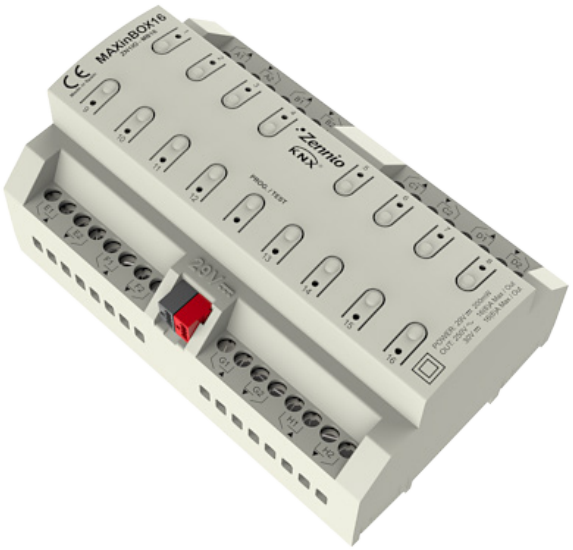
Zennio
Passion for KNX innovation



MAXinBOX 16

16-Output KNX Actuator

ZN1IO-MB16

USER MANUAL

Application program version: [2.3]
User manual edition: [2.3]_a

www.zennio.com

Contents

DOCUMENT UPDATES

Version	Changes	Page(s)
[2.3]_a	Changes in the application program: • Improved management of the output order buffer.	-
	Minor changes in the description of the elements of the device.	6
	New detailed explanation about the manual control modes (Test On and Test Off).	9-11
	Clarifications about the lock and manual control functions.	13-14
	Clarification about the timed functions.	15-17
	Example added about the “Multiply” parameter.	18
	Brief clarification about the alarm functions.	22, 32
	Note added about the initial position of the shutter.	34
	General revision of texts and styles.	-
[2.2]_a	Changes in the application program: • Improved compatibility of the application program with some device batch numbers..	
[2.1]_a	Changes in the application program: • Improvement in the behaviour of the shutter channels: o On the activations of the additional time when the shutter state is already 100%. o On joint activations of the additional time of multiple shutter channels where the state is already 100%. • Optimization of the number of the individual output state objects sent at the start-up.	

1 INTRODUCTION

1.1 MAXINBOX 16

MAXinBOX 16 is a KNX actuator that combines in only one device the following features:

- **16 multi-function binary outputs** (16A each), configurable as:
  - Up to 8 shutter channels (with or without slats/lamellas).
  - Up to 16 individual outputs.
- 10x multi-operation **logical function** module, being possible to enable or disable each function independently through a specific communication object.
- **Possibility of manually operating** the actuator outputs

The outputs and the logical function module work independently and can interact with each other as if they were two autonomous devices connected to the KNX bus.

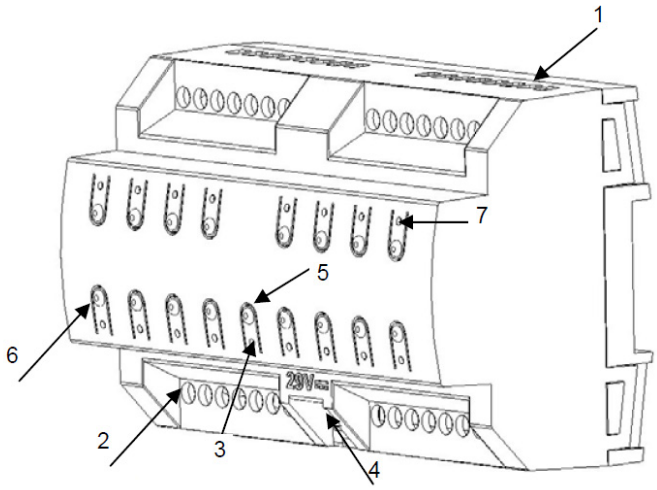
Figure 1 MAXinBOX 16

1.2 INSTALLATION

MAXinBOX 16 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.- Output Securing Screws
3.- Prog/Test LED
4.- KNX Bus Connection
5.- Prog/Test button
6.- Output Control Button
7.- Output Status LED Indicator

Figure 2 MAXinBOX 16. Element Scheme

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

- **Prog/Test button (5)**: 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, MAXinBOX 16 goes into secure mode. The LED will blink in red every 0.5 seconds*.

  In case of having enabled the Test On manual control mode through the corresponding parameter (see section 2.3), a long push (i.e., for at least three seconds, until the red light from the Prog/Test LED changes to yellow) on this button enables the manual control over the actuator. Just after releasing the button, the LED light will become green, indicating the activation of this manual control. To leave the device manual control, an additional press on the Prog/Test button will be required (the LED will turn off).

While MAXinBOX 16 is under the start-up process –after an ETS download or a bus power failure–, the Prog/Test LED will blink in blue. During the execution of the start-up, every order received will be taken into account and performed immediately once the start-up is over.

- **Output control pushbuttons (6)**: permit a manual and individual control of each of the actuator outputs, provided that such control has been configured. The LED indicator next to every pushbutton (7) will show a green light whenever the corresponding output is active.

- **Outputs (1) and Output Securing Screws (2)**: slots for the insertion of the electrical output cables, and screws for properly securing them once inserted. Please refer to section 2.2 for details about the correct cable connection order for controlling shutters.

To get detailed information about the technical features of MAXinBOX 16, as well as on security and on the installation procedure, please refer to the device **Datasheet**, bundled with the original packaging and also available at: http://www.zennio.com.

2 CONFIGURATION

2.1 INDIVIDUAL OUTPUTS

The MAXinBOX 16 actuator incorporates **16 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, MAXinBOX 16 allows the configuration of the following functionalities for the individual outputs:

- **Timers.** Permit 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 specific actions over the output/s on the reception of a scene object. The status of the outputs will vary depending on the action set for the parameterised scene.
- **Alarm.** Allows changing the status of the output on the reception of an alarm message, being possible to configure the state the output will be set to, both on the alarm activation and on the alarm deactivation.

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

All these configuration options are explained in detail in section 3.

2.2 SHUTTER CHANNELS

The MAXinBOX 16 output channels allow controlling **up to 8** different shutter drives (or similar window/door automated systems). Thus, it is possible to control the movement of the shutters in the domotic system:

- **Basic control**: simple up/down movements.
- **Precise control** of the shutter and of the slats/lamellas (if any).

Each channel (A, B, C, D, E, F, G and H) consists of two consecutive individual outputs; i.e., Channel A is made of the individual outputs 1 and 2; channel B consists of outputs 3 and 4; and so on. The first output of every will send the orders to **raise** the shutter, whereas the second output will send the 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
C	5	Move up
	6	Move down
D	7	Move up
	8	Move down
E	9	Move up
	10	Move down
F	11	Move up
	12	Move down
G	13	Move up
	14	Move down
H	15	Move up
	16	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, MAXinBOX 16 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 (lamellas), a "secondary time" for the entire slat movement and for the slat steps can also be configured.

- **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. 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 parameterised action will be executed when an alarm event is received.
- **Reverse movement.** Allows an 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.

2.3 MANUAL CONTROL

MAXinBOX 16 allows manually switching the state of its 16 output relays through the respective pushbuttons on the top of the device. Therefore, a specific pushbutton is available per output (see Figure 2).

Manual operation can be done in two different ways, referred to as **Test On Mode** (intended for testing the domotic system during the configuration of the device) and **Test Off Mode** (intended for using it anytime). Whether both, only one or none of these modes will be available can be parameterised from ETS. Moreover, it will be possible to enable a specific binary object for locking and unlocking the manual control in runtime. See section 3.2 for further details on the device parameterisation.

Note: *the Test Off mode will be available anytime (unless it has been disabled by parameter) with no need of a specific activation after a download or a reset. Accessing the Test On mode, on the contrary, will require (unless disabled by parameter) pressing the Prog/Test button for at least three seconds, until the LED turns yellow. From that moment, once the button is released, the LED light will turn green to confirm that the device has switched from the Test Off mode to the Test On mode. After that, an additional press will turn the LED off, setting the device back to the Test Off mode.*

2.3.1 TEST OFF MODE

Under the Test Off Mode, outputs can be controlled through both communication objects and through the actual pushbuttons located on the top of the device (Figure 2).

When one of these buttons is pressed, the output will behave as if an order had been received through the corresponding communication object (see section 3.2)

The behaviour of the outputs upon a button press depends on whether the outputs have been configured as individual outputs or as a shutter channel.

