

Operating instructions

1 Safety instructions



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

Serious injuries, fire or property damage possible. Please read and follow manual fully.

Danger of electric shock. Always disconnect before carrying out work on the device or load.

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.

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.

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.

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

2 Device components

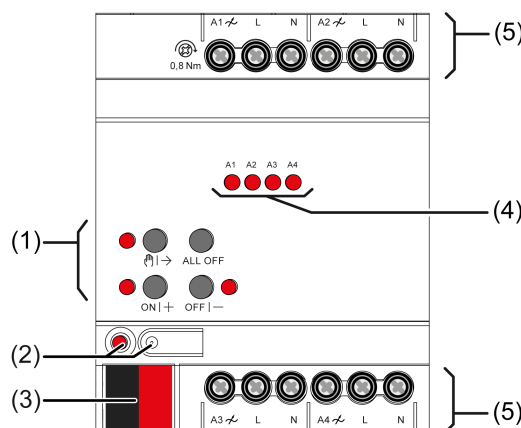


Figure 1: Device components

- (1) Button field for manual operation
- (2) Programming button and LED
- (3) KNX connection
- (4) Status LEDs for outputs
- (5) Load connections

3 Function

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 Jung ETS Service App (additional software).

LED universal dimming actuator, 4-gang

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.

Intended use

- Switching and dimming of incandescent lamps, HV halogen lamps, dimmable HV-LED lamps, dimmable compact fluorescent lamps, dimmable inductive transformers with LV halogen or LV LED lamps, dimmable electronic transformers with LV halogen or LV LED lamps
- Operating in KNX systems
- Mounting on DIN rail according to EN 60715 in sub-distribution unit
- i** If inductive or electronic transformers are connected, observe the data of the transformer manufacturer on loads and the dimming principle.
- i** HV-LED and compact fluorescent lamps generate high pulsed currents, when they are operated in the leading edge phase control.
- i** Our dimmers take into account the different electronic characteristics of most LED lamps found on the market. However, it cannot be guaranteed that in individual cases the desired results may not be achieved.

Product characteristics

- Outputs can be operated manually, construction site mode
- Feedback in manual mode and in bus mode
- Disabling of individual outputs manually or by bus
- Status feedback
- KNX Data Secure compatible
- Updateable with 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
- Status indicator of the outputs via LED
- 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.
- Increase in output power possible through parallel switching of multiple outputs
- Power extension possible by means of power boosters.
- i** Delivery state: Construction site mode, outputs can be operated using button field.
- i** 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.

Logic function characteristics

- logic gates
- Transformer (conversion)
- Disabling element
- comparator
- Limit value switch

4 Operation

Operating elements

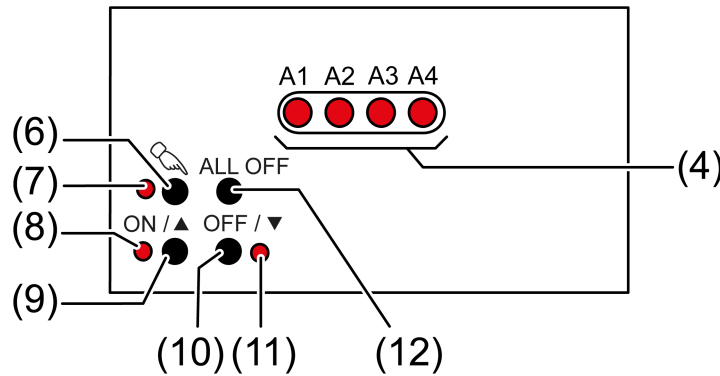


Figure 2: Operating elements

- (4) Status LEDs for outputs
 - on: output switched on, 1...100%
 - flashes slowly (1 Hz): short-circuit or manual mode
 - flashes quickly (2 Hz): overload, mains voltage failure or firmware update
- (6) Button
 - Manual operation
- (7) LED
 - on: continuous manual mode
- (8) LED ON/▲
 - on: selected output on, 1...100%
 - flashes: Firmware update
- (9) Button ON/▲
 - Switch on/increase brightness
- (10) Button OFF/▼
 - Switch off/reduce brightness
- (11) LED OFF/▼
 - on: Selected output off
 - flashes: Firmware update
- (12) Button ALL OFF
 - Switching off all outputs

The LEDs (4) optionally indicate the states of the outputs only temporarily (parameter-dependent).



Operating modes

- Bus operation: Operation via push-button sensors or other bus devices
- Temporary manual control: manual control locally with keypad, automatic return to bus control

- Continuous manual mode: Exclusively manual operation on the device
- i** No bus operation is possible in manual mode.
- i** After a bus failure and restoration the device switches to bus operation.
- i** The manual mode can be disabled in ongoing operation via a bus telegram.


Switching on the temporary manual control

Operation using the button field is programmed and not disabled.

