

Application manual



**KNX Dimmer 12/24/48 Vdc
with 2/4 channels Tunable White
EK-GD2-TP-2-LV
EK-GD1-TP-4-LV-T**

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Revision	Modifications	Date	Drafted	Verified
1.0	First version	03/11/2025	G. Schiochet	C. Baldini
1.1	References to sequences deleted	14/11/2025	G. Schiochet	C. Baldini

1. Purpose of the document

This manual describes the application details for version A1.0 of the following devices:

- ekinex® 2-channel 12/24/48 Vdc Tunable White KNX dimmer EK-GD2-TP-2-LV;
- ekinex® 4-channel 12/24/48 Vdc Tunable White KNX dimmer EK-GD1-TP-4-LV-T.

This document is intended for system configurators as a description and reference guide for device functionality and application programming. For mechanical and electrical details of the installation device, please refer to the device's technical data sheet.

This application manual and the application programmes for the ETS development environment are available for download at www.ekinex.com.

Document	File name (## = revision)	Version	Device revision	Last update
Technical data sheet	STEKGD2TP2LV_EN.pdf STEKGD1TP4LVT_EN.pdf	1.0 and later	A1.0	11 /2025
Application manual	MAEKGDXTPLVT_EN.pdf	1.0 and later		
Application program	APEKGDXTPLVT##.knxprod	1.0		

2. Product description

The EK-GD2-TP-2-LV and EK-GD1-TP-4-LV-T 2- or 4-channel 12/24/48 Vdc ekinex KNX dimmers allow PWM brightness control of LED loads, with white colour temperature adjustment. Designed specifically for dimmable LED strips and loads, they are compatible with the KNX system and suitable for use with 2 or 4 single channels or with dynamic white colour temperature control TW (warm or cool) on 1 or 2 channels, each consisting of 2 paired channels. The PWM frequency can be set via a drop-down menu in the ETS application, with values in the range 250 Hz – 6 kHz.

Installation is simple via DIN rail mounting, ensuring perfect integration into electrical panels. The devices have an integrated SELV 30 Vdc bus communication module, KNX certified.



In the rest of this manual, reference will be made to both devices interchangeably, highlighting the different characteristics only where necessary.

The devices are equipped with an integrated interface module for the KNX bus and are designed for mounting:

- on a 35 mm profile rail (according to EN 60715) using the plastic support supplied, in the case of 1 and 2-channel models;
- on a standard DIN rail inside electrical panels, in the case of 4-channel models.

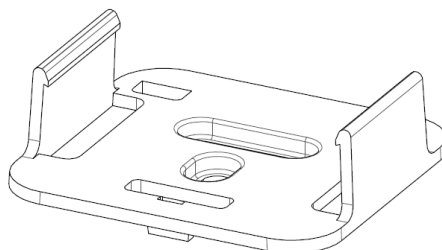


Figure 1 - Bracket for mounting the 2-channel model on a profile rail

During operation, the module receives communication telegrams from the KNX bus sent by another device (e.g. a manual control point, a sensor, a timer, etc.). These telegrams cause the outputs to be activated or deactivated and the percentage of dimming to be changed by applying a series of utility functions defined according to the programming.

The device draws its power from the KNX bus line with a SELV voltage of 30V DC and therefore does not require additional power sources. All auxiliary voltages required for the operation of the internal logic are produced by the device.



For further details and connection diagrams, please refer to the technical data sheets STEKGD2TP2LV_EN.pdf and STEKGD1TP4LVT_EN.pdf, available on the website www.ekinex.com.

3. Switching, display and connection elements

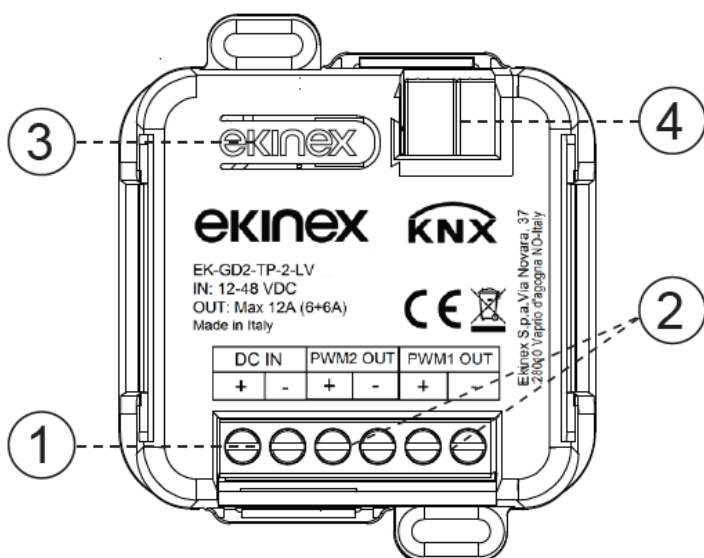
The 2-channel devices are equipped with:

- a button and a KNX programming LED. This button is also used to test the loads, with the KNX bus present
- screw terminals for connecting the power supply for the outputs
- screw terminals for connecting the output loads
- plug-in terminal block for connecting the KNX bus line

4-channel devices are equipped with:

- a button and a KNX programming LED;
- a button and LED for activating/deactivating manual mode;
- a button and an LED for each channel, for local ON/OFF testing of output loads in manual mode;
- screw terminal block for connecting the power supply and output loads
- plug-in terminal block for connecting the KNX bus line

3.1 Layout of EK-GD2-TP-2-LV elements



1. 12/24/48 Vdc input power supply
2. Terminals for output loads
3. Manual mode/KNX programming button and signal LED (internal)/Test button
4. KNX bus terminal

Figure 2 - EK-GD2-TP-2-LV switching, display and connection elements

3.2 Layout of EK-GD1-TP-4-LV-T elements

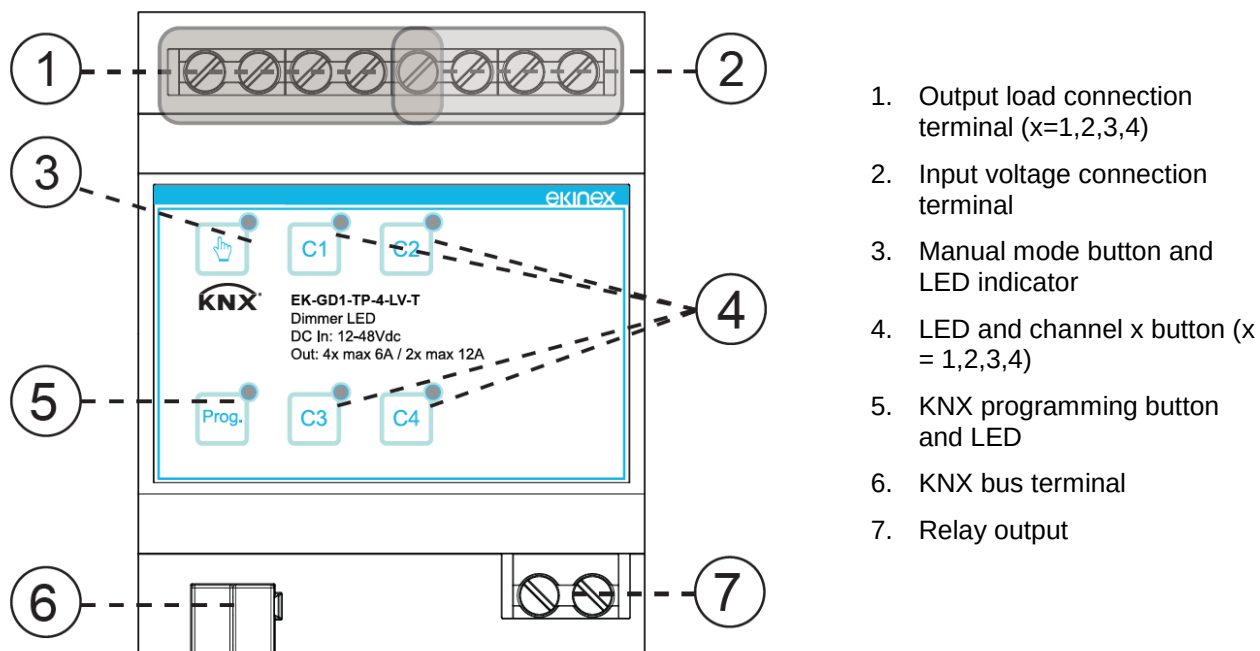


Figure 3 - EK-GD1-TP-4-LV-T switching, display and connection elements



Caution:

Pay particular attention to identifying the correct connections in order to avoid short circuits and damage, which could be fatal to the operator or the device.



Caution:

The PWM frequency can be selected via ETS.

Please change this parameter with caution. Always check compatibility with the connected load: the device may be damaged if the PWM frequency selection is not compatible with the loads connected to the output.

4. Configuration

The functionality of the devices is determined by the settings made via software. These activities must be carried out in accordance with the building automation system design created by a qualified professional.

In order to configure each device, you need the ETS5 development tool (or later versions) and the dedicated application programme **APEKGDXTPLVX##.knxprod**; the latter can be downloaded from the ekinex website www.ekinex.com.

The application programme is the same for both models and allows you to access, within the ETS environment, the choice of device type (2 or 4 channels) and the configuration of all the device's operating parameters. The programme must be loaded into ETS (alternatively, the entire ekinex[®] product database can be loaded in a single operation), after which all devices of the type in question can be added to the project being defined.

The configurable parameters for the device will be described in detail in the following paragraphs.

The configuration can be, and generally will be, defined completely in *offline* mode; the transfer of the set configuration to the device will then take place during the programming phase, described in the following section.

Product code	No. of channels	ETS application programme (## = revision)	Communication objects (Max. no.)	Group addresses (Max. no.)
EK-GD1-TP-2-LV	2	APEKGDXTPLVX##.knxprod	50	254
EK-GD2-TP-4-LV-T	4		98	254



The configuration and programming of KNX devices require specific knowledge; to acquire this knowledge, it is recommended that you attend the appropriate training courses at a centre certified by the KNX consortium.

For further information, visit www.knx.org.

5. programming and commissioning

Once the device configuration has been defined within the ETS project according to the user's requirements, the following steps must be taken to carry out programming:

- electrically connect the device, as described in the technical data sheet or instruction sheet, to the KNX bus in the final destination system or in a reduced system, specifically designed for programming. In any case, the system will contain an interface device to the PC on which the KNX environment is installed;
- apply power to the bus
- activate the programming mode on the device by pressing the appropriate button on the front panel. The programming mode indicator LED should light up steadily
- from the ETS environment, start programming (which, in the case of initial configuration, must include the physical address to be assigned to the device).

Once the programme has been downloaded, the device will automatically return to operating mode; the programming LED should be off. The device is now programmed and ready for operation in the system.

5.1 Resetting the device

To reset the device, remove the connection to the bus network by pulling the bus terminal out of its socket. While holding down the programming button, reinsert the bus terminal into its socket; after about 10 seconds, the programming LED will flash rapidly. Release the programming button and remove the terminal again; the reset has been performed. At this point, it is necessary to re-address and reconfigure the device using ETS.



Warning! The reset resets the device to its factory default settings. The addressing and parameter values set during configuration will be lost.

6. Description of functions

The devices are dimmers for dimmable LED strips and loads, with white colour temperature adjustment. They activate and modulate their outputs according to the commands received via bus.

They also incorporate numerous additional functions such as:

- ON/OFF control and light intensity adjustment of individual or grouped lighting fixtures
- Selection of the PWM output frequency from ETS, from 250 Hz to 6 kHz
- Two configurations available: 1 TW-coupled channel, or 2 independent channels
- TW function: allows two LED strips to be controlled, one warm white and the other cool white, so that by adjusting the brightness of each channel appropriately, it is possible to gradually switch between the minimum and maximum colour temperatures of white
- Possibility of connecting the outputs in parallel to increase the output power
- Fade-in and fade-out time, minimum and maximum brightness levels, linear or logarithmic adjustment curve can be set from ETS
- Soft or instant on/off, with adjustable delay
- Configuration of behaviour after power restoration, bus ON/OFF, download via ETS
- Channels can be set from ETS as independent, in parallel or with copy function from another channel
- Lock function, forced operation, stair lighting, scenarios, night mode, counter and logic functions for each channel, configurable via ETS
- Automatic temperature adjustment based on light intensity: as brightness decreases, the colour temperature of the strips connected in TW warms up, gradually changing from a neutral white to a warmer, more intense colour
- Power failure alarm (Power OFF)
- Auxiliary output function via relay (external) with status indication via KNX
- Installer mode (with KNX bus active): pressing the programming button for about 2 seconds activates/deactivates the flashing of the programming LED and the load approximately every 1 second.

