

Voltage Monitoring Relay : 3 Phase 3 Wire

Model		VMR31A0	VMR31A1	VMR31A2	VMR31A3	VMR31M4	VMR38A0	VMR39A0	
Trip Setting	Over Voltage	420-520 V	420-520 V	420-520 V	420-520 V	420-520 V	x	420-520 V	
	Under Voltage	285-410 V	285-410 V	285-410 V	285-410 V	285-410 V	285-410 V	x	
Time Delay	Trip Delay	0.2-10 Sec	5 Sec	5 Sec	0.2-10 Sec	0.2-10 Sec	0.2-10 Sec	0.2-10 Sec	
	Reset Delay	5 Sec	0.2-10 Sec	5 Sec	0.2-10 Sec	Manual Reset	5 Sec	5 Sec	
	Phase Failure Delay	Less than 1 Sec							
	Power on Delay	5 Sec	0.2-10 Sec	5 Sec	0.2-10 Sec	1 Sec	5 Sec	5 Sec	
Indication	Mains(Continuous On)	Power On							
	OV (Continuous On)						Over Voltage	x	Over Voltage
	UV (Continuous On)						Under Voltage		x
	All LED Off	Phase Failure							

Voltage Monitoring Relay : 3 Phase 4 Wire

Model		VMR41A0	VMR41A1	VMR41A2	VMR41A3	VMR41M4	VMR48A0	VMR49A0	
Trip Setting	Over Voltage	245-315 V	245-315 V	245-315 V	245-315 V	245-315 V	x	245-315 V	
	Under Voltage	165-235 V	165-235 V	165-235 V	165-235 V	165-235 V	165-235 V	x	
Time Delay	Trip Delay	0.2-10 Sec	5 Sec	5 Sec	0.2-10 Sec	0.2-10 Sec	0.2-10 Sec	0.2-10 Sec	
	Reset Delay	5 Sec	0.2-10 Sec	5 Sec	0.2-10 Sec	Manual Reset	5 Sec	5 Sec	
	Phase Failure Delay	Less than 1 Sec							
	Power on Delay	5 Sec	0.2-10 Sec	5 Sec	0.2-10 Sec	1 Sec	5 Sec	5 Sec	
Indication	Mains(Continuous On)	Power On							
	OV (Continuous On)						Over Voltage	x	Over Voltage
	UV (Continuous On)						Under Voltage		x
	All LED Off	Phase Failure							

Single Phase, Phase Reversal, Unbalance Protection Relay 3 Phase 3 Wire

Model		VMP32A2	VMP34A3	VMP36A2	VMP37A2
Trip Setting	Voltage Unbalance	N/A	4-20%	10%	15%
Time Delay	Trip & Reset Delay Ub	x	0.2-10 Sec	5 Sec	5 Sec
	Trip Delay PR	Less than 100 msec			
	Trip Delay Ph. Fail	Less than 1 Sec			
	Power On Delay	1 Sec	0.2-10 Sec	5 Sec	5 Sec
	Reset Delay Ph. Fail	1 Sec	0.2-10 Sec	5 Sec	5 Sec
Indication	Mains(Continuous On)	Power On			
	UB/PR	Blinks: Phase Reverse, Continuous On: Unbalance Voltage			
	All LED Off	Phase Failure(SPP)			

Single Phase, Phase Reversal, Unbalance Protection Relay 3 Phase 4 Wire

Model		VMP42A2	VMP44A3	VMP46A2	VMP47A2
Trip Setting	Voltage Unbalance	N/A	4-20%	10%	15%
Time Delay	Trip & Reset Delay Ub	x	0.2-10 Sec	5 Sec	5 Sec
	Trip Delay PR	Less than 100 msec			
	Trip Delay Ph. Fail	Less than 1 Sec			
	Power On Delay	1 Sec	0.2-10 Sec	5 Sec	5 Sec
	Reset Delay Ph. Fail	1 Sec	0.2-10 Sec	5 Sec	5 Sec
Indication	Mains(Continuous On)	Power On			
	UB/PR	Blinks: Phase Reverse, Continuous On: Unbalance Voltage			
	All LED Off	Phase Failure(SPP)			

Specifications :

Voltage	: 240±35% / 415±35%
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 / 30VDC
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

Application / Protection :

- Under Voltage
- Over Voltage
- Single Phasing, Phase Loss Protection
- Reverse Phase Sequence

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.



MRM PROCOM® Pvt. Ltd.



Voltage Monitoring & Protection Relay Series

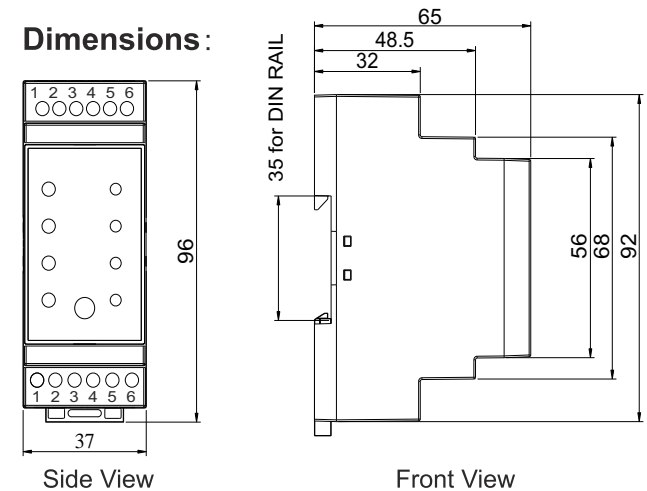
Introduction :

