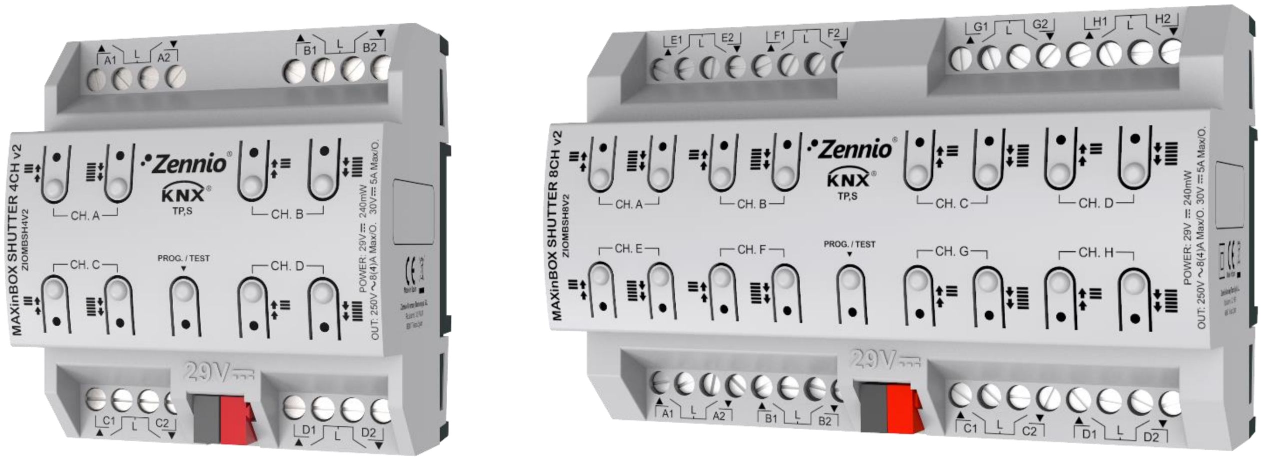


MAXinBOX SHUTTER 4CH / 8CH v2

4-Channel / 8-Channel Shutter Actuator

ZIOMBSH4V2
ZIOMBSH8V2

Application program version: [1.2]
User manual edition: [1.2]_a

www.zennio.com

USER MANUAL

CONTENTS

1 INTRODUCTION

1.1 MAXinBOX SHUTTER 4CH / 8CH v2

MAXinBOX SHUTTER 4CH v2 and **MAXinBOX SHUTTER 8CH v2** from Zennio are KNX specific actuators (of 4 or 8 channels, respectively) for controlling motorised shutter / blind systems.

The most outstanding features are:

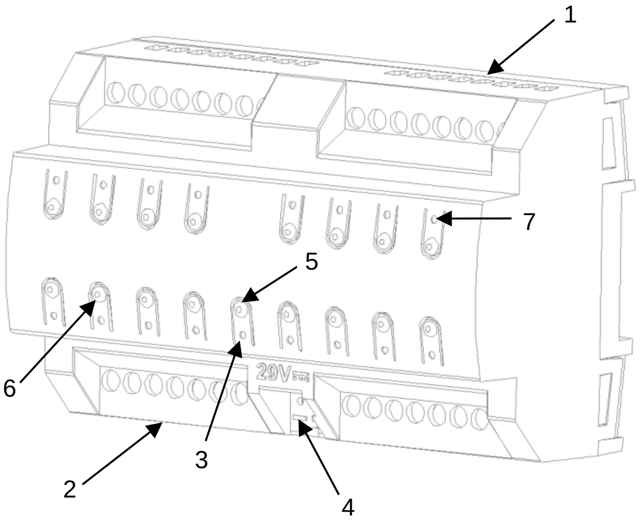
- **8 / 16 relay outputs**, configurable as up to 4 / 8 independent shutter channels (with or without slats).
- **20** customisable, multi-operation **logic functions**.
- **Scene-triggered action control**, with an optional delay in the execution.
- **Manual operation / supervision** of the shutter channels through the on-board pushbuttons and LEDs.
- **Heartbeat** or periodic “still-alive” notification.
- **Relay Switches Counter**.

1.2 INSTALLATION

MAXinBOX SHUTTER 4CH / 8CH v2 connects to the KNX bus through the on-board KNX connector.

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

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



1. Upper Outputs.
2. Lower Outputs.
3. Prog./Test LED.
4. KNX Bus Connector.
5. Prog./Test Pushbutton.
6. Manual Control Pushbutton.
7. Output Status LED.

Figure 1. MAXinBOX SHUTTER 8CH v2

Note: *the above figure is entirely analogous for MAXinBOX SHUTTER 4CH v2*.

The main elements of the device are described next.

