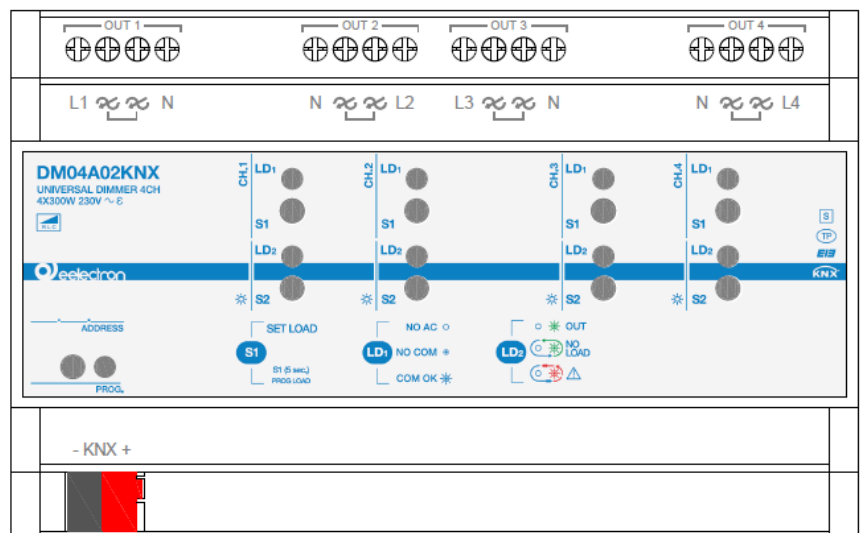
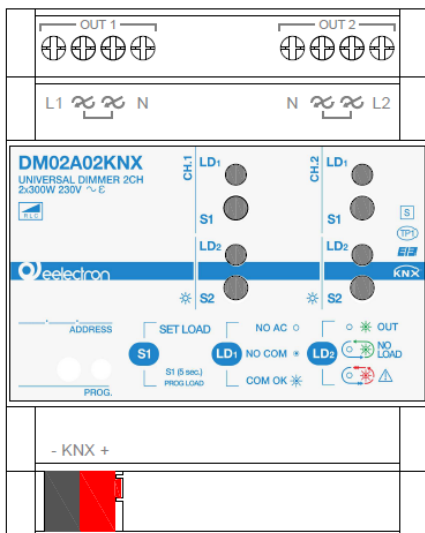


Product Handbook

DM02A02KNX	Universal Dimmer DIN Module 2 Channels - 2x300W
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DM04A02KNX	Universal Dimmer DIN Module 4 Channels - 4x300W
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Document

 Version: **1.2**

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Any information inside this manual can be changed without advice.

This handbook can be download freely from the website: www.eelectron.com

Exclusion of liability:

Despite checking that the contents of this document match the hardware and software, deviations cannot be completely excluded. We therefore cannot accept any liability for this.

Any necessary corrections will be incorporated into newer versions of this manual.

Symbol for relevant information



Symbol for warning



DISPOSAL : The crossed-out bin symbol on the equipment or packaging means the product must not be included with other general waste at the end of its working life. The user must take the worn product to a sorted waste centre, or return it to the retailer when purchasing a new one. An efficient sorted waste collection for the environmentally friendly disposal of the used device, or its subsequent recycling, helps avoid the potential negative effects on the environment and people's health, and encourages the re-use and/or recycling of the construction materials

1. General introduction

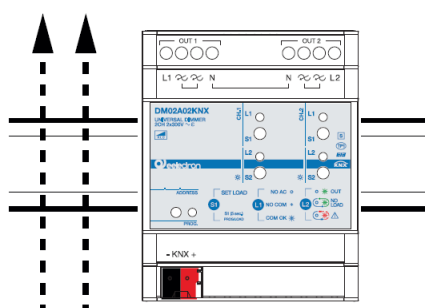
This manual is intended for KNX® installers and describes functions and parameters of the DIN modules DM02A02KNX and DM04A02KNX and how it is possible to change the settings and configurations using the ETS software tool.

The DM02A02KNX Module has 2 output channels while the DM04A02KNX module has 4 channels; the parameters and configurations available are identical for both modules.

2. Product overview

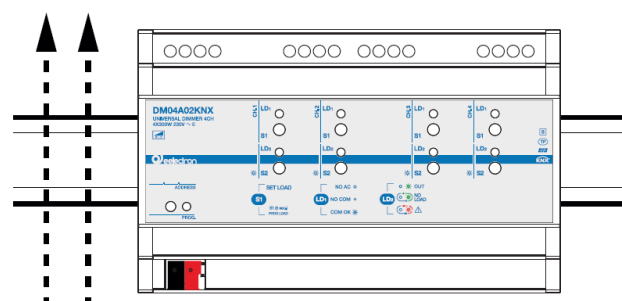
The DM02A02KNX module is designed for use in domestic and building installations (eg offices, hotels, private homes, etc.).

TOP/ALTO



BOTTOM/BASSO

TOP/ALTO



BOTTOM/BASSO



DIN rail in electrical distribution Cabinets and in vertical position with the bus connector on the bottom side as shown in figure; it is recommended to ensure adequate dissipation conditions in free air

DM04A02KNX is a universal KNX 4 channel dimmer with automatic identification of the type of load and with adjustable parameters to optimize the control of different types of lamps such as LEDs, incandescent and halogen lamps, dimmable compact fluorescent lamps (CFL), low voltage lamps with electronic or ferromagnetic transformer.

