EKF



TECHNICAL MANUAL

Multifunctional phase monitoring relay RKF-8 EKF

1 DESCRIPTION

Multifunctional phase monitoring relay RKF-8 EKF is a microprocessor-based device used in automated control circuits to monitor voltage quality and protect electrical equipment in three-phase AC circuits up to 1000 V.
The relay is designed for protection against:

- phase loss;
- undervoltage with delayed response time;
- overvoltage with delayed response time;
- voltage asymmetry with delayed response time;
- phase sequence.

The relay has easy to read LED indicators and front panel dials for adjustment of user settings.
The phase monitoring relay complies with IEC 60947-5-1.

2 TECHNICAL DATA

The main technical data are listed in Table 1 below.

Table 1

Characteristics	**Values**
Supply voltage Ue, V	380 / 400 / 415
Rated frequency, Hz	50/60
Overvoltage range	(1,05–1,25)*Ue
Undervoltage range	(0,70–0,95)*Ue
Voltage asymmetry adjustment range, %	5–20
Voltage hysteresis, V	6
Trip delay (asymmetry, overvoltage or undervoltage), s	0,2–10
Max. trip time at phase loss, phase sequence fault, s	⩽0,2
Voltage measurement error, %	<1 (full scale)

Table 1 continued

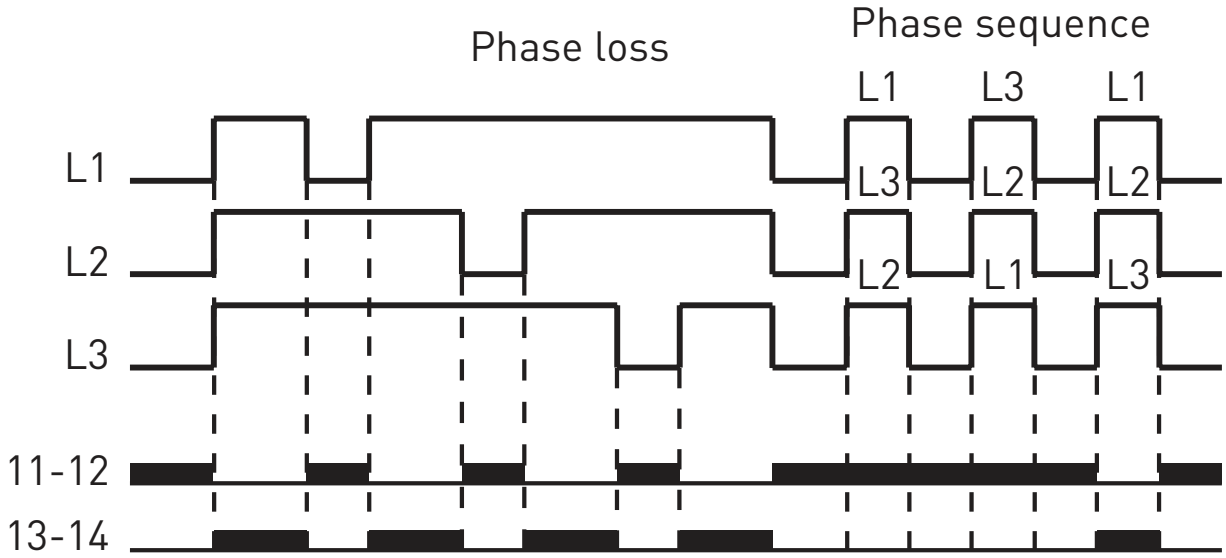
Characteristics	**Values**
Trip delay accuracy, %	±10
Set-point accuracy, %	1 (full scale)
Rated insulation voltage Ui, V	480
Contacts	1NO + 1NC
Degree of protection	IP20
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Rated contact current, A	8 (AC-1)
Rated load current, A	2 x 8 at 250 V (AC-1)
Maximum power consumption, VA	2
Altitude above sea level, m	max. 2000
Operating temperature, °C	-5 to +50
Storage temperature, °C	-25 to +75
Max. conductor cross-section, mm^2	1,5

Operation

If the power supply is normal, the contacts of the relay (13–14) are closed and the controlled device will be energized. In the event of a fault, relay contacts open and the controlled device is de-energized. The relay trips with an adjustable time delay (0,1–10 seconds) to prevent accidental load drop due to short-term changes in supply voltage. The relay will automatically re-close after the supply voltage returns to the normal range.

