

## DESCRIPTION

Demonstration circuit 286 is a dual battery PowerPath™ and charger controller featuring the LTC1960. The input voltage is 15V to 20V. The charger output voltage is programmed via SPI serial interface. The maximum charge current is 4A. The demo board has been optimized to work with 3- and 4-cell Li-ion batteries. A jumper is provided to select the LowBatt voltage trip point.

The board will not charge any battery without a device to program it. By default the board powers up in 3Diode mode, which simply means all three power paths to the

output (load) are on. PowerPath selection is programmed over the SPI interface.

This is not a stand-alone demonstration circuit—an SPI interface and associated software is required for proper evaluation. Linear Technology offers demonstration circuit 410, which includes an SPI-to-serial-port adapter and software to control demonstration circuit 286.

**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 Volt Ratings.       | 20V ±10 %                                     |
| Recommended Minimum Input Voltage                 |  | 15V ±10%                                      |
| Low Battery Voltage trip point at full discharge. | 0% capacity voltage. Set by DCLOW TRIP Jumper. | >7.9 for 3 cell Lion<br>>11V for 4 cell Lion. |
| Input Trip Voltage                                | Set by DCDIV divider network.                  | 13V ±3%                                       |
| Maximum Charge Current                            | $V_{in} > V_{BATMAX} > 13V$                    | 4A ±5%  |
| Short Circuit Shutdown Trip Current               | Static Load $T > 15mS$                         | 8.33A ±5%                                     |
| Input Current Limit                               | $I_{BAT} + I_{LOAD}$                           | 3.57A ±5%                                     |

## QUICK START PROCEDURE

Demonstration circuit 286 is easy to set up to evaluate the performance of the LTC1960. 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 TP1 and TP3 using a power supply capable of handling 4A of current within a 15V to 20V range.

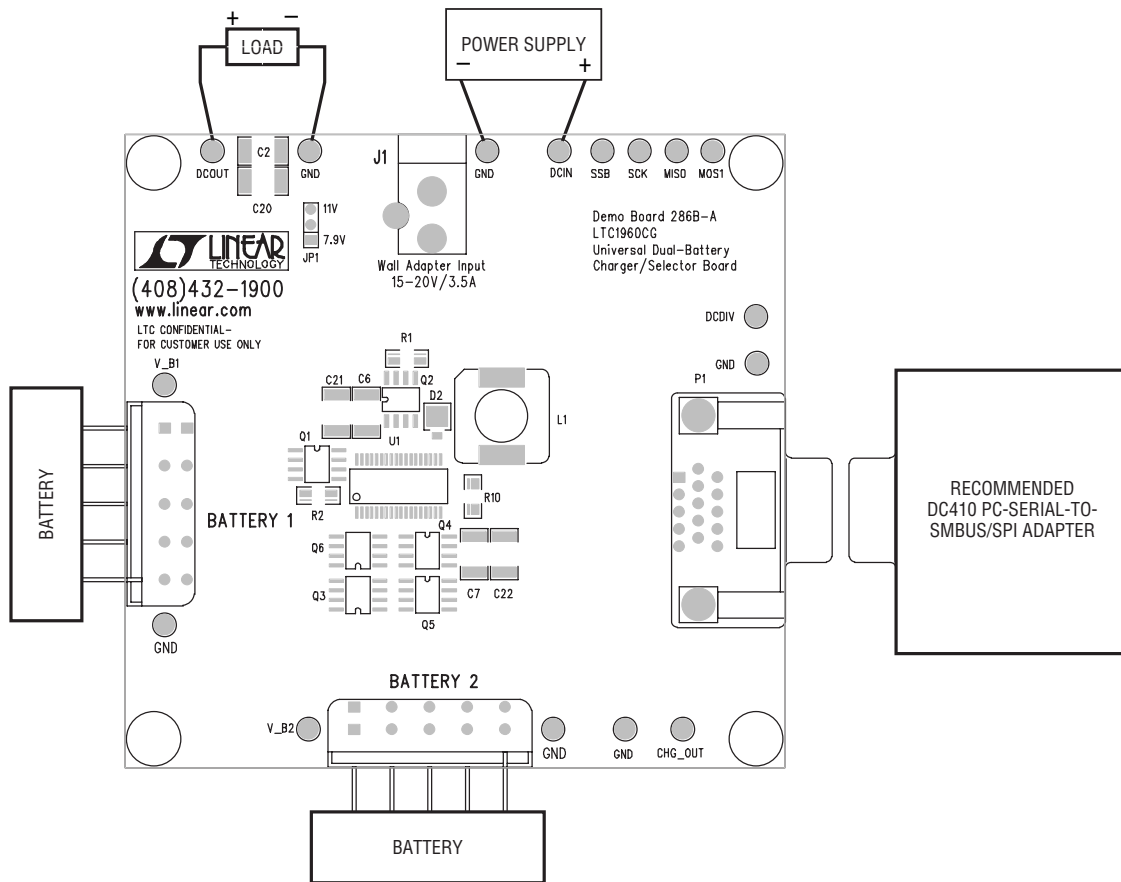
**NOTE:** The input supply *must* be greater than the full voltage value of the battery to allow a full charge to take place.

2. Connect the load to DCOUT terminals TP2 and TP4.
3. Turn on the input power supply.
4. Attach one or two batteries to the BATTERY 1 or BATTERY2 terminals or both. Industry standard 5-pin AMP Smart Battery connectors are provided as well as test points for hardware.
5. Program the LTC1960.

