



FEATURES

- Over voltage, Under voltage, Phase Asymmetry, Phase sequence, Phase failure monitoring in 3Ø system.
- True RMS Measurement.
- Trip Time Delay, Recovery time Delay, Power ON Delay.
- Adjustable switching Hysteresis.
- One relay with two change over.

SPECIFICATIONS

DISPLAY : 3 Digits, LCD with Backlight (optional)
ELECTRICAL CONNECTIONS : 1Ø 2 wire, 3Ø 4 wire
AUXILIARY SUPPLY : Self Powered
OPERATING RANGE : 127-288V AC(L-N)
FREQUENCY RANGE : 48-63Hz
VA RATING : 5VA max.

TRIP SETTINGS

Under Voltage : 127-219V AC(L-N)
 [For 1Ø2 wire/ 3Ø4 wire]
Over Voltage : 242-288V AC(L-N)
 [For 1Ø 2 wire / 3Ø 4 wire]
Phase Asymmetry : 5-30%
 [Only in case of 3Ø 4 wire]

TIME SETTING:

Power ON Delay : 0.5 – 300sec.
Trip Time Delay : 0 – 300sec.
Recovery Time : 0 – 300sec.
Response Time
 Under Voltage : < 150ms
 Over Voltage : < 150ms
 Phase Asymmetry : < 150ms [Only 3Ø 4 wire]
 Phase loss : < 200ms [Only 3Ø 4 wire]
 Phase sequence : < 300ms [Only 3Ø 4 wire]

Hysteresis

Voltage : 1 – 99.9V
Asymmetry : 2 – 20%[Only 3Ø 4 wire]

Resolution

Voltage : 1V

ACCURACY

Voltage : ± 1% of reference value ± 2digits
Time : ± 5% of setting ±150ms
 (Trip Time, Recovery Time, Power ON Delay)

OUTPUT SPECIFICATIONS

Relays : 2C/O (DPDT)

RELAY RATING

: NO (5A, 250V AC / 28V DC)
 NC (5A, 250V AC / 28V DC)

LED INDICATIONS

LED 1 (Green) : Power On
 (only for product without backlight)
 LED 2 (Red) : Relay (Glows continuously after Trip)

ENVIRONMENTAL SPECIFICATIONS

- Indoor use
- Altitude of up to 2000meters
- Pollution degree 2
- Temperature : Operating : -10°C to +55°C
 Storage : -25°C to +70°C
- Humidity : Up to 95% RH, non-condensing
- Weight : 112gms

SAFETY PRECAUTIONS

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment.

If there is physical damage to the unit then do not use it. Read complete instructions prior to installation and operation of the unit.

WIRING GUIDELINES

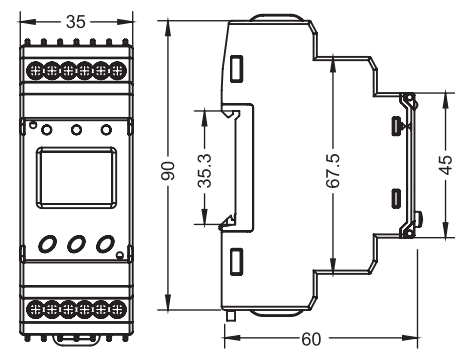
WARNING

1. To prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement.
2. Wiring shall be done strictly according to the terminal layout with shortest connections. Confirm that all connections are correct.

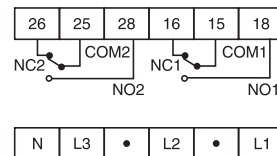
CAUTION

To ensure the safe operation of unit, check the wiring and connections.

DIMENSIONS (All dimensions in mm)



TERMINAL CONNECTIONS



Fuse Protection on each Phase : 0.5A

LED INDICATION CHART

| Various Conditions | Power LED | ' R ' LED |
|--------------------|-----------|-----------|
| No fault | ON | OFF |
| Relay Trip | ON | ON |

CONFIGURATION MENU

Press ▲ + ▼ for 3sec. to enter or exit configuration menu.