- **Test/Prog. Pushbutton (5)**: a short press on this button sets the device 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, the device will enter into* ***safe mode****. In such case, the LED will blink in red every 0.5 seconds.*

- **Outputs (1 and 2)**: output ports for the insertion of the stripped cables of the systems being controlled by the actuator (see section 2.2). Please secure the connection by means of the on-board screws.

- **Manual control pushbuttons (6)**: pushbuttons for a direct control of the shutter channels during the set-up process. See section 2.5.

To get detailed information about the technical features of this device, as well as on the installation process and on security procedures, please refer to the corresponding **Datasheet**, bundled with the original packaging of the device and also available at www.zennio.com.

1.3 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.

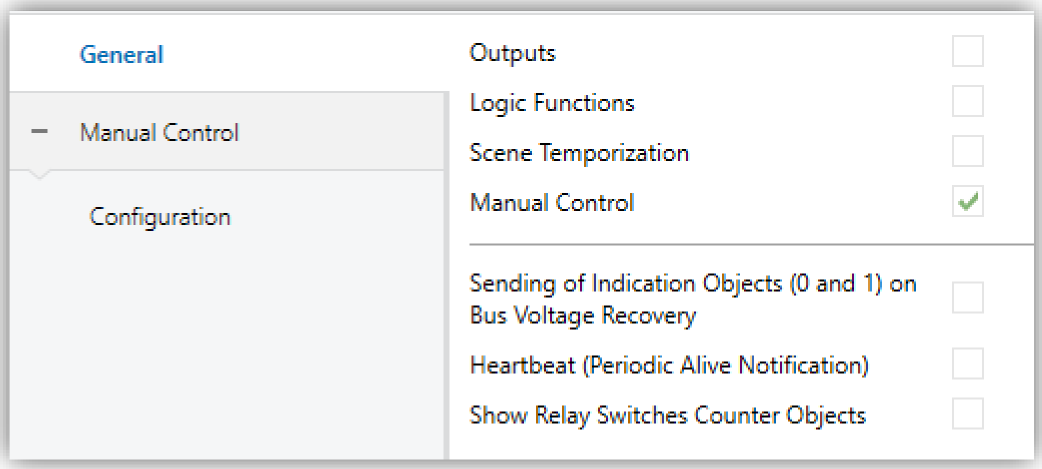
2 CONFIGURATION

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.



General
− Manual Control
Configuration

Outputs □
Logic Functions □
Scene Temporization □
Manual Control ☑

Sending of Indication Objects (0 and 1) on Bus Voltage Recovery □
Heartbeat (Periodic Alive Notification) □
Show Relay Switches Counter Objects □

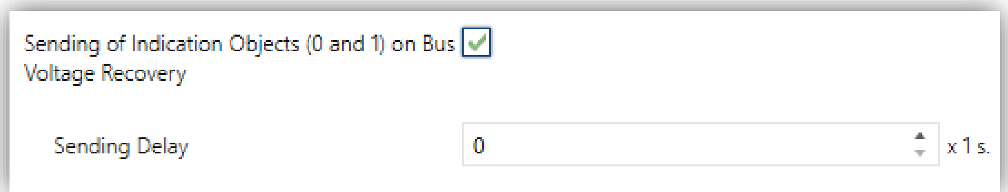
Figure 2. General screen

- **Outputs** [disabled/enabled][1]: 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.
- **Scene Temporization** [disabled/enabled]: enables o disables the "Scene Temporization" tab on the left menu. See section 2.4 for more details.

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

- **Manual Control** [*disabled/enabled*]: enables o disables the “Manual Control” tab on the left menu. See section 2.5 for more details.

- **Sending of Indication Objects (0 and 1) on Bus Voltage Recovery** [*disabled/enabled*]: this parameter lets the integrator activate two new communication objects (“**Reset 0**” and “**Reset 1**”), 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.

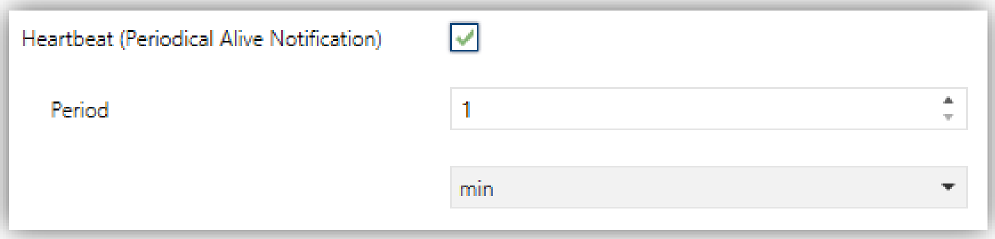


Sending of Indication Objects (0 and 1) on Bus Voltage Recovery ☑

Sending Delay 0 x 1 s.

