

# Din Rail 8 Input / 8 Output Module

## IO88B02KNX

### *Product Handbook*



Product: **Din Rail 8 Input / 8 Output Module**  
Order Code: **IO88B02KNX**

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- Any information inside this manual can be changed without advice.
- This handbook can be download freely from the website: [www.eelectron.com](http://www.eelectron.com)
- **Exclusion of liability:**  
Despite checking that the contents of this document match the hardware and software, deviations cannot be completely excluded. We therefore cannot accept any liability for this. Any necessary corrections will be incorporated into newer versions of this manual.

## 1. General Introduction

This manual is intended to be used by installers and describes functions and parameters of the device IO88B02KNX – Din Rail 8 Input / 8 Output Module and how is possible to change settings and configurations using ETS software tool.

## 2. Product and functional overview

The IO88B02KNX module is designed to be installed on a Din rail and to be used in Home and Building installations (i.e. offices, hospitals, hotels, private houses, etc...).

The device is equipped with 8 binary inputs (potential free) and 8 binary relay outputs. Inputs can be connected to conventional switching devices, e.g. push buttons, switches, floating contacts, for switching functions with pulse edge evaluation (e.g. rising or falling edge, toggle, etc...). Inputs can be configured with ETS SW, as output channels to drive LEDs in synoptic monitoring panels.

Input main functions:

- Load activation / deactivation commands (ON/OFF/TOGGLE) with short or long and short action
- Sending of long action on the same address of short action or on a different group address
- Dimmer management (with single or double push-button)
- Blind / Roller Shutter management (with single or double push-button)
- Scene management
- LED driving as independent channel (ON/OFF or BLINKING)

Output main functions:

- Load ON/OFF with timing function
- Programmable delay on activation (ON) or deactivation (OFF)
- NO / NC behaviour
- Programmable value on status sending
- Logical operation (AND / OR / XOR)
- Scene store and recall (4 scenes independent for every single output)

Relay from 5 to 8 are equipped with tab and can be switched manually

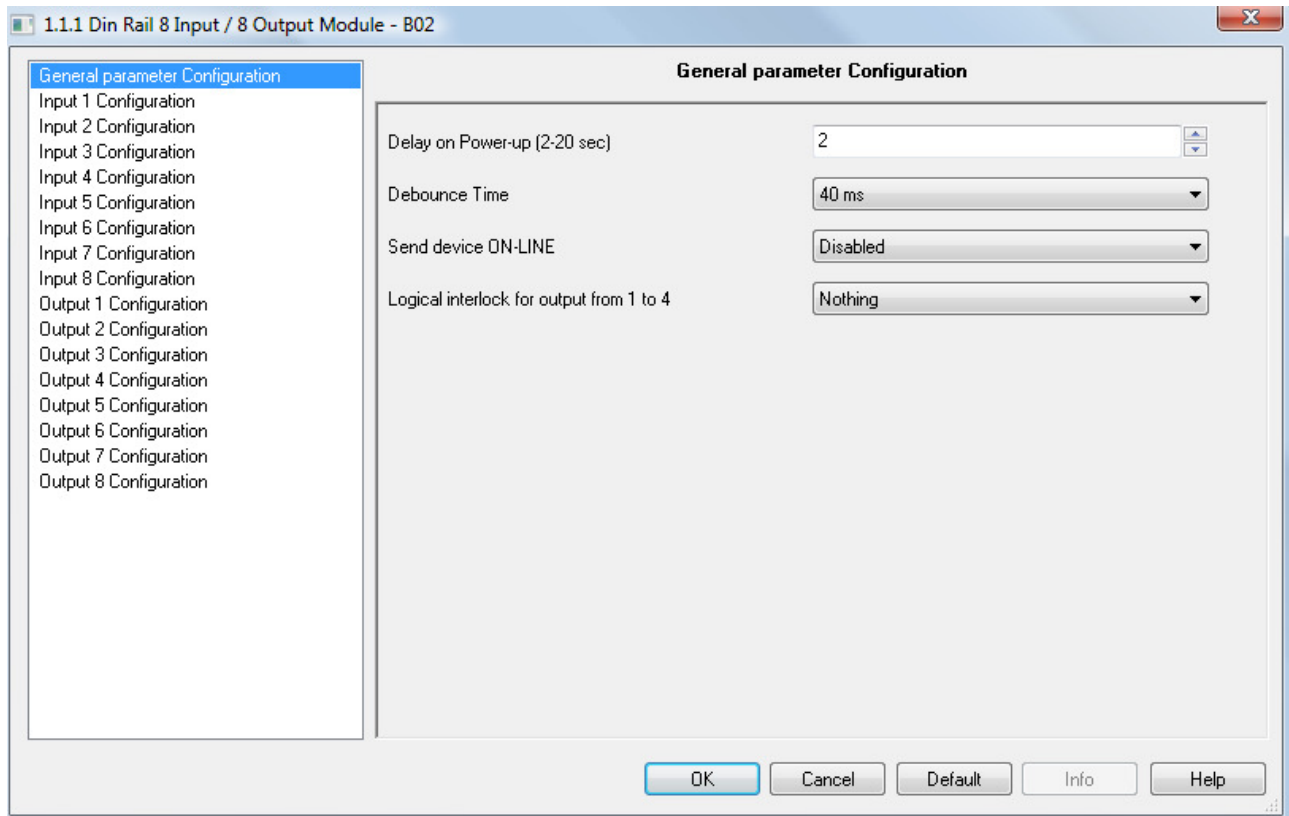
The physical address, group address and parameters are assigned and programmed with the ETS tool software. In order to commission the device, a PC with ETS2 version V1.3 or higher is required as well as an interface to the bus, e.g. via an RS232 interface or via a USB interface.

## 2.1. Address and associations limits

- The maximum number of group addresses allowed for the device is 44 this means that it is possible to associate the communication objects to a maximum of 44 group addresses.
- The maximum number of logical associations allowed for the device is 69; this means that the maximum number of logical connections between communication objects and group addresses is 69.
- **Caution:** there is a limit to the number of associations that can be created, on the same device, between transmission communications objects (i.e. inputs) and receiving communication objects (i.e. outputs). If you want, on the same device, add a group address linked to a transmission communication object (input) to a receiving communication object (output) which already has a different group address associated, please note that you can add a maximum of **20** group addresses of this kind for the whole device.

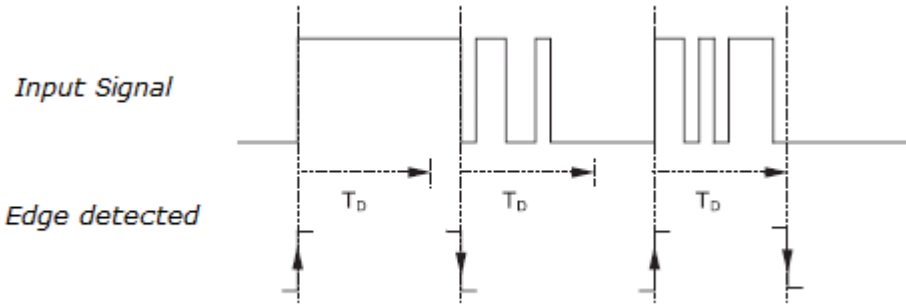
### 3. General Parameter Configuration

#### 3.1. Parameters



This page list generic parameters that affects all input channels, or their selection applies to all contacts of the input device simultaneously regardless of the function selected later for each.

KNX PARAMETER	SETTINGS
<b><i>TX delay on Power-up (2-20 sec)</i></b>	2 ÷ 15 seconds
<p>Through this parameter is possible to set the delay of transmission of telegrams after a power on by selecting the time by which the device is allowed to send telegrams.                      In large systems after a power failure or shutdown this delay avoids to generate excessive traffic on the bus, causing slow performance or a transmission block.                      If there are different devices that require to send telegrams on the bus after a reset, these delays must be programmed to prevent traffic congestion during the initialization phase.                      The input detection and the values of objects are updated accordingly at the end of the transmission delay time</p> <p>At the end of ETS programming the device behaves like after a power on.</p>	

KNX PARAMETER	SETTINGS		
<b>Debounce time</b>	20 ms 40 ms	80 ms 100 ms	150 ms 200 ms
<p>When a button is pressed it is possible to have the contact opened or closed more than once before fixing into a stable position; this can be caused by a rapid succession of bounces between mechanicals contacts.</p> <p>For this reason it is important to determine a correct value of the parameter “debounce time” to avoid these bounces could be taken by the device as input switching.</p> <p>How this parameter works: after the device has detected a change of status for a input channel, it waits for a time equal to the time set as “debounce time” before updating the value of the corresponding data point. The input signal is not evaluated during this time.</p> <p>This parameters affects all 8 device input channels .</p>			
			

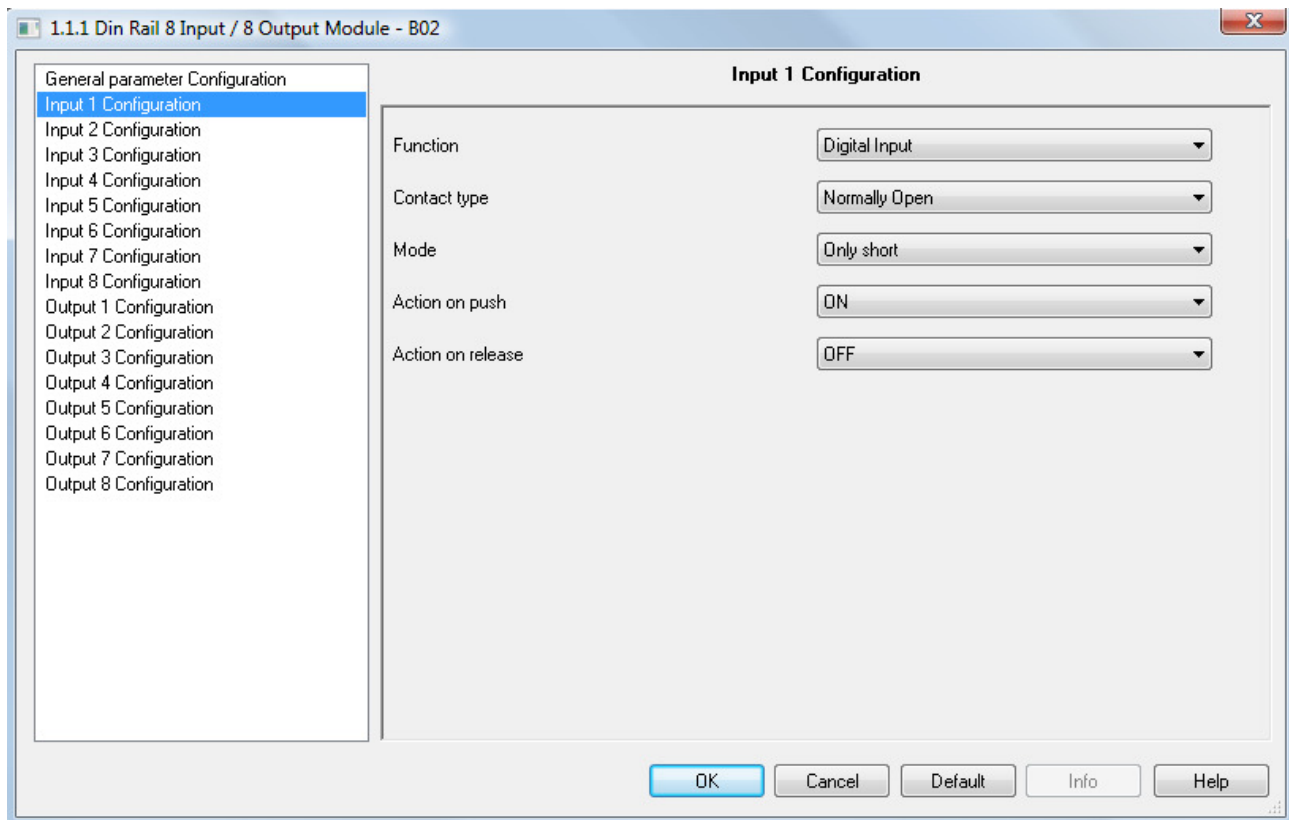
KNX PARAMETER	SETTINGS
<b>Send Device ON-LINE</b>	<ul style="list-style-type: none"> <li>• Disabled</li> <li>• Enabled</li> </ul>
<b>Device ON-LINE sending time</b>	<ul style="list-style-type: none"> <li>• 1 min</li> <li>• 10 min</li> <li>• 30 min</li> <li>• 1 hr</li> <li>• 2 Hr</li> <li>• 12 Hr</li> <li>• 24 Hr</li> </ul>
<p>Through this parameter it's possible to enable a cyclical sending, on the bus, of a 1 bit telegram with value “1”; this sending has a programmable time interval.</p> <p>This message can be used to detect errors like power failure or breakage of the device to a monitoring system or to a bus control system.</p>	
<b>Logical interlock for outputs from 1 to 4</b>	<div style="border: 1px solid gray; padding: 5px;"> <ul style="list-style-type: none"> <li>Nothing</li> <li>Output 1 and 2</li> <li>Output 3 and 4</li> <li>Output 1 with 2 and 3 with 4</li> <li>Output 1, 2, 3</li> <li>Output 1, 2, 3, 4</li> </ul> </div>
See paragraph 10	

