EKF


# TECHNICAL MANUAL

## Phase monitoring relay

## RKF-31, RKF-34, RKF-37 EKF

## 1 DESCRIPTION

RKF phase monitoring relays are electromechanical switching devices that are designed to monitor the voltage level in three-phase AC networks and to protect the load in the event of a drop or increase in the supply voltage beyond the preset values, as well as in the event of phase loss, incorrect phase sequence and voltage asymmetry. Over- and undervoltage setpoints can be adjusted (see Table 2). The available functions for each type of relay are presented in Table 1.

Phase monitoring relays complies with IEC 60947-5-1:2009.

## 2 TECHNICAL DATA

Table 1

| Name | Overvoltage, U> | Undervoltage, U< | Phase loss | Phase sequence fault | Voltage asymmetry |
|---|---|---|---|---|---|
| RKF-31 | | | • | • | |
| RKF-34 | • | • | • | | |
| RKF-37 | • | • | • | • | • |

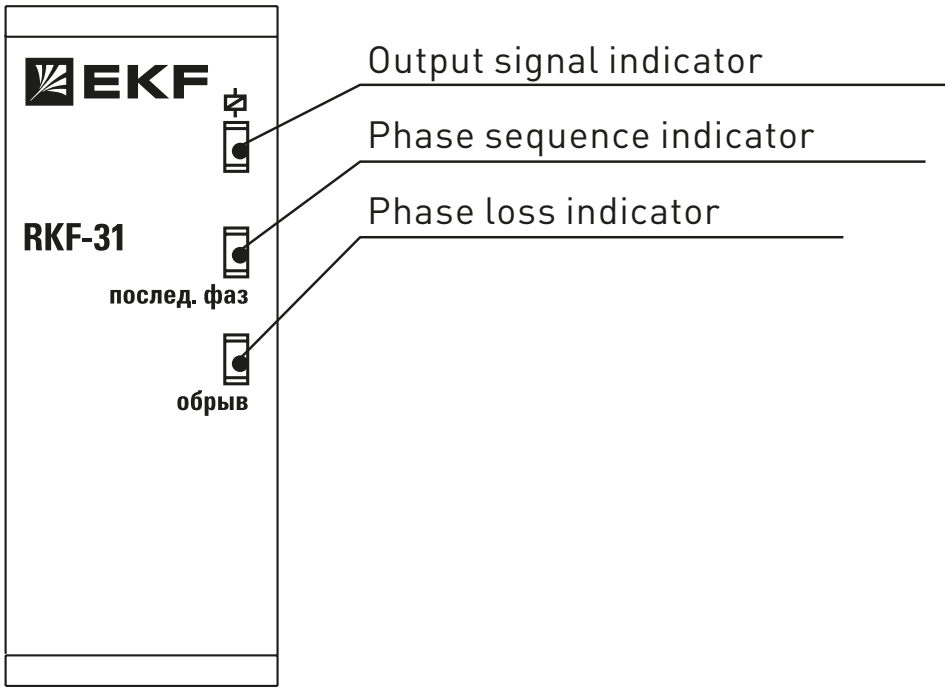
Table 2 - Technical data

| Characteristics | Values | |
|---|---|---|
| Connection | 3-wire | 4-wire |
| Supply voltage Un, V | 380/400/415 | 220/230/240 |
| Operating voltage range, V | 266-540 | 154–312 |
| Rated frequency, Hz | 50/60 | |
| U> setting range | (1,05~1,25)*Un | |
| U< setting range | (0,75~0,95)*Un | |