- **Individual Output**: a simple press, short or long, will make the output switch its state, as if a 0/1 order had been received through the "**[SX] ON/OFF**" communication object. Once the output state changes, a message is sent through the corresponding status object, "**[SX] Status**".

- **Shutter Channel**: when the button is pressed, the device will act over the output according to the length of the button press and to the current state.

  - A long press makes the shutter start moving (upwards or downwards, depending on the actual button being pressed), lighting the LED in green until the end of the movement, unless no further movements are possible when the button is pressed because of being the shutter in a final position. Hence, the output will behave the same as when the device receives an order through the "**[CX] Up/Down**" communication object.

  - A short press will make the shutter drive stop the movement (if in motion), as it would happen on the reception of a message through the "**[CX] Stop**" object. In case of not being the shutter in motion, pressing the button does not cause any action, unless the shutter features slats/lamellas – in such case, a step movement (up/down, depending on the button pressed) of the

slats will take place, as if the equivalent order had been received through the "**[CX] Stop/Step**" communication object.

- **Disabled output**: presses on the pushbutton will be ignored.

Note: *multiple shutter channels can be manually controlled at the same time by pressing their corresponding pushbuttons*.

Regarding the lock, timer, alarm, scene and status object sending functions, the device will behave under the Test Off mode as usual: button presses are entirely analogous to the reception of the corresponding orders from the KNX bus.

2.3.2 TEST ON MODE

Once the Test On mode has been activated, it will only be possible to control the outputs through the on-board pushbuttons. Orders received through communication objects will be always ignored, with independence of the channel or the output they are actually addressed.

Depending on whether an output has been parameterized as an individual output or as a part of a shutter channel, its reaction to the button presses will differ.

- **Individual output**: short or long pressing the associated button will commute the state of the relay, therefore switching the state of the output (from "on" to "off", or vice versa).
- **Shutter channel**: a press on the corresponding button will set the shutter drive in motion, staying this way until the button is released, thus ignoring the current position of the shutter and the parameterized up/down times.
- **Disabled output**: under the Test On mode, short and long presses will cause the same effect for disabled outputs as for individual outputs (i.e., the relay will switch its state).

The lock, timer, alarm, scene and status object sending functions will not work while the device is under the Test On mode.

Note: *the device is factory delivered with all the output channels configured as shutters, and with both manual control modes (Test Off and Test On) enabled*.

3 ETS PARAMETRISATION

To begin with the parameterisation of the MAXinBOX 16 actuator it is necessary, once the ETS application is running, to import the database of the product (MAXinBOX 16 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 parameterisation starts from.

After entering the parameter edition for the first time, the following window comes up:

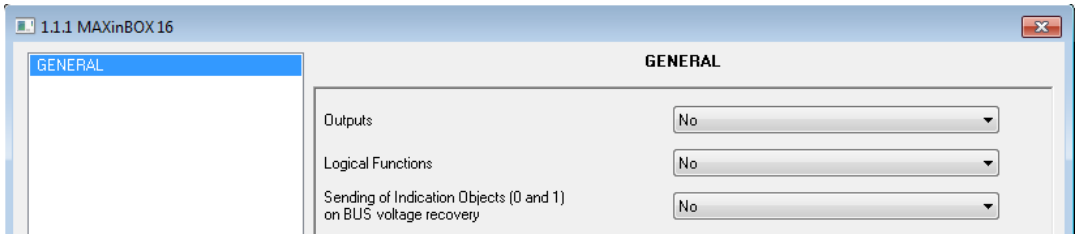


Figure 3 Configuration screen by default

As shown in Figure 3, 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 "**Sending of indication objects on bus voltage recovery**" is set to "Yes", 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" respectively after a bus power failure, in order to recover the communication with the rest of the devices in the facility. This transmission may be immediate or after a configurable delay (in seconds).

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:

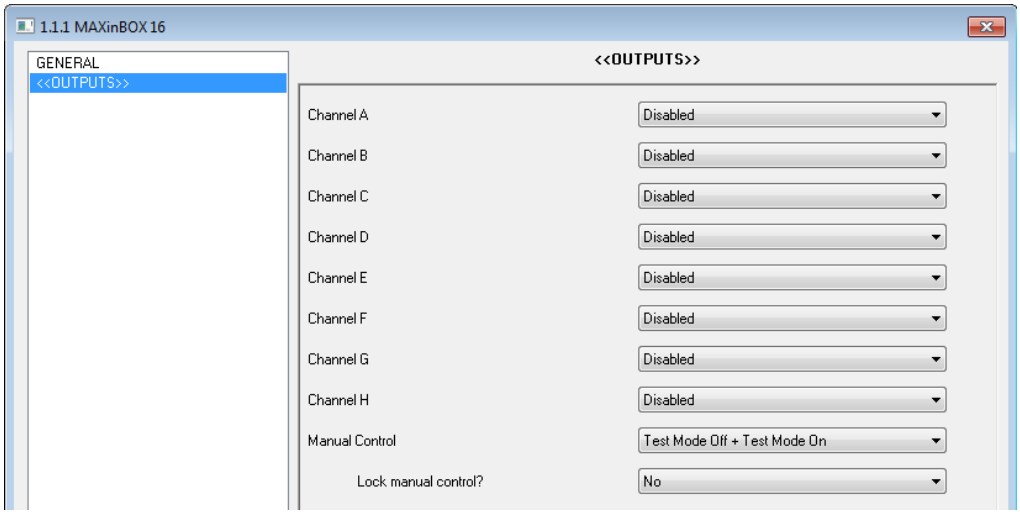


Figure 4 Configuring the outputs

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

Figure 5 Configuring the channels

From this screen, there is also the option to select which manual control modes will be available (parameter "**Manual control**"):

- **Disabled**: the manual control over the outputs will not be active, and it will not be possible to activate it in runtime.
- **Only Test Mode Off**: only the simple manual control (i.e., the one corresponding to the Test Off mode) will be available (see section 2.3), not being possible at all to access the Test On mode in runtime.

- **Only Test Mode On**: only the Test On mode will be available (see section 2.3), not being possible at all to access the Test Off mode in runtime.

- **Test Mode Off + Test Mode On**: default parameter value. Both the Test On and the Test Off modes are available under the manual control, being the Test Off mode the active one by default (see section 2.3).

MAXinBOX 16 allows locking the manual control in runtime. This is possible after enabling the "**Lock manual control?**" parameter, which will bring up a new 1-bit communication object, "**Manual control locking**", and two additional parameters:

- **Value**: sets the value (0 or 1) the communication object should be sent to lock/unlock the manual control.

- **Initialization**: sets whether the initial state of the lock function (after an ETS download/reset or after a bus failure) should have the previous value, or be locked or unlocked. If the first option is selected, the state will be unlocked after the very first start-up of the device.

While the manual control remains locked, presses on the on-board pushbuttons will be ignored.

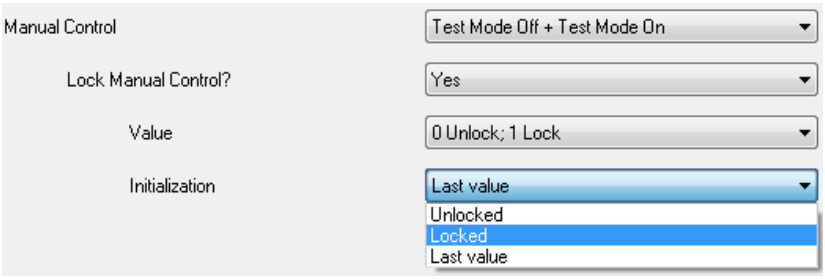


Figure 6. Manual control type and lock

In the next sections the configurable parameters are explained in detail, depending on the selected output type.

3.2.1 INDIVIDUAL OUTPUTS

Figure 7 represents an example of how a channel can be parameterised: in this case, channel A is set to "individual outputs", which activates outputs 1 and 2.

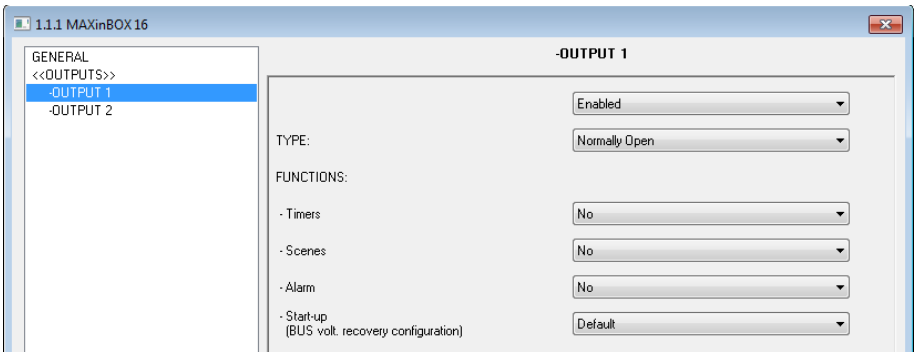


Figure 7 Channel A configured as individual outputs

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

- **[OX] ON/OFF**: allows switching the corresponding output to the "on" or the "off" states by sending the value "1" or "0", depending on the parameterised output type. Whether the relay is actually open or closed under each state depends on the normally open / normally closed configuration of the output, as explained below.

