

Operating instructions

Universal rotary dimmer LED
Art. no. 1731DD



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Product image non-binding

08.10.2025
82598663 J0082598663

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1 Safety instructions



Installation only by persons with relevant knowledge and experience in the following areas:

- Five safety regulations and standards for the installation of electrical systems
- Selection of suitable tools, measuring devices, installation materials and, if necessary, personal protective equipment
- Installation of the installation material
- Connection of devices to the building installation under consideration of local connection conditions

Improper installation will endanger your life and the lives of people using the electrical system, and there is a risk of serious damage to property, e.g. through fire. You are at risk of personal liability for personal injury and damage to property.

Consult an electrically skilled person.

Danger of electric shock. The device is not suitable for disconnection from the supply voltage because the mains potential is applied on the load even when the device is switched off. Before carrying out work on the device or load, switch off all corresponding circuit breakers.

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 (VDE 0570 parts 2-6) must be used.

Instructions are part of the product, so keep them in a safe place.

2 Intended use

- Switching and dimming of lighting
- Operation with suitable cover
- Mounting in appliance box with dimensions according to DIN 49073

3 Product characteristics

Product characteristics

- The device works according to the leading edge phase control or trailing edge phase control principle
- Automatic or manual setting of the dimming principle suitable for the load
- Indication of the set operating mode by means of LED
- Operation without neutral conductor possible
- Switch-on by bulb-preserving soft start

- Switch on with last brightness set or switch-on brightness saved
- Switch-on brightness can be saved permanently
- Minimum brightness can be saved permanently
- Maximum brightness can be saved permanently
- Connection of extension units possible
- Electronic short-circuit protection with permanent switch-off after 7 seconds at the latest
- Electronic over-temperature protection
- Hotel card function

Power extension possible by means of power boosters.

4 Operation

Switching light or adjusting brightness

Operation on the main unit or a rotary extension unit is identical.

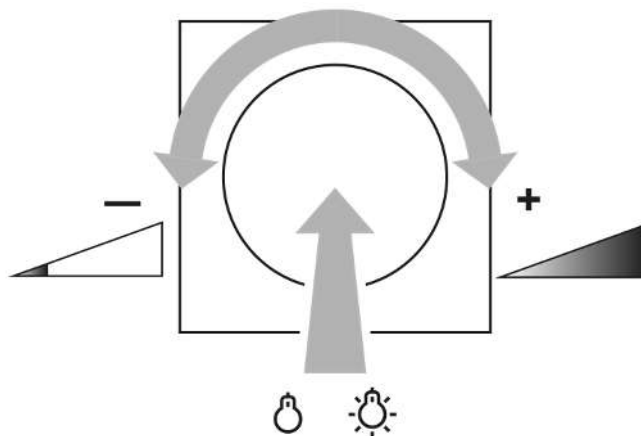


Figure 1: Switching light or adjusting brightness

- Press the setting knob briefly: Light switches on or off (see figure 1).
- Turn the setting knob quickly: Brightness is changed quickly (see figure 1).
- Turn the setting knob slowly: Brightness is changed slowly (see figure 1).

Switching the light on at minimum or maximum brightness

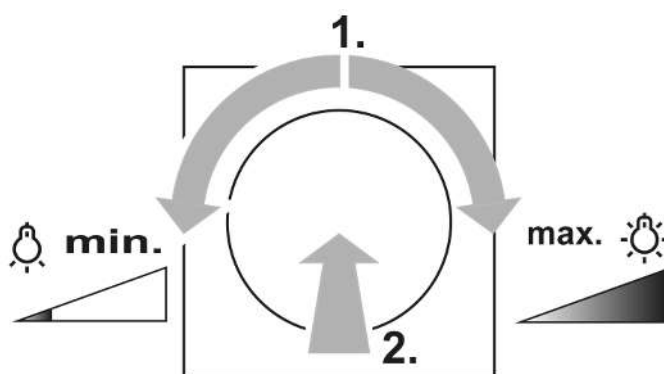


Figure 2: Switching on the light at minimum or maximum brightness

- Turn the setting knob by a quarter turn, then press the setting knob briefly: Light switches on at minimum brightness or maximum brightness (see figure 2).

