INTERRA

Binary Input Module
2, 4 or 6 Channels

Product Manual

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APPLICATION PROGRAM USAGE

Manufacturer: Interra Technology
Application Program: 2, 4 or 6-Channel Binary Input Module
Product family: Binary Input Module
Product name: 2, 4 or 6-Channel Binary Input Module
Media Type: Twisted Pair
Order number: ITR102, ITR104 or ITR106

TECHNICAL DATA

Power suply	EIB Power Supply
Power Consumption	50 mW
Number of inputs	2, 4 or 6
Mode of commissioning	S-Mode
Type of Inputs	Dry Contact Inputs
Type of protection	IP 20
Ambient temperature range	- 40°C ...70 °C
Flammability	Non-flammable product
Mounting	60mm diameter flush mounting
Dimensions	40x10x40mm (HxWxD)
Certification	EIB-Certified

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FIGURE INDEX

1. FUNCTIONAL DESCRIPTION

The binary input module can be configured as 2, 4 or 6 channels depending on the application: ITR102, ITR104 or ITR106. The application program can be loaded with ETS3 or higher and supports the applications which will be described in this manual:

- Send switching commands - 1 bit.
- Send toggle commands - 1 bit.
- Dimming – 1 bit, 4 bit.
- Blind control – 1 bit.
- Send a value selected previously – 1 byte, 2 byte.
- 2-Channed Mode – 1 bit, 1 byte, 2 byte.

Most of functions only need one input and therefore each input might be assigned a different function. However there are also some functions which use two inputs such as "Dimming with 2 buttons" and "Shutter/Blinds with 2 buttons".

The device also allows configuring some safety general parameters. It is possible to set a time to detect the presence of the signal when its state changes and to activate a sending of the value "true" periodically when the device is running.

Binary Input Module Family:

Device	Inputs	Outputs	Group Adresses (Max)	Assignments (Max)
ITR102	2	-	252	252
ITR104	4	-	252	252
ITR106	6	-	252	252

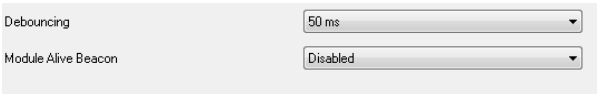
Note:

The bold values in the tables are the factory settings (default values).

Type and number of the available objects depending on the settings with ETS. Visible objects might vary according to settings you have already made. In this documentation, all objetcs are always shown.

2. GENERAL PARAMETERS

There are some safety general parameters such as "Debouncing" and "Module Alive Beacon". Using these parameters it is possible to know weather the device is working correctly.



PARAMETER	DESCRIPTION	VALUES
Debouncing	This function set a common debouncing duration for every channel. The duration of the selected option will be used to detect the presence of the signal to chance its state.	**50 ms** 100 ms 150 ms 200 ms 250 ms
Module Alive Beacon	This parameter allows sending the value "true" periodically while the module is running.	**Disabled** Enabled
Module Alive Beacon Interval (sec)[1]	This parameter determines the Module Alive Beacon sending period.	**3600** (1…65535)

[1]This parameter is only visible when the parameter "Module Alive Beacon" is set to "Enabled"

The following objects can be used through the general function:

OBJ NAME	FUNCTION	TYPE	FLAG
General	Alive Beacon	1 bit	CRT
This object is only visible when the "Module Alive Beacon" function is enabled. Via the group address linked, the value "true" is sent while the module is running.			

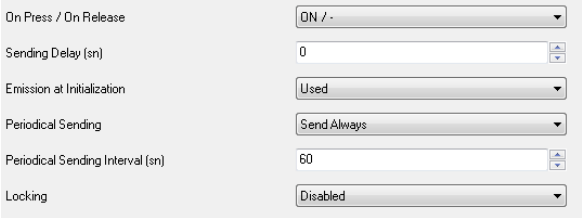
3. FUNCTIONS

3.1. SWITCHING

3.1.1. Description

This function is used to send switching values (ON or OFF). Each time when the push button is pressed and / or released a telegram is sent. The sent value with every action will depend on the parameters configurated.

