

# Product Manual

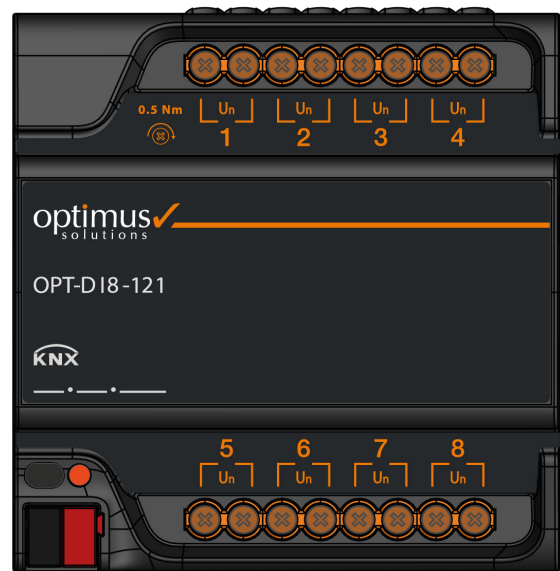
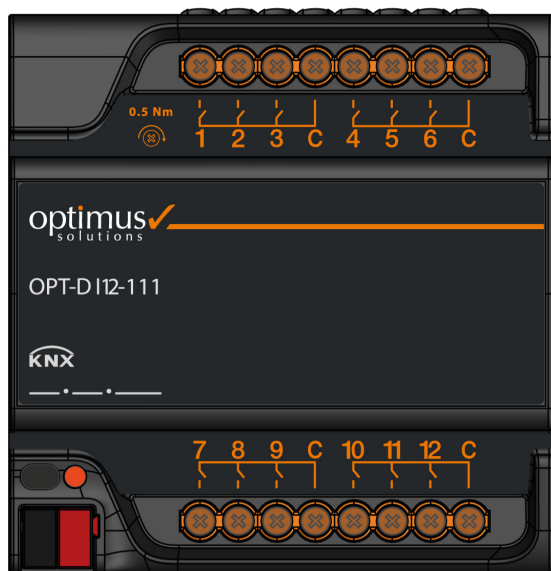
## Binary Input

OPT-DI4-121

OPT-DI8-121

OPT-DI6-111

OPT-DI12-111



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## About this document

This manual provides detailed technical information on the function, installation and programming of the OPT-Dlx device.

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## Disposal of packaging

The packaging protects the device from damage during transmit. All utilized materials are environmentally safe and recyclable. Please help us by disposing of the packaging in an environmentally friendly manner.

## Disposal of old device

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optimus ✓

# 1 Product Description

OPT-DIx-xxx is a 4,8 channel 230V and 6,12 channel DIN rail mounted interface device. It allows the functions of external physical contact devices to be transferred to the KNX line.

## 1.1 Product Models

OPT-DI4-121, 4 Channel AC/DC Binary Input  
 OPT-DI8-121, 8 Channel AC/DC Binary Input  
 OPT-DI6-111, 6 Channel Dry Contact Binary Input  
 OPT-DI12-111, 12 Channel Dry Contact Binary Input

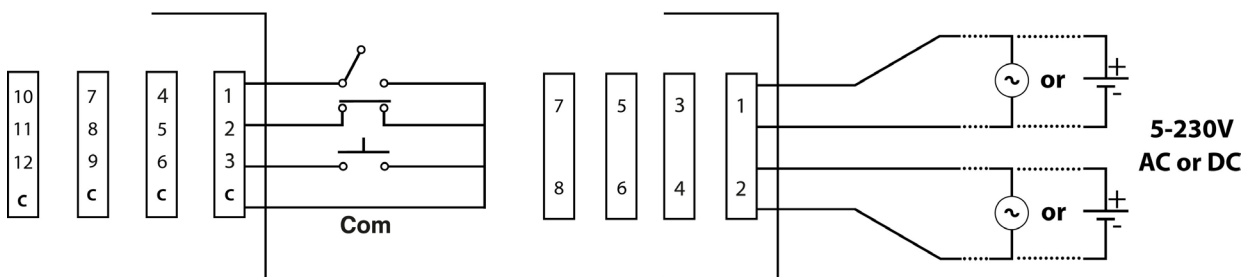
Regardless of the product model, all channels include the following features.