The 4 channels can be used independently or combined (1+2 and/or 3+4) to drive higher power loads; always respect the maximum power values indicated in the table of this instruction sheet and read this manual about how to configure the outputs as combined in ETS.

For determining the maximum load and in particular the maximum number of lamps that can be connected, the DimmerLoadTester software is available; with this SW tool it is possible to analyze the peak absorption of a single lamp and calculate the maximum number of lamps that can be connected. Each output can be used in one of the following configurations:

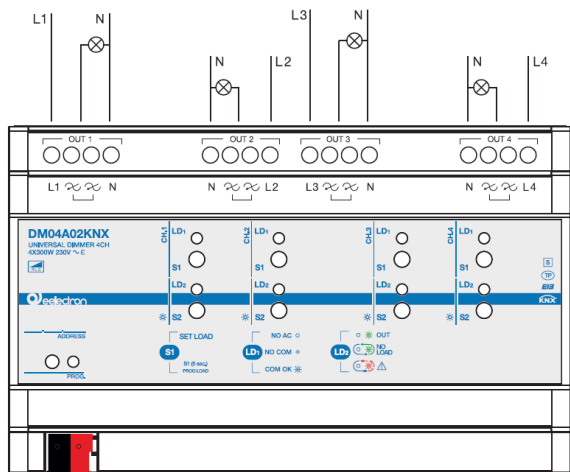
Trailing Edge [RC]: The dimmer turns off the final part of the waveform of the input voltage resulting in reduced lamp output. This load regulation is used for resistive or capacitive loads (typically halogen lamps with electronic transformer or incandescent lamps)

Leading Edge [L]: The dimmer turns off the initial part of the waveform of the input voltage, resulting in reduced lamp output. This load regulation is used for inductive loads (typically ferromagnetic or toroidal transformers)

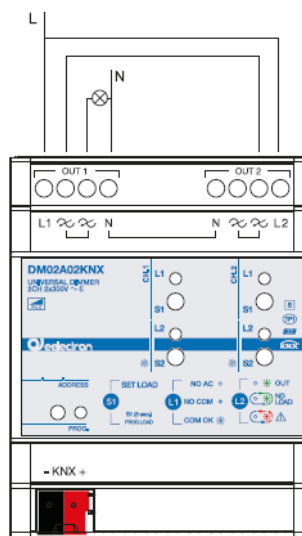
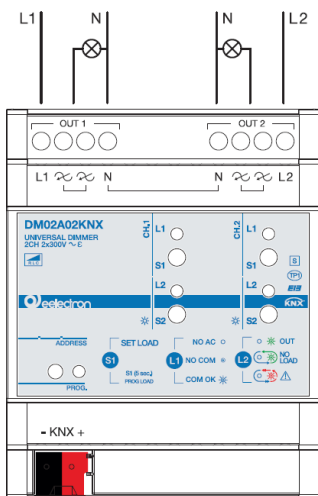
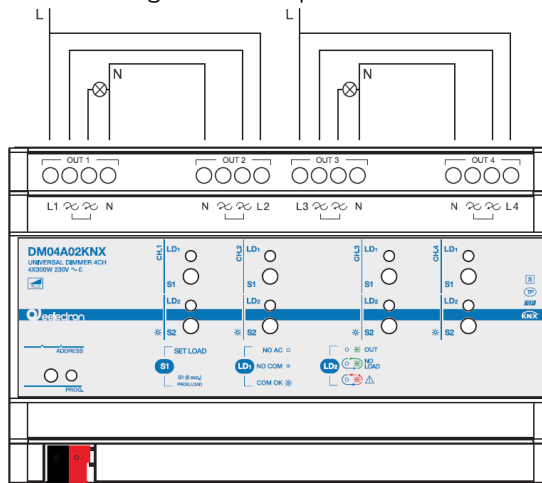
Product is intended for installation on

3. Connection diagrams

Connection diagram for output independent



Connection diagram for output combined



The 2 channels can work with different LINES (PHASE) ; it is necessary to correctly identify the NEUTRAL since it is the same for both channels and is internally connected between the 2 output channels!



Danger of destruction for the device and for the connected load if you connect 2 different PHASES or a PHASE and a NEUTRAL on the terminals identified with the letter N.



In the configuration with 2 combined channels it is possible to drive higher power loads, to control the maximum permissible power according to the type of load in the paragraph "ALLOWED LOADS"



Danger of destruction for the device and for the connected load if different phases are connected on terminals L1 and L2!



Danger of destruction of the device if connection is made to the combined load without having correctly configured the device in ETS!

