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ACTinBOX HYBRID AD

ACTinBOX Classic-Hybrid Actuator

ZN1IO-AB46A

Application program version: [2.1]
User manual edition: [2.1]_a

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USER MANUAL

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DOCUMENT UPDATES

Version	Changes	Page(s)
[2.1]_a	Changes in the application program: • Improved management of the output order buffer	-
	Example added about the "Multiply" parameter.	16
	General revision of texts and styles	-
[2.0]_a	Changes in the application program: • Integration of version 1.1 of the Building Thermostat. • Slat precise control and direct positioning implemented.	-

1 INTRODUCTION

1.1 ACTINBOX CLASSIC - HYBRID

ACTinBOX Classic-Hybrid is a KNX actuator that combines in only one device the following features:

- **4** multifunction binary **outputs**, up to 10A each, configurable as:
  - Up to 2 shutter channels (with or without slats/lamellas).
  - Up to 4 individual outputs.

  Note: *outputs 3 and 4 also admit the connection of capacitive loads.*

- **6** specific **inputs**, configurable as:
  - **Inputs 1-4:** multifunction binary entries.
  - **Input 5:** multifunction binary input or temperature probe.
  - **Input 6:** multifunction binary input or movement detector.
- Zennio Building **Thermostat**.
- 5x multi-operation **logical function** module.
- **Manual operation** over the actuator outputs, by means of the Zennio infrared remote control.

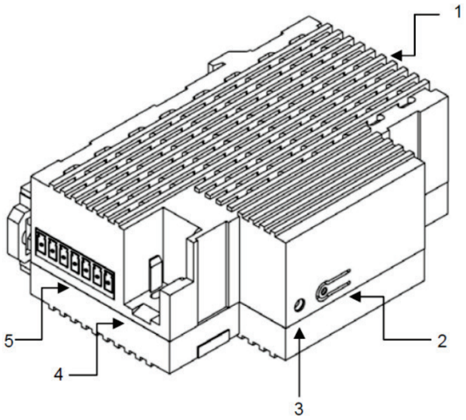
Figure 1 ACTinBOX Classic-Hybrid Actuator

1.2 INSTALLATION

ACTinBOX Classic-Hybrid connects to the KNX bus through the on-board KNX connector.

Once the device is provided with power from the KNX bus, both the physical address and the associated application program can be downloaded.

This actuator does not need any additional external power since it is entirely powered through the KNX bus.



1 – Outputs

2 – Programming button

3 – Programming LED

4 – KNX connector

5 – Inputs

Figure 2 ACTinBOX Classic Hybrid. Element Scheme

The functionality of the main elements of the actuator is described below:

- **Programming button (2)**: a short press on this button sets the actuator into the programming mode, making the associated LED (3) light in red.

  Note: *if this button is held while plugging the device into the KNX bus, ACTinBOX Classic-Hybrid goes into secure mode. The LED will blink in red every 0.5 s.*

- **Outputs (1)**: the screw terminal block (bundled with the original packaging) must be plugged here to allow the connection of the different systems to be controlled by the actuator. Wiring the terminal block may be carried out before inserting it into the corresponding slot.

- **Inputs (5)**: the remaining screw terminal block (bundled with the original packaging) must be plugged here, to allow the connection of the inputs to the actuator. To ensure the adequate behaviour, the two terminals of the input devices (push button, switch/sensor, temperature probe or movement detector) must be connected, on the one hand, to the corresponding input (connection points 1 to 6 in the terminal block) and on the other hand, to the point identified as "C" on the terminal block.

To get detailed information about the technical features of ACTinBOX Classic-Hybrid, as well as on security and on the installation procedure, please refer to the actuator **Datasheet**, bundled with the original package of the device and also available at: http://www.zennio.com .

2 CONFIGURATION

2.1 INDIVIDUAL OUTPUTS

ACTinBOX Classic-Hybrid incorporates **4 relay outputs** that allow controlling different loads autonomously. Each output can be enabled or disabled independently and perform different functionalities.

Every individual output can be configured as **normally open** (the activation of the output makes the relay close) or **normally closed** (the deactivation of the output makes the relay open).

Besides the output type, ACTinBOX Classic-Hybrid allows the configuration of the following functionalities for the individual outputs:

- **Timers.** Permits a timed control over the outputs, being possible to set times for the switch-on and for the switch-off of the output.

- **Scenes.** Allows running and/or saving a specific action over the output/s where this function is enabled. The status of the outputs will vary depending on the action set for the parameterized scene.
- **Alarm.** Allows changing the status of the output where this function is enabled, being possible to configure the status the output will be set to, both on the alarm activation and on the alarm deactivation.

  Note: *the alarm behaves with priority over the other functionalities*.
- **Start-up configuration**: default or custom.

All these configuration options are explained in detail in section 3, ETS Parametrization.

2.2 SHUTTER CHANNELS

The output channels of ACTinBOX Classic-Hybrid allow controlling **up to 2** different shutter drives (or similar window/door automated systems).

Thus, it is possible to control the movement of the shutter within the domotic installation.

- **Basic control**: moving the shutter up/down
- **Precise control**: precise control of the shutter and the slats (for blinds featuring slats).

Each channel (A and B) consists of two consecutive individual outputs; i.e., Channel A is made of the individual outputs 1 and 2, while channel B consists of outputs 3 and 4. The first output of every channel sends orders to **raise** the shutter, whereas the second output sends orders to **lower** the shutter. Therefore, the cables of the shutter motor carrying out these actions should be properly connected to the corresponding output of the channel to perform the required action.

Table 1 shows the action carried out by the outputs of each channel:

Channel	Outputs	Action
A	1	Move up
	2	Move down
B	3	Move up
	4	Move down

Table 1 Shutter channels: actions of the outputs

Each channel can be configured as a **Shutter (No Slats)** or as a **Blind (with Slats)**.

Besides the shutter type, ACTinBOX Classic-Hybrid allows the configuration of the following functionalities for the shutter channels:

- **Times.** Sets the main times that define the movement of the shutter: the length of the rising movement, the length of the descending movement, a security time for making a pause in the movement of the motor when the direction changes, and an additional movement time when the shutter gets to its limit (top or bottom). For blinds with slats, it is also possible to configure a "secondary time" for the slat movement length and for the slat step time.

- **Status objects.** They report the current position of the shutter (and of the slats, if applicable).

- **Precise control.** Allows moving the shutter to a particular position (defined by parameter). Moreover, for blinds with slats, it is also possible to establish a particular position for the slats (value between 0% and 100%).

- **Scenes.** Allows running and/or saving a specific action over the channel/s where this function is enabled.

- **Alarms.** Two alarms are available for each shutter channel. The parameterized action will be executed when an alarm event is received.

- **Reverse movement.** Allows inverse shutter control.

- **Direct positioning.** Function that permits moving the shutter to a preset specific position by sending a 1-bit communication object.

- **Start-up configuration**. Default or custom.

All these options are explained in detail in section 3, ETS Parametrization.

2.3 INPUTS

The actuator ACTinBOX Classic-Hybrid features 6 inputs, which may be configured as:

- **Binary input** (all inputs: 1-6)
- **Temperature probe** (only input 5)
- **Movement detector** (only input 6)

Depending on the selected configuration, it may be necessary to connect different external elements to the actuator inputs: push buttons or switches, temperature probes (like model **ZN1AC-NTC68 S/E/F** from Zennio) or movement sensors (like model **ZN1IO-DETECT** from Zennio).

Inputs configured as binary inputs may be **push buttons** or **switches/sensors** (depending on the connected element). For every type, different customizable options are available, as explained in section 3 of this manual.

Input 5 may be configured as a binary input or as a **temperature probe**. For this configuration, it will be possible to set different parameters regarding the measurement and sending of the temperature.

Input 6 may be configured as a binary input or as a **movement detector**. For this configuration, up to 2 different detection channels can be enabled and configured to react on movement detections or on the absence of movement, by setting custom timings. As a result of the movement detection or non-detection, the channel will transmit the corresponding information through the KNX bus, provided that the channel is enabled (not locked). The movement detector also features a luminosity sensor that allows configuring the sending of the movement detection or non-detection restricted to a luminosity level, according to the parameterization.

2.4 THERMOSTAT

It is possible to enable and configure one thermostat with the Building functionality. The operation and ETS configuration of the Zennio thermostat are described in the specific documentation "Zennio Building Thermostat", available at: http://www.zennio.com.

2.5 RELAY CONTROL USING THE IR REMOTE

The ACTinBOX Classic-Hybrid actuator incorporates a built-in infrared receiver, located next to the programming LED. This functionality allows testing the actuator outputs by making use of the Zennio infrared remote control (the one used to control the InZennio Z38i and ZAS touch panels. See Figure 3).

Note: *to control the outputs from the IR remote, **it is necessary to have the programming LED on** (lighting in red).*

The control of the outputs is carried out as follows:

- Press over the right button: closes the relay of the corresponding output.
- Press over the left button: opens the relay of the corresponding output.

Figure 3 shows a representation of the buttons of the IR remote that must be pressed depending on the output to be remotely controlled.

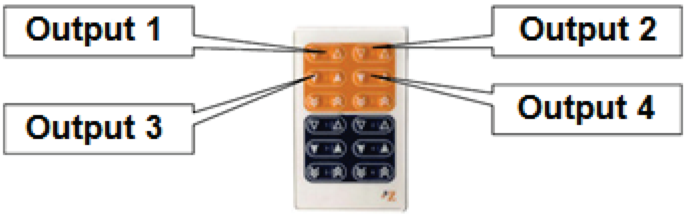


Figure 3 Controlling the outputs from the IR remote

The IR control of the device outputs is only provided for testing purposes. None of the parameterized functions (such as scenes, timers, etc.) is taken into account for opening / closing the relays remotely.

3 ETS PARAMETRIZATION

To begin with the parameterization of the ACTinBOX Classic-Hybrid actuator it is necessary, once the ETS application is running, to import the database of the product (ACTinBOX Hybrid AD application program).

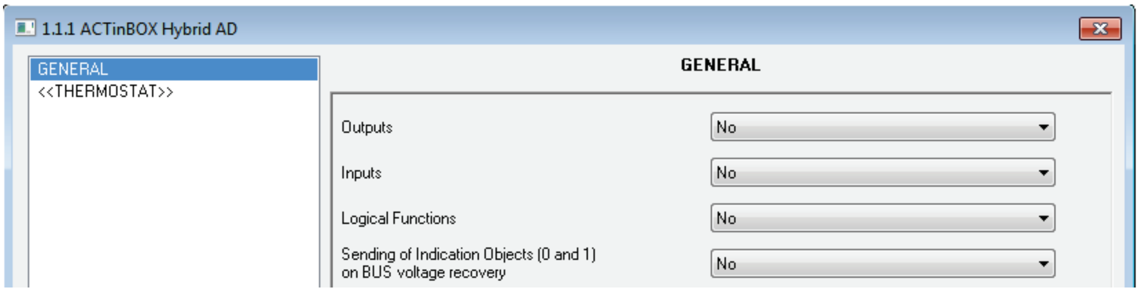
Next, the device must be added to the project where desired. Finally, right-click on the device and select "Edit parameters" to start with the configuration.

The following sections provide a detailed explanation about each of the different functionalities of the application in ETS.

3.1 DEFAULT CONFIGURATION

This section shows the default configuration the device parameterization starts from.

When the parameter edition is entered for the first time, the following window will come up:



1.1.1 ACTinBOX Hybrid AD

GENERAL

Outputs: No

Inputs: No

Logical Functions: No

Sending of Indication Objects (0 and 1) on BUS voltage recovery: No

Figure 4 Configuration screen by default

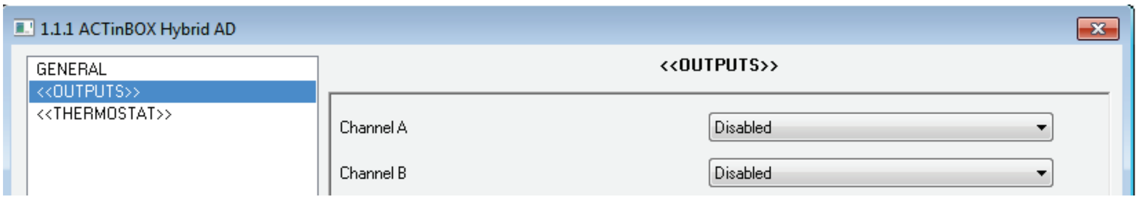
As shown in Figure 4, outputs, inputs and logical functions are disabled by default, so there will be no communication objects available until the user enables some of the functions of the actuator.

If the parameter "**Sending of indication objects on bus voltage recovery**" is set to “Yest”, two new 1-bit communication objects will show up ("Reset 0" and "Reset 1"), which will send to the KNX bus the values "0" and "1" after a bus power failure, in order to recover the communication with the rest of the devices in the installation. This sending may be immediate or after a configured delay (in seconds).

The left-side menu also shows the access to the Thermostat configuration, disabled by default (see Section 3.5).

3.2 OUTPUTS

When “Outputs” is set to “Yes”, a new tab will be added to the left-side panel, making it possible to configure the outputs of the device. This screen will look as follows:

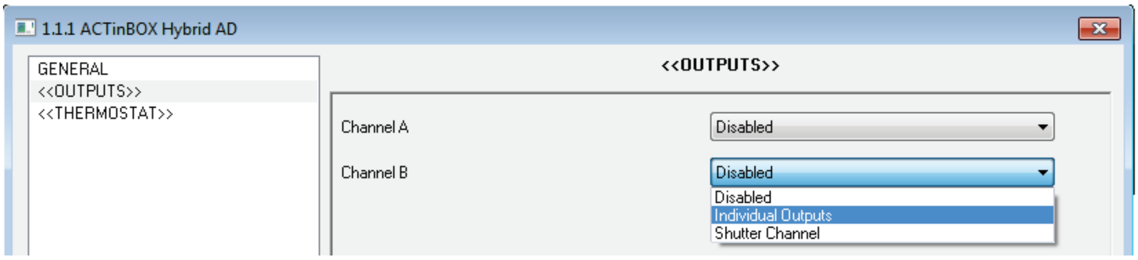


Channel A: Disabled

Channel B: Disabled

Figure 5 Configuring the outputs

The outputs are grouped into channels (Channel A and Channel B, both disabled by default), with two outputs each. A drop-down list permits configuring the behaviour of each channel, as **individual outputs** or **shutter channels**.



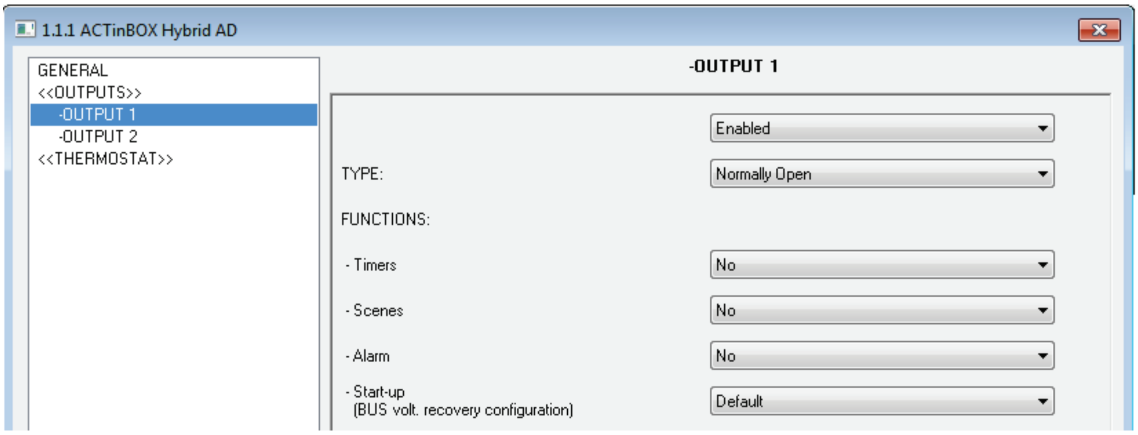
Channel A: Disabled

Channel B: Disabled

Figure 6 Configuring the channels

3.2.1 INDIVIDUAL OUTPUTS

Figure 7 represents an example of how a channel can be parameterized: in this case, channel A is parameterized as “individual outputs” (output 1 and 2).



Enabled

TYPE: Normally Open

FUNCTIONS:

- Timers: No
- Scenes: No
- Alarm: No
- Start-up (BUS volt. recovery configuration): Default

Figure 7 Channel A configured as individual outputs

Once the output is enabled, the ETS topology will automatically display the following communication objects (1-bit each):

- **[OX] ON/OFF**: allows activating (ON) or deactivating (OFF) the corresponding output by sending the value "1" or "0", depending on the parameterized output type.
- **[OX] Status**: shows the current status of the output (active or inactive).
- **[OX] Block**: allows locking/unlocking the output (i.e., disabling/enabling its control) by sending the values "1" or "0" to the object, respectively.