## 1.2 Usage Areas

Optimus digital input device; It is a KNX module designed to transfer the information sent from switches, classic buttons or dry contacts to the KNX bus or to monitor voltage information (OPT-DIy-121), sending values such as bit, 1-byte, 2-byte, scenes or HVAC, Shutter/Blind control, dimming control and counting requests. This module is designed to be mounted in electrical panels or junction boxes with DIN Rail.

## 1.3 Connection Diagram

The sample connection diagram is as follows:



OPT-DI6-111  
 OPT-DI12-111

OPT-DI4-121  
 OPT-DI8-121

The device can be programmed with ETS5 or higher version software. The Optimus Binary Input device is added to the project and started to be activated from the library file downloaded from the online catalog or via the website.

## 1.4 Technical Information

Model	OPT-DIx-111, OPT-DIy-121
Dimensions (mm) 4,6 Channel 8,12 Channel (H x W x D)	54x92x64 mm 90x92x64 mm
Weigth (g)	4 Kanal: 105g 6 Kanal: 107g 8 Kanal: 153g 12 Kanal: 155g
Material	Body: ABS
Electrical Data	Supply Voltage: 21-30 V Supply: KNX Power Source Current < 10 mA Connection: With Standart KNX Terminal
Storage Information	Temperature: -25 ... 55 °C
Protection Class	IP 20
Mounting	DIN Rail Mounting
Operation Range	-5 ... +45 °C
Programming	ETS Version : 5 or above Transmission Object Number : 4 Ch: 12 pcs 6 Ch: 18 pcs 8 Ch: 24 pcs 12 Ch: 36 pcs Group Adress Assignment Capacity : 250 pcs

## 2 General Settings

The device added to the ETS project is entered in the “General Settings” tab in the Parameters section. The settings made here determine all the channels and the general process of the device.

General	
Channel - 1	Debounce Time
General	Time for Long Operation
	Start Up Transmission Delay

50	ms
0,50	sec
5	sec

### 2.1 Debounce Time

Used to select the minimum contact time that the device will be based on for contact detection from the drop-down list. The options are: 20ms, 30ms, 50ms and 150ms. The default value is 50ms. Contacts that last less than this time are perceived as interference and are not processed. It is common to all Push Button channels.

### 2.2 Time for Long Operation

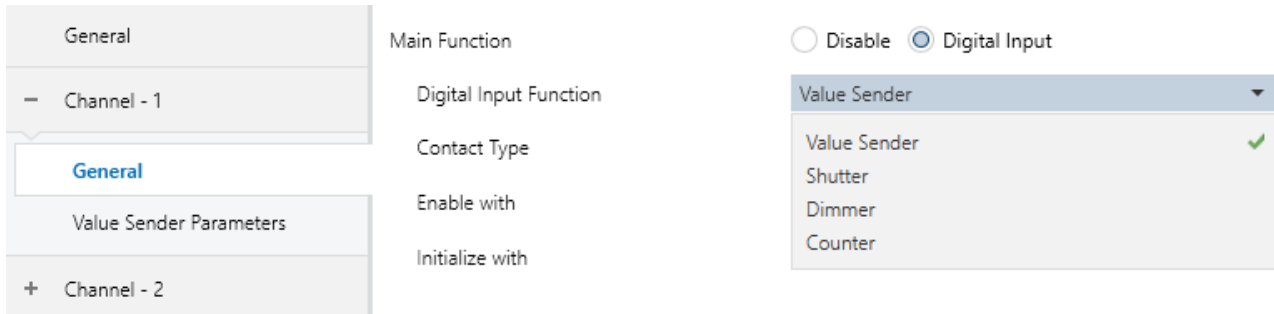
It is the option that is placed for the device to generate an additional function (for example, shutter, dimmer switches) for contacts that remain pressed until the threshold time to be selected. It is common to all Push Button channels. Dec values between 0.25s and 60s, the appropriate one can be selected from the list. The default value is 0.50s.

