MOTOR PROTECTOR WITH AMPEREMETER, GROUND FAULT AND OUTPUT 4-20mA, CONTROL BOARD SEPARATE
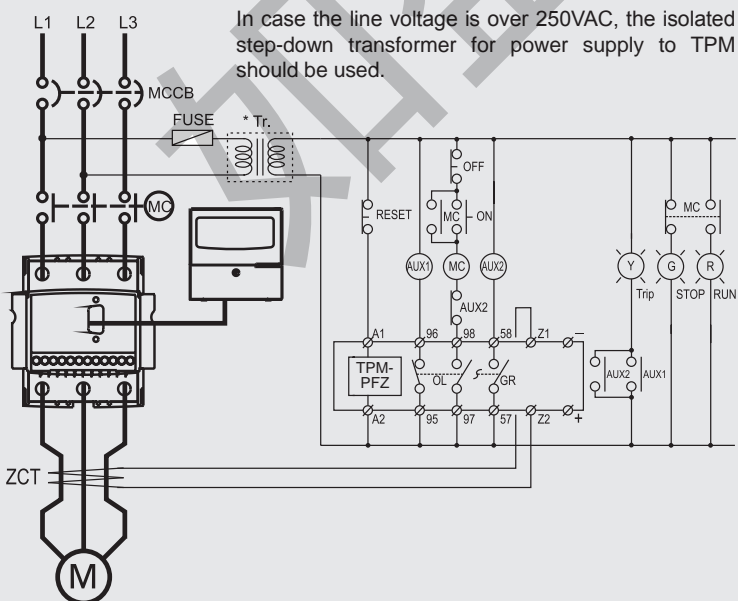
TPM-PFZ

Descripción

- MCU(Micro Controller Unit) based.
- Base module and control board separate.
- 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)
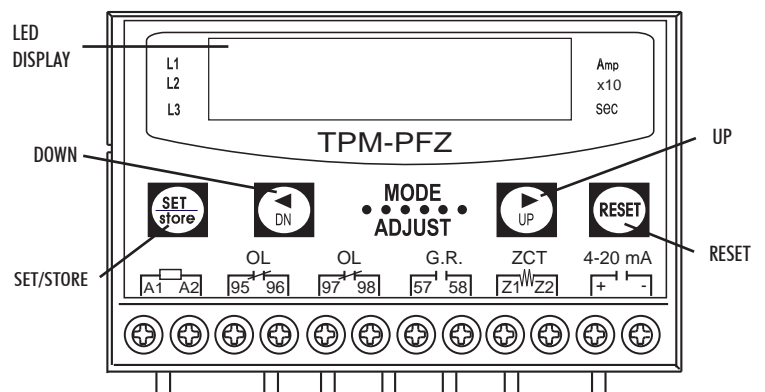- Wide room temperature range working.

I/O Terminals Configuration

85~250V	OL		GR	ZCT	4~20mA	
A1	A2	95	96	97	98	57	58	Z1	Z2	+	−

Typical Application Diagram

In case the line voltage is over 250VAC, the isolated step-down transformer for power supply to TPM should be used.

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	◀ DN ▶ UP	Search a mode to be adjusted by depressing UP/DN mode switch.
Set	SET store	Selected mode and setting value start flickering which means to be ready to accept setting as depressing once a Set/store button.
Adjust	◀ DN ▶ UP	Select a required setting value and/or characters by depressing continuously UP/DN mode switch until reaching what want to do.
Store	SET store	Store a selected value and/or characters by depressing once Set/store button. Instantaneously the flickering is stopped.
Reset	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

