



**KNX M/WS05.1 Indoor Microwave
Sensor
User Manual**

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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	2020/11/25

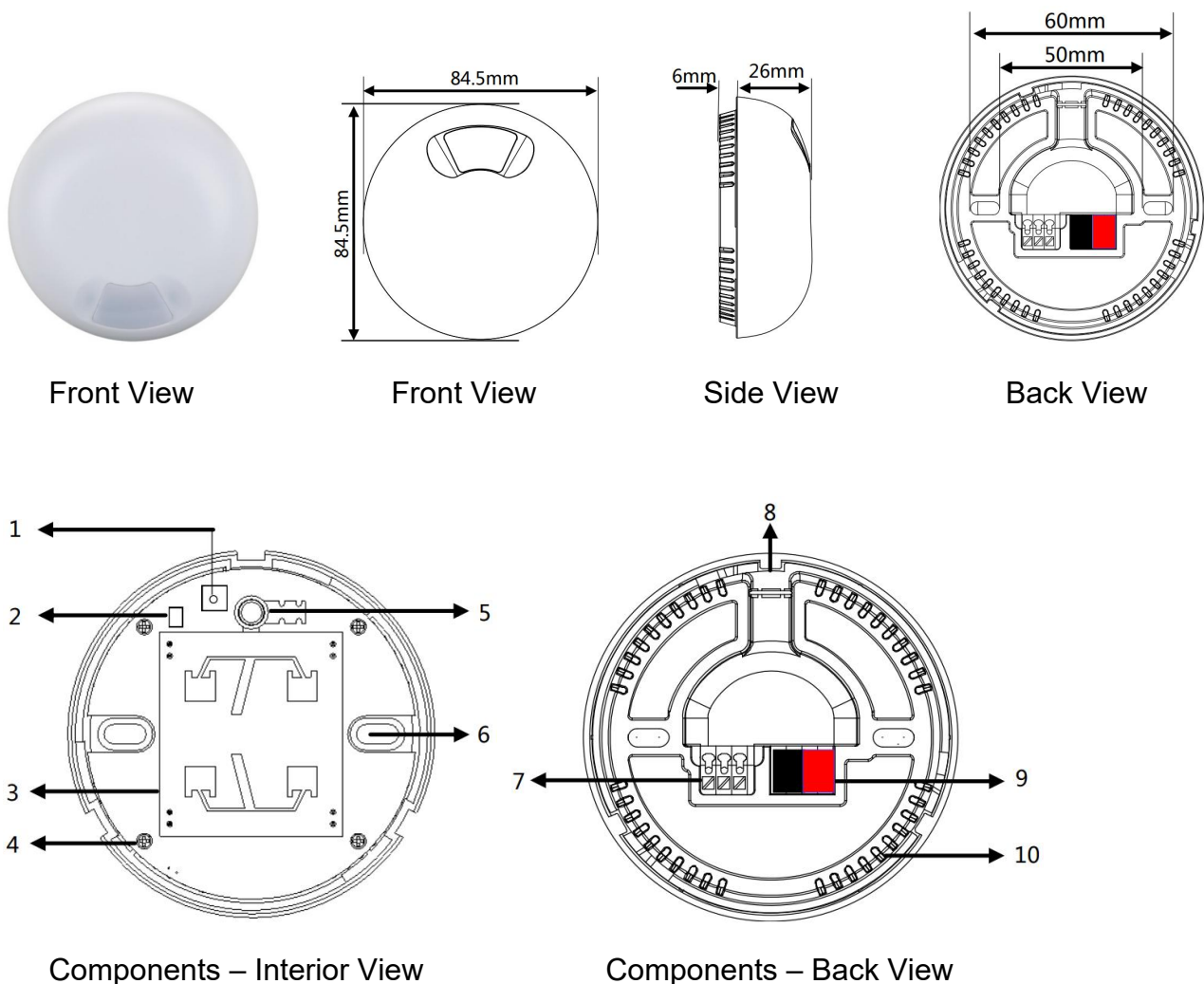
1 Overview

1.1 General Information

1.1.1 Description

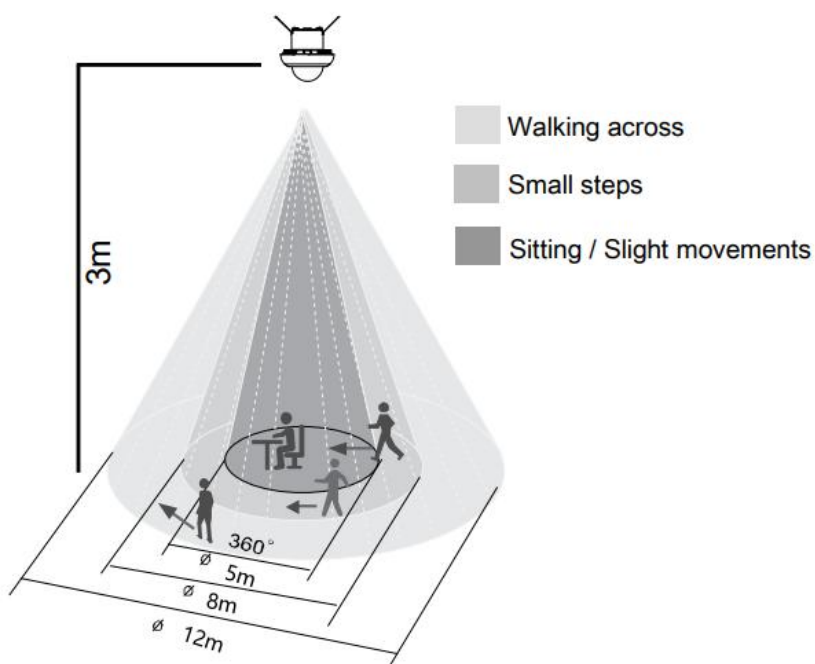
KNX Ceiling Mount Indoor Microwave Sensor (M/WS05.1) contains four independent logic blocks and one combined logic block. The logic inputs include microwave sensor status, brightness value, temperature, dry contact input and external telegrams, which enables the control of lighting, curtains, thresholds, etc.

1.1.2 Device Description



1. Programming button.
2. LED indicator.
3. Microwave sensor.
4. PCB fixing screw.
5. Lux sensor.
6. Screw hole.
7. Dry contact 1, dry contact 2.
8. Wiring channel, open it for wiring.
9. KNX/EIB bus connector.
10. Ventilation hole.

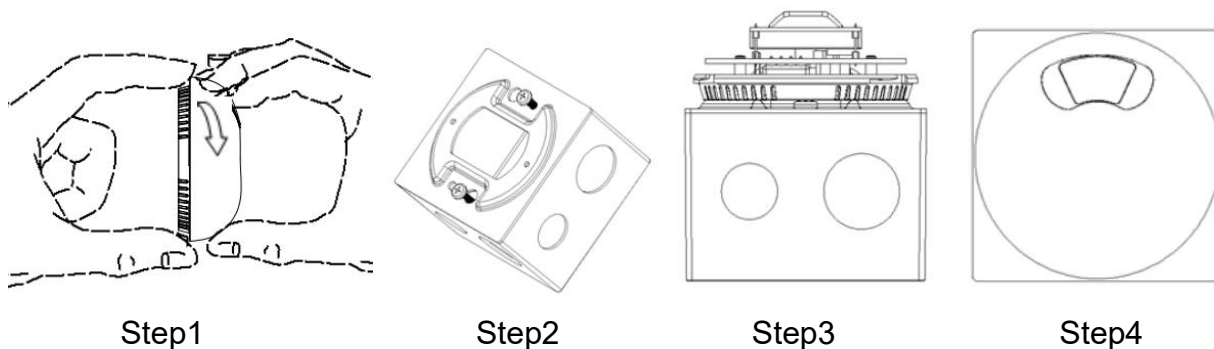
Detection Range:



Detection Range (30°C)

Mounting height	Sitting/Slight movements/Walking towards	Small steps	Walking across
3m	5m	10m	16m

1.1.3 Installation Steps



Step 1. Rotate and take the cover off.

Step 2. Screw the plate on the wall box with screws.

Step 3. Install the sensor onto the plate with screws.

Step 4. Rotate and attach the cover to the sensor.

1.2 Functionalities

- With 2CH constant brightness control, 4 dimming values and forced operation can be set.
- The sensor has 5 logic blocks and each block contains 10 object outputs. Dry contact and telegram locking/unlocking and delay time can be set.
- 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: Microwave sensor status, brightness value, temperature, dry contact input and external telegrams.
- 2 logical relations: AND, OR.
- 2 working modes: Single mode and master / slave mode.
- 2CH dry contact can be set as dry contact and LED status display and the operation function can be set as switch control, dimming control, scene control and percentage control.

