

DC Load Bank Specifications

1. Summary

This document describes the specific requirements for a SMART DC load bank. Discharge data measured, displayed and recorded by a load bank should include:

- String Voltage
- Discharge Current
- Discharge Capacity
- Discharge Time
- **Optional:** Cell/Unit Voltage

2. System Composition

The load bank requires the following components unless stated as optional:

Load Bank Body	Resistive load bank utilizes PCB firmware to control MOSFET switches to create an electrical load which will be applied to the battery system, to mimic a typical operational load.
Discharge Cables	Insulated cables used to carry load current from load bank to battery string.
Data Management Software	Software used to view, manage and analyze discharge test information.
USB to RS-232 Cable	Cable used to connect from RS-232 port on load bank to PC's USB serial port.
AC Power Cord	Provides power to the unit at 110/220 VAC, 50/60 Hz.
Cell Cables (Optional)	Multi-lead cables used to measure/monitor cell voltages (1.2V, 2V, 6V, 12V).

3. Load Bank Capabilities

3.1 The load bank measures, displays, and records the following discharge parameters:

- String Voltage
- Discharge Current
- Discharge Capacity
- Discharge Time
- **Optional:** Cell/Unit Voltage

3.2 Overall string voltage, discharge current, discharge capacity, cell/unit voltage (if applicable), and test time are displayed in real-time during discharge, and may be viewed onscreen or by using the provided software.

3.3 Adjustable settings for auto shut-down of discharge are available, based on user-defined cutoff parameters for string voltage, discharge capacity, and discharge time. In addition, an alarm will sound and end the discharge in the event of overheating, an abnormal disconnection of the battery, or if improper polarity is detected.

3.4 Software allows the user to remotely set and modify parameters, start a discharge, and view the test data live and after the test is completed (an RS-232 cable is used for serial connection to PC). It also allows for the creation of customized test reports, which provide test criteria, string/cell information, lists of weakest cells, discharge graphs, time stamps, and test notes.

3.5 Built in thermal shutdown. Safe circuits avoid damage to battery when testing. Circuit breakers prevent damage to the load bank's internal components.

3.6 Programmable load steps (via software).

3.7 Previously used parameters are saved after powering off the unit.

3.8 Large units are equipped with dual lift handles and robust 360° locking wheels for maximum portability.

4. Hardware Performance

4.1 Discharge data save cycle can be set anywhere between 6 and 600 seconds.

4.2 Internal storage of test data, save up to 8 sets of data (each up to 10 hours).

4.3 Max discharge load available within 2 seconds of test start.

5. Technical Specifications

Discharge Current Range:	0 – 2,000 A
Discharge Voltage Range:	0 – 600 V
Accuracy:	Discharge Current: $\pm 1\%$ String Voltage: $\pm 1\%$ Cell Voltage: $\pm 0.5\%$ Discharge Control Precision: $\pm(0.3\% + 0.2 \text{ A})$
Resolution:	Discharge Current: 0.1 A Cell Voltage (2V, 6V): 0.001 V Cell Voltage (12V): 0.01 V
Display:	Backlit numeric LCD
Communication	RS-232 and USB interfaces
Operating Environment:	10 – 40 °C (14 – 104 °F) 0 – 90% relative humidity
Power Requirements:	110/220 VAC 50/60 Hz
Safety Features:	Over-voltage protection Automatic timed fan operation after discharge test

6. Warranty

12 months