D5407 Switchgear trip low power chargers.

The D5407 charger range is intended for use with circuit breakers which require dc shunt tripping. These chargers combine an inbuilt set of high current capacity long life sealed lead acid batteries for shunt coil or winder motor service with a regulated and filtered output suitable for supplying a standing load such as relays and pilot lights and additionally the charger features comprehensive alarm facilities.

General description.

The D5407 charger is a single-phase, fully controlled, transistor regulator type which consists of the following major power elements:

(1) Stepdown power transformer
This single phase transformer steps down, isolates and provides the low voltage output to the rectifier bridge. The transformer is constructed and tested to AS2374-1982 (Power Transformers).

(2) Rectifier bridge
The rectifier bridge consists of 4 high voltage high current diodes in a single assembly. The rectifier bridge is air natural cooled.

(3) Smoothing capacitor group
This smoothing capacitor filters the dc supply voltage to the preregulator and regulator.

(4) Transistor regulator
The transistor regulator uses a single hybrid power device to accurately set the voltage to the battery. The transistor regulator has internal thermal protection and is current limited by external control circuitry. For voltages above 24V, an additional preregulating high voltage transistor protects the pass transistor.

Control of the charger output is achieved through regulation of the pass transistor device current. The output voltage and current are sampled by amplifier circuits and a control signal is delivered to the pass transistor. By this means, smoothly varying voltage and current control are obtained. The good voltage regulation obtained from this configuration is necessary for reliable sealed lead acid battery charging.

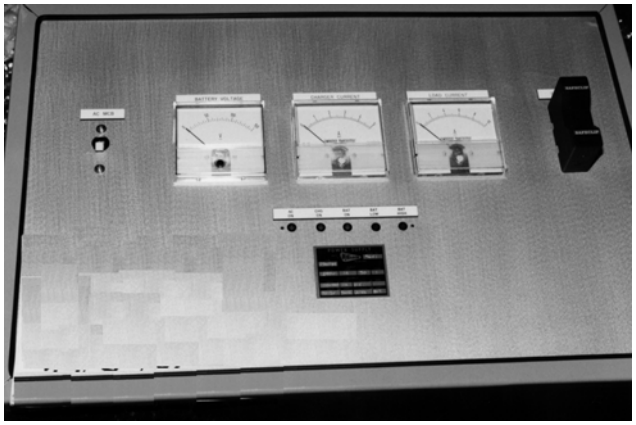
Battery chargers and Switchgear trippers

Standard alarms and indicators.

The charger is fitted with the following local annunciators and remote alarms:

(1) AC SUPPLY ON (Green Pilot lamp)
(2) CHARGER ON (Green Pilot lamp)
(3) BATTERY ON (Green Pilot lamp)
(4) LOW BATTERY VOLTAGE (Red Pilot) Remote contact provided.
(5) BATTERY HIGH (Red Pilot) Remote contact provided.
(6) CHARGER FAIL (Red Pilot) Remote contact provided.
(7) BATTERY DISCONNECT (Red Pilot) Remote contact provided.

The low voltage disconnect relay serves to protect the battery set from being discharged to completely flat as a complete discharge will damage the battery and prevent the battery from being recharged fully.



The D5407 charger is available as standard in a convenient wall mounted enclosure. This enclosure contains the charger and the high rated valve regulated battery.

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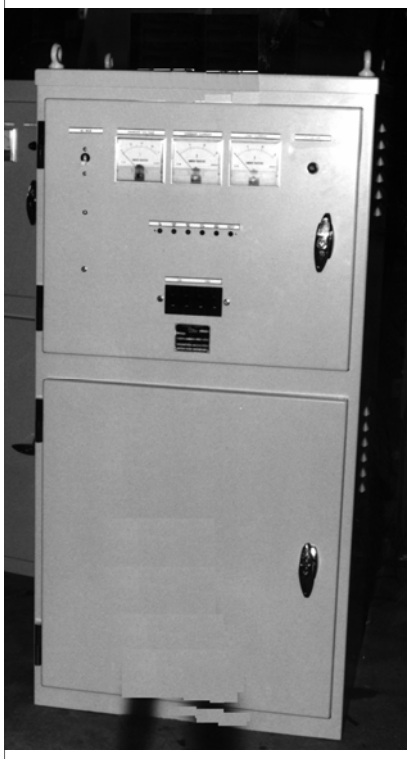
All lamp indications are by high intensity light emitting diodes mounted on the front panel. The remote alarms consist of one set of voltage free changeover contacts for each of the alarms 4,5,6 & 7. The contacts are rated at 5A AC.

Standard metering and protection.

The charger is equipped as standard with two analogue indicating meters, which show battery voltage and charger output current. Protection for the charger is provided by both electronic current limit circuits and, in addition, the output positive line of the battery charger is protected by a clip-in HRC cartridge fuse mounted in a fully shrouded fuse holder.

Constant voltage charging

The battery charger is a constant voltage current limited float charger, where a closely regulated voltage controlled is delivered to the battery. The float voltage will hold the battery at the fully charged state and recharge the battery after a discharge takes place.



The D5407 range of chargers is available in a wide number of custom configurations. Shown here is a battery charger system in floor mounted cabinet with inbuilt batteries and a dc distribution panel.

D5407 Charger performance specification.

(1) Input voltage: 100V/110V/120V/ 220V/240V 1-phase +/-10% (Specify input)
(2) Input frequency: 50/60Hz.
(3) Full load continuous output: 1A, 2A, 3A or 5A (chargers above 24V available only as 1A and 2A in this execution).
(4) Float voltage at full load output: 27.6V (24V system), 34V (30V system), 36V (32V system), 40.5V (36V system), 54V (48V system).
(5) Regulation at float: +/-1%
(6) Ripple at any load, without battery: <1.0% rms.
(7) Temperature derating (above 40 degrees C): derate 2%/degree C above 40 degrees C ambient.
(8) Efficiency at full load: >60%
(9) Cooling: AN

D5407 wall mounting enclosures

The standard D5407 charger is provided in a wall mounted cabinet manufactured of 1.25mm steel sheet and suitable for indoor mounting. The protection rating of the cabinet is IP22 (AS 1939) and the cabinet is finished in durable powdercoat paint, colour RAL 7032 beige. Other colours are available in this range, please contact us.
The cabinet outlines are as shown in Figure 1.
The enclosure dimensions will vary according to the type of charger and battery combination as shown in the following table.
The battery fitted as standard to the D5407 switch gear tripper battery chargers is a valve regulated type pure lead acid sealed battery. This battery is

Voltage	Current Size	Int Batt. Cap.	
24V	1A - 3A	2.5, 5Ahr.	II
24V	5A	5A, 10Ahr	IV
30V - 36V	1A, 2A	2.5, 5Ahr	II
30V - 36V	1A, 2A	10Ahr	IV
48V	1A	2.5 Ahr	II

available in executions of 2.5, 5 and 10 Ampere hour. The battery offers a long design life, with typically 8 years life in float service, a fully sealed construction and has a very low internal impedance, allowing high pulse currents that tripping and winder motors require from small battery sets.