Zennio Lumento DX4 v2 4 Channel Constant Voltage PWM Dimmer in DIN Rail for DC LED Loads Installation Guide

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INTRODUCTION

LUMENTO DX4 V2

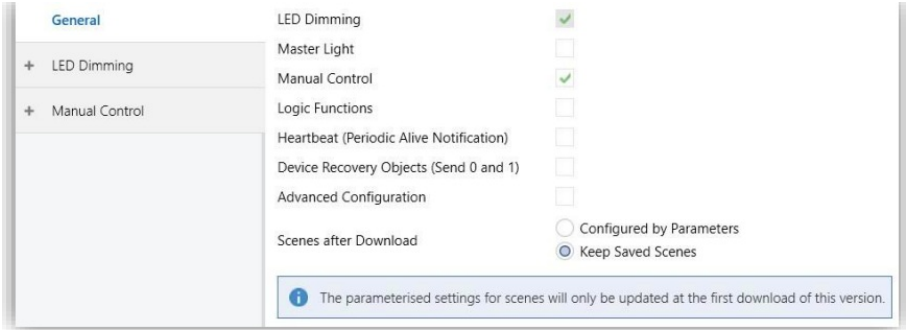
Lumen to DX4 v2 constitutes the Zennor solution in DIN-rail format for light regulation in **constant-voltage** DC LED luminaires. It offers a wide variety of functions:

- output channels parametrizable for different output configurations, according to the LED module type:
  - Individual channels: allows independent and parallel control over the different output channels.
  - RGBW: allows a joint control over one four-color LED module. The output channel will be formed by the color components (R, G, B and W) of a sole module, being all of them controlled jointly but with differentiated luminosity levels.
  - RGB+W: allows controlling a three-colour LED module, plus an independent white channel (i.e., an RGB channel plus an individual channel for the connection of a white LED module).
- **Tunable White:** allows controlling up to two regulation channels for the white colour temperature
- Light regulation with **customisable dimming** limits and times.
- **Scenes** and **sequences**
- **Timed actions:** simple timers, flashing sequences and automatic switch-off.
- **Custom On/Off** controls.
- **Error detection** and notification
- **Power Supply** Relay
- **Master light control** 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
- **Manual operation** / **supervision** of the four output channels, TW channel selection, colour shift (for RGB, RGBW and TW channels) and the power relay through the on-board pushbuttons and LEDs.
- **Customisable,** multi-operation logic functions.
- **Heartbeat** or periodical “still-alive” notification.
- **KNX Security**

CONFIGURATION

GENERAL

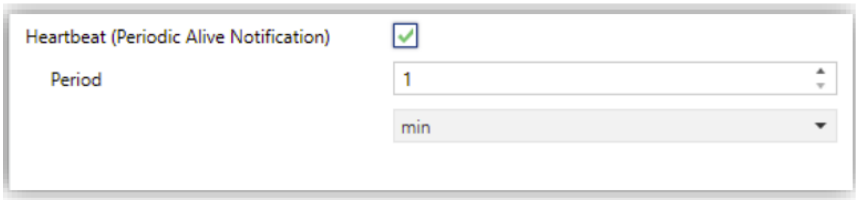
After importing the corresponding database in ETS and adding the device into the topology of the desired project, the configuration process begins by entering the Parameters tab of the device.



ETS PARAMETERISATION

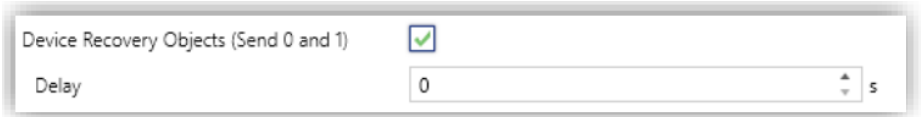
The tab tree on the left shows the “General” tab in the first place, which contains the following parameters.

- **LED Dimming [enabled]** : always enabled; the related parameters are contained in the “LED Dimming” tab (see section 2.2).
- **Master Light [disabled/enabled]:** enables or disables the “Master Light” tab on the left menu (see section 2.3).
- **Manual Control [disabled/enabled]:** enables or disables the “Manual control” tab on the left menu (see section 2.4).
- **Logic functions [disabled/enabled]:** enables or disables the “Logic Functions” tab on the left menu (see section 2.5)The default values of each parameter will be highlighted in blue in this document, as follows:
- **Heartbeat (Periodical 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).



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 (“[Heatbeat] 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 parameterize a certain delay [0…255] to this sending.



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

- **Scenes after Download [Configured by Parameters / Keep Saved Scenes]:** 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 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.
- **Advanced Configuration [disabled/enabled]:** enables or disables the “Advanced Configuration” tab on the left menu (see section 2.1.1).

ADVANCED CONFIGURATION

- Power Supply Start-Up Time [4…255][ds]: allows parameterizing the waiting time to be applied from the time the power supply relay closes until the channels are activated..

- **ERRORS**

  Lomenta is able to detect certain errors that may occur during normal operation, which will be indicated through communication objects and lighting sequences of the LEDs of the device. It should be noted that Lumen to does not report any of the other possible errors until it rules out or confirms that it is a lack of external power.

OVERHEATING
This error is activated in case that any of the NTC probes that the device has reaches a temperature that could be harmful.
The temperature is measured in each probe every 100ms and the corresponding action is taken if any temperature value is within these ranges:

- **Preventive range (110ºC < T < 115ºC)**: when 110ºC is exceeded, the lighting level of the loads is reduced to 30% if it is at a higher level. The values received by the bus during this mode are also limited to a maximum brightness of 30%.
- **Cutt-off range (T > 115ºC)**: when this temperature is exceeded, current is nolonger supplied to the outputs
- Lumento does not return to its normal state until the temperature is below 105ºC.
  When the overheat error state starts, several actions are performed:
- Send of a ‘1’ by the communication object “Error: overheating”.
- Turn off the Power out led.
- Flashing of the status leds of the outputs belonging to a channel enabled by parameter. Each led blinks 2 consecutive times every 6 seconds (Ton = Toff = 0.5s). See Table 1. Visual notification in case of error detection. for more detail. When leaving the error state, the flashing of the leds stops, remaining on or off depending on the state of the corresponding output. In addition, the Power out led lights up and a ‘0’ is sent by thementioned object.Some relevant consideration
- When the overheating error ends, the channels remain at the regulation level they are at that moment, a level higher than 30% is not recovered even if a certain channel had it before the error occurred.
- While the overheating state is active, Test On mode cannot be used. In case of being active when overheating is detected, it will exit said mode.