### 3.2. Communications Objects

Number	Name	Object Function	Length	C	R	W	T	U	Priority
48	Device On-Line	Off/On	1 bit	C	R	W	T	-	Low

## 4. Input <x> Configuration

For each of the 8 input channels present on the device the selections are made through a configuration page.



Every single input channel can be configured to perform one of the following functions:

- Digital input
  - Short action on press or release or both (ON / OFF / TOGGLE)
  - Short & long press function (ON / OFF / TOGGLE)
  - Short & long press function with different communication objects
- Dimmer management (Brighter / Darker / Brighter & Darker)
- Blind / Roller Shutter management (Up / Down / Up & Down)
- Scene management
- Led ON / OFF
- Led Blinking

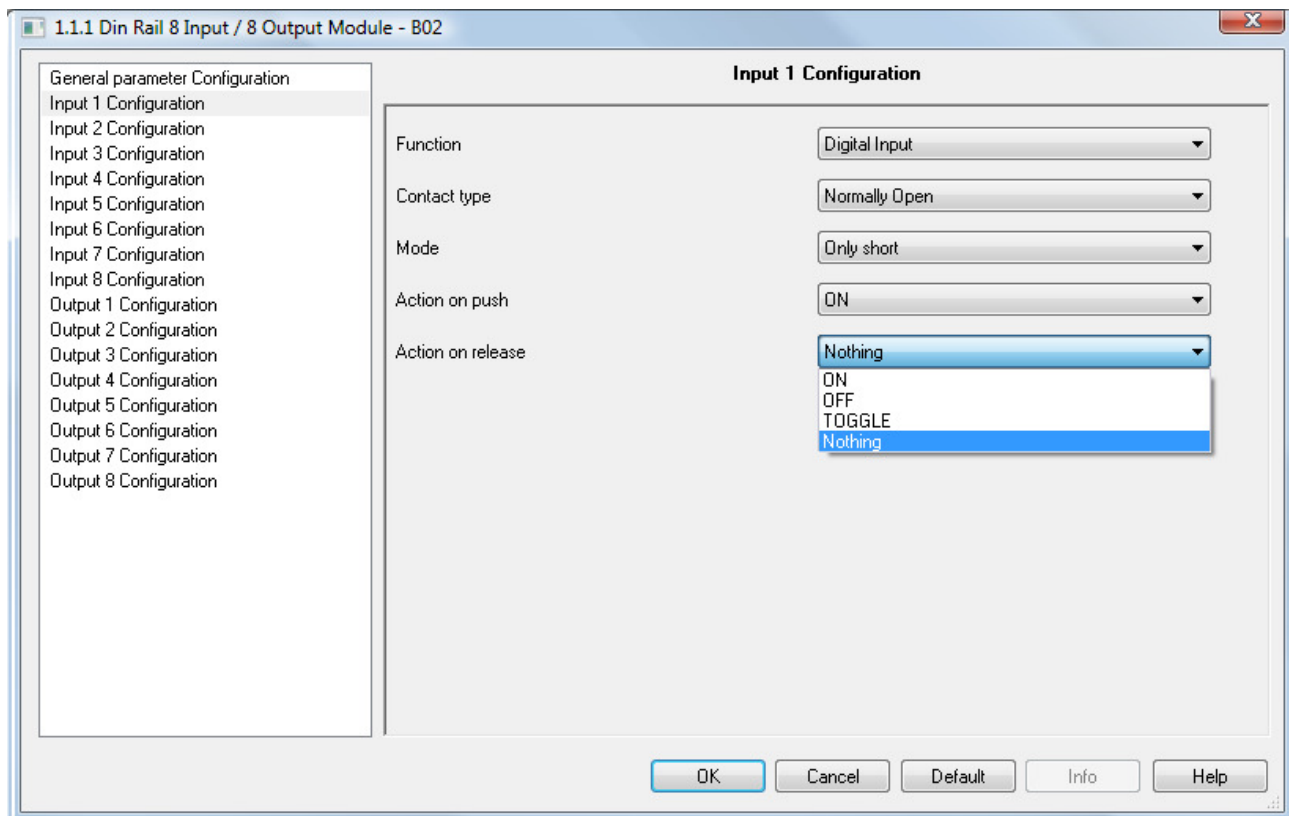
KNX PARAMETER	SETTINGS
<b>Function</b>	<ul style="list-style-type: none"> <li>• Digital Input</li> <li>• Dimming</li> <li>• Shutter and Blind</li> <li>• Scene</li> <li>• Output Led ON/OFF</li> <li>• Output Led Blinking</li> </ul>
<ul style="list-style-type: none"> <li>• Digital input</li> <li>• Dimming</li> <li>• Shutter and Blind</li> <li>• Scene</li> <li>• Output Led ON/OFF</li> <li>• Output Led Blinking</li> </ul>	see paragraph <b>5 - Digital Input</b> see paragraph <b>6 - Dimming</b> see paragraph <b>7 - Shutter and Blind</b> see paragraph <b>8 - Scene Management</b> see paragraph <b>9 - Led output</b> see paragraph <b>9 - Led output</b>
<b>Contact type</b>	<ul style="list-style-type: none"> <li>• Normally Open</li> <li>• Normally Close</li> </ul>
<p>This parameter selects which is the normal condition for the input channel, open or close. If you select <i>Normally Open</i> the device detects the closing of the input to determine which telegram to send; otherwise if you select <i>Normally Close</i> the front detected is the opening one.</p> <p>This parameter must be considered also for the short and long press function: if you select <i>Normally Open</i> the device detects how long the input is closed to determine if the press is short or long; otherwise if <i>Normally Close</i> is selected the device detects how long the input is opened to distinguish between short or long press.</p>	



## 5. Digital Input

KNX PARAMETER	SETTINGS
<p><b>Mode</b></p>	<ul style="list-style-type: none"> <li>• Only short</li> <li>• Short + Long</li> </ul>
<p>Through this parameter it's possible to configure an input channel to send a telegram with different values associated using long or short press or decide to send commands only with one of these two events.</p>	

### 5.1. Digital Input – Short Action Mode



KNX PARAMETER	SETTINGS
<b>Action on push</b>	<ul style="list-style-type: none"> <li>• ON</li> <li>• OFF</li> <li>• TOGGLE</li> <li>• Nothing</li> </ul>
<b>Action on release</b>	<ul style="list-style-type: none"> <li>• ON</li> <li>• OFF</li> <li>• TOGGLE</li> <li>• Nothing</li> </ul>
<p>This parameter allows to set which behaviour is expected when a edge is detected on a input channel; the difference between make or break contact is made with the parameter “<b>Contact type</b>”:</p> <ul style="list-style-type: none"> <li>• ON on make/ break contact telegram “1” – ON - is sent.</li> <li>• ON on make/ break contact telegram “0” – OFF - is sent.</li> <li>• TOGGLE on make/ break contact the actual CO value is evaluated and a telegram with opposite value is sent (▲)</li> <li>• Nothing Edges on input channels are ignored.</li> </ul>	

▲ When the TOGGLE function is used to control a single actuator from different input channels (input channels on the same device but also on different devices) the CO Write (W) flag must be set otherwise the toggle function will not work properly.

