HDL®

KNX M/SIS05.1 PIR Sensor
User Manual

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Content

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GZ HDL Technology Co., L

Modification Record

This record accumulates instructions for each document update. The latest version of the document contains updates from all previous document versions。

| Num	Version	Modification Content	Date
1	V1.0.0	First official release	2020/10/23

1 Overview

1.1 General Information

1.1.1 Description

KNX PIR Sensor (M/SIS05.1) is a multi-function sensor which contains PIR sensor, temperature sensor and brightness sensor. 4 independent logical blocks and 1 combined block are available, and each block contains 10 object outputs. Logical relations AND, OR can be set and single mode and master / slave mode are supported.

1.1.2 Device Description


Front View   Side View   Back View
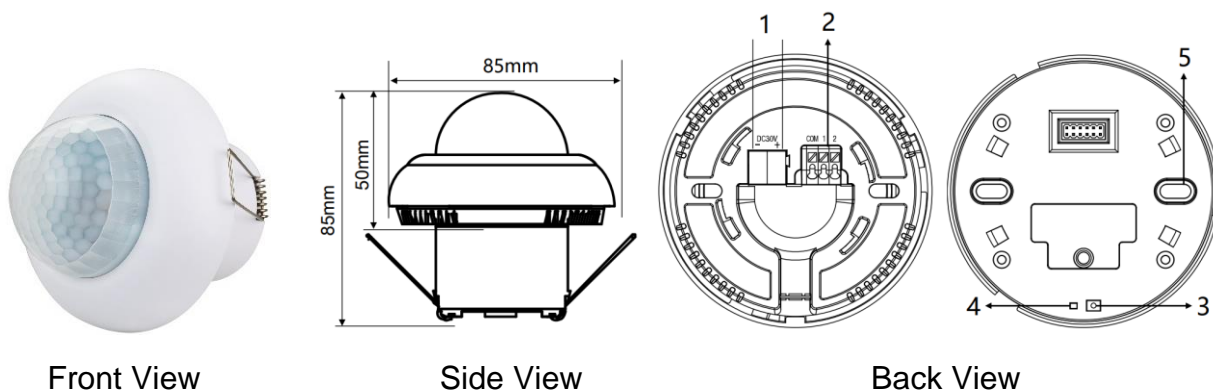
1. KNX interface.

2. Dry contact connector, from left to right are COM, Dry Contact 1, Dry Contact 2.

3. Programming button.

4. Programming LED indicator: The LED is on when the sensor is in programming mode, off when the sensor exits programming mode, and off when the sensor works properly.
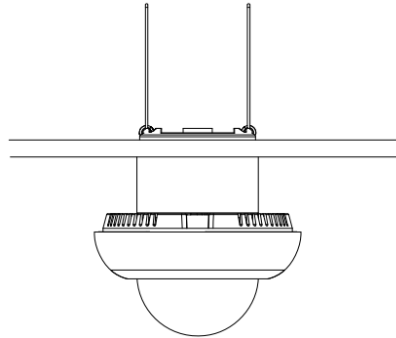
5. Screw hole.
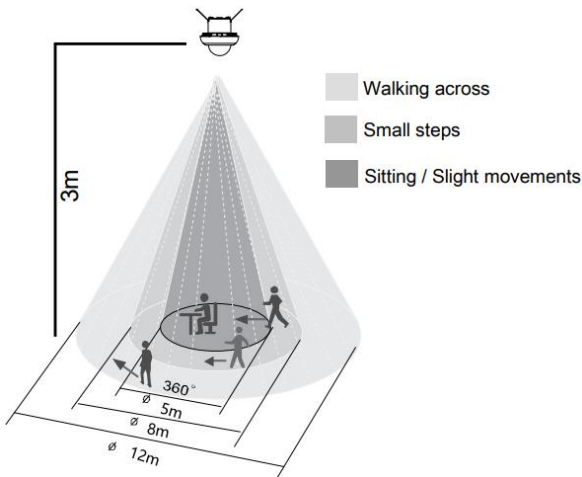
Detection Range (25℃)			
Mounting height	Sitting / Slight movements	Small steps	Walking across
3m	5m	8m	12m

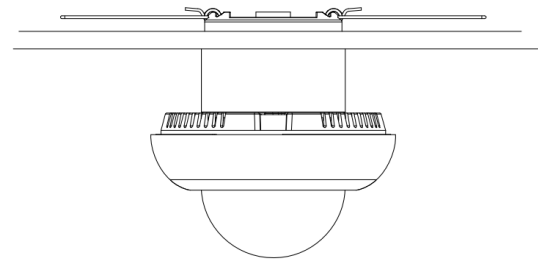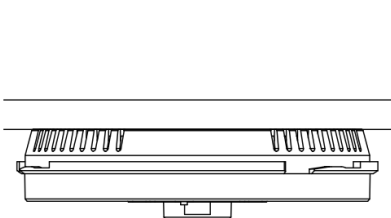## 1.1.3 Installation Steps
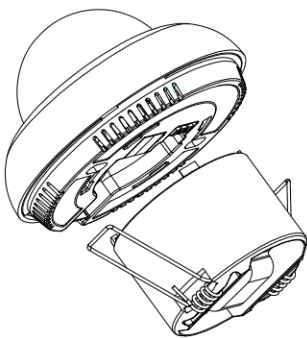
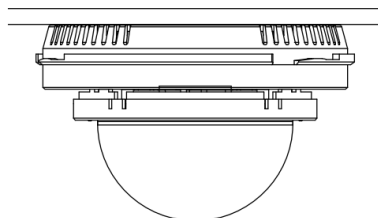| Step1 | Step2 | Step3 |

● **Spring clip mounting:**

Step1: Rotate and fix the sensor and the spring clip together.

Step 2. Insert the spring clip into the hole. (diameter of the hole: 55mm)
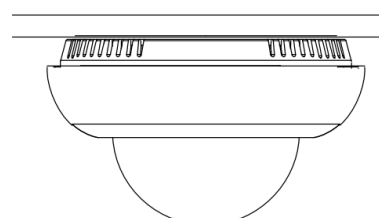
Step 3. Fix the sensor into position with the assistance of the spring clips.
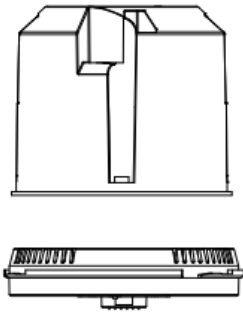

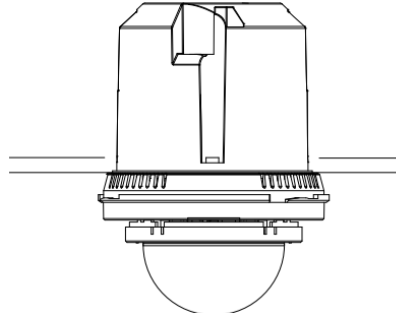| Step1 | Step2 | Step3 |

● **Screw mounting:**

Step 1. Fix the sensor on the ceiling with screws.
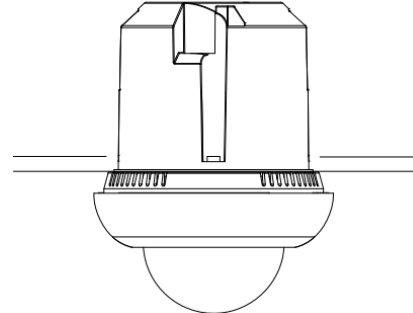
Step 2. Install PIR sensor board.

Step 3. Attach the cover to the sensor.

| Step1 | Step2 | Step3 |

- **Wall box mounting**

Step 1. When installing the sensor in the thick wall , produce a hole in the wall.

Step 2. Install the wall box in the wall.

Step 3. Fix the sensor on the wall box with screws.

Step 4. Install PIR sensor board.

Step 5. Attach the cover to the sensor.

1.2 Functionalities

- 4 independent logical blocks and 1 combined block are available, and each block contains 10 object outputs. Control targets include switches, dimming, alarm devices, etc.

- 1 sensor status feedback function block, including data and status feedback for human presence detection and photosensitive sensors, and intrusion alarms.

- 2 lighting control function blocks, which support automatic and semi-automatic control, and switch control according to ambient illumination.

- 1 constant brightness automatic adjustment function block can compare the ambient illumination with the set illumination value, adjust the brightness of the light, and select the curtain combination dimming.

- 2 HVAC control blocks enable automatic and semi-automatic mode, HAVC open delay and duration settings.

- Control types: Switch control, Absolute dimming control, Shutter control, Alarm control, Percentage control, Sequence control, Scene control, String(14 bytes) control, Threshold control, Logic combination control.

- Logic inputs: PIR sensor status, brightness value, temperature and humidity value, and external telegrams.

- 2 logical relations: AND, OR.

- 2 working modes: Single mode and master / slave mode.

- The logic validity can be set by external telegram.

- Support online upgrade in HDL KNX Assistant software.

2 Software Configurations

2.1 Device Import

We need to add device/database before program it.

1: Create project in ETS5, if you have project, ignore it. Suggested use Three Level when create project.
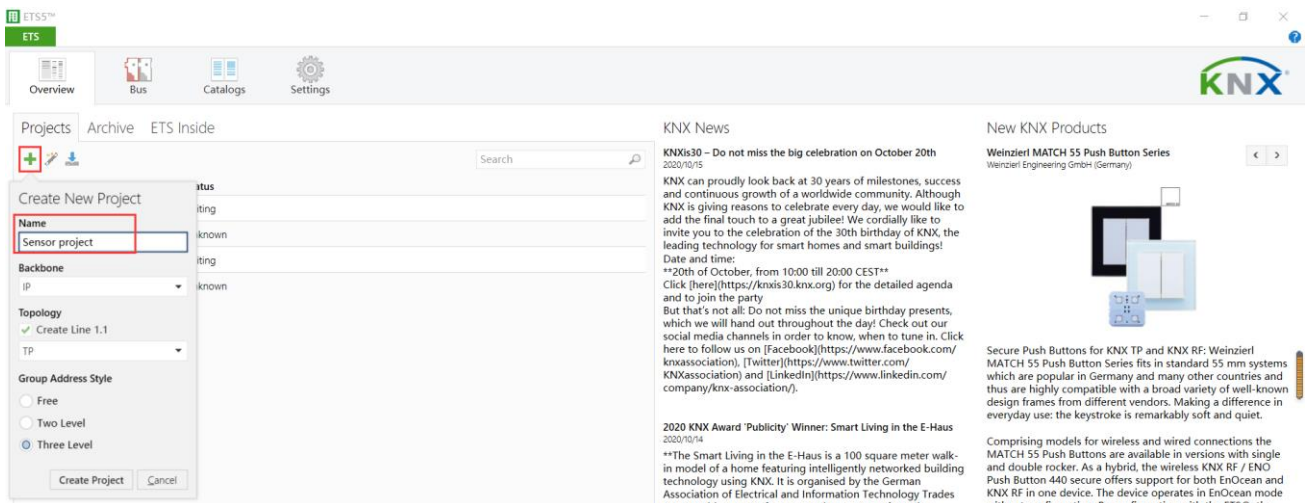
2: Select Catalog, and Import the database of device which you want.
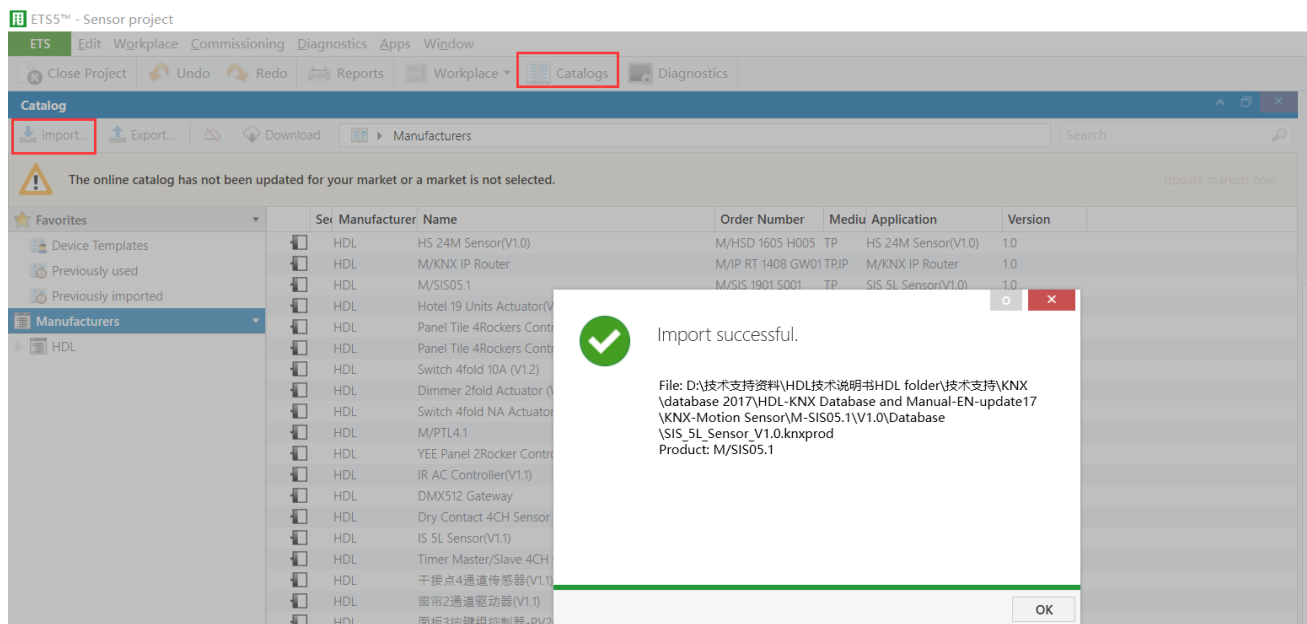
3: Select Topology, and click Add Device; It will show the Catalog again, and double click the device which in Catalog, the device will be added in Topology. add the device which you want.

