



'Jyoti' Power Unit

high reliability
better repeat accuracy
negligible maintenance
low burden
increased life span



APPLICATIONS

In majority of installations DC supply is available from station batteries for tripping circuit breakers. However, in a few isolated installations where provision of station batteries is not economical 'Jyoti' power units can be used for energizing trip coil of the circuit breaker.

SALIENT FEATURES

- Two Models with 10 & 20 Watt-sec. output energy at 110 VDC.
- 'DC HEALTHY', 'AC HEALTHY' and 'TRIP HEALTHY' indications on fronts.
- Optional in built auxiliary relay for input AC failure alarm / indications.

DESCRIPTION

The power unit input transformer has two taps on the primary winding and hence is reconnectable at site to either 110 VAC, 50 Hz. or 240 VAC, 50 Hz. The AC input is suitably transformed by the input transformer and rectified by a full wave rectifier which charges a set of capacitors. The capacitors store energy at 110 VDC which is available as output to energize trip coil of the circuit breaker.

An auxiliary relay is provided in power units type JDR-110 and JDK-110. The auxiliary relay is connected to the input of the power unit transformer. The relay remains energized as long as the AC input is available. Its output contact can be externally wired to Alarm / Indication to denote AC supply failure. This arrangement can be utilized only when other alternate AC source for such Alarm / Indication is available.

Two separate LED's and push buttons are provided on the front plate of the power unit to indicate on demand DC output healthiness and trip circuit healthiness. Third LED is provided for indicating the healthiness of AC supply to the inbuilt circuit.



APPLICATIONS CHECK

The Power units can be used to trip breakers whose shunt trip coils are rated for 110 VDC and are having maximum rating of 150 watts for type JDC 110 / JDR 110 and a maximum of 300 watts for type JDL 110 and JDK 110. The suitability of power unit can be checked as follows. Considering maximum operating time of a circuit breaker as 3 cycles (i.e. 60 msec.) and Trip coil of 150 watts the energy required to trip the circuit breaker will be $150 \text{ watts} \times 0.06 \text{ sec.} = 9.0 \text{ watt seconds}$. Hence power unit type JDC 110/JDR 110 with 10 watt sec. output energy can be used here. Since the trip coils are normally designed to operate even at reduced voltage, at least two operations of the breaker shunt trip coils are possible within 10 minutes of failure of AC input supply for power unit type JDL110/JDK110 whose output is 20 watt sec.

THE POWER UNIT OUTPUT SHOULD NOT BE CONNECTED TO CONTINUOUS LOAD.

For using the power units with a trip coil of higher power consumption, please consult us.

SERIES TRIPPING RELAYS V/S POWER UNIT TRIPPINGS

- In series tripping arrangement, trip coils are connected in series with CT secondary. The output contact of protective relay under healthy system condition shorts the trip coil. On occurrence of fault the output contact of the relay opens out and allows current to flow through trip coil, causing the breaker to trip.
- The series tripping arrangement requires three separate trip coils for 3 phase system. While in case of tripping through power unit only one trip coil is required.
- During a fault, the relay output contact breaks heavy current. Hence the contacts require more maintenance. Also the burden imposed on the current transformer will be high for relays with series tripping arrangement. Compared to this circuit breaker tripping using power unit is simple.

TECHNICAL PARTICULARS

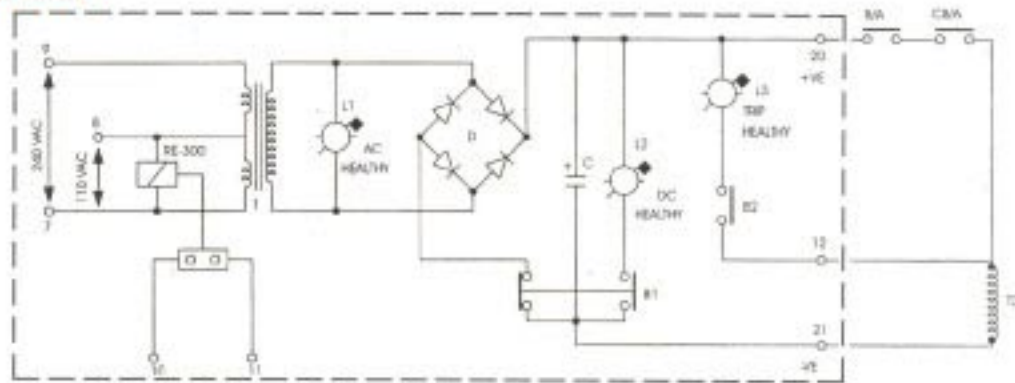
- **Input** : 110 VAC, 50 Hz. or 240 VAC, 50 Hz. connectable on the same unit. The unit shall work satisfactorily from 80% to 110% of the rated A.C. input.
- **Output** : At 110 VDC