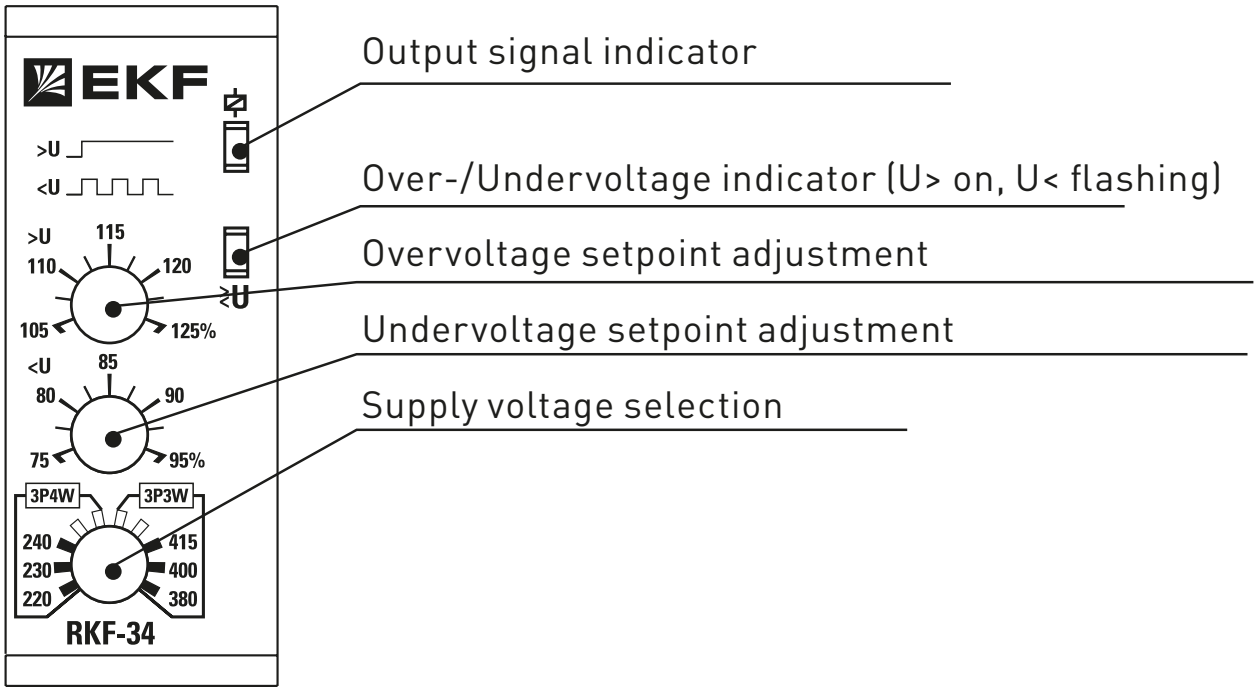
| Characteristics | Values |
|---|---|
| Voltage asymmetry range, % | Adjustable 5~20% Fixed 8% |
| U> trip delay | Fixed 2 s |
| U< trip delay | Fixed 2 s |
| Asymmetry trip delay | Fixed 2 s |
| Voltage hysteresis, V | 6 |
| Asymmetry hysteresis | 2% |
| Time delay for phase loss and phase sequence fault, s | <0,5 |
| Trip delay accuracy, % | ±10% +0,1 s |
| Set-point accuracy, % | 1 (full scale) |
| Rated insulation voltage, (Ui), V | 480 |
| Output contacts | 2 C/O |
| Rated current, A | 8 / 250V AC1 |
| Electrical life, cycles | 100 000 |
| Mechanical life, cycles | 1 000 000 |
| Degree of protection | IP20 |
| Pollution degree | 3 |
| Operating temperature, °C | –20 to +55 |
| Conductor cross-section, $mm^2$ | 0,5–2,5 |
| Tightening torque, N•m | 0,5 |
| Altitude above sea level, m | 2000 |
| Max. relative humidity | ⩽ 50% at 40 °C (non-condensing) |
| Storage temperature, °C | –30 to +70 |
| Mounting | DIN rail |