Before or after added the devices, we can modify the Area number for the devices.

After added the device, click the device, then can enter to the Setting page.

2.2 General

We can set some general setting in here, like heartbeat/sensitivity/temperature source and so on.

Parameter: set the parameter for sensor.

Group Objects: the group objects for sensor.

● **System delay (2..255s) after bus voltage recovery:**
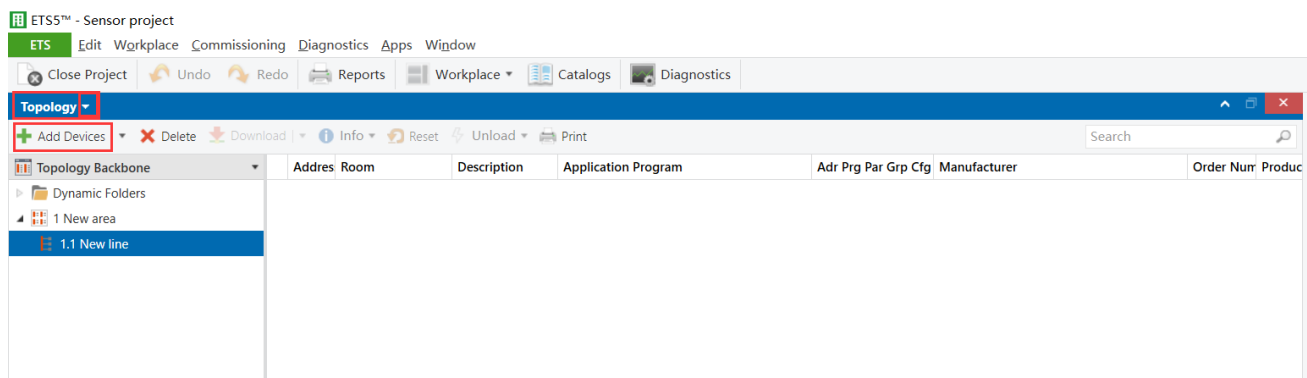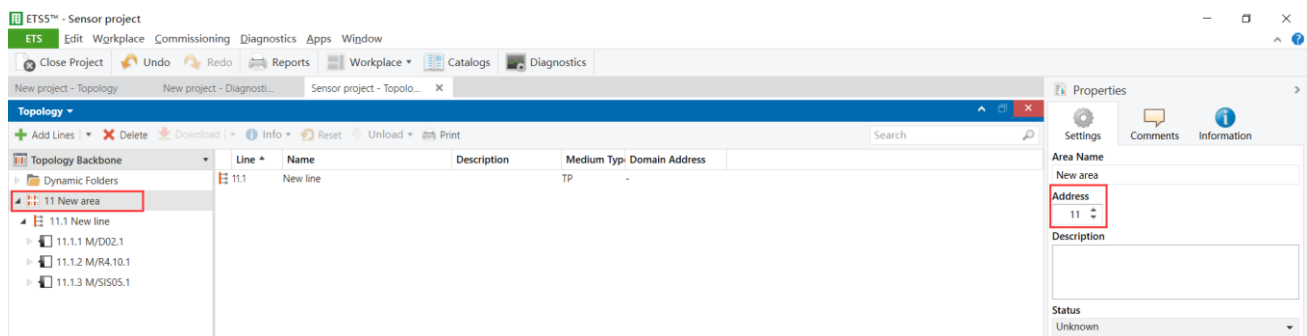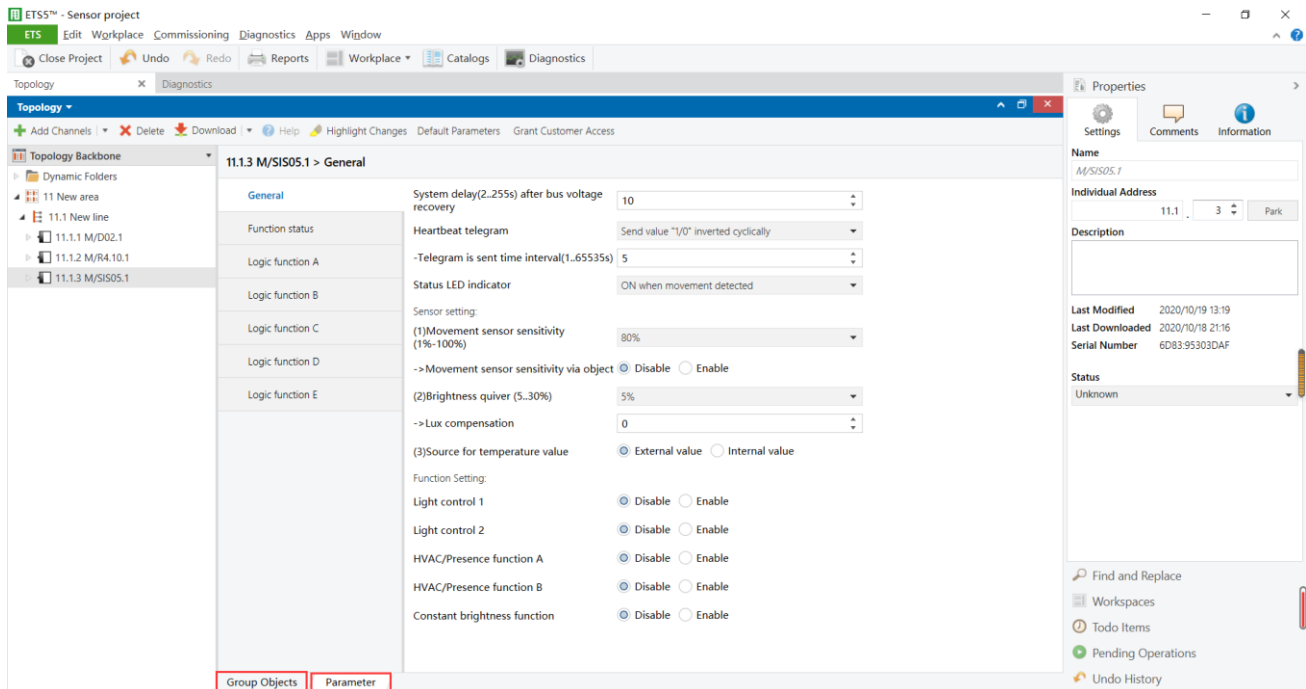
When the bus voltage recovery and timer start, and when the time out. The presence detector can be allowed operating. This function is selected by user. The default value is 10 seconds.

● **Heartbeat telegram:**

Used to check device is online or not in 3rd party software. If enable, device will send heartbeat telegram cyclically on the Bus when online.

Disable: Disable heartbeat telegram.

Send value '0' cyclically: Send heartbeat telegram '0' cyclically.

Send value '1' cyclically: Send heartbeat telegram '1' cyclically.

Send value '1/0' inverted cyclically: Send heartbeat telegram '1/0' inverted cyclically.

Telegram is sent time interval (1..65535): The interval time for send out telegram.

right click to link an address
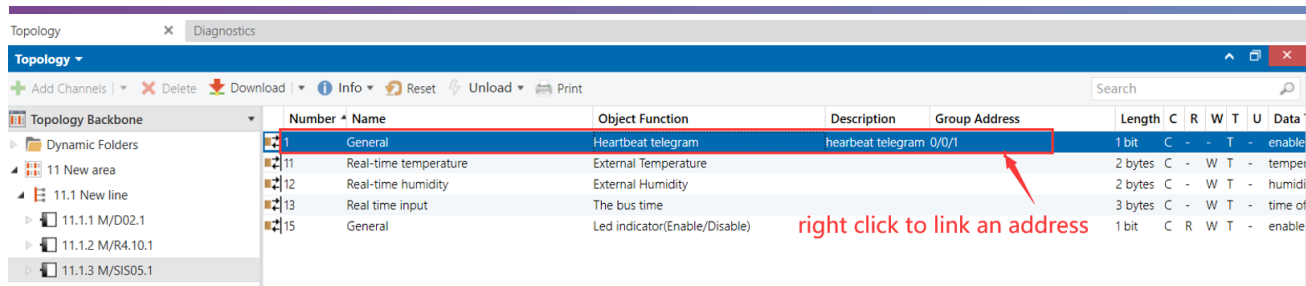
● **Status LED indicator:**

Set the LED indicator's status, for normal use ON when movement detected.
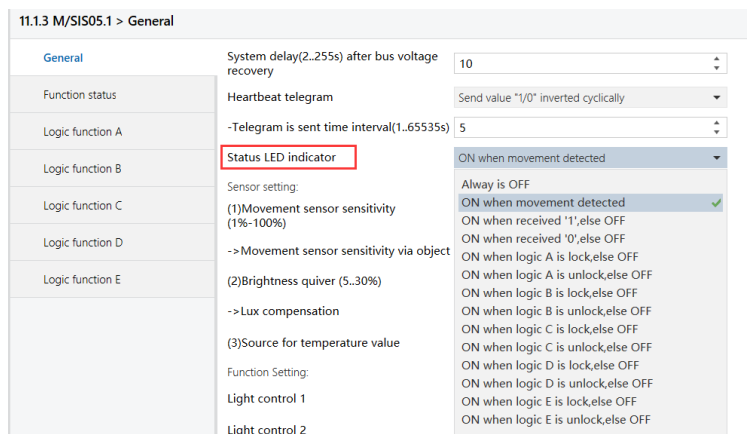
If select anyone except 'Always is OFF', there has 'Led indicator (Enable/Disable)' function.

We can use this Group Address to enable or disable the Led indicator.
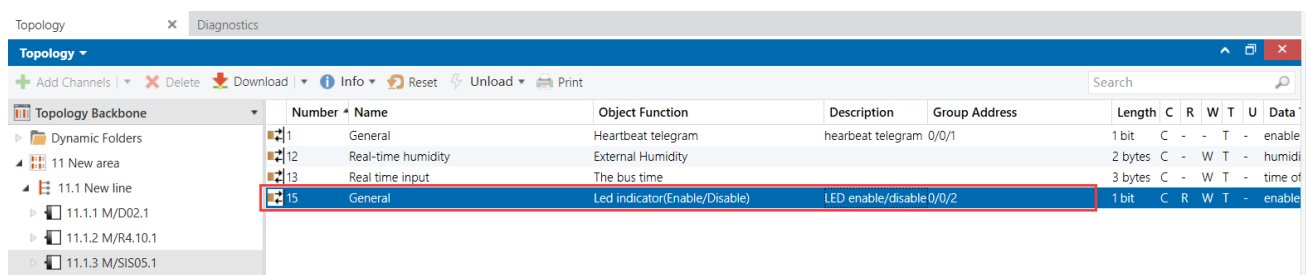
'ON when received '1', else OFF', means if received 'Led indicator (Enable/Disable),1', then turn ON the Led indicator.

'ON when received '0', else OFF', means if received 'Led indicator (Enable/Disable),0', then turn ON the Led indicator.

