



HDL[®]

Tile Series OLED Panel (KNX) User Manual

(Applicable model: M/PTOL6.1)

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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	Nov.12, 2019

1 Introduction

This user manual offers the information on configuring Tile Series OLED Panel (KNX) (hereinafter referred to as “Tile Panel”). The following tools might be included:

- Tile Series Multifunctional Panel (KNX) and corresponding power interface (Model: M/PTCI.1)
- A computer with ETS5 software
- KNX USB interface (Model: M/USB.1)
- KNX power supply and auxiliary power supply
- KNX project files
- Dedicated KNX cable(s)

Note:

- ① Please refer to the datasheet attached to the product for the information of installation, wiring, specifications, etc.
- ② The pictures in this user manual are for reference only and the actual product should prevail.

1.1 Import Data

1.1.1 Import Database to ETS (.knxprod)

1. **Import Catalogs:** click “Catalogs” → “Import...” in the main page of ETS5 software and select local database files with the suffix of .knxprod, as shown in Figure 1-1.

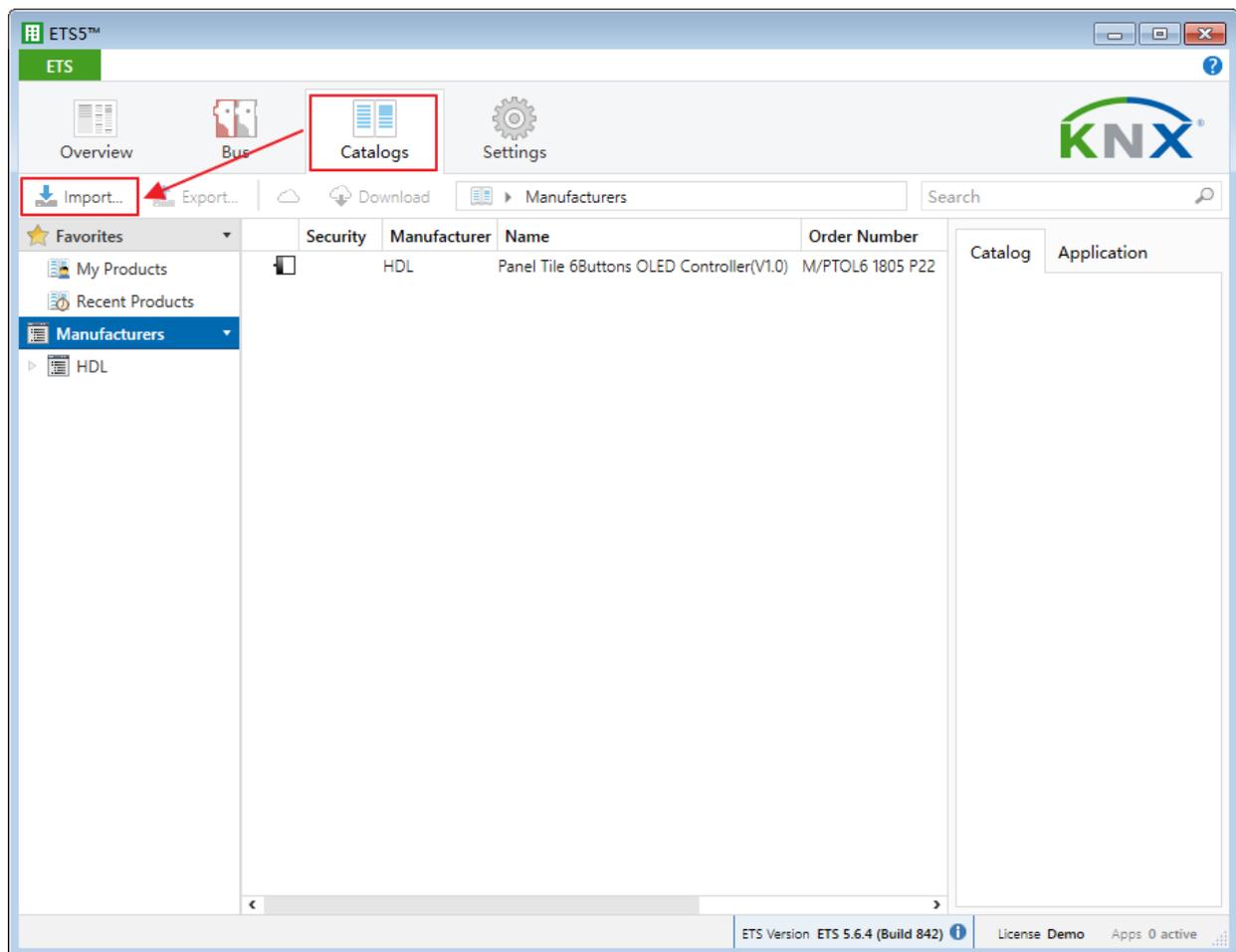


Figure 1-1 Import catalog

- 2. Create Projects:** as shown in Figure 1-2, in “Your Projects” tab from ETS5 software’s “Overview” page, click “+” to create projects. After editing project name, please keep other setting items by default.

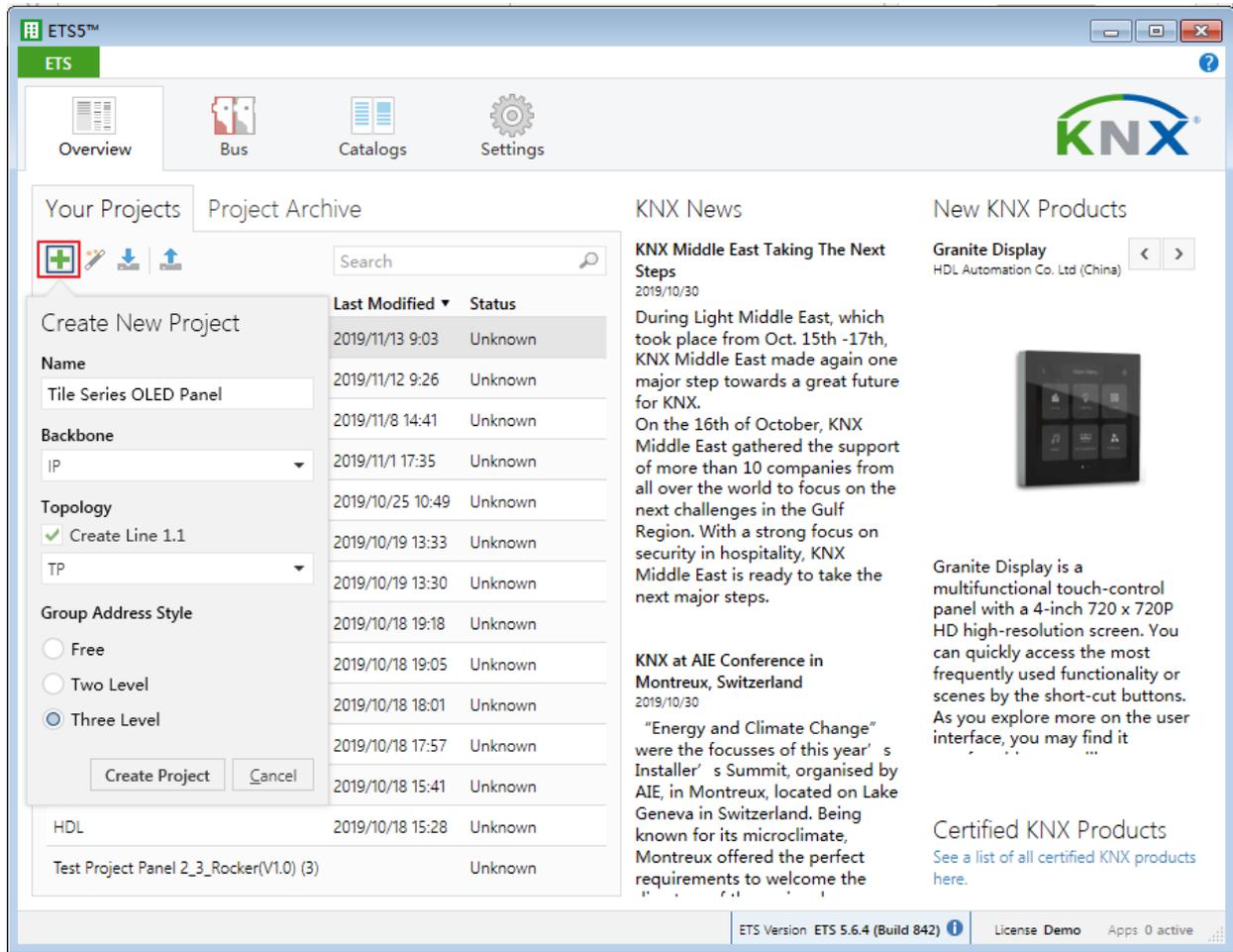


Figure 1-2 Create projects

3. Add Devices to Projects:

- ① After creating a project, the project page will show up by default. Click “Buildings” and select “Topology”, as shown in Figure 1-3.

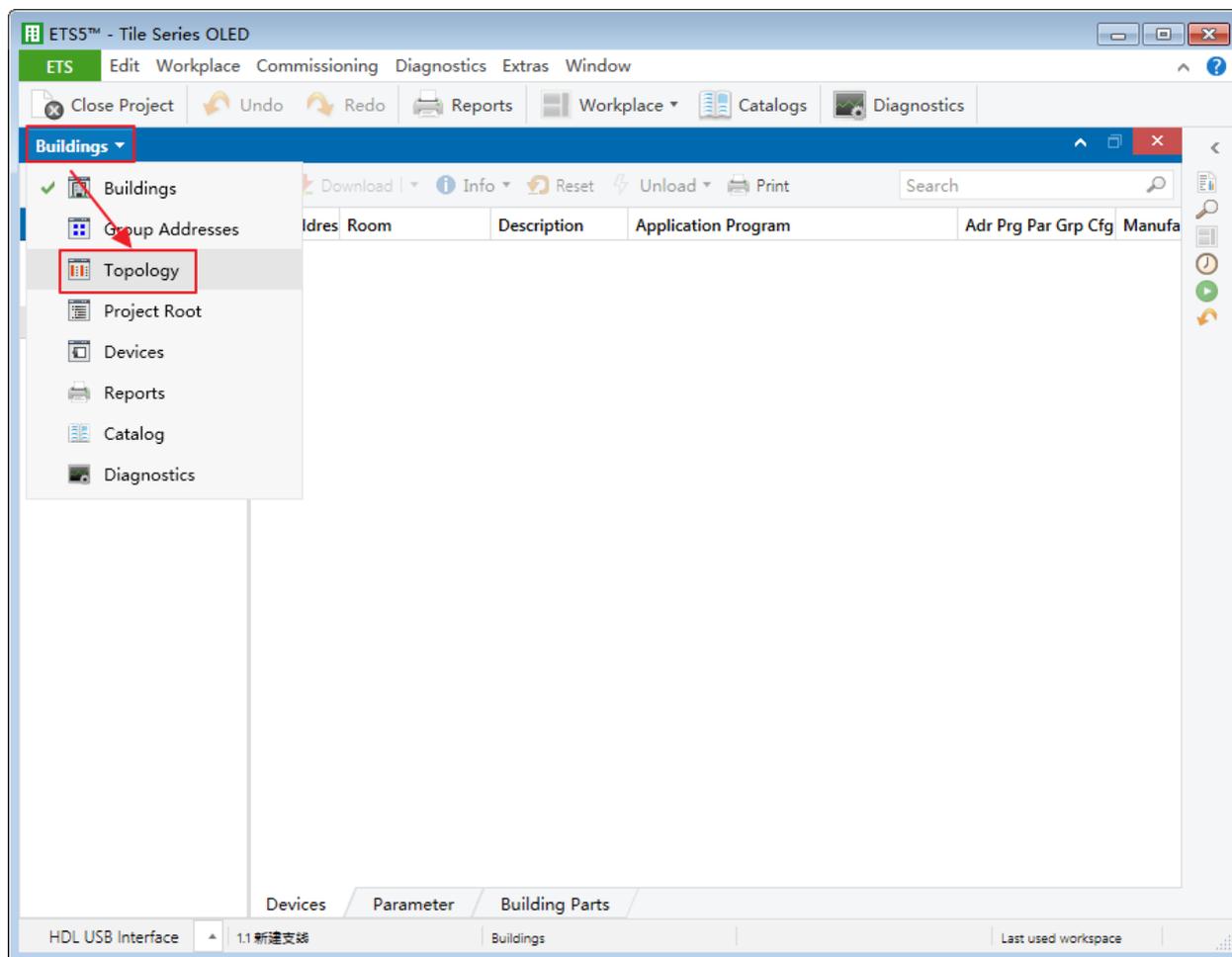


Figure 1-3 Add devices to projects (1)

- ② Figure 1-4 shows “Topology” page, click the arrow beside “Add Areas” and select “Devices”, and the catalog page will show up below.

