



Luzen Plus

Universal 1-Channel Dimmer

ZN1DI-P400

Application program version: [3.3]

User manual edition: [3.3]_a

www.zennio.com

Contents

Document Updates.....	3
1 Introduction	4
1.1 Luzen Plus.....	4
1.2 Load Types.....	5
1.3 Installation	6
2 Configuration	8
3 ETS Parameterisation	9
3.1 Default Configuration	9
3.2 General Window.....	10
3.3 Functions.....	12
3.3.1 Status Objects	12
3.3.2 Simple Timer	13
3.3.3 Flashing.....	17
3.3.4 Scenes.....	18
3.3.5 Sequences	19
3.3.6 Lock.....	21
3.3.7 Secondary ON/OFF.....	22
3.3.8 Memory ON/OFF.....	23
3.3.9 Auto OFF	24
3.3.10 Initial Settings.....	25
3.3.11 Error Identification	26
3.4 Logical Functions	33
ANNEX I. Communication Objects.....	34

DOCUMENT UPDATES

Version	Changes	Page(s)
[3.3]_a	Changes in the application program: <ul style="list-style-type: none"> • Optimised management of voltage surge situations and of the lock state, which is now notified also through LED blinks. • Automatic load switch-off on locks due to voltage surge events. • Test mode not available during locks due to voltage surge events. 	
	The test mode is not available during the “lock due to voltage surge” state.	7
	Improved management of the voltage surge situations.	31
[3.2]_a	Changes in the application program: <ul style="list-style-type: none"> • New object: “Lock due to Voltage Surge”. • General improvement of the Anomalous Frequency detection function. • Temporary interruption of the light regulation upon successive overvoltage events. • Automatic load switch-off upon bus failures. • Minor changes in texts. 	-
[3.1]_a	Changes in the application program: <ul style="list-style-type: none"> • Unconditional sending of the ON/OFF status after a switch-on or switch-off order (through any of the objects that permit it), even if it did not imply an actual switch of the previous state. • Change in the smooth dimming algorithm on the reception of successive orders: increments are applied to the final luminosity of the previous order, no matter if the dimming process was interrupted. • Inversion of the behaviour of the “Edge select (only for test purposes)” communication object. 	-
[3.0]_a	Changes in the application program: <ul style="list-style-type: none"> • Possibility of dimming CFL lamps and LED lamps 	-

1 INTRODUCTION

1.1 LUZEN PLUS

LuZen Plus is the 1-channel universal dimmer from Zennio, that allows regulating light sources connected to its output channel.

The most outstanding functions are:

- Compatibility with **resistive (R)**, **capacitive (C)**, **inductive (L)**, **dimmable CFL** (low consumption fluorescent lamps) and **dimmable LED** lamps.
- 1 output channel admitting up to **400 W** loads (for R, C or L lamps) and up to **125 W** loads (for CFL and LED lamps).
- **Automatic detection** of the type of conventional loads (resistive, capacitive or inductive) connected to the channel.
- Configuration of **timers**, **flashing sequences**, **scenes** and **custom sequences**.
- Different ON/OFF customizable functions, such as **Secondary ON/OFF** or **Memory ON/OFF**.
- Possibility of **locking** the channel output.
- Module with 5x multi-operational **logical functions**.



Figure 1. LuZen Plus

1.2 LOAD TYPES

LuZen Plus can be used to dim **resistive**, **inductive** and **capacitive** loads (also known as "conventional" loads), as well as **dimnable LED** and **dimnable CFL** loads.

LuZen Plus can perform an **automatic detection of the load type of the conventional lamps** (resistive, capacitive or inductive) connected to the output channel. This makes the device more versatile, as it is not necessary to define by parameter the type of the conventional load connected – LuZen Plus will identify it internally.

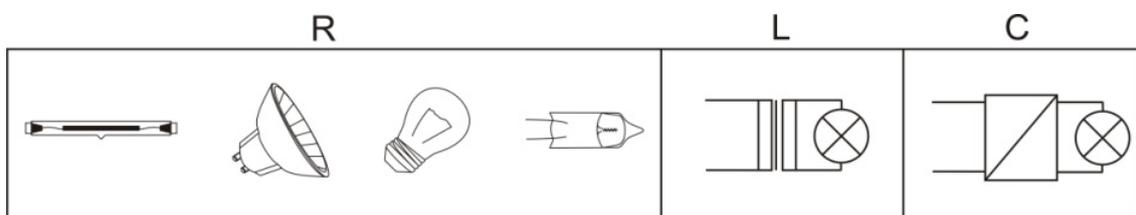


Figure 2. Load types

LuZen Plus can also dim conventional (resistive, capacitive and inductive) loads combined together, provided that the total consumption does not exceed 400 W and keeping in mind the following restrictions:

- Resistive loads (such as traditional ohmic bulbs) may be combined with inductive loads (loads with a conventional transformer) as long as less than 50% of the total load corresponds to the resistive load:

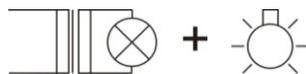


Figure 3. Inductive load + resistive load

- Conventional resistive loads can be installed together with capacitive loads (loads with an electronic transformer) as long as –again– less than 50% of the total load corresponds to the resistive load.



Figure 4. Capacitive load + resistive load

- However, combining inductive and capacitive loads, under any proportion, is **strictly not permitted**.

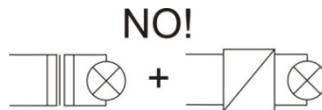


Figure 5. Inductive load + capacitive load

Notes:

- Combining dimmable CFL/LED loads with conventional loads is **not allowed**.
- In order to obtain the best light homogeneity, it is recommended to only combine loads of the **same type** and, in any case, from the same maker, if possible.

1.3 INSTALLATION

Figure 6 shows the connection diagram of LuZen Plus:

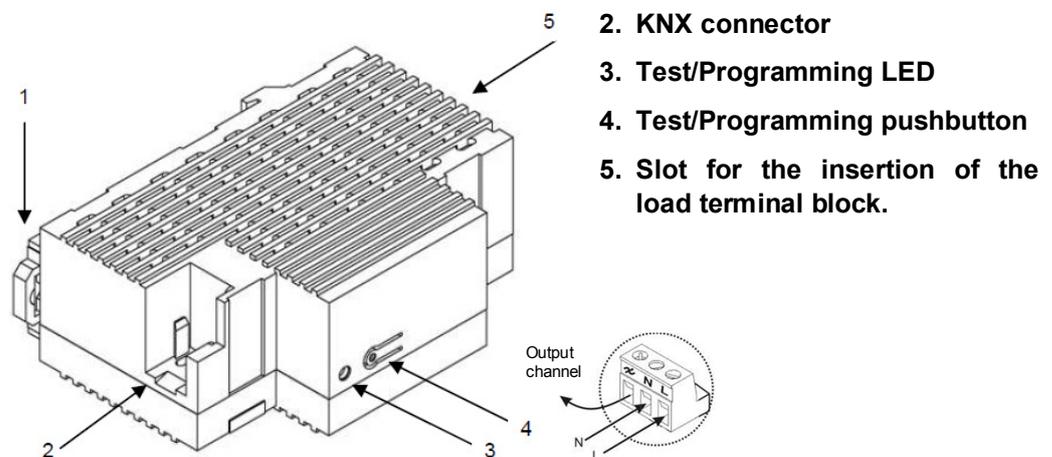


Figure 6. LuZen Plus connection scheme and load terminal block

The LuZen Plus dimmer connects to the KNX bus through the bus connecting terminal (2), included with the device.

The cables to the load and to the main voltage need to be connected to their corresponding slots in the screw terminal (provided with the device), which should then be plugged into the dimmer (5). These cables can be screwed onto the terminal block before the latter is inserted into the corresponding slot in the dimmer.

Note: every device installed next to the dimming actuator must be equipped at least with electric insulation.

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

After connecting the load to the device and this to the KNX bus, the load connected will show a flash (if resistive or capacitive); for inductive loads, this initial flash will not happen, showing that LuZen Plus has recognised the load as inductive. This way LuZen Plus carries out the **automatic detection of the conventional loads** connected to its output. (**Note:** CFL and LED loads will also perform this initial flash).