EXTERNAL POWER SUPPLY
his error is activated in the following cases:

- No external power is connected.
- External power is reversed.
- The external power supply has a voltage greater than 40V.
  When entering this error state, the following actions are performed:
- Notification every 30 seconds by the communication object “Error: external voltage”.
- Turn off the Power out led.
- Flashing of the status leds of the outputs belonging to a channel enabled by parameter. Each led flashes 4

consecutive times every 6 seconds (Ton = Toff = 0.5s). See Table 1. Visual notification in case of error detection. for more detail.

When leaving the error state, the flashing of the status leds stops, remaining on or off depending on the state of the corresponding output. In addition, the Power out led lights up and a ‘0’ is sent by the mentioned object.
The following issues should be mentioned:

- When the external power is recovered, if there is no other error that prevents the LEDs from lighting, the target value prior to the power failure is recovered. In case of external voltage recovery during a bus failure, the values configured in the custom initialization apply.
- While this error is present it is not possible to enter Test On mode. If it is active when external power problems are detected, this mode is abandoned.

SHORTCIRCUIT
Once the external power supply error has been ruled out, Lumen to detects if there is a short circuit error in a certain output or a false short circuit detection through the following procedure:

- When an error of this type is detected for the first time, all the outputs are turned off immediately. In addition, the communication object “Searching for short-circuits error” is sent with a value of ‘1’ and the status LEDs of the outputs belonging to a channel enabled by parameter flash. Each led blinks 3 consecutive times every 6 seconds. Furthermore, the Power out led turns off.
- Once the outputs are off, a 5 second wait will be forced to dissipate the excess temperature. During this time, all possible actions on the outputs are completely ignored (orders from objects or by pressing the buttons) as well as the programming button.
- Once the cooling time has elapsed, the short-circuit detection process begins through a scan of all the outputs of the device. This scan consists of turning on a single output each time for a limited time (~300ms)
- If a short-circuit is detected during the scan the following occurs:
    - The output that caused the error is turned off.
    - A ‘0’ is sent by the “Searching for short-circuit error” object and the associated blinking stops.
    - A ‘1’ is sent through the “[ ] Error: Short-circuit” object associated with the output that caused the error.
    - The Power out LED turns on.
    - The status led of the output in which the error is starts flashing. This led flashes 1 time every 6 seconds. See Table 1. Visual notification in case of error detection. for more detail
- Once the short-circuit has been solved, Lumen to leaves this error state if it receives any on/off or dimming order caused by the reception of a communication object or by pressing any of the buttons on the front panel in any of its modes. When leaving the error state, a ‘0’ is sent by the “[ ] Error: Short-circuit” object and the associated flashing ends.If a short-circuit is not detected during the scan, Lumen to returns to the target value prior to the detection of the error and sends a ‘0’ by the “Searching for short-circuit error” object.
  If the error had not been corrected and occurred again immediately, the entire detection and notification process would begin again.

  Some relevant considerations:

- If the error occurs while in Test On mode, Lumen to immediately exits it.
- Contrary to the rest of the errors, Test On mode can be entered while this error is active.
- The identification and notification of this error only takes place when the regulation level is different from 0%.
- There are situations where the regulation level is so low that no short-circuit error is detected (or produced). This depends on external factors such as the total

resistance of the LED strip, which not only varies according to its length but also with temperature.

ERROR NOTIFICATION

The detection of errors, as well as its notification through the corresponding LEDs, is always active, so if one or more of the indicated errors happens, it will be **visually reported**.

For notification via communication object, the Error objects parameter must be enabled.

External power problem (error)	Overheating	Shortcircuit	Nothing	Time
Channel enabled LEDs		Channel error LED		0.5s
				1.0s
				1.5s
				2.0s
				2.5s
				3.0s
				3.5s
				4.0s
				4.5s
				5.0s
				5.5s
				6.0s
Power out LED				
				0-6s

Table 1. Visual notification in case of error detection.

If there is more than one error simultaneously, only the one with the highest priority will be visually notified. If this one disappears while another one of lower priority is still active, the latter will be visually notified. The priority of the errors from highest to lowest is as follows:

1. External power supply failure.
2. Shortcircuit.
3. Overheating

LED DIMMING

The main functionality of Lumen to DX4 v2 consist of controlling LED luminaries, for which it has **4 configurable outputs** depending on the LED strips to be connected.
The different configurations available for these 4 outputs are:

- The different configurations available for these 4 outputs are: [Individual Channels]
- [4x Individual]
- [Channel 1+2+3+4 (Parallel)]
- [Channel 1+2+3 (Parallel); Channel 4 (Indep.)]

    - Channel 1+2 (Parallel); Channel 3 and 4 (Indep.)]
    - [Channel 1+2 (Parallel); Channel 3+4 (Parallel)]
- [RGBW]
- [RGB+W]
- [Tunable White]
    - [2x TW]
    - [TW 1+2 (Parallel)]
    - [TW 1; Channel 3 and 4 (Indep.)]
    - [TW 1; Channel 3+4 (Parallel)

Please refer to the “LED Dimming Control” user manual, available under the Lumen to DX4 v2 product section at **www.zennio.com** for detailed information on the use of the LED Dimming Control and its parameterization in ETS.

MASTER LIGHT

Lumen to has the Master Light function, that brings the option to monitor the state of up to 12 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 twelve status objects is found to be on.
- A courtesy switch-on order, if none of the up to twelve status objects is found to be on.

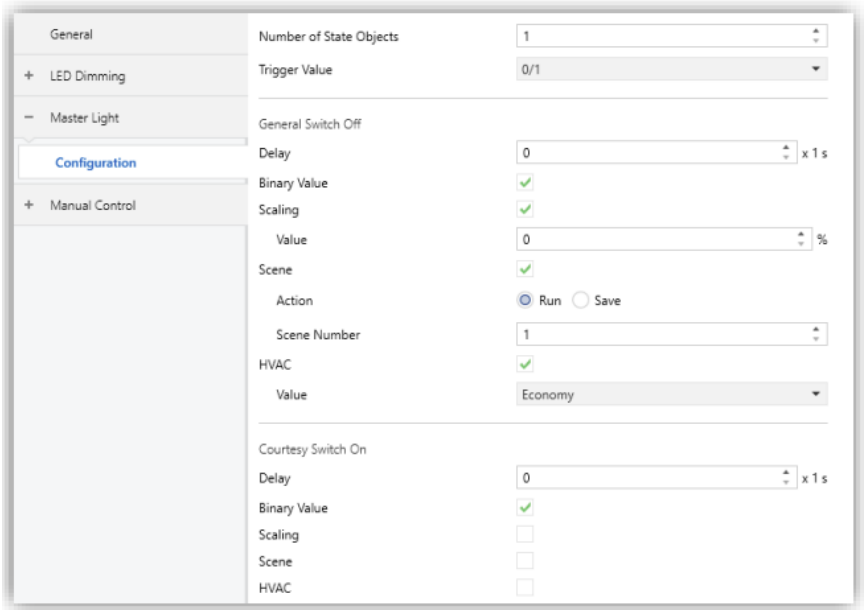
Note that the above switch-off and switch-on orders are not necessarily a binary value being sent to the bus – it is up to the integrator the decision of what to send to the KNX bus in both cases: a shutter order, a thermostat setpoint or mode switch order, a constant value, a scene… Only the trigger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