The functional blocks described are illustrated in the following figure, which is particularly important for understanding which functions have priority over others:

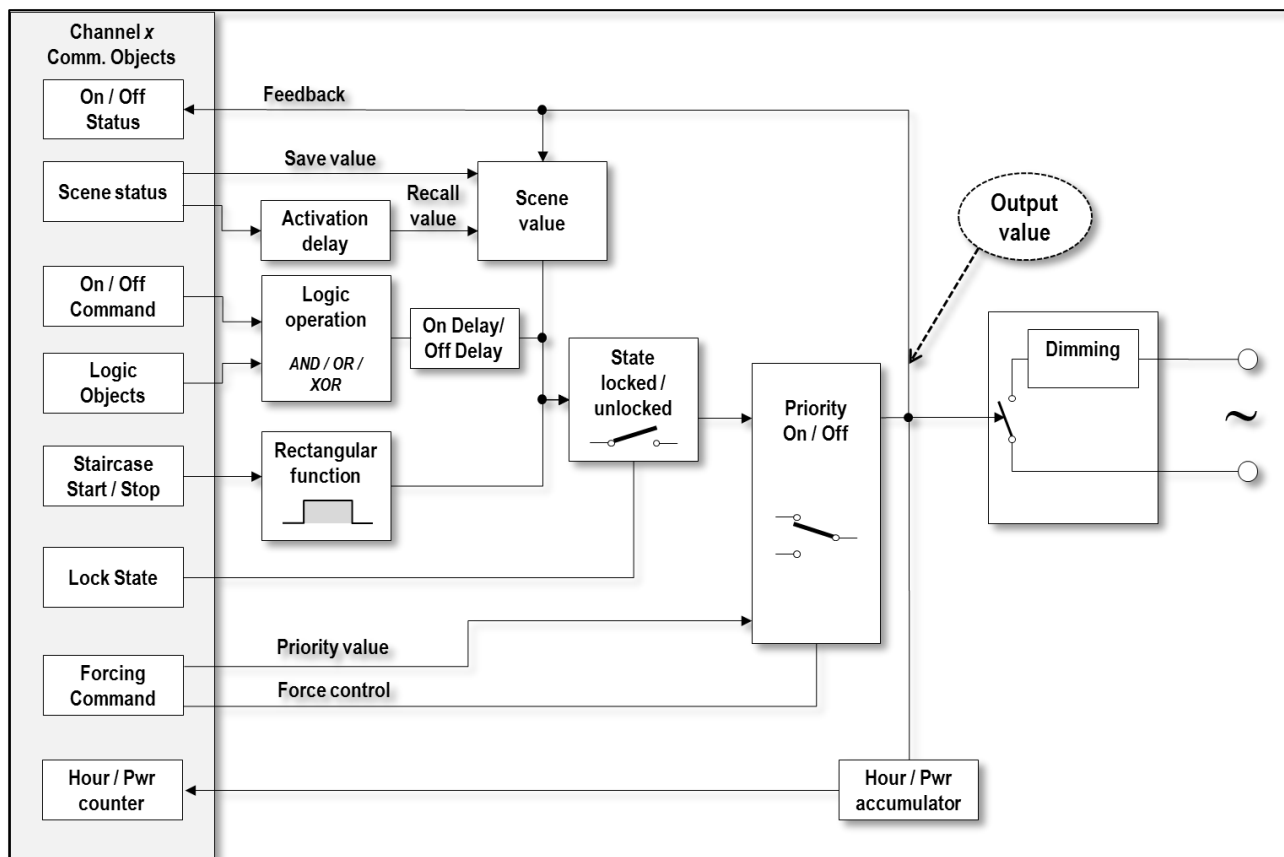


Figure 4 - Functional block diagram

The diagram in Figure 4 relates to the on-off switching functions of the outputs; however, some functions also influence the dimming value. For example, scenario management also concerns the definition of the intensity value associated with the scenario. Full details are described in the paragraphs concerning the individual functions.

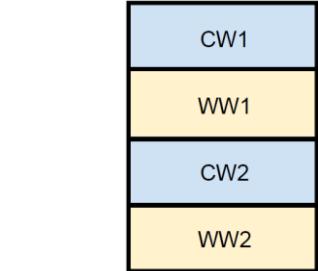
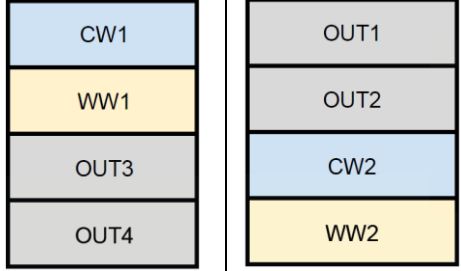
7. Tunable White function

With this function, as an alternative to using the outputs independently, it is possible to associate two outputs to work in tandem and control two LED strips, one warm white and the other cool white. By adjusting the brightness of each LED strip appropriately, it is possible to gradually switch between the minimum and maximum white temperatures.

In the 2-channel model, only the following configuration is allowed:

	One Tunable White channel with 2 outputs in parallel Outputs 1+2 and 3+4 must work in parallel to double the deliverable current, as a single Tunable White channel. Convention: • CW 1 = Cold White 1 • WW 1 = Warm White 1 (warm light)
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For the 4-channel model, the following configurations are available:

	Two Tunable White channels Both OUTPUT 1+2 and 3+4 must work in tandem. Convention: • CW X = Cold White 1 ... 2 (cold light) • WW X = Warm White 1 ... 2 (warm light)
	One tunable white channel + 2 independent outputs Convention: • CW X = Cold White 1 ... 2 (cold light) • WW X = Warm White 1 ... 2 (warm light) • OUT X = independent output 1 ... 4

8. Operation at power-up

When connected to the bus, which also supplies power to the logic, the device enters a state of full activity after a short period (in the order of tens of milliseconds) required for reinitialisation. It is possible to define a longer additional delay to avoid overloading the bus during the system start-up phase.

An unprogrammed device does not perform any activity on the bus; however, the outputs can be individually activated in manual mode (see below) using the membrane keypad on the front panel.

In the event of a voltage drop on the bus (voltage below 19 V for 1 s or more), the device switches off; before the power supply becomes insufficient, the status at the time of shutdown is stored internally.

When power is restored, the device resumes operation by restoring the status stored at shutdown, except for those parameters for which a different behaviour has been configured.

The configuration options allow you to define the status of the device after certain significant events. These events are:

- Switching on the device outputs, i.e. applying mains voltage to power the outputs (only available if the auxiliary relay output is disabled);
- Bus off, i.e. lack of KNX bus voltage (only available if the auxiliary relay output is disabled)
- Bus on, i.e. application of KNX bus voltage
- Downloading a new configuration via ETS

Additional events are associated with specific functions such as output forcing and the lock function.

For each of these events, the status of the outputs can be chosen from different combinations of values depending on how the outputs themselves are configured; these combinations of values will be indicated below in the paragraphs dedicated to the description of the corresponding functions.

9. Offline operation

Since the logic is powered by the KNX bus, a device that is not connected to the KNX bus has no operating mode, even if the power supply voltage remains present.

10. Manual operation

Manual operation is an alternative to controlling the inputs via bus commands; this mode is intended for testing or maintenance situations.

The 4-channel model allows manual control via the membrane buttons on the front of the device. After activating manual mode, pressing each button briefly or for a longer period allows a local ON/OFF test of the load connected to the respective channel.

The 2-channel model also features an "installer mode" for testing the load: pressing the programming button for 2 seconds activates/deactivates the 1-second flashing of the programming LED and the load.

To perform installation tests, the KNX bus must be connected and active.

11. Online operation

In addition to direct activation, the device also has auxiliary functions such as timing and logical combination of inputs. These functions are described in detail in the following paragraphs.

11.1 Software operation

The software performs the following tasks:

- Updating internal status variables based on telegrams on the KNX bus
- Implementing timing and other built-in functions to determine the status of physical outputs
- Activating the physical outputs based on the status of the logical outputs
- Respond to requests on the bus relating to communication objects.

There are also special events that can trigger additional functions. These events include, for example, a drop or restoration of bus or mains voltage and the loading of a new configuration from ETS (download).

11.2 Status variables (communication objects)

The status of the device, and specifically of its interface elements (outputs), is based on status variables that are automatically defined by the application programme. When a status variable is assigned a group address, it effectively becomes a KNX communication object; as such, it takes on the usual characteristics of communication objects, including, for example, the possibility of using flags to determine how the modification of the object affects its transmission on the bus.

11.3 Output management

In the simplest case, three communication objects are available for controlling each channel:

- **On-Off command**, turns the load connected to the channel on or off;
- **Dimming command**, changes the dimming percentage (intensity) incrementally, i.e. with increase/decrease/stop commands;
- **Absolute setpoint control**, allows the dimming percentage to be specified directly.

If the channel is configured as Tunable White, the following control objects are also available:

- **Colour temperature command (%)**: allows you to send the white gradation (warm or cool) as a percentage;
- **Colour temperature command (K)**: allows a command to be sent to set the colour temperature of white;
- **Colour temperature dimming**: to adjust the dimming level with a 4-bit object (3-bit controlled).

Two parameters are also available for switching on and off by dimming:

- **Switch on via dimming**
- **Switching off on dimming**

The following options are available for each of the parameters:

- **Always:** switching the dimmer on/off is always possible, both with direct On/Off command and with absolute or relative (percentage) dimming command;
- **Only via dimming:** switching the dimmer on/off is only possible with a direct On/Off command or with a relative dimming command;
- **Percentage control only:** the dimmer can only be switched on/off using the direct On/Off command or absolute dimming control (i.e. by specifying a percentage value);
- **Never:** the dimmer can only be switched on/off with a direct On/Off command and never with dimming.

11.4 Channel status information

Two communication objects are available for feedback on the status of each channel:

- **On/Off status:** there is an object for each individual output.
- **Current dimming value:** contains the current dimming value set for the channel.

If the channel is set for Tunable White operation, the following status objects are also available:

- **Colour temperature status (%):** contains the current colour temperature value, in %;
- **Colour temperature status (K):** contains the current colour temperature value, in K;

When these communication objects are defined, they are automatically transmitted at each status change, so that events can be generated at each actual change in the output. It is also possible to configure the objects so that transmission also takes place at regular intervals and to set the transmission delay after the KNX bus has been restored.

There is also a communication object called **Auxiliary Output Status**, which is set to ON if at least one load is active, and OFF if no load is controlled. It can be used to control any power supplies for lamps.



When the switch-on and/or switch-off mode is set to *soft*, the communication object indicating the current dimming position provides feedback on the actual value that will be reached at the end of the ramp. Similarly, during dimming, feedback is provided on the final value (maximum or minimum value) and only after the dimming command has been released is feedback provided on the actual dimming percentage achieved.

11.5 Dimming functionality

The main parameters relating to the dimming function are as follows:

- **Adjustment curve:** linear or logarithmic.
- **Minimum/maximum dimming value:** these are the values that define the maximum brightness of the lamp, those that will be associated with the "On" state (intensity and balance or colour), and the limits to be used for dimming operations.
A more detailed description of the limits for the various modes can be found in the following paragraph.
- **Ramp time for full dimming:** this refers to the complete transition from 0% to 100%. If smaller variations are defined (e.g. in sequences), the times will be proportionally shorter.
Different times can be defined for the following transitions, for each channel:

- Absolute dimming (i.e. when the percentage of intensity to be reached is controlled directly);
- Relative dimming (i.e. that obtained with commands such as "raise" / "lower")
- Switching on (upon receiving an "On" command)¹
- Switching off (upon receiving an "Off" command)

If the channel is configured as TW, the following settings are also available:

- **Minimum colour temperature (%)**: allows you to set the minimum value for colour temperature in steps of 5% of warm and cool white;
- **Maximum colour temperature (%)**: as above, but referring to the maximum value;
- **Absolute colour temperature for warm white (K)**: absolute reference value for warm white;
- **Absolute colour temperature for cool white (K)**: as above, referring to cool white.

11.6 Automatic colour temperature adjustment

In the parameters of a channel set as Tunable White, there is a parameter that enables automatic adjustment of the temperature according to the light intensity.

Imitating the behaviour of traditional incandescent lamps, as the brightness decreases, the colour temperature of the light warms up, gradually changing from a neutral white to a warmer, more intense colour.

If this function is enabled, two thresholds can be set, defined as a percentage, relative to the light intensity:

- **Light intensity threshold 1**: lower limit above which the colour temperature must be adjusted using the 'minimum colour temperature (%)' parameter, described in the paragraph 11.5 ;
- **Light intensity threshold 2**: upper limit below which the colour temperature must be adjusted using the "maximum colour temperature (%)" parameter, described in the paragraph 11.5 .

Between the two thresholds, the colour temperature varies linearly from threshold 1 to threshold 2 depending on the brightness.

11.6.1 Intensity limits

It is possible to define certain parameters to limit the intensity range, both for technical purposes (e.g. flicker prevention or over-piloting) and for functional purposes (e.g. optimisation of usable ranges or desired maximum or minimum brightness).

The **Minimum dimming value** and **Maximum dimming value** parameters allow you to limit the dimming range between a minimum value and a maximum value, calculated as a percentage of the maximum dynamic range available. After setting these numbers, the adjustment values will be normalised with respect to the two

¹ The dimming time "On" is applied even if the intensity to be reached is not equal to 100%, for example with a restart command when set as "Previous" restart level.

new limits, with the new 0% corresponding to the minimum adjustment and the new 100% corresponding to the maximum adjustment.

11.7 Switch-on/switch-off delay

It is possible to set delays between the command to change the status of an output and the actual switching. A separate delay time can be set for each transition in activation and deactivation (or, in electrical engineering terminology, in excitation and de-excitation); these times are indicated in the following figure as T_{ON} and T_{OFF} respectively.

