

INSTALLATION INSTRUCTION MANUAL UNDER / OVER VOLTAGE, PHASE FAILURE & VOLTAGE MONITORING RELAY



**D2 VMR1(3Ø - 3 W)
D2 VMR2(3Ø - 4 W)**



D2 VMR1 / D2 VMR2 is operating on IEEE/NEMA standard method for unbalance detection.

- It offers protection against :
- Unbalanced voltage condition.
 - Phase failure condition.
 - Phase sequence reversal condition.
 - Under voltage condition.
 - Over voltage condition.
 - Neutral Fail (For D2VMR2 Only).

D2 VMR1 and D2 VMR2 is an auxiliary relay and it should be used along with the starter only.

The effective working of the unit will depend on efficient working of the starter. Before installing unit check whether the starter is operating perfectly by starting with the "ON" push button and switching off by "OFF" push button. If the operation of "START" and "STOP" are imperfect the starter needs to be serviced.

Do not install unit with faulty starter.

TRIP SETTING, TRIP DELAY AND RESETTING

D2 VMR1 and D2 VMR2 is factory set to trip the starter as per Table 1.

MOUNTING

D2 VMR1 and D2 VMR2 can be Rail mounted or Panel mounted.

CAUTION

1. Ensure that D2 VMR1 and D2 VMR2 is -

- * Not installed near any heat sources like burner, sunlight, electric arc etc.
- * Not subjected to abnormal vibrations.
- * Installed as near to starter as possible.
- * Not subjected to direct heat, sunlight, rain, stormy wind and dust.

2. Working of the products is affected by frequency variations and Harmonic distortion in applications like GenSet Supply or UPS Supply. Ensure that percentage (%) unbalance Supply is not beyond the set percentage (%) unbalance of unit.

Do all connections in Power Off condition.

Connect L1, L2, L3 phase at terminal no. 1,2, and 3 (N at terminal no. 4 for D2 VMR2). The output relay contacts 13, 14 & 16, 17 are to be connected in series with no-volt coil of the starter. In case of Auto switching type circuits or for mains monitoring functions, L1, L2, L3, sensing should be taken from incoming side of starter / main contactor.

Note :

Three phase under/over voltage sensing is from L1, L2, L3 sensing points (N for D2 VMR2). The under voltage, over voltage, unbalance & trip delay settings are variable in D2 VMR1 and D2 VMR2 which you may set according to your requirement.

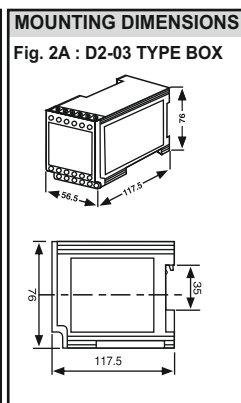
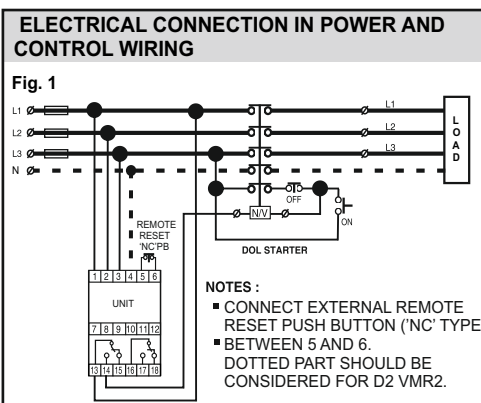
ELECTRICAL CONNECTIONS OF D2 VMR1 & D2 VMR2

See Fig.3A & 3B for terminal connection details. See Fig. 1 for installation of the unit in the power and control wiring.

Table 1 : TRIP SETTINGS

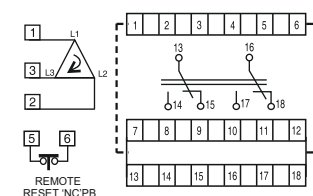
Parameters	Unbalance between any two phases	Under voltage	Over voltage
Cut off at	4 % to 20 % \pm 5 % Of Full Scale [Variable]	FOR D2 VMR1 - [Variable] 285 - 425 VAC FOR 380 - 440 VAC 165 - 225 VAC FOR 220 - 240 VAC 75 - 115 VAC FOR 100 - 120 VAC	FOR D2 VMR1 - [Variable] 400 - 520 VAC FOR 380 - 440 VAC 230 - 290 VAC FOR 220 - 240 VAC 105 - 145 VAC FOR 100 - 120 VAC
		FOR D2 VMR2 - [Variable] 165 - 245 VAC FOR 380 - 440 VAC 95 - 135 VAC FOR 220 - 240 VAC 45 - 65 VAC FOR 100 - 120 VAC	FOR D2 VMR2 - [Variable] 230 - 310 VAC FOR 380 - 440 VAC 130 - 170 VAC FOR 220 - 240 VAC 60 - 80 VAC FOR 100 - 120 VAC
Trip time delay	1 to 10 sec. \pm 5 % Of Full Scale [Variable]	1 to 10 sec. \pm 5 % Of Full Scale [Variable]	1 to 10 sec. \pm 5 % Of Full Scale [Variable]
Auto reset gap	20 % \pm 5 % Of Set Value	3 % \pm 1 % Of Set Value	3 % \pm 1 % Of Set Value

