ShutterBOX Drive 4CH

4-Channel Shutter Actuator with Automatic Travel Time Measurement and KNX Secure

ZIOSHD4

Application program version: [1.0]
User manual edition: [1.0]_a

www.zennio.com

USER MANUAL

CONTENTS

1 INTRODUCTION

1.1 SHUTTERBOX DRIVE 4CH

ShutterBOX Drive 4CH from Zennio is a **KNX Secure** specific 4 channel actuator for controlling motorised shutter / blind systems with the possibility of automatically measuring the travel times of their shutter channels.

The most outstanding features are:

- 8 relay outputs, configurable as up to **4 independent shutter channels** (with or without slats).
- **20 customisable, multi-operation logic functions**.
- **2 master light control modules** for an easy, out-of-the-box control of a set of luminaires (or functionally equivalent devices) one of which acts as a general lamp and the others as secondary lamps.
- **Sun position tracking module**.
- **Scene-triggered action control**, with an optional delay in the execution.
- **Manual operation / supervision** of the shutter channels through the on-board pushbuttons and LEDs.
- **Heartbeat** or periodic “still-alive” notification.
- **Relay switches counter**.
- **KNX Security**.

  For detailed information about the functionality and configuration of KNX security, consult the specific user manual “KNX Security”, available in the product section of the Zennio web portal (www.zennio.com).

1.2 START-UP AND POWER LOSS

During the start-up of the device, the Test/Prog. LED will blink in blue colour for a few seconds before the device is ready. External orders will not be executed during this time, but afterwards.

Depending on the configuration, some specific actions will also be performed during the start-up. For example, the integrator can set whether the shutter channels should switch to a particular state and whether the device should send certain objects to the bus after the power recovery. Please consult the next sections of this document for further details.

On the other hand, when a bus power failure takes place, the device will interrupt any pending actions, and will save its state so it can be recovered once the power supply is restored.

For safety reasons, all **shutter channels** will be stopped (i.e., the relays will open) if a power loss takes place.

2 CONFIGURATION

2.1 GENERAL

After importing the corresponding database in ETS and adding the device into the topology of the desired project, the configuration process begins by entering the Parameters tab of the device.

ETS PARAMETERISATION

The only parameterisable screen available by default is “General”. From this screen it is possible to activate/deactivate all the required functionality.

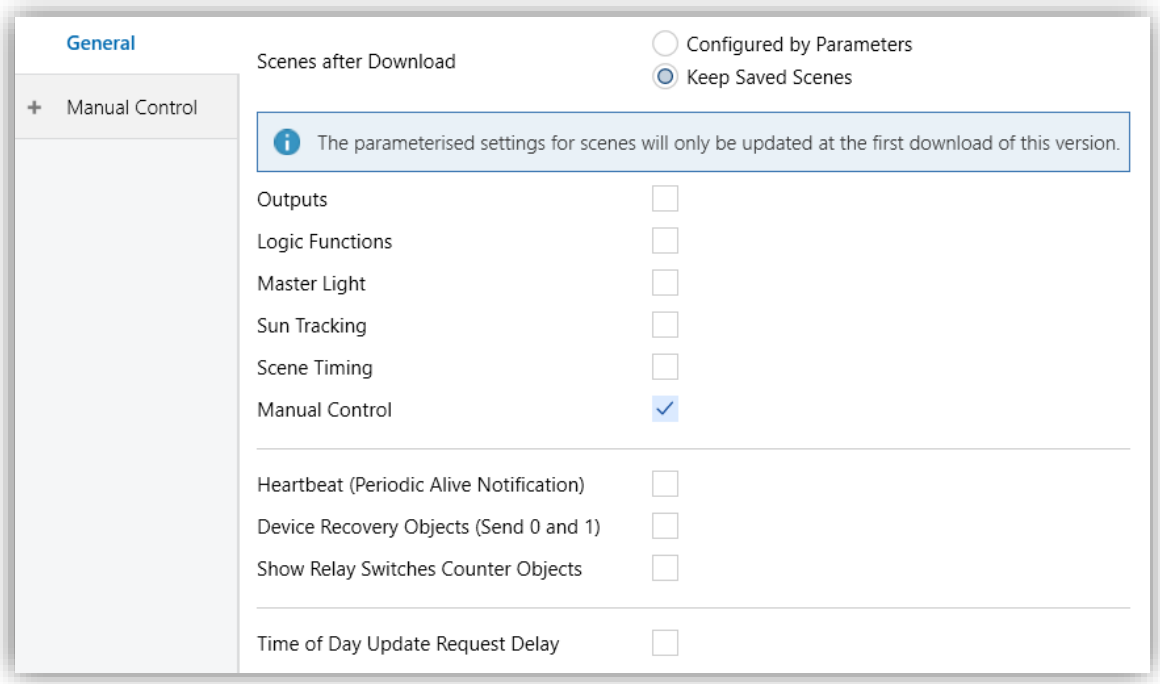

Figure 1. General.

- **Scenes after Download** [*Configured by Parameters* / *Keep Saved Scenes*][1]: allows defining whether the value of the scenes is the configured by parameter or whether the previously saved value is kept after download.