Saving the switch-on brightness

- Set the brightness.
- Press the setting knob for longer than 4 seconds.
The switch-on brightness is saved. The lighting switches briefly off and on again as confirmation.

Deleting the switch-on brightness

- Press the setting knob briefly: Light switches on at the saved switch-on brightness.
- Press the setting knob for longer than 4 seconds.
The switch-on brightness is deleted. Switching on takes place with the last brightness value set. For confirmation, the light is switched off briefly and switched on again.

Operation using 2-wire or 3-wire extension unit with LB Management push-button 1-gang or push-button

- Press briefly: Light switches on or off.
 - Press long with the light switched off: Switch on at minimum brightness.
 - Press long with the light switched on: Set brightness. The dimming operation stops at the appropriate end value.
- i** Push-button: The dimming direction is changed each time it is pressed and held.
- Press the operating cover over its entire surface for longer than 4 seconds with the light switched on:
Save the switch-on brightness. The lighting switches briefly off and on again as confirmation.

- i** On saving the same brightness again, the switch-on brightness is deleted. Switching on takes place with the last brightness value set. For confirmation, the light is switched off briefly and switched on again.
- i** Push-button: Switch-on brightness cannot be saved or deleted.

5 Information for electrically skilled persons

5.1 Mounting and electrical connection



DANGER!

Electric shock when live parts are touched.

Electric shocks can be fatal.

Always disconnect before carrying out work on the device or installation. To do so, switch off all corresponding circuit breakers, secure them against being switched on again and check that there is no voltage. Cover up any adjacent live parts.

Mounting and electrical connection

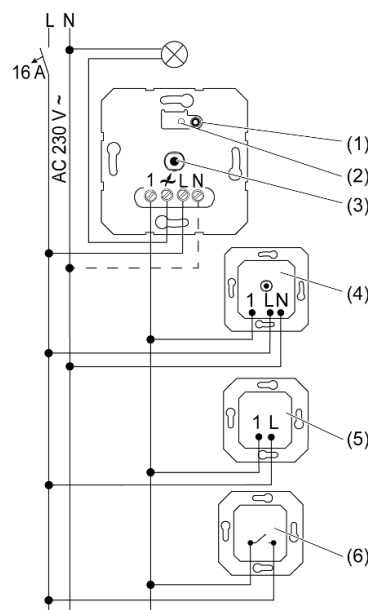


Figure 3: Connection diagram with optional extension units

- (1) Button **Dimm-Mode**
- (2) Indication LED of the dimming principle
- (3) Rotary axle
- (4) Rotary extension unit, 3-wire extension unit
- (5) 2-wire extension unit
- (6) Push-button, NO contact

Connect the 600 W LED lamps or compact fluorescent lamps at most for each 16 A circuit breaker. When connecting transformers, observe the data of the transformer manufacturer.

Operation without neutral conductor possible.

Observe the conductor cross-sections (see technical data).

Only connect illuminated push-buttons if they have a separate N connection terminal.

The light can be switched by briefly pressing the **Dimm-Mode** button (1).

The dimmer takes into account the different electronic characteristics of most dimmable LED lamps on the market. However, it cannot be guaranteed that in individual cases the desired results may not be achieved.

Resetting the overheating protection / short-circuit protection

If the electronic overheating or short-circuit protection has been activated, separate the dimmer from the grid.

5.2 Commissioning

Operating mode: Universal, R,L,C,LED (factory setting)

- Automatic calibration to the load, dimming principle, trailing edge phase control, leading edge phase control or LED leading edge phase control

Operating mode: LED trailing edge phase control, LED

- Loads can be dimmed according to the trailing edge phase control principle.