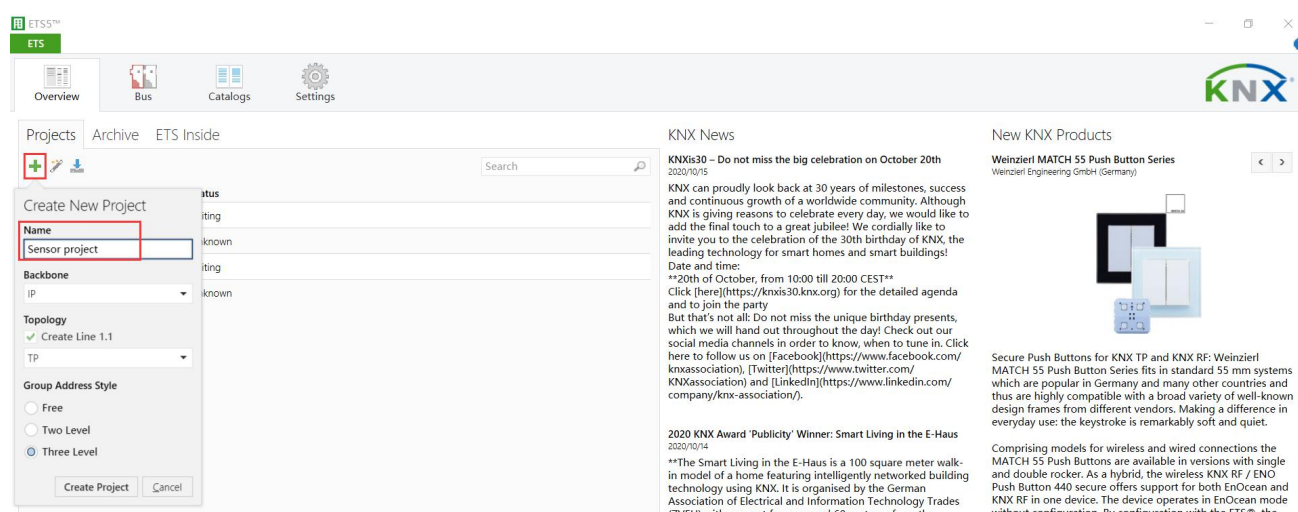
- The logic validity can be set by external telegram.

2 Software Configurations

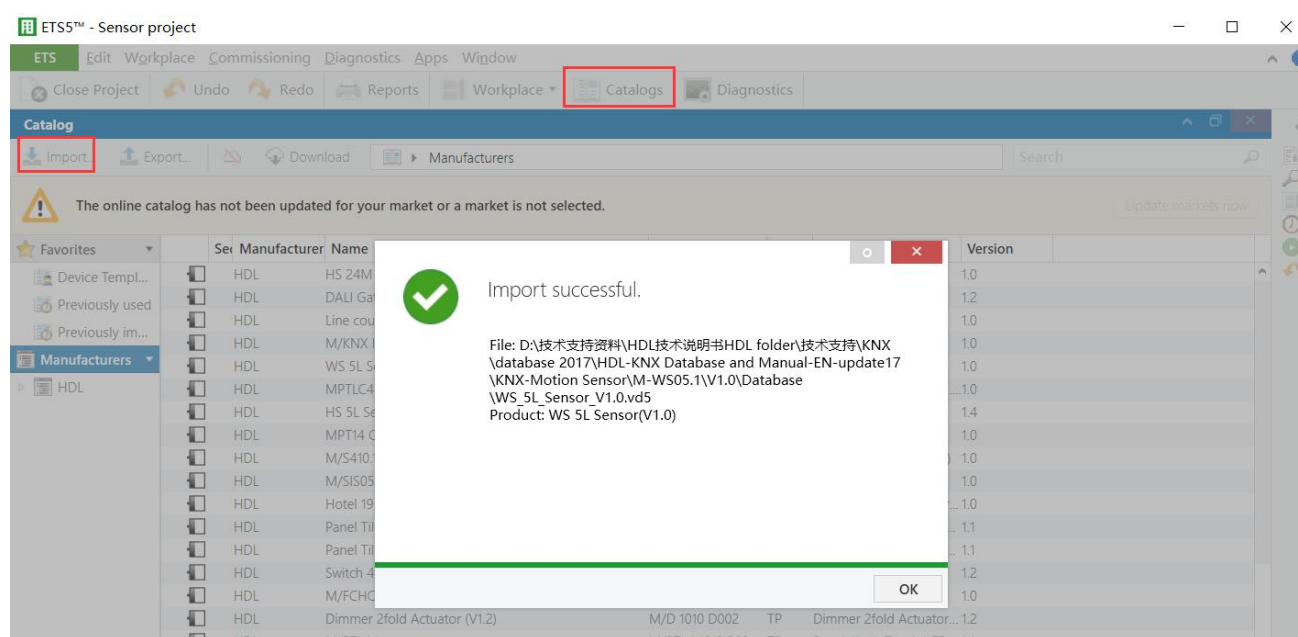
2.1 Device Import

We need to add device/database before program it.

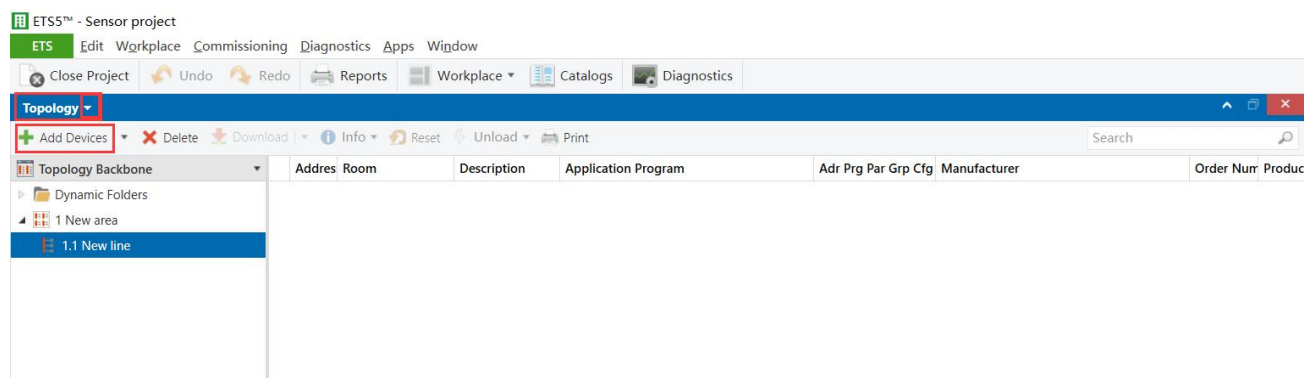
1: Create project in ETS5, if you have project, ignore it. Suggested use Three Level when create project.



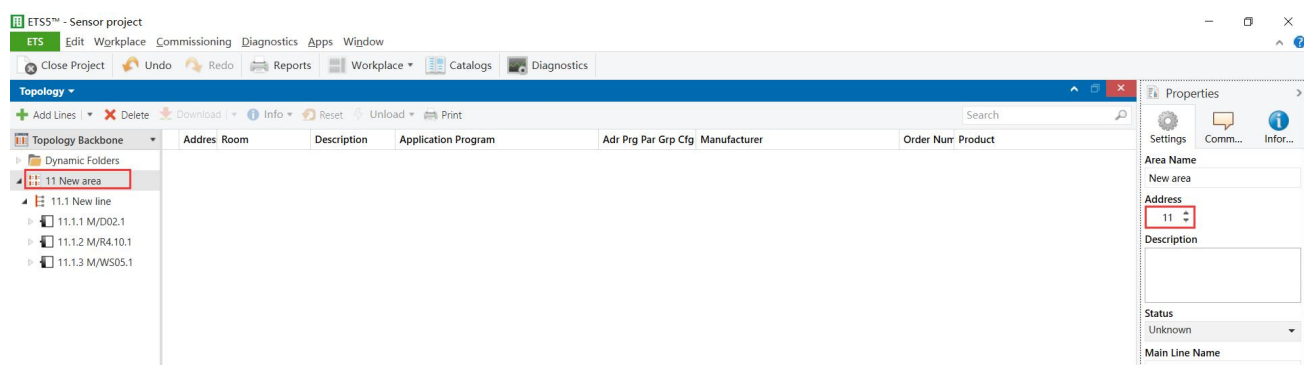
2: Select Catalog, and Import the database of device which you want.



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.



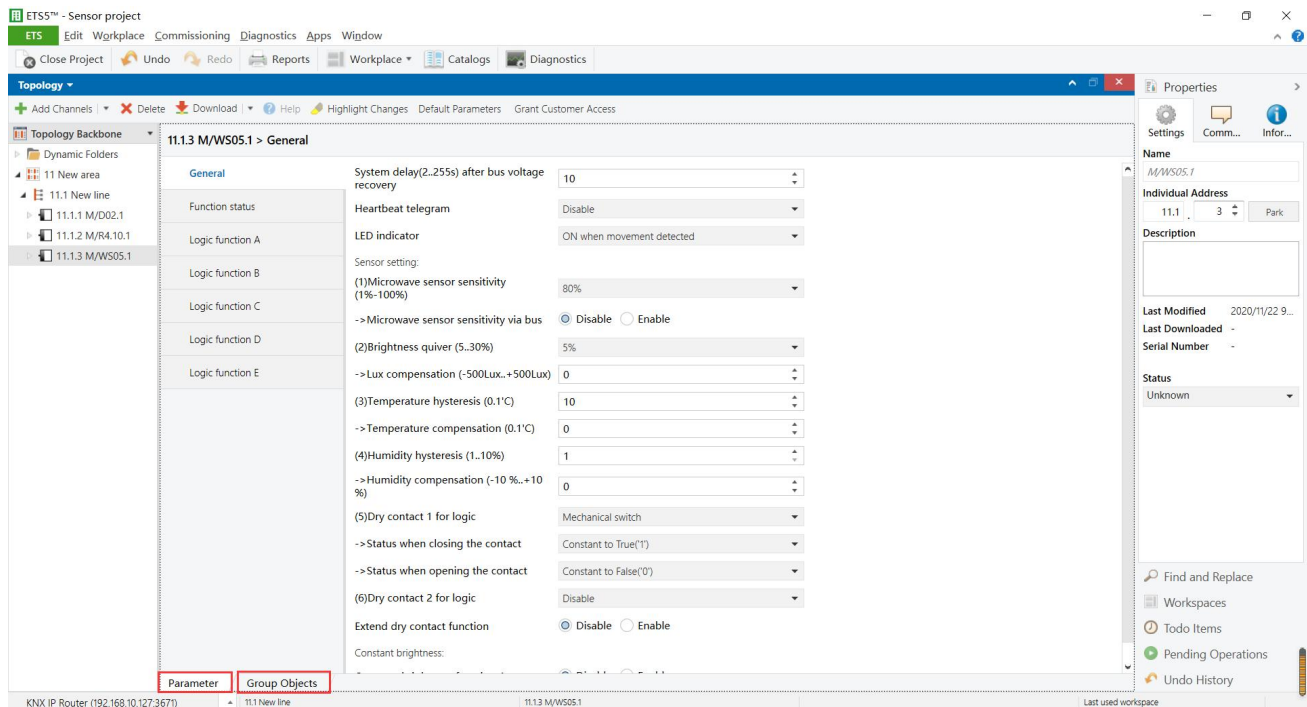
After added the device, click the device, then can enter to the Setting page.

