INSTALLATION INSTRUCTIONS FOR D1HLS1

INTRODUCTION

Thank you for selecting and purchasing **MINILEC** make Phase failure relay with under/over voltage cutout, D1 HLS1(3 PH-3WIRE).

The following installation instructions would guide you in installing D1 HLS1 and making the best use of it.

The unit 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

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D1 HLS1 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.

MOUNTING

D1 HLS1 can be Rail mounted or Panel mounted. (See Fig. 4A & 4B for mounting it on DIN and releasing it from DIN RAIL respectively). It is suitable for 35 mm RAIL. (For panel mounting and drilling details, see Fig. 2).

TRIP SETTING, TRIP DELAY AND RESETTING

D1 HLS1 is factory set to trip the starter as per following values.

CAUTION

1. Ensure that D1 HLS1 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 CONNECTION

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

Connect L1, L2 , L3 phases at 7, 8 , and 9 . The output relay contacts 1, 2 Or 13, 14 are to be connected in series with no-volt coil of the starter.

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For 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 sensing of the unit & under / over voltage sensing is from L1, L2 ,L3 sensing points at terminals no. 7, 8 and 9. .

The under voltage, over voltage, unbalance & trip delay settings are fixed in D1 HLS1.

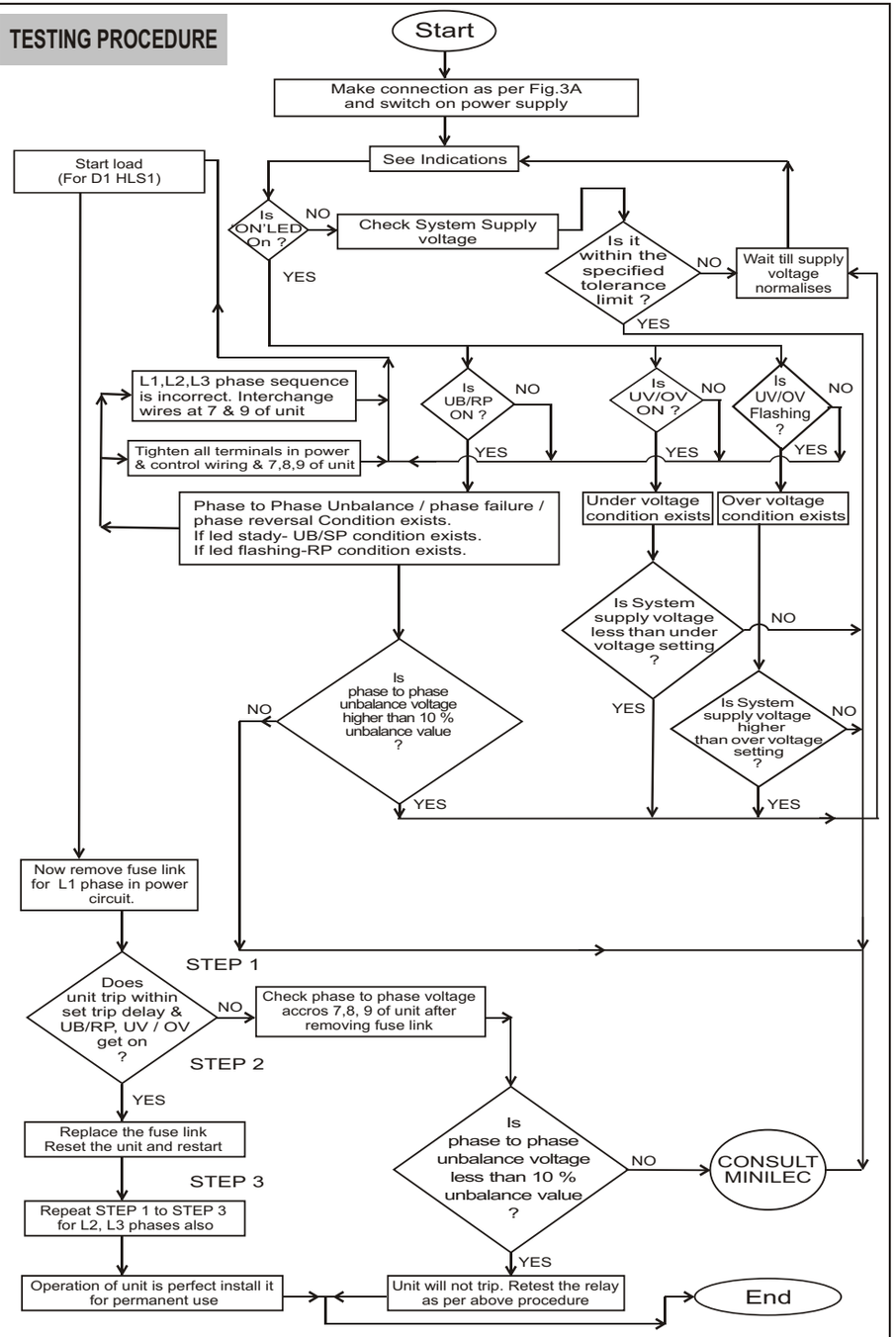
TABLE-1

	Unbalance between any two phases	Under voltage	Over voltage
Cut off at	10 % [FIXED], ± 10%	75 % [FIXED] (± 2 % of Set system supply & ± 3 % for 110 VAC system supply)	120 % [FIXED] (± 2 % of Set system supply & ± 3 % for 110 VAC system supply)
