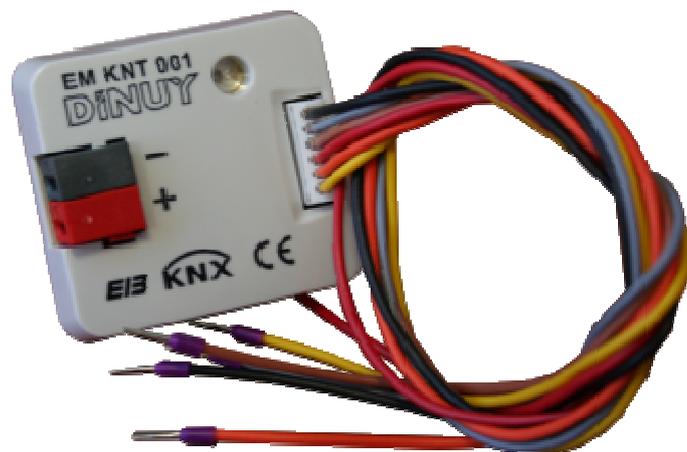


# 4-CHANNEL PUSHBUTTON UNIVERSAL INTERFACE EM KNT 001



## INSTRUCTIONS MANUAL

## General Description

The universal interface EM KNT 001 is equipped with 4 independent channels, which can be used as inputs or outputs, depending on the parameterization by the ETS software.

In this way, the 4 channels of this device can be used as an interface for pushbuttons or switches (for binary inputs reading) or as outputs (for the visualization with LEDs).

Each one of the 4 channels can work as:

- Switch: to turn the light ON and OFF.
- Switch and Dimmer: to turn ON/OFF and dim the light.
- Multiple Switch: to turn ON/OFF the light depending of the number of pressings.
- Sequential Switch: to do sequential switching ON/OFF.
- Blinds/Shutters Control: to move the blinds/shutters by pushbutton or switches.
- Scenes Control: to save and recover a light scene.
- Values Sending: to send different measures or values, for example the light level, temperature...
- Impulse Counter: it allows, for example, counting the number of operations.
- LED Activation: to inform about an operation by the permanent ON or by the flickering of one LED.

In the table below is shown the color assignment of each wire:

Channel A	Red
Channel B	Brown
Channel C	Grey
Channel D	Black
Inputs Common	Orange
Outputs Common	Yellow

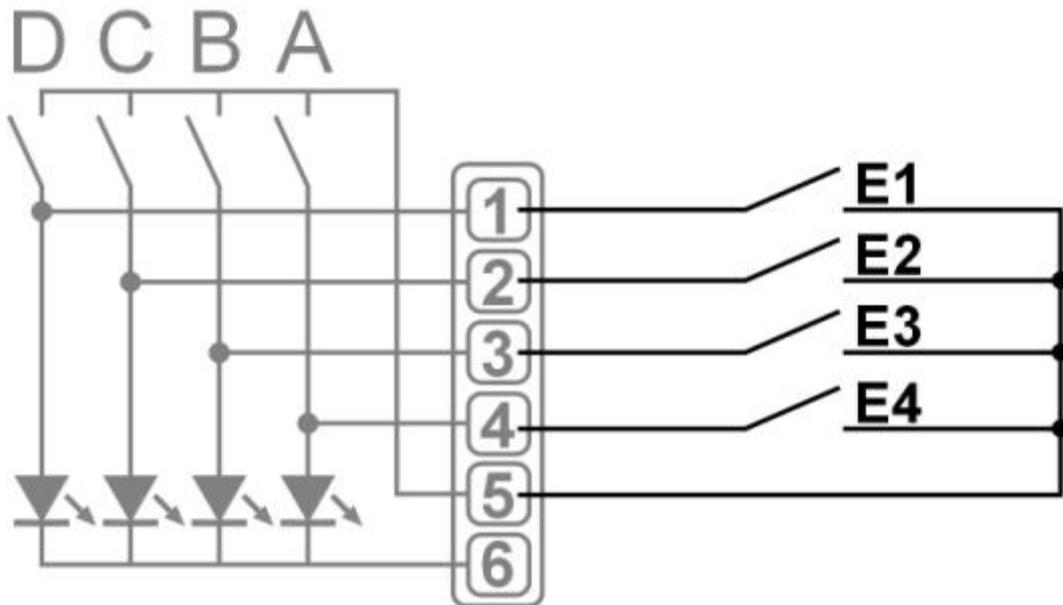
**Technical Data**

<b>Power supply</b>	21 ~ 32V <sub>DC</sub> (via Bus)
<b>Power consumption</b>	< 10mA
<b>Inputs / Outputs</b>	4 (individually configurable)
<b>Commissioning</b>	ETS3 or ETS4
<b>Wires length</b>	~ 30cm
<b>Line length</b>	< 10 m
<b>BUS connection</b>	By the supplied KNX connecting terminal
<b>Input polling Voltage</b>	20V <sub>DC</sub>
<b>Input Current</b>	0,5mA
<b>Output Voltage</b>	5V <sub>DC</sub>
<b>Output Current</b>	<2mA
<b>Safety</b>	Short-circuit, Overload and wrong polarity
<b>Dimensions</b>	38 x 42 x 15mm
<b>Ambient temperature</b>	-5°C ~ +45°C
<b>Type of protection</b>	IP20 (EN60529)
<b>Safety class</b>	III
<b>Mounting</b>	Flush mounting universal box
<b>According to the Standard</b>	EN50090-2-2, EN50428 and EN50491
<b>Certification</b>	EIB/KNX