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.

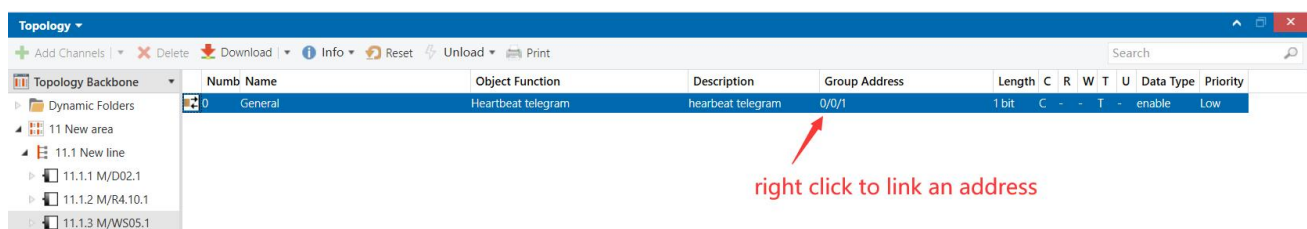
Disable: Disable heartbeat telegram.

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.



● Status LED indicator:

Set the LED indicator's status, for normal use ON when movement detected.

11.1.3 M/WS05.1 > General

General	System delay(2..255s) after bus voltage recovery	10
Function status	Heartbeat telegram	Disable
Logic function A	LED indicator	ON when movement detected
Logic function B	Sensor setting:	Always is OFF
Logic function C	(1)Microwave sensor sensitivity (1%-100%)	ON when movement detected ✓
Logic function D	->Microwave sensor sensitivity via bus	ON when received '1',else OFF
Logic function E	(2)Brightness quiver (5..30%)	ON when received '0',else OFF
	->Lux compensation (-500Lux..+500Lux)	ON when logic A is disable,else OFF
	(3)Temperature hysteresis (0.1'C)	ON when logic A is enable,else OFF
	->Temperature compensation (0.1'C)	ON when logic B is disable,else OFF
	(4)Humidity hysteresis (1..10%)	ON when logic B is enable,else OFF
	->Humidity compensation (-10 %..+10 %)	ON when logic C is disable,else OFF
		ON when logic C is enable,else OFF
		ON when logic D is disable,else OFF
		ON when logic D is enable,else OFF
		ON when logic E is disable,else OFF
		ON when logic E is enable,else OFF

If select 'ON when received '1', else OFF' or 'ON when received '0', else OFF', there has 'Led indicator status' function.

We can use this Group Address to enable or disable the Led indicator.

Topology

Num	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram	heartbeat telegram	0/0/1	1 bit	C	-	-	T	-	enable	Low
2	General	Led indicator status	LED enable/disable	0/0/2	1 bit	C	R	W	T	-	switch	Low

● Microwave 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%).

->Microwave sensor sensitivity via object: If enable, we can modify sensor sensitivity via Group Address.

Topology

Num	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram	heartbeat telegram	0/0/1	1 bit	C	-	-	T	-	enable	Low
1	General	Microwave sensor sensitivity			1 byte	C	R	W	T	-	percentag...	Low
2	General	Led indicator status	LED enable/disable	0/0/2	1 bit	C	R	W	T	-	switch	Low

● Brightness quiver (5..30%):

The quiver value is used for brightness in logic.

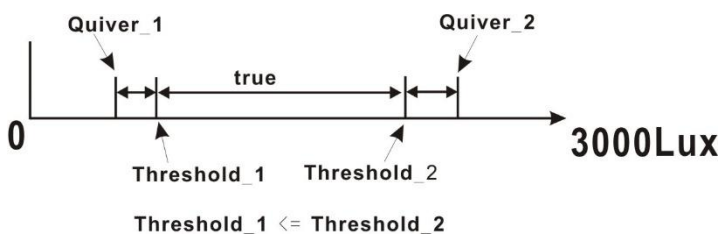
-> Lux compensation: If Lux value is not correct, you can use this to adjust the Lux value.

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.

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

$$\text{Threshold}_2 * (1 + 5\%) = 300 * (1 + 5\%) = 315 \text{ Lux}$$

General	(2)Enable brightness(Lux) sensor	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Function status	Enable brightness(Lux) threshold A	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Logic function A	-> Lux ≥ Threshold lower(0 ~ 15K lux) 100 -> Lux ≤ Threshold upper(0 ~ 15K lux) 300	

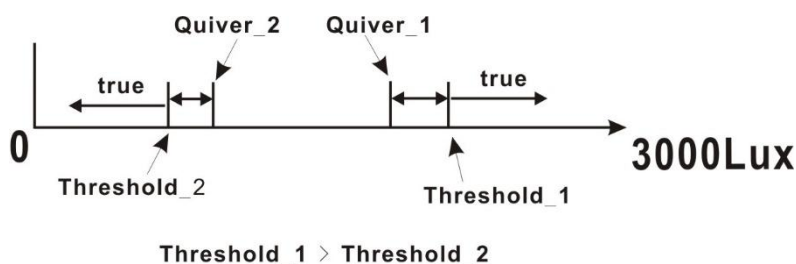


If Quiver is 5% and Threshold_1 > Threshold_2. Threshold_1 = 300 Lux and Threshold_2 = 100 Lux. Then effective value is >285 or <105 Lux.

$$\text{Quiver}_1 = \text{Threshold}_1 * (1 - 5\%) = 300 * (1 - 5\%) = 285 \text{ Lux}$$

$$\text{Quiver}_2 = \text{Threshold}_2 * (1 + 5\%) = 100 * (1 + 5\%) = 105 \text{ Lux}$$

General	(2)Enable brightness(Lux) sensor	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Function status	Enable brightness(Lux) threshold A	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Logic function A	-> Lux ≥ Threshold lower(0 ~ 15K lux) 300 -> Lux ≤ Threshold upper(0 ~ 15K lux) 100	



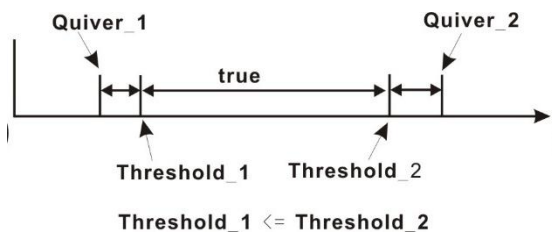
- **Temperature hysteresis:** The hysteresis for Logic Temperature input.

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

General	(2)Enable brightness(Lux) sensor	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Function status	(3)Enable temperature sensor	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Logic function A	-> Temperature ≥ Threshold lower (0.1°C) <input type="text" value="200"/>	
Block A	-> Temperature ≤ Threshold upper (0.1°C) <input type="text" value="300"/>	

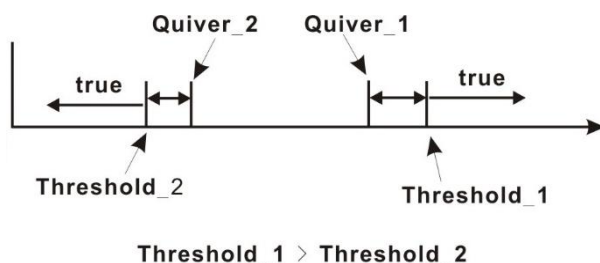


If hysteresis is 10 and Threshold_1 > Threshold_2. Threshold_1 = 30C and Threshold_2 = 20 C. Then effective value is <21C or >29C.

Threshold_1 – 1C= 29C

Threshold_2 + 1C= 21C

General	(2)Enable brightness(Lux) sensor	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Function status	(3)Enable temperature sensor	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Logic function A	-> Temperature ≥ Threshold lower (0.1°C) <input type="text" value="300"/>	
Block A	-> Temperature ≤ Threshold upper (0.1°C) <input type="text" value="200"/>	



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

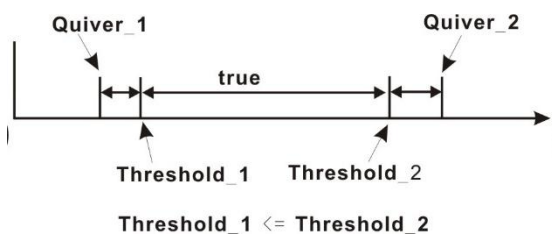
● **Humidity hysteresis:** The hysteresis for Logic Humidity input.