### 2.3 Start Up Transmission Delay

The device does not perform operations until the time selected here from the moment of its energization. An appropriate value is selected to regulate the incoming traffic on the bus. The default value is 5s.

## 3 Channel Functions

According to the model of the device, it has DC 6,12 or AC 4, 8 channels. Channels come in passively at the initial settings. From the Settings page of the corresponding channel, "Digital Input" is selected for switch functions.



At this point, the selection is made in accordance with the intended use of this input. From the window opened in the Digital Input Function, the appropriate one among the "Value Sender", "Dimmer", "Shutter", "Counter" options is selected.

### 3.1 Contact Type

It is selected to determine the form of the contact structure of the connected key when it is not pressed. "Normally Open" or "Normally Closed" contact options are selected. The default is "Normally Open".

### 3.2 Enable With

The "Enable With" object of the relevant channel is added by default. It is used to determine the method of using this object. If "OFF Telegram" is selected, the channel becomes active when the value "0" is sent to the event object (Enable) of the relevant channel; If "ON Telegram" is selected, the channel is activated by sending "1" value to the same object.

### 3.3 Initialize with

It is the option where the active or passive selection is made when the device starts to work. By default, "Enabled" is selected.

### 3.4 Value Sender

This is the section opened on the left tab when Digital Input Selection is selected as "Send Value". In this section, the details of the connection are set.

General	Main Function	<input type="radio"/> Disable <input checked="" type="radio"/> Digital Input
- Channel - 1	Digital Input Function	Value Sender
General	Contact Type	<input checked="" type="radio"/> Normally Open <input type="radio"/> Normally Closed
Value Sender Parameters	Enable with	<input type="radio"/> OFF Telegram <input checked="" type="radio"/> ON Telegram
+ Channel - 2	Initialize with	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

#### 3.4.1 Button Type

Depending on the type of switches connected, the "Switch Button" type is selected for those that remain in the pressed position, and "Push Button" is selected for Push Button switches that return to their initial position.

#### 3.4.2 Read Input and Send Status After Start

For "Switch Button", it is used to send the current position of the switch to the bus when the device is energized. For "Push Button", this option is hidden.

#### 3.4.3 Switch Button

For "Switch Button", it is the place where the action to be taken when the switches position changes from the contact position (Normally Open or Normally Closed) specified on the first page to another. It is selected as "Passive" in its initial setting. It is entered into the settings by making it "Active". First, the data type of the command to be sent, and then the value to be sent is selected. It defaults to a 1-bit value. Depending on the selected data type, the value to be sent is written in the "Send value" section or selected from the list.

General	Button Type	<input checked="" type="radio"/> Switch Button <input type="radio"/> Push Button
- Channel - 1	Read Input And Send Status After Start	<input checked="" type="checkbox"/>
General	When Pressed	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Value Sender Parameters	Press Output Type	1 Bit
+ Channel - 2	Send Value	<input type="radio"/> OFF Telegram <input checked="" type="radio"/> ON Telegram
+ Channel - 3	When Released	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
+ Channel - 4	Release Output Type	1 Bit
+ Channel - 5	Send Value	<input checked="" type="radio"/> OFF Telegram <input type="radio"/> ON Telegram



### 3.4.3.1 When Pressed

For "Switch Button", it is the place where the action to be taken when the switchs position changes from the contact position (Normally Open or Normally Closed) specified on the first page to another. It is selected as "Passive" in its initial setting. It is entered into the settings by making it "Active". First, the data type of the command to be sent, and then the value to be sent is selected. It defaults to a 1-bit value. Depending on the selected data type, the value to be sent is written in the "Send value" section or selected from the list.