Trip time delay	2 TO 5 SEC [FIXED]	LESS THAN 2 SEC	LESS THAN 2 SEC
Auto reset gap	20 % (± 5 %) OF SET VALUE	3 % (± 1 %) OF SET VALUE	3 % (± 1 %) OF SET VALUE

TECHNICAL SPECIFICATIONS

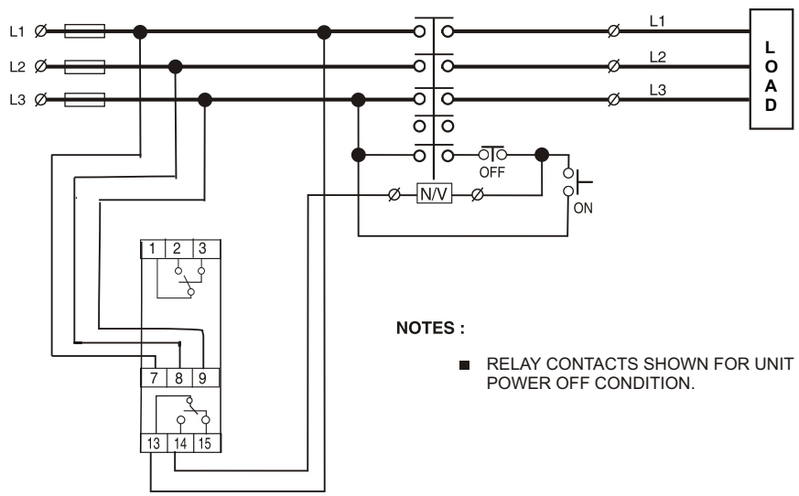
1. **System Supply Voltage :** 100 / 110 / 120 / 220 / 230 / 240 / 380 / 415 / 440VAC ± 20 %
2. **Aux. Supply :** IN - BUILT
3. **Frequency :** 48 TO 63 Hz.
4. **Output Relay Contacts :** 2 CO.
5. **Output contact rating :** 5 Amp, 240VAC [RESISTIVE]
6. **Power consumption :** 24 VA (max.)
7. **Unbalance Trip Setting :** 10 % [FIXED]
8. **UV trip Setting [Fixed] :** 75 % of Set system supply
9. **OV trip Setting [Fixed] :** 120 % of Set system supply
10. **Trip time delay**
    - **For UB/SP :** 2 TO 5 SEC
    - **For UV/OV :** Less than 2 SEC
    - **For RP :** INSTANT
11. **Set Accuracy**
    - * **For UV & OV :** ± 2 % of set value(± 3% of set Value for 110VAC system).
    - * **For UB :** ± 10 % of set value.
12. **Resetting :** **AUTO RESET**
13. **Reset Gap**
    - * **For unbalance :** 20 % ± 5 % of set value
    - * **For UV & OV :** 3 % ± 1 % of set value
14. **Indications**
    - * **Power ON (Green) :** ON
    - * **UB/RP (Red) :** SP,UB(Steady) / RP (Flashing)
    - * **UV/ OV (Red) :** UV(Steady) / OV(Flashing)
15. **ENCLOSURE :** **ABS (D1 Series)**
16. **DIMENSIONS (mm)**
    - * **OVERALL :** 76 X 30.5 X 117.5
    - * **MOUNTING :** 68 Center to Center
17. **MOUNTING :** 35mm RAIL MOUNTING & PANEL MOUNTING
18. **WEIGHT (Appro.) :** 200 gms.
19. **OPERATING CONDITIONS**
    - * **TEMPERATURE :** - 5°C TO + 60°C
    - * **HUMIDITY :** UP TO 95 % Rh.

