

LED dimming insert
Order No. : 2390 00

Operating instructions

1 Safety instructions

Electrical equipment may only be installed and fitted 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. At the same time, take into account all circuit breakers that supply dangerous voltage to 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 device is switched off.

Do not connect any LED or compact fluorescent lamps that are not specifically suitable for dimming. Device can be damaged.

Do not connect any lights with integrated dimmers. Device can be damaged.

Danger of electric shock. Do not operate the insert without a cover.

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

2 Device components

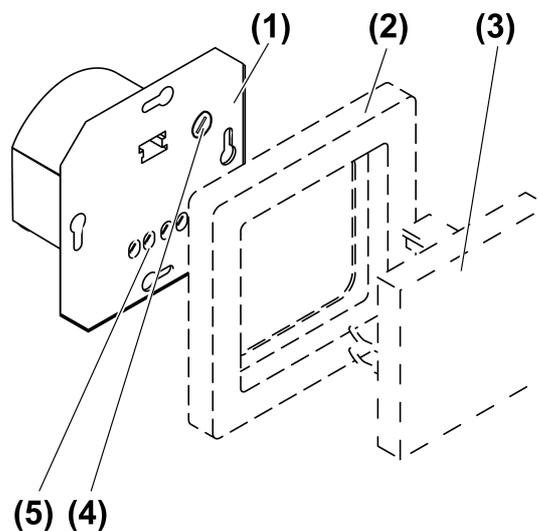


Figure 1: Device components

- (1) FM insert
- (2) Frame
- (3) Cover
- (4) Setter, minimum brightness
- (5) Terminals

3 Function

Intended use

- Switching and dimming of incandescent lamps, HV halogen lamps, HV LED and compact fluorescent lamps

- Suitable for mixed-load operation of ohmic load (incandescent lamps, HV halogen lamps) and HV LED lamps
- Suitable for mixed-load operation of ohmic load (incandescent lamps, HV halogen lamps) and compact fluorescent lamps
- Installation in appliance box according to DIN 49073
- Operation with suitable cover
- i** No mixed-load operation of HV LED and compact fluorescent lamps. Only connect lamps of one manufacturer and of the same type.
- i** No operation with transformers.
- i** HV-LED and compact fluorescent lamps generate high pulsed currents, when they are operated in the leading edge phase control. Depending on the design and power rating of these lamps, the connected load of the specified values could vary.

Product characteristics

- Device works according to the phase cut-on principle
- Device can also be operated without neutral conductor
- Bulb-preserving soft start
- Switch-on brightness can be saved permanently
- Minimum brightness can be set
- Connection of extensions possible
- Power failures of more than 1 second will cause the device to switch off
- Electronic short circuit protection with permanent switch-off
- Electronic over-temperature protection
- 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.

4 Operation

These instructions describe operation with a pushbutton cover (see Accessories). Operation with a different cover is described in the instructions for the cover in question. Operation on the main device or 2-wire extension is identical.

- i** Extension operation is only possible if there is a cover fitted on the main device.

Switch light

- Press button for less than 0.4 seconds.

Adjust the brightness

Light is switched on.

- Press button at top for longer than 0.4 seconds.
The light gets brighter up to maximum brightness.
- Press button at bottom for longer than 0.4 seconds.
Light gets darker to minimum brightness.

- i** Installation button: the light becomes brighter up to maximum brightness, remains there briefly and becomes dimmer down to minimum brightness, remains there briefly and becomes brighter again. This process repeats for as long as the push-button remains pressed.

Switch light on with minimum brightness

- Press button at bottom for longer than 0.4 seconds.

Save switch-on brightness

- Set light to the required brightness.
- Press button over entire surface for longer than 3 seconds.
Switch-on brightness is saved. For confirmation the lighting switches off briefly and then on again to the saved switch-on brightness.

- i** An installation button cannot be used to save the switch-on brightness.

5 Information for electrically skilled persons

5.1 Fitting and electrical connection



DANGER!

Electrical shock when live parts are touched.

Electrical shocks can be fatal.

Before carrying out work on the device or load, disengage all the corresponding circuit breakers. Cover up live parts in the working environment.

Fitting and electrical connection

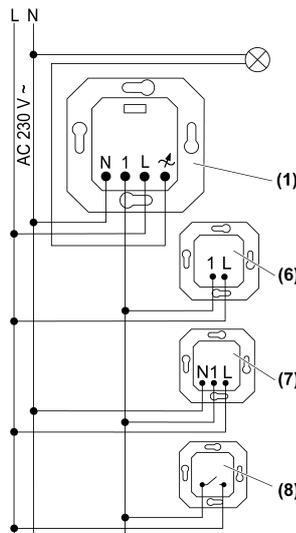


Figure 2: Connection diagram with optional extensions

- (1) FM insert
- (6) Extension insert, 2-wire
- (7) Extension insert, 3-wire
- (8) Installation button, NO contact
- i** HV-LED lamps and compact fluorescent lamps: Only connect lamps of one manufacturer and of the same type.
- i** Connect 16 A maximum of 300 W HV LED lamps or compact fluorescent lamps per circuit breaker.
 - Connect FM insert according to connection diagram (Figure 2).
- i** If no neutral conductor is available at the installation location, then the dimmer can also be operated without a neutral conductor. In this case, there is an increased likelihood of unsuitable combinations of dimmer and HV LED lamp.
- i** For extension units use the electric circuit of the main device.
- i** Illuminated installation buttons may only be connected if they have a separate N terminal.
 - Connect the extensions, optional.
 - Install insert in appliance box, terminals must be at the bottom.
 - Perform commissioning
- i** Do not attach or replace the cover under voltage, otherwise this might cause a malfunction.
 - Attach the frame (2) and the top (3).
 - Switch on mains voltage.