### 3.4.3.2 When Released

For "Switch Button", it is the place where the action to be taken when the position of the switch returns to the contact position specified on the first page is determined. It is selected as "Passive" in its initial setting. It is entered into the settings by making it "Active". First, the data type of the command to be sent, and then the value to be sent is selected. It defaults to a 1-bit value. Depending on the selected data type, the value to be sent is written in the "Send value" section or selected from the list.

Press and release functions of channels are divided into two separate communication objects to provide programming flexibility. If desired, normal commissioning can be performed by assigning the same group address to both objects (provided that the data types are selected the same).

Data Types	Possible Values
1 bit	Off (0), On (1)
1-byte unsigned integer	0...255
1-byte signed integer	-128...127
Scene Call	Scene 1...64
HVAC Mode	Auto, Comfort, Standby, Economy, Protection
2-byte unsigned integer	0-65535
2-byte signed integer	-32768...32767
2-byte float	-670760...670760

### 3.4.4 Push Button

"Push Buttons", events occur as soon as the key is pressed and/or when it is pressed for a certain period of time. The first option is for a short press event when the key is pressed or if long press detection is enabled.

General	Button Type	<input type="radio"/> Switch Button <input checked="" type="radio"/> Push Button
- Channel - 1	When Pushed	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
General	Push Output Type	1 Bit
Value Sender Parameters	Send Value	ON Telegram
+ Channel - 2	Long Press Detection	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
+ Channel - 3	Press Output Type	1 Bit
+ Channel - 4	Send Value	OFF Telegram

#### 3.4.4.1 When Pushed

For "Push Button" type switches, it is the place where the action to be taken when the switch's position changes from the contact position (Normally Open or Normally Closed) specified on the first page to another. It is selected as "Passive" in its initial setting. It is entered into the settings by making it "Active". First, the data type of the command to be sent, and then the value to be sent is selected. It defaults to a 1-bit value. Depending on the selected data type, the value to be sent is written in the "Send value" section or selected from the list.

#### 3.4.4.2 Long Press Detection

Used to activate long press on "Push Buttons. In this case, the device performs its operation according to the key press time. The long press time is adjusted from the general parameters of the device. Settings are made in the same way.

The data types to be sent are the same for any key. However, Push Button have On and Off commands for 1-bit as well as the "Other" command. In this option, the inverse of the value of the last sent or updated object from the data line (1 when 0, 1 when 0 is sent).

### 3.4.5 Value Sender Communication Objects

Value Sender	ComObject Number: Channel Number	Object Function	Length / Data Type	C	R	W	T
	0 : Channel - 1 3 : Channel - 2 6 : Channel - 3 9 : Channel - 4 12 : Channel - 5 15 : Channel - 6 18 : Channel - 7 21 : Channel - 8 24 : Channel - 9 27 : Channel - 10 30 : Channel - 11 33 : Channel - 12	Enable	1 bit / Boolean	C	-	W	-
	1 : Channel - 1 4 : Channel - 2 7 : Channel - 3 10 : Channel - 4 13 : Channel - 3 16 : Channel - 6 19 : Channel - 7 22 : Channel - 8 25 : Channel - 9 28 : Channel - 10 31 : Channel - 11 34 : Channel - 12	Press Output (for switch button) Output (for push button)	1 bit / Switch 1 byte unsigned / Counter Pulse(0,...255) 1 byte signed / Counter Pulse(-128,...127) 1 byte / Scene Number 1 byte / HVAC Mod 2 byte unsigned / Pulses 2 byte signed / Pulses Difference 2 byte float / Temperature °C	C	-	W	T
	2 : Channel - 1 5 : Channel - 2 8 : Channel - 3 11 : Channel - 4 14 : Channel - 5 17 : Channel - 6 20 : Channel - 7 23 : Channel - 8 26 : Channel - 9 29 : Channel - 10 32 : Channel - 11 35 : Channel - 12	Release Output (for switch button) Output (Long Press) (for push button)	1 bit / Switch 1 byte unsigned / Counter Pulse(0,...255) 1 byte signed / Counter Pulse(-128,...127) 1 byte / Scene Number 1 byte / HVAC Mode 2 byte unsigned / Pulses 2 byte signed / Pulses Difference 2 byte float / Temperature °C	C	-	W	T