3.1.2. Parameters



PARAMETER	DESCRIPTION	VALUES
On Press / On Release	This parameter determines the behaviour of the switching button. ON / - : when the contact is closed the value "on" is sent. OFF / - : when the contact is closed the value "off" is sent. ON / OFF: when the contact is closed the value "on" is sent and when the contact is opened the value "off" is sent. OFF / ON: when the contact is closed the value "off" is sent and when the contact is opened the value "on" is sent. - / ON: when the contact is opened the value "on" is sent. - / OFF: when the contact is opened the value "off" is sent.	**ON / -** OFF / - ON / OFF OFF / ON - / ON - / OFF
Sending Delay (sec)	This parameter set a delay between the action and the sending of telegram to the bus. Value 0 means the immediate emission of the telegram.	**0** (0...255)
Emission at Initialization	"Used" option allows sending the current values of the inputs to the bus when the module is energized. Otherwise, any telegram will be sent after first powered on.	Not Used **Used**
Periodical Sending	Send Always: The current input value will be periodically sent to the bus.	Dont Send Periodically

PARAMETER	DESCRIPTION	VALUES
	Dont Send Periodically: There will not be any periodical sending to the bus. Send While Button Pressing: The current input value will be periodically sent to the bus while the contact of the input is closed. Send While Button Not Pressing: The current input value will be periodically sent to the bus while the contact of the input is opened.	Send While Button Pressing Send While Button Not Pressing **Send Always**
Periodical Sending Interval (sec)[1]	This parameter determines the sending period of the current input value.	**60** (1…65535)
Locking	This parameter determines if the input can be locked via an additional locking object or not. Disabled: This option is disabled. Lock On Value 0: When the locking communication object takes the value 0, status changes at the input are not transmitted. Lock On Value 1: When the locking communication object takes the value 1, status changes at the input are not transmitted.	**Disabled** Lock On Value 0 Lock On Value 1

[1]This parameter is only visible when the parameter "Periodical sending" is set to "Send Always", "Send While Button Pressing" or "Send While Button Not Pressing".

3.1.3. Objects

The following objects can be used through the switching function:

OBJ NAME	FUNCTION	TYPE	FLAG
InputX	ON / OFF	1 bit	CRT
Switching telegrams are sent via the group address linked with this object.			
InputX	Locking	1 bit	CRWU
This object is only visible when the locking function is enabled. Via the group address linked, it is possible to lock the current input through the value configured previously.			