4. Allowed loads

Allowed loads table

RC	TRAILING EDGE	LIN	LINEAR
L	LEADING EDGE	LOG	LOGARITMIC

LOAD TYPE	MAXIMUM POWER		MODE	CURVE
	SINGLE CHANNEL	LINKED CHANNELS		
INCANDESCENT OR ALOGEN LAMPS (230V~ 50/60HZ)	300 W	600 W	RC	LIN
FERROMAGNETIC TRANSFORMERS (HALOGEN LAMPS 12/24V~ 50/60HZ)	200 VA	400 VA	L⁽¹⁾	LIN
ELECTRONIC TRANSFORMERS (HALOGEN LAMPS 12/24V~ 50/60HZ)	60 VA	100 VA	RC	LOG
DIMMABLE LED LAMPS (230V~ 50/60HZ)	60W ⁽²⁾	100W ⁽²⁾	L	LOG
DIMMABLE LED LAMPS (230V~ 50/60HZ)	120W ⁽²⁾	200W ⁽²⁾	RC	LOG
DIMMABLE LED DRIVERS (230V~ 50/60HZ)	60W ^{(2) (3)}	100W ^{(2) (3)}	RC/L⁽⁴⁾	LOG
COMPACT FLUORESCENT LAMPS (ESL/CFL)	60W ⁽²⁾	100W ⁽²⁾	L	LOG

(1) **DO NOT CONNECT THE TRANSFORMER WITHOUT CONNECTING THE LAMP ON THE SECONDARY WINDING TO THE AVOID OVERVOLTAGE THAT MAY CAUSE DAMAGING TO THE DEVICE.**

(2) FOR LED OR ESL LAMPS, THE CORRECT OPERATION STRICTLY DEPENDS FROM THE LAMP USED; SO THERE IS NO GUARANTEE IN ADVANCE THE PROPER OPERATION OF THIS KIND OF LAMPS, EVEN IF THEY ARE DECLARED AS DIMMABLE.

(3) FOR THE CALCULATION OF THE MAXIMUM ALLOWED POWER LOAD, CONSIDER THE NOMINAL POWER OF THE BALLAST AND NOT THE LOAD CONNECTED THAT COULD BE LOWER.

(4) TRAILING MODE [**RC**] USUALLY RESULTS LESS STRESSFUL FOR THE DEVICE WITH THIS KIND OF LOADS

Manual commands

LED LD1	DESCRIPTION	SYMBOL
---------	-------------	--------

Off	Mains 230V not present	NO AC
Steady on	Error (internal bus not OK)	NO COM
Short blink	Normal operating mode	COM OK
Short double blink (only CH2)	Normal operating mode, CH2 is linked to CH1	
LED LD2	DESCRIPTION	SYMBOL
On / Off	Out On / Off status	
Slow blink (green)	Load not connected	
Slow blink (red)	Overvoltage	
Fast blink (red)	Overcurrent	
Steady on (red)	Overtemperature	

The load type setting can be done by ETS parameter or manually with the procedure here described. It is also possible to perform an automatic recognition of the load type on the device. To perform the manual/automatic load type setting on the device, ETS parameter „Manual local setting“ must be selected. Press button P1 for at least 5 seconds to enter load programming mode: (PROG LOAD); LED L1 and L2 blink together for 1 second then show actual setting; each time P1 is pressed (SET LOAD) the LEDs change state with the following meaning:

Setting	LD1	LD2
Trailing edge – Linear [RC – LIN]	OFF	GREEN
Leading edge – Linear [L – LIN]	OFF	RED
Trailing edge – Logaritmica [RC – LOG]	GREEN	GREEN
Leading edge – Logaritmica [L – LOG]	GREEN	RED
Teach-in (automatic load detection)	OFF	ORANGE
Set CH2 as linked to CH1 (only for channel 2)	GREEN	ORANGE

After 5sec from the last button press, device exit this manual setting mode and the last set mode is saved in memory; exit from LOAD PROG mode is shown by the simultaneous blinking of LEDs LD1 and LD2 for 1 second. If “Automatic load recognition” mode is selected the recognition procedure start immediately, during this procedure it is possible to see the load switched ON and OFF; after this, the identified mode is saved in memory and can be changed manually by repeating the procedure. The test procedure can also be done via the DimmerLoadTester software

Automatic identification of mains frequency

Each time the device is switched on, it automatically recognizes whether the mains frequency is 50Hz or 60Hz; the LEDs LD1 and LD2 flash for a few seconds; at the end of the procedure one of the two LEDs remains ON indicating the detected frequency (LD1 = 50Hz, LD2 = 60Hz).

WARNING: The automatic frequency identification is activated only if the load is connected.



ATTENTION

5. Installation instructions

The device may be used for permanent indoor installations in dry locations within wall box mounts.

- **Device must be installed keeping a minimum distance of 4 mm between electrical power line (mains) and input cables or red / black bus cable**
- The device must be mounted and commissioned by an authorized installer.
- The applicable safety and accident prevention regulations must be observed.
- The device must not be opened. Any faulty devices should be returned to manufacturer.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.
- KNX bus allows you to remotely send commands to the system actuators. Always make sure that the execution of remote commands do not lead to hazardous situations, and that the user always has a warning about which commands can be activated remotely.
- **The device must be installed in a vertical position respecting the direction indicated in the drawing in paragraph 2; it is recommended to guarantee sufficient dissipating conditions in free air**

6. General parameters

KNX PARAMETER	SETTINGS
Delay to send telegram on power-up [s]	5 ÷ 15 seconds
<p>Through this parameter is possible to set the delay of transmission of telegrams after a power on by selecting the time by which the device is allowed to send telegrams.</p> <p>In large systems after a power failure or shutdown this delay avoids to generate excessive traffic on the bus, causing slow performance or a transmission block.</p> <p>If there are different devices requiring sending telegrams on the bus after a reset, these delays must be programmed to prevent traffic congestion during the initialization phase.</p> <p>The values of objects are updated at the end of the transmission delay time</p> <p>At the end of ETS programming the device behaves like after a power on.</p>	
Channel <x> Enable temperature object	false true