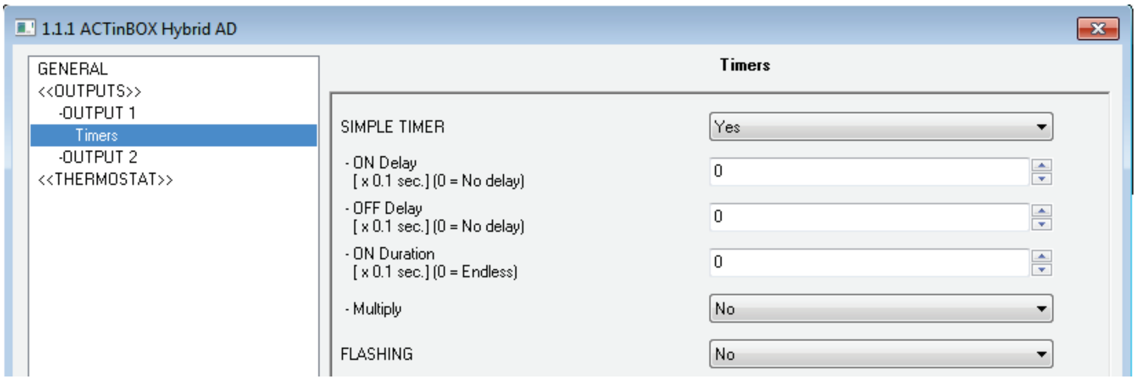
  Note: *only the Alarm function has a higher priority than the block function; if an alarm signal arrives when the output is locked, the output will be set to the status defined by the alarm function. When the alarm gets deactivated, the output returns to the lock status*.

The first thing to be parameterized is the type of each output of the channel:

- **Normally open**: the output will be considered as active (ON) when the relay stays closed and inactive (OFF) when the relay stays open.
- **Normally closed**: the output will be considered as active (ON) when the relay stays open and inactive (OFF) when the relay stays closed.

Next, the list of functions available for each output:

- **Timers**: allow performing a timed control of the outputs, both through a simple timer and/or through an intermittent sequence (*flashing*).



SIMPLE TIMER: Yes
- ON Delay [x 0.1 sec.] (0 = No delay): 0
- OFF Delay [x 0.1 sec.] (0 = No delay): 0
- ON Duration [x 0.1 sec.] (0 = Endless): 0
- Multiply: No

FLASHING: No

Figure 8 Timers screen. Simple timer

- **Simple timer**: allows switching the output on and off on the reception of the values “1” and “0” through the “[OX] Timer” object. These switches are subject to a set of parameterizable times:

  - **On Delay**: time the actuator will wait before switching on the output once the ON order has been received (through the “[OX] Timer” object). The value “0” will cause an immediate response.
  - **Off delay**: time the actuator will wait before switching off the output once the OFF order has been received (through the “[OX] Timer” object). The value “0” will cause an immediate response.
  - **On Duration**: time the output remains ON before switching back to the OFF status. A “0” in this field means the output will remain permanently ON.

  These parameters apply as follows:

    - When ACTinBOX Classic-Hybrid receives a "1" through the "[OX] Timer" communication object, an ON order is sent to the output after waiting for the “On Delay” time. The output will stay switch off again after the “On Duration” time (if other than 0).
    - When ACTinBOX Classic-Hybrid receives a "0" through the "[OX] Timer" communication object, an OFF order is sent to the output after waiting for the “Off Delay” time.

  - **Multiply**: allows progressively increasing (multiplying), in runtime, the On Duration time or the On/Off delays of the output. Two situations are distinguished:

    - **No multiply**:

      - If the On delay count is already running, it will be reset every time a new “1” is received through the “[OX] Timer” object.
      - If the output has already been activated and the On Duration time is counting, it will be reset whenever a new “1” is received.

- If the Off delay count is already running, it will be reset every time a new “0” is received.

- **Multiply**:

  - If the On delay count is already running and the value “1” is received several times through the “[OX] Timer” object, then the actual delay time will be “n” times the parameterized time, being “n” the number of times the value “1” is received .

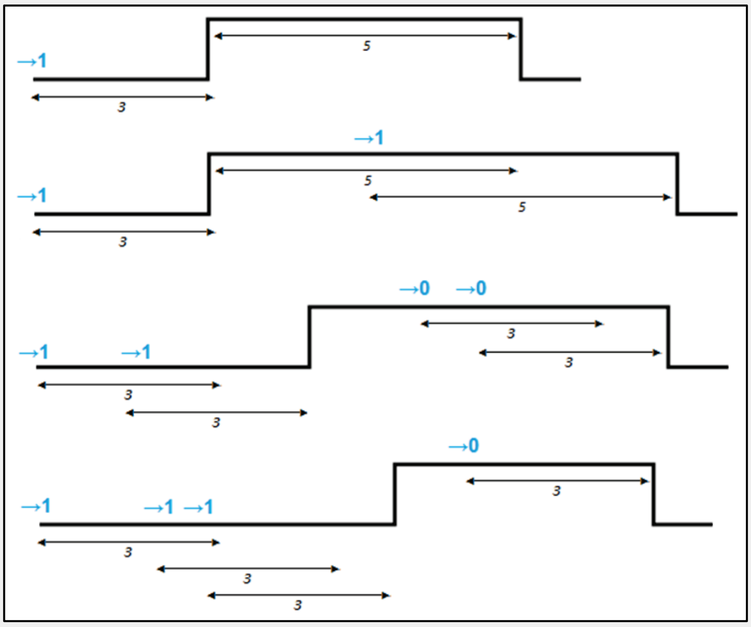
  - If the output has already been activated and while the On Duration time is counting the value “1” is received several times, then the actual duration will be “n” times the parameterized time, being “n” the number of times the value “1” is received.

  - If the Off delay count is already running and the value “0” is received several times, then the actual delay time will be “n” times the parameterized time, being “n” the number of times the value “0” is received.

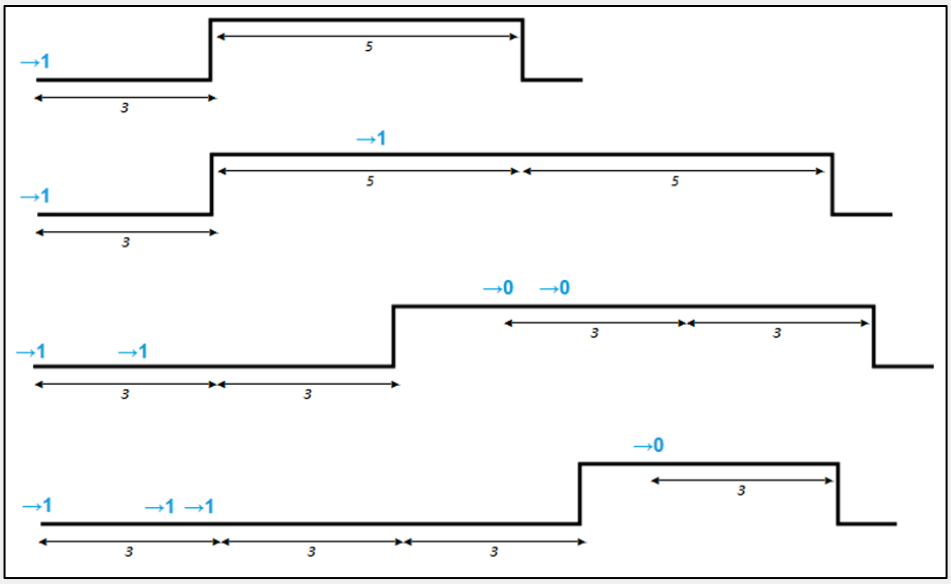
Note: *the Multiply option may result particularly useful under parameterizations with no ON and OFF delays. Nevertheless, as already explained and as the following example shows, these delay times, if parameterized with a value other than 0, do also admit multiplication.*

Example: *the following is parameterized: On Delay = 3 seconds; Off Delay = 3 seconds, On Duration = 5 seconds. The graphs bellow reflect some possible situations if the values "0" or "1" are received from the (which is represented as →0 and →1), respectively for the cases of having the "multiply" option enabled and disabled.*

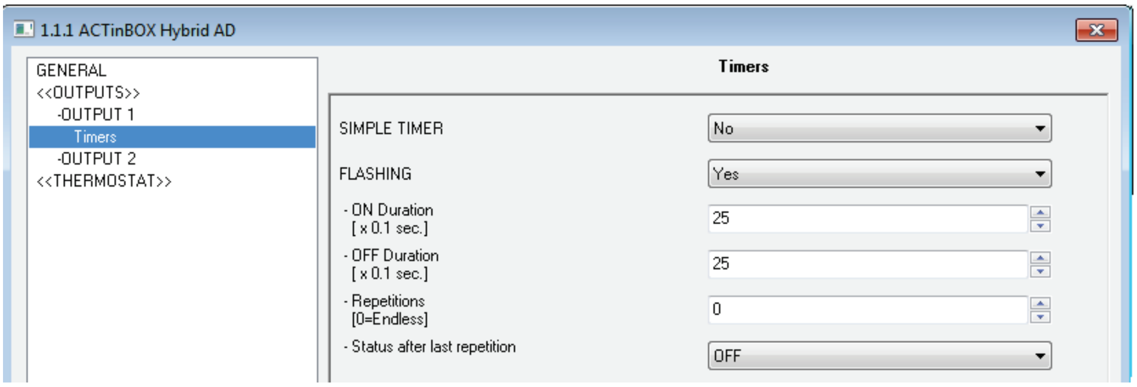
With no multiplication:



With multiplication:



- **Flashing** (Figure 9). This function allows the execution of alternating ON-OFF sequences when needed. It is possible to parameterize the ON and an OFF time length, as well as the number of repetitions (the value "0" makes the sequence endless until a "0" is received through the "[OX] Flashing" communication object). It is also possible to define the final status (ON or OFF) of the output after the last repetition.



1.1.1 ACTinBOX Hybrid AD

Timers

SIMPLE TIMER: No

FLASHING: Yes

- ON Duration [x 0.1 sec.]: 25

- OFF Duration [x 0.1 sec.]: 25

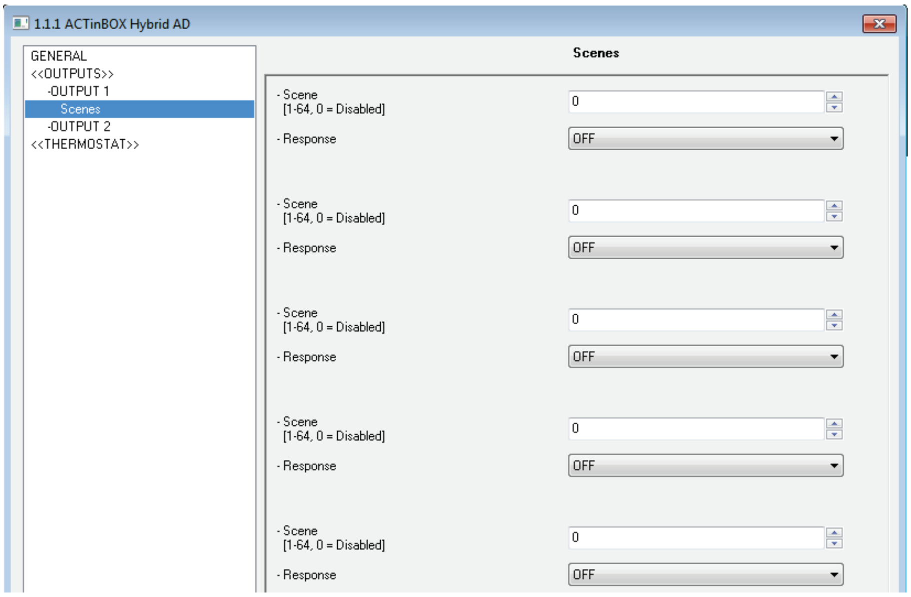
- Repetitions [0=Endless]: 0

- Status after last repetition: OFF

Figure 9 Flashing

It is **important** to keep in mind that ACTinBOX Classic-Hybrid allows parameterizing both a simple timer and an intermitting sequence for the same output.

- **Scenes**: scenes consist of a synchronized activation of the devices in the domotic installation, so that different predefined atmospheres can be generated by simply sending a scene value over the bus.



1.1.1 ACTinBOX Hybrid AD

Scenes

- Scene [1-64, 0 = Disabled]: 0
- Response: OFF

- Scene [1-64, 0 = Disabled]: 0
- Response: OFF

- Scene [1-64, 0 = Disabled]: 0
- Response: OFF

- Scene [1-64, 0 = Disabled]: 0
- Response: OFF

- Scene [1-64, 0 = Disabled]: 0
- Response: OFF

Figure 10 Scenes

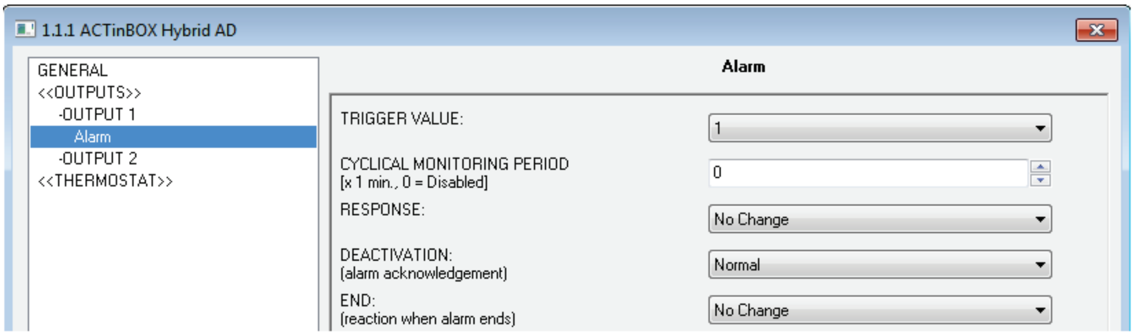
There is a 1-bye communication object associated with Scenes for the individual outputs: "Scenes (Individual Outputs)", which shows when the "Outputs" tab in ETS is enabled, even if the outputs are disabled.

In the case of the individual outputs, scenes allow linking a numerical value (between 1 and 64, where 0 means that the option is disabled) to an output status (OFF or ON). Thus, when the predefined scene value is received through the Scenes object, the parameterized action for the output (a switch-off or a switch-on) will be performed; so it will be possible to create different environments in the installation.

Besides running scenes, it is possible to **learn** (save) scenes, taking into account that the associated numerical values for learning scenes are in the range 128-191.

ACTinBOX Classic-Hybrid allows running and/or learning **up to 5 different scenes** for each output.

- **Alarm**: for each output it is possible to configure an alarm, which, once activated, will have **priority** over the rest of the orders that the actuator may receive, i.e., any order received while the alarm is active will be ignored until the alarm becomes inactive.



TRIGGER VALUE: 1

CYCLICAL MONITORING PERIOD [x 1 min., 0 = Disabled]: 0

RESPONSE: No Change

DEACTIVATION: (alarm acknowledgement): Normal

END: (reaction when alarm ends): No Change

Figure 11 Alarm

The following parameters can be configured for alarms:

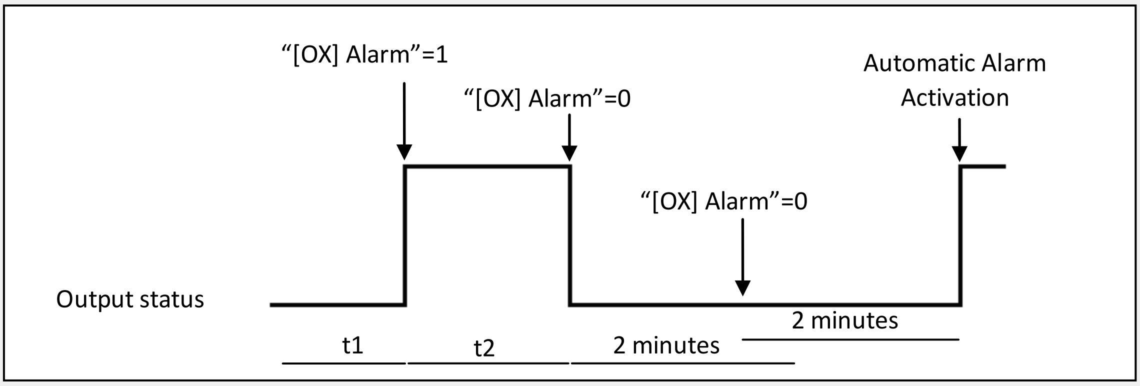
- **Trigger value**: sets the value that will trigger the alarm status. It can be "1" or "0". The alarm status will be activated when the value set in this field is sent to the "[OX] Alarm" object, and it will be deactivated when the opposite value is sent to the aforementioned communication object.

