Automatic mains-field disconnector NFA 63 / NFA U2

Mains-field disconnector for eliminating electromagnetic fields e.g. in bedrooms. Only 2.5V monitoring DC voltage

Special features

- Only 2.5V DC monitoring voltage
- Separately adjustable switching and holding thresholds
- Switch status display by LED
- Holding threshold display by LED
- Additional control input for NFA 63
- High switching capacity
- Disconnected phase at low resistance to N potential

General information

The NFA mains-field disconnector monitors the electric circuit and disconnects the mains voltage as soon as the last load is switched off, thereby also eliminating electrical fields. This function is important, because in view of modern scientific findings the damaging effects of electric fields on the human organism should no longer be ignored.

The use of these devices is especially recommended for bedroom circuits (rest areas). The NFA 63 is simply connected downstream of the automatic circuit breaker of the relevant circuit.

In the case of the NFA U2, the demand switch is installed in a junction box, so that a circuit can be split into a monitored section and a permanently powered section. This configuration can greatly simplify installation, in particular in older systems.

Functional description

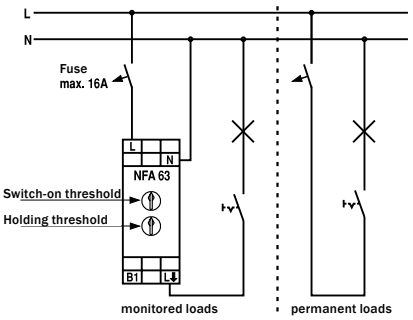
When disconnected from the power supply, a direct voltage of only 2.5V is applied at the output of the NFA. If a load is then switched on, with a power consumption above the set switch-on threshold, the circuit is switched over to the mains supply voltage. The “on” LED indicates the ON state. The “hold” LED shows when the current exceeds or falls below the “holding” threshold, thereby assisting the user to set up the system correctly.

When the power consumption drops below the set holding threshold after the connected loads have been switched off, the demand switch returns the circuit to monitoring mode after a brief delay.

The NFA 63 has an additional control input (B1) to enable switching on by external actuation. With this feature, for example, a fixed power supply can be ensured at specific times of the day by means of a time switch.

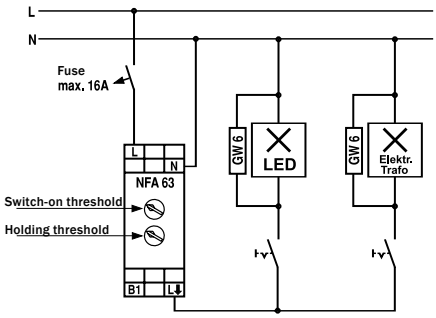
Typical applications and accessories

Fig.1: Disconnection of individual circuits



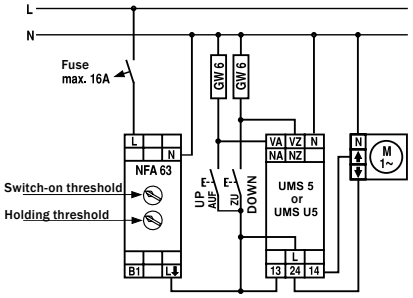
Permanent loads that are required to provide guaranteed uninterrupted operation (e.g. telephone, motion sensor, refrigerator etc.) must not be connected to a demand switch.

Fig.2: LED lamps or electronic ballasts



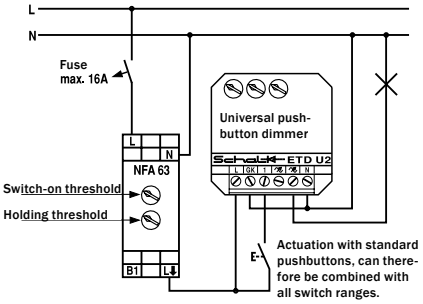
LED lamps and lamps with electronic ballasts (low-voltage halogen lamps, fluorescent lamps, energy-saving lamps etc.) generally require an additionally switched base load as switch-on aid. Conventional transformers can be operated without base load.

Fig.3: Motor controllers and NFA



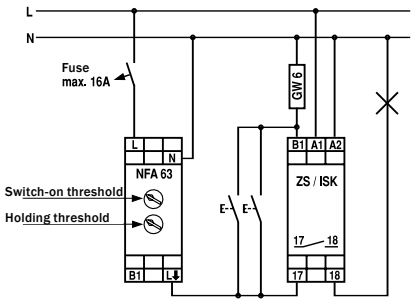
The Schalk UMS 5 and UMS U5 universal motor controls can also be operated in combination with the NFA.
For this purpose, a separate basic load resistor must be installed for the OPEN button and for the CLOSE button respectively.

Fig.4: ETD U2 pushbutton dimmer and NFA



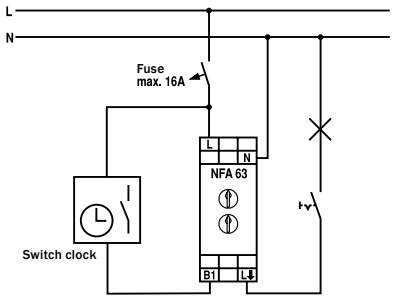
The ETD U2 universal pushbutton dimmer has a compact flush-mounting housing for combination with every range of switches. With its built-in base load and mains-independent brightness memory, it is ideal for operation with a mainsfield disconnector.

