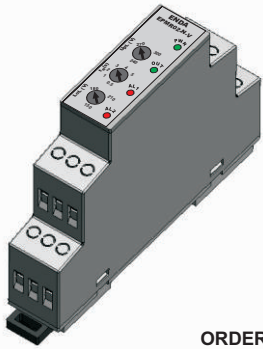




Read this document carefully before using this device. The guarantee will be expired by device damages if you don't attend to the directions in user manual. Also we don't accept any compensations for personal injury, material damage or capital disadvantages.

## ENDA EPMR02 MOTOR PROTECTION RELAY

Thank you for choosing ENDA EPMR02 Rail mounted motor protection relays.



- \* "Phase Failure" (Loss Phase) monitoring
- \* "Phase Sequence" monitoring
- \* Adjustable "Voltage / Asymmetry" protection
- \* Overvoltage and/or Low Voltage protection
- \* PTC protection
- \* Contact output for system control (OUT)
- \* Rail mounted, screw-terminal connection
- \* CE marked according to European Norms



ORDER CODE EPMR02 - N - A

Product Basic Code	
Rail mounted protection relay	
Connection type	
Neutral connection	N

Protection Type	
Only for "Phase Failure" and "Sequence"	F
Adjustable asymmetry protection	A
Adjustable voltage protection	V

## Technical Specifications

### OPERATING

ENDA motor protection relays are designed in order to protect systems from surges, imbalance between the phase sequence of the disturbances and overloads.

- Phase Failure** At least one of the phase is disconnected, output relay status will be OFF immediately. With the return to the normal state of the phases, the output relay status will be ON immediately.
  - Phase Sequence** in case of incorrect phase sequence connection, relay status will be OFF immediately. With the return to the normal state of the phase sequences, the output relay status will be ON immediately.
  - Adjustable Voltage Protection** When the upper and lower limit values exceeds, output relay status will be OFF end of the set delay time. Little voltage fluctuations of the mains changes is not considered. System has 3% (6V) hysteresis protection for harmful conditions.
  - Overvoltage and/or very low Voltage protection** If the nominal voltage of the input phase exceeds 40% and/or fall to 40%, output relay status will be OFF immediately. With the return to the normal operating voltage, output relay status will be ON immediately.
  - PTC Protection** PTC sensors responds immediately in the temperature changes. (See PTC Thermistor Temperature-Resistance Graphics table). With this sensor, if the temperature increase, output relay status will be OFF immediately. With the return to the normal temperature, output relay status will be ON.  
\* If the PTC not used, PTC connections should be short-circuited.
  - Asymmetry Protection** If phase-to-neutral or phase-to-phase voltage in case of instability, in order to protecting the system, output relay status will be delayed ON.  
• Phase-neutral asymmetry(%) =  $\frac{\text{Max. voltage} - \text{Min. voltage}}{220 \text{ Vac}} \times 100$  • Phase-phase asymmetry(%) =  $\frac{\text{Max. voltage} - \text{Min. voltage}}{380 \text{ Vac}} \times 100$
  - 6.1- Stable Asymmetry** In adjustable voltage protection models, stable asymmetry is valid for 20%. If this value exceeded, output relay status will be delayed ON. For without delay time selection devices, delay time is 2 sec.
  - 6.2- Adjustable Asymmetry** In adjustable asymmetry protection relay models, if adjusted asymmetry value exceed, output relay status will be delayed ON.
- \* Priority alarm sequences : Phase failure, phase sequence, PTC, overvoltage and very low voltage, asymmetry, high voltage, low voltage.

### CONTROL

Delay time (t <sub>e</sub> ) adjustment	0.1, 1, 2, 6, 8, 10 sec, can be selected on device.
Voltage lower limit (LoL) adjustment	150, 180, 210 VAC can be selected on device.
Voltage upper limit (UpL) adjustment	240, 270, 300 VAC can be selected on device.
Hysteresis (V)	6 VAC.
Overvoltage (V)	308 VAC.
Low voltage (V)	132 VAC.
Asymmetry adjustment (%)	5, 10, 15 and OFF, can be selected on device.
Asymmetry hysteresis (%)	20% of adjusted or constant asymmetry.