Micro-controller based design to monitor and protect from Unhealthy supply/line voltage (eg. under/over / unbalance Voltage / reverse phase sequence / single phasing)

Features :

- true RMS measurement.
- 3PH-3W / 3PH-4W systems.
- 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

Dimensions :



Functional Description :

- VMR31A0, VMR31A1, VMR31A2, VMR31A3, VMR31M4
VMR41A0, VMR41A1, VMR41A2, VMR41A3, VMR41M4

The above VMR Series continuously measures the voltage of each of the three phases using a micro-controller circuit design that senses and provides the following protection schemes for the mentioned models: -

- Under Voltage Protection.
- Over Voltage Protection.
- Phase Loss (Single Phase Prevention).

- VMR38A0
VMR48A0

The above VMR Series continuously measures the voltage of each of the three phases using a micro-controller circuit design that senses and provides the following protection schemes for the above mentioned models: -

- Under Voltage Protection.
- Phase Loss (Single Phase Prevention).

- VMR39A0
VMR49A0

The above VMR Series continuously measures the voltage of each of the three phases using a micro-controller circuit design that senses and provides the following protection schemes for the above mentioned models: -

- Over Voltage Protection.
- Phase Loss (Single Phase Prevention).

- VMP33A0, VMP33A1, VMP33A2, VMP33M4, VMP35A0, VMP35A1,
VMP35A2, VMP43A0, VMP43A1, VMP43A2, VMP43M4, VMP45A0,
VMP45A1, VMP45A2

The above VMP Series continuously measures the voltage of each of the three phases using a micro-controller circuit design that senses and provides the following protection schemes for the mentioned models: -

- Under Voltage Protection.
- Over Voltage Protection.
- Phase Unbalance Protection.
- Phase Sequence/Phase Reversal.
- Phase Loss (Single Phase Prevention).

- VMP34A3, VMP36A2, VMP37A2, VMP44A3, VMP46A2, VMP47A2

The above VMP Series continuously measures the voltage of each of the three phases using a micro-controller circuit design that senses and provides the following protection schemes for the mentioned models: -

- Phase Unbalance Protection.
- Phase Sequence/Phase Reversal.
- Phase Loss (Single Phase Prevention).

- VMP32A2
VMP42A2

The above VMP Series continuously measures the voltage of each of the three phases using a micro-controller circuit design that senses and

provides the following protection schemes for the mentioned models: -

- Phase Sequence/Phase Reversal.
- Phase Loss (Single Phase Prevention).

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 by the preset.
- **Over Voltage**
Over Voltage is a condition in which voltage is upper than the level set by the preset.
- **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.

$$\frac{\text{Maximum Deviation from Average Voltage}}{\text{Average voltage}} \times 100 \quad \%$$

Example:

Measured voltages:

241 Volts

243 Volts

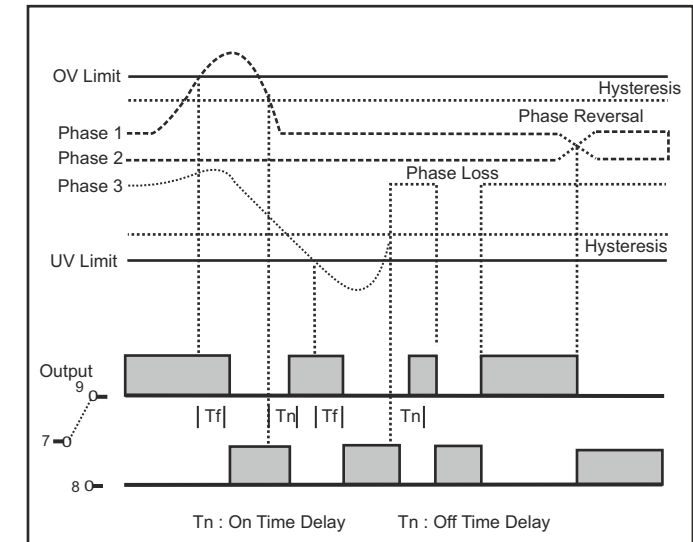
233 Volts

$$\text{Average Voltage} = 239$$

$$\frac{6}{239} \times 100 = 2.5\% \quad \text{Voltage Unbalance}$$

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

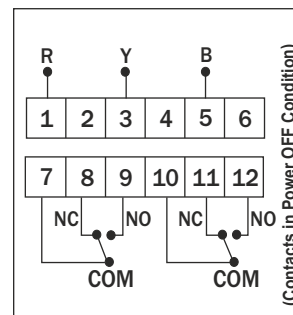
Function Diagram :



Connection Diagram :

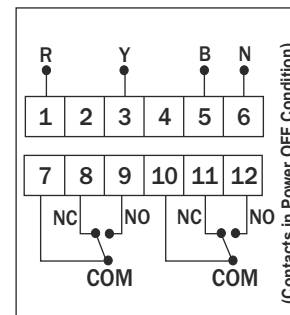
Connection Diagram

3 Phase 3 Wire Connection



Connection Diagram

3 Phase 4 Wire Connection



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