Cyclical monitoring period (minutes): defines, for the case of having a periodically-sent alarm object (“1” or “0”, as corresponding each time), the maximum permitted time without receiving the “no alarm” value (“[OX] Alarm” = value contrary to the parameterized trigger value) before the actuator automatically assumes the alarm status, foreseeing the possibility of a failure in the transmitting device. If for whatever reason the monitoring period expires, ACTinBOX Classic-Hybrid will trigger the parameterized action (unless it does not imply a change in the output status). This will not happen while the “no alarm” value keeps being sent before each monitoring period expires. The cyclical monitoring can be disabled by simply setting a 0 under this filed.

The following example is provided for a better comprehension:

Example:

Suppose that a cyclical monitoring period of 2 minutes is configured. The trigger value is “1” and the reaction of the actuator when the alarm is activated consists in switching on the output, while when the alarm is deactivated, the output will be switched off. Assuming that the output is off, the alarm becomes active (“[OX] Alarm=1”), so the output is switched on. While the alarm is not deactivated, any action over the output will be ignored. After some time (t2), the alarm is deactivated (“[OX] Alarm=0”), which makes the output switch from ON to OFF. Before the parameterized cyclical monitoring period (2 minutes) ends, a new alarm deactivation order arrives, so the time count starts again. After 2 minutes without receiving further values through the alarm object, the alarm will be automatically activated, making the output status switch on. As before, any action over the output will be ignored until the alarm is deactivated. See the following figure.



- **Response**: sets the response (status) of the actuator output when the alarm is activated:

  - No change.
  - ON.
  - OFF.
  - Flashing: 3 drop-down lists are shown to configure the ON Duration, the OFF Duration and the number of repetitions of the sequence.

- **Deactivation**: two different procedures are provided to deactivate an active alarm:

  - Normal: depending on what was parameterized under “Trigger Value”, the alarm will be deactivated as soon as the actuator receives a “0” or a “1” through the alarm object.
  - Frozen: this method requires a normal deactivation, plus the reception of the value “1” over the “[OX] Unfreeze Alarm” object (if the latter does not occur, the alarm status will still be active). This method makes the channel output remain locked (even when the alarm situation is over) until it is externally (or manually) enabled.

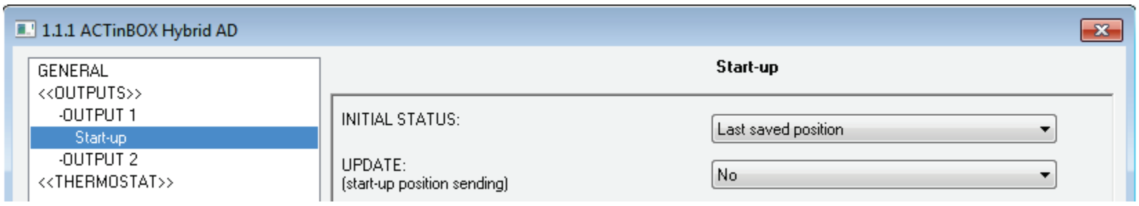
- **End (reaction when alarm ends)**: this parameter sets the status that will be adopted by the output once the alarm finishes:

  - No change
  - ON
  - OFF
  - Last (the output returns to the status it had before the alarm)

- **Start-up configuration**: defines the state (ON/OFF) that will be adopted by the outputs when the device recovers from a bus power failure, or after an ETS download. A default or a custom configuration may be selected.

  Selecting the default configuration will make the output stay off after a partial or complete ETS download, while after a bus power failure, the status of the output will be the same it had before the failure (ON or OFF).

If "custom" is chosen, ETS will show the following window:



INITIAL STATUS: Last saved position

UPDATE: (start-up position sending) No

Figure 12 Start-up configuration: custom.

Where the following parameters can be configured:

- **Initial status**: this field defines the initial status of the output after a bus power failure or after a download. The following options are available: last saved position (i.e., the status of the output before the bus power failure), ON or OFF.

- **Update**: enabling this field ("Yes") will make the actuator send the output status to the bus (through the corresponding communication object) after the start-up as a feedback for the rest of the devices in the installation. A parameterizable delay can also be applied to this sending. If the delay is set to 0, the status will be sent immediately.

The initial status is always sent through the object "[OX] Status".

3.2.2 SHUTTER CHANNEL

ACTinBOX Classic-Hybrid also allows configuring its outputs as shutter channels, making it possible to control **up to 2 separate shutters** in an installation.

When a channel is configured in ETS as a shutter channel, a 1-bit communication object ("[CX] Block") related to each enabled channel becomes visible. This object allows locking the channel outputs (i.e., disabling the control over them through both the ON/OFF and the timed control objects) when it is received with value "1". Moreover, if the shutter is already moving at the moment of being locked, the movement will be interrupted and any order over it will be ignored. The channel outputs will become unlocked when a "0" is sent through this object.

Note: *only the "alarm" function has a higher priority than the "block" function. If an alarm signal arrives while the channel is locked, the shutter will adopt the position* *configured for the alarm. Once the alarm is deactivated, the shutter will recover the position defined for the locked status.*

The first parameter to be configured is the type of the shutter:

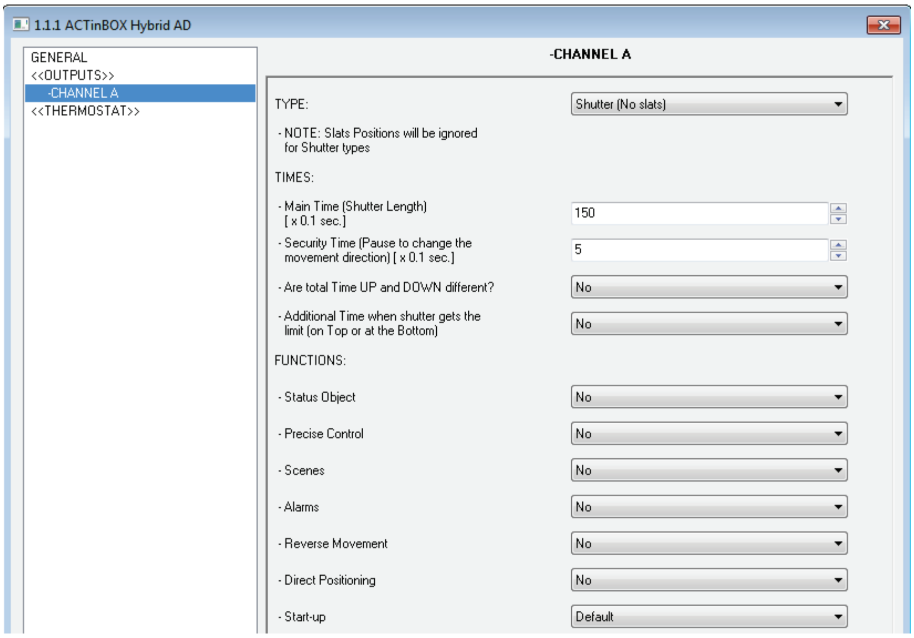
- **Shutter (no slats)**: typical shutter with a simple movement up/down. If this type is selected, two communication objects are enabled: “[CX] Move” and “[CX] Stop” to move the shutter up/down and to stop it, respectively.

  In addition, the following remark is shown for this type: "Slats positions will be ignored for Shutter types", which means that function parameters related to slat positions (%) will not be taken into account.

- **Blind (with slats)**: special slat shutters where both the shutter itself and the slats/lamellas are controlled with a single drive. ACTinBOX Classic-Hybrid allows controlling both movements: the slat rotation (which permits varying the level of the incident light) and the movement (up/down) of the blind. Two communication objects are enabled for this purpose: "[CX] Move" (which will send the orders to move the blind up/down) and "[CX] Stop/Step". If the device receives a “0” or a “1” through the latter when the blind is already in motion, the movement will be interrupted, while if the blind was not in motion, receiving a “0” through this communication object will make the slats rotate upwards, while receiving a “1” will make them rotate downwards. These step movements are useful to correct both the slat and the blind position together.

  To get detailed information about blinds with slats and their ETS configuration, please refer to **ANNEX I. Slats precise control**.

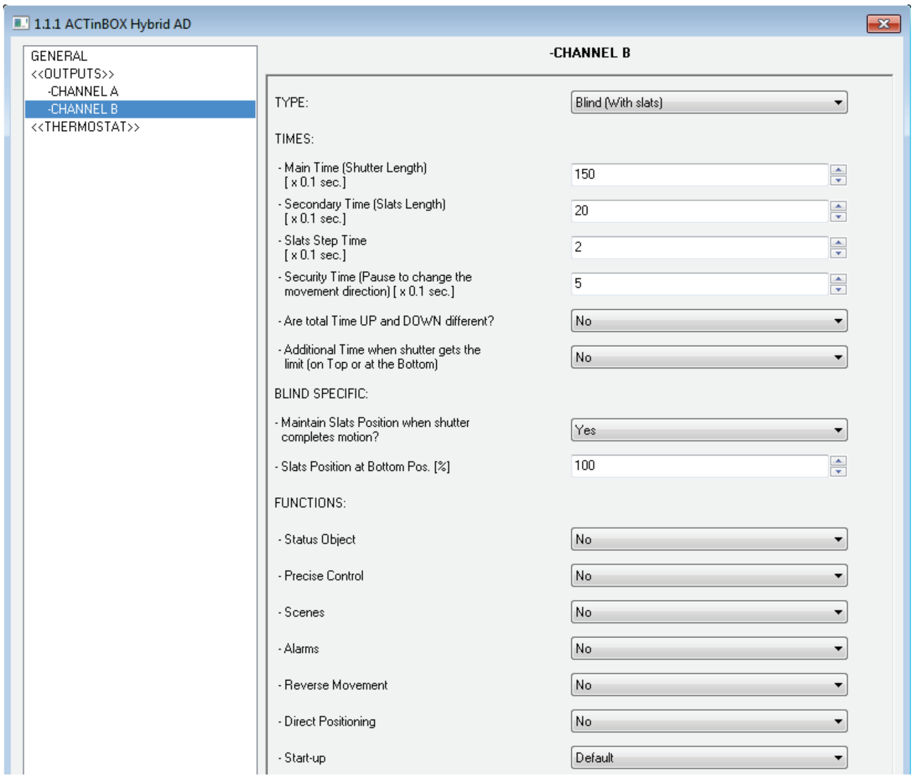
The next figures show the screens that contain the parameterizable options for channels configured as shutters (no slats) or as blinds (with slats).



-CHANNEL A

TYPE:	Shutter (No slats)
- NOTE: Slats Positions will be ignored for Shutter types	
TIMES:	
- Main Time (Shutter Length) [x 0.1 sec.]	150
- Security Time (Pause to change the movement direction) [x 0.1 sec.]	5
- Are total Time UP and DOWN different?	No
- Additional Time when shutter gets the limit (on Top or at the Bottom)	No
FUNCTIONS:	
- Status Object	No
- Precise Control	No
- Scenes	No
- Alarms	No
- Reverse Movement	No
- Direct Positioning	No
- Start-up	Default

Figure 13 Channel A configured as a shutter (no slats)



-CHANNEL B

TYPE:	Blind (With slats)
TIMES:	
- Main Time (Shutter Length) [x 0.1 sec.]	150
- Secondary Time (Slats Length) [x 0.1 sec.]	20
- Slats Step Time [x 0.1 sec.]	2
- Security Time (Pause to change the movement direction) [x 0.1 sec.]	5
- Are total Time UP and DOWN different?	No
- Additional Time when shutter gets the limit (on Top or at the Bottom)	No
BLIND SPECIFIC:	
- Maintain Slats Position when shutter completes motion?	Yes
- Slats Position at Bottom Pos. [%]	100
FUNCTIONS:	
- Status Object	No
- Precise Control	No
- Scenes	No
- Alarms	No
- Reverse Movement	No
- Direct Positioning	No
- Start-up	Default

Figure 14 Channel B configured as a blind (with slats)

Apart from the shutter type, it is necessary to configure some specific functions, which are common to both types:

- **Times**: this section allows setting the times (in tenths of seconds) that define to the shutter movement.

  - **Main time (Shutter length)**: this is the time the shutter needs to move all the way down or up. In case the shutter does not take similar times for both directions, parameter "Are total time up and down different?" should be set to "Yes". In such case, this Main time will define the time required to move the shutter all the way down, while a secondary parameter ("Total Time Up") will become available to define the time required for the inverse movement.

    It is not necessary to periodically calibrate this parameter, since the exact shutter position is stored by ACTinBOX Classic-Hybrid at any time, even after power failures.

  - **Security time (pause to change the movement direction)**: this is the time reserved by the actuator, as a preventive measure to protect the shutter drive, when the movement switches from one direction to the inverse. If the device receives an order to lower the shutter while it is being raised, ACTinBOX Classic-Hybrid will temporarily interrupt the movement (security time) and will afterwards lower the shutter. It is advisable to set a value not lower than 5 tenths of a second (the default value).

  - **Are total time Up and Down different?** Heavy shutters may require different times to move up and to move down. When this happens, this field should be set to "Yes", making the already mentioned "Main time (Shutter length)" parameter be interpreted as the time required to lower the shutter, while a secondary parameter will be provided to define the time required to raise it.

  - **Additional time when the shutter gets the limit**: this parameter is useful to prevent small maladjustments and to ensure that the shutter always gets to the lowest or highest position. This is done by defining an extra time to keep the drive moving once the rising/lowering times end. This parameter is not visible by default; however it is advisable to give it a value to guarantee a proper behaviour in the shutter.

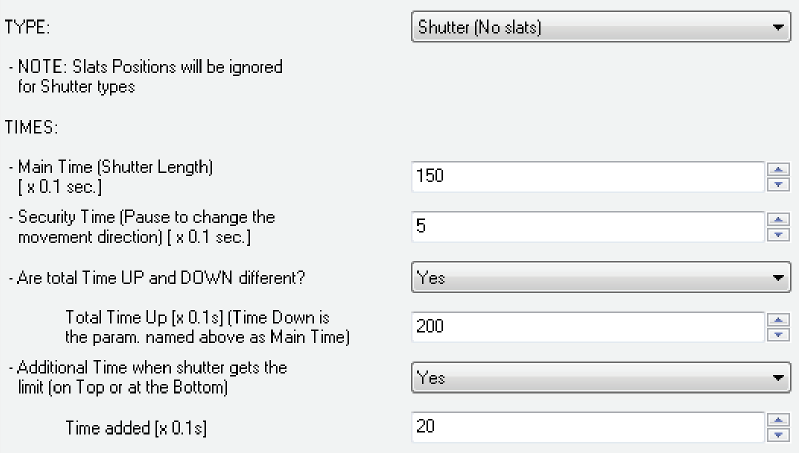
If the shutter is configured as a blind with slats (Figure 14), some more specific parameters appear. All of them are explained in detail in **ANNEX I. Slats precise control**.

Note: *after programming the device from ETS from ETS and unless a custom start-up configuration has been parameterized, ACTinBOX Classic-Hybrid will assume the shutter as completely raised, so any raising order will be ignored.*

The following is an example of a possible shutter configuration.

Example:

Channel A (shutter without slats) takes 15 seconds to be lowered and 20 to be raised. Additional times for direction changes (5 tenths of a second) and at the end of the movement (2 seconds) are also required. The required parameterization is as follows:



TYPE:	Shutter (No slats)
- NOTE: Slats Positions will be ignored for Shutter types	
TIMES:	
- Main Time (Shutter Length) [x 0.1 sec.]	150
- Security Time (Pause to change the movement direction) [x 0.1 sec.]	5
- Are total Time UP and DOWN different?	Yes
Total Time Up [x 0.1s] (Time Down is the param. named above as Main Time)	200
- Additional Time when shutter gets the limit (on Top or at the Bottom)	Yes
Time added [x 0.1s]	20

The following parameters add functionality or special features to both shutter types (with or without slats):

- **Status object**: this function provides a 1-byte communication object ("[CX] Current Shutter Position") which will show, at any time, the exact position of the shutter in percentage (%). This object throws the value 0 (or 0%) when the shutter in completely up and 255 (or 100%) when it is completely down. The remaining values represent intermediate positions.

  It is possible to set, by parameter, whether the shutter position will be sent every second or not. This is done by enabling or disabling “Send current shutter position every second while moving?", which appears once the "Status Object" parameter has been enabled.

For Blinds with slats, the 1-byte object "[CX] Current Slats Position" is also provided. It will show the value 0 (0%) when the slats are completely "up" and the value 255 (100%) when the slats are completely "down".