By short pressing the Test/Programming pushbutton (4), the device will be set into the programming mode, and the associated LED (2) will light in red. If this button is held while plugging the device into the KNX bus, LuZen Plus will enter the **safe mode**. The LED will then blink in red.

A long press (~3 seconds) on this button will make the dimmer go into **test mode**, turning the LED colour green.

The test mode allows switching on and off the load connected to the output of the dimmer by successively short pressing the test/programming push button. I.e., once the dimmer is under the test mode, a short press on the button will switch the load on (if it was off); the next short press will switch it off, and so on. This testing process can be carried out as many times as desired and may be useful for checking the connections and the proper state of the installation.

To leave the test mode, a new long press (at least 3 seconds) over the test/programming pushbutton is required, until the test/programming LED switches off (simply hold the button until the LED changes from green to red; at that moment, release it and the LED will switch off).

Note: to ensure safety, entering the test mode while the device remains locked due to voltage surge situations (see 3.3.11) is not possible. Moreover, if already in the test mode, the device may leave this mode in case of locks due to voltage surge events.

For detailed information about the technical features of LuZen Plus, as well as on security and installation procedures, please refer to the device **Datasheet**, included within the device packaging and also available at <http://www.zennio.com>.

2 CONFIGURATION

LuZen Plus allows controlling and dimming light sources of different types connected to its output. Moreover, it is possible to configure a set of additional functionalities, which make the dimmer a very versatile device:

- **ON/OFF:** basic ON/OFF control and optional Secondary ON/OFF and Memory ON/OFF controls. All of them permit dimming the loads immediately or smoothly (progressive dimming).
- **Simple timer and Flashing:** timed on/off switches of the output of the dimmer.
- **Scenes:** possibility of configuring up to 5 different scenes, in order to define a particular light ambient per scene.
- **Sequences:** possibility of enabling up to 5 different sequences consisting of 4 customizable transitions to create different light ambients.
- **Lock:** option to enable/disable the control of the output of the device.
- **Auto OFF:** automatic switch off of the load connected to the output of the dimmer when the light level stays under a threshold value for a certain time (both set by parameter).
- **Error identification:** automatic detection of anomalous situations that may occur in the load connected to the output channel: open circuit, short circuit, overload, overtemperature, voltage surge and anomalous frequency.
- **Initial Settings:** function to customise the brightness level to be set on a bus/load voltage recovery to the load connected to LuZen Plus, being possible to parameterise an immediate or delayed sending of the status objects to the KNX bus.
- **Logical Functions:** module that lets the integrator enable and configure up to 5 logical functions, which can carry out 1 to 4 different binary or arithmetic operations each.

3 ETS PARAMETERISATION

To begin with the parameterisation of LuZen Plus it is necessary, after opening ETS, to import the product database (LuZen Plus application program).

Next, the device is added to the project where desired. Right-clicking on the device permits selecting the "Edit parameters" option, which will bring the set of options detailed next.

3.1 DEFAULT CONFIGURATION

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

Number	Name	Object Function	Length
0	On/Off (at once)	0=Off; 1=On	1 bit
1	On/Off (smooth)	0=Off; 1=On	1 bit
2	Light Dimming (smooth)	4 bits dimmer ctrl	4 bit
3	Light Precise Dimming (at once)	1 byte dimmer ctrl	1 Byte
4	Light Precise Dimming (smooth)	1 byte dimmer ctrl	1 Byte

Figure 7. LuZen Plus. Default topology

When entering for the first time to the parameters edition, the following window will be shown:

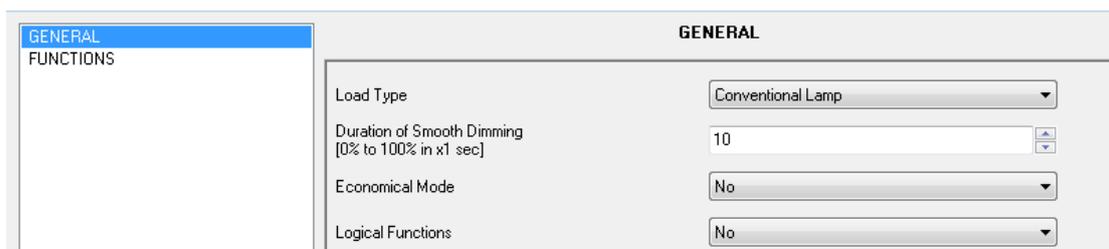


Figure 8. Parametrisation Screen by Default

As shown in Figure 8, the parameterisation screen is divided into two main tabs, which will be explained in detail in the next sections:

- **General:** parameters that refer to general features.
- **Functions:** parameters that refer to specific functionalities.

3.2 GENERAL WINDOW

This section of the settings allows configuring the following:

- **Load Type:** sets, by parameter, the type of the load connected to the output channel of the dimmer, in order to properly carry out the dimming. The available options are:
 - **Conventional Lamp:** this option covers all conventional loads, i.e., lamps with a linear light response in relation to the provided energy. Conventional loads can be **resistive**, **capacitive** or **inductive**. It will not be necessary to specify the concrete load type since Luzen Plus carries out an automatic detection of conventional loads connected to its output. See Section 1.3 for further information.
 - **CFL/LED Lamp:** this option covers loads whose light response is not necessarily linear in relation to the provided energy. Selecting this type of load brings a set of configurable parameters, which are important to achieve a light response in the load as linear as possible.

Load Type	CFL / LED Lamp
Dimming Pattern (Characteristic Curve)	CFL Lamp (Curve 1)
Low Dimming Limit (%)	0
Dimmig Mode	Leading Edge

The available parameters are:

- **Dimming Pattern (Characteristic Curve):** selects the type of the energy transfer curve that best matches the light response of the connected load. There are 5 different options:

Linear / LED lamp (curve 1) / LED lamp (curve 2) / CFL lamp (curve 1) / CFL lamp (curve 2)

The dimming pattern can be modified in runtime through the “**Dimming pattern (only for test purposes)**” communication object. Sending the value “0” sets a linear pattern, while the values “1” and “2” set the

curves 1 and 2 of the LED lamp pattern, respectively. Finally, the values “3” and “4” will set the curves 1 and 2 of the CFL lamp, respectively.

- **Low Dimming Limit (%):** sets the minimum light level (between 0 and 20%) under which the Dimmer will quit from dimming the connected load, with the aim of avoiding undesired effects at low dimming levels.

Note: *if the low dimming limit is configured together with the Economical mode (i.e., maximum light level different from 100%), the dimming limit may be raised compared to the normal range (0-20%).*

- **Dimming Mode:** allows selecting how Luzen Plus will carry out cuts in the load wave. The available options are: Leading edge (default option) and Trailing edge.

The dimming mode may be modified in runtime through the “**Edge select (only for test purposes)**” communication object. Sending the value “0” selects the leading edge cut, while the value “1” sets the trailing edge cut. Finally, the value “2” sets back the option originally parameterised.

- **Duration of Smooth Dimming:** sets the time (in seconds) the dimmer should take to switch the output channel from a light level of 0% (off) to a light level of 100% (on), or vice versa. The available range is [3...200] seconds.

Smooth dimming between two intermediate light levels different to 0%-100% (on-off) are performed at the same speed, so the time needed to carry them out will be lower than the parameterised under "Duration of smooth dimming".

