song 0——Play last song					
8	**Volume+/Volume-**	**Page x-BgMusic**	**1bit**	**C,T**	**1.007 step**
The communication object is used to adjust volume of background music. Message value: 1——Increase volume 0——Decrease volume					

9	**Play mode**	**Page x-BgMusic**	**1byte**	**C,T**	**5.010 counter pluses**
The communication mode is used to send controlling message of play mode of the background mode, different message is pre-set by parameter.					
10	**Play mode status**	**Page x-BgMusic**	**1byte**	**C,W,T,U**	**5.010 counter pluses**
The communication object is used to receive status feedback message of play mode of background music. The received message could update the display status on the panel, only when the message is appointed by the parameter.					
11	**Music source**	**Page x-BgMusic**	**1byte**	**C,T**	**5.010 counter pluses**
The communication object is used to send optional message of sound source of background music, different sound source is preset by parameter.					
12	**Music source status**	**Page x-BgMusic**	**1byte**	**C,W,T,U**	**5.010 counter pluses**
The communication object is used to receive feedback message of sound source status of background music. The received message could update the display status on the panel, only when the message is appointed by the parameter.					

Table. 7.3_7 "Background Music" communication object Table

7.3.8 "RGB dimming" communication object

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-RGB Dimming	Red dimming value			1 byte	C	-	-	T	-	percentag...	Low
6	Page 1-RGB Dimming	Green dimming value			1 byte	C	-	-	T	-	percentag...	Low
7	Page 1-RGB Dimming	Blue dimming value			1 byte	C	-	-	T	-	percentag...	Low
8	Page 1-RGB Dimming	White dimming value			1 byte	C	-	-	T	-	percentag...	Low

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-RGB Dimming	RGB dimming value			3 bytes	C	-	-	T	-		Low

Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-RGB Dimming	RGBW dimming value			6 bytes	C	-	-	T	-		Low

Fig. 7.3_8 "RGB dimming" communication object

No.	Object Function	Name	Type	Flags	DPT
5	**Red dimming value**	**Page x-RGB Dimming**	**1byte**	**C,T**	**5.001 percentage**
The communication object is used to send brightness value of controlling R(red) channel to the BUS. Message Value: 0..100%.					
6	**Green dimming value**	**Page x-RGB Dimming**	**1byte**	**C,T**	**5.001 percentage**
The communication object is used to send brightness value of controlling G(green) channel to the BUS. Message Value: 0..100%.					
7	**Blue dimming value**	**Page x-RGB Dimming**	**1byte**	**C,T**	**5.001 percentage**
The communication object is used to send brightness value of controlling B(blue) channel to the BUS. Message Value: 0..100%.					
8	**White dimming value**	**Page x-RGB Dimming**	**1byte**	**C,T**	**5.001 percentage**
The communication object is used to send brightness value of controlling W(white) channel to the BUS. Message Value: 0..100%.					
5	**RGB dimming value**	**Page x-RGB Dimming**	**3byte**	**C, T**	**232.600 RGB value 3x(0..255)**
This communication object is visible when RGB-1x3byte is selected for the RGB type and is used to send the brightness value of the RGB three-color lamp.					

3-byte RGB dimming object data type encoding: U8 U8 U8, details are as follows:

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

R: Red dimming value;

G: Green dimming value;

B: Blue dimming value.

5	RGBW dimming value	Page x-RGB Dimming	6byte	C, T	251.600 RGB value 4x(0..255)

This communication object is visible when RGBW-1x6byte is selected for the RGB type and is used to send the brightness value of the RGBW four-color lamp.