- Press button  (6) briefly.
LED  (7) flashes, LED A1... (4) of the first configured output flashes.
Short-time manual operation is switched on.
- i** After 5 s without a key-press, the actuator returns automatically to bus operation.



Switching off temporary manual operation

The device is in short-term manual mode.

- No button-press for 5 s.
- or -
- Press  (6) button briefly as many time as necessary until the actuator leaves the short-time manual mode.
Status LED A1... (4) no longer flash, but rather indicate the output status.
Short-time manual operation is switched off.
When switching off the manual control, the outputs, depending on the programming, switch to the active position, e.g. forced position, logic operation.



Switching on permanent manual control

Operation using the button field is programmed and not disabled.

- Press the  (6) button for at least 5 s.
LED  (7) lights, LED A1... (4) of the first configured output flashes.
Continuous manual mode is switched on.


Switching off permanent manual control

The device is in continuous manual mode.

- Press the  (6) button for at least 5 s.
LED  (7) is off.
Continuous manual mode is switched off. Bus operation is switched on.
When switching off the manual control, the outputs, depending on the programming, switch to the active position, e.g. forced position, logic operation.

Operating the outputs

The device is in continuous or short-term manual mode.

- Press the button  (6) briefly as many times as necessary until the desired output is selected.
The LED of the selected output A1... (4) flashes.
The LEDs ON/▲ (8) and OFF/▼ (11) indicate the status.
- Operate output with ON/▲ (9) button or OFF/▼ (10) button.
Short: switch on/off.
Long: dim brighter/darker.
Release: Stop dimming.
The LEDs ON/▲ (8) and OFF/▼ (11) indicate the status.

- i** Short-term manual operation: After running through all of the outputs the device exits manual mode after another brief press.


Switching off all outputs

The device is in continuous manual mode.

- Press the button **ALL OFF** (7).
All outputs are shut off.

Disabling outputs

The device is in continuous manual mode. The bus control can be disabled (ETS parameter).

- Press the button  (6) repeatedly until the LED **A1...** (4) of the desired output flashes.
- Press the **ON/▲** (9) and **OFF/▼** (10) buttons simultaneously for approx. 5 s.


Selected output is disabled.

The status LED **A1...** (4) of the selected output flashes quickly.

- i** A disabled output can be operated in manual mode.

Re-enabling outputs

The device is in continuous manual mode. One or more outputs were disabled in manual mode.

- Press the button  (6) repeatedly until the output to be unlocked is selected.
- Press the **ON/▲** (9) and **OFF/▼** (10) buttons simultaneously for approx. 5 s.

Disabling is deactivated.

LED **A1...** (4) of the selected output flashes slowly.

5 Information for electrically skilled persons



DANGER!

Mortal danger of electric shock.

Disconnect the device. Cover up live parts.

5.1 Fitting and electrical connection

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.

Observe ambient temperature. Ensure adequate cooling.

- Maintain a distance of 18 mm, 1 module when operating multiple dimmers or power units within the same control cabinet.
- Mount device on DIN rail.
- In secure operation: The device certificate must be removed from the device and stored securely.

Connecting the device

- Connect bus line with KNX connecting terminal according to their correct polarity.
- Attach the cover cap to the KNX connection as protection against hazardous voltages.



CAUTION!

Danger of destruction. 400 V are shorted when outputs switched in parallel are connected to different outer phase conductors.

The device will be destroyed.

Always connect outputs switched in parallel to the same outer phase conductor.

- i** Delivery state: The outputs can be operated with manual control.
In the "Universal" operating mode, the dimming actuator only calibrates itself again after disconnection of the load and also after commissioning using the ETS.
- i** Inductive capacitive mixed load is not permitted.
- i** For LED leading edge phase control: Connect a maximum of 2 electronic transformers per output.
- i** Connect 600 Watt LED lamps or compact fluorescent lamps at most per 16 ampere circuit breaker. When connecting transformers, observe the data of the transformer manufacturer.
- i** Several dimmer outputs can be combined for dimming greater lamp loads. Only utilise parallel-switched outputs up to 95 % each. Do not connect any compact fluorescent lamps to dimmer outputs switched in parallel.
- i** Observe delivery state. Before connecting parallel outputs and switching on, program the dimming actuator with ETS to the changed output configuration.
- i** Do not expand parallel-switched dimmer outputs with power packs.