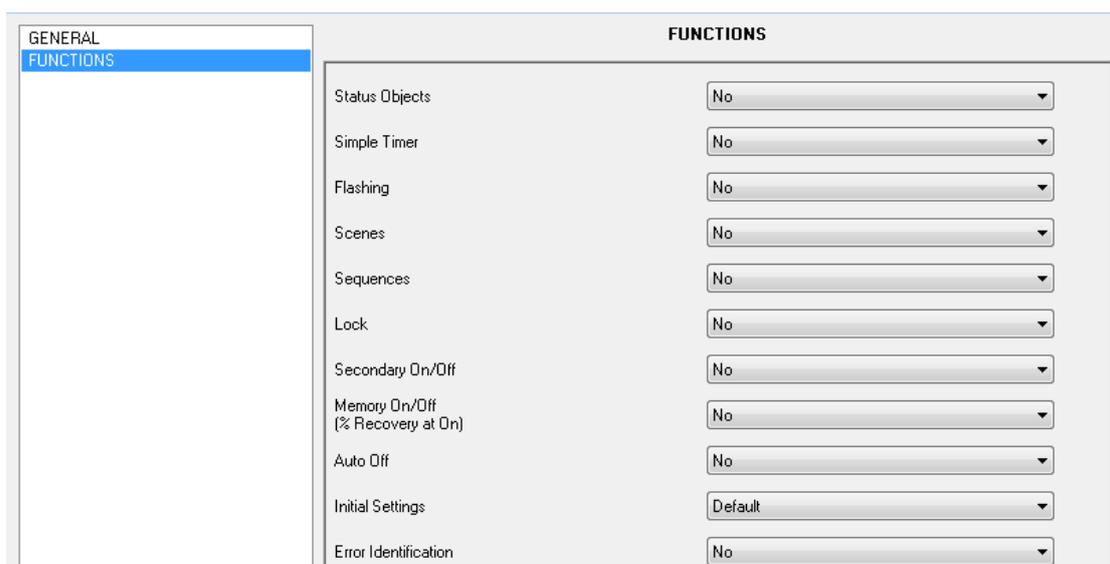
- **Economical Mode:** enabling this parameter (by selecting “Yes” from the drop-down list) will make it possible to customise the maximum brightness level the device will apply to the output channel. This maximum level must be defined (as a percentage) under “Max light Level”, being the valid range [20%...99%]. When Luzen Plus receives a switch-on order through the ON/OFF object or an order to switch the light level to 100%, it performs a series of internal calculations so that the load is applied an intensity proportionally reduced according to the parameterised maximum intensity allowed.

Note that no matter what the maximum permitted light level is, once it is reached LuZen Plus will still send the bus a light level of 100% for consistence in the communication with other KNX devices, such as the **InZennio Z38i** and **InZennio Z41** touch panels, which need to receive the value “100%” in order to interpret the light level as maximum.

- **Logical Functions:** enabling this parameter brings a new tab to the menu on the left, from which it is afterwards possible to configure up to 5 multi-operation logical functions. Please refer to section 3.4 for further information.

3.3 FUNCTIONS

LuZen Plus features a set of different functions, disabled by default (see Figure 9). These functions may be selectively enabled, depending on the requirements of the installation.



FUNCTIONS	Value
Status Objects	No
Simple Timer	No
Flashing	No
Scenes	No
Sequences	No
Lock	No
Secondary On/Off	No
Memory On/Off (% Recovery at On)	No
Auto Off	No
Initial Settings	Default
Error Identification	No

Figure 9. Functions Section by Default

Every available function is detailed next.

3.3.1 STATUS OBJECTS

This function allows to independently enable (by selecting “Yes” under the corresponding drop-down lists) the 1-bit on/off status object (“On/Off Status”) and/or

the 1-byte light level status object (“Lighting Level Status”), which may be used to send feedback to other devices in the KNX installation.



Figure 10. Status Objects

- **On/Off:** enables the “On/Off (Status)” 1-bit communication object, in charge of reporting the on/off state of the output channel when required. Additionally, the “**Send ON when**” parameter sets when the channel status should be considered as “on” and when as “off”, being the available options:
 - **Totally ON:** the output channel is considered as “ON” (“ON/OFF status = 1”) only when the light level is 100%.
 - **Partially ON:** the output channel is considered as “ON” as long as the light level is in the range [1%...100%]. Therefore, any value other than 0% will make the device send the value “ON” to the KNX bus.
- **Percentage:** enables the “Lighting Level (Status)” 1-byte communication object, which is in charge of reporting, when required, the status (in percentage) of the light level applied to the output channel, with a precision of $\pm 1\%$.

3.3.2 SIMPLE TIMER

This function allows actuating over the output channel with a certain delay after the reception of the switch-on (Simple Timer=ON) or switch-off (Simple Timer=OFF) orders. It also implements a configurable length for the “on” state, so that the load can be automatically turned off after a certain interval.

The parameters to be set are:

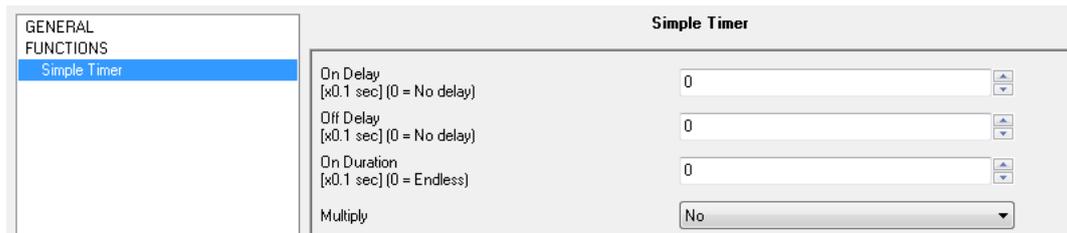


Figure 11. Simple Timer

- **On Delay:** sets the time required to be elapsed between the reception of the Timer ON order and the actual switch-on of the output. This value must be set with a precision of tenths of a second (e.g. 25 for 2.5 seconds). For an immediate reaction, this field should be set to 0.
- **Off Delay:** sets the time required to be elapsed between the reception of the Timer OFF order and the actual switch-off of the output. It is analogous to “On Delay”.
- **On Duration:** sets the time the output should remain ON before it is automatically switched off again. For an endless “on” state, this field should be set to 0.

These parameters determine the timed switches as follows:

1. When LuZen Plus receives a "1" through the "**Simple Timer**" communication object, an ON order is sent to the output after waiting for the On Delay. The output will then stay on until the “ON Duration” expires, after which it will be automatically switched off.
 2. When LuZen Plus receives a "0" through the "**Simple Timer**" communication object, an OFF order is sent to the output after waiting for the Off Delay.
- **Multiply:** allows progressively increasing (multiplying), in runtime, the On Duration time or the On/Off delays of the output. Two situations are distinguished.
 - **No Multiply:**
 - If the On delay count is already running, it will be reset every time a new “1” is received through the “[OX] Timer” object.

- If the output has already been activated and the On Duration time is counting, it will be reset whenever a new “1” is received.
- If the Off delay count is already running, it will be reset every time a new “0” is received.

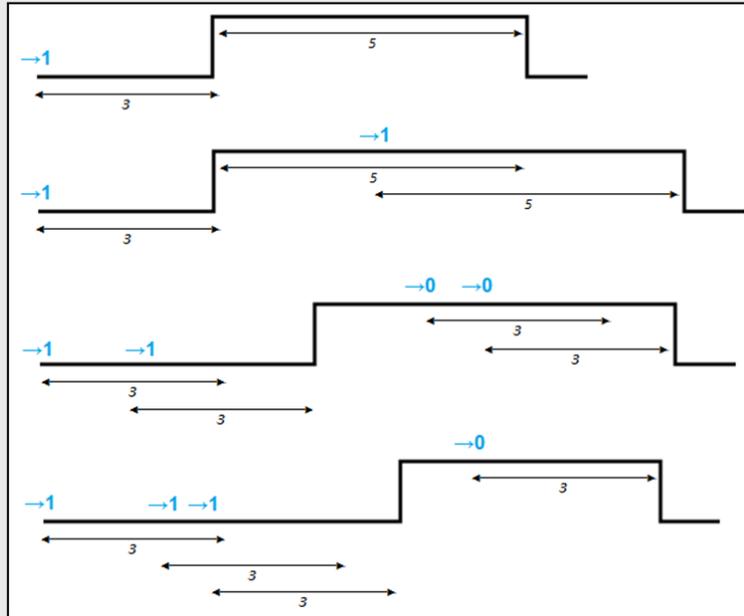
➤ **Multiply:**

- If the On delay count is already running and the value “1” is received several times through the “[OX] Timer” object, then the actual delay time will be “n” times the parameterised time, being “n” the number of times the value “1” is received.
- If the output has already been activated and while the On Duration time is counting the value “1” is received several times, then the actual duration will be “n” times the parameterised time, being “n” the number of times the value “1” is received.
- If the Off delay count is already running and the value “0” is received several times, then the actual delay time will be “n” times the parameterised time, being “n” the number of times the value “0” is received.