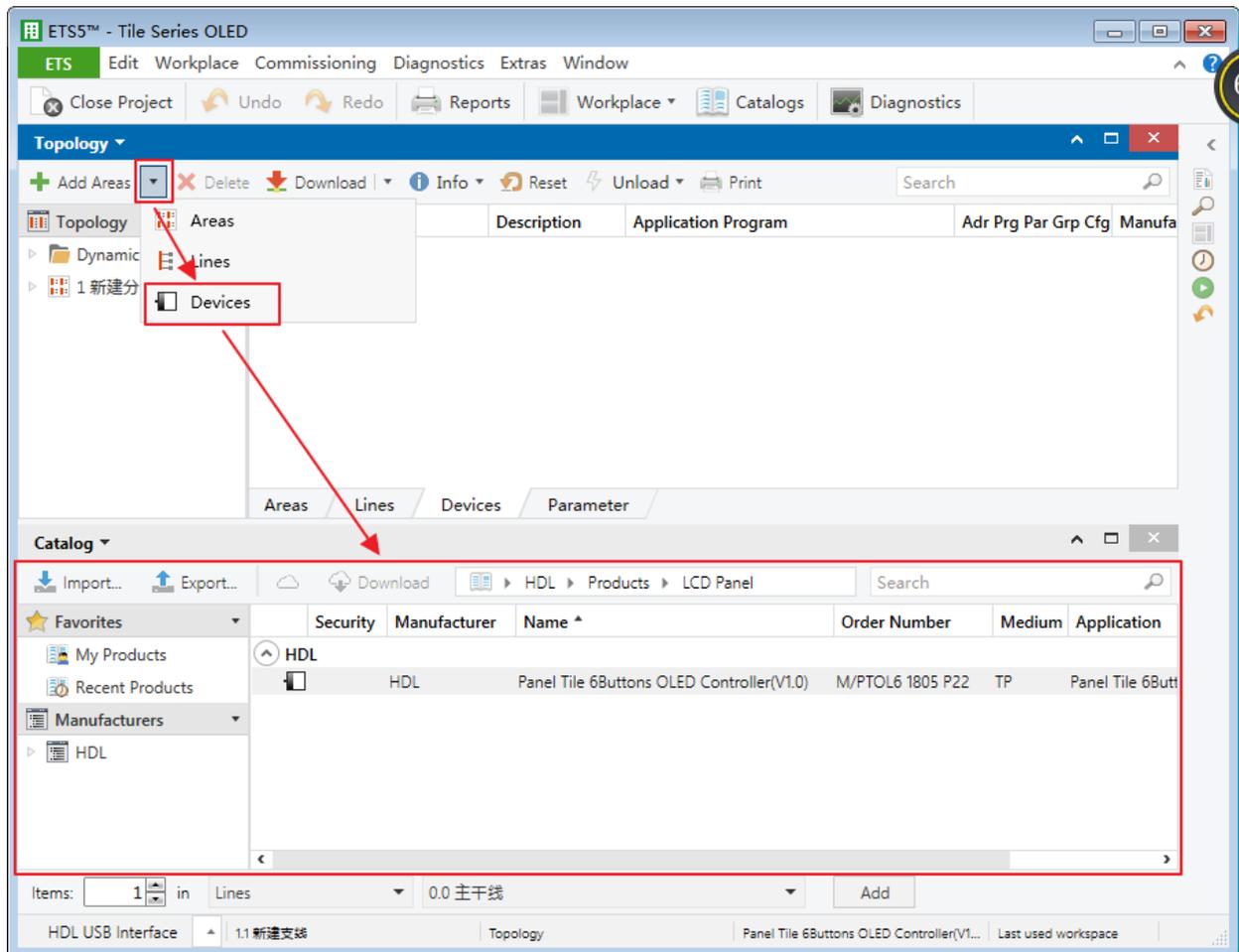


Figure 1-4 Add devices to projects (2)

- ③ As shown in Figure 1-5, click “HDL” in “Manufactures” column and select devices to be added to the project on the right. Drag devices to the above area (Method 1) or click “Add” button to add devices after clicking the location needed to add projects below (Method 2).

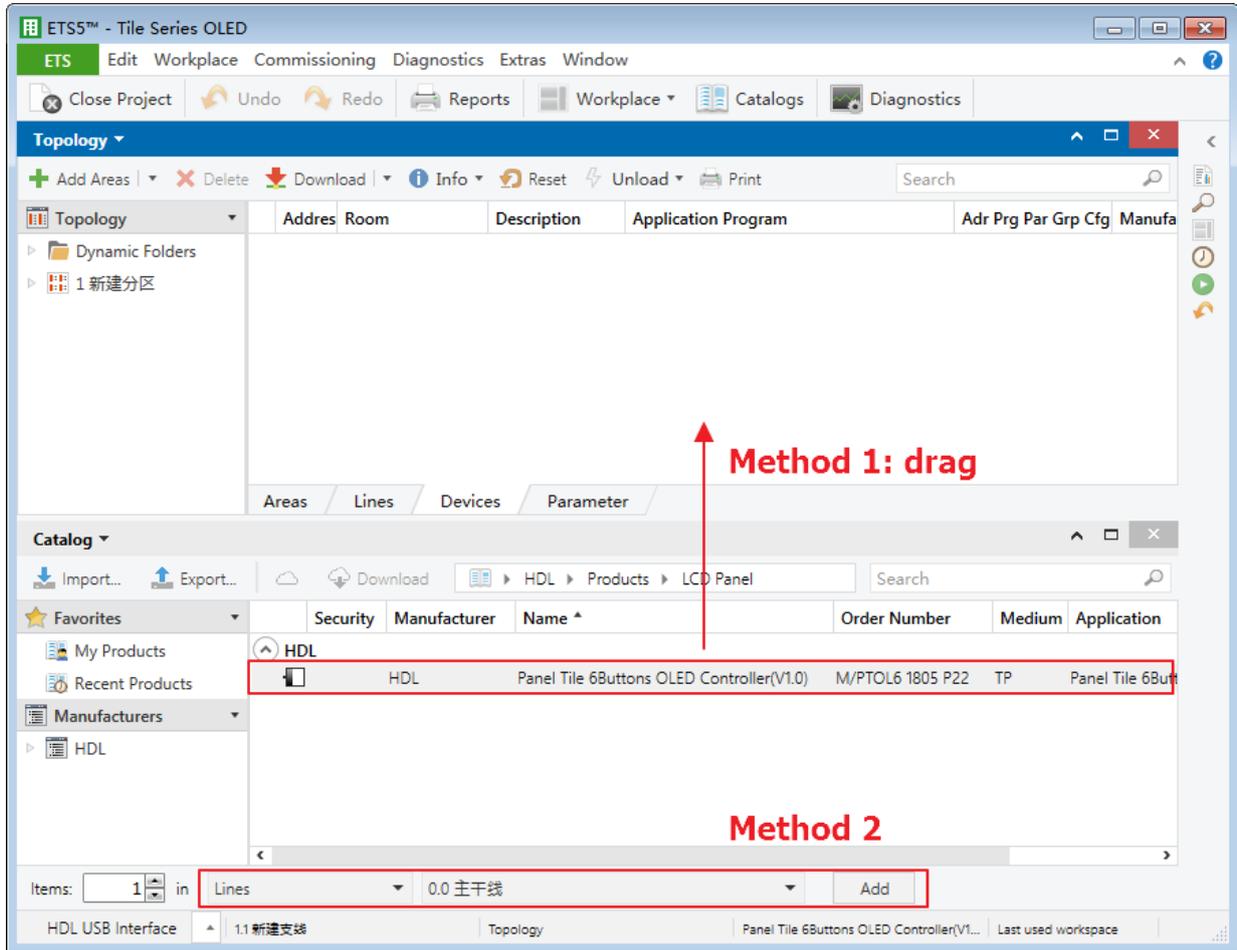


Figure 1-5 Add devices to projects (3)

1.1.2 Import Projects (.knxproj)

As shown in Figure 1-6. Open ETS5 and click “Import project” button of “Your Project” tab of “Overview” page and import obtained KNX project files with the suffix of .knxproj/.pr5. After importing projects, added/created projects will be listed below. Double click to edit.

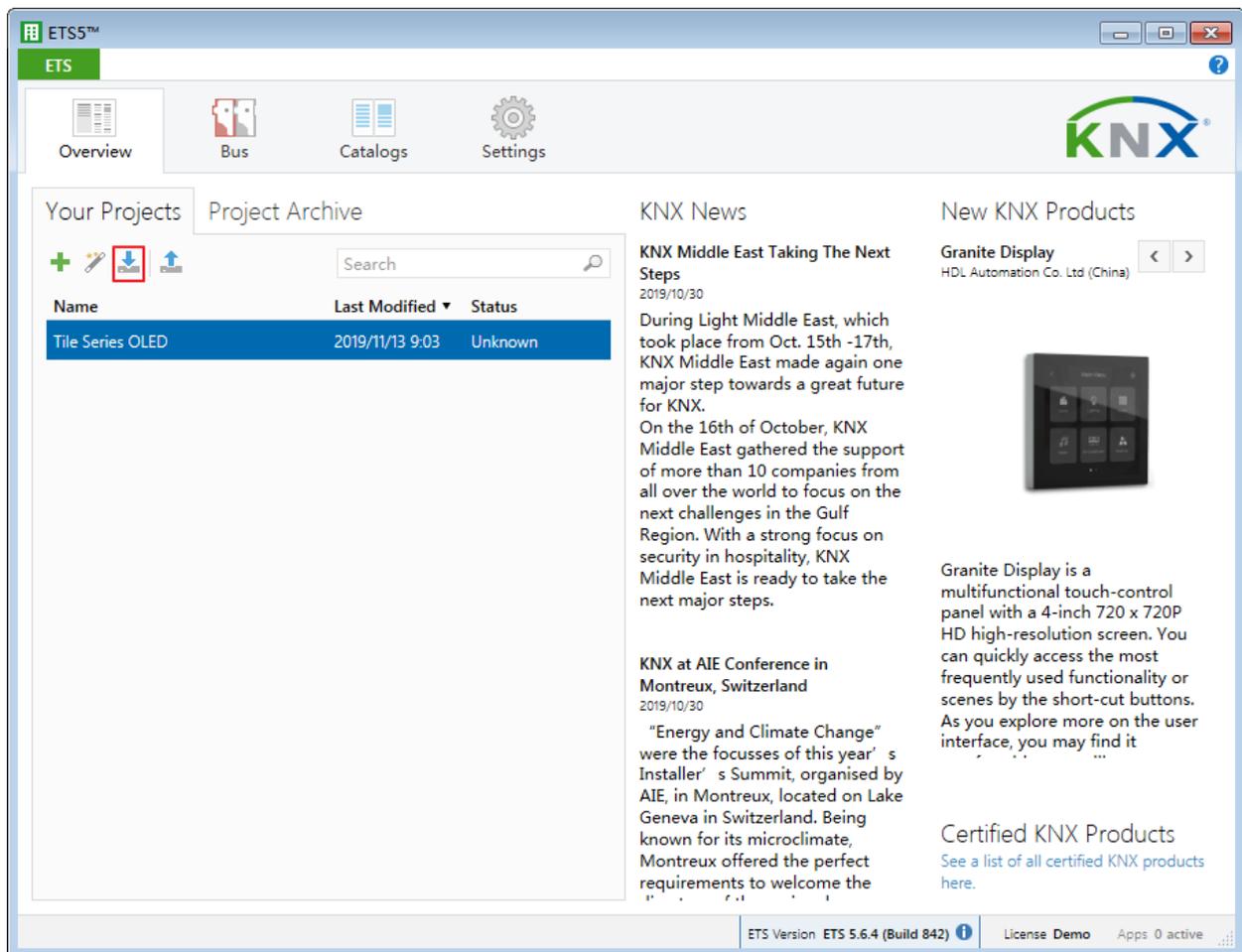


Figure 1-6 Import projects

1.2 Open Configuration Window

Double click the project to be configured. Click “Workspace” → “Open New Panel” → “Topology” to open the window, as shown in Figure 1-7.

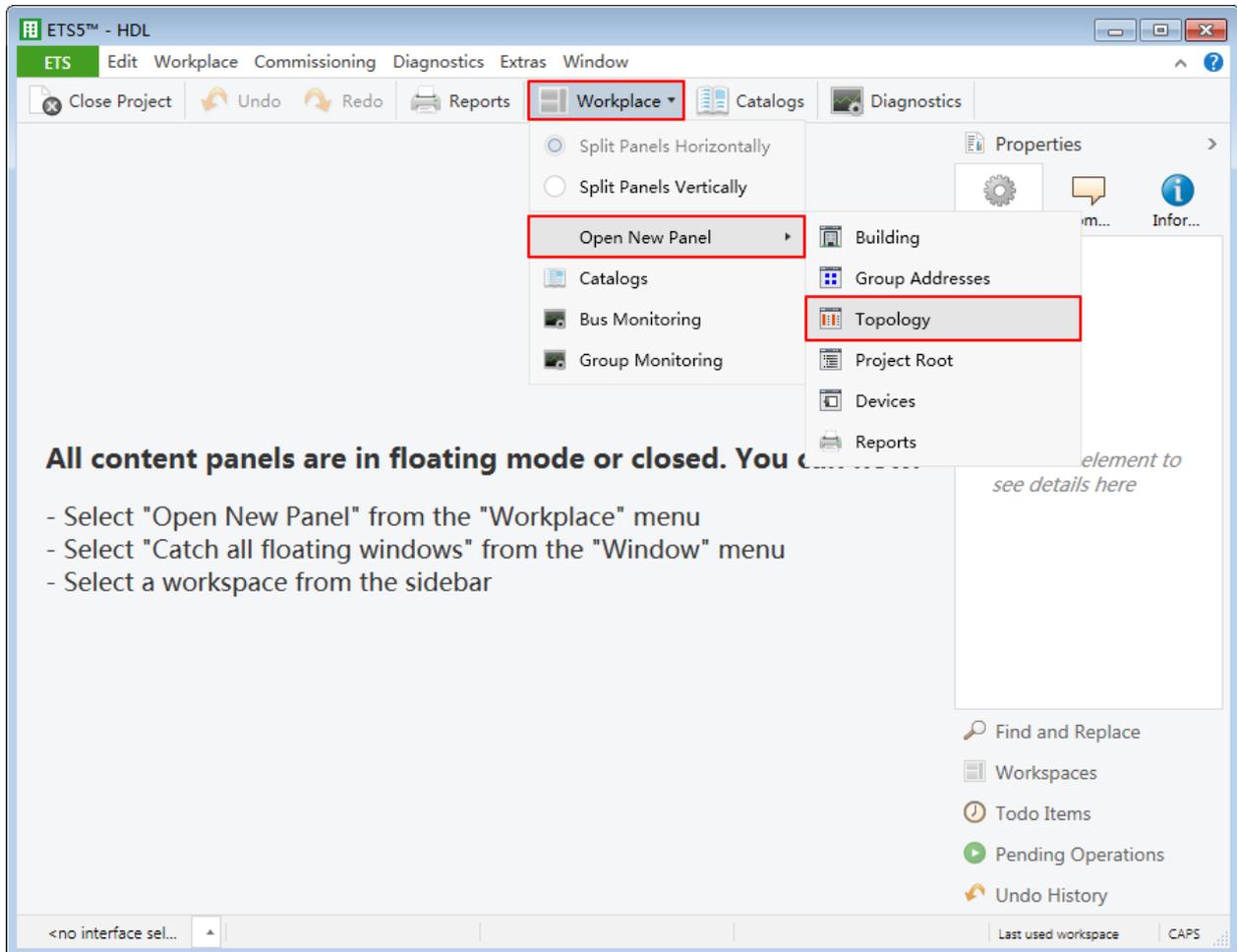


Figure 1-7 Open configuration window

2 General Setting

In topology skeleton on the left side of topology page, click devices to be set, and select “General” in “Parameter” option, as shown in Figure 2-1.