TESTING PROCEDURE



ELECTRICAL CONNECTION IN POWER AND CONTROL WIRING

Fig. 1

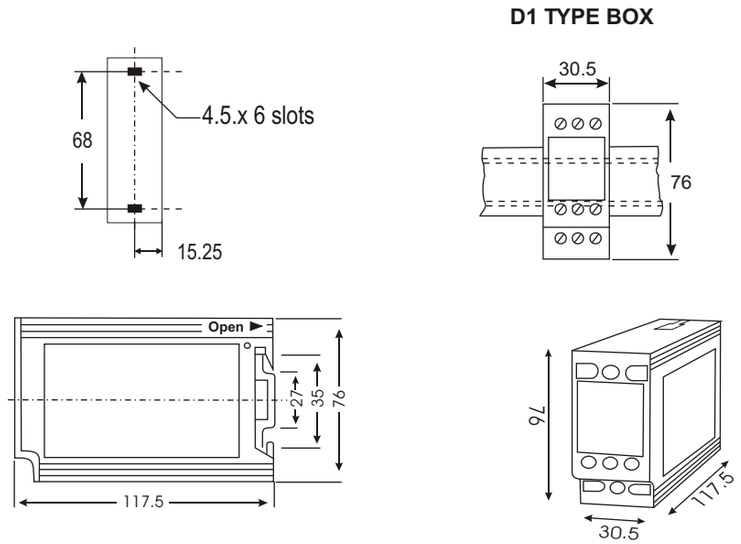


NOTES :

- RELAY CONTACTS SHOWN FOR UNIT IN POWER OFF CONDITION.

MOUNTING DIMENSIONS

Fig. 2

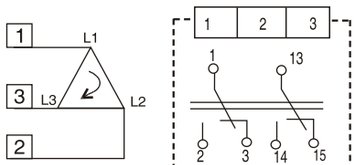


INSTALLATION INSTRUCTION MANUAL FOR PHASE FAILURE RELAY WITH UNDER & OVER VOLTAGE RELAY

D1 HLS1

CONNECTION DETAILS OF D1 HLS1

Fig. 3A



INDICATIONS :

ON : POWER ON

UB / RP : SP, UB (STEADY) / RP (FLASHING)

UV /OV : UNDER VOLTAGE(STEADY) / OVER VOLTAGE(FLASHING)

TERMINAL DETAILS :

7 - 8 -9 : L1-L2-L3 PHASE VOLTAGE SENSING POINTS

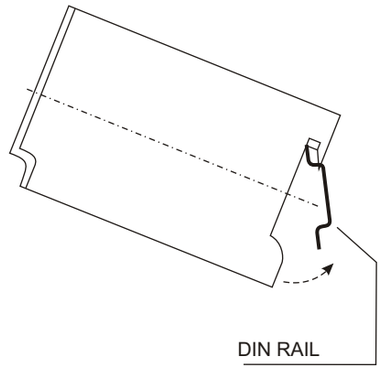
13-14-15 : C1 - NO1 - NC1

1 -2 -3 : C2 - NO2 - Nc2

- NOTE : RELAY CONTACTS SHOWN IN POWER OFF CONDITION.

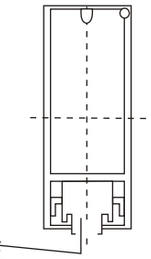
MOUNTING ON DIN RAIL

Fig. 4A

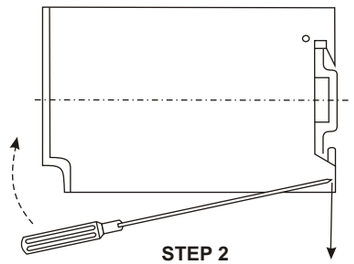


RELEASING FROM DIN RAIL

Fig. 4B



STEP 1
INSERT SCREW DRIVER IN THIS SLOT TO RELEASE FROM DIN RAIL



STEP 2
USE SCREW DRIVER NO. 936 OR EQUIVALENT.

WARRANTY

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

Manufactured by :

minilec®

S.NO. 1073/1-2-3,
AT POST : PIRANGOOT,
TAL : MULSHI, DIST. : PUNE (INDIA)
PIN : 412 111,
www.minilecgroup.com

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