

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 486B DUAL-SMART BATTERY CHARGER/SELECTOR BOARD

LTC1760

## DESCRIPTION

Demonstration circuit 486B is a dual Smart Battery PowerPath and charger controller featuring the LTC1760. The input voltage is 12 to 20V. The charger output voltage is programmed SMBus serial interface. The maximum charge current is 4A. The demoboard has been optimized to work with 2, 3 and 4-Cell Li-ion battery packs. A jumper is provided to select trip for low battery voltage (LOBAT), VLIMIT (VLIM), and ILIMIT (ILIM). The board will automatically charge any battery chemistry or cell configuration within the limits provided. By default, the board will power up in 3-Diode mode, which simply means all three power paths to the output (load) are on. The LTC1760 follows the Smart Battery Standards for the Smart Battery System Manager (SBSM) specification. The standard specifies that all PowerPath selection is automatically controlled exclusively by the LTC1760. There is no SMBUS interface command to control the

power paths. A user-selectable standalone mode is provided where the host SMBus lines become battery status output signals and can be monitored with the on-board LEDs.

**OPTIONAL DC1223A-B Demoboard:** The DC486B demoboard is populated with connectors that allow the use of an optional DC1223A-B SMBUS-to-USB port adapter and associated software to control the LTC1760 and monitor the batteries for demonstration purposes only. The software also supports data logging. Contact your LT representative for ordering a DC1223A-B.

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

PowerPath is a trademark of Linear Technology Corporation

**Table 1. Performance Summary**

| PARAMETER   | CONDITION                                      | VALUE   |
|---|--|---|
| Maximum Input Voltage                               | Limited by input capacitor voltage rating      | 20V +/- 10 %  |
| Recommended Minimum Input Voltage                   |  | 12V +/- 10%   |
| Low Battery Voltage<br>Trip point at full discharge | 0% capacity voltage. Set by DCLOW TRIP Jumper. | 5.3V for 2-cell Li-ion<br>7.9 for 3-cell Li-ion<br>11V for 4-cell Li-ion. |
| Input Trip Voltage                                  | Set by DCDIV divider network                   | 10.7V +/- 3%  |
| Maximum Charge Current                              | $V_{IN} > V_{BATmax} > 6V$                     | 4A +/- 5%<br>Adjustable to 1, 2 and 3A.                                   |
| Short-Circuit Shutdown Trip Current                 | Static Load $T > 15mS$                         | 8.33A +/- 5%  |
| Input Current Limit                                 | $I_{BAT} + I_{LOAD}$                           | 3.57A +/- 5%  |

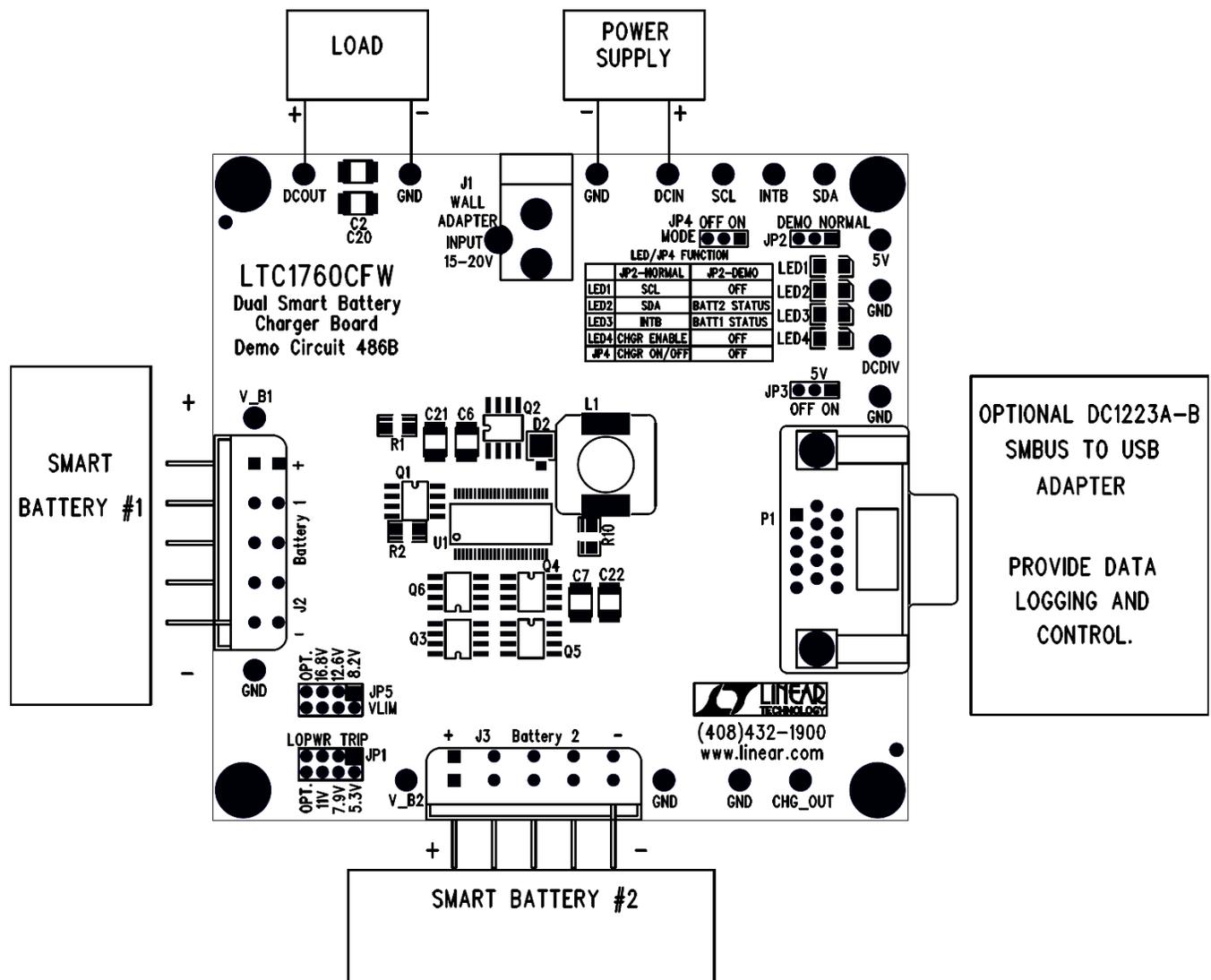
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## DUAL-SMART BATTERY CHARGER/SELECTOR BOARD

### QUICK START PROCEDURE

1. Connect the input power source to J1 or DCIN and GND terminals using a power supply capable of handling 4A of current within the 11 to 20V range. The input supply MUST be greater than the full battery voltage to allow a full charge to take place.
2. Connect the load to DCOUT and GND terminals.
3. Turn on the input power supply.
4. Plug in one or two Smart Batteries of your choice to BATTERY 1 and/or BATTERY2. Industry standard 5-Pin AMP Smart Battery connectors are provided as well as test points.
5. Optionally use the provided DC1223A-B demonstration software to control and configure the DC486B.

Figure 1. Proper Measurement Equipment Setup



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