ATTACHMENT CONVERTER
KNX-306-72-DRI-LL-IN

CONTENTS

1. SUMMARY

KNX-306-72-DRI-LL-IN can install to be system with KNX bus and other device, which are mainly use in building control system. The functions are both simple to operate and intuitive, users can program it according to the requirement to implement the function systematically.

This manual provides technical information about KNX-306-72-DRI-LL-IN in detail for users as well as assembly and programming, and explains how to use KNX-306-72-DRI-LL-IN by the application examples.

1.1. PRODUCT AND FUNCTIONAL OVERVIEW

KNX-306-72-DRI-LL-IN achieve the functional applications via conventional push buttons/switches, communicate by technical binary, which are used to control the devices such as the dimmer Actuator/the Switch Actuator, to control domestic appliance indirectly. At the same time, they also enable the control of LEDs. The extremely compact design enables the device to be inserted in a conventional 60mm wiring box.

KNX-306-72-DRI-LL-IN are connected directly to the bus via the EIB terminal blocks and have no use for additional supply voltage . It is available to assign the physical address and set the parameters by Engineering design tools ETS (version ETS5 or higher).

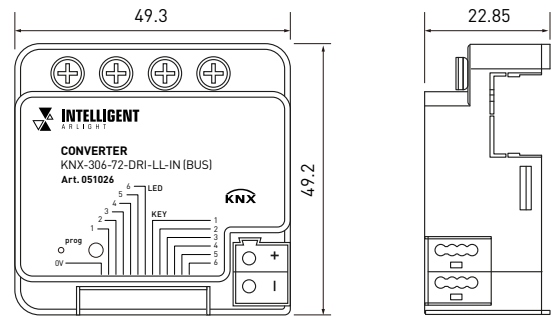The main functions of Universal interfaces are as following:
▼ Switching and dimming function.
▼ Control of blinds and shutters.
▼ Sending of values e.g. temperature values, water line.
▼ Recalling and storing of scenes.
▼ Trigger an LED for reporting an operation.
▼ Operation of various loads by multiple push button actions

Each channel of a device can adopt any of the functions described above.

## 2. TECHNICAL PARAMETER, DIMENSION AND WIRING DIAGRAM

2.1. TECHNICAL DATA

Power supply	working voltage	DC 21-30V,via KNX bus
Input/Output	6-fold input	Can be individually configured per input
	6-fold LED	Can be individually configured per LED
	Input scanning voltage	DC 20V
	Input current	0.5mA
	LED output voltage	DC 11-12V
	LED output current	Max 1mA
Operating and display	Programming LED and button	For assignment of the physical address
	Green LED flashing	Indicate the application layer running normally
Temperature	running	−5 °C ... 45 °C
	Storage	−25 °C ... 55 °C
	Transport	−25 °C ... 70 °C
Environment	humidity	<93%, except dewing
Protection level	IP 20	(EN60529)
Security level	III	
CE Standard	meets EMC and low-voltage standard	
Certificate	EIB/KNX certificate, meets EN50 090-1, -2 certificate	
Installation	flush mounted	60mm wall-box
Size	49.3mm×49.3mm×22.85mm(L×W×H)	
Weight	0.05 KG	

2.2 DIMENSION

2.3 WIRING DIAGRAM

① Programming Button
② Programming LED
③④ LED and key terminal
⑤ KNX/EIB bus terminal
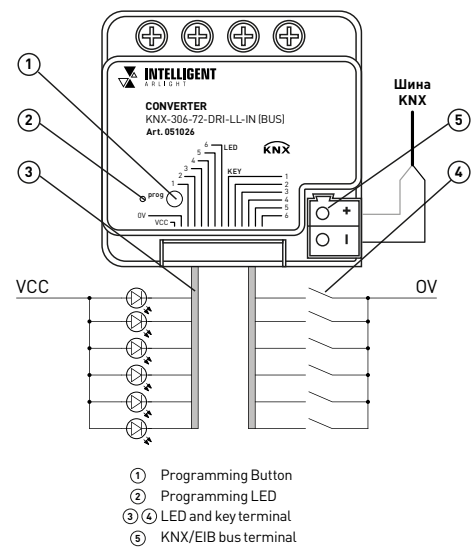
3. PARAMETER SETTING DESCRIPTION IN THE ETS