  Note: *if “Keep Saved Scenes” option has been configured, but it is the first download of the device or a different version from the current one, the values configured by parameter will be adopted. If new scenes are added in*

[1] The default values of each parameter will be highlighted in blue in this document, as follows: [*default* / rest of options].

successive downloads, it will be necessary to perform a download by checking the option "Configured by Parameters" to ensure the correct operation of these scenes.

- **Outputs** [*disabled / enabled*]: enables o disables the "Outputs" tab on the left menu. See section 2.2 for more details.

- **Logic Functions** [*disabled / enabled*]: enables o disables the "Logic Functions" tab on the left menu. See section 2.3 for more details.

- **Master Light** [*disabled / enabled*]: enables o disables the "Master Light" tab on the left menu. See section 2.4 for more details.

- **Sun Tracking** [*disabled / enabled*]: enables o disables the "Sun Tracking" tab on the left menu. See section 2.5 for more details.

- **Scene Timing** [*disabled / enabled*]: enables o disables the "Scene Timing" tab on the left menu. See section 2.6 for more details.

- **Manual Control** [*disabled / enabled]*: enables o disables the "Manual Control" tab on the left menu. See section 2.7 for more details.

- **Heartbeat (Periodic Alive Notification)** [*disabled / enabled*]: this parameter lets the integrator incorporate a one-bit object to the project ("**[Heartbeat] Object to Send '1'**") that will be sent periodically with value "1" to notify that the device is still working (*still alive*).

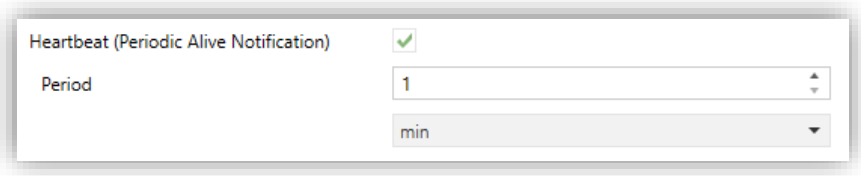

Figure 2. Heartbeat (Periodic Alive Notification).

Note: *the first sending after download or bus failure takes place with a delay of up to 255 seconds, to prevent bus overload. The following sendings match the period set.*

- **Device Recovery Objects (Send 0 and 1)** [*disabled / enabled*]: this parameter lets the integrator activate two new communication objects ("**[Heartbeat] Device Recovery**"), which will be sent to the KNX bus with values "0" and "1" respectively whenever the device begins operation (for example, after a bus

power failure). It is possible to parameterise a certain **delay** [*0…255*] to this sending.

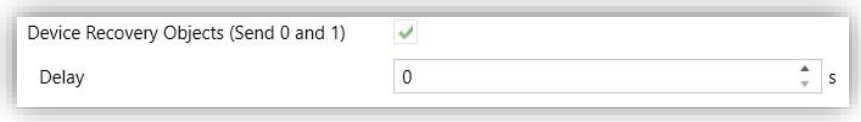

Figure 3. Device Recovery Objects.

Note: *after download or bus failure, the sending takes place with a delay of up to 6,35 seconds plus the parameterised delay, to prevent bus overload.*

- **Show Relay Switches Counter Objects** [*disabled / enabled*]: enables two communication objects to keep track of the number of switches performed by each of the relays ("**[Relay X] Number of Switches**") and the maximum number of switches carried out in a minute ("**[Relay X] Maximum Switches per Minute**").

- **Time of Day Update Request Delay** [*enabled / disabled*]: if this parameter is enabled, a request to read the objects **"[General] Time of Day"** and **"[General] Date"** will be sent with a time delay. This **delay** can be set to [*0…1…255*][*s / min / h*].

2.2 OUTPUTS

ShutterBOX Drive 4CH incorporates **8 relay outputs**, configurable as up to **4 independent shutter channels**, each of which will operate one motorised shutter system.

For detailed information about the functionality and the configuration of the parameters related to the shutter channels, please refer to the specific manual "**Shutters**", available in the ShutterBOX Drive 4CH product section at the Zennio homepage (www.zennio.com).

2.3 LOGIC FUNCTIONS

This module makes it possible to perform numeric and binary operations to incoming values received from the KNX bus, and to send the results through other communication objects specifically enabled for this purpose.

ShutterBOX Drive 4CH can implement **up to 20 different and independent functions**, each of them entirely customisable and consisting in **up to 4 consecutive operations each one**.

The execution of each function can depend on a configurable **condition**, which will be evaluated every time the function is **triggered** through specific, parameterisable communication objects. The result after executing the operations of the function can also be evaluated according to certain **conditions** and afterwards sent (or not) to the KNX bus, which can be done every time the function is executed, periodically or only when the result differs from the last one.

Please refer to the specific "**Logic Functions**" user manual (available in the ShutterBOX Drive 4CH product section at the Zennio homepage, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

2.4 MASTER LIGHT

ShutterBOX Drive 4CH implements **two Master Light** which can be enabled and configured independently.

The Master Light function brings the option to monitor the state of up to 30 light sources (or even more, if the Master Light controls from multiple Zennio devices are linked together) or of any other elements whose state is transmitted through a binary object and, depending on those states, perform a ***master order*** every time a certain trigger signal (again, a binary value) is received through a specific object.

