

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 498

## 3 AND 4 CELL LI-ION BATTERY CHARGER BOARD WITH BUILT IN CHARGE TERMINATION

LTC4007

### DESCRIPTION

Demonstration circuit 498 is a single battery stand-alone battery charge controller with built in charge termination featuring the LTC<sup>®</sup>4007. The input voltage is 13 to 20V. The charger output voltage is programmed by jumpers to support 3- and 4-Cell Li-ion batteries with a cell voltage of 4.1V or 4.2V/Cell. The maximum charge current is 4A. The demo board is initially configured for 12.6V Li-ion batteries. The board will automatically charge a battery to termination as soon as input power is applied with a battery connected prior to power up. Status LEDs are provided for CHG, ACP, FAULT, FLAG, ICL and LOBAT. An onboard NTC thermistor is provided. Although this

charger is not a smart battery charger, a popular smart battery connector is provided that can be used for data logging with the optional DC1223A-B demo board and software. To be clear, you do NOT need a smart battery to use this board. The optional DC1223A-B SMBUS to USB Port Adapter and associated software to monitor a smart battery are for demonstration purposes only. Contact your LT representative for ordering a DC1223A-B.

**Design files for this circuit board are available. Call the LTC factory.**

LTC is a registered trademark of Linear Technology Corporation.

**Table 1. Performance Summary**

| PARAMETER                         | CONDITION                                | VALUE                                  |
|-----------------------------------|------------------------------------------|----------------------------------------|
| Maximum Input Voltage             | Limited by input Capacitor Volt Ratings. | 20V +/- 10 %                           |
| Recommended Minimum Input Voltage | Vin > Vbat Termination voltage.          | 13V when using a 12.6V Li-ion battery. |
| Input Current Limit               |                                          | 3.5A                                   |
| Maximum Charge Current            | Vin > Vbatmax > 6V                       | 4A +/- 5%                              |

### QUICK START PROCEDURE

Demonstration circuit 498 is easy to set up to evaluate the performance of the LTC4007. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. Connect the input power source to DCIN terminals J1 or DCIN and GND using a power supply capable of handling 4A of current within an 11 to 20V range. The input supply MUST be greater than the full voltage value of the battery to allow a full charge to take place.
2. Connect the load to VOUT and GND terminals.
3. Configure the jumpers for your specific battery.

**NOTE:** When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the VIN or VOUT and GND terminals. See Figure 2 for proper scope probe technique.

4. Plug in the battery. The industry standard 5 Pin AMP Smart Battery connector is provided as well as generic soldering Test Points for hardwire connections.
5. Turn on the input power supply.
6. Optionally use the provided DC1223A-B demonstration software to control and configure the DC498A.

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7. **NOTE:** If the board is allowed to get warm, the onboard NTC thermistor may trip and momentarily suspend the charge process. This can be con-

firmed by the fault LED turning on. When the board cools down, charging will resume.

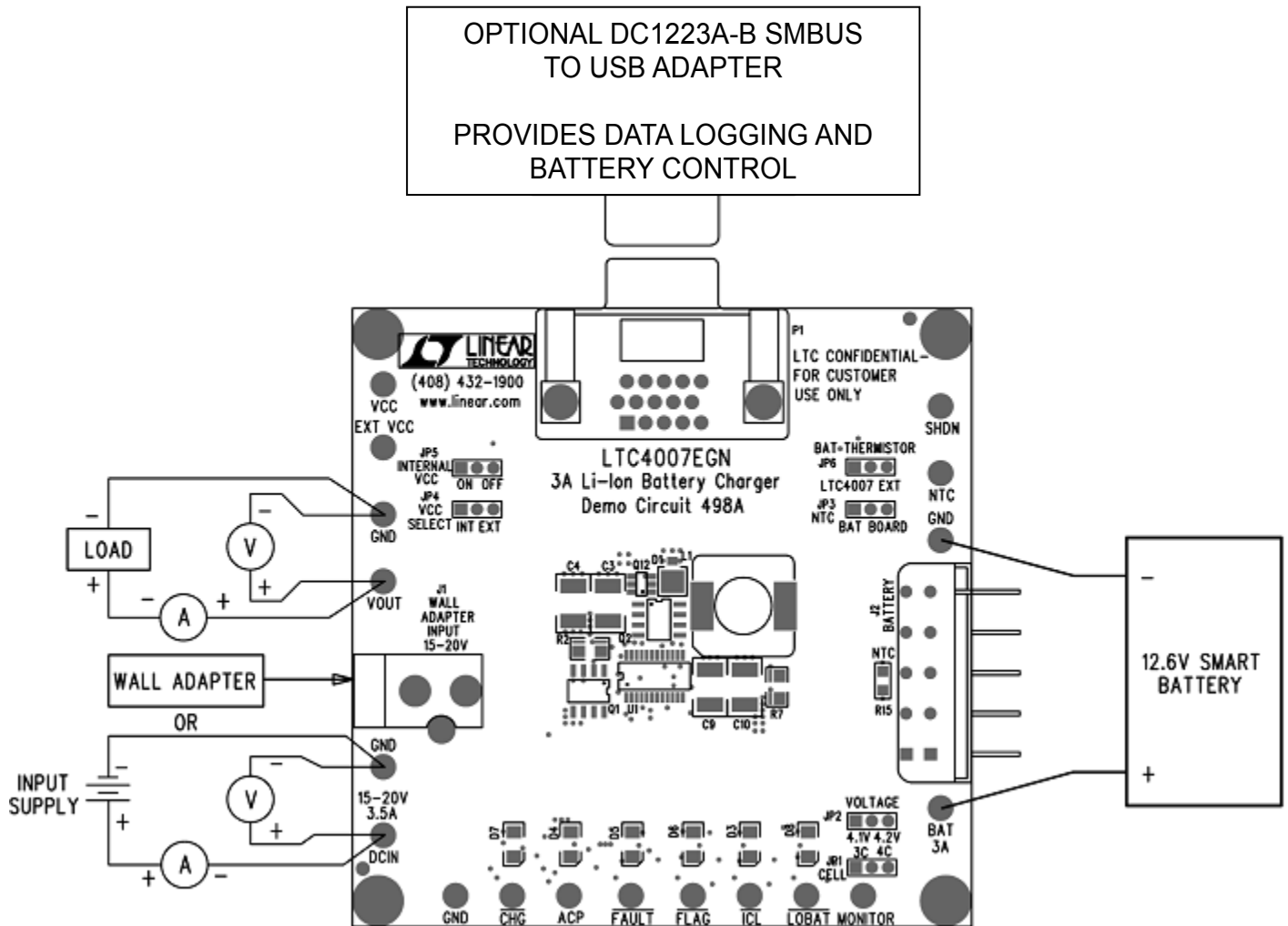


Figure 1: Proper Measurement Equipment Setup

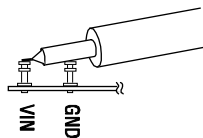


Figure 2: Scope Probe Placement for Measuring Input or Output Ripple

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