EKF

TECHNICAL MANUAL
Automatic phase switch with display RVF-3-63A EKF

1 DESCRIPTION

Automatic phase switch RVF-3-63A EKF is designed to provide single-phase power to a 220-240V/50(60) Hz load from a three-phase network. An embedded microcontroller measures the supply voltage and outputs it to the integrated digital LCD. The relay switches the power supply of a single-phase load depending on the availability and quality of the phase voltage on L1, L2 and L3 conductors. The L1 phase conductor is treated as a priority supply, the L3 — as the lowest priority supply. If the voltage on the priority phase is out of bounds, the relay switches the load to another phase. Return to priority phase can be set. If the voltage on the priority and reserve phases does not correspond to the operating thresholds, then the load is switched off. Trip setpoints and reset time delay can be set using the buttons on the front panel of the device. Setpoints are saved in non-volatile memory.

Relays comply with IEC 60947-1 and IEC 60947-5-1.

2 TECHNICAL DATA

Table 1

Characteristics	**Values**
Input terminals	N, L1, L2, L3
Rated supply voltage, V AC	3*220-240(N-L1/L2/L3)
Rated frequency, Hz	50 / 60
Backup phase switching delay, sec.	<0,2
Voltage hysteresis, V	5
Voltage measurement error, %	<2
Maximum operating voltage, V	400
Minimum operating voltage, V	50
Maximum impulse withstand voltage, V	450

Table 1 continued

Characteristics	**Values**
Maximum current, A	80 (AC-1)
Rated current, A	63 (AC-1)
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Degree of protection, relay	IP20
Max. altitude above sea level, m	≤2000
Operating temperature, °C	- 25 to +50
Max. relative humidity, %	≤50 at 40 °C (non-condensing)
Storage temperature ° C	-40 to +55
Max. cross-section of connected wires, mm^2	16

The product must be operated under the following ambient conditions:

- non-explosive environment;
- no corrosive gases and vapors in concentrations damaging to metals and insulation;
- no saturation with conductive dust and vapors;
- no direct exposure to ultraviolet radiation (for the relay).

The product housing is made of flame retardant ABS plastic.

3 USER-SET PARAMETERS

Table 2

Characteristics	Symbol	Range	Step	Factory settings
Overvoltage, V	oU	220 to 300	1	250
Undervoltage, V	uU	120 to 210	1	170
Reset time delay range, sec.	ton	1-600	1	5
Return delay range to priority phase, sec.	tr	5-200/OFF	1	OFF

For relay operation under fault voltages, refer to Figures 1 and 2.