3.1. PARAMETER WINDOW ″INPUT X″

Take one of the input channel as example to explain the parameter:
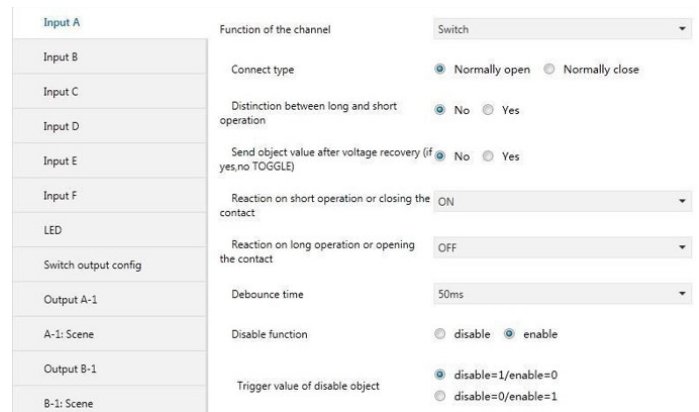

Fig 3.1 parameter window ″Input X-Switch″

″Function of the channel″
This parameter for setting the function of input, if option is ″No function″, the input function is disable.

Options:

No function
Switch
Switch/Dimming
Value/Force output
Scene control
Shutter control

The following shows detail parameter of each function.

3.1.1. "SWITCH" FUNCTION

"Switch"parameter window shown as 4.1

"Connect type"
This parameter for setting the connect type for the contact.it is used to define whether the contact is a normally open contact or a normally close contact in general.

Options:

Normally open
Normally close

The parameters presented in this chapter are all in terms of Normally open types; Normally closed types operate in the opposite way to Normally open types.

"Distinction between long and short operation"
This parameter sets whether the input distinguishes between a short and long operation. If "yes" is selected, there is a waiting period after the opening/closing of the contact to determine whether the operation is long or short. Only then is a possible reaction triggered. The following drawing clarifies the function:
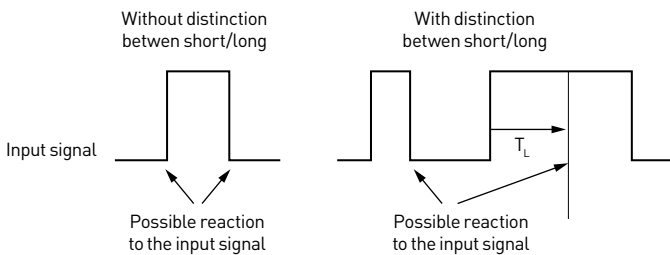
NOTE:
The long operation in the below chapters are the same with here. TL for time of long operation.

Options: Yes/No

"Send object value after voltage recovery (if yes, no TOGGLE)."
This parameter for setting whether to send the current value of object "Switch" to the bus after bus recovery. The parameter is visible if there is no distinction between a short and long operation.

Options: Yes/No

If the parameter "Yes" is selected, it will send the current value on the bus. Only when the value "Toggle" has not been set in either of the two parameters "Reaction on short operation or closing the contact"/"Reaction on long operation or opening the contact", the value of the object can be send on the bus. If one of the two parameters has the value "TOGGLE", no values are sent in general on the bus after bus voltage recovery. If "No reaction" is selected, there is no values are sent on the bus either.

"Long operation after (*0.1s)"
This parameter is visible when select to distinguish long/short operation. Set the valid time for long operation.. The period TL is defined here, after which an operation is interpreted as "long".

Options: 3...25

"Reaction on short operation or closing the contact"/"Reaction on long operation or opening the contact"
These parameters are for setting the reaction on press/release the contact or on short/long operation. The object values are updated immediately when the input is confirmed.

Options:

No action
ON
OFF
Toggle

"No action", no telegram to be sent;
"ON", send on telegram;
"OFF", send off telegram;
"Toggle", each operation will toggle the switch between on and off, if send an. On telegram(or received) at the last, then the next operation will trigger an Off telegram. When the contact is operated again, it will send an On telegram, etc. So the contact will always remember the previous status and covert to opposite value during next operation.

"Debounce time"
This parameter is for setting the debounce time to avoid the unnecessary operations which is caused by the contact triggered multiple times in bouncing time, debounce time is the valid time of the contact operation.

Options: 10ms/20ms/.../150ms

"Disable function"
This parameter for setting whether to enable the disable function of the contact.

Options:

Disable
Enable

If "Enable". the input can be disabled or enabled by the object.

"Trigger value of disable object"
This parameter is visible when previous parameter is enabled. Set the trigger value of disable/enable the contact.