These delays apply to switching via direct command and/or logical objects, but not to switching caused by other functions (e.g. staircase lighting or scenario).



Note: the switch-on delay must be set according to the power supply used for the loads, taking into account its switch-on time, in order to avoid false power failure alarms on the bus.

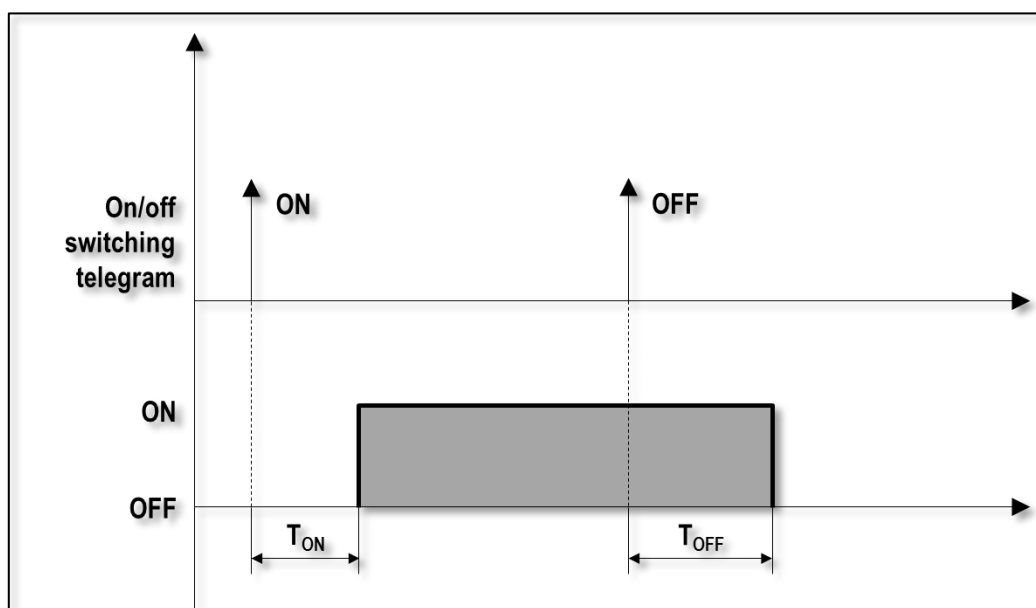


Figure 5 - Switching delays

11.8 Alarm information

With regard to device-level alarm/fault indicators, the **Power Supply Alarm Status** communication object is available. It is activated if the power supply voltage to the power stage is missing.

11.9 Staircase lighting function

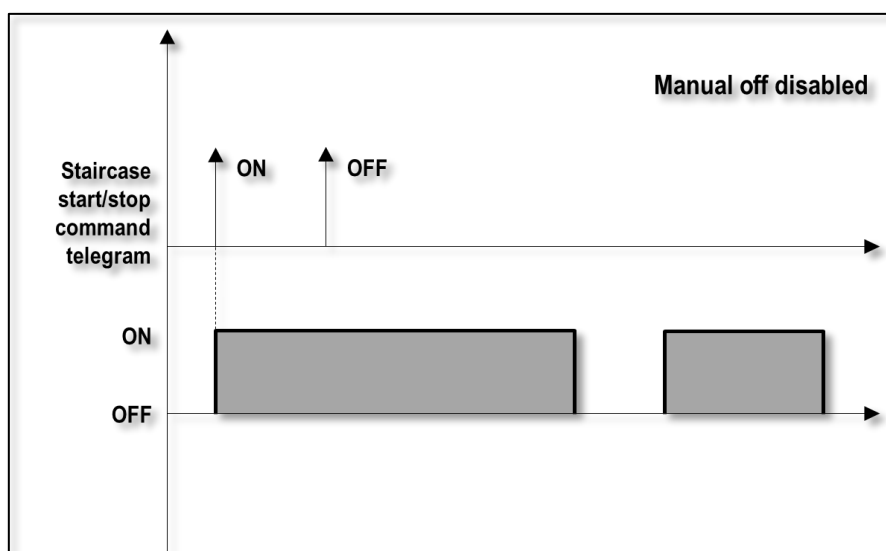
The purpose of this function is to allow simple and flexible management of the timing of staircase lights or similar utilities. The specific requirements are as follows:

- The light is activated by a "Start" command (e.g. via a button or presence sensor) and must normally remain on for a programmed base time.
- It must be possible to activate a "Stop" command (manual OFF), again via a button or other event, which allows the light to be switched off before the programmed time (e.g. when a sensor detects that the person passing through has left the building);
- It must be possible to allow another "Start" command, received during the timing, to restart the time count (retriggerable).
- An additional function, known as "pre-warning", can cause the light to be temporarily switched off a certain distance before the time expires to warn of the imminent end; both of these times (duration of the interruption and distance from the end) can be set.



- The pre-warning time must be shorter than the staircase light time ($T_{P-W} < T_S$) and the interruption time must be shorter than the pre-warning time ($T_I < T_{P-W}$).
- The set on/off delay times have no influence on the staircase lighting function.
- A timing process in progress will be terminated by a device reset (bus voltage drop and recovery or reprogramming from ETS) or by the use of any function that affects the output (e.g. direct command, forced command, logic function, scenario recall), even if the on/off value of the output is not changed by the function used.
- In the event of forced termination of the timing, the output value remains the one active at the time of termination; this also applies if termination occurs during the warning time.

The following figures illustrate how the manual switch-off function works:



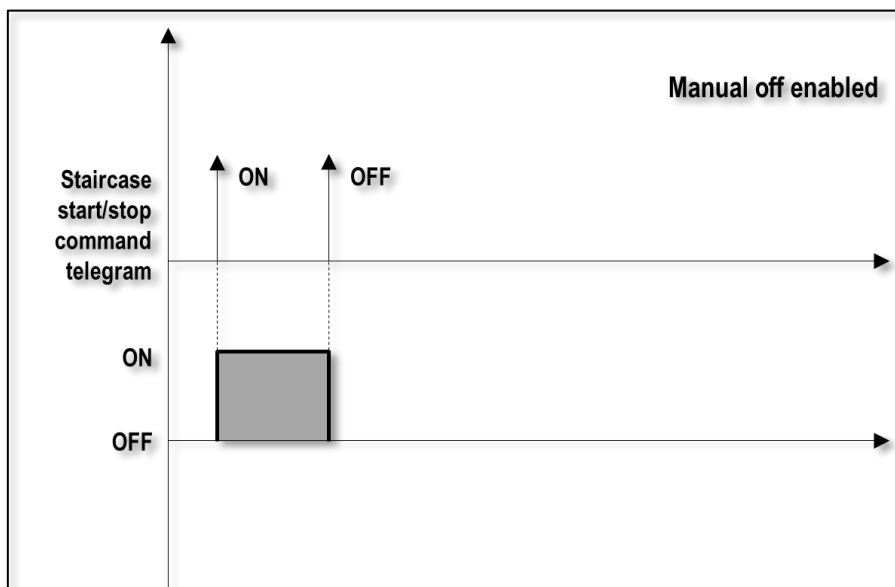
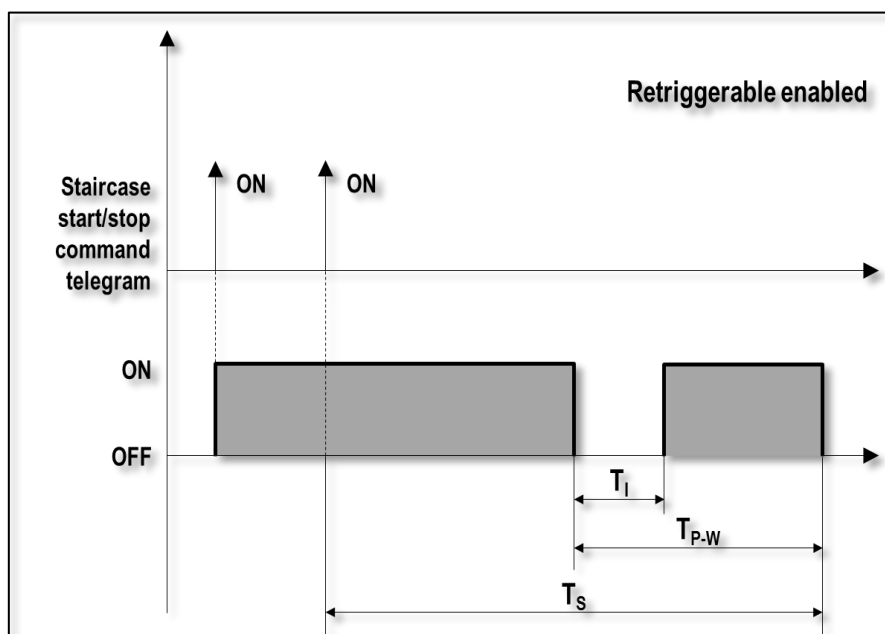


Figure 6 - Manual shutdown function

The following figures illustrate the operation of the *restart* function (*retriggerable*):



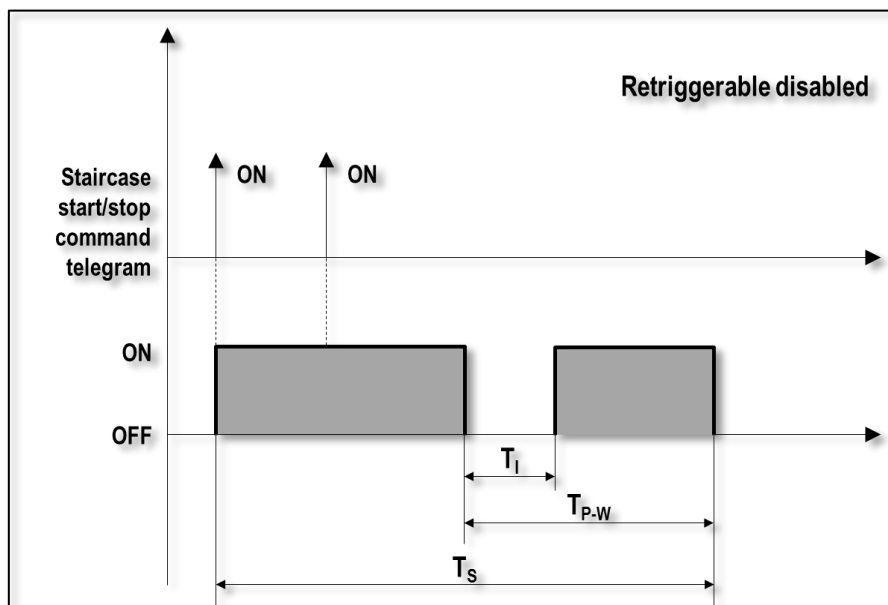
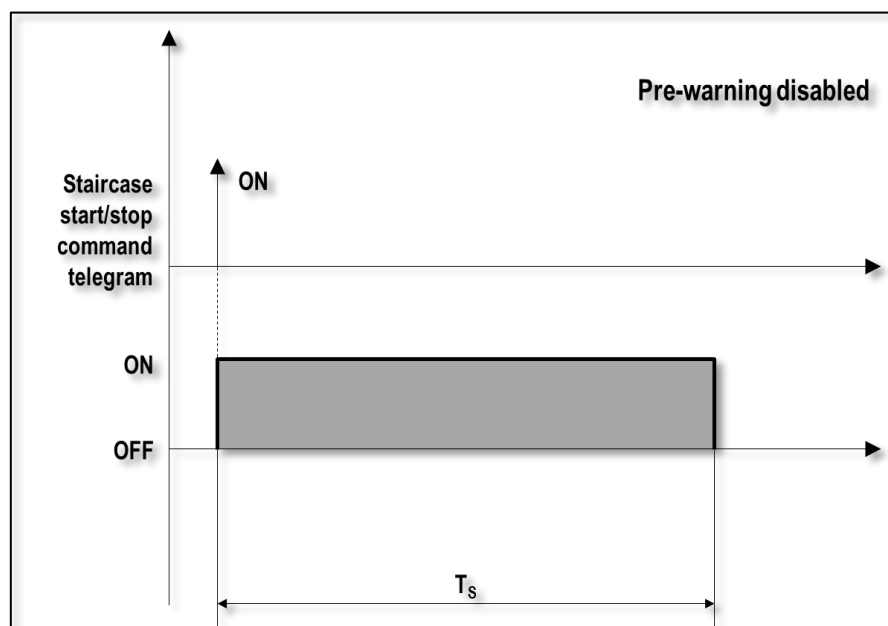


Figure 7 - Staircase function with/without restart

The following figures illustrate how the *pre-warning* function works:



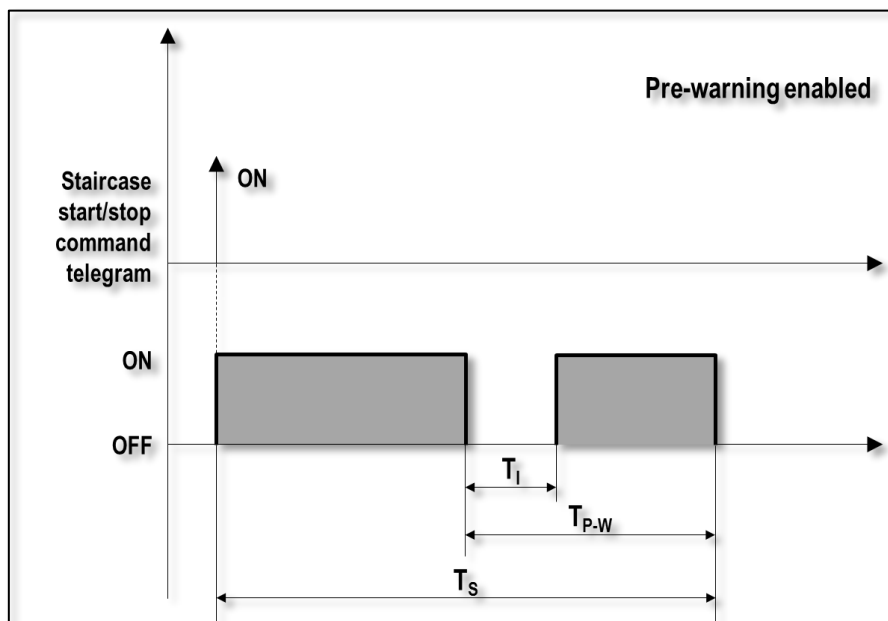


Figure 8 - Pre-warning function

11.10 Logic combination function

The device can condition the status of the outputs by applying a simple logic block.

