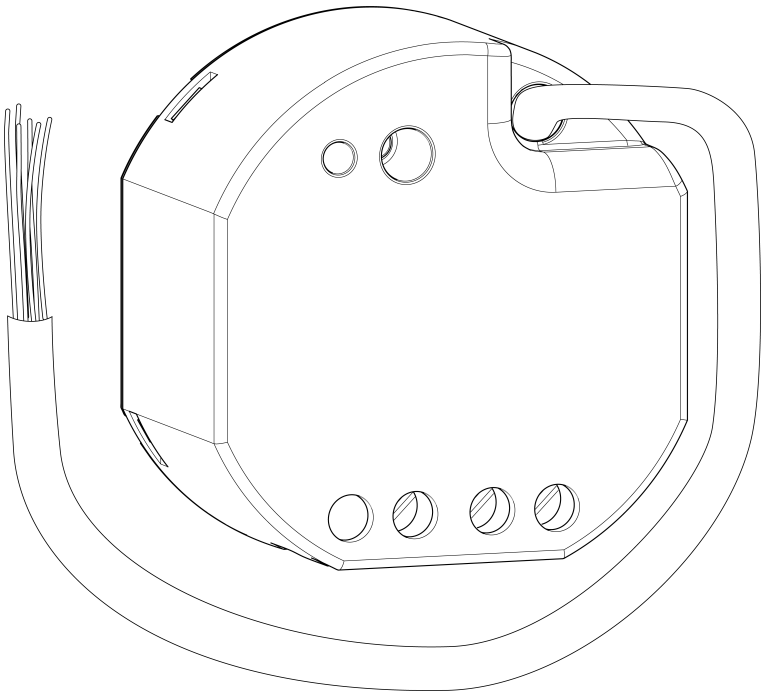
SpaceLogic KNX

Flush Mounted Universal Dimming Acutator 1g with 3 binary inputs

Product information

This document is based on the installation instructions of the device and provides you with further information, e.g. about functions and operation, etc.

MTN6003-0013
17.06.2021



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Safety information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that accompany this symbol to avoid possible injury or death.

DANGER!

DANGER

indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!

WARNING

indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION!

CAUTION

indicates a hazardous situation which, if not avoided, could result in minor or moderate injury

Additonal notes

You will find additional information here to make your work easier.

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1 For your safety

DANGER!

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Safe electrical installation must be carried out only by skilled professionals. Skilled professionals must prove profound knowledge in the following areas:

- Connecting to installation networks
- Connecting several electrical devices
- Laying electric cables
- Connecting and establishing KNX networks
- Safety standards, local wiring rules and regulations

Failure to follow these instructions will result in death or serious injury.

1.1 Safety instructions

Electrical devices may only be mounted and connected by electrically skilled persons.

The device may not be opened or operated outside the technical specifications.

Danger of electric shock. Device is not suitable for disconnection from supply voltage. The load is not electrically isolated from the mains even when the output is switched off.

Danger of electric shock. Make sure during the installation that there is always sufficient insulation between the mains voltage and the bus. A minimum distance of at least 4 mm must be maintained between bus conductors and mains voltage cores.

Danger of electric shock on the KNX installation. Do not connect any external voltage to the inputs. The device might be damaged, and the SELV potential on the KNX bus line will no longer be available.

Fire hazard. For operation with inductive transformers, each transformer must be fused on the primary side in accordance with the manufacturer's instructions. Only safety transformers according to EN 61558-2-6 may be used.

Risk of destruction of the dimmer and load if the set operating mode and load type do not match. Set the correct dimming principle before connecting or exchanging the load.

These instructions are an integral part of the product, and must remain with the end customer.

2 Device components

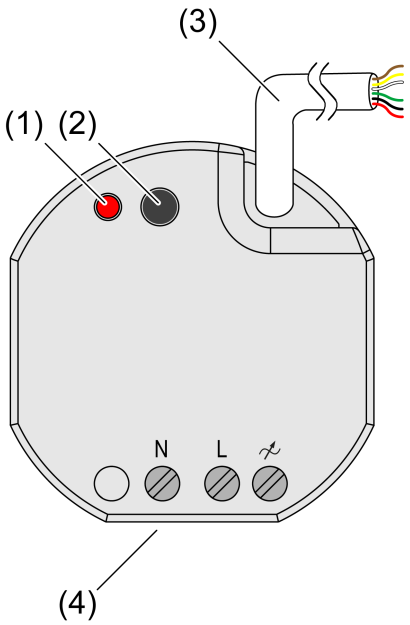

Image 1: Device components

(1) Programming LED
(2) Programming button
(3) Control cable (KNX connection and extension inputs)
(4) Load connection (dimming output)

