

# Type: M3PRC/S/2 & M3PRC/S/2-4W

Phase Failure, Phase Sequence, Under and Over Voltage plus Time Delay

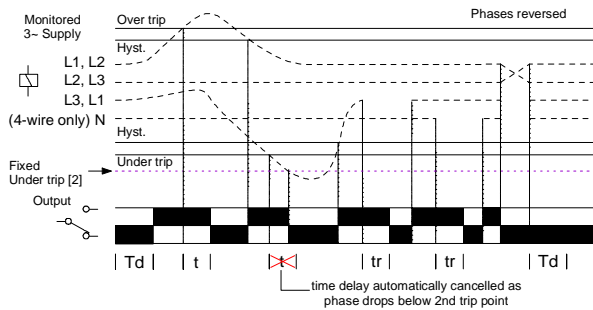
- 35mm DIN rail housing
- Microprocessor controlled with internal monitoring (self-checking)
- Monitors own supply and detects if one or more phases exceed the set Under or Over Voltage trip levels
- M3PRC/S/2 measures phase to phase voltage and M3PRC/S/2-4W measures phase to neutral voltage
- Detects incorrect phase sequence, phase loss and neutral loss (4-wire only)
- Adjustments for under and over voltage trip levels
- Adjustment for time delay (from an under or over voltage condition)
- 1 x DPDT relay output 8A
- Intelligent LED indication for supply and relay status



Dims:  
to DIN 43880  
W. 35mm

Terminal Protection to IP20

## FUNCTION DIAGRAM



## INSTALLATION AND SETTING

Installation work must be carried out by qualified personnel.

- BEFORE INSTALLATION, ISOLATE THE SUPPLY.
- Connect the unit as required. The diagram below shows a typical installation, whereby the supply to the load is being monitored by the relay. If a fault should occur (i.e. fuse blowing), the contactor is de-energised removing the 3-phase supply to the load. The contactor only re-energises after the fault has cleared.

### Applying power.

- Set the "over %" adjustment to maximum and the "under %" adjustment to minimum. Set the "time delay" to minimum.
- Apply power and the green "supply on" and red "relay" LED's will illuminate, the relay will energise and contacts 15 and 18 / 25 and 28 will close. Refer to the troubleshooting table if the unit fails to operate correctly.

### Setting the unit.

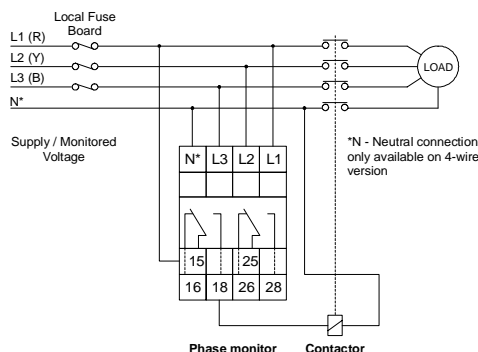
- Set the "over %" and the "under %" adjustments to give the required monitoring range.
- If large supply variations are anticipated, the adjustments should be set further from the nominal voltage.
- Set the "time delay" as required. (Note that the delay is only effective should the supply increase above or drop below the set trip levels. However, if during an under voltage condition the supply drops below the 2<sup>nd</sup> under voltage trip level, any set time delay is automatically cancelled and the relay de-energises).

### Troubleshooting.

The table below shows the status of the unit during a fault condition.