**NOTE:** Optionally use the DC410 demonstration software to control and configure DC286.

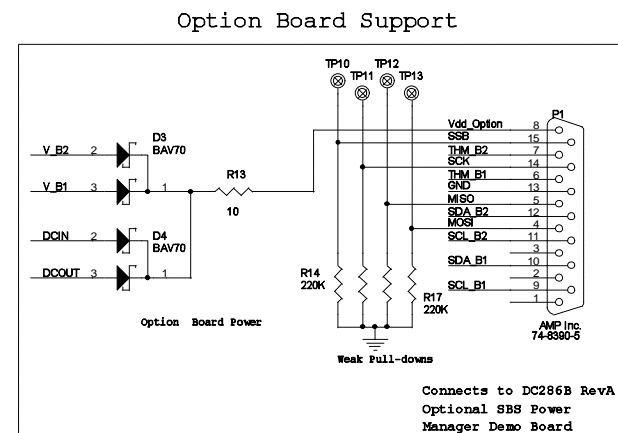
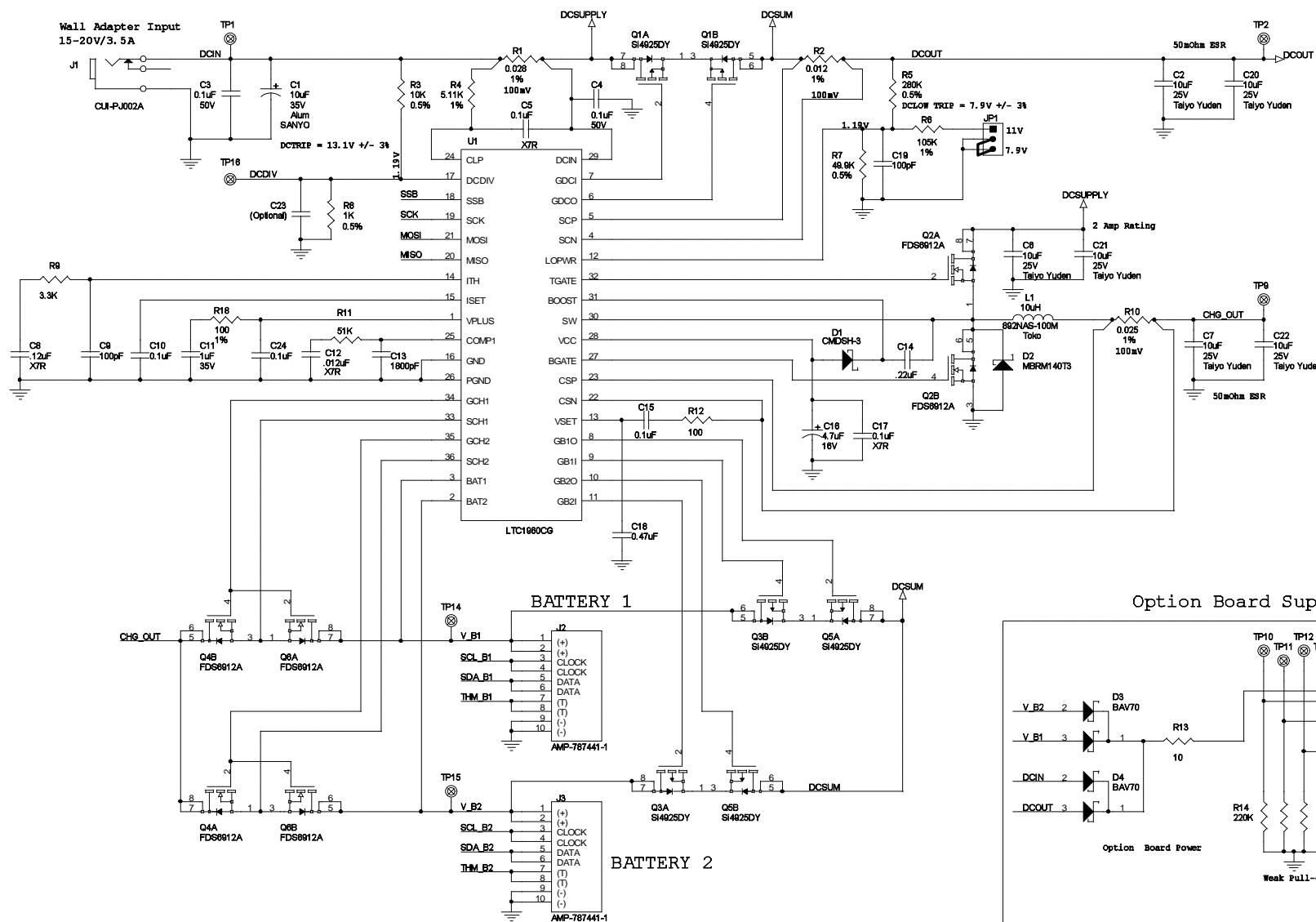
# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 286

## UNIVERSAL DUAL-BATTERY CHARGER/SELECTOR

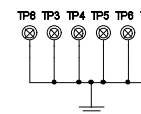


**Figure 1. Proper Measurement Equipment Setup**

| REVISIONS |                  |      |      |
|-----------|------------------|------|------|
| REV       | DESCRIPTION      | APPR | DATE |
| B         | SES Mark Gurries |      |      |



# TEST POINT GROUNDS



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|--|-----------------------|
| <b>Linear Technology Corp.</b><br>1630 McCarthy Blvd., Milpitas, CA<br>95035-7417<br>Phone: (408)432-1900 Fax: (408)434-0507 |                       |
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