Options:

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

3.1.2. "SWITCH / DIMMING" FUNCTION

"Switch / Dimming" parameter window shown as fig.3.2 .
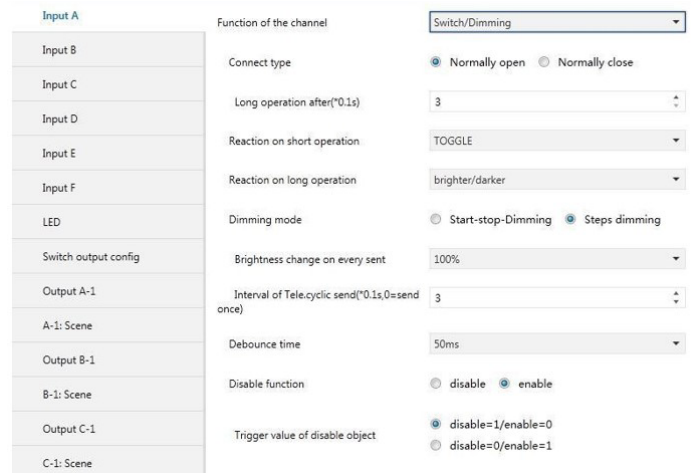
Fig 3.2 Parameter window "Input X-Switch/Dimming"

"Connect type"
This parameter defines whether the contact at the input is a normally open contact or a normally closed contact.

Options:

Normally open
Normally close

The parameter introduced in this chapter is use "Normally open" as the example, the normally close is just opposite.

"Long operation after (*0.1s)"
This parameter is visible when select to distinguish long/short operation. Set the valid time for long operation. The period TL is defined here, after which an operation is interpreted as "long".

Options: 3...25

"Reaction on short operation"
This parameter is for setting the reaction on short operation.

Options:

No action
ON
OFF
Toggle

"No action": no telegram to be sent;

"ON", send on telegram;

"OFF", send off telegram;

"Toggle", each operation will toggle the switch between on and off.

"Reaction on long operation"

This parameter is for setting the reaction on long operation to send relative dimming value.

Options:

Brighter
Darker
Toggle

Brighter", send the dimming up value;
"Darker", send the dimming;
"Toggle", Each operation will switch between brightening and dimming.

NOTE:

In the options of "TOGGLE" and "Brighter/Darker", there are a linkage between the received switch status and the dimming. For example, if receive an On value from object "Switch" at the last, then it will be darker in next dimming operation. If receive an Off value first, then it will be brighter in next dimming operation.

"Dimming mode"

This parameter is for setting the mode of relative dimming.

Options:

Start-stop dimming
Steps-dimming

If "Start-stop dimming" is selected, the dimming mode is start-stop dimming; it begins the dimming process with a dim darker or brighter telegram and ends the dimming process with a stop telegram. Cyclical sending of the dimming telegram is not required in this case.

If "Step dimming" is selected, the dimming mode is step dimming, the dimming telegram is sent cyclically during a long operation. Once the operation has finished, a stop telegram ends the dimming process.

"Brightness change one very sent"

This parameter is visible when "Step dimming" is selected. Set the brightness (%) that can be changed by the dimming telegrams sent cyclically.

Options:

100%
50%
...
1.56%

"Interval of Tele. Cyclic send (*0.1s, 0=send once)"

This parameter is visible when parameter "Dimming mode" is chosen as "steps dimming" it is used to set the time interval of cyclical blinds angle adjustment telegram sent.

Options: 0...25

"Debounce time"

This parameter is for setting the debounce time to avoid the unnecessary operations which is caused by the contact triggered multiple times in bouncing time, debounce time is the valid time of the contact operation.

Options: 10ms/20ms/.../150ms

Options"Disable function"

This parameter for setting whether to enable the disable function of the contact.

Options: Disable/Enable

If "Enable", the input can be disabled or enable by the object.

"Value of disable object"

This parameter is for setting the trigger value of disable /enable object.

Options:

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

3.1.3."VALUE / FORCE OUTPUT" FUNCTION

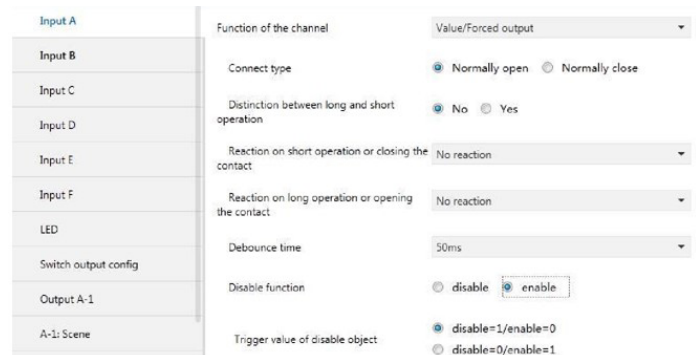"Value / Force output" parameter window shown in Fig. 3.3

Fig. 3.3 Parameter window"Input X-Value/Forced output"

"Connect type"

It is used to define whether the contact is a normally open contact or a normally close contact in general.