# CONTROL PANEL

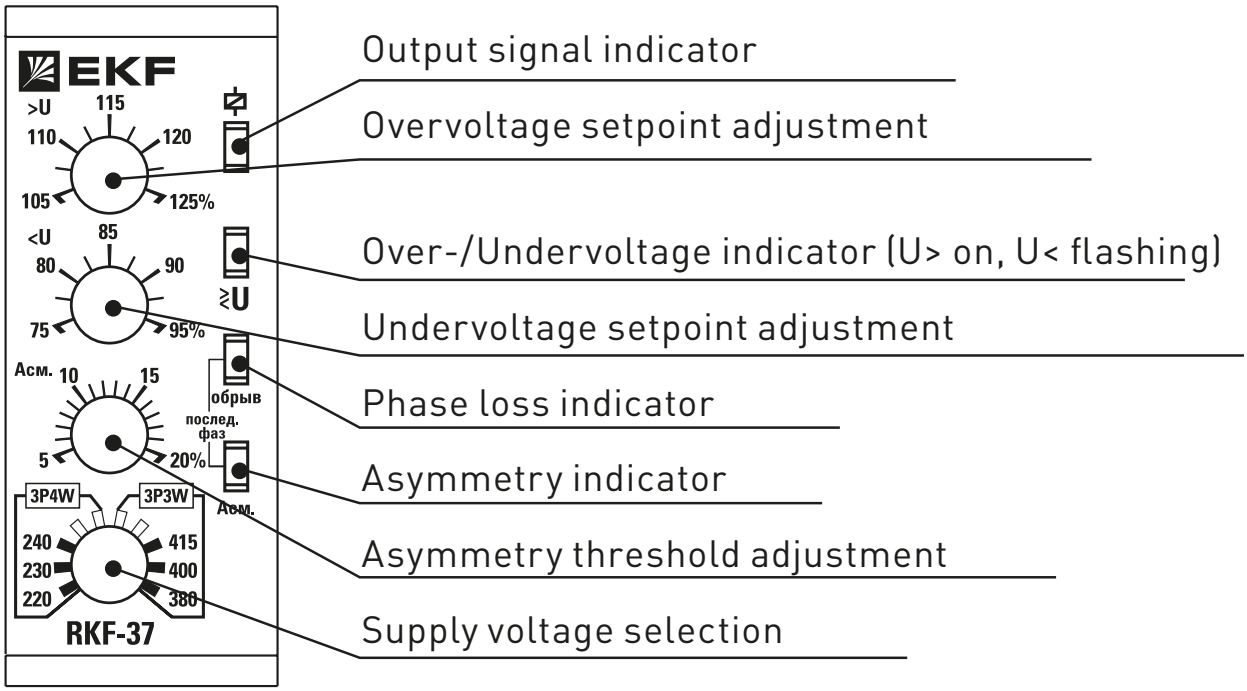
## RKF-31




## RKF-34



RKF-37




Phase break and phase sequence

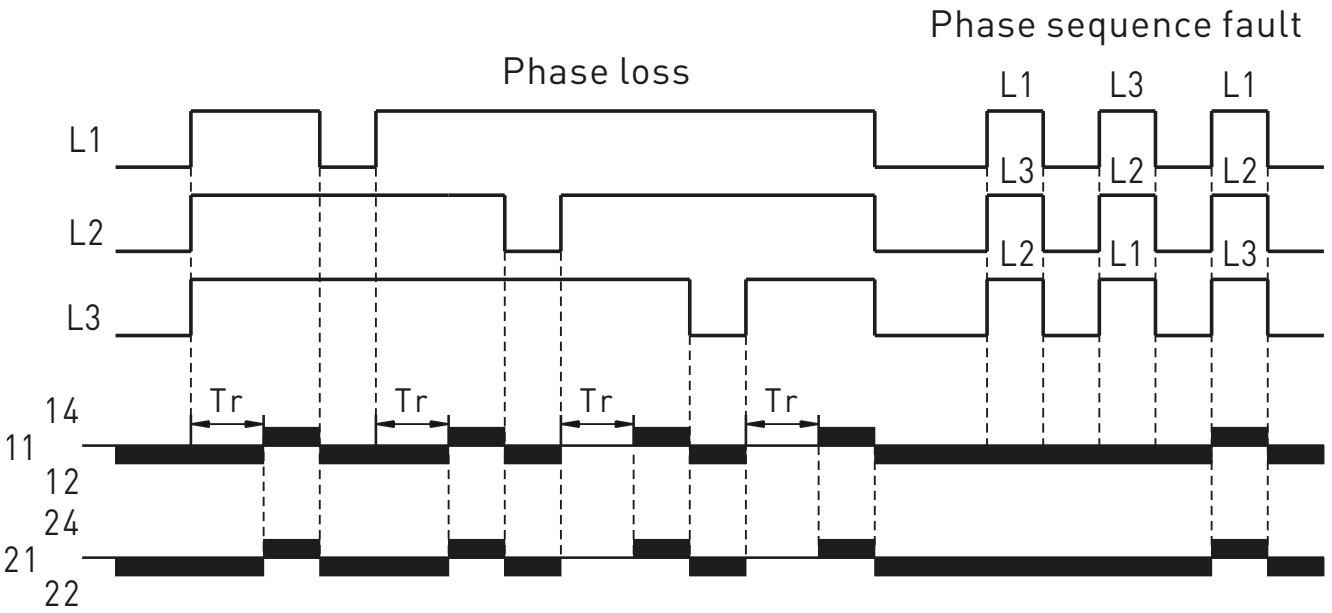



