

INSTALLATION INSTRUCTION MANUAL MOTOR / SUBMERSIBLE PUMP PROTECTION RELAY

MPR D2



SPG D2



D2 MPR2



D2 MPR3



PGS D2



S2 CMR1



Thank you for selecting and purchasing MINILEC make current monitoring relay. The following installation instructions would guide you in installing your MPR D2/SPG D2, D2 MPR2, D2 MPR3, S2 CMR1, PGS D2, making the best use of it. These units offers following protections against-

- Phase Unbalance, Phase failure,
- Phase sequence reversal condition.
- Over load and Dry run
- Under Voltage.
- Over Voltage.

All above mention relays are auxiliary relay and it should be used along with the starter only or similar contactor circuit. The effective working of the unit will depend on efficient working of the starter.

Before installing your unit check whether the starter circuit 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 circuit needs to be serviced. Do not install your unit with faulty starter circuit.

CAUTION

1. Ensure that all above relay are -
 - * 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. Care should be taken to ensure that net resultant unbalance Supply is not beyond the unbalance trip limits of your unit.

3. Program the relay to suit your application. refer table for programming the relay.

4. If the product is not installed as per guideline given by Minilec, Our company will not be responsible for any wrong connection, damage, Injury, accident, Etc.

ELECTRICAL CONNECTION

See diagram for installation of the unit in the power and control wiring.

PROGRAMMING/ SETTING

With the help of push button provided on front, you can Program the relay for suitable operation.

MOUNTING -

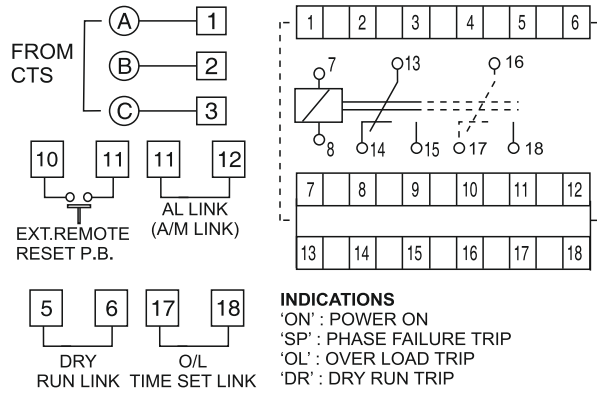
All models are suitable for DIN RAIL mounting.