Such master order will consist in:

- A **general switch-off** order, if at least one of the up to thirty status objects is found to be on.
- A **courtesy switch-on** order, if none of the up to thirty status objects is found to be on.

Note that the above switch-off and switch-on orders are not necessarily a binary value being sent to the bus – it is up to the integrator the decision of what to send to the KNX bus in both cases: a shutter order, a thermostat setpoint or mode switch order, a constant value, a scene… Only the trigger object and the thirty status objects are required to be binary (on/off).

The most typical scenario for this Master Light control would be a hotel room with a master pushbutton next to the door. When leaving the room, the guest will have the possibility of pressing on the master pushbutton and make all the lamps turn off together. Afterwards, back on the room and with all the lamps off, pressing on the same master pushbutton will only make a particular lamp turn on (e.g., the closest lamp to the door) – this is the courtesy switch-on.

Besides, it is possible to concatenate two or more Master Light modules by means of a specific communication object which represents the general state of the light sources of each module. Thereby, it is possible to expand the number of light sources by considering the general state of one module as an additional light source for another.

ETS PARAMETERISATION

Once the Master Light function has been enabled, a specific tab will be included in the menu on the left. This new parameter screen contains the following options:

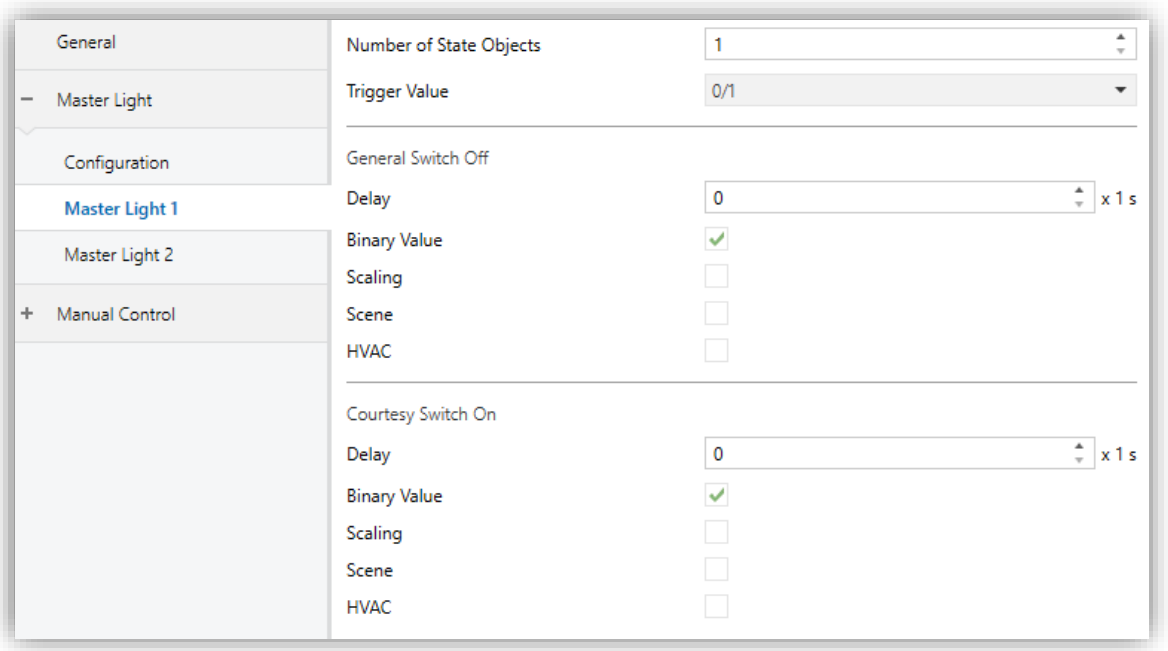

Figure 4. Master Light.

- **Number of State Objects** [*1…30*]: defines the number of 1-bit status objects required. These objects are called "**[ML] Status Object *n***."

  In addition, the general status object ("**[ML] General status**") will always be available in the project topology. It will be sent to the bus with a value of "1" whenever there is at least one of the above state objects with such value. Otherwise (i.e., if none of them has a value of "1"), it will be sent with a value of "0".

- **Trigger Value** [*0 / 1 / 0/1*]: sets the value that will trigger, when received through "**[ML] Trigger**", the master action (the general switch-off or the courtesy switch-on).

- **General Switch-Off**.

  - **Delay** [*0…255*] [*x 1 s*]: defines a certain delay (once the trigger has been received) before the execution of the general switch-off.

  - **Binary Value** [*disabled / enabled*]: if checked, object "**[ML] General Switch-off: Binary Object**" will be enabled, which will send one "0" whenever the general switch-off takes off.

  - **Scaling** [*disabled / enabled*]: if checked, object "**[ML] General Switch-off: Scaling**" will be enabled, which will send a percentage value (configurable in **Value** [*0…100*]) whenever the general switch-off takes off.

  - **Scene** [*disabled / enabled*]: if checked, object "**[ML] General Switch-off: Scene**" will be enabled, which will send a scene run / save order (configurable in **Action** [*Run / Save*] and **Scene Number** [*1…64*]) whenever the general switch-off takes off

  - **HVAC** [*disabled / enabled*]: if checked, object "**[ML] General Switch-off: HVAC mode**" will be enabled, which will send an HVAC thermostat mode value (configurable in **Value** [*Auto / Comfort / Standby / Economy / Building Protection*) whenever the general switch-off takes off.