If this parameter is set "true", it's possible to enable a communication object, <Ch. x> <i>Actual Temperature</i> , for each channel to know what's the temperature measured inside the enclosure.	
Channel <x> sending interval	no sending 5 min 15 min 1 h
It's possible to enable the periodic sending of measured temperature value, if this parameter is set "no sending", reading can be done only on read request.	
Channel <x> Send temperature if variation >= 5°C	false true
If this parameter is set "true", it's possible to enable the sending of measured temperature value, only if the actual temperature value is different from the previous temperature value of at least 5°C or higher.	
Enable channel 2 (3,4)	disabled enabled
By enabling this parameter, the second, third, and fourth channels can be activated.	
Enable dynamic scene object	false true
If this parameter is set "true", it's possible to enable a communication object <i>Dynamic Scene</i> , one for the whole device. Concerning Dynamic Scene function see paragraph: 17	
Economy mode: switch OFF leds after 1 minute	false true
After one minute of inactivity of the local keys, the front LEDs turn off and are re-activated only in case of manual operation or if an anomaly is detected.	

KNX PARAMETER	SETTINGS
Channel 1 and Channel 2	independent linked
Channel 3 and Channel 4	independent linked

This parameter activates the internal mode of the device that allows to connect a load using the outputs in parallel, according to the connection diagram indicated in the paragraph 3 Allowed loads In this mode with ETS only one channel is configured, the device takes care of extending the configuration also to the second channel so that the 2 channels behave in the same way.



Danger of destruction of the device if connection is made as combined load without having correctly configured the device in ETS!

7. Channel <x> Generic

KNX PARAMETER	SETTINGS
Type of load	manual local setting capacitive / resistive inductive CFL mode LED leading edge LED trailing edge expert
With this parameter is possible to set the type of load for related channel. <u>Manual local setting</u> It is possible to automatically recognize the type of load on the device. To make the settings related to the type of manual / automatic load on the device, it is necessary to select the ETS parameter "Manual local setting". To enter the load programming mode, refer to the procedure described in chapter 4 <u>Capacitive / resistive</u> Using the final part of the curve: the dimmer switches off at the end of the input voltage waveform, reducing the power supplied to the load. This regulation is used for resistive or capacitive loads (typically halogen lamps with electronic transformer or incandescent lamps) <u>Inductive</u> Using the initial part of the curve: The dimmer switches off in the initial part of the input voltage waveform, reducing the power supplied to the load. This load regulation is used for inductive loads (typically ferromagnetic or toroidal transformers) <u>CFL Mode</u> This mode is used for CFL lamps. <u>LED leading edge</u> This mode is used for dimmable LED lamps with an internal transformer (eg 230V AC lamps); sometimes such lamps have a very weak inductive behavior and	

can be well piloted in RC mode.

LED trailing edge

This mode is used for dimmable LED lamps with inductive behaviour.

Local buttons (on/off)	disabled enabled
This parameter enables / disables the local buttons S1 and S2; when the parameter "Load type" is set as "manual local setting" the S1 button is always enabled while S2 can be enabled / disabled. When the S2 pushbutton is enabled, it is possible to switch the output (with short press) or to dim it (with long press).	
Maximum dimming value	50 - 100%
It's possible to set a maximum percentage value; any percentage command higher than this value is limited to the value of this parameter.	
Minimum dimming value	0 - 45 %
It's possible to set a minimum percentage value; any percentage command lower this value is replaced with a command of 0% (OFF).	
Ramp time 0% - 100%	0 ÷ 255 secondi 10s
With this parameter, it is possible to set the ramp time, which takes the channel from 0% to 100%.	

8. Channel <x> Configuration

KNX PARAMETER	SETTINGS
Behavior on KNX bus power down	0 - 100% 101 = no action
When bus voltage fall down under approximately 18V device enters the power down routine and it's possible to set the channel status.	
Behavior on KNX bus power up	0 - 100% 101 = previous state
On power up it is possible to set the status of each channel with this parameter.	
Brightness at switch on	0 - 100% 101 = previous state

<p>Con questo parametro è possibile impostare un valore per il canale quando l'uscita è attivata con oggetto di commutazione 1 bit:</p> <ul style="list-style-type: none"> • <i>Channel <x> Switching (at once)</i> • <i>Channel <x> Switching (smooth)</i> 	
<p> When an ON switching command is received, the actual brightness value of the output channel must be different from the set value otherwise this command is ignored.</p>	
<p> If this parameter is set to "previous state", with ON switching, the output channel will go to the value it had before going to 0%. With an OFF command, the output channel will go to 0%.</p>	
<p> If this parameter is set to "previous state", after download, with an ON switching command, the output channel will go to 100%; subsequently, if a new brightness value is set, at the following ON switching, the output channel will go to the previously set percentage value.</p>	
<p>Absolute value object [0...100%]</p>	<p>disabled enabled</p>
<p>It is possible enable two different communication object:</p> <ul style="list-style-type: none"> • <i><Ch. x> Dimming Value</i> • <i><Ch. x> Dimming Status</i> <p>Communication object <i><Ch. x> Dimming Value</i>, is used to set a brightness value for the output channel. Communication object <i><Ch. x> Dimming Status</i> is used to inform what is the actual brightness value of the output channel.</p>	
<p>Additional function</p>	<p>no function logic function lock function</p>
<p>It is possible enable two different additional function: Logic function, see chapter 14 Lock function, see chapter 15</p>	
<p>Switching activation telegram</p>	<p>telegram "0" telegram "1"</p>
<p>It's possible to determine if the output channel is activated with a telegram "0" (and then off with "1") or is activated with telegram "1" (and then off with "0").</p>	
<p>Timing Function</p>	<p>timing function disabled on / off with delay on with delay / timing off</p>
<p><i>on / off with delay</i> it is possible to set a delay between the reception of a telegram and the switch of the output channel; for</p>	