3.1.4. Logic

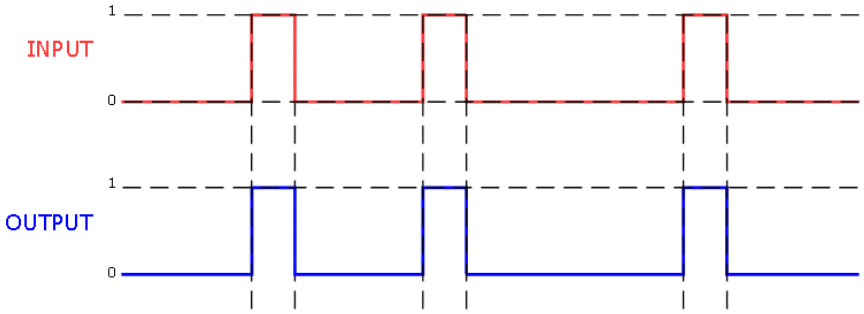


Fig5. Switching Logic without delay

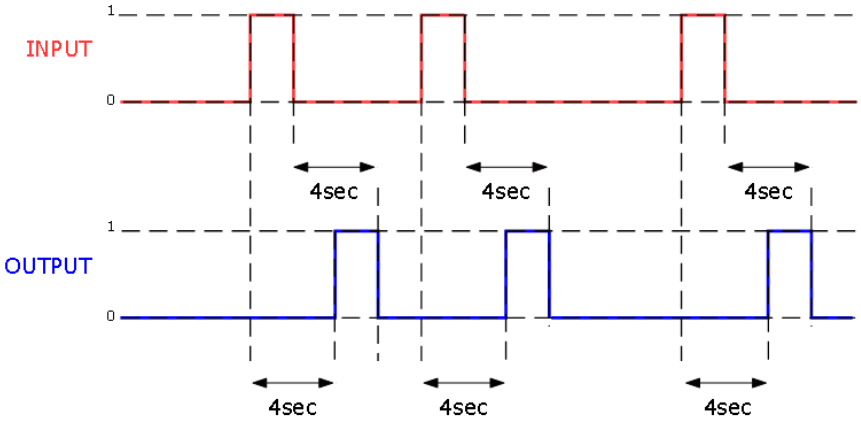


Fig6. Switching Logic with 4 seconds delay

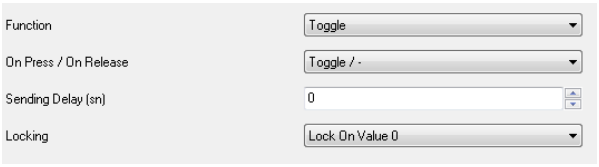
3.2. TOGGLE

3.2.1. Description

Each press of the button sends to the bus 1-bit object with the value "0" or "1". If "0" is transmited through the first press, the next value will be "1" and viceversa. The device is switched on and off alternately in every press.

The object value can be update via the bus from others devices thus there is an status object which prevent any incorrect behaviour. This object must be connected with the state of the actuator via a group address.

3.2.2. Parameters



PARAMETER	DESCRIPTION	VALUES
On Press / On Release	This parameter determines the behaviour of the toggle button. Toggle / - : when the contact is closed the inverted value of the status is sent. - / Toggle: when the contact is opened the inverted value of the status is sent.	**Toggle / -** - / Toggle
Sending Delay (sec)	This parameter set a delay between the action and the sending of the telegram to the bus. Value 0 means the immediate emission of the telegram.	**0** (0...255)
Locking	This parameter determines if the input can be locked via an additional locking object or not. Disabled: This option is disabled. Lock On Value 0: When the locking communication object takes the value 0, status changes at the input are not transmitted. Lock On Value 1: When the locking communication object takes the value 1, status changes at the input are not transmitted.	**Disabled** Lock On Value 0 Lock On Value 1

3.2.3. Objects

The following objects can be used through the toggle function:

OBJ NAME	FUNCTION	TYPE	FLAG
InputX	ON / OFF	1 bit	CRT
Toggle telegrams are sent via the group address linked with this object.			
InputX	Status	1 bit	CRWU
This object is only visible with Toggle function. Via the group address linked, it indicates the current status of a related output.			
InputX	Locking	1 bit	CRWU
This object is only visible when the locking function is enabled. Via the group address linked, it is possible to lock the current input through the value configured previously.			

