



TECHNICAL MANUAL

Voltage, current monitoring
relay with display RVb EKF

1 DESCRIPTION

Voltage, current monitoring relay with display RVb EKF is designed to trip and disconnect downstream load if the supply voltage or current is out of bounds. An embedded microcontroller constantly monitors supply voltage and current and outputs them on integrated LCDs. Switching is performed by an electromagnetic relay. 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.

2 TECHNICAL DATA

Table 1

Characteristics	Values
Rated supply voltage U_n , V AC	220-240
Rated frequency, Hz	45-65
Power consumption, W	2
Rated current, A	40, 63
Maximum current, A	40, 63
Overvoltage range, V	240-300
Undervoltage range, V	140-210
Overcurrent range, A	0,5-40,0; 0,5-63,0
Max. voltage error, %	2
Max. current error, %	4
Undervoltage tripping time, sec.	<0,5
Overvoltage tripping time, sec.	0,4
Overcurrent reset time, sec.	5-300
Response time, sec.	5-300
Rated insulation voltage, V	420
Output contacts	1NO

Table 1 continued

Characteristics	Values
Maximum cross-section of solid wires, mm ²	25
Maximum cross-section of stranded wires, mm ²	16
Degree of protection	IP20
Pollution degree	3
Electrical endurance, cycles	100 000
Mechanical endurance, cycles	1 000 000
Max. altitude above sea level, m	2000
Operating temperature, °C	-5 to +50
Max. relative humidity, %	≤ 50 at 40°C (non-condensing)
Storage temperature, °C	-40 to +55
Mounting	DIN rail
Output contacts	1NO (only L)

Table 2 - User-set parameters

Characteristics	Range	Step	Default value
Overvoltage tripping setpoint, V	240 to 300	1	270
Overvoltage reset time, sec.	5 to 300	1	5
Undervoltage tripping setpoint, V	100 to 210	1	170
Undervoltage reset time, sec.	5 to 300	1	5
Max. current, A	0,5 to 40/63	0,1	40/63
Overcurrent reset time, sec.	5 to 300	1	5
Reset time delay, sec.	5 to 300	1	30

For relay operation diagram, refer to Figure 1.

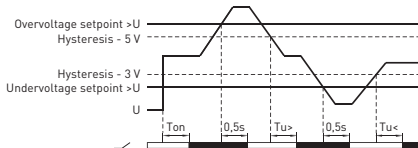


Figure 1. Relay operation diagram

For relay operation under overcurrent, refer to Figure 2.

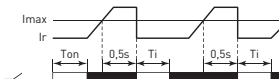


Figure 2. Relay operation under overcurrent

3 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 overload and short circuit, install a circuit breaker before the relay. Circuit breaker tripping current must be in-line with the power limit of the relay. To avoid damaging stranded wire conductors by the terminal screws, use the appropriate cord end terminals.

After the device is energized, the numeric display will show supply voltage. Bottom LED will not light up, meaning there is no voltage at the device output. If the supply voltage is within the set range, after the Ton time (30 sec. by default) the load will be switched on and the indicator will light up. If the voltage is out of bounds, the load will not be connected to the network until the voltage returns to normal. If, after the reset, the voltage remains out of bounds, an associated error LED will be blinking. Follow Figure 4 instructions to change the default settings. The buttons are located on the front panel, below the display. For control elements, refer to Figure 3.

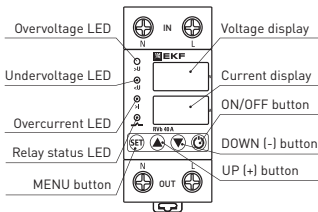


Figure 3. Main control elements of the relay



Setting overvoltage $>U$

Press the Menu button for 5 seconds to start setting the overvoltage.



Setting overvoltage reset timer $T>U^*$

Press the Menu button to confirm the value and start setting overvoltage reset timer.



Setting undervoltage $<U$

Press the Menu button to confirm the time value and start setting the undervoltage.



Setting undervoltage reset timer $T<U^*$

Press the Menu button to confirm the value and start setting undervoltage reset timer.



Setting overcurrent I_{max}

Press the Menu button to confirm the value and start setting overcurrent reset timer.



Setting overcurrent reset timer TI*

Press the Menu button to confirm the time value and start setting the delay time (Ton).



Setting relay reset timer*

Press the Menu button to confirm the time value and enter tripping log (display circuit values of the latest trip).



Figure 4. Configuring the Relay

When connecting loads with compressors, it is advised to set a reset delay of min. 180 seconds.

You can adjust this value higher or lower as needed.

The device will automatically exit setting mode 10 seconds after the last button press, saving any changes made.

Press the button to switch the relay on/off. If overcurrent persist after the third reset attempt, the relay will fail safe and display an error. In order to continue operation, eliminate the overcurrent fault and manually reset the relay.

4 WIRING DIAGRAM

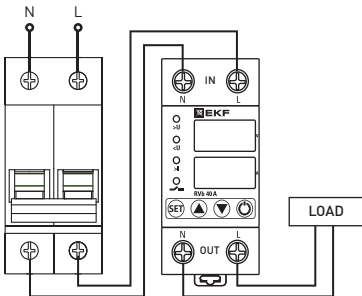


Figure 5. Wiring diagram

5 OVERALL AND INSTALLATION DIMENSIONS

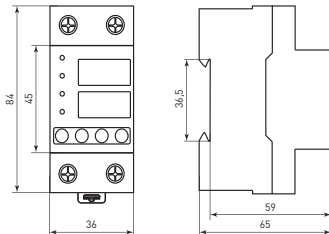


Figure 6 - Overall dimensions

6 OPERATION CONDITIONS

Operating temperature: from -5°C to $+50^{\circ}\text{C}$.

Max. altitude above sea level: 2000 m.

7 DELIVERY SCOPE

Voltage, current monitoring relays RVb EKF are supplied in an individual package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

8 SAFETY REQUIREMENTS

Do not operate the devices with visible mechanical damage.

Relays conform to IEC 61140 Class 0 for protection against electrical shock and must be installed in distribution enclosures with Class 1 protection or higher.

9 MAINTENANCE

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

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

Do not operate relays with damaged housing.

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

Follow the wiring diagram when connecting the relay.

Do not install the relay without protective cover in any area exposed to water or direct sunlight.

10 TRANSPORTATION AND STORAGE

Relays can be transported by any means of enclosed transport that ensures protection of packed products from mechanical impacts 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.

11 DISPOSAL

Life-expired and failed devices 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 MANUFACTURER'S WARRANTY

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

Warranty period: 3 years from the date of sale specified in the sales receipt.

Shelf life: 3 years from the date of manufacture specified on the product package or housing.

Service life: 8 years

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

MEA regional headquarters: EKF ELECTRICAL SOLUTION FZCO,
Techno Hub-2, DSO, P.O. box 341079, Dubai, United Arab Emirates,
tel. +971-4-547-06-18.

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

13 CERTIFICATE OF ACCEPTANCE

Voltage, current monitoring relay RVb EKF has been manufactured
in compliance with the laws and regulations in effect and has been
approved for operation.

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

Quality control stamp

EAC



v3

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