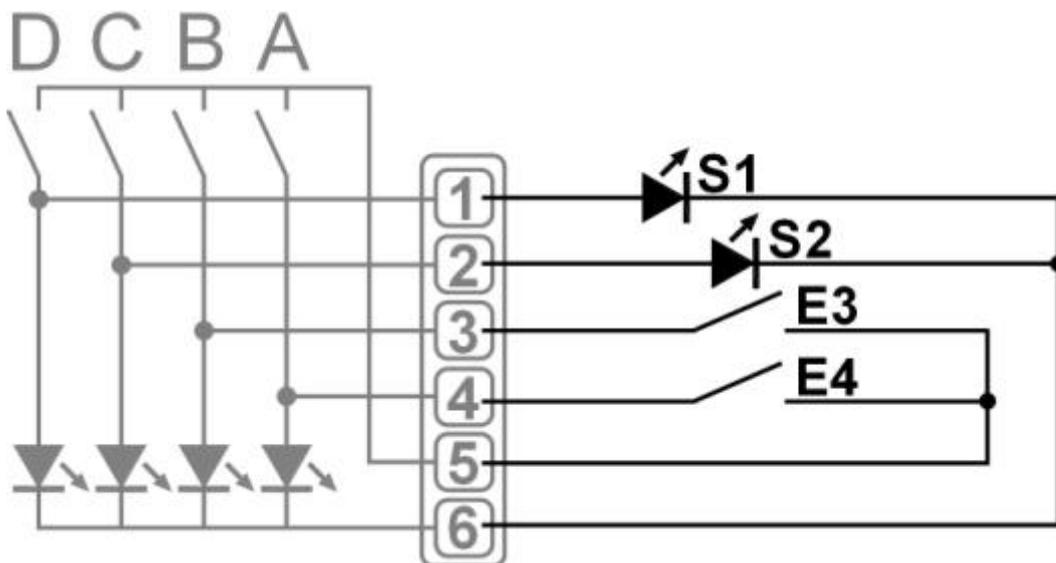
## Installation

This interface can be used as input or output:

**Wiring diagram as Input with pushbuttons or switches (Channels A, B, C and D):**

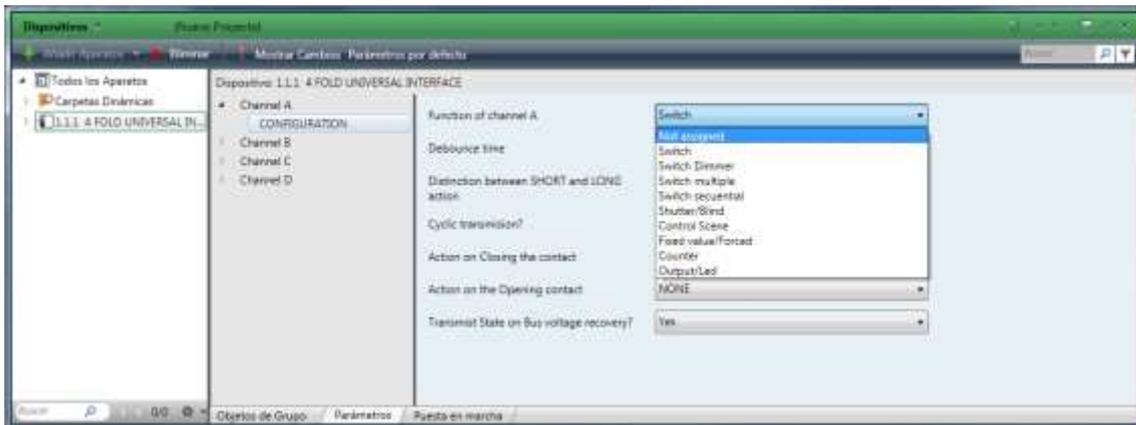


**Wiring diagram as Output with LEDs (Channels C and D) and Input (Channels A and B):**



## Project Development and Commissioning

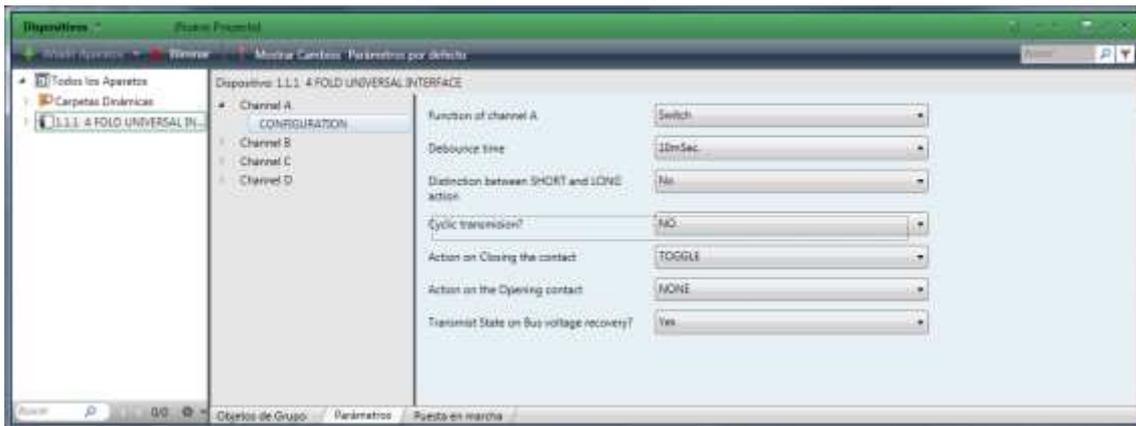
The communication objects are identical for the 4 channels.