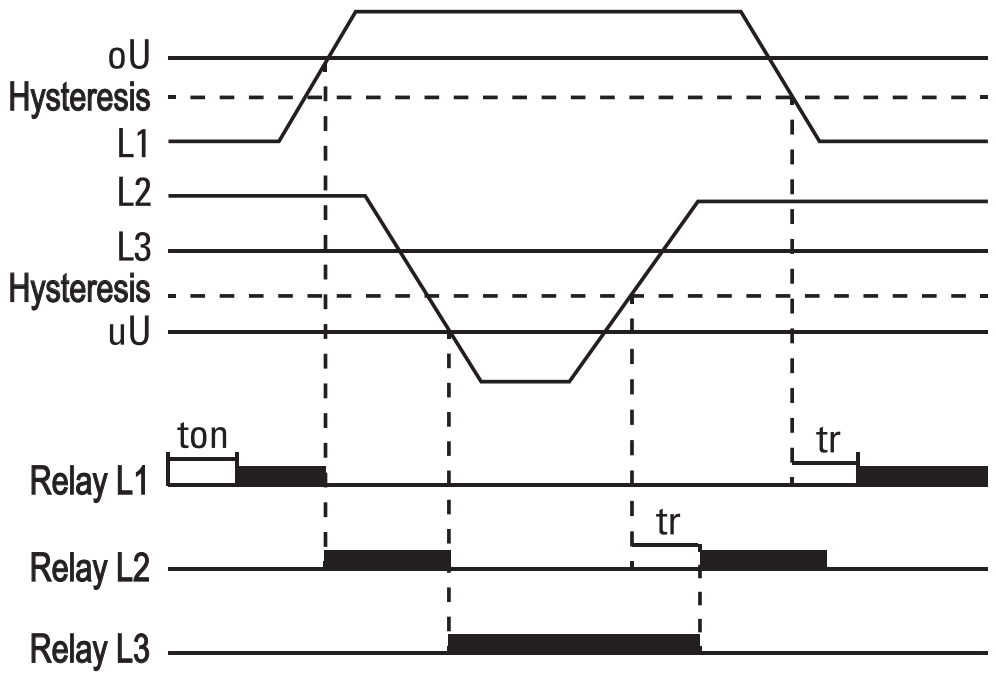


Figure 1. Relay operation with delay return to the priority phase

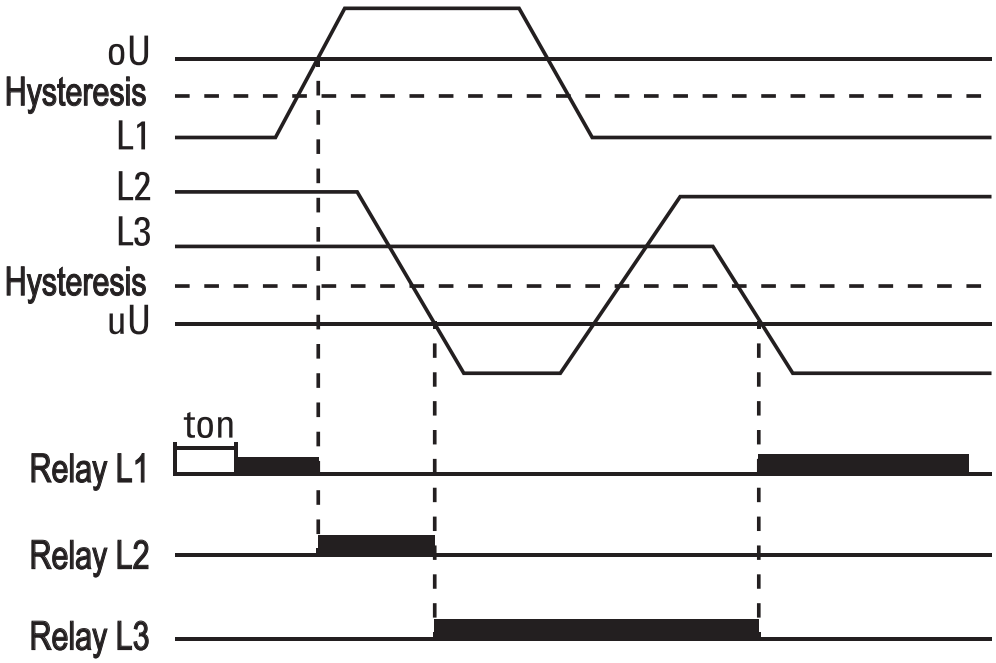


Figure 2. Relay operation without delay return to the priority phase

4 INSTALLATION AND OPERATION

Mount the device onto a 35 mm DIN rail. Connect the wires as per wiring diagram. The cross-section of the wires must correspond to the maximum load current. To protect against short circuits, install a circuit breaker with a tripping current of max. 63 A upstream the device. To avoid damaging stranded wire conductors by the terminal screws, use the appropriate cord end terminals.

Figure 3. Operation display

When the relay is switched on for the first time or after being de-energized, the display will show the turn-on countdown "ton". After this, one of the relays will switch, and voltage will appear at the output. To manually turn the relay on and off, press the power button.

L1, L2 & L3 LEDs on the front panel indicate which phase is currently supplying power. When switching the load between phases, the device monitors the disconnection of the electromechanical relays, and in the event of them "sticking", the Fault LED will light up.