Figure 3. Sending of Indication objects on bus voltage recovery.

- **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*).



Heartbeat (Periodical Alive Notification) ☑

Period 1

min

Figure 4. Heartbeat (Periodical 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.*

- **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**").

2.2 OUTPUTS

MAXinBOX SHUTTER 4CH / 8CH v2 incorporates **8 or 16 relay outputs**, respectively, configurable as up to **4 or 8 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 MAXinBOX SHUTTER 4CH / 8CH v2 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.

MAXinBOX SHUTTER 4CH / 8CH v2 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 in MAXinBOX SHUTTER**” user manual (available in the MAXinBOX SHUTTER 4CH / 8CH v2 product section at the Zennio homepage, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

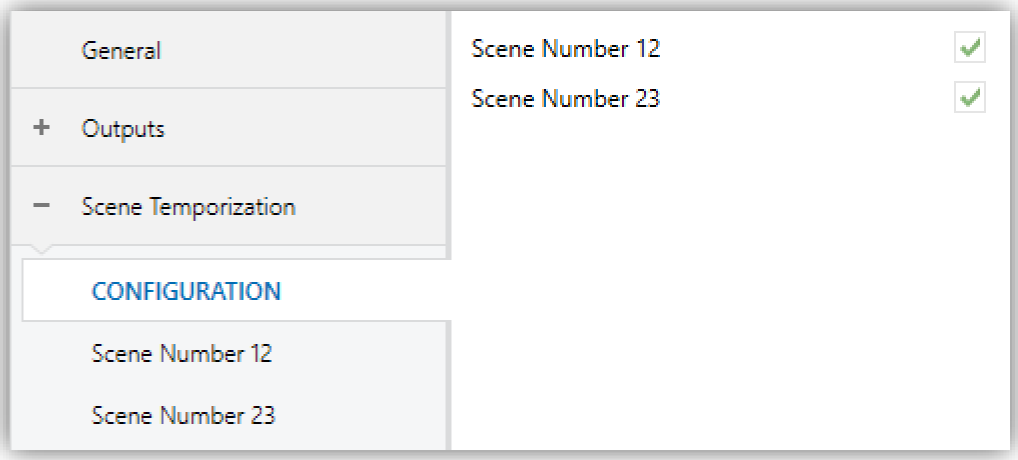
2.4 SCENE TEMPORISATION

The scene temporisation 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

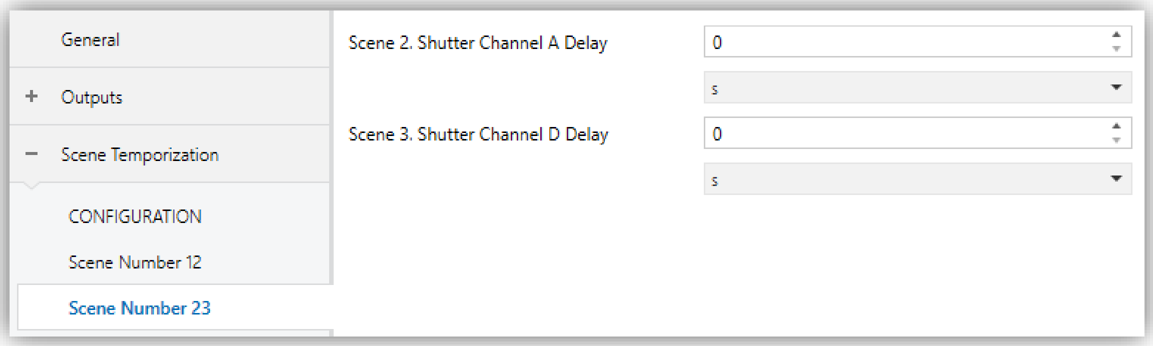
Prior to setting the **scene temporisation**, it is necessary to have one or more scenes configured in some of the channels. When entering the Configuration window under Scene Temporization, all configured scenes will be listed, together with a few checkboxes to select which of them need to be temporised,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



Scene Number 12 ☑
Scene Number 23 ☑

Figure 5. Scene Temporization

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.



Scene 2. Shutter Channel A Delay: 0 s

Scene 3. Shutter Channel D Delay: 0 s

Figure 6. Configuration of Scene Temporization

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 parameterize 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 parameterization, the behavior will be as follows: the action and delay of the first scene parameterized 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.*

2.5 MANUAL CONTROL

MAXinBOX SHUTTER 4CH / 8CH v2 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.

Note:

- *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.

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*.