| TECHNICAL SPECIFICATIONS OF | D2 MPR2 | MPR D2 / SPG D2 | D2 MPR3 | S2 CMR1 | PGS D2 |
|--|--|---|--|--|---|
| 1. System Supply : | 380 / 415 VAC ± 20 % | 220 / 230 / 240 / 380 / 400 / 415 / 440 VAC ± 20 % | 220-240 / 380-440 VAC ± 20% | 100 / 110 / 120 VAC ± 20 % 220 / 230 / 240 VAC ± 20 % | 220-240 VAC ± 20% |
| 2. Aux. Supply : | 380-440/220-240/100-120 VAC ± 20 % | 24 / 110 / 220 / 230 / 240 / 380 / 400 / 415 / 440 VAC ± 20 % 24V DC ± 10% | 100-120/220-240 / 380-440 VAC ± 20% | 100- 120- 220- 240- 415 VAC ± 20% 24VDC ± 20% | 220-240 VAC ± 20%, |
| 3. Frequency : | 48 Hz - 63 Hz. | 50 Hz / 60 Hz ± 3% | 48Hz - 63Hz. | 48Hz - 63Hz. | 50/60 Hz ± 3% |
| 4. Output Relay Contacts : | 2 CO | 1CO / (2CO) | 2CO | 2CO | 1CO / (2CO) |
| 5. Output Contact Rating : | 5A, 240 VAC [Resistive] | 5A, 240 VAC | 5A, 240 VAC | 5 Amp, 240VAC [resistive] | 5A, 240 VAC |
| 6. Power Consumption : | 5 VA (max) | 30 VA max. | 22 VA max. | 30 VA max. | 30 VA max. |
| 7. Current UB trip setting : | 50% of motor current [Fixed] | 50% ±10% of motor current. (Fixed.) | 50% ± 10% of FLC [fixed] | 50% ± 10% of FLC [fixed] | NA |
| 8. Under current setting : | 50% of Set current [Fixed] | 40% to 80% ± 5% of set current (Site selectable) | 40% to 80% ± 5% of set current (Site selectable) | 40% to 80% ± 5% of set current | 75% OF SET ± 10% |
| 9. Current setting [FLC] : | 0.4 to 1.0 of CTS [max(40% to 100% of CTS I _{max})] | 0.4 to 1.0 of CTS [max(40% to 100% of CTS I _{max})] | type by Front Knob with bypass facility) | Current setting (FLC) 40%-100% of I _{max} (Adjustable) | 0.4 to 1.0 of CTS I _{max} [40% to 100% of CTS I _{max}] |
| 10. Overload Trip time setting : | 2 Sec IDMTL Curve | 2 / 5 / 10 / 15 / 20 sec. IDMT Curve | 2 / 5 / 10 / 15 / 20 sec. IDMT Curve | 2 / 5 / 10 / 15 / 20 sec. IDMT Curve | Above 120% |
| 11. Voltage UB trip setting : | 10% ± 1% as per IEEE Method [fixed] | NA | NA | NA | NA |
| 12. Under Voltage Trip setting : - | - 20% of System supply | NA | NA | NA | NA |
| 13. Over Voltage Trip setting : | + 20% of System supply | NA | NA | NA | NA |
| 14. Trip Time Delay : • Phase Failure • Current & voltage BU • Dry Running • Overloading • Under & Over voltage • Phase Reversal | 4 Sec ± 1 Sec 4 Sec ± 1 Sec 4 Sec ± 1 Sec As per IDMTL Char. 4 Sec ± 1 Sec Less than 2 sec | Phase Failure : 5.5 + 1.5 secs Dry Running (in SPG D2 only) : 3.5 ± 1.5 secs. Overloading : As per inverse time characteristics (IDMTL) | Phase Failure : 4.0 ± 1.0 secs. Dry Running : 4.0 ± 1.0 secs. Over loading : As per IDMTL char. | Unbalance - 4 sec ± 1 sec Phase failure - 4 sec ± 1 sec. Dry running - 4 sec ± 1 sec. Overloading - As per IDMTL Char. (2 / 5 / 10 sec. IDMTL characteristics) | Phase Failure: Less than 2 Sec. As per selectable inverse time Characteristics |