3.2.4. Logic

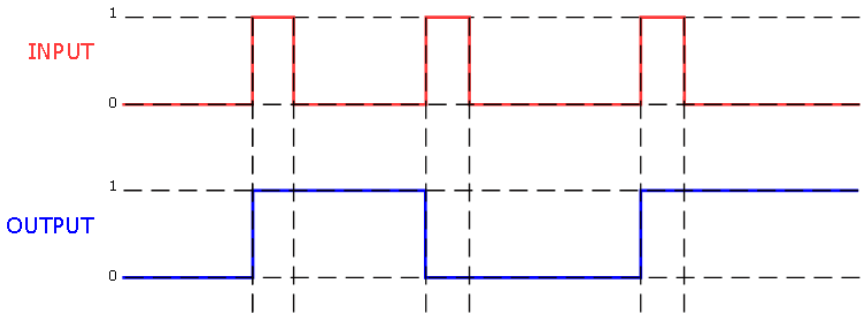


Fig7. Toggle Logic without delay

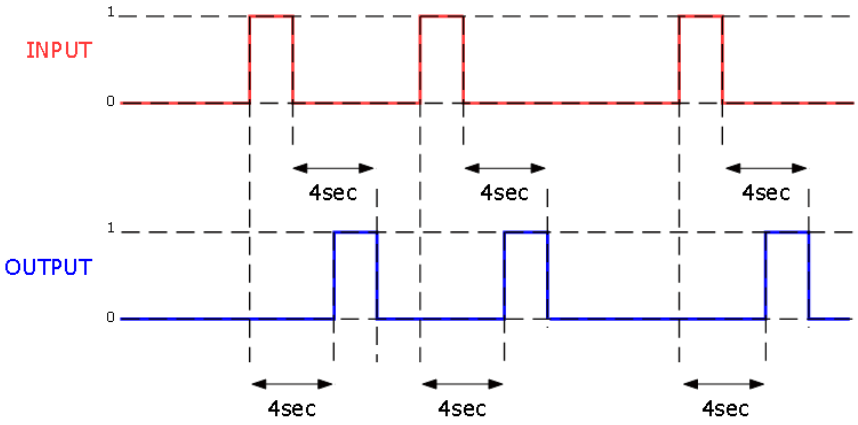


Fig8. Toggle Logic 4 seconds delay

3.3. DIMMING

3.3.1. Description

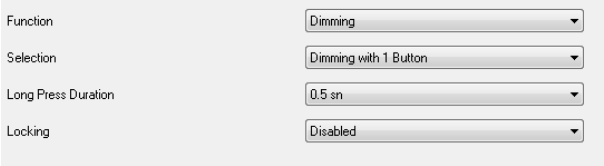
With this function it is possible to dim and switch a lighting circuit using one or two pushbuttons. There are two different objects for each function and they are controlled depending on the duration of the push button press. A short press is processed as switching action and the value (1 bit) is sent via "On/Off" object. Otherwise a longer one is interpreted as dimming and the value (4 bit) is sent via "Dimming" object. The minimum period for detecting a long push button action is parameterized previously. When the button is released after a long press a "stop" telegram is sent.

The dimming function can be configured with 1 button or 2 buttons:

Dimming with one button: Just one input is used for dimming function. Short presses are interpreted as toggle action (function described above) switching on and off alternately in every press. For longer presses the behaviour is similar, each press of the button sends to the bus 4-bit object with the value "up" or "down". If "up" is transmited through the first long press, the next value will be "down" and viceversa. The object value can be update via the bus from others devices thus there is an status object, only visible with this configuration, which prevent any incorrect behaviour. This object must be connected with the state of the actuator via a group address.

Dimming with two buttons: Two inputs are necessary for this option. Each input providing the function of one push button defined as "Up" or "Down" through the parameter "Direction" . One input configured as "Up" will send ON and increase telegrams while another configured as "Down" will send OFF and decrease telegrams.

3.3.2. Parameters



PARAMETER	DESCRIPTION	VALUES
Selection	This parameter is used to configure whether the dimming function works with 1 button or 2. Dimming with 1 Button: when the contact is closed briefly the inverted value of the status is sent via "On/Off" object. Otherwise if the the push-button is pressed longer a dimmer telegram is sent via "Dimming" object. The dimming telegram can be "up" or "down", it depends on the status. When the button is released after a long press a "stop" telegram is sent. Dimming with 2 Buttons: when the contact is closed briefly the value "on" (corresponding to UP direction parameter) or "off" (corresponding to DOWN direction parameter) is sent via "On/Off" object. Otherwise if the the push-button is pressed longer a dimmer telegram is sent via	**Dimming with 1 Button** Dimming with 2 Buttons