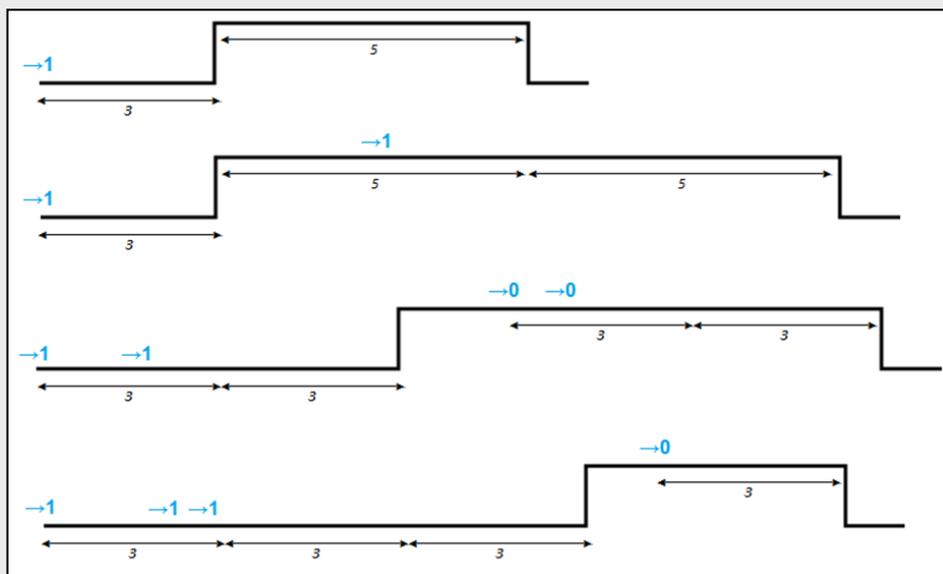
Note: *the Multiply option may be particularly useful under parameterisations with no ON and OFF delays. Nevertheless, as already explained and as the following example shows, these delay times, if parameterised with a value other than 0, do also admit multiplication.*

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

With no multiplication:



With multiplication:



3.3.3 FLASHING

This function allows running **ON-OFF-ON-OFF** sequences with customisable lengths for the “ON” and the “OFF” states. Moreover, it is possible to set the number of repetitions by parameter (up to a maximum of 255), as well as the desired state for the output after the last repetition.

The flashing sequence starts when LuZen Plus receives a "1" through the "**Flashing**" object and stops once it has executed all the configured repetitions (unless if set to 0, which means an endless sequence, as shown later). It is possible to interrupt the flashing sequence at any time by sending the value "0" through the "Flashing" object, or by sending any other control order to the output (e.g., ON/OFF, a sequence, etc.).

Flashing	
On Duration [x0.1 sec]	20
Off Duration [x0.1 sec]	20
Number of Repetitions (0 = Endless)	0
Final Status	Off

Figure 12. Flashing

These are the parameters that can be configured for the flashing function:

- **On Duration:** sets how much time the ON states should last during the execution of the flashing sequence.
- **Off Duration:** sets how much time the OFF states should last during the execution of the flashing sequence.
- **Number of Repetitions:** the number of times the ON/OFF cycle will repeat during the sequence. For endless flashing, this field should be set to zero (in such case the sequence will repeat until an order to deactivate it is received).
- **Final Status:** sets the desired state of the output channel after the last repetition or after the reception of the value “0”. This state can be OFF or ON.

Note: both functions, Simple Timer and Flashing, are independent from each other and also independent from the normal ON/OFF and the secondary ON/OFF controls, as they all are implemented by four different communication objects.

Example:

If a “1” is received through the “Simple Timer” object, a timed switch-on of the output will begin. If an OFF order is sent to the “ON/OFF” object before the timed switches end, the output will switch off and the temporization will be interrupted.

3.3.4 SCENES

This function allows defining a series of predefined light ambients that will be executed on the reception, through the “Scenes” 1-byte object, of their corresponding scene numbers.

GENERAL FUNCTIONS		Scenes	
Scenes		Scene 1	Yes
		Scene Number	1
		Lighting percentage [%]	0
		Dimming Type	At once
		Scene 2	No
		Scene 3	No
		Scene 4	No
		Scene 5	No

Figure 13. Scenes

LuZen Plus allows configuring up to 5 scenes, being necessary to set the following fields for each of them:

- **Scene Number:** the scene number the dimmer output will react to.
- **Lighting Percentage (%):** the brightness level the output will switch to once LuZen Plus receives the corresponding scene through the “Scenes” object.
- **Dimming Type:** the way LuZen Plus will dim the output (smooth or at once) when it is switched to the level corresponding to the scene received.

Note: *if multiple scenes are configured with the same number (wrong configuration), LuZen Plus will only run the first one parameterised, discarding the others (which will never be triggered).*

3.3.5 SEQUENCES

A **sequence** consists of a set of programmed stages or steps, up to a maximum of 4, each of which can be parameterised to switch the output channel to a certain light level during a certain time (up to 255 minutes), both configurable.

This function can be controlled through the "Sequences" 1-byte object.

Sequence	Status
Sequence 1	Yes
Sequence 2	No
Sequence 3	No
Sequence 4	No
Sequence 5	No

Action 1 details for Sequence 1:

- Lighting percentage [%]: 0
- Dimming Type: At once
- Duration [x1 min]: 1
- Final Status (%) (when last action finishes): 0
- Dimming Type: At once

Figure 14. Sequences

Up to a maximum of 5 different sequences (with up to 4 steps each) can be parameterised through the following fields:

- **Sequence Number:** indicates the sequence number (1-64) that, if received through the "Sequences" object, will make the device trigger the sequence being parameterised.
- **Number of Actions:** sets the number of stages the sequence is divided into (1 to 4).
- **Final Status (%):** sets the light level the output channel is required to be set after the last stage of the sequence ends.
- **Dimming Type:** the way LuZen Plus will dim the output (smooth or at once) when it is switched to the level corresponding to the final state.

For every enabled stage (1 to 4), three new configurable fields come up:

- **Lighting Percentage (%)**: the brightness level the output channel will be switched to during that particular stage.
- **Dimming Type**: the way Luzen Plus will dim the output (smooth or at once) when it is switched to the level corresponding to that particular state.
- **Duration**: the time the corresponding action should last, in minutes (up to 255).

Example:

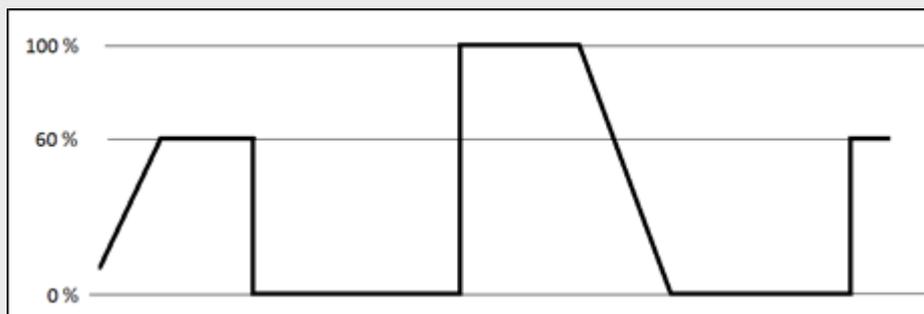
Suppose the following sequence configuration:

Sequence 1 has been enabled and set to be triggered when receiving the value “13” through the “Sequences” object. The sequence is divided into 4 different actions:

- *Step 1: the output is switched to a light percentage of 60% (smoothly). It will remain in this state during 3 minutes.*
- *Step 2: the output is switched to a light percentage of 0% (at once). It will remain in this state during 5 minutes.*
- *Step 3: the output is switched to a light percentage of 100% (at once). It will remain in this state during 2 minutes.*
- *Step 4: the output is switched to a light percentage of 0% (smoothly). It will remain in this state during 7 minutes. When this time expires, the output will be set to a light level of 60% (at once), and then will keep this state indefinitely, until Luzen Plus receives new orders.*

The ETS configuration corresponding to this sequence is shown below:

Sequences	
Sequence 1	Yes
Sequence Number	13
Number of Actions	4
Action 1	
Lighting percentage [%]	60
Dimming Type	Smooth
Duration [x1 min]	3
Action 2	
Lighting percentage [%]	0
Dimming Type	At once
Duration [x1 min]	5
Action 3	
Lighting percentage [%]	100
Dimming Type	At once
Duration [x1 min]	2
Action 4	
Lighting percentage [%]	0
Dimming Type	Smooth
Duration [x1 min]	7
Final Status (%) (when last action finishes)	60
Dimming Type	At once



3.3.6 LOCK

This function makes it possible to lock the dimmer output channel; i.e., to disable its control, whenever the value "1" is received through the "Lock" 1-bit communication

object. In the lock state, any order received from the KNX bus will be ignored, remaining the output in the state it had before the lock order was received.