- **Movement sensor sensitivity (1%-100%):**

The default value is 80%. If set too high possible interference (e.g 100%), and set too low may can't detect movement (e.g 1%).

->Movement sensor sensitivity via object: If enable, we can modify sensor sensitivity via Group Address.
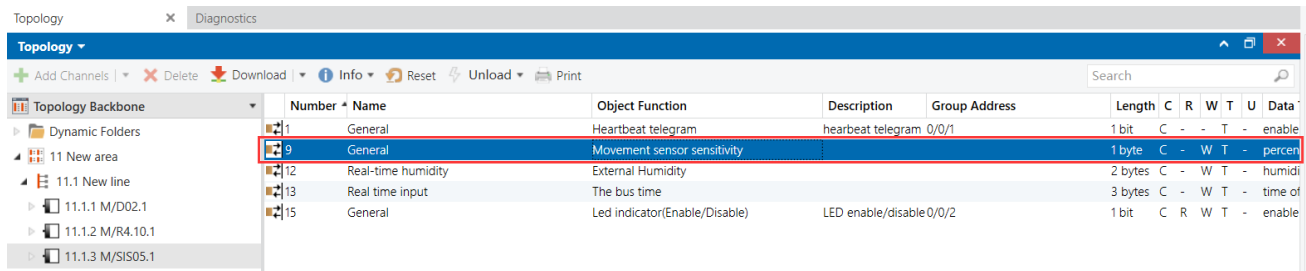
- **Brightness quiver (5..30%):**

The quiver value is used for brightness in logic.

-> Lux compensation: If Lux value is not correct, you can use this to adjust the Lux value.

If Quiver is 5% and Threshold_1 <= Threshold_2. Threshold_1 = 100 Lux and Threshold_2 = 300 Lux. Then effective value is 95~315 Lux.

$Threshold\_1 * (1 - 5\%) = 100 * (1 - 5\%) = 95$ Lux

$Threshold\_2 * (1 + 5\%) = 300 * (1 + 5\%) = 315$ Lux
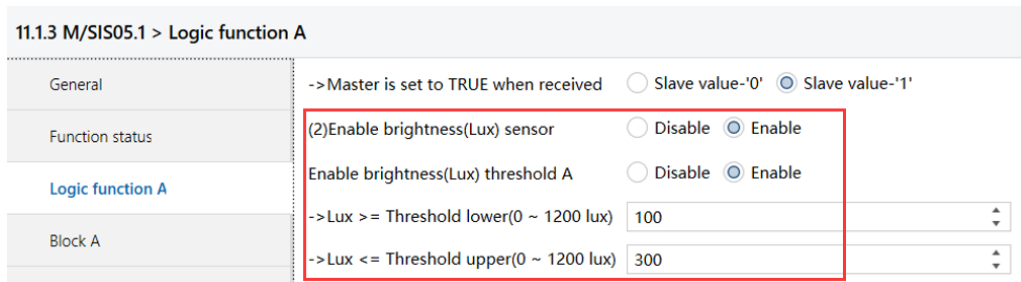
If Quiver is 5% and Threshold_1 > Threshold_2. Threshold_1 = 300 Lux and Threshold_2 = 100 Lux. Then effective value is >285 or <105 Lux.

Quiver_1 = Threshold_1 * (1 – 5%) = 300 * (1 - 5%) = 285 Lux

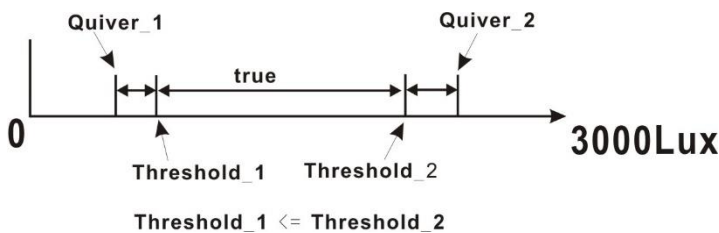Quiver_2 = Threshold_2 * (1 + 5%) = 100 * (1 + 5%) = 105 Lux

Threshold_1 > Threshold_2
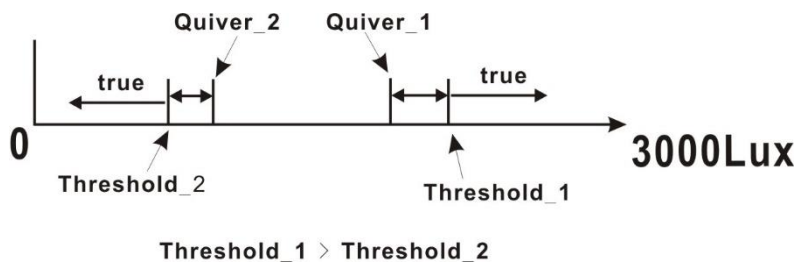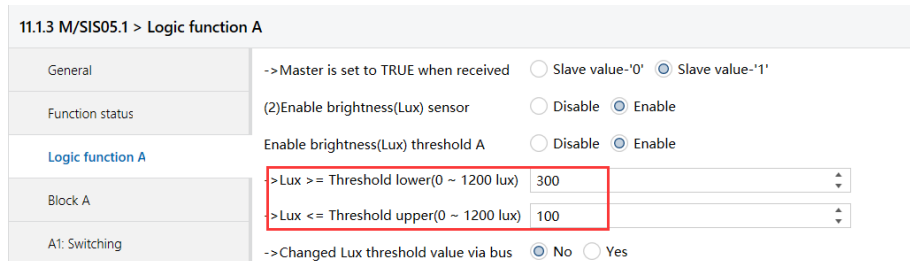
- **Source for temperature value:**

External value: Used temperature from BUS. You can set 2 bytes Group Address to read temperature from BUS.
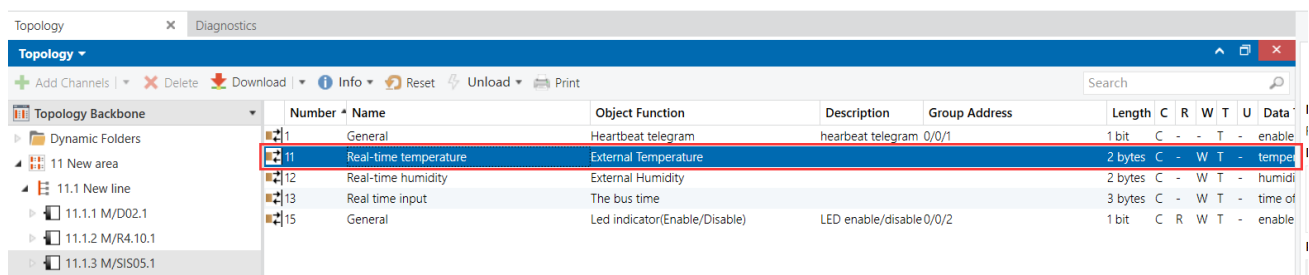
Internal value: Used temperature inside sensor.

-> Temperature hysteresis (0.1'C): The hysteresis for Logic Temperature input.

If hysteresis is 10 and Threshold_1 <= Threshold_2. Threshold_1 = 20C and Threshold_2 = 30 C. Then effective value is 19~31C.

Threshold_1 – 1C= 19C

Threshold_2 + 1C= 31C

If hysteresis is 10 and Threshold_1 > Threshold_2. Threshold_1 = 30C and Threshold_2 = 20 C. Then effective value is <21C or <29C.

Threshold_1 – 1C= 29C

Threshold_2 + 1C= 21C

-> Temperature compensation (0.1'C): If temperature value is not correct, you can use this to adjust the temperature value.

2.2.1 Light Control1

Lighting control function. If just use PIR or PIR+brightness to control the light, you can set the parameter in Light Control1 or Light Control2. Take Light Control1 as example.

Enable the Light Control1 in General.
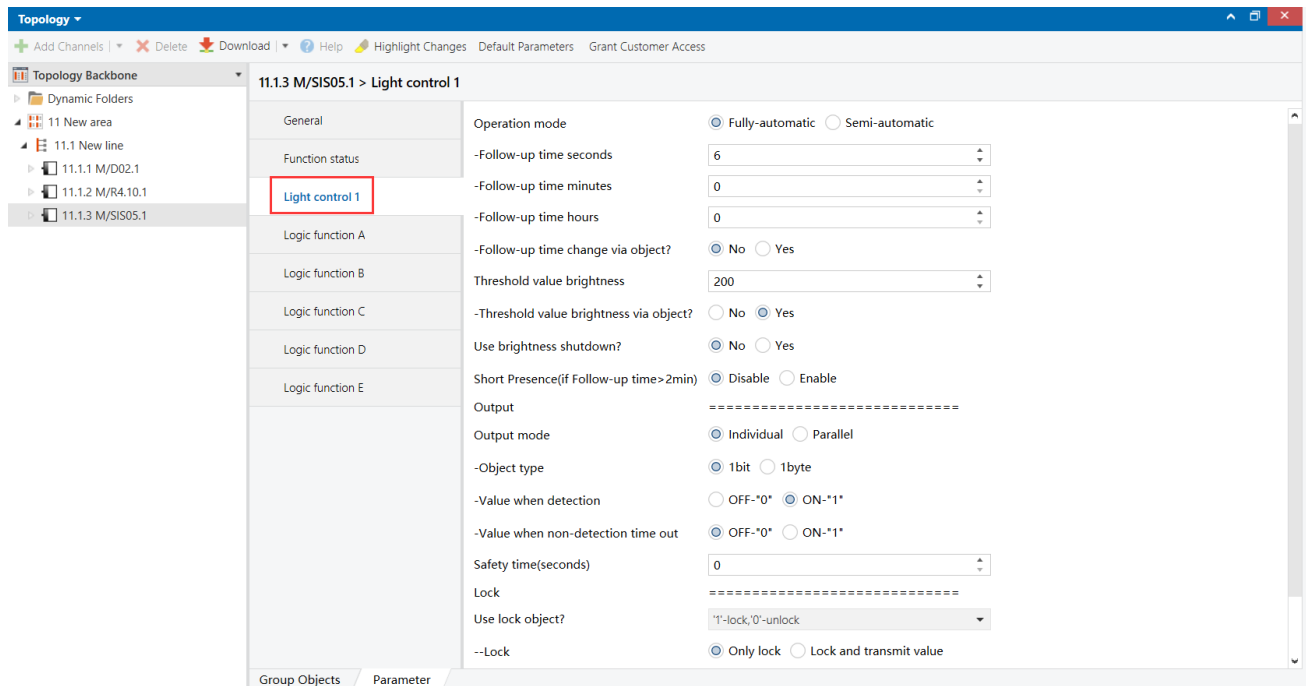
● **Operation mode:**

Fully-automatic: The logic can start by auto.

Semi-automatic: The logic needs to start when receive External switching telegram '1'.

No meter which mode you select, it has Number27.

- Follow-up time: If no detection after this time, will trigger the output for non-detection.

- Follow-up time change via object? If Yes, then can use Group address to change the follow-up time from BUS.

- **Threshold value brightness:**

The brightness value which you want to use in Logic for Light Control1. The logic relationship is AND, means PIR and Brightness. If no need brightness, set=1200.

For example: If the brightness is less then Threshold value and detects movement, will turn on the light. If the brightness is over then Threshold value even detects movement, will not turn on the light.

- Threshold value brightness via object? If yes, then can use Group address to change the threshold value from BUS.

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
12	Real-time humidity	External Humidity			2 bytes	C	-	W	T	-	humidity (...	Low
13	Real time input	The bus time			3 bytes	C	-	W	T	-	time of day	Low
15	General	Led indicator(Enable/Disable)			1 bit	C	R	W	T	-	enable	Low
26	Light channel 1 slave input	Movement status from bus			1 bit	C	-	W	T	-	switch	Low
27	Light channel 1 input	External switching telegram			1 bit	C	-	W	T	-	switch	Low
29	Light channel 1 lux input	Brightness(Lux) threshold			2 bytes	C	-	W	T	-	lux (Lux)	Low
30	Light channel 1 lock input	'1'-lock,'0'-unlock			1 bit	C	-	W	T	-	enable	Low
31	Light channel 1 output	Switching			1 bit	C	R	-	T	-	switch	Low

- **Use brightness shutdown:**

If Yes, it will trigger the output for non-detection when value is in Threshold value brightness during delay time.

Use brightness shutdown?	○ No ● Yes
-Calculate delay time(1..50minutes)	1
-Threshold value brightness	1000

When the brightness is 1000 lux during 1 minute, will turn off the light directly.