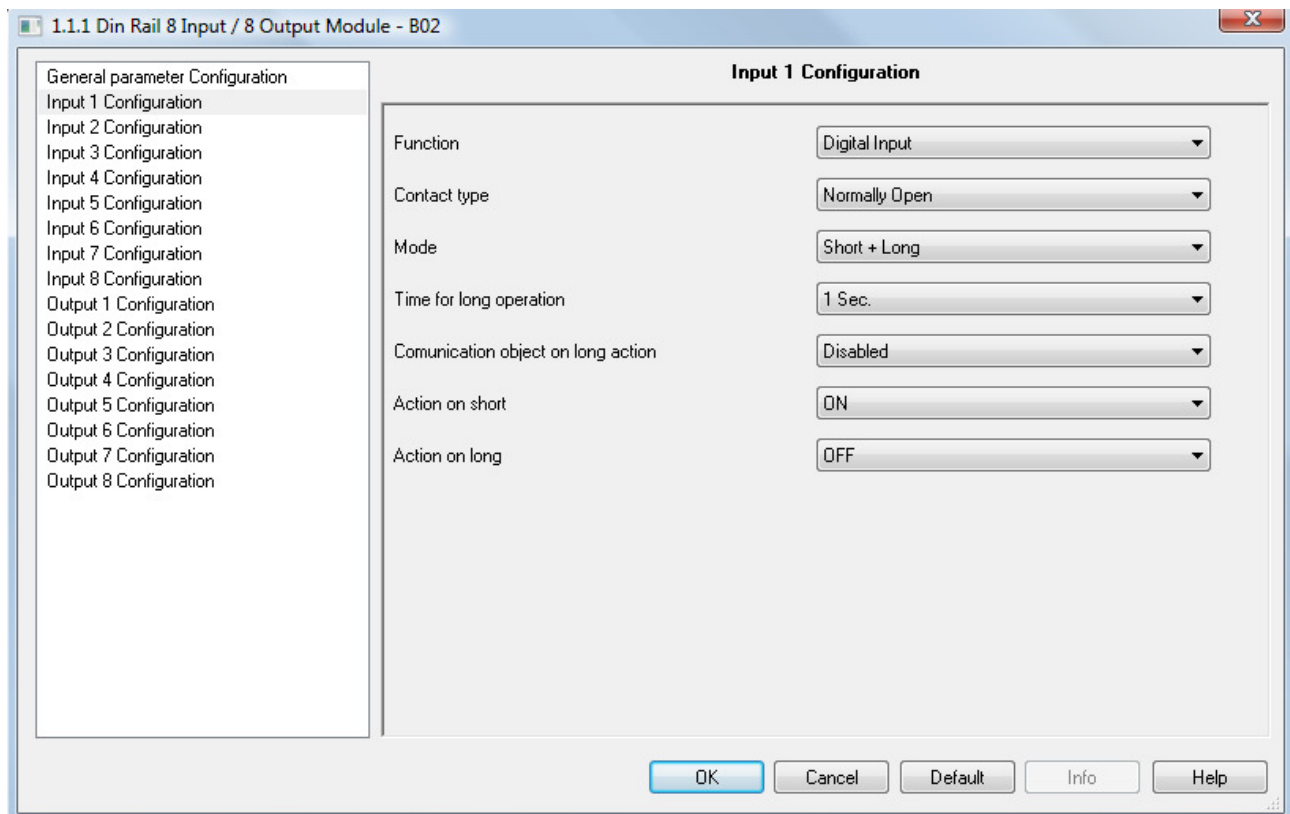
Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Digital input	Off/On	1 bit	C	R	W	T	-	Low

## 5.2. Communications Objects

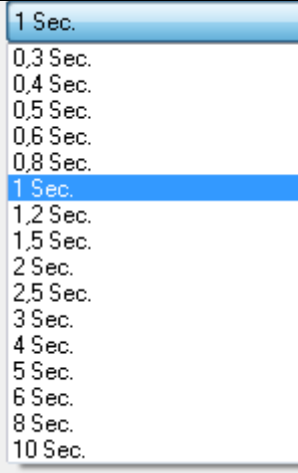
Communication Objects associated to *Short Action Mode* are :

Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Digital input	Off/On	1 bit	C	R	-	T	-	Low
2	<Input 2> Digital input	Off/On	1 bit	C	R	-	T	-	Low
4	<Input 3> Digital input	Off/On	1 bit	C	R	W	T	-	Low
6	<Input 4> Digital input	Off/On	1 bit	C	R	W	T	-	Low

## 5.3. Digital Input – Long Action Mode



By selecting parameter *Mode* with value *Short + Long* it's possible to send to the bus 2 different telegrams according with the type of action done on the input channels: one for short press and another for long press.

KNX PARAMETER	SETTINGS
<b>Contact type</b>	<ul style="list-style-type: none"> <li>• Normally Open</li> <li>• Normally Close</li> </ul>
See paragraph 4	
<b>Time for long operation</b>	
Determines how long must be a press to be considered long; if shorter than the selected value the press will be considered short.	
<b>Communication objects on long action</b>	<ul style="list-style-type: none"> <li>• Disable</li> <li>• Enable</li> </ul>
<p>If this parameter is disable, the telegrams sent to the bus, operating on the input channel with short or long press are transmitted from a single CO named &lt;Input x&gt; Digital Input; otherwise if this parameter is enable the telegram associated to the Long Press Action is transmitted by another CO named &lt;Input x&gt; Long action.</p> <p>In this way it is possible to send two different telegram on two different group addresses.</p>	
<b>Action on short</b>	<ul style="list-style-type: none"> <li>• ON</li> <li>• OFF</li> <li>• Toggle (▲)</li> <li>• Nothing</li> </ul>
<b>Action on long</b>	
This parameter selects which telegram in associated to the short or long press.	

▲ When the TOGGLE function is used to control a single actuator from different input channels (input channels on the same device but also on different devices) the CO Write (W) flag must be set otherwise the toggle function will not work properly.

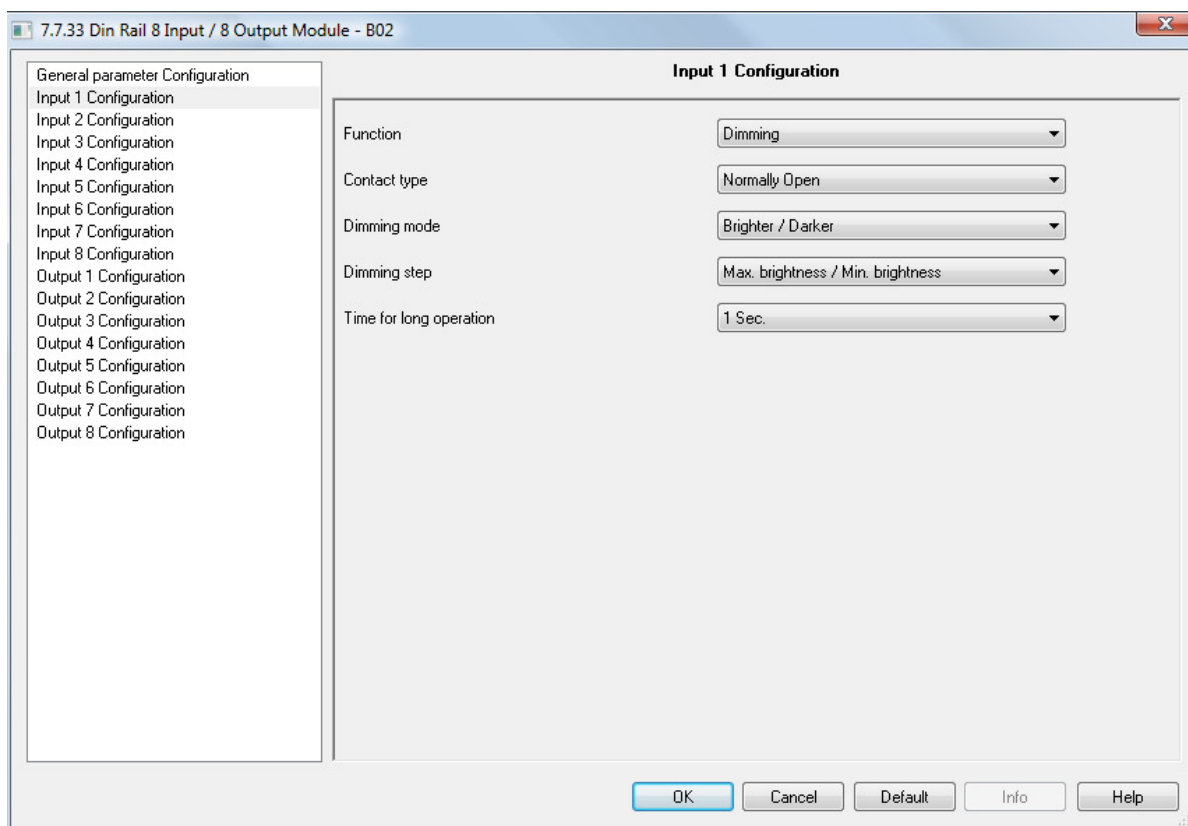
Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Digital input	Off/On	1 bit	C	R	W	T	-	Low
1	<Input 1> Long action	Off/On	1 bit	C	R	W	T	-	Low

## 5.4. Communications Objects

Communication Objects associated to *Short + Long Action Mode* are :

Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Digital input	Off/On	1 bit	C	R	W	T	-	Low
1	<Input 1> Long action	Off/On	1 bit	C	R	-	T	-	Low
2	<Input 2> Digital input	Off/On	1 bit	C	R	W	T	-	Low
3	<Input 2> Long Action	Off/On	1 bit	C	R	-	T	-	Low
4	<Input 3> Digital input	Off/On	1 bit	C	R	W	T	-	Low
5	<Input 3> Long Action	Off/On	1 bit	C	R	-	T	-	Low
6	<Input 4> Digital input	Off/On	1 bit	C	R	W	T	-	Low
7	<Input 4> Long Action	Off/On	1 bit	C	R	-	T	-	Low
8	<Input 5> Digital input	Off/On	1 bit	C	R	W	T	-	Low
9	<Input 5> Long Action	Off/On	1 bit	C	R	-	T	-	Low
10	<Input 6> Digital input	Off/On	1 bit	C	R	W	T	-	Low
11	<Input 6> Long Action	Off/On	1 bit	C	R	-	T	-	Low
12	<Input 7> Digital input	Off/On	1 bit	C	R	W	T	-	Low
13	<Input 7> Long Action	Off/On	1 bit	C	R	-	T	-	Low
14	<Input 8> Digital input	Off/On	1 bit	C	R	W	T	-	Low
15	<Input 8> Long Action	Off/On	1 bit	C	R	-	T	-	Low

## 6. Input: Dimming



Trough the dimming function it's possible to control a light dimmer using short & long press of a push button connected to the input channel.

Each input uses 2 communication object:

- 1 bit dimension for ON /OFF command associated to short press operation
- 4 bit dimension for brightness regulation associated to long press operation

KNX PARAMETER	SETTINGS							
<b>Contact type</b>	<ul style="list-style-type: none"> <li>• Normally Open</li> <li>• Normally Close</li> </ul>							
See paragraph 4								
<b>Dimming Mode</b>	<ul style="list-style-type: none"> <li>• Brighter</li> <li>• Darker</li> <li>• Brighter / Darker</li> </ul>							
<ul style="list-style-type: none"> <li>• Brighter</li> <li>• Darker</li> <li>• Brighter / Darker</li> </ul>	<p>on short operation telegram “1” – ON - is sent to the bus, on long operation telegram “increase brightness” is sent to the bus</p> <p>on short operation telegram “0” – OFF - is sent to the bus, on long operation telegram “decrease brightness” is sent to the bus</p> <p>on short or long operation telegrams ON / OFF and telegrams “increase / decrease brightness” are sent alternatively (▲)</p>							
<b>Dimming step</b>	<table border="1"> <thead> <tr> <th>Max. brightness/Min. Brightness</th> </tr> </thead> <tbody> <tr> <td>1/2 Brighter/Darker</td> </tr> <tr> <td>1/4 Brighter/Darker</td> </tr> <tr> <td>1/8 Brighter/Darker</td> </tr> <tr> <td>1/16 Brighter/Darker</td> </tr> <tr> <td>1/32 Brighter/Darker</td> </tr> <tr> <td>1/64 Brighter/Darker</td> </tr> </tbody> </table>	Max. brightness/Min. Brightness	1/2 Brighter/Darker	1/4 Brighter/Darker	1/8 Brighter/Darker	1/16 Brighter/Darker	1/32 Brighter/Darker	1/64 Brighter/Darker
Max. brightness/Min. Brightness								
1/2 Brighter/Darker								
1/4 Brighter/Darker								
1/8 Brighter/Darker								
1/16 Brighter/Darker								
1/32 Brighter/Darker								
1/64 Brighter/Darker								
<p><b>Max brightness / min brightness:</b> When a long press is detected, device sends on the bus a command in order to increase/decrease 100% the brightness; when the contact returns in its normal condition (open or close, it depends on the <i>Contact type</i> parameter selects) a STOP telegram is sent.</p> <p><b>1/2 (or other values) Brighter / Darker</b> Behaviur is the same of the previous setting but when a long press is detected device sends a command to the bus in order to increase/decrease 1/2 (50%) the brightness; 1/4 means 25%; 1/8 means 12.5% ; 1/16 means 6.25% ; 1/32 means 3.125% 1/64 means 1.56%</p>								
<b>Time for long operation</b>	Same values seen in short + long action							
Determines how long must be a press action to be considered long; if shorter than the selected value the press will be considered short.								

