

K-BUS[®] 55mm System

Push Button Sensor Plus -Ver. 2.1

1-Gang, CHPLE-02/02.x.0y

2-Gang, CHPLE-04/02.x.0y

3-Gang, CHPLE-06/02.x.0y

4-Gang, CHPLE-08/02.x.0y

(x=1, Shiny Finish; x=2, Matt Finish)

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

KNX/EIB Intelligent Installation Systems

User manual update instructions:

Ver.	Date	Edit contents	Edit position
1.0	2017.4.27	Published the first edition	
2.0	2017.7.7	Published the second edition	The logic function of the threshold comparator type add a 4bit type.
2.1	2017.8.25	Published version 2.1	Add delay for the Event group function
2.2	2017.10.11	For the RGB dimming function, the RGBW mode of object type is changed from 4byte to 6byte	Section 4.2.7 and 5.1, the related parameters and Object of the RGBW dimming mode

Content

1. General Introduction	4
2. Technical Parameter	5
3. Dimension and Structural Diagram	6
3.1 Dimension	6
3.2 Structural Diagram	7
4. ETS System Parameters Setting	8
4.1 "General" Parameter Setting	8
4.2 Independent Button Mode	12
4.2.1 "Switch" Function	12
4.2.2 "Switch/Dimming" Function	14
4.2.3 "Value/Forced output" Function	16
4.2.4 "Scene control" Function	17
4.2.5 "Shutter control"Function	18
4.2.6 "Shift register" Function	19
4.2.7 "RGB dimming" Function	21
4.2.8 "Multiple operation" Functions	22
4.2.9 "Delay mode" Function	25
4.3 Linked button Mode	27
4.3.1 "Switch" Function	27
4.3.2 "Switch/Dimming" Function	28
4.3.3 "Scene control" Function	30
4.3.4 "Shutter control" Function	31
4.4 Parameter window "LED function"	32
4.5 Parameter window"Temperature measurement"	35
4.6 Parameter window"Logic function"	37
4.6.1 Parameter "AND/OR/NAND/NOR/XOR" Function	40
4.6.2 "Threshold comparator" Function parameters	41
4.7 Parameter window " Event Group setting "	43
5. 1. Communication object description	45
5.1 "General" Communication object description	45
5.2 Button function object description	46
5.3 LED Object description	50
5.4 Temperature Measurement Object description	50
5.5 Logic Function Object description	51
5.5.1 "AND/OR/NAND/NOR/XOR" Object	51
5.5.2 The Communication Object of "Threshold comparator"	51
5.5.3 The Communication Object "Format convert"	52
5.6 Event Group Communication Object description	54

1. General Introduction

The Push Button Sensor Plus (Compatible with European standard 55mm System), hereinafter being referred as push button, is mainly used in building control system. By connection of EIB terminals (black/red), the push button will be connected to the KNX BUS system to realize different functions in KNX system with very simple programming, easy installation and customized button look.

This Manual has offered its customer with all technical parameters of the push button, including installation as well as programming details, moreover, with actual examples to explain how the push button can be used in each KNX system.

This push button series are designed based on the standard European 55mm system as any other European KNX manufacturers, which means the Push Button Sensor Plus can be used in ON/OFF switch, dimming, shutter control, scenario, RGB control, multiple control, delay sending, temperature measurement etc. Meanwhile, the button series also perfectly match almost all frames from other manufacturers like Gira, Jung, Berker, Hager, Merten etc. For installation both 60mm and 86mm wall box fit.

The push button connects to KNX bus directly, no extra power is needed. In programming, both physical addressing and parameter setting can be realized by using ETS with .knxprod files. (ETS4 or above)

Functions of this push button are powerful, main points are listed as below:

- Switching and dimming
- Shutter control
- Value sending
- Scenario function
- Shift register function
- RGB and RGBW dimming
- Multiple control
- Delay sending(e.g. switching value, dimming value)
- LED indication
- Temperature measurement
- 8 logic function
- 8 event group function (with 8 parameterizable output in each group)

There're 1-gang, 2-gang, 3-gang, 4-gang push buttons in this series with all above functions included. During project planning, designers can use these functions as per their actual project needs.

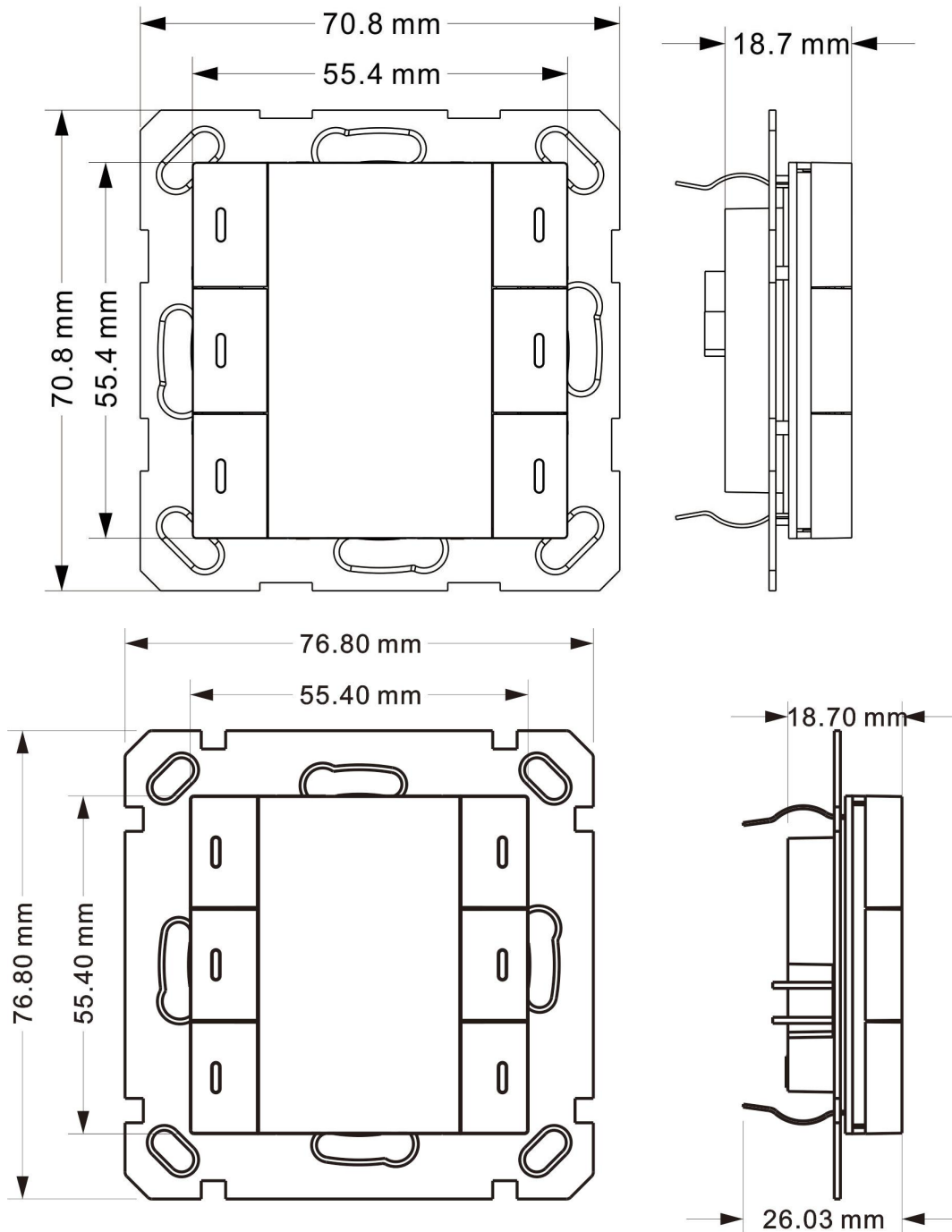
2. Technical Parameter

Power Supply	Bus Voltage	21-30V DC, via KNX bus
	EIB/KNX Current Consumption	<12mA
	EIB/KNX Power Consumption	<360mW
Indication LED	1 LED for each button, with RGB colors	
	Red LED and button	Physical address programming
Push Button Lifespan	>20000	
Connection	EIB/KNX	Bus via KNX terminals
Temp. Range	Working	-5 °C ... 45 °C
	Storage	- 25 °C ... 55 °C
	Transportation	- 25 °C ... 70 °C
Installation	Standard 60mm or 86mm wallbox	
Weight	0.1KG	
Color	White (or other color in customization)	

Application Program	Max. Communication Object number	Max. GA Number	Max. Combined Address Number
Push button sensor Plus,1/2/3/4-Gang	189	250	250

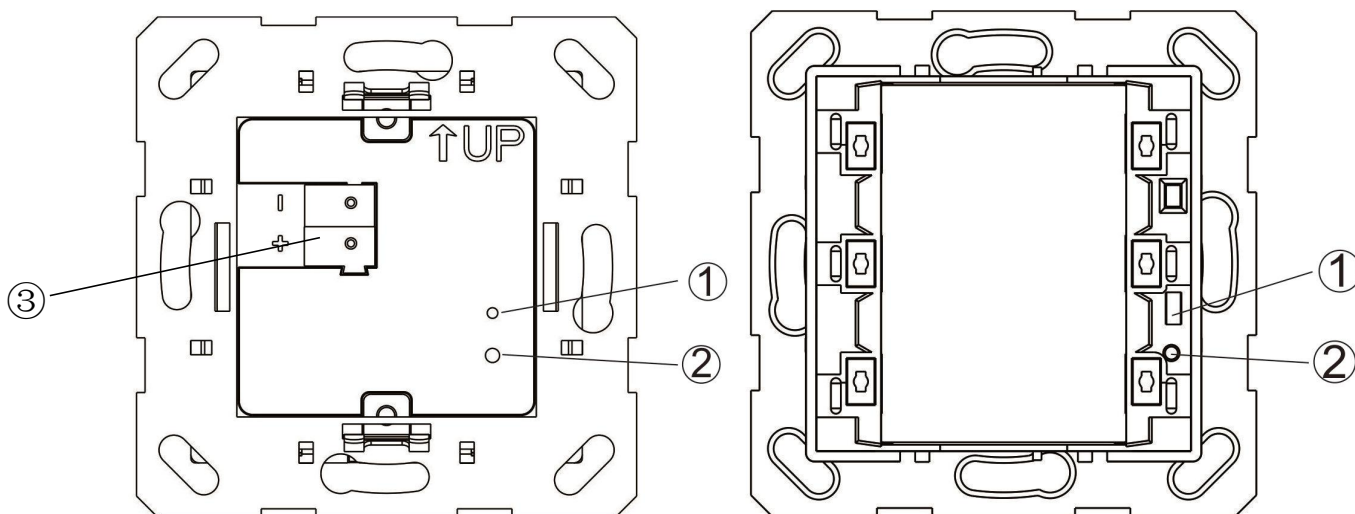
3. Dimension and Structural Diagram

3.1 Dimension (apply to 60mm and 86mm wall-box)



Here's an example of 3-gang, the 1/2/4-gang is similar

3.2 Structural Diagram



- 1、 Programming LED, when it turns RED, the device becomes programmable
- 2、 Programming Button
- 3、 KNX/EIB Terminals