The connection of inductive transformers is not permitted.

Operating mode: LED leading edge phase control, LED

- Loads can be dimmed according to the leading edge phase control principle.

The connection of inductive transformers is not permitted.

Setting the operating mode and minimum brightness

Prerequisite: Light is switched off.

- Press the button **Dimm-Mode** (1) until LED (2) lights up.

LED	Dimm-Mode
GN (grün, green)	R,L,C,LED
RD (rot, red)	LED 
BU (blau, blue)	LED 

Figure 4: Assignment of LED colour to dimming principle

- Keep briefly pressing button **Dimm-Mode** (1) until the necessary operating mode is selected.

The LED (2) lights up in the colour of the selected operating mode (see figure 4).

- Press the button **Dimm-Mode** (1) for longer than 1 second and keep it pressed.

LED (2) flashes. The light switches on at half brightness and slowly dims.

- i** When changing the operating mode to universal, the calibration to the load is first performed. Keep the Dimming mode (1) button pressed.

- i** Set the minimum brightness so that the lamp lights up visibly in the lowest dimming position and when switched on at minimum brightness.

- Once the desired minimum brightness is reached, release the button **Dimm-Mode** (1).

LED (2) lights up, operating mode and minimum brightness are set.

- Optionally change the minimum brightness again: Press the button **Dimm-Mode** (1) for longer than 1 second again.
- Save the settings: Press the button **Dimm-Mode** (1) for less than 1 second or do not press for 30 seconds. The LED (2) goes out.

Setting the maximum brightness

Prerequisite The light is switched on.

- Press the button **Dimm-Mode** (1) for longer than 4 second and keep it pressed.

LED (2) flashes. The light switches on at maximum brightness and slowly dims.

- Release the button **Dimm-Mode** (1) as soon as the desired maximum brightness is reached.
- Optionally, change the maximum brightness again: Press the button **Dimm-Mode** (1) again for longer than 1 second.
- Save the setting: Press the **Dimm-Mode** button (1) for less than 1 second or do not press for 30 seconds. The LED (2) goes out.

Switching the hotel card function on or off

If a hotel card is used, removing the card switches off the mains voltage, inserting the card switches it on. The hotel card function means that no separate operation of the dimmer is required to switch on the light. After mains voltage return the dimmer switches on the light with the saved switch-on brightness. Only the operating modes LED trailing edge phase control or LED leading edge phase control are available.

Precondition: Load is switched off.

- Press and hold down the rotary axle (3) until the setting is made.
 - Press the **Dimm-Mode** button (1) for more than 4 seconds.
- LED (2) flashes green or red.

- Press **Dimm-Mode** (1) button briefly.
LED (2) flashes red. The hotel card function is switched on. LED (2) flashes green. The hotel card function is switched off.
- Release the rotary axle (3).
The setting is saved. For confirmation, the light is briefly switched on and switched off again.

If the Universal operating mode was set before the hotel card function was switched on, the system automatically switches to LED trailing edge phase control or LED leading edge phase control. If the LED trailing edge phase control or LED leading edge phase control operating mode was set, it is retained. If the hotel card function is switched off, the last set operating mode is retained.

6 Technical data

Rated voltage	AC 230 V ~
Mains frequency	50/60 Hz
Standby power	approx. 0.35 W
Power loss	approx. 4 W
Ambient temperature	-5 ... +45 °C
Connected load at 25 °C	See table 2

Operating mode **LED** : max. connected load for LED lamps typ. 3 ... 400 W, electronic transformers with LV-LED typ. 20 ... 200 W.

Mixed load	
ohmic-capacitive	20 ... 420 W
capacitive-inductive	not permitted
ohmic-inductive	20 ... 420 VA
ohmic and HV LED	typ. 3 ... 100 W
ohmic and compact fl lamp.	typ. 3 ... 100 W

Power specifications including transformer dissipation.