Power Unit : Type JDC-110	} 10 watt sec.
JDR-110	
JDL-110	} 20 watt sec.
JDK-110	
- **Burden On AC supply** : 5 VA at rated input voltage (continuously) for power unit type JDC 110 & JDL 110. Additional 6 VA at rated voltage for auxiliary relay for power unit type JDR 110 & JDK 110.

- **Minimum charging time** : Minimum charging time for the power unit to charge to its rated capacity is 30 seconds.
- **Maximum off time** : The maximum time for which the power unit will maintain an output sufficient to trip the shunt trip after AC input failure, once the unit is charged for 30 seconds continuously is 10 minutes.
- **'DC HEALTHY' Indication** : On Pressing 'DC HEALTHY' push button relevant Red LED will glow, indicating healthiness of output DC supply. The shunt trip operations are not guaranteed once this LED extinguishes.
- **'AC HEALTHY' Indication** : 'AC HEALTHY' indication for indicating the healthiness of AC supply to the inbuilt circuit.
- **'TRIP HEALTHY' Indication** : Once the trip coil is connected across terminal No.12 (i.e. 7H) and 21, on pressing trip healthy push button, relevant Red LED will glow indicating healthiness of the trip circuit.
- **Case** : The power unit is supplied in our standard EGE-301 case, suitable for flush or projection mounting. Please refer Fig-2

- ORDERING INFORMATION** :
1. Output power requirement
 2. Optional inbuilt auxiliary relay, if required.

SCHEMATIC DIAGRAM

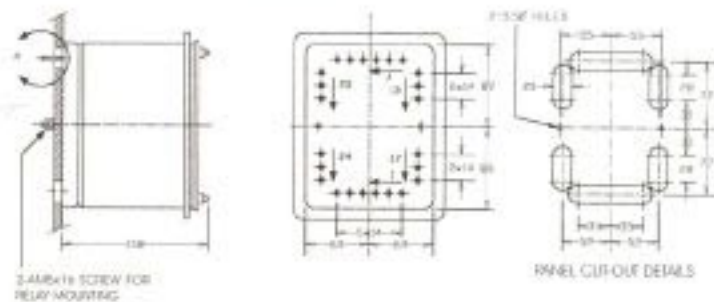


- T- Transformer
 D- Diode bridge
 C- Storage Capacitor
 R- Resistor
 B1, B2- Push Button
 L1, L2, L3- Indicating Lamp
 TC- Trip Coil
 R/A- Relay N/O Contact
 CB/A - Circuit breaker N/O Contact

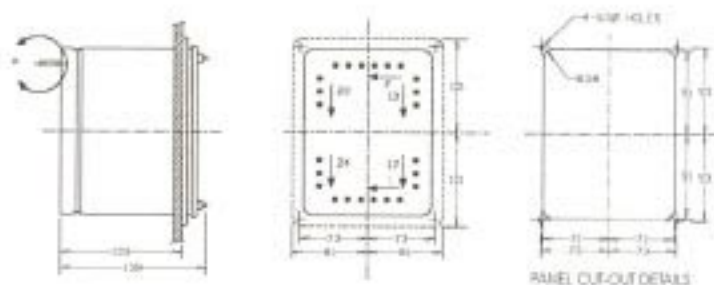
FIG. 1

CASE EGE 301 DIMENSIONS

PROJECTION MOUNTING



FLUSH MOUNTING



DETAILS OF TERMINAL A1 - A

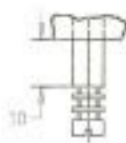


FIG. 2



Jyoti Ltd. VADODARA (INDIA)
50 Years of Engineering Excellence

FOR FURTHER ENQUIRIES
PLEASE CONTACT

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