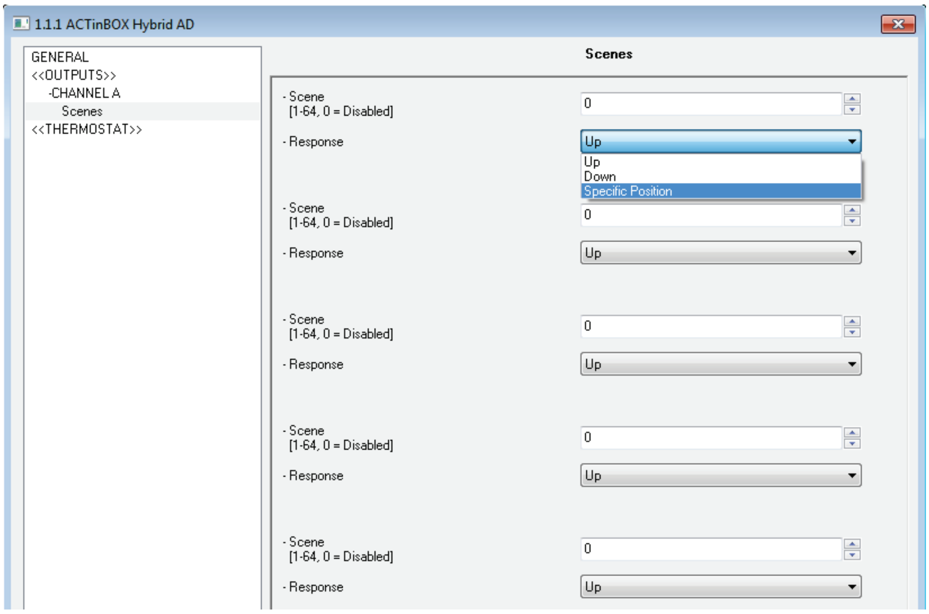
- **Precise control**: this function makes it possible to actually move the shutter to any position via a 1-byte communication object ("[CX] Shutter Positioning", in percentage). Every time ACTinBOX Classic-Hybrid receives a new percentage value through this object (e.g. 50%), the shutter moves to the corresponding position (e.g., the central position).

  For blinds with slats, the actuator also implements the 1-byte object "[CX] Slats Positioning" for setting the desired position (in percentage) for the slats.

- **Scenes**: this function makes it possible to use scenes to control the shutters. It allows choosing precise positions where the shutter will be moved to upon the reception of certain scene numbers through the 1 byte object "Scenes (Shutter Channels)".

  Apart from running scenes, it is possible to **learn** (save) scenes, taking into account that the values that should be received to learn a scene must be in the range 128-191 (values 0-63 are reserved for running scenes).

  Up to 5 scenes can be run and/or leant, for each shutter channel.



1.1.1 ACTinBOX Hybrid AD

GENERAL
<<OUTPUTS>>
-CHANNEL A
Scenes
<<THERMOSTAT>>

Scenes

- Scene [1-64, 0 = Disabled]: 0
- Response: Up

- Scene [1-64, 0 = Disabled]: 0
- Response: Up
- Scene [1-64, 0 = Disabled]: 0
- Response: Up
- Scene [1-64, 0 = Disabled]: 0
- Response: Up
- Scene [1-64, 0 = Disabled]: 0
- Response: Up

Figure 16 Scenes

The “Scene” parameter indicates the scene value the shutter will react to. If this value is 0, the corresponding option is disabled.

“Response” sets the precise position where the shutter will be moved to when the above scene number arrives from the bus. The shutter can be moved completely up, completely down, or to a specific intermediate position (in percentage, from 0% to 100%). In case of choosing the latter, parameter "Shutter specific position?" will become visible to allow the definition of a specific shutter position (through the "Select Shutter Position [%]"parameter, after selecting "Yes") or to make the shutter stay as is.

For blinds with slats it is also possible to configure a specific position for the slats (via the parameter "Select Slats Position [%]") when the configured scene number is received, or to make them maintain their current position.

The following example illustrates the configuration process.

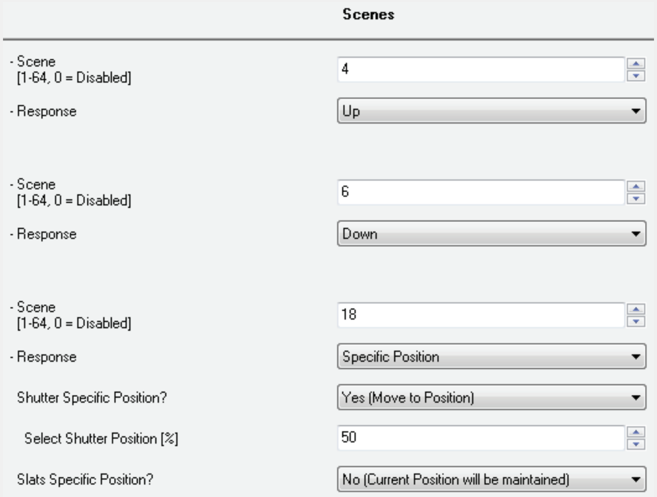
Example:

Consider a facility where 3 scenes will be distinguished (values “4”, “6” and “18”) and where ACTinBOX Classic-Hybrid will be used to move a blind with slats to precise positions on the reception of these scene values:

- *Scene 4: shutter up*

- *Scene 6: shutter down*
- *Scene 18: central position (50%). The slats maintain their current position.*

The associated parameterization should be as follows.



Scenes

- Scene [1-64, 0 = Disabled]: 4
- Response: Up

- Scene [1-64, 0 = Disabled]: 6
- Response: Down

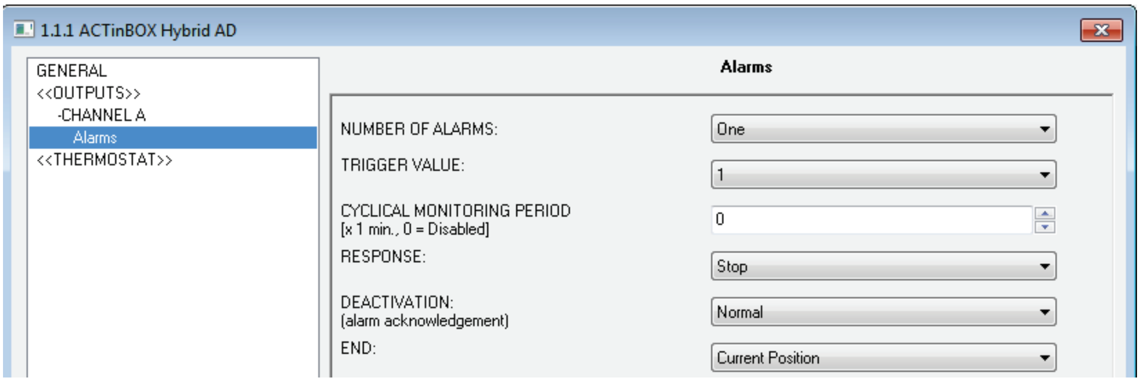
- Scene [1-64, 0 = Disabled]: 18
- Response: Specific Position

Shutter Specific Position?: Yes (Move to Position)

Select Shutter Position [%]: 50

Slats Specific Position?: No (Current Position will be maintained)

- **Alarms**: ACTinBOX Classic-Hybrid allows configuring up to 2 alarms for each shutter channel. This function is designed for cases in which the actuator must react to an alarm situation. Having two alarms configured allows carrying out different reactions to two external events.



Alarms

NUMBER OF ALARMS: One

TRIGGER VALUE: 1

CYCLICAL MONITORING PERIOD [x 1 min., 0 = Disabled]: 0

RESPONSE: Stop

DEACTIVATION: (alarm acknowledgement): Normal

END: Current Position

Figure 17 Alarms

The following parameters can be configured:

- **Number of alarms**: sets whether to use one or two alarms. Both of them can be independently managed through their corresponding communication objects ("[CX] Alarm" for Alarm 1 and "[CX] Alarm 2" for the second one).

It is important to keep in mind that Alarm 1 has a higher priority than Alarm 2. This means that if a channel is under the Alarm 2 status and Alarm 1 occurs, then the shutter will switch to the Alarm 1 status and only switch back to the Alarm 2 status once Alarm 1 finishes. Analogously, when the channel is under the Alarm 1 status and Alarm 2 occurs, Alarm 1 prevails.

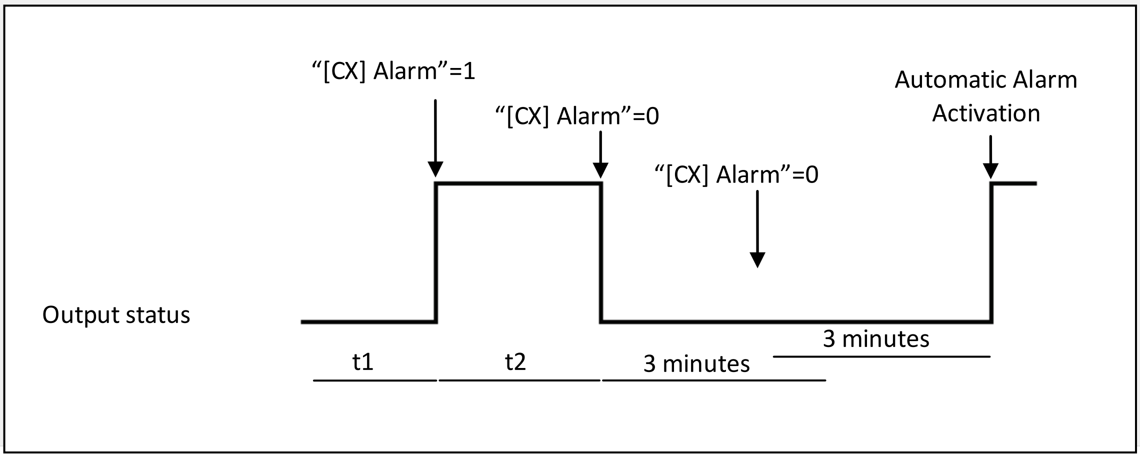
- **Trigger value**: sets the value (“1” or “0”) that will trigger the alarm status. This value is intended to be received through object “[CX] Alarm” (or “[CX] Alarm2”).

- **Cyclical monitoring period (minutes)**: defines, for the case of having a periodically-sent alarm object (“1” or “0”, as corresponding each time), the maximum permitted time without receiving the “no alarm” value (“[OX] Alarm” = value contrary to the parameterized trigger value) before the actuator automatically assumes the alarm status, foreseeing the possibility of a failure in the transmitting device. If for whatever reason the monitoring period expires, ACTinBOX Classic-Hybrid will trigger the parameterized action (unless it does not imply a change in the output status). This will not happen while the “no alarm” value keeps being sent before each monitoring period expires. The cyclical monitoring can be disabled by simply setting a 0 under this filed.

The following example illustrates the above behaviour:

Example:

Suppose that a cyclical monitoring period of 3 minutes is configured. The trigger value is “1” and the reaction of the actuator when the alarm is activated consists in moving the shutter all the way up, while when the alarm is deactivated, the shutter will be raised. Assuming that the shutter has been lowered, when the alarm becomes active the actuator will begin raising the shutter. While the alarm is not deactivated, any action over the shutter channel will be ignored by the actuator. After some time (t2), one “0” arrives through the alarm object, which makes the alarm turn off and the shutter be raised. Before the parameterized cyclical monitoring period (3 minutes) ends, a new alarm deactivation order arrives, so the time count starts again. After 3 minutes without receiving further values through the alarm object, the alarm will be automatically *activated, making the shutter move up again. As before, any action over the shutter will be ignored until the alarm is deactivated. See the following figure*



- **Response**: sets the response order to be sent to the shutter when the alarm is activated:
  - Stop.
  - Up.
  - Down.
  - Specific position.

  When the latter is chosen, a new drop-down list is shown, letting the integrator set a value for this specific position, in the range 0% (completely up) to 100% (completely down).

  For blinds with slats, an option called "Select Slats position [%]" will also become visible, making it possible to set a position for the slats between 0% (totally open or "up") and 100% (totally closed or "down").

- **Deactivation**: two different procedures are provided to deactivate an active alarm:
  - Normal: depending on what was parameterized under "Trigger Value", the alarm will be deactivated as soon as the actuator receives a "0" or a "1" through the corresponding alarm object.

- Frozen: this method requires a normal deactivation, plus the reception of the value “1” over the corresponding *unfreeze alarm* object (if the latter does not occur, the alarm status will still be active). This method makes the channel output remain locked (even when the alarm situation is over) until it is externally (or manually) enabled.

➢ **End**: this parameter sets the desired shutter position once the alarm becomes inactive:

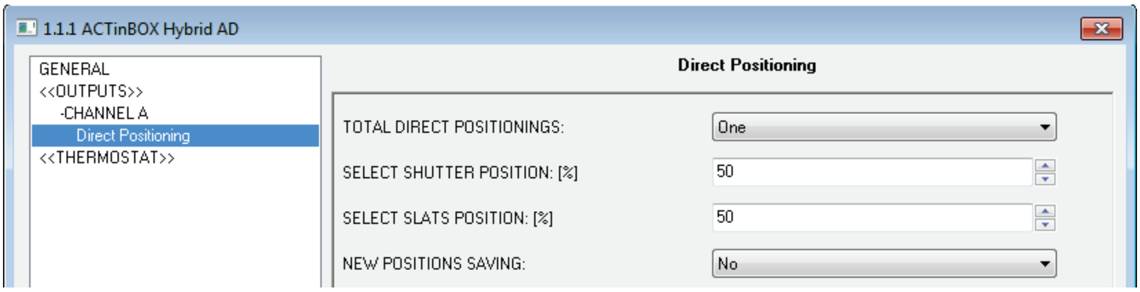
- Current position.
- Up.
- Down.
- Last position (before the alarm).

- **Reverse movement**: this function makes it possible to control a shutter with the usual orders inverted (ACTinBOX Classic-Hybrid normally raises the shutter when the value "0" is received through the object "[CX] Move" and stops it with value "1"). Therefore, if this function is enabled, ACTinBOX Classic-Hybrid will also raise the shutter when the value "1" is received through object "[CX] Reversed Movement", and will lower it on the reception of the value “0”.

  This reverse control is compatible with the usual control, since “[CX] Move” and “[CX] Reversed Movement” are provided as separate objects for normal and reverse control, respectively.

  Reverse control becomes particularly useful when a centralised OFF order is sent over the installation to turn the lights off and to lower the shutters at the same time. In this case, the value “0” can be sent to the light ON/OFF objects and to the shutter “Reverse movement” objects.

- **Direct positioning**: this function allows moving the shutter to a preset position by a simple 1-bit order (through “[CX] Direct Positioning” and “[CX] Direct Positioning 2”). When a “1” is received through one of these objects, the shutter will be moved to the parameterized position. When a “0” is received, no action is performed.



Direct Positioning

TOTAL DIRECT POSITIONINGS: One

SELECT SHUTTER POSITION: [%] 50

SELECT SLATS POSITION: [%] 50

NEW POSITIONS SAVING: No

Figure 18 Direct positioning

It is possible to configure the following parameters:

- **Total direct positionings**: one or two direct positioning functions can be enabled.

- **Select shutter position [%]**: sets the exact position to move the shutter to (0%=Top; 100%=Bottom).

  For blinds with slats, an option called "Select Slats position [%]" will also become visible, making it possible to set a position for the slats when the value "1" is received through the corresponding positioning object.

  If two direct positioning controls are configured, two boxes will be available here: “Select Shutter Position 1” and “Select Shutter Position 2” (as well as "Select Slats position 1" and "Select Slats position 2" for blinds with slats).

- **New positions saving:** allows (“Yes”) or not (“No”) saving new direct positions. After enabling this option, one or two new communication objects appear (depending on the number of direct positioning controls): “[CX] Save Position” and “[CX] Save Position 2”. To overwrite the parameterized direct position it is necessary to send a “1” to these objects when the shutter is at the desired position.

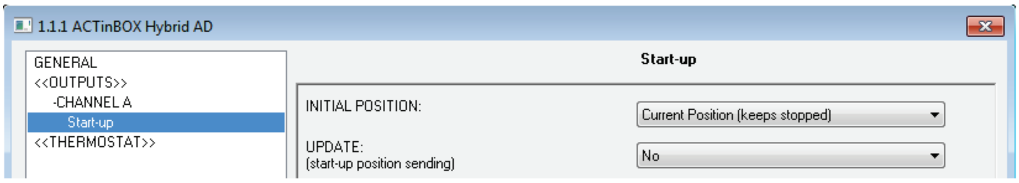
  <u>**Note**</u>: *saving a new position is not possible while the shutter is moving*.

- **Start-up configuration**: defines the shutter state that the device will assume/order when it recovers from a bus power failure, or after an ETS download. A <u>default</u> or a <u>custom</u> configuration may be selected.

  If “default” is chosen, after a partial or complete download from ETS, ACTinBOX Classic-Hybrid will assume the shutter is completely up (0%), independently of its actual status. For blinds with slats, ACTinBOX Classic-

Hybrid assumes that the slats are completely open (0%), no matter what their actual status is. On the other hand, after a bus power failure, the device will assume the shutter (and the slats) maintains the same state as before the power failure.