▲ When the *BRIGHTER / DARKER* function is used to control a single dimmer from different input channels (input channels on the same device but also on different devices) the *CO Write (W)* flag must be set otherwise the function will not work properly.

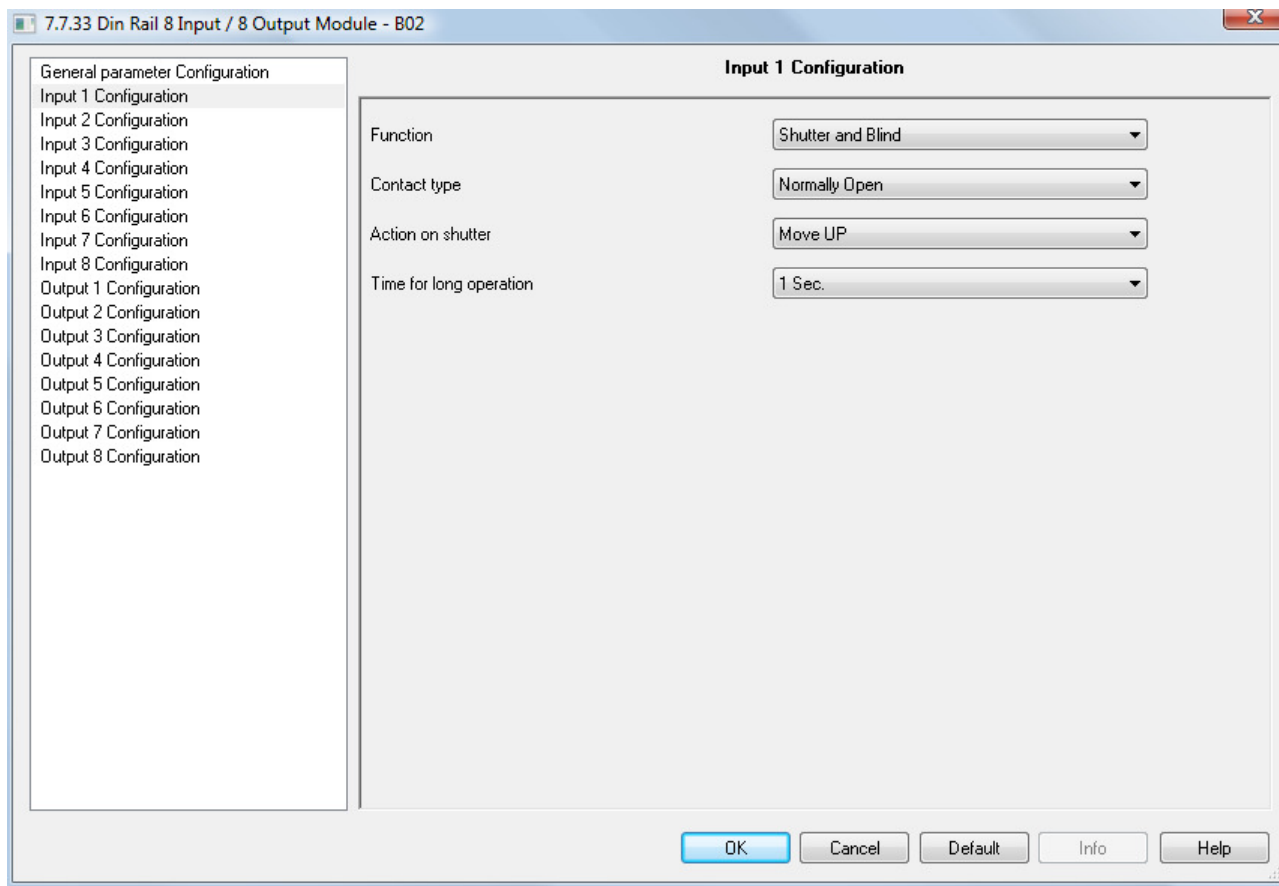
Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
1	<Input 1> Dimming	Dimming Control	4 bit	C	R	W	T	-	Low

## 6.2. Communications Objects

For every input channel configured as *Dimming*, two different communication objects are used, as shown below:

Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
1	<Input 1> Dimming	Dimming Control	4 bit	C	R	W	T	-	Low
2	<Input 2> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
3	<Input 2> Dimming	Dimming Control	4 bit	C	R	-	T	-	Low
4	<Input 3> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
5	<Input 3> Dimming	Dimming Control	4 bit	C	R	-	T	-	Low
6	<Input 4> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
7	<Input 4> Dimming	Dimming Control	4 bit	C	R	-	T	-	Low
8	<Input 5> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
9	<Input 5> Dimming	Dimming Control	4 bit	C	R	-	T	-	Low
10	<Input 6> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
11	<Input 6> Dimming	Dimming Control	4 bit	C	R	-	T	-	Low
12	<Input 7> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
13	<Input 7> Dimming	Dimming Control	4 bit	C	R	-	T	-	Low
14	<Input 8> Dimming On/Off	Off/On	1 bit	C	R	W	T	-	Low
15	<Input 8> Dimming	Dimming Control	4 bit	C	R	-	T	-	Low

## 7. Input: Shutter and Blind



Through the Shutter and Blind function it's possible to control Roller Shutters or Blinds using short & long press of a push button connected to the input channel.

Each input uses 2 communication object:

- 1 bit dimension for STEP /STOP command associated to short press operation
- 1 bit dimension for UP / DOWN command associated to long press operation

KNX PARAMETER	SETTINGS
<b>Contact type</b>	<ul style="list-style-type: none"> <li>• Normally Open</li> <li>• Normally Close</li> </ul>
See paragraph 4	
<b>Action on shutter</b>	<ul style="list-style-type: none"> <li>• Move UP</li> <li>• Move Down</li> <li>• Move UP / Move DOWN</li> </ul>



<ul style="list-style-type: none"> <li>• Move UP on short operation Command STEP UP / STOP - is sent to the bus, on long operation telegram “MOVE UP” is sent to the bus.</li> <li>• Move DOWN on short operation Command STEP DOWN / STOP - is sent to the bus, on long operation telegram “MOVE DOWN” is sent to the bus.</li> <li>• Move UP / Move DOWN on short or long operation telegrams STEP / STOP and telegrams MOVE UP / DOWN are sent alternatively (▲).</li> </ul>	
<b>Time for long operation</b>	Same values seen in short + long action
Determines how long must be a press to be considered long; if shorter than the selected value the press action will be considered short.	

▲ When the MOVE UP / MOVE DOWN function is used to control a single shutter from different input channels (input channels on the same device but also on different devices) the CO Write (W) flag must be set otherwise the function will not work properly.

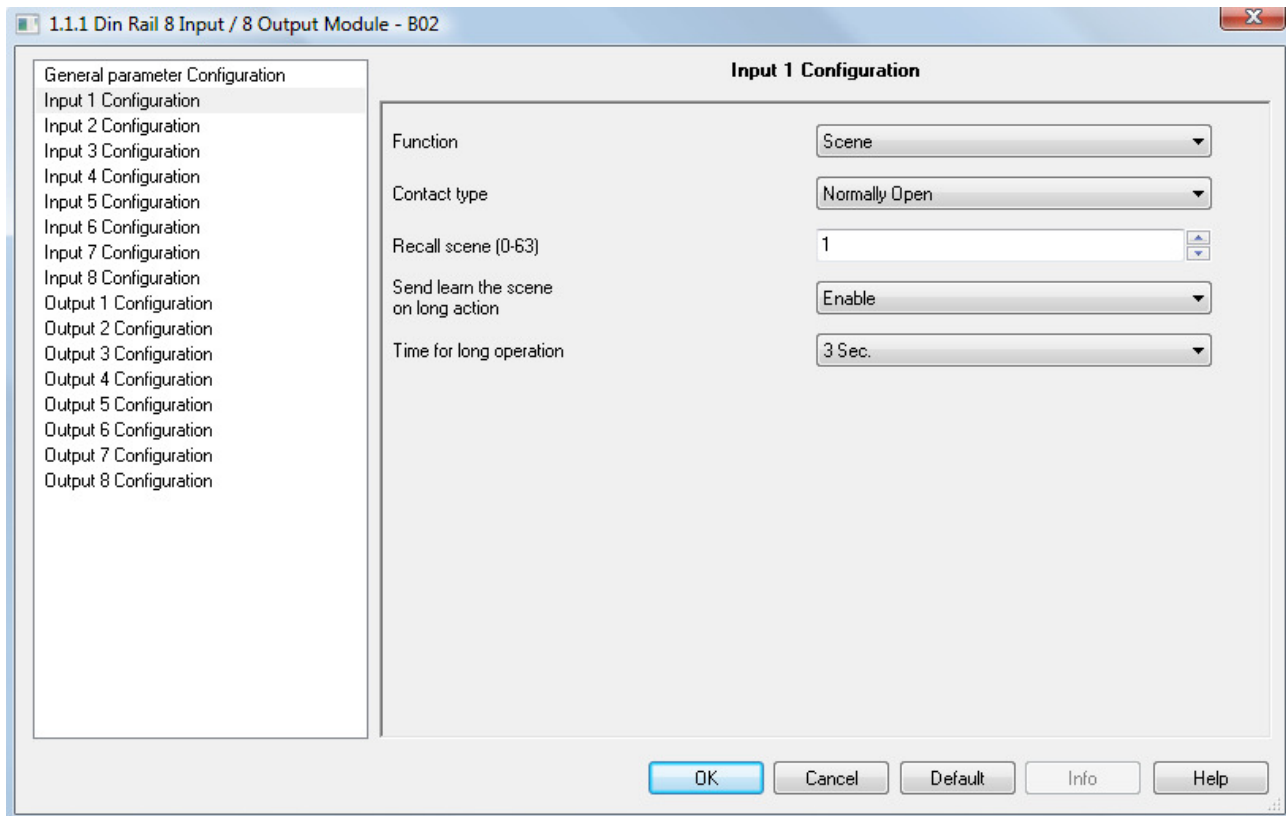
Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
1	<Input 1> Shutter STOP/Step	Stop/Step	1 bit	C	R	W	T	-	Low

## 7.2. Communications Objects

For every input channel configured as *Shutter and Blind* two different communication objects are used, as shown below:

Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
1	<Input 1> Shutter STOP/Step	Stop/Step	1 bit	C	R	W	T	-	Low
2	<Input 2> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
3	<Input 2> Shutter STOP/Step	Stop/Step	1 bit	C	R	-	T	-	Low
4	<Input 3> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
5	<Input 3> Shutter STOP/Step	Stop/Step	1 bit	C	R	-	T	-	Low
6	<Input 4> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
7	<Input 4> Shutter STOP/Step	Stop/Step	1 bit	C	R	-	T	-	Low
8	<Input 5> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
9	<Input 5> Shutter STOP/Step	Stop/Step	1 bit	C	R	-	T	-	Low
10	<Input 6> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
11	<Input 6> Shutter STOP/Step	Stop/Step	1 bit	C	R	-	T	-	Low
12	<Input 7> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
13	<Input 7> Shutter STOP/Step	Stop/Step	1 bit	C	R	-	T	-	Low
14	<Input 8> Shutter On/Off	Up/Down	1 bit	C	R	W	T	-	Low
15	<Input 8> Shutter STOP/Step	Stop/Step	1 bit	C	R	-	T	-	Low

## 8. Input: Scene Management



In this configuration page it's possible to set the input channel for scene management : learn and recall scene commands.