TECHNICAL SPECIFICATIONS OF D2 VMR1 & D2 VMR2		
1. System Supply :	100 - 120 / 220 - 240 / 380 - 440 VAC \pm 20 %	
2. Aux. Supply :	In - Built	
3. Frequency :	48 Hz - 63 Hz.	
4. Output Relay Contacts :	2 CO	
5. Output contact rating :	5 Amp, 240VAC [Resistive]	
6. Power consumption :	26 VA (max.)	
7. Unbalance Trip Setting :	4 % to 20 % [Variable]	
8. Under/Over Voltage Trip Setting :	Refer Table 1	
9. Trip time delay :	1 to 10 Sec. [Variable]	
UB/SP/UV/OV :	1 to 10 Sec. [Variable]	
NF (D2VMR2 only) :	2 sec \pm 1.5 sec [Fixed]	
Phase Reversal :	Instant	
10. Set Accuracy : UV & OV :	\pm 2 % of set value (\pm 3% of set Value for 110VAC system)	
UB & Trip delay :	\pm 5 % of full scale	
11. Resetting :	Auto/Manual Reset [Remotely Wired] by 'NC' Push Button	
12. Reset Gap : Unbalance :	20 % \pm 5 % of set value	
UV & OV :	3 % \pm 1 % of set value	
13. Indications: ON :	Steady On : Power ON	
UB/RP :	Steady On : Phase Failure/Unbalance Flashing : Phase Reversal	
UV/NF :	Steady On : Under voltage Flashing : Neutral Fail (D2VMR2 Only)	
OV :	Steady On : Over Voltage	
14. Enclosure :	ABS	
15. Dimensions (mm) : Overall :	76 X 56.5 X 117.5	
Mounting :	67 X 46	
16. Mounting :	35mm Rail Mounting & Panel Mounting	
17. Unit Weight (Approx.) :	300 gms.	
18. Operating Conditions :		
Temperature :	- 5 °C To + 60 °C	
Humidity :	Up To 95 % Rh	
19. Life Expectancy :	0.5 x 10 ⁶ operations at 100% Rating	



TERMINAL DETAILS OF D2 VMR1

Fig. 3A



- INDICATIONS**
- 'ON' : Steady on : Power On
 - 'UB / RP' : Steady on : Unbalance, Phase Failure
Flashing : Phase Reversal
 - 'UV' : Steady on : Under Voltage
 - 'OV' : Steady on : Over Voltage

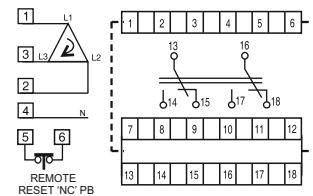
TERMINAL DETAILS

TERMINAL NO.	D2 VMR1
1 - 2 - 3	L1-L2-L3 PHASE VOLTAGE INPUT.
4	DUMMY
5, 6	EXTERNAL REMOTE RESET 'NC' P.B.
7 - 12	DUMMY
13 - 14 - 15	C1 - NO1 - NC1
16 - 17 - 18	C2 - NO2 - NC2

■ NOTE : RELAY CONTACTS SHOWN FOR UNIT IN POWER OFF CONDITION.

TERMINAL DETAILS OF D2 VMR2

Fig. 3B



- INDICATIONS**
- 'ON' : Steady on : Power On
 - 'UB / RP' : Steady on : Unbalance, Phase Failure
Flashing : Phase Reversal
 - 'UV / NF' : Steady on : Under Voltage
Flashing : Neutral Fail
 - 'OV' : Steady on : Over Voltage

TERMINAL DETAILS

TERMINAL NO.	D2 VMR2
1 - 2 - 3	L1-L2-L3 PHASE VOLTAGE INPUT.
4	NEUTRAL POINT
5, 6	EXTERNAL REMOTE RESET 'NC' P.B.
7 - 12	DUMMY
13 - 14 - 15	C1 - NO1 - NC1
16 - 17 - 18	C2 - NO2 - NC2

■ NOTE : RELAY CONTACTS SHOWN FOR UNIT IN POWER OFF CONDITION.

COMPLIANCE TO STANDARDS

	TEST	IEC STD.
1.	EFT Test of System Supply	61000-4-4
2.	Surge Test of System Supply	61000-4-5
3.	ESD Test (Contact Discharge)	61000-4-2
4.	ESD Teast (Air Discharge)	61000-4-2
5.	H.V. Test (Dielectric Test)	60255-5
6.	Insulation Resistance Test	60255-5
7.	Dry Heat Test	60068-2-2
8.	Damp Heat test (Steady State)	60068-2-30
9.	Damp Heat test (cyclic test)	60068-2-78

WARRANTY - AGAINST ALL MANUFACTURING DEFECTS FOR 18 MONTHS FROM DATE OF SUPPLY OR 12 MONTHS FROM INSTALLATION WHICHEVER IS EARLIER