When "custom" is chosen, ETS will show the following window:



INITIAL POSITION: Current Position (keeps stopped)

UPDATE: (start-up position sending) No

Figure 19 Custom Start-up configuration

Where it is possible to configure the following parameters:

- **Initial position**: this field defines the desired initial position for the shutter after a bus power failure or after programming the device. The following statuses can be chosen: Current position (keeps stopped), up, down, or specific position (which moves the shutter to the position set for "Select shutter position [%]" and the slats to the position set for "Select slats position [%]", both shown after this option is chosen).

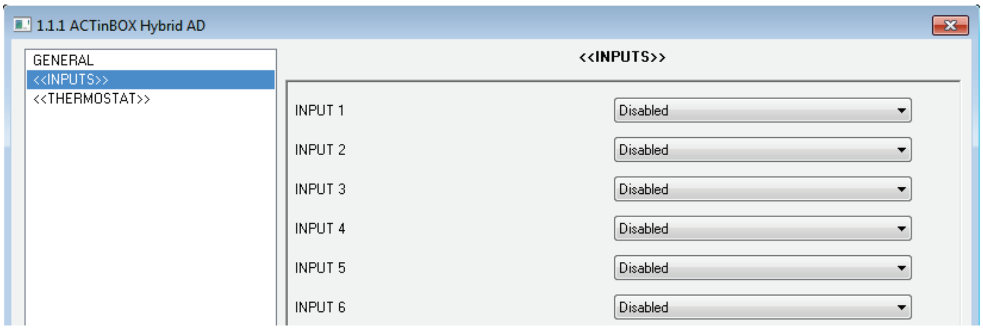
- **Update**: by enabling this field ("Yes"), the position status object will be sent to the bus as a feedback for the rest of the devices in the installation. In addition a delay can be applied to this sending. If the value 0 is set, the status is sent immediately.

Note: *the initial status is always sent through the object "[CX] Current Shutter position" (and "[CX] Current Slats position", for slats)*.

Note: *in the event of a bus power failure while the shutter is moving, ACTinBOX Classic-Hybrid opens the output relay prior to being unpowered, as a security measure. The interrupted movement is not resumed after the bus recovery*.

3.3 INPUTS

If "Inputs" is set to "Yes", a new tab will appear in the menu on the left side.



<<INPUTS>>

INPUT 1 Disabled

INPUT 2 Disabled

INPUT 3 Disabled

INPUT 4 Disabled

INPUT 5 Disabled

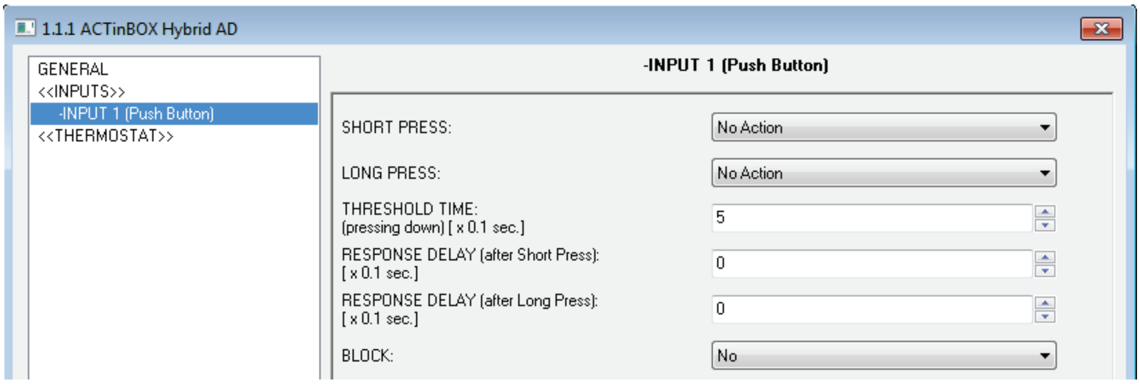
INPUT 6 Disabled

Figure 20 Inputs configuration

Inputs can be configured as: **push button**, **switch/sensor**, **temperature probe** (only input 5) and **movement detector** (only input 6).

All these options are explained in detail in the following sections.

3.3.1 PUSH BUTTON



-INPUT 1 (Push Button)

SHORT PRESS: No Action

LONG PRESS: No Action

THRESHOLD TIME: (pressing down) [x 0.1 sec.] 5

RESPONSE DELAY (after Short Press): [x 0.1 sec.] 0

RESPONSE DELAY (after Long Press): [x 0.1 sec.] 0

BLOCK: No

Figure 21 Binary input: Push button

From the default window (Figure 20) it will be possible to customize the behaviour of the push button connected to the actuator input, through the following options:

- **Short press**: it allows selecting an action to be carried out after a short press on the pushbutton connected to the input channel. The options are:
  - **No action.** Nothing (no action is performed).
  - **Sending of 0/1.** A new window is shown, from which (through the "Response" field) it is possible to select a value that will be sent to the KNX bus after a short press:
    - **"0"**: the "[Ix][Short press] 0" binary communication object becomes visible, and will send the value "0" to the bus after a short press.

  - **"1"**: the "[Ix][Short press] 1" binary communication object becomes visible, and will send the value "0" to the bus after a short press.

- **"Switching 0/1"**: the "[Ix][Short press] Switching" binary communication object becomes visible, and will perform an alternate sending of the values "0" and "1" to the bus on short presses.

  The transmission of the selected value can be carried out cyclically, i.e., it is possible to parameterize a periodical sending to the KNX bus, through the field "Cyclical response sending".

- **Shutter control.** This function allows sending the KNX bus a 1-bit object to control shutters. The field "Response" defines the order to be sent after a short press:

  - **Up**: the "[Ix][Short press] Move up shutter" 1-bit communication object becomes enabled and will send the KNX bus the *move up* order (value "0") after a short press.

  - **Down**: the "[Ix][Short press] Move down shutter" 1-bit object becomes enabled and will send the KNX bus the *move down* order (value "1") after a short press..

  - **Up/Down (switched)**: the "[Ix][Short press] Move up/down shutter" 1-bit communication object becomes enabled and will perform an alternate sending to the KNX bus of the orders to move up and to move down the shutter (values "0" and "1", respectively) after short presses. This option allows handling the shutter through just one input button.

  - **Stop/Step Up**: the "[Ix][Short press] Stop/Step up shutter" 1-bit communication object becomes enabled and will send the KNX bus the *stop shutter* order (value “0”). If the shutter was not in motion, this stop order performs a short movement upwards (in the case of blinds with slats, this permits moving them one step up). In both cases, the value sent to the KNX bus is "0".

  - **Stop/Step Down**: the "[Ix][Short press] Stop/Step down shutter" 1-bit communication object becomes enabled and will send the KNX bus the *stop shutter* order (value “1”). If the shutter was not in motion, this stop order performs a short movement downwards (in the case of blinds with slats, this permits moving them one step down). In both cases, the value sent to the KNX bus is "1".

- **Stop/Switched Step**: the "[Ix][Short Press] Stop/Step Shutter (switched)" 1-bit communication object becomes enabled and will send the KNX bus the *stop shutter* order (with values “1” and “0”, alternating after every short press). If the shutter was not in motion, this stop order performs a short movement upwards or downwards (in the case of blinds with slats, this permits moving them one step up or down).

➢ **Dimmer control.** This function allows sending the KNX bus orders to control a dimmer (light regulator). The field "Response" is provided for the selection of the order to be sent after a short press:

- **Light ON**: the "[Ix][Short press] Dimmer ON" 1-bit communication object becomes enabled and will send the KNX bus a switch-on order (value "1") after a short press.

- **Light OFF**: the "[Ix][Short press] Dimmer OFF" 1-bit ommunication object becomes enabled and will send the KNX bus a switch-off order (value "0") after a short press.

- **Light ON/OFF (switched)**: the "[Ix][Short press] Dimmer ON/OFF" 1-bit communication object becomes enabled and will send the KNX bus an alternate switch order (values "1" and "0", respectively for switch-on and switch-off orders) after short presses.

- **Brighter**: the "[Ix][Short press] Brighter" 4-bit communication object becomes enabled and will send the dimmer, after a short press, an order to increase the light level according to the parameterized dimming step (see Table 2). A second short press will send an order to interrupt the dimming process (value “0”).

- **Darker**: the "[Ix][Short press] Darker" 4-bit communication object becomes enabled and will send the dimmer, after a short press, an order to decrease the light level according to the parameterized dimming step (see Table 2). A second short press will send an order to interrupt the dimming process (value “8”).

- **Brighter/Darker (switched)**: the "[Ix][Short press] Brighter/darker" 4-bit communication object becomes enabled and will send the dimmer, after a short press, an order to increase the light level according to the parameterized dimming step (see Table 2). A second short press will send an order to interrupt the dimming process (“0”). A third press causes sending an order to decrease the light level, while another one will interrupt such order (“8”). Further presses will make the described sequence start again.

Note: *the last three options require defining the dimming step to be applied, i.e., how much the brightness level will be increased or decreased by the Dimmer after every press. Please refer to Table 2 for the configurable steps.*

Note: *dimmers typically perform step dimming progressively, being it possible to interrupt the process as soon as a stop order arrives. Therefore, it is advisable to parameterize a step of 100%, so a sole initial press and a later stop press are enough to set the amount of light at the desired level.*

Dimming step	Necessary presses for a complete regulation (0-100%)
(1) 100%	1
(2) 50%	2
(3) 25%	4
(4) 12.5%	8
(5) 6.25%	16
(6) 3.1%	32
(7) 1.5%	64

Table 2 Dimming step

- **Sending of a Scene.** This function allows sending the KNX bus a 1-byte scene control order. The "Response" field is provided to select the action to be carried out on short presses:

    - **Run Scene**: the "[Ix][Short press] Run scene" 1-byte object is enabled and will send the bus, after a short press, a value (between 1 and 64, parameterizable) for the execution of a scene.

  - **Save Scene**: the "[Ix][Short press] Save scene" 1-byte object is enabled and will send (after a short press) the bus a scene save order, so it can be executed afterwards.

- **Long press**: it allows selecting the option that will be carried out when a long press is performed on the pushbutton connected to ACTinBOX Classic-Hybrid. The available options are the same as for **Short press**, however the orders to increase/decrease the light level will not require a second press to be interrupted – they will be as soon as the first long press ends.

- **Threshold time**: defines the minimum time (in tenths of a second) that the pushbutton must be held in order to consider the action as a long press.

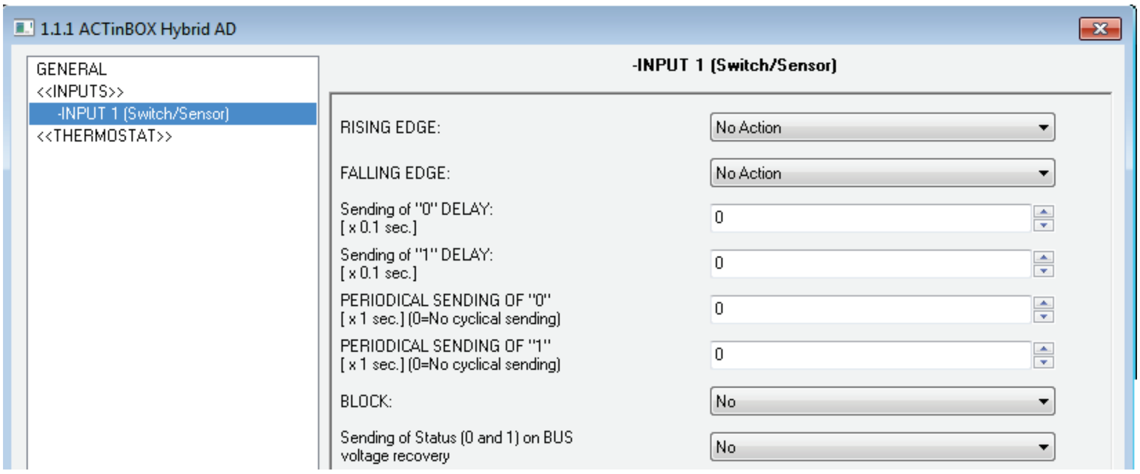
- **Response delay (short press)**: sets a delay (in tenths of a second) for the sending of the object associated to the reaction to the short press. Therefore, after a short press, ACTinBOX Classic-Hybrid will wait for this parameterized time before sending the bus the value of the corresponding object. For an immediate sending (no delay), just leave the value 0 for this field.

- **Response delay (long press)**: sets a delay (in tenths of a second) for the sending of the object associated to the reaction to the long press. Therefore, after a long press, ACTinBOX Classic-Hybrid will wait for this parameterized time before sending the bus the value of the corresponding object. For an immediate sending (no delay), just leave the value 0 for this field.

- **Block**: the "[Ix] Block" binary object is enabled, making it possible to block any action performed over the ACTinBOX Classic-Hybrid input (i.e., disabling the input control) by simply sending the value "1" through the block object, after which ACTinBOX Classic-Hybrid will ignore any press or signal received from the input device. Once the value "0" arrives, the input will be enabled again.

  Actions or presses performed while the input is locked will not be taken into account when the input becomes unlocked again.

3.3.2 SWITCH/SENSOR



RISING EDGE: No Action

FALLING EDGE: No Action

Sending of "0" DELAY: [x 0.1 sec.] 0

Sending of "1" DELAY: [x 0.1 sec.] 0

PERIODICAL SENDING OF "0" [x 1 sec.] (0=No cyclical sending) 0

PERIODICAL SENDING OF "1" [x 1 sec.] (0=No cyclical sending) 0

BLOCK: No

Sending of Status (0 and 1) on BUS voltage recovery No

Figure 22 Binary entry: Switch/Sensor

The default window (Figure 21) provides with the required parameters to customize the behaviour of a switch or sensor connected to the ACTinBOX Classic-Hybrid input:

- **Rising edge**: sets the action to be performed by ACTinBOX Classic-Hybrid when it detects a rising edge in the input signal. The options are:
  - **No action**: no action is performed.
  - **0**: ACTinBOX Classic-Hybrid will send the value "0" to the KNX bus through the "[Ix][Sensor] Edge" 1-bit object.
  - **1**: ACTinBOX Classic-Hybrid will send the value "1" to the KNX bus through the "[Ix][Sensor] Edge" 1-bit object.
  - **Switching 0/1**: ACTinBOX Classic-Hybrid will send the values "0" and "1" alternatively to the KNX bus (through "[Ix][Sensor] Edge") when a rising edge is detected in the input.
- **Falling edge**: sets the option to be performed by ACTinBOX Classic-Hybrid when it detects a falling edge in the input signal. The available options are the same as for **Rising edge**.
- **Sending of "0" delay**: sets a delay (in tenths of a second) to be applied by ACTinBOX Classic-Hybrid prior to sending the value “0” through “[Ix][Sensor] Edge” once the corresponding edge has been received from the switch/sensor. For an immediate response, just leave this field as “0”.

- **Sending of "1" delay**: sets a delay (in tenths of a second) to be applied by ACTinBOX Classic-Hybrid prior to sending the value “1” through “[Ix][Sensor] Edge” once the corresponding edge has been received from the switch/sensor. For an immediate response, just leave this field as “0”.

- **Periodical sending of "0"**: sets a period time (in seconds) if a cyclic sending of the value "0" through the object "[Ix][Sensor] Edge" is preferred instead of a unique sending. ACTinBOX Classic-Hybrid will send this value to the KNX bus in cyclically and endlessly, according to the parameterized time. For a non-cyclical sending, simply set a 0 as the period time.

- **Periodical sending of "1"**: sets a period time (in seconds) if a cyclic sending of the value "1" through the object "[Ix][Sensor] Edge" is preferred instead of a unique sending. ACTinBOX Classic-Hybrid will send this value to the KNX bus in cyclically and endlessly, according to the parameterized time. For a non-cyclical sending, simply set a 0 as the period time.

- **Block**: the "[Ix] Block" binary object is enabled, making it possible to block any action performed over the ACTinBOX Classic-Hybrid input (i.e., disabling the input control) by simply sending the value "1" through the block object, after which ACTinBOX Classic-Hybrid will ignore any edges or signals received from the input device. Once the value "0" arrives, the input will be enabled again.

  Actions or edges received while the input is locked will not be taken into account when the input becomes unlocked again.

- **Sending Status on Bus voltage recovery**: if enabled, the status of the ACTinBOX Classic-Hybrid input will be automatically sent (after the parameterized delay, in seconds) to the bus (values "0" and "1", depending of which one applies) when the device recovers from a bus power failure.