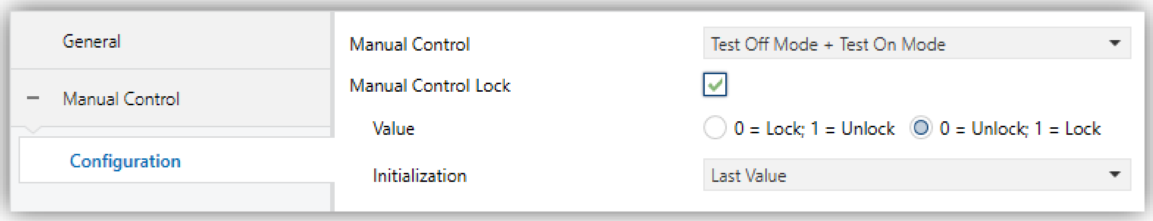
As described previously if the device is in Test On mode, any command sent from the KNX bus to the actuator will not affect the channel and no status objects will be sent (only periodically timed objects such as Heartbeat or logic functions will continue to be sent to the bus) while Test ON mode is active. 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.

The only two parameters are:



Manual Control: Test Off Mode + Test On Mode

Manual Control Lock: ☑

Value: ○ 0 = Lock; 1 = Unlock ● 0 = Unlock; 1 = Lock

Initialization: Last Value

Figure 7. Manual Control

- **Manual Control** [*Disabled / Only Test Off Mode / Only Test On Mode / Test Off Mode + 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** [*enabled/disabled*]: 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.

- **Initialization** [*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.

Note: some of the numbers in the first column are only applicable to MAXinBOX SHUTTER 8CH v2.

Number	Size	I/O	Flags	Data type (DPT)	Functional Range	Name	Function
1	1 Bit		C T - - -	DPT_Trigger	0/1	Reset 0	Voltage Recovery -> Sending of 0
2	1 Bit		C T - - -	DPT_Trigger	0/1	Reset 1	Voltage Recovery -> Sending of 1
3	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
4	1 Bit		C T - - -	DPT_Trigger	0/1	[Heartbeat] Object to Send '1'	Sending of '1' Periodically
5, 16, 27, 38, 49, 60, 71, 82, 93, 104, 115, 126, 137, 148, 159, 170, 181, 192, 203, 214, 225, 236, 247, 258	1 Byte	I	C - - W -	DPT_SceneControl	0-63; 128-191	[Ox] Scenes	0 – 63 (Execute 1 – 64); 128 – 191 (Save 1 – 64)
6, 17, 28, 39, 50, 61, 72, 83, 94, 105, 116, 127, 138, 149, 160, 171, 182, 193, 204, 215, 226, 237, 248, 259	1 Bit	I	C - - W -	DPT_BinaryValue	0/1	[Ox] On/Off	N.O. (0=Open Relay; 1=Close Relay)
	1 Bit	I	C - - W -	DPT_BinaryValue	0/1	[Ox] On/Off	N.C. (0=Close Relay; 1= Open Relay)
7, 18, 29, 40, 51, 62, 73, 84, 95, 106, 117, 128, 139, 150, 161, 172, 183, 194, 205, 216, 227, 238, 249, 260	1 Bit	O	C T R - -	DPT_BinaryValue	0/1	[Ox] On/Off (Status)	0=Output Off; 1=Output On
8, 19, 30, 41, 52, 63, 74, 85, 96, 107, 118, 129, 140, 151, 162, 173, 184, 195, 206, 217, 228, 239, 250, 261	1 Bit	I	C - - W -	DPT_Enable	0/1	[Ox] Lock	0=Unlock; 1=Lock
9, 20, 31, 42, 53, 64, 75, 86, 97, 108, 119, 130, 141, 152, 163, 174, 185, 196, 207, 218, 229, 240, 251, 262	1 Bit	I	C - - W -	DPT_Start	0/1	[Ox] Timer	0=Switch Off; 1=Switch On
10, 21, 32, 43, 54, 65, 76, 87, 98, 109, 120, 131, 142, 153, 164, 175, 186, 197, 208, 219, 230, 241, 252, 263	1 Bit	I	C - - W -	DPT_Start	0/1	[Ox] Flashing	0=Stop; 1=Start

