

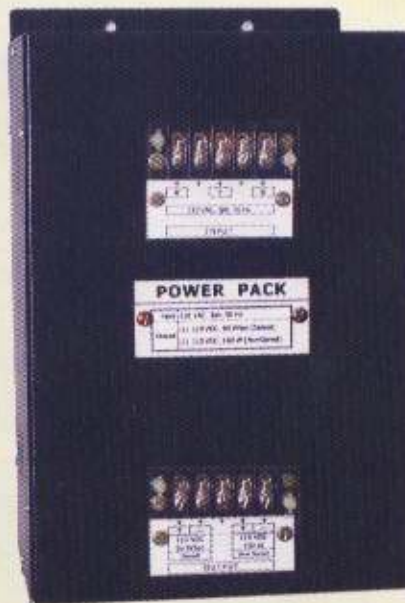
POWER PACK

(Energy Storage Device)



SALIENT FEATURES

- Adequate DC energy for energising shut-trip coil of Circuit Breakers
- Built-in capacitors to store energy on failure of AC supply.
- Trip Supply Healthy Indication by LED (optional)
- Can be used as 'Capacitor Trip Device' in unmanned substation etc.,



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Application

During a fault or undesirable condition of the system, the protective relays primarily operate and give an impulse to the tripping coil of the breaker. To energise the trip coil when this impulse is given, a most reliable auxiliary DC supply is required. In majority of installations this DC supply is obtained from 'battery' which is considered to be the most reliable auxiliary DC supply. In unmanned sub-stations and / or in installations where only one or two panels are installed, the provision of battery becomes quite expensive, as also its maintenance. In such cases, **Power Pack** can be conveniently used for obtaining DC supply for tripping.

Description

The Power Pack unit rectifies the AC auxiliary supply available at the station and stores rectified DC energy in predetermined number of *capacitors* to ensure that sufficient DC energy is made available to the shunt-trip coil of *breaker* during fault condition, when input AC auxiliary supply may not be available.

Construction

- Power Pack consists of an *input transformer* (1Ø or 3Ø), *bridge rectifier(s)* and a set of *aluminium electrolytic can-type capacitors* mounted on varnished-impregnated hylam boards and housed in sheet metal enclosures. The ratings of above components are based on input/output parameters, application and other co-related operations, of specific models of *circuit breakers* to be tripped.
- In addition to the stored DC (Power Pack) output, simple rectified DC output (non-storage type) for use as *auxiliary* DC supply to other interconnected equipments, can also be provided, as an option.
- 'DC Healthy Test' facility for Power Pack output, by means of LED/Push Button combination, can also be provided, as an option.

NOTE

1. Power Pack unit employs Aluminium Electrolytic Can-type Capacitors. "Shelf-Life" factor is hence applicable, when Power Pack unit is stored/unused beyond **2 weeks**. **Pre-conditioning** of Capacitors (Power Pack) by applying rated working voltage for 2 to 3 hours is essential to ensure homogenous distribution of electrolyte inside capacitor and thereby enabling Power Pack to charge to and deliver rated/desired output.
2. The glow of 'DC Healthy Test' LED with push button (if provided on the unit) indicates **only the presence of output DC voltage**. This does not in any way represents either the quantum of desired stored DC charge or the magnitude of rated DC output voltage, required / suitable for the load (for tripping).
3. **Watt-Sec rating of Power Pack = Wattage of Shunt Trip coil of Breaker x Operating time of Shunt Trip coil X No. of Shunt trip operations required.** Under normal operating conditions, the Power Pack unit shall deliver exactly to the load the rated DC voltage with **specified Watt-Sec rated DC charge**, as called for. The user is hence advised to include **adequate** factor-of-safety while specifying the Watt-Sec rating of Power Pack, bearing in mind the possible degradation of Mechanical/Electrical properties of Breakers over prolonged use.

Technical Data

Input	Any AC voltage, 1Ø or 3Ø
Output	Any AC voltage, with specified watt-sec rating
Maximum assured Shunt Trip operations	To be specified by user, so that Watt-Sec rating is provided accordingly. Minimum charging time shall be five seconds.
Maximum Off time	On fully charged condition, the maximum time for which the Power Pack maintains 80% of rated Output Voltage on NO LOAD condition, after the failure of input AC Voltage = 2 to 4 Hours
Insulation	Unit withstands 2500V AC RMS 50Hz for 1 sec between earth and all output terminals (as per IS:3231)

Ordering Information

The following are '**Ordering Information**' (technical) which are to be furnished by the Customer, beyond ambiguity, while raising an Enquiry or a Purchase Order.

1. **Input:**

Input AC Voltage, to be applied : _____ VAC
Whether 1 Phase or 3 Phase : _____ Phase

2. **'Stored' DC Output :**

Output DC Voltage required : _____ VDC
Watt-Sec rating required on 'Stored' DC Output : _____ WSec

If Watt-Sec rating is not available, please specify :

Resistance of Shunt Trip Coil : _____ Ohms
Operating Time of Shunt Trip Coil : _____ milli sec
No. of Shunt Trip Operations, required after failure of Input AC : _____ Nos.

If Electrically-operated 'Close Coil' is **also** to be powered by Power Pack, specify **all** above details for Close-Coil also.

3. **"Non Stored" DC Output (simple-rectified) :**

Whether "Non-Stored Output" required : _____ YES / NO
If : **YES**, Max Wattage of your Load : _____ W

4. **Whether 'DC Healthy' Test facility (LED + Push Button) required**

YES / NO

NOTE : Quotation & Mechanical Dimensions of Power Pack are determined **ONLY** when **all** the above details are furnished

For further details, please contact :

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