### Channels Functions:

Not assigned	There is not assigned any function
Switch	Switch ON or OFF
Switch Dimmer	Switch ON/OFF or Dim
Switch multiple	Switch ON or OFF depending on the number of actions
Switch sequential	Switch ON or OFF sequentially
Shutter/Blind	Move UP or DOWN shutters or blinds
Control Scene	Save and recover Scenes
Fixed value/Forced	Send specific values
Counter	Count input pulses
Output/Led	LED control as visualization

## 1 - “Switch” Function



### 1.1 - Parameters

#### Debounce time

Sets the time of suppression of rebounds when there is a switching. It prevents multiple unwanted actions caused by the rebound at the moment of closing its contact.

Adjustable from 10ms up to 160ms.

#### Distinction between SHORT and LONG action

It allows discriminating between a long and a short action. Thus, if the distinction is made, could run two different actions depending on the duration of the operation.

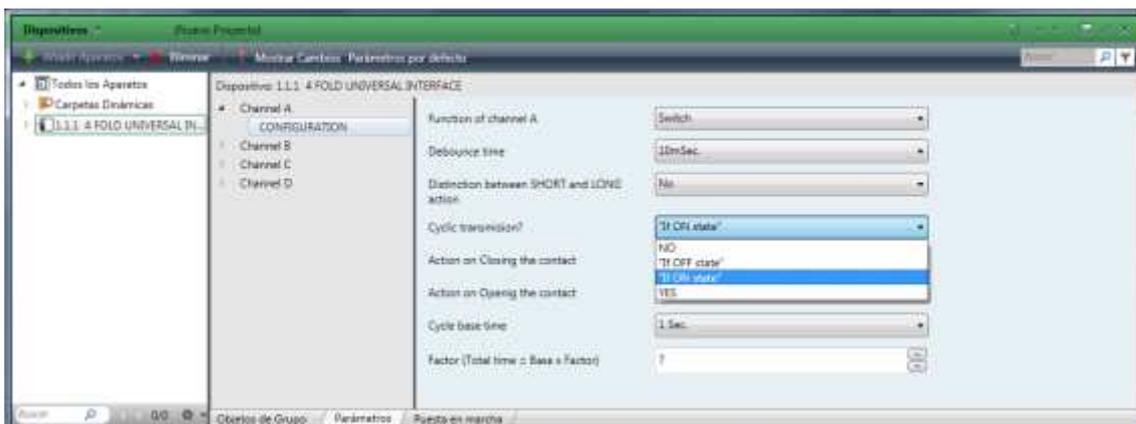
*- If NO distinction is made between a short and a long action:*

#### Cyclic transmission

It allows sending the communication object "Switch Telegram" cyclically, at set time intervals.

It is possible to select "NO" sending it cyclically, to send always ("YES"), regardless of the value of the communication object, or depending on the object ("If OFF state" or "If ON state").

In case of selecting the “cyclic transmission” it will be necessary to choose its frequency through the parameter “Cycle base time” and “Factor”. The time between two transmissions will be the multiplication of the two parameters.



#### Action on Closing the contact

Defines the action to be done when the contact is closed.

The value of the object can be: “ON”, “OFF”, “TOGGLE” or “NONE”.

#### Action on Opening the contact

Defines the action to be done when the contact is open.

The value of the object can be: "ON", "OFF", "TOGGLE" or "NONE".

### Transmit State on Bus voltage recovery

After a recover from a failure in the Bus supply, it is possible to configure whether the current state of the object "Switch Telegram" is sent again.

**- If distinction is made between a short and a long action:**

### Contact type

Allows selecting if it is a normally open ("Normally OPEN") or closed ("Normally CLOSED") contact.

### Long action after...

Sets the duration of the action from which is interpreted as long ("Long action").

Configurable from 0.3s up to 4s.

### Long action

Sets the value of the object after a long action.

The value of the object can be: "ON", "OFF", "TOGGLE" or "NONE".

### Short action

Sets the value of the object after a short action.

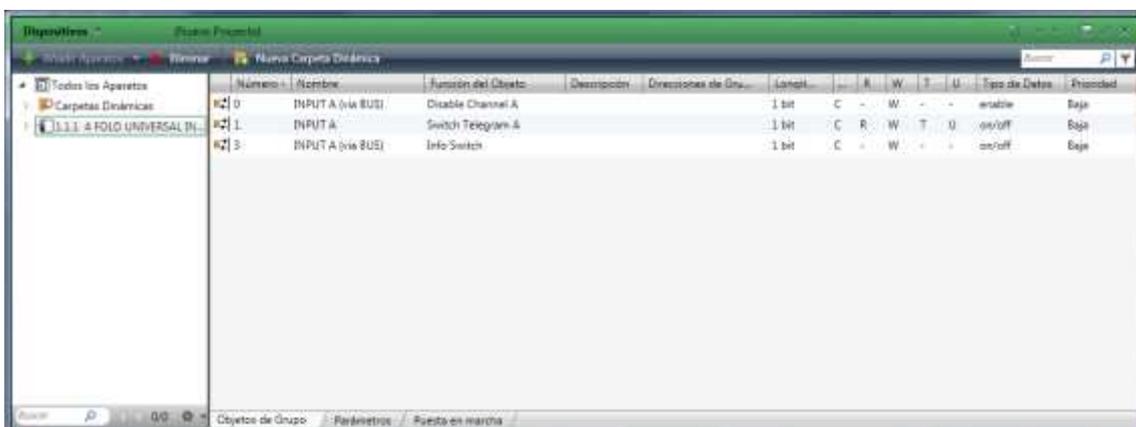
The value of the object can be: "ON", "OFF", "TOGGLE" or "NONE".