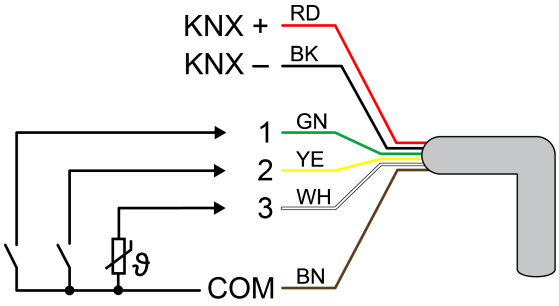

Image 2: Connection assignment of control cable (example)

red (**RD**)	KNX +
black (**BK**)	KNX -
green (**GN**)	Input 1 (push-button, switch, contact)
yellow (**YE**)	Input 2 (push-button, switch, contact)
white (**WH**)	Input 3 (push-button, switch, contact, NTC temperature sensor)
brown (**BN**)	COM inputs 1...3

3 Function

Intended use

- Operating in KNX systems
- Switching and dimming of lighting
- Reading in switching states of installation switches or push-buttons and other potential-free contacts at inputs 1...3
- Acquisition of temperature values via NTC temperature sensor at input 3 (see accessories)
- Mounting in appliance boxes according to DIN 49073

Product characteristics

- Outputs can be operated via KNX telegrams or extension inputs
- Three extension inputs for connecting potential-free contacts. NTC temperature sensor can be connected to input 3.
- Supply via KNX, no additional power supply necessary
- KNX Data Secure compatible
- Updateable with Schneider Electric ETS Service App

Dimming operation characteristics

- Automatic or manual selection of the dimming principle suitable for the load
- Protected against no-load, short-circuit and overheating
- Signal in the event of a short-circuit
- Feedback of the switching position and the dimming value
- Parameterisable switch-on and dimming behaviour
- Time functions: switch-on delay, switch-off delay, staircase lighting timer with run-on time
- Light scene operation
- Operating hours counter
- Mains failure longer than approx. 5 seconds leads to switch-off of the dimming actuator. Depending on the parameter setting, the connected load is calibrated after resumption of power supply.
- Power extension possible by means of power boosters.

Delivery state: Operation of the output via extension inputs 1 and 2 possible with existing supply via KNX.

Flickering of the connected lamps due to undershoot of the specified minimum load or through centralised pulses from the power stations. This does not represent any defect in the device.

Characteristics extension inputs

- Switching operating function
- Dimming operating function (incl. colour temperature dimming)
- Shutter/Venetian blinds operating function

- Value transmitter operating function (1-byte, 2-byte, 3-byte and 6-byte incl. RGBW and colour temperature presets)
- Scene extension operating function
- 2-channel operation operating function
- Controller extension operating function
- Disabling functions
- Debounce time adjustable

Logic function characteristics

- Logic gates
- Transformer (conversion)
- Disabling element
- Comparator
- Limit value switch

System information

This device is a product of the KNX system and complies with the KNX directives. Detailed technical knowledge obtained in KNX training courses is a prerequisite to proper understanding.

The function of this device depends upon the software. Detailed information on loadable software and attainable functionality as well as the software itself can be obtained from the manufacturer´s product database.

The device can be updated. Firmware can be easily updated with the Schneider Electric ETS Service App (additional software).

The device is **KNX Data Secure** capable. **KNX Data Secure** offers protection against manipulation in building automation and can be configured in the ETS project. Detailed specialist knowledge is required. A device certificate, which is attached to the device, is required for safe commissioning. During mounting, the certificate must be removed from the device and stored securely.

Planning, installation and commissioning of the device are carried out with the aid of the ETS, version 5.7.3 and above.

4 Information for electrically skilled persons

DANGER!

Mortal danger of electric shock.

- Disconnect the device. Cover up live parts.

4.1 Fitting and electrical connection

DANGER!

When connecting the bus/extensions and mains voltage wires in a shared appliance box, the KNX bus line may come into contact with the mains voltage.

