

# Type: MXPRT

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

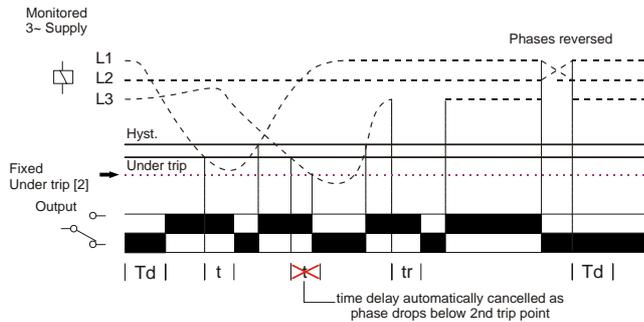
- ☐ 17.5mm DIN rail housing
- ☐ True R.M.S.
- ☐ Microprocessor based (self checking)
- ☐ Monitors own supply and detects an Under voltage condition on one or more phases
- ☐ Measures phase to phase voltages
- ☐ Detects incorrect phase sequence and phase loss
- ☐ Adjustment for under voltage trip level
- ☐ Adjustment for time delay (from an under 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 Connection Diagram below shows a typical installation, whereby the supply to a load is being monitored by the Phase monitoring relay. If a fault should occur (i.e. fuse blowing), the relay will de-energise and assuming control of the external Contactor, de-energise the Contactor as well.

#### Applying power.

- Set the adjustments "<U"& and the "Delay (t)" to minimum.
- Apply power and the green "Power supply" and red "Relay" LED's will illuminate, the relay will energise and contacts 15 and 18 will close. Refer to troubleshooting table if the unit fails to operate correctly.

#### Setting the unit.

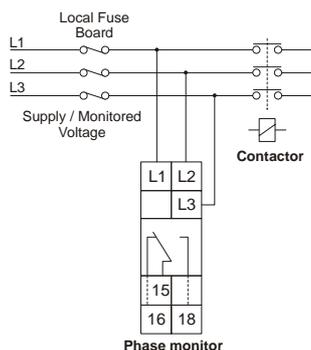
- Accurate setting can be achieved by adjusting the trip level "<U" until the unit trips (relay de-energises) then by decreasing the trip level "<U" setting until the relay re-energises. By close setting of the trip level, the unit will also detect a phase loss even with a large percentage of re-generative voltage.
- In order to set the unit as previously described but without causing disruption to the equipment being controlled/monitored, set the "Delay (t)" to maximum. It will now be possible to establish the trip point when the red "Relay" LED starts to flash. Decrease the trip level setting to stop the LED flashing. (Note: If the time delay is allowed to expire, the output relay will de-energise)
- If large supply variations are anticipated, the trip level should be set further from the nominal voltage.
- Set the "Delay (t)" as required. (Note that the delay is only effective should the supply drop below the set trip level. 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).  
**Note:** If the supply voltage increases above the maximum "<U" trip setting by approx. 10% or more, the relay will de-energise immediately.

#### Troubleshooting.

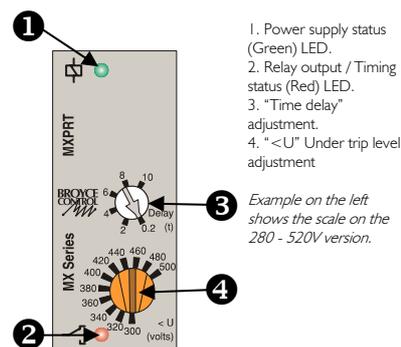
The table below shows the status of the unit during a fault condition.

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

### CONNECTION DIAGRAM



### SETTINGS



### TECHNICAL SPECIFICATION

Supply / monitoring voltage U\* (L1, L2, L3): 77 - 143V AC  
161 - 300V AC  
280 - 520V AC<sup>1</sup>  
48 - 63Hz

Frequency range: Over voltage cat. III

Isolation: Over voltage cat. III

Rated impulse withstand voltage: 4kV<sup>1</sup> (1.2 / 50μs) IEC 60664

Power consumption: 8VA max.

\*Please state Supply / monitoring voltage when ordering

Trip levels:

Voltage range:	Under [2] fixed ±2%:	Under (adjustable):
77 - 143V AC	77V	83 - 138V
161 - 300V AC	161V	173 - 288V
280 - 520V AC	280V	300 - 500V

Hysteresis: ≈ 2% of trip level (factory set)

Setting accuracy: ± 3%

Repeat accuracy: ± 0.5% @ constant conditions

Immunity from micro power cuts: < 50 mS

Response time: ≈ 50 mS

Time delay (t): 0.2 - 1.0 sec (± 5%)  
Note: actual delay (t) = adjustable delay + response time

Delay from phase loss (tr): ≈ 150 mS (worst case = tr x 2)

Power on delay (Td): ≈ 1 sec. (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 impulse 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 2.5mm<sup>2</sup> solid or stranded

Approvals: Conforms to IEC, CE and RoHS Compliant.  
EMC: Immunity: EN/IEC 61000-6-2 (EN/IEC 61000-4-3 15V/m 80MHz - 2.7GHz)  
Emissions: EN/IEC 61000-6-4

#### Options:

1. The unit is also available with a double-pole relay output. Refer to separate data sheet for Mxprrt/2.

### MOUNTING DETAILS