If hysteresis is 1% and Threshold_1 ≤ Threshold_2. Threshold_1 = 20% and Threshold_2 = 60%. Then effective value is 19~61%.

Threshold_1 – 1C= 19%

Threshold_2 + 1C= 61%

General	(3)Enable temperature sensor	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Function status	(4)Enable humidity sensor	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Logic function A	-> Humidity ≥ Threshold lower (20%..95%)	20
Block A	-> Humidity ≤ Threshold upper (20%..95%)	60
	-> Changed humidity threshold value via bus	<input checked="" type="radio"/> No <input type="radio"/> Yes

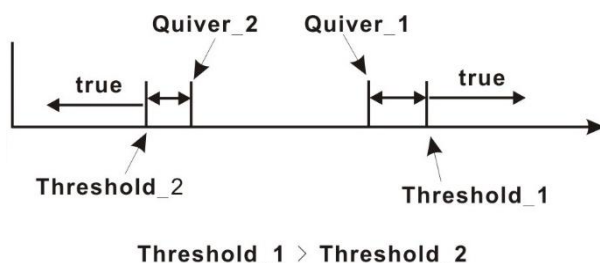


If hysteresis is 1% and Threshold_1 > Threshold_2. Threshold_1 = 60% and Threshold_2 = 20%. Then effective value is <21% or >59%.

Threshold_1 – 1C= 59%

Threshold_2 + 1C= 21%

General	(3)Enable temperature sensor	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Function status	(4)Enable humidity sensor	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Logic function A	-> Humidity ≥ Threshold lower (20%..95%)	60
Block A	-> Humidity ≤ Threshold upper (20%..95%)	20



-> Humidity compensation (0.1°C): If humidity value is not correct, you can use this to adjust the humidity value.

- Dry contact 1 for logic:
- Dry contact 2 for logic:

Before use the dry contact as Logic input condition, pls set the dry contact status value for logic. There has Invalid, Mechanical switch, Electronic switch type.

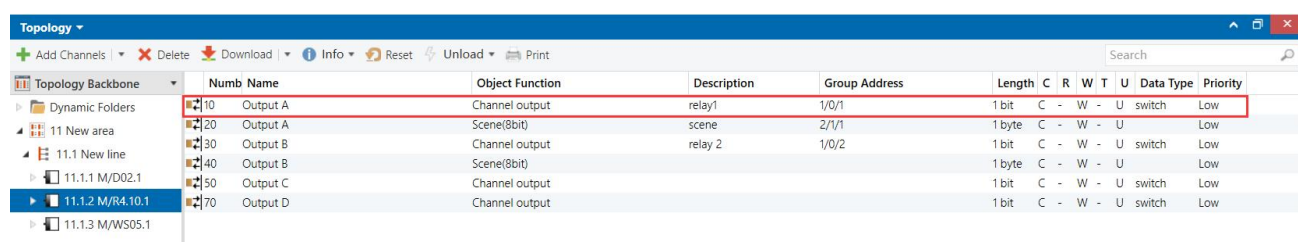
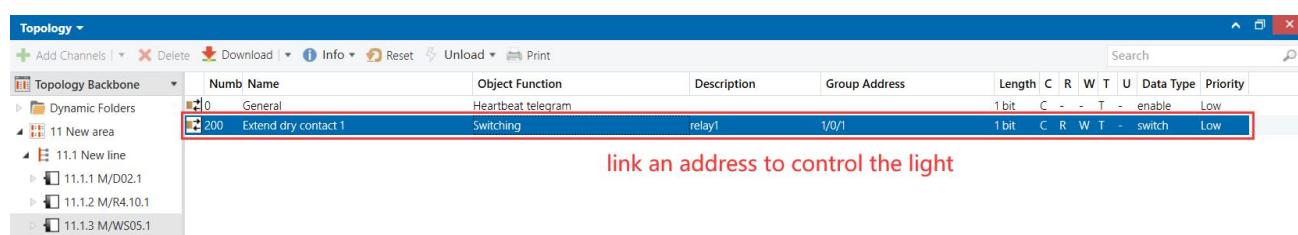
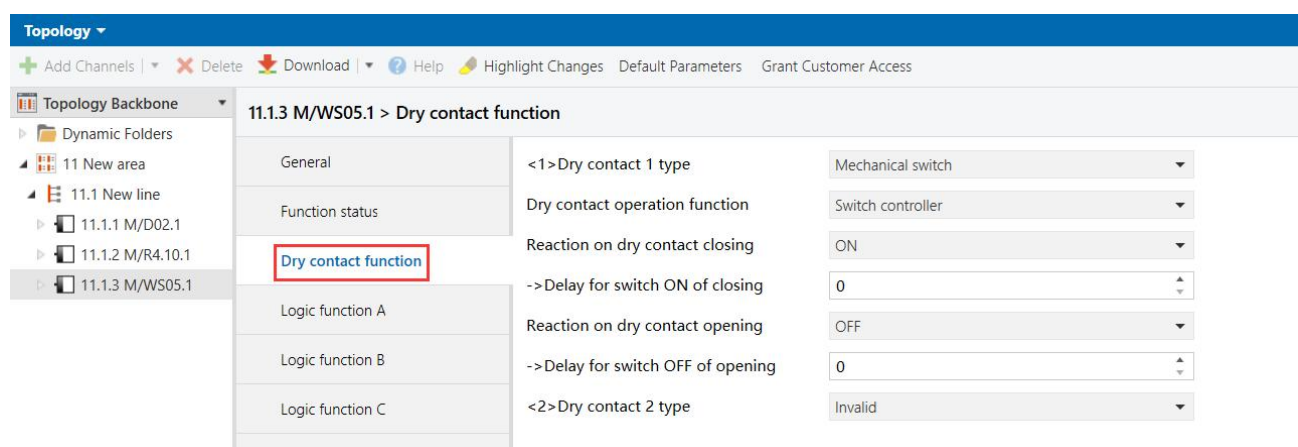
Mechanical switch: Set the Closing/Opening status. Like door dry contact.

Electronic switch: Set short/long operation status and voltage recovery status. Like self-reset key.

2.2.1 Extend dry contact function

The dry contact triggers the output directly. You can enable it in General page.

For examples connect Mechanical switch to this dry contact1. When dry contact close, turn on the light. When dry contact open, turn off the light.

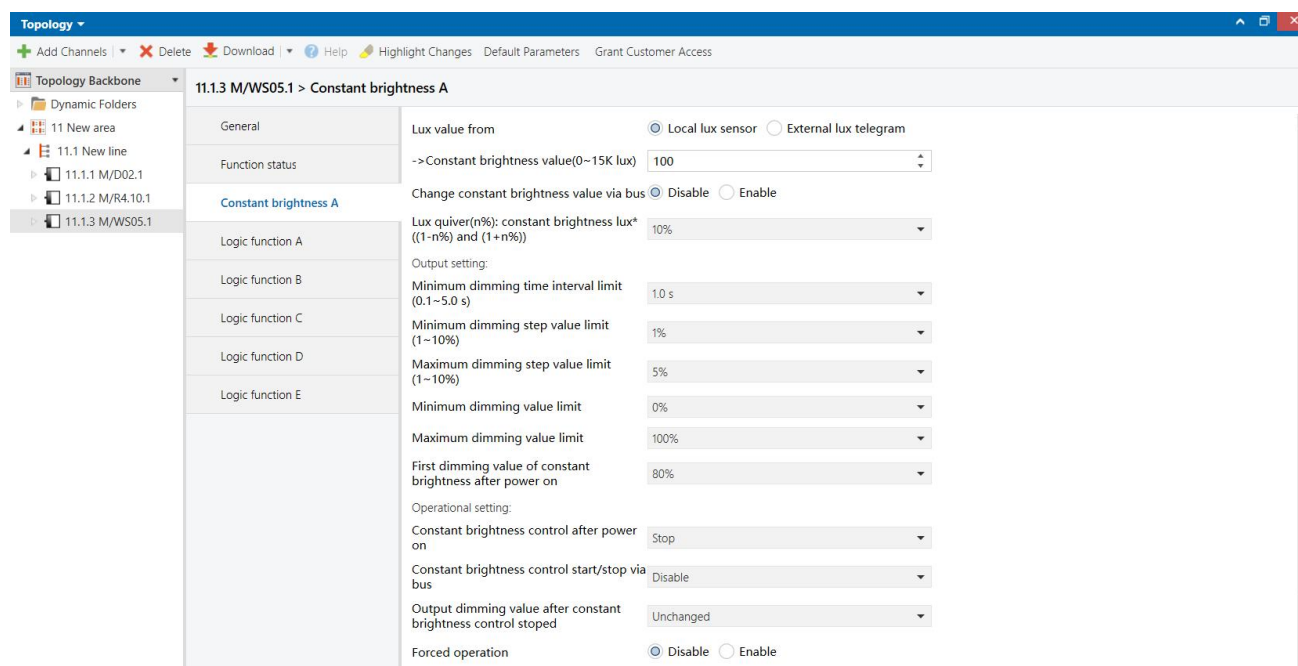


2.2.2 Constant Brightness

It can make the brightness in constant value.

