



MRM **PROCOM**® Pvt. Ltd.



Voltage Monitoring & Protection Relay Series

Introduction :

Micro-controller based design to monitor and protect from Unhealthy supply/line voltage (eg. Under/Over/Unbalance Voltage / Reverse Phase Sequence / Phase Loss/Under Frequency/Over Frequency/Neutral Loss)

Features :

- True RMS measurement.
- 3PH-3W / 3PH-4W systems selectable.
- Micro-controller based design with SMD technology
- No auxiliary required (self powered).
- Programmable auto & manual reset.
- Programmable fail safe & non fail safe mode.
- Adjustable on time delay & off time delay
- LED indication for all faults.
- DPDT relay. SPDT relay (5a resistive contacts)
- Din rail mounting (35 mm)
- Terminations - screw type
- All Protections can be individually Enabled/Disabled.

Specifications :

Voltage	: 240±35%(L-N)/415±35%(L-L)
Frequency	: 40 to 70 Hz
Power Consumption	: 8VA/Phase
Setting Accuracy	: ±5% of setting
Hysteresis	: 3%
Relay Output:	
Contact Arrangement	: 1C/O or 2C/O
Contact Rating	: 5A Res. @ 250 VAC / 30 VDC
Contact Material	: Ag Alloy
Mechanical Life Expectancy	: 3 x 10 ⁶ Operations
Operating Temperature	: -20°C to +70°C
Storage Temperature	: -25°C to +80°C
Pollution Degree	: 2
Degree of Protection	: IP-20 for Terminals, IP-40 for Housing
Mounting	: Din Rail
Dimensions in mm(WXHXD)	: 37 x 65 x 92 (mm)
Weight	: 130 gm

Parameter Settings:

Name	Parameter	Type	Range	Default
Sys	System Configuration	-	3P 3W 3P 4W	3P 4W
OPr	Operating Mode	-	Non Fail Safe Fail Safe	Fail Safe
OV	Over Voltage	-	Enable/Disable	Enable
		3P-3W	420-520V	470V
		3P-4W	245-315V	260V
UV	Under Voltage	-	Enable/Disable	Enable
		3P-3W	260-410V	340V
		3P-4W	150-235V	200V
HYS	Hysteresis	-	1-10 %	3%
UNB	Unbalance	-	Enable/Disable	Enable
		-	4-20 %	10%
OF	Over Frequency	-	Enable/Disable	Enable
		-	48.0 – 60.0 Hz	51.0
UF	Under Frequency	-	Enable/Disable	Enable
		-	45.0 – 52.0 Hz	49.0
PHS	Phase Sequence	-	Disable /Enable	Enable
TRP	Trip Delay	-	1-999 Sec	5 Sec
RST	Reset Delay	-	1-999 Sec	5 Sec
PHL	Phase Loss	-	Disable /Enable	Enable
RST	Reset Mode	-	Manual Mode Auto Mode	Auto Mode

Model Specification:

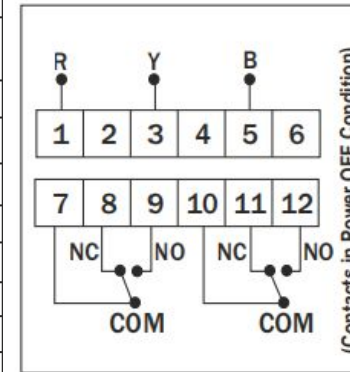
Model	Available Protection	No. of Relay Contact
VMPD-VUF-01	UV, OV, UNB, UF, OF, PHL, PHS	1
VMPD-VUF-02	UV, OV, UNB, UF, OF, PHL, PHS	2
VMPD-VU-01	UV, OV, UNB, PHL, PHS	1
VMPD-VU-02	UV, OV, UNB, PHL, PHS	2
VMPD-V-01	PHL, PHS	1
VMPD-V-02	PHL, PHS	2

Key Functions:

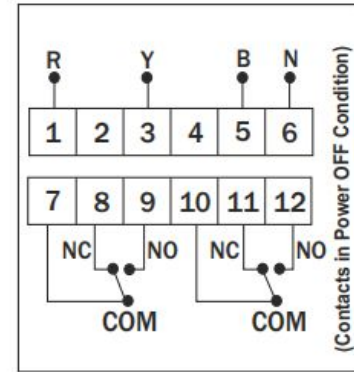
KEY	In Edit Mode	In Measurement Mode
^ Increment	Increment the value selected	In manual mode, relay operate
v Decrement	Decrement the value selected	-
> Next	Scrolling to the next edit parameter	Scrolling to the next measurement parameter

Connection Diagram :

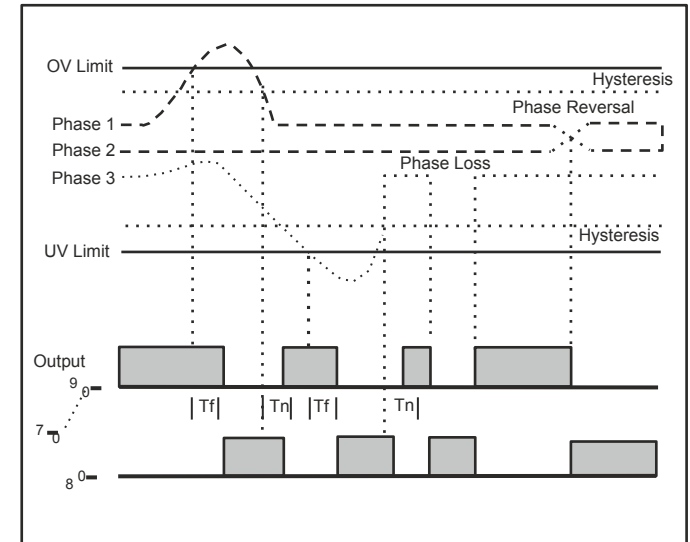
Connection Diagram
3 Phase 3 Wire Connection



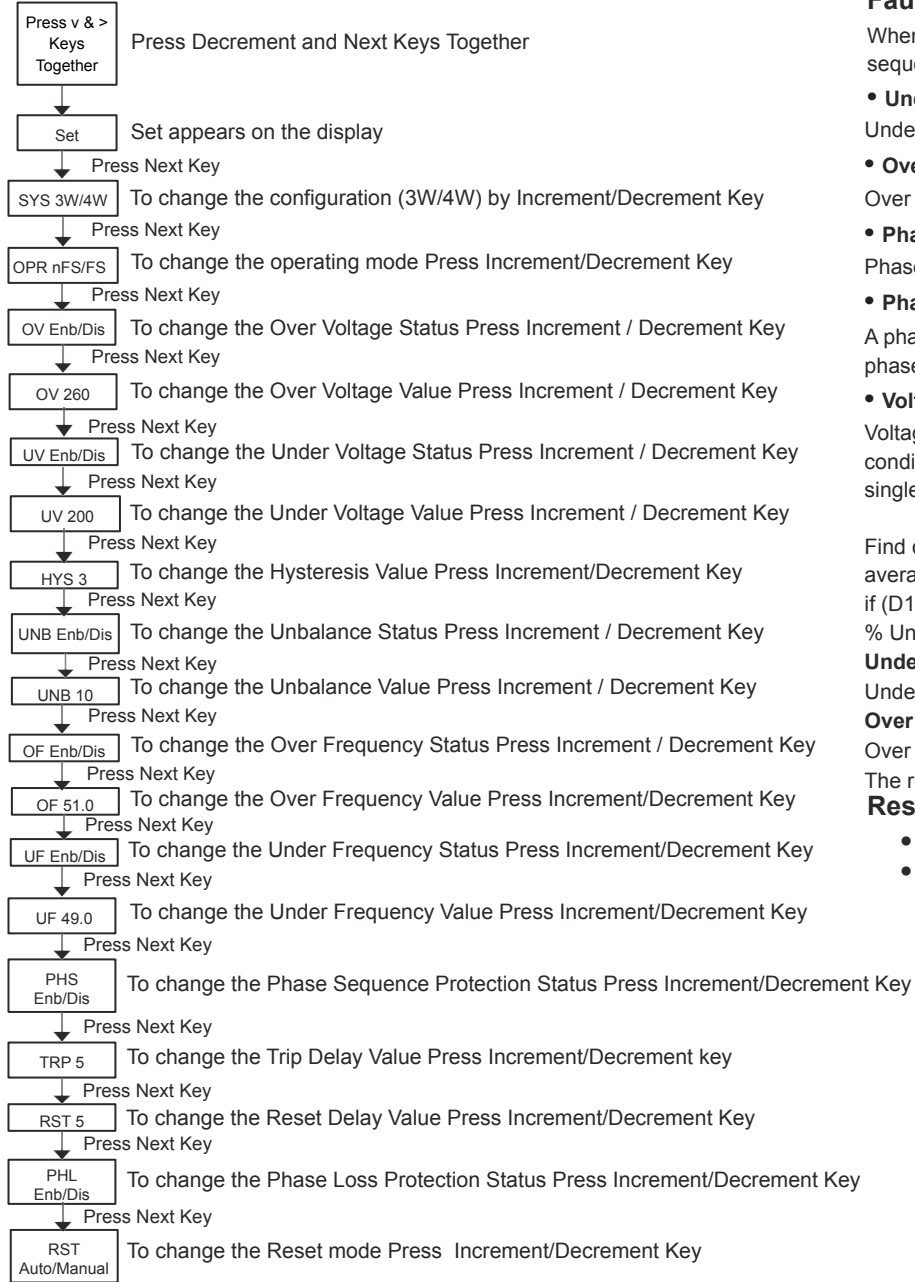
Connection Diagram
3 Phase 4 Wire Connection