- **[OX] Status**: shows the current status of the output (on or off).

- **[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 lock function; if an alarm signal arrives when the output is locked, the output will be set to the state defined by the alarm function. When the alarm gets deactivated, the output returns to the lock status*.

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

- **Normally open**: the output will be considered as "on" when the relay stays closed and "off" when the relay stays open.

- **Normally closed**: the output will be considered as "on" when the relay stays open and "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*).

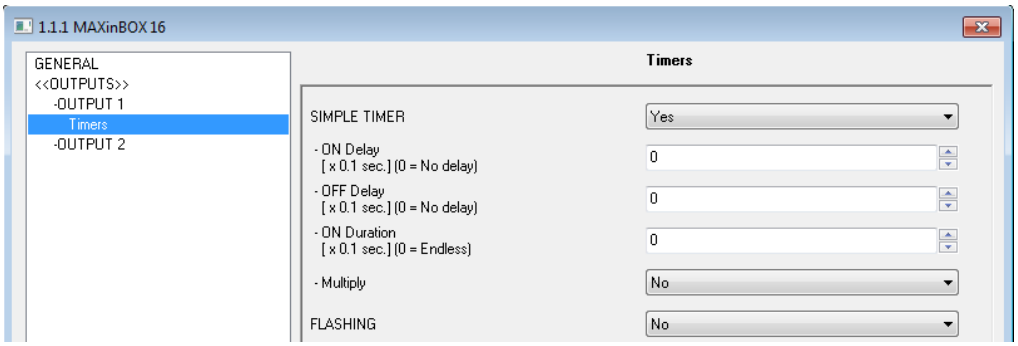


Figure 8 Timers screen. Simple timer

- **Simple timer**: allows automatically switching on (and afterwards off) the output on the reception of the values "1" and "0" through the "**[OX] Timer**" object, subject to a set of parameterisable times:

  - **On Delay**: time the actuator will wait before switching the output on 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 the output off 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 state. A "0" in this field means the output will remain permanently ON (unless an OFF order arrives).

  These parameters apply as follows:

    - When MAXinBOX 16 receives a "1" through the "**[OX] Timer**" communication object, an ON order is sent to the output relay after waiting for the "On Delay" time. The output will switch off again after the "On Duration" time (if other than 0).

    - When MAXinBOX 16 receives a "0" through the "**[OX] Timer**" communication object, an OFF order is sent to the output relay 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.

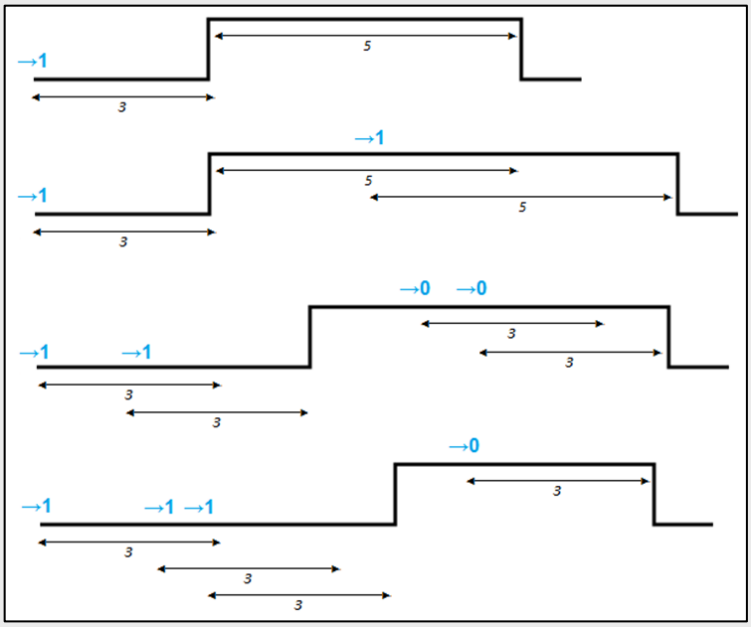
- **Multiply**:

  - 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 parameterised 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 parameterised 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 parameterised time, being "n" the number of times the value "0" is received.

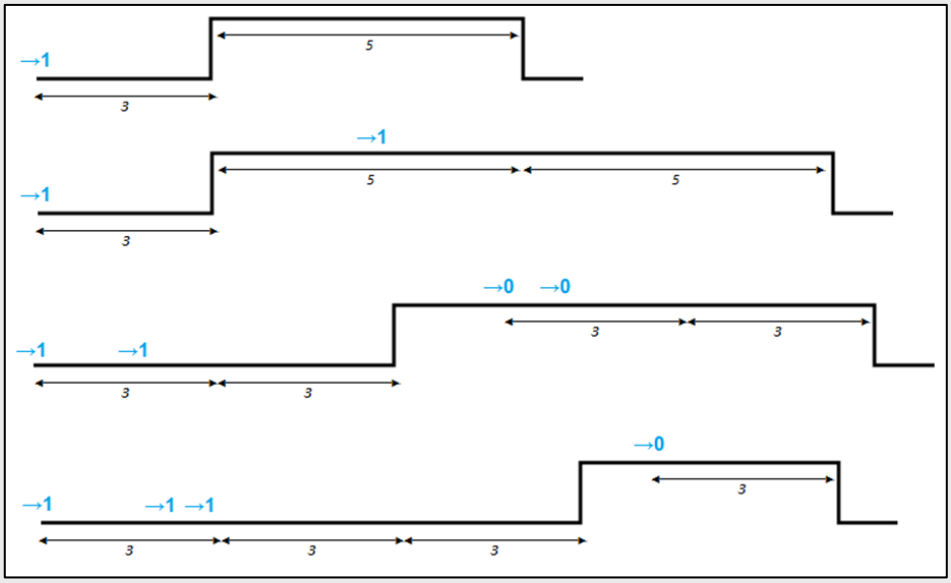
Note: *the Multiply option may result particularly useful under parameterisations with no ON and OFF delays. Nevertheless, as already explained and as the following example shows, these delay times, if parameterised with a value other than 0, do also admit multiplication*.

Example: *the following is parameterised: 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 parameterise the ON and an OFF time lengths, 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.

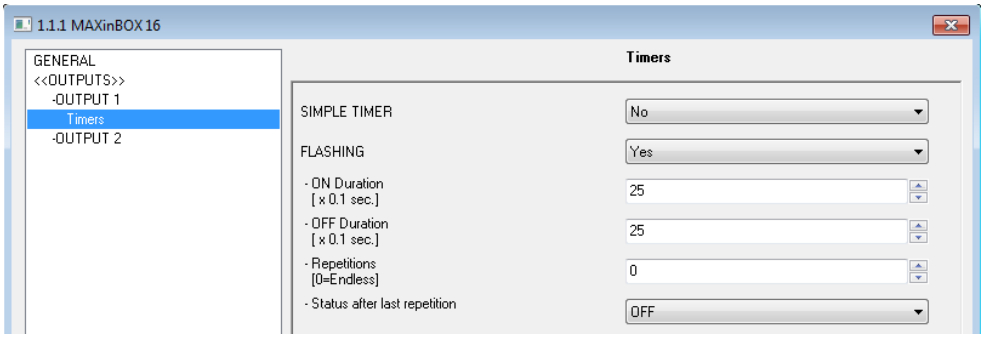


Figure 9 Flashing

Note: *MAXinBOX 16 allows parameterising both a simple timer and an intermitting sequence for the same output*.