<p>both telegrams: activation and deactivation.</p> <p><i>on with delay / timing off</i> it is possible to set a delay between the reception of a telegram of activation and the switch of the output channel; the OFF switch is automatic after a configurable time (staircase timer).</p>	
<p>Scene</p>	<p>disabled enabled</p>
<p>It is possible enable scene function. see chapter 16 .</p>	
<p>Economical mode</p>	<p>disabled enabled</p>
<p>The economic mode function can be enabled. If this function is enabled, a communication object is visible:</p> <ul style="list-style-type: none"> • <i>Channel <x> Economical Mode</i> <p>When the value of this communication object is "1", the economic mode is activated, otherwise it is deactivated. Economic mode is used for energy saving. It is possible to set a maximum brightness value of the output channel, associated with the economic mode enabled.</p>	
<p>Maximum dimming value in economical mode</p>	<p>20 - 90% 80%</p>
<p>It's possible to set the maximum brightness value for the output channel, when economical mode is enabled</p> <p> If the actual brightness value of the output channel is higher than the value set by "maximum dimming value in economical mode" parameter, when economical mode is activated the output channel goes to the value set by "maximum dimming value in economical mode" parameter.</p> <p> The value set by the parameter "Maximum dimming value in economical mode" must be equal or lower than the value set by the parameter "Maximum dimming value."</p>	
<p>Timing economical object [h] (0=time unlimited)</p>	<p>0 - 255 h</p>



The value of the "Economic Mode" object is saved in memory in the event of a power failure, if the timing is in progress when the power is turned on again, the timer will be reset and the count will start again.

9. Timing functions

It's always possible to manage, for each output channel, on/off commands and timing commands in order to select if switch it on/off for indefinite time or with timing function.

Timing function is activated by receiving a command on the communication object <Ch. x> *Switching (timing)*.

Two possible timing functions.

- on / off with delay
- on with delay / timing off

KNX PARAMETER	SETTINGS
<i>Dimming time from 0% a 100%</i>	0 – 255 s 10 s
With this parameter it's possible to set a different ramp time, that is used from the timing functions.	

10. Function ON/OFF with delay

In this configuration it is possible to set a time delay on the output channel activation (T_{ON}) and also a delay time for the output channel deactivation (T_{OFF}).

Switching ON and OFF of the output channel, when the parameters are different from zero, occur later than the receipt of the telegram. Activation and deactivation delays are set separately.

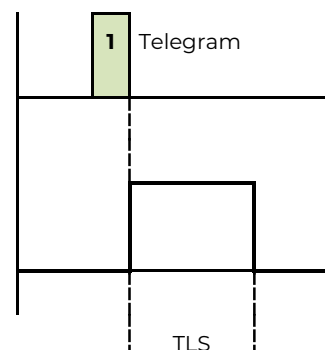
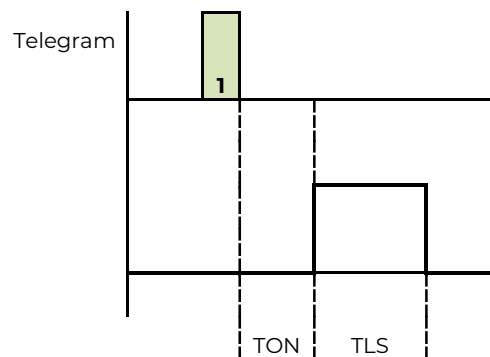
KNX PARAMETER	SETTINGS
Delay on activation	false true
Delay on deactivation	false true
Delay on activation (base Time)	1 s 1 min 1 h
Delay on activation (factor)	1.. 255
The delay time between the receipt of a telegram and the execution of the command is given by: <i>Delay of activation time = Delay on activation (base</i>	

<i>time) x Delay on activation (factor)</i>	
Delay on deactivation (base time)	1 s. 1 min 1 h
Delay on deactivation (factor)	1.. 255
The delay time between the receipt of a telegram and the execution of the command is given by: <i>Delay of activation time = Delay on deactivation (base time) x Delay on deactivation (factor).</i>	

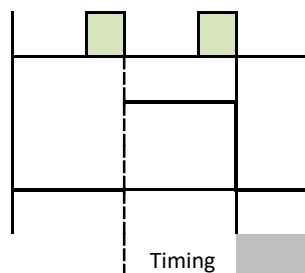
11. ON with delay / timing OFF

After receiving a telegram on the communication object Channel <x> *Switching (timing)*, the output channel is active for a time (TLS) that can be set by ETS parameters: *Base Time* and *Factor*, when TLS expires, the channel automatically switches off.