### 3.5 Dimmer

It is used to perform dimmer operation (dimming, increasing, on-off) by sending different types of data according to the pressing time, working with "Push Buttons" or "Switch Buttons". It is mostly used in the control of adjustable light level (dimmer) lighting. It has two parameters:

General	Main Function	<input type="radio"/> Disable <input checked="" type="radio"/> Digital Input
- Channel - 1	Digital Input Function	Dimmer
General	Contact Type	<input checked="" type="radio"/> Normally Open <input type="radio"/> Normally Closed
Dimmer Parameters	Enable with	<input type="radio"/> OFF Telegram <input checked="" type="radio"/> ON Telegram
+ Channel - 2	Initialize with	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

#### 3.5.1 Short Press Action

It is the action that will take place if the key is pressed for a short time. Options:

**No Reaction Functions:** In this case, the command is not sent when the "Switch Button or Push Button" is pressed briefly.

**ON Function:** When pressed the buttons for a short time, 1-bit "ON" command is sent over the "Dimmer Switch" object.

**OFF Function:** When pressed the buttons for a short time, a 1-bit "OFF" command is sent over the "Dimmer Switch" object.

**Toggle ON/OFF:** With each short press of the buttons, the next ON or OFF command is sent. Note: This object can be updated by connecting to the status object of the dimmer device and real reverse command is sent.

#### 3.5.2 Long Press Action

When the button is pressed for a long time, the action to be taken is dimmer (dim or increase). Options:

**Dimmer toggle:** With each long press of the buttons, the next "Decrease" or "Increase" operation takes place.

**Dim Brighter :** When the buttons is pressed for a long time, a command is sent from the "Dimmer Dimming" object in the direction of increasing.

**Dim Darker :** When the buttons is pressed for a long time, a command is sent from the "Dimmer Dimming" object in the direction of dimming.

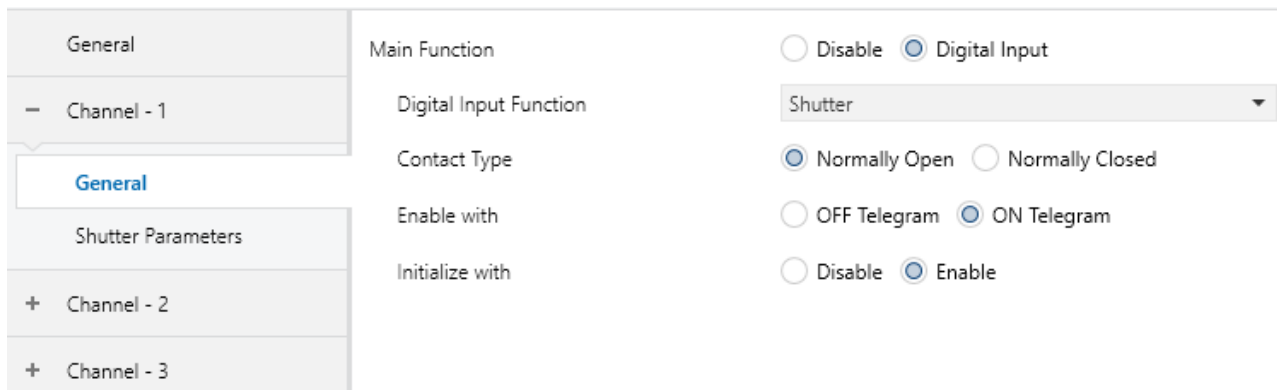
General	Short Press Action	Toggle ON/OFF
- Channel - 1	Long Press Action	Dimming Toggle
General		
Dimmer Parameters		
+ Channel - 2		