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

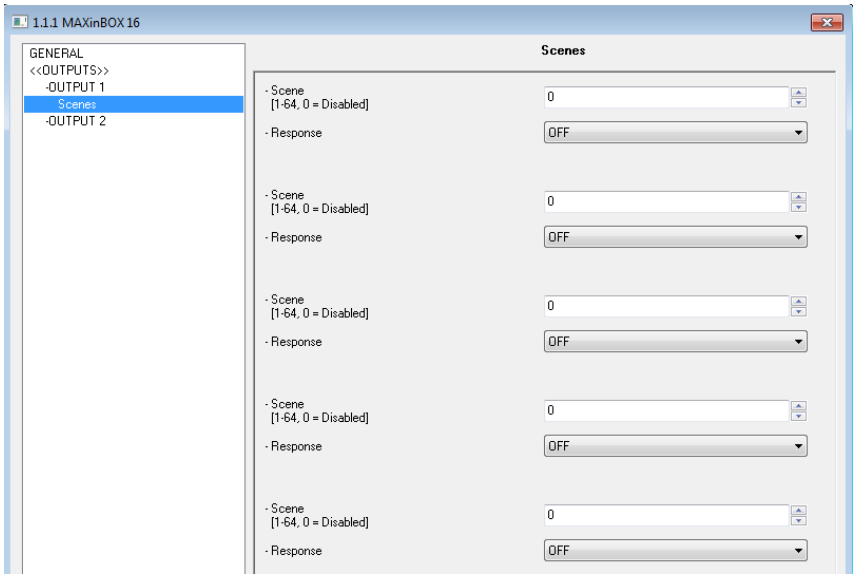


Figure 10 Scenes

A 1-byte communication object is provided in relation to 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", while "0" means that the option is disabled) to an output state (OFF or ON). Thus, when the defined scene value is received (decreased by one) through the Scenes object, the parameterised action for the output (a switch-off or a switch-on) will be performed, making it possible to create different ambient scenarios in the domotic system.

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, which correspond to saving scenes 1-64 respectively.

MAXinBOX 16 allows defining **up to 5 different scenes** for each output.

- **Alarm**: for each output it is possible to configure an alarm, which, once triggered, 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 situation stops.

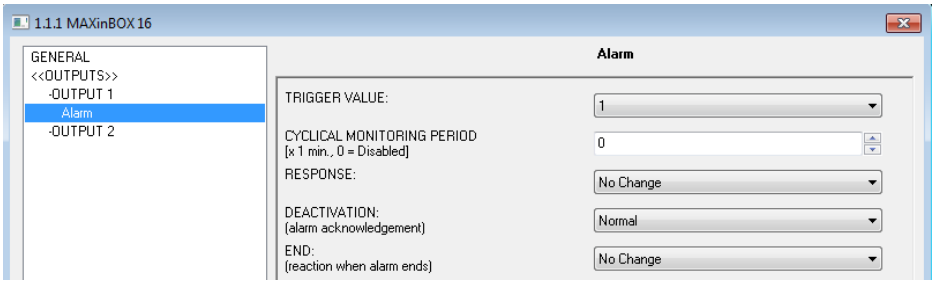


Figure 11 Alarm

The following parameters can be configured for alarms:

- **Trigger value**: sets the value that will trigger the alarm ("1" or "0") if received through the "**[OX] Alarm**" object. The opposite value ("0" or "1") will be considered as the *no alarm* value.

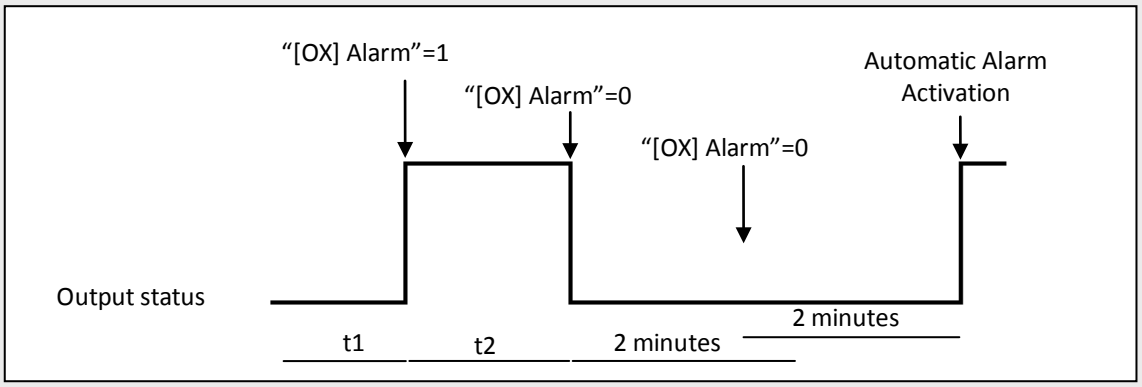
- **Cyclical monitoring period (minutes)**: defines, for the case of having a periodically-sent alarm object ("1" or "0", as corresponding each time), the maximum permitted time without receiving the "no alarm" value ("**[OX] Alarm**" = value contrary to the parameterised trigger value) before the

actuator automatically assumes the alarm state, foreseeing the possibility of a failure in the transmitting device. If for whatever reason the monitoring period expires, MAXinBOX 16 will trigger the parameterised 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:

Let a cyclical monitoring period of 2 minutes be 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 initially 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 parameterised 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 switch on. As before, any action over the output will be ignored until the alarm is deactivated. See the figure.



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

  - No change.
  - ON.

- OFF.
- Flashing (intermitting sequence): three 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 parameterised under "Trigger Value", the alarm will become inactive 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 will still remain triggered). 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 state that will be adopted by the output once the alarm finishes:

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

Start-up configuration: defines the desired state (ON/OFF) to be adopted by the output when the device recovers from a bus power failure, or after an ETS download/reset. A default or a custom configuration may be set.

Selecting the default configuration will make the output stay off after a partial or complete ETS download, while after a bus power failure, the state of the output will be the same it had before the failure (ON or OFF). On the other hand, if "custom" is chosen, ETS will show the following window:

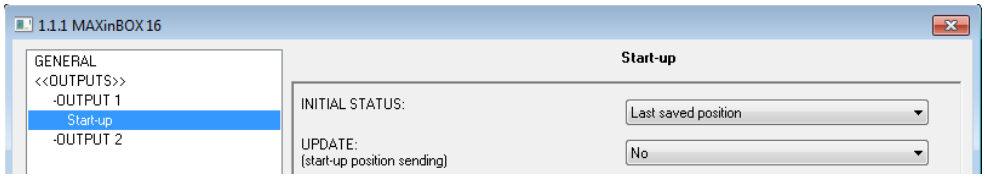


Figure 12 Custom start-up configuration.

Where the following parameters can be configured:

- **Initial status**: this field defines the initial state of the output after a bus power failure or after a download. The following options are available: last saved position (i.e., the state 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 or after a bus failure, as a feedback for the rest of the devices in the domotic system. A parameterisable delay can also be applied to this transmission. If the delay is set to 0, the status will be sent immediately.

The state of the output is always sent through the "**[OX] Status**" object.

3.2.2 SHUTTER CHANNEL

MAXinBOX 16 also allows configuring its outputs as shutter channels, making it possible to control **up to 8 separate shutters** in a domotic facility.

When a channel is configured in ETS as a shutter channel, a 1-bit communication object ("**[CX] Lock**") related to that particular 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 in motion 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 "lock" 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 shutter type:

- **Shutter (no slats)**: typical shutter drives with simple up/down movements. 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 will be shown under this shutter type: "Slats positions will be ignored for Shutter types", which means that parameters and objects related to slats should be ignored under this shutter type.

- **Blind (with slats)**: special slat shutter drives where both the shutter itself and the slats/lamellas are controlled with a single engine. MAXinBOX 16 allows controlling both movements: the slat rotation (which permits varying the level of the incident light) and the scrolling (up/down) of the blind. Two communication objects are enabled for this purpose: "**[CX] Move**" (which will receive from the bus 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 slightly rotate upwards, while receiving a "1" will make them slightly 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. Slat precise control**.

The next figures show the screens with the parameterisable options for channels configured as Shutters (no slats) or as Blinds (with slats).