These two different behaviour (recall and learn) are performed troughs two different action (short and long press) on a a push button connected to the input channel.

Learn scene on long press action is enabled by a parameter.

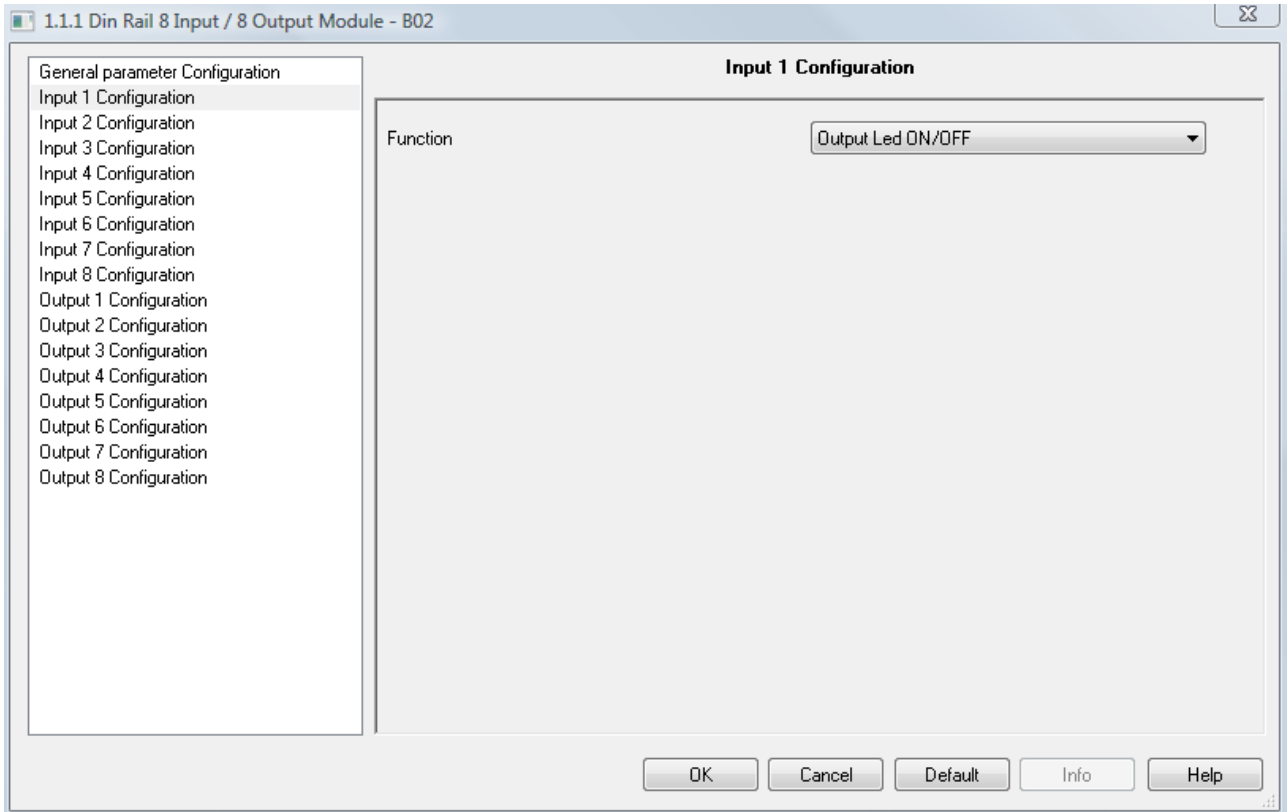
KNX PARAMETER	SETTINGS
<b>Contact type</b>	<ul style="list-style-type: none"> <li>• Normally Open</li> <li>• Normally Close</li> </ul>
See paragraph 4	
<b>Recall Scene</b>	Number of the scene: 0 ÷ 63
<p>This parameter sets the value of the scene you intend to learn / recall (one per channel).</p> <p>Remember that output devices (i.e. actuators, etc.) generally can manage several scenes, each identified by a value (that varies from 0 to 63); therefore is important to set this parameter correctly and matching the number set on the actuators.</p>	
<b>Send learn the scene on long action</b>	<ul style="list-style-type: none"> <li>• Disable</li> <li>• Enable</li> </ul>
If disable long press action is ignored and no telegram is sent to the bus; if enable on long press action a learn scene telegram is sent to the bus.	
<b>Time for long operation</b>	Same values seen in short + long action
Determines how long must be a press to be considered long; if shorter than the selected value the press action will be considered short.	

## 8.1. Communications Objects

For every input channel configured as *Scene* these communication objects are used, as shown below:

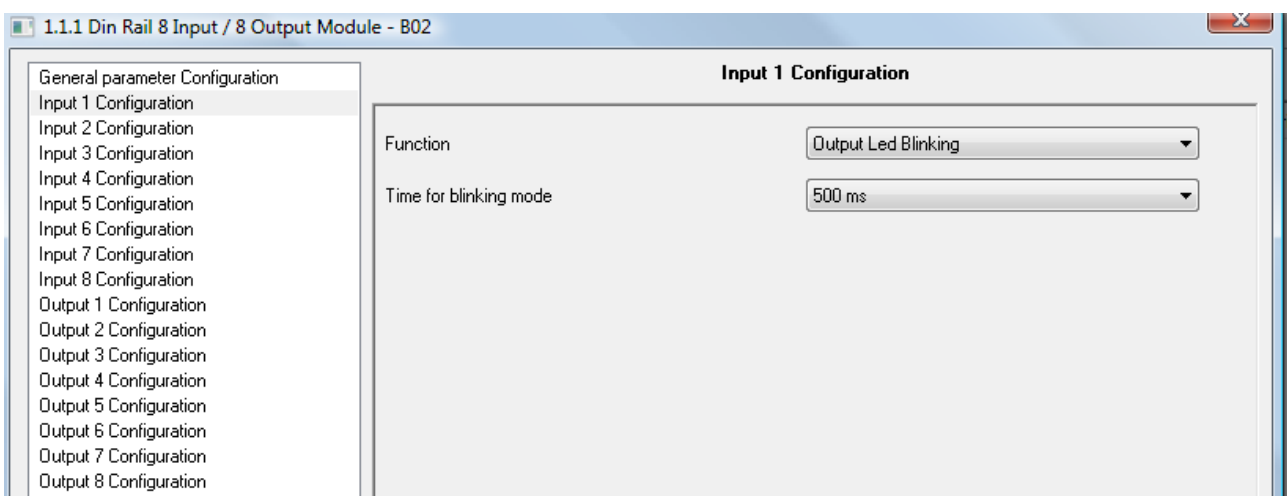
Number	Name	Object Function	Length	C	R	W	T	U	Priority
0	<Input 1> Recall/Learn scene	Scene	1 Byte	C	R	-	T	-	Low
2	<Input 2> Activate scene	Scene	1 Byte	C	R	-	T	-	Low
4	<Input 3> Activate scene	Scene	1 Byte	C	R	-	T	-	Low
6	<Input 4> Activate scene	Scene	1 Byte	C	R	-	T	-	Low
8	<Input 5> Activate scene	Scene	1 Byte	C	R	-	T	-	Low
10	<Input 6> Activate scene	Scene	1 Byte	C	R	-	T	-	Low
12	<Input 7> Activate scene	Scene	1 Byte	C	R	-	T	-	Low
14	<Input 8> Activate scene	Scene	1 Byte	C	R	-	T	-	Low

## 9. Led Output



IO88B02KNX device has 8 input channels configurable as output able to drive one led with a maximum current consumption of 0,5 mA

The output channel can drive the led in 2 different way: ON/OFF or Blinking (flashing)



KNX PARAMETER	SETTINGS
<b>Function</b>	<ul style="list-style-type: none"> <li>• ON / OFF</li> <li>• Blinking</li> </ul>
This parameter selects behaviour associated to the led when is active.	
<b>Time for blinking mode</b>	<ul style="list-style-type: none"> <li>• 250 ms</li> <li>• 500 ms</li> <li>• 750 ms</li> <li>• 1 sec.</li> </ul>
This parameter is visible when the function mode <i>Blinking</i> is selected and sets the on / off period of flashing.	

## 9.1. Communications Objects

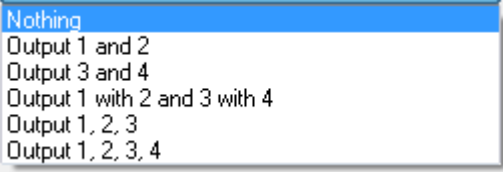
For every input channel configured as *led output* two different communication objects are used, as shown below:

Number	Name	Object Function	Length	C	R	W	T	U	Priority
<input type="checkbox"/> 0	<Input 1> Led Control	Off/On	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 2	<Input 2> Led Control	Off/On	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 4	<Input 3> Led Control	Off/On	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 6	<Input 4> Led Control	Off/On	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 8	<Input 5> Led Control	Off/On	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 10	<Input 6> Led Control	Off/On	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 12	<Input 7> Led Control	Off/On	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 14	<Input 8> Led Control	Off/On	1 bit	C	R	W	T	-	Low

Number	Name	Object Function	Length	C	R	W	T	U	Priority
<input type="checkbox"/> 0	<Input 1> Led Control	Off/Blink	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 2	<Input 2> Led Control	Off/Blink	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 4	<Input 3> Led Control	Off/Blink	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 6	<Input 4> Led Control	Off/Blink	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 8	<Input 5> Led Control	Off/Blink	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 10	<Input 6> Led Control	Off/Blink	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 12	<Input 7> Led Control	Off/Blink	1 bit	C	R	W	T	-	Low
<input type="checkbox"/> 14	<Input 8> Led Control	Off/Blink	1 bit	C	R	W	T	-	Low

## 10. Interlocking

Relay from 1 to 4 can be configured in order to have a logic interlock (see parameter in General Parameter Configuration page)