MAIN MENU

Network selection: **NWK**

Relay Settings: **RLY**

Time Setting for Relay: **EMR**

Hysteresis: **HYS**

Password: **PW**

Factory set: **RSt**

SUB MENU

Press ▲ Key to go to Relay 1 setting (RL1) from network selection (NWK)
 Press ▼ Key to go to network selection (NWK) from Relay 1 setting (RL1)

Over voltage: **OV** Set Over Voltage: **SOV** Under voltage: **UV** Set under voltage: **SUV** Asymmetry: **AS**

Phase Asymmetry Setting: **PAS** Phase sequence: **PS9** Phase failure: **PFL** MOD: **MOD** Latch: **LCH**

Trip time delay: **TRP** Recovery time: **REC** Power ON delay: **PON**

Voltage Hysteresis: **VLE** Asymmetry Hysteresis: **ASY** (For 3 Phase Only)

Password Enable / Disable: **PW** Set password: **SPW**

Factory set Yes / No: **RSt**

TO SCROLL THROUGH MAIN MENU PRESS ▲ OR ▼ KEYS

SUB MENU

Network Selection (NWK) Press ▲ to enter sub menu from main menu

Press ▲ or ▼ to scroll through sub menu Press ● + ▲ or ● + ▼ to change parameter value

| DISPLAY (For 1sec) | DESCRIPTION | DEFAULT VALUE | RANGE | CONDITION |
|--------------------|-------------------|---------------|-----------|-----------|
| NWK | Network selection | 3P4 | 1P2 / 3P4 | |

Relay (RLY) settings Press ▲ to enter sub menu from main menu

Press ▲ or ▼ to scroll through sub menu Press ● + ▲ or ● + ▼ to change parameter value

| DISPLAY (For 2 sec) | DESCRIPTION | DEFAULT VALUE | RANGE | CONDITION |
|---------------------|-------------------|---------------|------------|--|
| OV | Over voltage | ON | ON / OFF | |
| SOV | Set Over Voltage | 264 | 242 - 288V | This option will be prompted only when OV protection is ON |
| UV | Under voltage | OFF | ON / OFF | |
| SUV | Set under voltage | 184 | 127 - 219V | This option will be prompted only when UV protection is ON |

| DISPLAY (For 2 sec) | DESCRIPTION | DEFAULT VALUE | RANGE | CONDITION |
|---------------------|-------------------------|---------------------|-------------|---|
| AS | Asymmetry | ON ^{As} | ON / OFF | This option will be prompted only when NWK is 3P4W |
| PAS | Phase Asymmetry Setting | 100 ^{V As} | 5.0 - 30.0% | This option will be prompted only when AS protection is ON |
| PSQ | Phase sequence | ON | ON / OFF | This option will be prompted only when NWK is 3P4W |
| PFL | Phase failure | ON | ON / OFF | This option will be prompted only when NWK is 3P4W |
| MOD | MOD | ON | ON / OFF | ON : NC (During Trip) OFF: NO (During Trip) |
| LCH | Latch | OFF | ON / OFF | If Latch is ON, user has to reset the unit manually when fault is removed |

Time Setting for Relay (TMR)

Press ▲ to enter sub menu from main menu

Press ▲ or ▼ to scroll through sub menu

Press ● + ▲ or ● + ▼ to change parameter value

| DISPLAY (For 2 sec) | DESCRIPTION | DEFAULT VALUE | RANGE | CONDITION |
|---------------------|-----------------|--------------------|------------|---|
| TRP | Trip time delay | 10 ^s | 0.0 - 300s | 0.0 - 9.9 (step of 0.1s) 10 - 99 (step of 1s) 100 - 300 (step of 10s) |
| REC | Recovery time | 0.5 ^s | 0.0 - 300s | 0.0 - 9.9 (step of 0.1s) 10 - 99 (step of 1s) 100 - 300 (step of 10s) |
| P.ON | Power ON delay | 0.5 ^{10s} | 0.5 - 300s | 0.5 - 9.9 (step of 0.1s) 10 - 99 (step of 1s) 100 - 300 (step of 10s) |

