User Manual of
M/PTL35.1 KNX Tile Display

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Catalogue

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HDL Automation Co., Ltd.

Update History

The form below contains the information of every update. The latest version contains all the updates of all former versions.

No.	Version	Update Information	Date
1	V1.0.0	Initial release	Jan. 1st, 2023

1 Introduction

The manual offers the information on the installation, wiring connection, Function and configuration of KNX Tile Display (Model: M/PTL35.1).

KNX Tile Display (See Figure 1) is a multi-function control panel for home automation. With 3.5-inch LCD screen and full screen touch control, it is convenient for the users to control lighting, curtain, scene, AC/FCU, floor heating, music and fresh air in an intuitive way.

Figure 1. KNX Tile Display

1.1 Product Function

(1) Built-in temperature and humidity sensor

(2) Built-in proximity sensor, when the panel detects human body, the LCD screen will wake up.

(3) Adjustable LCD backlight

(4) LCD screen wakes up automatically.

(5) Screen lock setting

(6) 5 scene shortcut buttons and 1 main menu button available in main interface

(7) Time and environment status display setting

(8) Dedicated pages for lighting, curtain, scene, AC/FCU, floor heating, music and fresh air control

(9) A total of 20 control keys can be set on the lighting page. The control types are: Switch, dimmer, RGB and CCT.

(10) Curtain control: up to 8 curtains supported. Supports opening/closing, stopping, percentage adjustment

(11) Scene control: up to 20 scenes supported

(12) AC/FCU control: Supports switching, temperature adjustment, fan speed adjustment, mode switching of up to 3 AC/FCU Floor heating control: Supports switching, temperature adjustment, mode switching of up to 8 floor heating control, Floor heating modes: Normal, Day, Night, Away, Timer.

(13) Music play: 1 music player is supported, list not supported (source switching not supported)

(14) Fresh air control: Supports switching, fan speed adjustment, mode switching of 1 fresh air control

1.2 Product Components

Dimensions – See Figure 2 - 5

A1. 3.5-inch touch screen

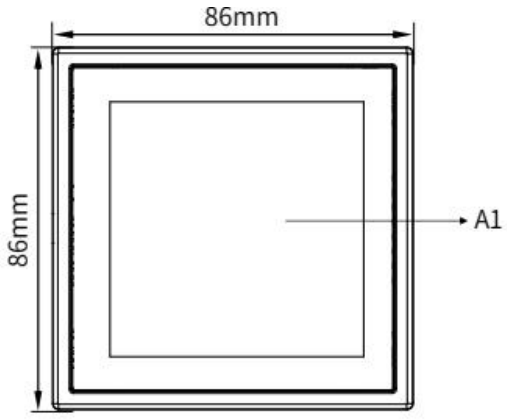


Figure 2. Dimensions - with plastic frame

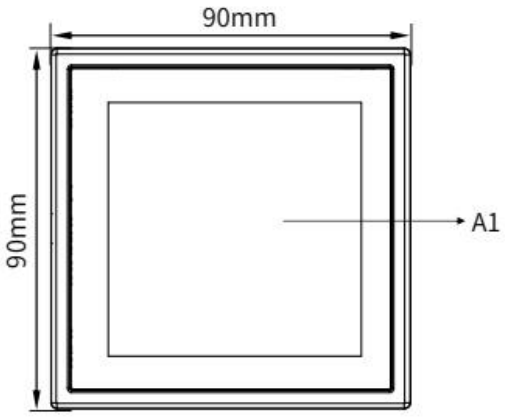


Figure 3. Dimensions - with metal frame

A2. Communication interface

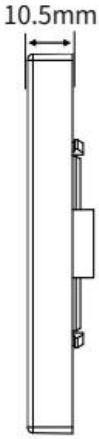


Figure 4. Dimensions - Side View

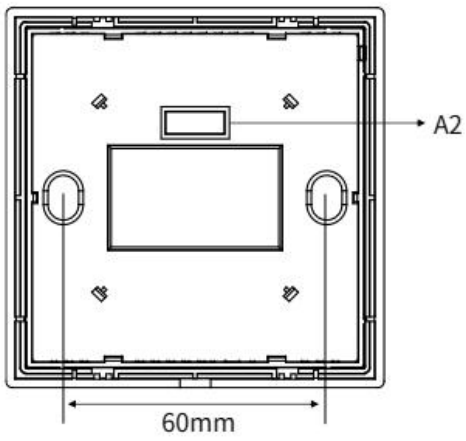


Figure 5. Dimensions - Back View

1.3 Product Installation

Installation - See Figure 6

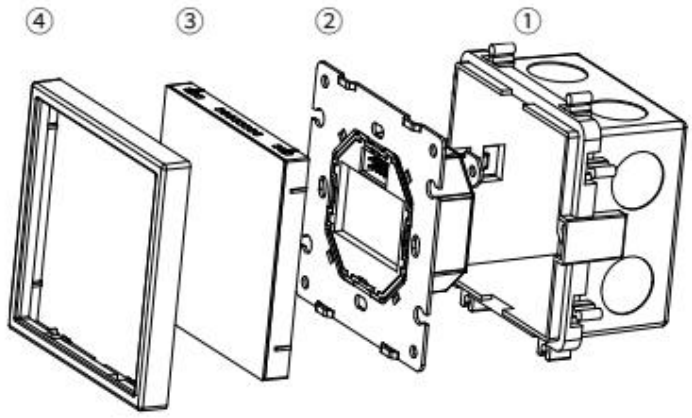


Figure 6. Installation

Step ①: Install the wall box in the wall.

Step ②: Secure the power interface to the wall box with screws.

Step ③: Install the panel on the power interface.

Step ④: Install the frame around the panel.

Horizontal installation - See Figure 7

Vertical installation - See Figure 8

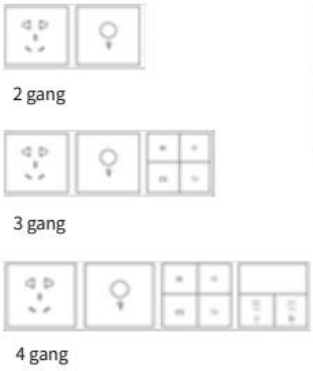


Figure 7. Horizontal installation

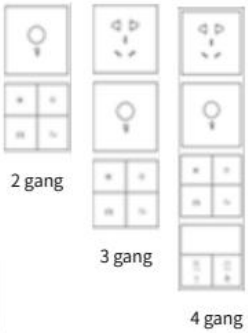


Figure 8. Vertical installation

Product name	Frame Types	Gang	Dimensions
2/3/4-gang frames	Metal	2 gang	176*90*10.5(mm)
		3 gang	262*90*10.5(mm)
		4 gang	348*90*10.5(mm)
	Plastic	2 gang	172*86*10.5(mm)
		3 gang	258*86*10.5(mm)
		4 gang	344*86*10.5(mm)

Notes: Metal panels can be installed either horizontally or vertically. Plastic panels can be only installed horizontally.

1.4 Important Notes

(1) The panel should be mounted on the wall box with Tile Series KNX Panel Power Interface (with External Power Supply) (M/PTCI2P.1).

(2) The device is compliant with the KNX standard and the parameters are set by the Engineering Tool Software (ETS).

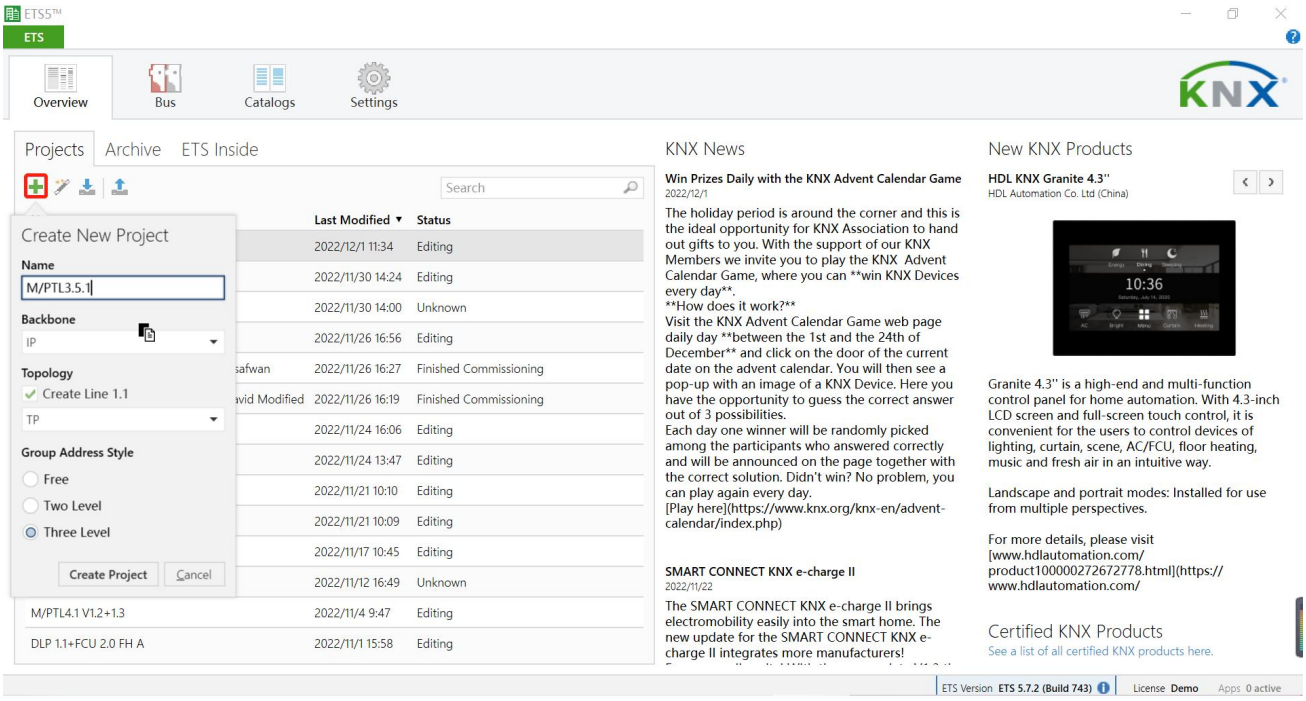
2.Import Device

The database of KNX Tile Display M/PTL3.5.1 is imported for description.

And the database name of KNX Tile Display database is: Panel 3.5Inch Touch LCD Controller(V1.0).pr5

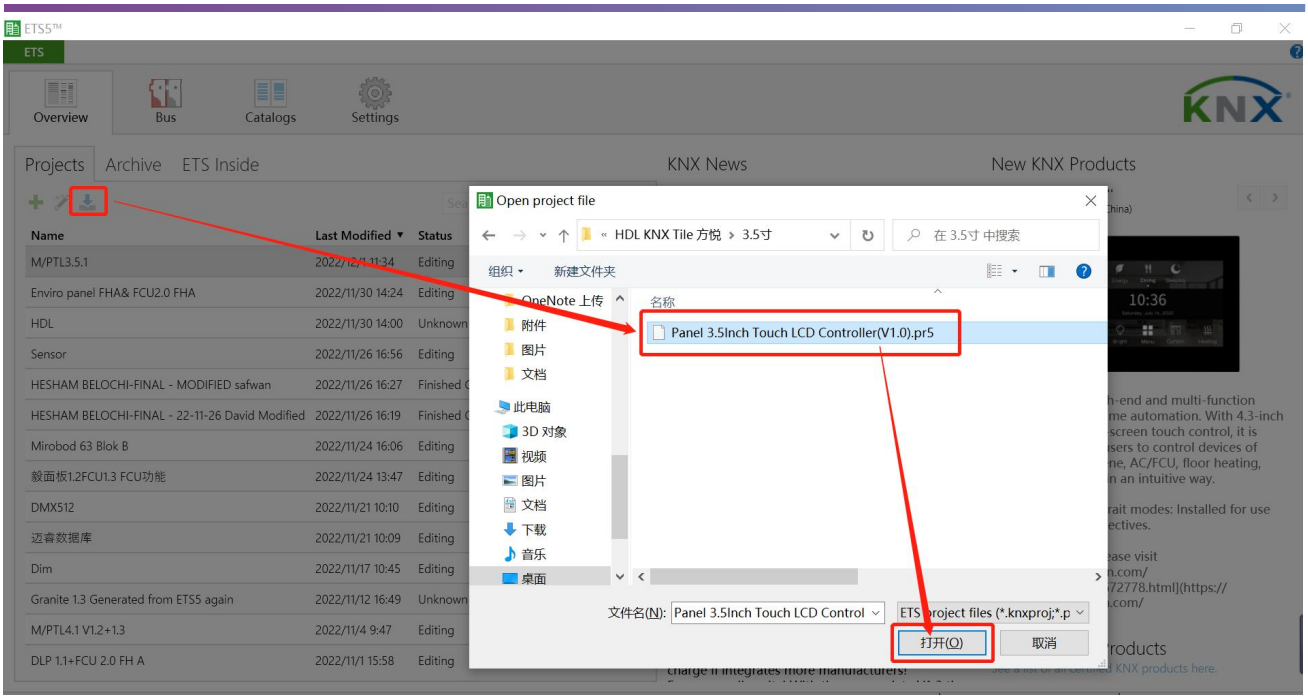
2.1 Create Project

Click “Overview” in ETS5 → “Your Projects” → Click “+” → Fill the project name “M/PTL35.1” to create new project.

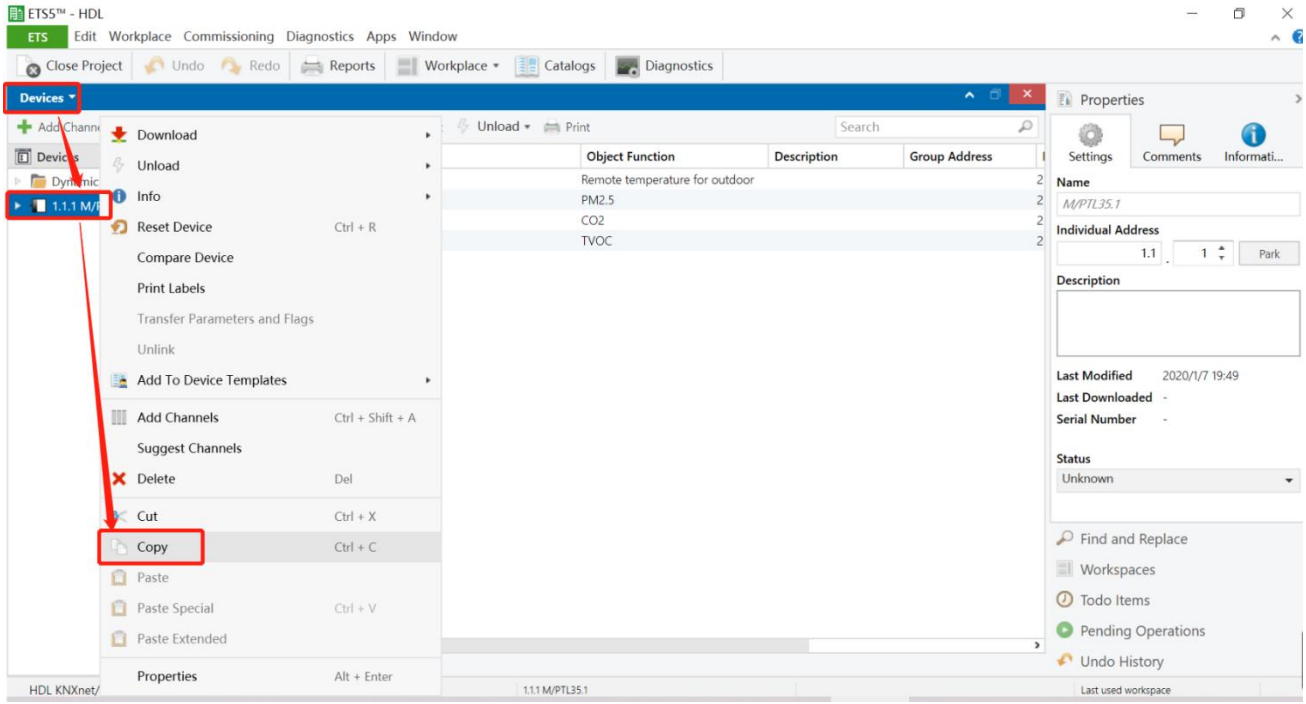


2.2 Add the Device to Currect Project

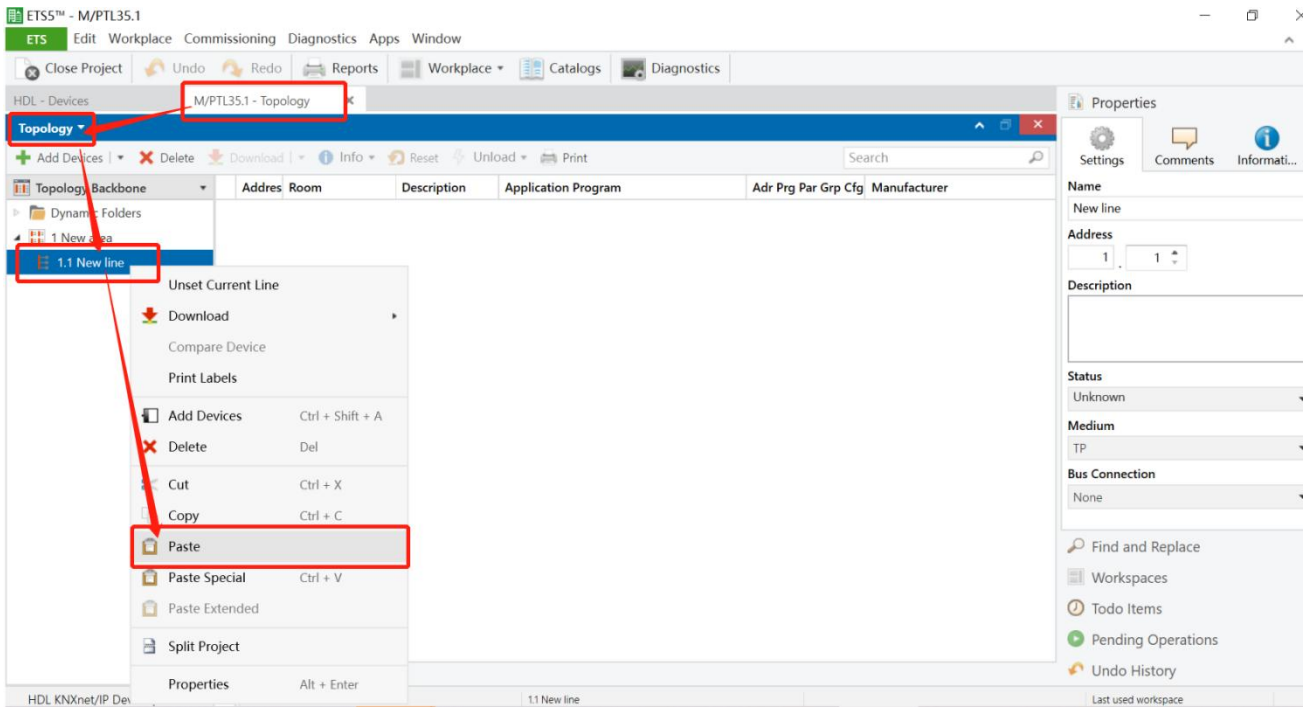
The database of M/PTL3.5.1is Panel 3.5Inch Touch LCD Controller(V1.0).pr5, which is the format of project file. Need to import it to ETS5, then copy and paste the device to current project

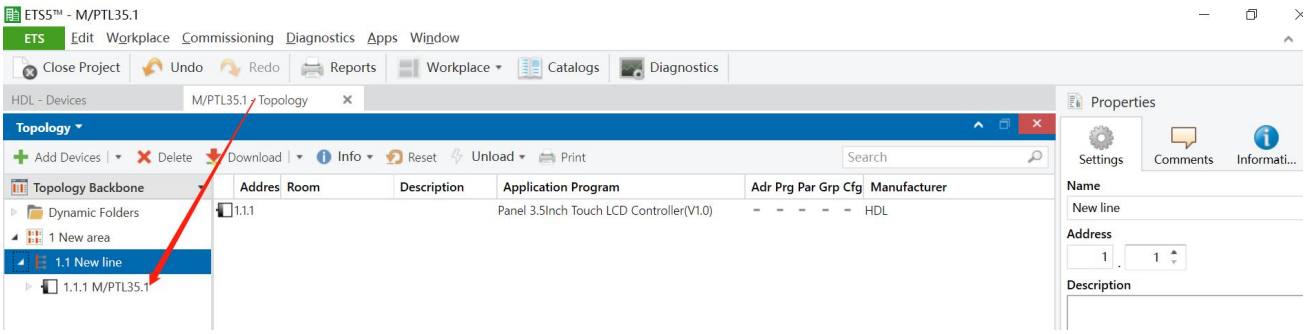


Double click to open the project named “HDL” and copy the M/PTL35.1 device



Return back to current project “M/PTL35.1”, change to “Topology” structure, right click the New Line1 to paste the device