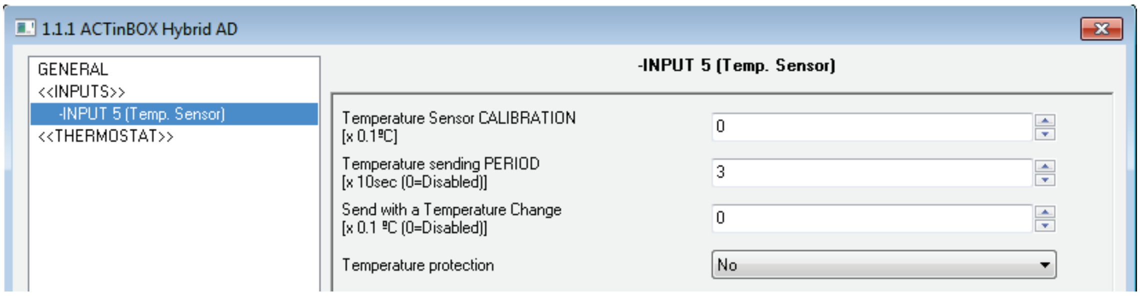
3.3.3 TEMPERATURE PROBE

Note: *this option is only available for input 5.*

When input 5 is configured as a temperature probe, the ETS topology window will show the communications objects "[I5] Current Temperature" (2 bytes) and "[I5] Probe Error"

(1 bit). The first one reports the temperature value measured by the probe connected to ACTinBOX Classic-Hybrid, while through the second object it is possible to monitor errors due to a wrong connection of the probe or a defective probe (in such case, the object will acquire the value "1" and will be sent every 30 seconds). Once the problem is solved, the error object acquires the value "0" again.

The default configuration screen of the temperature sensor is shown in Figure 22:



-INPUT 5 (Temp. Sensor)

Temperature Sensor CALIBRATION [x 0.1ºC]: 0

Temperature sending PERIOD [x 10sec (0=Disabled)]: 3

Send with a Temperature Change [x 0.1 ºC (0=Disabled)]: 0

Temperature protection: No

Figure 23 Input 5. Temperature probe

The following parameters can be parameterized:

- **Temperature sensor calibration**: allows making an adjustment (by setting a positive or negative value in tenths of a degree) over the measured temperature when, due to whatever external factor, a deviation is found between the measured value and that of the actual temperature of the room.

- **Temperature sending period**: sets the period time (in tens of a second) in case a cyclical sending of the current temperature through the "[Ix] Current Temperature" communication object is required. The value “0” disables the periodical sending.

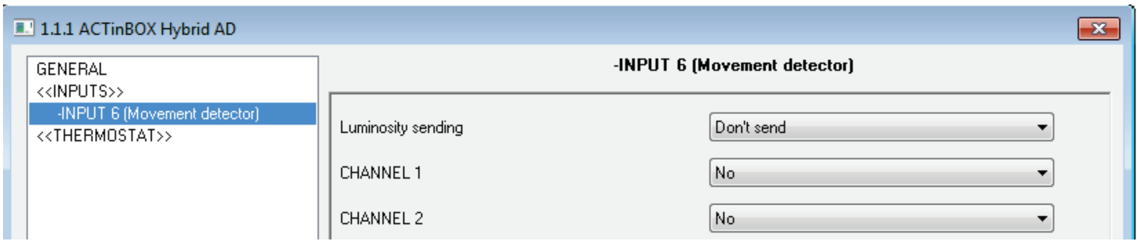
- **Send with a temperature change**: ACTinBOX Classic-Hybrid will automatically make an extra sending of the value of the current temperature to the KNX bus when, due to a temperature increase or decrease, the difference between two consecutive measurements is found to be greater or equal than the amount set here (from 0 to 200 tenths of a degree). To disable this sending, simply set this field to “0”.

- **Temperature protection**: enables the overheating or the overcooling protection, or both together. Depending on the option selected, one or two communication objects will be enabled: "[I5] Overheating" and "[I5] Overcooling", which will show, at any time, if the upper or lower limits have been reached (in such case, the value "1" will be sent). These overcooling / overheating limits need to be defined (in degrees), as well as a, if desired, a hysteresis value (in tenths of a degree), which will help prevent consecutive warnings to the bus when the temperature moves continuously around the parameterized limit.

3.3.4 MOVEMENT DETECTOR

Note: *this option is only available for input 6.*

The ACTinBOX Classic-Hybrid actuator allows configuring input 6 as a movement detector, with the possibility of enabling up to 2 detection channels.



1.1.1 ACTinBOX Hybrid AD

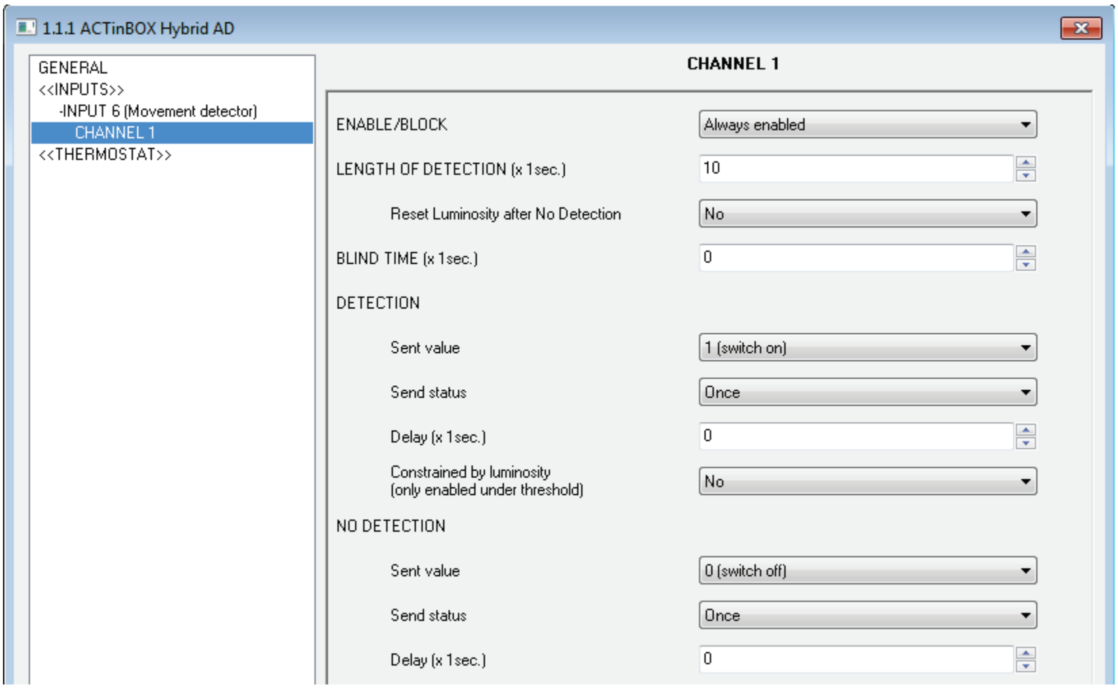
GENERAL
<<INPUTS>>
-INPUT 6 (Movement detector)
<<THERMOSTAT>>

-INPUT 6 (Movement detector)

Luminosity sending: Don't send
CHANNEL 1: No
CHANNEL 2: No

Figure 24 Input 6: Movement detector

After enabling the desired channels, the next configuration screen will be shown:



1.1.1 ACTinBOX Hybrid AD

GENERAL
<<INPUTS>>
-INPUT 6 (Movement detector)
CHANNEL 1
<<THERMOSTAT>>

CHANNEL 1

ENABLE/BLOCK: Always enabled
LENGTH OF DETECTION (x 1sec.): 10
Reset Luminosity after No Detection: No
BLIND TIME (x 1sec.): 0
DETECTION
Sent value: 1 (switch on)
Send status: Once
Delay (x 1sec.): 0
Constrained by luminosity (only enabled under threshold): No
NO DETECTION
Sent value: 0 (switch off)
Send status: Once
Delay (x 1sec.): 0

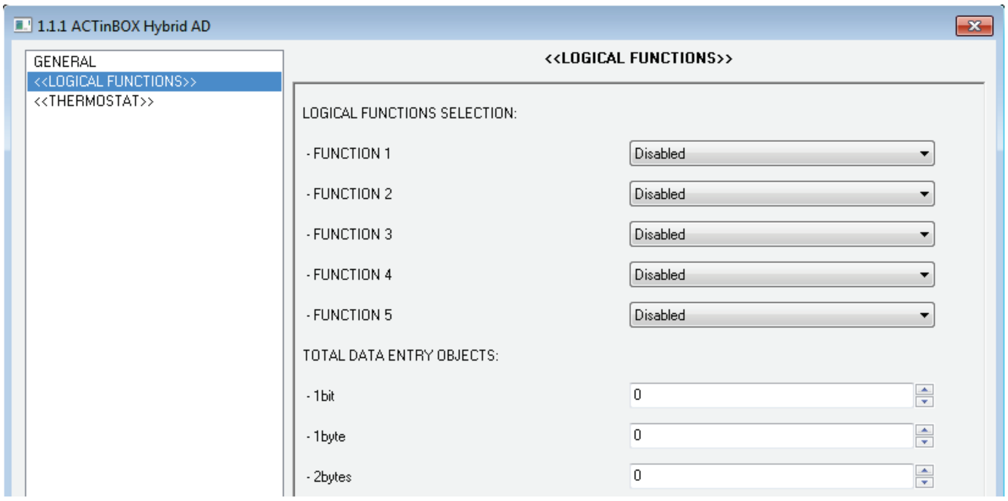
Figure 25 Channel configuration

For further information on the behaviour and ETS parameterization of the detection channels, please refer to the specific document "**Motion detector**", available at http://www.zennio.com.

3.4 LOGICAL FUNCTIONS

This option in ACTinBOX Classic-Hybrid makes it possible to perform mathematical or binary logic operations to incoming values received from the KNX bus, and to send the result through other communication objects specifically enabled in the actuator for this purpose.

Up to 5 different and independent logical functions can be enabled, being each of them capable of carrying out **up to 4 operations**. To use any of them, it is necessary to enable it from the following ETS screen, which becomes available after selecting "Yes" under Logical Functions in the General parameter screen.



<<LOGICAL FUNCTIONS>>

LOGICAL FUNCTIONS SELECTION:

- FUNCTION 1: Disabled
- FUNCTION 2: Disabled
- FUNCTION 3: Disabled
- FUNCTION 4: Disabled
- FUNCTION 5: Disabled

TOTAL DATA ENTRY OBJECTS:

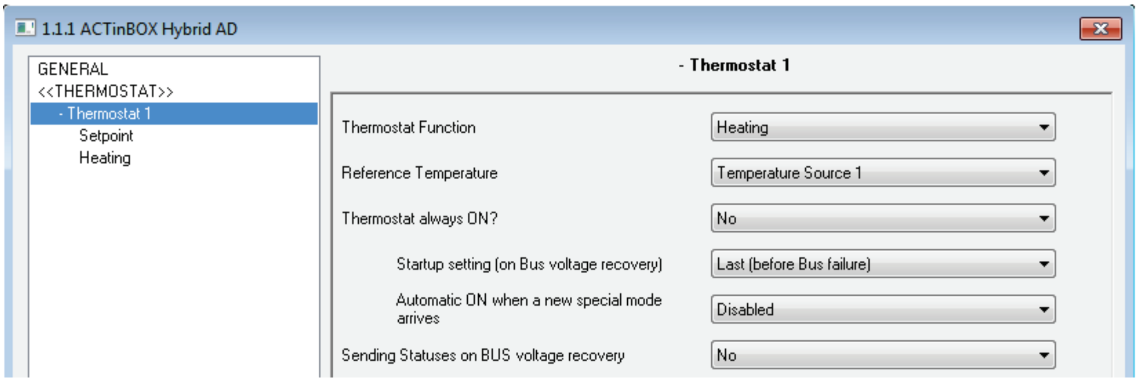
- 1bit: 0
- 1byte: 0
- 2bytes: 0

Figure 26 Logical functions

To get further information about how to use and parameterize the logical functions, please refer to the specific document "**Logical Functions X5**", available at http://www.zennio.com.

3.5 THERMOSTAT

The ACTinBOX Classic-Hybrid actuator offers the possibility to enable and configure one thermostat of the type "Zennio Building Thermostat".



1.1.1 ACTinBOX Hybrid AD

- Thermostat 1

Thermostat Function	Heating
Reference Temperature	Temperature Source 1
Thermostat always ON?	No
Startup setting (on Bus voltage recovery)	Last (before Bus failure)
Automatic ON when a new special mode arrives	Disabled
Sending Statuses on BUS voltage recovery	No

Figure 27 Thermostat Configuration

To find basic theory about the Zennio thermostat, as well as information about the related ETS configuration, please refer to the specific document "**Zennio Building Thermostat**", available at http://www.zennio.com.

ANNEX I. SLATS PRECISE CONTROL

Zennio actuators allow controlling the movement of shutters, blinds or similar window/door automated systems, which may be of one of the following types:

- Shutter (No slats).
- Blind (with slats/lamellas).

Depending on the shutter type, the ACTinBOX Classic-Hybrid application program will show different options.

This particular section is referred to the parameterization of blinds with slats.

To begin with, it is important to keep in mind the criteria followed by the actuator for shutter positioning:

- The shutter is in the "up" position (**0%**, in percentage) when it is completely **open**.
- The shutter is in the "down" position (**100%**, in percentage) when it is completely **closed**.

While the slat positioning criteria is as follows:

- The slats are in the “up” position or “open” (**0%**, in percentage) when their position is such that they can only move downwards.
- The slats are in the “down” position or “close” (**100%**, in percentage) when their position is such that they can only move upwards.

Figure 27 shows a scheme of the positions the slats may adopt.

It is necessary to take into account that shutter actuators control shutter drives without any feedback about their exact position, and that the movement of the slats relays entirely on the movement of shutter drive itself. This means that a **movement in the slats will always provoke a certain change in the position of the shutter**.

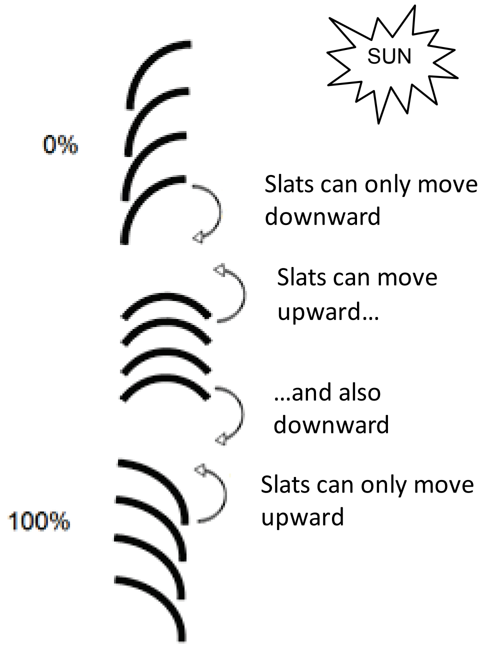
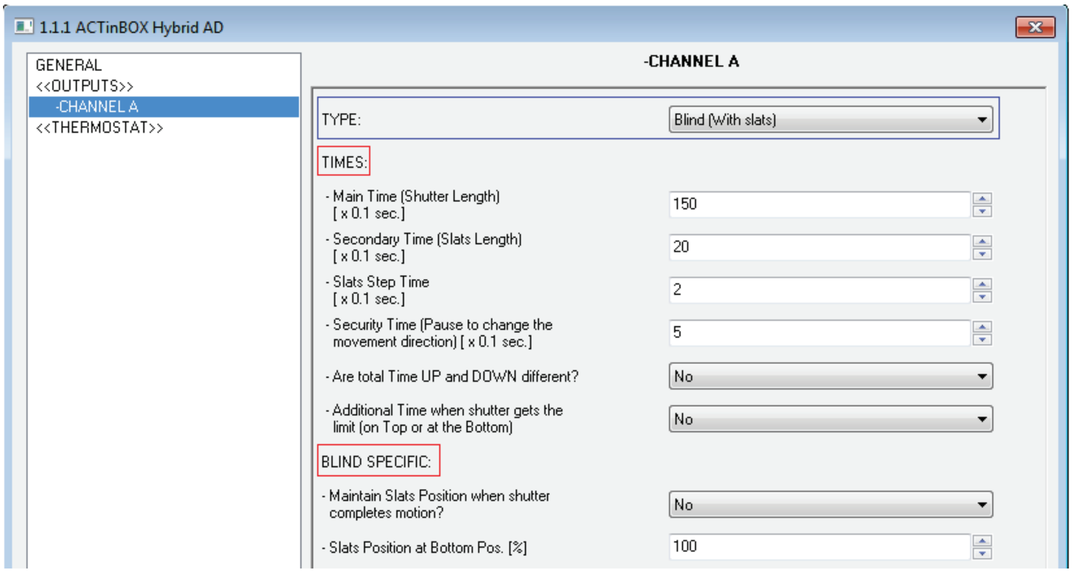


Figure 28 Slat positions

The ETS configuration screen for Blinds with slats is shown next, as well as the details about the available options:



1.1.1 ACTinBOX Hybrid AD

GENERAL
<<OUTPUTS>>
-CHANNEL A
<<THERMOSTAT>>

-CHANNEL A

TYPE: Blind (With slats)

TIMES:

- Main Time (Shutter Length) [x 0.1 sec.]: 150
- Secondary Time (Slats Length) [x 0.1 sec.]: 20
- Slats Step Time [x 0.1 sec.]: 2
- Security Time (Pause to change the movement direction) [x 0.1 sec.]: 5
- Are total Time UP and DOWN different?: No
- Additional Time when shutter gets the limit (on Top or at the Bottom): No

BLIND SPECIFIC:

- Maintain Slats Position when shutter completes motion?: No
- Slats Position at Bottom Pos. [%]: 100

Figure 29 Blinds with slats. Configuration screen (ETS)

As shown in Figure 28, for this type of shutters multiple time parameters need to be parameterized. On the one hand, time parameters referred to the movement of the blind: “**Main Time (shutter length)**”, “**Security time**”, “**Are total time up and down different?**” and “**Additional time when shutter gets the limit**”. All of them were already explained in Section 3.2.2 of this manual.

