

## FEATURES

- Safely discharges LiPo batteries 1S-8S
- Simple, reliable design
- ~1 Amp discharge per cell
- LEDs indicate discharge progress
- Easy to use- attach standard 0.1" pitch

balance connector and leave until LEDs are off

- Insulated backside
- 110g, 3.3"L 3.2"W

## DESCRIPTION

The E2540 LiPo Battery Discharger allows the safe complete discharge of used batteries for proper disposal.

## APPLICATIONS

- Radio control planes, boats, cars

**Table 1. Electrical Characteristics**Test Conditions: Supply Voltage  $V_{bat} = +33.6V$ ,  $T_{ambient} = 25^{\circ}C$ , unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{bat}$	Battery voltage	0		50	V
$V_{cell}$	Cell voltage	0	4.2	6.2	V
$V_{led}$	LED voltage	1.4	1.5	1.6	V
$I_{dis}$	Discharge current per cell @4.2V			1.07	A
$T_{operate}$	Operating temperature	-40		+40	$^{\circ}C$

**General Precautions**

**Discharge LiPo batteries at your own risk! LiPo batteries are fire hazards at all times so keep them in a fireproof container or open area far from flammable materials until ready to use.**

Charged devices and circuit boards can discharge without warning. Proper ESD precautions should be followed to avoid failure.

This device is not authorized for use in any product where the failure or malfunction of the product can reasonably be expected to cause failure in a life support system or to significantly affect its operation.

Locus Engineering Inc. reserves the right to make changes at any time without notice to improve product features or reliability.

Information is provided by Locus Engineering Inc. with the best of intentions without any warranty expressed or implied. As such Locus Engineering Inc. disclaims all liabilities or responsibilities for any use of the information, any inaccuracies or fitness for a particular purpose.