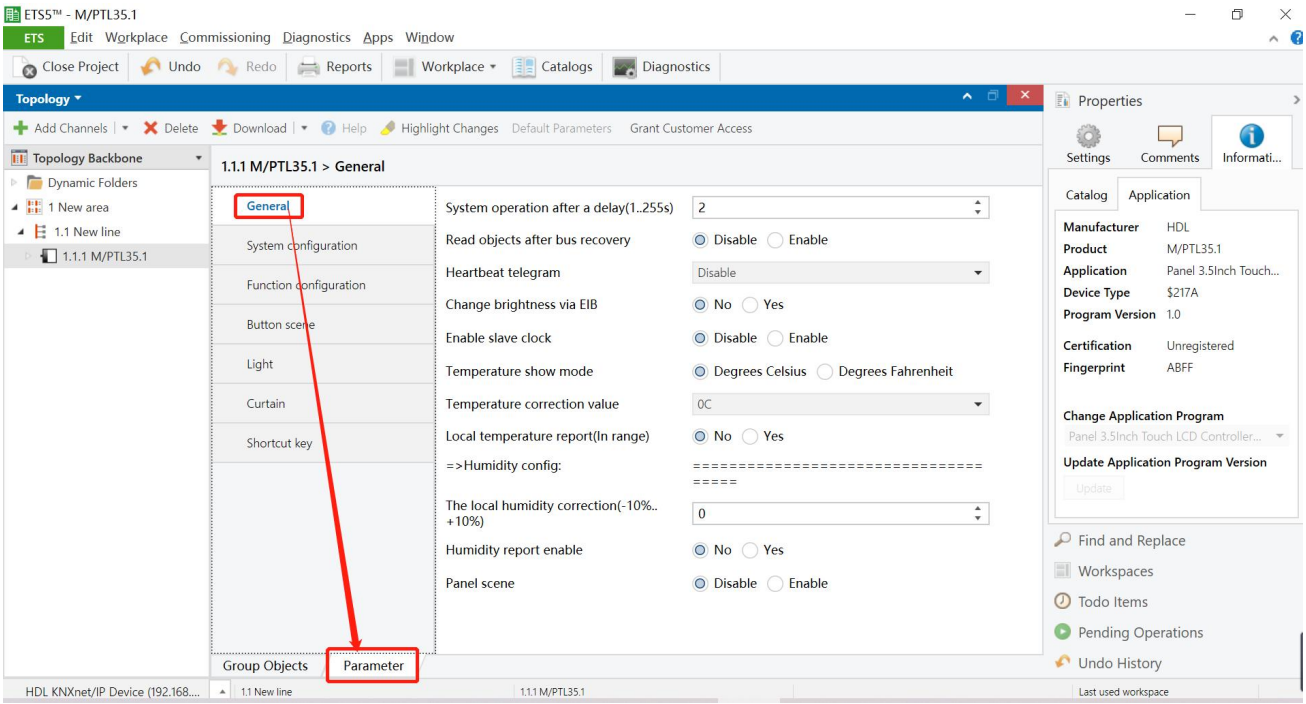




3 Parameter Description

3.1 General Settings

In topology skeleton on the left side of the topology page, firstly click devices to be set, secondly select “General” tab page in “Parameter” option.



The setting items are explained below:

System operation after a delay: The time-delay function, namely a delay time between powering on the device and activating the system, range from 1s to 255s.

（1） Read objects after bus recovery: Whether to read objects' status after KNX power supply recovery.

➔ Read objects delay time: If enabled, set the delay time between bus recovery and reading objects.

（2） Heartbeat telegram: It's used to check whether the device is online. You can select cyclically send value 1, value 0 or send value "1 / 0" inverted cyclically to the Bus.

➔ Telegram is sent time interval: The time interval for sending heartbeat telegram can be set. The range is 1-65535 seconds. The default setting is 5 seconds.

（3） Change brightness via EIB: Enable/disable adjusting the panel brightness via EIB bus

（4） Enable slave clock: Set the panel to display the current time. You can refer to section 4.1 How to set the panel to display the current time.

（5） Temperature show mode: Select the units for temperature display, which are Degrees Celsius and Fahrenheit.

（6） Temperature correction value: Select the temperature correction value, from -5℃ to +5℃.

（7） Local temperature report (In range): After enabling, the panel will broadcast the temperature to KNX bus line only when the temperature is within this temperature range.

- ➔ Temperature>=Threshold1 (-30℃..+99℃): Set the minimum value of panel broadcast temperature.
- ➔ Temperature<=Threshold2 (-30℃..+99℃): Set the maximum value of panel broadcast temperature.
- ➔ Temperature report mode: Select the mode of sending temperature signal, including “Report when changed” or “Report cyclically”.
- ➔ Temperature report of check period: Check whether the temperature changes at intervals. If the panel temperature changes, broadcast the temperature to KNX bus. The range is 1-65535 seconds.

（8） The local humidity correction：Local humidity data can be corrected from - 10% to +10%.

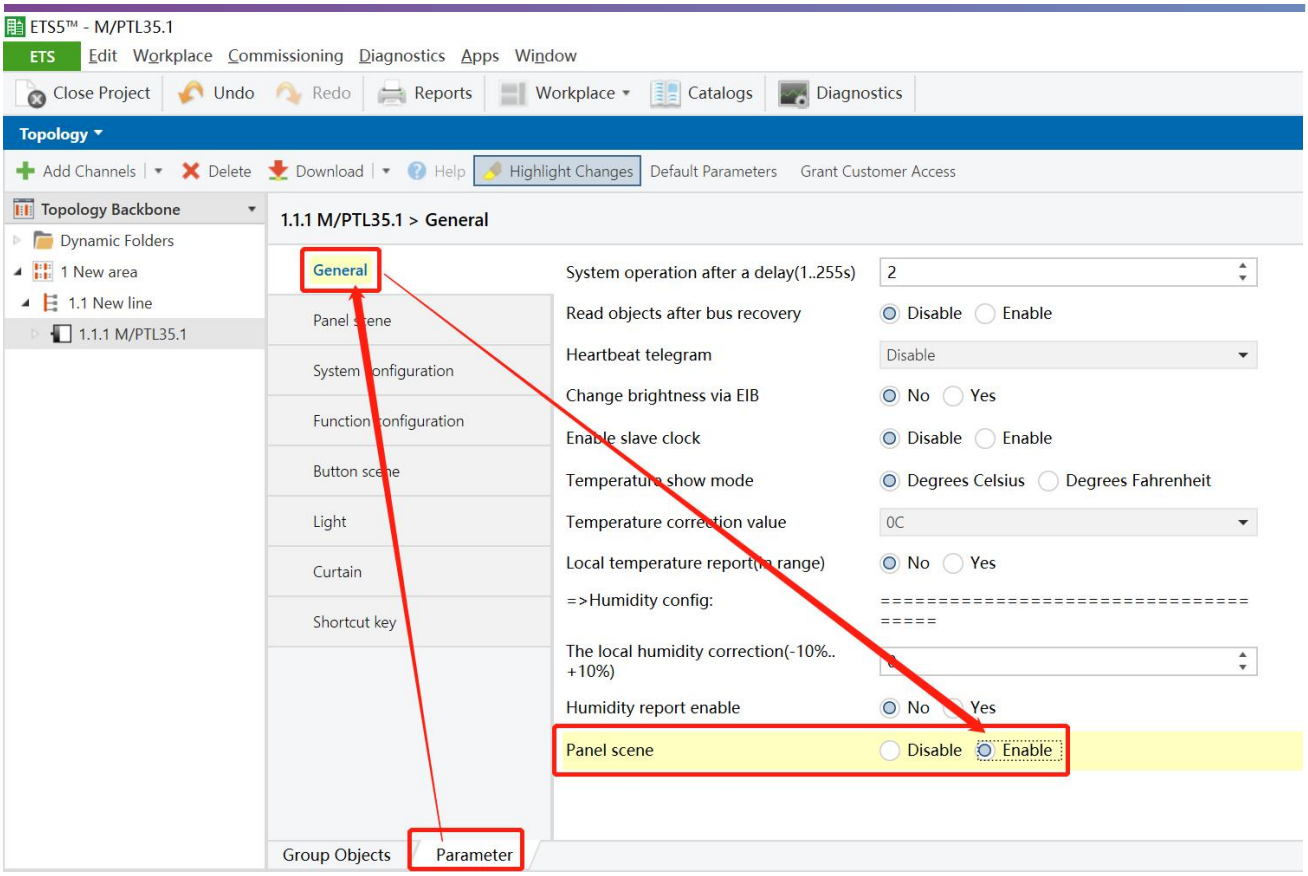
（9） Humidity report enable：Enable/disable broadcast humidity data to KNX bus.

（10） Send humidity to bus：The transmission cycle or source of humidity data can be selected, including Report cyclic、Report when changed and Read from bus。

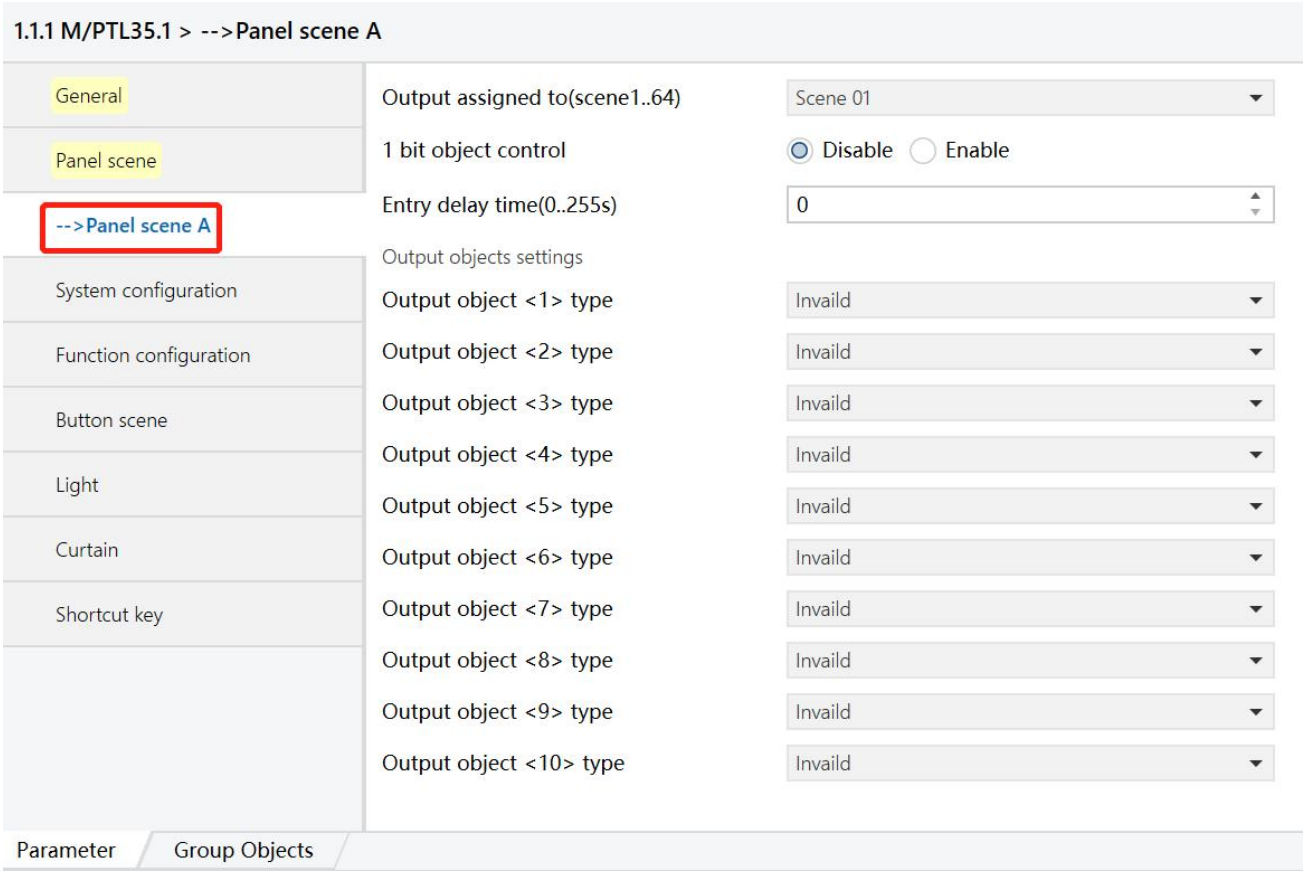
（11） Panel scene：Enable Panel Scene A or B.

3.1.1 Panel Scene A / B

Click “General” in the parameter list, enable the Panel Scene->Panel Scene A.



After enabling the panel scene, click the Panel Scene A to configure on the left.



Other panels and devices can send the corresponding scene number to the scene group address of scene A/B to control those Output object targets.

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type
11	External temperature	Remote temperature for outdoor			2 bytes	C	-	W	T	U	
12	General	PM2.5			2 bytes	C	-	W	T	-	
13	General	CO2			2 bytes	C	-	W	T	-	
14	General	TVOC			2 bytes	C	-	W	T	-	
21	Panel scene A	Call scene (1byte)			1 byte	C	-	W	T	U	
41	Panel scene B	Call scene (1byte)			1 byte	C	-	W	T	U	

The parameters of Panel Scene are described as follows:

（1） Output assigned to: choose the output the scene number. There are 64 scene numbers available.

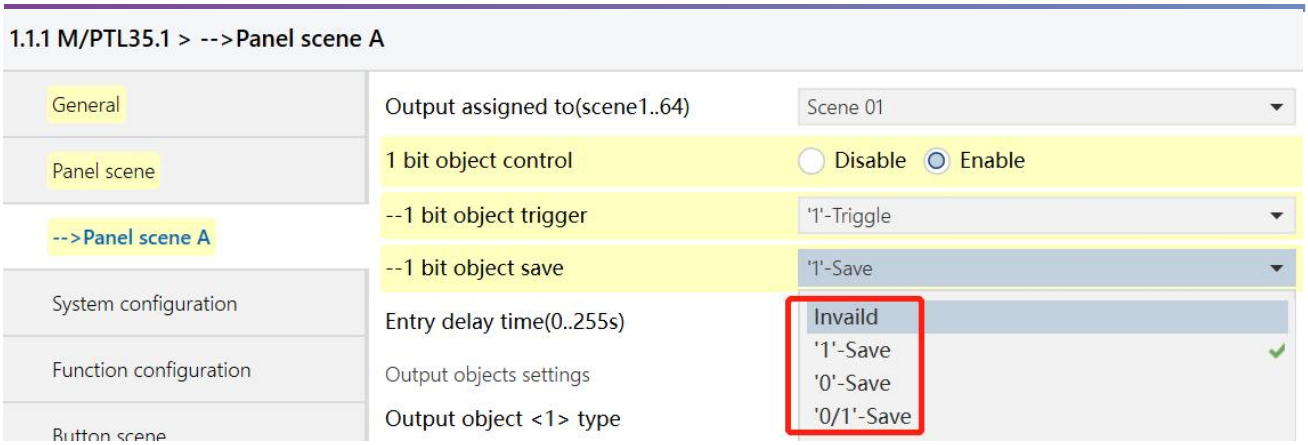
（2） 1 bit object control: After enabling, detailed settings can be made below.

➔ 1 bit object trigger: Other KNX panels and devices can send a 1-bit value to trigger the output in panel scene A/B. “0” - trigger, “1” - trigger, or “1/0” - trigger can be selected.

➔ 1 bit object save: When the target state of the scene changes, send the corresponding value to the group address of Save Scene (1 bit), and you can turn the current scene into a new scene. Execute this scene again, it will be a new scene.

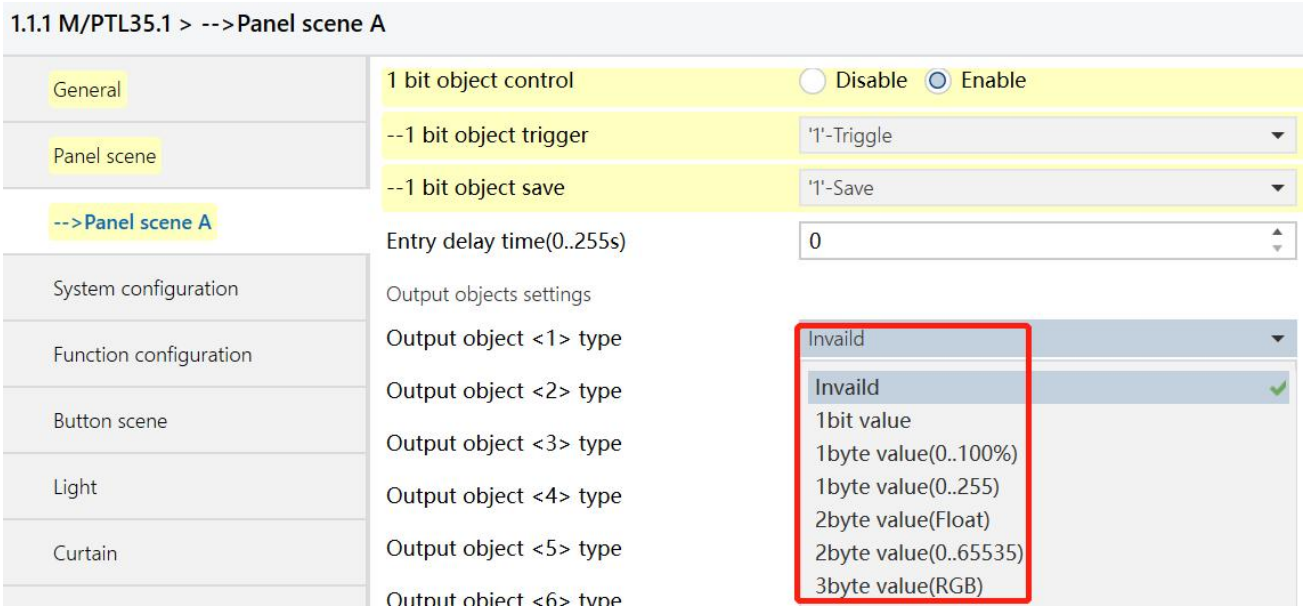
Note: If you want to restore the scene effect based on the current ETS configuration, you can modify the target of the output object and then modify the original data. Then right click M/PTL35.1 device to Partial Download.