6-byte RGBW dimming object data type encoding: U8 U8 U8 U8 R8 R4 B4, details are as follows:

6_{MSB}	5	4	3	2	1_{LSB}
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: Determine whether the red dimming value is valid, 0=Invalid, 1=Effective;

mG: Determine whether the Green dimming value is valid, 0=Invalid, 1=Effective;

mB: Determine whether the Blue dimming value is valid, 0=Invalid, 1=Effective;

mW: Determine whether the White dimming value is valid, 0=Invalid, 1=Effective;

Table. 7.3_8 "RGB dimming" communication object Table

7.3.9 "Floor heating" communication object

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-Floor heating	Heating on/off			1 bit	C	-	W	T	U	switch	Low
6	Page 1-Floor heating	Setpoint			2 bytes	C	-	W	T	U	temperature (°C)	Low
7	Page 1-Floor heating	External temperature sensor			2 bytes	C	-	W	T	U	temperature (°C)	Low
8	Page 1-Floor heating	En./Dis. timer			1 bit	C	-	W	-	-	enable	Low
9	Page 1-Floor heating	Scene			1 byte	C	-	W	-	-		Low
10	Page 1-Floor heating	Power on/off			1 bit	C	-	W	T	U	switch	Low

Fig. 7.3_9 "Floor heating"communication object

No.	Object Function	Name	Type	Flags	DPT
5	**Heating on/off**	**Page x-Floor heating**	**1bit**	**C,W,T,U**	**1.001 switch**

This communication object is used to send floor heating control commands. It can also receive floor heating feedback status feedback. The switch status corresponding to the packet value is specifically set by parameters.

6	**Setpoint**	**Page x-Floor heating**	**2byte**	**C,W,T,U**	**9.001 temperature**
This communication object is used to send the temperature setpoint to the bus. Feedback temperature settings can also be received. Range: 5~40°C					
7	**External temperature sensor**	**Page x-Floor heating**	**2byte**	**C,W,T,U**	**9.001 temperature**
This communication object is visible when an external sensor is selected for temperature reference and is used to receive the temperature measurement sent from the temperature sensor on the bus. Range: -50~99.8°C					
8	**En./Dis. timer**	**Page x-Floor heating**	**1bit**	**C,W**	**1.003 enable**
This communication object is used to disable/enable warming of the floor. The disabled/enabled message values are specifically defined by parameters.					
9	**Scene**	**Page x-Floor heating**	**1byte**	**C,W**	**17.001 scene number**
This communication object is used to invoke floor heating control. The parameter setting is 1~64, and the actual corresponding message value is 0~63.					
10	**Power on/off**	**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.					

Table. 7.3_9 "Floor heating" communication object Table

7.3.10 "Ventilation System" communication object

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
5	Page 1-Ventilation	External temperature sensor			2 bytes	C	-	W	T	U	temperature (°C)	Low
6	Page 1-Ventilation	Automatic function, In/Out			1 bit	C	-	W	T	U	enable	Low
7	Page 1-Ventilation	Fan speed, In			1 byte	C	-	W	T	U	counter pulses (0..255)	Low
8	Page 1-Ventilation	Fan speed, Out			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
10	Page 1-Ventilation	Heat Recovery, In/Out			1 bit	C	-	W	T	U	switch	Low
11	Page 1-Ventilation	Filter timer reset, In			1 bit	C	-	W	-	-	reset	Low
12	Page 1-Ventilation	Filter alarm, Out			1 bit	C	-	-	T	-	alarm	Low
13	Page 1-Ventilation	Scene, In			1 byte	C	-	W	-	-	scene number	Low
14	Page 1-Ventilation	CO2,In			2 bytes	C	-	W	T	U	parts/million (ppm)	Low
15	Page 1-Ventilation	PM2.5, In			2 bytes	C	-	W	T	U		Low
16	Page 1-Ventilation	En./Dis. Heat Recovery, In			1 bit	C	-	W	-	-	enable	Low
17	Page 1-Ventilation	Filter timer counter, In/Out			2 bytes	C	-	W	T	U	pulses	Low
7	Page 1-Ventilation	Fan Speed No.1 1Bit, In/Out			1 bit	C	-	W	T	U	switch	Low
8	Page 1-Ventilation	Fan Speed No.2 1Bit, In/Out			1 bit	C	-	W	T	U	switch	Low
9	Page 1-Ventilation	Fan Speed No.3 1Bit, In/Out			1 bit	C	-	W	T	U	switch	Low

