



# Advanced Diagnostics Board

Fully Automatic, High Power  
8 bit Micro-Controller Based System

Design based on field proven techniques that are well known for high quality and long life reliability

The **Advanced Diagnostics Board** is a fully self-contained, automatic micro-controller based system. The use of a high power, 8 bit micro-controller enables us to provide the customer with one of the best charger/diagnostic systems on the market.

## Features

### GENERAL

- High power 8-bit micro-controller (MCU)
- Lockout mode
- Annual test sequence
- Standard 10 minutes time delay
- Selectable accelerated lamp test
- Variable time forced test

### CHARGER

- 120/347 volts 60 Hz input standard
- Pulse charger under MCU control
- Temperature compensated
- Charger "ON" indicator lamp
- AC "ON" pilot lamp

### TRANSFER

- Sealed relay
- Automatic and instantaneous
- Low voltage battery disconnect
- Fused output circuits
- Brownout detection
- Lockout

### DIAGNOSTIC

- Audible alarm and high efficiency red LEDs
- Battery failure/1 minute test
- Battery disconnect / 5 minutes test
- Charger failure/10 minutes test
- Lamp failure/20 minutes test
- Service alarm
- AC on
- Charger on



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## Suggested Specification

The Emergi-lite **Advanced Diagnostics** Micro-controller board shall supply the rated load for a minimum of a 1/2 hour to 87.5% of the rated battery/voltage. The unit shall be rated 120 or 347 V, 60Hz and be CSA listed.

The charger shall be fully computer tested and its charge voltage factory set to  $\pm 1\%$  tolerance. Chargers with field adjusted potentiometers are not acceptable.

A Pulse type charger shall be employed to promote long battery life and reduce the potential for grid corrosion. The charger shall provide a continuous high charge to recharge the battery. When the battery is at full capacity, the charger will shut off. Periodically the charger shall provide a Pulse of energy to keep the battery topped off. The Pulse charge shall be current limited and precisely regulated by a micro-processing circuit which samples the battery in relation to its temperature, state of charge and input voltage fluctuations. The charger shall be current limited,

temperature compensated, short-circuit proof and reverse polarity protected. The unit shall be furnished with an electronic lockout circuit which will connect the battery when the AC circuit is activated, and an electronic brownout circuit which will activate the emergency heads when utility power dips below 75% of nominal voltage. A low voltage battery protection circuit shall be provided and will disconnect the load and circuitry from the fused output circuit when the battery reaches 87.5% discharge. The unit shall self test for 1 minute every 30 days, 10 minutes on the 6th month and 30 minutes every 12 months. The unit shall be capable of full recharge in compliance with CSA specifications. The unit shall be furnished with a dust-tight relay, a test switch and diagnostic LED indicator lights to continuously monitor the status of the unit:

Battery Failed, Battery Disconnected, Charger Failure, Lamp Failure, Service alarm, AC "ON", Charger High Rate.

## Electrical Specification

**Power requirements:** 120 or 347 volts 60Hz

**Output:**

Fused output circuit

- 6 volts 50 watts One lamp circuit (54 watts max.)
- 6 volts 100 watts Two lamp circuits (54 watts each)
- 12 volts 100 watts One lamp circuit (108 watts max.)
- 12 volts 200 watts Two lamp circuits (108 watts each)

**Transfer:** Dust-tight relay automatically and instantaneously energizes lamp load upon failure of AC supply.

**Lamp Filament Detection:** Resolution is 10% of the full-load circuit or 5.6 watts in a 56 watts load (i.e.: one lamp out of ten). No more than 5% voltage drop is allowed in the remote lead wires. See chart for wire size vs. distance and power.

**LVD:** Low voltage battery disconnect automatically shuts down lamp load and circuitry when battery reaches 87% of nominal battery voltage preventing deep discharge and permanent damage to the battery.

**Lockout:** Labor saving feature that automatically connects battery only after AC circuit is activated.

**Brownout:** Close tolerance feature that initiates a transfer when input line voltage dips below 80-85% of nominal voltage.

**Charger:** The charger is current limited, temperature compensated and short-circuit proof. The equipment is capable of full recharge in compliance with Underwriters Laboratories std. 924 specifications, and CSA C22.2 no. 141.

**Controls:** One external test/silence test switch, one "reset" switch on PCB.

**Indicators:** Five high efficiency red LEDs for alarms, one yellow LED for CHARGER "on" and one green LED for AC "on". These LEDs perform dual duty of indicating forced test in progress and its duration.