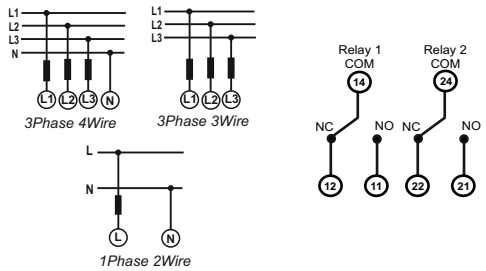


Voltage Protection Relay Operating Manual and Installation guide

The Voltage Protection Relay protects system from the faults occurring on voltage line. Relay protects against under voltage, over voltage, phase unbalance, phase failure, incorrect phase sequence and neutral disconnection faults. Front adjustment knobs are provided for easy selection of nominal voltage, system type, trip delay, fault trip point. Onsite 3P3W / 3P4W selection offers flexibility to user. The faults under voltage and over voltage can be disabled while other faults cannot be disabled. All faults are self resetting. Multiple LEDs indicate type of fault that helps for diagnosis purpose. Potential free relay contacts can be used for connection / disconnection of load or trigger alarm for annunciation purpose. Relay has fail safe operation. Application in Motor protection, conveyor system and for process industry etc.



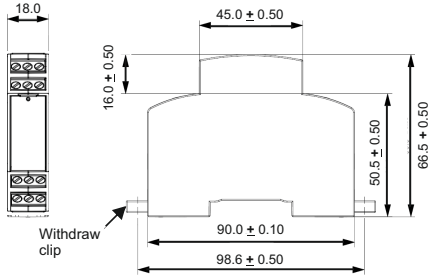
Connection diagram:



Installation: Installation to be carried out by qualified person along with life protecting equipment to prevent hazardous shock. Isolate incoming supply before connection. Do not expose device to Rain, Dust environment. Keep at least 10-15 mm distance on both sides of device. Do not install near Vibrating environment. Do not install near Heat source. Install Fuses of 2 Amp in series with supply. Use Sealing provision to protect from unintentional adjustment.

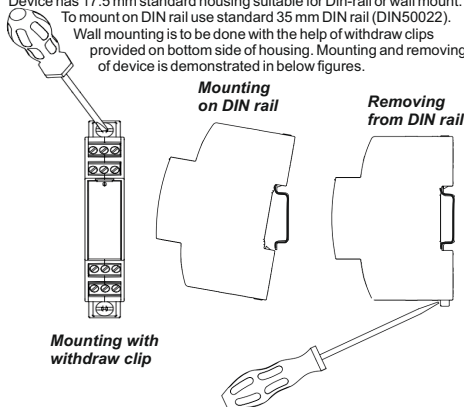


Dimensions:



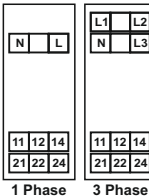
Mounting:

Device has 17.5 mm standard housing suitable for Din-rail or wall mount. To mount on DIN rail use standard 35 mm DIN rail (DIN50022). Wall mounting is to be done with the help of withdraw clips provided on bottom side of housing. Mounting and removing of device is demonstrated in below figures.



Terminals and Connector details:

Input connectors are marked by numbers 1, 2, 3, 4 and potential free relay contacts are marked as 11, 12, 14 for relay1 and 21, 22, 24 for relay2. Rated switchgear and fusing is required to prevent inrush. Wire of 2 sq. mm is recommended for Input connection. Use suitable screw driver for tightening so that sufficient force can be applied, take care while tightening because excess force may result in damage to inside circuitry. Control voltage is to be applied with fusing to the connector numbered as 14, 24. Refer diagrams for input connection.



Parameter Settings:

Nominal Voltage Vn* (Variable - AC rms) 3 Phase : L : 110-240 VLL / 63-138 VLN
: M : 381-388-415 VLL / 220-230-240 VLN
: H : 415-440-480 VLL / 240-254-277 VLN
1 Phase : L : 58-63-110-120-127-138 VLN
: H : 220-230-240-254 VLN

Under Voltage Trip point 75-95% (Variable)
Over Voltage Trip point 105-125% (Variable)
Voltage Unbalance Trip point 20% (Fixed)
Phase Failure Trip point 70 % (Fixed)
Hysteresis value 3% (Fixed) of Trip point
3% (Fixed) of Vn for Unbalance
Trip delay 0-10 seconds variable for Undervoltage, Over voltage, Unbalance. Instant tripping for Phase reversal, Neutral fail and Phase fail conditions
Reset Delay 1 second (Fixed)
Power On Delay Approx. 3 seconds (Fixed)

*Note : For 3P3W system, the tripping is based on VLL value.
For 3P4W & 1P2W system, the tripping is based on VLN value.

