



TECHNICAL MANUAL

Voltage, current monitoring relays with display MRVA

1 DESCRIPTION

Voltage, current monitoring relay with display MRVA 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	50 / 60
Overvoltage range, V	230-300
Undervoltage range, V	120-210
Max. current adjustment range, A	1-25; 1-32; 1-40; 5-50; 5-63
Measurement error, %	2
Overvoltage tripping time, s	0,1 ($\geq 280V$); <0,02 ($\geq 420V$)
Undervoltage tripping time, s	<0,5
Overcurrent tripping time, s	5-600s ($I_n < I_{mea} < I_{max}$); 0,1s ($I_{mea} \geq I_{max}$)
Voltage measurement error, %	≤ 1

Table 1 continued

Rated insulation voltage, V	400
Output contacts	1NO
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 at 40°C, %	50 (non-condensing)
Storage temperature, °C	-40 to +55
Mounting	DIN rail

* In – rated current, refer to Table 2.

Table 2

Model	25A	32A	40A	50A	63A
Max. current (10 min), A	30	40	50	60	80
Rated current*, A	25	32	40	50	63
Rated power*, kW	5,5	7	8,8	11	13,9
Max. conductor cross-section, mm ²	6-16				

* Active load

USER-SET PARAMETERS

1. Undervoltage setpoint $<U$: 120-210 V (1 V steps, 170 V by default)
2. Overvoltage setpoint $>U$: 230-300 V (1 V steps, 250 V by default)
3. Reset time delay T_{on} : 5-600 sec. (5 sec. steps, 15 sec. by default)
4. Overcurrent setpoint I_s : 5- I_n (1 A steps, I_n by default)
5. Overcurrent trip delay T_a : 5-600 sec. (1 sec. steps, 90 sec. by default)

For relay operation under fault voltages, refer to Figure 1.

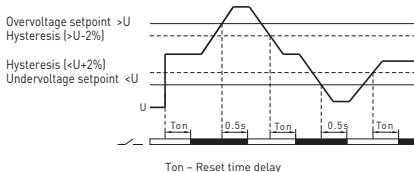
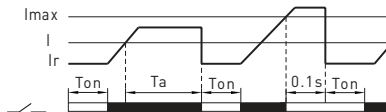


Figure 1 - Relay voltage chart

For relay operation under overcurrent, refer to Figure 2.



Ton – Reset time delay

Ta – overcurrent tripping time

Figure 2 – Relay current chart

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 and start blinking (Figure 3). Blinking display indicates that there is no voltage at the output of the device. If the supply voltage is within the set range, after the Ton time (15 sec. by default) the load will be switched on and the indicator will stop flashing. 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.



Figure 3

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.

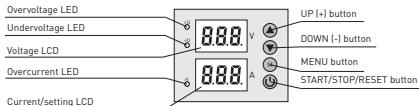
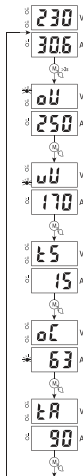


Figure 4



SETTING OVERVOLTAGE

Press the Menu button for 3 seconds to start setting overvoltage (>U indicator will be blinking).

SETTING UNDERVOLTAGE

Press the Menu button to confirm the overvoltage and start setting undervoltage (<U indicator will be blinking).

SETTING RELAY RESET TIMER

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

SETTING OVERCURRENT

Press the Menu button to confirm the time value and start setting overcurrent value (>I indicator will be blinking).

SETTING OVERCURRENT TRIPPING TIME

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

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.

If overcurrent persist after the third reset attempt, the relay will fail safe and display an error (Figure 5). In order to continue operation, eliminate the overcurrent fault and manually reset the relay.

The device memorises the voltage value that caused the last tripping. Press the  button to display the value.

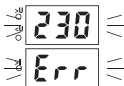


Figure 5

4 WIRING DIAGRAM

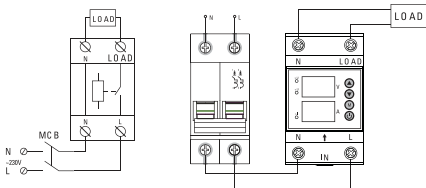


Figure 6 - Wiring diagram

5 OVERALL AND INSTALLATION DIMENSIONS

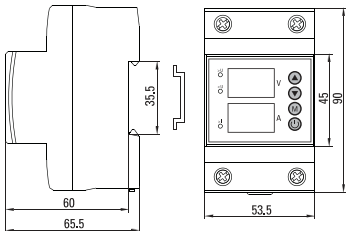


Figure 7 – Overall and installation dimensions

6 DELIVERY SCOPE

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

7 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.

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 -40°C to +55°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, 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.

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.

11 CERTIFICATE OF ACCEPTANCE

Voltage, current monitoring relay with display MRVA 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 package.

Quality control stamp



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