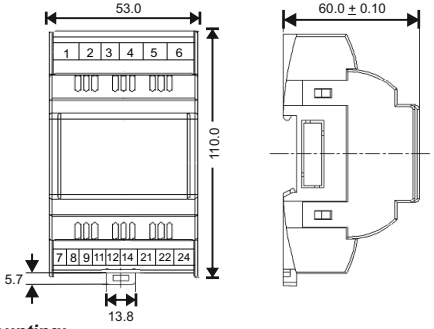
Current Protection Relay Operating Manual and Installation guide

The Current Protection Relay protects system from the current faults. Relay protects against undercurrent, over current and unbalance faults.
Multiple LEDs indicate type of fault that helps for diagnosis purpose.
Switch (Key) is provided to enable/ disable unbalance function and to select automatic / manual resetting of faults upon fault recovery.
Manual reset ensures safety.
Potential free relay contacts can be used for connection / disconnection of load or trigger alarm for annunciation purpose.
relay configuration can be ordered in fail safe and normal operation depending upon application The application includes motor protection, conveyor system and for process industry, etc.

Installation:

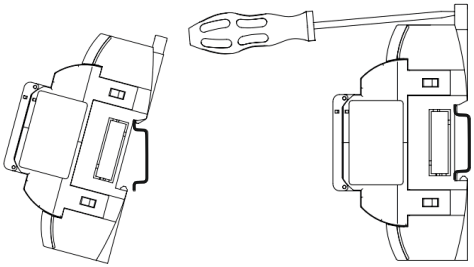
Installation to be carried out by qualified person along with life protecting equipment to prevent hazardous shock.
Isolate incoming supply before connection.
Do not expose device to Rain, Dust environment.
Keep at least 10-15 mm distance on both sides of device.
Do not install near Vibrating environment.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

Dimensions and Terminals:



Mounting:

To mount the device it should be fastened to a standard 35mm DIN rail (DIN50022).
To remove from DIN rail use screw driver to pullout clip as shown below.

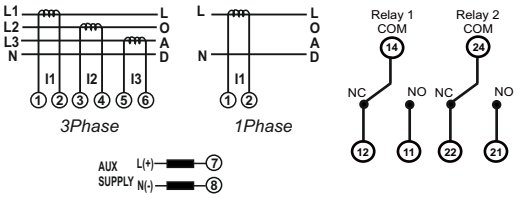


Mounting On DIN rail ***Removing From DIN rail***

Connector details:

Input connectors are marked by numbers 1, 2, 3, 4, 5, 6 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 with Lug is recommended for Input connection. Use suitable screw driver so that sufficient force can be applied, 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.

Connection diagram:



Parameter Settings:

Overcurrent Trip point	30 - 140 % of In
Undercurrent Trip point	10 - 95 % of In
Hysteresis Undercurrent , Overcurrent	5 - 50 % of trip point
Power on delay	3 Second Approx.
Reset delay	1 Second
Trip delay	0-10 Second (Undercurrent, Overcurrent)
Current unbalance Trip Point	20 % fixed
Current unbalance Trip Delay	5 Seconds fixed
Current unbalance Hysteresis	5 %

Technical Specifications:

Nominal Input current In (AC)	1 to 5 Amps settable
Maximum continuous Input current (AC)	145 % of In
Current overload withstand	20 x for 1 second, repeated 5 Times in 5 minutes
Auxiliary supply range	60-300 V AC/DC
Auxiliary nominal value	230 VAC 50/60 Hz
Auxiliary supply frequency	45 - 66 Hz
Operating measuring current range	5 to 140 % of nominal value
Operating measuring frequency range	40...70 Hz
Input current burden	< 0.25 VA per phase at nominal
Auxiliary supply burden	< 3 VA
Operating reference condition	
Reference Condition	23°C +/- 2°C
Input waveform	Sinusoidal (distortion factor 0.005)
Input frequency	50 or 60 Hz ± 2%
Auxiliary supply voltage	Nominal value ± 1 %
Auxiliary supply frequency	Nominal value ± 1%
Accuracy	
Measurement accuracy	± 2 % of nominal value
Setting accuracy	± 6 % of nominal value ± 0.8 second for trip delay
Response time	**< 140 milisecond**
Applicable Standards	
IP for water & dust	IEC60529
Safety	IEC 61010-1-2010 Permanently connected use.
Pollution degree:	2
Installation category:	CAT III
High Voltage Test	2.2 kV AC, 50Hz for 1 minute between all electrical circuits
Environmental	
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 or DeEnergised (Energised-Relay is ON under healthy condition and DeEnergised-Relay is OFF under healthy condition)
Contact Ratings	5A/250VAC/30VDC (resistive load)
Mechanical Endurance	1x10^7 OPS
Electrical Endurance	1x10^5 OPS
Mechanical Attributes	
Weight	175g Approx.
Dimensions	53 x 110 x 60 mm