When brightness lower than the preset value, then turn on the light (100%), and then the light will be dimming to preset value by auto.

You can enable the Constant Brightness function in General page.



- **Lux value from:**

Local lux sensor: Use the lux sensor which built inside sensor.

External lux telegram: Use external lux telegram 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.

-- Lux quiver (n%): constant brightness lux*((1-n%) and (1+n%)): The lux quiver for constant brightness value.

- **Output Setting:**

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

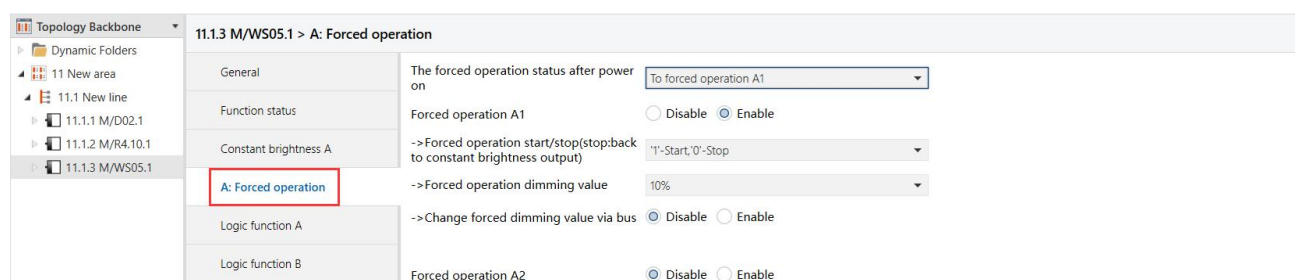
- Minimum dimming step value limit (1~10%):
- Maximum dimming step value limit (1~10%):
- Minimum dimming value limit:
- Maximum dimming value limit:
- First diming value of constant brightness after power on: Set the first dimming value after power on.

● Operational setting:

- Constant brightness control after power on: Set the constant brightness after power on.
- Output dimming value control start/stop via bus: If enable, can use 1bit group address to start/stop the constant brightness function.
- Output dimming value after constant brightness control stop: Set the output dimming value after constant brightness stop.

● Forced operation:

This used to forced control the dimming value during the constant brightness function. It is up to 4 forced operations. If enable, can use 1bit group address to forced control the dimming value.

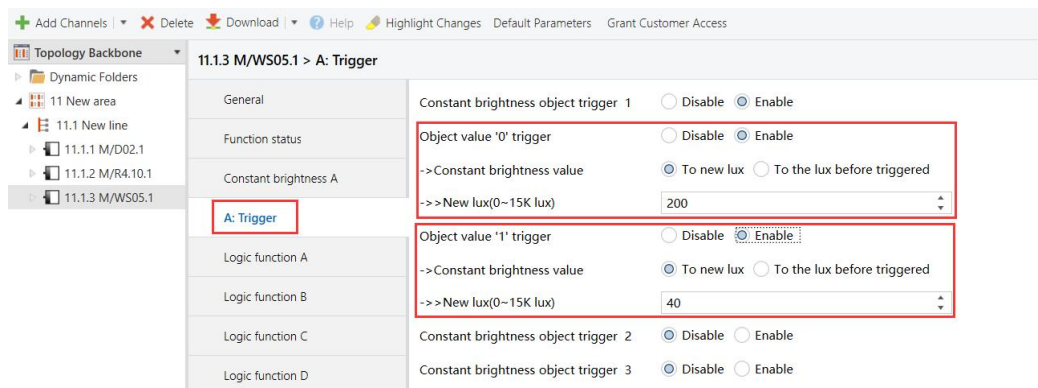


- The force operation status after power on: No operation; Last forced operation; To forced operation A1; To forced operation A2; To forced operation A3; To forced operation A4;
- Forced operation A1: If enable, you can use 1bit group address to start/stop the forced operation, and trigger the preset dimming value. The forced dimming value can be changed via bus.

● Trigger:

If you want to use 1bit group address to change the constant brightness value, you can use Trigger function. When receive '1' or '0', the constant brightness value can be changed to preset value.

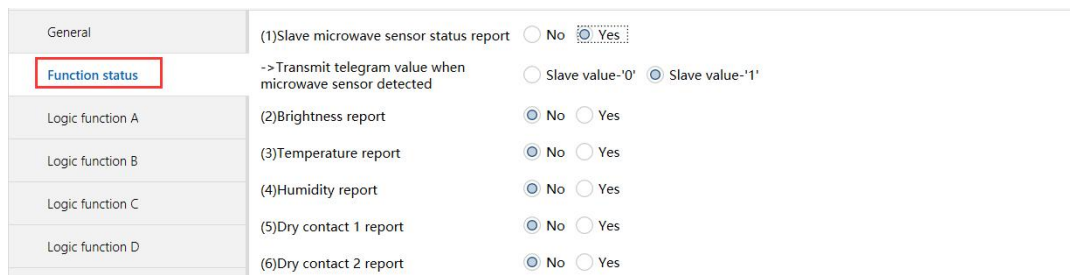
It is up to 3 trigger functions.



● $PI: u(k) = K_p(\text{Proportional coefficient})[e(k) - e(k-1)] + K_i(\text{integration time})e(k):$

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

2.3 Function Status



Report the status to Bus.

(1): Slave Movement sensor status report: If current sensor works as Slave microwave sensor, then can use this function to report current status to the Bus.

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
3	Function status	Microwave status to bus			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/WS05.1 > Function status

General	(1)Slave microwave sensor status report <input checked="" type="radio"/> No <input type="radio"/> Yes
Function status	(2)Brightness report <input type="radio"/> No <input checked="" type="radio"/> Yes
Logic function A	->Lux report mode <input checked="" type="radio"/> Report when changed <input type="radio"/> 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 <input checked="" type="radio"/> No <input type="radio"/> Yes
	(4)Humidity report <input checked="" type="radio"/> No <input type="radio"/> Yes

Topology

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	-	-	enable	Low
5	Function status	Brightness(Lux) value			2 bytes	C	R	-	-	-	pulses	Low

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

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

11.1.3 M/WS05.1 > Function status

General	(1)Slave microwave sensor status report <input checked="" type="radio"/> No <input type="radio"/> Yes
Function status	(2)Brightness report <input checked="" type="radio"/> No <input type="radio"/> Yes
Logic function A	(3)Temperature report <input type="radio"/> No <input checked="" type="radio"/> Yes
Logic function B	->Temperature report mode <input checked="" type="radio"/> Report when changed <input type="radio"/> Report cyclic
Logic function C	->Differential value for report (0.1°C) 10
	(4)Humidity report <input checked="" type="radio"/> No <input type="radio"/> Yes

Topology

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	-	-	enable	Low
6	Function status	Temperature value			2 bytes	C	R	-	-	-	temperatu...	Low

(4): Humidity report:

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

11.1.3 M/WS05.1 > Function status

General	(1)Slave microwave sensor status report	<input checked="" type="radio"/> No <input type="radio"/> Yes
Function status	(2)Brightness report	<input checked="" type="radio"/> No <input type="radio"/> Yes
Logic function A	(3)Temperature report	<input checked="" type="radio"/> No <input type="radio"/> Yes
Logic function B	(4)Humidity report	<input type="radio"/> No <input checked="" type="radio"/> Yes
Logic function C	-> Humidity report mode	<input checked="" type="radio"/> Report when changed <input type="radio"/> Report cyclic
Logic function D	-> Differential value for report (1..10 %)	3 %
	(5)Dry contact 1 report	<input checked="" type="radio"/> No <input type="radio"/> Yes

Topology

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
7	Function status	Humidity value			2 bytes	C	R	-	T	-		Low

(5): Dry contact 1 report:

(6): Dry contact 2 report:

Set the dry contact report mode. For more settings of dry contact, pls go to General – Dry contact 1 or 2 for logic.

11.1.3 M/WS05.1 > Function status

General	(1)Slave microwave sensor status report	<input checked="" type="radio"/> No <input type="radio"/> Yes
Function status	(2)Brightness report	<input checked="" type="radio"/> No <input type="radio"/> Yes
Logic function A	(3)Temperature report	<input checked="" type="radio"/> No <input type="radio"/> Yes
Logic function B	(4)Humidity report	<input checked="" type="radio"/> No <input type="radio"/> Yes
Logic function C	(5)Dry contact 1 report	<input type="radio"/> No <input checked="" type="radio"/> Yes
Logic function D	-> Dry contact 1 report mode	When status value changed
Logic function E	(6)Dry contact 2 report	<div> <div>When status value changed</div> <div> <div>True</div> <div>False</div> <div>Contact action and periodically</div> <div>When status value changed and periodically</div> <div>True and periodically</div> <div>False and periodically</div> </div> </div>

Topology

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
8	Function status	Dry contact 1 status			1 bit	C	R	-	T	-	switch	Low

2.4 Logic Function A/B/C/D

There are four independent logic, you can select microwave /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 microwave sensor: If enable, the microwave sensor as logic input condition.

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

-- Single mode (independent sensor): This microwave 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 conditions, but this sensor as master. The slave sensor can use 1bit group address to link to this master sensor; when receive salve value, then the master set to Ture.

Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
10	Object input A	Microwave status from bus			1 bit	C	R	W	T	U	switch	Low
30	Object output A1	Switching			1 bit	C	R	-	T	-	switch	Low

(2): Enable brightness (Lux) Sensor: It supports up to 3 brightness thresholds. You can select the brightness value as logic input condition.

-- Lux >= Threshold lower; Lux <= Threshold upper: The range of lux.

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

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

-- Independent control < object output 8>: It can independently control the object output8 when brightness in the range. This is separated from Logic A.

If enable independent control object output8, the A8 output in Block A is for object output8.

If enable independent control object output9, the A9 output in Block A is for object output9.

If enable independent control object output10, the A10 output in Block A is for object output10.

11.1.3 M/WS05.1 > Logic function A

General	(2)Enable brightness(Lux) sensor <input type="radio"/> Disable <input checked="" type="radio"/> Enable
Function status	Enable brightness(Lux) threshold A <input type="radio"/> Disable <input checked="" type="radio"/> Enable
Logic function A	-->Lux >= Threshold lower(0 ~ 15K lux) <input type="text" value="300"/> -->Lux <= Threshold upper(0 ~ 15K lux) <input type="text" value="100"/> -->Changed Lux threshold value via bus <input checked="" type="radio"/> No <input type="radio"/> Yes -->Brightness(Lux) status <input type="text" value="In range is True,else False"/> -->Independent control <object output 8> <input checked="" type="radio"/> No <input type="radio"/> Yes(Separated from logic and output) Enable brightness(Lux) threshold B <input checked="" type="radio"/> Disable <input type="radio"/> Enable
Block A	(3)Enable temperature sensor <input checked="" type="radio"/> Disable <input type="radio"/> Enable
A1: Switching	
Logic function B	
Logic function C	
Logic function D	

-->Independent control <object output 8> ☐ No ☒ Yes(Separated from logic and output)
 -->>Enable/disable independent control via bus ☐ No ☒ Yes
 -->>Operation mode
 -->><Object output 8 > status when independent control disabled

(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)

->Temperature <= Threshold upper (0.1'C)

->Changed temperature threshold value via bus ☒ No ☐ Yes

->Temperature status

(4): Enable humidity sensor: If enable, the humidity 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 (20%..95%)

->Humidity <= Threshold upper (20%..95%)

->Changed humidity threshold value via bus ☒ No ☐ Yes

->Humidity status

(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.

- **Logical A function 'Enable/disable' status control**

It can use telegram via bus or dry contact to enable/disable the logical A Function.

-- Telegram via bus: It can be used 1bit group address to enable/disable the Logical A.

-- Dry contact: It can use itself dry contact to enable/disable the Logical A.

If dry contact1 used for enable/disable, then dry contact1 can not use as logic input condition.

You can set the dry contact status in General page.

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

-- Logic A automatic enable after logic function disabled: It will auto enable after delay time.

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

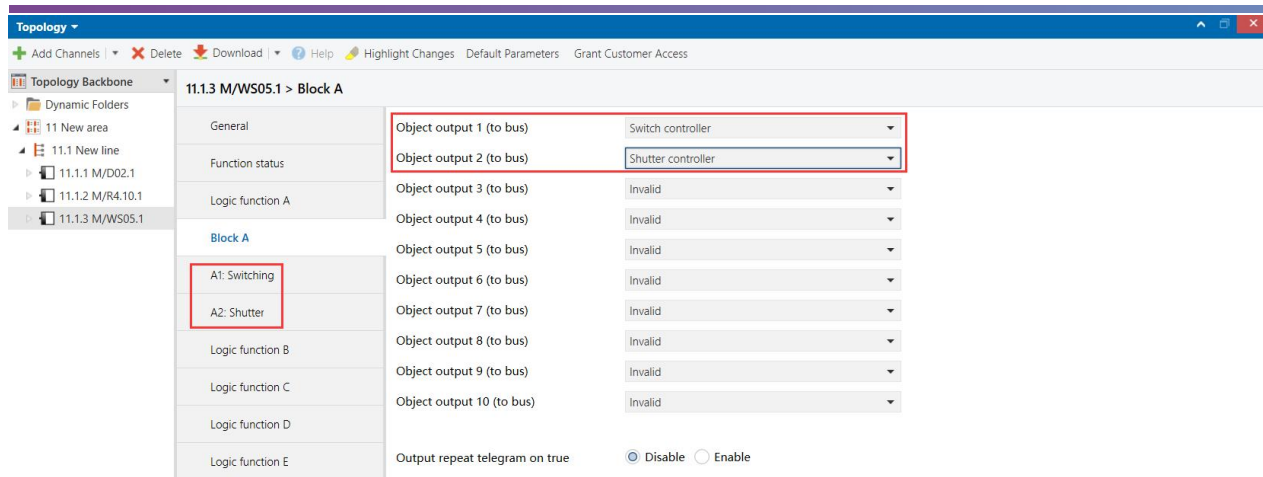
Set the output status when logic was enabled.

- **Feedback logic A function 'enable/disable' status:** If enable, it can use 1bit group address to feedback the enable/disable 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.

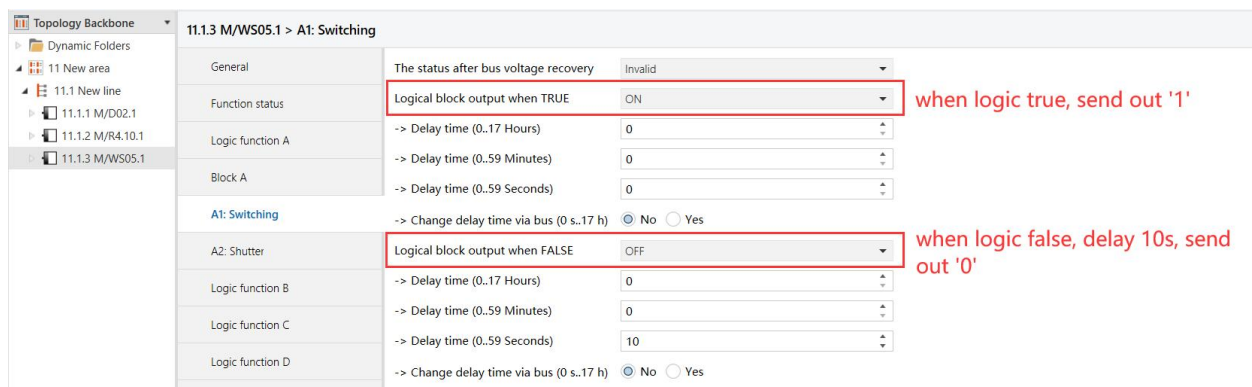
For example: Logic function A has two outputs, one is control single light, second is control curtain.



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 true/false. For examples 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.

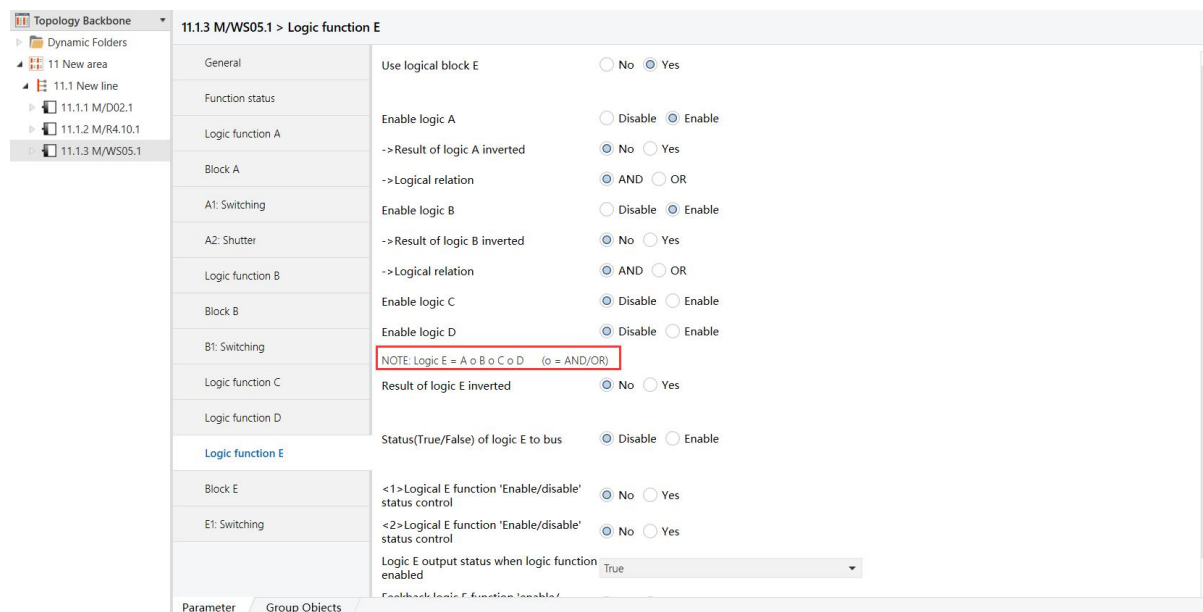
- **Logical block output when False:** Set the detail function when logic false.

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.
- **Logical E function 'Enable/disable' status control**
It can use telegram via bus or dry contact to enable/disable the logical E Function.
 -- Telegram via bus: It can be used 1bit group address to enable/disable the Logical E.
 -- Dry contact: It can use itself dry contact to enable/disable the Logical E. You can set the dry contact status in General page.
 -- Logic E output status when logic function disabled: Set the output status when logic disable.
 -- Logic E automatic enable after logic function disabled: It will auto enable after delay time.