### Number of objects for SHORT/LONG operation

If this option is enabled the short action works with an object and the long action with another. If not, both actions work on the same object.



## 1.2 – Communication Objects



## 2 - “Switch Dimmer” Function



### 2.1 - Parameters

#### Debounce time

Sets the time of suppression of rebounds when there is a switching. It prevents multiple unwanted actions caused by the rebound at the moment of closing its contact.

Adjustable from 10ms up to 160ms.

#### Contact type

Allows selecting if it is a normally open (“Normally OPEN”) or closed (“Normally CLOSED”) contact.

#### Dimming Functionality

Allows selecting if it is only necessary to dim the lighting (“Only Dimming”) or dimming and switching (“Dimming and Switch”).

If “Dimming and Switch” is selected, the lighting is dimmed with long actions and it is switched on/off with short press.

#### **- Selecting “Only Dimming”:**

##### Action on operation

Allows selecting the action after a short or long press: “Brighter/Darker” (each press changes the dimming direction), “Dim Brighter” (upward dimming) or “Dim Darker” (downward dimming).

#### **- Selecting “Dimming and Switch”:**

##### Long action after...

Sets the duration of the action from which is interpreted as long (“Long action”).

Configurable from 0.3s up to 4s.

##### Short action

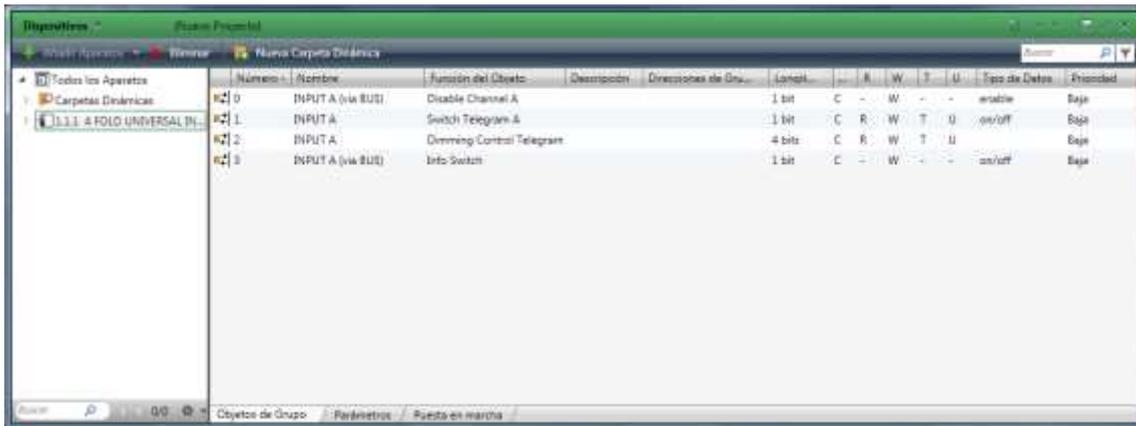
Sets the value of the object after a short action.

The value of the object can be: “ON”, “OFF”, “TOGGLE” o “NONE”.

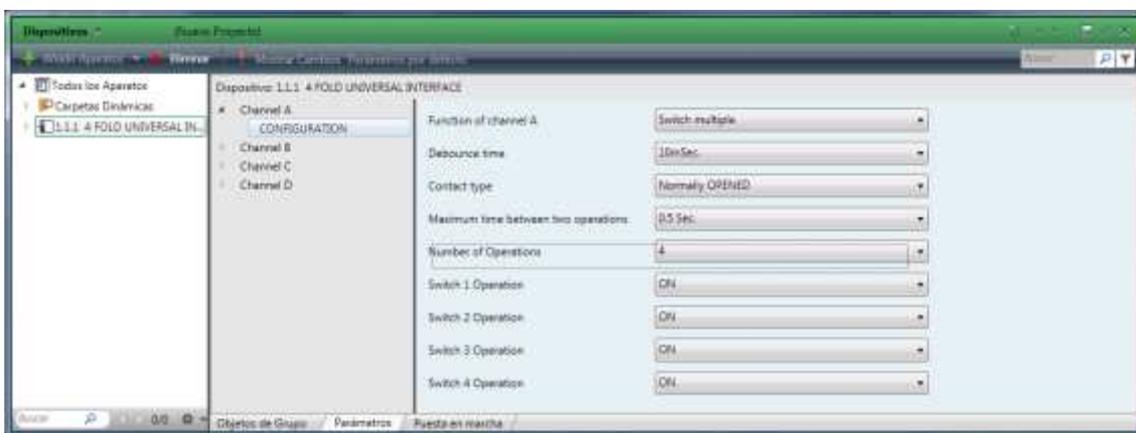
##### Action on long operation

Allows selecting the action after a short or long press: “Brighter/Darker” (each press changes the dimming direction), “Dim Brighter” (upward dimming) or “Dim Darker” (downward dimming).

## 2.2 – Communication Objects



## 3 - “Switch Multiple” Function



### 3.1 - Parameters

#### Debounce time

Sets the time of suppression of rebounds when there is a switching. It prevents multiple unwanted actions caused by the rebound at the moment of closing its contact.