### 3.5.3 Dimmer Communication Objects

Dimmer	ComObject Number: Channel Number	Object Function	Length / Data Type	C	R	W	T
	0 : Channel - 1 3 : Channel - 2 6 : Channel - 3 9 : Channel - 4 12 : Channel - 5 15 : Channel - 6 18 : Channel - 7 21 : Channel - 8 24 : Channel - 9 27 : Channel - 10 30 : Channel - 11 33 : Channel - 12	Enable	1 bit / Boolean	C	-	W	-
	1 : Channel - 1 4 : Channel - 2 7 : Channel - 3 10 : Channel - 4 13 : Channel - 3 16 : Channel - 6 19 : Channel - 7 22 : Channel - 8 25 : Channel - 9 28 : Channel - 10 31 : Channel - 11 34 : Channel - 12	Switch	1 bit / Switch	C	-	W	T
	2 : Channel - 1 5 : Channel - 2 8 : Channel - 3 11 : Channel - 4 14 : Channel - 5 17 : Channel - 6 20 : Channel - 7 23 : Channel - 8 26 : Channel - 9 29 : Channel - 10 32 : Channel - 11 35 : Channel - 12	Dimmer	4 bit / Dimming control	C	-	-	T

### 3.6 Shutter

It is used in the control of two-way curtain/blind motors. It can be adjusted according to the switch type and button model. Movement commands (up or down) are sent from the "Channel - x Move" object, and "Stop/Step" commands are sent from the "Channel - x Stop" object.



#### 3.6.1 Operation With

It is the field where the control with how many button is selected, there are 1-button and 2-button options. When 1-button is selected, operations are performed sequentially or only in a certain direction. If 2-button is selected, a more comfortable application is provided.

#### 3.6.2 Button Type

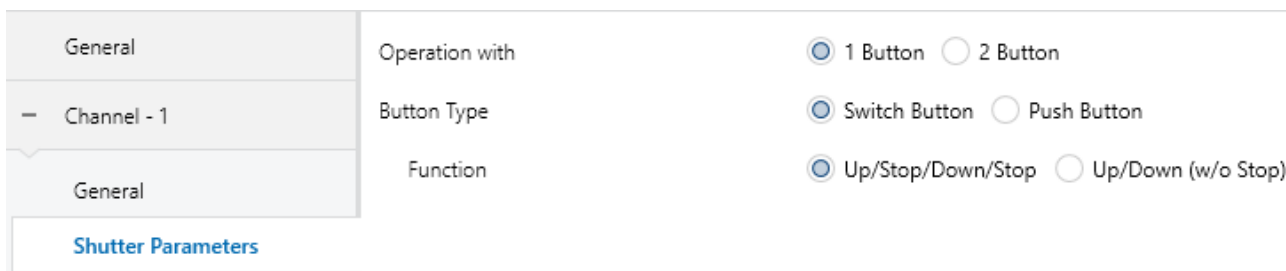
Depending on the type of switch connected, the "Switch" type is selected for those that remain in the pressed position, and "Push Button" is selected for "Push Button" switches that return to their initial position. Short or long press time is determined in General Settings, same for all keys.

#### Function :

##### 3.6.2.1 1-Button /Switch

**Up/Stop/Down/Stop** : Every time the "Switch Button" changes position, the next command is sent (from the related objects).

**Up/Down (w/o Stop)** : Every time the "Switch Button" changes position, the command to go Up or Down is sent (via the "Channel - x Move" object).



### 3.6.2.2 2-Button/Switch

**Move Up** : When this button is pressed, the "1-bit up" command is sent over the "Channel - x Move" object. When the switch moves to the other position, a 1-bit step/stop command is sent over the "Channel - x Stop" object.

**Move Down** : When this button is pressed, a "1-bit down" command is sent over the "Channel - x Move" object. When the switch moves to the other position, a 1-bit step/stop command is sent over the "Channel - x Stop" object.

### 3.6.2.3 1-Button/Push Button

The following appropriate one is selected from the list appearing in the Function section:

**"Short Press: Stop/Step, Long Press: Move"** : When the button is pressed for a short time, 1-bit step/stop command is sent via the "Channel - x Stop" object, when the button is pressed for a long time, the next "go up" or "go down" command is sent via the Channel - x Move" object.