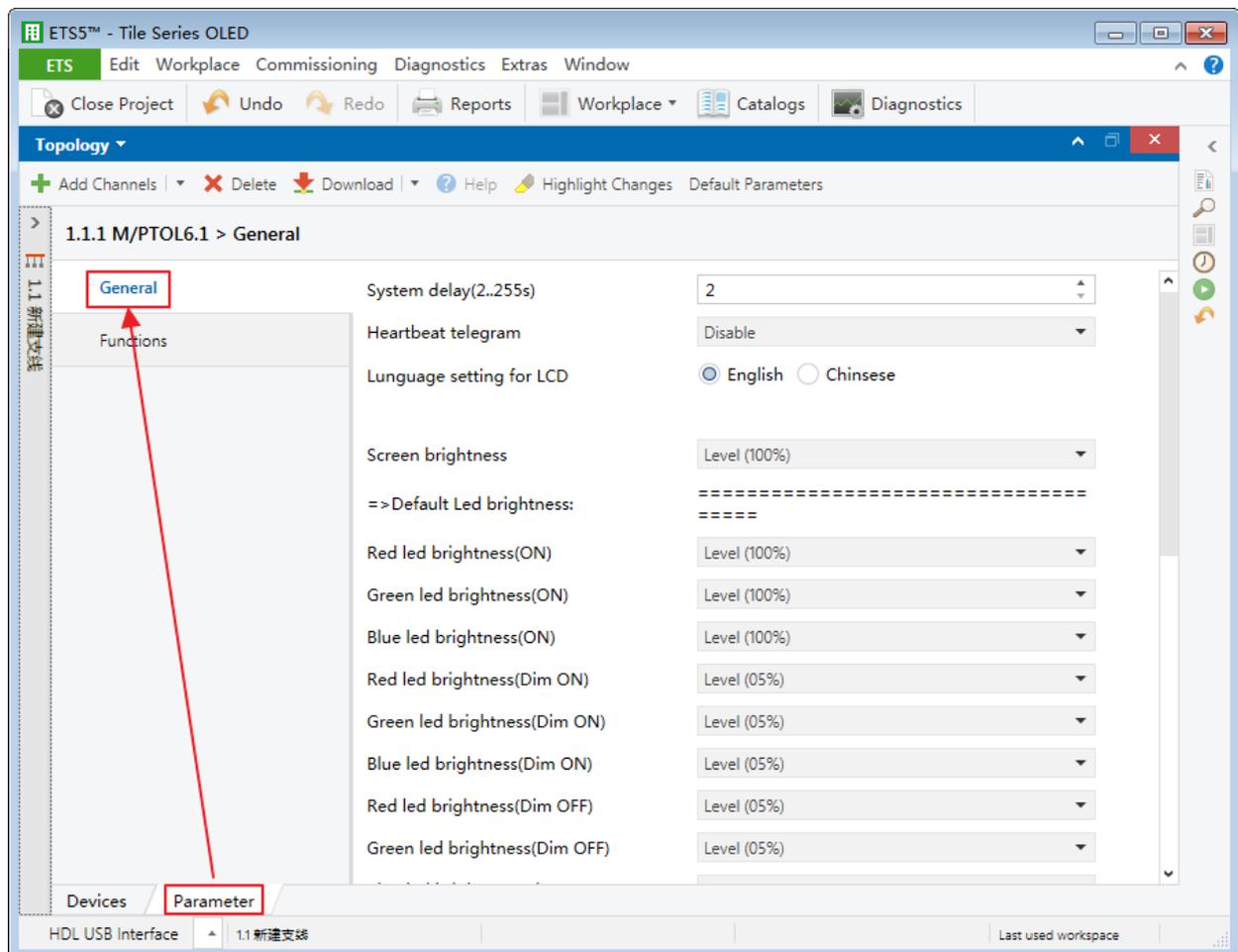


Figure 2-1 General Setting

The setting items are explained below:

1. System delay: time-delay function, namely a delay time between powering on the device and activating the system, which ranges from 2 to 255s.
2. Heartbeat telegram: to choose to send “1”, “0”, or “1, 0” cyclically.
 - Telegram is sent time interval: to set the interval of sending heartbeat telegram.
3. Language setting for LCD: to set the language for the panel.
4. Screen brightness: to adjust screen brightness.

5. Red/Green/Blue LED brightness (ON/OFF) (invalid for now): to set button backlight color via adjusting RGB value.
6. Red/Green/Blue LED brightness (Dim ON/OFF) (invalid for now): to set button backlight brightness via adjusting RGB value.
7. Change brightness via EIB: to enable changing panel brightness via EIB.
8. Sleep time enable: to enable panel sleep function. After enabled, set sleep delay time in "Sleep time".
9. Enable slave clock (invalid for now)
10. Lock button via EIB (invalid for now)
11. Temperature show mode: to select displayed temperature unit, including "Degrees Celsius" and "Degrees Fahrenheit".
12. The local temperature correction: to choose to correct temperature, which ranges from -10°C to +10°C (accurate to 0.1°C).
13. Temperature report enable: to choose whether to send temperature report. After enabled, select sending temperature signal mode in "Send temperature to bus", including "Report when changed", "Report cyclic" and "Read from bus". When "Report cyclic" is selected, change "Temperature report period" below, which ranges from 1 to 65535s.
14. The local humidity correction: to choose to correct local humidity data, which ranges from -10% to +10%.
15. Humidity report enable: to enable sending humidity report.
 - Send humidity to bus: to select the sending period or source, including "Report cyclic", "Report when changed" and "Read from bus".

3 Select Functions

Click “Functions” label in the parameter list to enable/disable panel functions, as shown in Figure 3-1.

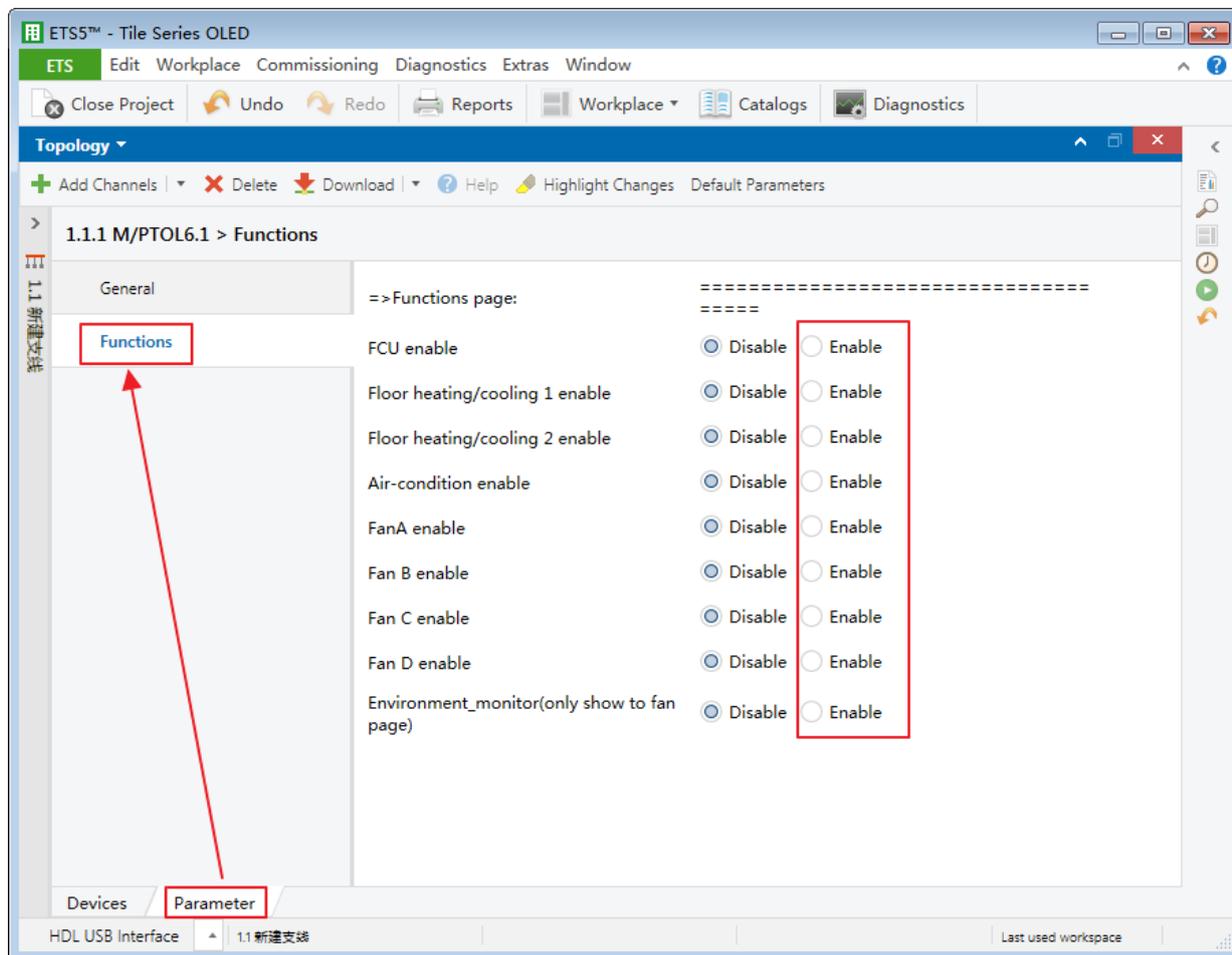


Figure 3-1 Select function

Tile Panel supports:

1. FCU enable: to enable FCU.
2. Floor heating/cooling 1/2 enable: to enable floor heating/cooling 1/2.
3. Air-condition enable: to enable air conditioner function.
4. Fan A/B/C/D: to enable fan A/B/C/D.
5. Environment monitor (only show to fan page): to enable displaying environment data in fan page.

4 Air Conditioner (FCU) Setting

4.1 Air Conditioner (FCU) Setting

Click “FCU” label in the parameter list to open the page, as shown in Figure 4-1.

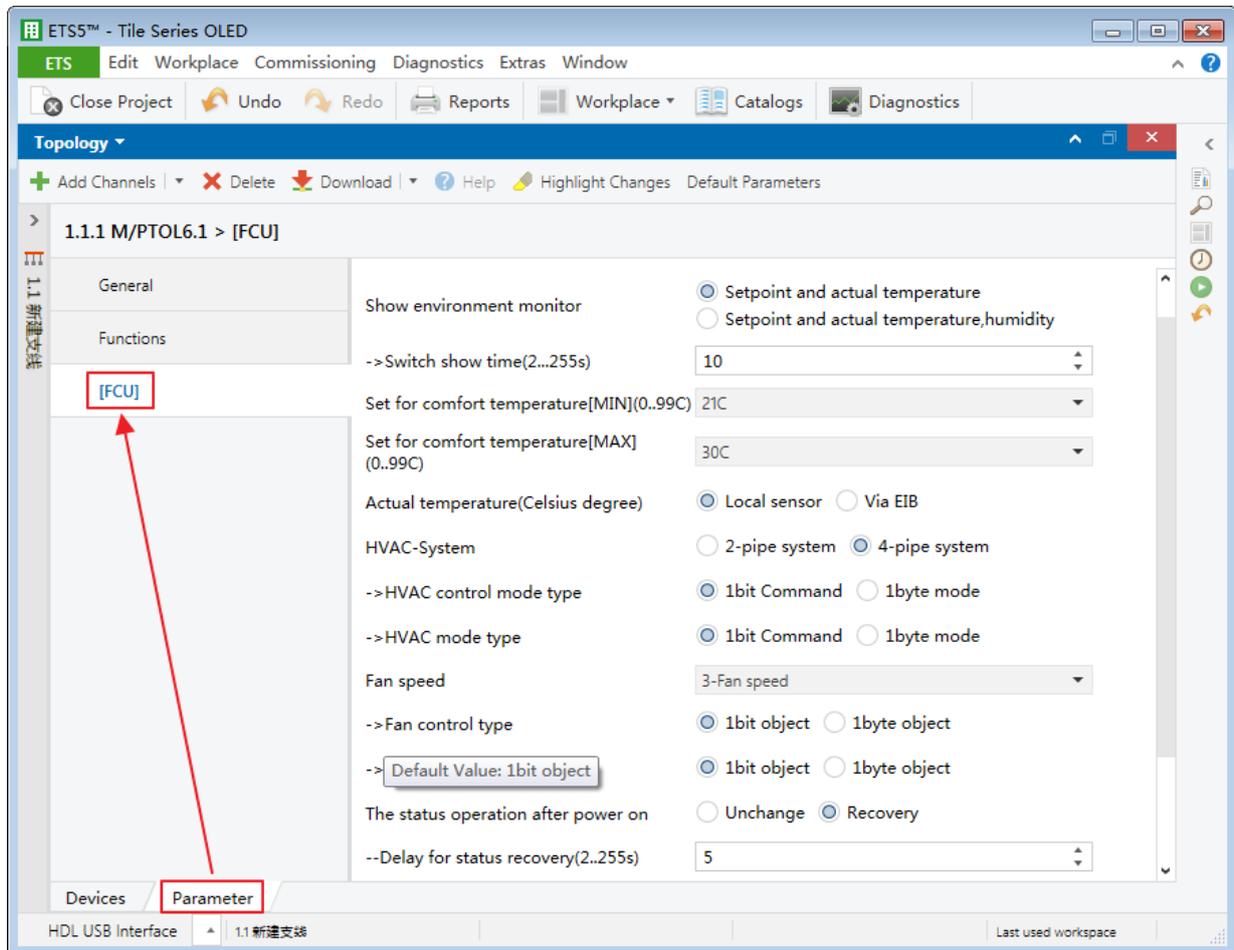


Figure 4-1 FCU setting

The setting items are explained below:

1. FCU functions selection: to select FCU function, including “Fan”, “Heating” and “Cooling”.
2. Show environment monitor: to select environment monitor data to be displayed. “Setpoint and actual temperature” means the preset and actual temperature, while “Setpoint and actual temperature, humidity” means the preset temperature, actual temperature and the humidity.
 - Switch show time: to set switch time between displaying environment monitor data, which ranges from 2 to 255s.

