

INSTALLATION INSTRUCTION MANUAL REVERSE POWER RELAY



RPT D2 / RPF D2



RPT D2 / RPF D2 senses VOLTAGE, CURRENT & COS ϕ . The Reverse Power Relay provides continuous surveillance for A.C. Generators operating in parallel or for boosting supplies.

On site adjustment of trip point and the time delay ensures accurate protection against 'MOTORING' in the event of engine failure and prevents tripping from surges during synchronising.

MOUNTING

RPT D2 / RPF D2 can be RAIL mounted or PANEL mounted.

CAUTION

- Ensure that RPT D2 / RPF D2 is -
- * Not installed near any heat sources like burner, sunlight, electric arc etc.
 - * Not subjected to abnormal vibration.
 - * Not subjected to direct rains, stormy wind & dust.
 - * Not connected to unbalanced load system.
 - * Not connected to I/P or O/P side of frequency converter / inverter.

ELECTRICAL CONNECTIONS FOR RPT D2 / RPF D2

See Fig.3 for electrical connection details of RPT D2 / RPF D2. See Fig. 2A , 2B & 2C for power & control wiring. System Supply must be as marked on front cover plate. The o/p relay contacts 13, 14 and 16,17 (for 2 CO) are to be connected in series with the no volt coil of the contactor.

FUNCTIONING

The reverse power relay RPT D2 / RPF D2 is current monitor for AC applications detecting an overload when current flows in the reverse direction (i.e Reverse power).

The unit interfaces with conventional current transformer (5 Amp secondary rating). The internal CT permits the RPT D2 / RPF D2 to be connected directly to loads drawing less than 5 Amps.

Power on delay:- When power is applied to the module, the relay energises immediately, ignoring abnormal load conditions experienced during power on. This time delay is adjustable up to 10 seconds.

Forward power:- Under normal conditions (i.e. forward power) the relay remains energised and the 'ON' LED illuminates.

Forward current:- Forward current is the current that flows through the internal CT (in-built) during forward power flow.

Reverse power:- When the power flow changes direction (i.e. Reverse power) the RP' LED illuminates.

Reverse current:- Reverse current is the current that flows through internal CT (in-built) during reverse power flow.

Overload sensing:- The tripping level for reverse current is adjustable from 2% to 20% of maximum forward current (i.e. 100mA to 1Amp For 5 Amp forward current).

Hysteresis:- Hysteresis represents the difference between the tripping level and the recovery level of the unit. The hysteresis is 4% \pm 2% of Full scale .

Trip Time Delay:- The relay de-energises when the reverse current exceeds the tripping level for longer than the trip delay time period. The trip time delay is adjustable up to 10 sec. The 'ON' LED off when the reverse current level exceeded until the time delay expires (at which time, relay de-energised). If forward power is restored or the reverse current level drops below the hysteresis level before the trip delay expires, the 'ON' LED constantly on and relay remains energised.

Latching :- When the LINK between terminals 11 & 12 is connected, the relay will not recover from a tripped condition, but will remain de-energised until reset push button is pressed.

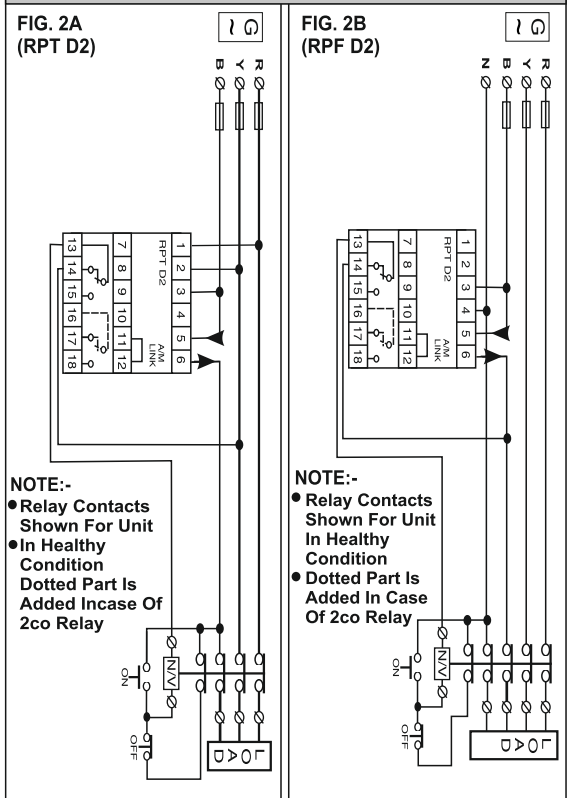
1. If nominal current is higher than permissible input current (5A) use external CT as shown in fig. 2C.