11, 22, 33, 44, 55, 66, 77, 88, 99, 110, 121, 132, 143, 154, 165, 176, 187, 198, 209, 220, 231, 242, 253, 264	1 Bit	I	C - - W -	DPT_Alarm	0/1	[Ox] Alarm	0=Normal; 1=Alarm
	1 Bit	I	C - - W -	DPT_Alarm	0/1	[Ox] Alarm	0=Alarm; 1=Normal
12, 23, 34, 45, 56, 67, 78, 89, 100, 111, 122, 133, 144, 155, 166, 177, 188, 199, 210, 221, 232, 243, 254, 265	1 Bit	I	C - - W -	DPT_Ack	0/1	[Ox] Unfreeze Alarm	Alarm=0 + Unfreeze=1 => End Alarm
13, 24, 35, 46, 57, 68, 79, 90, 101, 112, 123, 134, 145, 156, 167, 178, 189, 200, 211, 222, 233, 244, 255, 266	1 Bit	O	C T R - -	DPT_State	0/1	[Ox] Warning Time (Status)	0=Normal; 1=Warning
14, 25, 36, 47, 58, 69, 80, 91, 102, 113, 124, 135, 146, 157, 168, 179, 190, 201, 212, 223, 234, 245, 256, 267	4 Bytes	I/O	C T R W -	DPT_LongDeltaTimeSec	-2147483648, 2147483647	[Ox] Operating Time (s)	Time in Seconds
15, 26, 37, 48, 59, 70, 81, 92, 103, 114, 125, 136, 147, 158, 169, 180, 191, 202, 213, 224, 235, 246, 257, 268	2 Bytes	I/O	C T R W -	DPT_TimePeriodHrs	0 - 65535	[Ox] Operating Time (h)	Time in Hours
269	1 Byte	I	C - - W -	DPT_SceneControl	0-63; 128-191	[Shutter] Scenes	0 - 63 (Execute 1 - 64); 128 - 191 (Save 1 - 64)
270, 298, 326, 354, 382, 410, 438, 466, 494, 522, 550, 578	1 Bit	I	C - - W -	DPT_UpDown	0/1	[Cx] Move	0=Raise; 1=Lower
271, 299, 327, 355, 383, 411, 439, 467, 495, 523, 551, 579	1 Bit	I	C - - W -	DPT_Step	0/1	[Cx] Stop/Step	0=Stop/StepUp; 1=Stop/StepDown
	1 Bit	I	C - - W -	DPT_Trigger	0/1	[Cx] Stop	0=Stop; 1=Stop
272, 300, 328, 356, 384, 412, 440, 468, 496, 524, 552, 580	1 Bit	I	C - - W -	DPT_Enable	0/1	[Cx] Lock	0=Unlock; 1=Lock
273, 301, 329, 357, 385, 413, 441, 469, 497, 525, 553, 581	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Cx] Shutter Positioning	0%=Top; 100%=Bottom
274, 302, 330, 358, 386, 414, 442, 470, 498, 526, 554, 582	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[Cx] Shutter Position (Status)	0%=Top; 100%=Bottom
275, 303, 331, 359, 387, 415, 443, 471, 499, 527, 555, 583	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Cx] Slats Positioning	0%=Open; 100%=Closed
276, 304, 332, 360, 388, 416, 444, 472, 500, 528, 556, 584	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[Cx] Slats Position (Status)	0%=Open; 100%=Closed
277, 305, 333, 361, 389, 417, 445, 473, 501, 529, 557, 585	1 Bit	O	C T R - -	DPT_Switch	0/1	[Cx] Rising Relay (Status)	0=Open; 1=Closed
278, 306, 334, 362, 390, 418, 446, 474, 502, 530, 558, 586	1 Bit	O	C T R - -	DPT_Switch	0/1	[Cx] Lowering Relay (Status)	0=Open; 1=Closed
279, 307, 335, 363, 391, 419, 447, 475, 503, 531, 559, 587	1 Bit	O	C T R - -	DPT_Switch	0/1	[Cx] Movement (Status)	0=Stopped; 1=Moving
280, 308, 336, 364, 392, 420,	1 Bit	O	C T R - -	DPT_UpDown	0/1	[Cx] Movement Direction	0=Upward; 1=Downward