Fig.5: Time or pulse switch connected to NFA



Electronic timer switches or pulse switches generally remain permanently connected to the power supply. However, the load circuit and light switches can be supplied via the NFA . In this case, a base load must be energised from the connected push buttons.

Fig 6: Combination with switch clock



The NFA 63 can be activated via input B1 by an external trigger. With this feature, for example, a fixed voltage supply can also be guaranteed at specific times of day by means of a switch clock.

Important notes

Permanent loads, such as motion sensor, refrigerator, telephone, alarm-radio etc. require a continuous power supply in order to operate correctly and can therefore not be operated at a mains field disconnector. A permanent supply must be provided by a dedicated circuit (Fig. 1).
LEDs, energy saving lamps, fluorescent lamps and other lamps with electronic ballasts can not be adequate energised by the monitoring voltage (2.5V DC) of the NFA! To ensure that these components are reliable switched on, a base load of type GW 6 must be simultaneously switched (Fig. 2).
Pushbutton / touch dimmers of other manufacturers are usually not suitable. Consequently, the use of the Schalk Universal Pushbutton Dimmer ETD U2, ETD 2 or ETD 2E with built-in base load are recommended (Fig. 4)
Many devices when switched off are no longer disconnected from the mains (stand-by mode). Due to their constant current consumption, these loads prevent reliable mains disconnection by the NFA demand switch.
Inductive quiescent current consumption by mains power adapters results in cyclic operation (constant on/off switching) of the NFA. Con-sequently, with this type of devices, correct operation of the NFA can only be ensured by an intermediary switch in the supply line or by a switchable power socket.
Small loads (less than approx. 3W) or loads with electronic power control, such as vacuum cleaners or power drills, can be reliably operated with the use of the base load adapter plug. In this case, the adapter serves as permanent load booster in order to maintain the NFA continuously in the ON state.
After operation, the adapter plug must be un-plugged together with the load in order to restore the automatic circuit disconnection function of the demand switch.

Optimal setting of the NFA:
1. Turn off all consumer loads of the connected circuit
2. Set „Switch-on threshold“ („Einschaltschwelle“) control to the center position
3. Set the „Holding threshold“ („Halteschwelle“) control to the leftmost position. The NFA now turns on the mains voltage. The LED „hold“ (indicates the stop threshold) and the LED „on“ (indicates the switching state) light up.
4. Slowly turn the „Holding threshold“ („Halteschwelle“) control to the right until the „hold“ LED goes off completely. The NFA is now adjusted to its optimal holding threshold.

When the switch-off delay (approx. 8s) has elapsed, the NFA switches off the mains voltage and is thus ready for operation.

If the NFA only switches on delayed or not at all when switching on small loads, then the „Switch-on threshold“ („Einschaltschwelle“) must be set further to the left (= higher sensitivity).

If the NFA tends to turn itself on or turns on and off permanentely, the „Switch-on threshold“ („Einschaltschwelle“) must be set further to the right (= lower sensitivity).

Caution! *In the case of unloaded circuits, only a monitoring voltage of 2.5V DC is applied. This is not displayed by phase testers. However, touching the line conductor could cause the NFA to connect through the mains voltage and thus lead to a power accident!*

Accessories

Item no.	Type	Specifications	
GW6009	Base load resistor GW 6 for operating immers, floures-cent lamps, electronic ballasts etc	Operating voltage: 230V 50/60Hz, Switch-on current: 140mA, Continous current: 2mA	

Order data

Operating voltage:	230 V 50/60 Hz 10 %
Monitoring voltage:	2.5 V DC
Switch-on threshold:	5 mA - 200 mA
Holding threshold	5 mA - 140 mA
Switch-on delay	approx. 0.1s
Switch-off delay	approx. 8s
Power consumption:	0.8 W [0.6 W]
capacitive load on Lout	max. 1.5 uF
capacitive load at B1	approx. 10 nF
Relay output	1 NO contact 16 A [10 A]
Contact rating	see data sheet: “Relay contact rating"
Ambient temperature	-10°C to +45°C
NFA 63 connections:	
- Connection terminals	Socket terminals with captive screws M3.5
- Clamping range	0.5 mm² - 4.0 mm²
- Strip length	6.0 mm - 6.5 mm
- Screwing torque	0.80 Nm
NFA U2 connections:	
- Connection terminals	Socket terminals with captive screws M3
- Clamping range	0.5 mm² - 2.5 mm²
- Strip length	6.5 mm - 7.0 mm
- Screwing torque	0.50 Nm
Mounting orientation	arbitrarily
Mounting	Click-mount on standard 35-mm rail (EN 60715)
External dimensions	18 x 88 (45) x 58 mm [43 x 43 x 18 mm]
Installation depth	55 mm
Weight	approx. 70 g [approx. 40 g]
RAL colour	grey 7035 / green 6029

Order data

Item no.	EAN	Type	Designation
NFA639	4 046929 501033	NFA 63	Automatic mains field disconnector, 230V AC
NFAU29	4 046929 501019	NFA U2	Automatic mains field disconnector, 230V AC (FMD)
GW6009	4 046929 501064	GW 6	Base load resistor 230V AC, 140/2mA

2018-06-01