| 15. Set Accuracy : For UV & OV : For others : | ± 2 Sec of set value ± 5 Sec of set value | +10% of set value | ±5% of set value | ±5% of set value | 10% of set value |
| 16. Resetting : | Delayed Auto Reset [15 Min] or Manual [Remotely wired] with 'NO' Push button | Auto / Manual / Remote | Auto / Manual / remote | Auto / Manual | Auto / Manual / remote |
| 17. Indications : • ON : • RP/ SP,UB : • DR / OL : • UV/ OV : | Steady On: Power On Flashing : Phase Reversal Steady On: Phase Failure, Unbalance Flashing : Dry Run (No Load) Steady On: Over Load Flashing : Under Voltage Steady On: Over Voltage | ON : Green : Power On SP : Red : Phase Failure OL : Red : Overload DR : Red : Dry Running (in SPG D2 only) | ON : Green : Power On PF : Red : Phase Failure / Unbalance OL : Red : Overload UC : Red : Dry Running | Power on (Green) - ON Phase failure / Reverse Phasing (Red) - RP Over load / Dry run - OL / DR [For SRPP & Oil fault LED Steady] [For DR LED Flashing] | ON : Green : Power On OL : Red : Overload UC : Red : Dry Running |
| 18. Enclosure : | ABS | ABS | ABS | S2 series - ABS / PC ABS | ABS |
| 19. Dimensions (mm) : Overall Mounting : | 16 x 56.5 x 117.5 67 x 46 | 76 X 56.5 X 117.5 67 X 46 | 76 X 56.5 X 117.5 67 X 46 | Overall (L X W X D) = 90 x 35 x 60 | 76 x 56.5 x 117.5 67 x 46 / 35 mm Rail Mounting |
| 20. Mounting : | 35mm Rail Mounting & Panel Mounting | 35mm Rail Mounting & Panel Mounting | 35 mm rail mounting & panel mounting | 35mm Rail Mounting & Panel Mounting | 35mm Rail Mounting & Panel Mounting |
| 21. Unit Weight (Approx.) : | 460 gms. | 250 gms (approx) | 250 gms (approx) | UNIT - 140g S2 CTS - 100g | 600gms |
| 22. Sensor Weight (Approx.) : [gms] | 320gms (For CTS 5/CTS 10/ CTS20/ CTS40) 330 gms (For CTS 80) 380 gms (For CTS120 pair) | 225 (For CTS 1.25 / CTS 2.5) 320(For CTS 5 / CTS 10 / CTS 20 / CTS 40) 330 (For CTS 80) & 380 (For CTS 120 pair) | 140 (for S2 CTS 1/5, S2 CTS 1/10, S2 CTS 1/20, S2 CTS 1/40, S2 CTS 1/60) 320 (For CTS 120 pair) | 140 (for S2 CTS 1/5, S2 CTS 1/10, S2 CTS 1/20, S2 CTS 1/40, S2 CTS 1/60) 320 (For CTS 120 pair) | - |
| 23. Operating Condition : | Temperature: -5°C to +60°C Humidity : Up to 90% | Temperature : -5°C to 60°C Humidity : Upto 95% R.H. | Temperature : -5°C to 60°C Humidity : Up to 95% R. H. | Temperature = - 5°C to + 60°C Humidity = upto 95 % rh. | Temperature = - 5°C to + 60°C Humidity = upto 95 % rh. |
| 24. Life Expectancy : | 0.5 x10 operations at 100% rating | 0.5 x10 operations at 100% rating | 0.5 x10 operations at 100% rating | 0.5 x10 operations at 100% rating | 0.5 x10 operations at 100% rating |
| 25. Test Push Button Delay : | Less than 2 sec. | Less than 2 sec. | Less than 2 sec. | Less than 2 sec. | Less than 2 sec. |
| 26. Test Facility : | With front push button. | With front push button. | With front push button. | With front push button. | With front push button. |
| 27. Environment | | | | Pollution Degree 2 | |

