EKF



TECHNICAL MANUAL

Motor protection relay MPR EKF

1 DESCRIPTION

Motor protection relays are designed for continuous monitoring and protection of three-phase squirrel-cage motors against overload, load imbalance and phase failure.

Motor protection relays MPR EKF can be installed both onto 35 mm DIN rail (20 A and 80 A models) and a mounting plate (200 A and 400 A models).

2 TECHNICAL DATA

Table 1 - Main characteristics

Characteristics	Values			
	MPR 20A	**MPR 80A**	**MPR 200A**	**MPR 400A**
Rated supply voltage, V AC	220-240			
Rated power circuit voltage, V	400			
Rated frequency, Hz	50 / 60			
Rated insulation voltage, V	690			
Number and type of contacts	1 C/O (change-over)			
Max. contact current at 240V, A	1,5			
Thermal resistance current, A	5			
Utilization category	AC-15			
Current setpoint adjustment range, A	4-20	16-80	40-200	80-400
Max. trip time at 40% electrical imbalance, sec*	5			
Max. trip time at phase failure, sec	3			
Trip class, selectable	5, 10, 10A, 20, 30			
Max. current setpoint error, %	5			
Max. power consumption, VA	1,5			
Electrical endurance, cycles	100 000			
Mechanical endurance, cycles	1 000 000			
Maximum cross-section of connected wires, mm^2	2,5			
Tightening torque, N·m	0,5			
Degree of protection	IP20			
Operating temperature, °C	- 5 to + 50			
Weight, g	156	248	425	425
Mounting	35 mm DIN rail / Mounting plate		Mounting plate	

*Imbalance calculation: (Imax -Ir)•100%/ Ir

3 OVERALL DIMENSIONS

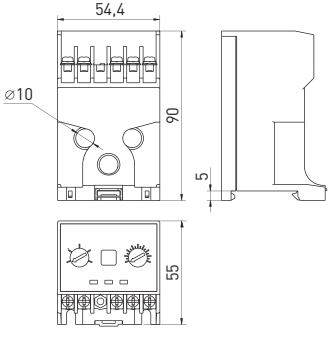


Fig. 1 - Overall dimensions of 20A model

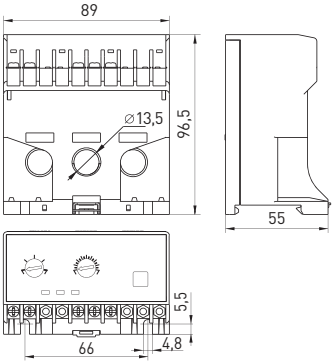


Fig. 2 - Overall dimensions of 80A model

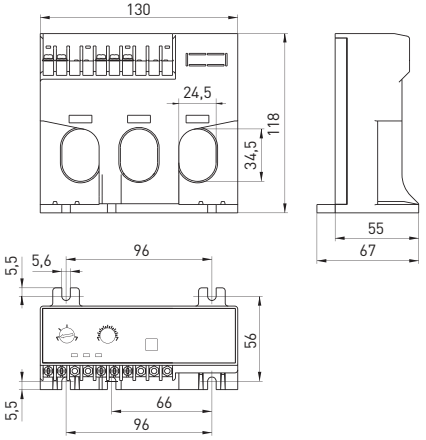


Fig. 3 - Overall dimensions of 200A and 400A models

4 INSTALLATION AND OPERATION

Motor protection relays must be installed and connected by qualified electrical personnel.

WARNING! Make sure the power is off before installation, connection and setting!

Connect the relay as per wiring diagram (refer to Figure 4).

Power to the relay is supplied via A1 and A2 terminals.

CONNECTION

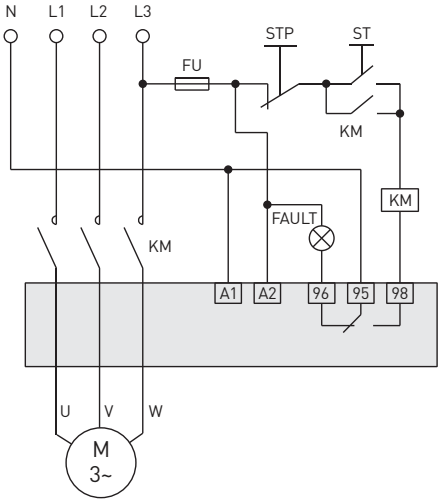


Fig. 4 - Relay wiring diagram

CONTROL AND INDICATION

Table 2

	Trip class adjusting dial
	Motor rated current setting dial
	Test & Reset button
	Relay state indication LEDs

RELAY FUNCTION

Under normal motor operation the contacts 95-98 are closed, the contacts 95-96 are open and the Operation LED is lit.

When the motor load current increases to 1,1 of the setpoint, the Overload LED will start flashing, and the contacts 95-98 will open with a delay, according to the set tripping class (refer to Table 3). To avoid relay activation at inrush currents, the protective functions of the relay are disabled during motor starting (refer to Figure 5).

Table 3

Current ratio	1,0	1,2	1,5	2	⩾4
Trip class	Tripping time, sec				
5		63	40	22	3,5
10		125	80	45	4,5
10	-	250	160	90	5,5
20		500	320	180	10,5
30		750	480	270	20,5

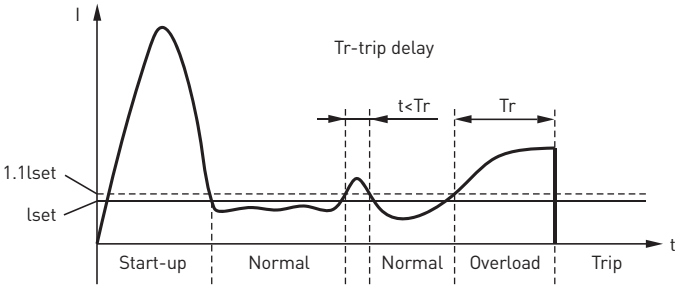


Figure 5. Relay operation diagram

If one or two phases are lost during motor operation, the contacts 95-98 will open within 3 seconds and the Phase Failure LED will light up.
In case of load imbalance of over 40% (of the average load current), the contacts 95-98 will open within 5 seconds, and the Phase Failure LED will light up.
To restart the relay after tripping, press the Test/Reset button.
To test the relay operation in normal operation mode, press and hold the Test/Reset button for 3 seconds for the relay to operate.
To test the LEDs operation press the Test/Reset button twice without connecting the load. All LEDs on the front panel will light up and remain in this mode if functioning correctly. To quit the test mode, press the Test/Reset button.

5 DELIVERY SCOPE

Motor protection 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

The relay must be repaired and serviced by qualified electrical personnel only.
WARNING! Make sure the power is off before installation, connection and setting!
Do not operate relays with visible mechanical damage.

7 MAINTENANCE

For maintenance, follow national safety rules for operation of electrical Installations.
Under normal operating conditions, visually inspect the relays and tighten the fastening screws every 6 months.

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 motor protection 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: ООО 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:
ТОО «Energoresheniya Kazakhstan», Kazakhstan, Almaty,
Bostandyk district, Turgut Ozal st., 247, apt 4.

11 CERTIFICATE OF ACCEPTANCE

The motor protection relays MPR EKF have 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

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