Adjustable from 10ms up to 160ms.

#### Contact type

Allows selecting if it is a normally open (“Normally OPEN”) or closed (“Normally CLOSED”) contact.

#### Maximum time between two operations

Defines the maximum time between two consecutive actions of the same sequence.

Adjustable from 0,5s and 3s.

#### Number of operations

Number of actions which compose a sequence.

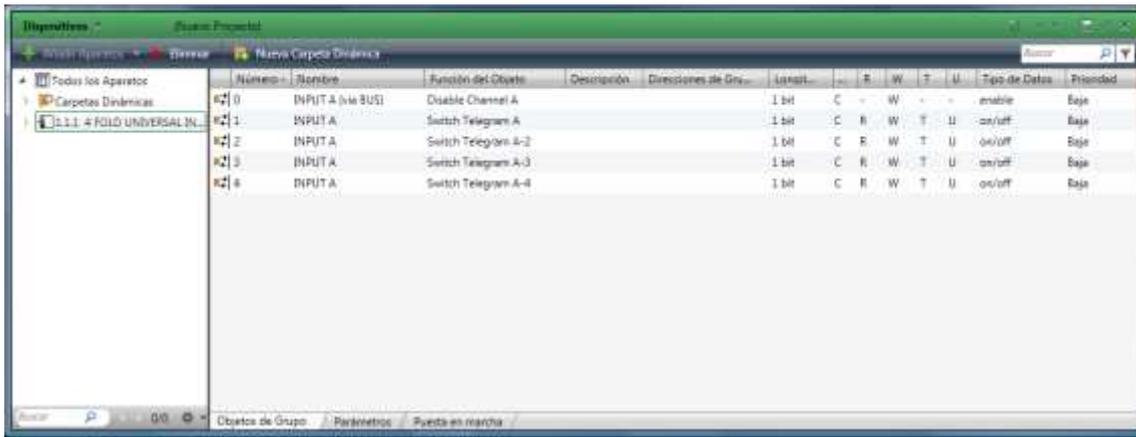
Adjustable from 2up to 4.

#### Switch 1...4 operation

Operation that will be done by each of the consecutive actions.

The value of the object can be: “ON”, “OFF” or “TOGGLE”.

### 3.2 – Communication Objects



### 4 - “Switch Sequential” Function



#### Debounce time

Sets the time of suppression of rebounds when there is a switching. It prevents multiple unwanted actions caused by the rebound at the moment of closing its contact.

Adjustable from 10ms up to 160ms.

#### Contact type

Allows selecting if it is a normally open (“Normally OPEN”) or closed (“Normally CLOSED”) contact.

#### Number of objects

Sets the maximum number of levels. Adjustable from 2 up to 5.

## 4.2 – Communication Objects

Número	Nombre	Función del Objeto	Descripción	Direcciones de Dis...	Limit...	R	W	T	U	Tipo de Datos	Prioridad	
#2	0	INPUT A (via BUS)	Disable Channel A		1 bit	C	-	W	-	enable	Baja	
#2	1	INPUT A	Switch Telegram A		1 bit	C	R	W	T	U	on/off	Baja
#2	2	INPUT A	Switch Telegram A-2		1 bit	C	R	W	T	U	on/off	Baja
#2	3	INPUT A	Switch Telegram A-3		1 bit	C	R	W	T	U	on/off	Baja
#2	4	INPUT A	Switch Telegram A-4		1 bit	C	R	W	T	U	on/off	Baja
#2	5	INPUT A	Switch Telegram A-5		1 bit	C	R	W	T	U	on/off	Baja
#2	6	INPUT A (via BUS)	Increment/Decrement A		1 bit	C	R	W	T	U	up/down	Baja

## 5 - “Shutter/Blind” Function



### Debounce time

Sets the time of suppression of rebounds when there is a switching. It prevents multiple unwanted actions caused by the rebound at the moment of closing its contact.

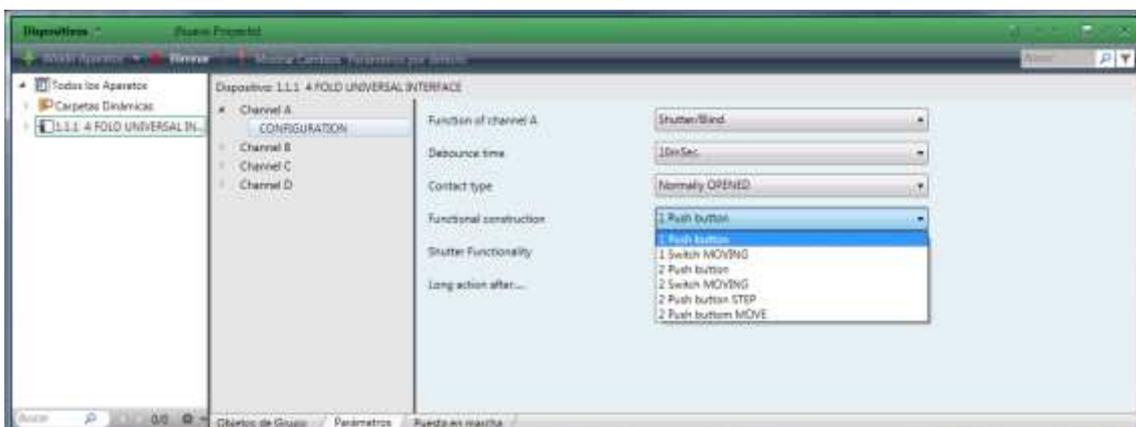
Adjustable from 10ms up to 160ms.