**"Short Press: Move , Long Press: Stop/Step"**: When the button is pressed for a short time, the next "go up" or "go down" command is sent via the Channel - x Move object. When the button is pressed for a long time, a 1-bit step/stop command is sent via the "Channel - x Stop" object.

**"Up/Stop/Down/Stop"** : Each time the "Push Button" is pressed, the next command is sent (from the related objects). There is no long press in this function.

General	Operation with	<input checked="" type="radio"/> 1 Button <input type="radio"/> 2 Button
- Channel - 1	Button Type	<input type="radio"/> Switch Button <input checked="" type="radio"/> Push Button
General	Function	Short Press: Stop/Step Long Press: Move
<a href="#">Shutter Parameters</a>		
+ Channel - 2		

### 3.6.2.4 2-Button/Push Button

The following appropriate one is selected from the list appearing in the Function section:

General	Operation with	<input type="radio"/> 1 Button <input checked="" type="radio"/> 2 Button
- Channel - 1	Button Type	<input type="radio"/> Switch Button <input checked="" type="radio"/> Push Button
General	Function	Standard
<a href="#">Shutter Parameters</a>		
+ Channel - 2	Short Press	<input checked="" type="radio"/> Stop/Step Up <input type="radio"/> Stop/Step Down
	Long Press	<input checked="" type="radio"/> Move Up <input type="radio"/> Move Down

**Standart:** Task distribution is made according to short and long presses.

**Short Press :** "Stop/Step Up" or "Stop/Step Down" is selected. The information is sent via the "Channel - x Stop" object.

**Long Press :** Select the desired one from the "Go Up" or "Go Down" options. The information is sent via the "Channel - x Move" object.

**Moving:** Buttons only send movement command regardless of pressing time (no command is sent from Channel - x Object).

**Stepping :** It is a blade adjustment technique that is mostly used in flap adjustable curtains or small moving motors.

**Press:** Select the desired one from the "Go Up" or "Go Down" options. The information is sent via the "Channel - x Move" object.

**Stepping Period (0=No Repeat):** This is the area where the expected time for the step operation to be repeated when the button is pressed is set. The entered value is multiplied by 100ms and processed.



### 3.6.3 Shutter Communication Objects

Shutter	ComObject Number: Channel Number	Object Function	Length / Data Type	C	R	W	T
	0 : Channel - 1 3 : Channel - 2 6 : Channel - 3 9 : Channel - 4 12 : Channel - 5 15 : Channel - 6 18 : Channel - 7 21 : Channel - 8 24 : Channel - 9 27 : Channel - 10 30 : Channel - 11 33 : Channel - 12	Enable	1 bit / Boolean	C	-	W	-
	1 : Channel - 1 4 : Channel - 2 7 : Channel - 3 10 : Channel - 4 13 : Channel - 3 16 : Channel - 6 19 : Channel - 7 22 : Channel - 8 25 : Channel - 9 28 : Channel - 10 31 : Channel - 11 34 : Channel - 12	Move	1 bit / Up / Down	C	-	-	T
	2 : Channel - 1 5 : Channel - 2 8 : Channel - 3 11 : Channel - 4 14 : Channel - 5 17 : Channel - 6 20 : Channel - 7 23 : Channel - 8 26 : Channel - 9 29 : Channel - 10 32 : Channel - 11 35 : Channel - 12	Stop	1 bit / Step	C	-	-	T

### 3.7 Counter

It is a counting function made with a "Push Button" or "Switch Button". Each time the relevant key receives a trigger (while pressing or release the button), it changes its current value by the specified amount and transmits it from the "Channel - x Counter Value" object.