- Number of State Objects [1…12]: 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. The allowed range is 0 to 255 seconds.
  - 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)

MANUAL CONTROL

Element	Comment	Identifier
Output control buttons	On/off and output dimming	R/1/CW1, G/2/WW1, B/3/CW2, W/4/WW2
Output status LEDs	Shows if the output is on, off or with an error	
Colour Shift Button	Exclusive use for RGB(W) and TW channels	COLOUR SHIFT
Colour Shift LED	Exclusive use for RGB(W) channels. Shows the col our of the LED strip	RGBW
Tunable White Selection Button	Exclusive use for TW channels	TW SELECT
Tunable White LEDs	Exclusive use for TW channels. They will adopt the colour of the LED strips	TW1, TW2
Open/Close Relay Button	External power supply dis/connection	
Relay Status LED	External power supply connected (On) or disconnec ted (Off)	R
External Power Status LED	External power without error (On) or with error (Off)	POWER OUT

Table 2. Front panel elements.Lumen to DX4 v2 allows manually switching the state of its channels through the respective pushbuttons on the top side of the device. 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 parameterized 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 in parameters) 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 in parameters) 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.
- When several outputs are parametrized in parallel as a single grouped channel, only pressing the first button in the group will have an effect.

Test Off

Under the Test Off Mode, the channels can be controlled through both their communication objects and the actual pushbuttons located on the top of the device. When any of these buttons is pressed, the corresponding channel will behave as if an order had been received through the analogous communication object.

- Output control buttons:

- A short press will be equivalent to receiving a switch order (either a switch-on or a switch-off – this will alternate on every short press). The first time, it will always consist in a switch-on, unless the current level is already maximum (in such case, the regulation will be towards 0%). This regulation is subject to the “On/Off Dimming Time” (see “LED Dimming Control” user manual) for each channel.
- A long press will be equivalent to receiving a relative dimming command (see “LED Dimming Control” user manual). The dimming direction will be contrary to that of the previous regulation, although the first time the regulation will always be upwards (unless the current level is already the maximum one – in such case the regulation will be towards 0%). The dimming speed will correspond to that defined in parameters for the relative dimming. Once the pushbutton is released, the regulation is interrupted.

Note: Both dimming and switch limits will be subject to the parameterisation (economical mode, characteristic curve, etc).

- **Color shift buttons:** offer the possibility to do a colour shift in both directions over the entire colour range provided by the LEDs connected to the outputs (only when the outputs are RGBW, RGB+W or TW).
  A long press will be equivalent to receiving a colour shift command (see “LED Dimming Control” user manual). If the LED strips are switched off the colour shift will start from white colour (in case the outputs are RGBW or RGB+W) or warm white (in case the outputs are TW). On the other hand, if the LED strips are switched on the colour shift will start from the current colour. Once the button is released, the regulation is interrupted.
- **TW select:** allows choosing which channel between TW1 and TW2 is controlled manually with the color shift buttons (only when both TW1 and TW2 outputs are enabled as independent). After downloading it will be OFF (and the LED also OFF). Pressing the button will change the group in an ascending and cyclical way. With TW1 the LED flashes at 500ms and with TW2 at 250ms.
- **Relay:** allows switching the status of the power supply relay when it is parametrized to be opened and closed by object. Otherwise, it will only open if all the outputs are at 0%.Regarding the rest of the functions, the device will behave under the Test Off mode as usual. As stated, button presses during this mode are entirely analogous to the reception of the corresponding orders from the KNX bus, thus the status objects will also be sent normally

Test On
After entering the Test On mode, it will only be possible to control the output channels through the on-board manual control pushbuttons.
Enabling the Test On mode allows the direct control of every channel with independence of the device parameterization – the output channels can be controlled in the Test On mode no matter if they have not been enabled in parameters:
The channel dimming through the buttons will be analogous to the one in Test Off mode,with the following particularities:

- **Short press**: will cause immediate regulations to 0% or to 100%.
- **Long press:** dimming period will be 10 seconds from 0% to 100%.
- Orders received through communication objects will be ignored. Moreover, the device will not send any status objects corresponding to the manual actions performed by the user. The only exception is the blocking objects, which will be taken into account when leaving Test On Mode.
- In case of an external power failure or shortcircuit, Lumento will automatically exit Test On mode.
- Color shift and TW select buttons are not used in this mode.

Test On mode will not be accessible during:

- An external power error.
- An overheating error.
- The shortcircuit search analysis.

Important
the device is delivered from factory with both manual modes (Test Off and Test On) enabled, although with all channels disabled (thus, the Test Off mode will result functionless)

ETS PARAMETERISATION
After enabling “Manual Control” (enabled by default) in the General screen, a new tab will be incorporated into the tree on the left.

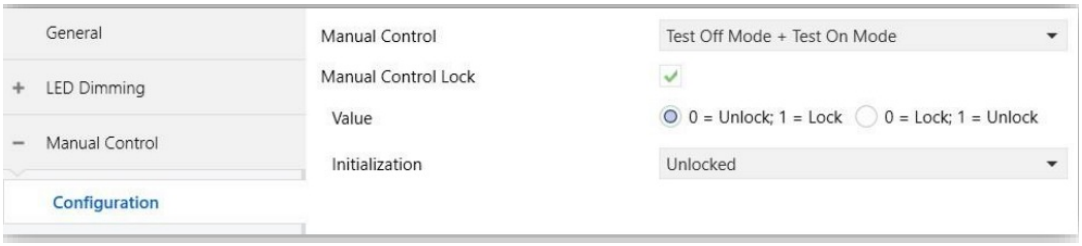


Figure 6. Manual Control.

This tab comprises the following parameters:

- 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 [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 = Unlock; 1 = Lock / 0 = Lock; 1 = Unlock]: 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 (Before Bus Failure)]: sets how the lock state of the manual control should remain after the device startup (after an ETS download or a bus power failure)

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. Up to 10 different and independent functions can be implemented, each of them entirely customizable 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, parameterizable 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 “Logic Functions” user manual, available within the Lumen to DX4 v2 product section at the Zennio homepage, **www.zennio.com,** for detailed information about the functionality and the configuration of the

related parameters.

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 programmed itself.