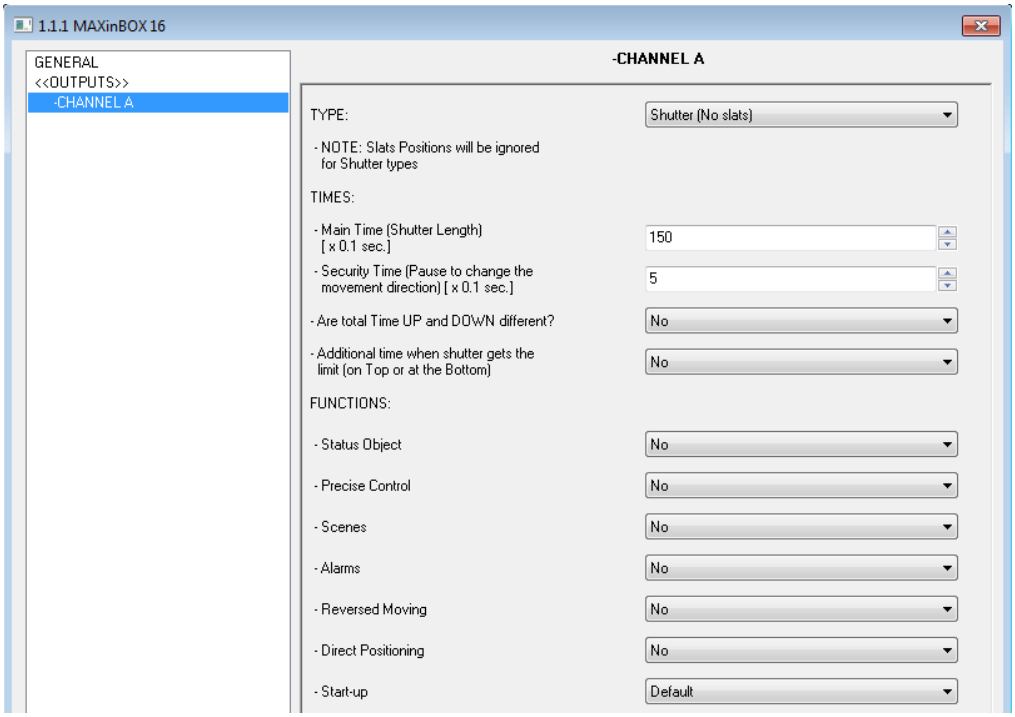


Figure 13 Channel A configured as a shutter (no slats)

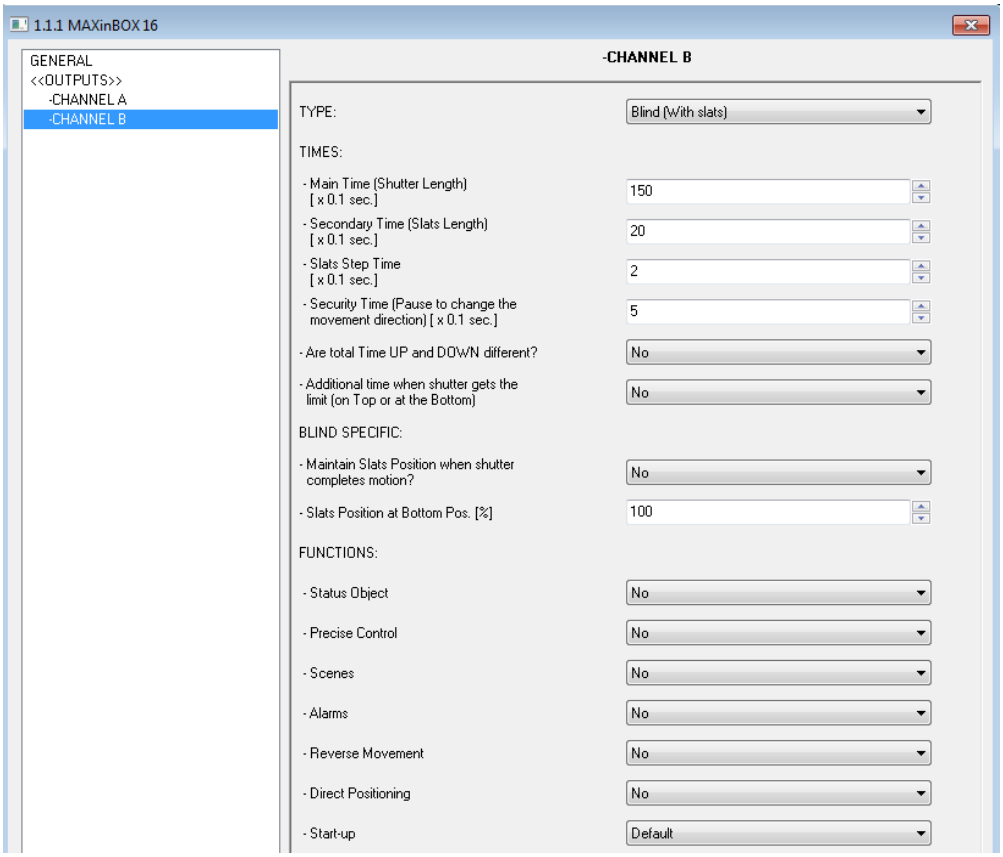


Figure 14 Channel B configured as a blind (with slats)

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 time intervals (in tenths of a second) that define the movement of the shutter.

  - **Main time (Shutter length)**: this is the time the motor needs to move the shutter all the way down or up. In case it does not take the same time to raise it as to lower it, parameter "**Are total times 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 MAXinBOX 16 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, MAXinBOX 16 will temporarily interrupt the movement (during the configured security time) before lowering it (or vice versa). 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 device interpret the already mentioned "Main time (Shutter length)" parameter 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.

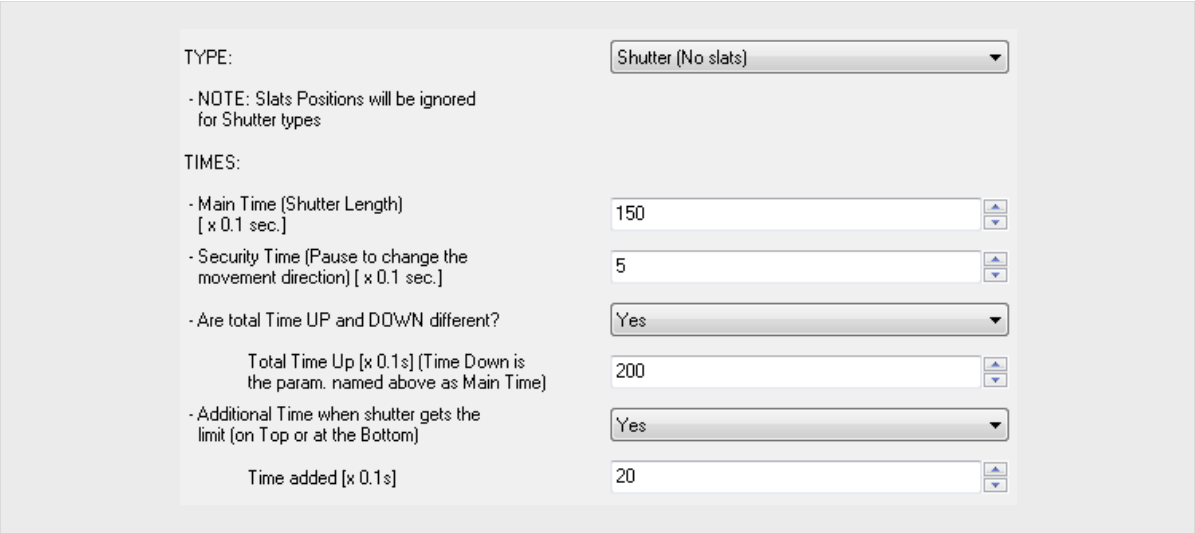
If the shutter is configured as a blind with slats (Figure 14), additional specific parameters appear. All of them are explained in detail under **ANNEX I. Slat precise** control.

Note: *after programming the device from ETS and unless a custom start-up configuration has been parameterised, MAXinBOX 16 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 corresponding parameterisation is as follows:



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 returns 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 "**[CX] Current Slats Position**" 1-byte object 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 MAXinBOX 16 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 "**[CX] Slats Positioning**" 1-byte object for setting the desired position (in percentage) for the slats.

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

  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.