4. ETS System Parameters Setting

4.1 “General” Parameter Setting

“General” Parameter Setting Interface is shown as in Fig.4.1, here you can set the preferential working way of switch, one rocker can be used as two buttons or in conjunction. When used as 2 buttons, the application of each button is independent. If it is used in conjunction, the buttons are associated. Here in this chapter we take 1 pair push button as an example to illustrate the parameters setting:

General	Push button type	1 rocker(2 buttons)
Rocker 1	Rocker 1 use as	<input type="radio"/> Independent button <input checked="" type="radio"/> Linked button
LED	Brightness of LED when it is on	Level 5
Temperature measurement	Brightness of labelling LED	Level 5
Logic function	Labelling LED display mode	<input checked="" type="radio"/> Normal(always on/off) <input type="radio"/> Breath(Cyclically step dimming)
Event Group setting	LED brightness adjustment for Day/Night	<input type="radio"/> No <input checked="" type="radio"/> Yes
Version	Polarity of Day/Night mode	<input checked="" type="radio"/> Day=1/Night=0 <input type="radio"/> Day=0/Night=1
	Day/Night mode need send read request when bus recovery	<input checked="" type="radio"/> No <input type="radio"/> Yes
	Status LED brightness when it is night	Level 2
	Labelling LED brightness when it is night	Level 2
	LED status object need send read request when bus recovery	<input checked="" type="radio"/> No <input type="radio"/> Yes
	Initial LED color	<input checked="" type="radio"/> No <input type="radio"/> As color as object value *0*
	Button description:	
	Button 1 location:	Left of Rocker 1
	Button 2 location:	Right of Rocker 1
	Button 3 location:	Left of Rocker 2
	Button 4 location:	Right of Rocker 2
	Button 5 location:	Left of Rocker 3

Fig. 4.1 Parameter Setting Page

Parameter “Push button type”

This parameter is to set the types of the push button sensor, there are different rockers of the push button sensors, so during the parameter setting, please choose the same rocker in ETS as the push button it is, and the

LED lights will be matched. Options:

1 rocker (2 buttons)	it is for the 1-gang push button
2 rocker (4 buttons)	it is for the 2-gang push button
3 rocker (6 buttons)	it is for the 3-gang push button
4 rocker (8 buttons)	it is for the 4-gang push button

For any of the above-listed Options, the parameters are same. One rocker can be used as two buttons or in conjunction. When used as 2 buttons, the application of each button is independent. If it is used in linked mode, the buttons are associated.

--Parameter “Rocker x use as (x=1,2,3) ”

This parameter is to set the working ways of the rockers. Options:

- Independent button
- Linked button

If you choose “Independent button”, then the buttons (left and right side) are used as 2 individual ones, if you choose “Linked button”, then buttons are associated.

Next chapter 4.2 and 4.3 we will take 1 button or 1 rocker as example to introduce the parameters of each function and communication objects under different applications.

Note: After the bus power-on recovery/ program is downloaded, the value of all communication objects is 0.

Parameter “Brightness of LED when it is on”

This parameter is to set the brightness of LED indicator light on the push buttons. Options:

- Level 1
- Level 2
- Level 3
- Level 4
- Level 5

When status LED light a certain color,if there is distinguish with the day/night mode, then the brightness of LED indicator depends on this parameter in day mode .Otherwise, the brightness of LED indicator will always depends on this parameter.

Parameter “Brightness of labeling LED”

This parameter is to set the brightness of labeling LED light. Options:

- OFF
- Level 1
- Level 2
- Level 3
- Level 4
- Level 5

OFF: The labeling LED will be off.

Level 1-5: The levels of the brightness, 1 to 5 means darkest to brightest.

When labeling LED lights ,if there is distinguish with the day/night mode, then the brightness of LED indicator depends on this parameter in day mode .Otherwise, the brightness of LED indicator will always depends on this parameter.

Parameter “Labeling LED display mode”

This parameter is to set the indication status of LED labeling light. Options:

Normal (always on/off)

Breath (Cyclically step dimming)

Parameter “LED brightness adjustment for Day/Night”

This parameter is to set if the LED light of the buttons and label parts will change accordingly to the day/night mode. Options:

No

Yes

NO: No matter day or night, the brightness of LED on buttons and label will not change.

Yes: It distinguish between day/night mode, and the following 4 parameters will be visible when you choose “YES”.

After bus recovery or program downloaded, the brightness of LED indicators is same as the brightness of day mode by default.

--Parameter “polarity of Day/Night mode”

This parameter is to set the object value for day/night mode conversion. Options:

Day=1/Night=0

Day=0/Night=1

Day=1/Night=0: The object “Day/Night mode receives the telegram “1”, it will turn to day mode, and “0” to night mode.

Day=0/Night=1: The object “Day/Night mode receives the telegram “0”, it will turn to day mode, and “1” to night mode.

--Parameter “Day/Night mode need send read request when bus recovery”

This parameter is to set whether the object "Day / Night mode" sends a read request after bus recovery or program downloaded. Options:

No

Yes

No: Do not send.

Yes: Send a read request, the LED will indicate accordingly to the brightness of day / night mode. If there is no response, then it indicates in day mode.

--Parameter “Status LED brightness when it is night”

This parameter is to set the brightness of LED indicator light when it is night. Options:

OFF
Level 1
Level 2
Level 3
Level 4
Level 5

OFF: The LED doesn't light.

Level 1-5: The levels of the brightness, 1 to 5 means darkest to brightest.

Parameter “Labeling LED brightness when it is night”

This parameter is to set the brightness of labeling LED light when it is night. Options:

OFF
Level 1
Level 2
Level 3
Level 4
Level 5

OFF: The LED doesn't light.

Level 1-5: The levels of the brightness, 1 to 5 means darkest to brightest.

Parameter “LED status object need send read request when bus recovery”

This parameter is to set whether the LED object on the buttons will send a read request after bus recovery or program downloaded. Optional:

No
Yes

No: Do not send. And the following parameter “Initial LED color” is visible when you choose “No”.

Yes: Send a read request. And the LED will indicate accordingly to the responded value.

Parameter “Initial LED color”

This parameter is visible when you choose “No” in the parameter “LED status object need send read request when bus recovery”, it is to set the initial LED colors of the buttons. Options:

No
As color as object value “0”

No: No indication.

As color as object value “0”: To indicate accordingly to the colors when LED object value is 0. If the function of LED x selects "control by external object, and 1byte" or "Indicate button press", there is no indication.

Parameter “Button description”

It describes the location of the buttons:

- Button 1 location: Left of Rocker 1
- Button 2 location: Right of Rocker 1
- Button 3 location: Left of Rocker 2
- Button 4 location: Right of Rocker 2
- Button 5 location: Left of Rocker 3
- Button 6 location: Right of Rocker 3
- Button 7 location: Left of Rocker 4
- Button 8 location: Right of Rocker 4

4.2 Independent Button Mode

In this way, the application of buttons on the left and right sides are not related. In this case, the parameter setting and communication object of the 2 buttons are independent. For example, you can send the button on left side for switching, and the right side, you can allocate other functions listed in ETS.

4.2.1 “Switch” Function

“Switch” Parameter Setting Interface is shown as in Fig.4.2, with this application, the users can press or release the button to send a switch telegram.

General	Function of the channel	Switch
Button 1	Distinction between long and short operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
Button 2	Long operation after(*0.1s)	5
LED	Reaction on short operation or press the button	TOGGLE
Temperature measurement	Reaction on long operation or release the button	no action
Logic function	Disable function	<input type="radio"/> disable <input checked="" type="radio"/> enable
Event Group setting	Trigger value of disable object	<input type="radio"/> disable=1/enable=0 <input checked="" type="radio"/> disable=0/enable=1
Version		

Fig. 4.2 Parameter Setting Page “Button x- Switch”

Parameter “Distinction between long and short operation”

This parameter is to set if to choose “distinction between long and short operation”. If choose “Yes”, you should press it for certain time, so it can be identified as long operation and will act accordingly.

--Parameter “Long operation after (*0.1s) ”

This parameter can be seen under “Distinction between long and short operation”, you can set the valid time for long operation. So, when you press longer than the time set here, it will be identified as long operation, otherwise, it will be taken as short operation. Options: 3...25

Parameter “Reaction on short operation or press the button” / “Reaction on long operation or release the button”

You can set the operation to be performed while pressing the button / release button or during long / short operation. When the input is confirmed, the object value will be updated immediately. Options:

No action
ON
OFF
TOGGLE

“No action”: No telegram to be sent.

“ON”: Send telegram for on.

“OFF”: Send telegram for off.

“TOGGLE”: Each operation will switch between on and off. For example, if the last telegram was sent (or received) for on, then the next operation will trigger a telegram for off. When the switch is operated again, it will send a telegram for on etc., So the switch will always remember the previous state and covert to opposite value during next operation.

Parameter “Disable function”

This parameter is to set whether to enable the disable function of the buttons. Options

Disable
Enable

If choose “Enable”, then you can enable or disable the button function through objects. It is enabled by default.

This parameter will not be illustrated in next chapters, the usage is similar.

--Parameter “Trigger value of disable object”

This parameter is set the trigger value of disable/enable the buttons. Options:

Disable=1/enable=0
Disable=0/enable=1

This parameter will not be illustrated in next chapters; the usage is similar.

4.2.2 “Switch/Dimming” Function

“Switch/Dimming” parameter setting is shown in fig. 4.3.

General	Function of the channel	Switch/Dimming
Button 1	Long operation after(*0.1s)	5
Button 2	Reaction on short operation	TOGGLE
LED	Reaction on long operation	brighter/darker
Temperature measurement	Dimming mode	<input type="radio"/> Start-stop-Dimming <input checked="" type="radio"/> Steps dimming
Logic function	Brightness change on every sent	12.5%
Event Group setting	Interval of Tele.cyclic send(*0.1s,0=send once)	0
Version	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig 4.3 Parameter Setting Page “Button x- Switch/Dimming”

Parameter “Long operation after (*0.1s) ”

This parameter is used to define the time for a long operation. If operation time is longer than the time set here, the operation will be identified as long operation, otherwise as short operation.

Option: 3..25

Parameter “Reaction on short operation”

This parameter is used to define the value sent by short operation, Options:

- No action*
- ON*
- OFF*
- TOGGLE*

“*No action*”: no telegram sent to the bus.

“*ON*”: ON telegram sent to the bus.

“*OFF*”: OFF telegram sent to the bus.

“*TOGGLE*”: every operation is alternately ON or OFF.

Parameter “Reaction on long operation”

This parameter is used to send the relative dimming value (up or down) during long operation, releasing the button will stop the dimming, Options:

- Brighter*
- Darker*
- Brighter/darker*

“Brighter”: the dimming up value will be sent

“Darker”: the dimming down value will be sent

“Brighter/Darker”: dimming up and down will be sent alternately.

Note: In “TOGGLE” mode of this parameter setting, the value sent will be linked. For example, if the last value is switching on status, then it will be dimmed down in next dimming operation; if the last value is switching of, then it will be dimmed down in next dimming operation.