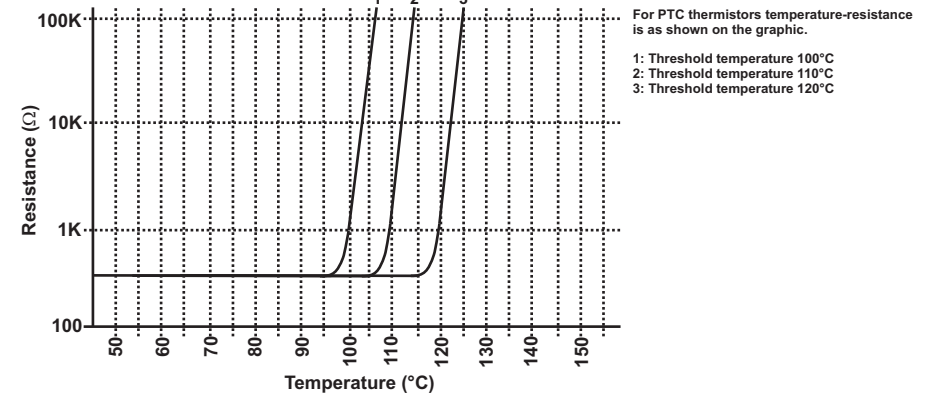
### ALARM CONDITIONS

LEDx	LED Status	Description
PWR	ON	Device running
	OFF	Device not running
OUT	ON	Relay activated
	OFF	Relay deactivated
AL1 AL2	AL1 OFF, AL2 OFF	System running normally (No faulty condition)
	AL1 ON, AL2 OFF	Low voltage
	AL1 OFF, AL2 ON	High voltage
	AL1 ON, AL2 ON	Low and High voltage
	AL1 Blinking slowly, AL2 OFF	Voltage very low
	AL1 OFF, AL2 Blinking slowly	Voltage very high
	AL1 and AL2 Blinking slowly	Phase sequence faulty
	AL1 Fast blink, AL2 OFF	Asymmetry alarm
	AL1 OFF, AL2 Fast blink	PTC Overheating alarm
	AL1 and AL2 Fast blink	No Phase



While the Relay LED in ON state and If, the AL1 and/or AL2 alarm LEDs are in ON state, delay time is active. When delay time is over, out Relay and LED state turns off.

### PTC Thermistor Temperature-Resistance Graphics



### ELECTRICAL CHARACTERISTICS

Supply voltage	125-310V AC (Phase-Neutral), 125-500V AC (Phase-Neutral) +%10 -%10
Operating frequency	45-65 Hz
Power consumption	Max. 10VA.
Connection	Screw-terminal connection.
Reset time	Max. 0.01 seconds.
Accuracy	Depending on the effect of voltage : Max. %1 Measurement error : Max. %5 Depending on the effect of temperature : Max %1
EMC	EN 61326-1: 2012
Safety requirements	EN 61010-1: 2010 (pollution degree 2, overvoltage category II)
Insulation test voltage	3kV AC min. 1 minute, 4,2kV DC min. 1 minute.

### ENVIRONMENTAL CONDITIONS

Ambient/storage temperature	0 ... +50°C/-25 ... +70°C (With no condensation and icing).
Max. relative humidity	Max. humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C. (With no condensation and icing).
Rated pollution degree	IP20, According to EN 60529
Height	Max. 2000m



Do not use the device in locations subject to corrosive and flammable gasses.

### OUTPUTS

Control output (OUT)	Relay: 250V AC, 10A (for resistive load), NO+NC
Life expectancy for relay	Without load 10.000.000 operation; 250V AC, 10A resistive load 50.000 operation.
Control output state	Out LED control output (OUT) lights up when device is powered.