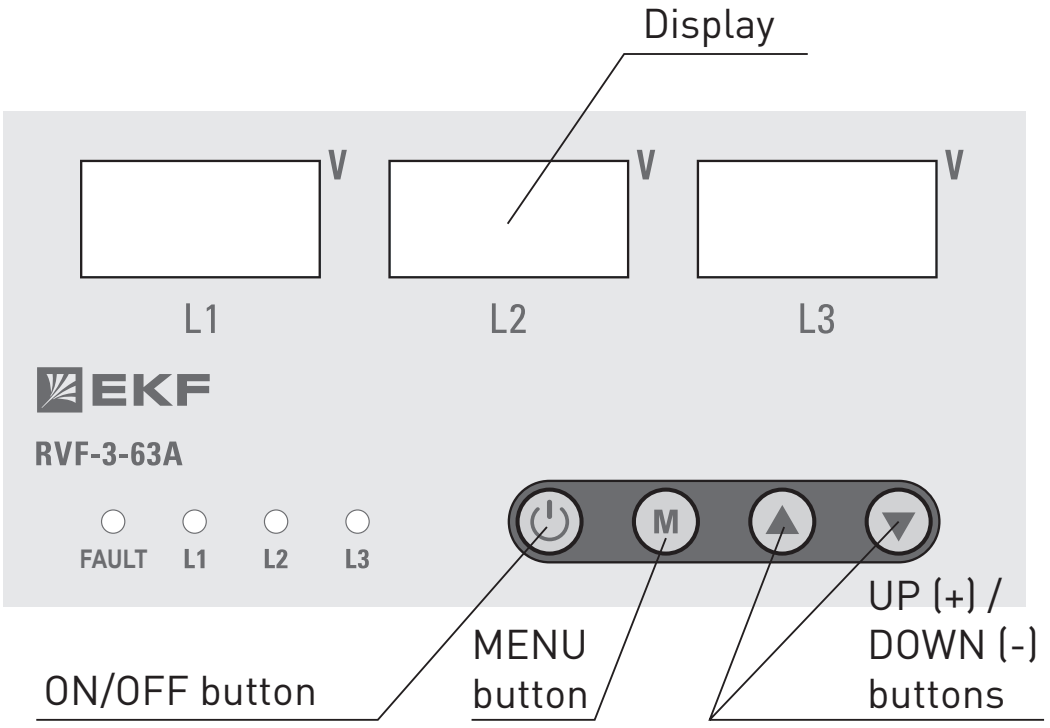
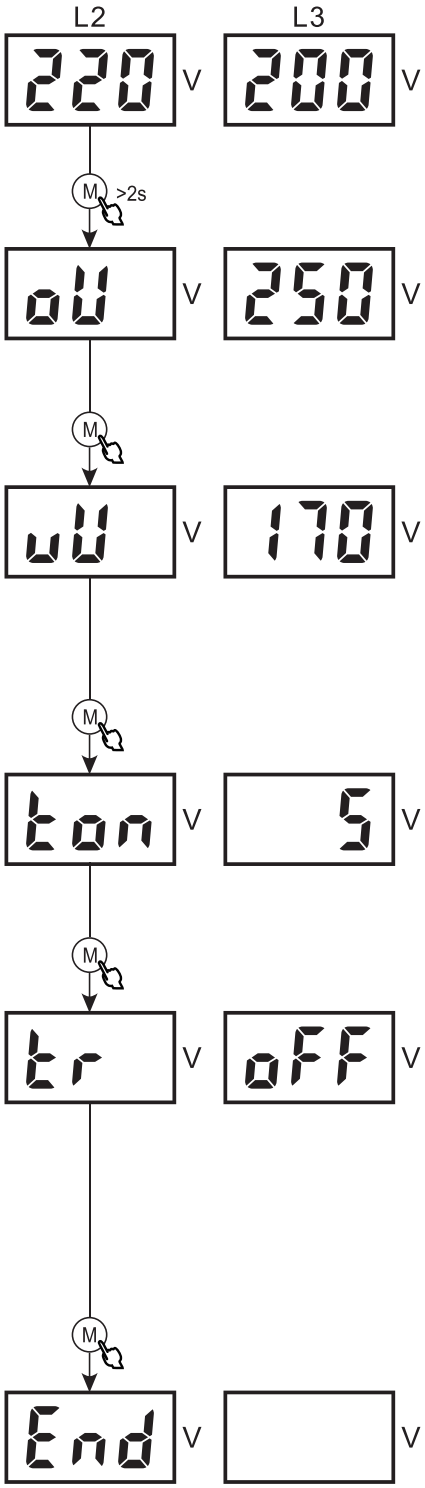


Figure 4. Display and LED indication

Follow Figure 5 instructions to change the default settings. The buttons are located on the front panel, below the display. For control elements, refer to Figure 4.



SETTING OVERVOLTAGE
Press the Menu button for 2 seconds to start setting overvoltage.

SETTING UNDERVOLTAGE
Press the Menu button to confirm the overvoltage value and start setting undervoltage.

SETTING RESET TIME DELAY.
Press the Menu button to confirm the undervoltage value and start setting the reset delay time.

SETTING RETURN DELAY TO PRIORITY PHASE
Press the Menu button to confirm the reset delay time and start setting return to priority phase.
OFF - no return to priority phase delay

SAVING THE SETTINGS
Press the Menu button to save the settings.

Figure 5. Configuring

You can adjust these values higher or lower as needed. To save the setpoints, pass all setting steps.
The device will automatically exit setting mode 60 seconds after the last button press, not saving any changes made.
Press the ⏻ button to switch the relay on/off or reset faults.