Parameter “Dimming mode”

This parameter is used to set the way of relative dimming, to define whether the dimming is a start-stop one or step one, Options:

Start-stop dimming

Step dimming

If “Start-stop dimming” is used, the dimming mode will be start-stop, i.e. a dimming up or down telegram will be sent when the dimming starts, and a stop telegram will be sent when dimming ends. Here the dimming telegram will not be sent cyclically.

If “Step dimming” is used, the dimming mode will be a step one and the dimming telegram will be sent cyclically. When dimming ends, a stop dimming telegram will be sent immediately.

Parameter “Brightness change on every sent”

Under Step dimming mode, this parameter is used to set a cyclically sending dimming telegram which changes the brightness percentage, Options:

100%

50%

.....

1.56%

Parameter “Interval of Tele. Cyclic send (*0.1s, 0=send once) ”

Under Step dimming mode, this parameter is used to set intervals of two cyclically sending dimming telegram, the range is from 0 to 25, 0 means the telegram will be sent once only.

4.2.3 “Value/Forced output” Function

“Value/Force output” parameter setting page is shown as fig. 4.4.

General	Function of the channel	Value/Forced output
Button 1	Distinction between long and short operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
Button 2	Long operation after(*0.1s)	5
LED	Reaction on short operation or press the button	1bit value[0.1]
Temperature measurement	Output value[0.1]	0
Logic function	Reaction on long operation or release the button	2bit value[0..3]
Event Group setting	Output value[0.3]	0
Version	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.4 Parameter Setting Page “Button x- Value/Forced output”

Parameter “Distinction between long and short operation”

This parameter defines whether the button use long/short operation or not. If “yes”, the operation must be long/short enough to be recognized as long/short operation, then long/short operation command will be executed, Options:

- Yes
- No

Parameter “Long operation after (*0.1s) ”

This parameter is used to distinguish long/short operation, here the long operation activation time can be set. In operation when the button is pressed longer than the time set here, it will be recognized as long operation, or else short operation.

Parameter “Reaction on short operation or press the button”/ “Reaction on long operation or release the button”

This parameter is used to set the data type sent when button is pressed/released, Options:

- No reaction
- 1bit value [0...1]
-
- 2 byte value [0...65535]

Parameter “Output value[...]”

This parameter is used to define the data value sent after operation, range of the value is defined by the above parameter data type.

4.2.4 “Scene control” Function

“Scene control” parameter setting page is shown in fig. 4.5.

General	Function of the channel	Scene control
Button 1	Distinction between long and short operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
Button 2	Long operation after(*0.1s)	5
LED	Reaction on short operation or press the button	Recall scene
Temperature measurement	Scene number[1..64]	Scene NO.1
Logic function	Reaction on long operation or release the button	Store scene
Event Group setting	Scene number[1..64]	Scene NO.2
Version	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.5 Parameter Setting Page “Button x- Scene control”

Parameter “Distinction between long and short operation”

This parameter defines whether the button use long/short operation or not. If “yes”, the operation must be long/short enough to be recognized as long/short operation, then long/short operation command will be executed, Options:

- Yes
- No

Parameter “Long operation after (*0.1s) ”

This parameter is used to distinguish long/short operation, here the long operation activation time can be set. In operation when the button is pressed longer than the time set here, it will be recognized as long operation, or else short operation, Options: 3..25.

Parameter “Reaction on short operation or press the button” / “Reaction on long operation or release the button”

This parameter is used to set the reaction for the scene use or storage when button is pressed/released, Options:

- No reaction
- Recall scene
- Store scene

Parameter “Scene number(1..64)”

This parameter is used to set the scene number, range NO.1~64 is correspondent to telegram 0~63.

4.2.5 “Shutter control” Function

“Shutter control” parameter setting is shown in fig. 4.5.

General	Function of the channel	Shutter Control
Button 1	Long operation after(*0.1s)	5
Button 2	Reaction on short operation	Stop(Adjust Up/Down)
LED	Reaction on long operation	Up/Down
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.6 Parameter Setting Page “Button x- Shutter control”

Parameter “Long operation after (*0.1s) ”

This parameter is used to set the activation time of long operation. If the button is pressed longer than the time set here, the operation will be defined as long operation, or else short operation, Options: 3..25.

Parameter “Reaction on short/long operation ”

This Parameter is used to set the actions when the button is operated in short/long operation, Options:

- No action*
- Up*
- Down*
- Up/Down*
- Stop (Adjust Up)*
- Stop (Adjust Down)*
- Stop (Adjust Up/Down)*

“No action”: no action is performed.

“Up”: the shutter/blinds will be opened or moved up.

“Down”: the shutter/blinds will be closed or moved down.

“Up/Down”: alternately open/close or move up/down the shutter/blinds

“Stop (Adjust Up)”: stop the shutter movement or move up one angle of blinds.

“Stop (Adjust Down)”: or move down the angle of blinds.

“Stop (Adjust Up/Down)”: stop the shutter movement or move up/down the angle of blinds alternately.

Parameter “Interval of Tele. Cyclic send (*0.1s, 0=send once) ”

This parameter is visible when last one is chosen as “Stop...”, it is used to set the time interval of cyclical blinds angle adjustment telegram sent, Options are 0..25, means once only.

4.2.6 “Shift register” Function

“Shift register” parameter setting page is shown in fig. 4.7, this function can send value by the way of shift register.

General	Function of the channel	Shift register
Button 1	Shift type	<input checked="" type="radio"/> Shift by step value <input type="radio"/> Shift without step value
Button 2	Value begin with	0
LED	Value end with(must be larger than value begin with)	10
Temperature measurement	Step size	2
Logic function	Direction	<input checked="" type="radio"/> From lowest to highest <input type="radio"/> From highest to lowest
Event Group setting	Reset function	<input checked="" type="radio"/> Disable <input type="radio"/> Enable by long operation
Version	Reaction on press the button	<input type="radio"/> No reaction <input checked="" type="radio"/> Send shift value
	Reaction on release the button	<input checked="" type="radio"/> No reaction <input type="radio"/> Send shift value
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.5 Parameter Setting Page “Button x- Shift register”

Parameter “Shift type”

This parameter is used to set the shift type, whether shift by step value or without step value, Options:

- Shift by step value*
- Shift without step value*

“*Shift by step value*”: here the starting value and stopping value of shift can be set, the value increased (from low to high) or decreased (from high to low) from every shift can also be set.

“*Shift without step value*”: when there’s no step value, the actual value sent by each shift can be set (max. 10 value), in every operation one value will be sent.

Parameter “Value begin with”

This parameter is available when the “Shift by step value” is activated. It is used to set the starting value of the shift, Options: 0..240.

Parameter “Value end with (must greater than the begin value)”

This parameter is available when the “Shift by step value” is activated. It is used to set the stopping value of the shift, Options: 1..250.

The stopping value must be larger than begin value.

Parameter “Step size”

This parameter is available when the “Shift by step value” is activated. It is used to set the increase (from low to high) or decrease (from high to low) value, Options: 0...240.

Parameter “Shift number”

This parameter is available when “Shift without step value” is activated. It is used to set number of shift, with maximum 10 value, Options: 1/2/.../10.

Setting the value sent from each shift in the following parameters:

Parameter “Value 1...10”

This parameter is used to set the value of every shifting operation, Options: 0..255

Parameter “Direction”

This parameter is used to set the shift direction, Options:

From lowest to highest
From highest to lowest

“*From lowest to highest*”: shift from low to high, e.g. from starting value to stopping value, or value 1 to value 10; when it reaches stopping value or value 10, the shift will start once more from starting value or value 1.

“*From highest to lowest*”: shift from high to low, e.g. from stopping value to starting value, or value 10 to value 1; when it reaches starting value or value 1, the shift will start once more from stopping value or value 10.

“*From lowest to highest*”, for example from ending value to beginning value or from Value 10 to Value 1.

After reaching the beginning value or value 1, the shifting will start again from the ending value or value 10.

Parameter “Reset function”

This parameter is used to set the possibility of enable/disable shift reset function, Options:

Disable
Enable by long operation

“*Disable*”: not possible to reset shift

“*Enable by long operation*”: possible to reset shift by long operation, when reset, shift will start new.

Parameter “Reaction on press/release the button”

This parameter is available when the shift reset function is disabled. It is used to define whether the shift operation will be effected when the button is pressed/released, Options:

No reaction
Send shift value

Parameter “Long operation after (*0.1s) ”

This parameter is available when the shift reset function is enabled. It is used to set the effective time of long operation. So when the button is pressed for longer time than time set here, it will be defined as long operation, or else short operation, Options: 3..25.

4.2.7 “RGB dimming” Function

Parameter window “RGB dimming” can be shown in Fig. 4.8.

General	Function of the channel	RGB dimming
Button 1	RGB strip type	<input checked="" type="radio"/> RGB <input type="radio"/> RGBW
Button 2	Object type	<input checked="" type="radio"/> 1X3byte <input type="radio"/> 3X1byte
LED	Distinction between long and short operation	<input checked="" type="radio"/> No <input type="radio"/> Yes
Temperature measurement	Operation when press the button	
Logic function	Red Value	0
Event Group setting	Green Value	1
Version	Blue Value	2
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.8 Parameter Setting Page “Button x- RGB dimming” (1)

General	Function of the channel	RGB dimming
Button 1	RGB strip type	<input type="radio"/> RGB <input checked="" type="radio"/> RGBW
Button 2	Object type	<input checked="" type="radio"/> 1X6byte <input type="radio"/> 4X1byte
LED	Distinction between long and short operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
Temperature measurement	Long operation after(*0.1s)	5
Logic function	Operation when press the button	
Event Group setting	Red Value	0
Version	Green Value	1
	Blue Value	2
	White Value	3
	Operation when long press the button	
	Red Value	4
	Green Value	5
	Blue Value	6
	White Value	7
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.8 Parameter Setting Page “Button x- RGBW dimming” (2)

Parameter “RGB strip type”

The parameter is used to set the type of RGB strip lights, Options:

RGB
RGBW

RGB: Apply to adjust RGB these three colors lights;

RGBW: Apply to adjust RGBW these four colors lights.