Direct control can be applied to the input of a block with a logical operation that can be selected from *AND*, *OR* or *Exclusive OR*. Up to 8 additional values can be supplied as inputs to the same block, referring to communication objects accessible via bus to other external devices. If desired, a negation operator can be applied individually to each of these objects to invert their value.

The inputs formed by the objects are then logically combined as shown in the following figure:

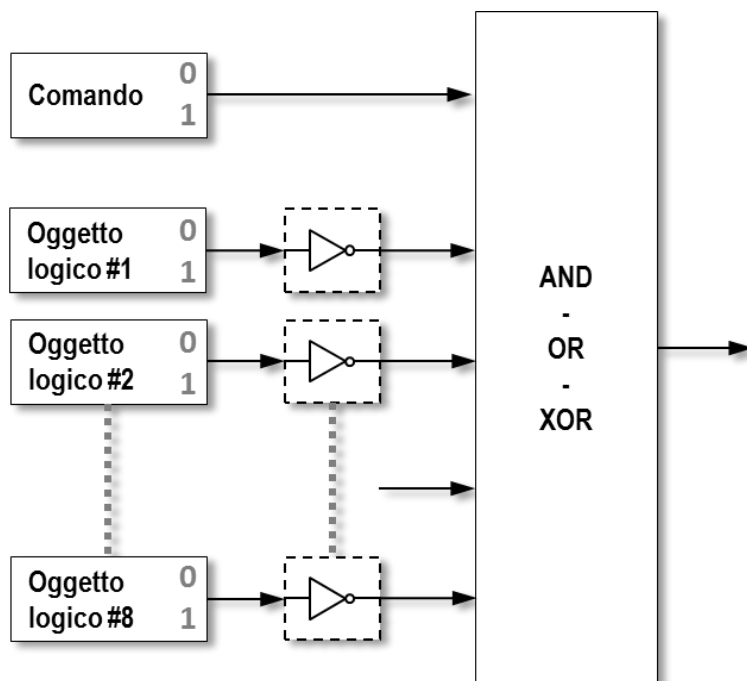


Figure 9 - Logic combination function

The logic block, on the right in the figure, has the following function depending on the operation selected:

- OR – the output is ON when at least one of the inputs is ON;
- AND – the output is ON only if all inputs are ON;
- XOR – the output is ON if an odd number of inputs are ON.
The latter function is more intuitive if only two inputs are considered: in this case, the output is ON when either one input or the other is ON, but not both together.

It should be noted that, in this description, 'input' and 'output' refer only to the logic block; for the purposes of device operation, the actual 'inputs' are given by the communication objects, so the possible activation of inverters must also be considered.

This structure also allows for the implementation of fairly complex logical combinations; more advanced programmability would have added excessive complexity and would therefore have been outside the scope of achieving a user-friendly structure.

The following figures better illustrate the basic logical functions, assuming that the direct command and a single logical communication object are used as inputs:

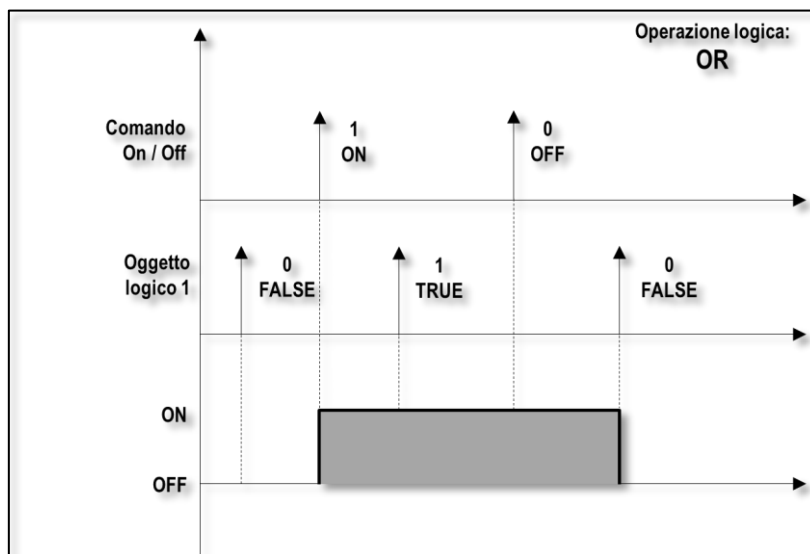


Figure 10 - Logical OR function

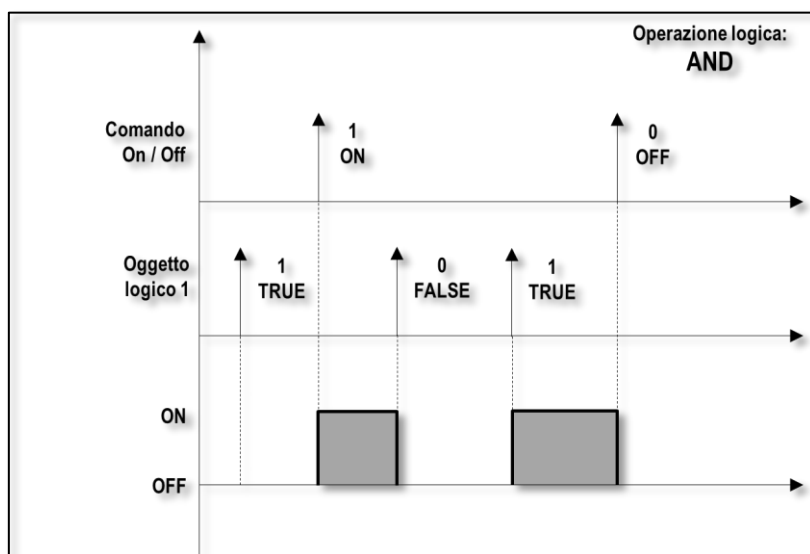


Figure 11 - Logical AND function

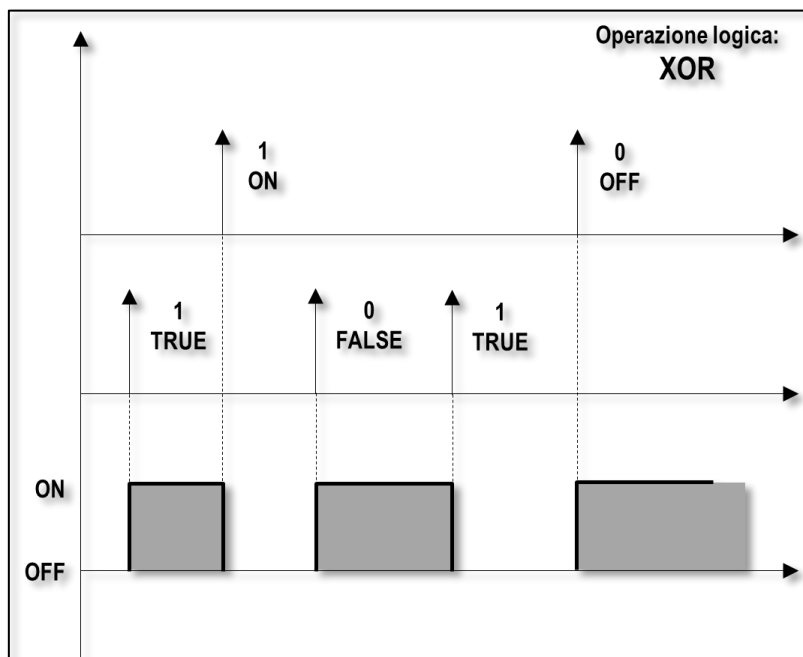


Figure 12 - Exclusive OR (XOR) logical function

11.11 Lock function

If the blocking function is enabled, the activation of a channel can be inhibited by the bus by writing a value to a communication object. The object has the KNX datapoint type "enable"; it is important to note that the meaning of this value when set to On is *"enable block"*, not to be confused with *"enable blocking function"* or *"enable output"*.

Furthermore, the meaning of the value can be inverted via a parameter, so that a value of "enable = On" is interpreted as *"disable block"*.

A blocked output ignores direct switching commands for the duration of the block, maintaining (unless other functions intervene) the value in force at the time of entry into the block. It is possible to assign the output status to a particular value both when entering lockout and when releasing lockout; it is also possible to indicate whether the lockout status should remain or expire when power is restored after a bus power failure.

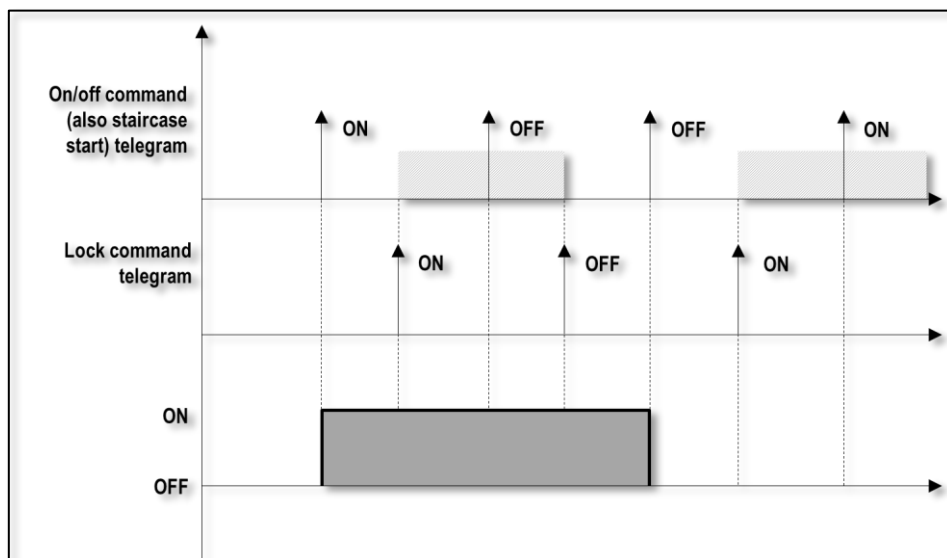


Figure 13 - Lock function

11.12 Force function

The forcing function is very similar to normal direct output control, but with the particularity of having priority both over the value set in the "ordinary" way and over the value conditioned by any other function (i.e. logic functions, staircase lighting timings, etc.).

In addition to forcing a desired value, it is possible to set the value that the output must assume both when the override is released and when power is restored after a bus voltage failure, if there was an active override at the time of the interruption.

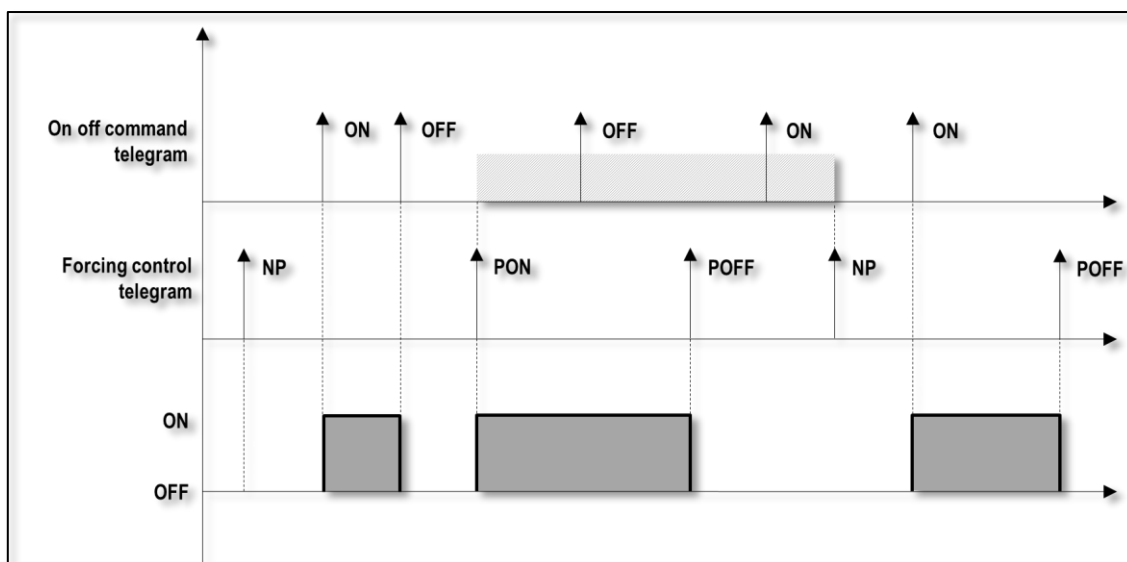


Figure 14 - Forcing function

The forcing command has priority over the blocking function (which acts on the ordinary direct command); this means that an output in a blocked state can still be controlled via the forcing commands.