- **Short Presence (if Follow-up time > 2minutes)**

It is for Fully-automatic mode. For example: If somebody is in room and leave the room after 30s, the light will turn off after 2 minutes.

- **Output mode:**

Individual: It can send out one output, you can select the output type (1bit or 1byte) and the value for detection/non-detection.

Parallel: It can send out two outputs, you can set the value for detection/non-detection and dimming offset between Value2 and Value1. The output type just 1byte.

For example: You want Value2 brightness always higher than Value1.

● **Safety time (seconds):**

When non-detection now, and if detection during this safety time, will not trigger output.

● **Lock:**

'1'-lock, '0'-unlock; '0'-lock, '1'-unlock: Used 1bit Group Address to lock/unlock the logic for Light Control1.

Scene: When receive scene Group Address, then lock/unlock the logic for Light Control1.

-- Only lock/unlock: Just lock/unlock the logic for Light Control1.

-- Lock/Unlock and transmit value: Lock/Unlock the logic for Light Control1 and send out the Logic value. For example: Lock the logic and turn on the light when you press button.

-- Automatic unlock after lock delay: It will auto unlock after delay time.

2.2.2 HVAC/Presence function

It can control HVAC according presence. You can enable the HVAC/Presence function in General page.

● **Operation mode:**

Fully-automatic: The logic can start by auto.

Semi-automatic: The logic needs to start when receive External switching telegram.

- Follow-up time: When not detect movement for this time, will trigger the output for non-detection.

- Follow-up time change via object? If Yes, then can use Group address to change the follow-up time from BUS.

● **Monitoring window:**

Monitoring window	○ Disable ● Enable
-Number of monitoring	3
-Monitoring time in seconds	1
-Monitoring time in minutes	0

This used for avoid error trigger.

3 monitoring windows and each window interval time is 1s. If has detection in 3 monitoring windows, means has someone in the room. Els no one in room.

● **Change trigger function via object?**

If enable, you can use 1bit Group address to enable/disable the logic.

● **Use temperature composite control?**

If enable, it needs external temperature. And temperature as logic input condition.

Temperature Threshold and output:	=============================
Use temperature composite control ?	○ Disable ● Enable
-Threshold lower temperature(0.1'C)	100
-Threshold upper temperature(0.1'C)	280
-Changed temperature threshold value via bus	● No ○ Yes
-When temperature<Threshold lower,outputing	● Switching Comand ○ HVAC Mode
-When temperature>Threshold upper ,outputing	● Switching Comand ○ HVAC Mode

1) Disable: means not use temperature composite control.

2) Enable: means use temperature composite control, can control the HVAC according temperature.

3) Threshold lower/upper temperature: The temperature range for logic input.

4) Changed temperature threshold value via bus: If enable, can use 2bytes Group Address to change Threshold lower/upper temperature value.

5) When temperature < Threshold lower, outputting: Set the output for lower than Threshold lower temperature value.

6) When temperature > Threshold upper, outputting: Set the output for over then Threshold upper temperature value.

7) Switching Comand: Means output object is 1bit.

8) HVAC Mode: Means HVAC mode, it can control preset mode/temperature/speed/swing.

--> When presence is over, HVAC close: If False, it can trigger the preset HVAC operation mode and control mode when non-detection.

--> HVAC Automatic close after delay: If True, the HVAC will automatic close after non-detection delay.

● **Lock:**

'1'-lock, '0'-unlock; '0'-lock, '1'-unlock: Used 1bit Group Address to lock/unlock the logic for HVAC A.

-- Only lock: Just lock the logic for HVAC A.

-- Lock and transmit value: Lock the logic for HVAC A and send out the Logic value.

-- Only unlock: Just unlock the logic for HVAC A.

-- Unlock and transmit value: Unlock the logic for HVAC A and send out the Logic value.

For example: Lock the logic and turn on the light when you press button.

-- Automatic unlock after lock delay: It will automatic unlock after lock delay time.

● **The status of HVAC after power on:** Set the HVAC status after power on.

2.2.3 Constant Brightness

It can make the brightness in constant value.

Trigger condition: Detection and Brightness as logic input conditions. When sensor detects movement and brightness lower than the preset value, then turn on the light (100%), and then the light will be dimming to preset value by auto. If no movement after delay time, the Constant Brightness function will stop.

You can enable the Constant Brightness function in General page.
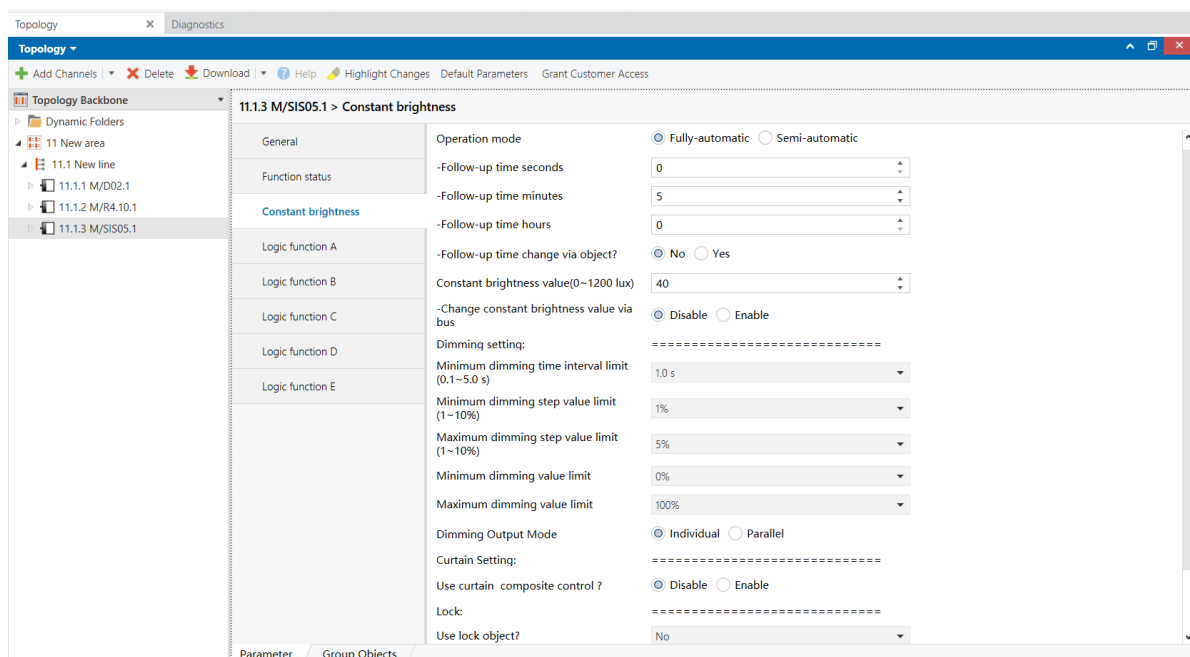
● **Operation mode:**

Fully-automatic: The logic can start by auto.

Semi-automatic: The logic needs to start when receive External switching telegram '1'.

No matter Fully or Semi mode, when receive External switching telegram '0', will stop the

Constant Brightness function, and then dimming output is the Minimum value.

	Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
	1	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
	12	Real-time humidity	External Humidity			2 bytes	C	-	W	T	-	humidity (...	Low
	13	Real time input	The bus time			3 bytes	C	-	W	T	-	time of day	Low
	15	General	Led indicator(Enable/Disable)			1 bit	C	R	W	T	-	enable	Low
	76	Constant Brightness A input	External switching telegram			1 bit	C	-	W	T	-	switch	Low
	79	Constant Brightness A	Dimming output(0%..100%)			1 byte	C	R	-	T	-	percentag...	Low

-- Follow-up time: Presence over time, means the time for light ON。After this time will

trigger the output for non-detection.

-- Follow-up time change via object? If Yes, then can use Group address to change the

follow-up time from BUS.

● **Constant brightness value:** The value for constant brightness.

-- Change constant brightness value via bus: If Yes, then can use Group address to change

the constant brightness value from BUS.

● **Dimming Setting:**

-- Minimum dimming time interval limit (0.1~5.0):

-- Minimum dimming step value limit (1~10%):

-- Maximum dimming step value limit (1~10%):

-- Minimum dimming value limit:

-- Maximum dimming value limit:

-- Dimming Output Mode:

   -- Individual：Just can send out one 1byte output.

   -- Parallel: It can send out two 1byte output.

     -> Dimming offset: Value2-Value1 (-100%..100%): The offset for two lights.

         For example: You want Value2 brightness always higher then Value1

● **Curtain Setting:** Enable/disable curtain control to make more brightness.

Use curtain composite control?

Curtain Setting:	===============================
Use curtain composite control ?	○ Disable ◉ Enable
-Curtain standby	○ Disable ◉ Enable
->Begin time minutes	5
->Begin time hours	18
->End time minutes	5
->End time hours	8
->Curtain value	0%
-When disable,curtain value	0%
-When presence is over,curtain value	Unchanged
-Curtain adjusting time interval limit (5~120 s)	5s
-Minimum adjusting step value limit (1~10%)	1%
-Maximum adjusting step value limit (1~10%)	5%
-Minimum curtain value limit	10%
-Maximum curtain value limit	100%

-- Disable: Disable curtain control to make more brightness.

-- Enable: Enable curtain control to make more brightness.

   -- Curtain standby

      -- Disable: Not have curtain standby time.

      -- Enable: Set the standby time for curtain. Curtain will not action in this time. Before

         you use this, need to use extra time from Bus.

12	Real-time humidity	External Humidity	2 bytes	C	-	W	T	-	humidity (...	Low
13	Real time input	The bus time	3 bytes	C	-	W	T	-	time of day	Low
15	General	Led indicator(Enable/Disable)	1 bit	C	R	W	T	-	enable	Low
76	Constant Brightness A input	External switching telegram	1 bit	C	-	W	T	-	switch	Low
79	Constant Brightness A	Dimming output(0%..100%)	1 byte	C	R	-	T	-	percentag...	Low
81	Constant Brightness A & Curtain	Curtain(Enable/Disable)	1 bit	C	-	W	T	-	enable	Low
84	Constant Brightness A & Curtain	Curtain output(0%..100%)	1 byte	C	R	-	T	-	percentag...	Low

   -- When disable, curtain value:

Control the preset value, when use 1bit group address to disable curtain control.

76	Constant Brightness A input	External switching telegram	1 bit	C	-	W	T	-	switch	Low
79	Constant Brightness A	Dimming output(0%..100%)	1 byte	C	R	-	T	-	percentag...	Low
81	Constant Brightness A & Curtain	Curtain(Enable/Disable)	1 bit	C	-	W	T	-	enable	Low
84	Constant Brightness A & Curtain	Curtain output(0%..100%)	1 byte	C	R	-	T	-	percentag...	Low

   -- When presence is over, curtain value:

Control the curtain value when presence is over (after follow-up time).

-- Curtain adjusting time interval limit (5~120s)

-- Minimum adjusting step value limit (1~10%)

-- Maximum adjusting step value limit (1~10%)

-- Minimum curtain value limit:

-- Maximum curtain value limit:

Set the curtain control adjust time interval/adjust step/ range.

Notice: If has detection, curtain will be maximum value; when dimming value less than 50%, the curtain will start to be adjusted; when dimming value more than 80%, the curtain will be maximum value.

● **Lock**：Use object to lock the Constant Brightness function or not.

76	Constant Brightness A input	External switching telegram	1 bit	C	-	W	T	-	switch	Low
79	Constant Brightness A	Dimming output(0%..100%)	1 byte	C	R	-	T	-	percentag...	Low
81	Constant Brightness A & Curtain	Curtain(Enable/Disable)	1 bit	C	-	W	T	-	enable	Low
84	Constant Brightness A & Curtain	Curtain output(0%..100%)	1 byte	C	R	-	T	-	percentag...	Low
85	Constant Brightness A lock input	1'-lock,'0'-unlock	1 bit	C	-	W	T	-	enable	Low

Use lock object

-- No:

-- '1'-lock,'0'-unlock:

-- '0'-lock,'1'-unlock:

● **PI:u(k)=Kp(Proportional coefficient)[e(k)-e(k-1)]+Ki(integration time)e(k):**

Dimming speed (for PI): You can select the dimming speed for constant brightness function.