Fig. 7.3_10 "Ventilation system" communication object

No.	Object Function	Name	Type	Flags	DPT
5	**External temperature sensor**	**Page x-Ventilation**	**2byte**	**C,W,T,U**	**9.001 temperature**
This communication object is visible when an external sensor is selected for temperature reference and is used to receive the temperature measurement sent from the temperature sensor on the bus. Range: -50~99.8°C					

6	**Automatic function, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**1.003 enable**

This communication object is used to enable automatic operation of fresh air.

After the bus is reset or programmed, automatic operation is disabled by default. Shutdown, manual adjustment of wind speed, scene can exit the automatic operation.

The auto-enable/disable message value is defined by parameters.

7	**Fan speed, In**	**Page x-Ventilation**	**1byte**	**C,W,T,U**	**5.010 counter pulses**

This communication object is visible when the wind speed type is "1byte" and is used to receive the status feedback of wind speed. The specific message value corresponding to each wind speed is defined by parameters.

8	**Fan speed, Out**	**Page x-Ventilation**	**1byte**	**C,T**	**5.010 counter pulses**

The communication object is visible when the wind speed type is "1byte" and is used to send a message controlling the wind speed to the bus. The specific message value corresponding to each wind speed is defined by parameters.

7	**Fan Speed No.1 1Bit, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**1.001 switch**
8	**Fan Speed No.2 1Bit, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**1.001 switch**
9	**Fan Speed No.3 1Bit, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**1.001 switch**

These three communication objects are visible when the wind speed type is “1 bit”, and the wind speed is controlled by three objects at the same time. The specific message value corresponding to each wind speed is defined by parameters. Can receive status feedback, but the feedback value also needs to correspond with the parameter definition value to update the on-screen display.

10	**Heat Recovery, In/Out**	**Page x-Ventilation**	**1bit**	**C,W,T,U**	**1.001 switch**

The communication object is used to send a control command to open/close the hot air exchange, and it can also receive the status feedback value. Message value:

1——On

0——Off

11	**Filter time reset, In**	**Page x-Ventilation**	**1bit**	**C,W**	**1.015 reset**

This communication object is used to reset the filter time. After the reset, the filter restarts counting when it is enabled. Message value:

1——Reset

12	**Filter alarm, Out**	**Page x-Ventilation**	**1bit**	**C,T**	**1.005 alarm**

When the length of use of the filter exceeds the set value, the communication partner issues an alarm to remind the user to replace the filter. Message value:

1——Alarm

13	**Scene, In**	**Page x-Ventilation**	**1byte**	**C,W**	**17.001 scene number**

This communication object is used to call scene control of fresh air. The parameter setting is 1~64, and the actual corresponding message value is 0~63.

14	**CO2, In**	**Page x-Ventilation**	**2byte**	**C,W,T,U**	**9.008 DPT_Value_AirQuality**
The communication object is used to receive the input of CO2 value, and the corresponding value is updated from the bus to the display. The unit is ppm. Range: 0~4000ppm If the control value of the automatic operation is CO2, then under automatic conditions, the fresh air system can be set to automatically adjust the wind speed according to the CO2 concentration.					
15	**PM2.5, In**	**Page x-Ventilation**	**2byte**	**C,W,T,U**	
The communication object is used to receive the input of the PM2.5 value and obtain the corresponding value from the bus to update the display. The unit is ug/m3. Range: 0~999ug/m3 If the automatic operation control value is PM2.5, then under the automatic, you can set the fresh air system to automatically adjust the wind speed according to the PM2.5 concentration.					
16	**En./Dis. Heat Recovery, In**	**Page x-Ventilation**	**1bit**	**C,W**	**1.003 enable**
This communication object is used to disable/enable the hot air exchange function. The disabled/enabled message values are specifically defined by parameters. After the prohibition, the heat exchange is closed and cannot be controlled.					
17	**Filter time counter, In/Out**	**Page x-Ventilation**	**2byte**	**C,W,T,U**	**7.001 pluses**
This communication object is used to count the length of time the filter is used. The timing is changed by 1h and sent once to the bus. This time can also be modified via the bus.					