The KNX override command code is a 2-bit value; the *priority* bit determines whether the output should be overridden, in which case the *value* bit will be assigned to the output itself.

In the figure above, *NP* means that the *priority* bit has a value of 0 (No priority), while the *PON* and *POFF* codes indicate output values of 1 and 0 respectively with *priority* = 1.



Figure 15 - Forcing command bits

11.13 Scenario management

Each output can be associated with a maximum of 8 scenario codes; when a scenario with one of these codes is called up by a control device, the output will assume the configured value. It is possible to define an additional delay for the actual activation (or deactivation) of the output with respect to the moment when the scenario is called up.

The value to be assigned to the output in the scenario can be defined as either fixed (chosen during configuration) or reprogrammable by bus via a learning command, i.e. "save scenario".

If the latter option is enabled at channel level, when the device receives a save command for a scenario code associated with the output, the current value of the output itself will be stored in association with that scenario. This value will be the one that will be recalled in subsequent activations of the scenario.

Configuring a channel as monochromatic only allows the configuration of scenes in which, upon receiving a scenario number from the bus, a dimming percentage value is recalled.

In Tunable White mode, when a scene is activated, you are asked to specify the type of scene and, in addition to the dimming value (%), you are also asked to specify the colour temperature (%).

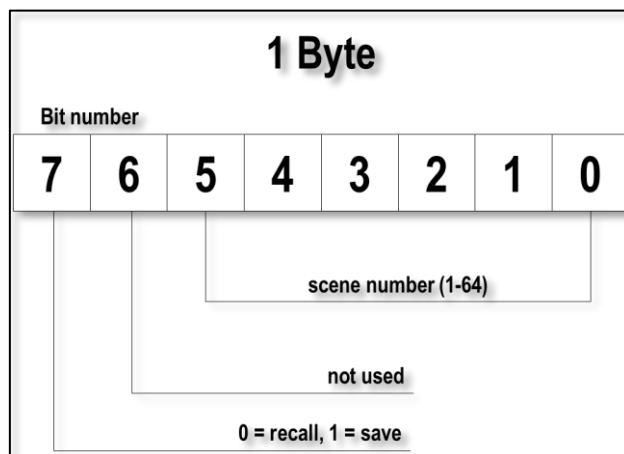


Figure 16 - Scene store / recall command code

11.14 Night function management

This function sets a maximum switch-on value for each individual output. This means that when the function is active and a maximum dimming percentage value has been set for a specific output, any command sent on the bus to increase the brightness beyond that value is ignored.

11.15 Energy/operating time counter

Each output can be associated with a counter that accumulates the time during which the output is active (On). In terms of communication objects, the counter has the KNX format of a 'hour counter', so it is additionally equipped with both an associated reset command and a full-scale alarm ('runout'); both of these commands consist of additional communication objects.

Together with the hour counter, a KNX object of the "energy counter (kWh)" type is created, which is also equipped with a communication object with a reset command. A special parameter allows you to define a conventional electrical power value in W associated with the load.

Although this is not an actual electrical power measurement, but simply the definition of a proportionality factor between operating time and estimated conventional consumption, this function provides a useful indication for monitoring consumption, particularly in the case of resistive or fixed-power loads such as lights and many other residential or office appliances.

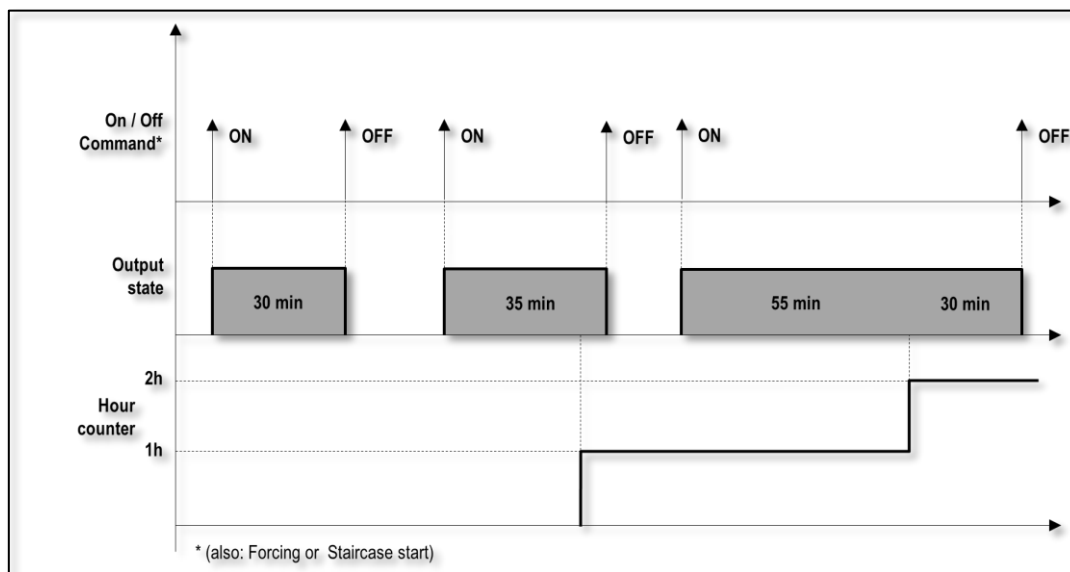


Figure 17 - Operating hours / energy counter function

11.16 Initialisations

It is possible to define the status of the device following various initialisation events, such as:

- **Behaviour on power-up**, i.e. when mains voltage is restored (only available if the auxiliary relay output is disabled)
- **Behaviour on bus OFF**, i.e. the reaction to the lack of KNX bus (available only if the auxiliary relay output is disabled)
- **Behaviour on bus ON**, i.e. when the KNX bus is restored
- **Behaviour after download**, i.e. the status at the end of the ETS application download

When the KNX bus is activated, the output channels can be set to one of the following states:

- ON/On
- OFF/Off
- No change (in the case of KNX bus OFF or after download)
- Previous state (in the case of KNX bus or power supply ON)

All settings that activate the output will only take effect if the auxiliary power supply is present; otherwise, in addition to obviously not being able to immediately power the loads, the states defined at the time of the power supply activation event will take priority.

The difference between "No change" and "Previous status" (option only available for *KNX bus ON* or *power supply ON* events) is that in the first case, the output remains unchanged following the event; the second case is relevant when, from the corresponding "Off" event, the outputs may have undergone a change. In this case, upon restoration, the state is set to the value prior to the bus OFF or power supply OFF event.

However, it is important to note that if the changes were derived from internal operations or bus commands, their effect would still be maintained.

For each of the available events, if the 'ON' option is selected, it is possible to specify the value to be assumed for the channel in question.

12. Application program for ETS

This section of the manual lists all the parameters that can be configured via ETS and describes the related communication objects.



The parameter values highlighted in bold are the *default* values.

The description of the parameters is divided into the following sections:

- **About**: general information about the ETS application
- **General**: general device parameters
- **Channel configuration**: general output parameters
- **Channel x**: general parameters of a specific monochromatic channel (x = 1,2 for EK-GD2-TP-2-LV and x = 1,2,3,4 for EK-GD1-TP-4-LV-T)
- **Tunable White x**: general parameters of a specific channel configured as Tunable White (x = 1 for EK-GD2-TP-2-LV and x = 1,2 for EK-GD1-TP-4-LV-T)

The device parameters are divided into general parameters and specific parameters, grouped into tabs. Figure **Errore. L'origine riferimento non è stata trovata.** shows the tree structure of the application programme with the main tabs.

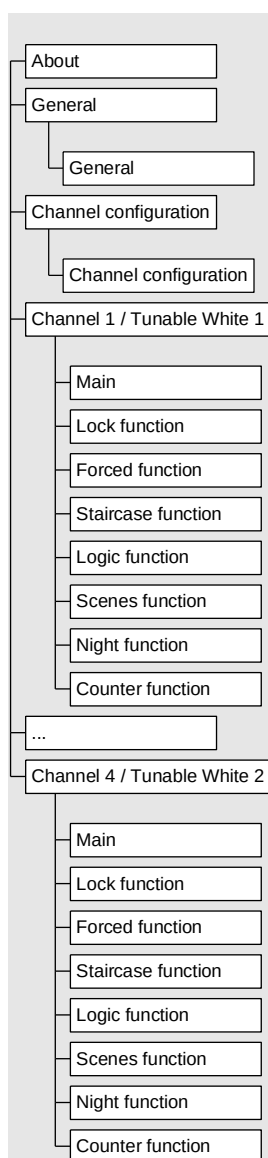


Figure 18 - ETS application parameter structure

12.1 About

The **About** tab is for information purposes only and does not contain any parameters to be set. The information provided is as follows:

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Application software for ETS5 and ETS6
Version 1.00 (or later)

EK-GDX-TP-X-LV-TW – KNX DIMMER series

EKINEX S.p.A.
Via Novara, 37
I-28010 Vaprio d'Agogna (NO) Italy
www.ekinex.com
info@ekinex.com

12.2 General

These parameters are located under the *General* menu.

Parameter name	Conditions	Values
Product type	-	----- EK-GD2-TP-2-LV EK-GD1-TP-4-LV-T
<i>Allows you to choose the type of dimmer, 2 or 4 channels.</i>		
Output PWM frequency	Product type = any	250 Hz 390 Hz 500 Hz 1 kHz 2 kHz 3 kHz 6 kHz
<i>Allows you to select the PWM frequency of the output load.</i>		
Power OFF alarm	Product type = any	Disabled Enabled
<i>Enables or disables the mains power failure alarm.</i>		
Auxiliary output function	Product type = any	Disabled Enabled
<i>Enable or disable auxiliary output</i>		
Delay power OFF duration	Product type = any Auxiliary output function = enabled	00:10.000 mm:ss:fff [range 00:00.000 ... 01:00.000]
<i>Sets the delay for switching off the auxiliary output.</i>		
Delay power ON duration	Product type = any Auxiliary output function = enabled	00:02.000 mm:ss:fff [range 00:00.000 ... 01:00.000]
<i>Sets the delay for switching on the auxiliary output.</i>		
Manual operation	Product type = any	Disabled Enabled
<i>For the EK-GD1-TP-4-LV-T model, set the device to be controlled using the buttons on the front panel. For the EK-GD2-TP-2-LV model, enable the installer test by pressing the button on the front panel.</i>		
Manual disable from bus	Product type = any Manual operation = enabled	Disabled Enabled
<i>Configures the option to disable manual operation from the KNX bus.</i>		

Parameter name	Conditions	Values
Restore auto mode	Product type = any Manual operation = enabled Manual disable from bus = disabled	00:00:10 hh:mm:ss [range 00:00:00 ... 04:39:37]
Allows you to set a timeout to end manual mode if no key operation is performed.		

Object name	Conditions	Dim.	Flags	DPT	Item no. Comm.
Power alarm status	Power OFF alarm = enabled	1 bit	CR-T-	[1.005] alarm	1
Auxiliary output status	Auxiliary output function = enabled	1 bit	CR-T-	[1.002] boolean	2
Manual commands disabled	Manual operation = enabled Manual disabling from bus = enabled	1 bit	C-W--	[1.001] switch	107

12.3 Channel configuration

These parameters are located under the *Channel Configuration* menu.

These settings allow you to configure which channels are active.

Activating a channel causes the creation of the fundamental communication objects already described, which is the minimum configuration necessary for controlling a channel via bus.

12.3.1 Channel enabled as independent

For channel 2 of the EK-GD2-TP-2-LV device and for channels 2, 3, and 4 of the EK-GD1-TP-4-LV-T device, two additional options are available.

- The configuration can be copied from previous channels, if set as independent: if this option is selected, the channel in question is configured exactly like the model, but with its own copy of the communication objects (whose values may therefore be different). This saves time in parameterisation and ensures that there are no discrepancies due to oversights between two channels that are to be configured in the same way.

It should be noted that copying the configuration from another channel is only a shortcut to facilitate parameterisation; the two channels do not share configuration objects but each maintain their own set of distinct objects. If the configuration of the 'model' channel is changed, so is the derived channel; similarly, disabling the 'model' channel also disables the derived channel.

- Channel 2 (and possibly 3 and 4) can be placed in parallel with channel 1. In this case, both the configuration and the parameter values are the same: there is only one copy of the communication objects, which are internally associated with both channels.

12.3.2 Channel enabled as Tunable White

If a channel is enabled in Tunable White mode, in the case of the EK-GD1-TP-4-LV-T device, the function of connecting channel 2 in parallel with channel 1 is available.

