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

ALV D2 VMR D2 D2 VMR2(3Ø - 4 W)

ALV D2 / VMR D2 / D2 VMR2 offers protection against -

* Unbalanced voltage condition.
* Phase failure condition.
* Phase sequence reversal condition.
* Under voltage condition.
* Over voltage condition.

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

ALV D2 / VMR D2 & D2 VMR2 an auxiliary relay and it should be used along with the starter / Contactor ckt only.

The effective working of the unit will depend on efficient working of the ckt Before installing unit check whether the ckt 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 ckt needs to be serviced.

Do not install unit with faulty ckt.

TRIP SETTING, TRIP DELAY AND RESETTING

Refer Specifications

MOUNTING

Refer Specifications

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 VMR2 Only which you may set according to your requirement.

CAUTION

1. Ensure that unit 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.

ELECTRICAL CONNECTIONS of ALV D2 / VMR D2 / D2 VMR2

See Fig.2(A & B) for terminal connection details. See Fig. 1(A & B) for installation of the unit in the power and control wiring.

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.

TECHNICAL SPECIFICATIONS

SR. NO.	PARAMETER	ALV D2	VMR D2	D2 VMR2	COMMON
1.	**Aux.Supply Voltage**	110 VAC (Fixed) 220-230-240VAC (Link selectable) 380-415-440VAC(Link selectable)±20%	110/220/230/240 380/415/440VAC ± 20%	**Aux. Supply :** In - Built **1. System Supply Voltage :** D2 VMR2 = 100 - 120 / 220 - 240 /380 - 440 VAC ± 20 %	**1. System Supply Voltage :** For ALV D2 / VMR D2 220/230/240/380/415/ 440VAC ± 20%
2.	**Output Relay Contacts**	1 CO / (2 CO)	1 CO / (2 CO)	2 CO	
3.	**Trip Setting (Volts)** * **Phase to Phase Unbalance** * **Under Voltage** * **Over Voltage**	40V ± 6V 80% to 95% (variable) of Aux. Supply (± 2% of the Set value). 105% to 120% (variable) of Aux. Supply (± 2% of the set value).	94V ± 6V 80% to 95% (variable) of Aux.Supply (± 2% of the set value.) 105% to 120%(variable Aux. Supply (± 2% of the)of set value).	**Unbalance Trip Setting :** 4 % to 20 % [Variable] **Refer table 1 for OV/UV**	**2. Frequency :** 50 / (60) Hz ± 3% D2 VMR2 = 48 Hz - 63 Hz. **3. Power Consumption :** 3 VA max. D2 VMR2= 26 VA (max.)
4.	**Set Accuracy**	± 2% of the set value	± 2% of the set value	**UV & OV :** ± 2 % of set value (± 3% of set Value for 110VAC system) **UB & Trip delay :** ± 5 % of full scale	**4. Output Contact Rating :** 5 Amp, 240 VAC [resistive]
5.	**Trip Time Delay** * **Phase Failure** * **Phase Reversal / Phase To Phase Unbalance** * **Under Voltage** * **Over Voltage**	3.5 sec. ± 1.5 sec. 3.5 sec. ± 1.5 sec.	3.5 sec. ± 1.5 sec. 3.5 sec. ± 1.5 sec.	**UB/SP/UV/OV : 1 to 10 Sec. [Variable]** **NF : 2 sec ± 1.5 sec [Fixed]** **Phase Reversal : Instant**	**5. Operating Condition :** * Humidity : upto 95 % RH * Temperature : -5°C to 60°C
6.	**Resetting**	Less than 2 sec. Less than 2 sec.	Less than 2 sec. Less than 2 sec.	Auto/Manual Reset [Remotely Wired] by 'NC' Push Button	**6. Life Expectancy :** $0.5x10^6$ operations at 100% rating
7.	**Reset Gap** * **For unbalance** * **For Under & Over Voltage**	Auto 10V to 18V 3% ± 1% of Aux.supply	Auto 10V to 18V 3% ± 1% of Aux.supply	20 % ± 5 % of set value 3 % ± 1 % of set value	**7. Enclosure :** ABS
8.	**Indications** **Green** **Red**	ON : Power on SP : Single Phasing Trip	ON : Power on SP : Phase Reversal / Phase to Phase Unbalance	**ON :** Steady On : Power ON **UB/RP :** Steady On : Phase Failure/Unbalance Flashing : Phase Reversal	**8. Unit Weight [gms] :** 400 **9. Dimensions [mm] :** Overall : 76x56.5x117.5 Mounting : 67x46
9.	**Red** **Red**	UV : Under Voltage OV : Over Voltage	UV : Under Voltage OV : Over Voltage	**UV/NF :** Steady On : Under voltage Flashing : Neutral Fail **OV :** Steady On : Over Voltage	**10. Mounting :** 35 mm Rail mounting & Panel mounting

