

MOTOR PROTECTION RELAY

FEATURES

State of Art Microcontroller Based Design

4 Line 3 Digit ultra bright LED display

Site selectable CT ratio

True RMS measurement

Password Protection

Universal Aux. Supply

Bargraph Indication of Load current

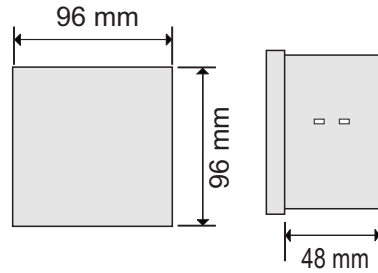
ALARM / TRIPS

- ✓ Under Voltage
- ✓ Over Voltage
- ✓ Voltage Assymetry / Unbalance
- ✓ Phase Loss
- ✓ Phase Reversal
- ✓ Under Current
- ✓ Over Current
- ✓ Current Phase Loss
- ✓ Current Imbalance
- ✓ Under Frequency
- ✓ Over Frequency
- ✓ Locked Rotor
- ✓ Rotor Earth Fault

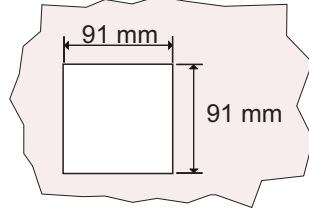
PARAMETERS

- ✓ Volts : R Y (Phase - Phase)
YB (Phase - Phase)
BR (Phase - Phase)
Average (Phase - Phase)
- RN (Phase - Neutral)
YN (Phase - Neutral)
BN (Phase - Neutral)
Average (Phase - Neutral)
- ✓ Amps : R Phase
Y Phase
B Phase
Average
- ✓ Frequency
- ✓ Run Hour
- ✓ Earth Fault current

