



## TECHNICAL MANUAL

Digital socket voltage  
monitoring relay  
MRVs-16 EKF



## 1 DESCRIPTION

Digital socket voltage monitoring relay MRVs-16 EKF is designed for protection of the connected load by automatically disconnecting it if the supply voltage is out of bounds. An embedded microcontroller measures the supply voltage and outputs it to the integrated LCD. Switching is performed by an electromagnetic relay. Trip set-points and reset time delay can be set using the buttons on the front panel of the device. Setpoints are saved in non-volatile memory. Voltage monitoring relays EKF comply with IEC 60947-5-1.

## 2 TECHNICAL DATA

Table 1

Characteristics	Values
Rated supply voltage $U_n$ , V AC	220-240
Operating voltage, V AC	100-400
Rated frequency, Hz	50 / 60
Overvoltage range, V	220-280
Undervoltage range, V	160-210
Hysteresis, undervoltage, V	3
Hysteresis, overvoltage, V	5
Undervoltage tripping time, s	0,5

Table 1 continued

<b>Characteristics</b>	<b>Values</b>
Overvoltage tripping time, s	0,5 (<285 V); 0,1 (≥285 V); <0,02 (≥380 V)
Voltage measurement error, %	≤1
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	- 20 to + 55
Max. relative humidity at 40°C, %	50 (non-condensing)
Storage temperature, °C	- 30 to + 70
Rated current, A	16

## USER-SET PARAMETERS

Table 2

Characteristics	Range	Step	Default value
Undervoltage tripping setpoint, V	160 to 210	1	170
Overvoltage tripping setpoint, V	220 to 280	1	250
Reset time delay, sec.	5 to 600	1	10

For relay operation, refer to Figure 1.

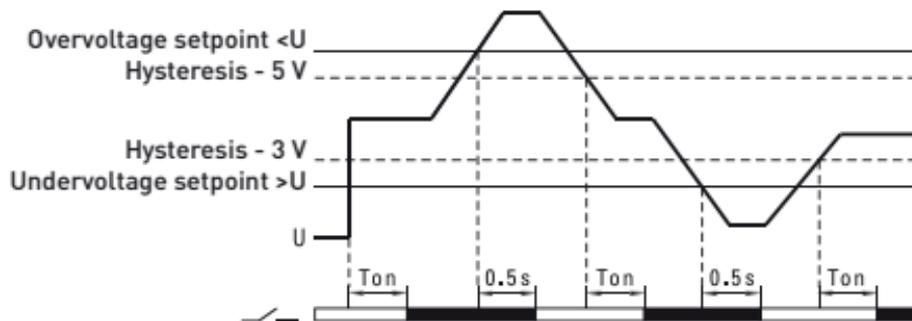


Figure 1. Relay operation diagram

### 3 OPERATION

After energizing the device, the display will show the countdown to activation. If the supply voltage is within the range, after the countdown is finished (10s by default) the relay will energize the load on and the green "ON" LED will light up. If the voltage is out of bounds, the relay will remain off until the voltage stabilizes within the set range. If the voltage is above the overvoltage setpoint, an "O" symbol will be blinking (See Figure 2a); if the voltage is below the under-voltage setpoint, a "U" symbol will be blinking (See Figure 2b).

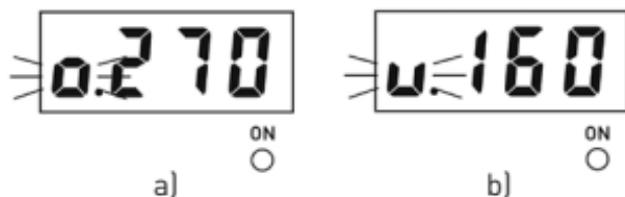


Figure 2. Fault indication

To set the desired setpoints, press and hold the Menu (M) button on the front panel for 3 seconds. The buttons are located on the front panel, below the display. For control elements, refer to Figure 3.