Number	Size	I/O	Flags	Data type (DPT)	Functional Range	Name	Function
1	1 Bit	I	**C – W – –**	DPT_Enable	0/1	Lock Manual Control	0 = Unlock; 1 = Lock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	Lock Manual Control	0 = Lock; 1 = Unlock
2	3 Bytes	I	**C – W T U**	DPT_TimeOfDay	00:00:00 – 23:59:59	[General] Time of Day	Time of Day External Reference
3	3 Bytes	I	**C – W T U**	DPT_Date	01/01/1990 - 31/12/2089	[General] Date	Date External Reference
4	1 Bit		**C – – T –**	DPT_Trigger	0/1	[Heartbeat] Object to Send ‘1’	Sending of ‘1’ Periodically
5	1 Bit		**C – – T –**	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 0
6	1 Bit		**C – – T –**	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 1
7	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 theMaster Light Function
	1 Bit	I	**C – W – –**	DPT_Ack	0/1	[MLx] Trigger	1 = Nothing; 0 = Trigger the Master Light Function
8, 9, 10, 11, 12, 13,14, 15, 16, 17, 18, 19	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[MLx] Status Object x	Binary Status

20	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[MLx] General Status	Binary Status
21	1 Bit		**C – – T –**	DPT_Switch	0/1	[MLx] General Switch Off: Binary Object	Switch Off Sending
22	1 Byte		**C – – T –**	DPT_Scaling	0% – 100%	[MLx] General Switch Off: Scaling	0-100%
23	1 Byte		**C – – T –**	DPT_SceneControl	0-63; 128-191	[MLx] General Switch Off: Scene	Scene Sending
24	1 Byte		**C – – T –**	DPT_HVACMode	1=Confort 2=Standby 3=Económico4=Protección	[MLx] General Switch Off: HVAC mode	Auto, Comfort, Standby, Economy, Building Protection

25	**1 Bit**		**C – – T –**	**DPT_Switch**	**0/1**	**[MLx] Courtesy Switch On: BinaryObject**	**Switch On Sending**
26	**1 Byte**		**C – – T –**	**DPT_Scaling**	**0% – 100 %**	**[MLx] Courtesy Switch On: Scaling**	**0-100%**
27	**1 Byte**		**C – – T –**	**DPT_SceneNumber**	**0 – 63**	**[MLx] Courtesy Switch On: Scene**	**Scene Sending**
28	**1 Byte**		**C – – T –**	**DPT_HVACMode**	**1=Confort 2=Standby 3=Económico4=Protección**	**[MLx] Courtesy Switch On: HVAC mode**	**Auto, Comfort, Standby, Economy, Building Protection**

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	1 Bit	I	C – W – –	DPT_Bool	0/1	[LF] (1-Bit) Data Entry x	Binary Data Entry (0/1)
61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76	1 Byte	I	C – W – –	DPT_Value_1_Ucount	0 – 255	[LF] (1-Byte) Data Entry x	1-Byte Data Entry (0-255)
77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92	2 Bytes	I	C – W – –	DPT_Value_2_Ucount	0 – 65535	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
93, 94, 95, 96, 97, 98, 99, 100	4 Bytes	I	C – W – –	DPT_Value_4_Count	-2147483648 -2147483647	[LF] (4-Byte) Data Entry x	4-Byte Data Entry
	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

101, 102, 103, 104, 105, 106, 107, 108, 109, 110	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
111	1 Bit	O	C R – T –	DPT_Alarm	0/1	Error: Overheating	0 = No Error; 1 = Error
112	1 Bit		C – – T –	DPT_Start	0/1	Searching for Shortcircuit Error	0 = Stop; 1 = Start
113	1 Bit	O	C R – T –	DPT_Alarm	0/1	Error: External Voltage	0 = No Error; 1 = Error

114, 115, 116, 117	1 Bit	O	C R – T –	DPT_Alarm	0/1	[Cx] Error: Shortcircuit	0 = No Error; 1 = Error
114	1 Bit	O	C R – T –	DPT_Alarm	0/1	[R] Error: Shortcircuit	0 = No Error; 1 = Error
114, 116	1 Bit	O	C R – T –	DPT_Alarm	0/1	[CWx] Error: Shortcircuit	0 = No Error; 1 = Error
115	1 Bit	O	C R – T –	DPT_Alarm	0/1	[G] Error: Shortcircuit	0 = No Error; 1 = Error
115, 117	1 Bit	O	C R – T –	DPT_Alarm	0/1	[WWx] Error: Shortcircuit	0 = No Error; 1 = Error
116	1 Bit	O	C R – T –	DPT_Alarm	0/1	[B] Error: Shortcircuit	0 = No Error; 1 = Error
117	1 Bit	O	C R – T –	DPT_Alarm	0/1	[W] Error: Shortcircuit	0 = No Error; 1 = Error
118	1 Byte	I	C – W – –	DPT_Scaling	0% – 100 %	[RGB] Maximum Light Level	20 – 100%
	1 Byte	I	C – W – –	DPT_Scaling	0% – 100 %	[RGBW] Maximum Light Level	20 – 100%

118, 149	1 Byte	I	C – W – –	DPT_Scaling	0% – 100 %	[TWx] Maximum Light Level	20 – 100%
118	1 Byte	I	C – W – –	DPT_Scaling	0% – 100 %	[TWx+TWx] Maximum Light Level	20 – 100%
119	1 Bit	I	C – W – –	DPT_Switch	0/1	[RGBW] Switch On/Off	0 = Off; 1 = On
	1 Bit	I	C – W – –	DPT_Switch	0/1	[RGB] Switch On/Off	0 = Off; 1 = On
119, 150	1 Bit	I	C – W – –	DPT_Switch	0/1	[TWx] Switch On/Off	0 = Off; 1 = On
119	1 Bit	I	C – W – –	DPT_Switch	0/1	[TWx+TWx] Switch On/Off	0 = Off; 1 = On
120	4 Bit	I	C – W – –	DPT_Control_Dimming	0x0 (Detener) 0x1 (Reducir 100%)…0x7 (Reducir 1%) 0x8 (Detener) 0x9 (Subir 100%)…0xF (Subir 1%)	[RGBW] Relative Dimming	4-Bit Dimmer Control
	4 Bit	I	C – W – –	DPT_Control_Dimming		[RGB] Relative Dimming	4-Bit Dimmer Control
120, 151	4 Bit	I	C – W – –	DPT_Control_Dimming		[TWx] Relative Dimming	4-Bit Dimmer Control