Note: *the above options are not mutually exclusive; it is possible to send values of different nature together*.

- **Courtesy Switch-On**:

  The parameters available here are entirely analogous to those already mentioned for General Switch-Off. However, in this case the names of the objects start with "**[ML] Courtesy Switch-On (…)**." On the other hand, sending **scene save orders** is not possible for the courtesy switch-on (only orders to play scenes are allowed).

  Note: *object "**[ML] Courtesy Switch-On: Binary Object**" sends the value "1" (when the courtesy switch-on takes place), in contrast to object "**[ML] General Switch-Off: Binary Object**", which sends the value "0" (during the general switch-off, as explained above)*.

2.5 SUN TRACKING

ShutterBOX Drive 4CH incorporates **a sun tracking module**, which calculates solar positioning relative to a specific location and provides data such as solar azimuth and elevation angles and the times when both sunrise and sunset take place.

For detailed information about the functionality and the configuration of the parameters related to this functionality, please refer to the specific manual "**Sun Tracking**", available in the ShutterBOX Drive 4CH product section at the Zennio homepage (www.zennio.com).

2.6 SCENE TIMING

The scene timing allows **imposing delays over the scenes** of the shutter channels. These delays, defined in parameters, are applied on the execution of one or more scenes that may have been configured.

Please bear in mind that, as multiple delayed scenes can be configured for each shutter channel, in case of receiving an order to execute one of them **when a previous temporisation is still pending** in that channel, the channel will interrupt such temporisation will be interrupted and only the delay and the action of the new scene will be executed.

ETS PARAMETERISATION

Prior to setting the **scene timing**, it is necessary to have one or more scenes configured in some of the channels. When entering the Configuration window under Scene Timing, all configured scenes will be listed, together with a few checkboxes to select which of them need to be temporised, as shown in Figure 5.

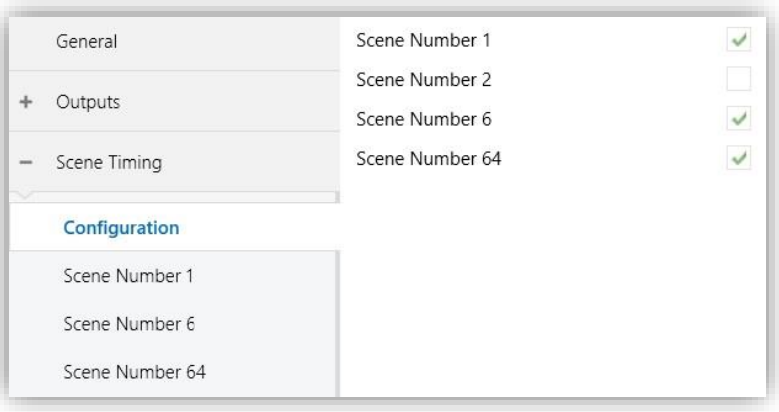

Figure 5. Scene Timing.

Enabling a certain **scene number *n*** brings a new tab with such name to the menu on the left, from which it is possible to configure the temporisation of that scene for each of the channels where it has been configured.

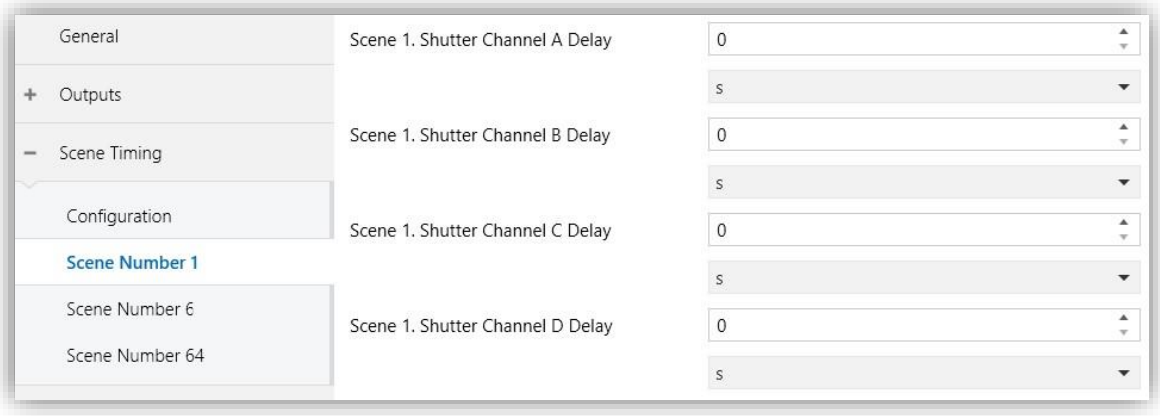

Figure 6. Configuration of Scene Timing.

Therefore, parameter "**Scene m. Shutter Channel Z Delay**" [*0…3600* [*s*] */ 0…1440* [*min*] */ 0…24* [*h*]], defines the delay that will be applied to the action defined in Z for the execution of scene m (where Z may be a specific shutter channel).