General	Main Function	<input type="radio"/> Disable <input checked="" type="radio"/> Digital Input
- Channel - 1	Digital Input Function	Counter
General	Contact Type	<input checked="" type="radio"/> Normally Open <input type="radio"/> Normally Closed
Counter Parameters	Enable with	<input type="radio"/> OFF Telegram <input checked="" type="radio"/> ON Telegram
+ Channel - 2	Initialize with	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

**Detection Edge:** The selection of the button pressed or released is made:

**Rising:** It defines the moment of pressing the button (open circuit to close circuit transition). The process takes place at this time.

**Falling:** It defines the moment of released the button (from short circuit to close circuit). The process takes place at this time.

**Data Type:** It shows the size and data type of the data to be counted. "Unsigned 1-byte" means 8-bit data from 0 to 255, "Signed 1-byte" refers to 8-bit data from -128 to +127, "Unsigned 2-byte" refers to a 16-bit number from 0 to 65535.

**Count Direction:** Counting can be done in increments or decrements.

**Starting From:** It is the field where we specify the first number to start counting (according to the data type).

**Step Size:** It is the number that the counter will add (if the counting direction is increasing) or subtract from its current value (if the counting direction is decrementing) each time the counter is triggered. The step size can be selected between 1 and 255.

**Send Last Value on Power-On:** When the device is reset, it can send where the counting was left to the data line. For this, the relevant box is ticked (Enabled).

**Reset With:** Counting can be returned to the initial value if desired. For this, the value specified here is expected from the "Channel - x Counter Reset" object. When "ON Telegram" is selected, 1-bit "1" value, when OFF Telegram is selected 1-bit "0" value, if "Any Value" is selected, the counter is reset when any of these commands comes.

**Count Limit:** A limit can be set to the counter if desired. Active or Passive can be selected. If Enabled is selected, this value is written in the "Limit (Included)" box that opens. This box is not displayed when Passive is selected. The box below is shown.

**Action When Final Value is Reached:** When the device reaches the last value as a data type (for example, when the counter reaches 255 in the "Unsigned 1-bit" data type in the incremental direction), it is the area where the counter's behavior in the next trigger is determined. "Stop Counting", "Continue with Next Value" or "Start Over" options are selected.

General	Detection Type	<input checked="" type="radio"/> Rising <input type="radio"/> Falling
- Channel - 1	Data Type	1 Byte Unsigned ▼
General	Count Direction	<input checked="" type="radio"/> Increase <input type="radio"/> Decrease
<b>Counter Parameters</b>	Starting From	0 ▲▼
	Step Size	1 ▲▼
+ Channel - 2	Send Last Value On Power-On	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
+ Channel - 3	Reset With	OFF Telegram ▼
+ Channel - 4	Count Limit	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
+ Channel - 5	Action When Final Value is Reached	Stop Counting ▼
+ Channel - 6		

### 3.7.1 Counter Communication Objects

Counter	ComObject Number: Channel Number	Object Function	Length / Data Type	C	R	W	T
	0 : Channel - 1 3 : Channel - 2 6 : Channel - 3 9 : Channel - 4 12 : Channel - 5 15 : Channel - 6 18 : Channel - 7 21 : Channel - 8 24 : Channel - 9 27 : Channel - 10 30 : Channel - 11 33 : Channel - 12	Enable	1 bit / Enable	C	-	W	-
	1 : Channel - 1 4 : Channel - 2 7 : Channel - 3 10 : Channel - 4 13 : Channel - 3 16 : Channel - 6 19 : Channel - 7 22 : Channel - 8 25 : Channel - 9 28 : Channel - 10 31 : Channel - 11 34 : Channel - 12	Counter Value	1 byte unsigned / Counter Pulse(0,...255) 1 byte signed / Counter Pulse(-128,...127) 2 byte unsigned / Pulse	C	-	-	T
	2 : Channel - 1 5 : Channel - 2 8 : Channel - 3 11 : Channel - 4 14 : Channel - 5 17 : Channel - 6 20 : Channel - 7 23 : Channel - 8 26 : Channel - 9 29 : Channel - 10 32 : Channel - 11 35 : Channel - 12	Counter Reset	1 bit / Reset	C	-	W	-



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