448, 476, 504, 532, 560, 588						(Status)	
281, 309, 337, 365, 393, 421, 449, 477, 505, 533, 561, 589	1 Bit	I	C - - W -	DPT_Switch	0/1	[Cx] Auto: On/Off	0=On; 1=Off
	1 Bit	I	C - - W -	DPT_Switch	0/1	[Cx] Auto: On/Off	0=Off; 1=On
282, 310, 338, 366, 394, 422, 450, 478, 506, 534, 562, 590	1 Bit	O	C T R - -	DPT_Switch	0/1	[Cx] Auto: On/Off (Status)	0=On; 1=Off
	1 Bit	O	C T R - -	DPT_Switch	0/1	[Cx] Auto: On/Off (Status)	0=Off; 1=On
283, 311, 339, 367, 395, 423, 451, 479, 507, 535, 563, 591	1 Bit	I	C - - W -	DPT_UpDown	0/1	[Cx] Auto: Move	0=Raise; 1=Lower
284, 312, 340, 368, 396, 424, 452, 480, 508, 536, 564, 592	1 Bit	I	C - - W -	DPT_Step	0/1	[Cx] Auto: Stop/Step	0=Stop/StepUp; 1=Stop/StepDown
	1 Bit	I	C - - W -	DPT_Step	0/1	[Cx] Auto: Stop	0=Stop; 1=Stop
285, 313, 341, 369, 397, 425, 453, 481, 509, 537, 565, 593	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Cx] Auto: Shutter Positioning	0%=Top; 100%=Bottom
286, 314, 342, 370, 398, 426, 454, 482, 510, 538, 566, 594	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Cx] Auto: Slats Positioning	0%=Open; 100%=Closed
287, 315, 343, 371, 399, 427, 455, 483, 511, 539, 567, 595	1 Bit	I	C T - W U	DPT_Scene_AB	0/1	[Cx] Sunshine/Shadow	0=Sunshine; 1=Shadow
	1 Bit	I	C T - W U	DPT_Scene_AB	0/1	[Cx] Sunshine/Shadow	0=Shadow; 1=Sunshine
288, 316, 344, 372, 400, 428, 456, 484, 512, 540, 568, 596	1 Bit	I	C T - W U	DPT_Heat_Cool	0/1	[Cx] Cooling/Heating	0=Heating; 1=Cooling
	1 Bit	I	C T - W U	DPT_Heat_Cool	0/1	[Cx] Cooling/Heating	0=Cooling; 1=Heating
289, 317, 345, 373, 401, 429, 457, 485, 513, 541, 569, 597	1 Bit	I	C T - W U	DPT_Occupancy	0/1	[Cx] Presence/No Presence	0=Presence; 1=No Presence
	1 Bit	I	C T - W U	DPT_Occupancy	0/1	[Cx] Presence/No Presence	0=No Presence; 1=Presence
290, 318, 346, 374, 402, 430, 458, 486, 514, 542, 570, 598	1 Bit	I	C - - W -	DPT_Alarm	0/1	[Cx] Alarm 1	0=No Alarm; 1=Alarm
	1 Bit	I	C - - W -	DPT_Alarm	0/1	[Cx] Alarm 1	0=Alarm; 1=No Alarm
291, 319, 347, 375, 403, 431, 459, 487, 515, 543, 571, 599	1 Bit	I	C - - W -	DPT_Alarm	0/1	[Cx] Alarm 2	0=No Alarm; 1=Alarm
	1 Bit	I	C - - W -	DPT_Alarm	0/1	[Cx] Alarm 2	0=Alarm; 1=No Alarm
292, 320, 348, 376, 404, 432, 460, 488, 516, 544, 572, 600	1 Bit	I	C - - W -	DPT_Ack	0/1	[Cx] Unfreeze Alarm	Alarm1=Alarm2=No Alarm + Unfreeze (1) => End Alarm
293, 321, 349, 377, 405, 433, 461, 489, 517, 545, 573, 601	1 Bit	I	C - - W -	DPT_Scene_AB	0/1	[Cx] Move (Reversed)	0=Lower; 1=Raise
294, 322, 350, 378, 406, 434, 462, 490, 518, 546, 574, 602	1 Bit	I	C - - W -	DPT_Ack	0/1	[Cx] Direct Positioning 1	0=No Action; 1=Go to Position
295, 323, 351, 379, 407, 435, 463, 491, 519, 547, 575, 603	1 Bit	I	C - - W -	DPT_Ack	0/1	[Cx] Direct Positioning 2	0=No Action; 1=Go to Position
296, 324, 352, 380, 408, 436, 464, 492, 520, 548, 576, 604	1 Bit	I	C - - W -	DPT_Ack	0/1	[Cx] Direct Positioning 1 (Save)	0=No Action; 1=Save Current Position
297, 325, 353, 381, 409, 437, 465, 493, 521, 549, 577, 605	1 Bit	I	C - - W -	DPT_Ack	0/1	[Cx] Direct Positioning 2 (Save)	0=No Action; 1=Save Current Position
606	1 Byte	I	C - - W U	DPT_SceneControl	0-63; 128-191	[Fan Coil] Scenes	0 - 63 (Execute 1 - 64); 128 - 191 (Save 1 - 64)
607, 640, 673, 706, 739, 772	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] On/Off	0 = Off; 1 = On
608, 641, 674, 707, 740, 773	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] On/Off (Status)	0 = Off; 1 = On
609, 642, 675, 708, 741, 774	1 Bit	I	C - - W U	DPT_Heat_Cool	0/1	[FCx] Mode	0 = Cool; 1 = Heat