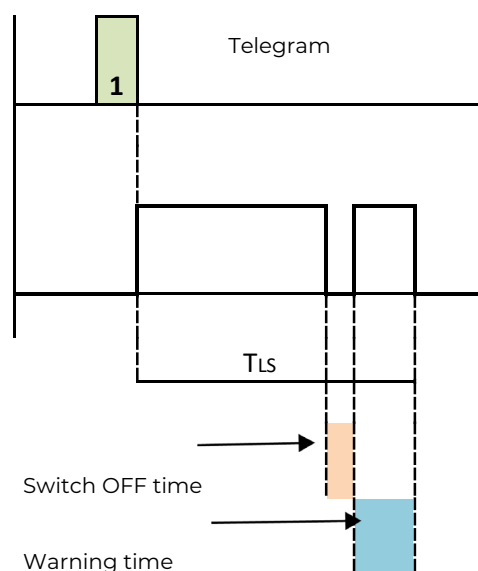
From ETS it is also possible to set an activation time delay (T_{ON}) (see the function *Delay on activation*).



KNX PARAMETER	SETTINGS
Base time	1 s 1 min 1 h
Factor	1.. 255
Timing can be stopped	false true
This allows you to set the behaviour of the device when it receives a OFF command: <p><i>True</i> On receiving a OFF command, the device immediately executes the command and switch off the output channel without waiting the end of the timing.</p> <p><i>False</i> On receiving a OFF command, the device ignores the command and continues the timing; the load is deactivated at the end of the set time and it is not possible to deactivate it using a bus command.</p>	
Warning function	false true
Warning time (seconds before time ends)	15 s 30 s 1 min 2 min
Switch off time	1,0 s 1,5 s 2,0 s
Here you can set the warning time before the deactivation of the stairway light function, upon which the device will consequently signal the imminent termination of the stairway light function by switching off, for a brief time, the light.	



Warning function:

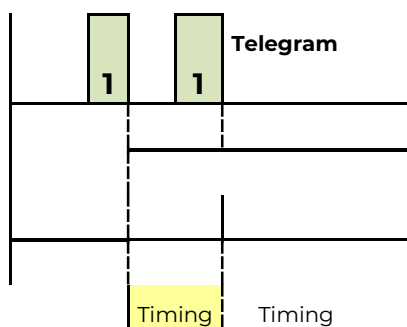


Timing of the output can be stopped with an OFF command:

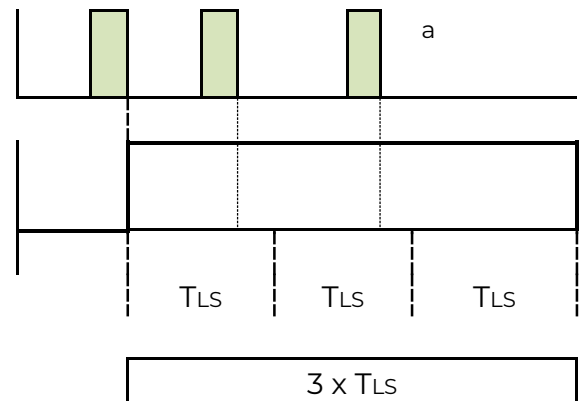
Telegram | 1 0

KNX PARAMETER	SETTINGS
Receiving ON when timing is stopped	ignore Trigger mode Extension mode
<p>This allows you to set the behaviour of the device when it receives a ON command while the staircase timing is running:</p> <p><i>ignore</i> On receiving a ON command, the device ignores it and goes on executing the timing.</p> <p><i>trigger mode</i> On receiving a ON command, the device restart the stairs light time executing the whole time again.</p> <p><i>extension mode</i> On receiving the command the device extends the stairs light time, increasing it by the time of the standard stairs light time. Note that the extension option does not reset the timing but it changes its duration and becomes a multiple of the set stairs light time. The maximum number of extension is allowed by the parameter "Maximum number of time extension".</p>	

Duration of the output channel timing is re-triggerable (trigger mode):



Extension mode:



12. ON/OFF vs Timing Functions

ON / OFF Commands have higher priorities respect timing command: here some examples:

Timing of the output channel is active and receives activation command (ON)

- If received on CO: "<Ch. x> Switching (timing)" communication object, then it follows the parameter settings (ignore / trigger /extension mode).
- If received on CO: "<Ch. x> Switching (at once) or (smooth)", then the output channel stay activated without timing.

Timing, of the output channel, is active and receives deactivation command (OFF)

- If received on CO : "<Ch. x> Switching (timing)" then it follows the parameter settings ("Timer can be stopped": true/false)
- If received on CO : "<Ch. x> Switching (at once) or (smooth)" then the output channel switch off and all the timings are reset.

13. Additional Functions

In DM02A02KNX 3 additional functions can be enabled:

- **LOCK FUNCTION** : this function according to the command received from the bus, blocks the output channel in a specific condition when a "lock on" command is received, this state is kept until a "lock off" command is received; any

command received during the period in which the block is activated is not executed.

- **LOGIC FUNCTION:** This function allows you to control the load, not only using the relay *Switching Command Object*, but using the result of a logic operation; the logic function consists in two logic ports: the operation is performed between the logic input and the output switching object.
- **SCENE FUNCTION:** The scene function manages two possible commands to the device: **perform scene**, that is a command to create a specific condition; **learn scene**, that is a command to memorize the current status of the output at the moment the command is received, and then reproduce it once the perform command is received.

LOCK and LOGIC function are alternative functions and only one of them can be enabled at a time.

14. Logic Function

Enabling logical operation allow to submit the command for the output channel to a result of a logical operation between the communication object *<Ch. x> Logic Function* and the communication object *<Ch. x> Switching (at once)* or *<Ch. x> Switching (smooth)* or *<Ch. x> Switching (timing)*.