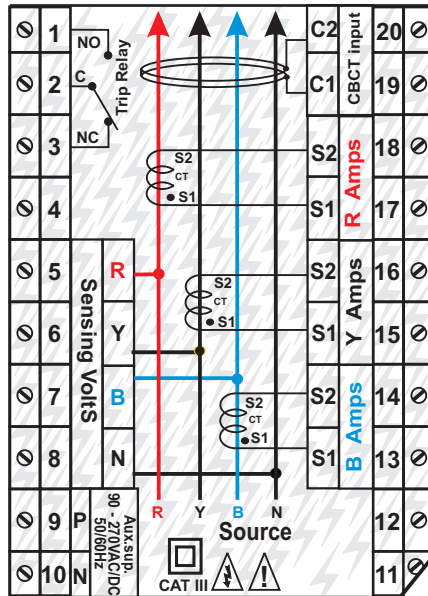
MECHANICAL DIMENTION



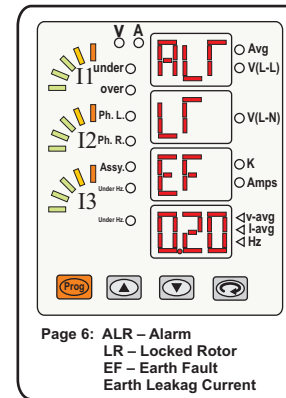
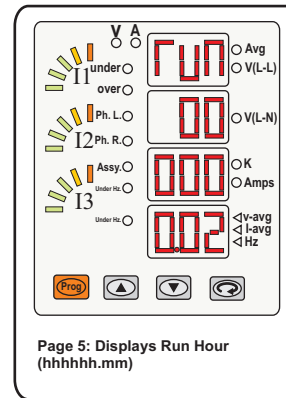
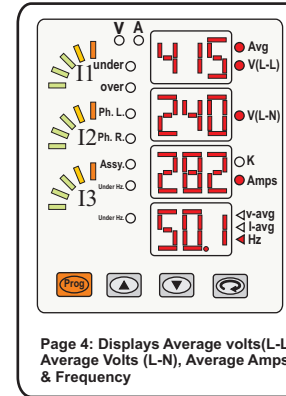
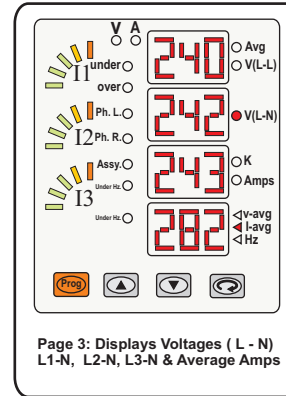
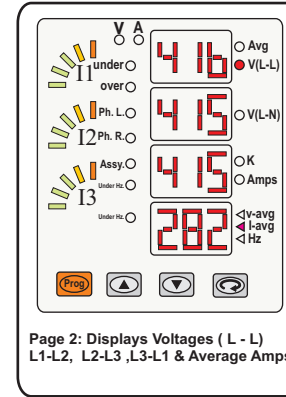
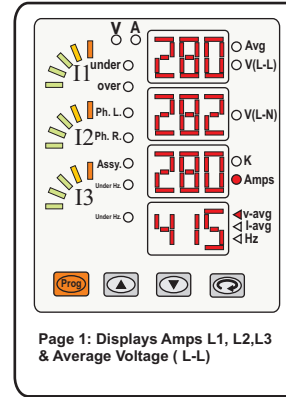
Panel Cutout



Electrical Wiring / Connection Diagram



DISPLAY PAGES



SPECIFICATIONS

- Input : 3 phase 4 wire
- Volts : Range 10 - 500VAC L-L
- Amps : 0.10 - 6.0 Amps
- Freq : Through R phase (Internally)
- Burden : 0.2 VA max. per input for Voltage & Current Signals
3 VA max. on Aux. Supply
- Aux. Supply : 90 - 270 VAC / DC, 50/60Hz
- Display : 4 Line x 3 Digit
{0.39 Inches 7 Segment LED Display}
- Accuracy : Class 1.0 for Volt / Ammeter
For Hz : 0.1 % of full scale
- Resolution : 0.01 for Frequency Meter
Amps: 0.1 < 100A
1.0 < 1000A
0.1KA > 1000A
- Relay : Normally Energised
- Computation : True RMS
- Frequency : 45 Hz - 65 Hz.
- Ambient : -10C to 55C
- Humidity : < 95 % Non-condensing
- Weight : 350gms
- Dimensions : 96 X 96 X 48 mm (L x W x D)
- Panel Cutout : (90^{+1.0})mm X (90^{+1.0})mm
- Mounting : Flush Mounting with side clamps.

TEST CERTIFICATE

Type : Motor Protection Relay

Accuracy : Class 1.0 for V & A ;
0.1% of FS for Hz

Accuracy TEST:

VOLTAGE		CURRENT		FREQUENCY
10%	100%	10%	100%	100%
+/- 1.0%	+/- 1.0%	+/- 1.0%	+/- 1.0%	+/- 0.10%
OK	OK	OK	OK	OK

Note:

A) For Digital Readouts the error is computed in counts.

- Class 1.0 = ±1% of Full Scale + 1 count
- Class 0.5 = ±0.5% of Full Scale + 1 count

Tested By.: Prathmesh

Date :

PROGRAMMING

1) Press key to enter Program Mode.

2) The Meter Shows Password Entry Page {ENT PASS 0000}.

Enter the Password using / Keys & Key to move to the next digit. After entering password press , if pass word is correct, unit will enter program mode.



3) Following Programming menus are available which can be accessed using / Keys.

Menu	Symbol	Description
1	CT PR1	To program CT Primary
2	ALF SET	To set various Alarm Parameters
3	ALF MOD	Alarm Reset Mode Auto / Manual
4	PON DLY	To set the Power ON Delay in Secs.
5	Ld DLY	Starting Delay for Motors to by-pass the starting surge current; setting in secs.
6	AUR DLY	Auto Reset Delay time in secs
7	PAS COD	To set new Password

Select the Menu to be edited using Keys and press Key to enter the respective menu.