Note: *in the configuration of a scene of a shutter channel it is possible to parameterise several scenes with the same scene number. This means that several delay parameters associated with the same output appear in the configuration tab of the delays of that scene. With this parameterisation, the behaviour will be as follows: the*

action and delay of the first scene parameterised with the same scene number will always prevail, where the highest priority scene is 1 (the first in the scene configuration tab) and the lowest priority is the last.

2.7 MANUAL CONTROL

ShutterBOX Drive 4CH allows commanding orders through the pushbuttons on the top of the device to move the shutter up or down. Two specific pushbuttons are provided per channel (i.e., one per relay output).

Manual operation can be done in two different ways, named as **Test On Mode** (for testing purposes during the configuration of the device) and **Test Off Mode** (for a normal use, anytime). Whether both, only one, or none of these modes should be accessible needs to be parameterised in ETS. Moreover, it is possible to enable a specific binary object for locking and unlocking the manual control in runtime.

Notes:

- *The **Test Off mode** will be active (unless it has been disabled by parameter) after a download or a reset with no need of a specific activation – the pushbuttons will respond to user presses from the start.*
- *On the contrary, switching to the **Test On mode** (unless disabled by parameter) needs to be done by long-pressing the Prog/Test button (for at least three seconds), until the LED is no longer red and turns yellow. From that moment, once the button is released, the LED light will remain 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 yellow and then off, once the button is released. This way, the device leaves the Test On mode. Note that it will also leave this mode if a bus power failure takes place or if a manual control lock is sending from KNX bus*.

Test Off Mode

Under the Test Off Mode, the shutter channels can be controlled through both their communication objects and the actual pushbuttons located on the top of the device.

When one of these buttons is pressed, the shutter will behave as if an order had been received through the corresponding communication object and will also send the status objects when required.

This behaviour depends on the length of the button press:

- A **long press** makes the shutter start moving (upwards or downwards, depending on the button being pressed). The LED will light in green until the end of the motion. If the button gets pressed being the shutter already at the top or bottom positions, nothing will happen (the LED will not light).
- A **short press** will make the shutter drive stop (if in motion), as it normally does when a step/stop order is received from the KNX bus. In case of not being the shutter in motion, pressing the button does not cause any action, unless slats/lamellas have been parameterised – in such case, a step movement (up/down, depending on the button pressed) will take place. The status objects will be sent to the bus when corresponding.

  Note: *if **Reverse Wiring** has been enabled (see the specific manual **"Shutters"**), when a button is pressed, the actuation will be performed on the relay corresponding to the opposite button, thus ensuring that the movement performed by the shutter is the same as that indicated by the silk-screen printing on the button.*

If the output is disabled, any button presses on the outputs disabled by parameter will be ignored in Test Off mode.

Regarding the lock, timer, alarm and scene functions, the device will behave under the Test Off mode as usual. Button presses during this mode are entirely analogous to the reception of the corresponding orders from the KNX bus.

Test On Mode

After entering the Test On mode, it will only be possible to control the shutters through the on-board pushbuttons. Orders received through communication objects will be ignored, with independence of the channel they are addressed to.

Pressing the button will make the shutter drive move upward or downward (depending on the button) until the button is released again, thus ignoring the position of the shutter and the parameterised times. The LED will light in green while the button is being hold.

For safety reasons, the device does not allow the activation of the two outputs of a shutter channel at the same time. If the button of one of the outputs is held while the other output is active, the device will first deactivate it and afterwards perform the required action on the output associated to the button pressed.

Note: *after leaving the Test On mode, the status objects will recover the values they had prior to entering Test On. As the device is never aware of the actual position of the shutter (as the shutter drive does not provide any feedback), these values may not show the real position. This can be solved by performing a complete move-up or move-down order, or by calibrating the shutter position in the Test On mode until it matches the status objects*.

As described previously if the device is in Test On mode, any command sent from the KNX bus to the actuator will not affect the channel and no status objects will be sent (only periodically timed objects such as Heartbeat or logic functions will continue to be sent to the bus) while Test ON mode is active. However, in the case of the "Alarm" and "Block" objects, although in Test ON mode the actions received by each object are not taken into account, the evaluation of their status is carried out when exiting this mode, so that any change in the alarm status or blocking of the outputs while Test ON mode is active is taken into account when exiting this mode and is updated with the last status detected.

Important: *the device is delivered from factory with the channel disabled, and with both manual modes (Test Off and Test On) enabled by default*.

ETS PARAMETERISATION

The **manual control** is configured from the “Configuration” tab, under “Manual Control”.

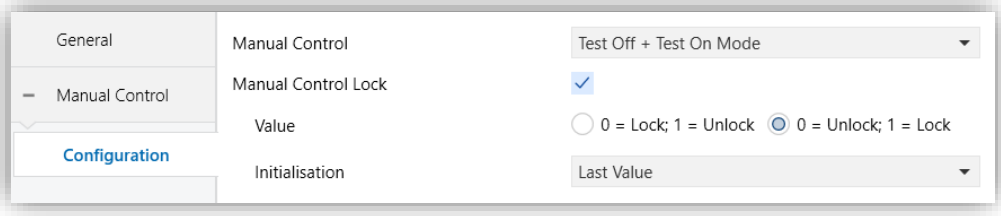

Figure 7. Manual Control.