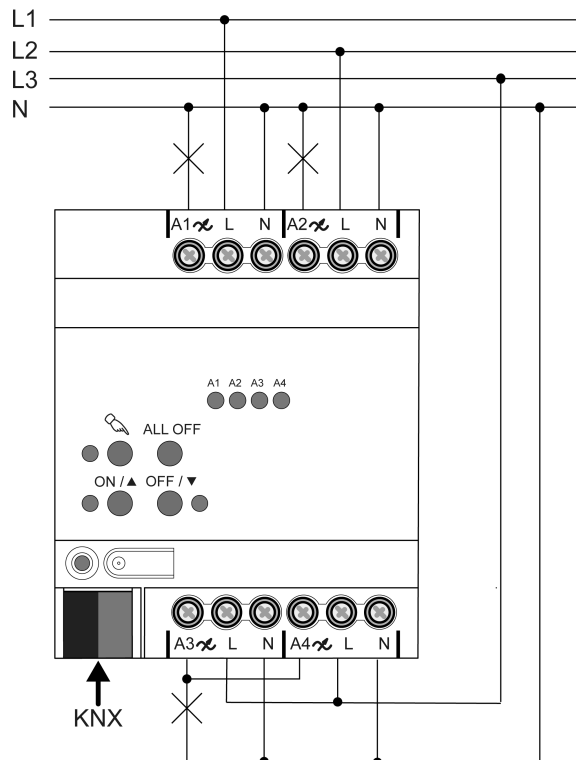


Figure 3: Device connection (connection example)

- Connect the lamp loads according to the connection example.

5.2 Commissioning

Load physical address and application program

- 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.

- i** Only the system software of the device is still functional. ETS diagnosis functions and programming of the device are possible. Manual operation is not possible.

Activating the safe-state mode

- Switch off the bus voltage or remove the KNX device connection terminal.
- Wait about 15 s.
- Press and hold down the programming button.
- Switch on the bus voltage or attach the KNX device connection terminal. 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. 15 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. Manual operation is possible.

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 Jung 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.

6 Technical data

Rated voltage	AC 110 ... 230 V ~
Mains frequency	50 / 60 Hz
Power loss	max. 7 W
Standby power	approx. 0.16 W per channel
Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-25 ... +70 °C

Connected load per channel depends on the connected lamps and the set load type: (Figure 4), (Figure 5)

ETS parameter load type

LED universal dimming actuator, 4-gang

UNI universal (with automatic calibration procedure)
 D conv. transformer (inductive / leading edge phase control)
 LED D LED (leading edge phase control)
 A electr. transformer (capacitive / trailing edge phase control)
 LED A LED (trailing edge phase control)




	 LED	 LED	 LED
230V			
	W	W	VA
UNI	1 ... 35	20 ... 100	20 ... 100
D	—	—	20 ... 100
LED D	1 ... 35	20 ... 100	—
A	1 ... 200	20 ... 200	—
LED A	1 ... 200	20 ... 200	—
110V			
	W	W	VA
UNI	1 ... 18	20 ... 50	20 ... 50
D	—	—	20 ... 50
LED D	1 ... 18	20 ... 50	—
A	1 ... 100	20 ... 100	—
LED A	1 ... 100	20 ... 100	—

Figure 4: LED lamp loads



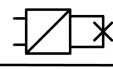


	 			 CFLi
230V				
	W	W	VA	W
UNI	20 ... 225	20 ... 210	20 ... 210	20 ... 80
D	20 ... 210	—	20 ... 210	—
LED D	20 ... 210	20 ... 210	—	20 ... 80
A	20 ... 225	20 ... 225	—	20 ... 150
LED A	20 ... 225	20 ... 225	—	20 ... 150
110V				
	W	W	VA	W
UNI	20 ... 120	20 ... 110	20 ... 110	20 ... 40
D	20 ... 110	—	20 ... 110	—
LED D	20 ... 110	20 ... 110	—	20 ... 40
A	20 ... 120	20 ... 120	—	20 ... 75
LED A	20 ... 120	20 ... 120	—	20 ... 75

Figure 5: conventional lamp loads

i Inductive capacitive mixed load is not permitted.

Power boosters

See power booster instructions

Connection

single stranded

0.5 ... 4 mm²

Finely stranded without conductor sleeve	0.5 ... 4 mm ²
Finely stranded with conductor sleeve	0.5 ... 2.5 mm ²
Connection torque screw terminals	Max. 0.8 Nm
Fitting width	72 mm / 4 module
KNX	
KNX medium	TP256
Commissioning mode	S-mode
Rated voltage KNX	DC 21 ... 32 V SELV
Current consumption KNX	6 ... 15 mA
Connection mode KNX	device connection terminal

7 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 all outputs from the mains, switch-off the corresponding 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: Surge 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.

- i** 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 all outputs from the mains.

Eliminate short-circuit.

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

- i** 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.

- i** 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.

Manual control with button field not possible

Cause 1: Manual control has not been programmed.

Program manual control.

Cause 2: Manual control via bus disabled.

Enable manual control.

None of the outputs can be operated.

Cause 1: All of the outputs are disabled-

Cancel disabling.

Cause 2: Manual mode active.

Deactivate manual mode (switch off continuous manual mode).

Cause 3: Application software missing or faulty.

Check programming and correct.

All outputs 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.

8 Accessories

Connection cover

2050 K

Compensation module LED

KMLED230U

9 Warranty

The warranty is provided in accordance with statutory requirements via the specialist trade.

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