Note: Wherever not specified Contact Rating : 5A @ 230 V AC (resistive)

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

CONNECTION DIAGRAM MPR D2 / SPG D2



INDICATIONS
 'ON' : POWER ON
 'SP' : PHASE FAILURE TRIP
 'OL' : OVER LOAD TRIP
 'DR' : DRY RUN TRIP

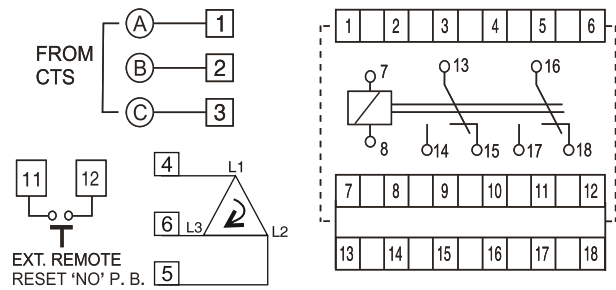
FOR UNITS WITH 2CO, RELAY CONTACT PRESENT BETWEEN 13,14,15 & 16,17,18 IN THAT CASE LINK AT 17& 18 IS ABSENT & FIXED OVERLOAD CHARACTERISTICS IS APPLICABLE.

Terminal Details

| TERMINAL NO. | MPR D2 | SPG D2 |
|--------------|--|--------------------------------|
| 1-2-3 | CURRENT INPUT FROM CTS(A-B-C) | |
| 4 | ALL DUMMY | DUMMY |
| 5 | | DRY RUN LINK |
| 6 | | 75 % WITH LINK 50 % NO LINK |
| 7-8 | AUX. SUPPLY AS MARKED ON THE UNIT | |
| 9 | DUMMY | |
| 10-11 | EXT. REMOTE RESET PUSH BUTTON | |
| 11-12 | MANUAL & REMOTE RESET- WITH LINK AUTO RESET- NO LINK | |
| 13-14-15 | 1 CHANGEOVER OUTPUT RELAY CONTACT (C-NO-NC) | |
| 16 | DUMMY for 1CO | |
| 17-18 | LINK FOR IDMTL CURVE 2 SEC. WITH LINK 5 SEC - NO LINK FOR OTHER IDMTL CURVE DUMMY | |
| 16-17-18 | RELAY CONTACT FOR 2CO | |

NOTE : RELAY CONTACTS SHOWN FOR UNIT IN HEALTHY CONDITION

TERMINAL DETAILS D2 MPR2



INDICATIONS

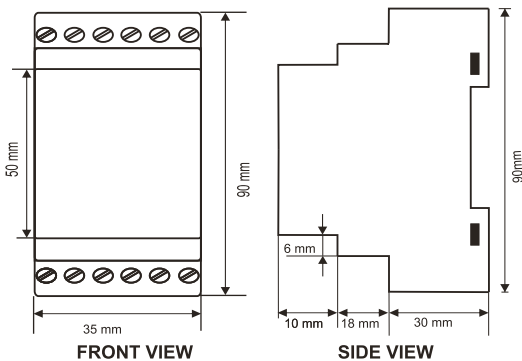
- 'ON' : Steady On : Power On
- 'RP / SP,UB' : Flashing : Phase Reversal
Steady On : Unbalance, Phase Failure
- 'DR / OL' : Flashing : Dry Run(No Load)
Steady On : Over load
- 'UV/ OV' : Flashing : Under Voltage
Steady On : Over Voltage

TERMINAL DETAILS

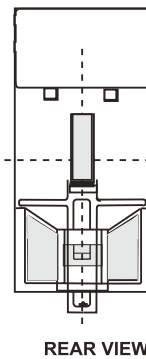
| TERMINAL NO. | D2 MPR2 |
|--------------|------------------------------------|
| 1 - 2 - 3 | CURRENT INPUT FROM CTS (A - B - C) |
| 4, 5, 6 | DUMMY |
| 7 - 8 | AUX. SUPPLY AS MARKED ON THE UNIT |
| 9 - 10 | DUMMY |
| 11 - 12 | EXT. REMOTE RESET 'NO' PUSH BUTTON |
| 13 - 14 - 15 | C1 - NO1 - NC1 |
| 16 - 17 - 18 | C2 - NO2 - NC2 |

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

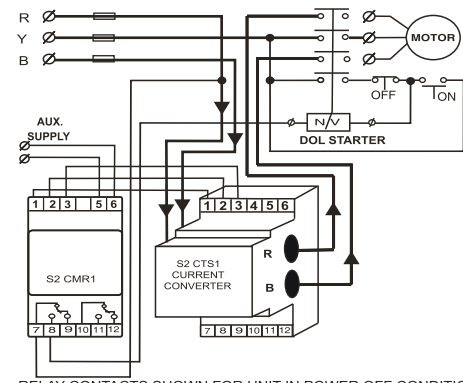
ENCLOSURE DIMENSIONS



S2 CMR1



S2 CMR1

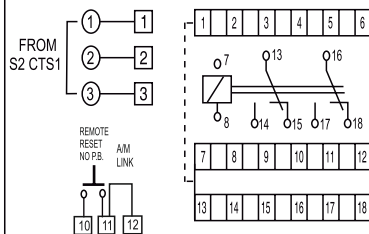


- RELAY CONTACTS SHOWN FOR UNIT IN POWER OFF CONDITION
- FOR VDC SUPPLY, CONNECT +ve TO 5 & -ve TO 6 TERMINALS.