2.3 Function Status

11.1.3 M/SIS05.1 > Function status

General	(1)Slave Movement sensor status report ○ No ● Yes
Function status	->Transmit telegram value when Movement sensor detected ○ Slave value-'0' ● Slave value-'1'
Logic function A	(2)Brightness report ● No ○ Yes
Logic function B	(3)Temperature report ● No ○ Yes
Logic function C	(5)Intruder alarm ○ No ○ Yes

Report the status to Bus.

(1): Slave Movement sensor status report: Report current status to the Bus, there can set 5 different group address.

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
12	Real-time humidity	External Humidity			2 bytes	C	-	W	T	-	humidity (...	Low
13	Real time input	The bus time			3 bytes	C	-	W	T	-	time of day	Low
15	General	Led indicator(Enable/Disable)			1 bit	C	R	W	T	-	enable	Low
16	Function status	Slave status to bus			1 bit	C	-	W	T	-	switch	Low
20	Function status	Slave status to bus(Logic A)			1 bit	C	-	W	T	-	switch	Low
21	Function status	Slave status to bus(Logic B)			1 bit	C	-	W	T	-	switch	Low
22	Function status	Slave status to bus(Logic C)			1 bit	C	-	W	T	-	switch	Low
23	Function status	Slave status to bus(Logic D)			1 bit	C	-	W	T	-	switch	Low

(2): Brightness report:

You can select report when changed or cyclic. If select report when changed, it will report when the brightness changed in preset value.

11.1.3 M/SIS05.1 > Function status

General	(1)Slave Movement sensor status report ● No ○ Yes
Function status	(2)Brightness report ○ No ● Yes
Logic function A	->Lux report mode ● Report when changed ○ Report cyclic
Logic function B	->Differential value for report (1..200lux) 20
Logic function C	->Minimum time interval(1..255s) 1
Logic function D	(3)Temperature report ● No ○ Yes
	(5)Intruder alarm ● No ○ Yes

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
12	Real-time humidity	External Humidity			2 bytes	C	-	W	T	-	humidity (...	Low
13	Real time input	The bus time			3 bytes	C	-	W	T	-	time of day	Low
15	General	Led indicator(Enable/Disable)			1 bit	C	R	W	T	-	enable	Low
17	Function status	Brightness(Lux) value			2 bytes	C	R	-	T	-	lux (Lux)	Low

(3): Temperature report: The local source temperature.

It will report the temperature when change preset value, or report in cyclic.

11.1.3 M/SIS05.1 > Function status

	General	(1)Slave Movement sensor status report	● No ○ Yes
	Function status	(2)Brightness report	● No ○ Yes
	Logic function A	(3)Temperature report	○ No ● Yes
	Logic function B	->Temperature report mode	● Report when changed ○ Report cyclic
	Logic function C	->Differential value for report (0.1'C)	10
		(5)Intruder alarm	● No ○ Yes

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
12	Real-time humidity	External Humidity			2 bytes	C	-	W	T	-	humidity (...	Low
13	Real time input	The bus time			3 bytes	C	-	W	T	-	time of day	Low
15	General	Led indicator(Enable/Disable)			1 bit	C	R	W	T	-	enable	Low
18	Function status	Temperature value			2 bytes	C	R	-	T	-	temperatu...	Low

(4): Intruder alarm:

After enable the intruder alarm, when has detection, will send out the alarm status to Bus.

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
12	Real-time humidity	External Humidity			2 bytes	C	-	W	T	-	humidity (...	Low
13	Real time input	The bus time			3 bytes	C	-	W	T	-	time of day	Low
15	General	Led indicator(Enable/Disable)			1 bit	C	R	W	T	-	enable	Low
24	Function status	Intruder alarm to bus			1 bit	C	R	-	T	-	alarm	Low
25	Intruder alarm	'1'-Enable,'0'-Disable			1 bit	C	-	W	T	-	enable	Low

11.1.3 M/SIS05.1 > Function status

	General	(1)Slave Movement sensor status report	● No ○ Yes
	Function status	(2)Brightness report	● No ○ Yes
	Logic function A	(3)Temperature report	● No ○ Yes
	Logic function B	(5)Intruder alarm	○ No ● Yes
	Logic function C	->Follow-up time seconds	5
	Logic function D	->Output repeat telegram when detected	○ No ● Yes
	Logic function E	-->Repeat time interval(0..59 min)	0
		-->Repeat time interval(0..59 sec)	10
		->Intruder alarm enable/disable via bus	● '1'-Enable,'0'-Disable ○ '1'-Disable,'0'-Enable
		->Intruder alarm after power on	Disable

-- Follow-up time seconds: The present time, if select 5s, means when there has detection for 5s, will trigger intruder alarm.

-- Output repeat telegram when detected: If need, it will repeat in preset interval time.

-- Intruder alarm enable/disable via bus: Use 1bit group address to enable/disable the Intruder alarm.

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
12	Real-time humidity	External Humidity			2 bytes	C	-	W	T	-	humidity (...	Low
13	Real time input	The bus time			3 bytes	C	-	W	T	-	time of day	Low
15	General	Led indicator(Enable/Disable)			1 bit	C	-	-	T	-	enable	Low
24	Function status	Intruder alarm to bus			1 bit	C	R	-	T	-	alarm	Low
25	Intruder alarm	'1'-Disable,'0'-Enable			1 bit	C	-	W	T	-	enable	Low

-- Intruder alarm after power on: Disable/Enable/Recovery

2.4 Logic Function A/B/C/D

There are four independent logic, you can select movement /brightness /temperature /humidity /external telegram as logic input conditions, and you can use 1bit group address to enable/disable the logic function.

Take Logic Function A as example:

(1): Enable Movement sensor: If enable, the movement sensor as logic input condition.

-- Disable: The movement sensor not use in this logic.

-- Single mode (independent sensor): This movement sensor work as logic input condition, and you can select the sensor status. Suggest select detected is True.

-- Master/Slave mode (Master sensor): More sensors work as logic input condition, but this sensor as master. It can use 1bit group address to link to slave sensor, when receive salve value, then the master set to Ture.
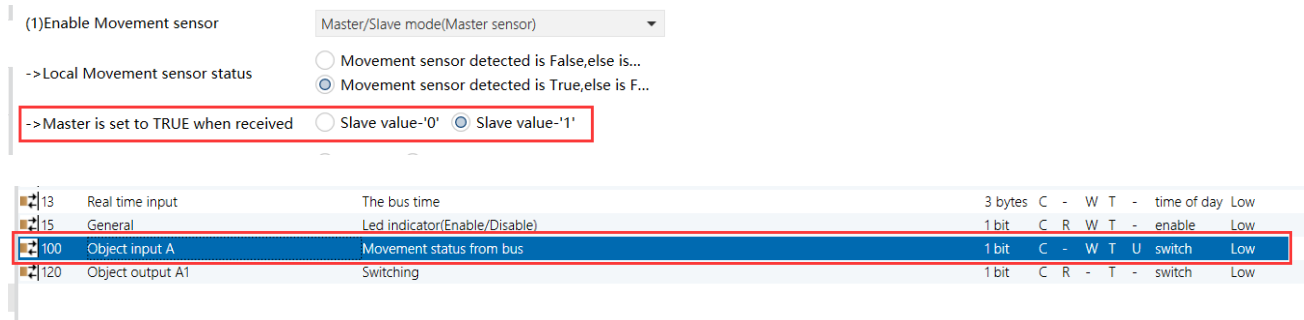
(2): Enable brightness (Lux) Sensor: It supports up to 3 brightness thresholds. You can select the brightness value.

-- Change Lux threshold value via bus: If enable, can modify the value via group address.

-- Brightness (Lux) status: Select the Ture/False status for logic.

-- Independent control < object output 8> : It can independent control the object output8 when brightness in the range. This is separated from Logic A.
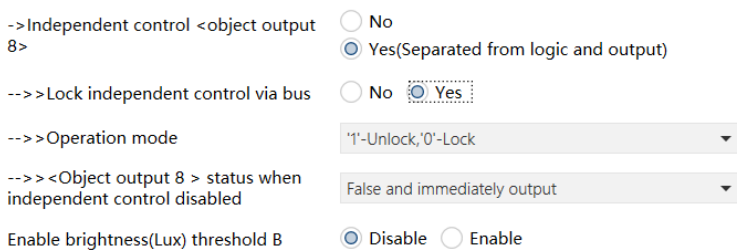
(3): Enable temperature sensor: If enable, the local temperature works as logic input condition, you can select the temperature range and the temperature status.

And it supports modify the temperature threshold value from Bus.

(3)Enable temperature sensor	○ Disable ● Enable
->Temperature >= Threshold lower (0.1'C)	30
->Temperature <= Threshold upper (0.1'C)	20
->Changed temperature threshold value via bus	● No ○ Yes
->Temperature status	In range is True,else False

(4): Enable humidity sensor: If enable, the humidity which from Bus works as logic input condition, you can select the humidity range and the humidity status.

And it supports modify the humidity threshold value from Bus.

(4)Enable humidity sensor	○ Disable ● Enable
->Humidity >= Threshold lower	45
->Humidity <= Threshold upper	65
->Changed Humidity threshold value via bus	● No ○ Yes
->Humidity status	In range is True,else False

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	General	Heartbeat telegram	humidity from Bus		1 bit	C	-	-	T	-	enable	Low
12	Real-time humidity	External Humidity			2 bytes	C	-	W	T	-	humidity (...	Low
13	Real time input	The bus time			3 bytes	C	-	W	T	-	time of day	Low

(5) Enable external telegram 1

(6) Enable external telegram 2

-- There are two external telegram which from Bus can work as logic input condition.

- **Logic relation of block A:**

    AND: All input conditions which enable are true, means the Logic is true.

    OR: One of input conditions which enable is true, means the Logic is true.

- **Result of logic A inverted:** Inverted the logic A result or not.

- **Status (True/False) of logic A to bus:** If enable, it will send out the logic A status to Bus via group address.

- **Use logical A function lock?**

  -- Use telegram via bus: If yes, then can use Big telegram or Scene telegram to

  lock/unlock the Logical A.

  -- Logic A output status when logic function lock: Set the output status when logic lock.

  -- Logic A automation unlock after logic function lock: It will auto unlock after delay

  time.

- **Logic A output status when logic function unlock:**

  -- Set the output status when logic unlock.

- **Feedback logic A function lock status:** If enable, it can use 1bit group address to

  feedback the lock status to Bus.

2.4.1 Block A

Enable the output object for logic, take Logic function A as example. Logic function B/C/D

are same.

For example: Logic function A has two outputs, one is control single light, second is control

curtain.
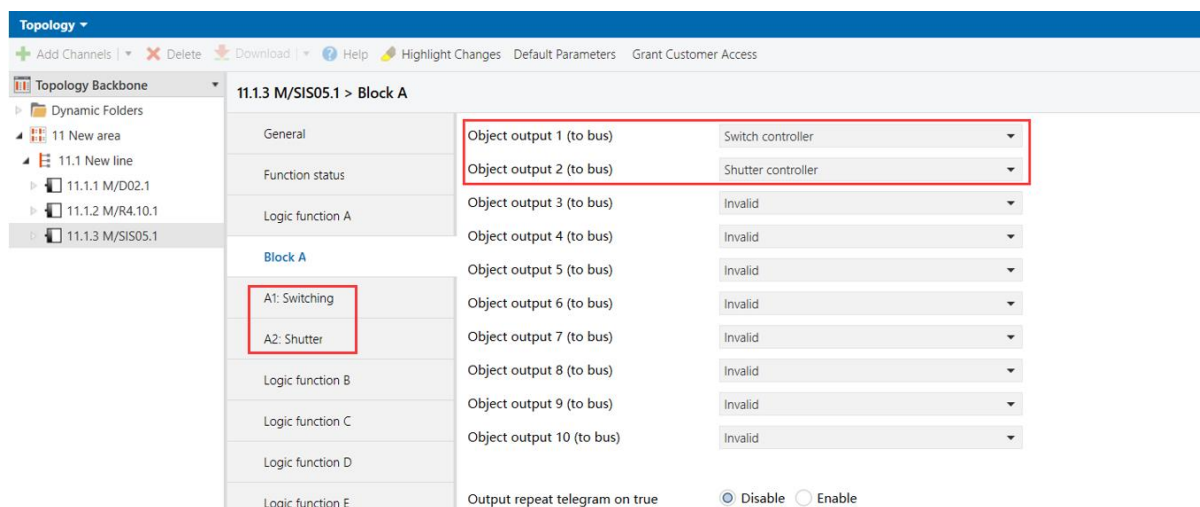
Output repeat telegram on true: Enable/disable the repeat telegram on true.