3. Set for comfort temperature [MIN/MAX]: to set the maximum/minimum comfort temperature, which both range from 0 to 99°C.
4. Actual temperature: to select to obtain actual temperature from “Local sensor” or via EIB.
5. HVAC-System: to select HVAC system type, including “2-pipe system” and “4-pipe system”.
6. HVAC control mode type: to select HVAC control type, including “1-bit command” and “1-byte mode”.
7. HVAC mode type: to select HVAC mode type, including “1-bit command” and “1-byte mode”.
8. Fan speed: to enable up to 3 fan speed levels.
9. Fan control type: to select fan control type. “1-bit object” is to control objects via 1-bit object while “1-byte object” is to control objects via 1-byte object.
10. The status operation after power on: to select the operation after FCU is powered on, including “Unchange” and “Recovery”. If the latter is selected, the delay time of recovering status can be set in “delay for status recovery” below, which ranges from 2 to 255s.
11. LED status (invalid for now): to select LED status, including “Flashing”, “Press=ON, Release=OFF” and “Press=OFF, Release=ON”.
12. Output control the relay actuator: to enable “Output control the relay actuator”. After enabled, click “Heat and Cool output” label on the left to configure in detail, as shown in the following part.

4.2 FCU Output Control the Relay Actuator Setting (Heat and Cool Output)

User may select to enable “Output control the relay actuator” in FCU setting and “Heat and Cool output” label can show up. Click the label to set, as shown in Figure 4-2.

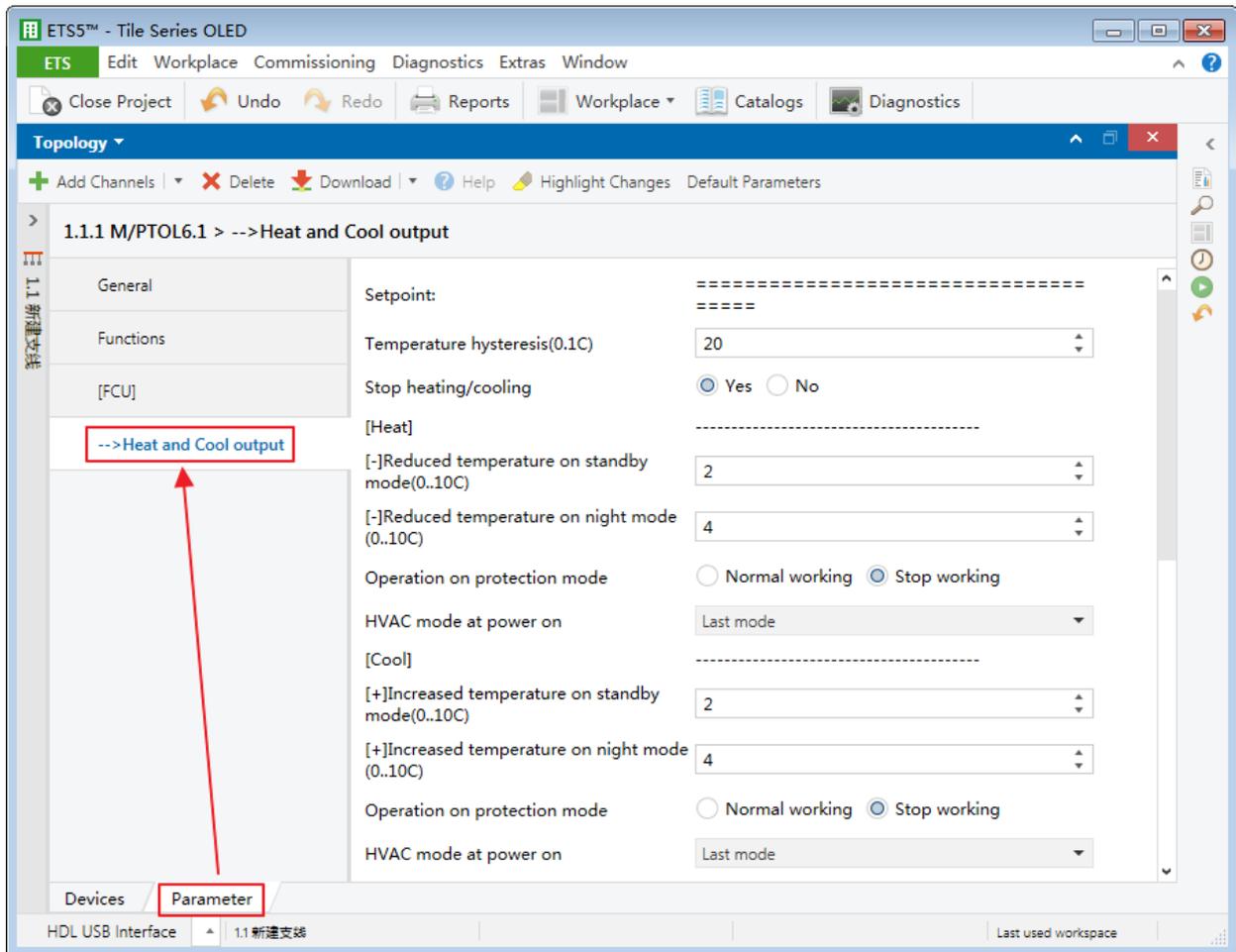


Figure 4-2 FCU output setting

The setting items are explained below:

1. Temperature hysteresis
2. Stop heating/cooling

Heat Setting

3. Reduced temperature on standby/night mode: to set the reduced temperature when the panel is in standby/night mode, which ranges from 0 to 10°C.
4. Operation on protection mode: to select the operation after the protection mode is activated, including “Normal working” and “Stop working”.
5. HVAC mode at power on: to select the mode after air conditioner is powered on, including “Last mode”, “Comfort mode”, “Standby mode”, “Night mode” and “Protection mode”.

Cool Setting

6. Increased temperature on standby/night mode: to set the increased temperature when the panel is in standby/night mode, which ranges from 0 to 10°C.
7. Operation on protection mode: to select the operation after protection mode is activated, including “Normal working” and “Stop working”.
8. HVAC mode at power on: to select the mode after air conditioner is powered on, including “Last mode”, “Comfort mode”, “Standby mode”, “Night mode” and “Protection mode”.

Fan Setting

9. Fan output control type: to select fan output control type, including “Changeover” and “Step”.
10. Starting characteristic of fan: to select the default fan speed after air conditioner is powered on.
11. Duration time at starting speed: to set the duration time of running air conditioner at the default speed.
12. Changeover delay between fan speeds: to set the delay time between one fan speed and another fan speed.
13. Duration on fan speed
14. Auto fan speed 1: if temperature deviation \leq : when the actual temperature is not higher than the set temperature, run fan speed 1.
15. Auto fan speed 2: if temperature deviation \leq : when the actual temperature is not higher than the set temperature, run fan speed 2.
16. Auto fan speed 3: else: to run fan speed 3 under the circumstances except “Auto fan speed 1: if temperature deviation \leq .” and “Auto fan speed 2: if temperature deviation \leq .”.
17. Fan speed when over setpoint temperature (for automatic fan speed): to run fan speed 1 or turn off fan speed when the actual temperature is higher than the set temperature.

Heat/Cool Valve Setting

18. Control type: to select control type, including “Two-step control” and “PWM control”. If the latter is selected, the details can be set below.
 - Heating/Cooling speed (For PI)
 - PWM period
 - Minimum/Maximum PWM valve

5 Floor Heating/Cooling Setting

5.1 Floor Heating/Cooling Setting

Tile Panel supports a total of 2 floor heating/cooling modules. After enabled, “Floor Heating/Cooling” label shows up on the left. Click to open as shown in Figure 5-1.

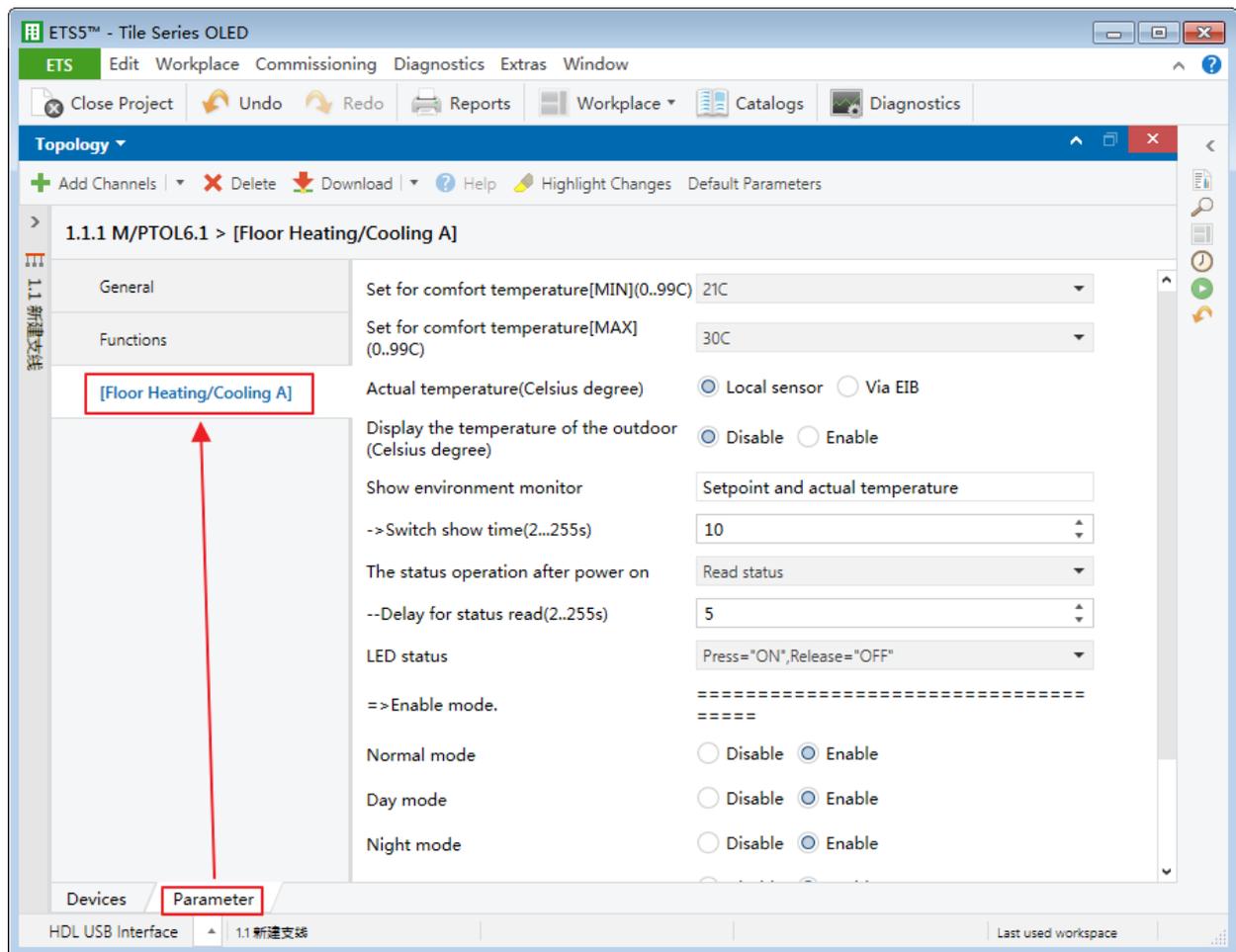


Figure 5-1 Floor heating/cooling setting

The setting items are explained below:

1. Set for comfort temperature [MIN/MAX]: to set the maximum/minimum comfort temperature, which both range from 0 to 99°C.
2. Actual temperature: to select to obtain actual temperature from “Local sensor” or via EIB.

If “EIB” is selected, correct temperature data read by the panel below, which ranges from -5°C to +5°C.

3. Display the temperature of the outdoor: to enable displaying outdoor temperature. After enabled, the details can be set below.
 - Temperature correction value of the outdoor: to correct outdoor temperature data, which ranges from -5°C to +5°C.
 - Temperature monitoring time interval of the outdoor: to select the interval of obtaining outdoor temperature in seconds.
4. Show environment monitor: to enable displaying environment monitor data.
 - Switch show time: to set switch time between displaying environment monitor data, which ranges from 2 to 255s.
5. The status operation after power on: to select the operation after floor heating is powered on, including “Unchange” or “Recovery”. If the latter two are selected, user can set the delay time of recovering/reading status in “Delay for status recovery/read” below.
6. LED status (invalid for now): to select LED status, including “Flashing”, “Press=ON, Release=OFF” and “Press=OFF, Release=ON”.
7. Enable mode: to enable mode, including “Normal mode”, “Day mode”, “Night mode” and “Away mode”.
8. Output control the relay actuator: to enable “Output control the relay actuator”. After enabled, click “FH Output” label on the left to configure in detail, as shown in the following part.

5.2 Floor Heating Output Setting (FH Output)

User can select to enable “Output control the relay actuator” in floor heating/cooling setting and “FH Output” label can show up. Click the label to set, as shown in Figure 5-2.