610, 643, 676, 709, 742, 775	1 Bit	O	C T R - -	DPT_Heat_Cool	0/1	[FCx] Mode (Status)	0 = Cool; 1 = Heat
611, 644, 677, 710, 743, 776	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] Fan: Manual/Automatic	0 = Automatic; 1 = Manual
	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] Fan: Manual/Automatic	0 = Manual; 1 = Automatic
612, 645, 678, 711, 744, 777	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Fan: Manual/Automatic (Status)	0 = Automatic; 1 = Manual
	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Fan: Manual/Automatic (Status)	0 = Manual; 1 = Automatic
613, 646, 679, 712, 745, 778	1 Bit	I	C - - W U	DPT_Step	0/1	[FCx] Manual Fan: Step Control	0 = Down; 1 = Up
614, 647, 680, 713, 746, 779	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] Manual Fan: Speed 0	0 = Off; 1 = On
615, 648, 681, 714, 747, 780	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] Manual Fan: Speed 1	0 = Off; 1 = On
616, 649, 682, 715, 748, 781	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] Manual Fan: Speed 2	0 = Off; 1 = On
617, 650, 683, 716, 749, 782	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] Manual Fan: Speed 3	0 = Off; 1 = On
618, 651, 684, 717, 750, 783	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Fan: Speed 0 (Status)	0 = Off; 1 = On
619, 652, 685, 718, 751, 784	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Fan: Speed 1 (Status)	0 = Off; 1 = On
620, 653, 686, 719, 752, 785	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Fan: Speed 2 (Status)	0 = Off; 1 = On
621, 654, 687, 720, 753, 786	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Fan: Speed 3 (Status)	0 = Off; 1 = On
622, 655, 688, 721, 754, 787	1 Byte	I	C - - W U	DPT_Value_1_Ucount	0 - 255	[FCx] Manual Fan: Enumeration Control	S0 = 0; S1 = 1; S2 = 2; S3 = 3
	1 Byte	I	C - - W U	DPT_Value_1_Ucount	0 - 255	[FCx] Manual Fan: Enumeration Control	S0 = 0; S1 = 1; S2 = 2
	1 Byte	I	C - - W U	DPT_Value_1_Ucount	0 - 255	[FCx] Manual Fan: Enumeration Control	S0 = 0; S1 = 1
623, 656, 689, 722, 755, 788	1 Byte	O	C T R - -	DPT_Value_1_Ucount	0 - 255	[FCx] Fan: Speed Enumeration (Status)	S0 = 0; S1 = 1; S2 = 2; S3 = 3
	1 Byte	O	C T R - -	DPT_Value_1_Ucount	0 - 255	[FCx] Fan: Speed Enumeration (Status)	S0 = 0; S1 = 1; S2 = 2
	1 Byte	O	C T R - -	DPT_Value_1_Ucount	0 - 255	[FCx] Fan: Speed Enumeration (Status)	S0 = 0; S1 = 1
624, 657, 690, 723, 756, 789	1 Byte	I	C - - W U	DPT_Scaling	0% - 100%	[FCx] Manual Fan: Percentage Control	S0 = 0%; S1 = 0,4-33,3%; S2 = 33,7-66,7%; S3 = 67,1-100%
	1 Byte	I	C - - W U	DPT_Scaling	0% - 100%	[FCx] Manual Fan: Percentage Control	S0 = 0%; S1 = 1-50%; S2 = 51-100%
	1 Byte	I	C - - W U	DPT_Scaling	0% - 100%	[FCx] Manual Fan: Percentage Control	S0 = 0%; S1 = 1-100%
625, 658, 691, 724, 757, 790	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[FCx] Fan: Speed Percentage (Status)	S0 = 0%; S1 = 33,3%; S2 = 66,6%; S3 = 100%
	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[FCx] Fan: Speed Percentage (Status)	S0 = 0%; S1 = 1-50%; S2 = 51-100%
	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[FCx] Fan: Speed Percentage (Status)	S0 = 0%; S1 = 1-100%
626, 659, 692, 725, 758, 791	1 Byte	I	C - - W U	DPT_Scaling	0% - 100%	[FCx] Cooling Fan: Continuous	0 - 100%