PROGRAMMING MODE SETTING

| PRESS TEST/ RESET PUSH BUTTON FOR | S2 CMR1 LED STATUS | | |
|-------------------------------------|--------------------|-----------|-----------|
| | ON LED | SP/RP LED | OL/DR LED |
| ≧ 8 SEC | ● | ○ | ○ |
| ≧ 4 SEC | ☆ | ☆ | ☆ |
| WAIT 3 SEC | ○ | ○ | ○ |
| ≧ 4 SEC | ☆ | ○ | ○ |
| ≧ 4 SEC | ●/○ | ○ | ○ |
| ≧ 4 SEC | — | — | — |
| ≧ 4 SEC | — | — | — |
| IF P. B. IS NOT PRESSED FOR >10 SEC | ☆ | ☆ | ☆ |

CONNECTION DIAGRAM D2 MPR3

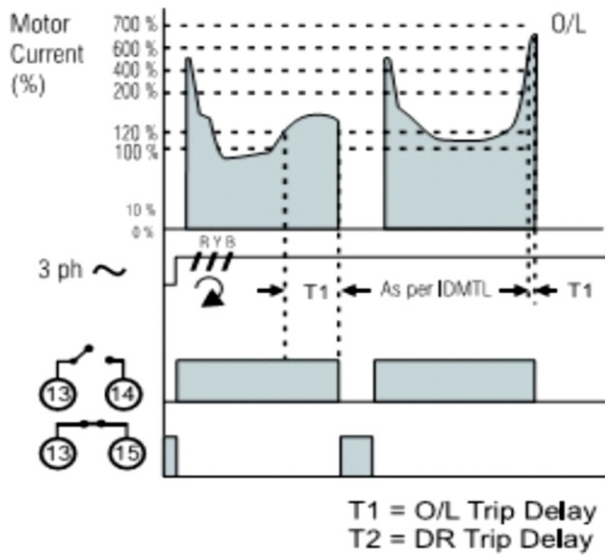


INDICATIONS
 'ON' : POWER ON
 'PF' : PHASE FAILURE TRIP / UNBALANCE TRIP
 'OL' : OVER LOAD TRIP
 'UC' : UNDER CURRENT

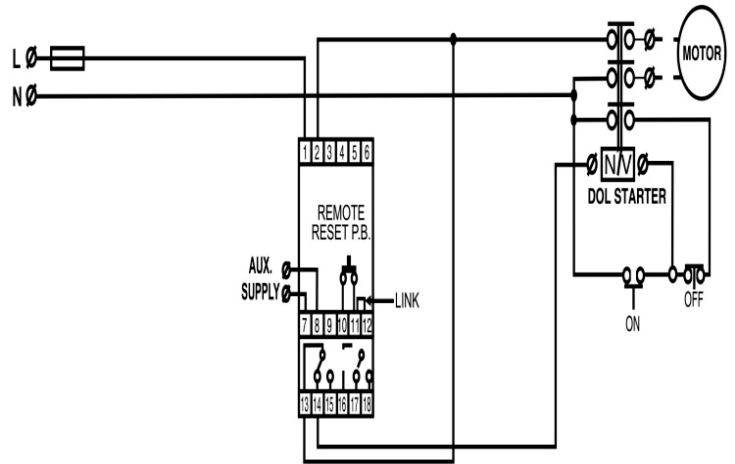
| TERMINAL NO | Terminal Details D2 MPR3 |
|-------------|---|
| 1-2-3 | CURRENT INPUT FROM S2 CTS 1 (1-2-3) |
| 4, 5, 6, 9 | ALL DUMMY |
| 7-8 | AUX. SUPPLY AS MARKED ON THE UNIT |
| 10-11 | EXT. REMOTE RESET PUSH BUTTON (NO TYPE) |
| 11-12 | MANUAL & REMOTE RESET - WITH LINK AUTO RESET - NO LINK |
| 13-14-15 | C1 - NO1 - NC1 |
| 16-17-18 | C2 - NO2 - NC2 |

NOTE : RELAY CONTACTS SHOWN FOR UNIT IN POWER OFF CONDITION

Timing/ Relay logic Diagram PGS D2



Electrical Connection Diagram PGS D2



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 be 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

www.minilecgroup.com

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