Parameter “object type”

The parameter is used to object type, Options:

Applicable to RGB type:

1x3byte Perform the RGB dimming by a 3byte object
3x1byte Execute the RGB dimming by three 1byte objects

Applicable to RGBW type:

1x6byte Perform the RGBW dimming by a 6byte object
4x1byte Execute the RGBW dimming by four 1byte objects

Parameter “Distinction between long and short operation”

The parameter is used to set the operation of rocker switch whether to distinguish long or short operation. If selecting the “yes” option, long or short operation can be confirmed only after a certain amount of time, and the contact will execute setup actions. Options:

Yes
No

——Parameter “Long operation after (*0.1s) ”

The parameter is visible when distinguishing the long and short operation, and set the valid time for long operation here. Therefore, when the operating time of rocker switch surpasses the setting time here, the operation is defined as long operation, otherwise, it’s considered as short operation. Options: 3..25

Parameter “Operation when press/long press the button—— Red/ Green/Blue/White Value (0..255)”

When setting the operational button or long/short operation here, the brightness value of sending various colors of strip lights is: 0...255

4.2.8 “Multiple operation” Functions

Parameter setting interface of “Multiple operation” can be shown in fig. 4.9. Multiple operation functions are set here, with the application, different predefined values can be sent out and different types of functions can be invoked for an operation of the rocker switch. Max. 4 different objects value can be set for each rocker switch. Parameter is described as below:

General	Function of the channel	Multiple operation
Button 1	Distinction between long and short operation	<input checked="" type="radio"/> No <input type="radio"/> Yes
Button 2	Object type for object1	1Bit_On/Off
LED	Function of press the button	TOGGLE
Temperature measurement	Object type for object2	1Bit_Up/Down
Logic function	Function of press the button	Up/Down
Event Group setting	Object type for object3	1Byte_RecallScene
Version	Function of press the button	<input type="radio"/> No reaction <input checked="" type="radio"/> Send Value
	Value 1(Scene NO.)	Scene NO.1
	Object type for object4	1Byte_Percentage
	Function of press the button	<input type="radio"/> No reaction <input checked="" type="radio"/> Send Value
	Value 1(Percentage)	30
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.9 Parameter Setting Page “Button x- Multiple Operation” (no distinctions between long & short operation)

General	Function of the channel	Multiple operation
Button 1	Distinction between long and short operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
Button 2	Long operation after(*0.1s)	5
LED	Object type for object1	1Bit_On/Off
Temperature measurement	Function of short operation	TOGGLE
Logic function	Function of long operation	TOGGLE
Event Group setting	Object type for object2	1Bit_Up/Down
Version	Function of short operation	Up/Down
	Function of long operation	Up/Down
	Object type for object3	1Byte_RecallScene
	Function of short operation	<input type="radio"/> No reaction <input checked="" type="radio"/> Send Value
	Value 1(Scene NO.)	Scene NO.1
	Function of long operation	<input type="radio"/> No reaction <input checked="" type="radio"/> Send Value
	Value 2(Scene NO.)	Scene NO.2
	Object type for object4	1Byte_Percentage
	Function of short operation	<input type="radio"/> No reaction <input checked="" type="radio"/> Send Value
	Value 1(Percentage)	30
	Function of long operation	<input type="radio"/> No reaction <input checked="" type="radio"/> Send Value
	Value 2(Percentage)	100

Fig. 4.9 Parameter Setting Page “Button x- Multiple Operation” (Distinctions of Long & Short Operation)

Parameter “Distinction between long and short operation”

The parameter is used to set the operation of rocker switch by whether to distinguish long & short operation. If selecting “yes”, long or short operation can be confirmed only after operating for a certain amount of time, and the contact point will execute the setup actions. Options:

Yes
No

——Parameter “Long operation after (*0.1s) ”

The parameter is visible when distinguishing the long and short operation, and set the valid time for long operation here. Therefore, when the operating time of rocker switch surpasses the setting time here, the operation is defined as long operation, otherwise, it’s considered as short operation. Options: 3..25

Parameter “Object type for object x(x=1..4)”

Setting here when pressing rocker switch or long/short operation, the data type of sending out. Options:

Disable
1Bit_On/Off
.....
1Byte_Unsigned value

——Parameter “Function of press the button/ Function of short operation/ Function of long operation”

Setting the specific values of sending here when executing the operation, either no action or sending value (the specific value will be set in next parameter).

——Parameter “Value 1/2 (...) ”

The parameter is visible when object type is selecting "1byte_RecallScene" "1byte_StoreScene" "1byte_Percentage" "1byte_Unsigned value". It’s used to set sending values when executing operations. The range of value is up to the data type selected by the parameter before last one.

4.2.9 “Delay mode” Function

Parameter window of “Delay mode” can be shown in fig. 4.10. It’s used to set delay mode function here. Sending a value or none when operating, then delaying for a period, another value will be sent out.

General	Function of the channel	Delay mode
Button 1	Distinction between long and short operation	<input checked="" type="radio"/> No <input type="radio"/> Yes
Button 2	Object type for press the button	1Bit_On/Off
LED	Send mode	No action when press,delay then send value1
Temperature measurement	Delay time *1s	10
Logic function	Value1	<input checked="" type="radio"/> 0 <input type="radio"/> 1
Event Group setting	Value2	<input type="radio"/> 0 <input checked="" type="radio"/> 1
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig.4.10 Parameter Setting Page “Button x- Delay mode” (no distinction between long & short operation)

General	Function of the channel	Delay mode
Button 1	Distinction between long and short operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
Button 2	Long operation after(*0.1s)	5
LED	Object type for short operation	1Bit_On/Off
Temperature measurement	Send mode	No action when press,delay then send value1
Logic function	Delay time *1s	10
Event Group setting	Value1	<input checked="" type="radio"/> 0 <input type="radio"/> 1
Version	Value2	<input type="radio"/> 0 <input checked="" type="radio"/> 1
	Object type for long operation	4Bit_Dimming
	Send mode	No action when press,delay then send value1
	Delay time *1s	10
	Value1	1
	Value2	0
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig.4.10 Parameter Setting Page “Button x- Delay Mode” (Distinction between long & short operation)

Parameter “Distinction between long and short operation”

The parameter is used to set the operation of rocker switch whether to distinguish long or short operation. If choosing “yes”, the operation will be confirmed only after operating for a certain amount of time, and then the

contact point will execute the setup actions. Options:

Yes
No

——Parameter “Long operation after (*0.1s) ”

The parameter is visible when distinguishing the long and short operation, and setting the valid time for long operation here. Therefore, when the operating time of rocker switch surpasses the setting time here, the operation is defined as long operation, otherwise, it's considered as short operation. Options: 3..25

Parameter “Object type of press the button/ Object type of short operation/ Object type of long operation”

Setting here when pressing rocker switch or long/short operation, the data type of sending out. Options:

Disable
1Bit_On/Off
4Bit_Dimming
1Byte_Unsigned value

——Parameter “Send mode”

Setting the sending mode here. Options:

No action when press, delay then send value 1
No action when press, delay then send value 2
Send value 1 when press, delay then send value 2
Send value 2 when press, delay then send value 1

——Parameter “Delay time*1s”

Setting delay time here. Options: 0..6500s

——Parameter “value1/2[...]”

Setting the data value 1/2 to send. The range of value is up to the selected data type.

4.3 Linked button Mode

In this working mode, the application of the left/right (up/down) side of the push button are linked.

The parameter settings of each function are as follows:

4.3.1 “Switch” Function

The parameter setting page of “Switch” is shown in figure 4.11.

General	Function of the channel	Switch
Rocker 1	Distinction between long and short operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
LED	Long operation after(*0.1s)	5
Temperature measurement	Reaction on short operation or press the button (for Left of Rocker)	TOGGLE
Logic function	Reaction on long operation or release the button (for Left of Rocker)	no action
Event Group setting	Reaction on short operation or press the button (for Right of Rocker)	TOGGLE
Version	Reaction on long operation or release the button (for Right of Rocker)	no action
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.11 Parameter Setting Page “Rocker x- Switch”

Parameter “Distinction between long and short operation”

The parameter setting is used to distinguish whether the operation is long or short. If “yes” is selected, then the operation should be long enough to be distinguished for long or short, thereupon the contact will perform selected configuration.

Parameter “Long operation after (*0.1s) ”

This parameter is used to distinguish long/short operation, here the long operation activation time can be set. In operation when the button is pressed longer than the time set here, it will be recognized as long operation, or else short operation.

Parameter “Reaction on short operation or press the button” / “Reaction on long operation or release the button” (for Left/Right of Rocker)

This parameter is used to set the reaction for the press/release or short/long operation of the button. When input is confirmed, the object value will be updated immediately, Options:

No action
ON
OFF

TOGGLE

“No action”: no telegram will be sent

“ON”: ON telegram will be sent

“OFF”: OFF telegram will be sent

“TOGGLE”: each operation is switching between ON and OFF, for example, if an ON telegram was last sent out (or received), then the next operation of switch will trigger an OFF telegram. When the switch is operated again, an ON telegram will be sent out, etc. So, the switch always remembers the last state and then switches over to opposite value.

4.3.2 “Switch/Dimming” Function

“Switch/Dimming” parameter setting page is shown in figure 4.12.

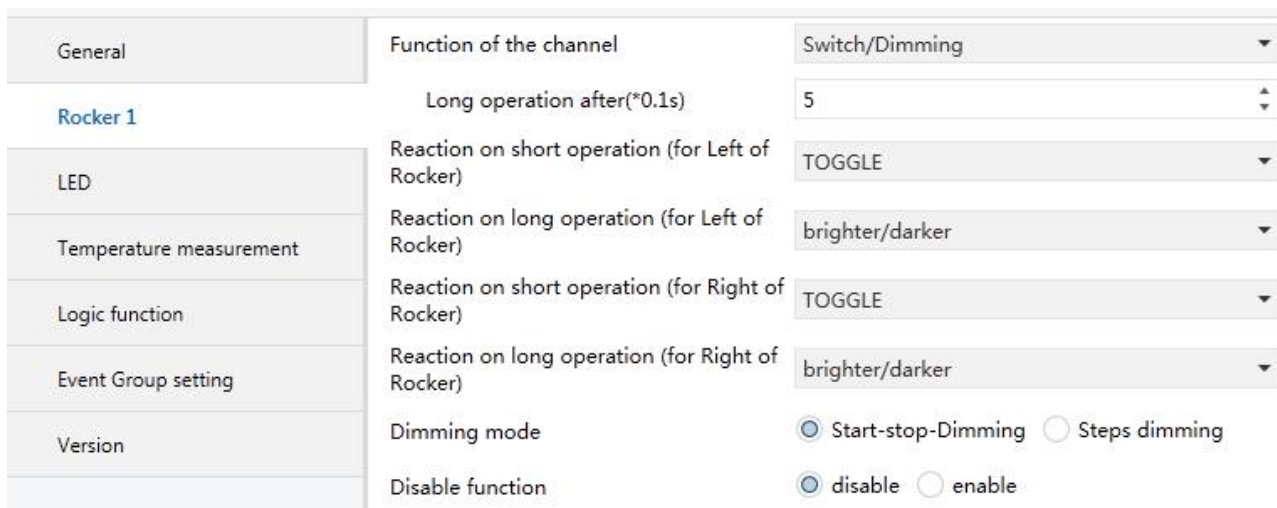


Fig. 4.12 Parameter Setting Page “Rocker x- Switch/Dimming”

Parameter “Long operation after (*0.1s) ”

This parameter is used to distinguish long/short operation, here the long operation activation time can be set. In operation when the button is pressed longer than the time set here, it will be recognized as long operation, or else short operation, Options 3..25.