						Control	
	1 Byte	I	C - - W U	DPT_Scaling	0% - 100%	[FCx] Cooling Valve: PI Control (Continuous)	0 - 100%
627, 660, 693, 726, 759, 792	1 Byte	I	C - - W U	DPT_Scaling	0% - 100%	[FCx] Heating Fan: Continuous Control	0 - 100%
	1 Byte	I	C - - W U	DPT_Scaling	0% - 100%	[FCx] Heating Valve: PI Control (Continuous)	0 - 100%
628, 661, 694, 727, 760, 793	1 Bit	I	C - - W U	DPT_OpenClose	0/1	[FCx] Cooling Valve: Control Variable (1 bit)	0 = Open Valve; 1 = Close Valve
	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] Cooling Valve: Control Variable (1 bit)	0 = Close Valve; 1 = Open Valve
629, 662, 695, 728, 761, 794	1 Bit	I	C - - W U	DPT_OpenClose	0/1	[FCx] Heating Valve: Control Variable (1 bit)	0 = Open Valve; 1 = Close Valve
	1 Bit	I	C - - W U	DPT_Switch	0/1	[FCx] Heating Valve: Control Variable (1 bit)	0 = Close Valve; 1 = Open Valve
630, 663, 696, 729, 762, 795	1 Bit	O	C T R - -	DPT_OpenClose	0/1	[FCx] Cooling Valve (Status)	0 = Open; 1 = Closed
	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Cooling Valve (Status)	0 = Closed; 1 = Open
	1 Bit	O	C T R - -	DPT_OpenClose	0/1	[FCx] Valve (Status)	0 = Open; 1 = Closed
	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Valve (Status)	0 = Closed; 1 = Open
631, 664, 697, 730, 763, 796	1 Bit	O	C T R - -	DPT_OpenClose	0/1	[FCx] Heating Valve (Status)	0 = Open; 1 = Closed
	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Heating Valve (Status)	0 = Closed; 1 = Open
632, 665, 698, 731, 764, 797	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Cooling Valve: Anti-Seize Protection (Status)	0 = Not Active; 1 = Active
	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Valve: Anti-Seize Protection (Status)	0 = Not Active; 1 = Active
633, 666, 699, 732, 765, 798	1 Bit	O	C T R - -	DPT_Switch	0/1	[FCx] Heating Valve: Anti-Seize Protection (Status)	0 = Not Active; 1 = Active
634, 667, 700, 733, 766, 799	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[FCx] Valve (Status)	0 - 100%
	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[FCx] Cooling Valve (Status)	0 - 100%
635, 668, 701, 734, 767, 800	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[FCx] Heating Valve (Status)	0 - 100%
636, 669, 702, 735, 768, 801	1 Bit	O	C T R - -	DPT_Bool	0/1	[FCx] Control Value - Error	0 = No Error; 1 = Error
637, 670, 703, 736, 769, 802	2 Bytes	I	C - - W U	DPT_Value_Temp	-273.00º - 670760.00º	[FCx] Ambient Temperature	Ambient Temperature
638, 671, 704, 737, 770, 803	2 Bytes	I	C - - W U	DPT_Value_Temp	-273.00º - 670760.00º	[FCx] Setpoint Temperature	Setpoint Temperature
639, 672, 705, 738, 771, 804	2 Bytes	I/O	C T R W U	DPT_TimePeriodMin	0 - 65535	[FCx] Duration of Manual Control	0 = Endless; 1 - 1440 min
	2 Bytes	I/O	C T R W U	DPT_TimePeriodHrs	0 - 65535	[FCx] Duration of Manual Control	0 = Endless; 1 - 24 h
805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828,	1 Bit	I	C - - W -	DPT_Bool	0/1	[LF] (1-Bit) Data Entry x	Binary Data Entry (0/1)

829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868							
869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900	1 Byte	I	C - - W -	DPT_Value_1_Ucount	0 - 255	[LF] (1-Byte) Data Entry x	1-Byte Data Entry (0-255)
901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932	2 Bytes	I	C - - W -	1.xxx	0/1	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948	4 Bytes	I	C - - W -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] (4-Byte) Data Entry x	4-Byte Data Entry
949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978	1 Bit	O	C T R - -	DPT_Bool	0/1	[LF] Function x - Result	(1-Bit) Boolean
	1 Byte	O	C T R - -	DPT_Value_1_Ucount	0 - 255	[LF] Function x - Result	(1-Byte) Unsigned
	2 Bytes	O	C T R - -	DPT_Value_2_Ucount	0 - 65535	[LF] Function x - Result	(2-Byte) Unsigned
	4 Bytes	O	C T R - -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] Function x - Result	(4-Byte) Signed
	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[LF] Function x - Result	(1-Byte) Percentage
	2 Bytes	O	C T R - -	DPT_Value_2_Count	-32768 - 32767	[LF] Function x - Result	(2-Byte) Signed
	2 Bytes	O	C T R - -	DPT_Value_Temp	-273.00º - 670760.00º	[LF] Function x - Result	(2-Byte) Float
979, 981, 983, 985, 987, 989, 991, 993, 995, 997, 999, 1001, 1003, 1005, 1007, 1009, 1011, 1013, 1015, 1017, 1019, 1021, 1023, 1025	4 Bytes	O	C T R - -	DPT_Value_4_Ucount	0 - 4294967295	[Relay x] Number of Switches	Number of Switches
980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1002, 1004, 1006, 1008, 1010, 1012, 1014, 1016, 1018, 1020, 1022, 1024, 1026	2 Bytes	O	C T R - -	DPT_Value_2_Ucount	0 - 65535	[Relay x] Maximum Switches per Minute	Maximum Switches per Minute

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