Table. 7.3_10 "Ventilation System" communication object Table

7.4 Communication object "Time Function"

Number	Name	Object Function	Descri	Group Addres	Length	C	R	W	T	U	Data Type	Priority
374	Time function 1	On/Off			1 bit	C	-	-	T	-	switch	Low
375	Time function 1	En./Dis. Timer			1 bit	C	-	W	-	-	enable	Low
376	Time function 2	1byte unsigned value			1 byte	C	-	-	T	-	counter p...	Low
377	Time function 2	En./Dis. Timer			1 bit	C	-	W	-	-	enable	Low
378	Time function 3	Scene control			1 byte	C	-	-	T	-		Low
379	Time function 3	En./Dis. Timer			1 bit	C	-	W	-	-	enable	Low
380	Time function 4	2byte unsigned value			2 bytes	C	-	-	T	-	pulses	Low
381	Time function 4	En./Dis. Timer			1 bit	C	-	W	-	-	enable	Low

Fig. 7.4_1 "Time function" communication object

No.	Object Function	Name	Type	Flags	DPT
374	**On/Off**	**Time function x**	**1bit**	**C,T**	**1.001 switch**
376	**1byte unsigned value**	**Time function x**	**1byte**	**C,T**	**5.010 counter pulses**
378	**Scene control**	**Time function x**	**1byte**	**C,T**	**17.001 scene number**
380	**2byte unsigned value**	**Time function x**	**2byte**	**C,T**	**7.001 pulses**
The communication object is used to send the preset message value of the timing function to the bus, and the timing time, the preset value and the object type are set by parameters. When the time comes, a preset message value will be sent to the bus. A total of 8 timings can be set.					

375	En./Dis. Timer	Time function x	1bit	C,W	1.003 enable
This communication object is used to disable/enable the timing x function. The disabled/enabled message values are specifically defined by parameters. After forbidden, timing will not be enabled.					

Table. 7.4_1"Time function" communication object Table

7.5 Communication object "Event Group"

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
390	Event	Main scene recall			1 byte	C	-	W	-	-		Low
391	1st Event Group	Sub event output 1			1 bit	C	-	-	T	-	switch	Low
392	1st Event Group	Sub event output 2			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
393	1st Event Group	Sub event output 3			2 bytes	C	-	-	T	-	pulses	Low
394	1st Event Group	Sub event output 4			1 bit	C	-	-	T	-	switch	Low
395	1st Event Group	Sub event output 5			1 bit	C	-	-	T	-	switch	Low
396	1st Event Group	Sub event output 6			1 bit	C	-	-	T	-	switch	Low
397	1st Event Group	Sub event output 7			1 bit	C	-	-	T	-	switch	Low
398	1st Event Group	Sub event output 8			1 bit	C	-	-	T	-	switch	Low

Fig. 7.5_1" Event Group" communication object

No.	Object Function	Name	Type	Flags	DPT
390	**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 invoking the scene number. Message: 0..63					
391/392/ 393/...	**Sub event output 1..8**	**1st /.../4th Event Group**	**1bit/1byte/2byte**	**C,T**	**1.001 switch** **5.010 counter pulses** **7.001 pulses**
When a scene is called, this communication object is used to send the corresponding output value of this scene to the bus. If this output is not set for this scene, it will not be sent.					