COMPLIANCE TO STANDARDS

	TEST	IEC STD.		TEST	IEC STD.
1.	EFT Test of Auxiliary Supply	61000-4-4	8.	H.V. Test (Dielectric Test)	60255-5
2.	EFT Test of System Supply	61000-4-4	9.	H.V. Test (Dielectric Test)	60255-5
3.	Surge Test of Auxiliary Supply	61000-4-5	10.	Insulation Resistance Test	60255-5
4.	Surge Test of System Supply	61000-4-4	11.	Dry Heat Test	160068-2-2
5.	Voltage Interruption, Variation		12.	Damp Heat test (Steady State)	60068-2-30
	& Dip Test	61000-4-11	13.	Damp Heat test (cyclic test)	60068-2-78
6.	ESD Test (Contact Discharge)	61000-4-2			
7.	ESD Teast (Air Discharge)	61000-4-2			

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

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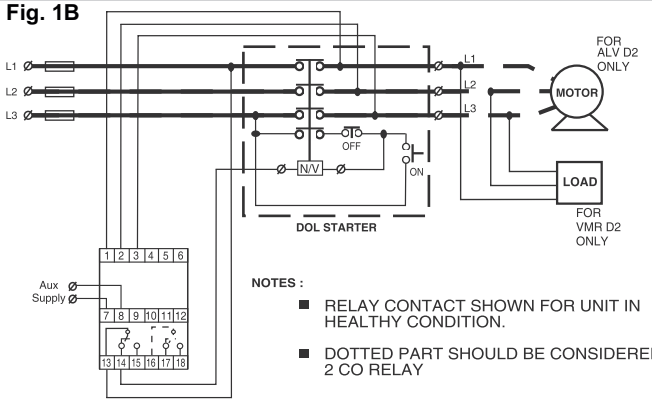
ELECTRICAL CONNECTION IN POWER AND CONTROL WIRING

Fig. 1B

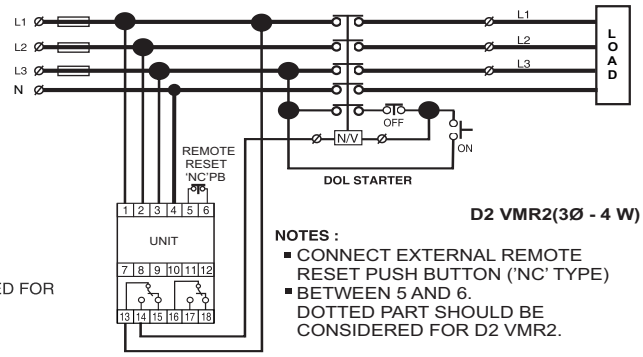


NOTES :

- RELAY CONTACT SHOWN FOR UNIT IN HEALTHY CONDITION.
- DOTTED PART SHOULD BE CONSIDERED FOR 2 CO RELAY

ALV D2 / VMR D2

Fig. 1A

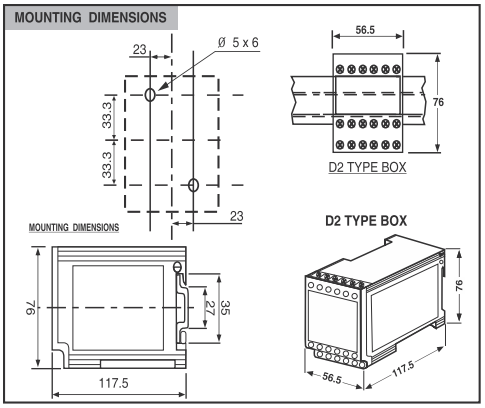


D2 VMR2(3Ø - 4 W)

NOTES :

- CONNECT EXTERNAL REMOTE RESET PUSH BUTTON ('NC' TYPE) BETWEEN 5 AND 6. DOTTED PART SHOULD BE CONSIDERED FOR D2 VMR2.