This endangers the safety of the entire KNX installation. People at remote devices may also receive an electric shock.

- Do not place bus/extensions and mains voltage terminals in a shared connection compartment. Use an appliance box with a fixed partition wall or separate appliance boxes.

Connecting and fitting the device

In secure operation (preconditions):

– Secure commissioning is activated in the ETS.

– Device certificate entered/scanned or added to the ETS project. A high resolution camera should be used to scan the QR code.

– Document all passwords and keep them safe.

Mounting in suitable appliance box (recommendation: electronic device box with partition). Observe cable routing and spacing (see figure 3)!

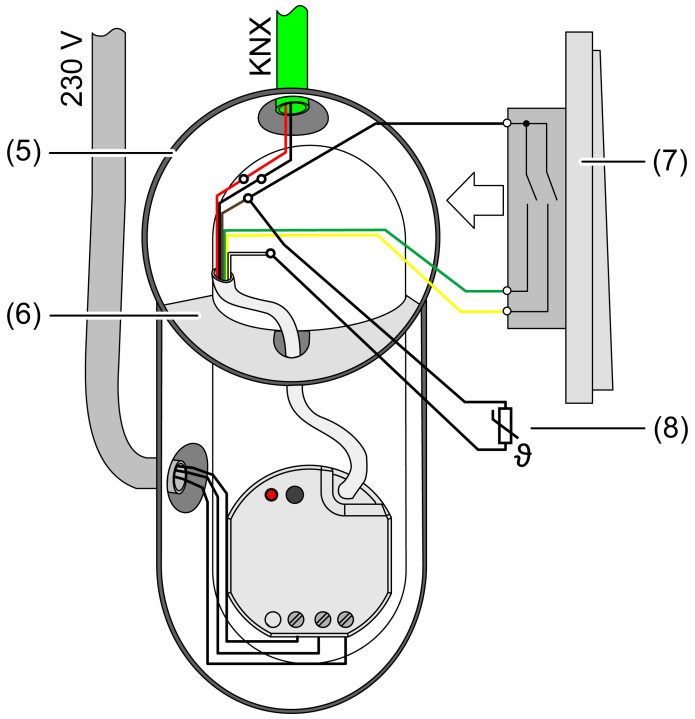

Image 3: Mounting example in electronic device box with partition wall, series push-button and NTC temperature sensor

(5) Appliance box
(6) Partition
(7) potential-free contacts (e.g. series push-button)
(8) NTC temperature sensor (optional)

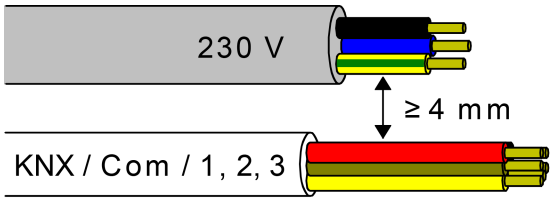

Image 4: Cable spacing

Minimum spacing between the mains voltage and bus/extension wires: 4 mm (see figure 4)

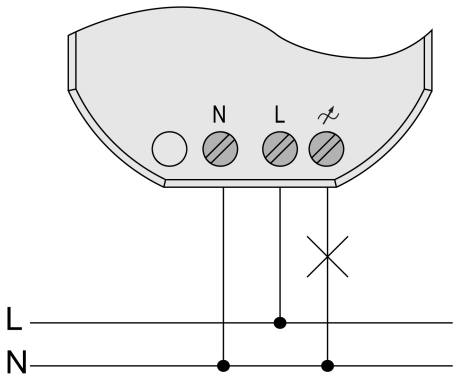

Image 5: Connection of load

Observe ambient temperature. Ensure adequate cooling.

- Connect the device to KNX with the correct polarity.
- Connect load as shown in the connection example (see figure 5).
- If required, connect potential-free contacts to inputs 1...3, or NTC temperature sensors to input 3 .
- Install the device in the appliance box.
- In secure operation: The device certificate must be removed from the device and stored securely.

The COM reference potential must not be connected together with COM connections of other devices!

4.2 Commissioning

Commissioning the device

In the as-delivered state, the actuator is passive, i.e. no telegrams are transmitted to the KNX. The output is set to the universal dimming principle with automatic recognition of the load type. Control of the output is possible via inputs 1 and 2, provided the bus voltage is switched on. Input 3 has no function.