2. Current I/P direction should be same as shown in fig. 2A / 2B and CT connected in the same phase.

TECHNICAL SPECIFICATIONS OF RPT D2 / RPF D2

1. System Supply :	100/110/120/220/230/240/380/415/440 VAC \pm 20% (3 phase, 3 wire for RPT D2 & 3 Phase, 4Wire for RPF D2)
2. Aux. Supply:	N.A.
3. Rated Current Input :	5 A mp (in-Built CT)
4. Frequency :	50 / (60)Hz, \pm 3%
5. Output Relay Contact :	1CO / (2 CO)
6. Output Contact Rating :	5A, 240 VAC (Resistive)
7. Trip Setting :	2 to 20% in step of 2% of max. forward current i.e. 5 Amp
8. Trip setting Accuracy :	\pm 10% of Full scale.
9. Monitoring:-	Phase to Phase voltage of three phase (For RPT D2) Phase to Neutral voltage of B phase (For RPF D2)
10. Trip Time delay :	1 to 10 sec in step of 1 sec.
11. Trip Time delay setting Accuracy :	\pm 10% of Full scale
12. Power On Delay:	1 to 10 Sec (Variable)
13. Reset Mode :	Auto / Manual
14. Hysteresis:	4% \pm 2% of full scale
15. Indication :	Relay ON - ON (Green) Reverse Power - RP (Red)
16. Current Sensor :	Inbuilt (5 Amp), above 5 Amp Ext. CT of 5 Amp secondary to be used.
17. Operating conditions :	Temperature : -5°C to +60°C Humidity : Up to 95% R.H.
18. Enclosure :-	ABS
19. Dimensions (mm) :	Overall : 76 x 56.5 x 117.5 Mounting : 67 x 46
20. Mounting:-	35 mm Rail MOUNTING / PANEL MOUNTING
21. Weight (approx) :	460 gms.

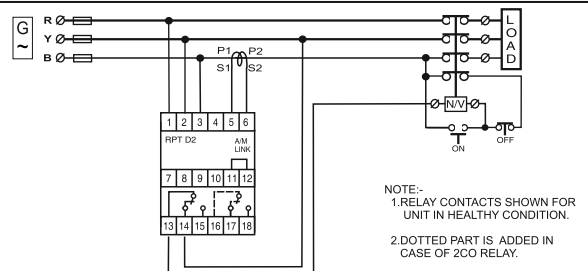
ELECTRICAL CONNECTIONS IN POWER AND CONTROL WIRING



NOTE:-
• Relay Contacts Shown For Unit
• In Healthy Condition Dotted Part Is Added In Case Of 2co Relay

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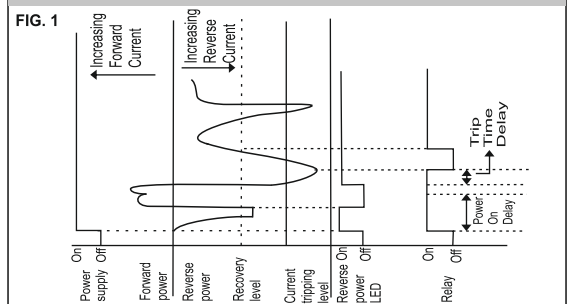
FIG 2C (RPT D2)



MONITORING OF CURRENT MORE THAN 5 AMP IS SHOWN ABOVE BY USING EXTERNAL CT OF 5 AMP SECONDARY RATING.