Figure 1 – Principles of relay operation during phase break and incorrect phase sequence

## OVER- AND UNDERVOLTAGE

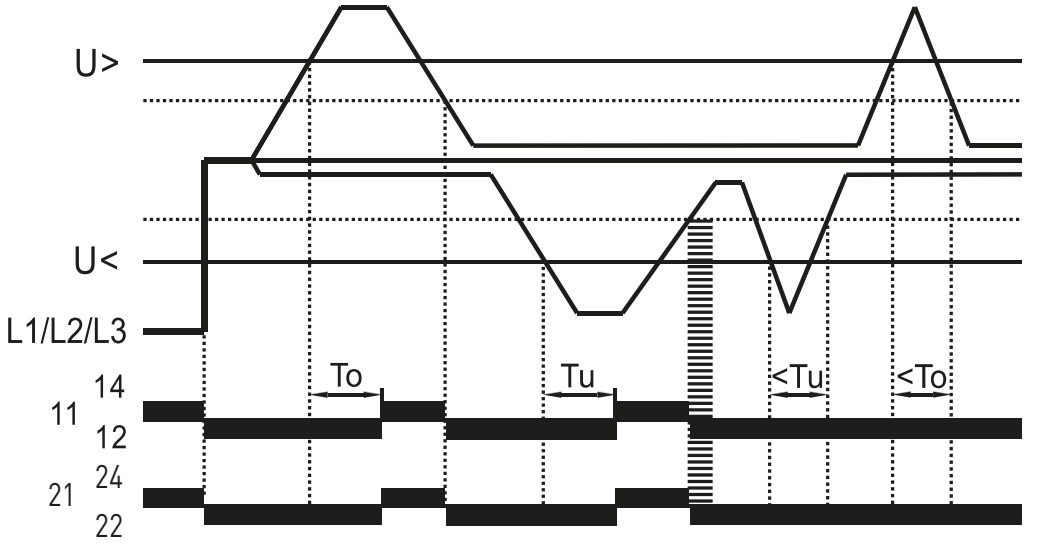
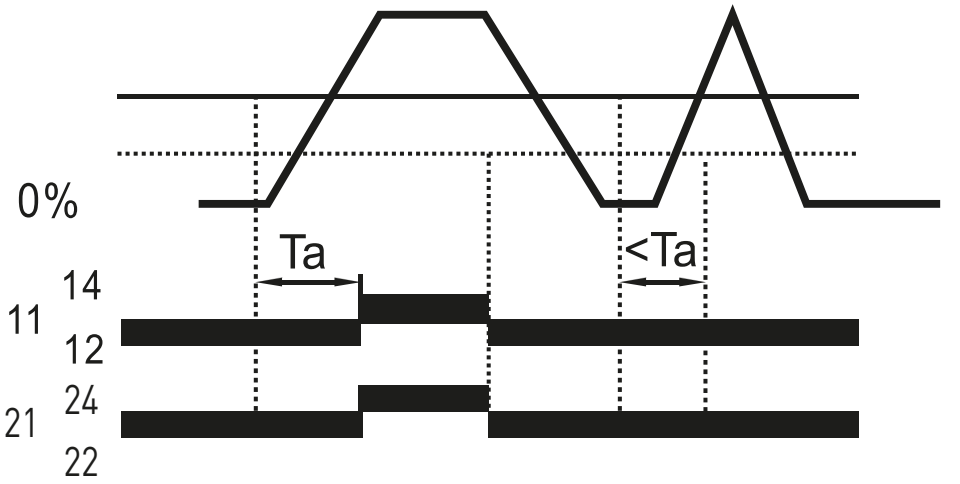