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

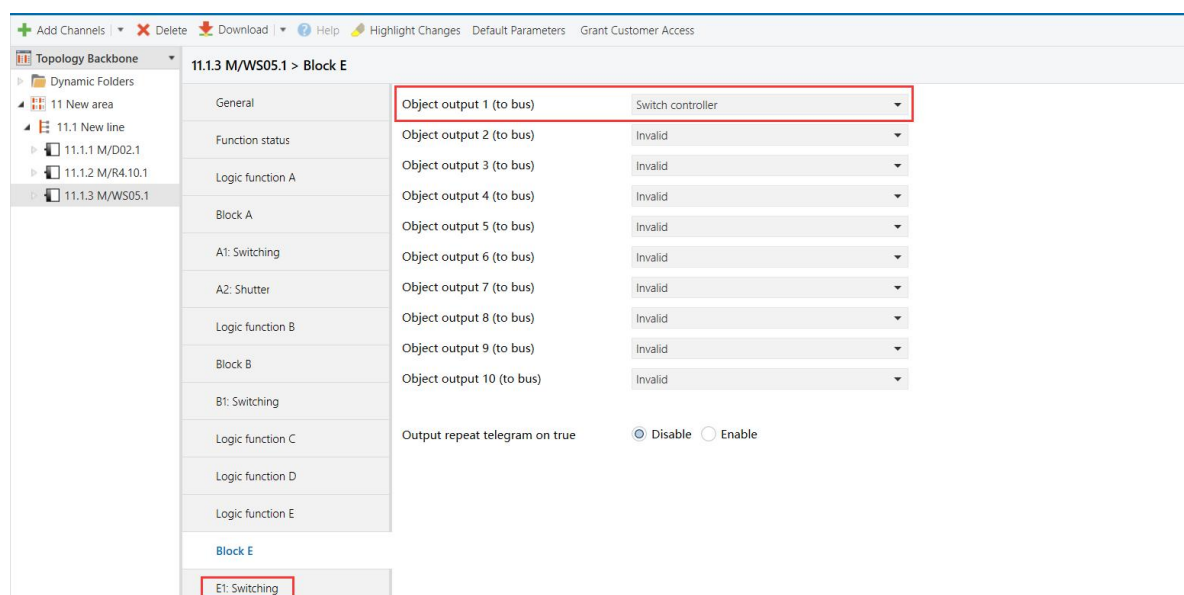
Set the output status when logic was enabled.

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

2.5.1 Block E

Enable the output object for logic E.

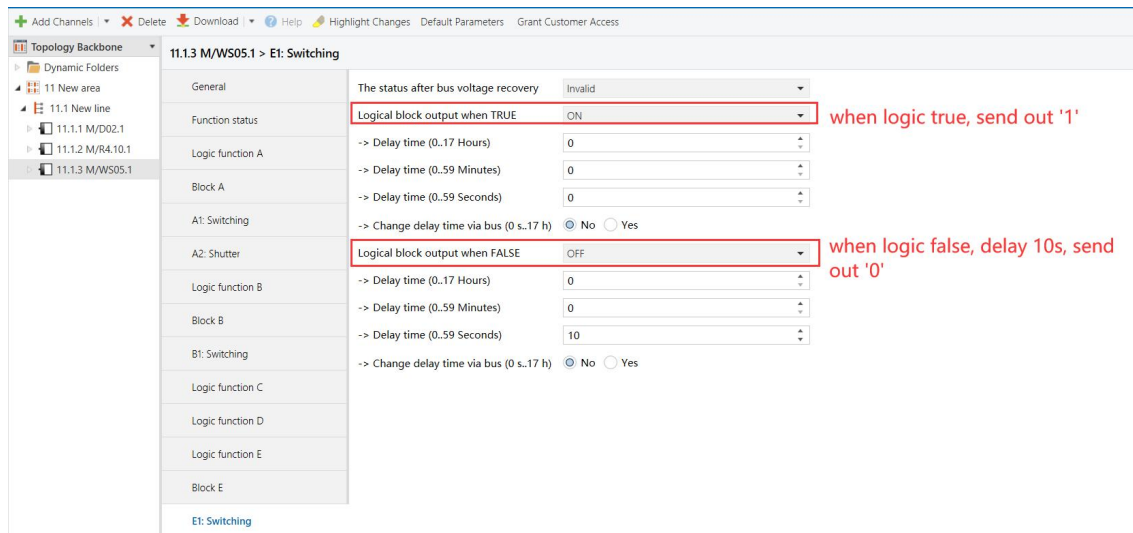
For example: Logic function E has one output (Switch controller to control single light).



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.

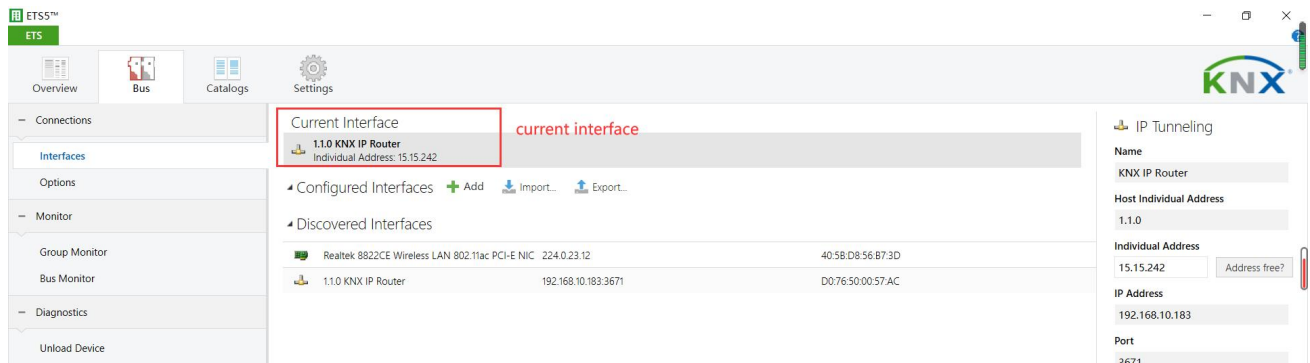


- **The status after bus voltage recovery:** Set the status after bus voltage recovery.
- **Logical block output when True:** Set the detail function when logic true.
 Delay time: After delay time, will trigger the output.
 Change delay time via bus (0s..17h): The delay time can be changed by bus.
- **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.

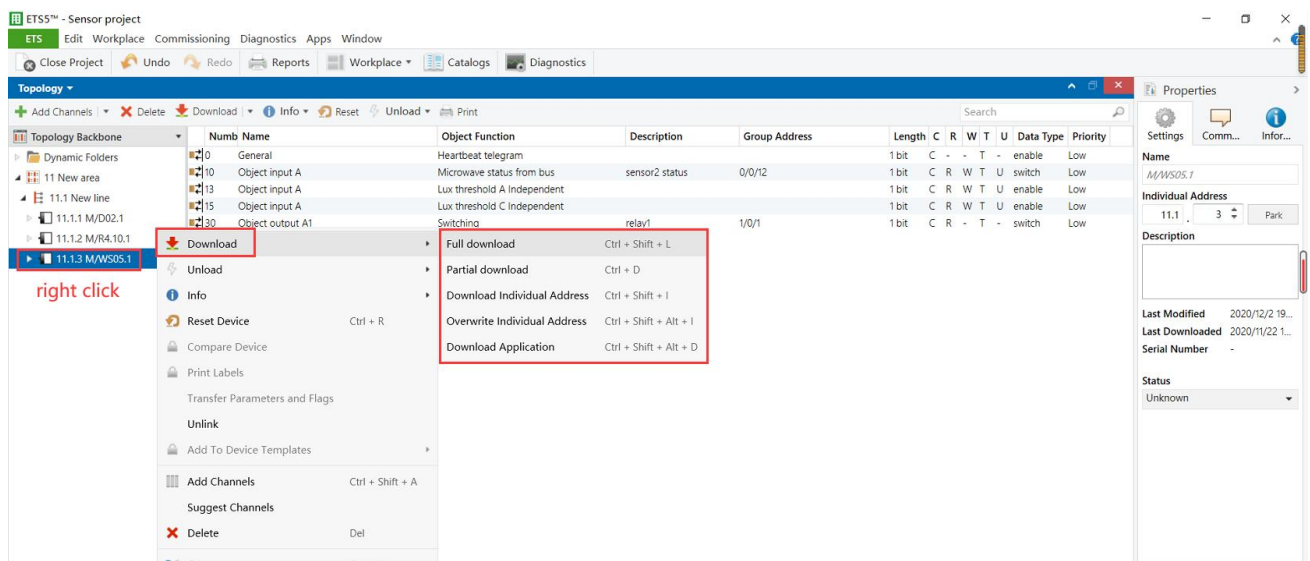
3 Download Database

After finished program, need to download the database to module.

1: Check the KNX connection first. In ETS5--Bus--Connections.



2: Go to project, right click the device which you want to download the database.



- Full download: Download all data (individual address and application), need to make the module enter to program mode. For sensor module, press PRO button one time, will make the sensor module enter to program mode.
- Partial download: Just download the data which modified.
- Download Individual Address: Just download individual address. Need to make module enter to program mode.
- Overwrite Individual Address: Overwrite individual address.
- Download Application: Just download application.

