Type: M1PRC/S & M1PRC/S-4W

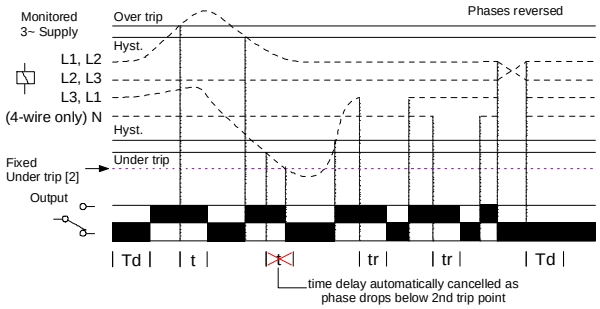
Phase Failure, Phase Sequence, Under and Over Voltage plus Time Delay

- ❑ **17.5mm DIN rail housing**
- ❑ **Monitors own supply and detects if one or more phases exceed the set Under or Over Voltage trip levels**
- ❑ **M1PRC/S measures phase to phase voltage and M1PRC/S-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 level**
- ❑ **Adjustment for time delay (from under or over voltage condition)**
- ❑ **1 x SPDT relay output 8A**
- ❑ **Intelligent LED indication for supply and relay status**

Dims:
to DIN 43880
W. 17.5mm

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 will close. Refer to the troubleshooting table if the unit fails to operate correctly.

Setting the unit.

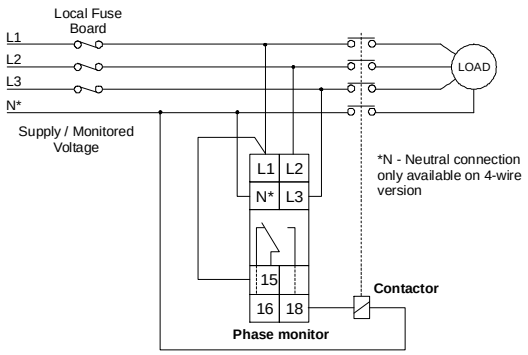
- Set the "over %" and the "under %" adjustments to give the required monitoring range.
- If large supply variations are anticipated, the adjustments should be set further from the nominal voltage.
- Set the "time delay" as required. (Note that the delay is only effective should the supply increase above or drop below the set trip levels. However, if during an under voltage condition the supply drops below the 2nd 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)
(L1, L2, L3, N):	4-wire: 63.5, 120, 127, 220, 230, 240V AC (phase to neutral)
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 (max.):	3-wire: L1: 20VA, L2: 0.2VA, L3: 20VA
	4-wire: L1: 13VA, L2: 0.1VA, L3: 0.1VA

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 [2]	Under	Over
63.5V:	44.5V	48 - 60V	67 - 79V (4-wire **)
120V:	84V	90 - 114V	126 - 150V(4-wire **)
127V:	90V	95 - 121V	133 - 159V (4-wire **)
220V:	154V	165 - 209V	231 - 275V (4-wire **)
230V:	161V	173 - 218V	241 - 288V (4-wire **)
240V:	168V	180 - 228V	252 - 300V (4-wire **)
110V:	77V	83 - 105V	116 - 138V (3-wire)
208V:	146V	156 - 197V	218 - 260V (3-wire)
220V:	154V	165 - 209V	231 - 275V (3-wire)
380V:	266V	285 - 361V	399 - 475V (3-wire)
400V:	280V	300 - 380V	420 - 500V (3-wire)
415V:	290V	311 - 394V	436 - 519V (3-wire)

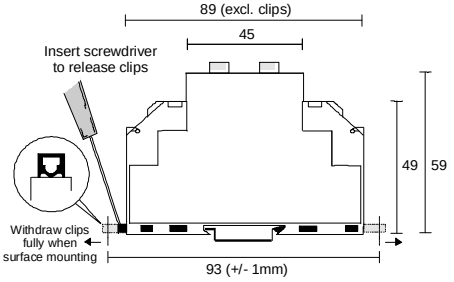
** measured phase to neutral

Repeat accuracy:	± 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 (15, 16, 18):	SPDT relay
Output rating:	AC1 250V 8A (2000VA)
	AC15 250V 5A (no), 3A (nc)
	DC1 25V 8A (200W)
Electrical life:	≥ 150,000 ops at rated load
Dielectric voltage:	2kV AC (rms) IEC 60947-1
Rated impluse withstand voltage:	4kV (1.2 / 50µS) IEC 60664
Housing:	Orange flame retardant UL94 VO
Weight:	≈ 70g
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 2.5mm² solid or stranded
Approvals:	Conforms to IEC. CE and Compliant.

Options:

1. The unit is also available with a double-pole relay output. Refer to separate data sheet for M3prc/s/2 and M3prc/s/2-4w.

MOUNTING DETAILS



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