Table 7.5_1 "Event Group" communication object Table

7.6 Communication object "Logic function"

7.6.1 Communication Object for "AND/OR/XOR"

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input a			1 bit	C	-	W	T	U	boolean	Low
424	1st Logic	Input b			1 bit	C	-	W	T	U	boolean	Low
425	1st Logic	Input c			1 bit	C	-	W	T	U	boolean	Low
426	1st Logic	Input d			1 bit	C	-	W	T	U	boolean	Low
427	1st Logic	Input e			1 bit	C	-	W	T	U	boolean	Low
428	1st Logic	Input f			1 bit	C	-	W	T	U	boolean	Low
429	1st Logic	Input g			1 bit	C	-	W	T	U	boolean	Low
430	1st Logic	Input h			1 bit	C	-	W	T	U	boolean	Low
431	1st Logic	Logic result			1 bit	C	-	-	T	-	boolean	Low

Fig. 7.6_1"Logic function_AND/OR/XOR" communication object

No.	Object Function	Name	Type	Flags	DPT
423..430	**Input x**	**1st /.../8th Logic**	**1bit**	**C,W,T,U**	**1.002 boolean**
This communication object is used to receive the value of the logical input Input x.					
431	**Logic result**	**1st /.../8th Logic**	**1bit**	**C,T**	**1.002 boolean**
This communication object is used to send logical operation results.					

Table 7.6_1 "Logic function_AND/OR/XOR" communication object Table

7.6.2 Communication Object for "Gate forwarding"

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Gate value select			1 byte	C	-	W	-	-	scene number	Low
424	1st Logic	Input A			1 bit	C	-	W	-	-	switch	Low
425	1st Logic	Input B			1 bit	C	-	W	-	-	switch	Low
426	1st Logic	Input C			1 bit	C	-	W	-	-	switch	Low
427	1st Logic	Input D			1 bit	C	-	W	-	-	switch	Low
428	1st Logic	Output A			1 bit	C	-	-	T	-	switch	Low
429	1st Logic	Output B			1 bit	C	-	-	T	-	switch	Low
430	1st Logic	Output C			1 bit	C	-	-	T	-	switch	Low
431	1st Logic	Output D			1 bit	C	-	-	T	-	switch	Low

Fig. 7.6_2"Logic function_Gate forwarding"communication object

No.	Object Function	Name	Type	Flags	DPT
423	**Gate value select**	**1st /.../8th Logic**	**1byte**	**C,W**	**17.001 scene number**
This communication object is used to select the logic gate forwarding scenario.					
424..427	**Input x**	**1st /.../8th Logic**	**1bit** **4bit** **1byte**	**C,W**	**1.001 switch** **3.007 DPT_Dimming control** **5.010 DPT_counter pulses**
This communication object is used to receive the value of the logic gate input Input x.					
428..431	**Output x**	**1st /.../8th Logic**	**1bit** **4bit** **1byte**	**C,T**	**1.001 switch** **3.007 DPT_Dimming control** **5.010 DPT_counter pulses**
This communication object is used to output the gated value of the logic gate. The output value is the same as the input value, but one input can be forwarded to one or more outputs, set by parameters.					

Table 7.6_2 "Logic function_Gate forwarding" communication object Table

7.6.3 Communication Object for "Threshold comparator"

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Threshold value input			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
431	1st Logic	Logic result			1 bit	C	-	-	T	-	boolean	Low

Fig. 7.6_3"Logic function_Threshold comparator" communication object

No.	Object Function	Name	Type	Flags	DPT
423	**Threshold value input**	**1st /.../8th Logic**	**4bit** **1byte** **2byte** **4byte**	**C,W, U**	**3.007 DPT_Dimming control** **5.010 DPT_counter pulses** **7.001 DPT_pulses** **12.001 DPT_counter pulses**
This communication object is used to enter the threshold.					
431	**Logic result**	**1st /.../8th Logic**	**1bit**	**C,T**	**1.002 DPT_boolean**
This communication object is used to send logical operation results. That is, the value that should be sent after the object input threshold is compared with the parameter setting threshold.					