5.2 Commissioning

Setting the minimum brightness

The minimum brightness can be set by an electrically skilled person as required, for example if the light flickers at low brightness.

- i** According to EN 60669-2-1 (01.2000), lamp brightness should be detectable over the whole load area, with darkness at – 10 % rated voltage in the minimum brightness position, in order to distinguish between the minimum brightness and being switched off.



DANGER!

Electrical shock when live parts are touched.

Electrical shocks can be fatal.

Use only insulated tools to set the minimum brightness! Cover up live parts in the working environment.

The device is connected as described above and fitted in an appliance box. The frame and cover are not mounted.

- Switch on mains voltage.
 - Adjust the setter (4) (Figure 1) by approx. 1/4 of a rotation.
Light switches on at minimum brightness.
 - Turn the setter in a clockwise direction up to the end stop.
Light switches off.
 - Slowly turn the setter in an anti-clockwise direction, until the light switches on. Turn the setter slightly further, so that the light is certain to switch on at minimum brightness.
- i** If the minimum brightness was set too brightly, turn the setter back to the end stop in a clockwise direction and reset the minimum brightness.
The minimum brightness is set.
 - Switch off mains voltage.
 - Mount frame and cover.
 - Switch on mains voltage again.

6 Appendix

6.1 Technical data

Rated voltage	AC 230 V ~
Mains frequency	50 / 60 Hz
Standby power	max. 0.5 W
Power loss	max. 4 W
Ambient temperature	+5 ... +25 °C
Contact type	ε
Connected load	
Incandescent lamps	20 ... 120 W
HV halogen lamps	20 ... 120 W

- i** When operated without a neutral conductor, the minimum load for incandescent lamps and HV halogen lamps increases to 50 W.

HV-LED lamps	typical 3 ... 100 W
Compact fl lamp.	typical 3 ... 100 W
Mixed load	
Ohmic and HV LED	typical 3 ... 100 W
Ohmic & compact fl lamp.	typical 3 ... 100 W
HV-LED and compact flamp.	not permitted
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	none
Connection	
single stranded	max. 4 mm ²
finely stranded without conductor sleeve	max. 4 mm ²
Finely stranded with conductor sleeve	max. 2.5 mm ²
Number of extension units	
Extension insert, 2-wire	unlimited
Extension insert, 3-wire	5
Non-illuminated installation buttons	unlimited
Total length of extension unit cable	max. 100 m
Total length power cable	max. 100 m

6.2 Troubleshooting

Connected lamps switch off in the lowest dimming position or flicker

The set minimum brightness is too low.
Increase minimum brightness.

Connected lamps flicker

Cause 1: Lamps are not dimmable.

Check manufacturer's instructions.
Exchange lamps for another type.

Cause 2: Dimmer requires the connection of a neutral conductor for operation with the connected lamp.

Connect a neutral conductor.
Replace the lamps with a type for which the dimmer does not require the connection of a neutral conductor.

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

The set minimum brightness is too low.
Increase minimum brightness.

Connected 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: Dimming principle LED phase cut-on does not optimally match the connected HV LED or compact fluorescent lamps.

Exchange lamps for another type.

Dimmer has switched off

Cause 1: overheating protection has tripped.

Disconnect dimmer from mains, also switch associated off circuit breakers.
Reduce the connected load.
Let dimmer cool down for at least 15 minutes.
Switch circuit breakers and dimmer on again.

Cause 2: short-circuit protection has tripped.

Switch off the mains supply.
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.

Dimmer does not switch on in combination with several lamps.

Short-circuit protection has tripped.

Reduce minimum brightness.

Reduce number of lamps.

Reduce connected load.

Exchange lamps for another type.

6.3 Accessories

Top unit for switching and dimming

Order No. 0655 ..

Top unit for switching and dimming

Order No. 2316 ..

6.4 Warranty

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

Please submit or send faulty devices postage paid together with an error description to your responsible salesperson (specialist trade/installation company/electrical specialist trade). They will forward the devices to the Gira Service Center.

Gira
Giersiepen GmbH & Co. KG
Elektro-Installations-
Systeme

Industriegebiet Mermbach
Dahlienstraße
42477 Radevormwald

Postfach 12 20
42461 Radevormwald

Deutschland

Tel +49(0)21 95 - 602-0
Fax +49(0)21 95 - 602-191

www.gira.de
info@gira.de