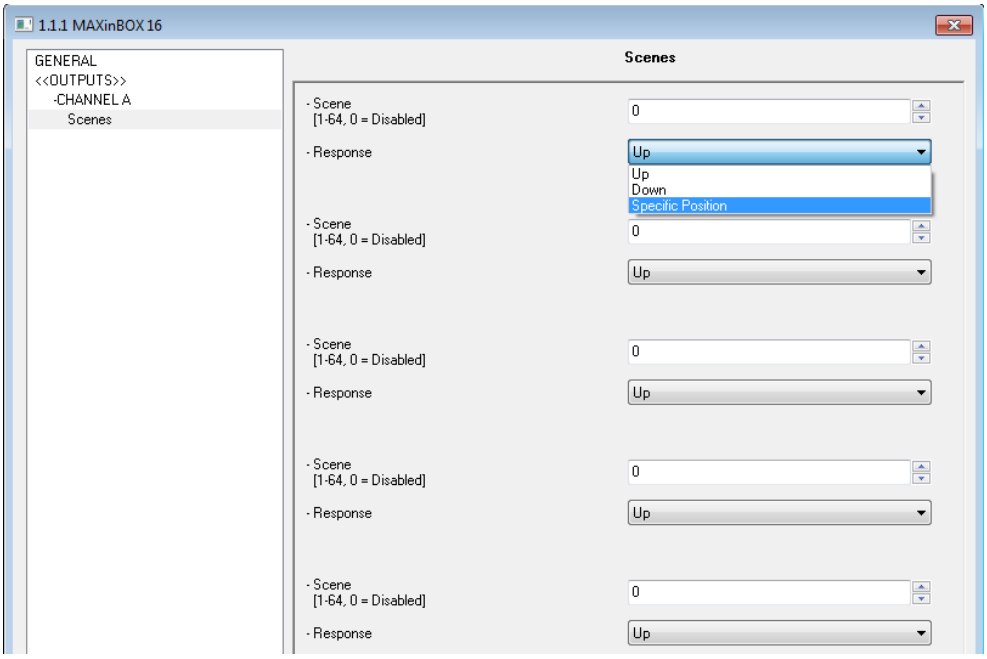


Figure 15 Scenes

The "**Scene**" parameter indicates the scene value (1-64) 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 (decreased by one) arrives from the bus. The shutter can be moved completely up, completely down, or to a specific position (in percentage, from 0% to 100%). In case of choosing the latter, the "**Shutter specific position**?" parameter 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 "**Select Slats Position [%]**"parameter) when the configured scene number is received, or to make them maintain their current position.

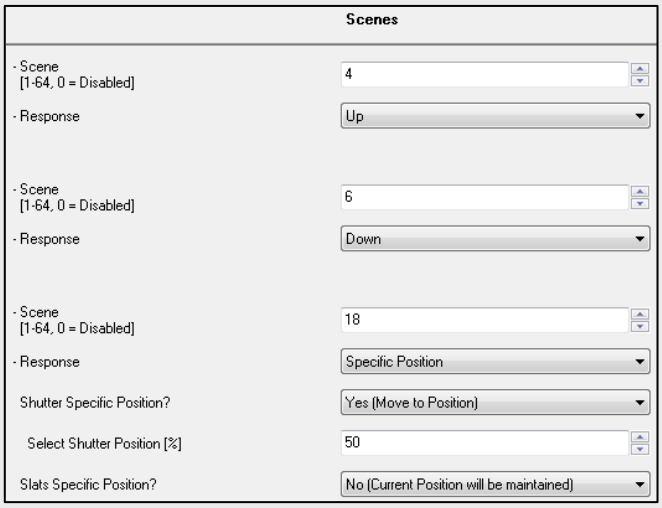
The following example illustrates the configuration process.

Example:

Consider a facility where 3 scenes will be distinguished (values "4", "6" and "18") and where MAXinBOX 16 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 parameterisation should be as follows.



- **Alarms**: MAXinBOX 16 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.

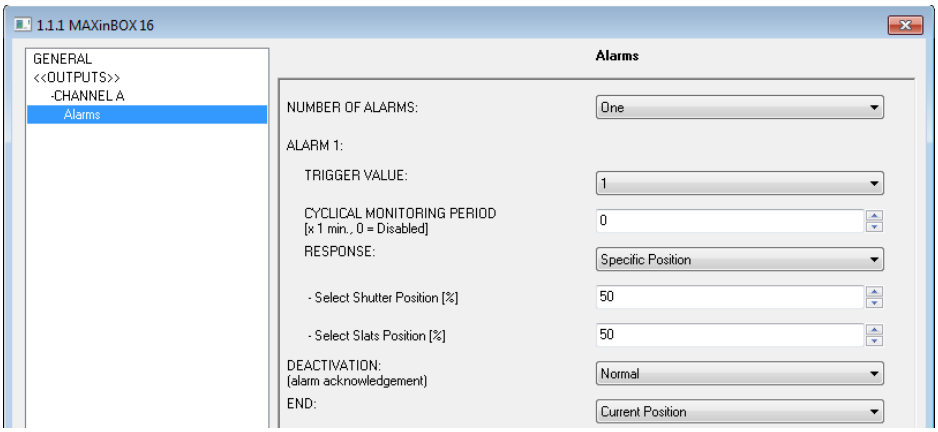


Figure 16 Alarms

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 state and Alarm 1 occurs, then the shutter will switch to the Alarm 1 state and will only switch back to the Alarm 2 state once Alarm 1 finishes. Analogously, when the channel is under the Alarm 1 state and Alarm 2 occurs, Alarm 1 prevails.

- **Trigger value**: sets the value ("1" or "0") that will trigger the alarm state. This value is intended to be received through the "**[CX] Alarm**" (or "**[CX] Alarm 2**") object. The inverse value ("0" or "1") will be assumed as the *no alarm* value.

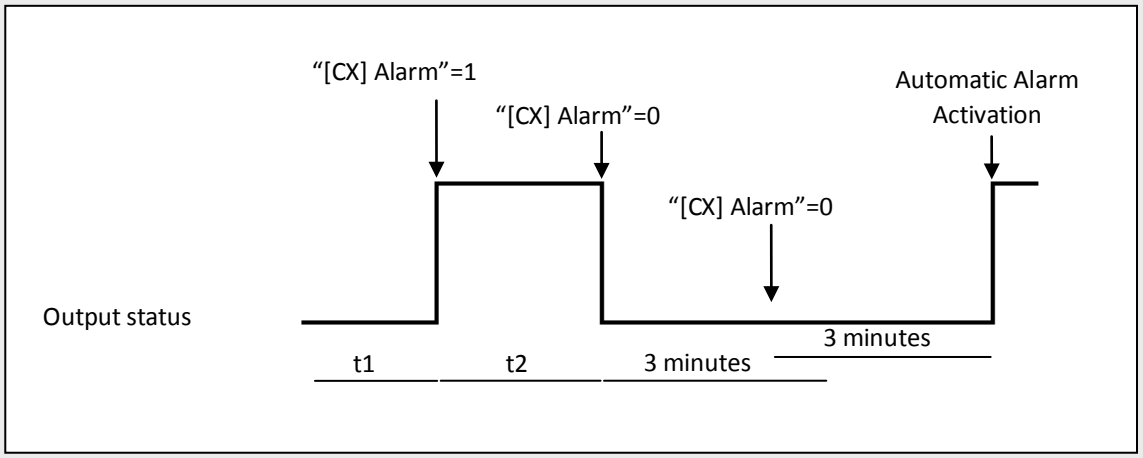
- **Cyclical monitoring period (minutes):** defines, for the case of having a periodically-sent alarm object ("1" or "0", as corresponding each time), the maximum permitted time without receiving the "no alarm" value ("[OX] Alarm" = value contrary to the parameterised trigger value) before the actuator automatically assumes the alarm state, foreseeing the possibility of a failure in the transmitting device. If for whatever reason the monitoring period expires, MAXinBOX 16 will trigger the parameterised action (unless it does not imply a change in the output state). 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 lowered. Assuming that the shutter has been lowered, when the alarm becomes active the actuator will start raising the shutter. While the alarm stays active, 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 parameterised 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 triggered:
  - 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: the alarm will become inactive as soon as the actuator receives a "0" or a "1" (the inverse of the parameterised trigger value) 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 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 (MAXinBOX 16 normally raises the shutter when the value "0" is received through "**[CX] Move**" and stops it with value "1"). Therefore, if this function is enabled, MAXinBOX 16 will also raise the shutter when the value "1" is received through object "**[CX] Reverse 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] Reverse 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 domotic system 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 parameterised position. When a “0” is received, no action is performed.

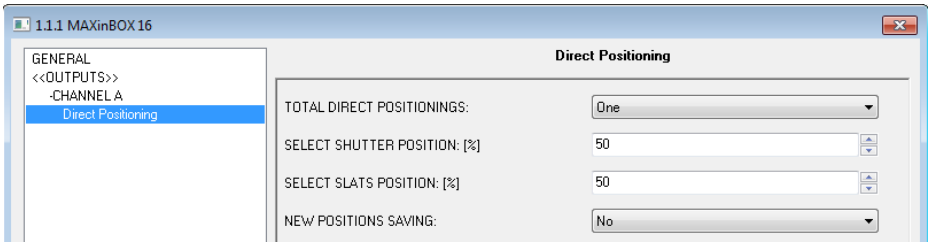


Figure 17 Direct positioning

It is possible to configure the following parameters:

- **Total direct positionings**: 1 or 2 direct position functions can be defined.
- **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 displayed: “**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 parameterised direct position it is necessary to send a “1” to these objects when the shutter is at the desired position.

Note: *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 default or a custom configuration may be selected.