Suggestion:

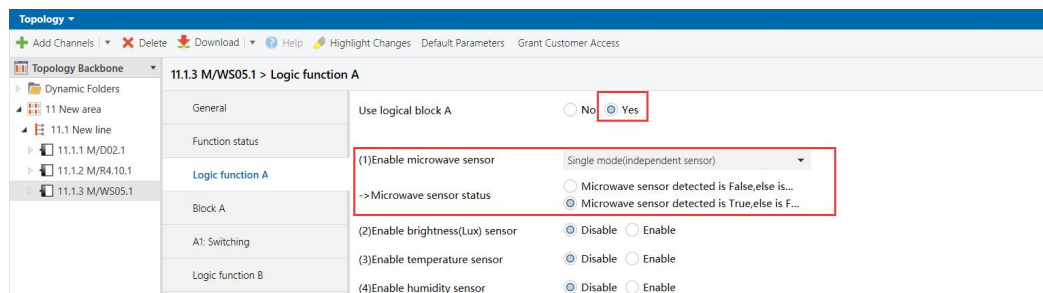
1: When first time to program the new module, suggested use full download.

2: If modified the data later, you can use partial download or download application.

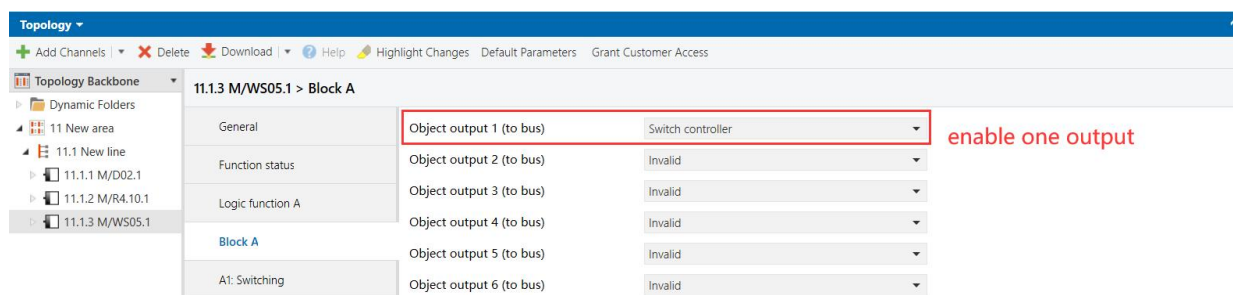
4 Examples

4.1 Single movement control one light

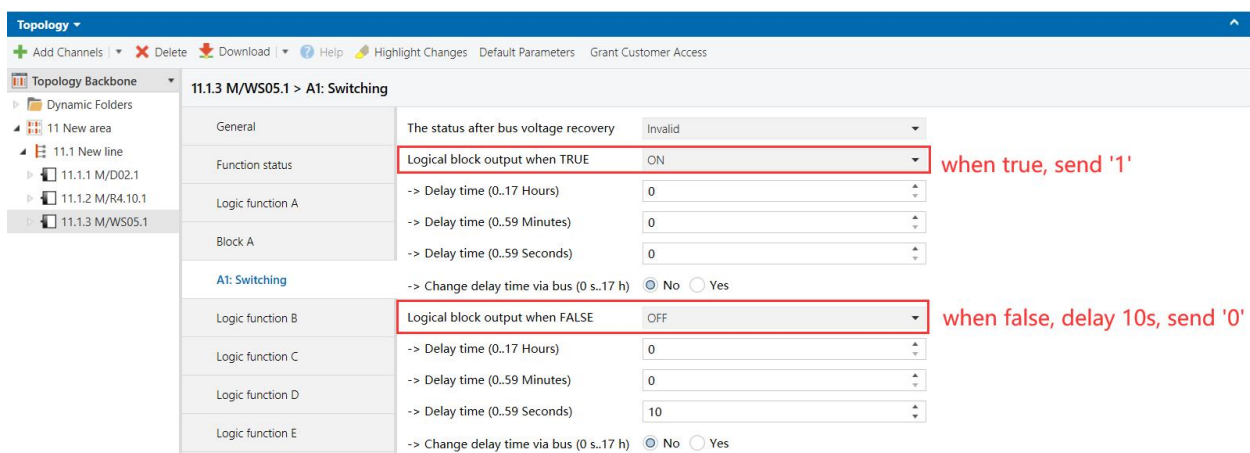
- 1) Enable Logic function A and select Single mode.



- 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.

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Topology Backbone	Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
Dynamic Folders	0	General	Heartbeat telegram			1 bit	C	-	-	T	-	enable	Low
11 New area	30	Object output A1	Switching	relay1	1/0/1	1 bit	C	R	-	T	-	switch	Low

right click, link to relay channel

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Topology Backbone	Numb	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
Dynamic Folders	10	Output A	Channel output	relay1	1/0/1	1 bit	C	-	W	-	U	switch	Low
11 New area	20	Output A	Scene(8bit)			1 byte	C	-	W	-	U	switch	Low
11.1 New line	30	Output B	Channel output			1 bit	C	-	W	-	U	switch	Low
11.1.1 M/D02.1	40	Output B	Scene(8bit)			1 byte	C	-	W	-	U	switch	Low
11.1.2 M/R4.10.1	50	Output C	Channel output			1 bit	C	-	W	-	U	switch	Low
11.1.3 M/WS05.1	70	Output D	Channel output			1 bit	C	-	W	-	U	switch	Low

relay

4.2 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).

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Topology Backbone

11.1.3 M/WS05.1 > Logic function A

General

Use logical block A ☐ No ☒ Yes

Function status

Logic function A

Block A

A1: Switching

(1) Enable microwave sensor ☐ Master/Slave mode(Master sensor) ☒ Slave value-'1'

-> Local microwave sensor status ☐ Microwave sensor detected is False,else is... ☒ Microwave sensor detected is True,else is F...

-> Master is set to TRUE when received ☐ Slave value-'0' ☒ Slave value-'1'

(2) Enable brightness(Lux) sensor ☐ Disable ☒ Enable

status from slave sensor

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

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Topology Backbone

11.1.3 M/WS05.1 > Block A

General

Function status

Logic function A

Block A

A1: Switching

Object output 1 (to bus) Switch controller

Object output 2 (to bus) Invalid

Object output 3 (to bus) Invalid

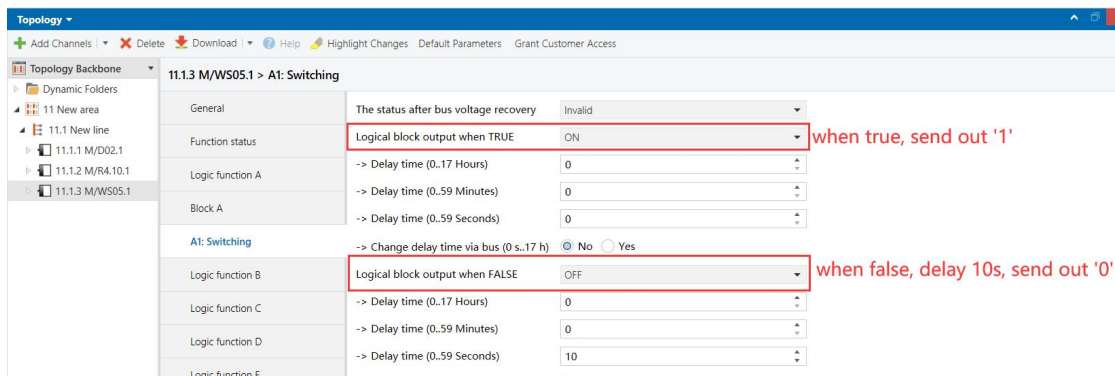
Object output 4 (to bus) Invalid

Object output 5 (to bus) Invalid

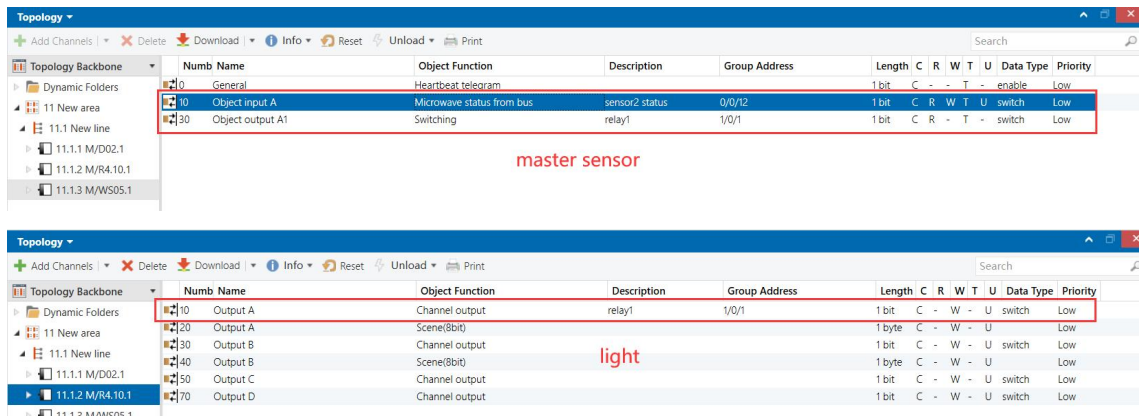
Object output 6 (to bus) Invalid

enable one output object

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.



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