Parameter “Reaction on short operation (for Left/Right of Rocker) ”

This parameter is used to setup the value of switch in short operation, Options:

- No action*
- ON*
- OFF*
- TOGGLE*

“No action”: no telegram will be sent

“ON”: ON telegram will be sent

“OFF”: OFF telegram will be sent

“TOGGLE”: each operation will ON or OFF alternately

Parameter “Reaction on long operation (for Left/Right of Rocker) ”

This parameter is used to setup the relative dimming value sent in long operation, brighter or darker, stop dimming when release the button, Options:

No reaction
Brighter
Darker
Brighter/Darker

“No action”: no telegram will be sent

“Brighter”: by long operation a dimming up telegram will be sent

“Darker”: by long operation a dimming down telegram will be sent

“Brighter/Darker”: every operation will switch from brighter and darker alternately

Note: In the parameter setting of switch and relative dimming, when there’s a “brighter/darker” option, there will be a linked relation between them, e.g. if the switch object receives an ON telegram, it will dim “darker” in the next dimming. If it receives an OFF telegram, it will dim brighter when dimming.

Parameter “Dimming mode”

This parameter is used to set the way of relative dimming, to define whether the dimming is a start-stop one or step one, Options:

Start-stop dimming
Step dimming

If “Start-stop dimming” is used, the dimming mode will be start-stop, i.e. a dimming up or down telegram will be sent when the dimming starts, and a stop telegram will be sent when dimming ends. Here the dimming telegram will not be sent cyclically.

If “Step dimming” is used, the dimming mode will be a step one and the dimming telegram will be sent cyclically. When dimming ends, a stop dimming telegram will be sent immediately.

Parameter “Brightness change on every sent”

Under Step dimming mode, this parameter is used to set a cyclically sending dimming telegram which changes the brightness percentage, Options:

100%
50%
.....

1.56%

Parameter “Interval of Tele. Cyclic send (*0.1s, 0=send once) ”

Under Step dimming mode, this parameter is used to set intervals of two cyclically sending dimming telegram, the range is from 0 to 25, 0 means the telegram will be sent once only.

4.3.3 “Scene control” Function

“Scene control” parameter setting page is shown in fig. 4.13.

Fig. 4.13 Parameter Setting Page “Button x- Scene control”

Parameter “Distinction between long and short operation”

This parameter defines whether the button use long/short operation or not. If “yes”, the operation must be long/short enough to be recognized as long/short operation, then long/short operation command will be executed, Options:

- Yes
- No

Parameter “Long operation after (*0.1s) ”

This parameter is used to distinguish long/short operation, here the long operation activation time can be set. In operation when the button is pressed longer than the time set here, it will be recognized as long operation, or else short operation, Options: 3..25.

Parameter “Reaction on short operation or press the button” / “Reaction on long operation or release the button”

This parameter is used to set the reaction for the scene use or storage when button is pressed/released, Options:

- No reaction
- Recall scene
- Store scene

Parameter “Scene number(1..64)”

This parameter is used to set the scene number, range NO.1~64 is correspondent to telegram 0~63.

4.3.4 “Shutter control” Function

“Shutter control” parameter setting page is shown in fig. 4.14.

General	Function of the channel	Shutter Control
Rocker 1	Long operation after(*0.1s)	5
LED	Reaction on short operation (for Left of Rocker)	Stop(Adjust Up/Down)
Temperature measurement	Reaction on long operation (for Left of Rocker)	Up/Down
Logic function	Reaction on short operation (for Right of Rocker)	Stop(Adjust Up/Down)
Event Group setting	Reaction on long operation (for Right of Rocker)	Up/Down
Version	Interval of Tele.cyclic send(*0.1s,0=send once)	0
	Disable function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.14 Parameter Setting Page “Button x- Shutter control”

Parameter “Long operation after (*0.1s) ”

This parameter is used to set the activation time of long operation. If the button is pressed longer than the time set here, the operation will be defined as long operation, or else short operation, Options: 3..25.

Parameter “Reaction on short/long operation”

This Parameter is used to set the actions when the button is operated in short/long operation, Options:

- No action
- Up
- Down
- Up/Down
- Stop (Adjust Up)
- Stop (Adjust Down)
- Stop (Adjust Up/Down)

“No action”: no action is performed.

“Up”: the shutter/blinds will be opened or moved up.

“Down”: the shutter/blinds will be drawn or moved down.

“Up/Down”: alternately open/close or move up/down the shutter/blinds

“Stop (Adjust Up)”: stop the shutter movement or move up one angle of blinds.

“Stop (Adjust Down)”: or move down the angle of blinds.

“Stop (Adjust Up/Down)”: stop the shutter movement or move up/down the angle of blinds alternately.

Parameter “Interval of Tele. Cyclic send (*0.1s, 0=send once) ”

This parameter is visible when last one is chosen as “Stop...”, it is used to set the time interval of cyclical blinds angle adjustment telegram sent, Options are 0..25, means once only.

4.4 Parameter window “LED function”

This parameter is used to set the LED function.Each button provide a LED indication.Each LED can be set separately.Take one of the LED for detailed explanation.

General	LED 1 function	Control by button switch object
Rocker 1	The object value='0',LED is	OFF
LED	The object value='1',LED is	Red
Temperature measurement	LED 2 function	Control by external object
Logic function	External object datatype	<input type="radio"/> 1bit <input checked="" type="radio"/> 1byte
Event Group setting	Threshold value is	50
Version	If object value<threshold value,LED is	OFF
	If object value=threshold value,LED is	Blue
	If object value>threshold value,LED is	OFF

Fig. 4.14 Parameter Setting Page “LED”

Parameter“LED X function”

LED function setting, Options:

- Disable*
- Control by button switch object*
- Control by external object*
- Indicate button press*

“Disable” , deactivating LED function;

“Control by button switch object” ,the LED indication is determined by the switch object of the button,no matter there is long/short operation,pressing or releasing the button;Under the switch function,it is determined by the “switch object”;Under dimming function,it is determined by the”short,switch”object.Under others function,the LED indication cannot be controlled.

“Control by external object” ,the LED indication can be controlled independently;It will be not influenced by the button functions.

“Indicate button press” ,when there is an operation of the button,the LED will flash at the set time intervals.But if the button is set “No function”,the LED will not flash.

Parameter “External object data type”

This parameter is available when LED function “Control by external object “is activated. It is used for setting the data type of the LED object, Options:

Ibit
Ibyte

Parameter “The object value =’0/1’, LED is”

This parameter is available when the LED function “Control by button switch object” or “Control by external object and Ibit”is activated.

OFF
Red
Green
Blue

Parameter “Threshold value is”

This parameter is available when the LED function “Control by external object and Ibyte”is activated. It is used for setting the threshold value of the LED indication.

Parameter “If object value<threshold value, LED is”

This parameter is available when the LED function “Control by external object and Ibyte”is activated. It is used for setting the color of the LED indication when the object value is smaller than the threshold value. The Options:

OFF
Red
Green
Blue

Parameter “If object value=threshold value, LED is”

This parameter is available when the LED function “Control by external object and Ibyte”is activated. It is

used for setting the color of the LED indication when the object value is the same with the threshold value. The

Options:

OFF
Red
Green
Blue

Parameter “If object value>threshold value, LED is”

This parameter is available when the LED function “Control by external object and lbyte”is activated. It is used for setting the color of the LED indication when the object value is larger than the threshold value. The

Options:

OFF
Red
Green
Blue

Parameter “When press the button, LED flashing time is”

This parameter is available when the LED function “Indicate button press” is activated. It is used for setting the LED flashing time when there is button operation, Options:

500ms
1s
2s
3s

It will always flash in the certain time above when the button operation detected,no matter whether the button is assigned to function or not.

Parameter “LED flashing color”

This parameter is available when the LED function “Indicate button press” is activated,.It is used for setting the LED flashing color when there is button operation,Options:

Red
Green
Blue

4.5 Parameter window “Temperature measurement”

Parameter window “Temperature measurement” can be shown in fig. 4.16. The relevant parameter of Temperature measurement can be set here.

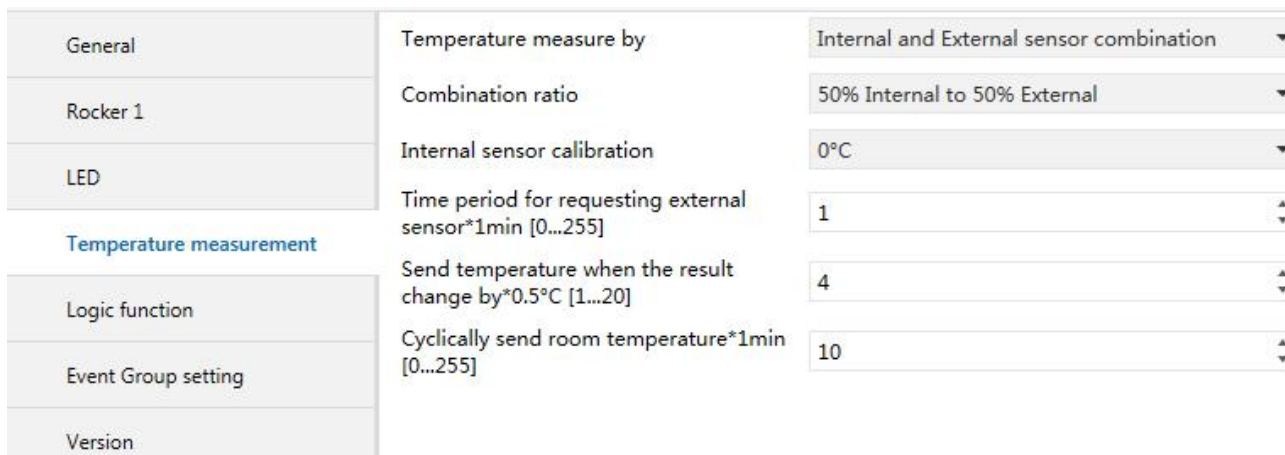


Fig. 4.16 Parameter Setting Page “Temperature measurement”

Parameter “Temperature measure by”

The Options:

- Disable*
- Internal sensor*
- Internal and External sensor combination*

If “*Internal sensor*” is activated, the internal temperature sensor of the button will measure the temperature value, then the temperature value will be sent /read to the bus by the object “Output actual temperature”

If “*Internal and External sensor combination*” is activated, the built-in temperature sensor of the button and the external sensor will measure the temperature value at the same time. The button will not have sent the actual output value to the bus if it does not receive the temperature value from the external sensor, and the reading temperature value is 0.

Parameter “Combination ratio”

Options:

- 10% Internal to 90% External*
- ...
- 90% Internal to 10% External*

This parameter is available when the “*Internal and External sensor combination*” is activated in the above parameter. It is used to set the combination ratio of the temperature value from the internal temperature sensor and

the temperature value from the KNX bus. For example, if the “40% Internal to 60% External” is activated, the temperature value from the internal sensor(A) takes 40% and the temperature value from the external sensor(A) takes 60%. Then the actual value of the sensor = (A×40%) + (B×60%)

Parameter “Internal sensor calibration”

Options:

-5 °C
...
0 °C
...
5 °C

This parameter is used for setting the calibration value from the internal temperature sensor. That is said, the temperature value measured by the internal sensor will be much close to the current environment temperature value after calibration.