  If "Default" is chosen, after a partial or a complete download from ETS, MAXinBOX 16 will assume the shutter is completely up (0%), independently of its actual state. For blinds with slats, MAXinBOX 16 also assumes that the slats are completely open (0%), no matter what their actual position 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:

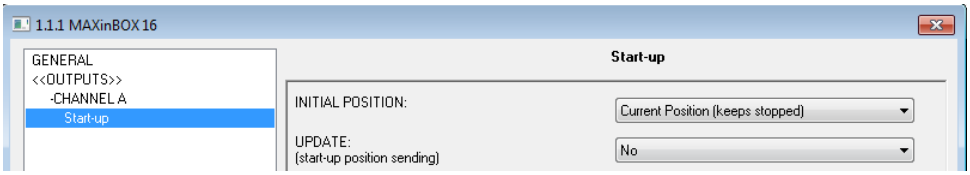


Figure 18 Custom Start-up configuration

where it is possible to configure the following parameters:

- **Initial position**: this field defines the desired initial position the shutter will be moved to, both after a bus power failure or after programming the device. The following options can be chosen: Current position (keeps stopped) (the shutter will remain 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).

  Note: *the actuator does not actually know the position of the shutter, as there is no feedback from the shutter drive. Therefore, the shutter will be moved to the specified initial position by assuming that it is initially completely raised (0%).*

- **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 domotic system. In addition, a delay can be applied to this transmission. If the value "0" is set, the status is sent immediately.

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

Note: *in the event of a bus power failure while the shutter is in motion, MAXinBOX 16 opens the output relay prior to being unpowered, as a security measure. The interrupted movement is not resumed after the bus recovery.*

3.3 LOGICAL FUNCTIONS

This option in MAXinBOX 16 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 10 different and independent logical functions can be enabled, being each of them capable of carrying out **a maximum of 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.

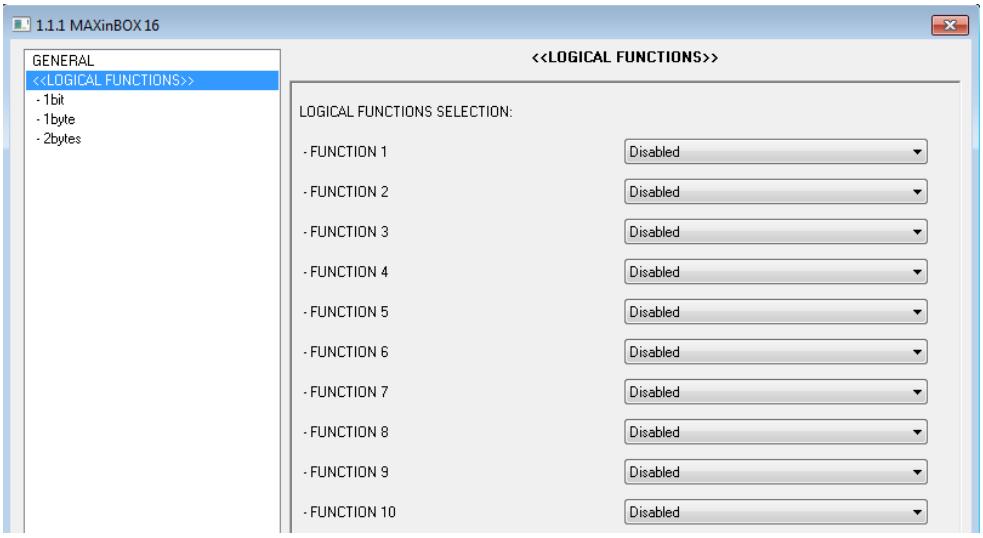


Figure 19 Logical functions

To get further information about how to use and parameterise the logical functions, please refer to the "**Logical Functions X10**" specific document, available at http://www.zennio.com.

ANNEX I. SLAT PRECISE CONTROL

Zennio actuators allow controlling the movement of shutters, blinds or any other window/door automated drives, as long as they match one of the following types:

- **Shutters (with no slats)**.
- **Blinds (with slats/lamellas)**.

Depending on the drive type, the MAXinBOX 16 application program will show different options.

This particular section is referred to the parameterisation 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 20 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**.

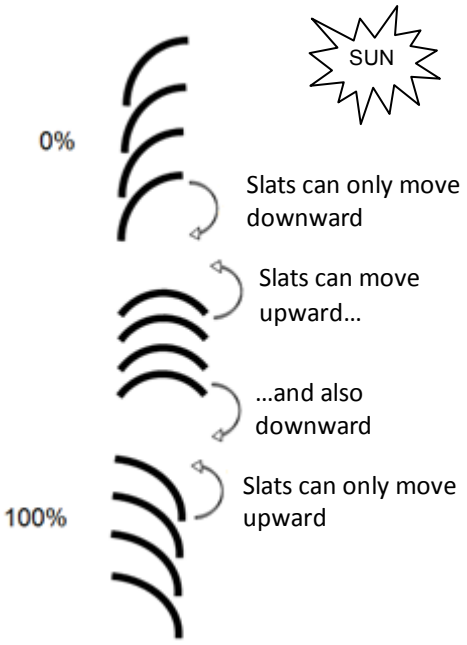


Figure 20 Slat positions

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

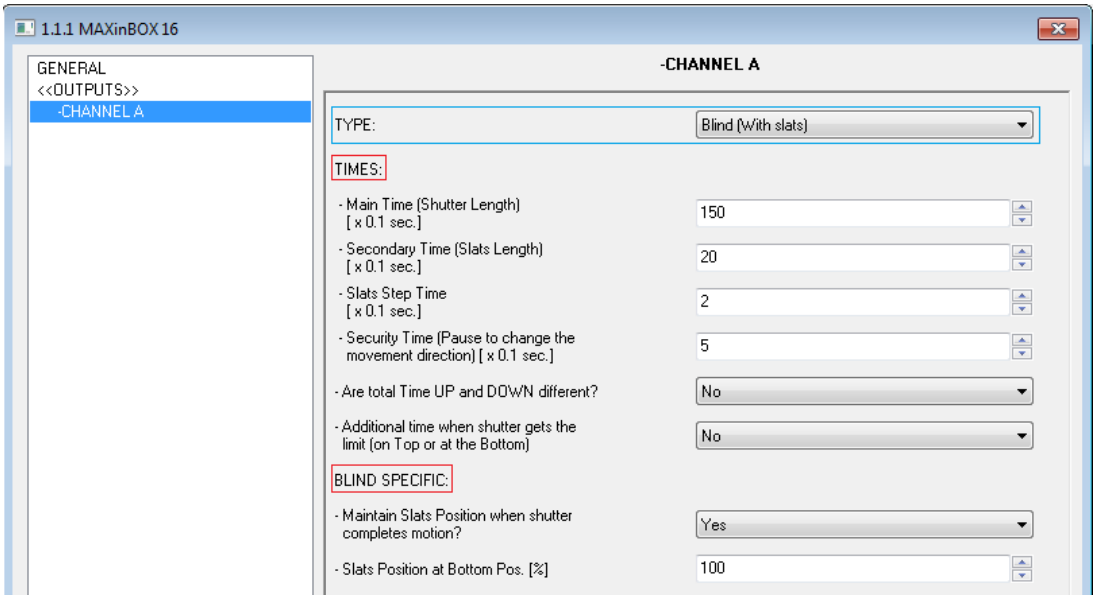


Figure 21 Blinds with slats. Configuration screen (ETS)

As shown in Figure 21, for this type of shutters various time parameters need to be parameterised: 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 number 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 MAXinBOX 16 will revert the position of the slats by additionally moving the drive back 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 reached 100% (down), the slats would have maintained 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 parameterised. 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 parameterised 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

- "**Functional range**" shows the values that, with independence of any other values permitted by the bus according to the object size, may be of any use or have a particular meaning because of the specifications or restrictions from both the KNX standard or the application program itself.

- "**1st boot**" shows the cases where an object is assigned a certain value by the application program after a device download or a full reset. In case the value of such assignment can be parameterised, √ is shown in column "**P**". Objects showing a hyphen (-) are not assigned a particular value and therefore can be assumed to be initialised with the value "0". Moreover, if the object is sent (or is there an option to send it) to the bus (write or read requests) after a download or a device reset from ETS, the marks **(W)** or **(R)** will be shown.

- "**Reboot**" shows the cases where an object is assigned a certain value by the application program after a bus power failure. In case the value of such assignment can be parameterised, √ is shown in column "**P**". Objects showing a hyphen (-) are not assigned a particular value and therefore can be assumed to maintain their previous value after the failure. Moreover, if the object is sent (or is there an option to send it) to the bus (write or read requests) after a bus failure, the marks **(W)** or **(R)** will be shown.