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type
11	External temperature	Remote temperature for outdoor			2 bytes	C	-	W	T	U	
12	General	PM2.5			2 bytes	C	-	W	T	-	
13	General	CO2			2 bytes	C	-	W	T	-	
14	General	TVOC			2 bytes	C	-	W	T	-	
21	Panel scene A	Call scene (1byte)			1 byte	C	-	W	T	U	
22	Panel scene A	Call scene (1bit)			1 bit	C	-	W	T	U	
23	Panel scene A	Save scene (1bit)			1 bit	C	-	W	T	U	

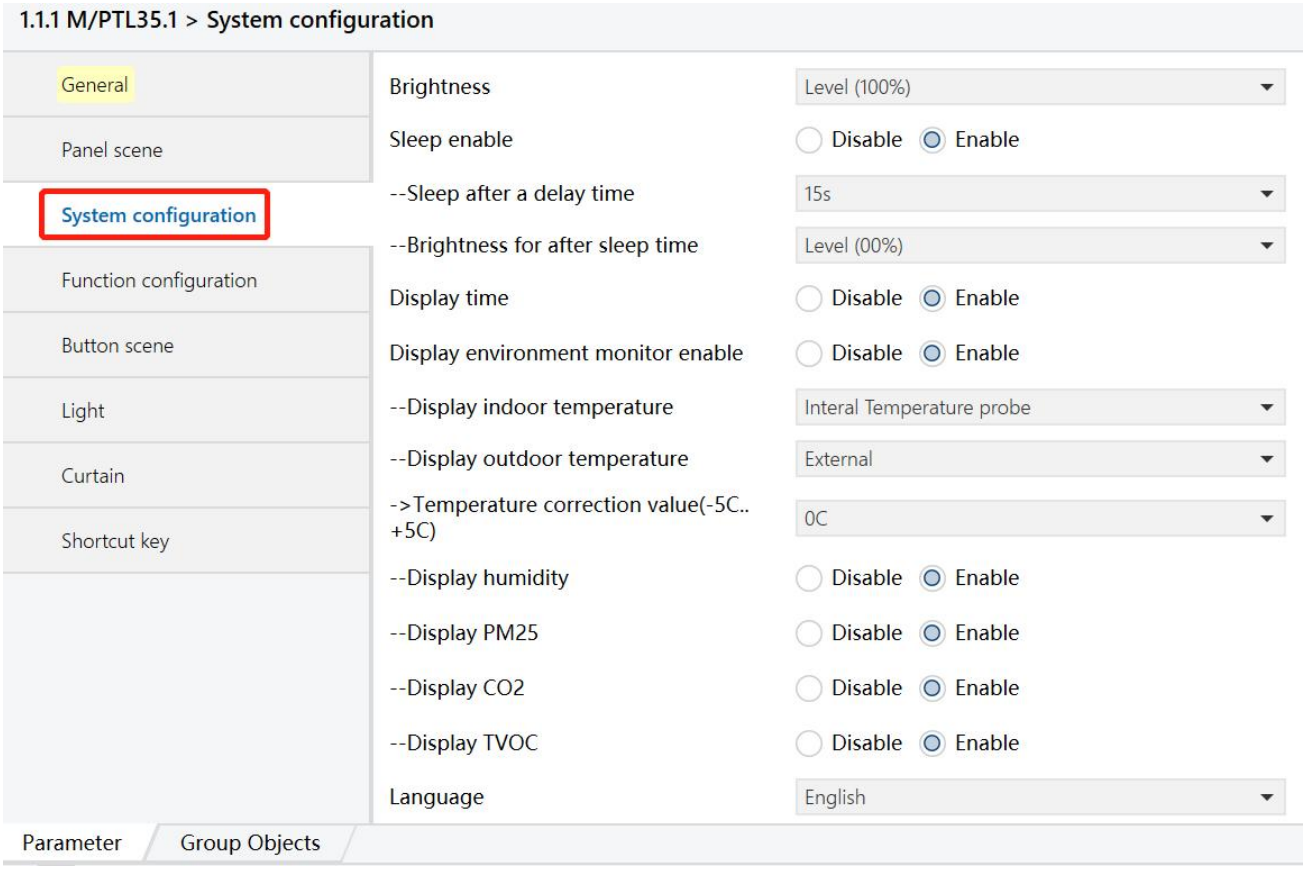


（3） Entry delay time: Set the delay for triggering scene.

（4） Output object <n> type: Set the data type of target object n in the scene. A scene can contain up to 10 control targets. For example, selecting 1 bit value can control the relay switch, and 3-byte value can control the RGB dimmer color, etc.



3.2 System Configuration



The parameters related to system configuration are as follows:

（1）Brightness: Set the screen brightness of Level 0-100%. The default screen brightness is 100%.

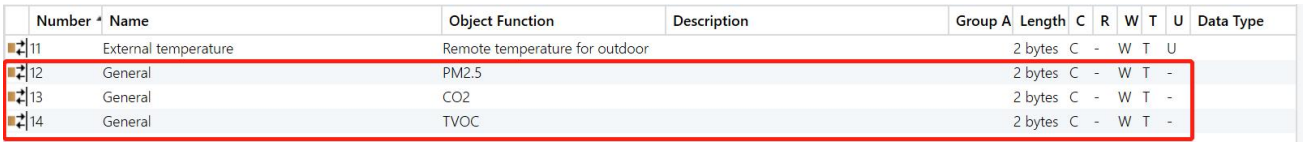
（2）Sleep enable: Disable or enable the sleep function. It's enabled to enter the sleep mode 15 seconds after no operation by default, and the screen brightness is 0%.

- ➔ Sleep after a delay: Set the delay time for entering sleep mode. There are three delay time: never, 15 seconds or 1 minute.
- ➔ Brightness for after sleep time: Set the screen brightness after the panel enters the sleep mode, the range is 0% - 20%.

（3）Display time: Enable or disable the display of time and date on the home page.

（4） Display environment monitor enable: You can enable the display of environmental data PM2.5, CO2, TVOC, humidity and indoor/outdoor temperature on the home page of the panel. To display the values of PM2.5, CO2 and TVOC, other KNX sensors and other devices need to link the corresponding air quality group address and send the

corresponding value to the panel to display.



Number	Name	Object Function	Description	Group A	Length	C	R	W	T	U	Data Type
11	External temperature	Remote temperature for outdoor			2 bytes	C	-	W	T	U	
12	General	PM2.5			2 bytes	C	-	W	T	-	
13	General	CO2			2 bytes	C	-	W	T	-	
14	General	TVOC			2 bytes	C	-	W	T	-	

- ➔ Display indoor/outdoor temperature: The display of indoor/outdoor temperature can be enabled or disabled. If it is enabled, the temperature data source can be selected, including the internal temperature probe or external temperature probe attached to the panel. If Internal temperature probe is selected, then in "General" page → use the "Temperature correction value" for correction, with the range of - 5 ℃ to+5 ℃; If external is selected, the temperature data can be corrected below, ranging from - 5 ℃ to +5 ℃.
- ➔ Display humidity/PM 2.5/CO2/TVOC: Enable or disable the panel to display humidity/PM2.5/carbon dioxide/TVOC data.

（5）Language: Select the system language: Simplified Chinese, Traditional Chinese, Lowercase English, and All Capital English.

（6）Unlock protected by password: Set unlocking panel full lock (default password is 0000).

- ➔ Enable universal password: Enable the universal password. After enabling, universal password and user password can be used to unlock the panel.
- ➔ Password (1-4): Set four-digit passwords. Range is from 0 to 9.

（7）Proximity sensor: Enable the human body of the panel to approach the sensor, with the sensing distance of 25~35cm.

- ➔ Proximity sensor sensitive: Select the sensor sensitivity, the range is 1% - 100%, and the default is 80%.
- ➔ Recovery the LCD brightness: Whether to light the screen at the same time when the sensor senses the human body.
- ➔ Enable send to bus: When the panel senses the human body, it can send a 1-bit ON or OFF value to the bus.
- ➔ Send to bus: Invalid means not to send; Toggle sends on and off alternately (for

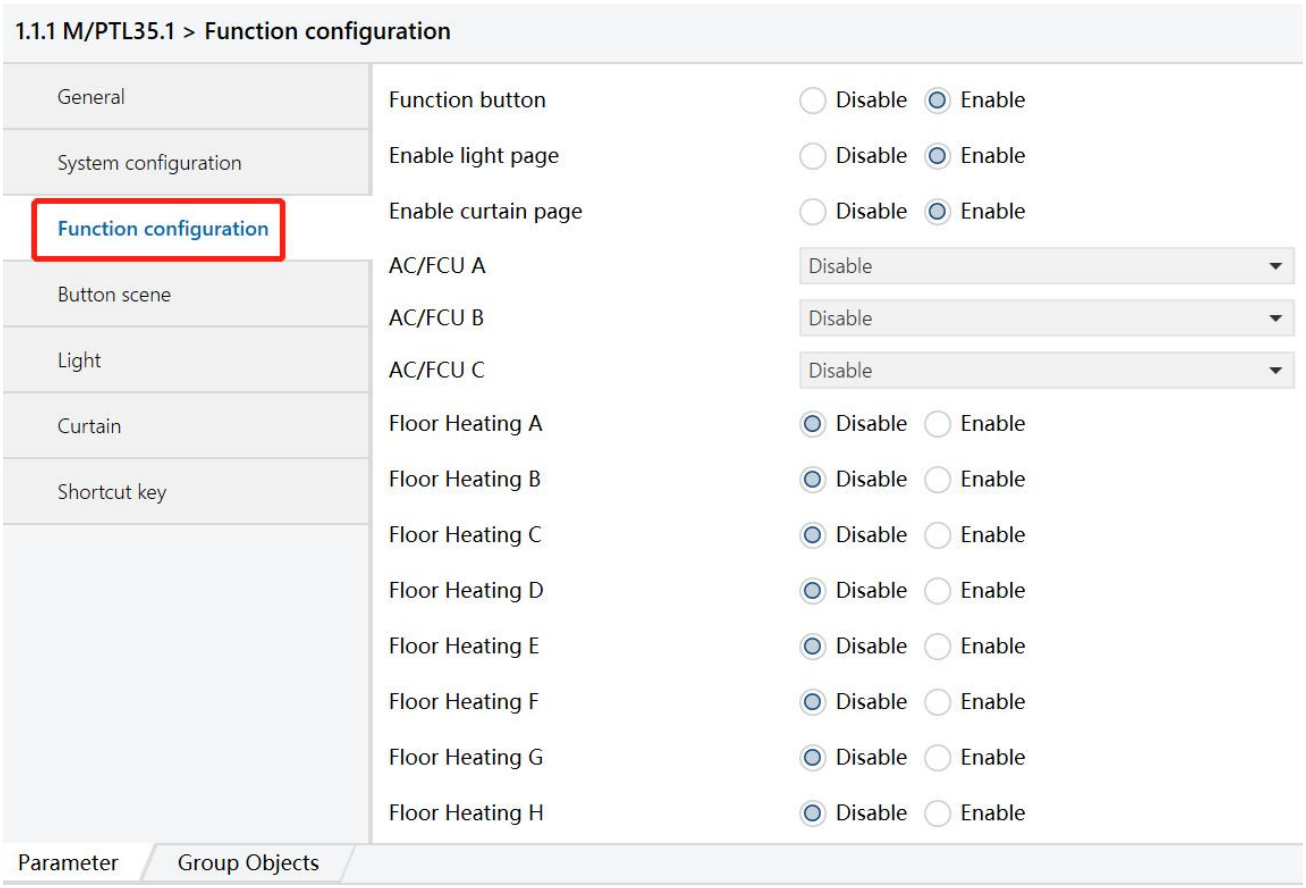
example, when the first time sensing a human body, it sends on, and when the second time sensing a human body, it sends off); ON is the value that only sends on; OFF is the value of sending off only.

➔ Send to bus after delay time: Set the delay time for sending the value after the human body approaches. Invalid means not to send; Toggle sends on and off alternately (for example, when the first time sensing a human body, it sends on, and when the second time sensing a human body, it sends off); ON is the value that only sends on; OFF is the value of sending off only. Delay time is the delay time, ranging from 5-255 seconds.

3.3 Function Configuration

Click the main menu button of KNX TILE Display to open the main menu (i.e., control page), and each control page button (air conditioner, light, scene, etc.) in the panel can be displayed or hidden through the function configuration part of ETS software.

Click Function configuration in the parameter menu to open the function configuration interface as follows:



The relevant parameters of System Configuration are described as follows:

（1） Function button: Enable the Button scene function. A total of 20 scenarios are supported.

（2） Enable light page: Enable the light function. A total of 20 lights are supported. Lights include switches, dimmers, RGB lights, and CCT types.

（3） Enable curtain page: Enable the curtain function. A total of 8 curtains are supported。Curtain control type can be on, off, stop, and percentage adjustment.

（4） AC/FCU: Enable the AC or FCU function. A total of 3 AC/FCUs are supported.

（5） Floor Heating N: Enable the floor heating function (eight in total); The modes are normal, day, night, departure, and timing. Control modes include on/off, temperature regulation and mode switching.

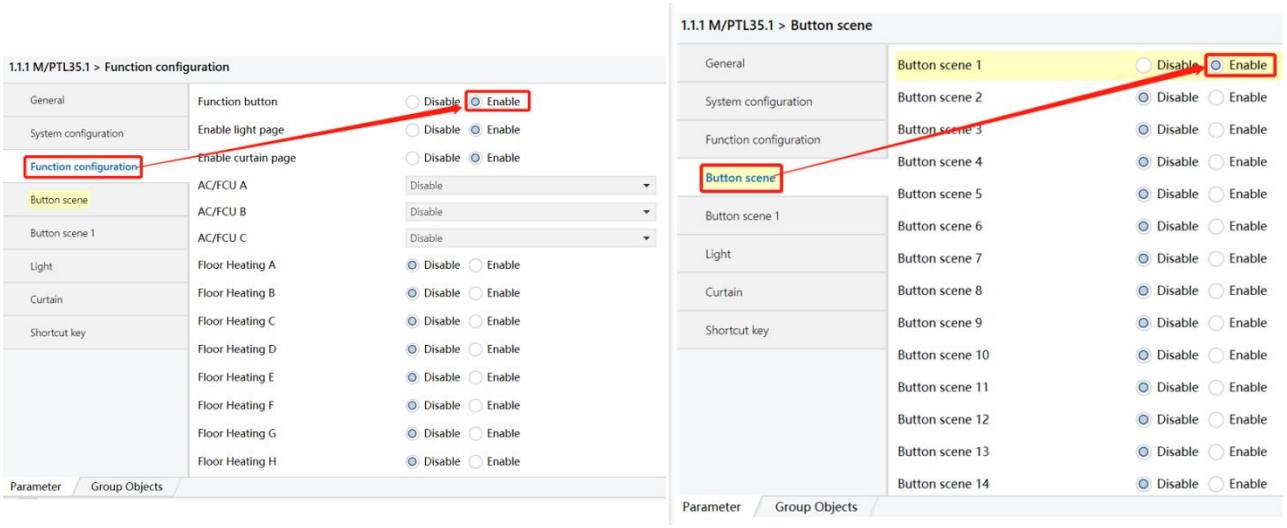
（6） Fresh air: Enable the Fresh Air function (one in total). Control modes include switch, wind speed, mode, etc.

（7） Audio page: Enable music control (one in total).

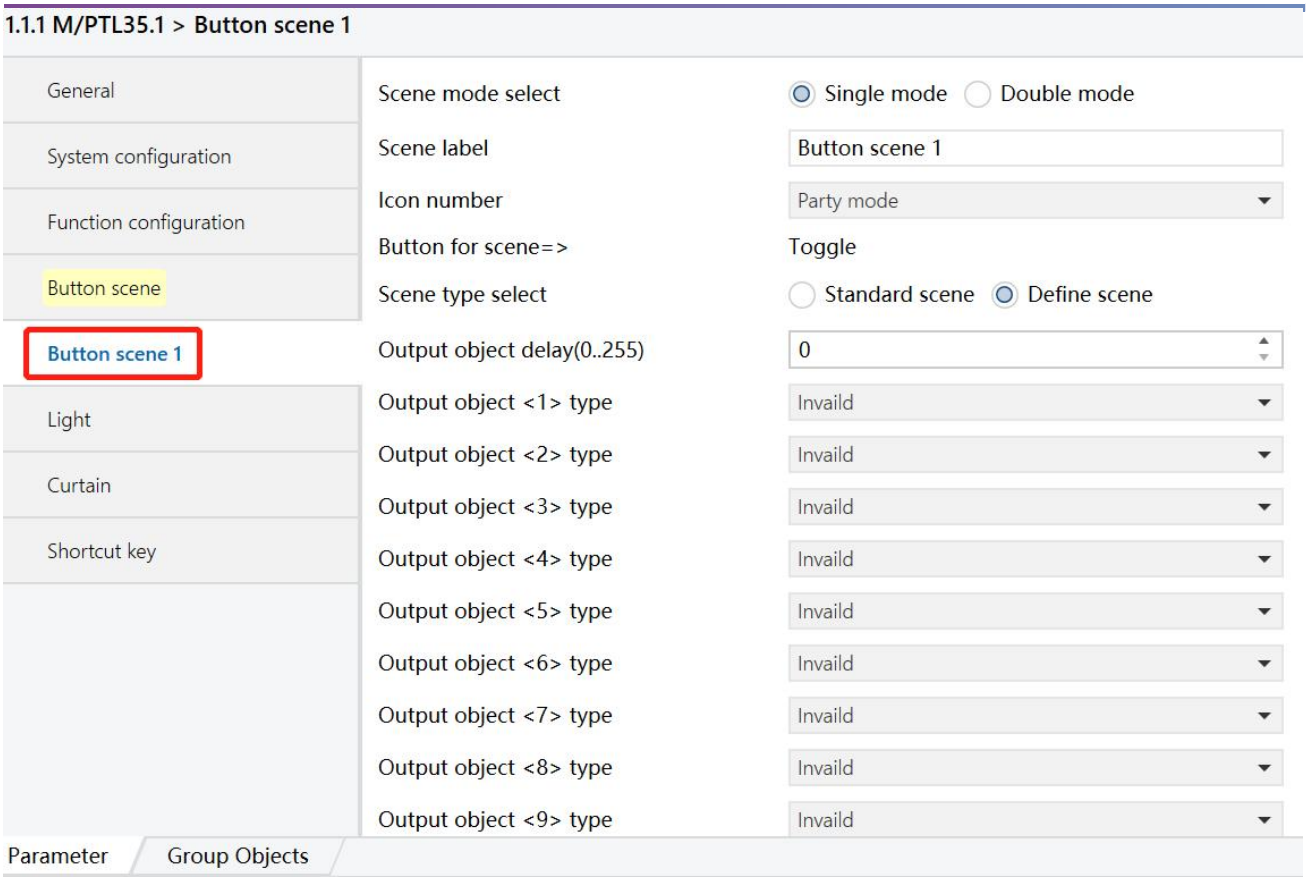
（8） Shortcut key page: Enable shortcut key page (on the main interface, up to five are supported).

3.4 Button Scene

n Function configuration, after enabling the Function button, you can see the Button scene in the panel main menu. Click Button scene in the parameter menu to open the button scene enabling interface.



After enabling scene 1, you can get the following interface:

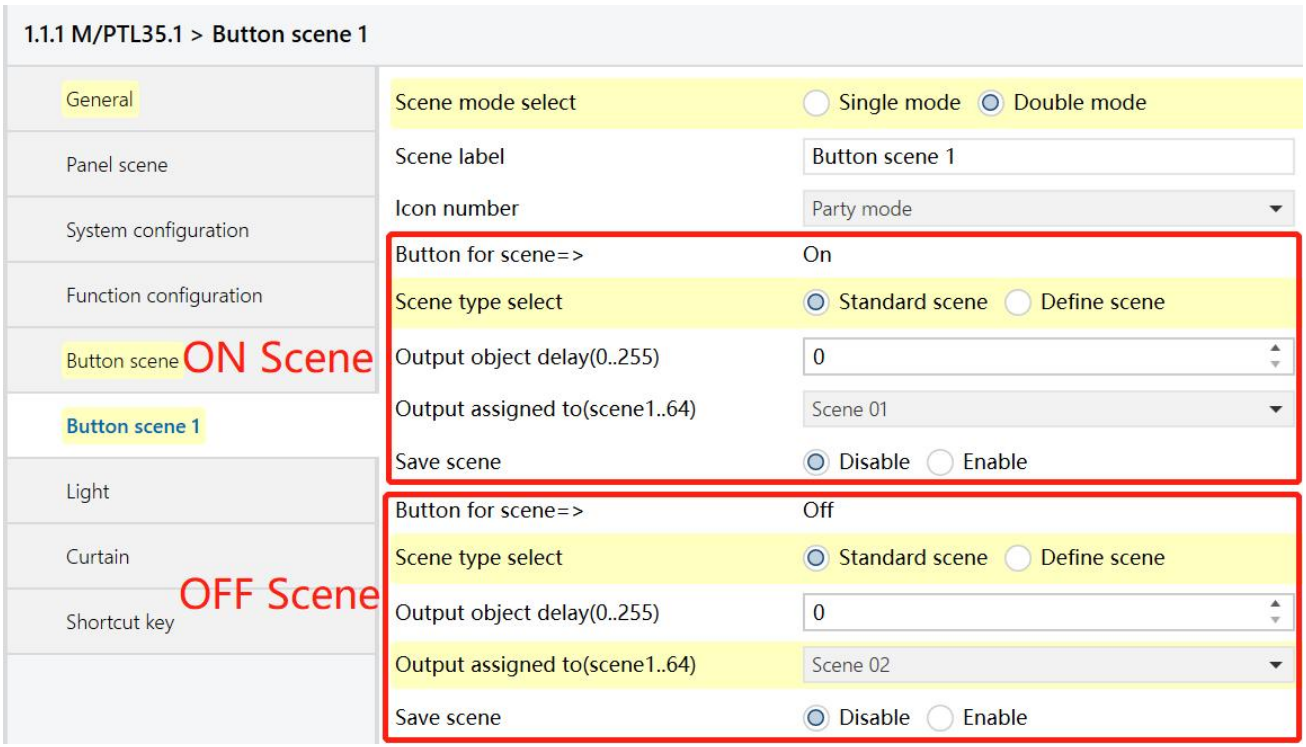


The related parameters of the button scene are described as follows:

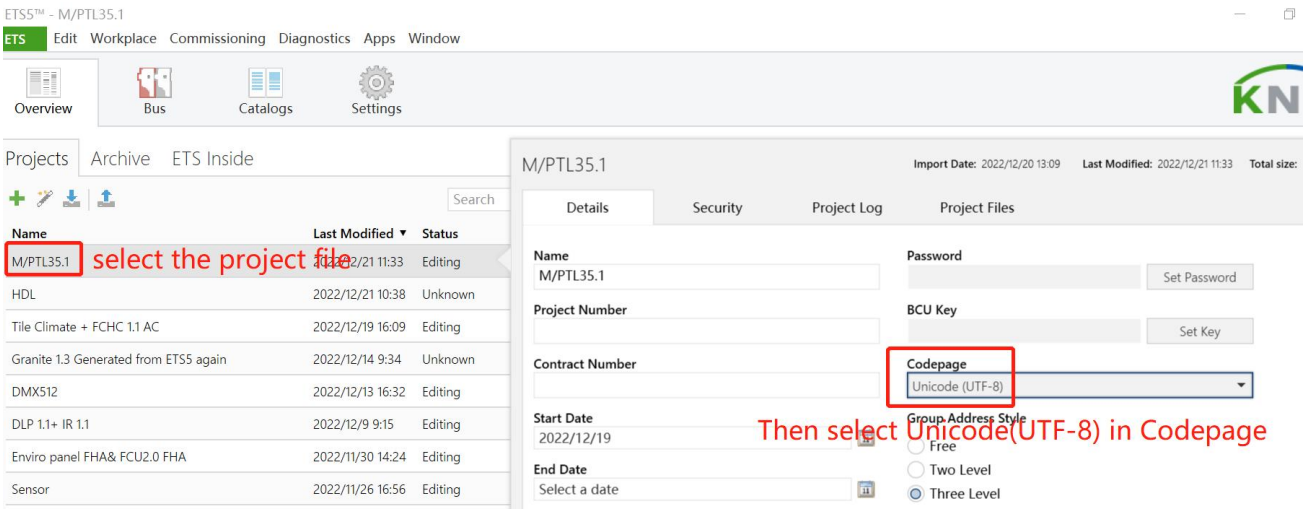
（1）Scene mode select: Single scene or double scene can be selected.