PARAMETER	DESCRIPTION	VALUES
	"Dimming" object. When the button is released after a long press a "stop" telegram is sent.	
Direction[1]	This parameter determines the behaviour of the button when "dimming with 2 buttons" has been selected. Up: when the contact is closed briefly the value "on" is sent via "On/Off" object. Otherwise if the the push-button is pressed longer the value "Up" is sent via "Dimming" object. Down: when the contact is closed briefly the value "off" is sent via "On/Off" object. Otherwise if the the push-button is pressed longer the value "Down" is sent via "Dimming" object.	Up **Down**
Long Press Duration	This parameter determines the minimum period for detecting a long push button action.	0.4 sec **0.5 sec** 0.6 sec 0.7 sec 0.8 sec 0.9 sec 1.0 sec
Locking	This parameter determines if the input can be locked via an additional locking object or not. Disabled: This option is disabled. Lock On Value 0: When the locking communication object takes the value 0, status changes at the input are not transmitted. Lock On Value 1: When the locking communication object takes the value 1, status changes at the input are not transmitted.	**Disabled** Lock On Value 0 Lock On Value 1

[1]This parameter is only visible when the parameter "Selection" is set to "Dimming with 2 Buttons".

3.3.3. Objects

The following objects can be used through the dimming function:

OBJ NAME	FUNCTION	TYPE	FLAG
InputX	ON / OFF	1 bit	CRT
Toggle telegrams are sent via the group address linked with this object.			
InputX	Dimming	4 bit	CRT

Dimming telegrams are sent via the group address linked with this object.			
InputX	Status	1 bit	CRWU
This object is only visible with "Dimming with 1 Button" function. Via the group address linked it indicates the current status of a related output.			
InputX	Locking	1 bit	CRWU
This object is only visible when the locking function is enabled. Via the group address linked, it is possible to lock the current input through the value configured previously.			

3.4. SHUTTER / BLINDS

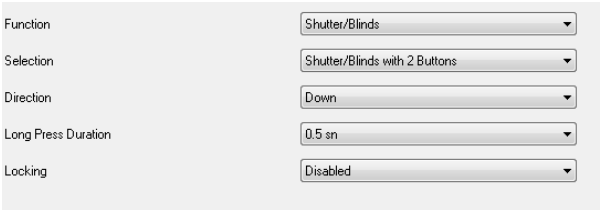
3.4.1. Description

The binary input module makes it possible to control blinds and shutters with one or two buttons.

Shutter/Blinds with one button: You can both raise and lower the blind with a single push-button. Each short press will send a value following this sequence "down", "start", "up" and "stop". The current direction of movement of the blind, or the direction of the slat adjustment, always depends on the previous action. The object value can be update via the bus from others devices thus there is an status object, which prevent any incorrect behaviour. This object must be connected with the state of the actuator via a group address.

Shutter/Blinds with two buttons: Two inputs are necessary for this option. With the combination of both push buttons, the blind can be lowered or raised with a long push button action, while a short push button action ends the movement or adjusts the slats by one step. The minimum period for detecting a long push button action is parameterized previously. Each input providing the function of one push button defined as "Up" or "Down" through the parameter "Direction" . One input configured as "Up" will send Up and start telegrams while another configured as "Down" will send down and stop telegrams.

3.4.2. Parameters



PARAMETER	DESCRIPTION	VALUES
Selection	This parameter is used to configure whether the Shutter/Blinds function works with 1 button or 2. Shutter/Blinds with 1 Button: when the contact of the input is closed briefly the values "down", "start", "up" and "stop" are sent sequentially.	**Shutter/Blinds with 1 Button** Shutter/Blinds with 2 Buttons

PARAMETER	DESCRIPTION	VALUES
	Shutter/Blinds with 2 Buttons: when the contact of the input is closed briefly the value "stop" is sent via "SlatAngle/Stop" object. Otherwise if the the push-button is pressed longer, the value "UP" (corresponding to UP direction parameter) or "down" (corresponding to DOWN direction parameter) is sent via "Up/Down" object.	
Direction[1]	This parameter is used to configure if the inputX will work as up or down.	Up **Down**
Long Press Duration[2]	This parameter determines the minimum period for detecting a long push button action.	0.4 sec **0.5 sec** 0.6 sec 0.7 sec 0.8 sec 0.9 sec 1.0 sec
Locking	This parameter determines if the input can be locked via an additional locking object or not. Disabled: This option is disabled. Lock On Value 0: When the locking communication object takes the value 0, status changes at the input are not transmitted. Lock On Value 1: When the locking communication object takes the value 1, status changes at the input are not transmitted.	**Disabled** Lock On Value 0 Lock On Value 1

[1]This parameter is only visible when the parameter "Selection" is set to "Shutter/Blinds with 2 Buttons".