5 WIRING DIAGRAM

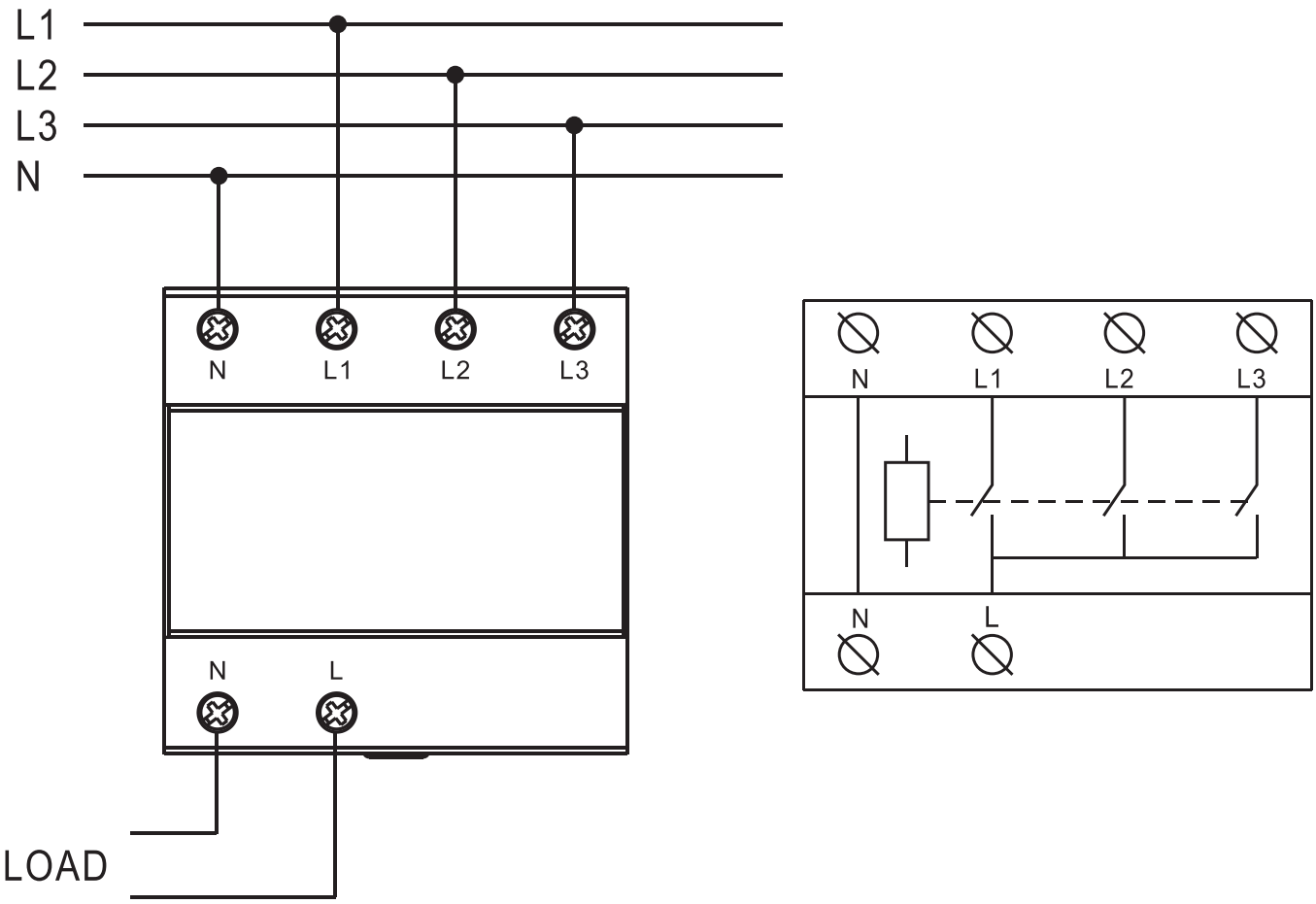


Figure 6. Wiring diagram

6 OVERALL AND INSTALLATION DIMENSIONS

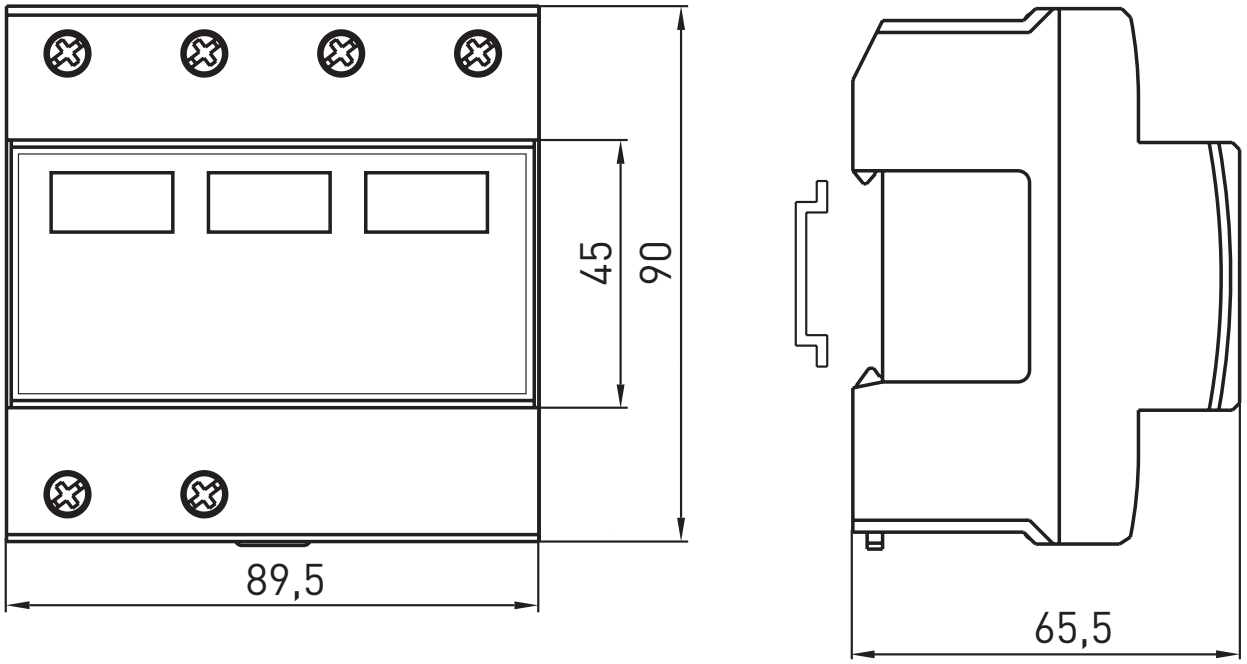


Figure 7. Overall and installation dimensions

7 DELIVERY SCOPE

Relays are supplied in an individual packaging. Scan the QR-code on the insert or on the inside of the package for all available documentation.

8 SAFETY REQUIREMENTS

WARNING! Hazardous voltage. The device conforms to IEC 61140 Class 0 for protection against electrical shock.

The devices must be installed and serviced by qualified electrical personnel only.

Do not operate relays with visible mechanical damage.

For maintenance, follow national safety rules for operation of electrical Installations.

Do not operate the relays with damaged housing.

9 TRANSPORTATION AND STORAGE

Relays can be transported by any means of enclosed transport that protects the packaged goods from mechanical impact and weather exposure.

Relays shall be stored indoors, in their original packaging, at the ambient temperatures from -40 °C to +55 °C and max. relative humidity of 50 % at +40 °C.

10 MANUFACTURER'S WARRANTY

The manufacturer guarantees the products comply with the declared characteristics, provided that consumers follow the operation, transportation and storage conditions.

Service life: 10 years.

Shelf life: 7 years from the date of manufacture specified on the product package or housing.

Warranty period: 7 years from the date of sale specified in the sales receipt.

Manufacturer: OOO Electroresheniya, Otradnaya st., 2b/9, 127273, Moscow, Russia, tel. +7 (495) 788-88-15.

MEA regional headquarters: EKF ELECTRICAL SOLUTION — FZCO, Dubai Silicon Oasis, DDP, Building A2, Dubai, United Arab Emirates, tel. +971-4-547-06-18.

Importer and EKF trademark service representative on the territory of the Republic of Kazakhstan: TOO «Energoresheniya Kazakhstan», Kazakhstan, Almaty, Bostandyk district, Turgut Ozal st., 247, apt 4.

11 DISPOSAL

Life-expired and failed products shall be disposed of in compliance with the effective national and local laws and regulations. To dispose of the product, send it to an authorized company for recycling in compliance with the effective national and local laws and regulations.

12 CERTIFICATE OF ACCEPTANCE

Automatic phase switch with display RVF-3-63A EKF has been manufactured in compliance with laws and regulations in force and has been approved for operation.

Date of manufacture: for information, refer to the product package.

Quality control stamp

ekfgroup.com

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