

MOTOR PROTECTOR WITH AMPEREMETER, GROUND FAULT  
AND OUTPUT 4-20mA

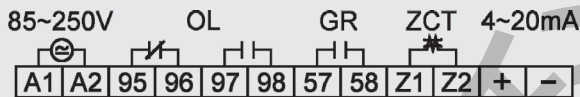
TPM-PMZ

Description

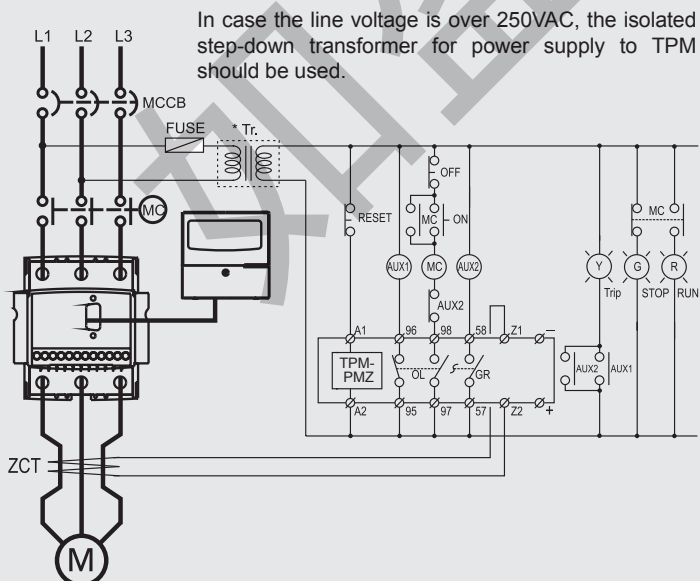
- MCU(Micro Controller Unit) based.
- Easy installation: surface mounting.
- Wide functions range, easy to program.
- Three integral current transformers.
- Multiple protection functions.
- Wide current range protection from 0.1A to 3600A only a model.
- Current display:
  - Order display: L1→L2→L3→GF→L1→ ....
  - Display time of each current is 5 sec., user can select the phase to read manually.
- Time-Current trip characteristics selectable (see tables 2 and 3):
  - Overcurrent protection / Ground fault protection.
  - Thermal memory protection (see table 3).
  - Non-thermal memory protection (see table 2).
- Digital amperemeter integrated.
- Total running time display.
- Overload trip bar graph control.
- 4-20mA current loop communications.
- Test function.
- Fail safe selection / Version without voltage (FS : ON)
- Wide room temperature range working.



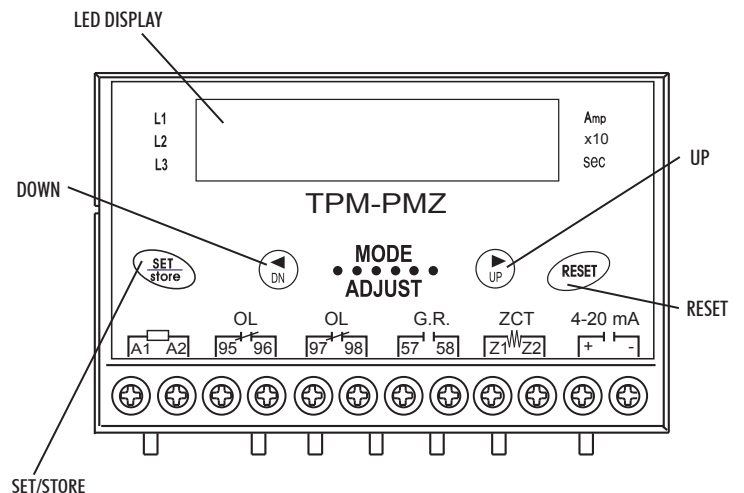
I/O Terminals Configuration



Typical Application Diagram



Frontal configuration



## Function feature

Protected Item	Operation Delay
Overcurrent	1...30 seC (adjustable time)
	Type 1...30 (inverse time)
Undercurrent	1...30 sec (adjustable time)
Phase Loss	3 sec.
Phase Reversal	0,1 sec.
Unbalance	8 sec.
Locked rotor/running	Trip after "dt" time (see "how to set")
Locked rotor/work	1...10 sec. (see "how to set")
Ground fault	0,05...10 sec. (adjustable time)

## How to setup

## 1) Current:






- **Definite time** – Set the rated motor current in "OC" mode. For protection of connected machinery with motor, it is recommended to set the 10~115% of running current after motor current is stabilized.
- **Inverse time** – 100% of rated motor current or 110~125% actual motor current is recommended.