### Contact type

Allows selecting if it is a normally open (“Normally OPEN”) or closed (“Normally CLOSED”) contact.

### Functional construction

To define the type of operation being carried out and with which mechanism will be done.



## 1 Push button

Pushbutton control.

### Shutter functionality

Permits choosing the operation depending on the action (short or long).

- Short=Stepping → The shutter is raised or lowered one step. Each press changes the movement direction. After a “Moving” done after a long press, a short press will do a “Stop”.
- Long=Moving → The shutter is raised or lowered completely or until a short press is done. Each press changes the movement direction.
- Short=Moving → The shutter is raised or lowered completely or until a short press is done. Each press changes the movement direction.
- Long=Stepping → The shutter is raised or lowered one step. Each press changes the movement direction. After a “Moving” done after a short press, a long press will do a “Stop”.
- Up-Stop-Down-Stop → The following process is done cyclically with each short or long action: “Move Up” → “Stop” → “Move Down” → “Stop”...

### Long action after...

Sets the duration of the action from which is interpreted as long (“Long action”).

Configurable from 0.3s up to 4s.

### 1 Switch MOVING

The shutter is raised or lowed depending on the position of the switch.

The possible actions are: “Move Up” or “Move Down”.

## 2 Push button

The shutter will be controlled with two pushbuttons, each one in a different cannel (A...D), so it must be configured independently.

### Action on Short operation

Defines the operation to be done with a short action.

The value of the object can be: “Step Up” or “Step Down”.

### Action on Long operation

Defines the operation to be done with a long action.

The value of the object can be: “Move Up” or “Move Down”.

### Long action after...

Sets the duration of the action from which is interpreted as long (“Long action”).

Configurable from 0.3s up to 4s.

### 2 Switch MOVING

The shutter will be controlled with two switches, each one in a different cannel (A...D), so it must be configured independently.

### Action on Long operation

Defines the operation to be done with a long action.

The value of the object can be: “Move Up” or “Move Down”.

## 2 Push button STEP

The shutter will be controlled with two pushbuttons, each one in a different cannel (A...D), so it must be configured independently.

### Action on Short operation

Defines the operation to be done with a short action.

The value of the object can be: “Step Up” or “Step Down”.

## 2 Push button MOVE

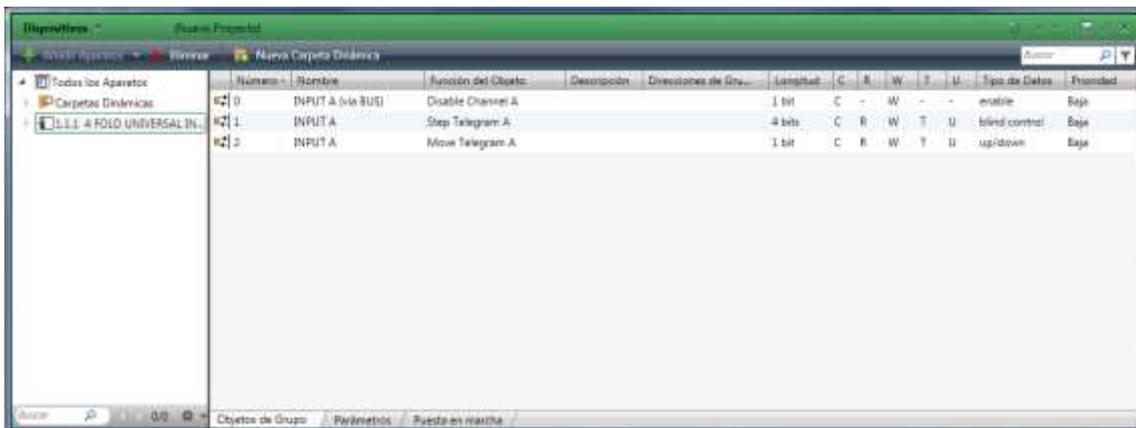
The shutter will be controlled with two pushbuttons, each one in a different channel (A...D), so it must be configured independently.

### Action on Long operation

Defines the operation to be done with a long action.

The value of the object can be: "Move Up" or "Move Down".

## 5.2 – Communication Objects



## 6 - "Control Scene" Function



### Parameters

#### Debounce time

Sets the time of suppression of rebounds when there is a switching. It prevents multiple unwanted actions caused by the rebound at the moment of closing its contact.

Adjustable from 10ms up to 160ms.

#### Contact type

Allows selecting if it is a normally open ("Normally OPEN") or closed ("Normally CLOSED") contact.

#### Type of scene control...

Sets if the scene control will be done by 5 separated objects or by 8 bits.

#### Scene number

Assigns the number of scene to the channel that is being configured (1 – 63).

## Action on Short operation

Defines the operation to be done with a short action.

The value of the object can be: “Recall” or “Ignore”.

## Store scene

Which action saves the current scene:

- NO: it does not do anything.
- On LONG operation: with a long action.
- with OBJECT value=1: if the object “Store Scene object” receives the value “1” the scene is saved.
- On Long operation if OBJECT value=1: if the object “Store Scene object” receives the value “1”, after the next long action the scene is saved.

