

Mains disconnection relay

FR12.1-230V

The FR12.1-230V mains disconnection switch disconnects the power supply once all series connected loads are turned off, thus preventing any electromagnetic interference fields from occurring. Up to 200mA drawn (resp. an ohmic resistance $> 1 \text{ k}\Omega$), small loads are acceptable which, once major loads are disconnected, do not prevent isolation from being accomplished. There is no need for manually setting the limit; it is learned by the FR12.1. Loads drawing more than 200mA are consistently defined as loads which should cause the line power to be connected.

As long as no major load is turned on, one pole of the monitored circuit remains isolated from the mains. Neutral and earth are connected continuously. A DC voltage settable between 5V and 230V DC is applied for monitoring. Therefore bridging of the make contact is not permitted, ultimately causing failure of the device. When a load is turned on, the mains disconnection switch connects the phase after approx. 1 sec and the LED under the "Learn" rotary switch lights red.

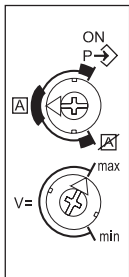
How to connect the mains disconnection switch

Terminal L = Phase

Terminal N = Neutral


Terminal 3 = Monitored conductor


Function rotary switch



Rotary switch learn

ON = continuously on
 P → = learn of current value instantly (at reset to A)

 = self-learn

 = not self-learn

Rotary regulator monitoring voltage

V min. approx. 5V DC

V max. approx. 230V DC

Function of the rotary regulator "monitoring voltage"

The monitoring voltage can be set between approx. V min. 5V DC and V max. 230V DC (direct voltage). Setting when delivered = V max.

The monitoring DC voltage produces no measurable alternating field, not even at the maximum value of 230V DC, due to the low residual ripple. However, the monitoring DC

voltage can be reduced to a level where all consumers are only just detectable.

The current consumption of the current circuit to be disconnected is determined after the mains voltage is restored. If the current consumption is less than 30mA, the monitored conductor will be opened. If the current consumption is greater than 30mA, the conductor remains connected and the self-learning process begins.

Base load

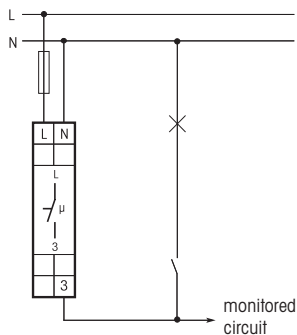
A base load is used where loads cannot be recognized because of their capacitance, are expected to cause the line voltage to be applied. Base loads must consistently start or operate in parallel with the related load and be turned off with the latter. Typical applications: Fluorescent lamps, dimmer circuits and electronic transformers. The higher the monitoring voltage the more capacitances will be recognized by the mains disconnection switch.

GLE Base load element

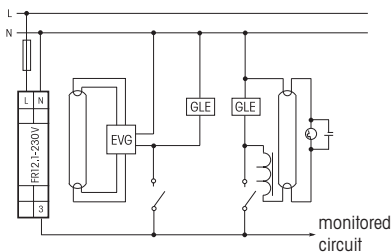
It consists of a PTC in a small sleeve, with connecting leads, and can be fitted direct in a load, a switch box or a tapping box. It is not capable of keeping the mains disconnection switch connected unless an additional load is connected.

Typical circuits

Standard connection

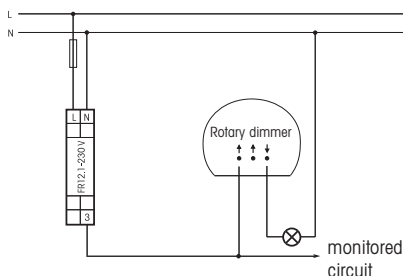


Mains disconnection switch with GLE base load element



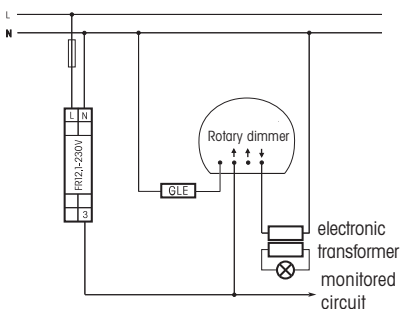
Elder rotary dimmers with phase-fired control (ON before zero crossing) for resistive and inductive loads

Can mostly be operated at $V=\max$ if no additional standby consumer is in the circuit. Otherwise see "Modern rotary dimmers".



Modern rotary dimmers and rotary dimmers with phase-fired control (OFF before zero crossing) for electronic transformers

Only dimmers with an additional terminal mains disconnection switch can be used.



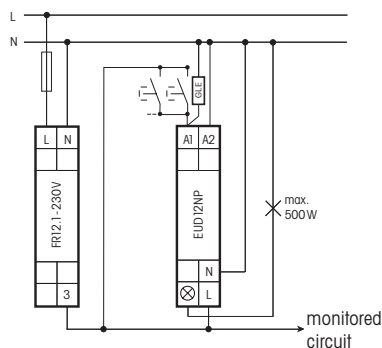
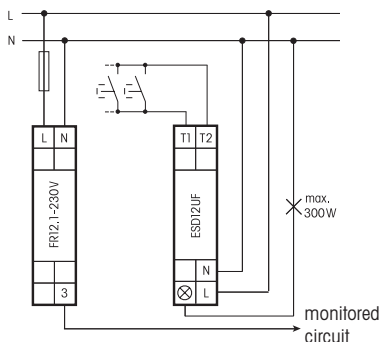
Touch dimmers and sensor dimmers cannot be used. The universal dimmer switch EUD61NP and a push-button from the associated switch product range can replace a touch dimmer.

Remote control dimmers

We recommend as remote control dimmers the impulse dimmer switches ESD12UF. On these devices, terminal L is 'tapped' ahead of the mains disconnection relay, thus, maintaining the complete function. An integrated cut-off relay takes over the mains disconnection of the circuit. Mechanical push-buttons are connected to T1 and T2. Only a low DC voltage is impressed on the control wire.

If the application of the ESD12UF is not possible for reasons of installation the type EUD12NP can be used. Here the terminal L is connected after the mains disconnection relay.

As a result the memory function is switched off.



Switched-mode power supplies in consumer electronic units (e.g. TV sets) and plug-in power supply units

Only specific units or power supplies are detected and disconnected by the mains disconnection switch, even while in standby mode. Where units or power supplies in a monitored circuit are not to be disconnected these must be isolated from line power by a switched socket outlet or a plug connector so that the function of the mains disconnection switch is not affected.

Timed shutter control directly on the window

Only specific shutter controls are detected and disconnected by the mains disconnection relay. If the shutter controls in the circuit to be disconnected should not be disabled, conventional shutter switches must be used instead. Tube-mounted motors with electronic limit switches must be wired with a base load in parallel to the sense of rotation control, provided this is permitted by the manufacturer of the tube-mounted motor.

Warning!

Only a trained electrician may install this equipment, otherwise there is a risk of fire or electric shock.