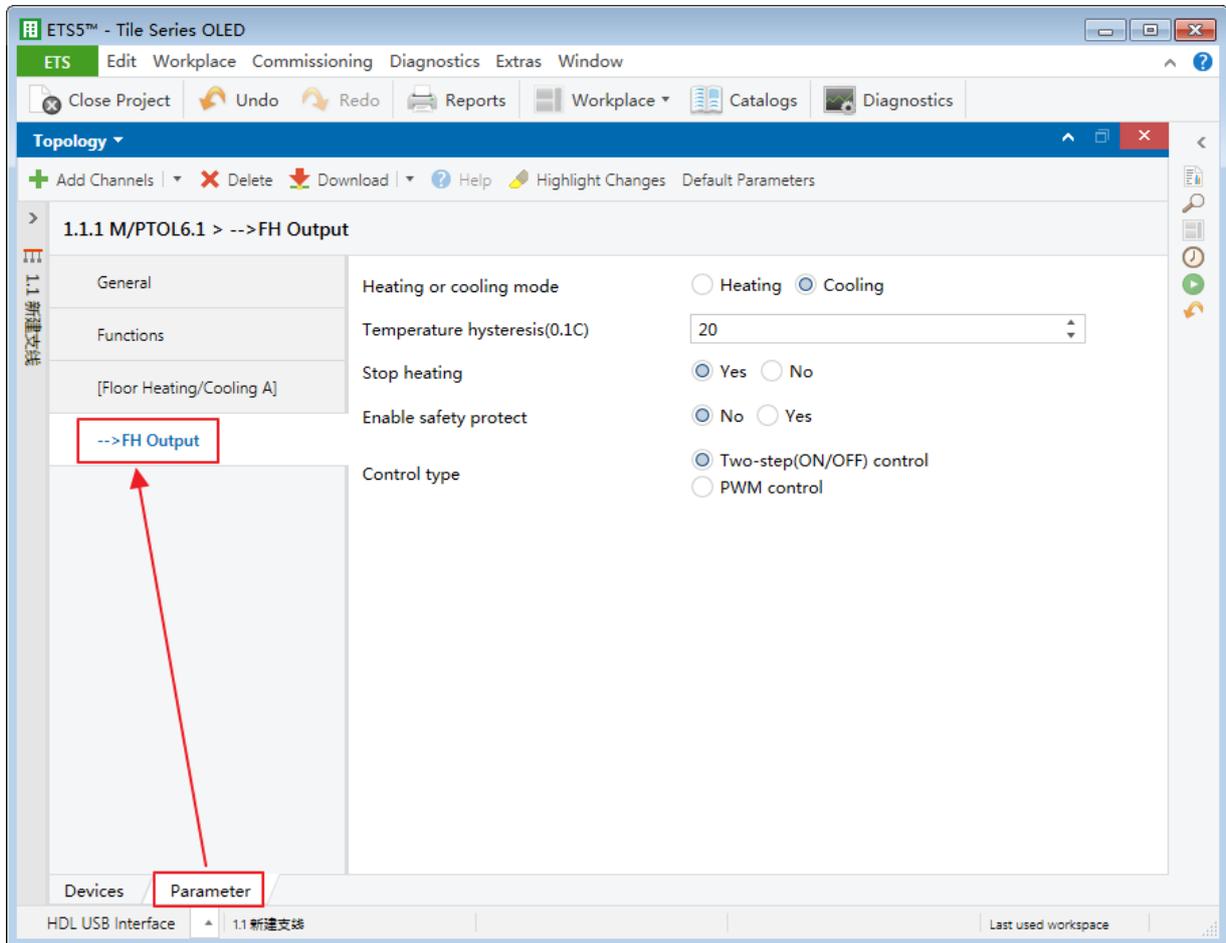


Figure 5-2 FH output setting

The setting items are explained below:

1. Heating or cooling mode
2. Temperature hysteresis
3. Stop heating
4. Enable safety protect: to enable safety protection function. After enabled, the details can be set below.
 - Temperature source: to choose to obtain actual temperature from “Local sensor” or via EIB.
 - Active/Cancel protection: to set the temperature for activating/canceling protection,

which both range from 0 to 99°C.

- Active/Cancel operation: to set the operation of activating/canceling protection, including “Unchange”, “ON” and “OFF”.
5. Control type: to select control type, including “Two-step control” and “PWM control”. If the latter is selected, the details can be set below.
- Floor heating/cooling speed (For PI)
 - PWM control object: Objects are controlled by PWM output. “1 bit object” is to control objects via 1-bit object PWM output duty ratio, while “1 byte object” is to control objects via 1-byte object PWM output duty ratio.
 - PWM period
 - Minimum/Maximum PWM valve

6 Air-condition Setting

6.1 Air-condition Setting

After enabled, click “Air-condition” label to set, as shown in Figure 6-1.

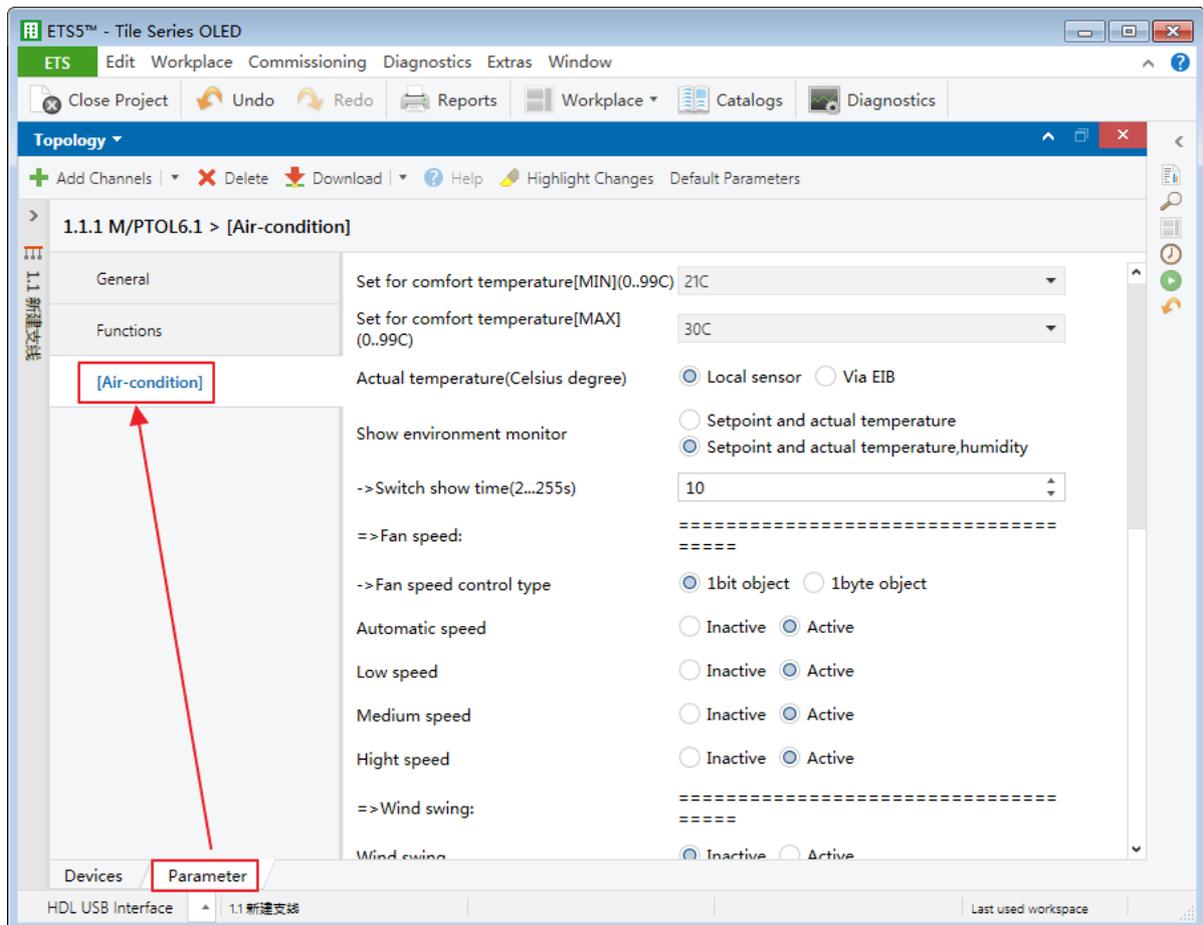


Figure 6-1 Air-condition setting

The setting items are explained below:

1. Set for comfort temperature [MIN/MAX]: to set the maximum/minimum comfort temperature, which both range from 0 to 99°C.
2. Actual temperature: to select to obtain actual temperature from “Local sensor” or via EIB.

If “EIB” is selected, correct temperature data read by the panel below, which ranges from -5°C to +5°C.

3. Show environment monitor: to select environment monitor data to be displayed. “Setpoint and actual temperature” means the set and actual temperature, while “Setpoint and

actual temperature, humidity” means the set temperature, actual temperature and the humidity.

- Switch show time: to set switch time between displaying environment monitor data, which ranges from 2 to 255s.

Fan Speed Setting

4. Fan speed control type: to select fan speed control type. “1-bit object” is to control objects via 1-bit object while “1-byte object” is to control objects via 1-byte object. If “1 byte object” is selected, the details can be set below:
 - Auto speed value: to set the fan speed of auto mode.
 - Low/Medium/High speed value: to set the fan speed value of different levels.
5. Auto speed: to enable adjusting fan speed automatically.
6. Low/Medium/High speed: to enable the fan speed of different levels.

Wind Swing Setting

7. Wind swing: to enable/disable wind swing.

Air condition Mode

8. Control mode type: to select air conditioner control type. “1 bit object” is to control objects via 1-bit object while “1 byte object” is to control objects via 1-byte object. If “1 byte object” is selected, the details can be set below:
 - Automatic heating/cooling value
 - Cooling value
 - Heating value
 - Dehumidification value
 - Fan value
9. Automatic heating/cooling
10. Only cooling
11. Only heating
12. Only dehumidification
13. Only fan

Air Condition Status Setting

14. The status operation after power on: to select the operation after air conditioner is powered on, including “Unchange” and “Recovery”. If “Recovery” is selected, set the delay time of recovering status in “Delay for status recovery” below.
15. The status operation after AC switch ON: to select the operation after air conditioner is turned on, including “Unchange” or “Recovery”. If “Recovery” is selected, set the delay time of recovering status in “Delay for status recovery” below.
16. LED status (invalid for now): to select LED status, including “Flashing”, “Press=ON, Release=OFF” and “Press=OFF, Release=ON”.
17. Output control the relay actuator: to enable “Output control the relay actuator”. After enabled, click “AC Output” label on the left to configure in detail, as shown in the following part.

6.2 AC Output Control the Relay Actuator Setting (AC Output)

User can select to enable “Output control the relay actuator” in air conditioner setting and “AC Output” label can show up. Click the label to set, as shown in Figure 6-2.

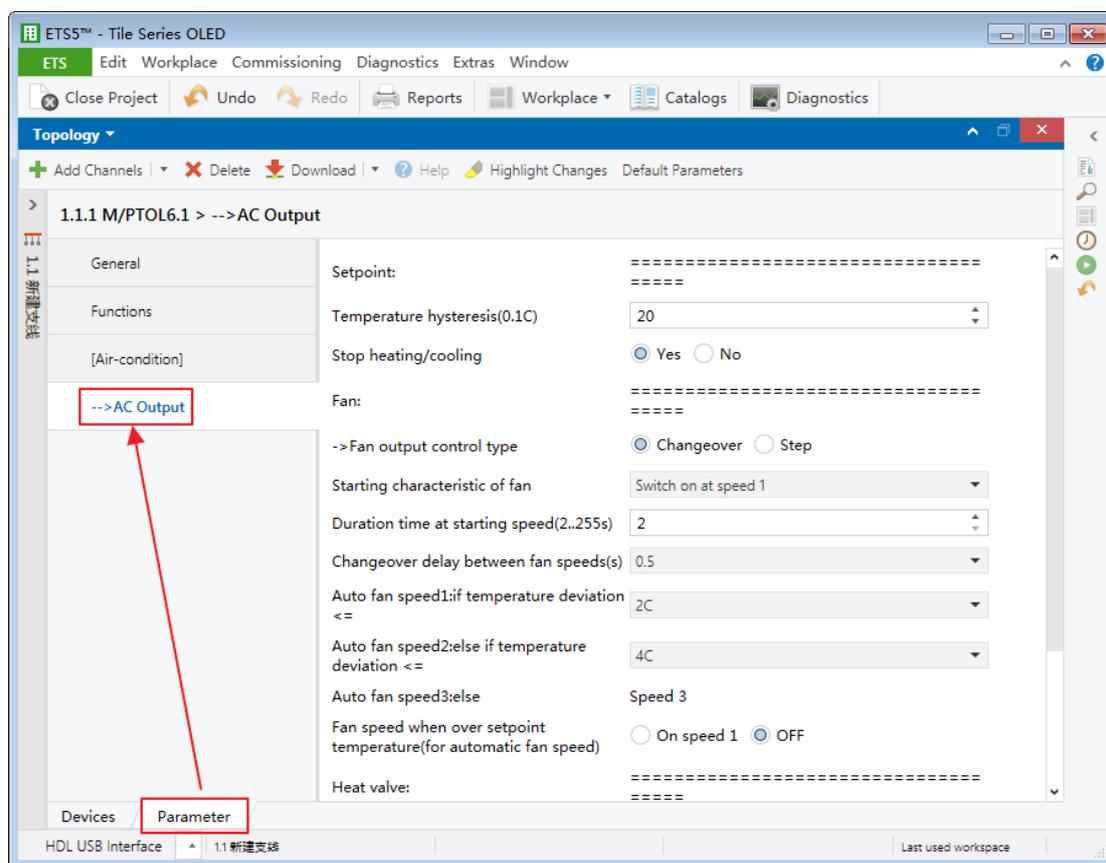


Figure 6-2 AC output setting

The setting items are explained below:

1. Temperature hysteresis
2. Stop heating/cooling

Fan Output Control Setting (Fan)

3. Fan output control type: to select fan output control type, including “Changeover” and “Step”.
4. Starting characteristic of fan: to select the default fan speed after air conditioner is powered on.
5. Duration time at starting speed: to set the duration time of running air conditioner at the default speed.
6. Changeover delay between fan speeds: to set the delay time between one fan speed and another fan speed.
7. Auto fan speed 1: if temperature deviation \leq : when the actual temperature is not higher than the set temperature, run fan speed 1.
8. Auto fan speed 2: if temperature deviation \leq : when the actual temperature is not higher than the set temperature, run fan speed 2.
9. Auto fan speed 3: else: run fan speed 3 under the circumstances except “Auto fan speed 1: if temperature deviation \leq ” and “Auto fan speed 2: if temperature deviation \leq ”.
10. Fan speed when over setpoint temperature (for automatic fan speed): to run fan speed 1 or turn off fan speed when the actual temperature is higher than the set temperature.