Number	Size	I/O	Flags	Data Type (DPT)	Functional range	1st boot	P	Reboot	P	Name	Function
0	1 Byte	I	C - - W -	DPT_SceneControl	0-63, 128-191	0		-		Scenes (Individual Outputs)	0-63(Run 1-64); 128-191(Learn)
1	1 Byte	I	C - - W -	DPT_SceneControl	0-63, 128-191	-		-		Scenes (Shutter Channels)	0-63(Run 1-64); 128-191(Learn)
2-33	1 Bit	I	C - - W -	DPT_Bool	0/1	0		-		[LF] (1 bit) Data Entry x	Binary Data Entry (0/1)
34-49	1 Byte	I	C - - W -	DPT_Value_1_Ucount	0-255	0		-		[LF] (1 byte) Data Entry x	1 byte Data Entry (0/1) (0-255)
50-65	2 Bytes	I	C - - W -	DPT_Value_Temp	0.00 – 120.00 or 0 - 65535	0		-		[LF] (2 bytes) Data Entry x	2 bytes Data Entry
66-75	1 Bit	O	C T R - -	DPT_Bool	0/1	0		-		[LF] Function 1 RESULT (1 bit)	FUNCTION x Result
76-85	1 Byte	O	C T R - -	DPT_Value_1_Ucount	0-255	0		-		[LF] Function 1 RESULT (1 byte)	FUNCTION x Result
86	2 Bytes	O	C T R - -	DPT_Value_Temp	0.00 – 120.00	0,00		-		[LF] Function 1 RESULT (2 bytes)	FUNCTION x Result
	2 Bytes	O	C T R - -	DPT_Value_2_Ucount	0 – 65535	0		-		[LF] Function 1 RESULT (2 bytes)	FUNCTION x Result
96, 98, 100, 102, 104, 106, 108, 110	1 Bit	I	C - - W -	DPT_Switch	0/1	0		-		[Ox] ON/OFF	N.C. (0=Close Relay; 1=Open)
	1 Bit	I	C - - W -	DPT_Switch	0/1	0		-		[Ox] ON/OFF	N.O. (0=Open Relay; 1=Close)
	1 Bit	I	C - - W -	DPT_Alarm	0/1	0		-		[Cα] Alarm	1=Alarm; 0=No Alarm
	1 Bit	I	C - - W -	DPT_Alarm	0/1	1		-		[Cα] Alarm	0=Alarm; 1=No Alarm
97, 99, 101, 103, 105, 107, 109, 111	1 Bit	I	C - - W -	DPT_Switch	0/1	0		-		[Oy] ON/OFF	N.C. (0=Close Relay; 1=Open)
	1 Bit	I	C - - W -	DPT_Switch	0/1	0		-		[Oy] ON/OFF	N.O. (0=Open Relay; 1=Close)
	1 Bit	I	C - - W -	DPT_Alarm	0/1	1		-		[Cα] Alarm 2	0=Alarm; 1=No Alarm
	1 Bit	I	C - - W -	DPT_Alarm	0/1	0		-		[Cα] Alarm 2	1=Alarm; 0=No Alarm

Number	Size	I/O	Flags	Data Type (DPT)	Functional range	1st boot	P	Reboot	P	Name	Function
112-127	1 Bit	O	C T R - -	DPT_Switch	0/1	0 W	√	- W	√	[Ox] Status	0=Output OFF; 1=Output ON
128, 130, 132, 134,	1 Bit	I	C - - W -	DPT_Trigger	0/1			-		[Cα] Save Position	1=Save Position; 0=No Action
136, 138, 140, 142	1 Bit	I	C - - W -	DPT_Enable	0/1	0		-		[Ox] Lock	1=Lock; 0=Unlock
129, 131, 133, 135,	1 Bit	I	C - - W -	DPT_Trigger	0/1	-		-		[Cα] Save Position 2	1=Save Position; 0=No Action
137, 139, 141, 143	1 Bit	I	C - - W -	DPT_Enable	0/1	0		-		[Oy] Lock	1=Lock; 0=Unlock
144, 146, 148, 150,	1 Bit	I	C - - W -	DPT_UpDown	0/1	-		-		[Cα] Move	0=Up Shutter; 1=Down Shutter
152, 154, 156, 158	1 Bit	I	C - - W -	DPT_Start	0/1	-		-		[Ox] Timer	0=to turn OFF; 1=to turn ON
145, 147, 149, 151,	1 Bit	I	C - - W -	DPT_Start	0/1	-		-		[Oy] Timer	0=to turn OFF; 1=to turn ON
153, 155, 157, 159	1 Bit	I	C - - W -	DPT_UpDown	0/1	-		-		[Cα] Reverse Movement	0=Down Shutter; 1=Up Shutter
160, 162, 164, 166,	1 Bit	I	C - - W -	DPT_Trigger	0/1	-		-		[Cα] Direct Positioning	1=Go to Position; 0=No Action
168, 170, 172, 174	1 Bit	I	C - - W -	DPT_Switch	0/1	-		-		[Ox] Flashing	1=Start Flashing; 0=End Flash.
161, 163, 165, 167,	1 Bit	I	C - - W -	DPT_Trigger	0/1	-		-		[Cα] Direct Positioning 2	1=Go to Position; 0=No Action
169, 171, 173, 175	1 Bit	I	C - - W -	DPT_Switch	0/1	-		-		[Oy] Flashing	1=Start Flashing; 0=End Flash.
	1 Bit	I	C - - W -	DPT_Alarm	0/1	0		-		[Ox] Alarm	1=Alarm; 0=No Alarm
176, 178, 180, 182,	1 Bit	I	C - - W -	DPT_Alarm	0/1	1		-		[Ox] Alarm	0=Alarm; 1=No Alarm
184, 186, 188, 190	1 Bit	I	C - - W -	DPT_Step	0/1	-		-		[Cα] Stop/Step	0=Stop/StepUp; 1=Stop/StepDown
	1 Bit	I	C - - W -	DPT_Step	0/1	-		-		[Cα] Stop	0 or 1 = Stop Shutter
	1 Bit	I	C - - W -	DPT_Alarm	0/1	0		-		[Oy] Alarm	1=Alarm; 0=No Alarm
177, 179, 181, 183,	1 Bit	I	C - - W -	DPT_Alarm	0/1	1		-		[Oy] Alarm	0=Alarm; 1=No Alarm
185, 187, 189, 191	1 Bit	I	C - - W -	DPT_Enable	0/1	0		-		[Cα] Lock	1=Lock; 0=Unlock
192-199	1 Byte	O	C T R - -	DPT_Scaling	0%-100%	0% W	√	- W	√	[Cα] Current Slats Position	0=0%=Open; 255=100%=Closed
200-207	1 Byte	I	C - - W -	DPT_Scaling	0%-100%	-		-		[Cα] Slats Positioning	0=0%=Open; 255=100%=Closed
208-223	1 Bit	I	C - - W -	DPT_Ack	0/1	-		-		[Ox] Unfreeze Alarm	Alarm=0 + Unf.=1 -> End Alarm
224-231	1 Byte	O	C T R - -	DPT_Scaling	0%-100%	0% W	√	- W	√	[Cα] Current Shutter Position	0=0%=Top; 255=100%=Bottom
232-239	1 Byte	I	C - - W -	DPT_Scaling	0%-100%	-		-		[Cα] Shutter Positioning	0=0%=Top; 255=100%=Bottom
240-247	1 Bit	I	C - - W -	DPT_Ack	0/1	-		-		[Cα] Unfreeze Alarm	Alarm=0 + Unf.=1 -> End Alarm
248	1 Bit	-	C T - - -	DPT_Switch	0	0 W		0 W		Reset 0	Voltage Recovery->Sending of 0
249	1 Bit	-	C T - - -	DPT_Switch	1	1 W		1 W		Reset 1	Voltage Recovery->Sending of 1
250	1 Bit	I/O	C - R W -	DPT_Enable	0/1	0	√	0	√	Manual Control Locking	1=Lock; 0=Unlock
	1 Bit	I/O	C - R W -	DPT_Enable	0/1	0	√	0	√	Manual Control Locking	0=Lock; 1=Unlock

Zennio
Passion for KNX innovation

Join and send us your inquiries
about Zennio devices:
http://zennioenglish.zendesk.com

Zennio Avance y Tecnología S.L.
C/ Río Jarama, 132. Nave P-8.11
45007 Toledo (Spain).

Tel. +34 925 232 002.
Fax. +34 925 337 310.
www.zennio.com
*info@*zennio*.com*

KNX CE RoHS