Supply fault	Green LED	Red LED	Relay
Phase or Neutral (4-wire only) missing	Off	Off	De-energised
Phases reversed (no delay)	Flashing	Off	De-energised
Under or Over Voltage condition (during timing)	On	Flashing	Energised for set delay (t)
Under or Over Voltage condition (after timing)	On	Off	De-energised
Phase below 70% of Un (fixed under trip level [2])	On	Off	De-energised
Phase below 50% of Un	Off	Off	De-energised

## CONNECTION DIAGRAM



## TECHNICAL SPECIFICATION

Supply / monitoring voltage Un\* (L1, L2, L3): 3-wire: 110, 208, 220, 380, 400, 415V AC (phase to phase)  
4-wire: 63.5, 120, 127, 220, 230, 240V AC (phase to neutral)  
(L1, L2, L3, N):  
Frequency range: 48 - 63Hz  
Supply variation: 70 - 130% of Un  
Isolation: Over voltage cat. III  
Rated impulse withstand voltage: 4kV (1.2 / 50μs) IEC 60664  
Power consumption: red phase: 20VA (3-wire), 13VA (4-wire)  
(max.) yellow phase: 0.2VA (3-wire), 0.1VA (4-wire)  
blue phase: 20VA (3-wire), 0.1VA (4-wire)

Please state Supply / monitoring voltage when ordering

Trip levels:	Under [2]:	70% of Un (fixed) ±2%
	Under:	75 - 95% of Un
	Over:	105 - 125% of Un
Measuring ranges:	Under	Over
63.5V:	48 - 60V	67 - 79V (4-wire **)
120V:	90 - 114V	126 - 150V (4-wire **)
127V:	95 - 121V	133 - 159V (4-wire **)
220V:	165 - 209V	231 - 275V (4-wire **)
230V:	173 - 218V	241 - 288V (4-wire **)
240V:	180 - 228V	252 - 300V (4-wire **)
110V:	83 - 105V	116 - 138V (3-wire)
208V:	156 - 197V	218 - 260V (3-wire)
220V:	165 - 209V	231 - 275V (3-wire)
380V:	285 - 361V	399 - 475V (3-wire)
400V:	300 - 380V	420 - 500V (3-wire)
415V:	311 - 394V	436 - 519V (3-wire)

\*\* measured phase to neutral  
± 0.5% @ constant conditions  
Hysteresis: ≈ 2% of trip level (factory set)  
Response time: ≈ 50 ms  
Time delay (t): 0.2 - 10 sec (± 5%)  
Note: actual delay (t) = adjustable delay + response time

Delay from phase/neutral loss (tr): ≈ 100 ms (worst case = tr x 2)  
Power on delay (Td): ≈ 1sec. (worst case = Td x 2)

Ambient temp: -20 to +60°C  
Relative humidity: +95%

Output: DPDT relay (15, 16, 18 / 25, 26, 28)  
Output rating: AC1 250V 8A (2000VA)  
AC15 250V 3A  
DC1 25V 8A (200W)

Electrical life: ≥ 150,000 ops at rated load  
Dielectric voltage: 2kV AC (rms) IEC 60947-1  
Rated impulse withstand voltage: 4kV (1.2 / 50μs) IEC 60664

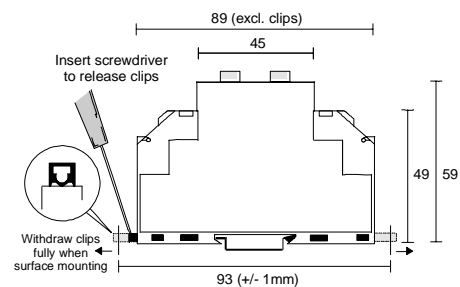
Housing: Orange flame retardant UL94 VO  
Weight: ≈ 100g  
Mounting option: On to 35mm symmetric DIN rail to BS5584:1978 (EN50 002, DIN 46277-3) Or direct surface mounting via 2 x M3.5 or 4BA screws using the black clips provided on the rear of the unit.

Terminal conductor size: ≤ 2 x 2.5mm<sup>2</sup> solid or stranded

Approvals: Conforms to IEC, CE and Compliant.  
Options:

For other supply/monitoring voltages, please contact the sales office.

## MOUNTING DETAILS



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The information provided in this literature is believed to be accurate (subject to change without prior notice); however, use of such information shall be entirely at the user's own risk.

M3PRCS2-3-A