120	4 Bit	I	C – W – –	DPT_Control_Dimming		[TWx+TWx] Relative Dimming	4-Bit Dimmer Control
121	1 Byte	I	C – W – –	DPT_Scaling	0% – 100 %	[RGBW] Absolute Dimming	1-Byte Dimmer Control
	1 Byte	I	C – W – –	DPT_Scaling	0% – 100 %	[RGB] Absolute Dimming	1-Byte Dimmer Control
121, 152	1 Byte	I	C – W – –	DPT_Scaling	0% – 100 %	[TWx] Absolute Dimming	1-Byte Dimmer Control
121	1 Byte	I	C – W – –	DPT_Scaling	0% – 100 %	[TWx+TWx] Absolute Dimming	1-Byte Dimmer Control
122, 123, 124	2 Bytes	I	C – W – –	DPT_TimePeriodSec	0 – 65535	[RGBW] Dimming Time x	Time in Seconds
	2 Bytes	I	C – W – –	DPT_TimePeriodSec	0 – 65535	[RGB] Dimming Time x	Time in Seconds
122, 123, 124, 153, 154, 155	2 Bytes	I	C – W – –	DPT_TimePeriodSec	0 – 65535	[TWx] Dimming Time x	Time in Seconds

122, 123, 124	2 Bytes	I	C – W – –	DPT_TimePeriodSec	0 – 65535	[TWx+TWx] Dimming Time x	Time in Seconds
125	3 Bytes	I	C – W – –	DPT_Colour_RGB	[0 – 255] * 3	[RGB] RGB Colour	3-Byte RGB Control
125, 156	2 Bytes	I	C – W – –	DPT_Absolute_Colour_Temperature	0 – 65535	[TWx] Colour Temperature	2-Byte Control (Kelvin)

125	3 Bytes	I	C – W – –	DPT_Colour_RGB	[0 – 255] * 3	[RGBW] RGB Colour	3-Byte RGB Control
	2 Bytes	I	C – W – –	DPT_Absolute_Colour_Temperature	0 – 65535	[TWx+TWx] Colour Temperature	2-Byte Control (Kelvin)
126	6 Bytes	I	C – W – –	DPT_Colour_RGBW	[0 -1] *4 – [0 – 255] * 4	[RGBW] RGBW Colour	6-Byte RGBW Control
126, 157	6 Bytes	I	C – W – –	DPT_Brightness_Colour_Temperature_Transition	[0 – 255] * 6	[TWx] Colour Temperature and Luminosity Transition	6-Byte Control

126	6 Bytes	I	C – W – –	DPT_Brightness_Colour_Temperature_Transition	[0 – 255] * 6	[TWx+TWx] Colour Temperatureand Luminosity Transition	6-Byte Control
127	3 Bytes	I	C – W – –	1.xxx	[0 – 255] * 3	[RGB] HSV Colour	3-Byte HSV Control
127, 158	1 Bit	I	C – W – –	DPT_Switch	0/1	[TWx] HCL	0 = Deactivate; 1 = Activate
127	1 Bit	I	C – W – –	DPT_Switch	0/1	[TWx+TWx] HCL	0 = Deactivate; 1 = Activate
128, 159	2 Bytes	I	C – W – –	DPT_Absolute_Colour_Temperature	0 – 65535	[TWx] HCL: Colour Temperature	Colour Temperature (Kelvin)
128	2 Bytes	I	C – W – –	DPT_Absolute_Colour_Temperature	0 – 65535	[TWx+TWx] HCL: ColourTemperature	Colour Temperature (Kelvin)
129	1 Byte	I	C – W – –	DPT_SceneControl	0-63; 128-191	[RGBW] Direct Colour	Colour Number (Scene 1 – 22)
	1 Byte	I	C – W – –	DPT_SceneControl	0-63; 128-191	[RGB] Direct Colour	Colour Number (Scene 1 – 22)

129, 160	1 Byte	I	C – W – –	DPT_SceneControl	0-63; 128-191	[TWx] Direct Colour	Colour Number (Scene 1 – 6)
129	1 Byte	I	C – W – –	DPT_SceneControl	0-63; 128-191	[TWx+TWx] Direct Colour	Colour Number (Scene 1 – 6)
130	1 Bit	I	C – W – –	DPT_Start	0/1	[RGBW] Colour Shift	0 = Stop; 1 = Start
	1 Bit	I	C – W – –	DPT_Start	0/1	[RGB] Colour Shift	0 = Stop; 1 = Start
130, 161	1 Bit	I	C – W – –	DPT_Start	0/1	[TWx] Colour Temperature Shift	0 = Stop; 1 = Start
130	1 Bit	I	C – W – –	DPT_Start	0/1	[TWx+TWx] Colour TemperatureShift	0 = Stop; 1 = Start
131	4 Bit	I	C – W – –	DPT_Control_Dimming	0x0 (Detener) 0x1 (Reducir 100%)…0x7 (Reducir 1%) 0x8 (Detener) 0x9 (Subir 100%)…0xF (Subir 1%)	[RGBW] Colour Shift	4-Bit Colour Control
	4 Bit	I	C – W – –	DPT_Control_Dimming		[RGB] Colour Shift	4-Bit Colour Control
131, 162	4 Bit	I	C – W – –	DPT_Control_Dimming		[TWx] Colour Temperature Shift	4-Bit Colour Control

131	**4 Bit**	**I**	**C – W – –**	**DPT_Control_Dimming**		**[TWx+TWx] Colour Temperature Shift**	**4-Bit Colour Control**
132	**1 Byte**	**I**	**C – W – –**	**DPT_Scaling**	**0% – 100 %**	**[RGBW] Memory Function: SwitchOn Value**	**0 – 100%**
	1 Byte	**I**	**C – W – –**	**DPT_Scaling**	**0% – 100 %**	**[RGB] Memory Function: Switch On Value**	**0 – 100%**

132, 163	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[TWx] Memory Function: SwitchOn Value	0 – 100%
132	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[TWx+TWx] Memory Function: Switch On Value	0 – 100%
133	1 Bit	I	**C – W – –**	DPT_Start	0/1	[RGBW] Simple Timer	0 = Deactivate; 1 = Activate
	1 Bit	I	**C – W – –**	DPT_Start	0/1	[RGB] Simple Timer	0 = Deactivate; 1 = Activate
133, 164	1 Bit	I	**C – W – –**	DPT_Start	0/1	[TWx] Simple Timer	0 = Deactivate; 1 = Activate
133	1 Bit	I	**C – W – –**	DPT_Start	0/1	[TWx+TWx] Simple Timer	0 = Deactivate; 1 = Activate
134	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[RGBW] Warning Time (Status)	0 = Deactivated; 1 = Activated
	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[RGB] Warning Time (Status)	0 = Deactivated; 1 = Activated
134, 165	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[TWx] Warning Time (Status)	0 = Deactivated; 1 = Activated
134	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[TWx+TWx] Warning Time (Status)	0 = Deactivated; 1 = Activated