[2]This parameter is only visible when the parameter "Selection" is set to "Shutter/Blinds with 2 Buttons".

3.4.3. Objects

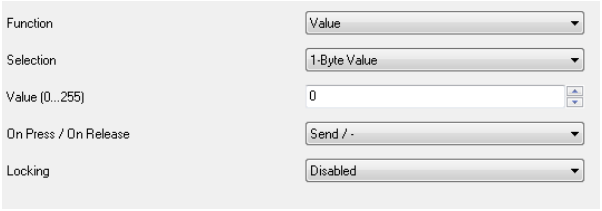
The following objects can be used through the Shutter/Blinds function:

OBJ NAME	FUNCTION	TYPE	FLAG
InputX	SlatAngle/Stop	1 bit	CRT
The commands SlatAngle or Stop are sent via the group address linked with this object.			

InputX	Up/Down	1 bit	CRT
The commands Up or Down are sent via the group address linked with this object.			
InputX	Status	1 bit	CRWU
These objects are only visible with Shutter/Blinds with 1 Button function. Via the group address linked they indicate the current status of a related output.			
InputX	Locking	1 bit	CRWU
This object is only visible when the locking function is enabled. Via the group address linked, it is possible to lock the current input through the value configured previously.			

3.5. VALUE

3.5.1. Description



This function is used to send a value defined previously. It is possible to choose between five differents types of values:

- 1-Byte Value: It can be used for recalling scenes.
- 2-Byte Value
- Percentage
- Temperature
- Luminosity

3.5.2. Parameters

PARAMETER	DESCRIPTION	VALUES
Selection	This parameter determines the type of value that will be sent. 1-Byte Value: (0...255) **0** 2-Byte Value: (0...65535) **0** Percentage: 1 byte in steps of 1. (0...100%) **0** Temperature: 2 byte in steps of 0.5 (0.0...50.0°C) **20.0°C** Luminosity: 2 byte in steps of 50.0 (0...1000 lux) **300 lux**	**1-Byte Value** 2-Byte Value Percentage Temperature Luminosity
On Press / On Release	This parameter determines the behaviour of the button. Send / - : when the contact is closed the selected value is sent. - / Toggle: when the contact is opened the selected value is sent.	**Send / -** - / Send
Locking	This parameter determines if the input can be locked via an additional locking object or not. Disabled: This option is disabled. Lock On Value 0: When the locking communication object takes the value 0, status changes at the input are not transmitted.	**Disabled** Lock On Value 0 Lock On Value 1

PARAMETER	DESCRIPTION	VALUES
	Lock On Value 1: When the locking communication object takes the value 1, status changes at the input are not transmitted.	

3.5.3. Objects

The following objects can be used through the value function:

OBJ NAME	FUNCTION	TYPE	FLAG
InputX	Value	*	CRT
Value telegrams are sent via the group address linked with this object.			
InputX	Locking	1 bit	CRWU
This object is only visible when the locking function is enabled. Via the group address linked, it is possible to lock the current input through the value configured previously.			

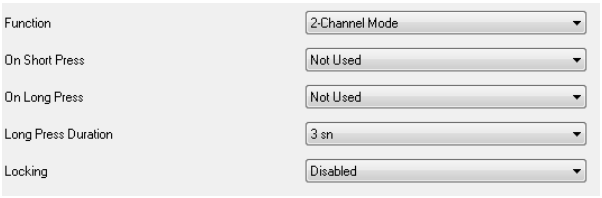
* The type of value depends on the selection parameter.