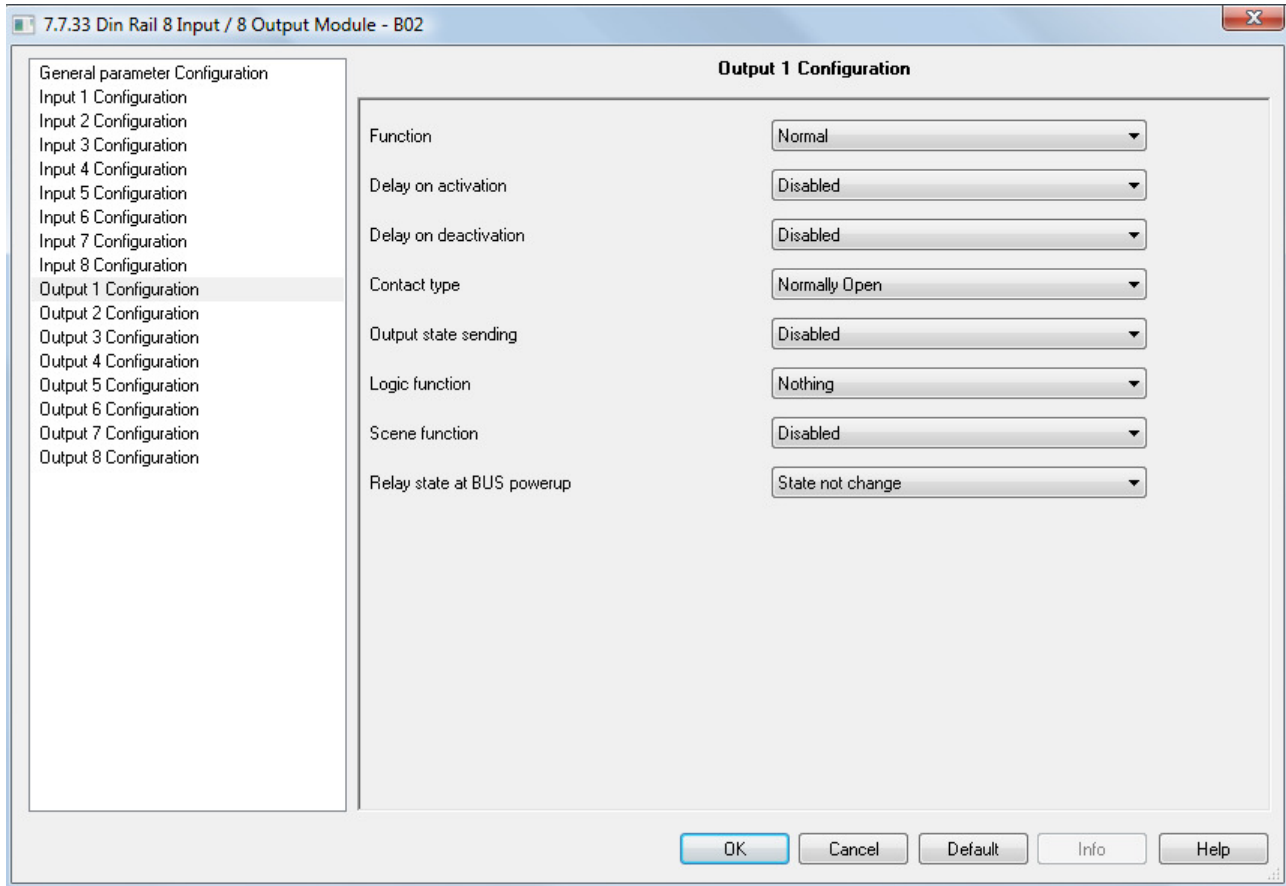
KNX PARAMETER	SETTINGS
<p><b>Logical interlock for outputs from 1 to 4</b></p>	
<p>When interlocking is enabled between two or more outputs the behaviour of a channel is submitted at what happens on the other channel(s) it is interlocked with.</p> <ul style="list-style-type: none"> <li>• Nothing Interlocking is disabled</li> <li>• Output 1 and 2 Interlocking is active between outputs 1 and 2</li> <li>• Output 3 and 4 Interlocking is active between outputs 3 and 4</li> <li>• Output 1 with 2 and 3 with 4 Interlocking is active between outputs 1 and 2 and between outputs 3 and 4</li> <li>• Output 1, 2, 3 Interlocking is active between output 1, 2 and 3</li> <li>• Output 1, 2, 3, 4 Interlocking is active between output 1, 2, 3 and 4</li> </ul>	

**Example:** interlocking between Output 1 and 2.

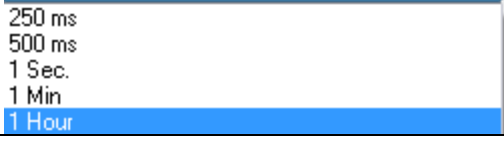
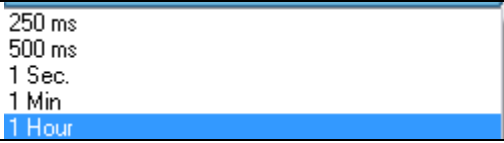
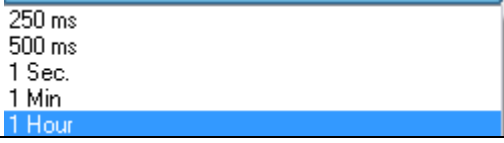
When interlocking is enabled between output channels 1 and 2 the channels are configurable independently by ETS with a limitation: scene, logical functions and delays on activation/deactivation cannot be enabled.

When a telegram is received on a communication object (i.e. on output 1) the device initially sets the channel 2 in off (like if it would have received a OFF command) and then starts the execution of the function associated to the command received.

## 11. Output <x> Configuration



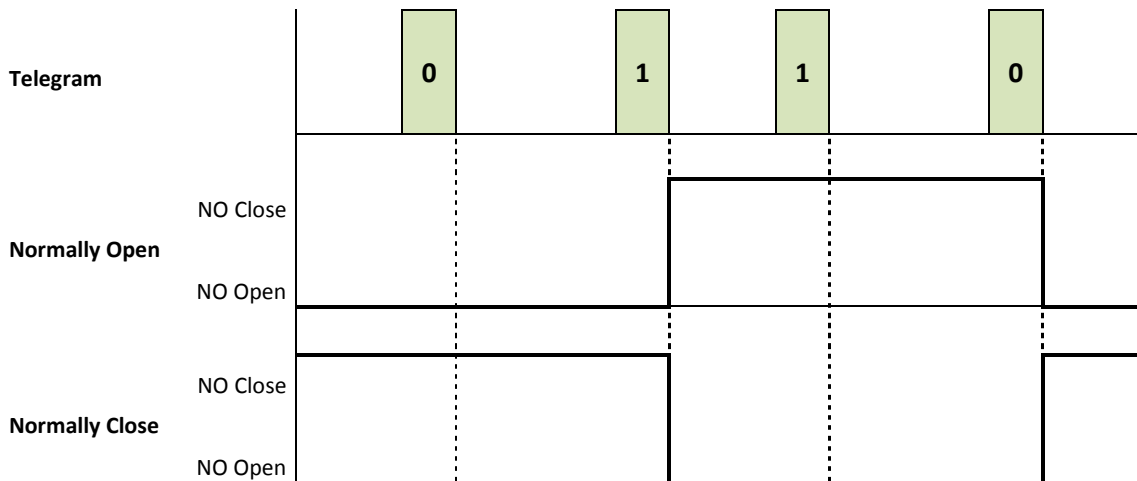
KNX PARAMETER	SETTINGS
<b>Contact type</b>	<ul style="list-style-type: none"> <li>• Normally Open</li> <li>• Normally Close</li> </ul>
<ul style="list-style-type: none"> <li>• Normally Open</li> <li>• Normally Close</li> </ul>	Output is intended to be activated when the contact is closed Output is intended to be activated when the contact is opened

KNX PARAMETER	SETTINGS
<b>Function</b>	<ul style="list-style-type: none"> <li>• Normal</li> <li>• Timing</li> </ul>
<ul style="list-style-type: none"> <li>• Normal</li> <li>• Timing</li> </ul>	Output has no temporization for auto deactivation Output has temporization for auto deactivation
<b>Time Base</b>	
<b>Factor for TimeBase</b>	1 ÷ 200
When timing function is active it's possible to set the duration of the timer through the parameters "Timebase" and "Factor for TimeBase"	
<b>Delay on activation</b>	<ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul>
Enabling this parameter it's possible to have a delay from the reception of a telegram and the actuation of the activation command (ON)	
<b>Factor for TimeBase (delay on activation)</b>	
<b>TimeBase (delay on activation)</b>	1 ÷ 200
Set the activation delay duration	
<b>Delay on deactivation</b>	<ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul>
Enabling this parameter it's possible to have a delay from the reception of a telegram and the actuation of the deactivation command (OFF)	
<b>Factor for TimeBase (delay on deactivation)</b>	
<b>TimeBase (delay on deactivation)</b>	1 ÷ 200
Set the deactivation delay duration	



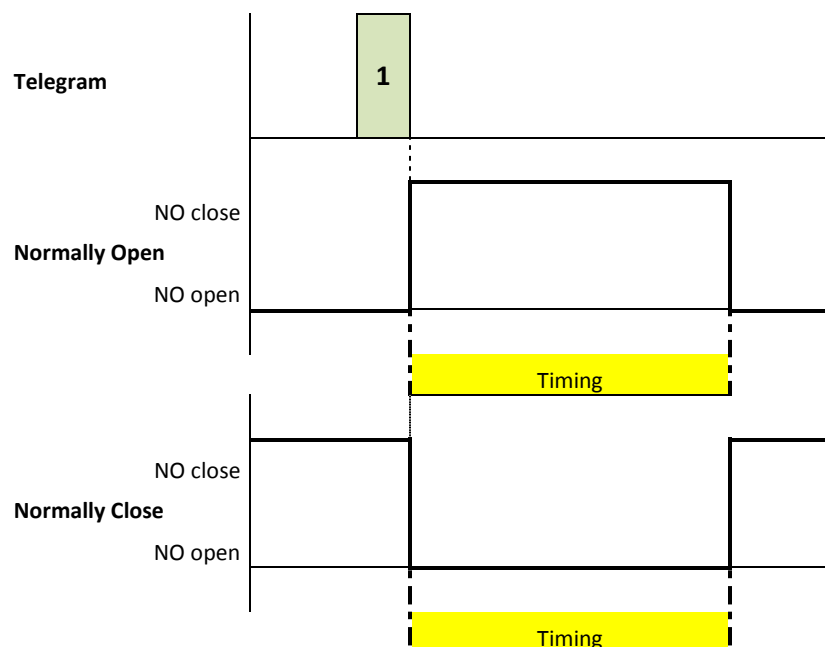
## 11.2. Function “Normal”

Output switch when is received a telegram which change the status of the communication object <output x> Relay Control; the behaviour of the output is influenced by the parameter “Contact Type”