Technical Specifications:

Input Voltage
Nominal Input Voltage As given above in **Parameter Settings**
Max Continuous Input Voltage 127% of nominal value
Nominal Frequency 50 / 60 Hz
Input Voltage Burden Per phase < 2 VA approx.
Input Voltage Burden Three phase < 4 VA approx.
Operating Voltage Range 70...125% of nominal value

Operating reference condition
Reference Condition 23°C +/- 2°C
Input waveform Sinusoidal (distortion factor 0.005)
Input Frequency 50 / 60 Hz ± 2%

Accuracy
Tripping Accuracy ± 3% of Nominal Value
± 0.8 sec for Trip delay

Response Time
Applicable Standards < 200 msec

Safety
IP for water & dust IEC 61010-1-2010
Pollution degree IEC60529
Installation category 2
CAT III

Environmental
High Voltage Test 2.2 kV AC 50Hz for 1 min. between all Electrical circuits.
Operating temperature -10 to +55°C
Storage temperature -25 to +70°C
Relative humidity 0...90% non condensing
Shock 15g in 3 planes
Vibration 10...55 Hz, 0.15mm amplitude
Enclosure Flame retardant, IP20 (front face only)

Relay Contacts
Types of output 1CO, 1CO+1CO
Relay configuration Energised (relay is ON in healthy condition and relay is OFF in fault condition)
Contact Ratings 5A/250VAC/30VDC (resistive load)
Mechanical Endurance 1x10⁷ OPS
Electrical Endurance 1x10⁵ OPS

Mechanical Attributes
Weight 80g Approx.
Dimensions 18 x 90 x 66 mm

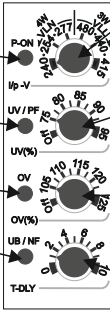
Adjustments:

Power on LED

Undervoltage /
Phase fail LED

Overvoltage LED

Unbalance / Neutral
Fail LED



Adjustment knob for Nominal voltage settings and system type. Keeping knob pointer on VLL side values selects 3 Wire system with nominal voltage as pointed. Pointer on VLN side values selects 4 wire system with nominal voltage as pointed.

Adjustment knob for undervoltage Trip point settings, values are in percentage of nominal voltage selected. Pointer kept at OFF position disables the fault protection.

Adjustment knob for overvoltage Trip point settings, values are in percentage of nominal voltage selected. Pointer kept at OFF position disables the fault protection.

Adjustment knob for Trip delay. Setting time is in seconds.

Indication Table:

Each LED has two states to indicate type of fault as explained in table below.

LED Indication	Continuous ON	Blinking
P-ON	Power ON	Incorrect Phase Sequence
UV/PF	Undervoltage	Phase Fail
OV	Overvoltage	-----
UB/NF	Unbalance voltage	Neutral Fail

Tripping Diagrams:

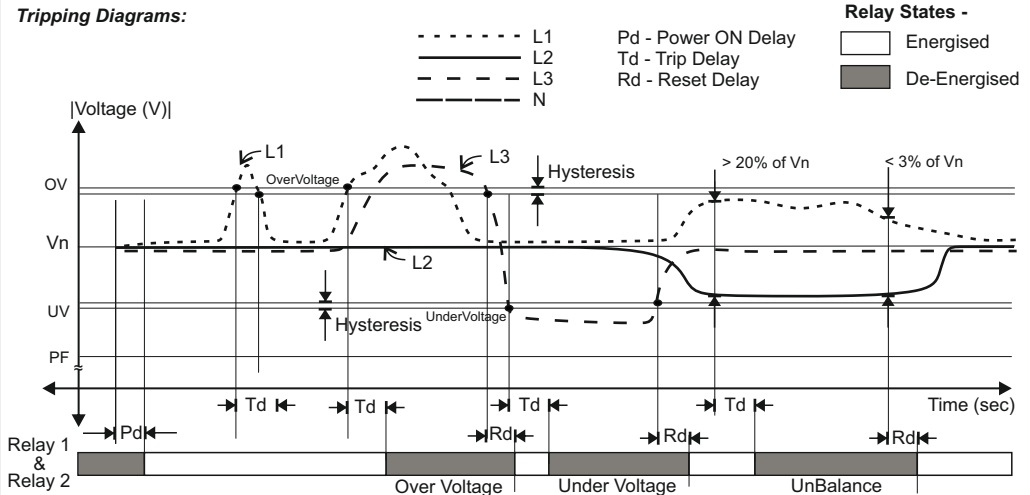


Figure 1 : OV, UV & UB Tripping functionality for 3 Phase System with default Energised Relay

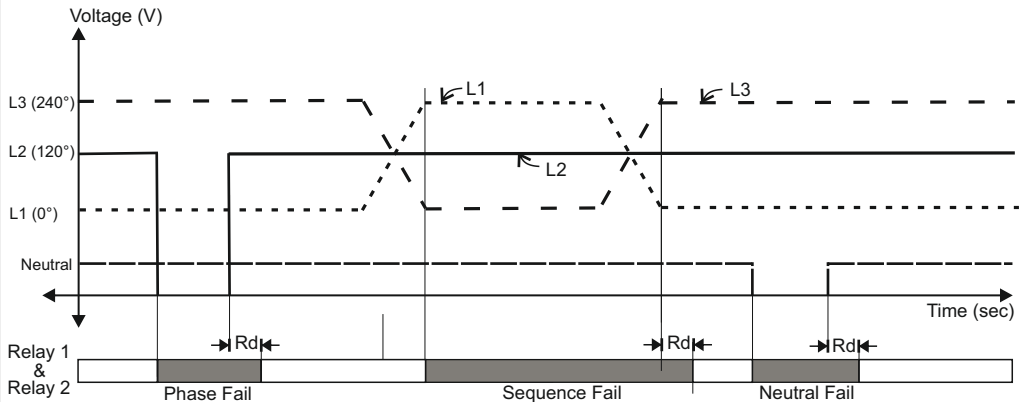


Figure 2 : PF, SEQ. FAIL & NF Tripping functionality for 3 Phase System with default Energised Relay

Test Certificate:

Model : Voltage Protection Relay
Accuracy Test : Pass
Tripping Test : Pass

Relay Test : Pass
Adjustment Test : Pass

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