➔ Single scene: The triggered scene target has only one effect. You can control scene numbers in standard scenes or 10 targets in custom scenes.

➔ Double scene: Each time the scene is triggered, you can alternately control the scene number in the standard scene/10 targets in the custom scene in the ON or OFF scene. That is, the first trigger scenario is to open the ON scenario; The second trigger scenario is to open the OFF scenario; The third time is to open the ON scene, and so on.



（2）Scene label: You can modify the scene name. If it does not show the name in languages other than English, configure the character encoding of the project file to Unicode (UTF-8).



（3）Icon number: Scene icons can be modified. A total of 17 scene icons can be selected (custom icons are not supported temporarily).

（4）Scene type select: Scene type Standard scene and Define scene can be selected.

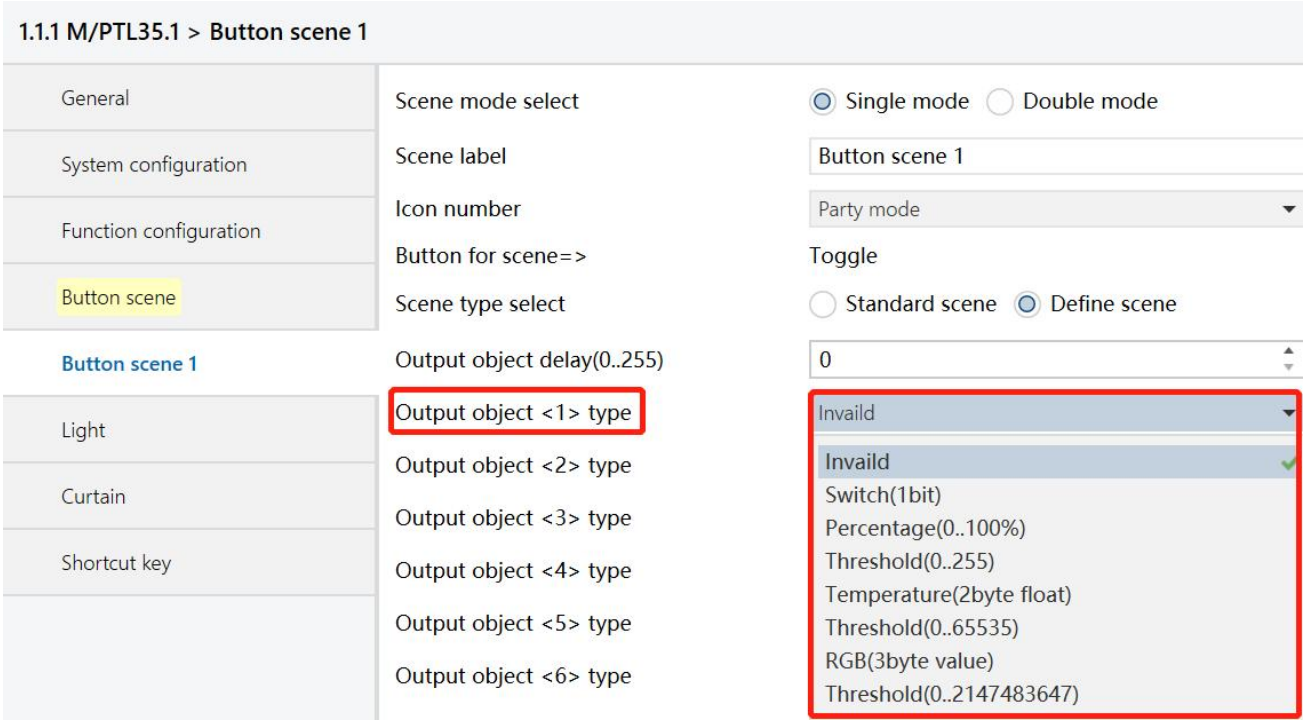
➔ Standard scene: Standard scene refers to the sending scenario number control scenario, with 64 scenario numbers in total. You can refer to section

"3.1.1 Panel Scene A / B -> 1 bit object save" to save current effect as new scene。

➔ Define scene: Customize the targets in define scene.

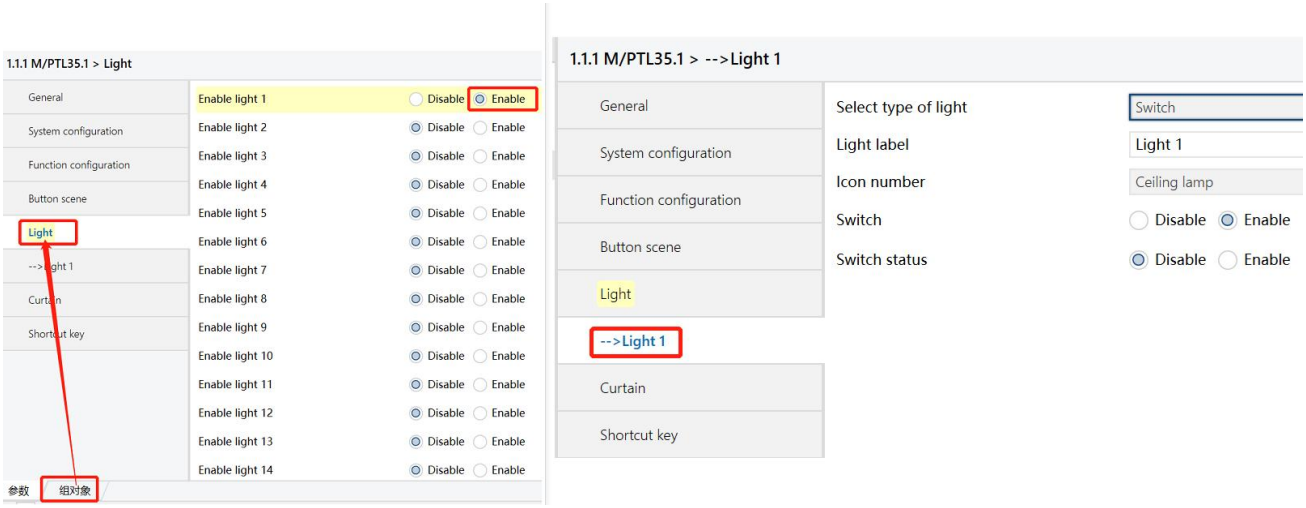
5. Output object delay (0…255): Delay the time to control the target after triggering the scene, ranging from 0-255 seconds. By default, there is no delay.

6. Output object <n> type (only for Define scene): The output target type can be selected, including 1bit switch, 1byte percentage control, 1byte or 2bytes or 4bytes threshold, 2byte temperature value output and 3bytes RGB. Each scenario supports up to 10 targets.



3.5 Light

Click Light in the parameter menu to open the light enabling interface, enabling light 1.



Select the light control type in Select type of light, including switch, dimmer, RGB, and control the brightness and color temperature (CCT) of DALI lights, and modify the light name in Light label. If the label is in other languages except for English, please refer to section 3.4 Button Scene ->（2）Scene label to modify the encoding format of the project file.

Icon number: One of the six light icons can be selected (upload of custom icons is not supported temporarily).

（1）If switch is selected:

- ➔ Switch: The switch lamp can be controlled through the panel.
- ➔ Switch status: Enable the switch light status。

（2）If Dimmer is selected:

- ➔ Dimming: The dimming light can be controlled through the panel
- ➔ Dimming status: Enable the dimming light status.

（3）If the RGB is selected:

- ➔ RGB absolute dimming (1 byte): Enable the absolute dimming brightness of RGB light.
- ➔ RGB color (3 byte)： You can select the disable, write a value of 3 bytes for 1 object at the same time, or write a value of 1 byte for each object to RGB to control the color.
- ➔ RGB absolute dimming status (1 byte): Enable the status of absolute dimming

brightness of RGB light.

➔ RGB color status (3 byte): You can select the disable You can select the RGB light color state of disabled, 1 object with 3 bytes, or 3 objects with 1 byte for each object.

（4）If the CCT is selected:

➔ Percentage: Enable control of percentage brightness.

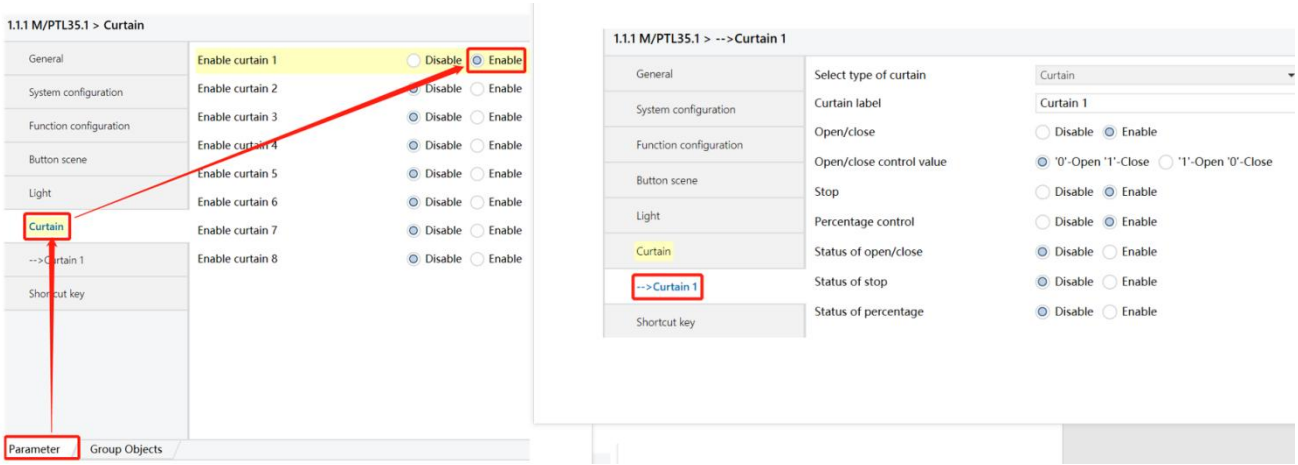
➔ Color temperature (2 byte): The color temperature of DALI lamp can be controlled through 2 bytes.

➔ Percentage status (1 byte): Enable the percentage brightness status.

➔ Color temperature status (2 byte): Enable 2-byte Color temperature status of DALI lamp.

3.6 Curtain

Click the curtain tab to enable the curtain 1 in the parameter menu.



The reference description of curtain function is as follows:

（1）Select type of curtain: The curtain type can be selected, including common curtain, motor curtain and roller blind.

（2）Curtain label: The remark of curtain.

（3）Open/close: The curtain opening/closing function can be enabled. After enabling, 1 or 0 can be selected below to control on/off

（4）Stop: Enable control curtain stop.

（5）Percentage control: Percentage of curtain that can be enabled to control by 1byte.

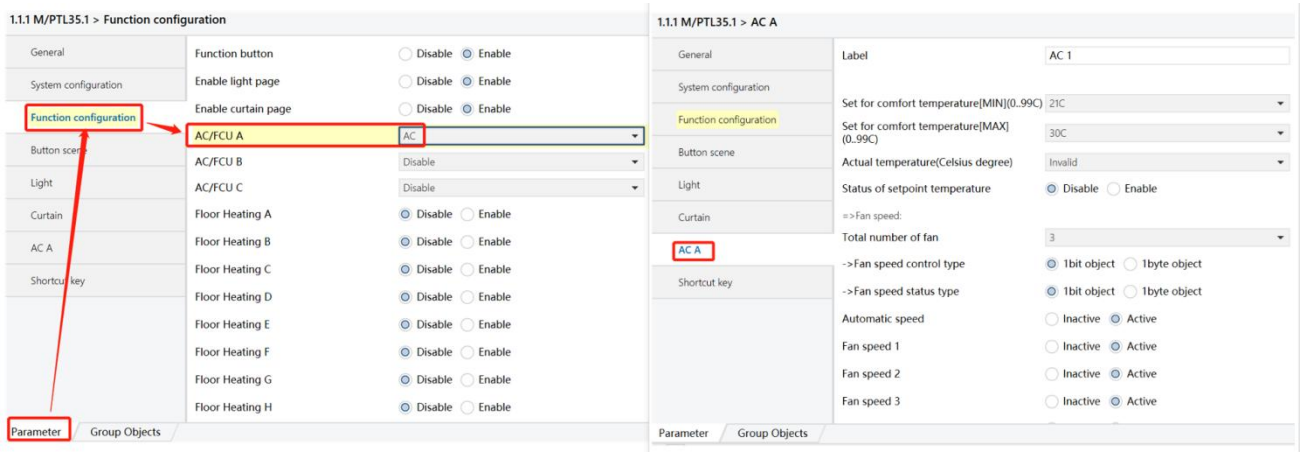
（6）Status of open/close: Enable the curtain status. After enabling, 1 or 0 can be selected below to indicate on/off respectively.

（7）Status of stop: Enable the curtain stop status.

（8）Status of percentage: Enable the curtain percentage control status, ranging from 0% -100%.

3.7 AC/FCU

In Function configuration, select the type of AC air conditioner. KNX TILE Display screen supports up to three AC or FCUs.



The parameters of the air conditioner are described as follows:

（1）Label: AC remark.

（2）Set for comfort temperature [MIN/MAX]: The maximum and minimum values of the set temperature can be adjusted. The range is 0-99 ℃, and the default value is 21~30 ℃.

（3）Actual temperature: Select the source of local temperature data, which can be selected from the local sensor and EIB.

➔ If local sensor is selected, temperature compensation can be performed through "Temperature correction value" on the "General" page. The range is - 5 ℃ to +5 ℃.

➔ If EIB is selected, the temperature data read from the panel can be compensated

below, with the range of - 5 ℃ to+5 ℃.

（4）Status of setpoint temperature: Enable the setpoint temperature status. This target can be used to synchronize the value of the current set temperature of the air conditioner to the set temperature of the panel.

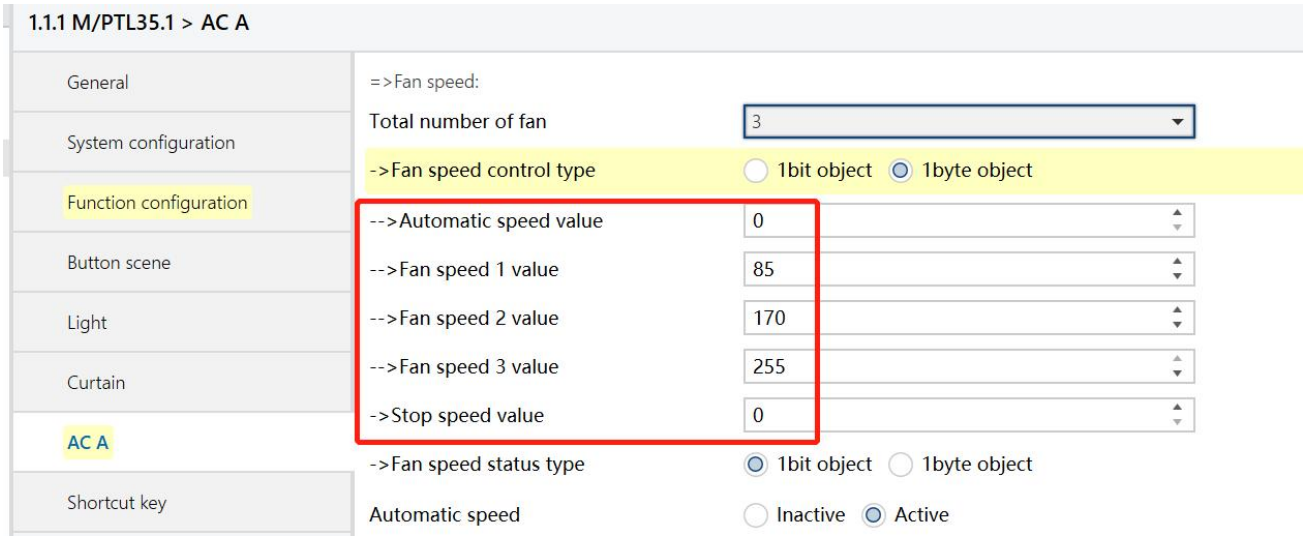
（5）Total number of fan: The gear of fan speed, there is the third-gear fan speed, is selected by default. And the maximum is the five gears fan speed.

（6）Fan speed control type: Fan speed control type can be selected. 1 bit object controls wind speed through 1 bit on/off, and 1 byte object controls wind speed through 1 byte target.

If 1 byte object is selected, detailed configuration can be made below。

➔ Automatic speed value: The panel controls the value of automatic fan speed. The default written value 0 is automatic fan.

➔ Fan speed n value: The panel sets the fan speed at different gears. If the default 3-gear fan speed is selected in (5) Total number of fan, the panel can be configured with what values to control the high, medium and low stop fan at Fan Speed 1/2/3 value.



（6）Fan speed status type: The panel controls the data type of the fan speed status. You can select 1 bit or 1 byte.

（7）Automatic speed、Fan speed 1-3 and Stop speed: Enable or disable the automatic, high, medium, low and stop fan speed functions, Inactive is disabled, Active is enabled.

（8）Wind swing: The wind swing function can be enabled, and the types can be selected

as 1bit, 1byte and 1bit/1byte.

（9）Status of wind swing: The state of the wind swing function. The swing feedback of the air conditioner can be synchronously displayed on the panel, and the type can also be selected as 1bit, 1byte and 1bit / 1byte.

（10） Control mode type: Select the air conditioning control mode type. 1 bit object controls the air conditioning through 1 bit target, and 1 byte object controls the air conditioning control mode through 1 byte target. If you select 1 byte object, you can configure the value sent to the air conditioner by the panel below for the air conditioner to switch to automatic mode, cooling, heating, dehumidification, and fan only mode:

- ➔ Automatic heating/cooling value: To control the air conditioner to automatic mode, the panel needs to send the value.
- ➔ Only cooling value: To control the air conditioner to cooling mode, the panel needs to send the value.
- ➔ Only heating value: To control the air conditioner to heating mode, the panel needs to send the value.
- ➔ Only dehumidification value: To control the air conditioner to dehumidification mode, the panel needs to send the value.
- ➔ Only fan value: To control the air conditioner to only fan mode, the panel needs to send the value.

（11）Status of mode type: The panel displays the status of the air conditioning control mode, and 1 bit or 1 byte data type can be selected.

（12）Automatic heating/cooling: Enable/disable automatic heating/cooling mode, Inactive is disabled, Active is enabled.

（13） Only cooling: Enable/Disable the cooling mode. Inactive is disabled, Active is enabled.

（14） Only heating: Enable/Disable the heating mode. Inactive is disabled, Active is enabled.

（15） Only dehumidification: Enable/Disable the dehumidification mode. Inactive is

disabled, Active is enable.