Heat/Cool Valve Setting

11. Control type: to select control type, including “Two-step control” and “PWM control”. If the latter is selected, the details can be set below.
 - Heating/Cooling speed (For PI)
 - PWM period
 - Minimum/Maximum PWM valve

7 Fan Setting

7.1 Fan Setting

Tile Panel supports a total of 4 fan systems. After enabled, “Fan” label shows up on the left. Click to set as shown in Figure 7-1.

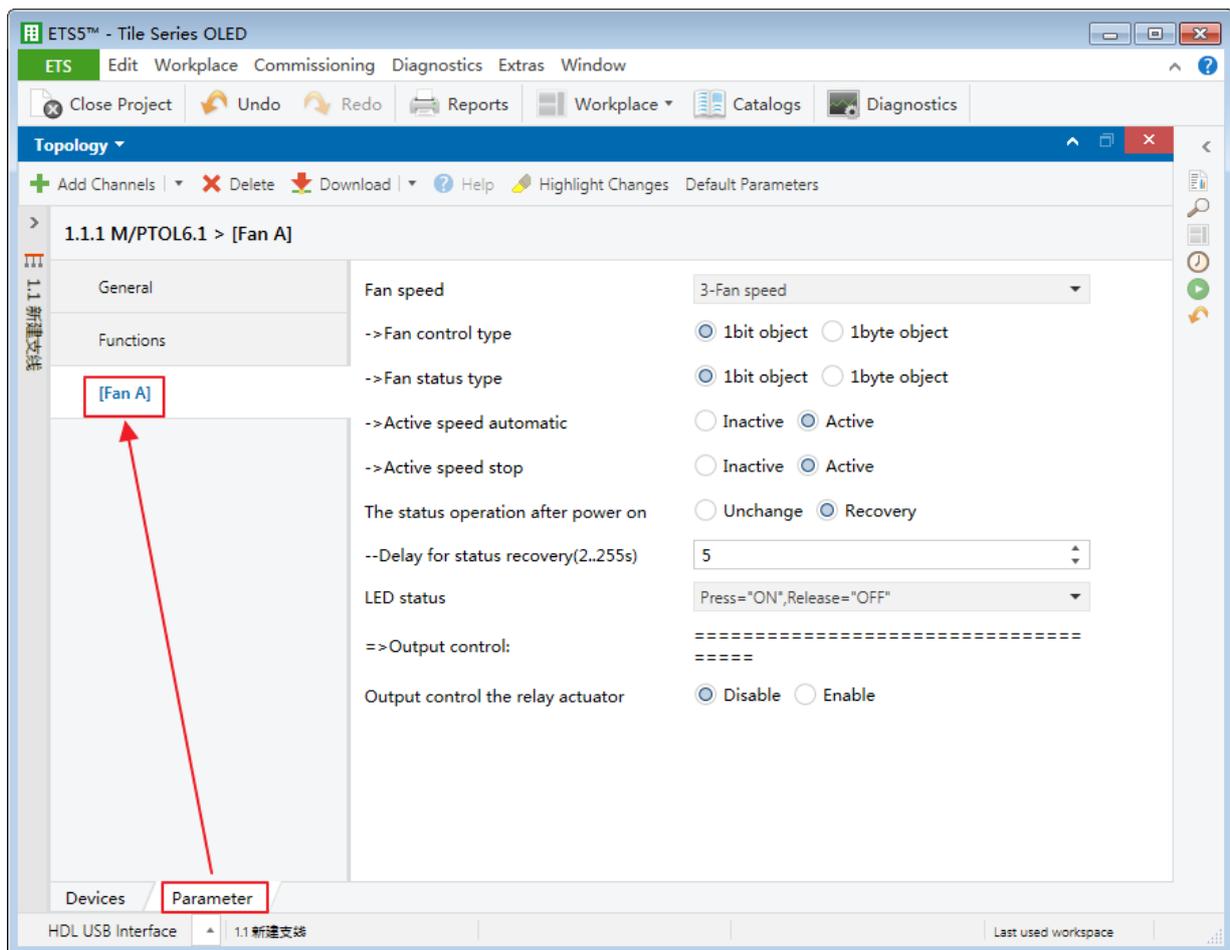


Figure 7-1 Fan setting

The setting items are explained below:

1. Fan speed: to enable up to 3 fan speed levels.
2. Fan control type: to select fan control type. “1 bit object” is to control objects via 1-bit object while “1 byte object” is to control objects via 1-byte object. If the latter is selected, the details of object value can be set below, including “Speed automatic value”, “Speed n value” and “Speed stop value”.
3. Fan status type: to select fan status type.

4. Active speed automatic: to enable activating automatic fan speed.
5. Active speed stop: to enable activating/deactivating fan speed.
6. The status operation after power on: to select the operation after fan is powered on, including “Unchange” or “Recovery”. If the latter is selected, set the delay time of recovering status in “Delay for status recovery” below.
7. Output control the relay actuator: to enable “Output control the relay actuator”. After enabled, click “Fan Output” label on the left to configure in details, as shown in the following part.

7.2 Fan Output Setting

User may select to enable “Output control the relay actuator” in fan setting and “Fan Output” label can show up. Click the label to set, as shown in Figure 7-2.

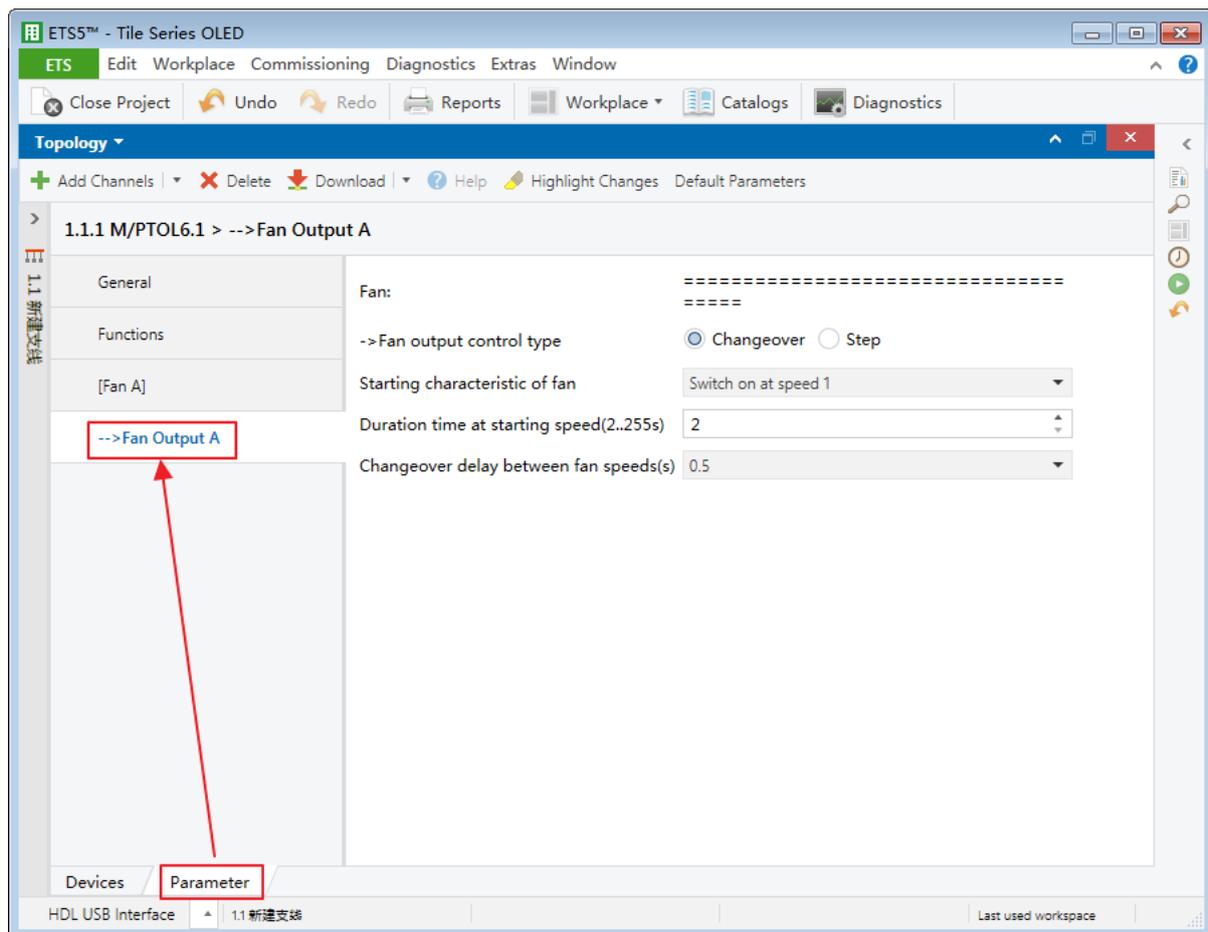


Figure 7-2 Fan output setting

The setting items are explained below:

1. Fan output control type: to select fan output control type, including “Changeover” and “Step”.
2. Starting characteristic of fan: to select the default fan speed after fan is powered on.
3. Duration time at starting speed: to set the duration time of running fan speed at the default speed.
4. Changeover delay between fan speeds: to set the delay time between one fan speed and another fan speed.

8 Environment Monitor Setting

User may select “Environment monitor” label in the parameter list, as shown in Figure 8-1.

Note:

Environment monitor result only shows up in fan page.

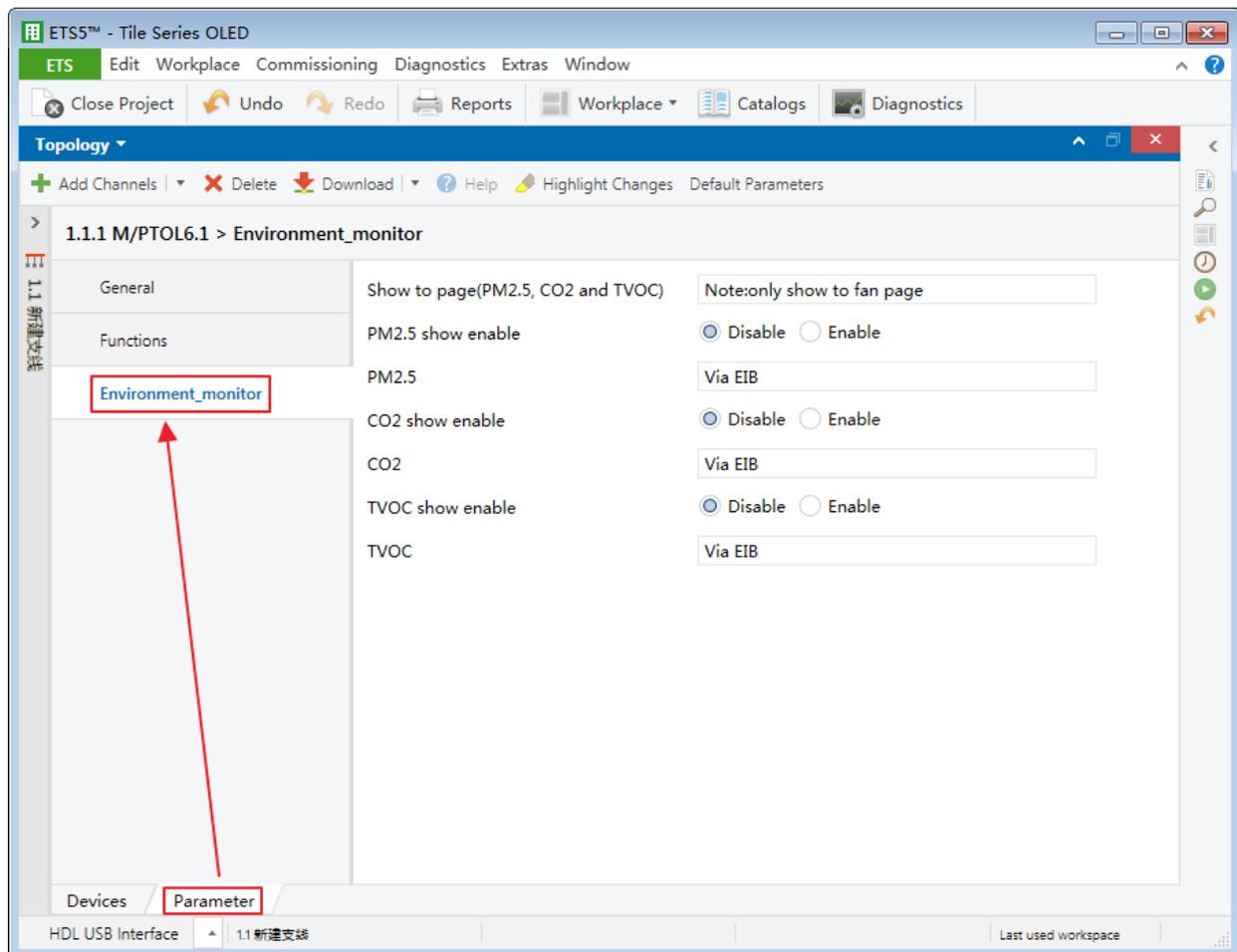


Figure 8-1 Environment monitor setting

Tile Panel supports a total of 3 kinds of environment data, including PM2.5, CO₂ and TVOC, the setting way of which are similar. * in the following contents represents one of 3 kinds of data.

1. * show enable: to enable displaying monitoring data.
2. * show position: to set the position for displaying monitoring data, including on the left/in the middle/on the right of the screen.

9 Download Data to the Panel

9.1 Interface Setting

If users need to download data to the panel, KNX interface is necessary.

After connecting KNX interface to a computer via USB, click “Bus” tab in ETS’ main page, “HDL USB Interface” will show up in “Discovered Interface”. Double click to add and the interface will show up in “Current Interface”, as shown in Figure 9-1.