## 2) D-Time: Set the expected run-up time of motor in "dt" mode.

## 3) O-Time :

- **Definite Time** – Set the desired trip delay time in "ot" mode.
- **Inverse Time** – Set the trip delay time according to Time-Current characteristics.

## How to set

Mode		Search a mode to be adjusted by depressing UP/DN mode switch.
Set		Selected mode and setting value start flickering which means to be ready to accept setting as depressing once a Set/store button.
Adjust		Select a required setting value and/or characters by depressing continuously UP/DN mode switch until reaching what want to do.
Store		Store a selected value and/or characters by depressing once Set/store button. Instantaneously the flickering is stopped.
Reset		After completing above procedure, make a reset to be ready to operate. If not made reset, it will be reset automatically after an elapse of 30 sec.
Current rotation by Manual		Instead of automatic rotation, manual display rotation is possible as depressing once SET/ Store button during an operation. If manual is selected, the information of phase current L1 is displayed firstly and next information is displayed continuously like a manner of: L1→L2→L3→GF→L1→....

## Size

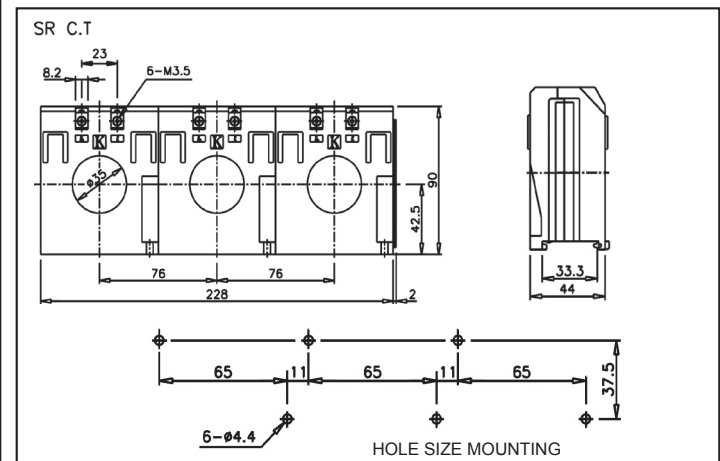
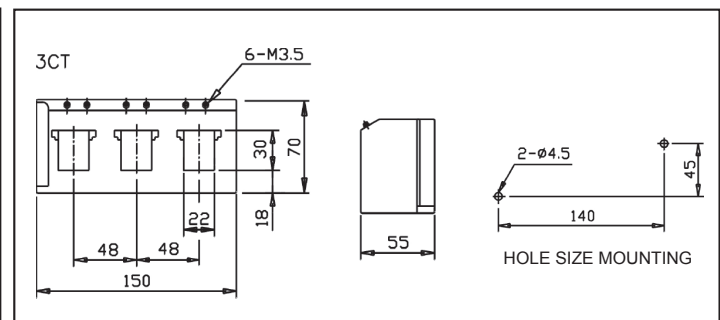
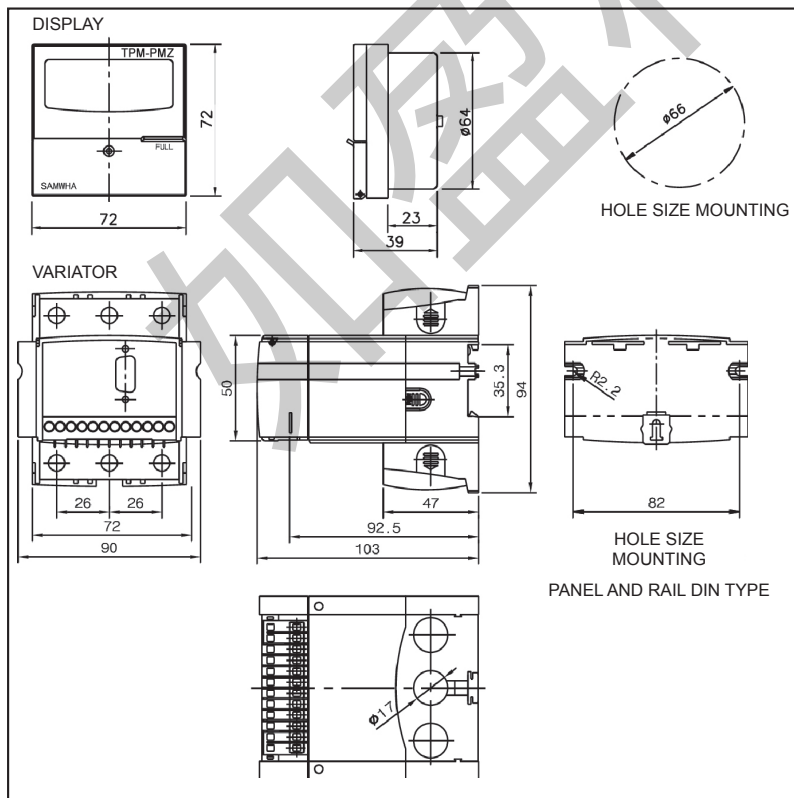