LuZen Plus will unlock the output once a "0" is received through the "Lock" object. The output will once again keep the state it had before receiving the lock order. Orders received during the lock status will not be taken into account once the output is unlocked, either.

3.3.7 SECONDARY ON/OFF

This function brings the possibility to enable a secondary ON/OFF control of the dimmer output channel, through the "Secondary ON/OFF" 1-bit communication object. This control allows customizing the ON/OFF brightness level of the output and, at the same time, defining if the switch will be performed at once or smooth.

The Secondary ON/OFF is particularly useful when the dimmer is required to set a specific brightness levels for each room (children bedrooms, hospitals rooms, etc.), other than the maximum light level brought by the normal ON/OFF control. In such cases, both options (Normal and Secondary ON/OFF) can be enabled.



Figure 15. Secondary ON/OFF

As Figure 15 shows, the following parameters for the Secondary ON/OFF can be configured:

- **Lighting Level at OFF (%)**: allows defining the brightness percentage (0% to 100%) to be set on the reception of a secondary OFF order.
- **Dimming Type**: allows defining whether the switch-off will be immediate (at once) or soft (smooth). The duration of the smooth switch-off will depend on the configured time for the "Duration of smooth dimming" parameter, under the General tab.

- **Lighting Level at ON (%):** this field allows defining the brightness percentage (0% to 100%) for the secondary ON order.
- **Dimming Type:** define whether the ON will be immediate (at once) or soft (smooth). The duration of the smooth ON will depend on the configured time in the “Duration of smooth dimming” box.

3.3.8 MEMORY ON/OFF

This function allows switching the output on and off with the particularity that the switch-on will always restore the light level the load had when it was switched off (through any of the following objects: “ON/OFF (smooth)”, “ON/OFF (at once)” and “Memory ON/OFF”).

Selecting this feature in ETS will enable the “Memory ON/OFF” 1-bit communication object, and an additional tab to customise the following parameters:

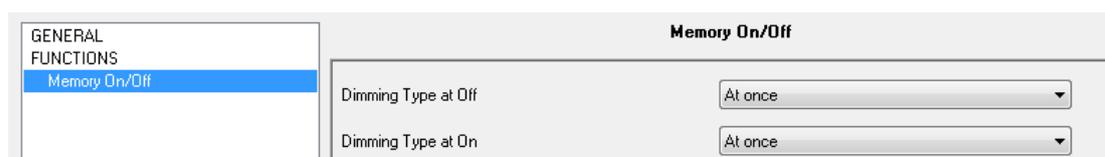


Figure 16. Memory ON/OFF

- **Dimming Type at OFF:** sets whether the switch-off of the output channel when LuZen Plus receives a “0” through the “Memory ON/OFF” object should be “at once” or “smooth”.
- **Dimming Type at ON:** sets whether the switch-on of the output channel when LuZen Plus receives a “1” through the “Memory ON/OFF” object should be “at once” or “smooth”.

The Memory ON/OFF function will only store the light percentage in memory if it is different from 0% and if the dimmer receives the switch-off order through the “ON/OFF smooth”, “ON/OFF at once” or “Memory ON/OFF” communication objects. An order to regulate the light to a level of 0% through the “Light precise dimming” (at once or smooth) objects will not imply LuZen Plus saves the current level, thus, sending an ON command through the “Memory ON/OFF” object will set the light to the level (different to 0%) it had immediately before the last OFF command received.

Note: if an ON command arrives through the “Memory ON/OFF” object and the channel output had already been dimmed to a percentage other than 0%, LuZen Plus will respond by performing a total switch-on (100%) on the output.

3.3.9 AUTO OFF

If the Auto OFF function is enabled, the load controlled by the dimmer may be automatically turned off when the limits set by parameter apply.

The Auto OFF function counts the time elapsed after the output falls below a certain threshold brightness level. If this count exceeds the parameterised timeout, LuZen Plus will turn the load off.

This function does not implement any communication objects as it consists in an internal procedure that LuZen Plus applies to the load depending on the parameterisation.

On the other hand, note that this function is not related to the **load switch-off that, for safety reasons, LuZen Plus performs automatically** upon certain error situations (e.g.: power failure of the KNX bus, overvoltage, short circuit...). For further details please read section 3.3.11.



Figure 17. Auto-OFF

The Auto OFF function allows configuring the following fields:

- **Level (%):** sets the light percentage (between 1% and 50%) the dimmer will consider as the threshold value. Light levels under this threshold, if active during more than the time parameterised downwards, will make LuZen Plus switch the output off.
- **Time:** sets the time (1 to 255 minutes) after which, the device will execute the Auto OFF, provided that the light level is under the parameterised threshold.

Note: when a brightness level lower than that parameterised is detected, the count for the configured time starts before the output is turned off. This countdown is interrupted

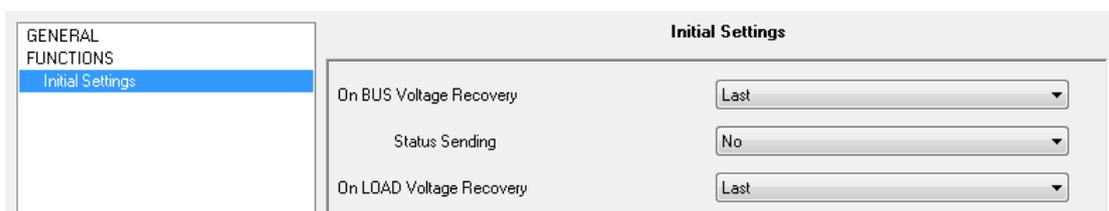
(or reset) if an additional dimming command is received before such time expires.

3.3.10 INITIAL SETTINGS

Permits setting a default or custom initial configuration for the load connected to the output.

Selecting default will make the output recover its previous state every time the bus voltage or the load voltage recover from a failure. After the first ETS download or a device reset, the output remains OFF.

If a custom configuration is selected, the integrator will have the option to set a custom state for the load on bus/load voltage recoveries.



Initial Settings	
On BUS Voltage Recovery	Last
Status Sending	No
On LOAD Voltage Recovery	Last

Figure 18 Initial configuration

The following parameters can be configured:

- **On Bus Voltage Recovery:** sets the desired initial state of the output after a bus power failure or after a download from ETS. The available options are Last (the load recovers the light level it had before the bus power failure) and Positioning (which brings an additional parameter, "Lighting percentage (at once)", to set the specific brightness level (%) the output will be set to).
- **Status Sending:** offers the option to update other devices in the KNX installation after the dimmer start-up by sending the KNX bus the value of the initial state of the output. Once enabled, a new parameter is shown: "Delay", which sets the time (in seconds) LuZen Plus will wait after the start-up before sending the status object(s) to the bus. To get an immediate sending (no delay), this field should be set to 0.
- **On Load Voltage Recovery:** sets the desired initial state of the output on the recovery of the load voltage. The available options are Last (the load recovers the light level it had before the bus power failure) and Positioning

(which brings an additional parameter, “Lighting percentage (at once)”, to set the specific brightness level (%) the output will be set to).

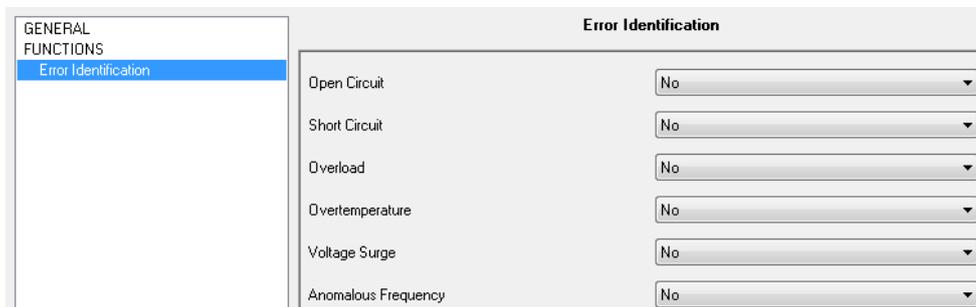
3.3.11 ERROR IDENTIFICATION

As a general rule, when a **bus failure** takes place, LuZen Plus switches off the load connected to the output channel, even if the general power supply has not been affected by the failure.