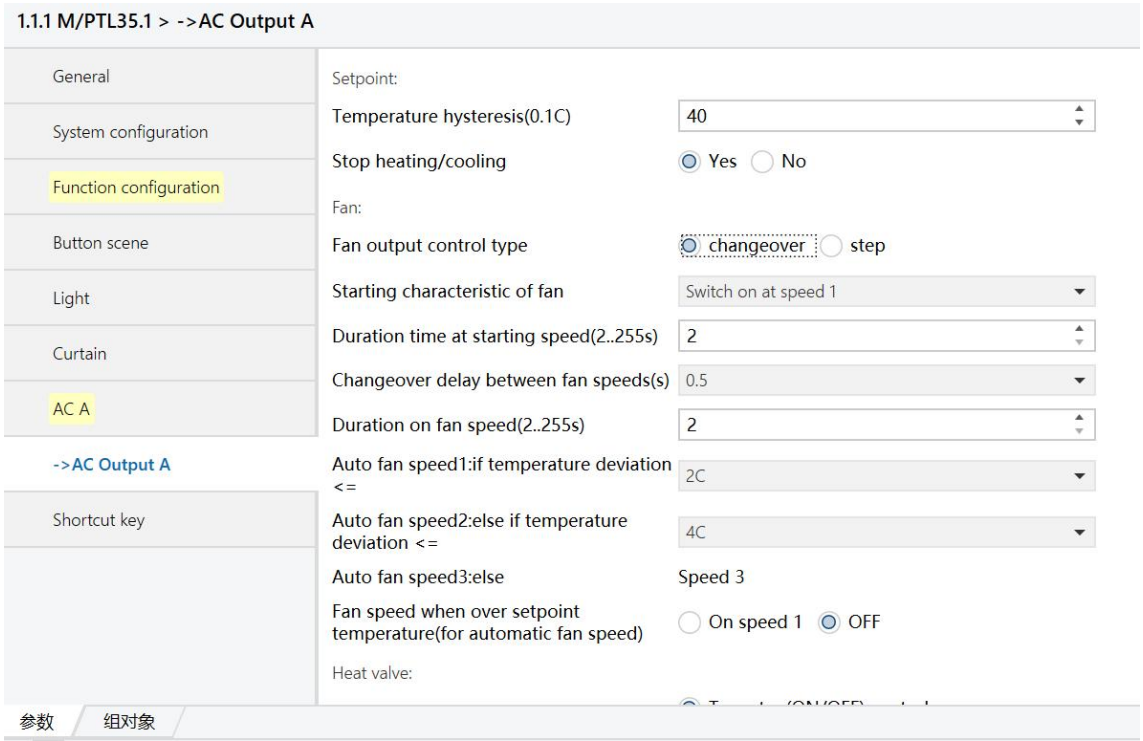
（16）Only fan: Enable/disable fan only mode. Inactive is disabled, Active is enabled.

（17）The status operation after power on: You can select the status of the air conditioning interface after the panel is powered on. “Unchange” is unchanged, and “Recovery” is the status before the power is restored. If Recovery is selected, you can configure the delay time for status recovery to the state before power failure. Range is 2-255 seconds; default is 5 seconds.

（18）The status operation after AC switch ON: You can select the state operation after the panel opens the air conditioner. Unchange is unchanged, and Recovery is the operation state before power failure. If Recovery is selected, you can set the recovery status delay at the Delay for status recovery below. The range is 0-20 seconds, and the default is 1 second。

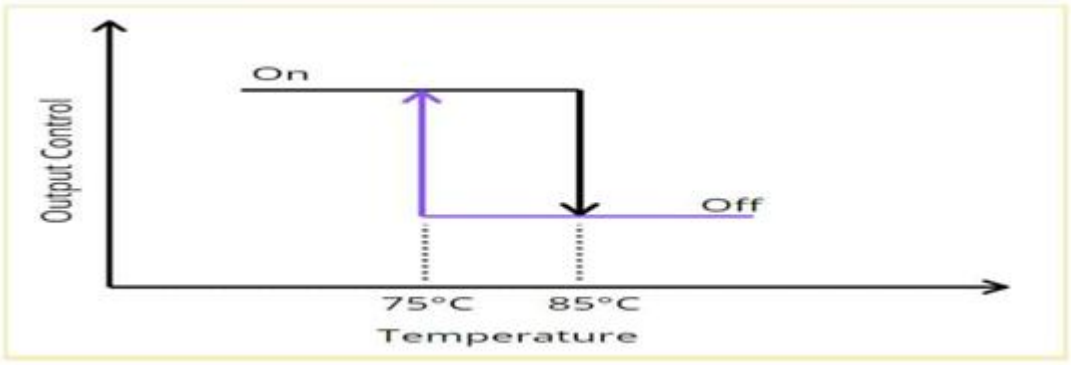
（19）Output control the relay actuator：Air conditioning output control relay. For more details, please refer to section 3.7.1 AC Output A description.

3.7.1. AC Output A



（1） Temperature hysteresis: Temperature hysteresis means that the valve can be

opened or closed when the temperature is set to the ambient temperature in degrees Celsius. The range is 1-200, i.e., 0.1℃ - 20℃.



（2）Stop heating/cooling: Stop the heating or cooling.

（3）Fan output control type: Fan output control type, you can select Changeover or Step.

（4）Starting characteristic of fan: The default fan speed after the air conditioner is powered on can be selected, and the fan speed can be 1/2/3.

（5）Duration time at starting speed: It refers to a period of time when the air conditioner operates at the default fan speed after being powered on. The default value is 2 seconds and the range is 2-255 seconds.

（6）Changeover delay between fan speeds: It refers to the delay time for the air conditioner to adjust from one fan speed to another. The default value is 0.5 seconds, and the range is 0.5-10 seconds.

（7）Duration on fan speed: It refers to the duration of fan speed. The default value is 2 seconds, and the range is 2-255 seconds.

（8）Auto fan speed 1: if temperature deviation<=: When the temperature is less than or equal to this temperature, the operating fan speed 1.

（9）Auto fan speed 2: if temperature deviation<=: When the temperature is less than or equal to this temperature, the operating fan speed 2.

（10）Auto fan speed 3: else: In addition to the above (points 8 and 9), the operating fan speed 3.

（11）Fan speed when over setpoint temperature (for automatic fan speed): When the temperature exceeds the set temperature, execute the fan speed 1 (On speed 1) or turn off

the fan speed (OFF).

（12）Control type: Control categories can be selected, including Two step control (ON/OFF) and PWM control. If the latter is selected, detailed settings can be made below:

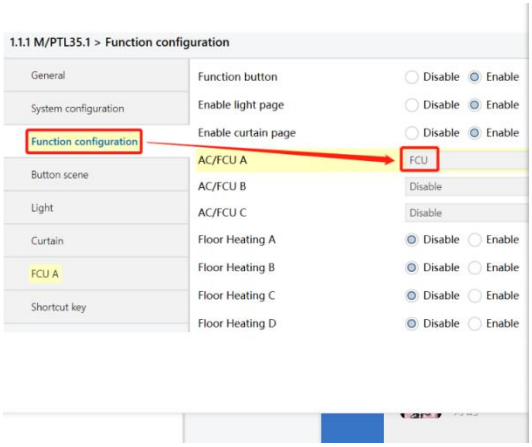
➔ Heating/Cooling speed (For PI): Heating or cooling speed.

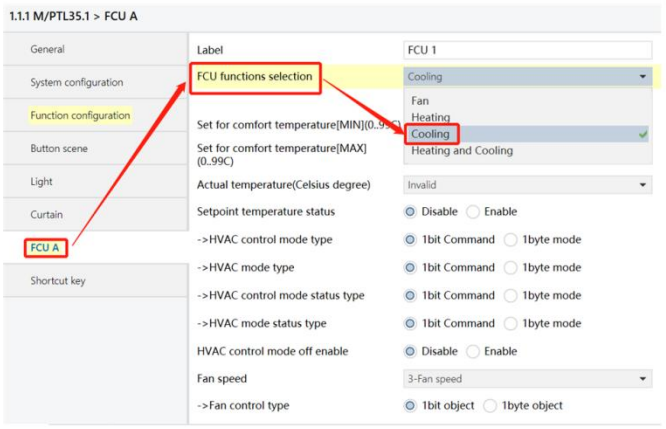
➔ PWM period: PWM control cycle.

➔ Minimum/Maximum PWM valve: minimum / maximum PWM value.

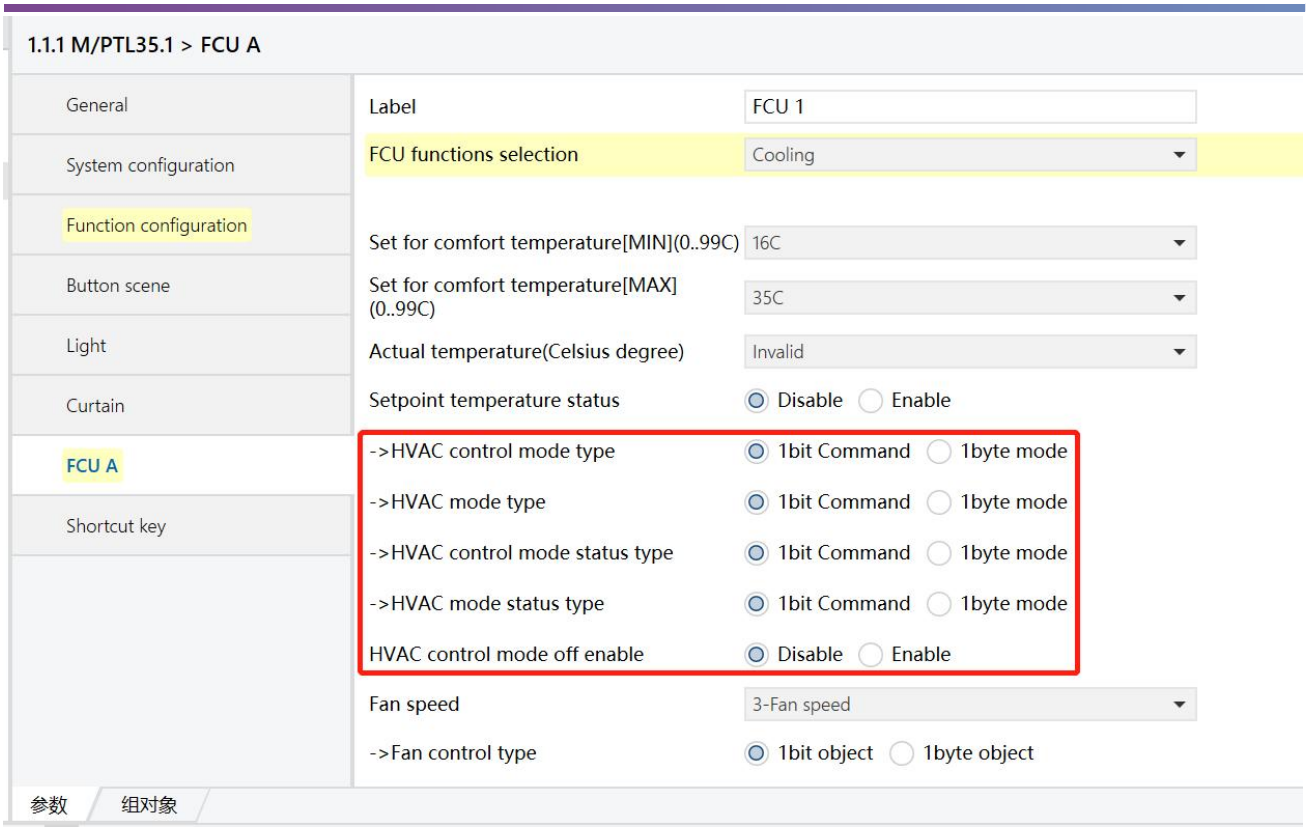
3.7.2. FCU

In Function configuration, find AC/FCU A to select FCU function, and select parameter to open FCU A interface. The FCU interface selects the cooling mode.





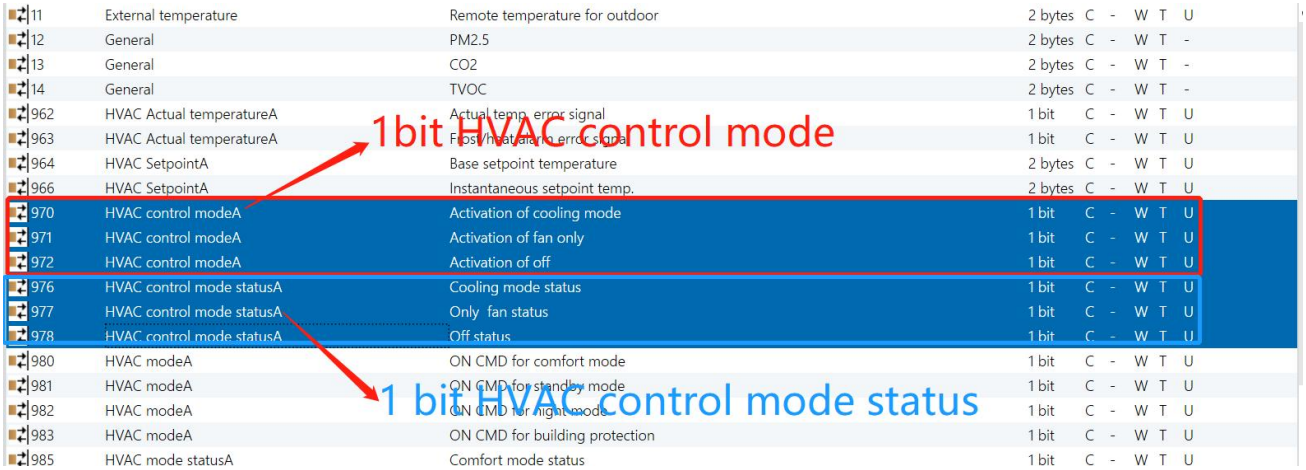
When the panel air conditioner is used to control the fan coil unit, the function of HVAC control is increased compared with that of AC/FCU in section 3.7, as shown in the following figure:



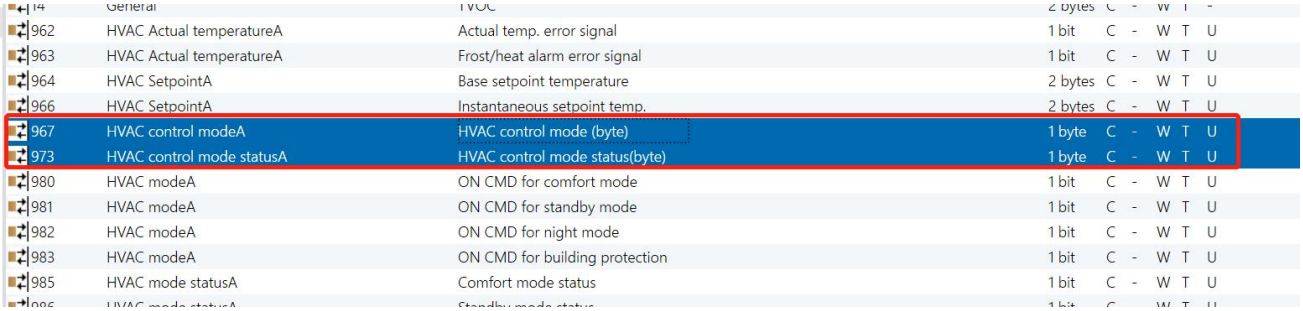
The following describes the parameters of HVAC function:

（1） HVAC control mode type: 1 bit or 1 byte data type can be selected to control the control mode of fan coil unit air conditioner. “HVAC control mode status type” is the status of panel cooling, fan, and off modes.

➔ If the 1-bit data type is selected, the group object interface includes Activation of cooling mode, Activation of fan only mode, and Activation of off mode. The group address can be fed back to the panel by linking the corresponding 1-bit control mode and 1-bit control mode of the FCU air conditioning module, as shown below:



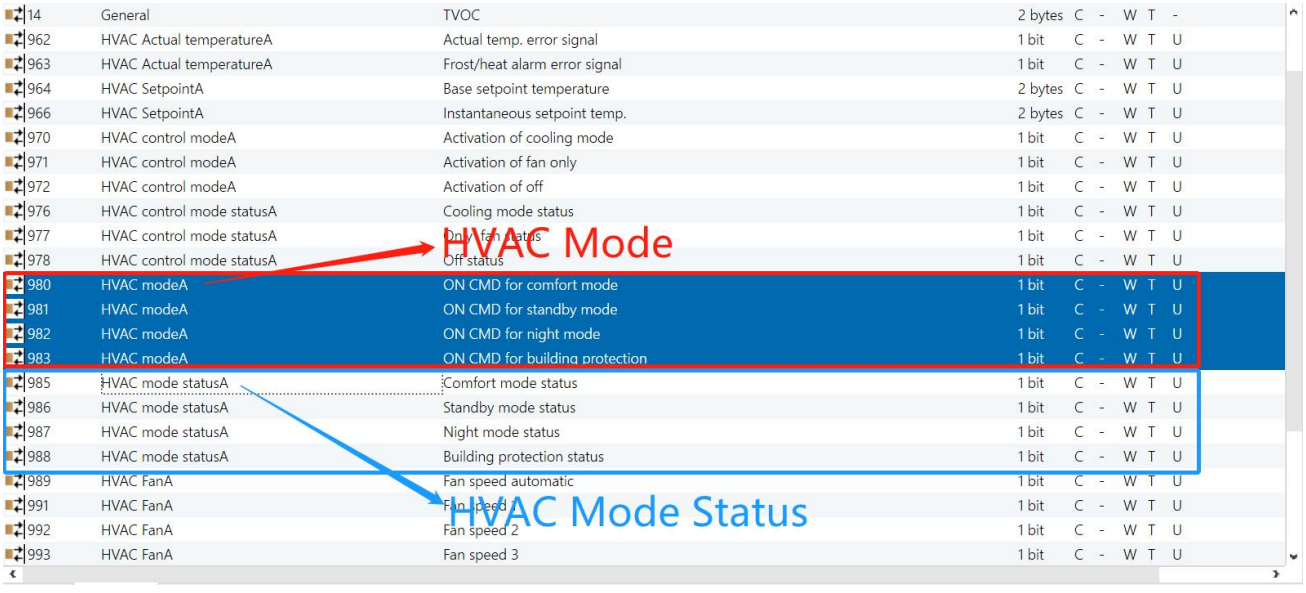
➔ If the 1-byte data type is selected, the corresponding 1-byte group address of the FCU air conditioning module can be linked to the panel's HVAC control mode and status, as shown below:



962	HVAC Actual temperatureA	Actual temp. error signal	1 bit	C	-	W	T	U
963	HVAC Actual temperatureA	Frost/heat alarm error signal	1 bit	C	-	W	T	U
964	HVAC SetpointA	Base setpoint temperature	2 bytes	C	-	W	T	U
966	HVAC SetpointA	Instantaneous setpoint temp.	2 bytes	C	-	W	T	U
967	HVAC control modeA	HVAC control mode (byte)	1 byte	C	-	W	T	U
973	HVAC control mode statusA	HVAC control mode status(byte)	1 byte	C	-	W	T	U
980	HVAC modeA	ON CMD for comfort mode	1 bit	C	-	W	T	U
981	HVAC modeA	ON CMD for standby mode	1 bit	C	-	W	T	U
982	HVAC modeA	ON CMD for night mode	1 bit	C	-	W	T	U
983	HVAC modeA	ON CMD for building protection	1 bit	C	-	W	T	U
985	HVAC mode statusA	Comfort mode status	1 bit	C	-	W	T	U

（2） HVAC mode Type: You can select 1bit or 1byte data type to control the current mode of fan coil unit air conditioning. It can be understood as the scene mode used. “HVAC mode status type” is the mode status of the panel.