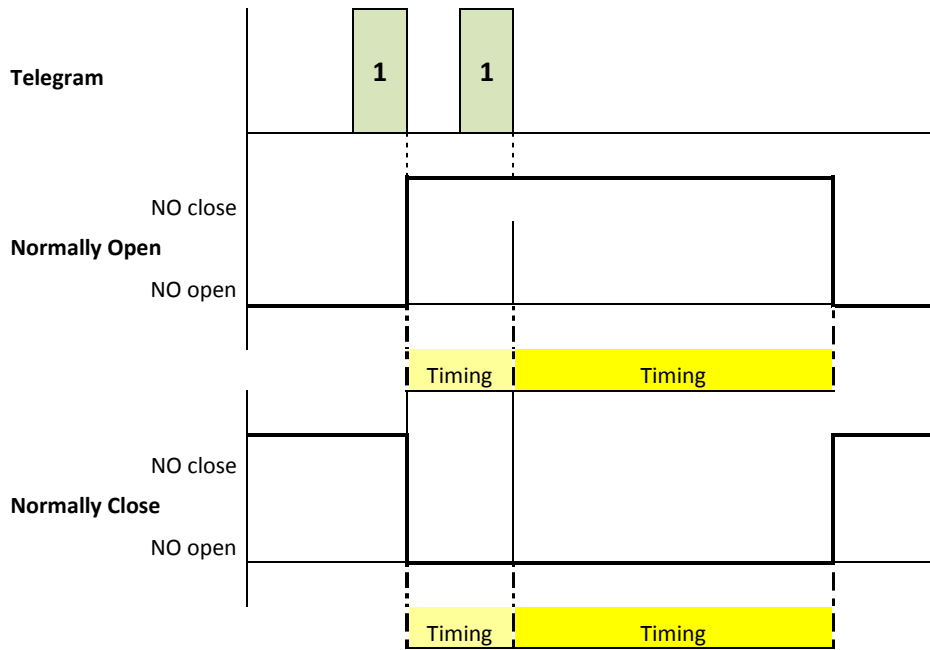


## 11.2. Function “Timing”

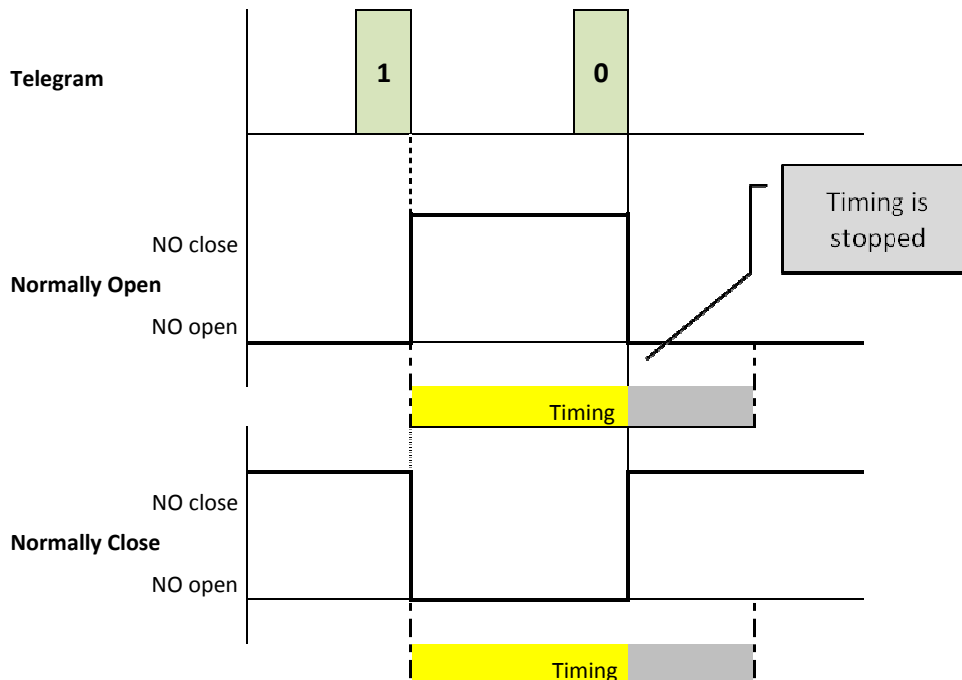
Duration of relay activation is programmable by ETS.



Duration of relay timing is re-triggerable:.

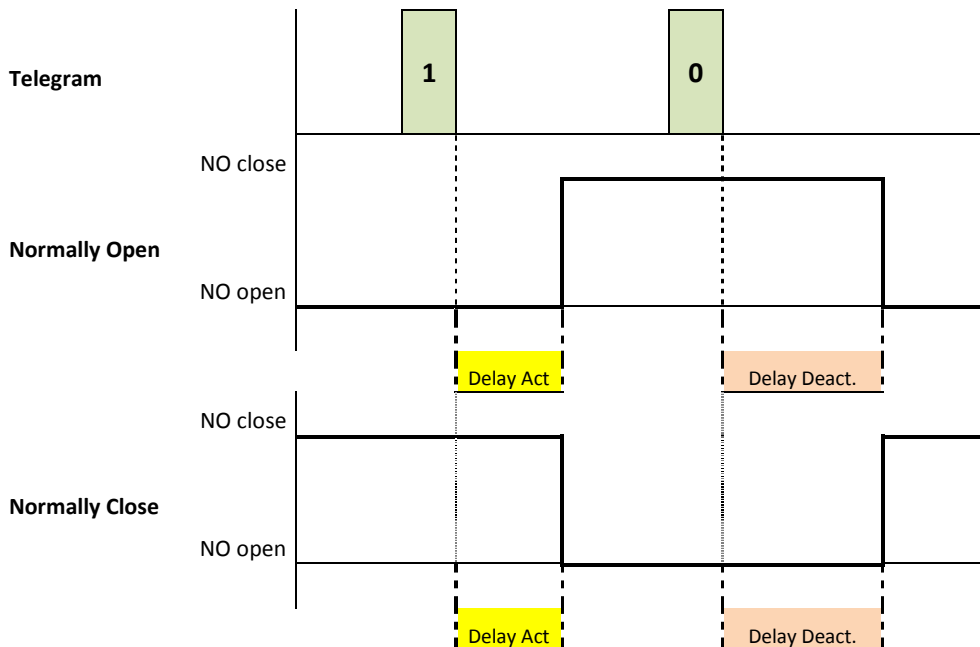


Duration of relay timing can be stopped with a OFF command.



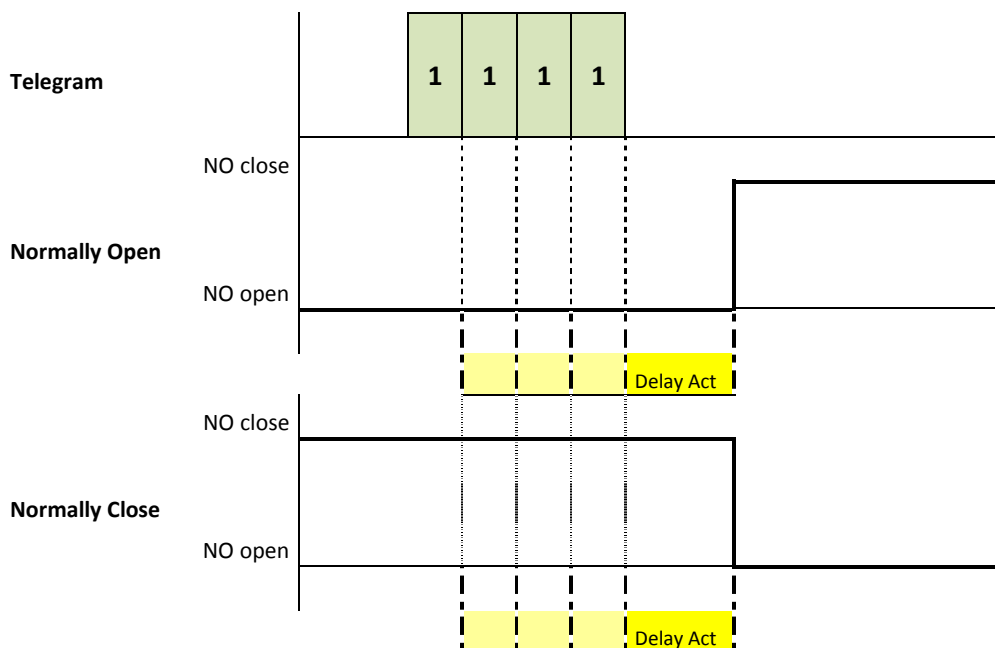
## 11.2. Function “Delay on Activation” and “Delay on Deactivation”

Duration of delay on activation / deactivation are programmable by ETS.

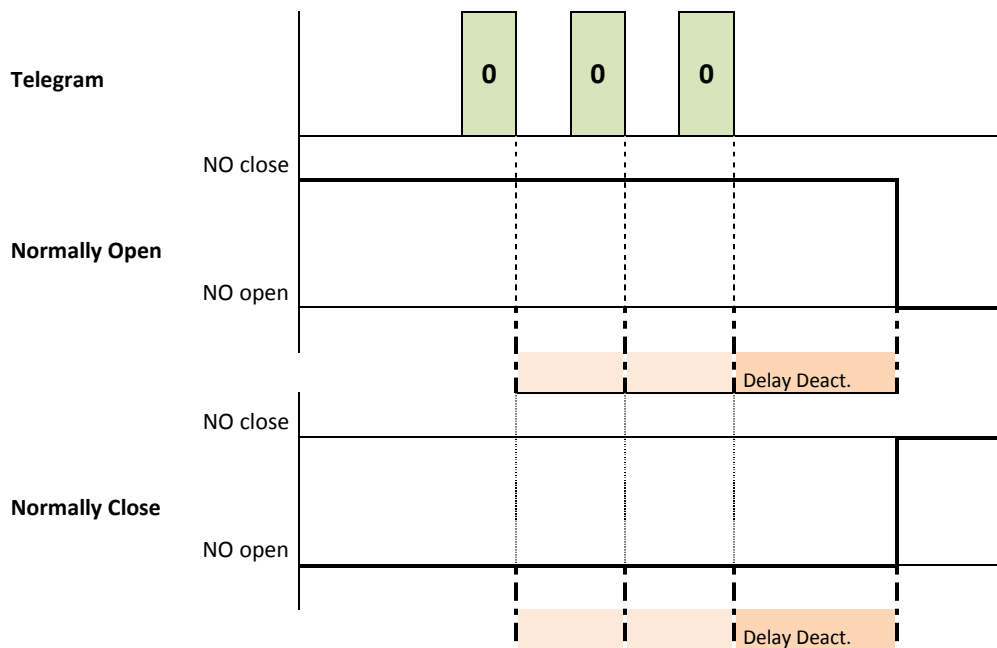


Delay on deactivation is applicable also to a output in which is enabled the timing function. In that case the output switches in OFF state when the first timer between “duration timer” and “deactivation timer” expires.