135	1 Bit	I	**C – W – –**	DPT_Start	0/1	[RGBW] Flashing	0 = Deactivate; 1 = Activate
	1 Bit	I	**C – W – –**	DPT_Start	0/1	[RGB] Flashing	0 = Deactivate; 1 = Activate
135, 166	1 Bit	I	**C – W – –**	DPT_Start	0/1	[TWx] Flashing	0 = Deactivate; 1 = Activate
135	1 Bit	I	**C – W – –**	DPT_Start	0/1	[TWx+TWx] Flashing	0 = Deactivate; 1 = Activate
136	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[RGBW] Scenes/Sequences	Scene/Sequence Number
	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[RGB] Scenes/Sequences	Scene/Sequence Number
136, 167	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[TWx] Scenes/Sequences	Scene/Sequence Number
136	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[TWx+TWx] Scenes/Sequences	Scene/Sequence Number
137	1 Bit	I	**C – W – –**	DPT_Start	0/1	[RGBW] Start/Stop Sequence	0 = Stop; 1 = Start
	1 Bit	I	**C – W – –**	DPT_Start	0/1	[RGB] Start/Stop Sequence	0 = Stop; 1 = Start
137, 168	1 Bit	I	**C – W – –**	DPT_Start	0/1	[TWx] Start/Stop Sequence	0 = Stop; 1 = Start
137	1 Bit	I	**C – W – –**	DPT_Start	0/1	[TWx+TWx] Start/Stop Sequence	0 = Stop; 1 = Start
138	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[RGBW] Custom On/Off 1	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[RGB] Custom On/Off 1	0 = Off; 1 = On
138, 169	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[TWx] Custom On/Off 1	0 = Off; 1 = On

138	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[TWx+TWx] Custom On/Off 1	0 = Off; 1 = On
139	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[RGBW] Custom On/Off 2	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[RGB] Custom On /Off 2	0 = Off; 1 = On
139, 170	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[TWx] Custom On /Off 2	0 = Off; 1 = On
139	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[TWx+TWx] Custom On/Off 2	0 = Off; 1 = On

140	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[RGBW] Custom On/Off 3	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[RGB] Custom On /Off 3	0 = Off; 1 = On
140, 171	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[TWx] Custom On /Off 3	0 = Off; 1 = On
140	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[TWx+TWx] Custom On/Off 3	0 = Off; 1 = On
141	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[RGBW] Custom On/Off 4	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[RGB] Custom On /Off 4	0 = Off; 1 = On
141, 172	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[TWx] Custom On /Off 4	0 = Off; 1 = On
141	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[TWx+TWx] Custom On/Off 4	0 = Off; 1 = On
142	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[RGBW] Lock	0 = Unlock; 1 = Lock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[RGB] Lock	0 = Unlock; 1 = Lock

	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[RGBW] Lock	0 = Lock; 1 = Unlock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[RGB] Lock	0 = Lock; 1 = Unlock
142, 173	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[TWx] Lock	0 = Unlock; 1 = Lock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[TWx] Lock	0 = Lock; 1 = Unlock
142	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[TWx+TWx] Lock	0 = Unlock; 1 = Lock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[TWx+TWx] Lock	0 = Lock; 1 = Unlock
143, 174	1 Bit	I	**C – W – –**	DPT_Trigger	0/1	[RGBW] White Balance	0 = 1 = Save RGB components
	1 Bit	I	**C – W – –**	DPT_Trigger	0/1	[RGB] White Balance	0 = 1 = Save RGB components
144	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[RGBW] On/Off (Status)	0 = Off; 1 = On
	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[RGB] On/Off (Status)	0 = Off; 1 = On
144, 175	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[TWx] On/Off (Status)	0 = Off; 1 = On
144	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[TWx+TWx] On/Off (Status)	0 = Off; 1 = On
145	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[RGBW] Dimming Value (Status)	0 – 100%
	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[RGB] Dimming Value (Status)	0 – 100%
145, 176	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[TWx] Dimming Value (Status)	0 – 100%

145	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[TWx+TWx] Dimming Value (Status)	0 – 100%
146	3 Bytes	O	**C R – T –**	DPT_Colour_RGB	[0 – 255] * 3	[RGB] RGB Dimming Values(Status)	3-Byte Status
146, 177	2 Bytes	O	**C R – T –**	DPT_Absolute_Colour_Temperature	0 – 65535	[TWx] Colour Temperature Value (Status)	Colour Temperature (Kelvin)
146	3 Bytes	O	**C R – T –**	DPT_Colour_RGB	[0 – 255] * 3	[RGBW] RGB Dimming Values(Status)	3-Byte Status

	2 Bytes	O	**C R – T –**	DPT_Absolute_Colour_Temperature	0 – 65535	[TWx+TWx] Colour TemperatureValue (Status)	Colour Temperature (Kelvin)
147, 178	6 Bytes	O	**C R – T –**	DPT_Colour_RGBW	[0 -1] *4 – [0 – 255] *4	[RGBW] RGBW Dimming Values (Status)	6-Byte Status
148	3 Bytes	O	**C R – T –**	1.xxx	[0 – 255] * 3	[RGB] HSV Dimming Values(Status)	3-Byte Status
148, 179	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[TWx] HCL (Status)	0 = Deactivated; 1 = Activated
148	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[TWx+TWx] HCL (Status)	0 = Deactivated; 1 = Activated
180, 200, 220, 240	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx] Maximum Light Level	20 – 100%
180	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx+Cx] Maximum Light Level	20 – 100%
	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx+Cx+Cx] Maximum LightLevel	20 – 100%
180, 220	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx] Maximum Light Level	20 – 100%
181, 201, 221, 241	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx] Switch On/Off	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[R] Switch On/Off	0 = Off; 1 = On

181	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx+Cx] Switch On/Off	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx] Switch On/Off	0 = Off; 1 = On
181, 221	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx] Switch On/Off	0 = Off; 1 = On
182, 202, 222, 242	4 Bit	I	**C – W – –**	DPT_Control_Dimming	0x0 (Detener) 0x1 (Reducir 100%)…0x7 (Reducir 1%) 0x8 (Detener) 0x9 (Subir 100%)…0xF (Subir 1%)	[Cx] Relative Dimming	4-Bit Dimmer Control
182	4 Bit	I	**C – W – –**	DPT_Control_Dimming		[R] Relative Dimming	4-Bit Dimmer Control
	4 Bit	I	**C – W – –**	DPT_Control_Dimming		[Cx+Cx+Cx+Cx] Relative Dimming	4-Bit Dimmer Control
	4 Bit	I	**C – W – –**	DPT_Control_Dimming		[Cx+Cx+Cx] Relative Dimming	4-Bit Dimmer Control
182, 222	4 Bit	I	**C – W – –**	DPT_Control_Dimming		[Cx+Cx] Relative Dimming	4-Bit Dimmer Control
183, 203, 223, 243	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx] Absolute Dimming	1-Byte Dimmer Control
183	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[R] Absolute Dimming	1-Byte Dimmer Control
183, 223	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx] Absolute Dimming	1-Byte Dimmer Control
183	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx+Cx] Absolute Dimming	1-Byte Dimmer Control
	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx+Cx+Cx] AbsoluteDimming	1-Byte Dimmer Control