Parameter “Time period for requesting external sensor*1min [0..255]”

This parameter is used for setting the reading telegram time intervals of button for the external temperature sensor, Options: 0...255

Parameter “Send temperature when the result change by*0.5°C [1...20]”

This parameter is used for setting the result change intervals of sending the current measured temperature value to the bus, Options: 1...20

Parameter “Cyclically send room temperature*1min[0...255]”

This parameter is used for setting the time intervals for the measured temperature to be sent cyclically to the bus, Options: 0.255min

The cyclical period is independently and the time is starting from the programming or resetting. It will not be influenced by the “result change”.

4.6 Parameter window “Logic function”

Parameter window “Logic function” can be shown in fig. 4.17. It can enable the Logic function. And there are 8 logic functions in total.

General	1st Logic function	<input checked="" type="radio"/> disable <input type="radio"/> enable
Rocker 1	2nd Logic function	<input checked="" type="radio"/> disable <input type="radio"/> enable
LED	3rd Logic function	<input checked="" type="radio"/> disable <input type="radio"/> enable
Temperature measurement	4th Logic function	<input checked="" type="radio"/> disable <input type="radio"/> enable
Logic function	5th Logic function	<input checked="" type="radio"/> disable <input type="radio"/> enable
Event Group setting	6th Logic function	<input checked="" type="radio"/> disable <input type="radio"/> enable
Version	7th Logic function	<input checked="" type="radio"/> disable <input type="radio"/> enable
	8th Logic function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Fig. 4.17 Parameter Setting Page “Logic function -- disable/enable”

General	Function of channel	AND
Rocker 1	Input a	Disconnected
LED	Default value	<input checked="" type="radio"/> 0 <input type="radio"/> 1
Temperature measurement	Input b	Disconnected
Logic function	Default value	<input checked="" type="radio"/> 0 <input type="radio"/> 1
1st Logic	Input c	Disconnected
Event Group setting	Default value	<input checked="" type="radio"/> 0 <input type="radio"/> 1
Version	Input d	Disconnected
	Default value	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Input e	Disconnected
	Default value	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Input f	Disconnected
	Default value	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Input g	Disconnected
	Default value	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Input h	Disconnected
	Default value	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Result is inverted	<input checked="" type="radio"/> No <input type="radio"/> Yes
	Read input object value after bus voltage recovery	<input checked="" type="radio"/> No <input type="radio"/> Yes
	Read input object value after bus voltage recovery	<input checked="" type="radio"/> No <input type="radio"/> Yes
	Output send when	<input checked="" type="radio"/> Receiving a new telegram <input type="radio"/> Every change of output object
	Send delay time: Base	None
	Factor: 1..255	1

Fig. 4.18 Parameter Setting Page “Logic function -- AND/OR/NAND/NOR/XOR”

General	Function of channel	Threshold comparator
Rocker 1	Threshold value data type	1byte
LED	Threshold value 0..255	0
Temperature measurement	If Object value < Threshold value	Do not send telegram
Logic function	If Object value = Threshold value	Do not send telegram
	If Object value != Threshold value	Do not send telegram
	If Object value > Threshold value	Do not send telegram
	If Object value <= Threshold value	Do not send telegram
	If Object value >= Threshold value	Do not send telegram
	Output send when	<input checked="" type="radio"/> Receiving a new telegram <input type="radio"/> Every change of output object
	Send delay time: Base	None
	Factor: 1..255	1

Fig. 4.19 Parameter Setting Page “Logic function -- Threshold comparator”

General	Function of channel	Format convert
Rocker 1	Function	2x1Bit-->1x2Bit
LED	Output send when	<input checked="" type="radio"/> Receiving a new telegram <input type="radio"/> Every change of output object
Temperature measurement		
Logic function		
1st Logic		
Event Group setting		

Fig. 4.20 Parameter Setting Page “Logic function -- Format convert”

Parameter “Function of channel”

This parameter is used for setting the Logic function of the channel, Options:

- Disable*
- AND*
- OR*
- NAND*
- NOR*
- XOR*
- Threshold comparator*
- Format convert*

AND/OR/NAND/NOR/XOR: These parameter is similar with the communication object. The only difference is the Logical algorithm. Take one of the logical function for detailed instruction as follows.

4.6.1 Parameter “AND/OR/NAND/NOR/XOR” Function

Parameter window “AND/OR/NAND/NOR/XOR” can be shown in fig. 4.18

Parameter “Input a/b/c/d/e/f/g/h”

This parameter is used for setting whether the logic input x will be involved in the logical operating, or normal operating or inverted operating.

Disconnected
Normal
Inverted

Disconnected: not involved in the logical operating;

Normal: Involved in the logical operating directly;

Inverted: the inverted value will be Involved in the logical operating.

Note: The “inverted operation” will not applied to the default value.

Parameter “Default value”

This parameter is used for setting the default value of the logical input x, Options:

0
1

Parameter “Result is inverted”

This parameter is used for setting whether the “inverted operation “is applied to the logical operation result, Options:

No
Yes

No: Output directly;

Yes: output the inverted value.

Parameter “Read input object value after bus voltage recovery”

This parameter is used for setting whether the reading telegram will be sent to the logical input object after the programming or resetting.

No
Yes

Parameter “Output send when”

This parameter is used for setting the conditions of sending logical operating result.

Receiving a new telegram
Every change of output object

Option “*Receiving a new telegram*”, the logical result will be sent to the bus every time when there is logical input.

Option “*Every change of output object*”, the logical result will be sent to the bus when there is changes of logical result. Note: Although there is no change of the logical result for first logical operating, the logical result will still be sent to the bus.

Parameter “Send delay time”

Base:

None
0.1s
1s
 ...
10s
25s

Factor: 1..255

This parameter is used for setting the delay time of the logical result to be sent to the bus.

Delay time = Base x Factor. If the option Base is “None”, then there is no delay.

4.6.2 "Threshold comparator" Function parameters

" Threshold comparator "Function parameter interfaces such as 4.19 As shown in

Parameter " Threshold value data byte "

Here set the threshold data types. Optional:

4bit
1byte
2byte
4byte

Parameter " Threshold value.... "

Sets the threshold, threshold value range determined by its data type: 4bit 0..15/1byte 0..255/ 2byte 0..65535 /4byte 0..4294967295

Parameter " If Object value<Threshold value "

Parameter " If Object value=Threshold value "

Parameter " If Object value!=Threshold value "

Parameter " If Object value>Threshold value "

Parameter " If Object value<=Threshold value "

Parameter " If Object value>=Threshold value "

These parameters are used to set the input threshold is less than, equal to, not equal to, greater than, less than, equal to or greater than or equal to the set threshold value, the logical result values should be sent. Options:

Do not send telegram

Send value "0"

Send value "1"

Do not send telegram: Select this option regardless of the parameters;

Send value "0"/ " 1 ": When the condition is satisfied, send telegram 0 or 1 。 If the parameter sets Options that conflict, so the final result will be considered by the last valid parameter. For example, when parameter "If Object value=Threshold value" set Send value "0", while the parameter "If Object value< =Threshold value" settings Send value "1" And so when an object value is equal to the threshold value, the logical result will be sent " 1 ".

Parameter " Output send when "

Here to set conditions for sending results of logical operations. Optional:

Receiving a new telegram

Every change of output object

Option " Receiving a new telegram "Each receives an input value; the logical result will be sent to the bus;

Option " Every change of output object "When the logic changes occur to the results, are sent to the bus. Note: when you first perform logical operations, logical operations results do not change, will also be sent.

Parameter " Send delay time "

Base:

None

0.1s

1s

...

25s

Factor: 1..255

This parameter is used to set the delay time of sending results of logical operations to the bus. Delay =Base x Factor, if the Base option to "None", there is no delay.

4.7 Parameter window " Event Group setting "

"Event Group setting" Parameter settings window as in Figure 4.21 As shown, this function is used to enable the event group, total 8 Group events feature can be set for each group and 8 Output.

General	Event Group 1 Function	<input type="radio"/> disable <input checked="" type="radio"/> enable
Rocker 1	Event Group 2 Function	<input checked="" type="radio"/> disable <input type="radio"/> enable
LED	Event Group 3 Function	<input checked="" type="radio"/> disable <input type="radio"/> enable
Temperature measurement	Event Group 4 Function	<input checked="" type="radio"/> disable <input type="radio"/> enable
Logic function	Event Group 5 Function	<input checked="" type="radio"/> disable <input type="radio"/> enable
1st Logic	Event Group 6 Function	<input checked="" type="radio"/> disable <input type="radio"/> enable
	Event Group 7 Function	<input checked="" type="radio"/> disable <input type="radio"/> enable
	Event Group 8 Function	<input checked="" type="radio"/> disable <input type="radio"/> enable

Event Group setting

4.21 Parameter interface "Event Group setting -- disable/enable"

General	Object type of output 1	1bit
Rocker 1	1->output 1 trigger scene NO. is (1~64 is active,0 is inactive)	0
LED	Object value of output 1 (0..1)	<input checked="" type="radio"/> 0 <input type="radio"/> 1
Temperature measurement	Delay time for sending [0..63]*0.1s	0
Logic function	2->output 1 trigger scene NO. is (1~64 is active,0 is inactive)	0
Event Group setting	Object value of output 1 (0..1)	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Delay time for sending [0..63]*0.1s	0
G1:Output 1 Function	3->output 1 trigger scene NO. is (1~64 is active,0 is inactive)	0
G1:Output 2 Function	Object value of output 1 (0..1)	<input checked="" type="radio"/> 0 <input type="radio"/> 1
G1:Output 3 Function	Delay time for sending [0..63]*0.1s	0
G1:Output 4 Function	4->output 1 trigger scene NO. is (1~64 is active,0 is inactive)	0
G1:Output 5 Function	Object value of output 1 (0..1)	<input checked="" type="radio"/> 0 <input type="radio"/> 1
G1:Output 6 Function	Delay time for sending [0..63]*0.1s	0

4.22 Parameter interface "G x: Output y Function"

Parameter " Event Group x Function" (x:1~8)

This parameter is used to enable Event group function. Optional:

Disable
Enable

When a event group function is enable, 8 sub Outputs configuration parameters are visible. As every event group function is the same, and each outputs of event group function is the same, so, here we have one group of one output parameter description, for example:

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

This parameter defines the set of output y data type. Optional:

1bit
1byte
2byte

Parameter " z->Output y trigger scene NO. is (1~64 is active,0 is inactive)" (z:1~6)

This parameter defines the set of output y. To define the trigger scenarios that need to execute. Each output can be triggered for up to 6 scenes, Options: 0..64,0= is not activated.

Parameter " Object value of output y (0..1/0..255/0..65535) "

Set output value, range of values, by Output y Type of data. 1bit 0..1/1byte 0..255/ 2byte 0..65535

Parameter " Delay time for send [0...63]*0.1s "

Set the delay time of sending for output value. Option: 0..63.

5. 1.Communication object description

The medium for One devices communicate with other devices on the bus is Communication object, Each communications object is detailed below.