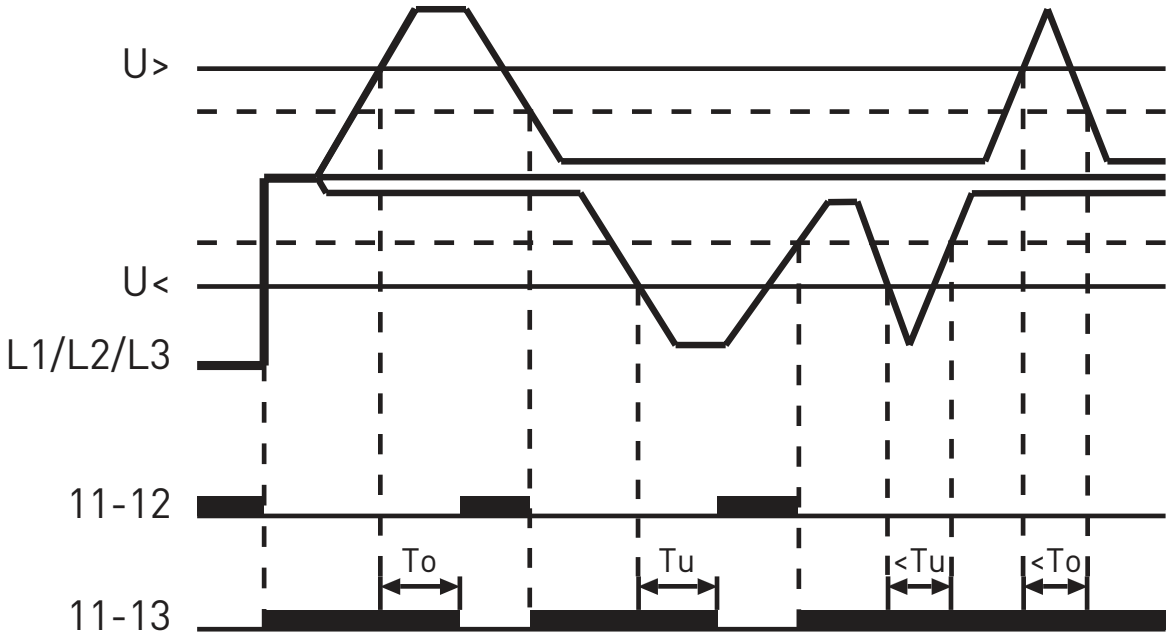
Functional diagram

Phase loss and phase sequence (with delayed response)



1NO+1NC

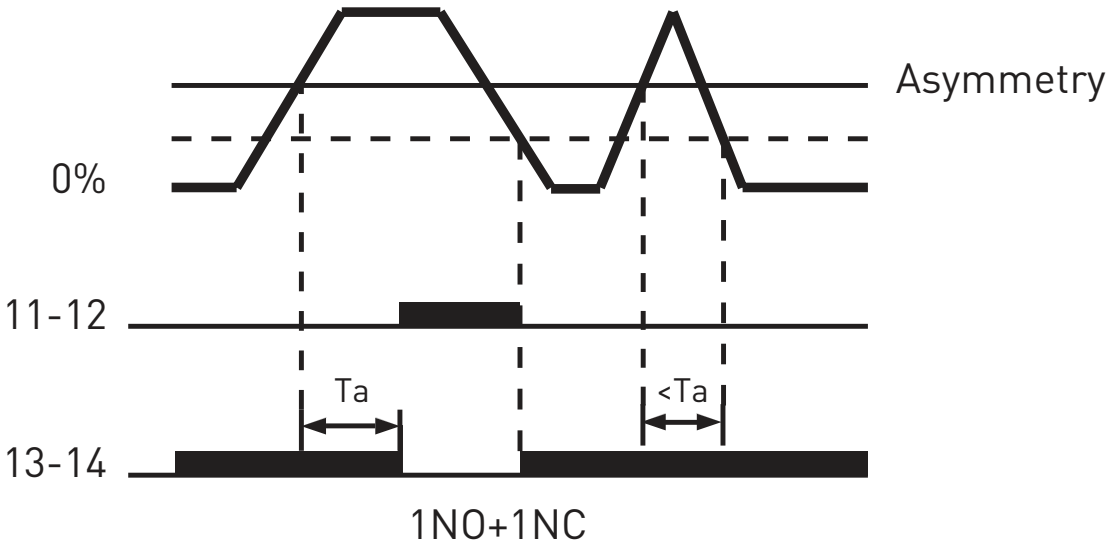
Overvoltage and undervoltage (with time delay)



1NO+1NC

To: overvoltage delay
Tu: undervoltage delay

Voltage assymetry (with delayed response)