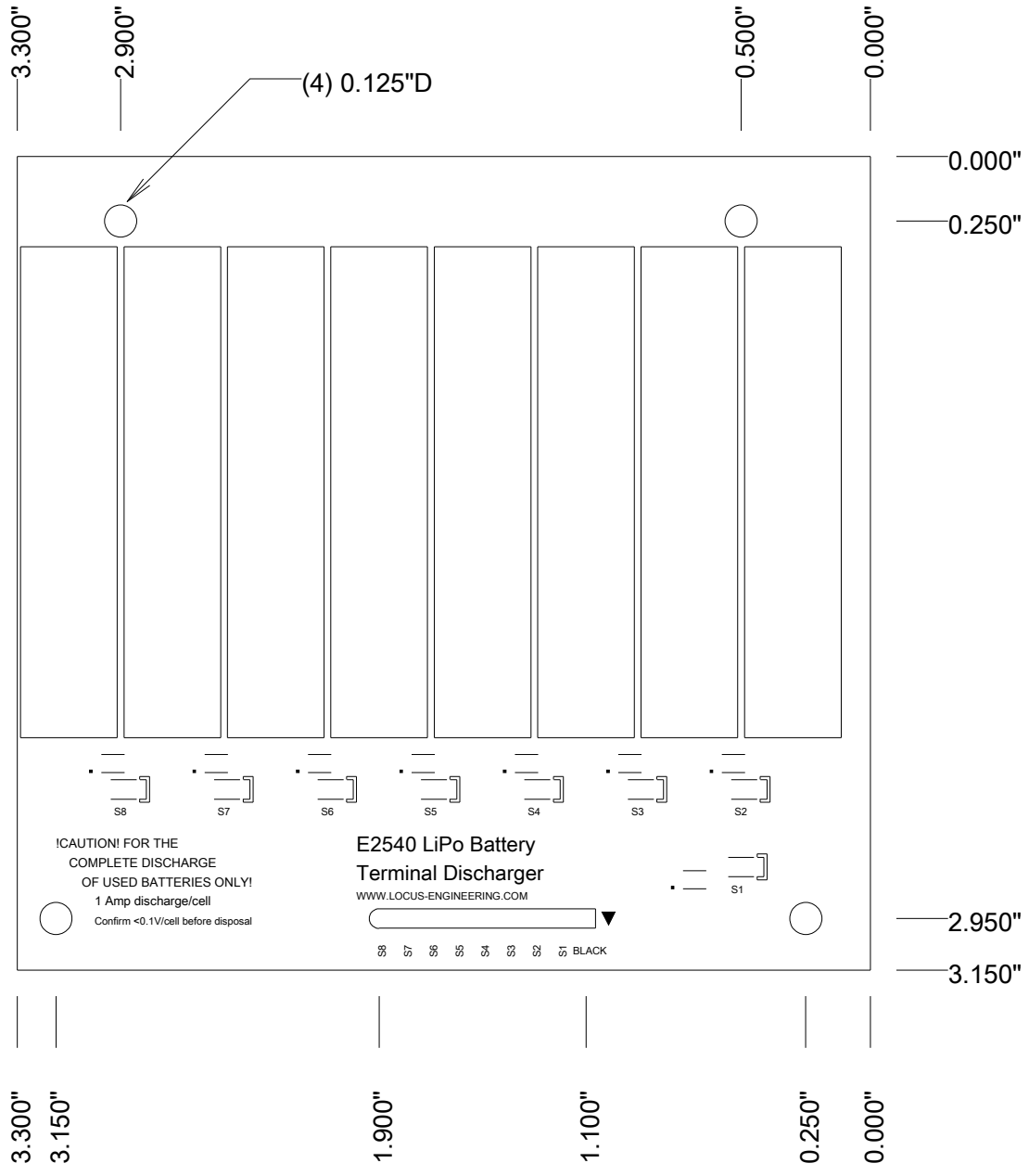


Figure 1. Module Dimensions

## Operation

The E2540 LiPo battery discharger is easy to use for the safe terminal discharge of unwanted batteries. This product is intended for the complete discharge of LiPo batteries, and will discharge all cells connected to the balance plug. For discharging LiPo batteries to storage capacity, use a discharger specifically designed for this purpose.

LiPo batteries are dangerous when charged due to the high energy density, however the danger decreases with the discharge. LiPo batteries remain fire hazards unless significantly discharged to below 1 volt.

Ensure LiPo batteries are kept away from flammable materials, and preferably in a fireproof container whether for storage or for discharge.

When a LiPo battery is deemed unusable, it should be discharged completely so it is safe for disposal.

The E2540 uses one 10W resistor for each cell, and the current is limited to ~ one Amp. This is safer than discharging a potentially damaged LiPo battery with a higher current. Discharging with a lower current minimizes heat buildup in the battery and puffing. The balance connector with 0.1" pitch is universally used and is rated for the discharge currents used.

Connect batteries to be discharged using the balance charge plug keeping the black wire on or towards the E2540 board terminal labelled "BLACK". If there is any charge in the battery, the LEDs associated with the connected cells will light up. If the balance charge plug is reversed, the battery will still discharge but the LEDs won't light. The LEDs will remain lit until near the end of the discharge.

Several LiPo batteries can be discharged at once if the balance connectors can be plugged in. Simply ensure the black wire of each balance plug is towards the E2540 board terminal labelled "BLACK".

Allow approximately one hour per 1,000 mA-Hr of battery capacity plus another hour. For example, for a 3200 mA-Hr battery, allow 3.2 hrs + 1 hr = 4.2 hrs. The discharge time is the same regardless of number of cells since there is a discharge resistor for each cell. Discharge used batteries in a safe area far from flammable material or in a fireproof enclosure.

In practice, the LEDs will turn off when the cell voltage reaches ~1.4 volts which is well below the 5% remaining capacity at 3.0V cell voltage. For added safety, measure the cell voltage and ensure it is <0.1V prior to disposal at your local battery recycling facility.

The battery internal resistance can be measured with a voltmeter. First measure the open battery voltage  $V_{open}$  with no load attached. Then measure the battery voltage  $V_{load}$  with the E2540 load connected. The internal resistance is calculated as  $R_{int} = 3.9 * (V_{open} - V_{load}) / V_{load}$  e.g. for  $V_{open} = 4.20V$ ,  $V_{load} = 4.15V$ ,  $R_{int} = 3.9 * (4.20 - 4.15) / 4.15 = 0.047$  ohms. Good batteries have internal resistances <0.020 ohms.