12.3.3 Parameters and communication objects

Parameter name	Conditions	Values
Output 1 Output 3 (only for EK-GD1-TP-4-LV-T)	-	Disabled Enabled Tunable White
<i>Allows you to enable/disable the operation of output 1 (3 only for EK-GD1-TP-4-LV-T).</i>		
Output 2 Output 4 (only for EK-GD1-TP-4-LV-T)	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output 1 ≠ Tunable White	Disabled Enabled
<i>Allows you to enable/disable the operation of output 2 (output 4 only for EK-GD1-TP-4-LV-T).</i>		
Output type	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x (x=2,3,4) = enabled	Direct In parallel with channel 1 Copy parameters from channel
<i>Selects the behaviour of the output. (output 3,4 only for EK-GD1-TP-4-LV-T).</i>		
Channel to copy from	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x (x=2,3,4) = enabled Output type = Copy parameters from channel	Channel 1 if Output 2 Channel 1 / Channel 2 if Output 3 Channel 1 / Channel 2 / Channel 3 if Output 4
<i>Select the channel from which to copy the parameters. (Outputs 3 and 4 only for EK-GD1-TP-4-LV-T).</i>		
In parallel (only for EK-GD1-TP-4-LV-T)	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output 1 = Tunable White Output 3 = Tunable White	Disabled Enabled
<i>Enables the possibility of putting channel 2 in parallel with channel 1, both in TW. (Outputs 3 and 4 only for EK-GD1-TP-4-LV-T).</i>		

Object name	Conditions	Dim.	Flags	DPT	Item no.
Output 1 – ON/OFF command	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output 1 ≠ disabled	1 bit	C-W--	[1.001] switch	3
<i>This communication object is the direct command for setting the output.</i>					

Object name	Conditions	Dim.	Flags	DPT	Item no.
Output x – ON/OFF command	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled	1 bit	C-W--	[1.001] switch	29, 55, 81
See above: x=2,3,4 (3, 4 only for EK-GD1-TP-4-LV-T).					
Output 1 – Dimming command	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output 1 ≠ disabled	4 bits	C-W--	[3.007] dimming control	4
Control object for incremental variation (increase/decrease).					
Output x – Dimming command	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled	4 bits	C-W--	[3.007] dimming control	30, 56, 82
See above: x=2,3,4 (3, 4 only for EK-GD1-TP-4-LV-T).					
Output 1 – Absolute setpoint control	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output 1 ≠ disabled	8-bit unsigned value	C-W--	[5.001] percentage (0-100%)	5
Control object for direct setting of the partialisation percentage.					
Output x – Absolute setpoint control	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled	8-bit unsigned value	CR-T-	[5.001] percentage (0-100%)	31, 57, 83
See above: x=2,3,4 (3, 4 only for EK-GD1-TP-4-LV-T).					
Output 1 – ON/OFF status	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output 1 ≠ disabled	1 bit	C-W--	[1.001] switch	6
Object for the ON/OFF status of the channel.					
Output x – ON/OFF status	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled	1 bit	C-W--	[1.001] switch	32, 58, 84
See above: x=2,3,4 (3, 4 only for EK-GD1-TP-4-LV-T).					
Output 1 – Actual dimming value	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output 1 ≠ disabled	8-bit unsigned value	CR-T-	[5.001] percentage (0-100%)	7
Object for the dimming status of the channel.					
Output x – Actual dimming value	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled	8-bit unsigned value	CR-T-	[5.001] percentage (0-100%)	33, 59, 85
See above: x=2,3,4 (3, 4 only for EK-GD1-TP-4-LV-T).					

Object name	Conditions	Dim.	Flags	DPT	Item no.
Output x – Colour temperature command (%)	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ Tunable White Automatic colour temperature adjustment = disabled	8-bit unsigned value	C-W--	[5.001] percentage (0-100%)	108, 115
Command for sending the colour temperature value in %. x=1 (3 only for EK-GD1-TP-4-LV-T).					
Output x – Colour temperature command (K)	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ Tunable White Automatic colour temperature adjustment = disabled	2-byte unsigned value	C-W--	[7.600] absolute colour temperature	109, 116
Command for sending the colour temperature value in K. x=1 (3 only for EK-GD1-TP-4-LV-T).					
Output x – Colour temperature dimming	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ Tunable White Automatic colour temperature adjustment = disabled	4 bits	C-W--	[3.007] dimming control	110, 117
Command for colour temperature dimming, similar to that for brightness dimming x=1 (3 only for EK-GD1-TP-4-LV-T).					
Output x – Colour temperature status (%)	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ Tunable White	8-bit unsigned value	CR-T-	[5.001] percentage (0-100%)	111, 118
Status of colour temperature value in %. x=1 (3 only for EK-GD1-TP-4-LV-T).					
Output x – colour temperature status (K)	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ Tunable White	2-byte unsigned value	CR-T-	[7.600] absolute colour temperature	112, 119
Status of colour temperature value in K. x=1 (3 only for EK-GD1-TP-4-LV-T).					

12.4 Channel x / Tunable White x - Main

These parameters are located under the *Channel x – Main* or *Tunable White x – Main* tab. In the first case, x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T; in the case of Tunable White, then x= 1 for EK-GD2-TP-2-LV and x = 1, 2 for EK-GD1-TP-4-LV-T

The *Channel x – main* tab is only visible if the Output type = independent or In parallel with channel 1 option has been selected for Output x in the *Channel configuration* tab.

The *Tunable White x – main* tab is only visible if the Output x = Tunable White option has been selected for Output 1 (or Output 3, in the case of EK-GD1-TP-4-LV-T) in the *Channel Configuration* tab.

Parameter name	Conditions	Values
Automatic colour temperature regulation	Output x = Tunable White	Disabled Enabled
	Enables thresholds for automatic temperature adjustment based on light intensity. x=1 (3 only for EK-GD1-TP-4-LV-T).	
Curve type	Output x ≠ disabled	Linear Logarithmic
	Allows you to set the adjustment curve, i.e. the parameter that specifies the response of the dimmer's voltage output to the control signal input. x=1.2 (3.4 only for EK-GD1-TP-4-LV-T).	
Minimum dimming value (%)	As above	0 ... 100
	Sets the minimum brightness value as a percentage.	
Maximum dimming value (%)	As above	0 ... 100
	Set the maximum brightness value as a percentage.	
Full range dimming time	As above	00:04.000 mm:ss.fff [range 00:00.000 ... 01:00.000]
	Set the time required to complete dimming from 0% to 100% or vice versa.	
Minimum colour temperature (%)	Output x = Tunable White	0% cool white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cool white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white
	Allows you to set the minimum value for colour temperature in 5% increments of warm and cool white. x=1 (3 only for EK-GD1-TP-4-LV-T).	
Brightness threshold 1	Output x = Tunable White Automatic colour temperature regulation = enabled	0 ... 100
	Sets the lower limit above which the colour temperature must be adjusted using the "minimum colour temperature (%)" parameter, described in the section 11.5. x=1 (3 only for EK-GD1-TP-4-LV-T).	

Parameter name	Conditions	Values
Maximum colour temperature (%)	Output x = Tunable White	55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
<i>Allows you to set the maximum value for colour temperature in 5% increments of warm and cool white. x=1 (3 only for EK-GD1-TP-4-LV-T).</i>		
Brightness threshold 2	Output x = Tunable White Automatic colour temperature regulation = enabled	0 ... 100
<i>Set the upper limit below which the colour temperature should be adjusted using the "minimum colour temperature (%)" parameter, described in the section 11.5. x=1 (3 only for EK-GD1-TP-4-LV-T).</i>		
Absolute colour temperature for warm white (K)	Output x = Tunable White	1000 ... 4000 (2500)
<i>Sets the reference value for warm white () tunable white. x=1 (3 only for EK-GD1-TP-4-LV-T).</i>		
Absolute colour temperature for cool white (K)	Output x = Tunable White	6000 ... 10000 (6500)
<i>Sets the reference value for cool white. x=1 (3 only for EK-GD1-TP-4-LV-T).</i>		
Intensity when switch on	Output x ≠ disabled	Last value New value
<i>Allows you to choose whether to keep the last dimming value set or choose a new one. x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>		
Light intensity (%)	As before Intensity when switch on = new value	50 [0 ... 100]
<i>Allows you to choose the new brightness dimming value. x=1.2 (3.4 only for EK-GD1-TP-4-LV-T).</i>		
Colour temperature (%)	Output x = Tunable White Intensity when switch on = new value	0% cool white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cool white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
<i>Allows you to choose the new dimming value for the colour temperature. x=1 (3 only for EK-GD1-TP-4-LV-T).</i>		
Switch ON type	Output x ≠ disabled	Instant ON Soft

Parameter name	Conditions	Values
	Allows you to choose the type of ignition, instant or soft. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Ramp time for ON	As above Switch ON type = Soft	00:02.000 mm:ss.fff [range 00:00.500 ... 01:00.000]
	Sets the time required to complete a soft ignition. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Delay start dimming after switch ON (ms)	Output x ≠ disabled	250 [range 0 ... 1000] ms
	Sets a possible delay time for the start of dimming after the channel is switched on. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Switch OFF type	Output x ≠ disabled	Instant OFF Soft
	Allows you to choose the type of shutdown, instant or soft. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Ramp time for OFF	As above Switch OFF type = Soft	00:02.000 mm:ss.fff [range 00:00.500 ... 01:00.000]
	Sets the time required to complete a soft shutdown. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Switch ON when dimming up	Output x ≠ disabled	Always Never Only on dimming Only on percentage command
	Allows you to set the switch-on mode via dimming. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Switch OFF when dimming down	As above	Always Never Only on dimming Only on percentage command
	Allows you to set the switch-off mode via dimming. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
ON delay time	As above	00:00.000 mm:ss.fff [range 00:00.000 ... 99:59.999]
	Delay before switching on. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
OFF delay time	As above	00:00.000 mm:ss.fff [range 00:00.000 ... 99:59.999]
	Delay before shutdown. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Status feedback telegram	As above	Enabled Disabled
	Enables the sending of status objects on the bus. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Delay after bus recovery	As above Status feedback telegram = enabled	00:01.000 mm:ss.fff [range 00:00.000 ... 99:59.999]
	Sets the delay after which status feedback is sent when the bus is restored. <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Transmission cycle time	As above Status feedback telegram = enabled	00:00:00 hh:mm:ss [range 00:00:00 ... 04:39:37]

Parameter name	Conditions	Values
	<i>Status feedback transmission period.</i> <i>The value 00:00:00 indicates that cyclic sending is disabled.</i> <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Behaviour at power ON	Output x ≠ disabled Auxiliary output function = disabled	Previous state Off On
	<i>Sets the behaviour of the dimmer when power is restored.</i> <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Light intensity (%)	As above Behaviour at power ON = On	50 [0 ... 100]
	<i>Allows you to choose the new dimming value when the power supply is restored.</i> <i>x=1.2 (3.4 only for EK-GD1-TP-4-LV-T).</i>	
Colour temperature (%)	Output x = Tunable White Behaviour at power ON = On	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cool white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
	<i>Allows you to choose the new dimming value for the colour temperature when switching on.</i> <i>x=1 (3 only for EK-GD1-TP-4-LV-T).</i>	
Behaviour at bus OFF	Output x ≠ disabled Auxiliary output function = disabled	No change Off On
	<i>Sets the behaviour of the dimmer when the KNX bus is absent.</i> <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Light intensity (%)	As above Behaviour at bus OFF = On	50 [0 ... 100]
	<i>Allows you to choose the new dimming value when the KNX bus is absent.</i> <i>x=1.2 (3.4 only for EK-GD1-TP-4-LV-T).</i>	

Parameter name	Conditions	Values
Colour temperature (%)	Output x = Tunable White Behaviour at bus OFF = On	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cold white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
	<i>Allows you to choose the new dimming value for the colour temperature when the KNX bus is switched off.</i> <i>x=1 (3 only for EK-GD1-TP-4-LV-T).</i>	
Behaviour at bus ON	Output x ≠ disabled	Previous status Off On
	<i>Sets the behaviour of the dimmer when the KNX bus is restored.</i> <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	
Light intensity (%)	As before Behaviour at bus ON = On	50 [0 ... 100]
	<i>Allows you to choose the new dimming value when the KNX bus is restored.</i> <i>x=1.2 (3.4 only for EK-GD1-TP-4-LV-T).</i>	
Colour temperature (%)	Output x = Tunable White Behaviour at bus ON = On	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cold white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
	<i>Allows you to choose the new dimming value for the colour temperature after reactivating the KNX bus.</i> <i>x=1 (3 only for EK-GD1-TP-4-LV-T).</i>	
Behaviour after download	Output x ≠ disabled	No change Off On
	<i>Sets the behaviour of the dimmer after downloading the ETS application.</i> <i>x=1,2 (3,4 only for EK-GD1-TP-4-LV-T).</i>	

Parameter name	Conditions	Values
Light intensity (%)	As before Behaviour after download = On	50 [0 ... 100]
Allows you to choose the new dimming value after downloading the ETS application. x=1.2 (3.4 only for EK-GD1-TP-4-LV-T).		
Colour temperature (%)	Output x = Tunable White Behaviour after download = On	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cool white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
Allows you to choose the new dimming value for the colour temperature after downloading the ETS application. x=1 (3 only for EK-GD1-TP-4-LV-T).		

12.4.1 Lock function

The lock function allows you to inhibit the operation of a specific channel output.

If the channel is configured as independent, these parameters are located under the *Channel x* tab, where x= 1.2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.