The only two parameters are:

- **Manual Control** [*Disabled / Only Test Off Mode / Only Test On Mode / Test Off + Test On Mode*]: depending on the selection, the device will permit using the manual control under the Test Off, the Test On, or both modes. Note that, as stated before, using the Test Off mode does not require any special action, while switching to the Test On mode does require long pressing the Prog/Test button.

- **Manual Control Lock** [*disabled / enabled*]: unless the above parameter has been "Disabled", the Lock Manual Control parameter provides an optional procedure for locking the manual control in runtime. When this checkbox is enabled, object "**Manual Control Lock**" turns visible, as well as two more parameters:

  - **Value** [*0 = Lock; 1 = Unlock / 0 = Unlock; 1 = Lock*]: defines whether the manual control lock/unlock should take place respectively upon the reception (through the aforementioned object) of values "0" and "1", or the opposite.

  - **Initialisation** [*Unlocked / Locked / Last Value*]: sets how the lock state of the manual control should remain after the device start-up (after an ETS download or a bus power failure). "Last Value" (default; on the very first start-up, this will be Unlocked.

ANNEX I. 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.

Number	Size	I/O	Flags	Data type (DPT)	Functional Range	Name	Function
1	3 Bytes	I	C - W T U	DPT_TimeOfDay	00:00:00 - 23:59:59	[General] Time of Day	Time of Day External Reference
2	3 Bytes	I	C - W T U	DPT_Date	01/01/1990 - 31/12/2089	[General] Date	Date External Reference
3	1 Bit	O	C R - T -	DPT_Trigger	0/1	[Heartbeat] Object to Send '1'	Sending of '1' Periodically
4	1 Bit	O	C R - T -	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 0
5	1 Bit	O	C R - T -	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 1
6	1 Bit	I	C - W - -	DPT_Enable	0/1	Lock Manual Control	0 = Lock; 1 = Unlock
	1 Bit	I	C - W - -	DPT_Enable	0/1	Lock Manual Control	0 = Unlock; 1 = Lock
7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70	1 Bit	I	C - W - -	DPT_Bool	0/1	[LF] (1-Bit) Data Entry x	Binary Data Entry (0/1)
71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102	1 Byte	I	C - W - -	DPT_Value_1_Ucount	0 - 255	[LF] (1-Byte) Data Entry x	1-Byte Data Entry (0-255)
103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134	2 Bytes	I	C - W - -	DPT_Value_2_Ucount	0 - 65535	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
	2 Bytes	I	C - W - -	DPT_Value_2_Count	-32768 - 32767	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
	2 Bytes	I	C - W - -	9.xxx	-671088.64 - 670433.28	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
135, 136, 137, 138, 139,	4 Bytes	I	C - W - -	DPT_Value_4_Count	-2147483648 -	[LF] (4-Byte) Data Entry x	4-Byte Data Entry

140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150					2147483647		
151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170	1 Bit	O	C R - T -	DPT_Bool	0/1	[LF] Function x - Result	(1-Bit) Boolean
	1 Byte	O	C R - T -	DPT_Value_1_Ucount	0 - 255	[LF] Function x - Result	(1-Byte) Unsigned
	2 Bytes	O	C R - T -	DPT_Value_2_Ucount	0 - 65535	[LF] Function x - Result	(2-Byte) Unsigned
	4 Bytes	O	C R - T -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] Function x - Result	(4-Byte) Signed
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[LF] Function x - Result	(1-Byte) Percentage
	2 Bytes	O	C R - T -	DPT_Value_2_Count	-32768 - 32767	[LF] Function x - Result	(2-Byte) Signed
	2 Bytes	O	C R - T -	9.xxx	-671088.64 - 670433.28	[LF] Function x - Result	(2-Byte) Float
171, 211	1 Bit	I	C - W - -	DPT_Trigger	0/1	[MLx] Trigger	Trigger the Master Light Function
	1 Bit	I	C - W - -	DPT_Ack	0/1	[MLx] Trigger	0 = Nothing; 1 = Trigger the Master Light Function
	1 Bit	I	C - W - -	DPT_Ack	0/1	[MLx] Trigger	1 = Nothing; 0 = Trigger the Master Light Function
172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241	1 Bit	I	C - W - -	DPT_Switch	0/1	[MLx] Status Object x	Binary Status
202, 242	1 Bit	O	C R - T -	DPT_Switch	0/1	[MLx] General Status	Binary Status
203, 243	1 Bit	O	C - - T -	DPT_Switch	0/1	[MLx] General Switch Off: Binary Object	Switch Off Sending
204, 244	1 Byte	O	C - - T -	DPT_Scaling	0% - 100%	[MLx] General Switch Off: Scaling	0-100%
205, 245	1 Byte	O	C - - T -	DPT_SceneControl	0-63; 128-191	[MLx] General Switch Off: Scene	Scene Sending
206, 246	1 Byte	O	C - - T -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[MLx] General Switch Off: HVAC mode	Auto, Comfort, Standby, Economy, Building Protection
207, 247	1 Bit	O	C - - T -	DPT_Switch	0/1	[MLx] Courtesy Switch On: Binary Object	Switch On Sending
208, 248	1 Byte	O	C - - T -	DPT_Scaling	0% - 100%	[MLx] Courtesy Switch On: Scaling	0-100%
209, 249	1 Byte	O	C - - T -	DPT_SceneNumber	0 - 63	[MLx] Courtesy Switch On: Scene	Scene Sending