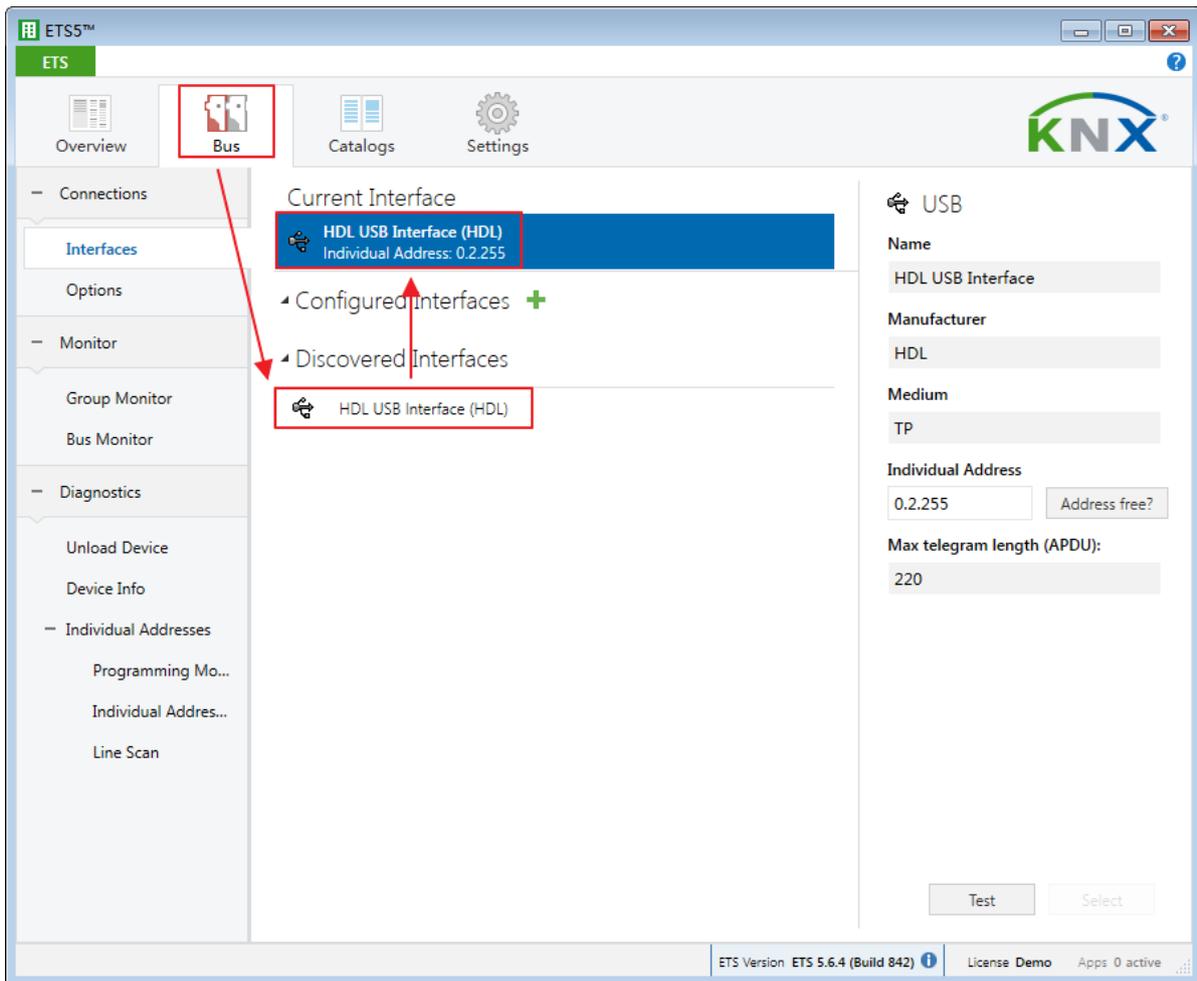


Figure 9-1 Interface setting

9.2 Download Data

Right click on the database to be downloaded to the panel and select “Download”. Keep pressing the top left button and bottom right button to enable the programming mode of the panel. The information on the right side of ETS indicates the process of downloading, as shown in Figure 9-2.

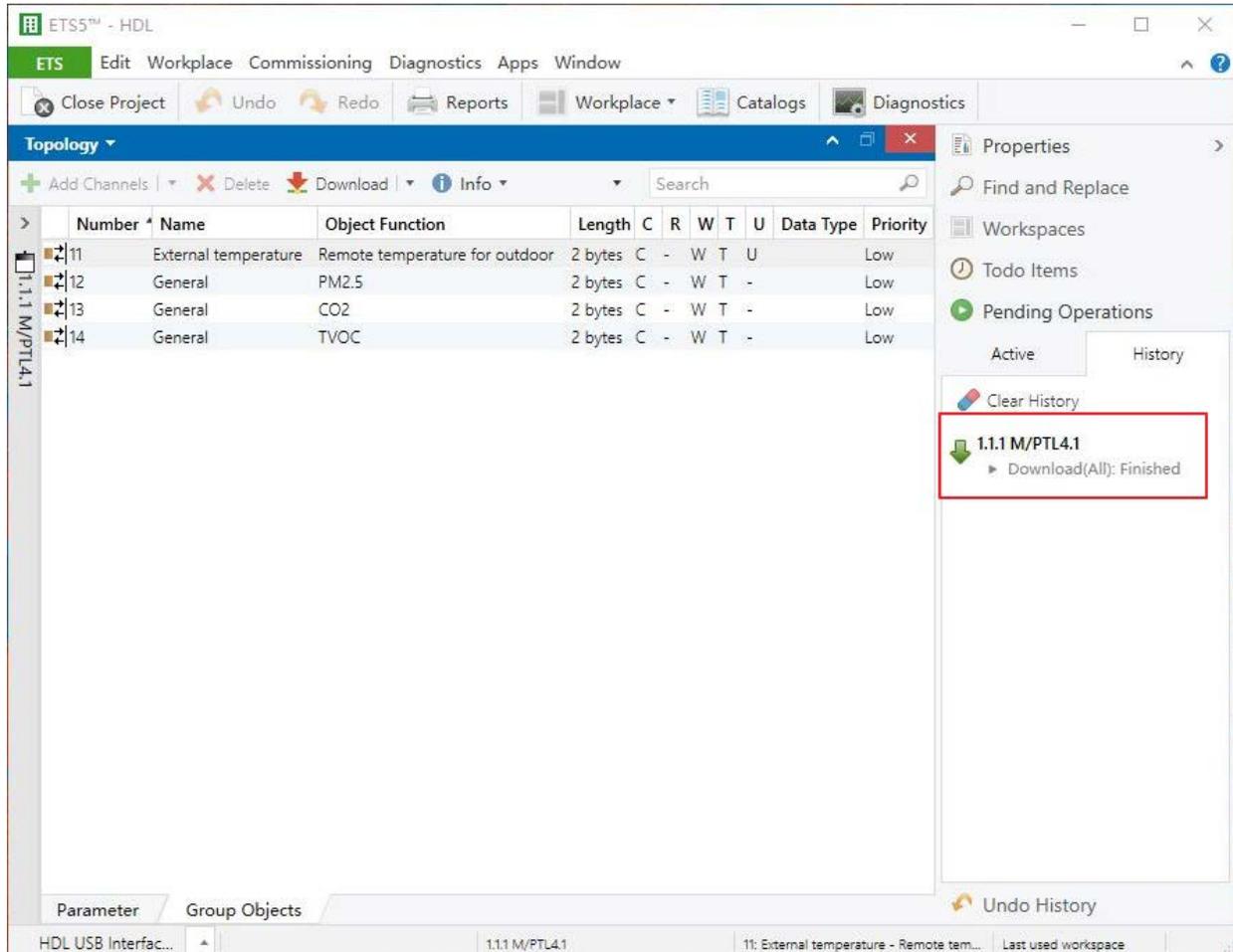


Figure 9-2 Download data

10 Object Instruction

KNX communication objects are used for receiving and sending data. The length of these objects is from 1 to 14 bits according to different function settings. Each object has a flag with communication property.

1. “C”-Communication, representing that communication objects are connected normally via the bus.
2. “R”-Read, representing that communication object value can be read via the bus.
3. “W”-Write, representing that communication object value can be rewritten via the bus.
4. “T”-Transmit, representing that communication objects have transmit function. When this object value is modified, send the message.
5. “U”-Update, representing that communication object value can be updated via the bus response message.

10.1 Objects “General”

Objects “General”					
1	General	Heartbeat telegram	1 bit	C - - T -	enable 低
2	General	Change RGB Led brightness	3 bytes	C R W T U	RGB value... 低
3	General	Change RED Led brightness	1 byte	C R W T U	percentag... 低
4	General	Change GREEN Led brightness	1 byte	C R W T U	percentag... 低
5	General	Change BLUE Led brightness	1 byte	C R W T U	percentag... 低
6	General	Oled brightness	1 byte	C - W T U	percentag... 低
7	General	Lock buttons	1 bit	C - W T U	enable 低
10	Slave clock	Network datetime	8 bytes	C - W T U	date time 低
11	Slave clock	Network date	3 bytes	C - W T U	date 低
12	Slave clock	Network time	3 bytes	C - W T U	time of day 低
13	General	Local temperature report	2 bytes	C R - T U	temperatu... 低
14	General	Local humidity report	2 bytes	C R - T U	humidity (%)低
No.	Name	Function	Flag	Data Type	
1	General	Heartbeat telegram	C T	DPT1.003 1 bit	
This object can be activated by selecting “Send value “0” cyclically, Send value “1” cyclically or Send value “1/0” inverted cyclically” in the parameter “Heartbeat Telegram”, which is used for checking if the device is connected to the system normally.					
2-6	General	Change RGB / RED / GREEN / BLUE / OLED	C W T U	DPT232.600 3 bytes	

		brightness		DPT5.001 1 byte
These objects are used for adjusting panel brightness.				
7	General	Lock buttons	C W T U	DPT1.003 1 bit
This object is used for enabling locking buttons.				
10-12	Slave lock	Network date time Network date Network time	C W T U	DPT19.001 8 bytes DPT11.001 3 bytes DPT10.001 3 bytes
These objects are used for indicating slave clock status. "Network date time" is to display time and date. "Network date" is only to display date. "Network time" is only to display time.				
13	General	Local temperature report	C R T U	DPT9.001 2 bytes
This object is used for reporting local temperature.				
14	General	Local humidity report	CRTU	DPT9.007 2 bytes
This object is used for reporting local humidity.				

10.2 Objects “HVAC”

Objects function status--“HVAC”					
20	HVAC	Switch ON/OFF	1 bit	C - W T U	switch 低
21	HVAC Actual temper...	Actual temperature	2 bytes	C - W T U	temperature (°C) 低
22	HVAC Actual temper...	Actual temp. error signal	1 bit	C - W T U	alarm 低
23	HVAC Actual temper...	Frost/heat alarm error signal	1 bit	C - W T U	alarm 低
24	HVAC Setpoint	Base setpoint temperature	2 bytes	C - W T U	temperature (°C) 低
25	HVAC Setpoint	Instantaneous setpoint temp.	2 bytes	C - W T U	temperature (°C) 低
26	HVAC control mode	HVAC control mode (byte)	1 byte	C - W T U	HVAC control mode 低
31	HVAC mode	HVAC mode (byte)	1 byte	C - W T U	HVAC mode 低
36	HVAC Fan	Fan speed automatic	1 bit	C - W T U	enable 低
37	HVAC Fan	Fan speed with % value	1 byte	C - W T U	percentage (0..100%) 低
44	HVAC Fan	Status fan speed	1 byte	C - W T U	counter pulses (0..255) 低
45	HVAC Fan	Status fan speed automatic	1 bit	C - W T U	enable 低
20	HVAC	Switch ON/OFF	1 bit	C - W T U	switch 低
21	HVAC Actual temper...	Actual temperature	2 bytes	C - W T U	temperature (°C) 低
22	HVAC Actual temper...	Actual temp. error signal	1 bit	C - W T U	alarm 低
23	HVAC Actual temper...	Frost/heat alarm error signal	1 bit	C - W T U	alarm 低
24	HVAC Setpoint	Base setpoint temperature	2 bytes	C - W T U	temperature (°C) 低
25	HVAC Setpoint	Instantaneous setpoint temp.	2 bytes	C - W T U	temperature (°C) 低
27	HVAC control mode	Automatic heating/cooling mode	1 bit	C - W T U	enable 低
28	HVAC control mode	Activation of heating mode	1 bit	C - W T U	enable 低
29	HVAC control mode	Activation of cooling mode	1 bit	C - W T U	enable 低
30	HVAC control mode	Activation of fan only	1 bit	C - W T U	enable 低
32	HVAC mode	ON CMD for comfort mode	1 bit	C - W T U	switch 低
33	HVAC mode	ON CMD for standby mode	1 bit	C - W T U	switch 低
34	HVAC mode	ON CMD for night mode	1 bit	C - W T U	switch 低
35	HVAC mode	ON CMD for building protection	1 bit	C - W T U	switch 低
36	HVAC Fan	Fan speed automatic	1 bit	C - W T U	enable 低
38	HVAC Fan	Fan speed 1	1 bit	C - W T U	switch 低
39	HVAC Fan	Fan speed 2	1 bit	C - W T U	switch 低
40	HVAC Fan	Fan speed 3	1 bit	C - W T U	switch 低
41	HVAC Fan	Status fan speed 1	1 bit	C - W T U	switch 低
42	HVAC Fan	Status fan speed 2	1 bit	C - W T U	switch 低
43	HVAC Fan	Status fan speed 3	1 bit	C - W T U	switch 低
45	HVAC Fan	Status fan speed automatic	1 bit	C - W T U	enable 低
50	HVAC Output	Heating PWM value	1 byte	C - W T -	percentage (0..100%)
51	HVAC Output	Relay-Cooling	1 bit	C - W T -	switch
52	HVAC Output	Relay-Fan speed1	1 bit	C - W T -	switch
53	HVAC Output	Relay-Fan speed2	1 bit	C - W T -	switch
54	HVAC Output	Relay-Fan speed3	1 bit	C - W T -	switch
No.	Name	Function	Flag	Data Type	
20	HVAC	Switch ON/OFF	C W T U	DPT1.001 1 bit	
This object is used for turning on/off air conditioner.					