1 Update on *<Ch x> Switching (at once)* command: result of the logic operation between this object and the *<Ch x> Logic Function* object is applied to output channel (no timing function). In this case the ramp time is 0 seconds.

2 Update on *<Ch x> Switching (smooth)* command: result of the logic operation between this object and the *<Ch x> Logic Function* object is applied to output channel (no timing function). In this case the ramp time is that set by parameter "*Dimming time from 0% to 100%*".

3 Update on *<Ch. x> Switching (timing)* command: result of the logic operation between this object and the *<Ch. x> Logic Function* object is applied to output channel (timing function performed). In this case the ramp time is that set by parameter "*Dimming time from 0% to 100%*" for *timing function*".

4 Update on *<Ch. x> Logic Function*: result of the logic operation between this object and the *<Ch. x> Switching* objects is applied to the objects *<Ch. x> Switching*. In this case the ramp time depends from Switching object is used.

By ETS is possible to select the logical operation to use: every time a telegram is received on the logical object or on the switching object then the logical operation is calculated again and the result is taken as a command for the output channel.

KNX PARAMETER	SETTINGS
Logic Function	AND OR XOR NAND NOR NXOR
With this parameter it's possible to select the logical operation.	
Initial value for logic object	value 0 value 1 Last value received
This parameter selects the value the logical object must have on power up . "Last value received" setting is intended to be the last value received before power down.	



The value assumed by the logic communication object set by the parameter *Initial value for the logical object* does not automatically change the output channel, because this behavior is determined by the parameter Behavior on bus voltage recovery KNX.

15. Lock Function

The lock function is activated by telegram on object *Channel <x> Lock Function*, it allows to maintain the current status of the output channel or a state set by ETS, even if the value switching object changes.

KNX PARAMETER	SETTINGS
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Initial value for lock object	value 0 value 1 Last value received
This parameter selects the value the lock object must have on power up. "Last value received" is intended to be the last value received before power down.	
Telegram for lock activation	telegram "0" telegram "1"
This parameter selects the values associated to the "lock" or "unlock" condition.	
Brightness value % when lock is active	0 - 100% 101 = no action
This parameter selects the value that the output channel must assume when the lock function becomes active".	
Position when lock ends	fixed value Keep previous state and ignore telegrams Keep previous state and don't ignore telegrams
<p><i>Keep previous state and ignore telegrams</i> Output channel returns in the state it was before lock function became active.</p> <p><i>Keep previous state and don't ignore telegrams</i> the output channel returns to its condition prior to the activation of the block unless you have received a telegram on the switching object (1 bit or 1 byte) or scenario; in this case, the last command received is executed.</p>	
Brightness value % when lock is ends	0 - 100% 101 = no action
This parameter allow to set a predefined value that the output channel assumes when lock ends. This parameter is visible only if the parameter "Position when lock ends" is set by "fixed value".	



If the parameter Initial value of the lock object has the same value as the *lock activation telegram*, when switched on, the output channel starts in blocking mode, waiting for a blocking telegram off

16. Scene Function

When the scene function is enabled a communication object named "<Ch. x> Scene" becomes visible.

It is possible to send to the device two different commands:

- **recall scene:** is a command to create a specific condition.
- **store scene:** is a command to learn and store the current status (at the moment the command is received) of the output channel, and then reproduce it once the recall command is received.

For every channel it is possible to store a maximum of 8 output scene.

KNX PARAMETER	SETTINGS
Scene <x>	0 – 63 64 = not active
For the 8 possible scenes, this number is the unique identifier for the scene: valid numbers are from 0 to 63; 64 means scene is not active.	
Initial value scene <x>	0 – 100%
For the 8 possible scene this number allow to initialize the status associated to previously selected scene number avoiding to execute the store scene procedure. If the store scene is done, this value is overwritten.	
Dimming time scene <x> from 0% to 100%	0 – 255 seconds
With this parameter it's possible to set the ramp time, that the channel takes to go from 0% to 100% when a recall scene command is executed.	
Learn scene	disabled enabled
This parameter enable / disable the output channel from storing value received from the bus; if this parameter is set to disable the value associated are set	

only by the parameters "*Initial value Scene <x>*" and cannot be modified without a ETS download.



When a scene is recalled the output channel behaves in the same way as it would have received a telegram on the *<Ch. x> Dimming Value* communication objects; this means that a scene always triggers a **NOT TIMING** command.



After a ETS download the device assumes the value of parameter: "*Initial value Scene <x>*" as a value in memory for the corresponding scene and overwrites previous memorized scene positions

17. Dynamic Scene Function

Dynamic scene function is compatible with the standard scene and dimmer actuators can use both at the same time.

Dynamic scene function use the same 1 byte communication object (DPT 18.001) as the standard scenes keeping the same structure and meaning.

To activate the dynamic scene function is necessary that the parameter "*Dynamic scene object*" is set as "true", in this way the object "*Dynamic Scene*" is visible. This 1 bit communication object, one for all four channels, is used to enable / disable learning of dynamic scene communication object runtime.

How it works

When the value of the object "Dynamic Scene" is 0 Dynamic scene function is disabled, it's possible to learn and execute the standard KNX scene as set in ETS parameter.

When the value of the object "Dynamic Scene" is 1 Dynamic scene function is enabled, during this condition a command over the 1 byte object "<Ch. x> Dimming Value" is not executed (output channel does not change) but the value is temporary stored in memory. When a learning command is sent over the 1 byte object "<Ch. x> Scene" the device stores in non-volatile memory the command previously received over the "<Ch. x> Dimming Value" object and associate it to the scene number just receive.