1NO+1NC

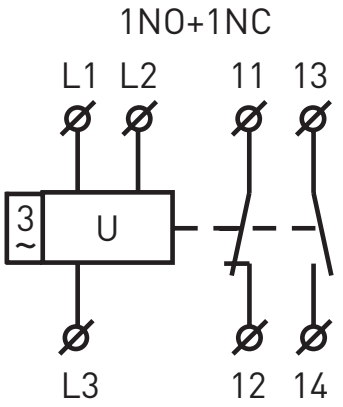
Ta: time delay

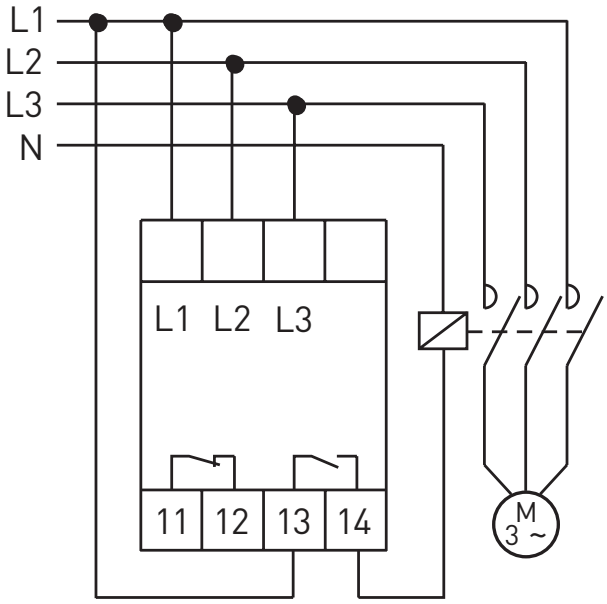
Adjustable parameters

Overvoltage control	Setting range (* Ue)	1,05–1,25
	Time delay	0,1–10 s
Undervoltage control	Setting range (* Ue)	0,70–0,95
	Time delay	0,1–10 s
Asymmetry control	Setting range	5–20%
	Time delay	0,1–10 s
Phase sequence protection		+
Phase loss protection		+

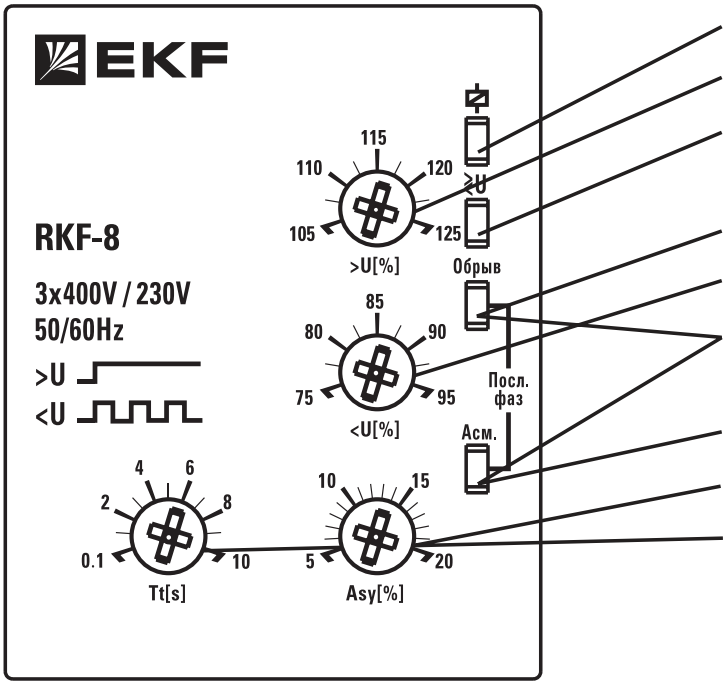
WARNING! Phase sequence and phase loss protection are triggered without time delay.