Input	Push-button (NO contact)	Function
1	Press briefly (< 0.4 s)	switch on
1	Press for a long time (> 0.4 s)	Increase brightness
2	Press briefly (< 0.4 s)	switch off
2	Press for a long time (> 0.4 s)	Reduce brightness
3	---	---

Table 1: Function of Inputs in the as-delivered state

The device can be programmed and put into operation via the ETS. The physical address is preset to 15.15.255

Moreover the device has been configured at the factory with the following characteristics...

– Behaviour in case of bus voltage failure: no reaction
– Behaviour in case of bus voltage return: brightness before bus voltage failure

Load physical address and application program

- Parameterize correct dimming principle for the connected load.
- Press the programming button.

  The programming LED lights up.
- Load physical address and application program using the ETS.

Safe-state mode

The safe state mode stops the execution of the loaded application program.

Only the system software of the device is still functional. ETS diagnosis functions and programming of the device are possible.

Activating the safe-state mode

- Switch off the bus voltage or disconnect the device from the KNX.
- Wait about 10 s.
- Press and hold down the programming button.
- Switch on the bus voltage or connect the device to KNX. Release the programming button only after the programming LED starts flashing slowly.

  The safe-state mode is activated.

  With a new brief press of the programming button, the programming mode can be switched on and off as usual also in the safe-state mode. If Programming mode is active, the programming LED stops flashing.

Deactivating safe-state mode

- Switch off bus voltage (wait approx. 10 s) or carry out ETS programming.

Master reset

The master reset restores the basic device setting (physical address 15.15.255, firmware remains in place). The device must then be recommissioned with the ETS.

During secure operation: A master reset deactivates device security. The device can then be recommissioned with the device certificate.

Performing a master reset

Precondition: The safe-state mode is activated.

- Press and hold down the programming button for > 5 s.

  The programming LED flashes quickly.

  The device performs a master reset, restarts and is ready for operation again after approx. 5 s.

Restoring the device to factory settings

Devices can be reset to factory settings with the Schneider Electric ETS Service App. This function uses the firmware contained in the device that was active at the time of delivery (delivery state). Restoring the factory settings causes the devices to lose their physical address and configuration.

5 Technical data

Ambient conditions	
Rated voltage	AC 230 V~
Mains frequency	50 / 60 Hz
Power loss	max. 1.5 W
Standby power	approx. 0.2 W
Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-25 ... +70 °C
Dimensions (W × H × D)	48 x 50 x 28 mm

KNX	
KNX medium	TP256
Commissioning mode	S-mode
Rated voltage KNX	DC 21 ... 32 V SELV
Current consumption KNX	5 ... 18 mA
Connection mode KNX	Connection terminal on control cable

Output	
Connection mode	Screw terminals
Rated voltage	AC 230 / 240 V ~

Connected load depends on the connected lamps and set load type: (see figure 6) and (see figure 7)

	ETS parameter load type
UNI	universal (with automatic calibration procedure)
⊓	conv. transformer (inductive / leading edge phase control)
LED ⊓	LED (leading edge phase control)
◿	electr. transformer (capacitive / trailing edge phase control)
LED ◿	LED (trailing edge phase control)

	LED	LED	LED
25 °C			
	W	W	VA
UNI	1 ... 32	20 ... 100	20 ... 100
⌐	1 ... 32	—	20 ... 100
LED ⌐	1 ... 32	20 ... 100	—
⌐	1 ... 200	20 ... 200	—
LED ⌐	1 ... 200	20 ... 200	—
45 °C			
	W	W	VA
UNI	1 ... 25	20 ... 100	20 ... 100
⌐	1 ... 25	—	20 ... 100
LED ⌐	1 ... 25	20 ... 100	—
⌐	1 ... 200	20 ... 200	—
LED ⌐	1 ... 200	20 ... 200	—

Image 6: Connected load LED lamps

25 °C			
	W	W	VA
UNI	20 ... 230	20 ... 210	20 ... 210
⌐	20 ... 210	—	20 ... 210
LED ⌐	20 ... 210	20 ... 210	—
⌐	20 ... 230	20 ... 230	—
LED ⌐	20 ... 230	20 ... 230	—
45 °C			
	W	W	VA
UNI	20 ... 210	20 ... 160	20 ... 160
⌐	20 ... 160	—	20 ... 160
LED ⌐	20 ... 160	20 ... 160	—
⌐	20 ... 210	20 ... 210	—
LED ⌐	20 ... 210	20 ... 210	—