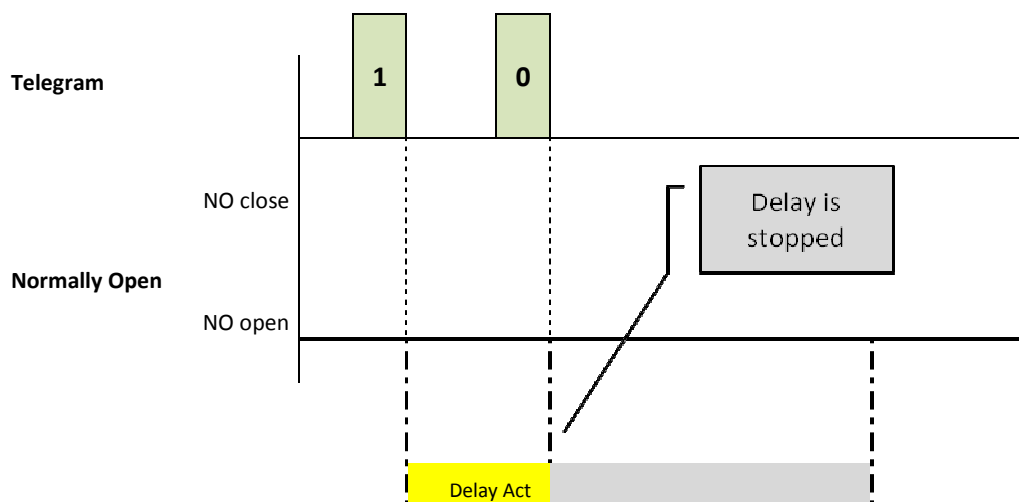
Duration of activation delay is re-triggerable:



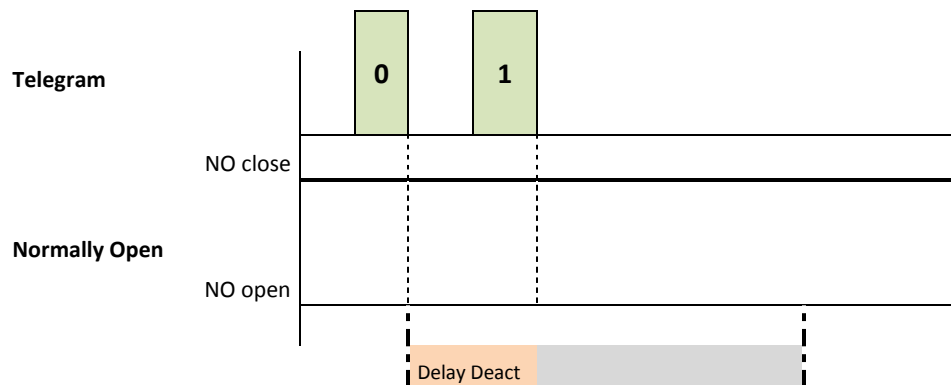
Duration of deactivation delay is re-triggerable:



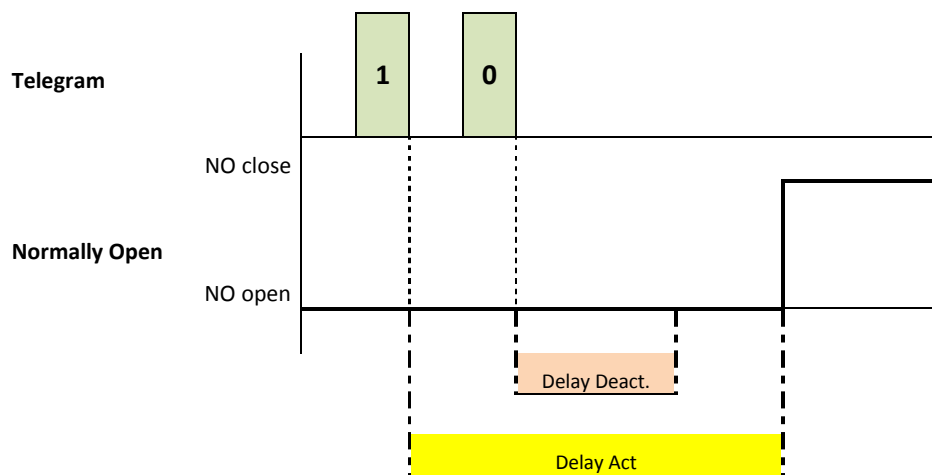
Activation delay can be stopped by a OFF command without deactivation delay:



Deactivation delay can be stopped by a ON command without activation delay:



**⚠ Caution:** mixing delay on activation and deactivation on the same output you may obtain that the command invoked for first is the last executed!



## 11.2. Communication objects

16	<Output 1> Relay Control	Off/On	1 bit	C	R	W	-	-	Low
17	<Output 2> Relay Control	Off/On	1 bit	C	R	W	-	-	Low
18	<Output 3> Relay Control	Off/On	1 bit	C	R	W	-	-	Low
19	<Output 4> Relay Control	Off/On	1 bit	C	R	W	-	-	Low
20	<Output 5> Relay Control	Off/On	1 bit	C	R	W	-	-	Low
21	<Output 6> Relay Control	Off/On	1 bit	C	R	W	-	-	Low
22	<Output 7> Relay Control	Off/On	1 bit	C	R	W	-	-	Low
23	<Output 8> Relay Control	Off/On	1 bit	C	R	W	-	-	Low

## 12. Output: Logical Operations

Enabling logical operation allow to submit the command for the output to the result of a logical operation between the communication object *<Output x> Relay Control* and another communication object called *<Output x> Logical Operation*.

By ETS is possible to select the logical operation to use, every time a telegram is received on both the logical object or the control object the logical operation is calculated and the result is taken as a command for the relay.

KNX PARAMETER	SETTINGS
<b>Logic function</b>	<ul style="list-style-type: none"> <li>• Nothing</li> <li>• AND logic</li> <li>• OR logic</li> <li>• XOR logic</li> </ul>
This parameter selects the logical operation	

Every time a telegram is received and a logical operation is calculated the status of the relay is sent (if enabled) even if the relay doesn't change its status.

If the relay has a timing, or a delay on activation or deactivation, etc... a logical operation result that bring to commando "0" or "1" determines a new behaviour of the relay that follows its own parameterization.

Example:

If a relay has the AND function enabled and a delay on deactivation enabled.

RELAY CONTROL	LOGICAL OPERATION	RESULT	BEHAVIOUR
0	0	0	-
1	0	0	Start a delay on deactivation

### 13. Output: Scene Function

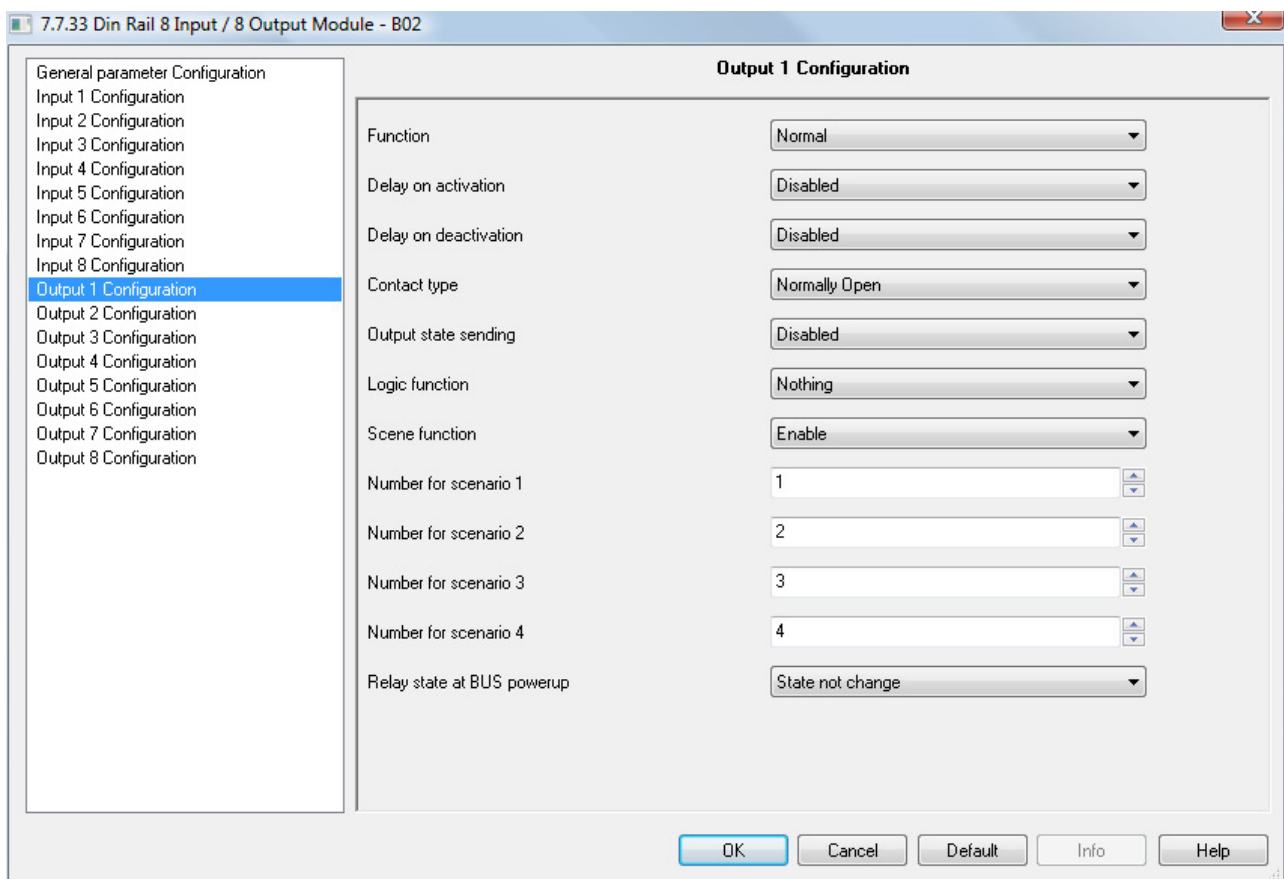
When the scene function is enabled a communication object named *<Output x> Recall Scene* becomes visible.

It is possible to send to the device two possible commands:

- recall scene - is a command to create a specific condition
- store scene - that is a command to learn and store the current status (at the moment the command is received) of the contact, and then reproduce it once the perform command is received

For every channel it is possible to store a maximum of 4 output scene.

**▲**: When a scene is recalled the output channel behaves in the same way as it would have received a telegram “0” or “1” on the *<Output x> Relay Control* communication objects; this means that if a output is normally open with the staircase light timer enabled – the receipt of a telegram “1” triggers a timed ON with automatic OFF when the timer expires.



KNX PARAMETER	SETTINGS
<b>Scene function</b>	<ul style="list-style-type: none"> <li>• Disable</li> <li>• Enable</li> </ul>
This parameter enable/disable the scene function	
<b>Number for scenario 1 ÷ 4</b>	1 ÷ 63
<p>With this parameter a number is assigned to the scene from 1 to 4; scene can be recalled by a bus command using this number in a range from 0 to 63.</p> <p>If you want to link in the same group address different scene objects - keep different numbers for the outputs you don't want to react to certain scenes and same numbers for the outputs you want to move on the receipt of that scene number.</p>	