In addition to the above security measure, LuZen Plus also provides protection against **short circuit, open circuit, overload, overtemperature, overvoltage** (voltage surge) and **anomalous frequencies**.

In order to make LuZen Plus report any of these events to the KNX bus, it is necessary to enable, by parameter, the desired notification(s).

Note: *in the event of an error, LuZen Plus will still implement the corresponding protection even if the option to notify the KNX bus has not been enabled by parameter.*



Error Identification	
Open Circuit	No
Short Circuit	No
Overload	No
Overtemperature	No
Voltage Surge	No
Anomalous Frequency	No

Figure 19. Error Identification

The behaviour of the error identification is as follows:

- **Open Circuit:** enabling the “Open Circuit” parameter brings a new 1-bit communication object under the same name. This object will report the open circuit event by sending the value “1”, while a “0” will reflect that the circuit is in fact connected to a load.

Note: *an open circuit is the situation of not having a load connected to the output channel of the dimmer.*

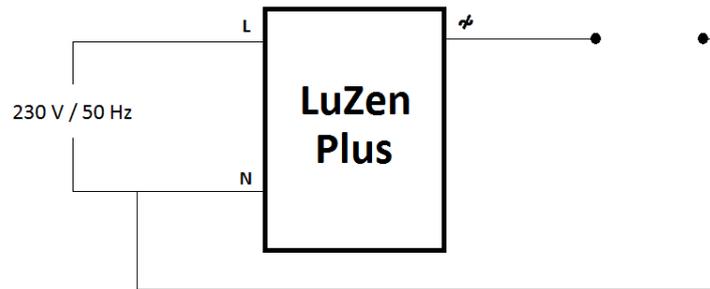


Figure 20. Open Circuit

LuZen PLUS responds to an open circuit event as follows:

- LuZen Plus sends a “1” through the “Open Circuit” object. Any order sent to the dimmer during this situation will be ignored until the circuit is no longer open.
- The load ON/OFF status object will switch to “OFF” and will be sent to the KNX bus (if status objects have been parameterised in ETS).
- The dimmer will periodically monitor whether the open circuit situation is over or not.
- Once the open circuit is over, LuZen Plus will send a “0” through the “Opened Circuit” object, after which the action configured under “On load voltage recovery” will be executed (if any; see section 3.3.10). The device will be ready again to receive new orders from the KNX bus.

Note: *after the open circuit situation is solved, LuZen Plus tests the loads connected to the output channel to verify the load type, since it may have been changed.*

- **Short Circuit:** enabling the “Short Circuit” parameter brings a new 1-bit communication object under the same name. This object will report the short circuit event by sending the value “1”, while a “0” will reflect that the situation is solved.

LuZen Plus responds to short circuits as follows:

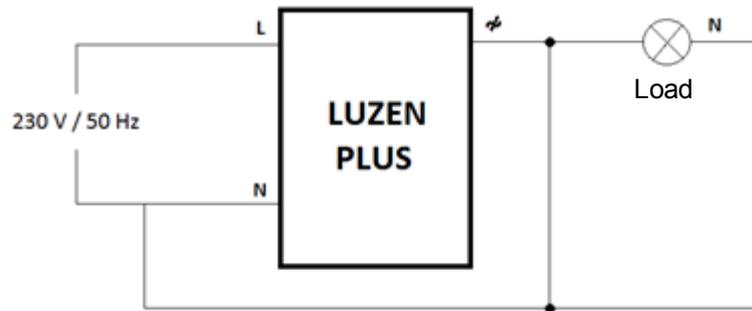


Figure 21. Short Circuit

- When short circuits happen, Luzen Plus sends a “1” through the “Short Circuit” object and switches the load off, which causes that the load status objects turn to “OFF” and are sent to the KNX bus (if enabled by parameter).
- If during the short circuit Luzen Plus receives a dimming order from the KNX bus (ON, timer, scene, etc.), it will try to dim the load, provided that:
 - If the load is still under a short circuit condition, Luzen Plus will not dim the load and will send the value “1” again through “Short Circuit”.
 - If the short circuit is over, Luzen Plus will actually regulate the load and send the value “0” through the “Short Circuit” object.

Note that, even if the load is not under a short circuit anymore, it will remain turned off until Luzen Plus receives further regulation orders.

- **Overload:** enabling the “Overload” parameter brings a new 1-bit communication object under the same name. This object will report the overload event by sending the value “1”, while a “0” will reflect that the situation is solved.

This type of error happens when the total load connected to the dimmer output channel is over **400 W** for conventional loads or over **125 W** for CFL and LED loads.

Luzen Plus responds to overload situations as follows:

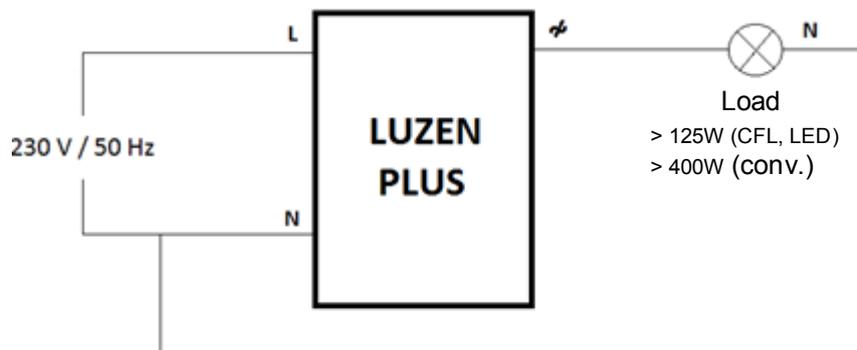


Figure 22. Overload

- When an overload occurs, LuZen Plus sends a “1” through the “Overload” communication object, and switches off the load connected to its channel.
- If during the overload situation LuZen Plus receives a dimming order from the KNX bus (ON, timer, scene, etc.), it will try to dim the load, provided that:
 - If still under the overload situation, LuZen Plus will not dim the load and will send a “1” through the “Overload” object.
 - If the overload situation is over, LuZen Plus will carry out the dimming action and will send the value “0” through the “Overload” object.
- **Overtemperature:** enabling the “Overtemperature” parameter brings a new 1-bit communication object under the same name. This object will report an excessive internal temperature in the dimmer by sending the value “1”, while a “0” will reflect that the situation is solved.

LuZen Plus features an internal protection system that automatically reduces the intensity of the output channel (and therefore the light intensity) when the internal temperature of the dimmer is found to be excessive.

The device may respond differently depending on how excessive the temperature is, as explained next.

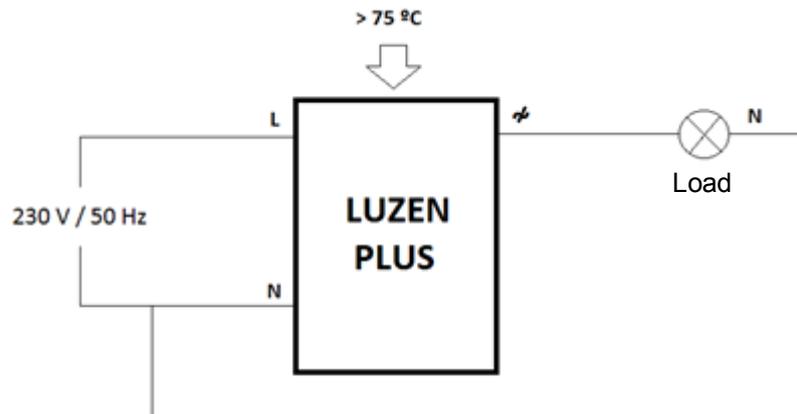


Figure 23. Overtemperature

➤ Internal Temperature in the Range [75°C ... 85°C]:

LuZen Plus sends a “1” through the “Overtemperature” object and sets the brightness level of the load down to 20%. From that moment, any order to set a brightness level greater than 20% will be ignored – orders will still be executed if the new level is under 20%.

LuZen Plus will not send a “0” to the object “Overtemperature” until this situation is over (when the temperature is below 65°C). The light level will stay unchanged until further dimming orders are received to increase or decrease it.