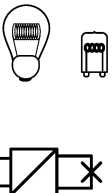
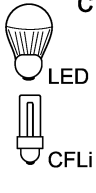
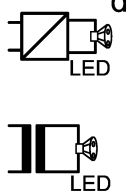
Operate inductive transformers with at least 85% nominal load in the Universal operating mode.

Ohmic-inductive mixed load: max. 50% proportion of ohmic load. Otherwise, an incorrect measurement is possible.

Operation without neutral conductor: Minimum load 50 W. Does not apply to loads with HV-LED and compact fluorescent lamps.

Power reduction	
per 5 °C in excess of 25 °C	-10%
when installed in wooden or dry construction walls	-15%
when installed in multiple combinations	-20%

Power boosters	see power booster instructions
Number of extension units	
3-wire extension, rotary extension	10
2-wire, push-button	unlimited
Total line length	
– Power cable	Max. 100 m
– Extension unit	Max. 100 m
Clampable conductor cross-section	(see figure 5)
Installation depth	24 mm

			
W 20...420	W/VA 20...420	W 3...100	W/VA 20...100

- a Incandescent lamps, HV halogen lamps, electronic transformer with LV halogen lamps
- b Inductive transformer with LV halogen lamps
- c HV-LED lamps, compact fluorescent lamps
- d Electronic LED ballast with LED lamps; Inductive transformer with LED lamps

Table 1: lamp loads

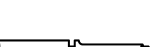
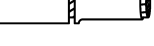
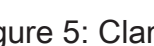
	1 x 0.5 ... 4 mm ²
	2 x 0.5 ... 2.5 mm ²
	1 x 0.5 ... 4 mm ²
	2 x 0.5 ... 2.5 mm ²
	1 x 0.5 ... 4 mm ²
	2 x 0.5 ... 1.5 mm ²

Figure 5: Clampable conductor cross-section

7 Troubleshooting

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

Cause: The set minimum brightness is too low.

Increase minimum brightness.

Connected lamps do not switch on in the lowest dimming position or only after a delay

Cause: The set minimum brightness is too low.

Increase minimum brightness.

Connected LED lamps or compact fluorescent lamps flicker or buzz, no correct dimming possible, device buzzes

Cause 1: Lamps are not dimmable.

Check manufacturer's instructions.

Exchange lamps for another type.

Cause 2: Operating mode (dimming principle) and lamps do not optimally match.

Check operation in another operating mode, reduce connected load as well if necessary.

Set the operating mode manually.

Exchange lamps for another type.

Cause 3: Dimmer is connected without neutral conductor.

Connect neutral conductor if possible, otherwise exchange lamp for another type.

Connected 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: Operating mode (dimming principle) does not optimally match the connected HV-LED lamps.

Check operation in another operating mode, reduce connected load as well if necessary.

Set the operating mode manually.

Exchange HV-LED lamps for another type.

The dimmer switches the load off briefly and then on again.

Cause: Short-circuit protection has tripped but now there is no longer a fault.

The dimmer has switched off and the load cannot be switched on again

Cause 1: Overheating protection has tripped.

Disconnect dimmer from mains by switching off circuit breaker.

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

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

Let dimmer cool down for at least 15 minutes.

Switch circuit breakers and dimmer on again.

Cause 2: Overvoltage protection has tripped.

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

Exchange lamps for another type.

Cause 3: Short-circuit protection has tripped.

Disconnect dimmer from mains by switching off circuit breaker.

Eliminate short-circuit.

Switch circuit breakers and dimmer on again.

i Short-circuit protection is not based on a conventional fuse, no metallic separation of the operational current.

Cause 4: load failure.

Check load, replace lamp. For inductive transformers, check primary fuse.

LED lamp is dimly lit when dimmer is switched off

Cause: LED lamp is not suitable for this dimmer.

Use a compensation module, see accessories.

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

8 Accessories

Compensation module LED

Art. no. KMLED230U

9 Warranty

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

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