ALV D2 / VMR D2 / D2 VMR2(3Ø - 4 W)



D2 VMR2(3Ø - 4 W)

Table 1 : TRIP SETTINGS

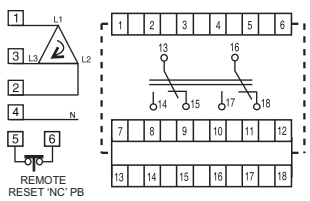
Parameters	Unbalance between any two phases	Under voltage	Over voltage
Cut off at	4 % to 20 % ± 5 % Of Full Scale [Variable]	FOR D2 VMR2 - [Variable] 165 - 245 VAC FOR 380 - 440 VAC 95 - 135 VAC FOR 220 - 240 VAC 45 - 65 VAC FOR 100 - 120 VAC	FOR D2 VMR2 - [Variable] 230 - 310 VAC FOR 380 - 440 VAC 130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

ALV D2 / VMR D2

	Unbalance voltage between any two phases	Under voltage	Over voltage
Cut off at	40V ± 6V (For ALV D2) 94V ± 6V (For VMR D2)	Site selectable between 80 % - 95% of Aux.supply	Site selectable between 105 % - 120% of Aux. supply
Trip time delay	3.5 sec. ± 1.5 sec	Less than 2 sec.	Less than 2 sec.
Auto reset gap applicable to ALV D2 / VMR D2	Less than 20V unbalance between all three phases (For ALV D2 only) Less than 74V unbalance between all three phases (For VMR D2 only)	Set value plus 3% ± 1% of Aux. supply	Set value less 3% ± 1% of Aux. supply

D2 VMR2(3Ø - 4 W) **Fig. 2A**

TERMINAL DETAILS OF D2 VMR2



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

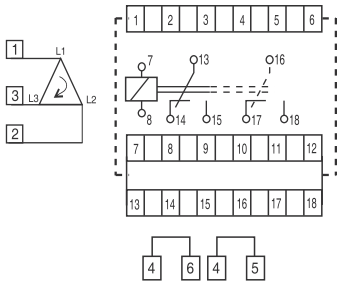
TERMINAL DETAILS

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.

ALV D2 / VMR D2 **Fig. 2B**

TERMINAL CONNECTION DETAILS



INDICATIONS :
L1 / ON : POWER ON
L2 / SP/RP : SINGLE PHASING / REVERSE PHASING
L3 / UV : UNDER VOLTAGE
L4 / OV : OVER VOLTAGE

TERMINAL DETAILS :
1-2-3 : L1- L2 - L3 PHASE VOLTAGE SENSING POINTS
4-5-6 : LINK SELECTION (FOR AUX SUPPLY)
7-8 : AUX. SUPPLY SELECTED AS PER CHART
10-11 : DUMMY CONTACTS
14-13-15 : 1 CHANGEOVER RELAY OUTPUT CONTACTS (NO-C-NC)
9-12 : DUMMY CONTACTS
17-16-18 : DUMMY CONTACTS (FOR 1 CO.) (NO- C -NC FOR 2 CHANGEOVER RELAY OUTPUT CONTACTS)

AUX. SUPPLY LINK SELECTION CHART (ONLY FOR ALV D2)

TERMINALS TO BE LINK	AUX. SUPPLY (220-230-240VAC)	AUX. SUPPLY (380-415-440VAC)
4 & 6	220 VAC	380 VAC
4 & 5	230 VAC	415 VAC
NO LINK	240 VAC	440 VAC

NOTES : ■ RELAY CONTACT SHOWN IN HEALTHY CONDITION.
■ DOTTED PART SHOULD BE CONSIDERED FOR 2CO RELAY

Instructions for Screw Gun torque adjustment –

- Torque should be 1 Nm max.
- Max 2.5 sq. mm size wire can be used.

WEEE (Waste Electrical & Electronic Equipment) Regulations: After end of equipment life, recycle or disposal needs to ne done as per guidelines or handover it to Ewaste processing authorized agencies. For more details contact us.

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

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