➤ Internal Temperature Over 85°C:

The only difference with the above case is that, under temperatures greater than 85°C, LuZen Plus completely interrupts the output power, thus switching the light level of the load to 0% (which causes that, if enabled by parameter, the ON/OFF object is sent to the bus with the value “0”). Any dimming order received will be ignored until the temperature is under 65°C.

- **Voltage Surge:** enabling the “Voltage Surge” parameter brings two new 1-bit communication objects: “**Voltage Surge**” and “**Lock due to Voltage Surge**”. The former will report situations of excessive voltage by sending the value “1”, while a “0” will reflect that the situation is over. Regarding the second object, its behaviour will be explained later.

The voltage surge error takes place on an overload event, i.e., when the voltage that passes through the dimmer is greater than **265v AC**.

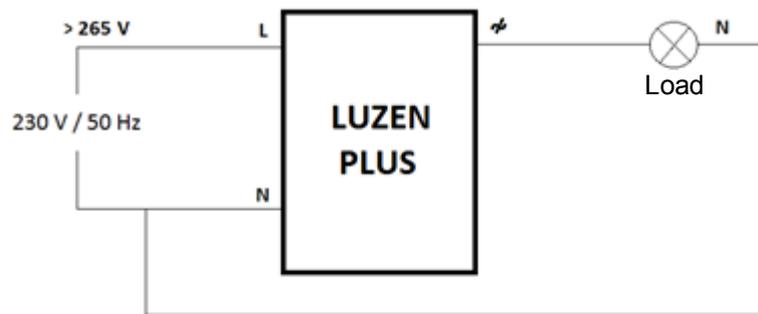


Figure 24. Voltage Surge

LuZen Plus responds to the voltage surge event by sending the value “1” through the “Voltage surge” communication object. On the other hand, any succession of regulations (blinking, simple timer, sequences...) being performed will be interrupted, although further regulation orders received from the KNX bus during the voltage surge state will still be executed. As soon as the voltage that passes through the dimmer is again correct, a “0” will be sent through the same object.

Even though the above applies to every voltage surge event, if the surge is found to **not cease or to be repetitive**, the device will completely stop the light regulation and temporarily remain in standby (thus, ignoring external orders), which will be notified by sending a “1” through the “**Lock due to Voltage Surge**” object and by making the **blue LED** blink. Afterwards, once the normal voltage becomes stable for at least three minutes, LuZen Plus leaves the lock status and sends a “0”.

Nevertheless, in the absence of device resets, if two consecutive locks take place (lock-unlock-lock), a **permanent lock** will activate. It is only possible to leave this state by disconnecting and re-connecting LuZen Plus from the KNX bus, once the voltage has remained stable for at least three minutes time.

Note: *during the lock state due to a voltage surge, LuZen Plus maintains the load off. Once unlocked, it will still remain off until a new switch-on order arrives.*

- **Anomalous Frequency:** enabling the “Anomalous frequency” parameter brings a new 1-bit communication object under the same name. This object will report the detection of an abnormal frequency by sending the value “1”, while a “0” will reflect that the situation is solved.

This option lets LuZen Plus detect **anomalous frequencies in the electrical supply**. Supplier companies are supposed to provide power supply at a frequency of 50 Hz. Nevertheless, different causes may distort such value, because of which, the dimmer needs to prevent such situations in order to protect the system.

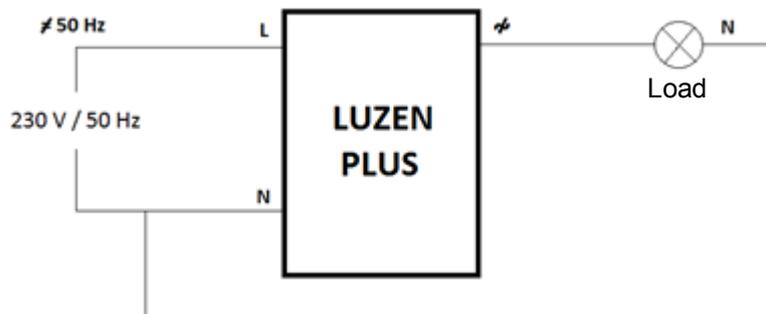


Figure 25. Anomalous Frequency

LuZen Plus controls the frequency of the power supply and responds to anomalous values as follows:

- The frequency is continuously monitored and compared with the expected $50 \text{ Hz} \pm 2\text{Hz}$.
- If the frequency is found to be lower than 48 Hz or higher than 52 Hz, LuZen Plus will send a “1” through the “Anomalous Frequency” communication object, and will respond to this situation analogously as with open circuits: the load connected to the output channel will be switched off (if on) and the value “1” will be sent through the “Open Circuit” object.
- LuZen Plus will then keep monitoring the frequency to detect when the expected value is recovered. In such case, the “Anomalous Frequency” and “Open Circuit” objects will be sent with the value “0”. After that the dimmer will also perform a load test, analogously as at the end of an open circuit situation, and then will set the light level of the load to the value configured for the “On load voltage recovery” parameter, under the Initial Settings tab (if such option has been parameterised in ETS; if not, the load will recover the brightness level it had before the detection of the anomalous frequency).

3.4 LOGICAL FUNCTIONS

This function is provided to make it possible to perform binary logic and arithmetic operations with incoming data from the KNX bus, the result of which can be then sent to other communication objects, specifically enabled for this purpose.

Up to **5 different logical functions** independent of each other can be enabled, each of which can carry out a maximum of 4 operations. To use any of them, it is necessary to have them enabled under the screen shown in Figure 26, which shows up when the option "Yes" is selected for the "Logical functions" parameter, under the General window.

LOGICAL FUNCTIONS	
LOGICAL FUNCTIONS SELECTION:	
- FUNCTION 1	Disabled
- FUNCTION 2	Disabled
- FUNCTION 3	Disabled
- FUNCTION 4	Disabled
- FUNCTION 5	Disabled
TOTAL DATA ENTRY OBJECTS:	
- 1bit	0
- 1byte	0
- 2bytes	0

Figure 26. Logical Functions

The size of the specific communication objects for logical functions can be 1-bit, 1-byte or 2-bytes. It is necessary, in addition, to parameterise how many of them will be necessary to implement the desired operations.

To get detailed information about using and parameterising the logical functions, please refer to the "**Logical Functions X5**" specific document, available at <http://www.zennio.com>.

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.
- **“1st boot”** shows the cases where an object is assigned a certain value by the application program after a device download or a full reset. In case the value of such assignment can be parameterised, ✓ is shown in column “P”. Objects showing a hyphen (-) are not assigned a particular value and therefore can be assumed to be initialised with the value “0”, or with the corresponding updated value in case they depend on an external element (sensors, etc.). Moreover, if the object is sent (or is there an option to send it) to the bus (write or read requests) after a download or a device reset from ETS, the marks **(W)** or **(R)** will be shown, respectively for transmissions or read requests.
- **“Reboot”** shows the cases where an object is assigned a certain value by the application program after a bus power failure. In case the value of such assignment can be parameterised, ✓ is shown in column “P”. Objects showing a hyphen (-) are not assigned a particular value and therefore can be assumed to maintain their previous value after the failure, or with the corresponding updated value in case they depend on external elements. Moreover, if the object is sent (or is there an option to send it) to the bus (write or read requests) after a bus failure, the marks **(W)** or **(R)** will be shown, respectively for transmissions or read requests.