21	HVAC Fan	Temperature from EIB	C W T U	DPT9.001 2 bytes
This object is used for indicating temperature data obtained via EIB.				
37-40	HVAC Fan	Fan speed automatic Fan speed with % value Fan speed 1/2/3	C W T U	DPT1.003 1 bit DPT5.001 1 byte DPT1.001 1 bit
These objects are used for controlling air conditioner fan speed.				
41-45	HVAC Fan	Status fan speed 1/2/3 Status fan speed Status fan speed automatic	C W T U	DPT1.001 1 bit DPT5.010 1 byte DPT1.003 1 bit
These objects are used for indicating air conditioner fan speed.				
46	HVAC Valve Heating	Trigger valve purge	C W T	DPT1.017 1 bit
This object is used for triggering the self-cleaning function of heating/cooling valve.				
47	HVAC Valve Heating	Status valve purge	C W T U	DPT1.003 1 bit
This object is used for indicating the self-cleaning function status of heating/cooling valve.				
21	HVAC Actual temperature	Actual temperature	C W T U	DPT9.001 2 bytes
This object is used for indicating actual temperature.				
22,23	HVAC Actual temperature	Actual temp. error signal Frost/heat alarm error signal	C W T U	DPT1.005 1bit
These objects are used for sending error signal to the bus when local temperature/frost/over-heating goes wrong.				
24	HVAC Setpoint	Base setpoint temperature	C W T U	DPT9.001 2 bytes
This object is used for setting temperature/instantaneous temperature.				
25	HVAC Setpoint	Instantaneous setpoint temp.	C W T U	DPT9.001 2 bytes
This object is used for returning to the set temperature of different mode, including "Comfort", "Standby", "Night", "Building protection", etc.				
26-30	HVAC control mode	HVAC control mode (byte) Activation of Automatic heating/cooling mode/	C W T U	DPT20.105 1 byte DPT1.003

		heating mode/cooling mode/ fan only		1 bit
These objects are used for controlling air conditioner control mode, including “Automatic heating/cooling mode”, “Only heating”, “Only cooling” and “Only fan”.				
31-35	HVAC mode	HVAC mode (byte) ON CMD for comfort/standby/night/building protection mode	C W T U	DPT20.102 1 byte DPT1.001 1 bit
These objects are used for controlling air conditioner mode, including “Comfort/Standby/Night/Building protection mode”.				
50-54	HVAC Output	Relay-Heating / Relay-Cooling / Heating PWM value/Cooling PWM value / Relay-Fan speed 1/2/3	C W T	DPT1.001 1 bit
These objects are used for outputting air conditioner work mode, including “Heating/Cooling/Heating PWM value/Cooling PWM value/Fan speed 1/2/3”.				

10.3 Objects “Floor Heating 0/1”

Objects function status--“Floor Heating”						
(Take “Floor Heating 0” as an example)						
56	Floor Heating 0	Pipe pressure protection	1 bit	C - W T U	switch	低
57	Floor Heating 0	Actual temperature	2 bytes	C - W T U	temperature (°C)	低
58	Floor Heating 0	Actual temp. error signal	1 bit	C - W T U	alarm	低
59	Floor Heating 0	Outdoor temperature	2 bytes	C - W T U	temperature (°C)	低
60	Floor Heating 0	Normal-mode setpoint Temp.	2 bytes	C - W T U	temperature (°C)	低
61	Floor Heating 0	Day-mode setpoint Temp.	2 bytes	C - W T U	temperature (°C)	低
62	Floor Heating 0	Night-mode setpoint Temp.	2 bytes	C - W T U	temperature (°C)	低
63	Floor Heating 0	Away-mode setpoint Temp.	2 bytes	C - W T U	temperature (°C)	低
64	Floor Heating 0	Preset 1 Temp. for timer mode	2 bytes	C - W T U	temperature (°C)	低
65	Floor Heating 0	Time of day for preset 1	3 bytes	C - W T U	time of day	低
66	Floor Heating 0	Start/Stop heating for preset1	1 bit	C - W T U	start/stop	低
67	Floor Heating 0	Preset 2 Temp. for timer mode	2 bytes	C - W T U	temperature (°C)	低
68	Floor Heating 0	Time of day for preset 2	3 bytes	C - W T U	time of day	低
69	Floor Heating 0	Start/Stop heating for preset2	1 bit	C - W T U	start/stop	低
70	Floor Heating 0	Preset 3 Temp. for timer mode	2 bytes	C - W T U	temperature (°C)	低
71	Floor Heating 0	Time of day for preset 3	3 bytes	C - W T U	time of day	低
72	Floor Heating 0	Start/Stop heating for preset3	1 bit	C - W T U	start/stop	低
73	Floor Heating 0	Floor heating(1-ON,0-OFF)	1 bit	C - W T U	switch	低
74	Floor Heating 0	ON CMD for Normal-mode	1 bit	C - W T U	switch	低
75	Floor Heating 0	ON CMD for Day-mode	1 bit	C - W T U	switch	低
76	Floor Heating 0	ON CMD for Night-mode	1 bit	C - W T U	switch	低
77	Floor Heating 0	ON CMD for Away-mode	1 bit	C - W T U	switch	低
78	Floor Heating 0	ON CMD for Timer-mode	1 bit	C - W T U	switch	低
No.	Name	Function	Flag	Data Type		
56,86	Floor Heating 0/1	Pipe pressure protection	C W T U	DPT1.001		

				1bit
These objects are used for enabling floor heating pipe pressure protection function.				
57,59,87,89	Floor Heating 0/1	Actual temperature Outdoor temperature	C W T U	DPT9.001 2 bytes
These objects are used for indicating actual/outdoor temperature.				
58,88	Floor Heating 0/1	Actual temp. error signal	C W T U	DPT1.005 1 bit
These objects are used for sending error signal to the bus when the local temperature goes wrong.				
60-63, 90-93	Floor Heating 0/1	Normal-mode/ Day-mode/ Night-mode/ Away-mode setpoint temp.	C W T U	DPT9.001 2 bytes
These objects are used for setting the temperature of different mode, including "Normal-mode/Day-mode/Night-mode/Away-mode".				
64,67,70, 94,97,100	Floor Heating 0/1	Preset 1/2/3 Temp. for timer mode	C W T U	DPT9.001 2 bytes
These objects are used for setting temperature for timer mode.				
65,68,71, 95,98,101	Floor Heating 0/1	Time of day for preset 1/2/3	C W T U	DPT10.001 3 bytes
These objects are used for controlling the time status of the preset temperature.				
66,69,72, 96,99,102	Floor Heating 0/1	Start/Stop heating for preset 1/2/3	C W T U	DPT1.010 1 bit
These objects are used for starting/stopping heating based on the preset temperature.				
73,103	Floor Heating 0/1	Floor heating (1-ON, 0-OFF)	C W T U	DPT 1.001 1 bit
These objects are used for turning on/off floor heating.				
74-78, 104-108	Floor Heating 0/1	ON CMD for Normal-mode/ Day-mode/ Night-mode/ Away-mode/ Timer-mode	C W T U	DPT1.001 1bit
These objects are used for enabling/disabling "Normal-mode/Day-mode/Night-mode/Away-mode/Timer-mode".				
81-82, 111-112	Floor Heating 0/1 Output	Safety protect temperature Relay PWM (1 bit) PWM valve (1 byte)	C W T U	DPT9.001 2 bytes DPT1.001 1 bit DPT5.001 1 byte
These objects are used for outputting safety protection temperature/relay switch status/PWM value.				

10.4 Objects “Air-condition”

Objects function status--“Air-condition”					
116	Air-condition	Switch ON/OFF	1 bit	C - W T U	switch 低
117	Air-condition Temper...	Actual temperature from EIB	2 bytes	C - W T U	temperature (°C) 低
118	Air-condition Temper...	Setpoint temperature	2 bytes	C - W T U	temperature (°C) 低
119	Air-condition Fan	ON CMD for automatic	1 bit	C - W T U	switch 低
120	Air-condition Fan	ON CMD for low speed	1 bit	C - W T U	switch 低
121	Air-condition Fan	ON CMD for medium speed	1 bit	C - W T U	switch 低
122	Air-condition Fan	ON CMD for high speed	1 bit	C - W T U	switch 低
123	Air-condition Wind	Wind swing('1'-swing,'0'-stop)	1 bit	C - W T U	start/stop 低
124	Air-condition Mode	ON CMD for automatic	1 bit	C - W T U	switch 低
125	Air-condition Mode	ON CMD for cooling	1 bit	C - W T U	switch 低
126	Air-condition Mode	ON CMD for heating	1 bit	C - W T U	switch 低
127	Air-condition Mode	ON CMD for dehumidification	1 bit	C - W T U	switch 低
128	Air-condition Mode	ON CMD for fan	1 bit	C - W T U	switch 低
129	Air-condition Output	Heating PWM value	1 byte	C - W T -	percentage (0..100%) 低
130	Air-condition Output	Relay-Cooling	1 bit	C - W T U	switch 低
131	Air-condition Output	Relay-Fan low speed	1 bit	C - W T U	switch 低
132	Air-condition Output	Relay-Fan medium speed	1 bit	C - W T U	switch 低
133	Air-condition Output	Relay-Fan high speed	1 bit	C - W T U	switch 低
No.	Name	Function	Flag	Data Type	
116	Air-condition	Switch ON/OFF	C W T U	DPT1.001 1bit	
This object is used for turning on/off air conditioner. Sending “1” is to turn on while sending “0” is to turn off.					
117	Air-condition Temperature	Actual temperature from EIB	C W T U	DPT9.001 2 bytes	
This object is used for indicating temperature data from EIB.					
118	Air-condition Temperature	Setpoint temperature	C W T U	DPT9.001 2 bytes	
This object is used for setting temperature.					
119-122	Air-condition fan	ON CMD for automatic/low/medium/high speed	C W T U	DPT1.001 1bit	
These objects are used for adjusting air conditioner fan speed.					
120	Air-condition fan	Fan speed with % value	C W T U	DPT5.001 1 byte	
This object is used for controlling air conditioner fan speed via absolute value.					
123	Air-condition Wind	Wind swing ('1'-swing,'0'-stop)	C W T U	DPT1.010 1bit	
This object is used for turning on/off air conditioner wind swing.					
124	Air-condition control mode	AC control mode (byte)	C W T U	DPT 20.105 1byte	

This object is used for setting air conditioner mode.				
124-128	Air-condition Mode	ON CMD for automatic/cooling/heating/dehumidification/fan	C W T U	DPT1.001 1bit
These objects are used for setting air conditioner work mode, including “Automatic/Cooling/Heating/Dehumidification/Fan”.				
129-133	Air-condition Output	Relay-Heating / Relay-Cooling / Relay-Fan low/medium/high speed	C W T U	DPT1.001 1bit
These objects are used for outputting air conditioner fan speed, including “Relay-Heating/Relay-Cooling/Relay-Fan low/medium/high speed”.				
129-130	Air-condition Output	Heating/Cooling PWM value	C W T	DPT5.001 1 byte
These objects are used for outputting the PWM value of air conditioner heating/cooling.				

10.5 Objects “Fan”

Objects function status--“Fan”				
(Take “Floor Heating 0” as an example)				
135	FanA	Switch ON/OFF	1 bit	C - W T U switch 低
136	FanA	Fan speed with % value	1 byte	C - W T U percentage (0..100%) 低
147	FanA	Status fan speed	1 byte	C - W T U counter pulses (0..255) 低
148	Fan A Output	Relay-Fan speed1	1 bit	C - W T - switch 低
149	Fan A Output	Relay-Fan speed2	1 bit	C - W T - switch 低
150	Fan A Output	Relay-Fan speed3	1 bit	C - W T - switch 低
135	FanA	Switch ON/OFF	1 bit	C - W T U switch 低
137	FanA	Fan speed automatic	1 bit	C - W T U switch 低
138	FanA	Fan speed 1	1 bit	C - W T U switch 低
139	FanA	Fan speed 2	1 bit	C - W T U switch 低
140	FanA	Fan speed 3	1 bit	C - W T U switch 低
141	FanA	Fan speed stop	1 bit	C - W T U switch 低
142	FanA	Status speed automatic	1 bit	C - W T U switch 低
143	FanA	Status fan speed 1	1 bit	C - W T U switch 低
144	FanA	Status fan speed 2	1 bit	C - W T U switch 低
145	FanA	Status fan speed 3	1 bit	C - W T U switch 低
146	FanA	Status fan speed stop	1 bit	C - W T U switch 低
No.	Name	Function	Flag	Data Type
135,151,167,183	Fan A/B/C/D	Switch ON/OFF	C W T U	DPT1.001 1bit
These objects are used for turning on/off fan. Sending “1” is to turn on, while sending “0” is to turn off.				
136,152,168,184	Fan A/B/C/D	Fan speed with %value	C W T U	DPT5.001 1 byte

These objects are used for controlling fan speed by percentage.				
137-141,153-157, 169-173,185-189	Fan A/B/C/D	Fans speed automatic/1/2/3/stop	C W T U	DPT1.001 1 bit
These objects are used for controlling fan speed, including "Automatic/1/2/3/Stop".				
142-147,158-163, 174-179,190-195	Fan A/B/C/D	Status speed automatic/fan speed 1/2/3/stop	C W T U	DPT1.001 1 bit DPT5.010 1 byte
These objects are used for indicating fan speed.				
148-150,164-166, 180-182,196-198	Fan A/B/C/D Output	Relay-Fan speed 1/2/3	C W T	DPT1.001 1 bit
These objects are used for outputting fan speed.				

10.6 Objects "Environment Monitor"

Objects function status--"Environment Monitor"				
199	Environment Monitor	PM2.5	2 bytes C - W T -	低
200	Environment Monitor	CO2	2 bytes C - W T -	parts/million (ppm) 低
201	Environment Monitor	TVOC	2 bytes C - W T -	parts/million (ppm) 低
No.	Name	Function	Flag	Data Type
199-201	Environment Monitor	PM2.5/CO2/TVOC	C W T	DPT9.030 2 bytes DPT9.008 2 bytes
These objects are used for monitoring environmental pollutants.				