

# 17. MICROPROCESSOR-BASED RELAY FOR ELECTRIC ENGINES

## EPS

### APPLICATION

The EPS is intended as a safety device for 3-phase electric motors. It is extremely efficient for expensive applications where reliability is essential, like for elevators, transporters, hoists, fans, centrifuges, compressors, etc.

### FUNCTIONING

The relay controls loads for all phases. Based on the values preset by the user, as well as the actual current consumed by the motor, the operation of the motor is analysed by the relay's CPU. By comparing the operation of the motor in question with model characteristics stored in the CPU, the device detects all defects very quickly and accurately, and immediately switches off the motor.

### SECURITY FEATURES

- THERMAL PROTECTION
- PROTECTION AGAINST MECHANICAL OVERLOAD
- PROTECTION AGAINST FAN STALL
- PROTECTION AGAINST FREQUENT RESTARTS
- PROTECTION AGAINST PHASE COLLAPSE
- PROTECTION AGAINST LOAD UNBALANCE
- PROTECTION AGAINST EARTH FAULT

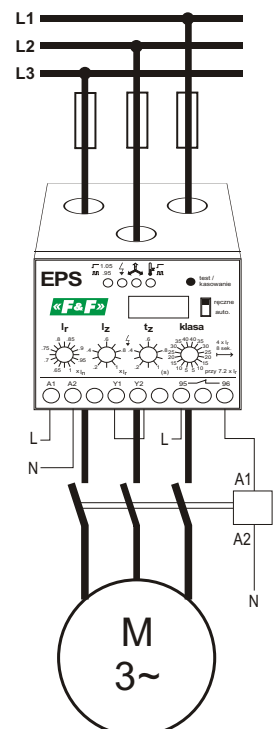
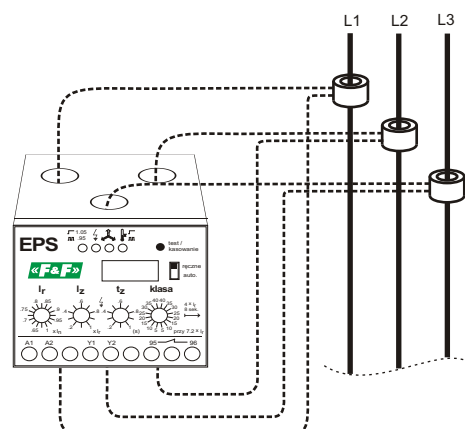
### ADDITIONAL FEATURES

- INITIAL LIGHT SIGNALLING OF ENGINE OVERLOAD
- SELECTIVE SIGNALLING OF TRIP CAUSE
- REMOTE RELAY MOTOR CONTROL DIRECTLY FROM INDUSTRIAL CONTROLLERS
- MOTOR'S THERMAL MEMORY



The EPS is available in seven current versions: 5 A, 10 A, 16 A, 25 A, 45 A, 63 A, and 100 A. The actual working current set value range for each version is from 62 to 100% of the relay's rated current ( $0.625 \div 1 \times I_n$ ). Therefore, the selection of a proper relay depends on the power of the engine to be protected and its rated current. For engines with power between several hundred watts and 55 kW, the EPS with a proper set current range can be used, whereas more powerful units require the 5A EPS version with additional external current transformers.

EPS VERSION	SETTING RANGE	
5A	3,125÷5A	to cooperatin with current transformer
10A	6,25÷10A	
16A	10÷16A	
25A	15,625÷25A	
40A	25÷40A	
63A	39,375÷63A	
100A	62,5÷100A	



Power supply	230V AC
Main circuits' insulation voltage	690V~
Rated current (I <sub>n</sub> )	see label on EPS case
current load of contact	2A AC-15
Effective current unbalance	>30%
Delay at phase decay and unbalance	4sec.
Max. cable diameter	Ø14
Terminal	screw terminals 2,5 mm
Measurements	72×59×88 mm
Weight	385g
Fixing	on rail TH-35

# EPS-D

## APPLICATION

The EPS-D is intended as a safety device for 3-phase electric motors. It is extremely efficient for expensive applications where reliability is essential, like for pumps, hydrophores, elevators, transporters, hoists, fans, centrifuges, compressors, etc.