## Long action after...

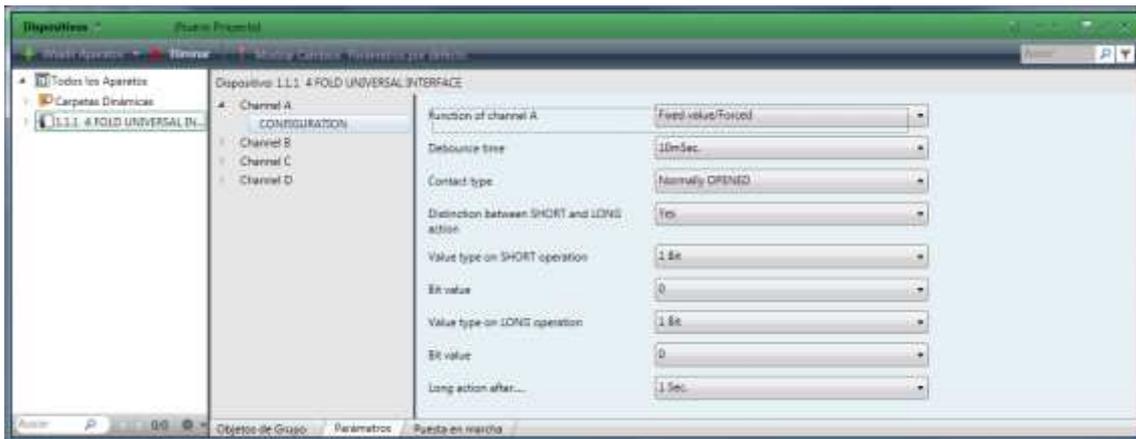
Sets the duration of the action from which is interpreted as long (“Long action”).

Configurable from 0.3s up to 4s.

## 6.2 – Communication Objects

Número	Nombre	Función del Objeto	Descripción	Direcciones de Grupo	Longitud	C	R	W	T	U	Tipo de Datos	Prioridad
0	INPUT A (via BUS)	Disable Channel A			1 Bit	-	-	-	-	-	enable	Baja
1	INPUT A	8 Bit scene			1 Byte	-	-	-	-	-	scene control	Baja

## 7 - “Fixed value/Forced” Function



### Debounce time

Sets the time of suppression of rebounds when there is a switching. It prevents multiple unwanted actions caused by the rebound at the moment of closing its contact.

Adjustable from 10ms up to 160ms.

### Contact type

Allows selecting if it is a normally open (“Normally OPEN”) or closed (“Normally CLOSED”) contact.

### Distinction between SHORT and LONG action

It allows discriminating between a long and a short action. Thus, if the distinction is made, could run two different actions depending on the duration of the operation.

### Value type on operation

Determines the sent data type:

- 1 Bit → Bit value: 0 or 1
- 2 Bit → Bit value: 00...11 (0, 2 or 3)
- 1 Byte → Bit value: 0...255
- 2 Bytes signed → Bit value: -32768...+32768
- 2 Bytes unsigned → Bit value: 0...65535
- 2 Bytes Floating → Bit value: -99,99...+99,99
- 4 Bytes unsigned → Bit value: 0...4294967295

### Value type on SHORT operation

Determines the sent data type with a short action:

- 1 Bit → Bit value: 0 or 1
- 2 Bit → Bit value: 00...11 (0, 2 or 3)
- 1 Byte → Bit value: 0...255
- 2 Bytes signed → Bit value: -32768...+32768
- 2 Bytes unsigned → Bit value: 0...65535
- 2 Bytes Floating → Bit value: -99,99...+99,99
- 4 Bytes unsigned → Bit value: 0...4294967295

### Value type on LONG operation

Determines the sent data type with a long action:

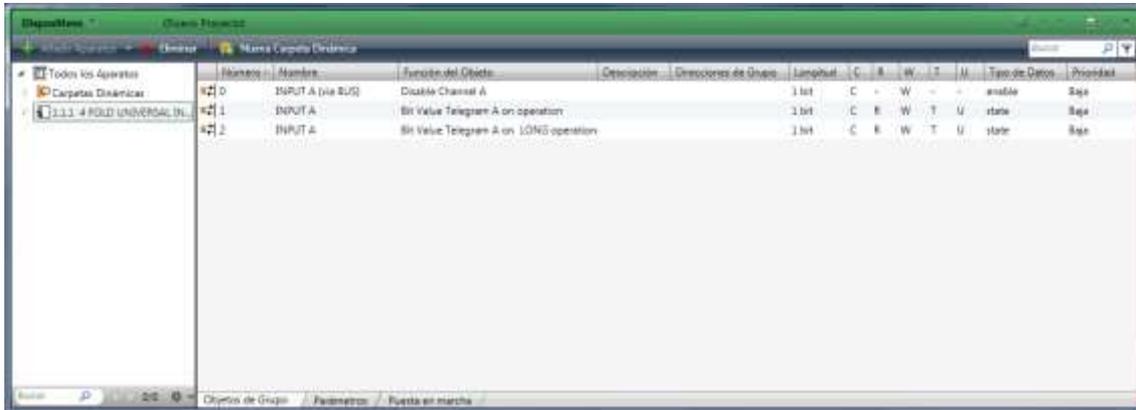
- 1 Bit → Bit value: 0 or 1
- 2 Bit → Bit value: 00...11 (0, 2 or 3)
- 1 Byte → Bit value: 0...255
- 2 Bytes signed → Bit value: -32768...+32768
- 2 Bytes unsigned → Bit value: 0...65535
- 2 Bytes Floating → Bit value: -99,99...+99,99
- 4 Bytes unsigned → Bit value: 0...4294967295