Table. 7.6_3"Logic function_Threshold comparator" communication object Table

7.6.4 Communication Object for "Format convert"

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 1bit-bit0			1 bit	C	-	W	-	U	switch	Low
424	1st Logic	Input 1bit-bit1			1 bit	C	-	W	-	U	switch	Low
431	1st Logic	Output 2bit			2 bit	C	-	-	T	-	switch control	Low

"2x1bit --> 1x2bit" function: converts 2 1bit values into a 2bit value, eg, Input bit1=1, bit0=0--> Output 2bit=2

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 1bit-bit0			1 bit	C	-	W	-	U	switch	Low
424	1st Logic	Input 1bit-bit1			1 bit	C	-	W	-	U	switch	Low
425	1st Logic	Input 1bit-bit2			1 bit	C	-	W	-	U	switch	Low
426	1st Logic	Input 1bit-bit3			1 bit	C	-	W	-	U	switch	Low
427	1st Logic	Input 1bit-bit4			1 bit	C	-	W	-	U	switch	Low
428	1st Logic	Input 1bit-bit5			1 bit	C	-	W	-	U	switch	Low
429	1st Logic	Input 1bit-bit6			1 bit	C	-	W	-	U	switch	Low
430	1st Logic	Input 1bit-bit7			1 bit	C	-	W	-	U	switch	Low
431	1st Logic	Output 1byte			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

"8x1bit --> 1x1byte" function: converts 8 1bit values into a 1byte value, such as Input bit2=1, bit1=1, bit0=1, and other bits are 0-->Output 1byte=7.

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 1byte			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
431	1st Logic	Output 2byte			2 bytes	C	-	-	T	-	pulses	Low

"1x1byte --> 1x2byte" Function: Convert a 1 byte value to a 2 byte value, such as Input 1byte=125-->Output 2byte=125. Although the value does not change, the data type of the value is different.

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 1byte-low			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
424	1st Logic	Input 1byte-high			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
431	1st Logic	Output 2byte			2 bytes	C	-	-	T	-	pulses	Low

"2x1byte --> 1x2byte" function: converts two 1byte values into 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 Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 2byte-low			2 bytes	C	-	W	-	U	pulses	Low
424	1st Logic	Input 2byte-high			2 bytes	C	-	W	-	U	pulses	Low
431	1st Logic	Output 4byte			4 bytes	C	-	-	T	-	counter pulses (unsigne...	Low

"2x2byte --> 1x4byte" function: Converts 2 2byte values into 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	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 1byte			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
424	1st Logic	Output 1bit-bit0			1 bit	C	-	-	T	-	switch	Low
425	1st Logic	Output 1bit-bit1			1 bit	C	-	-	T	-	switch	Low
426	1st Logic	Output 1bit-bit2			1 bit	C	-	-	T	-	switch	Low
427	1st Logic	Output 1bit-bit3			1 bit	C	-	-	T	-	switch	Low
428	1st Logic	Output 1bit-bit4			1 bit	C	-	-	T	-	switch	Low
429	1st Logic	Output 1bit-bit5			1 bit	C	-	-	T	-	switch	Low
430	1st Logic	Output 1bit-bit6			1 bit	C	-	-	T	-	switch	Low
431	1st Logic	Output 1bit-bit7			1 bit	C	-	-	T	-	switch	Low

"1x1byte --> 8x1bit" function: Convert 1 byte value to 8 1bit values, 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	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 2byte			2 bytes	C	-	W	-	U	pulses	Low
430	1st Logic	Output 1byte-low			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
431	1st Logic	Output 1byte-high			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

"1x2byte --> 2x1byte" function: converts a 2-byte value into two 1-byte values, such as Input 2byte = 55500 ($D8 CC) --> Output 1byte-low = 204 ($CC), Output 1byte-high = 216 ($D8)