Wiring diagram





Control panel

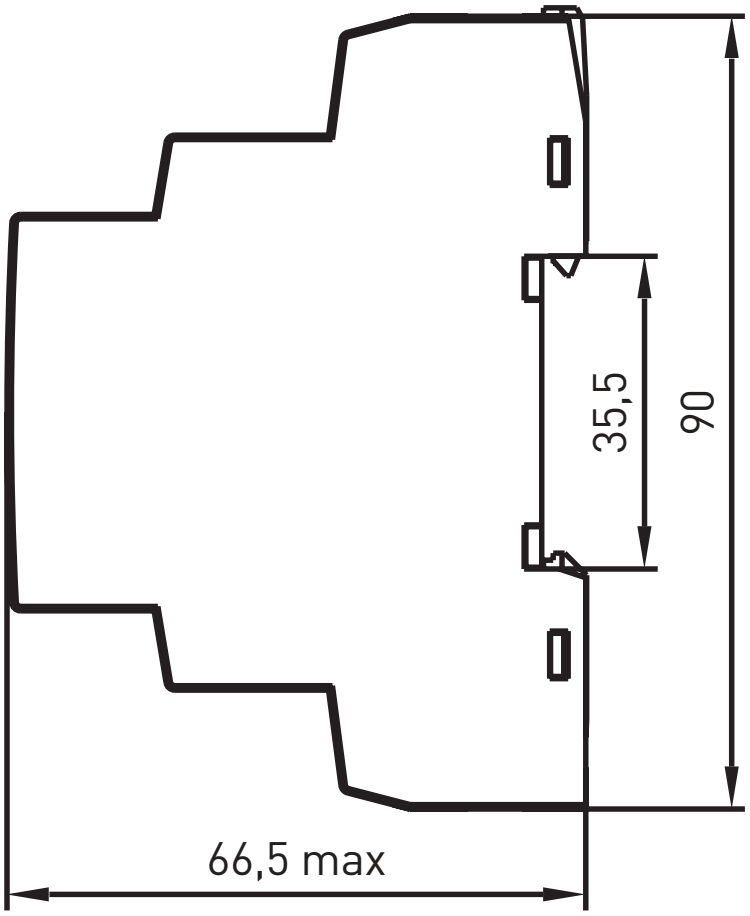


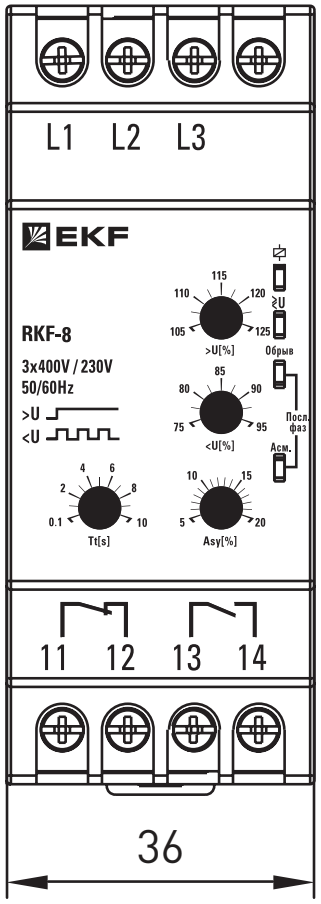
Status indicator
Overvoltage setpoint adjust. dial
Under/Over voltage indicator (Under — lit/Over — flashing)
Phase loss indicator
Undervoltage setpoint adjust. dial
Phase sequence fault indication, both LEDs lit
Asymmetry indicator
Asymmetry threshold adjust. dial
Delay timer

Installation and operation

1. Install and secure the relay in the intended location.
2. Connect the relay as per wiring diagram.
3. Set the desired voltage setpoints.
4. Set the desired trip delay.
5. After energizing the relay, if no faults are detected, a yellow LED will light up and the output contacts will switch: 11–12 will open and 13–14 will close. If the relay does not switch, check the LED indicators for active fault.
6. The relay will trip and open the output contacts after a preset time delay in the event of undervoltage, overvoltage, and voltage asymmetry fault.
7. At phase loss or phase sequence fault the relay will trip immediately, ignoring trip delay timer;
8. If the circuit voltage is ⩽0,5 Ue, the relay will trip with phase loss.
9. If the circuit voltage is ⩾1,5 Ue, the relay will trip with no time delay.

3 OVERALL DIMENSIONS





4 OPERATION CONDITIONS

Operating temperature: -5°C to +50°C
Max. altitude above sea level: 2000 m.

5 DELIVERY SCOPE

The phase monitoring relays are supplied in individual and group package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

6 SAFETY REQUIREMENTS

Do not operate relays with visible mechanical damage.
The relays conform to IEC 61140 Class 0 for protection against electrical shock and must be installed in Class 1 enclosures or higher.

7 MAINTENANCE

The relay must be installed and maintained by qualified personnel. For maintenance, follow national safety rules for operation of electrical Installations.
Under normal operating conditions, visually inspect the relay and check the set modes and trigger time every 6 months.
Tighten the screw terminals, as they may become loose due to cyclical changes in the ambient temperature and material flow.
Follow the wiring diagram when installing the relay.
Do not install the relay without protective cover in any area exposed to water or direct sunlight.

8 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 -25°C to +75°C and max. relative humidity of 80% at +25°C.

9 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.

10 MANUFACTURER'S WARRANTY

The manufacturer guarantees the relays comply with the declared characteristics, provided that the consumer observes the operation, transportation and storage conditions and requirements.

Warranty period: 7 years from the date of sale specified in the sales receipt. Shelf life: 7 years from the date of manufacture specified on the product package or housing. Service life: 10 years.

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

Importer and EKF trademark service representative:
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 CERTIFICATE OF ACCEPTANCE

Multifunctional phase monitoring relay RKF-8 EKF has been manufactured in compliance with the effective laws and regulations and has been approved for operation.

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

Quality control stamp

EAC

V3

ekfgroup.com

EKF