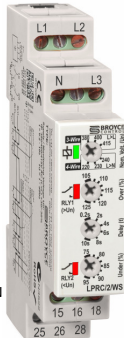


Terminal Protection to IP20



Dims: to DIN
43880
W. 17.5mm

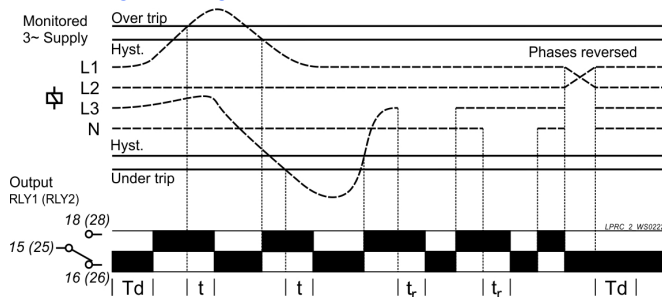
- True R.M.S. monitoring measuring phase to phase (3-wire) or phase to neutral (4-wire) voltages
- Selectable nominal voltages to suit most popular 3-wire or 4-wire supply voltages
- Monitors own supply and detects if one or more phases exceed the set Under or Over voltage trip levels
- Detects incorrect phase sequence
- Detects phase loss and neutral loss¹
- Adjustments for Under and Over voltage trip levels
- Adjustment for Time delay
- DPDT relay output 5A
- Green LED indication for supply status
- Red LED indication for both relay and timing status
- Compact 17.5mm DIN rail housing
- Microprocessor based



¹ Only when 4-wire monitoring selected

FUNCTION DIAGRAM

Under and Over Voltage Monitoring



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

Applying power.

- Set the "Nominal (Un)" **6** voltage selector to match that of the voltage being monitored.
- Set the Over % **4** adjustment to maximum and the "Under %" **5** adjustment to minimum. Set the "Delay (t)" **3** to minimum.
- Apply power and the green "Power supply" **1** LED will illuminate. The red **2** LED will illuminate, and relay will energise after the short Power on delay (Td).
- Refer to the Troubleshooting table if the unit fails to operate correctly.

Setting the unit (with power applied).

- 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 "Delay (t)" adjustment 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 both relays de-energise immediately).

Troubleshooting.

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

Supply fault	Green LED 1	Red LED 2	Relay
Phase or neutral ² missing	Flashing ¹	Flashing ¹	De-energised
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
Over voltage condition (during timing)	On	Flashing	Energised for delay (t)
Over voltage condition (after timing)	On	Off	De-energised
Phases < fixed under trip level [2]	On	Off	De-energised

¹ Green and Red LED's alternate in this fault condition

² Refer to Technical Specification for neutral loss/shift threshold voltage

TECHNICAL SPECIFICATION

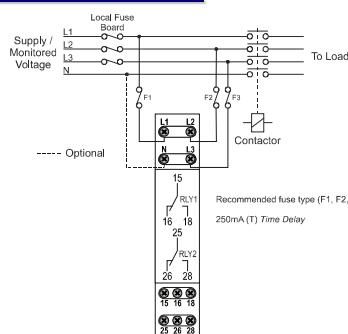
Supply/monitoring voltage Un (L1, L2, L3, (N)):	3-wire monitoring 3-Wire	4-wire monitoring 4-Wire		
Frequency range:	380, 400, 415V AC	220, 230, 240V AC		
Supply variation:	48 – 63Hz			
Overvoltage category:	243– 540V AC (L>L)			
Rated impulse withstand voltage:	III (IEC 60664)			
Power consumption (max.):	4kV (1.2/50µs) IEC 60664			
Monitoring mode:	2.5VA			
Trip levels:	Under and Over voltage			
Under [2]:	Fixed ± 2% see below			
Under:	75 – 95% of Un			
Over:	105 – 125% of Un			
Neutral loss/shift detection threshold:	≈ 45V rms (assuming balanced load across phases). Applies if unit set to: 220, 230 or 240V L-N			
Measuring ranges:	Nominal (Un)	Under [2]	Under	Over
3-wire (L>L)	380V	243V	285 – 361V	399 – 475V
	400V	256V	300 – 380V	420 – 500V
	415V	265V	311 – 394V	436 – 519V
4-wire (L>N)	220V	140V	165 – 209V	231 – 275V
	230V	147V	173 – 219V	242 – 288V
	240V	153V	180 – 228V	252 – 300V
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):	≈ 50ms			
Time delay (t):	0.2 – 10s (± 5%) Note: actual delay (t) = adjustable delay + response time			
Power on delay (Td):	≈ 1s (worst case = Td x 2)			
Reset time:	50 – 100ms			
Power on indication:	Green LED			
Relay status indication:	Red LED x2			
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:	Grey 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 black clips provided on the rear of the unit.			
Terminal conductor size	≤ 2.5mm ² solid or stranded			
Terminal screw:	M2.5			
Tightening torque:	0.4Nm (3.5Lb-In) Max.			
Approvals:	Conforms to IEC.			
	CE, UKCA, and RoHS Compliant.			
	EMC: Immunity: EN 61000-6-2 Emissions: EN 61000-6-4			



IND. CONT. EQ. E111187

Note: "L>L" has the same meaning as "phase to phase" and "L>N", the same as "phase to neutral"

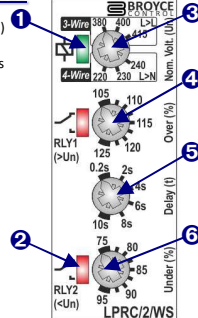
CONNECTION DIAGRAM



SETTING DETAILS

1. Power supply status (Green) LED
2. Relay output / Timing status
3. "Nominal (Un)" voltage selector
4. "Over %" trip level adjustment^A
5. "Delay (t)" adjustment
6. "Under %" trip level adjustment^A

^Ascaled as % of the selected nominal voltage "Un"



DIMENSIONS