Note: in the property column in the table below "C" Communications represents a communication object functionality is enabled, the "W" On behalf of a distribution object to rewriting across the bus, "R" On behalf of a distribution object's value can be read via the bus, "T" Represents a communication object with transfer function, "U" On behalf of a distribution object's value can be updated.

5.1 "General" Communication object description

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
49	LED brightness	Day/Night mode			1 bit	C	-	W	T	U	switch	Low
50	backlight LED brightness	on/off			1 bit	C	-	W	-	-	switch	Low

Fig. 5.1 "General" Communication partners

Object number	Function	Communication object name	Type	Property	DPT
49	Day/Night mode	LED brightness	1bit	C, W, T, U	1.001 DPT_Switch
This object is used to switch day or night mode to apply different brightness level.					
50	On/Off	Backlight LED brightness	1bit	C,W	1.001 DPT_Switch
This object is used to on/off the Panel backlight brightness.					

Table 5.1 "General" Communication object table

5.2 Button function object description

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Press/release, Switch			1 bit	C	-	W	T	U	switch	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Short operation, Switch			1 bit	C	-	W	T	U	switch	Low
12	Button 1	Long operation, Switch			1 bit	C	-	W	T	U	switch	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

"Switch" Function

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Short,Switch			1 bit	C	-	W	T	U	switch	Low
12	Button 1	Long,Dimming			4 bit	C	-	W	T	-	dimming...	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

"Switch/dimming" Function

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Short/Press,1bit value			1 bit	C	-	-	T	-	switch	Low
12	Button 1	Long/Release,2bit value			2 bit	C	-	-	T	-	switch con...	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

"Value/Forceoutput" Function

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Short/Press,scene			1 byte	C	-	-	T	-	scene con...	Low
12	Button 1	Long/Release,scene			1 byte	C	-	-	T	-	scene con...	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

"Scenecontrol" Function

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Up/Down,Blind			1 bit	C	-	-	T	-	up/down	Low
12	Button 1	Stop/Adjust,Blind			1 bit	C	-	-	T	-	step	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

"Shutter control" Function

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Register value			1 byte	C	-	W	T	-	counter p...	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

"Shift register" Function

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Red dimming value			1 byte	C	-	-	T	-	counter p...	Low
12	Button 1	Green dimming value			1 byte	C	-	-	T	-	counter p...	Low
13	Button 1	Blue dimming value			1 byte	C	-	-	T	-	counter p...	Low
14	Button 1	White dimming value			1 byte	C	-	-	T	-	counter p...	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low
11	Button 1	RGBW dimming value			6 bytes	C	-	-	T	-	RGB value 4x(0..255)	Low

11	Button 1	RGB dimming value	3 bytes	C - - T -	RGB value... Low
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“RGB dimming” Function

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Object1-On/Off			1 bit	C	-	W	T	-	switch	Low
12	Button 1	Object2-Up/Down			1 bit	C	-	W	T	-	up/down	Low
13	Button 1	Object3-SceneControl			1 byte	C	-	-	T	-	scene con...	Low
14	Button 1	Object4-Percentage			1 byte	C	-	-	T	-	percentag...	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

“Multiple operation” Function

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
11	Button 1	Press,Delay mode			1 bit	C	-	-	T	-	switch	Low
15	Button 1	Disable			1 bit	C	-	W	-	-	enable	Low

“Delay mode” Function

Fig. 5.2 Communication objects of button

Number	Function	Communication object name	Type	Property	DPT
11	Press/release, Switch	Button/Rocker X	bit	C,W, T,U	1.001 DPT_Switch
11	Short operation, Switch	Button/Rocker X	bit	C,W, T,U	1.001 DPT_Switch
12	Long operation, Switch	Button/Rocker X	bit	C,W, T,U	1.001 DPT_Switch
The communication object is used to trigger a switching operation. "Press/release" is visible when there is no distinguish for short/long operation. "Short/Long operation" is visible when there is distinguish for short/long operation.					
11	Short, Switch	Button/Rocker X	bit	C,W, T,U	1.001 DPT_Switch
The communication objects are used to trigger switch Operation. Telegram:0 – off, 1 – on					
12	Long, Dimming	Button/Rocker X	bit	C,W,T	3.007DPT_Dimming control
This communication objects triggers a dimming operation. the telegram 1~7 is to dim down, larger values of this range, smaller amplitude of dimming down , 0 is to stop dimming; while the telegram 9~15 dim up,larger values of this range, smaller amplitude of dimming up. 8 is to stop the dimming.					
11	Short/Press,1bit/2bit/4bit/1byte/2 byte value	Button/Rocker X	1bit/2bit/4bit/1byte/2byte	C,T	1.001 DPT_Switch/ 2.001 DPT_Switch control/ 3.007DPT_Dimming control/ 5.010 DPT_counter pulses/ 7.001 DPT_pulses
12	Long/Release, 1bit/2bit/4bit/1byte/2byte value	Button/Rocker X	1bit/2bit/4bit/1byte/2byte	C,T	
The communication object is used to send a fixed value, to send a range of values determined by the data type, the data type is determined by the parameter "Reaction on short operation or press the button"/ "Reaction on long operation or release the button" Set					
11	Short/Press, Scene	Button/Rocker X	1byte	C,T	18.001 DPT_SceneControl
12	Long/Release, Scene	Button/Rocker X	1byte	C,T	18.001 DPT_SceneControl
Sending a communication object 8bit Instruction calls or store scenes. Detailed 8bit the meaning of the directive. Set up a 8bit Orders for the (Binary code) : FXNNNNNN					

F: '0' Call scene; '1' For storage scenarios;

X : 0 ;

NNNNNN Scene (0... 63)。

Parameter setting Options are 1~64 Actually communication object "Scene" Corresponds to the telegram received is 0~63 。Such as parameter settings is the scene 1, Communication object "Scene" Received is the scene for 0 。 Is as follows:

Object message value	Description
0	Call scenarios 1
1	Call scenarios 2
2	Call scenarios 3
...	...
63	Call scenarios 64
128	Store scene 1
129	Store scene 2
130	Store scene 3
...	...
191	Store scene 64

11	Up/Down, Blind	Button/Rocker X	bit	C,T	1.008 DPT_up/down
This object is used to move up/down the curtain. Telegram:					
0 —— Move up the curtains / blinds					
1 —— Move down the curtains / blinds					
12	Stop/Adjust,Blind	Button/Rocker X	bit	C,T	1.007 DPT_Step
This object is used to stop the curtain moving or adjusting the shutter angle.					
11	Register value	Button X	bit	C,T	5.010 DPT_counter pulses
This address is used to send shift register value.					
11	Red dimming value	Button X	1byte	C,T	5.010 DPT_counter pulses
This object is used to send R (Red) The dimming value.					
12	Green dimming value	Button X	1byte	C,T	5.010 DPT_counter pulses
This object is used to send G (Green) The dimming value.					
13	Blue dimming value	Button X	1byte	C,T	5.010 DPT_counter pulses
This object is used to send B (Blue) The dimming value.					
14	White dimming value	Button X	1byte	C,T	5.010 DPT_counter pulses
This object is used to send W (white) The dimming value.					
11	RGB dimming value	Button X	byte	C,T	232.600 RGB value 3x(0..255)

This object is used to send RGB Tri-color lamp brightness values. Maximum is r (Red) lighting values.					
11	RGBW dimming value	Button X	6byte	C,T	251.600 DPT_Colour_RGBW
This object is used to send RGBW Four-colour light brightness value. Maximum is r (Red) lighting values.					
The encoding of the RGBW dimming value is: U8 U8 U8 U8 R8 R4 B4, Details as follow:					
6 _{MSB}	5	4	3	2	1 _{LSB}
R	G	B	W	Reserved	r r r r mR mG mB mW
UUUUUUUU	UUUUUUUU	UUUUUUUU	UUUUUUUU	00000000	0000BBBB
<p>R: Colour Level Red ;</p> <p>G: Colour Level Green;</p> <p>B: Colour Level Blue;</p> <p>W: Colour Level White;</p> <p>mR: Shall specify whether the colour information red in the field R is valid or not. , 0=not valid, 1=valid;</p> <p>mG: Shall specify whether the colour information green in the field G is valid or not. , 0=not valid, 1=valid;</p> <p>mB: Shall specify whether the colour information blue in the field B is valid or not. , 0=not valid, 1=valid;</p> <p>mW: Shall specify whether the colour information white in the field W is valid or not. , 0=not valid, 1=valid.</p>					
11	Object x-On/Off	Button X	1bit	C,W,T	1.001 DPT_Switch
	Object x-Up/Down		1bit	C,W,T	1.008 DPT_up/down
	Object x-SceneControl		1byte	C,T	18.001 DPT_SceneControl
	Object x-Percentage		1byte	C,T	5.001 DPT_Scaling
	Object x-Unsigned value		1byte	C,T	5.010 DPT_counter pulses
These objects for multiple object up and activate 4 (x=1,2,3,4), Through these objects, once, can be sent simultaneously 4 A different type of object values to the bus.					
11	Press, Delay mode	Button X	1bit/4bit/1byte	C,T	1.001 DPT_Switch 3.007 DPT_Dimming control 5.010 DPT_counter pulses
The value of this object is used to send time-delay mode of communication, there are three types of values to choose from.					
15	Disable	Button/Rocker X	bit	C,W	1.003 DPT_enable
This object is used to disable the / Enable key function.					

Table 5.2 Button Communication object table

5.3 LED Object description

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
43	LED 1	Status			1 bit	C	-	W	T	U	switch	Low
44	LED 2	Status			1 bit	C	-	W	T	U	switch	Low

Fig. 5.3 LED Object description

Number	Function	Object Name	Types	Attributes	DPT
43	Status	LED X	1bit/1byte	C,W,T,U	1.001 DPT_Switch/5.010 DPT_counter pulses
<p>This communication object is used to receive a type of 1bit / 1byte, LED indicates the state according to the received message and parameter settings.</p>					

Table 5.3 LED Object description

5.4 Temperature Measurement Object description

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
51	Temperature measurement	Output actual temperature			2 bytes	C	R	-	T	-	temperatu...	Low
52	Temperature measurement	Input external temperature			2 bytes	C	-	W	T	U	temperatu...	Low

Fig. 5.4 Temperature Measurement Object description

Number	Function	Object Name	Types	Attributes	DPT
51	Output actual temperature	Temperature measurement	2bytes	C,R,T	9.001 DPT_temperature(°C)
<p>This communication object is used to send the actual measured temperature to the bus, which is send the final result of the temperature measurement to the bus.</p>					
52	Input external temperature	Temperature measurement	2bytes	C,W,T,U	9.001 DPT_temperature(°C)
<p>This communication object is used to receive the temperature value sent by the external sensor.</p>					

Table 5.4 Temperature Measurement Object description

5.5 Logic Function Object description

5.5.1 “AND/OR/NAND/NOR/XOR” Object

Number	Name	Object Function *	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
53	1st Logic	Input a			1 bit	C	-	W	T	U	boolean	Low
54	1st Logic	Input b			1 bit	C	-	W	T	U	boolean	Low
55	1st Logic	Input c			1 bit	C	-	W	T	U	boolean	Low
56	1st Logic	Input d			1 bit	C	-	W	T	U	boolean	Low
57	1st Logic	Input e			1 bit	C	-	W	T	U	boolean	Low
58	1st Logic	Input f			1 bit	C	-	W	T	U	boolean	Low
59	1st Logic	Input g			1 bit	C	-	W	T	U	boolean	Low
60	1st Logic	Input h			1 bit	C	-	W	T	U	boolean	Low
61	1st Logic	Logic result			1 bit	C	-	-	T	-	boolean	Low

Number	Function	Object Name	Types	Attributes	DPT
53..60	Input x	1 st /.../8 th Logic	1bit	C,W,T,U	1.002 DPT_boolean
The communication object is used to receive the value of the logic Input x.					
61	Logic result	1 st /.../8 th Logic	1bit	C,T	1.002 DPT_boolean
The communication object is used to send logical result.					