2.4.2 Output for True/False

After enable the output objects in Block A, then it will show the output setting for logic

ture/false. For example below has two output objects (A1 and A2)
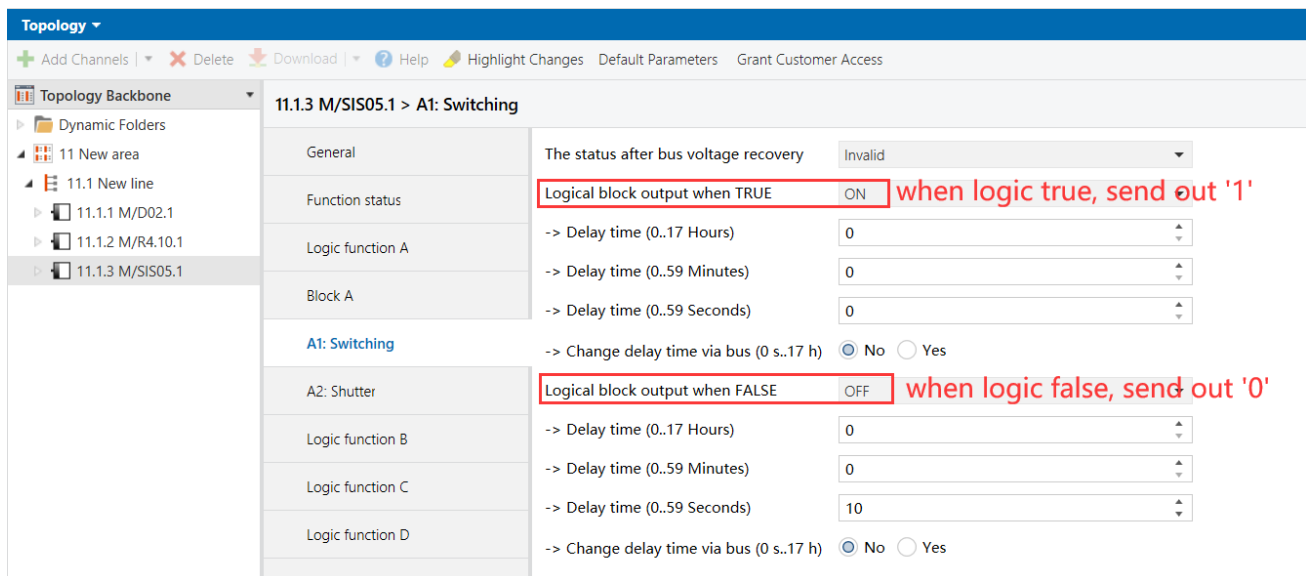
- **The status after bus voltage recovery:** Set the status after bus voltage recovery.

- **Logical block output when True:** Set the detail function when logic true.

  Delay time: After delay time, will trigger the output.

  Change delay time via bus (0s..17h): The delay time can be changed by bus.

- **Logical block output when False:** Set the detail function when logic false.

  Delay time: After delay time, will trigger the output.

  Change delay time via bus (0s..17h): The delay time can be changed by bus.

2.5 Logic Function E

Logic function E has combination function, it can combine logic A/B/C/D. For example,

when logic A and logic B are both true, then turn on the light.
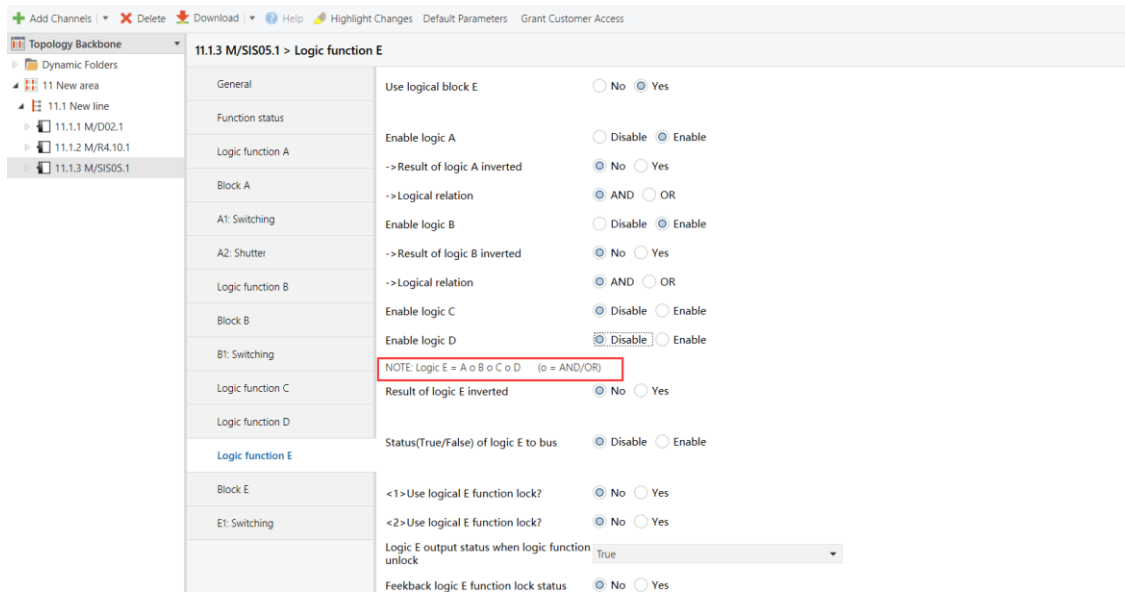
- **Enable logic A/B/C/D:** Enable logic A/B/C/D as logic E input condition or not.

  Result of logic A/B/C/D inverted: Inverted the result of logic A/B/C/D or not.

- **Result of logic E inverted:** Inverted the result of logic E or not.

- **Status (True/False) of logic E to bus:** If send out the logic E status to bus or not.

- **Use logical E function lock?**

  -- Use telegram via bus: If yes, then can use Big telegram or Scene telegram to lock/unlock the Logical E.

  -- Logic E output status when logic function lock: Set the output status when logic lock.

  -- Logic E automation unlock after logic function lock: It will auto unlock after delay time.

- **Logic E output status when logic function unlock:**

  -- Set the output status when logic unlock.

- **Feedback logic E function lock status:** If enable, it can use 1bit group address to feedback the lock status to Bus.

2.5.1 Block E

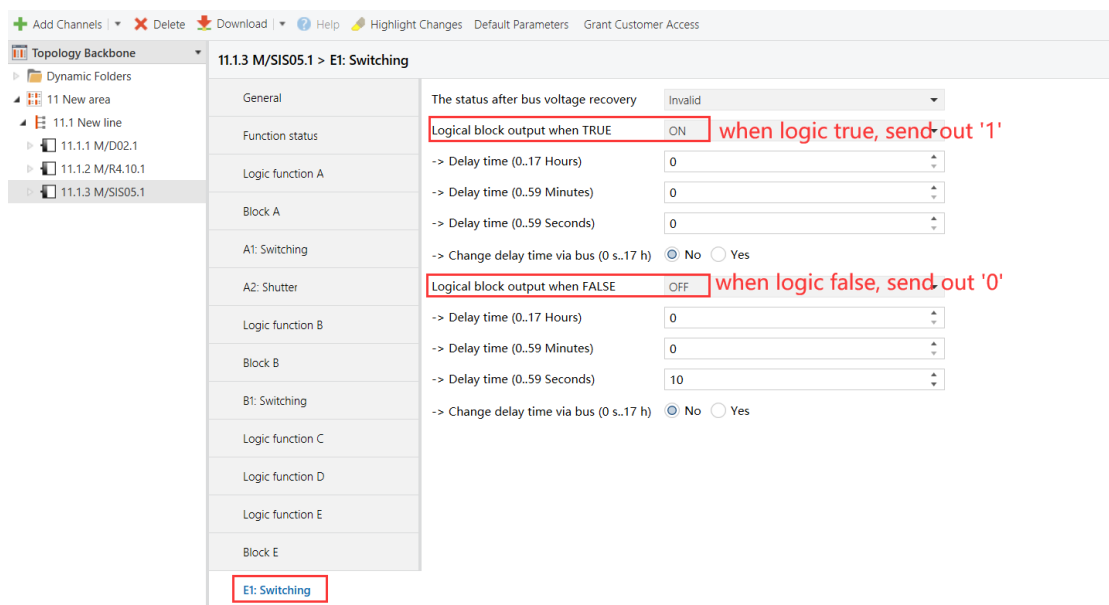Enable the output object for logic E.

For example: Logic function E has one output (Switch controller to control single light).
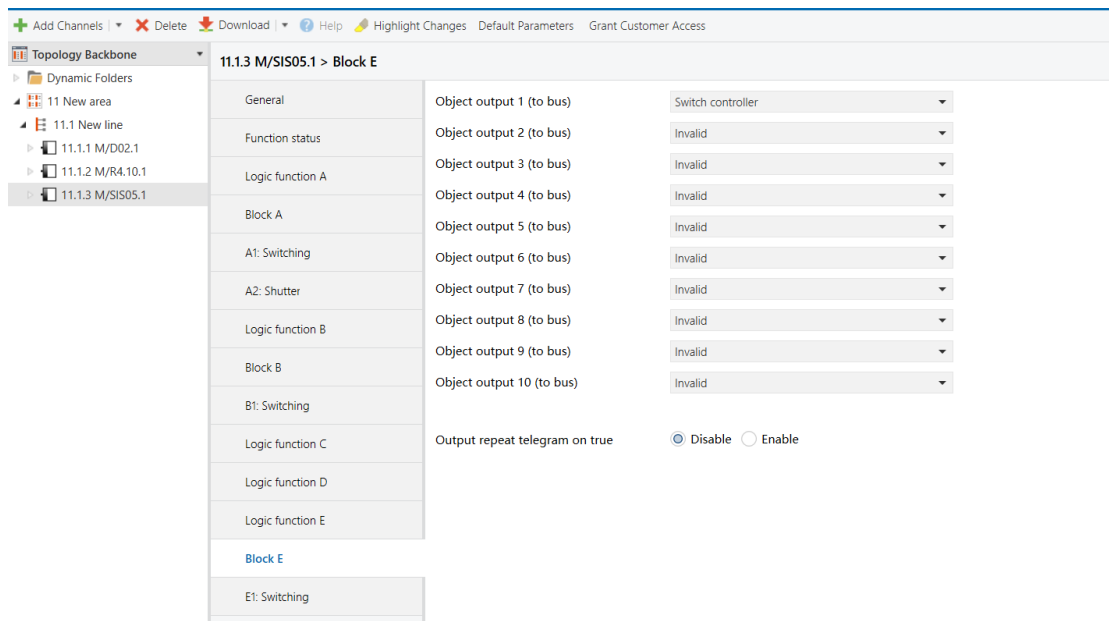
Output repeat telegram on true: Enable/disable the repeat telegram on true.

2.5.2 Output for True/False

After enable the output objects in Block E, then it will show the output setting for logic true/false.

- **The status after bus voltage recovery:** Set the status after bus voltage recovery.

- **Logical block output when True:** Set the detail function when logic true.

  Delay time: After delay time, will trigger the output.

 Change delay time via bus (0s..17h): The delay time can be changed by bus.

- **Logical block output when False:** Set the detail function when logic false.

  Delay time: After delay time, will trigger the output.

  Change delay time via bus (0s..17h): The delay time can be changed by bus.