➔ If the 1-bit data type is selected, the group object interface includes ON CMD for comfort mode, ON CMD for standby mode, ON CMD for night mode and ON CMD for building protection mode. The group address can be fed back to the panel by linking the corresponding 1-bit control mode and 1-bit control mode of the FCU air conditioning module, as shown below:



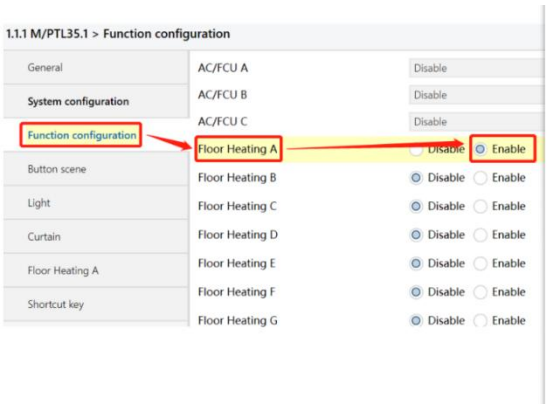
14	General	TVOC	2 bytes	C	-	W	T	-
962	HVAC Actual temperatureA	Actual temp. error signal	1 bit	C	-	W	T	U
963	HVAC Actual temperatureA	Frost/heat alarm error signal	1 bit	C	-	W	T	U
964	HVAC SetpointA	Base setpoint temperature	2 bytes	C	-	W	T	U
966	HVAC SetpointA	Instantaneous setpoint temp.	2 bytes	C	-	W	T	U
970	HVAC control modeA	Activation of cooling mode	1 bit	C	-	W	T	U
971	HVAC control modeA	Activation of fan only	1 bit	C	-	W	T	U
972	HVAC control modeA	Activation of off	1 bit	C	-	W	T	U
976	HVAC control mode statusA	Cooling mode status	1 bit	C	-	W	T	U
977	HVAC control mode statusA	Only fan status	1 bit	C	-	W	T	U
978	HVAC control mode statusA	Off status	1 bit	C	-	W	T	U
980	HVAC modeA	ON CMD for comfort mode	1 bit	C	-	W	T	U
981	HVAC modeA	ON CMD for standby mode	1 bit	C	-	W	T	U
982	HVAC modeA	ON CMD for night mode	1 bit	C	-	W	T	U
983	HVAC modeA	ON CMD for building protection	1 bit	C	-	W	T	U
985	HVAC mode statusA	Comfort mode status	1 bit	C	-	W	T	U
986	HVAC mode statusA	Standby mode status	1 bit	C	-	W	T	U
987	HVAC mode statusA	Night mode status	1 bit	C	-	W	T	U
988	HVAC mode statusA	Building protection status	1 bit	C	-	W	T	U
989	HVAC FanA	Fan speed automatic	1 bit	C	-	W	T	U
991	HVAC FanA	Fan speed 1	1 bit	C	-	W	T	U
992	HVAC FanA	Fan speed 2	1 bit	C	-	W	T	U
993	HVAC FanA	Fan speed 3	1 bit	C	-	W	T	U

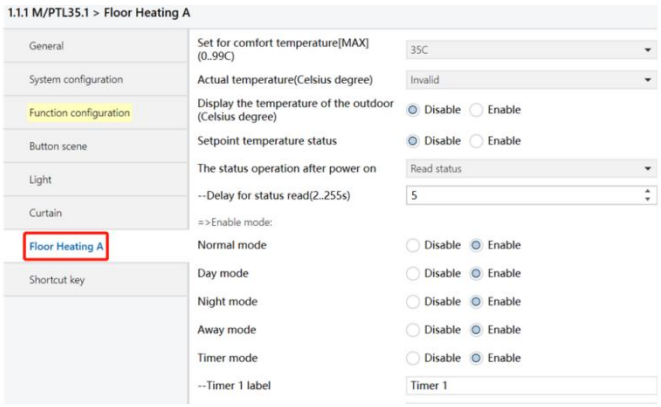
➔ If 1byte is selected in HVAC mode type and HVAC mode status type, the corresponding 1byte group address of FCU air conditioning module can be linked to the panel's HVAC mode and status, as shown below

（3） HVAC control mode off enable: In HVAC control mode, whether the disabled or enabled panel can be switched to off mode.

3.8 Floor Heating

In the Function configuration tab, you can enable floor heating function. KNX TILE Displat panel supports 8 Floor Heating A-H in total. After enabling, click Floor Heating A on the left side to open the floor heating configuration page.





The following mainly describes the parameters of the first floor heating A:

（1） Label: Floor heating display remark.

（2） Set for comfort temperature [MIN/MAX]: The maximum and minimum values of adjustable floor heating setting temperature are both 0-99 ℃, and the default value is 16-35℃.

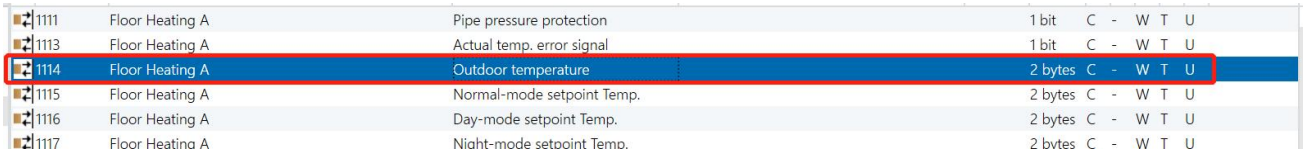
（3） Actual temperature: The source of local temperature data can be selected from the local sensor and EIA.

➔ If local sensor is selected, temperature compensation can be performed through "Temperature correction value" on the "General" page. The range is - 5 ℃ to +5 ℃

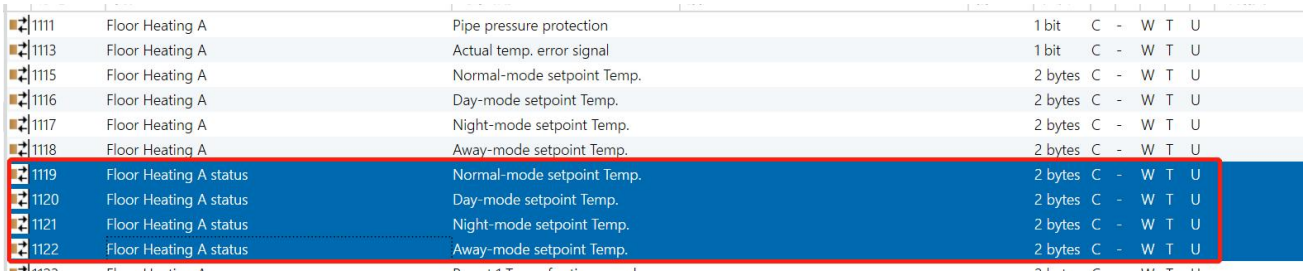
➔ If EIB is selected, the temperature data read from the panel can be compensated below, ranging from - 5 ℃ to +5 ℃.

➔ Display the temperature of the outdoor (Celsius degree): whether to display the

outdoor temperature. The group address of 2 bytes of outdoor temperature can be linked to the Outdoor Temperature object of Floor Heating A.



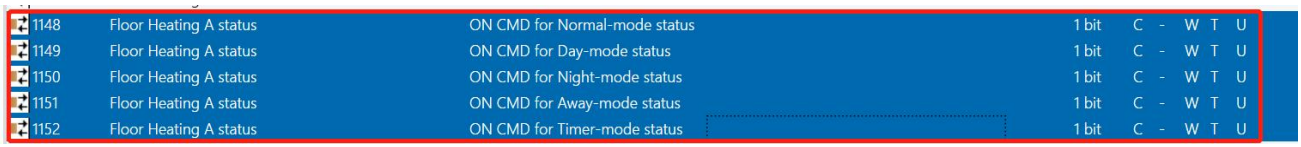
（4） Setpoint temperature status: The status of the floor heating setting temperature of the panel can be enabled. This target can be used to synchronize the current set temperature value of floor heating to the set temperature of the panel.



（5） The status operation after power on: You can select the status of the floor heating interface after the panel is powered on. Unchange is unchanged, and Recovery is the status before the power is restored. If Recovery is selected, you can configure the delay time for status read to recover to the state before power failure. Range: 2-255 seconds, default is 5 seconds.

（6） Enable mode: The floor heating interface operation mode of the panel can be enabled, including normal mode, day mode, night mode, away mode and timer mode. Timer 1-3 label is the name of three timing modes.

（7） Mode status：The status of the floor heating mode of the panel.



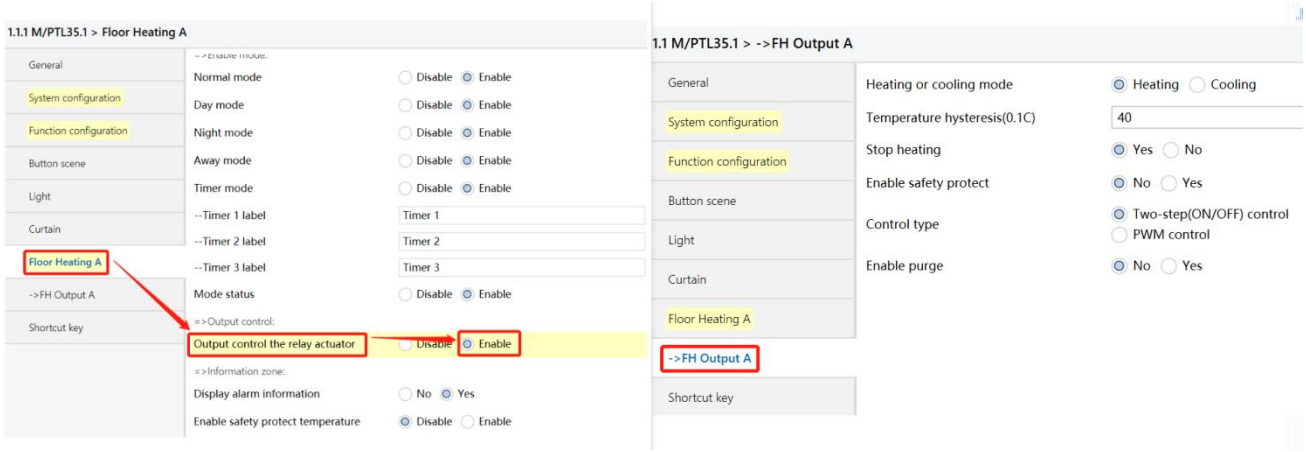
（8） Output control the relay actuator: It can be enabled to control relay actuator through target output. After enabling, click FH Output A on the left side to configure. For details, refer to the following 3.8.1 Section FH Output A of Floor Heating Output Settings.

（9） Display alarm information: Enable or disable alarm information

（10） Enable safety protect temperature: The overheat protection function can be turned on. If it is enabled, the protection temperature can be set at Stop floor heating when temperature. When the actual temperature exceeds this temperature, the floor heating will be turned off

3.8.1 FH Output A

In the floor heating setting, select Enable Output control the relay actuator, the FH Output label will appear, and click to set the floor heating output.



The parameters of floor heating output are described as follows:

（1） Heating or cooling mode: Heating or cooling mode can be selected.

（2） Temperature hysteresis: Temperature hysteresis means that the valve can be opened or closed when the temperature is set to the ambient temperature in degrees Celsius.

（3） Stop heating: Enable the stop heating function.

（4） Enable safety protect: The safety protection function can be enabled, and detailed settings can be made below when it is enabled.

➔ Temperature source: Temperature source can be selected, including Local sensor or Via EIB.

- ➔ Active/Cancel protection: The temperature for starting/canceling protection can be set, that is, when the temperature exceeds/falls below the temperature, the protection function can be started/canceled. The range of both is 0 ℃ - 99 ℃
- ➔ Active/Cancel operation: It can set the operation when starting/canceling protection, including keeping the current state unchanged (Unchange), opening (ON) and closing (OFF).

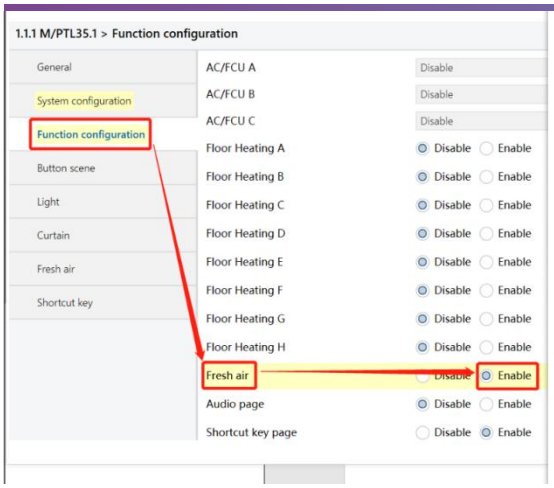
（5） Control type: Control categories can be selected, including Two step control and PWM control. If PWM control is selected, detailed settings can be made below:

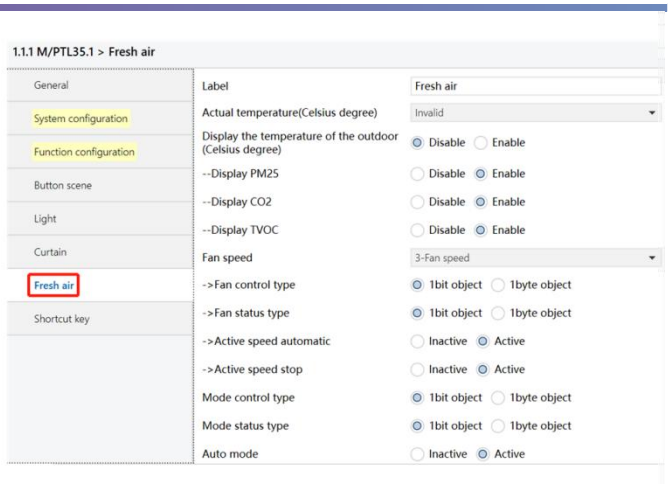
- ➔ Floor heating/cooling speed (For PI): The speed of heating or cooling.
- ➔ PWM control object: PWM output control target, 1 bit object refers to 100% open or close PWM percentage control through 1 bit, 1 byte object refers to control through 1 byte target PWM output duty cycle.
- ➔ PWM period: PWM cycle, the range is 1-255 minutes, the default is 5 minutes.
- ➔ Minimum/Maximum PWM valve: minimum / maximum PWM percentage.

（6） Enable purge: Enable/disable the purge function. After enabling, you can configure the self-cleaning time of Time of purge every 1-255 minutes. The default time is 5 minutes.

3.9 Fresh Air

In the Function configuration tab, you can enable the fresh air function. KNX Tile Display panel supports a total of 1 fresh air system. Click Fresh Air after enabling to set





Those parameters are described below:

（1） Label: The remark of fresh air.

（2） Display PM2.5/CO2/TVOC: PM2.5/CO2/TVOC data can be displayed on the panel.

（3） Fan speed: The gear of fan speed can be selected, up to three gears

（4） Fan control type: The fan speed control mode can be selected. 1 bit object refers to the control of air supply through 1 bit data type, and 1 byte object refers to the control of air supply through 1 byte data type. If the latter is selected, the target value can be set in detail below, including Speed automatic value, Level 1/2/3 (Speed n value), and Speed stop value.

（5） Fan status type: Enable the fan speed status of fresh air.

（6） Active speed automatic: Enable to activate automatic fan speed.

（7） Active speed stop: Enable to activate the stopping fan speed.

（8） Mode control type: The mode control type can be set. 1 bit object refers to the control mode through 1 bit data type, and 1 byte object refers to the control mode through 1 byte data type. If the latter is selected, you can set the values of each mode below, including Auto/Manual/Timer/Intelligent mode values.

（9） Mode status type: The status of fresh air mode of the panel can be selected, and the status can also be displayed by 1bit or 1byte

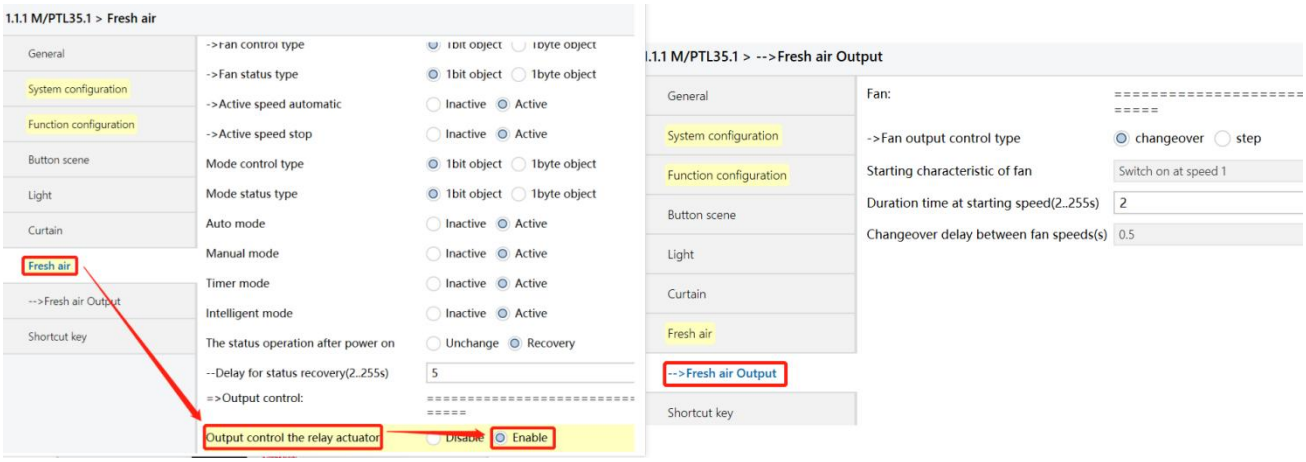
（10） Auto/Manual/Timer/Intelligent mode: Enable the auto、Manual、Timer、Intelligent mode.

（11） The status operation after power on: For the operation of fresh air after the panel is powered on, you can select Unchange or Recovery. If the latter is selected, the recovery delay can be set at Delay for status recovery below. The default is 5 seconds, and the range is 2-255 seconds

（12） Output control the relay actuator: It can be enabled to control the relay through the target output. If it is enabled, click the left Fresh Air Output label to set it. See the next section for details.

3.9.1 Fresh Air Output

In fresh air setting, select Enable Output control the relay actuator to display Fresh Air Output. Click to set fresh air output.



The description of fresh air output control relay is as follows:

（1） Fan output control type: It refers to the control type of fresh air output, and you can select Changeover or Step.

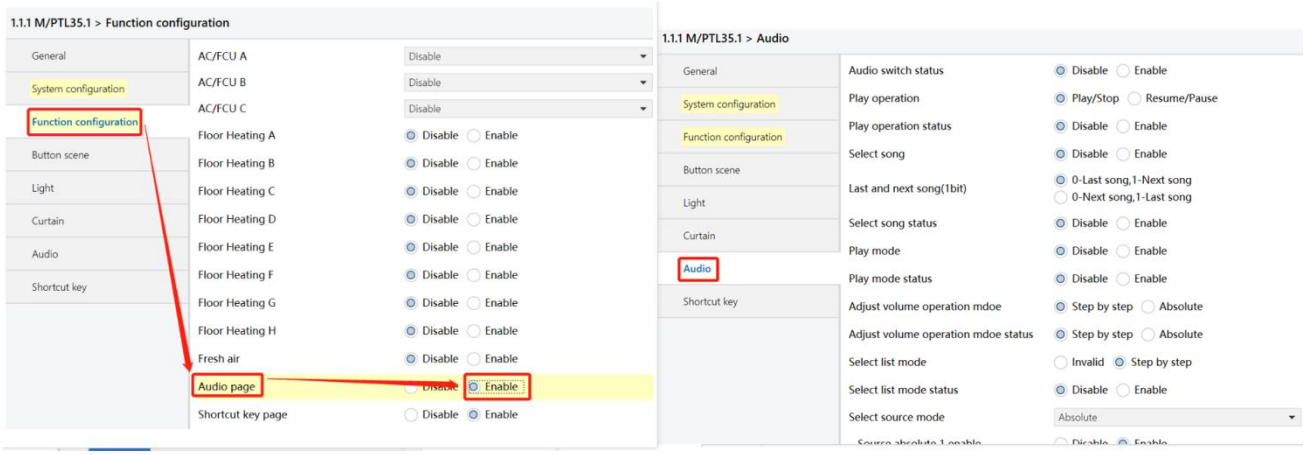
（2） Starting characteristic of fan: You can select the default wind speed after opening the fresh air, and you can select the fan speed of 1/2/3.

（3） Duration time at starting speed: It refers to a period of time when the air conditioner operates at the default fan speed after being powered on. The default value is 2 seconds and the range is 2-255 seconds.

（4） Changeover delay between fan speeds: It refers to the delay time for the air conditioner to adjust from one wind speed to another. The default value is 0.5 seconds, and the range is 0.5-10 seconds.

3.10 Audio Page

In the Function configuration tab, you can enable the audio function. The KNX Tile Display supports 1 audio in total. After enabling, you can see the music label on the left side. Click to set it.



The parameters of the audio configuration interface are described as follows:

（1） Label: The remark of audio。

（2） The status of operation after power on: You can select the operation of music after the panel is powered on. Unchange is unchanged, and Recovery is to restore the state before power failure

（3） Audio switch status: Enable/disable audio switch status.

（4） Play operation: Enable start/pause play, send 1 as start, send 0 as pause.

（5） Play operation status: Enable start/pause playback status synchronization.

（6） Select song: Enable song selection.

（7） Last and next song: You can select the operation mode of the previous song (Last) and the next song (Next), and you can select "0-Previous, 1-Next" or "0-Next, 1-Previous".