If the channel is configured as Tunable White, these parameters are located under the *Tunable White x* tab, where x = 1 for EK-GD2-TP-2-LV and x = 1, 2 for EK-GD1-TP-4-LV-T.

The communication object for a specific channel is only available if configured as Tunable White, or if enabled as single, with *Output Type = Independent* or *Copy parameters from channel*.

Parameter name	Conditions	Values
Channel x – Lock function	-	Disabled Enabled
Enables or disables the lock function in the case of an independent (or copied) channel or Tunable White, i.e. the ability to inhibit output modification via a bus command. Independent channel: x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T. Tunable White channel: x= 1 for EK-GD2-TP-2-LV and x = 1, 3 for EK-GD1-TP-4-LV-T.		
Channel x – Lock function – Lock device signal	Lock function = enabled	Not inverted Inverted
Allows the lock function signal to be inverted.		

Parameter name	Conditions	Values
Channel x – Lock function – After bus recovery	Lock function = enabled	Unlock Lock Previous state
Allows you to set the lock status when the bus is restored.		
Channel x – Lock function – Behaviour at locking	Lock function = enabled	No change Off On
Allows you to set the output status when blocking is activated.		
Channel x – Lock function – Behaviour at locking – Light intensity (%)	Lock function = enabled Behaviour at locking = On	50 [0 ... 100]
Allows you to set the brightness dimming value when blocking is enabled.		
Channel x – Lock function – Behaviour at locking – Colour temperature (%)	Output x = Tunable White Lock function = enabled Behaviour at locking = On	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cold white – 90% warm white 15% cool white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
Allows you to set the colour temperature dimming value when the block is activated. x= 1 for EK-GD2-TP-2-LV and x = 1, 3 for EK-GD1-TP-4-LV-T.		
Channel x – Lock function – Behaviour at unlocking	Lock function = enabled	Off On No change Updated value Value before locking
Allows you to set the output status when the lock is deactivated.		
Channel x – Lock function – Behaviour at unlocking – Light intensity (%)	Lock function = enabled Behaviour at unlocking = On	50 [0 ... 100]
Allows you to set the brightness dimming value when locking is disabled.		

Parameter name	Conditions	Values
Channel x – Lock function – Behaviour at unlocking – Colour temperature (%)	Output x = Tunable White Lock function = enabled Behaviour at unlocking = On	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cool white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
<i>Allows you to set the colour temperature dimming value when the block is deactivated. x= 1 for EK-GD2-TP-2-LV and x = 1, 3 for EK-GD1-TP-4-LV-T.</i>		

Object name	Conditions	Dim.	Flags	DPT	Item no. Comm.
Output x – Lock command	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Channel x Lock function = enabled	1 bit	C-W--	[1.003] enable	9, 35, 61, 87
<i>When enabled, it inhibits direct commands for the output (both switching on/off and changing the intensity); when disabled, it allows normal operation. x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>					

12.4.2 Forced function

The forced function allows you to force a value on the output of a specific channel, with priority over other functions.

If the channel is configured as independent, these parameters are located under the *Channel x* tab, where x = 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.

If, on the other hand, the channel is configured as Tunable White, these parameters are located under the *Tunable White x* tab, where x = 1 for EK-GD2-TP-2-LV and x = 1, 2 for EK-GD1-TP-4-LV-T.

The communication object for a specific channel is only available if configured as Tunable White, or if enabled as single, with *Output Type = Independent* or *Copy parameters from channel*.

Parameter name	Conditions	Values
Channel x – Forced function	-	Disabled Enabled

Parameter name	Conditions	Values
	<i>Enables or disables the forcing function, i.e. the ability to force a value on the output with priority over other functions.</i> <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>	
Channel x – Override function – Behaviour on forced control start	Forced function = enabled	Last value Predefined value
	<i>Defines the status that the output should assume when forcing is activated.</i> <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>	
Channel x – Bypass function – Behaviour on forced control start – Light intensity (%)	Forced function = enabled Behaviour on forced control start = Predefined value	50 [0 ... 100]
	<i>Allows you to set the dimming value when override is active.</i> <i>x= 1.2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>	
Channel x – Forced function – Behaviour on forced control start – Colour temperature (%)	Output x = Tunable White Forced function = enabled Behaviour on forced control start = Predefined value	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cold white – 90% warm white 15% cold white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
	<i>Allows you to set the colour temperature dimming value when forcing is activated.</i> <i>x= 1 for EK-GD2-TP-2-LV and x = 1, 3 for EK-GD1-TP-4-LV-T.</i>	
Channel x – Forced function – Behaviour on forced control end	Forced function = enabled	No change Off On Previous state
	<i>Defines the status that the output must assume when the override is released.</i> <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>	
Channel x – Forced function – Behaviour on forced control end – Light intensity (%)	Forced function = enabled Behaviour on forced control end = ON	50 [0 ... 100]
	<i>Allows you to set the dimming value at the end of forcing.</i> <i>x= 1.2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>	

Parameter name	Conditions	Values
Channel x – Forced function – Behaviour on forced control end – Colour temperature (%)	Output x = Tunable White Forced function = enabled Behaviour on forced control end = ON	0% cold white – 100% warm white 5% cold white – 95% warm white 10% cold white – 90% warm white 15% cold white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
<i>Allows you to set the colour temperature dimming value at the end of the forcing process. x= 1 for EK-GD2-TP-2-LV and x = 1, 3 for EK-GD1-TP-4-LV-T.</i>		
Channel x – Forced function – Behaviour after bus recovery	Forced function = enabled	Previous status Off On
<i>Defines the status that the outputs and the forcing status must assume after bus voltage recovery. Therefore:</i> • <i>previous status: when the bus is restored, the status of the channels and the forcing remain unchanged;</i> • <i>Off: when the bus is restored, the channels must go to OFF without forcing;</i> • <i>On: when the bus is restored, the channels must go to ON with forcing.</i> <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>		
Channel x – Forced function – Behaviour after bus recovery - Light intensity (%)	Forced function = enabled Behaviour after bus recovery = On	50 [0 ... 100]
<i>Allows you to set the dimming value when the KNX bus is restored. x= 1.2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>		
Channel x – Forced function – Behaviour after bus recovery - Colour temperature (%)	Output x = Tunable White Forced function = enabled Behaviour after bus recovery = On	0% cold white – 100% warm white 5% cold white – 95% warm white 10% cold white – 90% warm white 15% cold white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
<i>Allows you to set the colour temperature dimming value after bus reset. x= 1 for EK-GD2-TP-2-LV and x = 1, 3 for EK-GD1-TP-4-LV-T.</i>		

Object name	Conditions	Dim.	Flags	DPT	Item no. Comm.
Output x – Forcing command	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Forcing function = enabled	2 bits	C-W--	[2.001] 1-bit controlled switch control	10, 36, 62, 88
Allows you to force the status of an output. The value consists of 2 bits: the first indicates the priority status (i.e. it indicates that forcing is active if "Priority" = On) and the second indicates the value to be forced (which is ignored if forcing is not active). 2 bit Numero Bit 1 0 0 = off, 1 = on 0 = Nessuna Priorità, 1 = Priorità x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.					

12.4.3 Staircase function

For a comprehensive description of the staircase lighting function, refer to the section 11.9.

If the channel is configured as independent, these parameters are located under the *Channel x* tab, where x = 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.

If, on the other hand, the channel is configured as Tunable White, these parameters are located under the *Tunable White x* tab, where x = 1 for EK-GD2-TP-2-LV and x = 1, 2 for EK-GD1-TP-4-LV-T.

The communication object for a specific channel is only available if configured as Tunable White, or if enabled as single, with *Output Type = Independent* or *Copy parameters from channel*.

Parameter name	Conditions	Values
Channel x – Staircase function	-	Disabled Enabled
Enables or disables the staircase light function. <i>x = 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>		
Channel x – Staircase function – Staircase time	Staircase function = enabled	00:00:30 hh:mm:ss [range 00:00:03 ... 04:39:37]
Duration of the output timing period. This is the time indicated in the figure as "Ts" in the section "11.9" describing the function.		

Parameter name	Conditions	Values
Channel x – Staircase function – Manual OFF	Staircase function = enabled	Disabled Enabled
	When enabled, it allows you to terminate the timing with an "Off" command. The command can be sent at any time, including during the pre-warning period.	
Channel x – Staircase function – Retriggerable	Staircase function = enabled	Disabled Enabled
	When enabled, it allows the timer to be restarted with an "On" command. The command can be sent at any time, including during the pre-warning period.	
Channel x – Staircase function – Pre-warning	Staircase function = enabled	Disabled Enabled
	Activates the pre-warning function. For further details, see the feature description section.	
Channel x – Stair function – Pre-warning – Pre-warning time	Staircase function = enabled Pre-warning = enabled	00:00:10 hh:mm:ss [range 00:00:02 ... 04:39:37]
	Specifies how long before expiry the output must be briefly interrupted for signalling. The specified interval includes the duration of the interruption. The maximum value that can be set is 04:39:37. This is the time indicated in the figure as "Tp-w" in the par. 11.9 ".	
Channel x – Staircase function – Pre-warning – Interruption time (ms)	Staircase function = enabled Pre-warning = enabled	500 ms [range 250 ... 1000]
	Specifies the duration of the interruption. This is the time indicated in the figure as "Ti" in the par. "11.9 " describing the functionality.	

Object name	Conditions	Dim.	Flags	DPT	Item no. Comm.
Output x – Staircase start/stop command	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Channel x staircase function = enabled	1 bit	C-W--	[1.010] 1-bit start/stop	8, 34, 60, 86
	Writing a "Start" value activates the output and starts the timing. Once the set time has elapsed, the output is automatically deactivated. If "Manual Off" is enabled, writing a "Stop" value ends the timing. If "Retriggerable" is enabled, writing a new "Start" value restarts the timing.				

12.4.4 Logic function

For a comprehensive discussion of the logic function, refer to the section 11.10 .

If the channel is configured as independent, these parameters are located under the *Channel x* tab, where $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.

If the channel is configured as Tunable White, these parameters are located under the *Tunable White x* tab, where $x = 1$ for EK-GD2-TP-2-LV and $x = 1, 2$ for EK-GD1-TP-4-LV-T.

The communication object for a specific channel is only available if configured as Tunable White, or if enabled as single, with *Output Type = Independent* or *Copy parameters from channel*.



When using logical functions, the settings configured for "Bus Off/On behaviour" and "Behaviour after download" are not taken into account.

Parameter name	Conditions	Values
Channel x – Logic function	-	Disabled Enabled
	Enables or disables the output conditioning function via logic inputs. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Logic function – Read delay after bus recovery	Logic function = enabled	1000 ms [range 250 ... 10000]
	After bus recovery, the device waits for the specified time before evaluating the logic objects configured as inputs; for those for which no value has been received by the end of the time, a request is sent on the bus. The maximum value is 10 s. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Logic function – Logic operation type	Logic function = enabled	OR AND XOR
	Defines the logical operation to be performed on the inputs. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Logic function – Logic object n	Logic function = enabled	Disabled Enabled
	Defines which of the available logic objects to use as inputs. Logic objects configured as disabled are ignored and the corresponding communication objects are not generated. $n = 1, \dots, 8$. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Logic function – Logic object n – Logic object n negated	Logic function = enabled Logic object n = enabled	No Yes
	Applies a logic negation to the value of the logic object. $n = 1, \dots, 8$. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	



The logical function is only calculated if and when at least one of the input logical objects is updated.

Object name	Conditions	Dim.	Flags	DPT	Item no.
Output x – Logic object no.	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Logic function = enabled Logic object n = enabled	1 bit	CRWTU	[1.001] 1-bit switch	Output 1: 11 ... 18 Output 2: 37 ... 44 Output 3: 63 ... 70 Output 4: 89 ... 96
For each channel, the sequence of numbers corresponding to the 8 available logic objects is indicated. $n = 1, \dots, 8$. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.					

12.4.5 Scenario function

For a comprehensive description of the scenario function, refer to the section 11.13 .

If the channel is configured as independent, these parameters are located under the *Channel x* tab, where $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.

If, on the other hand, the channel is configured as Tunable White, these parameters are located under the *Tunable White x* tab, where $x = 1$ for EK-GD2-TP-2-LV and $x = 1, 2$ for EK-GD1-TP-4-LV-T.

