

Terminal Protection to IP20



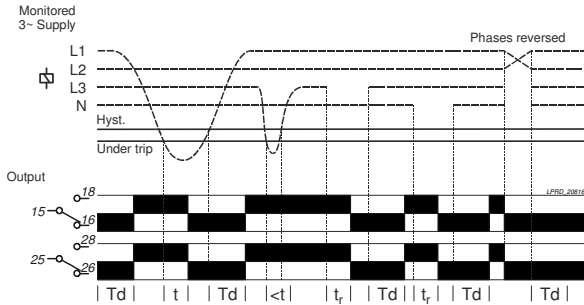
Dims: to DIN 43880 W. 17.5mm

- Compact 17.5mm DIN rail housing
- Microprocessor based
- True R.M.S. monitoring measuring phase to phase (3-wire) or phase to neutral (4-wire) voltages
- Selectable nominal voltages to suit most popular 3-wire or 4-wire supply voltages
- Monitors own supply and detects an Under voltage condition on one or more phases
- Detects incorrect phase sequence, phase loss and neutral loss<sup>1</sup>
- Adjustment for Under voltage trip level
- Adjustment for Restart delay
- Adjustment for Time delay
- DPDT relay output 5A
- Green LED indication for supply status
- Red LED indication for relay status



<sup>1</sup> Only when 4-wire monitoring selected

### FUNCTION DIAGRAM



### TECHNICAL SPECIFICATION

Supply/monitoring voltage Un (L1, L2, L3, (N)):	3-wire monitoring	3-Wire	4-wire monitoring	4-Wire
Frequency range:	380, 400, 415V AC		220, 230, 240V AC	
Supply variation:	48 – 63Hz			
Overvoltage category:	243- 540V AC (L>L)			
Rated impulse withstand voltage:	III (IEC 60664)			
Power consumption (max.):	4kV (1.2/50µs) IEC 60664			
Monitoring mode:	2.5VA			
Trip levels:				
Under [2]:	Fixed ± 2% see below			
Under:	75 – 95% of Un			
Measuring ranges:	Nominal (Un)	Under [2]	Under	
3-wire (L>L)	380V	243V	285 – 361V	
	400V	256V	300 – 380V	
	415V	265V	311 – 394V	
4-wire (L>N)	220V	140V	165 – 209V	
	230V	147V	173 – 219V	
	240V	153V	180 – 228V	
Hysteresis:	≈ 2% of trip level (factory set)			
Setting accuracy:	± 3%			
Repeat accuracy:	± 0.5% at constant conditions			
Immunity from micro power cuts:	<50ms			
Response time (t <sub>r</sub> ):	≈ 50ms			
Time delay (t):	0.2 – 10s (± 5%)			
	Note: actual delay (t) = adjustable delay + response time			
Restart/Power on delay (Td):	1s – 5m (± 5%)			
Reset time:	50 – 100ms			
Power on indication:	Green LED			
Relay status indication:	Red LED			
Ambient temperature:	-20 to +60°C			
Relative humidity:	+95% max.			
Output (15, 16, 18 / 25, 26, 28):	DPDT relay			
Output rating:	AC1	250V 5A (1250VA)		
	AC15	250V 2A		
	DC1	25V 5A (125W)		
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			
Weight:	90g			
Mounting option:	On to 35mm symmetric DIN rail to BS EN 60715 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:	≤ 2.5mm <sup>2</sup> solid or stranded			
Terminal screw:	M2.5			
Tightening torque:	0.4Nm (3.5Lb-In) Max.			
Approvals:	Conforms to IEC.			
	<b>UL LISTED</b>			
	IND. CONT. EQ. E111187			
	CE, RoHS and RoHS Compliant.			
	EMC:			
	Immunity: EN 61000-6-2 Emissions: EN 61000-6-4			

### INSTALLATION AND SETTING

- 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.
- Only connect the Neutral if available and 4-wire monitoring is required.



Installation work must be carried out by qualified personnel.

#### Applying power.

- Set the "Nominal (Un)" voltage selector to match that of the voltage being monitored.
- Set "Under %" adjustment to minimum.
- Set the "Delay (t)" and "Restart Delay" adjustments to minimum.
- Apply power and the green "Power supply" LED will illuminate. The red relay LED will flash and relay remain de-energised for the Power on delay (Td). After this period has elapsed, the LED will remain lit and relay energised. Note the red LED flashes at twice the rate of that when delaying the relay to de-energising. This is to help distinguish the two modes.
- Refer to the Troubleshooting table if the unit fails to operate correctly.

#### Setting the unit (with power applied).

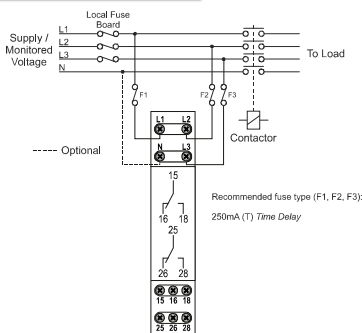
- Accurate setting can be achieved by adjusting the trip level "Under (%)" until the unit trips (relay de-energises) then by decreasing the trip level "Under (%)" until the relay re-energises. Close setting of the trip level ensures the unit will detect phase loss even with a large percentage of re-generative 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 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 relays will de-energise)
- If large supply variations are anticipated, the trip level should be set further from the nominal voltage.
- Set the "Delay (t)" and "Restart delay" as required. (Note that the delay "t" is only effective should any phases fall below the set trip point. However, if the supply drops below the 2<sup>nd</sup> under voltage trip level, any set time delay is automatically cancelled and the relays de-energise immediately.)

#### Troubleshooting.

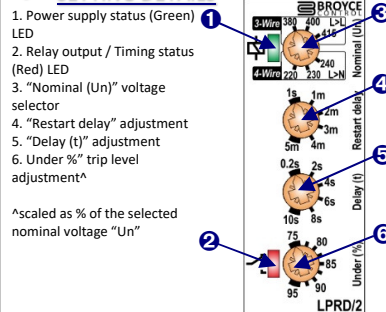
The table below shows the status of the unit during a particular fault condition.

Supply fault	Green LED	Red LED	Relay
Phase or neutral missing	On	LED's flash alternately	De-energised
Phase or neutral restored (during restart timing)	On	Flashing (x2)	De-energised for delay (Td)
Phases reversed (no delay)	Flashing	Off	De-energised
Under voltage condition (during timing)	On	Flashing	Energised for delay (t)
Under voltage condition (after timing)	On	Off	De-energised
Voltage returned from Under voltage (during restart timing)	On	Flashing (x2)	De-energised for delay (Td)
Phases < fixed under trip level [2]	On	Off	De-energised

### CONNECTION DIAGRAM



### SETTING DETAILS



<sup>^</sup>scaled as % of the selected nominal voltage "Un"

### DIMENSIONS