Function Diagram :



Edit Mode Configuration:



Caution :

1. Do not touch the terminal area while the power is turned ON.
2. Before installation, check to ensure that specifications agree with intended application.

Fault Detection :

When Power is applied, the relay energizes after the defined On Delay Time, provided all three phases are balanced and in the correct sequence. The relay will de-energise when any one of the following faults occur: -

• Under Voltage

Under Voltage is a condition in which voltage is lower than the level set.

• Over Voltage

Over Voltage is a condition in which voltage is upper than the level set.

• Phase Loss (Single Phase Prevention).

Phase Loss is the total loss of one of the three phases.

• Phase Sequence/Phase Reversal.

A phase reversal problem occurs when the supply phase is reversed due to wrong connection (except than RYB) or on reversing any of the phase of the three phases in power distribution systems.

• Voltage Unbalance or Excessive phase angle error.

Voltage unbalance takes place when the magnitudes of phase or line voltages are different and the phase angles differ from the balanced conditions, or both. Voltage unbalance is defined as the largest difference between the average RMS voltage and the RMS value of any single voltage phase divided by the average RMS voltage, usually expressed as a percentage.

Find out max line voltage (L-N in 4W) or (L-L in 3W), min line voltage and average line $D1 = \text{max line voltage} - \text{average line voltage}$ & $D2 = \text{average line voltage} - \text{min line voltage}$. % Unbalance calculation :

if $(D1 > D2)$ then $D = D1$ otherwise $D = D2$

% Unbalance = $(D / \text{Average}) \times 100$.

Under Frequency

Under Frequency is a condition in which frequency is lower than the level set.

Over Frequency

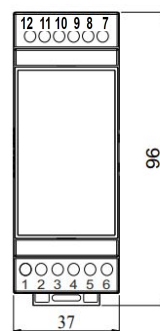
Over Frequency is a condition in which frequency is upper than the level set.

The relay will energize again when proper power supply conditions are established.

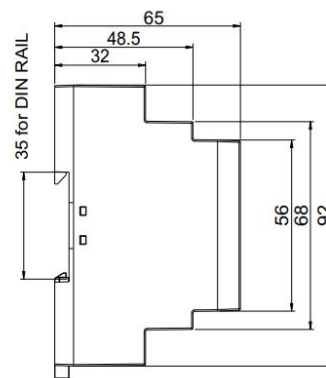
Reset Fault :

- In auto mode, fault automatically reset, once fault is no longer present and "Reset Delay" seconds have expired.
- In manual mode, fault is reset by manually pressing increment key after fault is no longer present.

Dimensions :



Front View



Side View

Application / Protection :

- Under Voltage
- Over Voltage
- Voltage Unbalance
- Under Frequency
- Over Frequency
- Phase Loss
- Reverse Phase Sequence
- Neutral loss (Available in 4W configuration)



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