3.6. 2-CHANNEL MODE

3.6.1. Description

The 2-channel mode is used to perform two different functions using the same pushbutton. Every possible function has been already defined above. First function is recalling by short button press and second one by longer press.

3.6.2. Parameters



PARAMETER	DESCRIPTION	VALUES
On Short Press	This parameter determines the behaviour of the button with short press action. ON: when the contact is closed the value "on" is sent. OFF: when the contact is closed the value "off" is sent. Toggle: when the contact is closed the inverted value of the last sending is sent. 1-Byte Value: (0…255) **0**. 2-Byte Value: (0…65535) **0**. Percentage: 1 byte in steps of 1. (0…100%) **0**. Temperature: 2 byte in steps of 0.5 (0.0…50.0°C) **20.0°C**. Luminosity: 2 byte in steps of 50.0 (0…1000 lux) **300 lux**.	**Not Used** ON OFF Toggle 1-Byte Value 2-Byte Value Percentage Temperature Luminosity
On Long Press	This parameter determines the behaviour of the button with long press action. ON: when the contact is closed the value "on" is sent. OFF: when the contact is closed the value "off" is sent. Toggle: when the contact is closed the inverted value of the last sending is sent. 1-Byte Value: (0…255) **0**. 2-Byte Value: (0…65535) **0**. Percentage: 1 byte in steps of 1. (0…100%) **0**.	**Not Used** ON OFF Toggle 1-Byte Value 2-Byte Value Percentage Temperature Luminosity

PARAMETER	DESCRIPTION	VALUES
	Temperature: 2 byte in steps of 0.5 (0.0…50.0°C) **20.0°C**. Luminosity: 2 byte in steps of 50.0 (0…1000 lux) **300 lux**.	
Long Press Duration	This parameter determines the minimum period for detecting a long push button action.	0.4 sec **0.5 sec** 0.6 sec 0.7 sec 0.8 sec 0.9 sec 1.0 sec
Locking	This parameter determines if the input can be locked via an additional locking object or not. Disabled: This option is disabled. Lock On Value 0: When the locking communication object takes the value 0, status changes at the input are not transmitted. Lock On Value 1: When the locking communication object takes the value 1, status changes at the input are not transmitted.	**Disabled** Lock On Value 0 Lock On Value 1

3.6.3. Objects

The objects used through the 2-Channel Mode function have been described above for every single function.

APPENDIX A: CONNECTION DIAGRAM

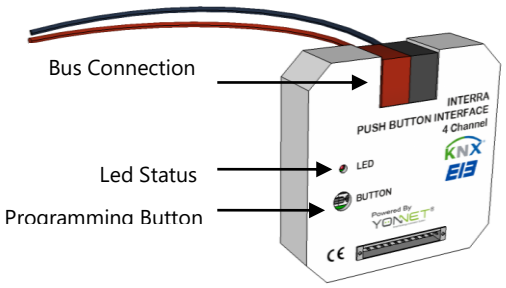


Fig1.Connecting Diagram

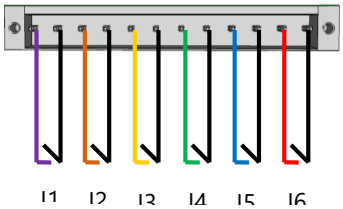


Fig2.ITR106 Connection (6 Inputs)

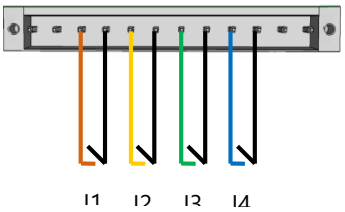


Fig3.ITR104 Connection (4 Inputs)

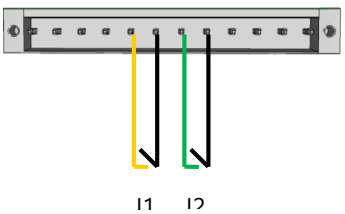


Fig4.ITR102 Connection (2 Inputs)

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