Options:

Normally open
Normally close

The parameter introduced in this chapter is use "Normally open" as the example; the normally close is just opposite.

"Distinction between long and short operation"

This parameter sets whether the input distinguishes between a short and long operation. If "yes" is selected, there is a waiting period after the opening/closing of the contact to determine whether the operation is long or short.

Options: yes/No

"Long operation after (*0.1s)"

This parameter is visible when select to distinguish long/short operation. Set the valid time for long operation. The period TL is defined here, after which an operation is interpreted as "long".

Options: 3...25

"Reaction on short operation or closing the contact" / "Reaction on long operation or opening the contact"

This parameter is for setting the data type to be sent when the contact is operated in press/release or long/short operation.

Options:

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

"Output value[...]"

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

"Debounce time"

This parameter is for setting the debounce time to avoid the unnecessary operations which is caused by the contact triggered multiple times in bouncing time, debounce time is the valid time of the contact operation.

Options: 10ms/20ms/.../150ms

"Disable function"

This parameter for setting whether to enable the disable function of the contact.

Options: Disable/Enable

If "Enable", the input can be disabled or enable by the object.

"Trigger value of disable object"

Set the trigger value of disable /enable object.

Options:

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

3.1.4. "SCENE CONTROL" FUNCTION

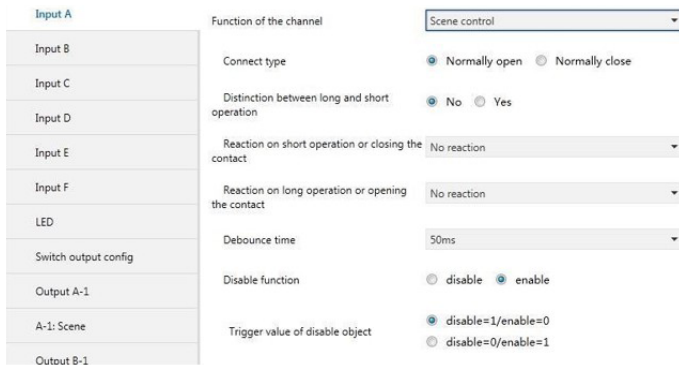"Scene control"parameter window showing as Fig. 3.4.

Fig3.4 Parameter window"Input X-Scene control"

"Connect type"
This parameter for setting the connect type for the contact.it is used to define whether the contact is a normally open contact or a normally close contact in general.

Options:
Normally open
Normally close

The parameters presented in this chapter are all in terms of Normally open types; Normally closed types operate in the opposite way to Normally open types.

"Distinction between long and short operation"
This parameter sets whether the input distinguishes between a short and long operation. If "yes" is selected, there is a waiting period after the opening/closing of the contact to determine whether the operation is long or short.

Options: yes/No

"Long operation after (*0.1s)"
This parameter is visible when select to distinguish long/short operation. Set the valid time for long operation. The period TL is defined here, after which an operation is interpreted as "long".

Options: 3...25

"Reaction on short operation or closing the contact" / "Reaction on long operation or opening the contact"
This parameter is for setting recall scene or store scene for the press/release or short/long operation of the contact.

Options:
No reaction
Recall scene
Store scene

"Scene number (1..64)"
This parameter is for setting scene number, range: Scene NO.1~64, according telegram is 0~63.

"Debounce time"
This parameter is for setting the debounce time to avoid the unnecessary operations which is caused by the contact triggered multiple times in bouncing time, debounce time is the valid time of the contact operation.

Options: 10ms/20ms/.../150ms

"Disable function"
This parameter for setting whether to enable the disable function of the contact.

Options: Disable/Enable

If "Enable", the input can be disabled or enable by the object.

"Trigger value of disable object"
This parameter is set the trigger value of disable/enable the contact.

