

Model D5395 Impedance Monitor

Introduction

The Model D5395 battery impedance monitor measures the impedance of a battery connected to a battery charger. The impedance, or internal resistance, of the battery is an indication of the health of the battery. The D5395 monitor can test the impedance of the battery while the battery is in service. The D5395 is powered from the test battery or an external auxiliary supply and comprises a single circuit card with local led indication and remote relay indication.

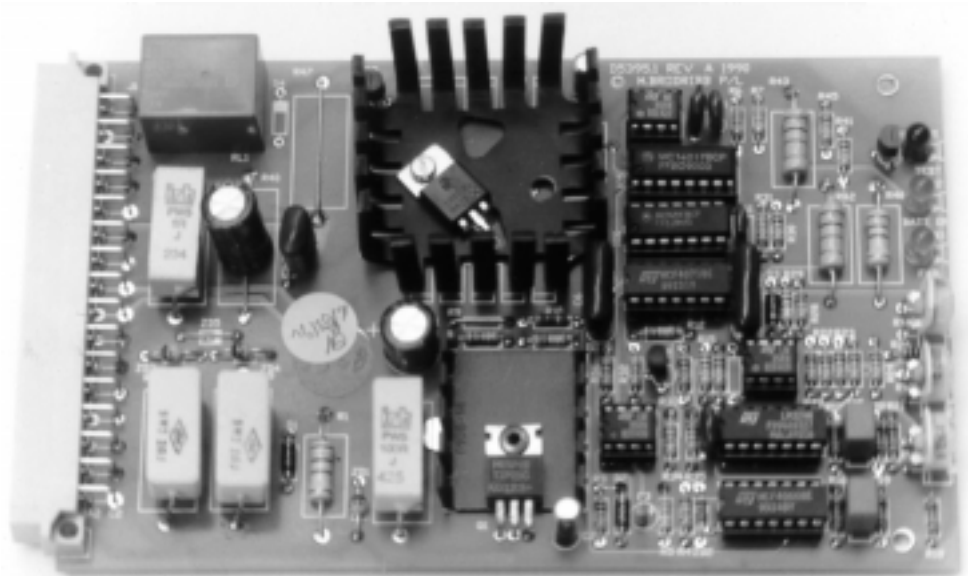
The D5395 monitors the battery impedance by repetitively applying a regulated small current load to the battery and measuring the voltage drop that this extra load imposes. The monitor also detects if the battery voltage is low and will detect if the battery is not connected to the charger because of the failure of connecting battery fuses or links.

The typical application for the D5395 monitor is for critical applications of battery sets that are unattended such as substations chargers.

The D5395 is suitable for use with battery charger systems using thyristor type control, with power ratings up to 125V and amperage ratings from 5A to 25A.

Installation

The D5395 is constructed on a single circuit card of "Eurocard" dimensions. The D5395 card dimensions are 100mm x 160mm and is fitted with a 32-pin DIN 41612 edge connector. The card may also be fitted to any card subrack suitable for 2RU ("Single Euro") circuit boards.



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Features

The monitor is provided ready for operation.

The monitor is fitted with three LEDs and a relay, with voltage free relay changeover contacts to provide remote indication. The indicator LEDs indicate the following conditions.

“BATT ON” LED. This green led indicates that dc supply is available to the monitor. illuminates

“TEST” LED . This yellow led flashes to indicate when a test load is being applied to the battery.

“FAIL” LED . This red led illuminates after an adjustable time delay, and at the same time, the alarm relay changes state.

The remote relay is fitted with 1 set of changeover voltage free contacts. The relay contacts are rated at 110V 1A ac or 24V ac/dc 3A.

Operation

The unit measures the circuit impedance of the associated battery and circuitry. The D5395 draws a 0.8A current for 0.4 sec in every 2 secs. This presents an average current drain of 200mA on the system. The associated battery charger should be charging at this time to ensure that the battery is not discharged over time by the operation of the test unit.

The D5395 is fitted with three adjustable potentiometers. These are for Gain, Impedance (0.5 - 5R) and Delay (15 sec to 150 sec). and are normally only used for initial settings and may be left for continuous operation.

Installation tips

The monitor operates by discharge of the battery for a short period of time. When the monitor applies the load a discharge current is drawn from the battery and any other connected capacitances, such as the filter capacitors of the battery charger and other connected dc loads. When the connected capacitance is very large it will mask the battery impedance and the monitor will give erroneous readings. The maximum connected capacitance that can be driven at 120V dc is 33 000uF.

The monitor also relies on the relatively slow response of thyristor controlled systems to changes in load. The applied pulse is 0.2 sec long which is faster than the response time of most single phase thyristor controlled systems, but if the charger transient response time is faster than 0.2 sec, the monitor will not be suitable for the application.