

# TCP

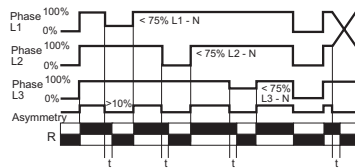
## overview

- ◆ detects phase failure, phase sequence and phase asymmetry
- ◆ detects phase failure with regenerated voltage present
- ◆ SPCO or DPCO output max. 6A
- ◆ fixed asymmetry alarm  
TCP / PCP >10%  
TCP-L / PCP-L >30%
- ◆ no neutral connection required
- ◆ adjustable reaction timer 0.1 - 10s
- ◆ LED indicators for power supply, relay and reaction timer
- ◆ 22.5 or 45mm DIN rail mount housing or 11pin plug in housing



### Function

- Control relay active
- Control relay passive
- Contact closed
- Contact open



Control relay to monitor 3-wire, 3-phase systems for the failure of one or more phase, a phase asymmetry shift exceeding 10% and the correct phase rotation (L1, L2, L3)

The TCP detects that the phase sequence is correct and that no phase has failed, in which case the output relay **R** energises.

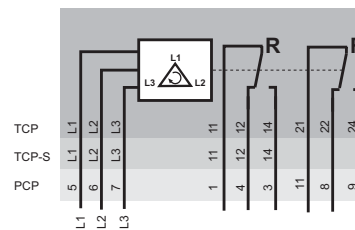
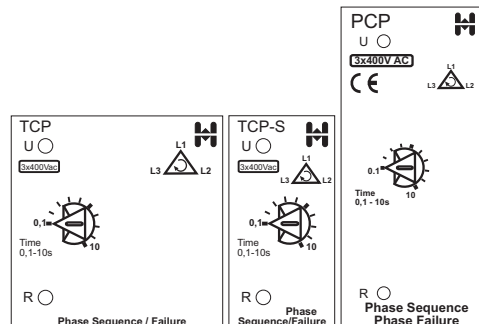
At a loss of one phase (> 25% under nominal voltage) or at a detection of an asymmetry shift (> 10%), the reaction time **t** starts. At the end of time **t** the output relay **R** re-energises. Time **t** is adjustable between 0.1s and 10s and is used to time out short transients which would otherwise cause nuisance tripping. The relay energises again when phase L1, L2 and L3 return to within the permitted range.

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%	
reaction timer	0,1 - 10s	
reset time	< 100ms	
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 <sup>6</sup>	resp. 1 x 10 <sup>7</sup> operations
electrical	1 x 10 <sup>5</sup>	resp. 1 x 10 <sup>5</sup> operations
screws	pozidrive 1	
screw tightening torque	0,6...0,8Nm	
operating conditions	-20 to +60 °C non condensing	

\* EN 60947-5-1 VDE 0435



## ordering information

part no	supply	output	sup. galv. iso*	HIQUEL	housing types
TCP 3x400Vac	3x 400V~	2,5VA DPCO	yes	yes	C
TCP 3x230Vac	3x 230V~	2,5VA DPCO	yes	yes	C
TCP-S 3x400Vac	3x 400V~	2,5VA SPCO	yes	yes	B
TCP-S 3x230Vac	3x 230V~	2,5VA SPCO	yes	yes	B
PCP 3x400Vac	3x 400V~	2,5VA DPCO	yes	no	G
PCP 3x230Vac	3x 230V~	2,5VA DPCO	yes	no	G
TCP-L 3x400Vac	3x 400V~	2,5VA DPCO	yes	no	C
TCP-L 3x230Vac	3x 230V~	2,5VA DPCO	yes	no	C
PCP-L 3x400Vac	3x 400V~	2,5VA DPCO	yes	no	G
PCP-L 3x230Vac	3x 230V~	2,5VA DPCO	yes	no	G

\* The measurement input is galvanically isolated from the power supply