5.5.1 “AND/OR/NAND/NOR/XOR” Object.

5.5.2 The Communication Object of “Threshold comparator”

Number	Name *	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
61	1st Logic	Logic result			1 bit	C	-	-	T	-	boolean	Low
53	1st Logic	Threshold value input			1 byte	C	-	W	-	U	counter p...	Low

Number	Function	Communication Object	Type	Attributes	DPT
53	Threshold value input	1 st /.../8 th Logic	4bit/1byte/ 2byte/4byte	C,W,U	3.007 DPT_Dimming control/ 5.010 DPT_counter pulses/ 7.001 DPT_pulses/ 12.001 DPT_counter pulses
This communication object for inputting the threshold value.					
61	Logic result	1 st /.../8 th Logic	1bit	C,T	1.002 DPT_boolean
This communication object for sending logic operate results. (The value which will be sent after comparing the threshold value of object input with the threshold value was set)					

5.5.2 The Function of “Threshold comparator”

5.5.3 The Communication Object “Format convert”

	Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	53	1st Logic	Input 1bit-bit0			1 bit	C	-	W	-	U	boolean	Low
■	54	1st Logic	Input 1bit-bit1			1 bit	C	-	W	-	U	boolean	Low
■	61	1st Logic	Output 2bit			2 bit	C	-	-	T	-	switch con...	Low

“2x1bit --> 1x2bit” function: to change 2 of 1 bit’s value to 1 of 2 bit’s value, such as: Input bit1=1, bit0=0--> Output 2bit=2

	Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	53	1st Logic	Input 1bit-bit0			1 bit	C	-	W	-	U	boolean	Low
■	54	1st Logic	Input 1bit-bit1			1 bit	C	-	W	-	U	boolean	Low
■	55	1st Logic	Input 1bit-bit2			1 bit	C	-	W	-	U	boolean	Low
■	56	1st Logic	Input 1bit-bit3			1 bit	C	-	W	-	U	boolean	Low
■	57	1st Logic	Input 1bit-bit4			1 bit	C	-	W	-	U	boolean	Low
■	58	1st Logic	Input 1bit-bit5			1 bit	C	-	W	-	U	boolean	Low
■	59	1st Logic	Input 1bit-bit6			1 bit	C	-	W	-	U	boolean	Low
■	60	1st Logic	Input 1bit-bit7			1 bit	C	-	W	-	U	boolean	Low
■	61	1st Logic	Output 1byte			1 byte	C	-	-	T	-	counter p...	Low

“8x1bit --> 1x1byte” function: to change 8 of 1bit’s value to 1 of 1 byte’s value, such as: Input bit2=1, bit1=1, bit0=1,the others are 0--> Output 1byte=7。

	Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	53	1st Logic	Input 1byte			1 byte	C	-	W	-	U	counter p...	Low
■	61	1st Logic	Output 2byte			2 bytes	C	-	-	T	-	pulses	Low

“1x1byte --> 1x2byte” function: to change 1 of 1 byte’s value to 1 of 2 byte’s value, such as: Input 1byte=125--> Output 2byte=125, the data type changed, even the same value.

	Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	53	1st Logic	Input 1byte-low			1 byte	C	-	W	-	U	counter p...	Low
■	54	1st Logic	Input 1byte-high			1 byte	C	-	W	-	U	counter p...	Low
■	61	1st Logic	Output 2byte			2 bytes	C	-	-	T	-	pulses	Low

“2x1byte --> 1x2byte” function: to changed 2 of 1 byte’s value to 1 of 2 byte’s value, such as: Input 1byte-low = 255 (\$FF), Input 1byte-high = 100 (\$64) --> Output 2byte = 25855 (\$64 FF)

	Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	53	1st Logic	Input 2byte-low			2 bytes	C	-	W	-	U	pulses	Low
■	54	1st Logic	Input 2byte-high			2 bytes	C	-	W	-	U	pulses	Low
■	61	1st Logic	Output 4byte			4 bytes	C	-	-	T	-	counter p...	Low

“2x2byte --> 1x4byte” function: to changed 2 of 2 byte’s value to 1 of 4 byte’s value, such as: Input 2byte-low = 65530 (\$FF FA), Input 2byte-high = 32768 (\$80 00)--> Output 2byte = 2147549178 (\$80 00 FF FA)

Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
53	1st Logic	Input 1byte			1 byte	C	-	W	-	U	counter p...	Low
55	1st Logic	Output 1bit-bit1			1 bit	C	-	-	T	-	boolean	Low
57	1st Logic	Output 1bit-bit3			1 bit	C	-	-	T	-	boolean	Low
59	1st Logic	Output 1bit-bit5			1 bit	C	-	-	T	-	boolean	Low
61	1st Logic	Output 1bit-bit7			1 bit	C	-	-	T	-	boolean	Low
60	1st Logic	Output 1bit-bit6			1 bit	C	-	-	T	-	boolean	Low
58	1st Logic	Output 1bit-bit4			1 bit	C	-	-	T	-	boolean	Low
56	1st Logic	Output 1bit-bit2			1 bit	C	-	-	T	-	boolean	Low
54	1st Logic	Output 1bit-bit0			1 bit	C	-	-	T	-	boolean	Low

“1x1byte --> 8x1bit” function: to change 1 of 1 byte’s value to 8 of 1 bit’s value, such as: Input 1byte=200 --> Output bit0=0, bit1=0, bit2=0, bit3=1, bit4=0, bit5=0, bit6=1, bit7=1

Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
53	1st Logic	Input 2byte			2 bytes	C	-	W	-	U	pulses	Low
61	1st Logic	Output 1byte-high			1 byte	C	-	-	T	-	counter p...	Low
60	1st Logic	Output 1byte-low			1 byte	C	-	-	T	-	counter p...	Low

“1x2byte --> 2x1byte” function: to changed 1 of 2 byte’s value to 2 of 1 byte’s value, such as: Input 2byte = 55500 (\$D8 CC) --> Output 1byte-low = 204 (\$CC), Output 1byte-high =216 (\$D8)

Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
53	1st Logic	Input 4byte			4 bytes	C	-	W	-	U	counter p...	Low
61	1st Logic	Output 2byte-high			2 bytes	C	-	-	T	-	pulses	Low
60	1st Logic	Output 2byte-low			2 bytes	C	-	-	T	-	pulses	Low

“1x4byte --> 2x2byte” function: to changed 1 of 4 byte’s value to 2 of 2 byte’s value, such as: Input 4byte = 78009500 (\$04 A6 54 9C) --> Output 2byte-low = 21660 (\$54 9C), Output 2byte-high =1190 (\$04 A6)

Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
53	1st Logic	Input 3byte			3 bytes	C	-	W	-	U	RGB value...	Low
59	1st Logic	Output 1byte-low			1 byte	C	-	-	T	-	counter p...	Low
60	1st Logic	Output 1byte-middle			1 byte	C	-	-	T	-	counter p...	Low
61	1st Logic	Output 1byte-high			1 byte	C	-	-	T	-	counter p...	Low

“1x3byte --> 3x1byte” function: to changed 1 of 3 byte’s value to 3 of 1 byte’s value, such as: Input 3byte = \$78 64 C8--> Output 1byte-low = 200 (\$C8) , Output 1byte-middle = 100 (\$64) , Output 1byte-high =120 (\$78)

Number	Name ^	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
53	1st Logic	Input 1byte-low			1 byte	C	-	W	-	U	counter p...	Low
54	1st Logic	Input 1byte-middle			1 byte	C	-	W	-	U	counter p...	Low
55	1st Logic	Input 1byte-high			1 byte	C	-	W	-	U	counter p...	Low
61	1st Logic	Output 3byte			3 bytes	C	-	-	T	-	RGB value...	Low

“3x1byte --> 1x3byte” function: to changed 3 of 1 byte’s value to 1 of 3 byte’s value, such as: Input 1byte-low = 150 (\$96), Input 1byte-middle = 100 (\$64), Input 1byte-high = 50 (\$32) --> Output 3byte = \$32 64 96

Number	Function	Communication Object	Type	Attribute	DPT
53	Input ...	1 st /.../8 th Logic	1bit/1byte/2byte/3byte/4byte	C,W,U	1.002 DPT_boolean/ 5.010 DPT_counter pulses/ 7.001 DPT_pulses/ 232.600 RGB value 3x(0..255)/ 12.001 DPT_counter pulses
This communication object for inputting the transfer value in need.					
61	Output ...	1 st /.../8 th Logic	2bit/1byte/2byte/4byte	C,T	2.001 DPT_Switch control/ 5.010 DPT_counter pulses/ 7.001 DPT_pulses/ 232.600 RGB value 3x(0..255)/ 12.001 DPT_counter pulses
This communication object for outputting the value was transferred.					

5.5.3 The function of "Format convert"

5.6 Event Group Communication Object description

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
125	Event	Main event trigger			1 byte	C	-	W	-	-	scene con...	Low
126	1st Event Group	Sub event output 1			1 bit	C	-	-	T	-	switch	Low
127	1st Event Group	Sub event output 2			1 bit	C	-	-	T	-	switch	Low
128	1st Event Group	Sub event output 3			1 bit	C	-	-	T	-	switch	Low
129	1st Event Group	Sub event output 4			1 bit	C	-	-	T	-	switch	Low
130	1st Event Group	Sub event output 5			1 bit	C	-	-	T	-	switch	Low
131	1st Event Group	Sub event output 6			1 bit	C	-	-	T	-	switch	Low
132	1st Event Group	Sub event output 7			1 bit	C	-	-	T	-	switch	Low
133	1st Event Group	Sub event output 8			1 bit	C	-	-	T	-	switch	Low

Fig. 5.6 Event Group's Communication Object

Number	Function	Communication Object	Type	Attribute	DPT
125	Main event trigger	Event	1byte	C,W	17.001 DPT_scene number
This Communication object is used to trigger every output in event group to send certain value to bus via scenario function.					
126	Sub event output 1..8	1 st /.../8 th Event Group	1bit/1byte/2byte	C,T	1.001 DPT_Switch/ 5.010 DPT_counter pulses/ 7.001 DPT_pulses/
If the certain scene was assigned, the communication object will send certain value to bus which set in parameter. If the scene didn't active, the data will not be sent.					

Table 5.6 The Communication Object of Event Group's Function