Hysteresis (HYS)

Press ▲ to enter sub menu from main menu

Press ▲ or ▼ to scroll through sub menu

Press ● + ▲ or ● + ▼ to change parameter value

| DISPLAY (For 2 sec) | DESCRIPTION | DEFAULT VALUE | RANGE | CONDITION |
|---------------------|--------------------------|------------------------|-------------|--|
| VLT | Hysteresis for voltage | 10 ^{V H} | 1.0 - 99.9V | |
| ASY | Hysteresis for Asymmetry | 20 ^{V As H %} | 2 - 20% | This option will be prompted only when NWK is 3P4W |

Password (PW)

Press ▲ to enter sub menu from main menu

Press ▲ or ▼ to scroll through sub menu

Press ● + ▲ or ● + ▼ to change parameter value

| DISPLAY (For 2 sec) | DESCRIPTION | DEFAULT VALUE | RANGE | CONDITION |
|---------------------|--------------|---------------|-----------|---|
| PW | Password | dl 5 | ENB / DIS | Enable / Disable password protection |
| SPW | Set password | 0 | 0-999 | Will be prompted only when Password protection is enabled |

NOTE : PW will be asked when the user enter the config. menu if PW protection is enabled in the config menu and the user has to enter the password which he has set in the S.PW (set password) option.

Factory set (RST)

Press ▲ to enter sub menu from main menu

Press ▲ or ▼ to scroll through sub menu

Press ● + ▲ or ● + ▼ to change parameter value

| DISPLAY (For 2 sec) | DESCRIPTION | DEFAULT VALUE | RANGE | CONDITION |
|---------------------|---------------------|---------------|----------|-----------|
| RST | Reset (Factory set) | NO | YES / NO | |

TRIP VALUE SETTING (Online)

Press ▲ key for 3 sec. to enter or exit Trip Value Setting menu :

Press ▲ or ▼ to scroll through main menu

Press ● + ▲ or ● + ▼ to change parameter value

| DISPLAY (For 1sec) | DESCRIPTION | DEFAULT VALUE | RANGE | CONDITION |
|--------------------|-----------------------------|----------------------|---|--|
| LCK | LOCK | YES | YES / NO | This option will be prompted first when the user enters the trip setting menu. User has to set NO after which he can access the trip setting menu. |
| 5.0V | Set over voltage for Relay | 264 ^{>V} | 242 - 288V AC(L-N) | |
| 5.0V | Set under voltage for Relay | 184 ^{<V} | 127 - 219V AC(L-N) | |
| TRP | Trip time delay for Relay | 10 ^s | 0.0 - 300s | |
| LCK | LOCK | NO | YES / NO, (In this option if YES is selected by the user, then whenever the user enters the Trip Value Setting, initially LOCK option will be prompted. The user will have to set NO after which he can access the trip setting menu. If the user wants to disable LOCK option, he can set NO when LOCK option is prompted after TRP option.) | |

NOTE : If Values are changed, the same setting in config. menu will also changed and vice versa.

ONLINE KEYS

Individual parameters can be viewed with every press of ▼ keys.

| PARAMETER | SYMBOL |
|--------------------|----------|
| * Average Voltage | L1 L2 L3 |
| Voltage (L1-phase) | L1 |
| Voltage (L2-phase) | L2 |
| Voltage (L3-phase) | L3 |
| Phase Asymmetry | As % |

* **Default Page :** This page is displayed after 3 sec. from other online page.
For 3P4W system average of L-N voltages is shown.
For 1P2W system L1-N voltage is shown.

TRIP INDICATION

Trip Indication on press of ▲ key : Trip value will be displayed till the key is pressed.

RESET

Press ● key for 3sec. to reset manually (Applicable only if Latch is ON)

Master Password : 753

In Trip value setting & configuration menu, if no key pressed for 30 sec. then unit resumes online mode.

(Specifications subject to change as development is a continuous process.)

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