3 Examples

3.1 Single movement control one light

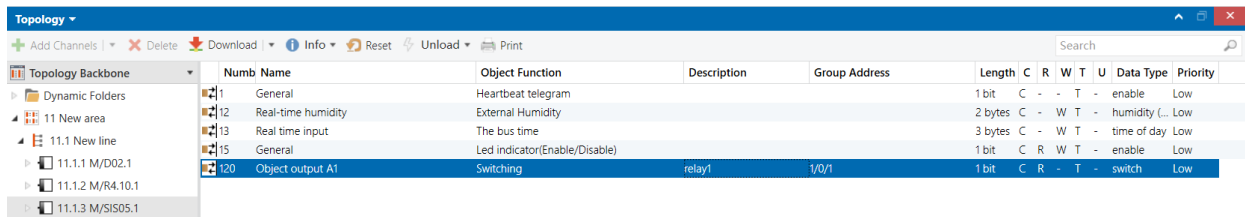1) Enable Logic function A and select Single mode.
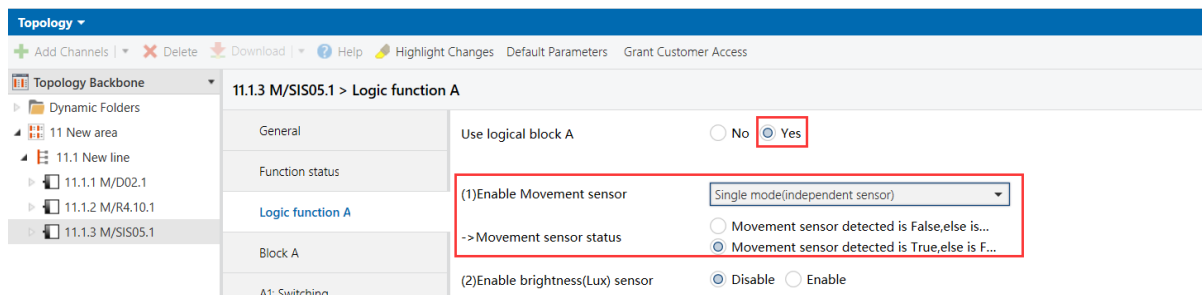
2) Enable one output object, because control one light turns on/off, so we can use Switch controller type.
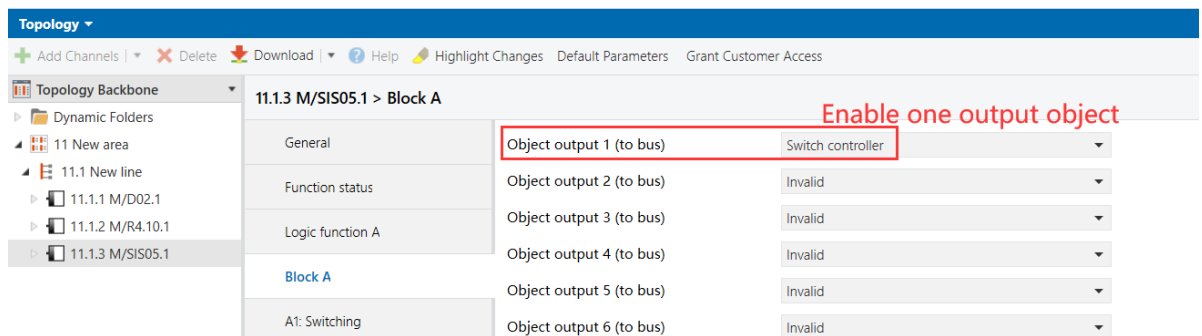
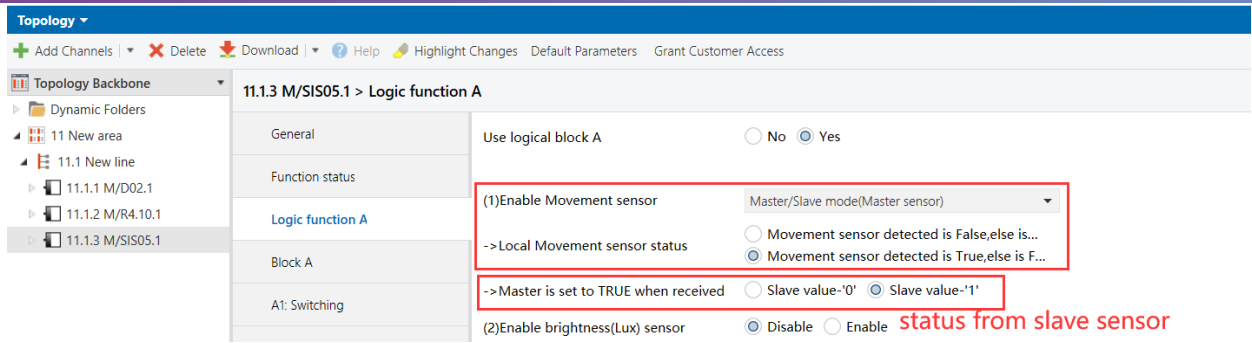3) Set the detail function for output.
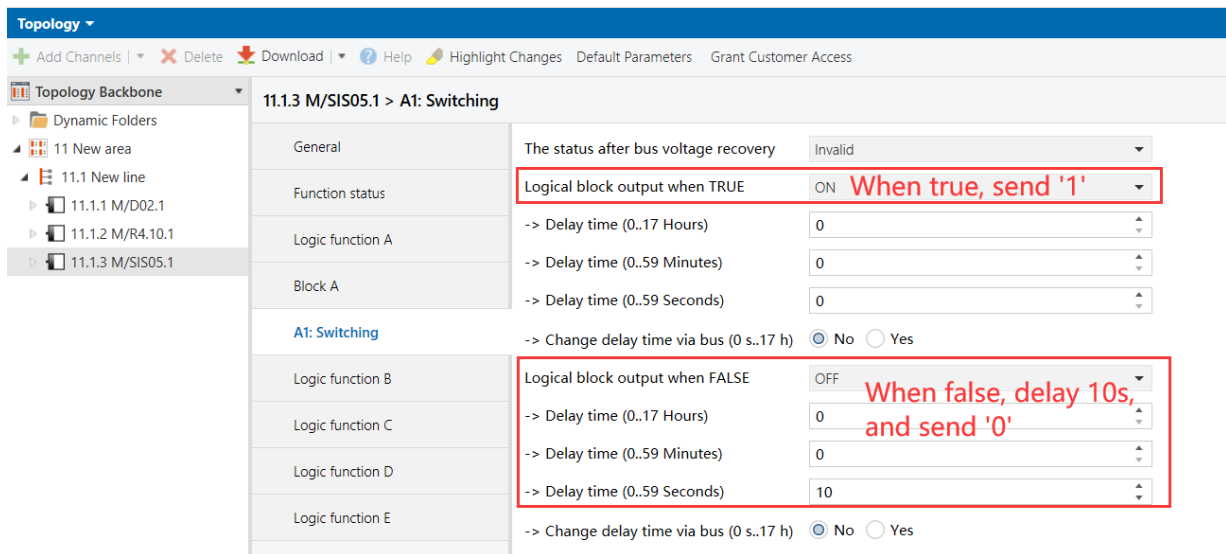
4) Link the address to light. That means if has detection, will turn on relay1; when no detection for 10s, will turn off relay1.
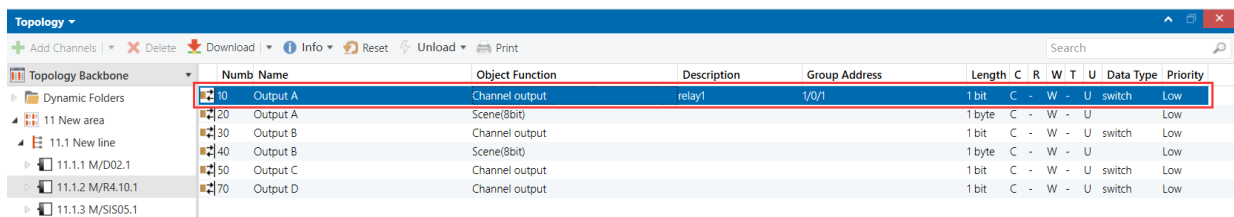

3.2 Master/Slave movement control one light

Some projects will use two sensors to control same light. One of sensors has detection, will turn on the light; If master sensor no detection for 10s and slave sensor not sent '1' in 10s, will turn off relay1.
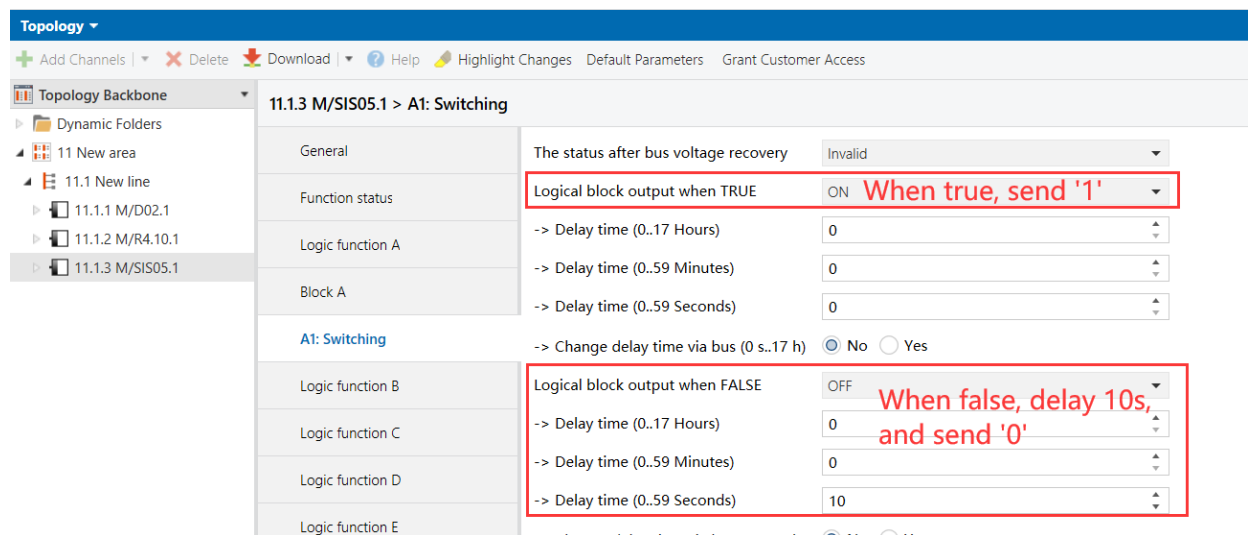
1) Master sensor enable Logic function A and select Master/Slave mode (Master sensor).

2) Master sensor enable one output object, because control one light turns on/off, so we can use Switch controller type.
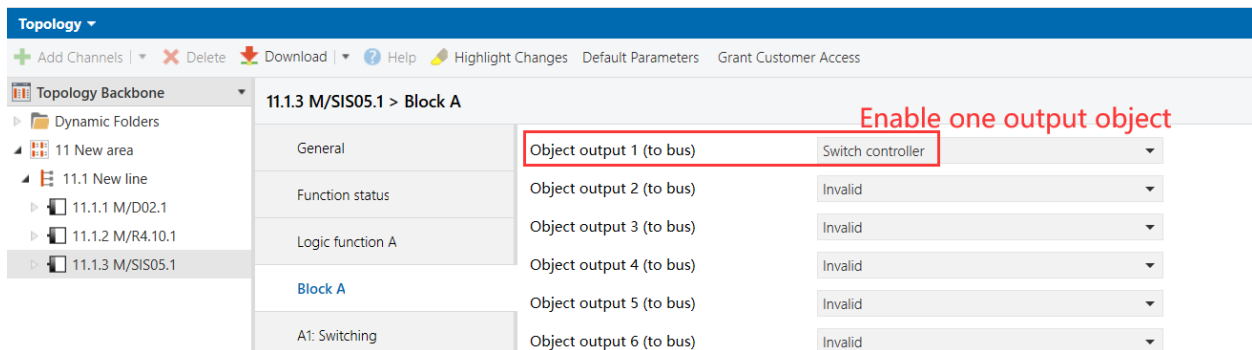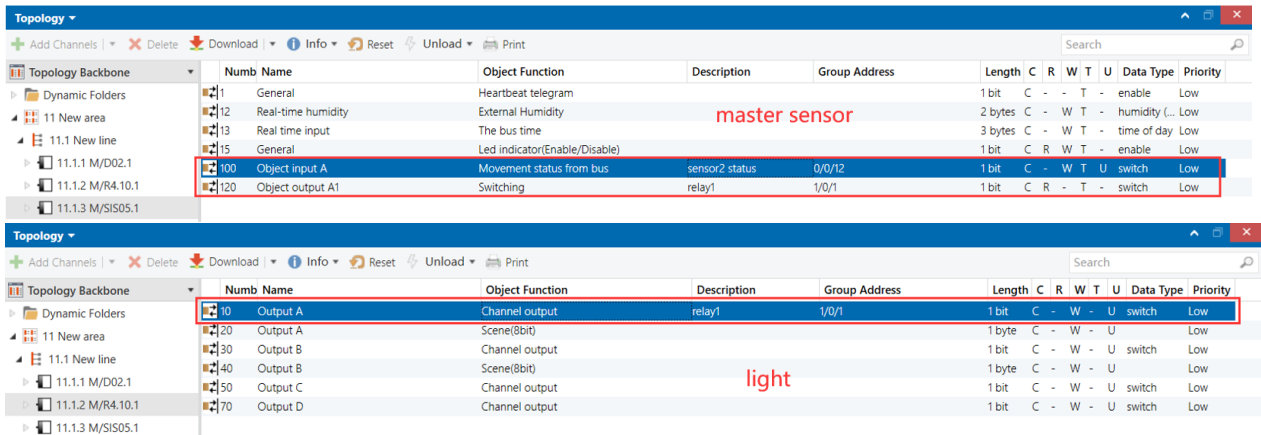

3) Set the detail function for master sensor output.