On the other hand, time parameters referred to the movement of the slats:

- **Secondary time (slats length)**: sets the time, in tenths of a second, the drive takes to perform a complete slat movement cycle from 0% (completely "up") to 100% (completely "down"), or vice versa. This time must be *manually* measured.

- **Slats Step Time**: sets the time, in tenths of a second, the drive will keep moving the slats every time it receives the order to perform an up/down step movement ("[CX] Stop/Step"=0 or 1, respectively), assuming that the blind is stopped. These step orders allow gradually rotating the slats and modifying their position (%), which may be very useful to prevent glare, for example after a change in the position of the sun.

  Note: *in case of joint-controlling slat step movements of multiple shutter channels together through the same group address, the time configured for this parameter is recommended to be* ***slightly greater than N*** *tenths of a second (where N is the amount of the channels that have been enabled and* *configured as "blind with slats") in order to ensure that rapidly sent consecutive orders are properly processed*.

Note: *times referred to slat movements must be shorter than those configured for blind movements (usual configuration).*

Besides defining these times, it will be necessary to configure the following options, which are specific for blinds with slats:

- **Maintain slats position when shutter completes motion?**: this option allows choosing whether the slats should recover their position after the blind reaches the desired position, or not.

Example:

Suppose the parameter "Maintain slats positioning when shutter completes motion?" has been enabled. The initial position of the slats is 50% and the initial position of the blind is 0% (up). An order to lower the blind is received, thus making the blind (and therefore the slats) start moving downwards, until the position of the blind reaches 100%. At this point, the blind has completed its movement, and ACTinBOX Classic-Hybrid will revert the position of the slats by additionally moving the drive until they reach the position they had before (50%, in this example), thus causing a minor deviation in the position of the blind.

If parameter "Maintain slats positioning when shutter completes motion?" had not been enabled, when the position of the blind reaches 100% (down), the slats will maintain their resulting position after the movement of the blind.

- **Slats position at Bottom pos. [%]**: allows establishing the slats position (in percentage) when the blind is completely closed (i.e., its position is equal to 100%).

  This means that, when the blind stops moving downwards and reaches 100%, the slats will correct their position to the one established by parameter.

Apart from these configuration options, it is necessary to define the "Slats specific position" for those enabled functions where particular positions are required to be parameterized. These functions are:

- **Scenes.** “Response: Specific position”. The positions of the blind and the slats (in percentage) can be configured independently.

- **Alarms.** “Response: Specific position”. The same as above.

- **Direct positioning.** Independent configuration of positions 1 or 2 (depending on the parameterized number), in percentage, of the blind and the slats.

- **Start-up configuration.** “Initial position: Specific position”. The position percentages of the blind and slats can be configured independently.

To obtain further information about the configuration and options of the functions of the shutter channels, please refer to the section 3.2.2 of this manual.

ANNEX II. COMMUNICATION OBJECTS

Column RESET shows the values of the communication objects after a bus failure. However, this does not necessarily imply that such values are sent to the bus.

NUMBER	SIZE	I/O	FLAGS	DATA TYPE (DPT)	VALUES			NAME	FUNCTION
					RANGE	1ST TIME	RESET		
0	1 Byte	I	C - - W -	[18.1] DPT_SceneControl	0-63 (run) 128-191 (learn)	-	-	Scenes (Individual Outputs)	0-63(Run 1-64); 128-191(Learn)
1	1 Byte	I	C - - W -	[18.1] DPT_SceneControl	0-63 (run) 128-191 (learn)	-	-	Scenes (Shutter Channels)	0-63(Run 1-64); 128-191(Learn)
2-5	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	Parameteriz.	Parameteriz.	[Ox] ON/Off	N.O. (0=Open Relay; 1=Close)
	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	Parameteriz.	Parameteriz.	[Ox] ON/Off	N.C. (0=Close Relay; 1=Open)
6-9	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	Parameteriz.	Parameteriz.	[Ox] Status	0=Output Off; 1=Output ON
10-13	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[Ox] Timer	0=to turn Off; 1=to turn ON
14-17	1 Bit	I	C - - W -	Start/stop	0/1	-	Last	[Ox] Flashing	1=Start Flashing; 0=End Flash.
18-21	1 Bit	I	C - - W -	[1.003] DPT_Enable	0/1	0	Last	[Ox] Block	1=Block; 0=Unblock
22-25	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[Ox] Alarm	0=Alarm; 1=No Alarm
	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[Ox] Alarm	1=Alarm; 0=No Alarm
26-29	1 Bit	I	C - - W -	[1.16] DPT_Ack	0/1	0	Last	[Ox] Unfreeze Alarm	Alarm=0 + Unf.=1 -> End Alarm
30	1 Bit	I	C - - W -	[1.007] DPT_UpDown	0/1	0	Last	[CA] Move	0=Up Shutter; 1=Down Shutter
31	1 Bit	I	C - - W -	[1.007] DPT_UpDown	0/1	0	Last	[CA] Reverse Movement	0=Down Shutter; 1=Up Shutter
32	1 Bit	I	C - - W -	[1.007] DPT_UpDown	0/1	0	Last	[CB] Move	0=Up Shutter; 1=Down Shutter
33	1 Bit	I	C - - W -	[1.007] DPT_UpDown	0/1	0	Last	[CB] Reverse Movement	0=Down Shutter; 1=Up Shutter
34	1 Bit	I	C - - W -	[1.7] DPT_Step	0/1	0	Last	[CA] Stop	0 or 1 = Stop Shutter
	1 Bit	I	C - - W -	[1.7] DPT_Step	0/1	0	Last	[CA] Stop/Step	0=Stop/StepUp; 1=Stop/StepDown
35	1 Bit	I	C - - W -	[1.003] DPT_Enable	0/1	0	Last	[CA] Block	1=Block; 0=Unblock
36	1 Bit	I	C - - W -	[1.7] DPT_Step	0/1	0	Last	[CB] Stop	0 or 1 = Stop Shutter
	1 Bit	I	C - - W -	[1.7] DPT_Step	0/1	0	Last	[CB] Stop/Step	0=Stop/StepUp; 1=Stop/StepDown
37	1 Bit	I	C - - W -	[1.003] DPT_Enable	0/1	0	Last	[CB] Block	1=Block; 0=Unblock
38	1 Byte	O	C T R - -	[5.001] DPT_Scaling	0-255	0	Last	[CA] Current Shutter Position	0=0%=Top; 255=100%=Bottom
39	1 Byte	O	C T R - -	[5.001] DPT_Scaling	0-255	0	Last	[CB] Current Shutter Position	0=0%=Top; 255=100%=Bottom

NUMBER	SIZE	I/O	FLAGS	DATA TYPE (DPT)	VALUES			NAME	FUNCTION
					RANGE	1ST TIME	RESET		
40	1 Byte	I	C - - W -	[5.001] DPT_Scaling	0-255	0	Parameteriz.	[CA] Shutter Positioning	0=0%=Top; 255=100%=Bottom
41	1 Byte	I	C - - W -	[5.001] DPT_Scaling	0-255	0	Parameteriz.	[CB] Shutter Positioning	0=0%=Top; 255=100%=Bottom
42	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[CA] Alarm	0=Alarm; 1=No Alarm
	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[CA] Alarm	1=Alarm; 0=No Alarm
43	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[CA] Alarm 2	0=Alarm; 1=No Alarm
	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[CA] Alarm 2	1=Alarm; 0=No Alarm
44	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[CB] Alarm	1=Alarm; 0=No Alarm
	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[CB] Alarm	0=Alarm; 1=No Alarm
45	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[CB] Alarm 2	0=Alarm; 1=No Alarm
	1 Bit	I	C - - W -	[1.5] DPT_Alarm	0/1	-	Last	[CB] Alarm 2	1=Alarm; 0=No Alarm
46	1 Bit	I	C - - W -	[1.16] DPT_Ack	0/1	0	Last	[CA] Unfreeze Alarm	Alarm=0 + Unf.=1 -> End Alarm
47	1 Bit	I	C - - W -	[1.16] DPT_Ack	0/1	0	Last	[CB] Unfreeze Alarm	Alarm=0 + Unf.=1 -> End Alarm
48	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[CA] Direct Positioning	1=Go to Position; 0=No Action
49	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[CA] Direct Positioning 2	1=Go to Position; 0=No Action
50	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[CB] Direct Positioning	1=Go to Position; 0=No Action
51	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[CB] Direct Positioning 2	1=Go to Position; 0=No Action
52	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[CA] Save Position	1=Save Position; 0=No Action
53	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[CA] Save Position 2	1=Save Position; 0=No Action
54	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[CB] Save Position	1=Save Position; 0=No Action
55	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[CB] Save Position 2	1=Save Position; 0=No Action
56	1 Byte	O	C T R - -	[5.001] DPT_Scaling	0-255	0	Parameteriz.	[CA] Current Slats Position	0=0%=Open; 255=100%=Closed
57	1 Byte	O	C T R - -	[5.001] DPT_Scaling	0-255	0	Parameteriz.	[CB] Current Slats Position	0=0%=Open; 255=100%=Closed
58	1 Byte	I	C - - W -	[5.001] DPT_Scaling	0-255	0	Parameteriz.	[CA] Slats Positioning	0=0%=Open; 255=100%=Closed
59	1 Byte	I	C - - W -	[5.001] DPT_Scaling	0-255	0	Parameteriz.	[CB] Slats Positioning	0=0%=Open; 255=100%=Closed
60-65	1 Bit	I	C - - W -	[1.003] DPT_Enable	0/1	0	Last	[Ix] Block	1=Input Disabled; 0=Input Free
65	1 Bit	I	C - - W -	[1.003] DPT_Enable	0/1	0	Last	[Ix] Block	1=Input Disabled; 0=Input Free
66-71	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	Parameteriz.	Last	[Ix] [Sensor] Edge	Edge -> Sending of "0" or "1"
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Short Press] "0"	Short Pr. -> Sending of "0"
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	1	Last	[Ix] [Short Press] "1"	Short Pr. -> Sending of "1"
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Short Press] Switching	Short Pr. -> Switching "0/1"
	1 Bit	I/O	C T R W -	[1.007] DPT_UpDown	0/1	0	Last	[Ix] [Short Press] Move Up Shutter	Short Pr. -> Sending of 0 (Up)
	1 Bit	I/O	C T R W -	[1.007] DPT_UpDown	0/1	1	Last	[Ix] [Short Press] Move Down Shutter	Short Pr. -> Send. of 1 (Down)
	1 Bit	I/O	C T R W -	[1.007] DPT_UpDown	0/1	0	Last	[Ix] [Short Press] Move	Short Pr. -> Switching "0/1"

NUMBER	SIZE	I/O	FLAGS	DATA TYPE (DPT)	VALUES			NAME	FUNCTION
					RANGE	1ST TIME	RESET		
	1 Bit	I/O	C T R W -	[1.7] DPT_Step	0/1	0	Last	[Ix] [Short Press] Stop / Step Up Shutter	Short Pr. -> Sending of "0"
	1 Bit	I/O	C T R W -	[1.7] DPT_Step	0/1	1	Last	[Ix] [Short Press] Stop / Step Down Shutter	Short Pr. -> Sending of "1"
	1 Bit	I/O	C T R W -	[1.7] DPT_Step	0/1	0	Last	[Ix] [Short Press] Stop / Step Shutter (switched)	Short Pr. -> Switching "0/1"
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	1	Last	[Ix] [Short Press] Dimmer ON	Short Pr. -> Sending of 1 (ON)
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Short Press] Dimmer Off	Short Pr. -> Send. of 0 (Off)
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Short Press] Dimmer	Short Pr. -> Switching "0/1"
72-77	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[Ix] [Short Press] Brighter	Sh.Pr.->Bright; Sh.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[Ix] [Short Press] Darker	Sh.Pr.->Dark; Sh.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[Ix] [Short Press] Brighter/Darker	Sh.Pr->Bright/Dark;Sh.Pr->Stop
78-83	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[Ix] [Short Press] Run Scene	Short Pr. -> Sending of 0-63
	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[Ix] [Short Press] Save Scene	Short Pr. -> Send. of 128-191
84-89	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Long Press] Dimmer On	Long Pr. -> Sending of 1 (ON)
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Long Press] Dimmer Off	Long Pr. -> Send. of 0 (Off)
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Long Press] Dimmer On/Off	Long Pr. -> Switching "0/1"
	1 Bit	I/O	C T R W -	[1.007] DPT_UpDown	0/1	0	Last	[Ix] [Long Press] Move Up Shutter	Long Pr. -> Sending of 0 (Up)
	1 Bit	I/O	C T R W -	[1.007] DPT_UpDown	0/1	0	Last	[Ix] [Long Press] Move Down Shutter	Long Pr. -> Send. of 1 (Down)
	1 Bit	I/O	C T R W -	[1.007] DPT_UpDown	0/1	0	Last	[Ix] [Long Press] Move Up/Down Shutter	Long Pr. -> Switching "0/1"
	1 Bit	I/O	C T R W -	[1.7] DPT_Step	0/1	0	Last	[Ix] [Long Press] Stop / Step Up Shutter	Long Pr. -> Sending of "0"
	1 Bit	I/O	C T R W -	[1.7] DPT_Step	0/1	0	Last	[Ix] [Long Press] Stop / Step Down Shutter	Long Pr. -> Sending of "1"
	1 Bit	I/O	C T R W -	[1.7] DPT_Step	0/1	0	Last	[Ix] [Long Press] Stop / Step Shutter (switched)	Long Pr. -> Switching "0/1"
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Long Press] "0"	Long Pr. -> Sending of "0"
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Long Press] "1"	Long Pr. -> Sending of "1"
	1 Bit	I/O	C T R W -	[1.001] DPT_Switch	0/1	0	Last	[Ix] [Long Press] Switching	Long Pr. -> Switching "0/1"
90	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I1] [Long Press] Brighter	Lg.Pr.->Bright; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I1] [Long Press] Darker	Lg.Pr.->Dark; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I1] [Long Press] Brighter/Darker	Lg.Pr->Bright/Dark;Lg.Pr->Stop
91	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I2] [Long Press] Brighter	Lg.Pr.->Bright; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I2] [Long Press] Darker	Lg.Pr.->Dark; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I2] [Long Press] Brighter/Darker	Lg.Pr->Bright/Dark;Lg.Pr->Stop
92	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I3] [Long Press] Brighter	Lg.Pr.->Bright; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I3] [Long Press] Darker	Lg.Pr.->Dark; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I3] [Long Press] Brighter/Darker	Lg.Pr->Bright/Dark;Lg.Pr->Stop
93	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I4] [Long Press] Brighter	Lg.Pr.->Bright; Lg.Pr.->Stop