Options:
Disable=1/enable=0
Enable=0/enable=1

3.1.5. "SHUTTER CONTROL" FUNCTION
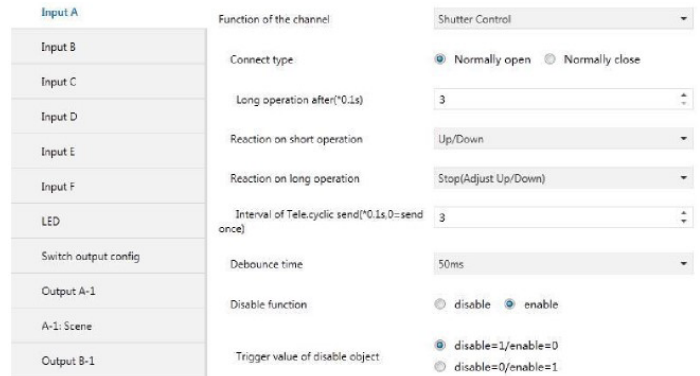
"Shutter control" parameter window is shown as Fig.3.5.

Fig 3.5 Parameter window "Input X-Shutter control"

"Connect type"
This parameter for setting the connect type for the contact.it is used to define whether the contact is a normally open contact or a normally close contact in general.

Options:
Normally open
Normally close

This parameter for setting the connect type for the contact.it is used to define whether the contact is a normally open contact or a normally close contact in general.

"Long operation after (*0.1s)"
This parameter is for setting the valid time for long operation.The period TL is defined here, after which an operation is interpreted as "long".

Options: 3...25

"Reaction on short/long operation"
This parameter is used to set the action when the input is short operation or 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", 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)", stop the shutter movement or move down one angle of blinds;
"Stop(Adjust Up/Down)", stop the shutter movement or move up/down the angle of blinds alternately.

"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.

"Debounce time"
This parameter is for setting the debounce time to avoid the unnecessary operations which is caused by the contact triggered multiple times in bouncing time, debounce time is the valid time of the contact operation.

Options: 10ms/20ms/.../150ms

"Disable function"
This parameter is to set whether to enable the disable function of the contact.

Options: Disable/Enable

If "Enable", the input can be disabled or enable by the object.

"Trigger value of disable object"
This parameter is set the trigger value of disable/enable the contact.

Options:

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

3.2. PARAMETER WINDOW "LED"

This parameter is for setting the LED function. There are 6-fold LED display, each can be configured separately, Take one of the LEDs parameter as example.
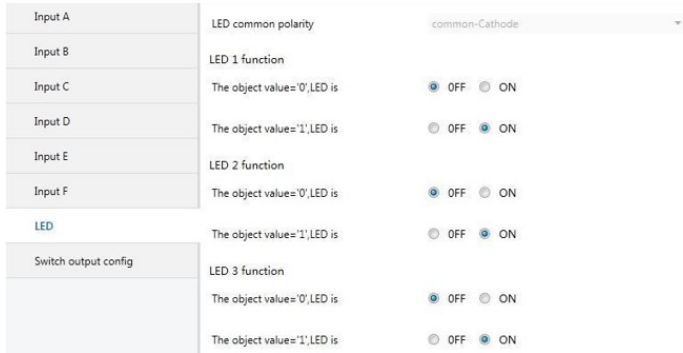
Input A	LED common polarity — common-Cathode
Input B	
Input C	LED 1 function
Input D	The object value='0',LED is — ● OFF ○ ON
Input E	
Input F	The object value='1',LED is — ○ OFF ● ON
LED	LED 2 function
Switch output config	The object value='0',LED is — ● OFF ○ ON
	The object value='1',LED is — ○ OFF ● ON
	LED 3 function
	The object value='0',LED is — ● OFF ○ ON
	The object value='1',LED is — ○ OFF ● ON

Fig 3.6 Parameter window "LED"

"LED common polarity"
This parameter comments on the polarity of the LED:common cathode.

"LED X function"
"The object value='0/1', LED is"
This parameter is for setting LED status on or off when LED object received telegram "1" or "0".

Options: OFF/ON

4. 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.