Parameter name	Conditions	Values
Channel x – Scene function	-	Disabled Enabled
Enables or disables the scene management function. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.		
Channel x – Scene function – Learning mode	Scene function = enabled	Disabled Enabled
When disabled, the "save scene" commands are simply ignored and only the values assigned in the configuration are used for the scenarios. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.		
Channel x – Scenario function – Learning mode – Download overwrites learned behaviour	Scene function = enabled Learning mode = enabled	Yes No

Parameter name	Conditions	Values
	Defines whether the programme update on the device from ETS should overwrite the values associated with the various scenarios, stored in the device and originating from previous programming or learning. Note: when the device is put into service for the first time, this parameter should be set to "yes" so that the initialisation values are written to the device; otherwise, the output values would be left at "0" (Off) for all scenarios. $x=1,2$ for EK-GD2-TP-2-LV and $x=1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Scene function – Scene n	Scene function = enabled	Disabled Enabled
	Enables or disables a new scene code to be associated with the output. $n=1, \dots, 8$. $x=1,2$ for EK-GD2-TP-2-LV and $x=1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Scene function – Scene n – Scene number	Scene function = enabled Scene n = enabled	1...64 (1)
	Scene number to be associated with the output. The channel will respond (among others) to scene commands that concern the set channel. $n=1, \dots, 8$. $x=1,2$ for EK-GD2-TP-2-LV and $x=1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Scene function – Scene n – Activation delay	Scene function = enabled Scene n = enabled	00:00.000 mm:ss.fff [range 00:00.000 ... 99:59.999]
	Waiting delay between a "recall scenario" command and the corresponding output switching. The maximum value is 99:59.999 $n=1, \dots, 8$. $x=1,2$ for EK-GD2-TP-2-LV and $x=1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Scene function – Scene n – Output behaviour	Scene function = enabled Scene n = enabled	Off On
	Value to be assigned to the output for the specified scene. This is an initialisation value that can remain fixed or, if learning mode is enabled, be overwritten by a "save scen" command. $n=1, \dots, 8$. $x=1,2$ for EK-GD2-TP-2-LV and $x=1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Scene function – Scene n – Output behaviour – Light intensity (%)	Scene function = enabled Scene n = enabled Output behaviour = On	50 (0 ... 100%)
	Dimming value % assigned to the scene when the output is ON $n=1, \dots, 8$. $x=1,2$ for EK-GD2-TP-2-LV and $x=1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	

Parameter name	Conditions	Values
Channel x – Scene function – Scene n – Output behaviour – Colour temperature (%)	Output x = Tunable White Scene function = enabled Scene n = enabled Output behaviour = On	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cool white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
<i>Allows you to set the colour temperature dimming value when the output is On. x= 1 for EK-GD2-TP-2-LV and x = 1, 3 for EK-GD1-TP-4-LV-T.</i>		

i	• A new "scene recall" command restarts the activation delay. • If a new "scene recall" command is received during the activation delay, the value of the new command overwrites the previous one, which is then lost. • If learning mode is enabled, the activation delay has no effect on saving, which always takes place immediately. • If the same scene number is assigned multiple times to the same output (with different parameters), the entry in the lowest position will be considered when recalling. Subsequent entries relating to the same scene number will be ignored. • The scene function has lower priority than the force or block functions.
--	--

Object name	Conditions	Dim.	Flags	DPT	No. of items
Output x – Scene number	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Scenario function = enabled	1 Byte	C-W--	[17.001] scene number [18.001] scene control	19, 45, 71, 97

Object name	Conditions	Dim.	Flags	DPT	No. of items								
	Allows you to recall the value for a scenario or store the current output value and associate it with the specified scenario. 1 Byte Numero bit <table><tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr></table> Numero scenario (1-64) <i>non utilizzato</i> 0 = richiama, 1 = salva <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>					7	6	5	4	3	2	1	0
7	6	5	4	3	2	1	0						

12.4.6 Night function

The function is described in the paragraph 11.14

If the channel is configured as independent, these parameters are located under the *Channel x* tab, where x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.

If, on the other hand, the channel is configured as Tunable White, these parameters are located under the *Tunable White x* tab, where x= 1 for EK-GD2-TP-2-LV and x = 1,2 for EK-GD1-TP-4-LV-T.

Parameter name	Conditions	Values
Channel x – Night function	-	Disabled Enabled
	<i>Enables or disables the night function.</i> <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>	
Channel x – Night function – Night mode signal	Night function = enabled	Not inverted Inverted
	<i>Allows you to invert the night function signal.</i> <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>	
Channel x – Night function – Maximum light intensity (%)	Night function = enabled	50 (0...100%)
	<i>Sets the maximum dimming percentage value to be used when the night function is active.</i> <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>	

Parameter name	Conditions	Values
Channel x – Night function – Colour temperature (%)	Output x = Tunable White Night function = enabled	0% cold white – 100% warm white 5% cool white – 95% warm white 10% cool white – 90% warm white 15% cool white – 85% warm white 20% cool white – 80% warm white 25% cool white – 75% warm white 30% cool white – 70% warm white 35% cool white – 65% warm white 40% cool white – 60% warm white 45% cool white – 55% warm white 50% cool white – 50% warm white 55% cool white – 45% warm white 60% cool white – 40% warm white 65% cool white – 35% warm white 70% cool white – 30% warm white 75% cool white – 25% warm white 80% cool white – 20% warm white 85% cool white – 15% warm white 90% cool white – 10% warm white 95% cool white – 5% warm white 100% cool white – 0% warm white
Sets the maximum colour temperature percentage when the night function is active. x= 1 for EK-GD2-TP-2-LV and x = 1, 3 for EK-GD1-TP-4-LV-T.		

Object name	Conditions	Dim.	Flags	DPT	Item no. Comm.
Output x – Night function control	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Night function = enabled	1 bit	C-W--	[1.003] enable	26, 52, 78, 104
Enables or disables the night function. x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.					

12.4.7 Meter function (energy and operating time)

This function allows an approximate calculation of the energy absorbed by accumulating the operating time of an output. For a comprehensive description of the energy and operating time counter function, please refer to the section 11.15 .

If the channel is configured as independent, these parameters are located under the *Channel x* tab, where x = 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.

If, on the other hand, the channel is configured as Tunable White, these parameters are located under the *Tunable White x* tab, where x = 1 for EK-GD2-TP-2-LV and x = 1, 2 for EK-GD1-TP-4-LV-T.

Parameter name	Conditions	Values
Channel x – Counter function	-	Disabled Enabled

Parameter name	Conditions	Values
	Enables or disables the operating time totalisation function. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Counter function – Output load (W)	Counter function = enabled	50 (0...5000 W)
	Sets the output load value. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.	
Channel x – Counter function – Cyclic sending	Counter function = enabled	00:00:00 hh:mm:ss [range 00:00:00 ... 04:39:37]
	Sets the sending period on the counter status object bus. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T. Note: if the period is set to 00:00:00, then objects are only sent when there is a change in the meter of 1 Wh or the hour counter of 1h.	

Object name	Conditions	Dim.	Flags	DPT	Item no.
Output x – Energy counter (Wh)	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Counter function = enabled	1 bit	C-W--	[13.010] Active energy (Wh)	20, 46, 72, 98
	Current value of the totaliser of energy absorbed by the load. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.				
Output x – Energy counter reset command	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Counter function = enabled	1 bit	C-W--	[1.015] Reset	21, 47, 73, 99
	Resets the energy totaliser value. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.				
Output x – Operating hours counter	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Counter function = enabled	2 bytes unsigned value	CR-T-	[7.007] time	22, 48, 74, 100
	Current value of the output operating time totaliser, expressed in hours. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.				
Output x – Operating seconds counter	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Counter function = enabled	4 bytes signed value	CR-T-	[13,100] time lag (s)	23, 49, 75, 101
	Current value of the output operating time totaliser, expressed in seconds. $x = 1, 2$ for EK-GD2-TP-2-LV and $x = 1, 2, 3, 4$ for EK-GD1-TP-4-LV-T.				

Object name	Conditions	Dim.	Flags	DPT	Item no.
Output x – Hours counter reset	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Counter function = enabled	1 bit	C-W--	[1.015] reset	24, 50, 76, 102
Resets the value of the output operating time totaliser. <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>					
Output x – Hours counter overflow	Product type = EK-GD2-TP-2-LV or EK-GD1-TP-4-LV-T Output x ≠ disabled Counter function = enabled	1 bit	CR-T-	[1.005] alarm	25, 51, 77, 103
Alarm transmitted when the output operating time totaliser reaches the limit value of 65,535 hours. <i>x= 1,2 for EK-GD2-TP-2-LV and x = 1, 2, 3, 4 for EK-GD1-TP-4-LV-T.</i>					

13. Summary of KNX communication objects

Below is a list of KNX communication objects with the corresponding *Data Point Types* (DPT) defined by the application programme according to the configurations made.

The list is generally ordered by object number; x = 1,2,3,4 depending on the number of channels of the device.

Object name	Dim.	Flags	DPT	Comm. Item No.
Power alarm status	1 bit	CR-T-	[1.5] DPT_Alarm	1
Auxiliary output status	1 bit	CR-T-	[1.2] DPT_Bool	2
Output x – ON/OFF command	1 bit	C-W--	[1.1] DPT_Switch	3, 29, 55, 81
Output x – Dimming command	4 bits	C-W--	[3.7] DPT_Control_Dimming	4, 30, 56, 82
Output x – Absolute setpoint control	1 byte	C-W--	[5.1] DPT_Scaling	5, 31, 57, 83
Output x – ON/OFF status	1 bit	CR-T-	[1.1] DPT_Switch	6, 32, 58, 84
Output x – Actual dimming value	1 byte	CR-T-	[5.1] DPT_Scaling	7, 33, 59, 85
Output x – Staircase start/stop command	1 bit	C-W--	[1.10] DPT_Start	8, 34, 60, 86
Output x – Lock command	1 bit	C-W--	[1.3] DPT_Enable	9, 35, 61, 87
Output x – Forcing command	2 bits	C-W--	[2.1] DPT_Switch_Control	10, 36, 62, 88
Output x – Logic object 1	1 bit	CRW TU	[1.1] DPT_Switch	11, 37, 63, 89
Output x – Logic object 2	1 bit	CRW TU	[1.1] DPT_Switch	12, 38, 64, 90
Output x – Logic object 3	1 bit	CRW TU	[1.1] DPT_Switch	13, 39, 65, 91
Output x – Logic object 4	1 bit	CRW TU	[1.1] DPT_Switch	14, 40, 66, 92
Output x – Logic object 5	1 bit	CRW TU	[1.1] DPT_Switch	15, 41, 67, 93
Output x – Logic object 6	1 bit	CRW TU	[1.1] DPT_Switch	16, 42, 68, 94
Output x – Logic object 7	1 bit	CRW TU	[1.1] DPT_Switch	17, 43, 69, 95
Output x – Logic object 8	1 bit	CRW TU	[1.1] DPT_Switch	18, 44, 70, 96
Output x – Scene number	1 byte	C-W--	[17.1] DPT_SceneNumber [18.1] DPT_SceneControl	19, 45, 71, 97
Output x – Energy counter (Wh)	4 bytes	CR-T-	[13.10] DPT_ActiveEnergy	20, 46, 72, 98
Output x – Energy counter reset command	1 bit	C-W--	[1.15] DPT_Reset	21, 47, 73, 99
Output x – Operating hours counter	2 bytes	CR-T-	[7.7] DPT_TimePeriodHrs	22, 48, 74, 100
Output x – Operating seconds counter	4 bytes	CR-T-	[13.100] DPT_TimeLag(s)	23, 49, 75, 101
Output x – Hour counter reset	1 bit	C-W--	[1.15] DPT_Reset	24, 50, 76, 102
Output x – Hour counter overflow	1 bit	CR-T-	[1.5] DPT_Alarm	25, 51, 77, 103
Output x – Night mode command	1 bit	C-W--	[1.3] DPT_Enable	26, 52, 78, 104
Manual commands disabled	1 bit	C-W--	[1.1] DPT_Switch	107
Output x – Colour temperature command (%)	1 byte	C-W--	[5.1] DPT_Scaling	108, 115
Output x – Colour temperature command (K)	2 bytes	C-W--	[7.6] DPT_Absolute colour temperature	109, 116

Object name	Dim.	Flags	DPT	Comm. Item No.
Output x – Colour temperature dimming	4 bits	C-W--	[3.7] DPT_Control_Dimming	110, 117
Output x – Colour temperature status (%)	1 byte	CR-T-	[5.1] DPT_Scaling	111, 118
Output x – Colour temperature status (K)	2 bytes	CR-T-	[7.6] DPT_absolute colour temperature	112, 119
Output x – Sequence execution status	1 bit	CR-T-	[1.1] DPT_Switch	113, 120
Output x – Sequence stop execution status	1 bit	CR-T-	[1.010] DPT_Start/stop	114, 121

14. Appendix

14.1 Warnings

- Installation, electrical connection, configuration and commissioning of the device may only be carried out by qualified personnel.
- Opening the device enclosure will immediately void the warranty.

14.2 Returning faulty devices

Devices that have problems or defects can be returned for repair or replacement by following the procedure described below.

14.2.1 Devices purchased directly from ekinex®

First, you must contact ekinex® technical support by sending an e-mail to support@ekinex.com with the following information (mandatory):

- Exact model of the device
- Serial number (found on the label affixed to the product)
- Date and/or purchase document references
- Precise and detailed description of the fault or problem

ekinex® technical support will contact the customer promptly, as appropriate, to investigate the problem, suggest possible solutions or authorise the return of the device for repair or replacement.

Devices should be shipped to the following address:

EKINEX S.p.A. - Via Novara, 37 - I-28010 Vaprio d'Agogna (NO) - Italy.

Any further instructions will be agreed with technical support during the support phase.

14.2.2 Devices purchased through retailers

For assistance with devices purchased through retailers, please contact their technical support department. Depending on the type of problem and other factors, at the sole discretion of ekinex® and in agreement with the retailer, the customer may be instructed to contact ekinex® directly following the same procedure as above.

14.3 Further information

This application manual is intended for installers, system integrators and system configurators. For further information on the product, please contact ekinex® technical support at support@ekinex.com or visit the website www.ekinex.com.

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