Table 1

Current setting range (A.)	Number of conductors through CT	External CT Ratio	Setting of CT Ratio	Remark
0.5...60A	1	-	OFF	Wide Range
0.25...3.0A	2	-	2t	
0.1...1.2A	5	-	5t	
1...12A	1	10:5	10	
1.5...18A	1	15:5	15	
2.0...24A	1	20:5	20	
2.5...30A	1	25:5	25	
3.0...36A	1	30:5	30	
4.0...48A	1	40:5	40	
5...60A	1	50:5	50	
6...72A	1	60:5	60	
7.5...90A	1	75:5	75	
10...120A	1	100:5	100	
12...144A	1	120:5	120	
15...180A	1	150:5	150	

Current setting range (A.)	Number of conductors through CT	External CT Ratio	Setting of CT Ratio	Remark
20...240A	1	200:5	200	
25...300A	1	250:5	250	
30...360A	1	300:5	300	
40...480A	1	400:5	400	
50...600A	1	500:5	500	
60...720A	1	600:5	600	
75...900A	1	750:5	750	
80...960A	1	800:5	800	
100...1200A	1	1000:5	1000	
120...1440A	1	1200:5	1200	
150...1800A	1	1500:5	1500	
200...2400A	1	2000:5	2000	
250...3000A	1	2500:5	2500	
300...3600A	1	3000:5	3000	

Table 2

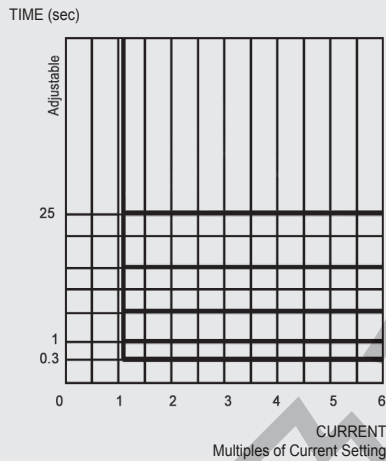


Table 2. OC adjustable time features

Table 3

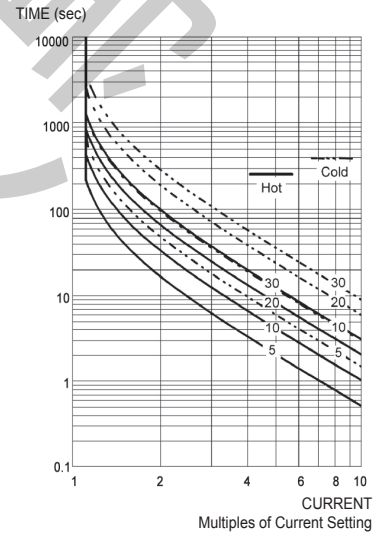


Table 3. OC inverse time features  
0.5...10A / combined with external transformer

Trip Display

Function	LED Display	Description
Overload	• -OC-	Tripped by over current
Unerload	• -UC-	Tripped by under current
Locked rotor running	• -LC-	Tripped by Locked Rotor
Locked rotor work	• -SC-	Locked Rotor in running
Phase reversal	• -AP-	Tripped by Phase reversal
Phase unbalance	• -Ub-	Tripped by unbalance phase
Phase loss	• -PL-	Tripped by phase loss
Ground fault	• -Ec-	Tripped by fround fault current