Number	Size	I/O	Flags	Data Type (DPT)	Functional Range	1st boot	P	Failure	P	Name	Function
0	1 Bit	I	C - - W -	DPT_Switch	0/1	-		-		On/Off (at once)	0=Off; 1=On
1	1 Bit	I	C - - W -	DPT_Switch	0/1	-		-		On/Off (smooth)	0=Off; 1=On
2	4 Bit	I	C - - W -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec.by 100%) 0x2 (Dec.by 50%) 0x3 (Dec.by 25%) 0x4 (Dec.by 12%) 0x5 (Dec.by 6%) 0x6 (Dec.by 3%) 0x7 (Dec.by 1%) 0x8 (Stop) 0x9 (Inc.by 100%) 0xA (Inc.by 50%) 0xB (Inc.by 25%) 0xC (Inc.by 12%) 0xD (Inc.by 6%) 0xE (Inc.by 3%)	-		-		Light Dimming (smooth)	4 bits dimmer ctrl

					0xF (Inc.by 1%)						
3	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	-	-	-	Light Precise Dimming (at once)	1 byte dimmer ctrl	
4	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	-	-	-	Light Precise Dimming (smooth)	1 byte dimmer ctrl	
5	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	Secondary On/Off	0=Off; 1=On Secondary	
6	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	Memory On/Off	0=Off; 1=On Memory	
7	1 Bit	O	CTR - -	DPT_Switch	0/1	- W	✓	- W	✓	On/Off (Status)	0=Off; 1=On
8	1 Byte	O	CTR - -	DPT_Scaling	0% - 100%	- W	✓	- W	✓	Lighting Level (Status)	0 - 100%
9	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	Simple Timer	0=Deactivate; 1=Activate	
10	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	Flashing	0=Deactivate; 1=Activate	
11	1 Bit	I	C - - W -	DPT_Enable	0/1	-	-	-	Lock	0=Unlock; 1=Lock	
12	1 Byte	I	C - - W -	DPT_SceneControl	0-63	-	-	-	Sequences	Sequence value	
13	1 Byte	I	C - - W -	DPT_SceneControl	0-63	-	-	-	Scenes	Scene value	
14	1 Bit	O	CTR - -	DPT_Alarm	0/1	-	-	-	Open Circuit	0=Closed Circ.; 1=Open Circ.	
15	1 Bit	O	CTR - -	DPT_Alarm	0/1	-	-	-	Short Circuit	0=No Short Circ.; 1=Short Circ.	
16	1 Bit	O	CTR - -	DPT_Alarm	0/1	-	-	-	Overload	0=No Overload; 1=Overload	
17	1 Bit	O	CTR - -	DPT_Alarm	0/1	-	-	-	Overtemperature	0=No Overtemp.; 1=Overtemp.	
18	1 Bit	O	CTR - -	DPT_Alarm	0/1	-	-	-	Voltage Surge	0=No Vol. Surge; 1=Vol. Surge	
19	1 Bit	O	CTR - -	DPT_Alarm	0/1	-	-	-	Anomalous Frequency	0=Normal; 1=Wrong	
20	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 1	Binary Data Entry (0/1)	
21	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 2	Binary Data Entry (0/1)	
22	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 3	Binary Data Entry (0/1)	
23	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 4	Binary Data Entry (0/1)	
24	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 5	Binary Data Entry (0/1)	
25	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 6	Binary Data Entry (0/1)	
26	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 7	Binary Data Entry (0/1)	
27	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 8	Binary Data Entry (0/1)	
28	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 9	Binary Data Entry (0/1)	
29	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 10	Binary Data Entry (0/1)	
30	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 11	Binary Data Entry (0/1)	
31	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 12	Binary Data Entry (0/1)	
32	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 13	Binary Data Entry (0/1)	
33	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 14	Binary Data Entry (0/1)	
34	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 15	Binary Data Entry (0/1)	
35	1 Bit	I	C - - W -	DPT_Switch	0/1	-	-	-	[LF] (1 bit) Data Entry 16	Binary Data Entry (0/1)	
36	1 Byte	I	C - - W -	DPT_Value_1_Ucount	0 - 255	-	-	-	[LF] (1 byte) Data Entry 1	1 byte Data Entry (0-255)	
37	1 Byte	I	C - - W -	DPT_Value_1_Ucount	0 - 255	-	-	-	[LF] (1 byte) Data Entry 2	1 byte Data Entry (0-255)	
38	1 Byte	I	C - - W -	DPT_Value_1_Ucount	0 - 255	-	-	-	[LF] (1 byte) Data Entry 3	1 byte Data Entry (0-255)	

39	1 Byte	I	C--W-	DPT_Value_1_Ucount	0 - 255	-	-	[LF] (1 byte) Data Entry 4	1 byte Data Entry (0-255)
40	1 Byte	I	C--W-	DPT_Value_1_Ucount	0 - 255	-	-	[LF] (1 byte) Data Entry 5	1 byte Data Entry (0-255)
41	1 Byte	I	C--W-	DPT_Value_1_Ucount	0 - 255	-	-	[LF] (1 byte) Data Entry 6	1 byte Data Entry (0-255)
42	1 Byte	I	C--W-	DPT_Value_1_Ucount	0 - 255	-	-	[LF] (1 byte) Data Entry 7	1 byte Data Entry (0-255)
43	1 Byte	I	C--W-	DPT_Value_1_Ucount	0 - 255	-	-	[LF] (1 byte) Data Entry 8	1 byte Data Entry (0-255)
44	2 Bytes	I	C--W-	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] (2 bytes) Data Entry 1	2 bytes Data Entry
45	2 Bytes	I	C--W-	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] (2 bytes) Data Entry 2	2 bytes Data Entry
46	2 Bytes	I	C--W-	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] (2 bytes) Data Entry 3	2 bytes Data Entry
47	2 Bytes	I	C--W-	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] (2 bytes) Data Entry 4	2 bytes Data Entry
48	2 Bytes	I	C--W-	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] (2 bytes) Data Entry 5	2 bytes Data Entry
49	2 Bytes	I	C--W-	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] (2 bytes) Data Entry 6	2 bytes Data Entry
50	2 Bytes	I	C--W-	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] (2 bytes) Data Entry 7	2 bytes Data Entry
51	2 Bytes	I	C--W-	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] (2 bytes) Data Entry 8	2 bytes Data Entry
52	1 Bit	O	CTR--	DPT_Switch	0/1	-	-	[LF] Function 1 RESULT (1 bit)	FUNCTION 1 Result
53	1 Bit	O	CTR--	DPT_Switch	0/1	-	-	[LF] Function 2 RESULT (1 bit)	FUNCTION 2 Result
54	1 Bit	O	CTR--	DPT_Switch	0/1	-	-	[LF] Function 3 RESULT (1 bit)	FUNCTION 3 Result
55	1 Bit	O	CTR--	DPT_Switch	0/1	-	-	[LF] Function 4 RESULT (1 bit)	FUNCTION 4 Result
56	1 Bit	O	CTR--	DPT_Switch	0/1	-	-	[LF] Function 5 RESULT (1 bit)	FUNCTION 5 Result
57	1 Byte	O	CTR--	DPT_Value_1_Ucount	0 - 255	-	-	[LF] Function 1 RESULT (1 byte)	FUNCTION 1 Result
58	1 Byte	O	CTR--	DPT_Value_1_Ucount	0 - 255	-	-	[LF] Function 2 RESULT (1 byte)	FUNCTION 2 Result
59	1 Byte	O	CTR--	DPT_Value_1_Ucount	0 - 255	-	-	[LF] Function 3 RESULT (1 byte)	FUNCTION 3 Result
60	1 Byte	O	CTR--	DPT_Value_1_Ucount	0 - 255	-	-	[LF] Function 4 RESULT (1 byte)	FUNCTION 4 Result
61	1 Byte	O	CTR--	DPT_Value_1_Ucount	0 - 255	-	-	[LF] Function 5 RESULT (1 byte)	FUNCTION 5 Result
62	2 Bytes	O	CTR--	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] Function 1 RESULT (2 bytes)	FUNCTION 1 Result
63	2 Bytes	O	CTR--	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] Function 2 RESULT (2 bytes)	FUNCTION 2 Result
64	2 Bytes	O	CTR--	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] Function 3 RESULT (2 bytes)	FUNCTION 3 Result
65	2 Bytes	O	CTR--	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] Function 4 RESULT (2 bytes)	FUNCTION 4 Result
66	2 Bytes	O	CTR--	DPT_Value_2_Ucount	0 - 65535	-	-	[LF] Function 5 RESULT (2 bytes)	FUNCTION 5 Result
67	1 Byte	I	C--W-	DPT_LoadTypeSet	0 - 2	-	-	Edge Select (Only for Test Purposes)	Off=0; Leading=1; Trailing=2
68	1 Byte	I	C--W-	Dimming_Pattern_Non-standard DPT	0 - 2	-	-	Dimming Pattern (Only for Test Purposes)	Linear=0; LED1/2=1/2; CFL1/2=3/4
69	1 Bit	O	CTR--	DPT_Alarm	0/1	-	-	Lock due to Voltage Surge	0=Unlocked; 1=Locked

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