（8） Select song status: Enable song selection status.

（9） Play mode: You can select control codes of different playback modes. When enabled, you can make detailed settings below, including Single play, Loop play, List play, List loop, and Random play.

（10） Play mode status: Status of the playback mode of the music interface of the enable panel.

（11） Adjust volume operation mode: Adjust the volume operation mode. You can select to disable the volume operation (Invalid) or percentage adjustment (Absolute).

（12） Adjust volume operation mode status: Volume status synchronization.

（13） Select source mode: It can support five music playback sources, including: Local music, SD card, Bluetooth, Server, Live stream music playback source switching mode. You can choose to disable music playback source, 1-bit switching function (Invalid), or 1-byte data type absolute value switching (Absolute).

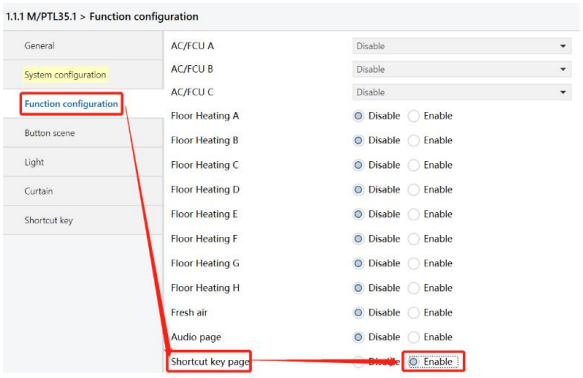
（14） Select source mode status: Mode status of the panel's music interface sound source.

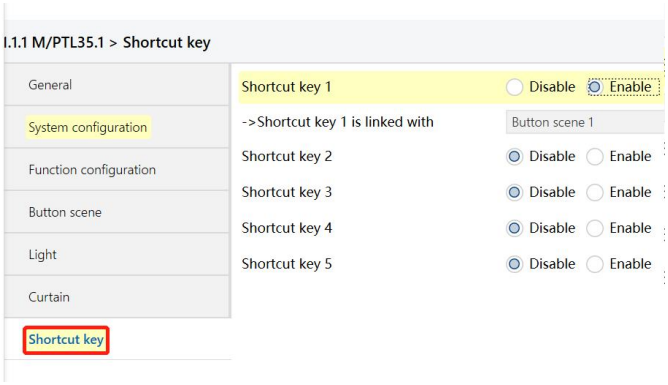
（15） Display 14-byte object for song name: Enable/disable 14-byte data type to display song name.

3.11 Shortcut Key

The KNX Tile Display panel supports up to five shortcut keys to point to the scenario and display it on the main interface, as shown below:

Shortcut key function can be enabled in the function configuration tab of ETS. Select Shortcut key in the parameter label to open the Shortcut key setting page





After enabling the corresponding shortcut key, detailed settings can be made below:

1. Shortcut key n: Enable the Shortcut keys.

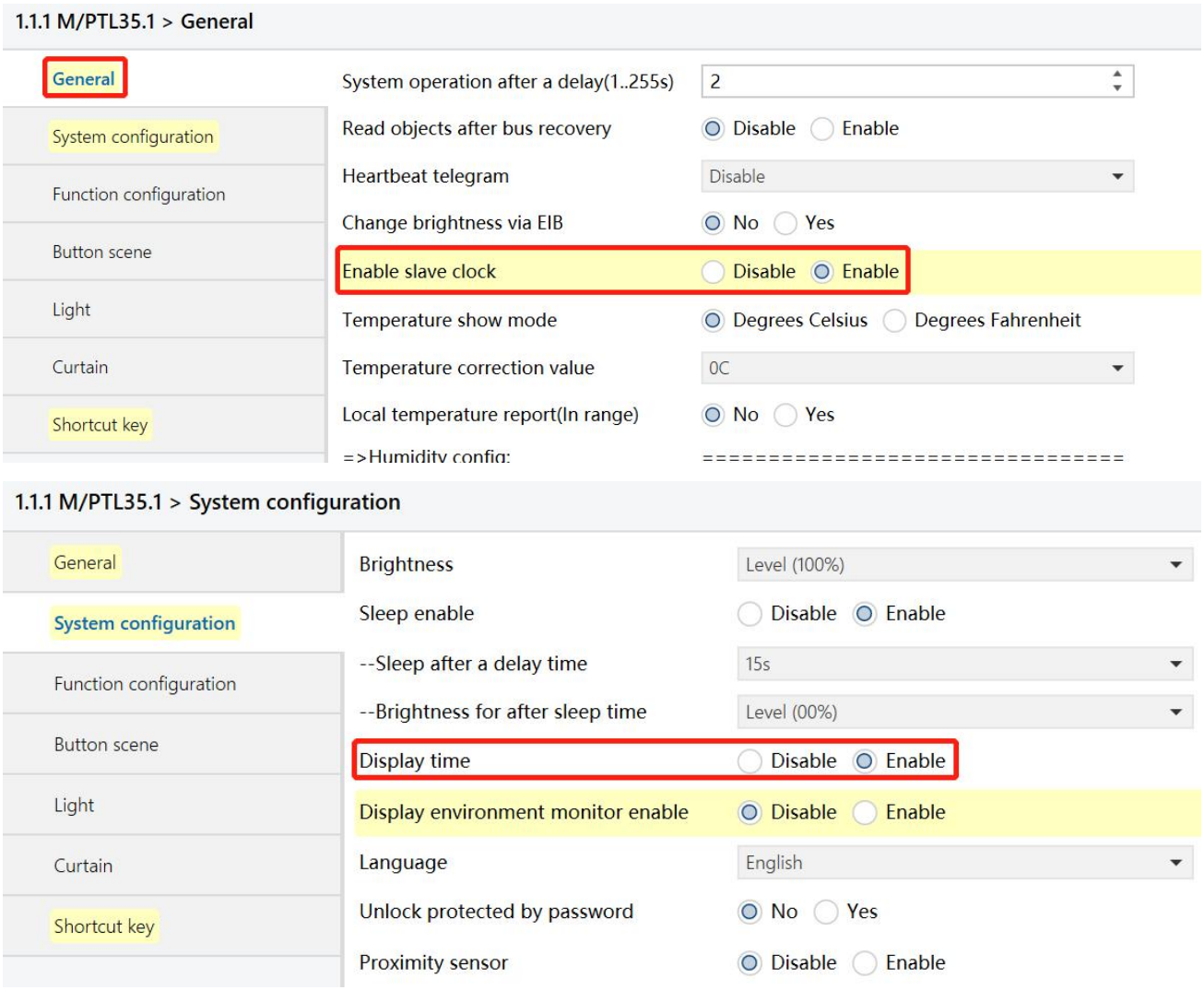
2. Shortcut key is linked with: You can select the scene corresponding to the shortcut key, and you can select Button Scene1-20.

4 Demo Example

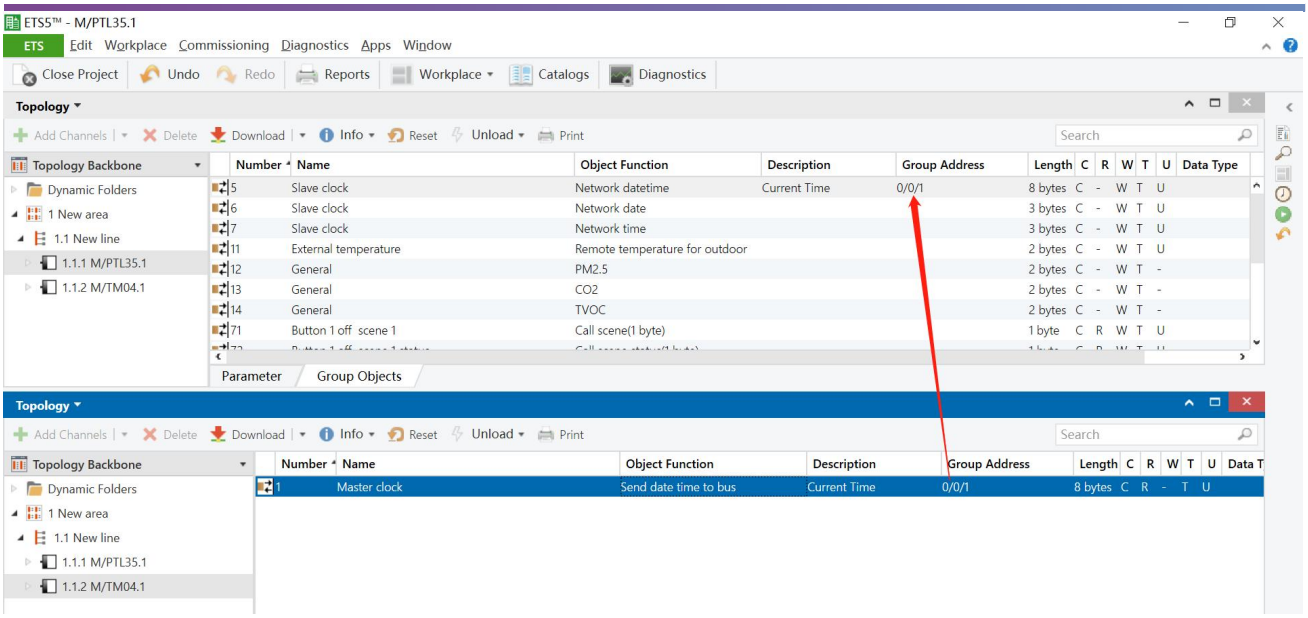
4.1 Set the Panel to Display the Current Time

Require another KNX device, such as KNX timer or KNX LINK M/GWASC.1, broadcasts time to the bus, so that the KNX Tile Display panel can display this time. The following is an example of KNX timer.

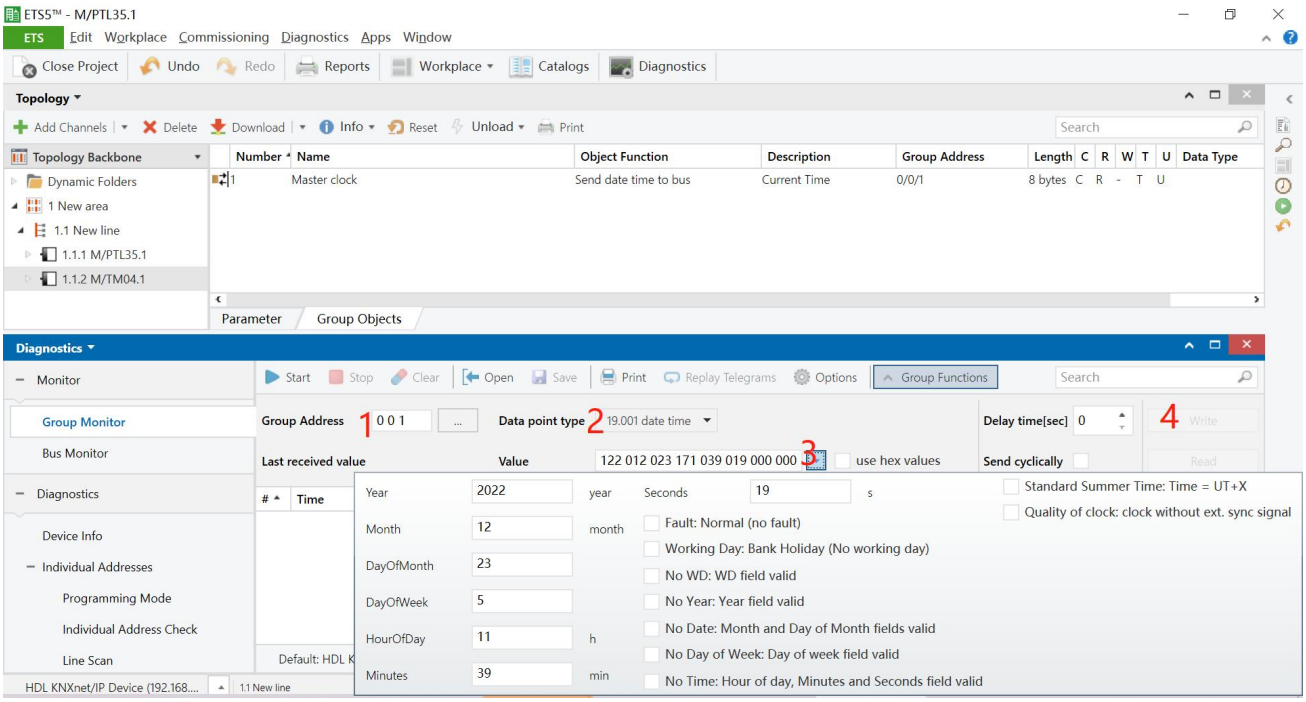
(1) Enable Slave Clock in the General settings of the panel, and enable the display time in the System configuration interface.



(2) Link the time group address of KNX timer to the 8bytes Network datetime of the panel



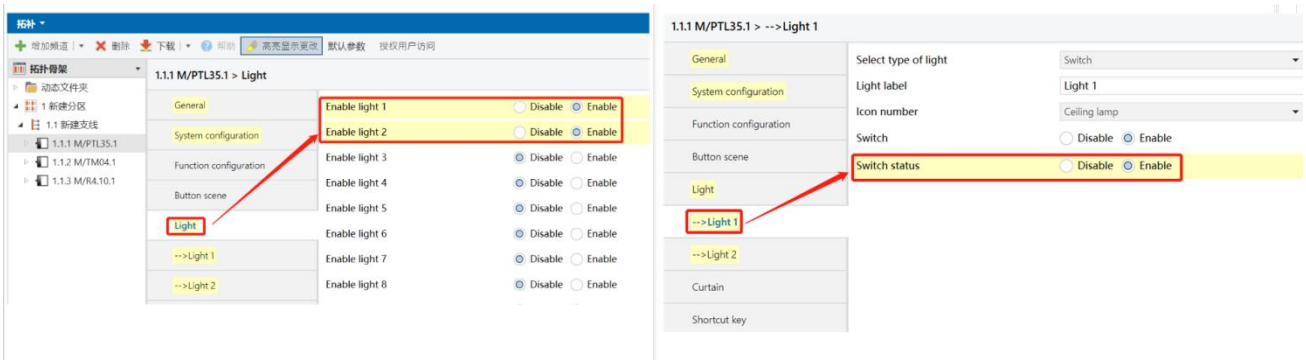
（4） Right click the panel and the timer to download the application to the device. Open ETS diagnosis, directly write the current time to the timer's time group address, and the timer will keep running at the current time.



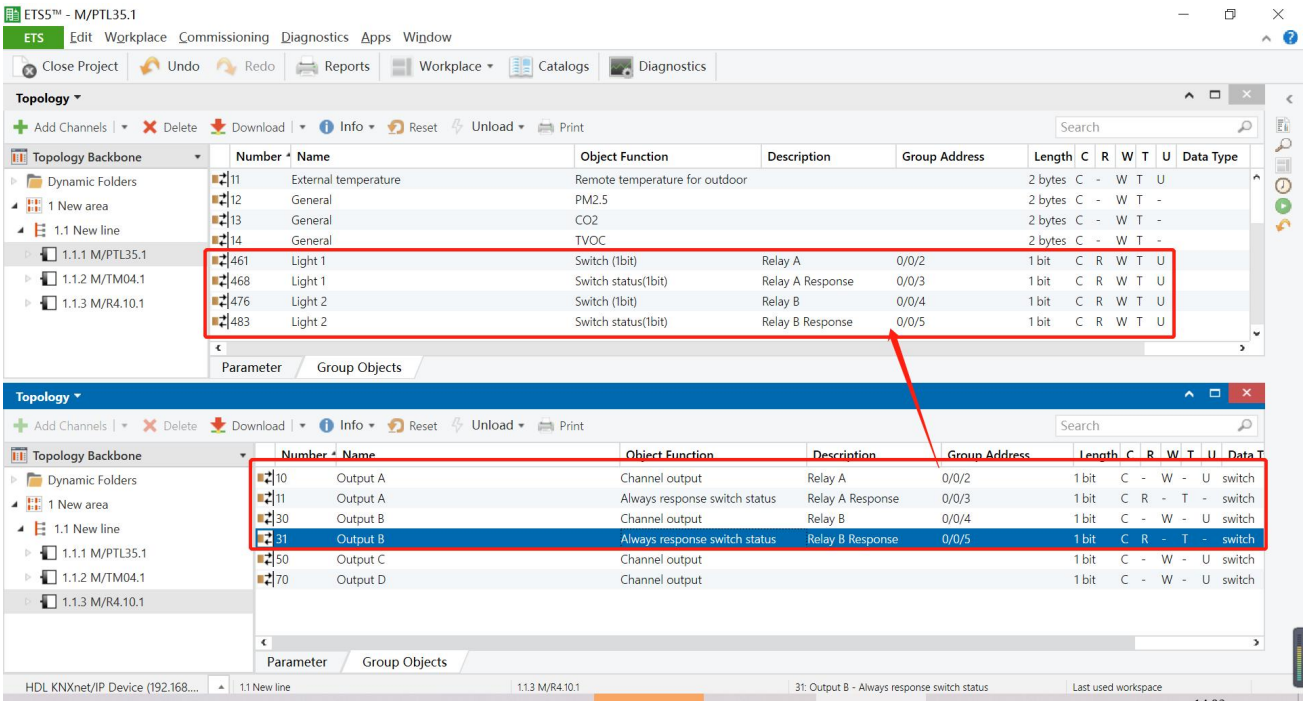
4.2 Panel Controls Relay Light

The following example is KNX Tile Display panel controls relay A and relay B of M/R04.10.1 V1.2.

(1) In KNX Tile Display Light function, enable light 1 and light 2. And enable switch status of light 1 and light 2 respectively.



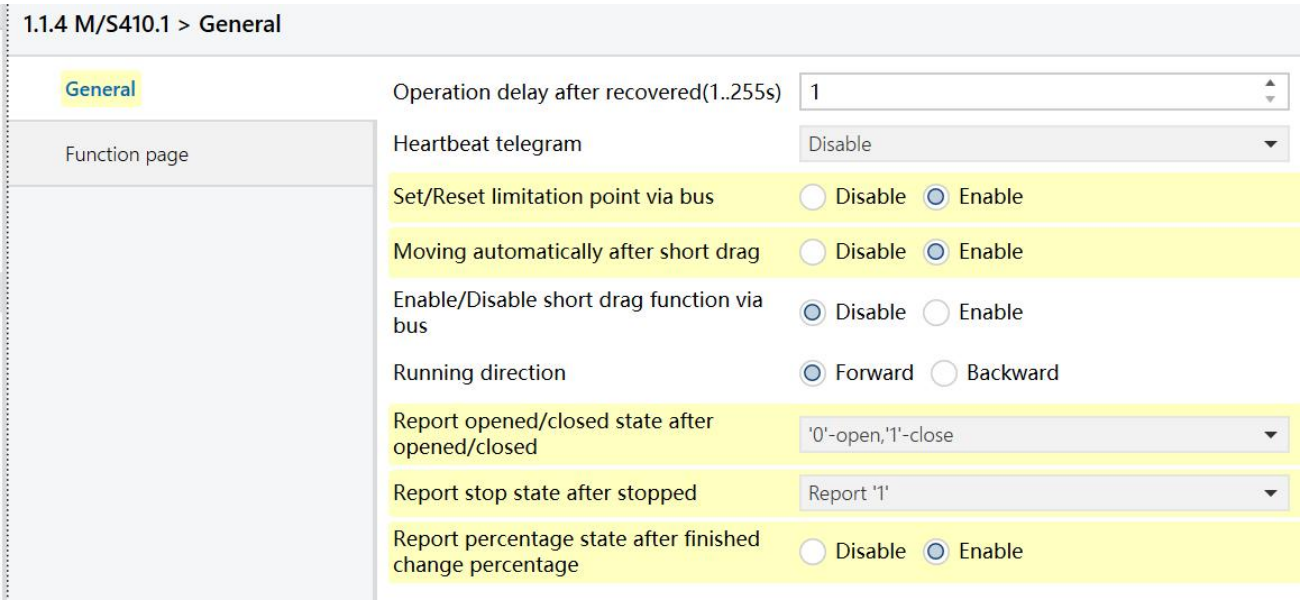
（2）Create new group addresses for switches and switch status in channel A and B, and link them to lights 1 and 2 of the panel. In the topology view on the left, right-click the relay and the panel to select partial download.