184, 185, 186, 204,205, 206, 224, 225,226, 244, 245, 246	2 Bytes	I	**C – W – –**	DPT_TimePeriodSec	0 – 65535	[Cx] Dimming Time x	Time in Seconds

184, 185, 186	2 Bytes	I	**C – W – –**	DPT_TimePeriodSec	0 – 65535	[Cx+Cx+Cx] Dimming Time x	Time in Seconds
	2 Bytes	I	**C – W – –**	DPT_TimePeriodSec	0 – 65535	[Cx+Cx+Cx+Cx] Dimming Time x	Time in Seconds
184, 185, 186, 224,225, 226	2 Bytes	I	**C – W – –**	DPT_TimePeriodSec	0 – 65535	[Cx+Cx] Dimming Time x	Time in Seconds
187, 207, 227, 247	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx] Memory Function: Switch On Value	0 – 100%
187	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx+Cx] Memory Function:Switch On Value	0 – 100%
	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx+Cx+Cx] Memory Function: Switch On Value	0 – 100%
187, 227	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[Cx+Cx] Memory Function: SwitchOn Value	0 – 100%
188, 208, 228, 248	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx] Simple Timer	0 = Deactivate; 1 = Activate
188	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx+Cx+Cx] Simple Timer	0 = Deactivate; 1 = Activate
	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx+Cx] Simple Timer	0 = Deactivate; 1 = Activate
188, 228	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx] Simple Timer	0 = Deactivate; 1 = Activate
189, 209, 229, 249	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[Cx] Warning Time (Status)	0 = Deactivated; 1 = Activated
189	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[Cx+Cx+Cx+Cx] Warning Time(Status)	0 = Deactivated; 1 = Activated

	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[Cx+Cx+Cx] Warning Time(Status)	0 = Deactivated; 1 = Activated
189, 229	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[Cx+Cx] Warning Time (Status)	0 = Deactivated; 1 = Activated
190, 210, 230, 250	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx] Flashing	0 = Deactivate; 1 = Activate
190	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx+Cx+Cx] Flashing	0 = Deactivate; 1 = Activate
190, 230	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx] Flashing	0 = Deactivate; 1 = Activate
190	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx+Cx] Flashing	0 = Deactivate; 1 = Activate
191, 211, 231, 251	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[Cx] Scenes/Sequences	Scene/Sequence Number
191	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[Cx+Cx+Cx+Cx] Scenes/Sequences	Scene/Sequence Number
	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[Cx+Cx+Cx] Scenes/Sequences	Scene/Sequence Number
191, 231	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[Cx+Cx] Scenes/Sequences	Scene/Sequence Number
192, 212, 232, 252	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx] Start/Stop Sequence	0 = Stop; 1 = Start
192	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx+Cx+Cx] Start/StopSequence	0 = Stop; 1 = Start
	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx+Cx] Start/Stop Sequence	0 = Stop; 1 = Start
192, 232	1 Bit	I	**C – W – –**	DPT_Start	0/1	[Cx+Cx] Start/Stop Sequence	0 = Stop; 1 = Start

193, 213, 233, 253	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx] Custom On/Off 1	0 = Off; 1 = On
193	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx+Cx] Custom On/Off 1	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx] Custom On/Off 1	0 = Off; 1 = On
193, 233	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx] Custom On/Off 1	0 = Off; 1 = On
194, 214, 234, 254	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx] Custom On/Off 2	0 = Off; 1 = On
194	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx+Cx] Custom On/Off 2	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx] Custom On/Off 2	0 = Off; 1 = On
194, 234	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx] Custom On/Off 2	0 = Off; 1 = On
195, 215, 235, 255	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx] Custom On/Off 3	0 = Off; 1 = On
195	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx+Cx] Custom On/Off 3	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx] Custom On/Off 3	0 = Off; 1 = On
195, 235	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx] Custom On/Off 3	0 = Off; 1 = On
196, 216, 236, 256	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx] Custom On/Off 4	0 = Off; 1 = On
196	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx+Cx] Custom On/Off 4	0 = Off; 1 = On
	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx+Cx] Custom On/Off 4	0 = Off; 1 = On

196, 236	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Cx+Cx] Custom On/Off 4	0 = Off; 1 = On
197, 217, 237, 257	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[Cx] Lock	0 = Unlock; 1 = Lock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[Cx] Lock	0 = Lock; 1 = Unlock
197	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[Cx+Cx+Cx+Cx] Lock	0 = Lock; 1 = Unlock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[Cx+Cx+Cx+Cx] Lock	0 = Unlock; 1 = Lock

	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[Cx+Cx+Cx] Lock	0 = Unlock; 1 = Lock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[Cx+Cx+Cx] Lock	0 = Lock; 1 = Unlock
197, 237	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[Cx+Cx] Lock	0 = Unlock; 1 = Lock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[Cx+Cx] Lock	0 = Lock; 1 = Unlock
198, 218, 238, 258	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[Cx] On/Off (Status)	0 = Off; 1 = On
198	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[R] On/Off (Status)	0 = Off; 1 = On
	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[Cx+Cx+Cx] On/Off (Status)	0 = Off; 1 = On
	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[Cx+Cx+Cx+Cx] On/Off (Status)	0 = Off; 1 = On
198, 238	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[Cx+Cx] On/Off (Status)	0 = Off; 1 = On
199, 219, 239, 259	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[Cx] Dimming Value (Status)	0 – 100%

199	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[R] Dimming Value (Status)	0 – 100%
	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[Cx+Cx+Cx] Dimming Value (Status)	0 – 100%
	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[Cx+Cx+Cx+Cx] Dimming Value(Status)	0 – 100%
199, 239	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[Cx+Cx] Dimming Value (Status)	0 – 100%
201	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[G] Switch On/Off	0 = Off; 1 = On
202	4 Bit	I	**C – W – –**	DPT_Control_Dimming	0x0 (Detener) 0x1 (Reducir 100%)…0x7 (Reducir 1%) 0x8 (Detener) 0x9 (Subir 100%)…0xF (Subir 1%)	[G] Relative Dimming	4-Bit Dimmer Control
203	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[G] Absolute Dimming	1-Byte Dimmer Control
218	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[G] On/Off (Status)	0 = Off; 1 = On
219	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[G] Dimming Value (Status)	0 – 100%