4.1. "INPUT X" COMMUNICATION OBJECT"

Number ▲	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	Input A	Short/Close,Switch			1 bit	C	-	W	T	-		Low
1	Input A	Long/Open,Switch			1 bit	C	-	W	T	-		Low
2	Input A	Disable, A			1 bit	C	-	W	-	-		Low

"Switch" Function

Number ▲	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	Input A	Short;Switch			1 bit	C	-	W	T	-	switch	Low
1	Input A	Long,Dimming			4 bit	C	-	W	T	-	dimming...	Low
2	Input A	Disable, A			1 bit	C	-	W	-	-		Low

"Switch/dimming" Function

Number ▲	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	Input A	Short/Close,1bit value			1 bit	C	-	-	T	-		Low
1	Input A	Long/Open,1bit value			1 bit	C	-	-	T	-		Low
2	Input A	Disable, A			1 bit	C	-	W	-	-		Low

"Value/Force output "Function

Number ▲	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	Input A	Short/Close,scene			1 byte	C	-	-	T	-		Low
1	Input A	Long/Open,scene			1 byte	C	-	-	T	-		Low
2	Input A	Disable, A			1 bit	C	-	W	-	-		Low

"Scene control"Function

Number ▲	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	Input A	Up/Down,Blind			1 bit	C	-	-	T	-		Low
1	Input A	Stop/Adjust,Blind			1 bit	C	-	-	T	-		Low
2	Input A	Disable, A			1 bit	C	-	W	-	-		Low

"Shutter control"Function

3.7 "Input X" Communication object

Object no	function	name	type	Property	DPT
0	Short/Close, Switch	Input X	1bit	C,W, T	1.001DPT_Switch
1	Long/Open, Switch	Input X	1bit	C,W, T	1.001DPT_Switch

This object is use for triggering the switch operation. "Short/Close"is an output object corresponding to a short or rising edge operation."Long/Open"is an output object corresponding to a long or falling edge operation.

0	Short, Switch	Input X	1bit	C,W, T	1.001DPT_Switch

This communication object is used for triggering the switch function.
0—off; 1—open

1	Long, Dimming	Input X	4bit	C,W, T	3.007 DPT_Dimming control

This communication object triggers a relative dimming operation.
When the telegram value is 1~7, it is down dimming, the larger the value in this range, the smaller the down dimming amplitude is, the largest down dimming amplitude is at 1, the smallest is at 7, and 0 is to stop dimming; when the input value is 9~15, it is up dimming, the larger the value in this range, the smaller the up dimming amplitude is, the largest up dimming amplitude is at 9, the smallest up dimming amplitude is at 15, and 8 is to stop dimming.

0	Short/Close, 1bit/4bit/1byte/ 2byte value	Input X	1bit / 4bit / 1byte / 2byte	C,T	1.001 DPT_Switch/ 3.007 DPT_Dimming control/ 5.010 DPT_counter pulses 7.001 DPT_pulses
1	Long/Open, 1bit/4bit/1byte/ 2byte value	Input X	1bit / 4bit / 1byte / 2byte	C,T	

This communication object is used to send input value of contact,the range of values can be sent is determined by the data type. Data type is set by parameter"Reaction on short operation or closing the contact"/ "Reaction on long operation or opening the contact"

0	Short/Close, Scene	Input X	1byte	C,T	18.001 DPT_Scene Control
1	Long/Open, Scene	Input X	1byte	C,T	18.001 DPT_Scene Control

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'recall scene; '1' for storage scene;
X: 0;
NNNNNN: scenes no. (0...63).
Parameter option is 1~64, range NO.1~64 is correspondent to telegram 0~63:

Object telegram value	Description
0	Recall Scene 1
1	Recall Scene 2
2	Recall Scene 3
...	...
63	Recall Scene 64
128	Store scene 1
129	Store scene 2
130	Store scene 3
...	...
191	Store scene 64

0	Up/Down, Blind	Input X	1bit	C,T	1.008DPT_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

1	Stop/Adjust, Blind	Input X	1bit	C,T	1.007DPT_Step

This object is used to stop the curtain moving or adjusting the shutter angle.

2	Disable	Input X	1bit	C,W	1.003DPT_enable

This communication object is used to disable/enable input channel

Table 3.8 "Input X"communication object

Number ▲	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
18	LED 1	LED 1			1 bit	C	-	W	-	-		Low
19	LED 2	LED 2			1 bit	C	-	W	-	-		Low
20	LED 3	LED 3			1 bit	C	-	W	-	-		Low
21	LED 4	LED 4			1 bit	C	-	W	-	-		Low
22	LED 5	LED 5			1 bit	C	-	W	-	-		Low
23	LED 6	LED 6			1 bit	C	-	W	-	-		Low

Fig.3.9 "LED" communication object

4.2. "LED" COMMUNICATION OBJECT DESCRIPTION

No.	Function	Name	Type	Property	DPT
18	LED X	LED X	1bit	C,W	1.001DPT_Switch

This communication object is used to receive a type of 1bit / 1byte, for displaying the switch

Fig. 4.0"LED" communication object description