DISPLAY

TPM-PFZ
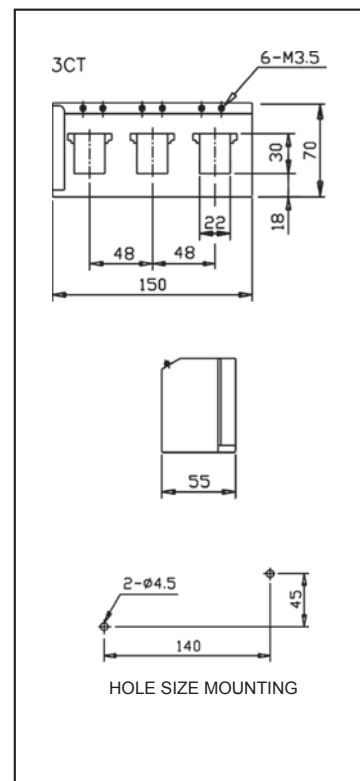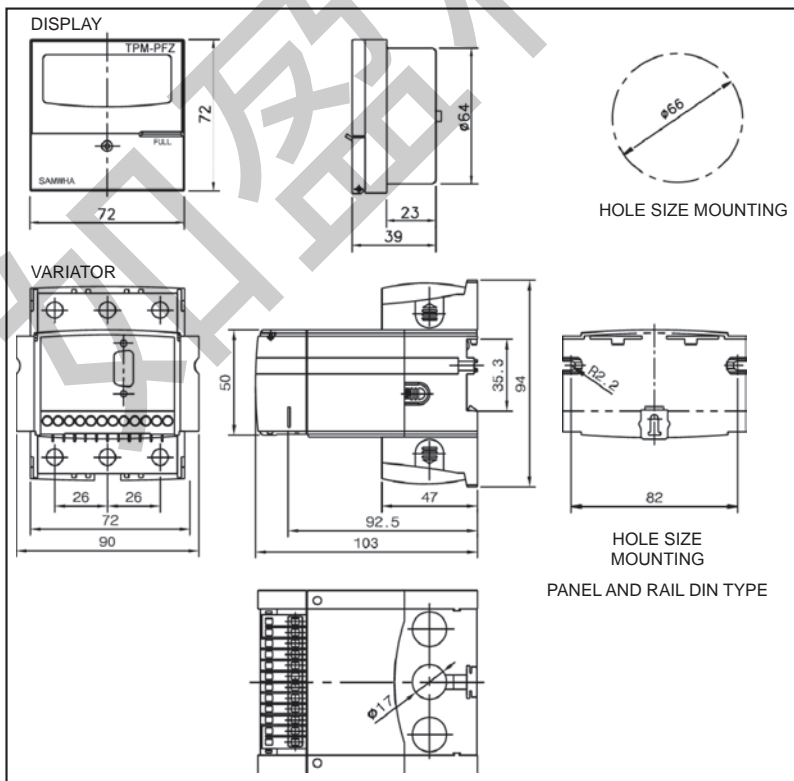PULL
SAMWHA

72

72

23
39

Ø64

Ø66

HOLE SIZE MOUNTING

VARIATOR

26 26
72
90

50

35.3
94

47
92.5
103

82

R2.2

HOLE SIZE MOUNTING

PANEL AND RAIL DIN TYPE

Ø17

3CT

6-M3.5

30 70

22 18

48 48
150

55

2-Ø4.5

45

140

HOLE SIZE MOUNTING

Table 1

Current set-ting range (A.)	Number of conduc-tors through CT	External CT Ratio	Setting of CT Ratio	Remark
0.5...60A	1	-	OFF (Mode:--)	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 set-ting range (A.)	Number of conduc-tors 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
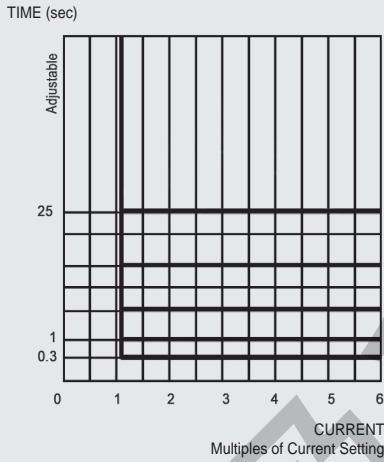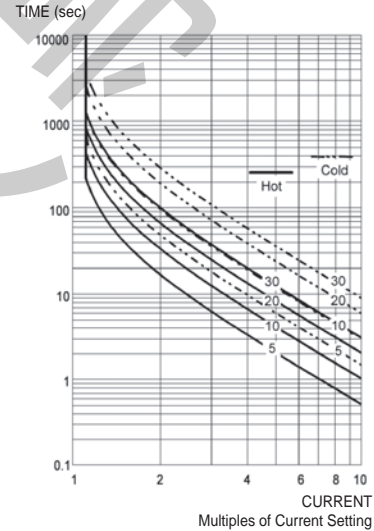

Table 2. OC adjustable time features

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
Uncerload	-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