221	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[B] Switch On/Off	0 = Off; 1 = On
222	4 Bit	I	**C – W – –**	DPT_Control_Dimming	0x0 (Detener) 0x1 (Reducir 100%)…0x7 (Reducir 1%) 0x8 (Detener) 0x9 (Subir 100%)…0xF (Subir 1%)	[B] Relative Dimming	4-Bit Dimmer Control

223	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[B] Absolute Dimming	1-Byte Dimmer Control
238	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[B] On/Off (Status)	0 = Off; 1 = On
239	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[B] Dimming Value (Status)	0 – 100%
240	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[W] Maximum Light Level	20 – 100%
241	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[W] Switch On/Off	0 = Off; 1 = On
242	4 Bit	I	**C – W – –**	DPT_Control_Dimming	0x0 (Detener) 0x1 (Reducir 100%)…0x7 (Reducir 1%) 0x8 (Detener) 0x9 (Subir 100%)…0xF (Subir 1%)	[W] Relative Dimming	4-Bit Dimmer Control
243	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[W] Absolute Dimming	1-Byte Dimmer Control
244, 245, 246	2 Bytes	I	**C – W – –**	DPT_TimePeriodSec	0 – 65535	[W] Dimming Time x	Time in Seconds
247	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[W] Memory Function: Switch OnValue	0 – 100%
248	1 Bit	I	**C – W – –**	DPT_Start	0/1	[W] Simple Timer	0 = Deactivate; 1 = Activate
249	1 Bit	O	**C R – T –**	DPT_Bool	0/1	[W] Warning Time (Status)	0 = Deactivated; 1 = Activated
250	1 Bit	I	**C – W – –**	DPT_Start	0/1	[W] Flashing	0 = Deactivate; 1 = Activate

251	1 Byte	I	**C – W – –**	DPT_SceneControl	0-63; 128-191	[W] Scenes/Sequences	Scene/Sequence Number

252	1 Bit	I	**C – W – –**	DPT_Start	0/1	[W] Start/Stop Sequence	0 = Stop; 1 = Start
253	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[W] Custom On/Off 1	0 = Off; 1 = On
254	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[W] Custom On/Off 2	0 = Off; 1 = On
255	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[W] Custom On/Off 3	0 = Off; 1 = On
256	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[W] Custom On/Off 4	0 = Off; 1 = On
257	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[W] Lock	0 = Unlock; 1 = Lock
	1 Bit	I	**C – W – –**	DPT_Enable	0/1	[W] Lock	0 = Lock; 1 = Unlock
258	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[W] On/Off (Status)	0 = Off; 1 = On
259	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[W] Dimming Value (Status)	0 – 100%
260	4 Bit	I	**C – W – –**	DPT_Control_Dimming	0x0 (Detener) 0x1 (Reducir 100%)…0x7 (Reducir 1%) 0x8 (Detener) 0x9 (Subir 100%)…0xF (Subir 1%)	[H] Relative Dimming	4-Bit Dimmer Control
260, 266, 269	4 Bit	I	**C – W – –**	DPT_Control_Dimming		[TWx] Colour Temperature Relative Dimming	4-Bit Dimmer Control (0% = Warm, 100% = Cold)
260	4 Bit	I	**C – W – –**	DPT_Control_Dimming		[TWx+TWx] Colour Temperature Relative Dimming	4-Bit Dimmer Control (0% = Warm, 100% = Cold)
261	1 Byte	I	**C – W – –**	DPT_Angle	0 – 360°	[H] Absolute Dimming	1-Byte Dimmer Control
261, 267, 270	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[TWx] Colour Temperature Absolute Dimming	1-Byte Dimmer Control (0% = Warm, 100% = Cold)

261	1 Byte	I	**C – W – –**	DPT_Scaling	0% – 100%	[TWx+TWx] Colour TemperatureAbsolute Dimming	1-Byte Dimmer Control (0% =Warm, 100% = Cold)
262	1 Byte	O	**C R – T –**	DPT_Angle	0 – 360°	[H] Dimming Value (Status)	0 – 360°
262, 268, 271	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[TWx] Colour Temperature Dimming Value (Status)	Colour Temperature (0% = Warm, 100% = Cold)
262	1 Byte	O	**C R – T –**	DPT_Scaling	0% – 100%	[TWx+TWx] Colour TemperatureDimming Value (Status)	Colour Temperature (0% = Warm,100% = Cold)

263	4 Bit	I	**C – W – –**	DPT_Control_Dimming	0x0 (Detener) 0 x1 (Reducir 100%)…0x 7 (Reducir 1%) 0x8 (D etener) 0x9 (Subir 100 %)…0xF (S ubir 1%)	[S] Relative Dimm ing	4-Bit Dimmer Con trol
264	1 By te	I	**C – W – –**	DPT_Scaling	0% – 100%	[S] Absolute Dim ming	1-Byte Dimmer C ontrol
265	1 By te	O	**C R – T –**	DPT_Scaling	0% – 100%	[S] Dimming Valu e (Status)	0 – 100 %
266, 269	4 Bit	I	**C – W – –**	DPT_Control_Dimming	0x0 (Detener) 0 x1 (Reducir 100%)…0x 7 (Reducir 1%) 0x8 (D etener) 0x9 (Subir 100 %)…0xF (S ubir 1%)	[V] Relative Dimm ing	4-Bit Dimmer Con trol
267, 270	1 By te	I	**C – W – –**	DPT_Scaling	0% – 100%	[V] Absolute Dim ming	1-Byte Dimmer C ontrol
268, 271	1 By te	O	**C R – T –**	DPT_Scaling	0% – 100%	[V] Dimming Valu e (Status)	0 – 100%
272	1 Bit	I	**C – W – –**	DPT_Switch	0/1	[Power Supply Re lay] Switch On/Off	0 = Off; 1 = On
273	1 Bit	O	**C R – T –**	DPT_Switch	0/1	[Power Supply Re lay] On/Off(Status)	0 = Off; 1 = On

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Documents / Resources

	Zennio Lumento DX4 v2 4 Channel Constant Voltage PWM Dimmer in DIN Rail for DC LED Loads [pdf] Installation Guide Lumento DX4 v2 4 Channel Constant Voltage PWM Dimmer in DIN Rail for DC LED Loads, Lumento DX4, v2 4 Channel Constant Voltage PWM Dimmer in DIN Rail for DC LED Loads, Voltage PWM Dimmer in DIN Rail for DC LED Loads, DIN Rail for DC LED Loads

References

- User Manual