4) Link the Movement status from bus (other sensor's status), and link the address to light. That means current sensor or other sensor has detection, will turn on relay1;

when master sensor no detection for 10s and slave sensor not sent '1' in 10s, will

turn off relay1.

master sensor

light

5) Slave sensor report status to bus. And send out status via group address.

slave sensor
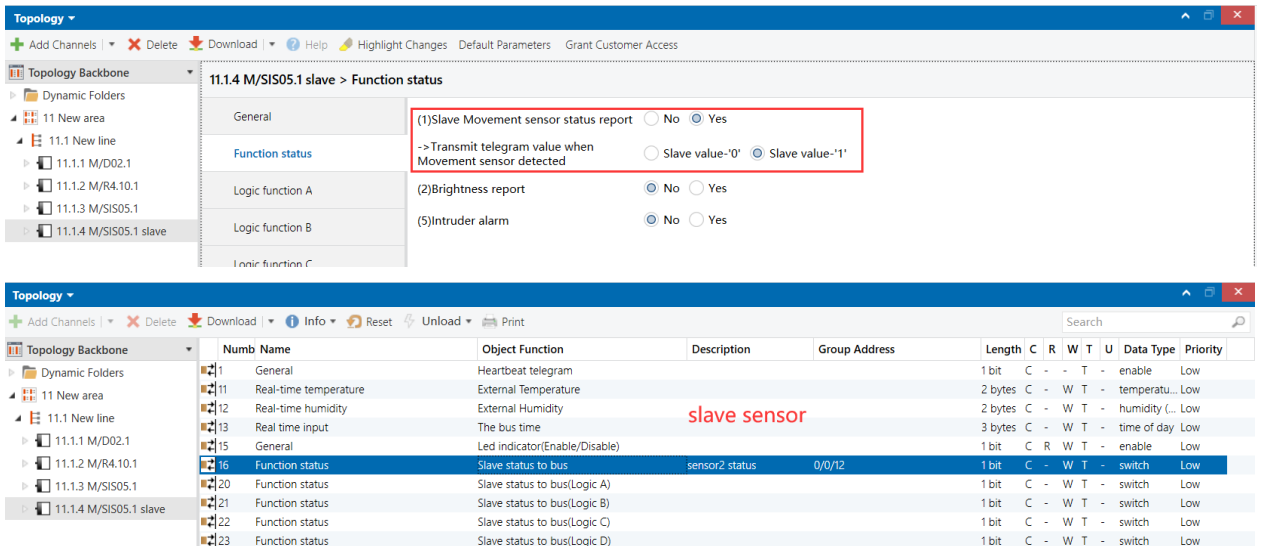
3.3 Light Control 1 (Fully-automatic)

Use movement and brightness as logic input. When the brightness in under preset value

and has detection, then turn on light. If no detection after delay time, turn off the light.

1) Enable fully-automatic mode, set the delay time and object type.
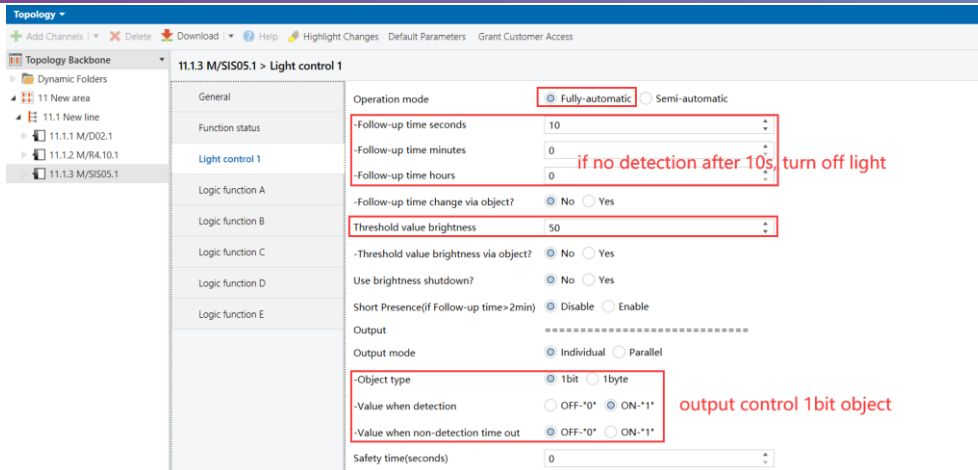
2) Link the output of Light channel 1.
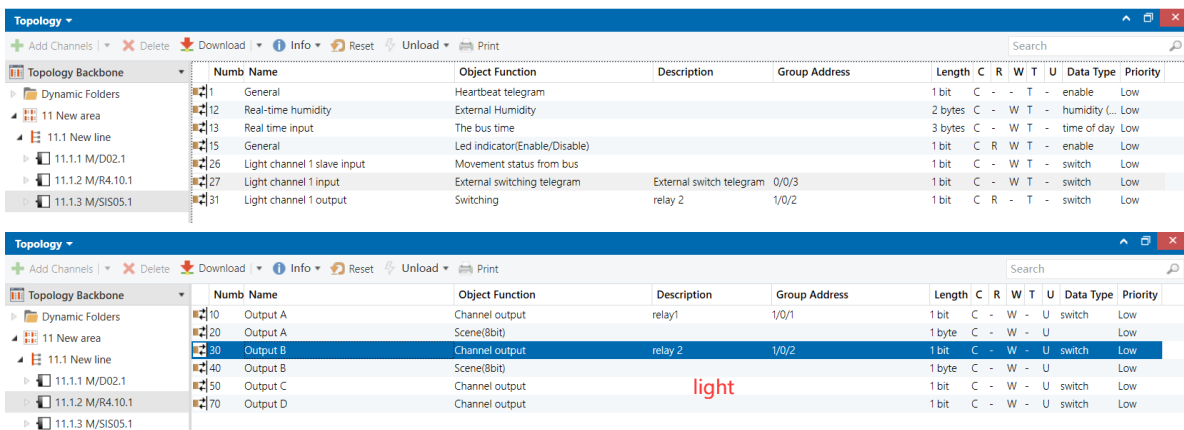
Result:

a) Now is in fully-automatic mode, no matter has External switching telegram or not, the logic will start by auto. If has group address for External switching telegram:

When receive External switching telegram '1', will turn on the light directly.

When receive External switching telegram '0', will turn off the light directly.

b) When the brightness is less than 50 and has movement, then turn on the light.

c) When no movement after 10s, turn off the light.

3.4 Light Control 1 (Semi-automatic)

Use movement and button as logic input. When press the button, will turn on the light, if no detection for preset time or the brightness are in preset value for a time, will turn off the light.

1) Enable fully-automatic mode, set the delay time and object type.
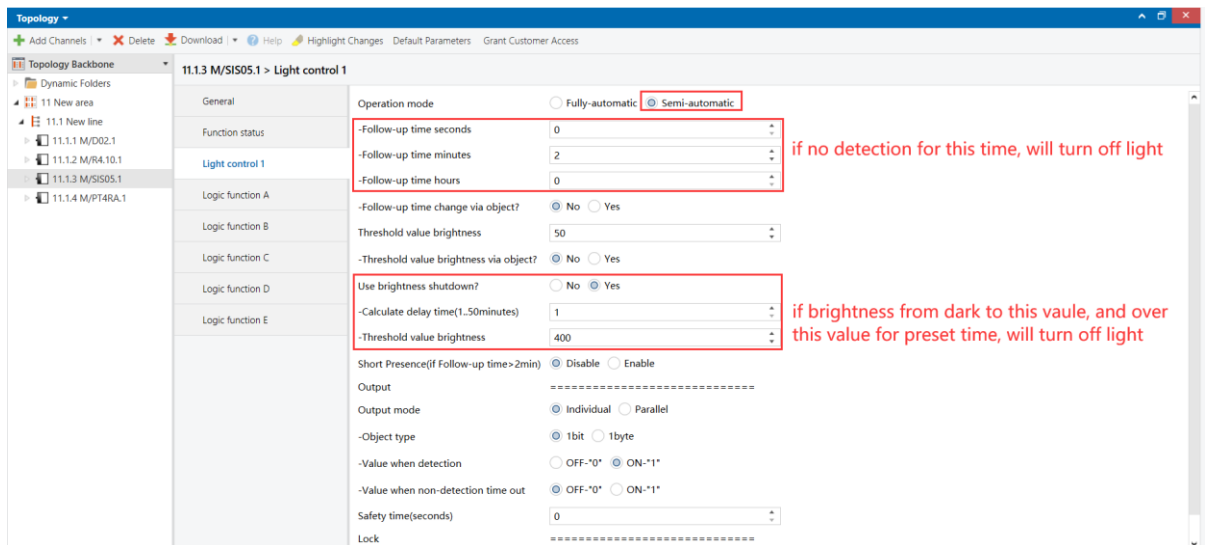
2) Link the group address for sensor/relay/button.
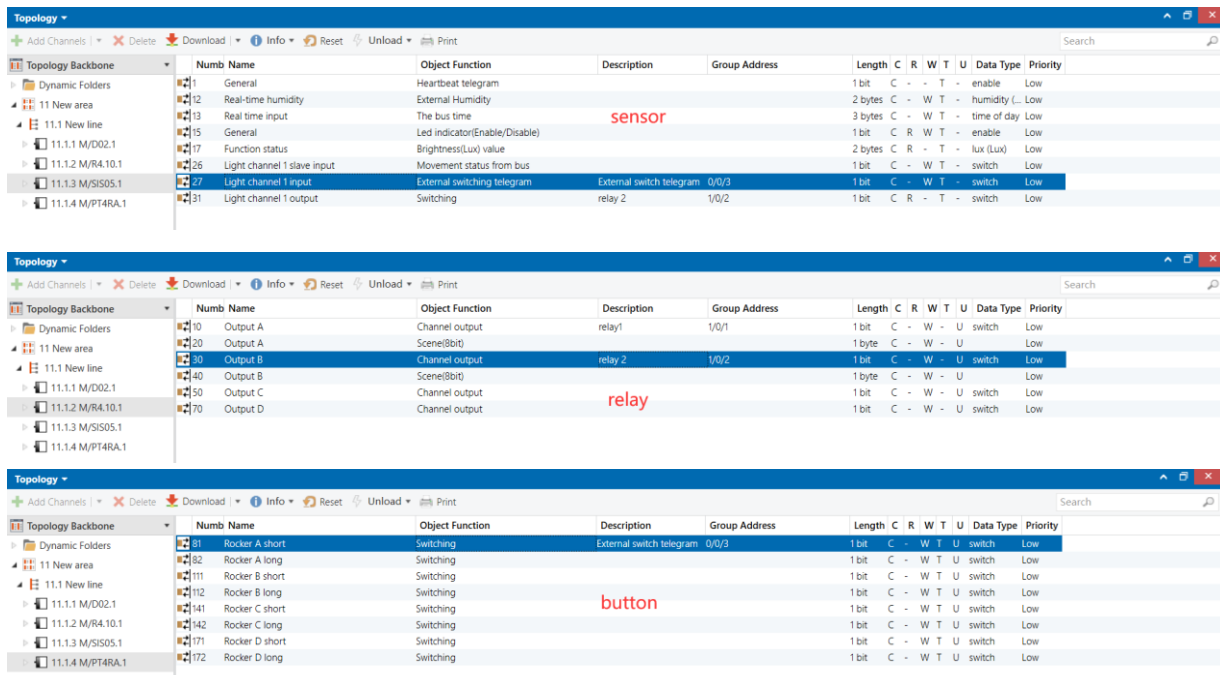
Result:

1: When press the button, the light will turn on.

2: If no detection for 2minutes, will turn off the light. OR the brightness from dark to

400lux and over 400lux for 1minute, will turn off the light.