## Long action after...

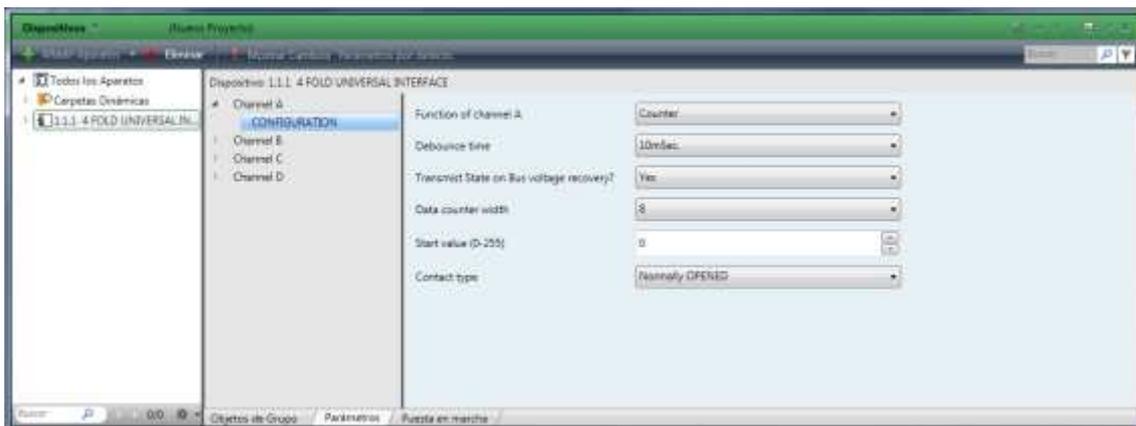
Sets the duration of the action from which is interpreted as long (“Long action”).

Configurable from 0.3s up to 4s.

## 7.2 – Communication Objects



## 8 - “Counter” Function



### Debounce time

Sets the time of suppression of rebounds when there is a switching. It prevents multiple unwanted actions caused by the rebound at the moment of closing its contact.

Adjustable from 10ms up to 160ms.

### Transmit State on Bus voltage recovery

After a recover from a failure in the Bus supply, it is possible to configure if the current state of the object "Bit Value Telegram on operation" is sent again.

### Data counter width

Determines the size of the data in bits: 8, 16 or 32.

### Start value (0-255)

Initial value of the counting process.

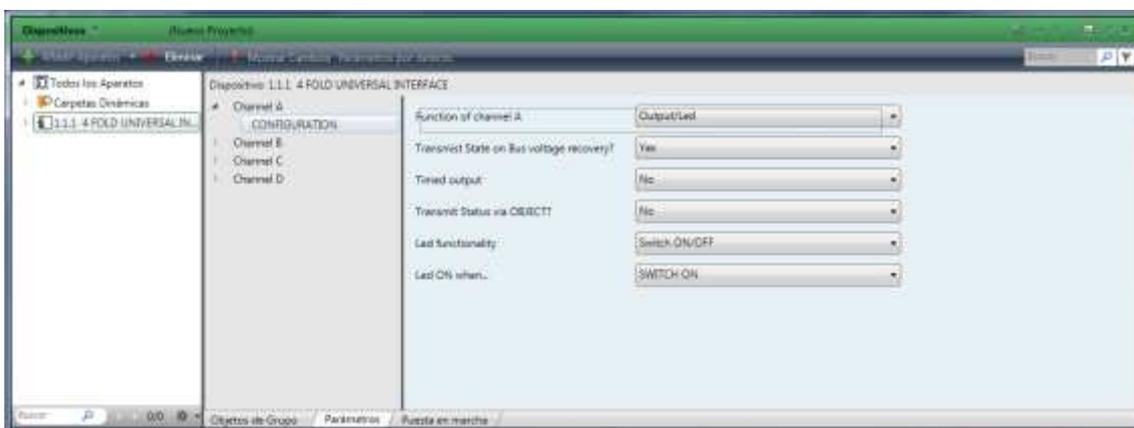
### Contact type

Sets if are accounted the openings (“Normally CLOSED”) or closings (“Normally OPEN”).

## 8.2 – Communication Objects



## 9 - “Output/Led” Function



### Transmit State on Bus voltage recovery

After a recover from a failure in the Bus, it is possible to configure if the current state of the object "Led ON permanent" is sent again.

### Timed output

Determines if the output will be activated timed or not.

In case of selecting the timed operation it will be necessary to choose its frequency through the parameter “ON TIME” and “Factor”. The time delay will be the multiplication of the two parameters.

### Transmit Status via OBJECT

The transmission of the status of the LED can be activated through the "Status Led" object.

### Led functionality

Defines if the output is activated permanently ("Switch ON/OFF") or intermittently ("Flashing").

### Led ON when...

Sets if the LED will turn on with the action "SWITCH ON" or "SWITCH OFF".

### Flash ON time

The time that the LED is ON if it flickers (0,2s...5s).

### Flash ON when...

Sets if the LED will flicker on with the action “SWITCH ON” or “SWITCH OFF”.

## Flash OFF time

The time that the LED is OFF if it flickers (0,2s...5s).

## 9.2 – Communication Objects

Número	Nombre	Función del Objeto	Descripción	Direcciones de Grupo	Longitud	C	R	W	T	U	Tipo de Datos	Precedencia
0	OUTPUT A (via BUS)	Led permanent On			1 bit	C	-	W	-	-	state	Baja
1	OUTPUT A	Led Switch ON/OFF			1 bit	C	R	W	-	U	on/off	Baja
2	OUTPUT A	Led Status			1 bit	C	R	W	T	U	state	Baja