Tripping Diagrams:

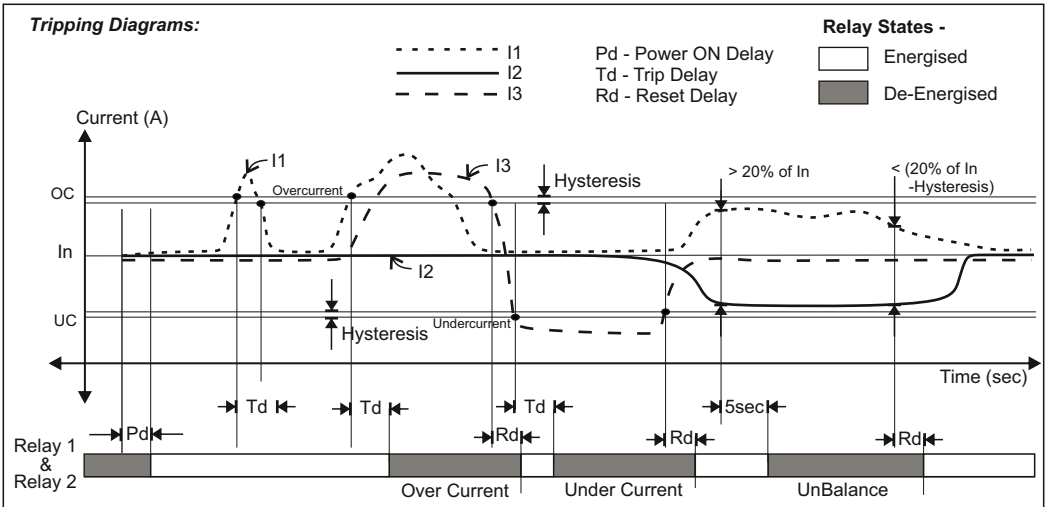


Figure : Tripping functionality for 3 Phase System with default Energised Relay

PRG / RST Switch Functionality:

PRG / RST switch has dual purpose

1. **Onsite Setting** of two parameters one by one :

(a) First Setting : Automatic Reset Mode / Manual Reset Mode

Step 1: Long press (for > 1sec) the PRG / RST button until all the LEDs glow.

Step 2: Release the PRG / RST button. The P-ON LED blinks once per second indicating the First Setting.

Step 3: The LEDs - UC and OC indicate option Auto and Manual, respectively. Use the PRG / RST button to toggle between the two options.

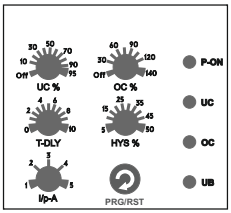
Step 4: Only Long press (until all LEDs glow) of PRG / RST button confirms the selected option and takes to the Second Setting for 3Phase system. For 1Phase system, since Unbalance is not applicable, the Long press of PRG / RST button will exit the onsite setting menu. If PRG / RST button is not long pressed, then the new setting (Auto/Manual Mode) will not get stored. The meter automatically comes out of setting if RST / PRG button is not pressed for 1 minute, hence not storing the changes.

(b) Second Setting (Not applicable for 1P System) : Enable Unbalance / Disable Unbalance

Step 1: Release the PRG / RST button after long press (for > 1sec) until all LEDs glow. The P-ON LED blinks twice per second indicating the Second Setting.

Step 2: The LEDs - UC and OC indicate options : Enable UB and Disable UB, respectively. Use the PRG / RST button to toggle between the two options.

Step 3: Only Long press (until all LEDs glow) of PRG / RST button confirms the selected option. If PRG / RST button is not long pressed, then the new setting (Enable/Disable Unbalance) will not get stored. The meter automatically comes out of setting if RST / PRG button is not pressed for 1 minute, hence not storing the changes.



First Setting	Second Setting
Blink Once per second	Blink Twice Per second
Auto Reset Mode	Enable Unbalance
Manual Reset Mode	Disable Unbalance

2. To **Reset Relay Manually** in NORMAL condition if Manual Reset Mode setting is done and fault is recovered.

Automatic / Manual reset :

1. Automatic fault reset - In this mode for undercurrent, over current, unbalance fault (If unbalance enabled) the relay resets automatically to Normal (No fault) condition and manual intervention is not required.
2. Manual fault reset - In this mode, after the fault recovers, the relay does not reset to Normal but remains in Trip condition unless the PRG/RST switch is not pressed.
   Pressing of switch is memorized in this mode. For example if fault is present and switch is pressed then Key function is memorized and relay resets to Normal condition once the fault is recovered.

Test Certificate:

Model	:	Current Protection Relay	Relay Test	:	Pass
Accuracy Test	:	Pass	Adjustment Test	:	Pass
Tripping Test	:	Pass			

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