Image 7: Connected load conventional lamps

Power reduction

when installed in wooden or dry construction walls	-15%
when installed in multiple combinations	-20%

Clampable conductor cross-section

single stranded	0.5 ... 4 mm²
Finely stranded without conductor sleeve	0.5 ... 4 mm²
Finely stranded with conductor sleeve	0.5 ... 2.5 mm²
Connection torque screw terminals	Max. 0.8 Nm

Inputs	
Control cable (preterminated)	YY6x0.6
Input type	Potential-free
Number	3
Total length of extension device cable	max. 10 m
Cable type (preferably)	J-Y(St)Y
Poll voltage, extension inputs	approx. 5 V

6 Troubleshooting

Connected LED lamps or compact fluorescent lamps switch off in the lowest dimming position or flicker

The set minimum brightness is too low.

Increase minimum brightness.

Connected LED lamps or compact fluorescent lamps flicker

Cause 1: Lamps are not dimmable.

Check manufacturer's instructions.

Exchange lamps for another type.

Cause 2: Dimming principle and lamps do not optimally match.

For HV-LED: Check operation in another dimming principle, reduce connected load as well if necessary.

For LV-LED: Check the lamp operating device and replace as necessary.

With the "Universal" setting: Define the dimming principle manually.

Connected HV-LED lamps or compact fluorescent lamps in the lowest dimming position are too bright; dimming range is too small

Cause 1: The set minimum brightness is too high.

Reduce minimum brightness.

Cause 2: HV-LED trailing edge phase control dimming principle does not optimally match the connected lamps.

Check operation in the "HV-LED leading edge phase control" setting, reduce connected load as well if necessary.

Exchange lamps for another type.

Output has switched off.

Cause 1: overheating protection has tripped.

Disconnect output from mains, switch off associated circuit breakers.

HV-LED trailing edge phase control: Reduce the connected load. Exchange lamps for another type.

HV-LED leading edge phase control: Reduce the connected load. Check the operation in the "HV-LED trailing edge phase control" setting. Exchange lamps for another type.

Let device cool down for at least 15 minutes. Check installation situation, ensure cooling, e.g. provide distance from surrounding devices.

Cause 2: Overvoltage protection has triggered.

HV-LED trailing edge phase control: Check the operation in the "HV-LED leading edge phase control" setting, reduce the connected load as well if necessary.

Exchange lamps for another type.

The response of the surge protection can be signalled by sending a short-circuit telegram or can be determined by polling the "short-circuit" communication object.

Cause 3: short-circuit in output circuit

Disconnect the output from the mains supply.

Eliminate short-circuit.

Switch on mains voltage again. Switch the affected output off and on again.

When a short-circuit occurs the affected output switches off. Automatic restart when short-circuit is eliminated within 100 ms (inductive load) or 7 seconds (capacitive or ohmic load). After that lasting switch-off.

When a short-circuit occurs during the calibration process, the load calibrates itself again after the short-circuit is eliminated.

Cause 4: load failure.

Check load, replace light bulb. For inductive transformers, check primary fuse and replace if necessary.

Output cannot be operated.

Cause 1: Output is disabled.

Cancel disabling.

Cause 2: Application software missing or faulty.

Check programming and correct.

Output off and not possible to switch on

Cause 1: bus voltage failure.

Check bus voltage.

Luminaires flicker or buzz, proper dimming not possible, device buzzes

Cause: wrong dimming principle set

Installation or commissioning error. Disconnect device and luminaire, switch off circuit breaker.

Check installation and correct.

If the wrong dimming principle has been preselected: Set correct dimming principle.

If dimming actuator calibrates itself incorrectly, e.g. with highly inductive mains or long load cables: preselect correct dimming principle with commissioning.

LED lamp is dimly lit when dimmer is switched off

Cause: LED lamp is not optimally suited for this dimmer.

Use a compensation module, see accessories.

Use another type of LED lamp or an LED lamp of another manufacturer.

7 Accessories

Remote sensor for room temperature measurement	MTN616790

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If you have technical questions, please contact the Customer Care Centre in your country.

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82404408 | NNZ42673-00 17.06.2021