NUMBER	SIZE	I/O	FLAGS	DATA TYPE (DPT)	VALUES			NAME	FUNCTION
					RANGE	1ST TIME	RESET		
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I4] [Long Press] Darker	Lg.Pr.->Dark; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I4] [Long Press] Brighter/Darker	Lg.Pr->Bright/Dark;Lg.Pr->Stop
94	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I5] [Long Press] Brighter	Lg.Pr.->Bright; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I5] [Long Press] Darker	Lg.Pr.->Dark; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I5] [Long Press] Brighter/Darker	Lg.Pr->Bright/Dark;Lg.Pr->Stop
95	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I6] [Long Press] Brighter	Lg.Pr.->Bright; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I6] [Long Press] Darker	Lg.Pr.->Dark; Lg.Pr.->Stop
	4 Bit	O	C T R - -	[3.007] DPT_Control_Dimming	0-15	0	Last	[I6] [Long Press] Brighter/Darker	Lg.Pr->Bright/Dark;Lg.Pr->Stop
96	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I1] [Long Press] Run Scene	Long Pr. -> Sending of 0-63
	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I1] [Long Press] Save Scene	Long Pr. -> Send. of 128-191
97	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I2] [Long Press] Run Scene	Long Pr. -> Sending of 0-63
	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I2] [Long Press] Save Scene	Long Pr. -> Send. of 128-191
98	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I3] [Long Press] Run Scene	Long Pr. -> Sending of 0-63
	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I3] [Long Press] Save Scene	Long Pr. -> Send. of 128-191
99	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I4] [Long Press] Run Scene	Long Pr. -> Sending of 0-63
	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I4] [Long Press] Save Scene	Long Pr. -> Send. of 128-191
100	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I5] [Long Press] Run Scene	Long Pr. -> Sending of 0-63
	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I5] [Long Press] Save Scene	Long Pr. -> Send. of 128-191
101	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I6] [Long Press] Run Scene	Long Pr. -> Sending of 0-63
	1 Byte	O	C T R - -	[18.1] DPT_SceneControl	0-63; 128-191	0	Last	[I6] [Long Press] Save Scene	Long Pr. -> Send. of 128-191
102	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 1	Binary Data Entry (0/1)
103	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 2	Binary Data Entry (0/1)
104	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 3	Binary Data Entry (0/1)
105	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 4	Binary Data Entry (0/1)
106	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 5	Binary Data Entry (0/1)
107	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 6	Binary Data Entry (0/1)
108	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 7	Binary Data Entry (0/1)
109	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 8	Binary Data Entry (0/1)
110	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 9	Binary Data Entry (0/1)
111	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 10	Binary Data Entry (0/1)
112	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 11	Binary Data Entry (0/1)
113	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 12	Binary Data Entry (0/1)
114	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 13	Binary Data Entry (0/1)

NUMBER	SIZE	I/O	FLAGS	DATA TYPE (DPT)	VALUES			NAME	FUNCTION
					RANGE	1ST TIME	RESET		
115	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 14	Binary Data Entry (0/1)
116	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 15	Binary Data Entry (0/1)
117	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	Last	[LF] (1 bit) Data Entry 16	Binary Data Entry (0/1)
118	1 Byte	I	C - - W -	[5.010] DPT_Value_1_Uncount	0-255	-	Last	[LF] (1 byte) Data Entry 1	1 byte Data Entry (0-255)
119	1 Byte	I	C - - W -	[5.010] DPT_Value_1_Uncount	0-255	-	Last	[LF] (1 byte) Data Entry 2	1 byte Data Entry (0-255)
120	1 Byte	I	C - - W -	[5.010] DPT_Value_1_Uncount	0-255	-	Last	[LF] (1 byte) Data Entry 3	1 byte Data Entry (0-255)
121	1 Byte	I	C - - W -	[5.010] DPT_Value_1_Uncount	0-255	-	Last	[LF] (1 byte) Data Entry 4	1 byte Data Entry (0-255)
122	1 Byte	I	C - - W -	[5.010] DPT_Value_1_Uncount	0-255	-	Last	[LF] (1 byte) Data Entry 5	1 byte Data Entry (0-255)
123	1 Byte	I	C - - W -	[5.010] DPT_Value_1_Uncount	0-255	-	Last	[LF] (1 byte) Data Entry 6	1 byte Data Entry (0-255)
124	1 Byte	I	C - - W -	[5.010] DPT_Value_1_Uncount	0-255	-	Last	[LF] (1 byte) Data Entry 7	1 byte Data Entry (0-255)
125	1 Byte	I	C - - W -	[5.010] DPT_Value_1_Uncount	0-255	-	Last	[LF] (1 byte) Data Entry 8	1 byte Data Entry (0-255)
126	2 Bytes	I	C - - W -	[7.001] DPT_Value_2_Uncount	0 - 65535	-	Last	[LF] (2 bytes) Data Entry 1	2 bytes Data Entry
				[9.001] DPT_Value_Temp	0.00 - 120.00	-	Last		
127	2 Bytes	I	C - - W -	[7.001] DPT_Value_2_Uncount	0 - 65535	-	Last	[LF] (2 bytes) Data Entry 2	2 bytes Data Entry
				[9.001] DPT_Value_Temp	0.00 - 120.00	-	Last		
128	2 Bytes	I	C - - W -	[7.001] DPT_Value_2_Uncount	0 - 65535	-	Last	[LF] (2 bytes) Data Entry 3	2 bytes Data Entry
				[9.001] DPT_Value_Temp	0.00 - 120.00	-	Last		
129	2 Bytes	I	C - - W -	[7.001] DPT_Value_2_Uncount	0 - 65535	-	Last	[LF] (2 bytes) Data Entry 4	2 bytes Data Entry
				[9.001] DPT_Value_Temp	0.00 - 120.00	-	Last		
130	2 Bytes	I	C - - W -	[7.001] DPT_Value_2_Uncount	0 - 65535	-	Last	[LF] (2 bytes) Data Entry 5	2 bytes Data Entry
				[9.001] DPT_Value_Temp	0.00 - 120.00	-	Last		
131	2 Bytes	I	C - - W -	[7.001] DPT_Value_2_Uncount	0 - 65535	-	Last	[LF] (2 bytes) Data Entry 6	2 bytes Data Entry
				[9.001] DPT_Value_Temp	0.00 - 120.00	-	Last		
132	2 Bytes	I	C - - W -	[7.001] DPT_Value_2_Uncount	0 - 65535	-	Last	[LF] (2 bytes) Data Entry 7	2 bytes Data Entry
				[9.001] DPT_Value_Temp	0.00 - 120.00	-	Last		
133	2 Bytes	I	C - - W -	[7.001] DPT_Value_2_Uncount	0 - 65535	-	Last	[LF] (2 bytes) Data Entry 8	2 bytes Data Entry
				[9.001] DPT_Value_Temp	0.00 - 120.00	-	Last		
134	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[LF] Function 1 RESULT (1 bit)	FUNCTION 1 Result
135	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[LF] Function 2 RESULT (1 bit)	FUNCTION 2 Result
136	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[LF] Function 3 RESULT (1 bit)	FUNCTION 3 Result
137	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[LF] Function 4 RESULT (1 bit)	FUNCTION 4 Result
138	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[LF] Function 5 RESULT (1 bit)	FUNCTION 5 Result
139	1 Byte	O	C T R - -	[5.010] DPT_Value_1_Uncount	0-255	0	Last	[LF] Function 1 RESULT (1 byte)	FUNCTION 1 Result

NUMBER	SIZE	I/O	FLAGS	DATA TYPE (DPT)	VALUES			NAME	FUNCTION
					RANGE	1ST TIME	RESET		
140	1 Byte	O	C T R - -	[5.010] DPT_Value_1_Uncount	0-255	0	Last	[LF] Function 2 RESULT (1 byte)	FUNCTION 2 Result
141	1 Byte	O	C T R - -	[5.010] DPT_Value_1_Uncount	0-255	0	Last	[LF] Function 3 RESULT (1 byte)	FUNCTION 3 Result
142	1 Byte	O	C T R - -	[5.010] DPT_Value_1_Uncount	0-255	0	Last	[LF] Function 4 RESULT (1 byte)	FUNCTION 4 Result
143	1 Byte	O	C T R - -	[5.010] DPT_Value_1_Uncount	0-255	0	Last	[LF] Function 5 RESULT (1 byte)	FUNCTION 5 Result
144	2 Bytes	O	C T R - -	[7.001] DPT_Value_2_Uncount	0 - 65535	0	Last	[LF] Function 1 RESULT (2 bytes)	FUNCTION 1 Result
				[9.001] DPT_Value_Temp	0.00 - 120.00	0	Last	[LF] Function 1 RESULT (2 bytes)	FUNCTION 1 Result
145	2 Bytes	O	C T R - -	[7.001] DPT_Value_2_Uncount	0 - 65535	0	Last	[LF] Function 2 RESULT (2 bytes)	FUNCTION 2 Result
				[9.001] DPT_Value_Temp	0.00 - 120.00	0	Last	[LF] Function 2 RESULT (2 bytes)	FUNCTION 2 Result
146	2 Bytes	O	C T R - -	[7.001] DPT_Value_2_Uncount	0 - 65535	0	Last	[LF] Function 3 RESULT (2 bytes)	FUNCTION 3 Result
				[9.001] DPT_Value_Temp	0.00 - 120.00	0	Last	[LF] Function 3 RESULT (2 bytes)	FUNCTION 3 Result
147	2 Bytes	O	C T R - -	[7.001] DPT_Value_2_Uncount	0 - 65535	0	Last	[LF] Function 4 RESULT (2 bytes)	FUNCTION 4 Result
				[9.001] DPT_Value_Temp	0.00 - 120.00	0	Last	[LF] Function 4 RESULT (2 bytes)	FUNCTION 4 Result
148	2 Bytes	O	C T R - -	[7.001] DPT_Value_2_Uncount	0 - 65535	0	Last	[LF] Function 5 RESULT (2 bytes)	FUNCTION 5 Result
				[9.001] DPT_Value_Temp	0.00 - 120.00	0	Last	[LF] Function 5 RESULT (2 bytes)	FUNCTION 5 Result
149	1 Bit		C T - - -	[1.001] DPT_Switch	0	0	0	Reset 0	Voltage Recovery->Sending of 0
150	1 Bit		C T - - -	[1.001] DPT_Switch	1	1	1	Reset 1	Voltage Recovery->Sending of 1
151	1 Bit		C T - - -	[1.001] DPT_Switch	0/1	-	0	[I6] Short circuit	1=Short-Circuit;0=No Short-Cir
152	1 Bit		C T - - -	[1.001] DPT_Switch	0/1	Connection dependant	Connection dependant	[I6] Open Circuit	1=Open Circuit;0=No Open Circ.
153	1 Byte	O	C T R - -	[5.001] DPT_Scaling	0-100	Parameteriz.	Last	[I6] Luminosity level	Luminosity on Input 6
154	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	0	[I6][Ch. 1] Channel block	1=Block, 0=Unblock
	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	1	[I6][Ch. 1] Channel enabling	1=[1.003] DPT_Enable, 0=Disable
155	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	0	[I6][Ch. 2] Channel block	1=Block, 0=Unblock
	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	-	1	[I6][Ch. 2] Channel enabling	1=[1.003] DPT_Enable, 0=Disable
156	1 Bit		C T - - -	[1.001] DPT_Switch	0/1	Parameteriz.	Parameteriz.	[I6][Ch. 1] Detection Status	According to parameters
157	1 Bit		C T - - -	[1.001] DPT_Switch	0/1	Parameteriz.	Parameteriz.	[I6][Ch. 2] Detection Status	According to parameters
158	1 Byte	I	C - - W -	[18.1] DPT_SceneControl	0-63	-	Last	[I6][Ch. 1] Scene Reception	0-63 (Run Scene 1-64)
159	1 Byte	I	C - - W -	[18.1] DPT_SceneControl	0-63	-	Last	[I6][Ch. 2] Scene Reception	0-63 (Run Scene 1-64)
160	1 Byte		C T - - -	[18.1] DPT_SceneControl	0-63	Parameteriz.	Parameteriz.	[I6][Ch. 1] Scene Sending	0-63 (Send Scene 1-64)
161	1 Byte		C T - - -	[18.1] DPT_SceneControl	0-63	Parameteriz.	Parameteriz.	[I6][Ch. 2] Scene Sending	0-63 (Send Scene 1-64)
162	2 Bytes		C T - - -	[9.001] DPT_Value_Temp	-273 - 670760	Parameteriz.	Parameteriz.	[I5] Current temperature	Temperature sensor value
163	1 Bit		C T - - -	[1.001] DPT_Switch	0/1	0	Last	[I5] Overcooling	1=Overcooling;0=No Overcooling
164	1 Bit		C T - - -	[1.001] DPT_Switch	0/1	0	Last	[I5] Overheating	1=Overheating;0=No Overheating
165	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	Connection dependant	Connection dependant	[I5] Probe Error	1=Error;0=No Error

NUMBER	SIZE	I/O	FLAGS	DATA TYPE (DPT)	VALUES			NAME	FUNCTION
					RANGE	1ST TIME	RESET		
166	2 Bytes	I	C - - W -	[9.001] DPT_Value_Temp	-273 - 670760	25	Last	[T1] Temperature Source 1	External Sensor Measure
167	2 Bytes	I	C - - W -	[9.001] DPT_Value_Temp	-273 - 670760	25	Last	[T1] Temperature Source 2	External Sensor Measure

168	1 Byte	I	C - - W -	[20.102] DPT_HVACMode	0=Confort;
					1=Standby;
					3=Economy;
					4=Building Protection
						Parameteriz.	Parameteriz.	[T1] Special Mode	1-byte HVAC Mode

169	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	0	Last	[T1] Special Mode: comfort	0=Off; 1=On
	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[T1] Special Mode: comfort	0=Nothing; 1=Trigger
170	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	0	Last	[T1] Special Mode: standby	0=Off; 1=On
	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[T1] Special Mode: standby	0=Nothing; 1=Trigger
171	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	0	Last	[T1] Special Mode: economy	0=Off; 1=On
	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[T1] Special Mode: economy	0=Nothing; 1=Trigger
172	1 Bit	I	C - - W -	[1.001] DPT_Switch	0/1	0	Last	[T1] Special Mode: protection	0=Off; 1=On
	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	Last	[T1] Special Mode: protection	0=Nothing; 1=Trigger
173	1 Bit	I	C - - W -	[1.19] DPT_Window_Door	0/1	0	Last	[T1] Window Status (input)	0=Closed; 1=Open
174	1 Bit	I	C - - W -	[1.17] DPT_Trigger	0/1	0	0	[T1] Comfort Prolongation	0=Nothing; 1=Timed Comfort
175	1 Byte	O	C T R - -	[20.102] DPT_HVACMode	0-255	Parameteriz.	Last	[T1] Special Mode Status	1-byte HVAC Mode
176	2 Bytes	I	C - - W -	[9.001] DPT_Value_Temp	5 - 45	Parameteriz.	Last	[T1] Basic Setpoint	Reference setpoint
	2 Bytes	I	C - - W -	[9.001] DPT_Value_Temp	5 - 45	Parameteriz.	Last	[T1] Setpoint	Thermostat setpoint input
177	1 Bit	I	C - - W -	[1.7] DPT_Step	0/1	0	Parameteriz.	[T1] Setpoint Step	0=-0.5ºC; 1=+0.5ºC
178	2 Bytes	I	C - - W -	[9.002] DPT_Value_Tempd	-10 - 10	0	Last	[T1] Setpoint Offset	Float Offset value
179	2 Bytes	O	C T R - -	[9.001] DPT_Value_Temp	5 - 45	25	Last	[T1] Setpoint Status	Current setpoint
180	2 Bytes	O	C T R - -	[9.001] DPT_Value_Temp	5 - 45	Parameteriz.	Last	[T1] Basic Setpoint Status	Current basic setpoint
181	2 Bytes	O	C T R - -	[9.002] DPT_Value_Tempd	-10 - 10	0	Last	[T1] Setpoint Offset Status	Current setpoint Offset
182	1 Bit	I	C - - W -	[1.15] DPT_Reset	0/1	0	Parameteriz.	[T1] Offset Reset	Reset Offset
	1 Bit	I	C - - W -	[1.15] DPT_Reset	0/1	0	Parameteriz.	[T1] Setpoint Reset	Reset setpoint to default
183	1 Bit	I	C - - W -	[1.100] DPT_Heat_Cool	0/1	Parameteriz.	Last	[T1] Mode	0 = Cool; 1 = Heat
184	1 Bit	O	C T R - -	[1.100] DPT_Heat_Cool	0/1	Parameteriz.	Last	[T1] Mode Status	0 = Cool; 1 = Heat
185	1 Bit	I	C - - W -	[1.100] DPT_Heat_Cool	0/1	Parameteriz.	Last	[T1] On/Off	0=Off; 1=On
186	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	Parameteriz.	Last	[T1] On/Off	0=Off; 1=On
187	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[T1] Control Variable (Cool)	PI Control (PWM)
	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[T1] Control Variable (Cool)	2-Point Control
188	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[T1] Control Variable (Heat)	PI Control (PWM)
	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[T1] Control Variable (Heat)	2-Point Control
189	1 Byte	O	C T R - -	[5.001] DPT_Scaling	0-100	0	Last	[T1] Control Variable (Cool)	PI Control (Continuous)

NUMBER	SIZE	I/O	FLAGS	DATA TYPE (DPT)	VALUES			NAME	FUNCTION
					RANGE	1ST TIME	RESET		
190	1 Byte	O	C T R - -	[5.001] DPT_Scaling	0-100	0	Last	[T1] Control Variable (Heat)	PI Control (Continuous)
191	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[T1] Additional Cool	Temp >= (Setpoint+Band) => "1"
192	1 Bit	O	C T R - -	[1.001] DPT_Switch	0/1	0	Last	[T1] Additional Heat	Temp <= (Setpoint-Band) => "1"

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