Figure 2 – Principles of relay operation during over- or undervoltage

## VOLTAGE ASYMMETRY




Coefficient of asymmetry:

$$Asy = \frac{Umax - Umin}{Un}$$

Figure 3 – Principles of relay operation during voltage asymmetry

WIRING DIAGRAM

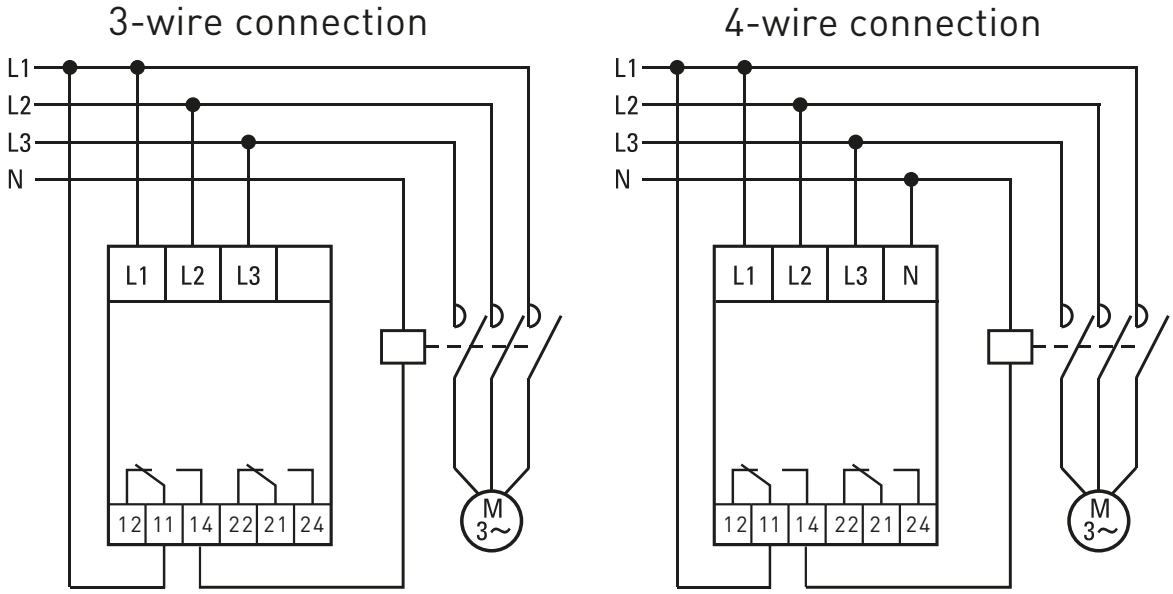



Figure 4 – Relay wiring diagram

## 3 OVERALL DIMENSIONS

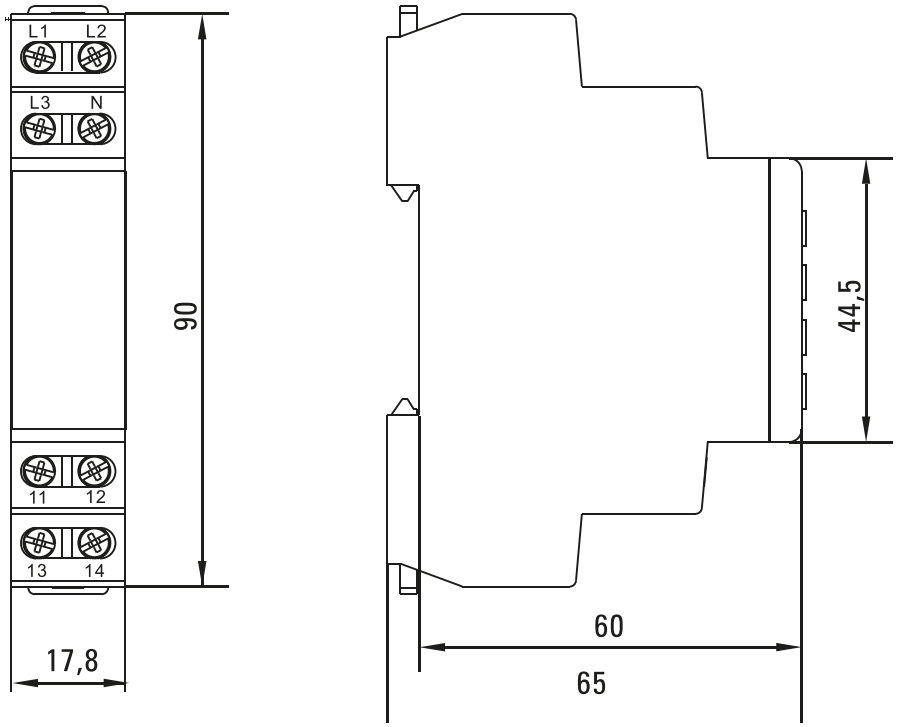



Figure 5 – Overall dimensions of phase monitoring relays

## 4 INSTALLATION AND OPERATION

Installation, connection and set-up shall be performed by qualified personnel.

Make sure the circuit is de-energized before relay installation and connection.

Before connecting, you must select the supply voltage (RKF-34, RKF-37 models). Do not change the supply voltage setpoint while the relay is energized.

If there is a fault in the circuit, the output contact of the relay will remain open after the relay is energized.

In the undervoltage event the relay will trip after a preset time delay (RKF-34, RKF-37).

If the circuit voltage is ⩽0,5Un, the relay will trip with phase loss fault.

Phase sequence and phase loss faults will trip the relay and light up an associated LED without time delay.

## 5 DELIVERY SCOPE

Phase monitoring relay RKF EKF — 1 pc.

## 6 SAFETY REQUIREMENTS

6.1. Do not operate relays with visible mechanical damage.

6.2. 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

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

7.2. Under normal operating conditions, visually inspect the relays every 6 months.