Menu 1: (CT Primary)

when Key is pressed the display shows {CT Rat 0005}.

The Ct Primary can be programmed using Keys and as shift key. After entering desired value press to save value.



Menu 2: (To set the Various Alarms)

when Key is pressed the Following options are available.



Alarm	Symbol	Description
1	UNd VOL	Under Voltage Alarm
2	OVr VOL	Over Voltage Alarm
3	ASy VOL	Asymmetry Voltage Alarm
4	PHS FEU	Phase Sequence Alarm {can be enabled / disabled; delay is ?xed 500mSec.}
5	PHF VOL	Phase Failure Alarm (voltage) {set to 10% of L-N Voltage; delay is ?xed 500mSec.}
6	UNd CUR	Under Current Alarm
7	OVr CUR	Over Current Alarm
8	ASy CUR	Asymmetry Current Alarm
9	PHF CUR	Phase Failure Alarm (current) {The Trip Value is 150% of OL Value; Delay is ?xed 500mSec.}
10	UNd FRE	Under Frequency Alarm
11	OVr FRE	Over Frequency Alarm
12	ROt LOC	Lock Rotor Alarm {only trip value can be set 2.0 to 5.0 times of set OL value}
13	ELF FLt	Earth Fault Alarm {Earth Fault current of 0.50 - 10.0 Amps can be set}

Note for Alarm 6 & 7 :

For Under current the Set Value is calculated as below.

e.g. : CT Ratio 200/5

Under load setting required is 60 Amps.

set value = $60 \times (5/200) = 1.50$

For Over current the Set Value is calculated as below.

e.g. : CT Ratio 200/5

Overload setting required is 175 Amps.

set value = $175 \times (5/200) = 4.37$

ALARM 1,2,3,6,7,8,10,11 can be edited by

Pressing Key. Once you enter the particular Alarm the following Parameters can be set using the Keys.

1	USE OFF	To Enable / Disable the alarm using Key & Press Key to store and Proceed further.
2	TRP VAL	The desired Tripvalue can be set by using Key & Press Key to store and Proceed further. Value is displayed on 4th Line
3	TRP HYS	The desired Hysteresisvalue can be set by using Key in % of the Set Point .
4	dLY 0050	The desired Delay value can be set by using Key & Press Key to store and Proceed further.

Menu 3: (To set the Alarm RESET Mode)

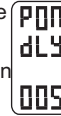
To set the Alarm Reset Mode Press Key the display shows AUT / MAN mode. Using by Auto / Manual RESET mode can be set.



For Manual Reset mode Key acts as Reset button. Pressing the Key when all Faults have cleared with reset fault LEDs and Output Relay will turn ON {normally energised in healthy conditions}

Menu 4: (To set Power ON Delay)

To set the Power ON Delay Press Key the display shows PON DLY / 005. Using key the Desired value can be edited (time in Secs.)

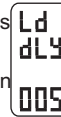


At power ON the output relay will energise after the delay time set has lapsed.

The output relay is in Normally energised condition in Healthy status (when no faults are present).

Menu 5: (To set Starting Delay)

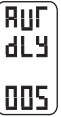
To set Starting time for the motors in secs Press Key the display shows Ld DLY / 005. Using key the Desired value can be edited .



When the current increases from 0 - 50% full scale to bypass the motor starting surge current, the delay time can be set. All faults will be by passed for the time period set.

Menu 6: (To set Auto Rest Time Delay)

To set the Auto Reset time Delay in secs Press Key the display shows AUR DLY/005. Using key the Desired value can be edited .



In case of Auto reset mode - Auto Reset delay can be programmed. when all the faults are cleared the output relay will energise after Auto Reset time has expired. This delay can be set for Auto mode only.

Menu 7: (To set PASSWORD)

To set the PASSWORD Press Key the display shows PAS COD-0000



The new password can be set using key . Press Key to store the password.