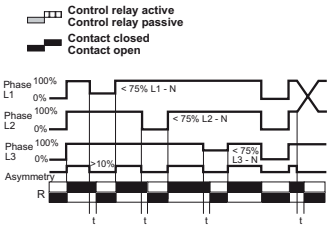
TCP-M

overview

- detects phase failure, phase sequence phase asymmetry and over-temperature using PTC sensors
- detects phase failure with regenerated voltage present
- up to 6 PTC sensors in series
- DPCO output max. 6A
- fixed asymmetry alarm >10%
- no neutral connection required
- adjustable reaction timer 0.1 - 10s
- LED indicators for power supply, relay and reaction timer
- 45mm DIN rail mount housing

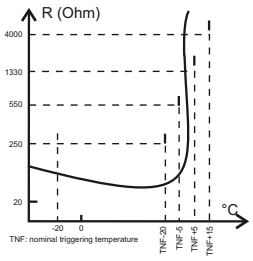


Function



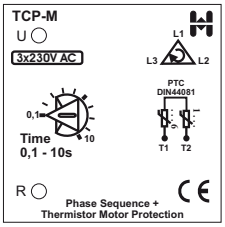
Control relay for phase failure and thermistor protection

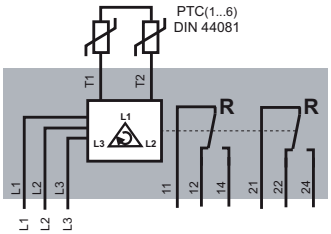
The TCP-M monitors phase sequence, phase failure and phase asymmetry, and is used with PTC sensors to provide over temperature protection for motors and other equipment. When the phase sequence is correct, all phases are detected, and the resistance of the PTC sensors on the input T1 - T2 is within the correct range, the output relay **R** energises. At a loss of one phase (> Vn x 0.75), or the detection of an asymmetry imbalance >10%, or when the resistance of the PTC sensors exceeds the triggering threshold (3100 Ohm) the reaction time **t** starts.



At the end of time **t** the output relay **R** de-energises. Time **t** is adjustable between 0.1s and 10s and is used to time out short transients which would otherwise cause nuisance tripping. The relay energises again when phase L1, L2 and L3 return to the correct range and the resistance of the sensors falls below the reset threshold (1650 Ohms).

The control relay will detect a phase failure even with a regenerated voltage present on the failed phase (no detection on request).





specification

supply voltage variation	nominal voltage +10% / -15%
frequency range	48 - 63 Hz
duty cycle	100%
response/delay time	< 300ms
reset time	< 500ms
max. measuring voltage	< 2,5V
max. resistance	1500 Ohm (6 sensors)
triggering threshold	3100 Ohm
reset threshold	1650 Ohm
short circuit detection	0 - 20 Ohm
output relay specification	max. 6A 230V~
Ue/Ie AC-15	120V/4A 240V/3A
Ue/Ie DC-13	24V/2A
expected life time	DPCO SPCO
mechanical	2 x 10^6 resp. 1 x 10^7 operations
electrical	1 x 10^5 resp. 1 x 10^5 operations
operating conditions	-20 to 60°C non condesning

* EN 60947-5-1 VDE 0435

ordering information

part no	supply		output	sup. galv. iso*	cULus	housing types
TCP-M 3x400Vac	3x 400V~	2,5VA	DPCO	yes	yes	C
TCP-M 3x230Vac	3x 230V~	2,5VA	DPCO	yes	yes	C
TCP-M 3x440Vac	3x 440V~	2,5VA	DPCO	yes	no	C

* The measurement input is galvanically isolated from the power supply

3 phase failure and thermistor motor protection

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