7.3. Do not operate the relays with damaged housing.

7.4 The relay must be installed and maintained by qualified personnel.

7.5 Follow the wiring diagram when connecting the relay.

7.6 Do not install the relay without a protective cover in any area which is exposed to water, corrosion or direct sunlight.

## 8 TRANSPORTATION AND STORAGE

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

8.2 Relays shall be stored indoors, in their original packaging, at the ambient temperatures from -30 °C to +70 °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 and requirements of IEC 60947-5-1:2009, provided that the consumer observes the operation, transportation and storage conditions and requirements.

Service life: 10 years.

Shelf life: 7 years.

Warranty period: 7 years.

**Manufacturer:** for information, refer to the product package.

**Importer and EKF trademark service representative:** EKF ELECTRICAL SOLUTION – FZCO, Dubai Silicon Oasis, DDP, Building A2, Dubai, United Arab Emirates.

**Importer and EKF trademark service representative on the territory of the Russian Federation:** ООО «Electroresheniya», Otradnaya st.,2b bld. 9, 5th floor, 127273, Moscow, Russia. Tel.: +7 (495) 788-88-15.

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

## 11 CERTIFICATE OF ACCEPTANCE

Phase monitoring relays comply with IEC 60947-5-1:2009 and have been approved for operation.

Date of manufacture:

For information, refer to the product package.

Quality control stamp

ekfgroup.com

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