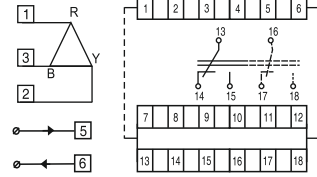
NOTE:-
1. RELAY CONTACTS SHOWN FOR UNIT IN HEALTHY CONDITION.
2. DOTTED PART IS ADDED IN CASE OF 2CO RELAY.

OPERATIONAL DIAGRAM FOR RPT D2 / RPF D2



CONNECTION DIAGRAM RPT D2

FIG. 3 A



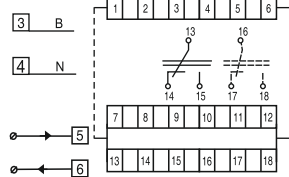
INDICATIONS :
 RP : REVERSE POWER
 ON : RELAY ON

TERMINAL DETAILS
 1-2-3 : SYSTEM SUPPLY
 4 & 7 TO 10 : DUMMY
 5-6 : CURRENT INPUT (5 Amp)
 11-12 : AUTO / MANUAL SELECTION.
 CONNECT LINK FOR MANUAL MODE.
 13-14-15 : C1 - NO1 - NC1(FOR 1CO RELAY)
 16-17-18 : C2 - NO2 - NC2 (FOR 2CO RELAY)
 DUMMY FOR 1CO RELAY)

NOTE : RELAY CONTACTS SHOWN FOR UNIT IN HEALTHY CONDITION.

CONNECTION DIAGRAM RPF D2

FIG. 3 B



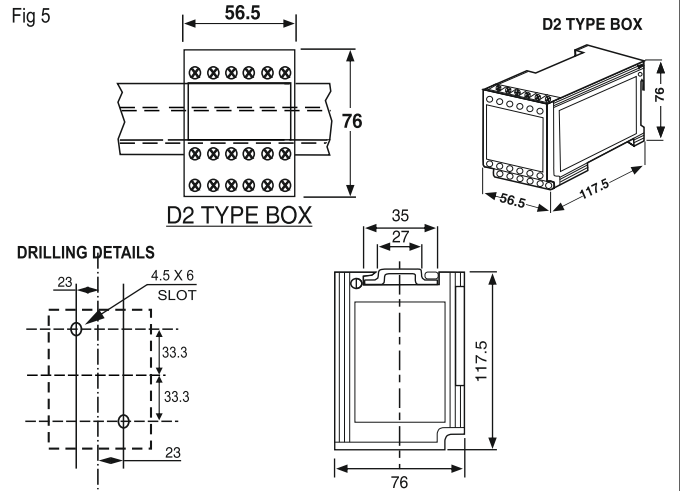
INDICATIONS :
 RP : REVERSE POWER
 ON : RELAY ON

TERMINAL DETAILS
 3-4 : SYSTEM SUPPLY
 1-2 & 7 TO 10 : DUMMY
 5-6 : CURRENT INPUT
 11-12 : AUTO / MANUAL SELECTION
 CONNECT LINK FOR MANUAL MODE.
 13-14-15 : C1 - NO1 - NC1(FOR 1CO RELAY)
 16-17-18 : C2 - NO2 - NC2 (FOR 2CO RELAY)
 DUMMY FOR 1CO RELAY)

NOTE : CONNECT CURRENT INPUT / EXT. CT OF PHASE B (i.e. PHASE CONNECTED TO TERMINAL 3)

MOUNTING DIMENSIONS

Fig 5



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
ESD Teast (Air Discharge)	61000-4-2
4. H.V. Test (Dielectric Test)	60255-5
5. Insulation Resistance Test	60255-5
6. Dry Heat Test	60068-2-2
7. Damp Heat test (Steady State)	60068-2-30
8. 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