210, 250	1 Byte	O	C - - T -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[MLx] Courtesy Switch On: HVAC mode	Auto, Comfort, Standby, Economy, Building Protection
251	1 Bit	O	C - - T -	DPT_Ack	0/1	[Sun] Event at Sunrise	Send 0 at Sunrise
	1 Bit	O	C - - T -	DPT_Ack	0/1	[Sun] Event at Sunrise	Send 1 at Sunrise
252	1 Bit	O	C - - T -	DPT_Ack	0/1	[Sun] Event at Sunset	Send 0 at Sunset
	1 Bit	O	C - - T -	DPT_Ack	0/1	[Sun] Event at Sunset	Send 1 at Sunset
253	1 Byte	O	C - - T -	DPT_SceneControl	0-63; 128-191	[Sun] Scenes: Send	0-63 (Run Scene 1-64)
254	1 Byte	O	C - - T -	DPT_Angle		[Sun] Azimuth	Current Azimuth Value [0° ... 360°]
255	2 Bytes	O	C - - T -	DPT_Rotation_Angle		[Sun] Elevation	Current Elevation Value [-90° ... 90°]
256	1 Byte	I	C - W - -	DPT_SceneControl	0-63; 128-191	[Shutter] Scenes	0 - 63 (Execute 1 - 64); 128 - 191 (Save 1 - 64)
257	2 Bytes	I	C - W T U	DPT_Value_Temp	-273.00º - 670433.28º	[Shutter] Outdoor Temperature Input	-30°C ... 60°C
258	1 Byte	I	C - W T U	DPT_Angle		[Shutter] Azimuth	Azimuth External Reference [0° ... 360°]
259	2 Bytes	I	C - W T U	DPT_Rotation_Angle		[Shutter] Elevation	Elevation External Reference [-90° ... 90°]
260, 301, 342, 383	1 Bit	I	C - W - -	DPT_UpDown	0/1	[Cx] Shutter - Move Control	0 = Up; 1 = Down
261, 302, 343, 384	1 Bit	I	C - W - -	DPT_Step	0/1	[Cx] Shutter - Stop/Step Control	0 = Stop/Step Up; 1 = Stop/Step Down
	1 Bit	I	C - W - -	DPT_Trigger	0/1	[Cx] Shutter - Stop Control	0/1 = Stop
262, 303, 344, 385	1 Bit	I	C - W - -	DPT_Trigger	0/1	[Cx] Shutter - Switched Control	0/1 = Up, Down or Stop, Depending on the Last Move
263, 304, 345, 386	1 Bit	I	C - W - -	DPT_Trigger	0/1	[Cx] Shutter - Switched Control Up	0/1 = Up or Stop, Depending on the Last Move
264, 305, 346, 387	1 Bit	I	C - W - -	DPT_Trigger	0/1	[Cx] Shutter - Switched Control Down	0/1 = Down or Stop, Depending on the Last Move
265, 306, 347, 388	1 Bit	I	C - W - -	DPT_Enable	0/1	[Cx] Shutter - Lock	0 = Unlock; 1 = Lock
266, 307, 348, 389	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[Cx] Shutter - Percentage Control	0% = Top; 100% = Bottom
267, 308, 349, 390	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[Cx] Shutter - Percentage Status	0% = Top; 100% = Bottom
268, 309, 350, 391	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[Cx] Shutter - Slats Percentage Control	0% = Open; 100% = Closed
269, 310, 351, 392	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[Cx] Shutter - Slats Percentage Status	0% = Open; 100% = Closed
270, 311, 352, 393	1 Bit	O	C R - T -	DPT_Switch	0/1	[Cx] Shutter - Rising Relay Status	0 = Open; 1 = Closed
271, 312, 353, 394	1 Bit	O	C R - T -	DPT_Switch	0/1	[Cx] Shutter - Lowering Relay Status	0 = Open; 1 = Closed
272, 313, 354, 395	1 Bit	O	C R - T -	DPT_Switch	0/1	[Cx] Shutter - Move Status	0 = Stopped; 1 = Moving