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 4byte			4 bytes	C	-	W	-	U	counter pulses (unsigne...	Low
430	1st Logic	Output 2byte-low			2 bytes	C	-	-	T	-	pulses	Low
431	1st Logic	Output 2byte-high			2 bytes	C	-	-	T	-	pulses	Low

"1x4byte --> 2x2byte" function: converts a 4-byte value into two 2-byte values, such as Input 4byte = 78009500 ($04 A6 54 9C) --> Output 2byte-low = 21660 ($54 9C), Output 2byte-high =1190 ($04 A6)

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 3byte			3 bytes	C	-	W	-	U		Low
429	1st Logic	Output 1byte-low			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
430	1st Logic	Output 1byte-middle			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
431	1st Logic	Output 1byte-high			1 byte	C	-	-	T	-	counter pulses (0..255)	Low

"1x3byte --> 3x1byte" function: converts a 3byte value into 3 1byte values, such as Input 3byte = $7864C8--> Output 1byte-low = 200 ($C8), Output 1byte-middle = 100 ($64), Output 1byte-high =120 ($78)

Number	Name	Object Function	Description	Group Addr	Length	C	R	W	T	U	Data Type	Priority
423	1st Logic	Input 1byte-low			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
424	1st Logic	Input 1byte-middle			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
425	1st Logic	Input 1byte-high			1 byte	C	-	W	-	U	counter pulses (0..255)	Low
431	1st Logic	Output 3byte			3 bytes	C	-	-	T	-		Low

"3x1byte --> 1x3byte" function: converts three 1byte values into one 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.	Function	Name	Type	Flags	DPT
423	**Input ...**	**1st /.../8th Logic**	**1bit** **1byte** **2byte** **3byte** **4byte**	**C,W,U**	**1.001 switch** **5.010 DPT_counter pulses** **7.001 DPT_pulses** **232.600 RGB value 3x(0..255)** **12.001 DPT_counter pulses**
This communication object is used to input the value that needs to be converted.					
61	**Output ...**	**1st /.../8th Logic**	**1bit** **2bit** **1byte** **2byte** **3byte** **4byte**	**C,T**	**1.001 switch** **2.001 switch control** **5.010 DPT_counter pulses** **7.001 DPT_pulses** **232.600 RGB value 3x(0..255)** **12.001 DPT_counter pulses**
This communication object is used to output the converted value.					

Table. 7.6_4"Logic function_Format convert" communication object Table

Chapter 8 Appendix

8.1 Homepage icon list

Multi-function	AQI	HVAC	AC	MUSIC	RGB	Floor heat	Ventilation
							
Default	Default	Default	Default	Default	Default	Default	Default
							
Mult-Function	Ventilation-1	Ventilation-2	Ventilation-3	HVAC-1	HVAC-2	AC-1	AC-2
1	2	3	4	5	6	7	8
							
Music-1	Music-2	Music-3	FloorHeat-1	FloorHeat-2	FloorHeat-3	RGB-1	RGB-2
9	10	11	12	13	14	15	16
							
Air Quality-1	Air Quality -2	Air Quality-3	Air Quality-4				
17	18	19	20				

8.2 Feature Icon List

Switch	Dimming	Value send	Curtain with 3 buttons	Curtain with 1 slider	Curtain with 2 slider
					
Default (two states) [1]	Default	Default	Default	Default	Default
					
Dimmer-1	Dimmer-2	Dimmer-3	Switch-1	Switch-2	Curtain-1
1 (two states)	2 (two states)	3 (two states)	4 (two states)	5 (two states)	6
					
Curtain-2	Curtain-3	Blinds	Shutter	Coffee	Night
7	8	9	10	11	12
					
LeaveHome	GoHome	Game	Cheers	Dinner	Read
13	14	15	16	17	18
					
Relax	Music				
19	20				

NOTE:

1. **6 icons have two states that on and off display.**