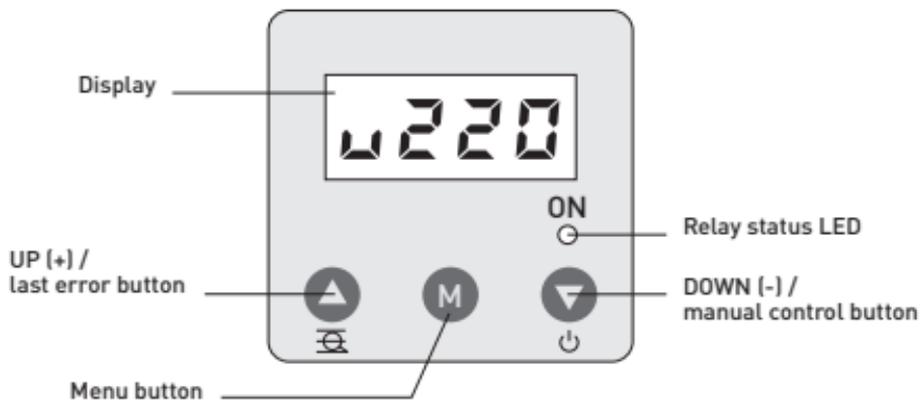


Figure 3. Control panel

## CONFIGURING DEFAULT VALUES

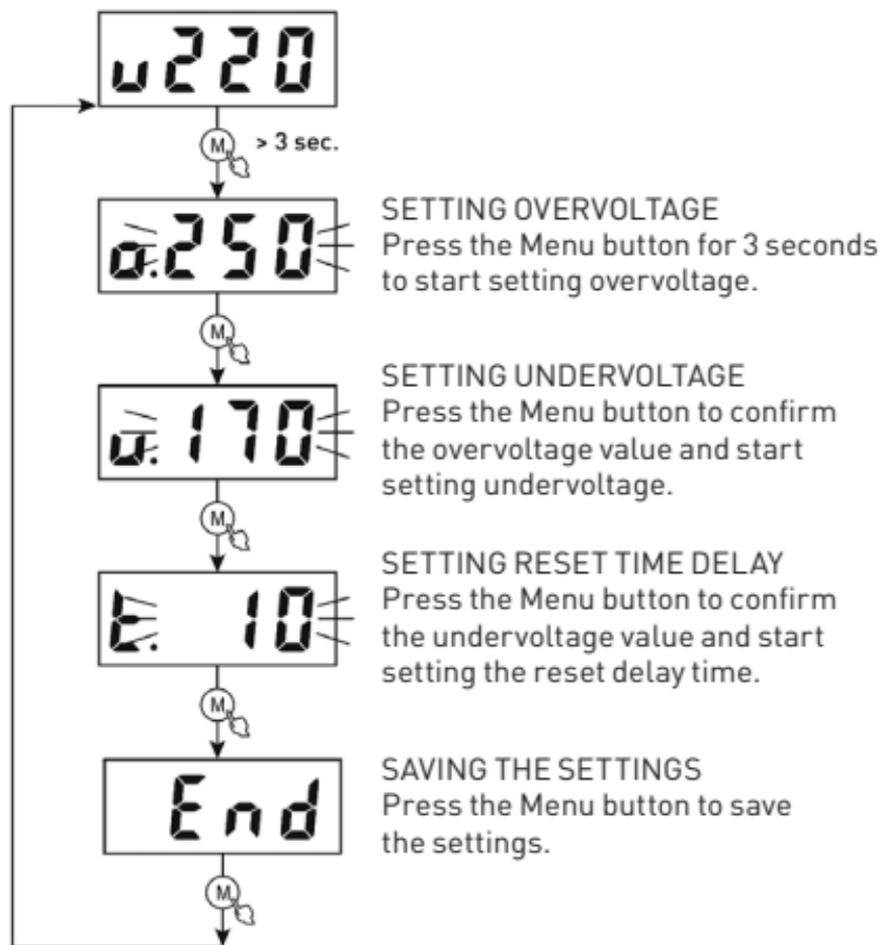
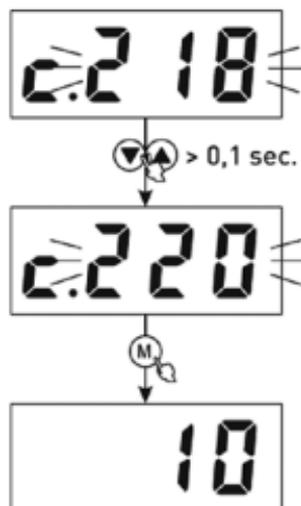


Figure 4. Configuring

## VOLTMETER CALIBRATION

For calibration details, refer to Figure 5.



### SETTING CALIBRATION

Use  $\uparrow$  and  $\downarrow$  buttons to calibrate voltmeter values. Make sure, the device is disabled, press both buttons and switch the device on. The 'c' sign will light up and a voltage value will be blinking. Use buttons to set the desired value.

### SAVING THE SETTINGS

Press the Menu button to save the settings.

To manually disable the relay, press and hold the  $\downarrow$  button for over 0,5 seconds.  
To view the last error, press the  $\uparrow$  button.

Figure 5. Calibration

## 4 OVERALL AND INSTALLATION DIMENSIONS

For overall and installation dimensions, refer to Figure 6.

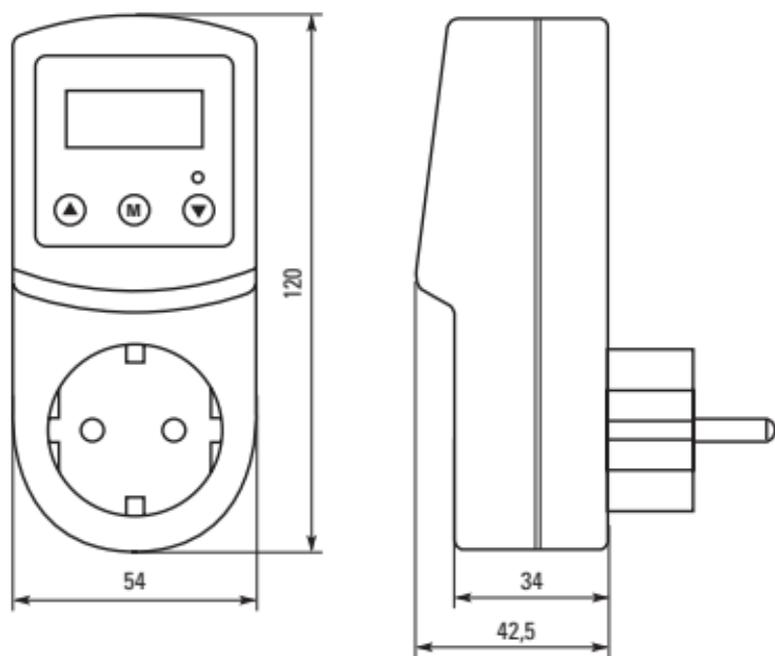


Figure 6. Overall and installation dimensions

## **5 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.

## **6 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  $-30\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$  and max. relative humidity of 50% at  $+40\text{ }^{\circ}\text{C}$ .

## **7 MANUFACTURER'S WARRANTY**

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

**Service life:** 10 years.

**Shelf life:** 10 years from the date of manufacture specified on the product package or housing.

**Warranty period:** 10 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.

**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.

## **8 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.

## **9 ACCEPTANCE CERTIFICATE**

Digital socket voltage monitoring relay MRVs-16 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

**EAC**

v3



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