If a learning command is sent over the 1 byte object "<Ch. x> Scene" without having previously updated "<Ch. x> Dimming Value" object the dimmer actuators consider this as a command to "unlink" this channel to scene number "n" and from this point after receiving a "execute scene command" for scene number "n" the channels doesn't reacts.

During this phase it's possible to associate until 64 scene numbers on every dimmer actuator channel. When the object "Dynamic Scene" returns to 0 the learning of dynamic scene is completed.

"Recall scene" operation works as in the standard scene function..

KNX PARAMETER	SETTINGS
Submit to dynamic scene function	false true

With this parameter it's possible to submit the output channel to the dynamic scene function.	
Keep scenes value after download	disabled enabled
If enabled, after download, is possible to keep the previous scene value stored.	

With the dynamic scene function, up to 64 scenes can be set for each channel.

It is possible to include or exclude an output from a scene without reprogramming the device with the ETS software, but it is necessary that the channels are connected to the same group address.

18. Alarm Function

It's possible to enable a communication object "<Ch. x> Alarm Function" that is used to report some particular alarm.

It's possible to enable "<Ch. x> Alarm Function" object as 1 bit object or 1 byte object.

KNX PARAMETER	SETTINGS
Alarm object	disable object 8-bit object 1-bit
<p><i>Disable</i> The object doesn't not appear</p> <p><i>1 bit object</i> When the "<Ch. x> Alarm Function" object is enabled as 1 bit object: -if its value is "1", this mean that an alarm is active otherwise -if its value is "0" no alarm is active.</p> <p><i>1 byte object</i> When the "<Ch. x> Alarm Function" object is enabled as 1 byte object it follows the rule of DPT 21.601 DPT_LigthActuatorErrorInfo: if its value is "0", this mean that no alarm is active otherwise, if is different from "0" an alarm is active:</p> <ul style="list-style-type: none"> • If its value is 2, this means that there is supply voltage problem or communication problem. In this case, if the alarm is active it is necessary to verify if the 230V voltage is present and if the local bus is present and there is continuity on it. 	

<ul style="list-style-type: none"> • If its value is 4, this means that the over current alarm is active. • If its value is 16, this means that the over voltage alarm is active. • If its value is 64, this means that the over temperature alarm is active 	
Sending interval	no sending 5 min 15 min 1 h
It's possible to enable the periodic sending of alarm state, if this parameter is set "no sending", reading can be done only on read request.	

low	<i>Economical Object</i>
	<i>Switching object (at once) or (smooth)</i> <i>Scene object</i> <i>Logic object</i>
	<i>Switching object (timing)</i>

19. Priority table for output channel

Priority	Description
high	Parameter: <i>Behaviour on KNX local bus power down</i>
PRIORITY	<i>Lock Object</i>
	Parameter: <i>Behaviour on KNX bus power up</i>

20. Behaviour of output channel on voltage failure, recovery and commissioning

Behaviour on bus voltage failure

On failure of bus voltage behaviour of output channel is driven by the parameter: *Behaviour on KNX or local bus power down*.

Behavior on bus voltage recovery

On bus voltage recovery behaviour of output channel is driven by the parameter: *Behaviour on KNX bus power up*.

Behaviour on commissioning (ETS Download)

After download, output channels are set to OFF.

Wrong application download

If the wrong ETS application is downloaded then KNX/EIB led starts blinking and device is not operative on the bus. A power reset must be done and the correct ETS application must be downloaded.

the ramp time	
< Channel X > Switching (timing)	[2, 14, 26, 38]
Switch the output channel on / off with the timing function.	
< Channel X > Dimming	[3, 15, 27, 39]
4-bit communication object for commands to increase and decrease the brightness of the output channel	
< Channel X > Dimming Value	[5, 17, 29, 41]
Allows to set the output channel to the preset value between 0% and 100%	
< Channel X > Dimming Status	[6, 18, 30, 42]
Indicates the status of the output channel in percentage value between 0% and 100%	
< Channel X > Status	[4, 16, 28, 40]
Indicates the status of the output channel with a value of 1 bit; 0 for off and 1 for access with brightness value $\geq 1\%$	
< Channel X > Lock Function	[7, 19, 31, 43]
Activate / deactivate the lock function	
< Channel X > Logic Function	[7, 19, 31, 43]
Receives the value to use with the selected logical operator.	
< Channel X > Scene	[8, 20, 32, 44]
Performs or stores a scenario	
< Channel X > Alarm Function 1 Byte	[9, 21, 33, 45]
Send the alarm or regular operation status using the 1 byte object	
< Channel X > Alarm Function 1 Bit	[9, 21, 33, 45]
Send the alarm or regular operation status using the 1 bit object	
< Channel X > Economical Mode	[10, 22, 34, 46]
Activate / deactivate Economical Mode Function	
< Channel X > Actual Temperature	[11, 23, 35, 47]
Send the internal temperature of the channel	
Dynamic Scene	[48]
Enables / disables the storage of values associated with dynamic scenes	

21. Communication Objects

< Channel X > Switching (at once)	[0, 12, 24, 36]
It allows to immediately activate / deactivate the output channel, without ramp time	
< Channel X > Switching (smooth)	[1, 13, 25, 37]
It allows to activate / deactivate the output channel with	