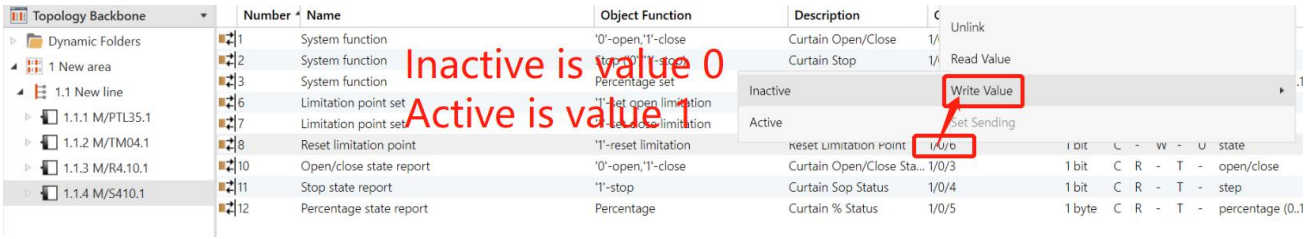
4.3 Panel Controls the Shutter Motor

The following example is the KNX Tile Display controls M/S0410.1 curtain opening and closing motor:

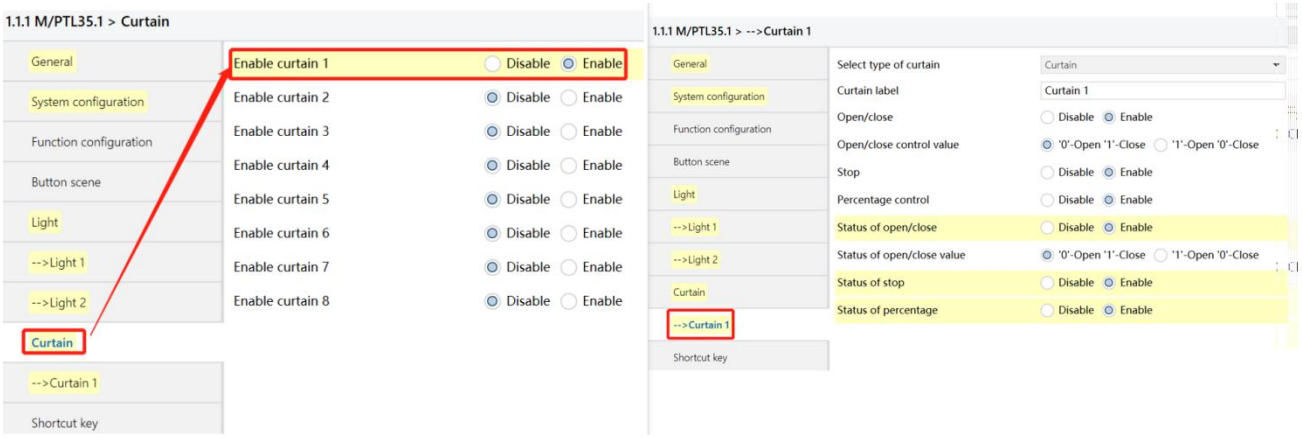
(1) After importing the database of curtain motor M/S04.1 to the project, Enable “Set/Reset limitation point via bus”, “Moving automatically after short drag” and the status of open close and percentage



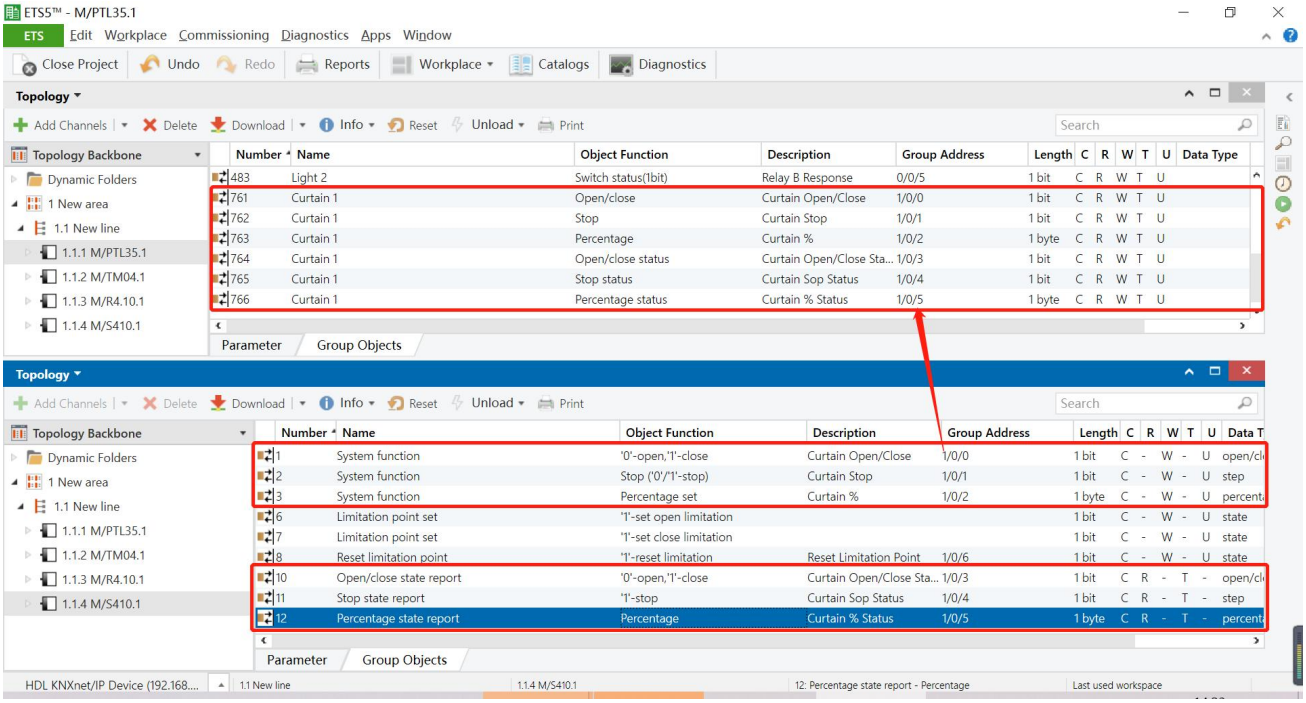
(2) Pull the curtain to the closed position, send a value of 0 and then 1 to reset limit point group address, wait for the motor to shake and complete a journey



（3）Set enable curtain 1 on the panel curtain, and enable open/close status, stop status and percentage status on curtain 1



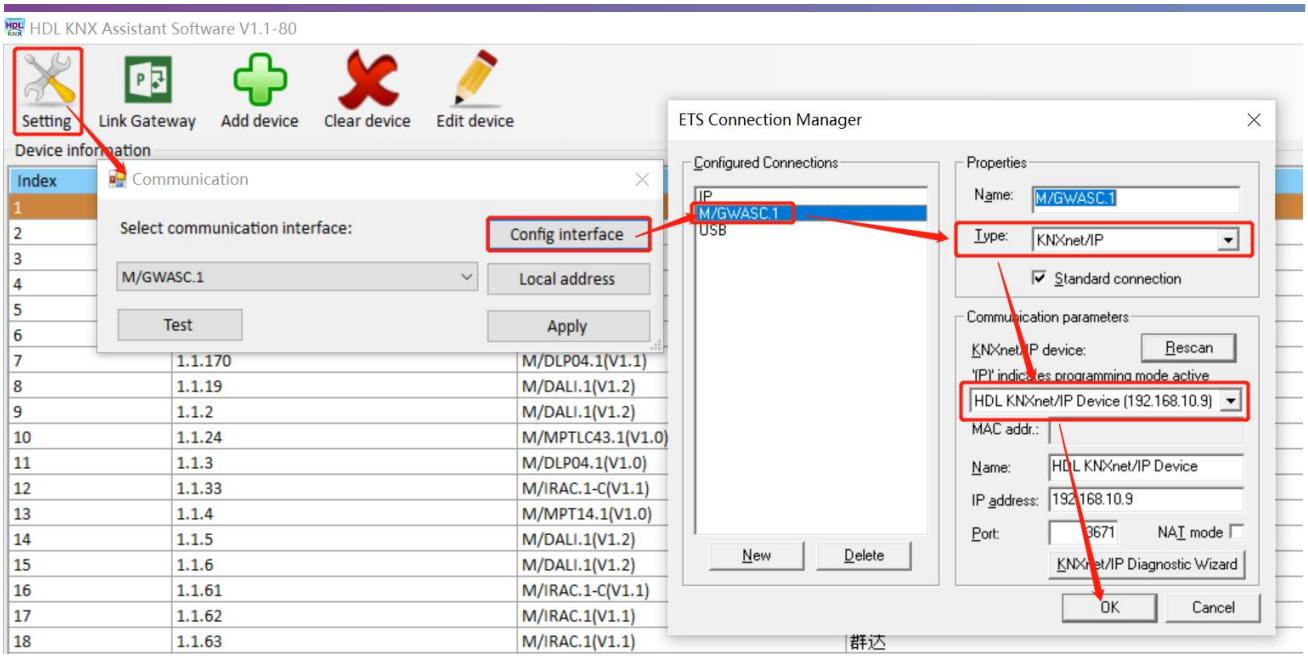
（4）Create group addresses of open limit point, close limit point and reset limit point in the M/S04.1 curtain motor. Then create new group addresses of open/close, stop, percentage and their feedback and link them to the corresponding objects on the panel. In the topology view, right-click to select the motor and panel respectively, and select to download some applications to the device.



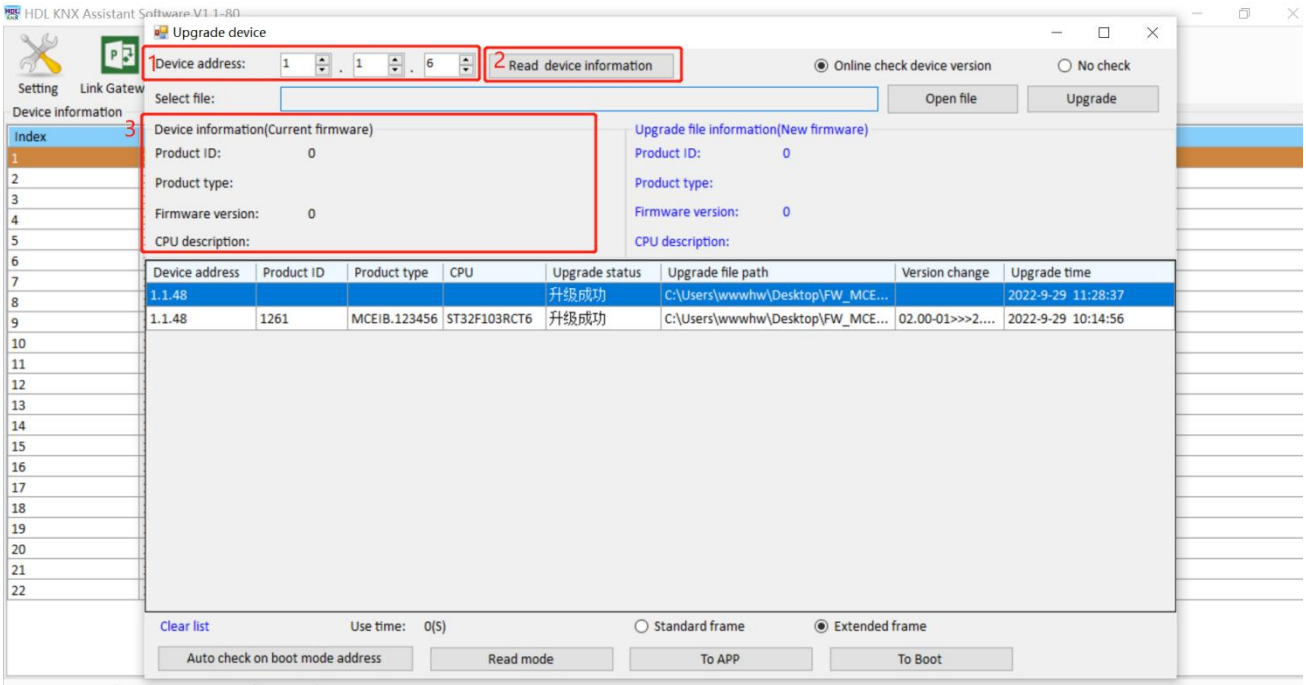
5 Firmware Upgrade

5.1 Online Upgrade

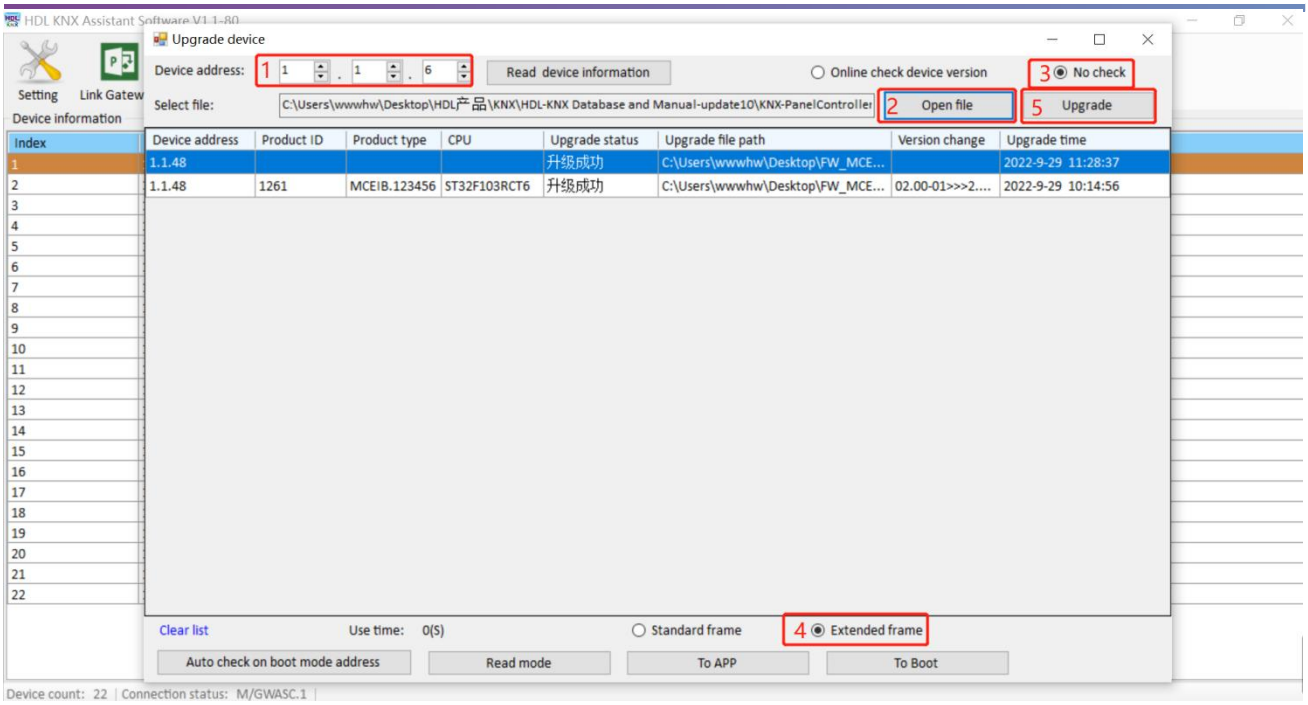
(1) Run the HDL KNX Assistant Software. Go to Setting-> Communication mode, select the available interface. If it's the USB downloader, please select the "USB" type. If it's the KNX IP router, please select "KNXnet/IP" type and corresponding IP interface. Then click "Test". After it shows OK, select "Apply".



(2) Go to Setting->Upgrade Device, fill the physical address of M/PTL35.1, and read the information. Wait for a while, it will display the product ID, product type, firmware version and CPU description.



(3) According to the CPU description (this is hardware version), for example, it shows the APM32F103RCT6, open file and select firmware select FW_M-PTL35.1_V1.0-43_220810_APM32F103RCT6_E23-B0.bin (You can ask HDL Support to get the suitable firmware), then select “No check” and “Extended frame” to start the upgrade (Notes: if the interface brand is HDL, select the “Extended frame”; if the interface brand is not HDL, select the “Standard frame”).

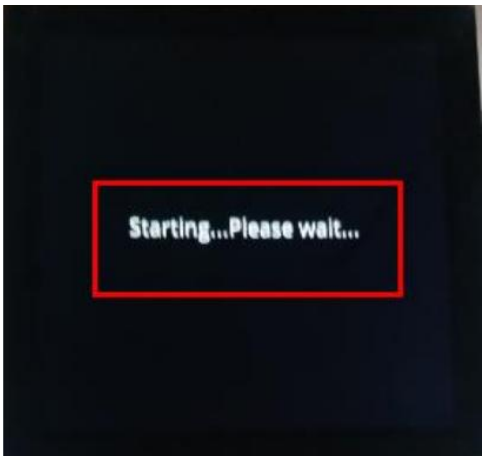


(4) After the upgrade progress runs to 100% and it shows “upgrade successfully”, you can fill the physical address of M/PTL35.1 and read information to make sure whether the firmware version is correct. Then go to ETS5 to select the panel, right click and select “Download the application” to download data to panel again.

5.2 Manually Upgrade

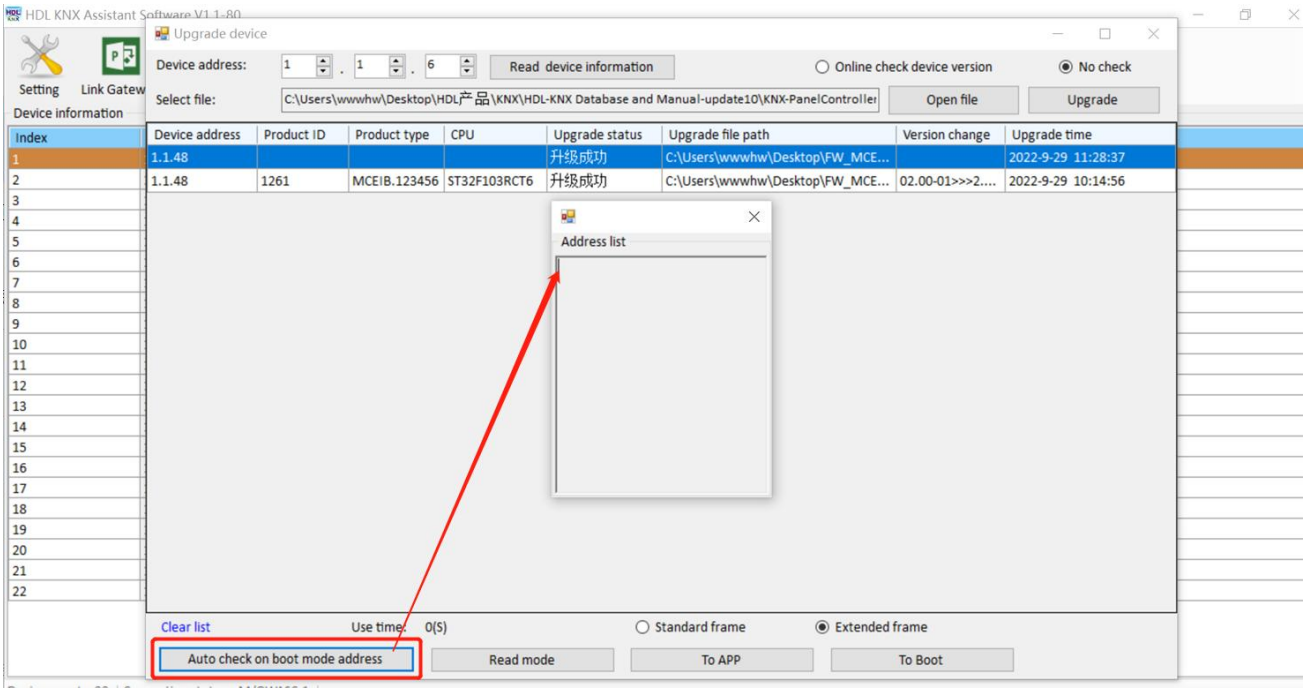
If you do not know the physical address of M/PTL35.1 or the online upgrade is failed, you can follow below to access the manually upgrade mode of M/PTL35.1 and start the upgrade:

(1) Repower on the panel (remove the panel from the power supply interface and connect it back to the power supply interface), it will show ”Starting… Please wait…” as below.



(2) At this time, please press and hold the LCD screen, it will show whether to upgrade the panel firmware. Then select “Confirm” to access the manually upgrade mode of M/PTL35.1.

(3) In KNX Assistant software, refer to the 1st step to 2nd step of section 5.1 Online upgrade, make sure the interface can be working. Then go to Setting->Upgrade device, click “Auto check on boot mode”, it will show the physical address of M/PTL35.1, add the correct firmware, select “No check” and “Extended frame” to start the upgrade.



(4) After the upgrade is successfully, go to ETS5 to select the panel, right click and select “Download the application” to download data to panel again