## FUNCTIONING

The relay controls loads for all phases. Based on the values preset by the user, as well as the actual current consumed by the motor, the operation of the motor is analysed by the relay's CPU. By comparing the operation of the motor in question with model characteristics stored in the CPU, the device detects all defects very quickly and accurately, and immediately switches off the motor.

## SECURITY FEATURES

- THERMAL PROTECTION
- PROTECTION AGAINST IDLE OPERATION AND DRY RUN (undercurrent protection)
- PROTECTION AGAINST MECHANICAL OVERLOAD
- PROTECTION AGAINST FAN STALL
- PROTECTION AGAINST FREQUENT RESTARTS
- PROTECTION AGAINST PHASE COLLAPSE
- PROTECTION AGAINST PHASE SEQUENCE SWITCH
- PROTECTION AGAINST LOAD UNBALANCE
- PROTECTION AGAINST EARTH FAULT

## OPTIONAL SECURITY FEATURES

AGAINST SHOCK (an additional Ferranti transformer enables efficient protection within the range of 30 mA 500 mA. Response time: approx. 100 ms).

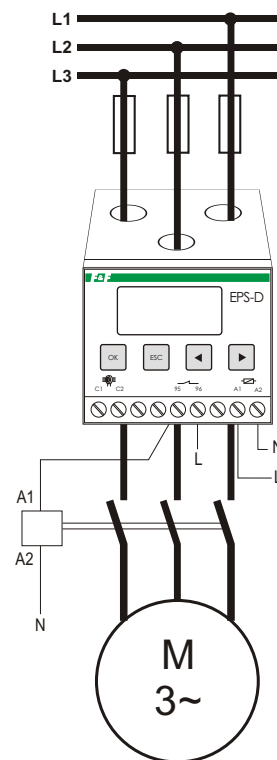
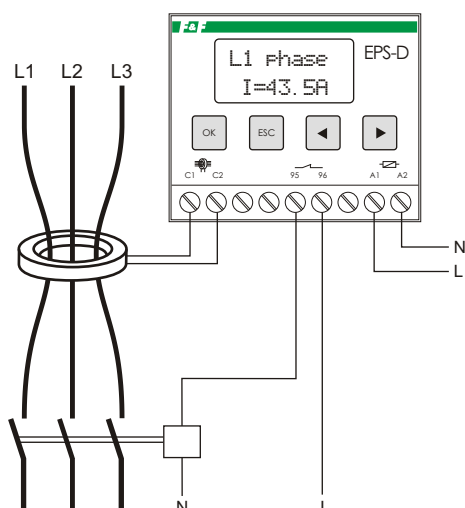
## ADDITIONAL FEATURES

- MOTOR LOAD PREVIEW
- MESSAGE CONCERNING THE CAUSE OF PROTECTION ACTIVATION
- MOTOR'S THERMAL MEMORY

The relay's LCD screen shows an actual current value for a single, selected phase. This is available in absolute (A) or relative (%) values in relation to the set current value  $I_n$ . additionally, the device displays the scope of the measured current by means of characters ( $I > 105\% I_n$ ), ( $I < 95\% I_n$ ), ( $95\% I_n \leq I \leq 105\% I_n$ ). The relay measures the real current value up to and including the 7th harmonic. The measurement accuracy is 1%.



VERSION	SETTING RANGE	
20A	0+20A	to cooperatin with current transformer
100A	20+100A	



Power supply	230V AC
Main circuits' insulation voltage	690V~
Rated current ( $I_n$ )	see label on EPS case
current load of contact	2A AC-15
Effective current unbalance	>30%
Delay at phase decay and unbalance	4sec.
Max. cable diameter	Ø14
Terminal	screw terminals 2,5 mm
Measurements	72×59×88 mm
Weight	385g
Fixing	on rail TH-35