273, 314, 355, 396	1 Bit	O	C R - T -	DPT_UpDown	0/1	[Cx] Shutter - Move Direction Status	0 = Upward; 1 = Downward
274, 315, 356, 397	1 Bit	O	C R - T -	DPT_Switch	0/1	[Cx] Shutter - Totally Up Status	0 = Other Positions; 1 = Up
275, 316, 357, 398	1 Bit	O	C R - T -	DPT_Switch	0/1	[Cx] Shutter - Totally Down Status	0 = Other Positions; 1 = Down
276, 317, 358, 399	1 Bit	I	C - W - -	DPT_Switch	0/1	[Cx] Shutter - Auto: On/Off	0 = On; 1 = Off
	1 Bit	I	C - W - -	DPT_Switch	0/1	[Cx] Shutter - Auto: On/Off	0 = Off; 1 = On
277, 318, 359, 400	1 Bit	O	C R - T -	DPT_Switch	0/1	[Cx] Shutter - Auto: On/Off Status	0 = On; 1 = Off
	1 Bit	O	C R - T -	DPT_Switch	0/1	[Cx] Shutter - Auto: On/Off Status	0 = Off; 1 = On
278, 319, 360, 401	1 Bit	I	C - W - -	DPT_UpDown	0/1	[Cx] Shutter - Auto: Move Control	0 = Up; 1 = Down
279, 320, 361, 402	1 Bit	I	C - W - -	DPT_Step	0/1	[Cx] Shutter - Auto: Stop/Step Control	0 = Stop/Step Up; 1 = Stop/Step Down
	1 Bit	I	C - W - -	DPT_Trigger	0/1	[Cx] Shutter - Auto: Stop Control	0/1 = Stop
280, 321, 362, 403	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[Cx] Shutter - Auto: Percentage Control	0% = Top; 100% = Bottom
281, 322, 363, 404	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[Cx] Shutter - Auto: Slats Percentage Control	0% = Open; 100% = Closed
282, 323, 364, 405	1 Bit	I	C - W T U	DPT_Scene_AB	0/1	[Cx] Shutter - Sunshine/Shadow Input	0 = Sunshine; 1 = Shadow
	1 Bit	I	C - W T U	DPT_Scene_AB	0/1	[Cx] Shutter - Sunshine/Shadow Input	0 = Shadow; 1 = Sunshine
283, 324, 365, 406	2 Bytes	I	C - W T U	DPT_Value_Lux		[Cx] Shutter - Sunshine/Shadow Input	1 Lux ... 100.000 Lux
284, 325, 366, 407	1 Bit	I	C - W T U	DPT_Heat_Cool	0/1	[Cx] Shutter - Cooling/Heating	0 = Cooling; 1 = Heating
	1 Bit	I	C - W T U	DPT_Heat_Cool	0/1	[Cx] Shutter - Cooling/Heating	0 = Heating; 1 = Cooling
285, 326, 367, 408	1 Bit	I	C - W T U	DPT_Occupancy	0/1	[Cx] Shutter - Presence/No Presence	0 = No Presence; 1 = Presence
	1 Bit	I	C - W T U	DPT_Occupancy	0/1	[Cx] Shutter - Presence/No Presence	0 = Presence; 1 = No Presence
286, 287, 288, 289, 290, 291, 327, 328, 329, 330, 331, 332, 368, 369, 370, 371, 372, 373, 409, 410, 411, 412, 413, 414	1 Bit	I	C - W - -	DPT_Alarm	0/1	[Cx] Shutter - x	0 = No Alarm; 1 = Alarm
	1 Bit	I	C - W - -	DPT_Alarm	0/1	[Cx] Shutter - x	0 = Alarm; 1 = No Alarm
292, 333, 374, 415	1 Bit	I	C - W - -	DPT_Ack	0/1	[Cx] Shutter - Unfreeze Alarm	Alarm1 = Alarm2 = ... = Alarm6 = No Alarm + Unfreeze (1) => End Alarm
293, 334, 375, 416	1 Bit	O	C R - T -	DPT_Alarm	0/1	[Cx] Shutter - General Alarm Status	0 = No Alarm; 1 = Alarm
	1 Bit	O	C R - T -	DPT_Alarm	0/1	[Cx] Shutter - General Alarm Status	0 = Alarm; 1 = No Alarm
294, 335, 376, 417	1 Bit	I	C - W - -	DPT_Scene_AB	0/1	[Cx] Shutter - Move Control (Reversed)	0 = Down; 1 = Up
295, 336, 377, 418	1 Bit	I	C - W - -	DPT_Ack	0/1	[Cx] Shutter - Direct Positioning 1	0 = No Action; 1 = Go to Position
296, 337, 378, 419	1 Bit	I	C - W - -	DPT_Ack	0/1	[Cx] Shutter - Direct Positioning 2	0 = No Action; 1 = Go to Position
297, 338, 379, 420	1 Bit	I	C - W - -	DPT_Ack	0/1	[Cx] Shutter - Direct Positioning 1 (Save)	0 = No Action; 1 = Save Current Position
298, 339, 380, 421	1 Bit	I	C - W - -	DPT_Ack	0/1	[Cx] Shutter - Direct Positioning 2	0 = No Action; 1 = Save Current

						(Save)	Position
299, 340, 381, 422	1 Bit	O	**C R - T -**	DPT_BinaryValue	0/1	[Cx] Shutter - External Contact - Stop Movement	0 = Open Relay; 1 = Close Relay
300, 341, 382, 423	1 Bit	I	**C - W - -**	DPT_Start	0/1	[Cx] Shutter - Start/Stop Rise and Fall Times Measurement	0 = Stop; 1 = Start
	1 Bit	I	**C - W - -**	DPT_Start	0/1	[Cx] Shutter - Start/Stop Rise and Fall Times Measurement	0 = Start; 1 = Stop
424, 426, 428, 430, 432, 434, 436, 438	4 Bytes	O	**C R - T -**	DPT_Value_4_Ucount	0 - 4294967295	[Relay x] Number of Switches	Number of Switches
425, 427, 429, 431, 433, 435, 437, 439	2 Bytes	O	**C R - T -**	DPT_Value_2_Ucount	0 - 65535	[Relay x] Maximum Switches per Minute	Maximum Switches per Minute

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