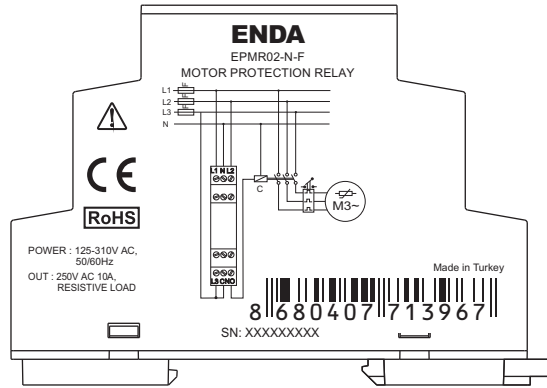
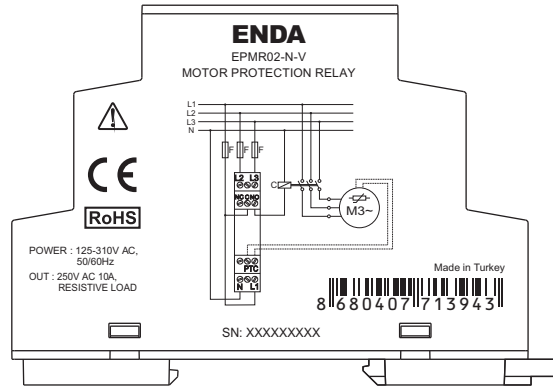
### CONTROL

Mounting	Rail mounted (EN 60715, Th35)
Dimensions	W18xH84xD62mm
Weight	Approx. 90g (after packaging)
Enclosure material	Self extinguishing plastics.

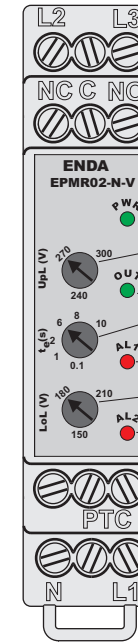


While cleaning the device, solvents (thinner, benzene, acid etc.) or corrosive materials must not be used.

# CONNECTION DIAGRAM



ENDA EPMR02 Series motor protection relays are rail mounted devices. Make sure that the device is used only for intended purpose. The shielding must be grounded on the instrument side. During an installation, all of the cables that are connected to the device must be free of energy. The device must be protected against inadmissible humidity, vibrations, severe soiling and make sure that the operation temperature is not exceeded. All input and output lines that are not connected to the supply network must be laid out as shielded and twisted cables. These cables should not be close to the power cables or components. The installation and electrical connections must be carried on by a qualified staff and must be according to the relevant locally applicable regulations.



- 1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
- 2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

- Supply indicator.
- Upper limit of voltage selection for EPMR02-N-V. Asymmetry selection for EPMR02-N-A.
- Relay status LED. (When OUT relay is turned on, OUT2 LED lights.)
- Alarm status, delay time selection for relay.
- AL1 LED (See Alarm Condition table)
- Lower limit of voltage selection for EPMR02-N-V.
- AL2 LED (See Alarm Condition table)

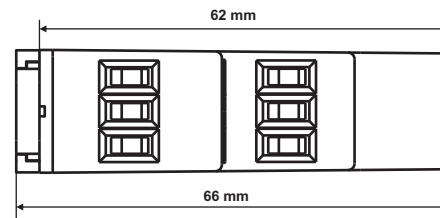
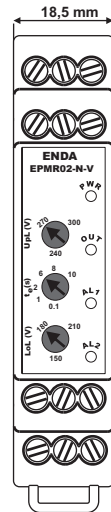
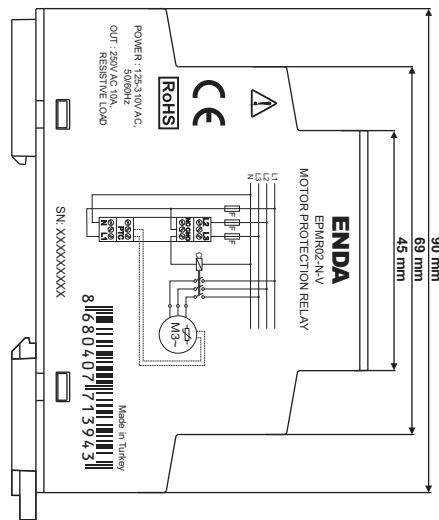
- Holding screw 0.4-0.5Nm.

- Device images may differ according to order code.

# DEVICE SELECTION

Device Code	Neutral Connection	Phase Failure Control	Phase Sequence Control	PTC Protection (Overheat)	Overvoltage Low Voltage Control	Adjustable Voltage Control	Stable Asymmetry (20%)	Adjustable Asymmetry
EPMR02-N-A	✓	✓	✓	✓	✓			✓
EPMR02-N-V	✓	✓	✓	✓	✓	✓	✓	
EPMR02-N-F	✓	✓	✓					

# DIMENSIONS



# MONTAGE

