MACCOR

BATTERY & CELL TEST EQUIPMENT WORLD WIDE

Series 5302 Advanced Formation System

The Series 5302 is the latest in a series of computerized cell formation systems from Maccor.

The features of the Series 5302 allow it to be used for final cell development, pilot line production, high-volume production, and production quality control applications.

The Series 5302 can be supplied as electronics-only with cabling for connecting to existing cell fixtures or it can be supplied as a turn-key system. The Series 5302 includes PC computer and software, once AC power and other utilities are connected the system is ready for use.

A few of the many system functions include:

- Do Loops to allow cell cycling.
- Charge CC to a Voltage limit, then CV to a Current limit. This is achieved in a single-step with a smooth transition from CC to CV under software control, without any switching.
- Discharge in modes of constant current, voltage, power, or resistance (load).
- End of charge or discharge based on Time, Voltage, Current, Amp-Hour, Watt-Hour, 1/2 cycle Amp-Hour, 1/2 Cycle Watt-Hour.
- Is delivered calibrated to NIST traceable standards, and requires calibration only once per year

A few of the many system features include:

- **Individual Cell Progression** - Each cell progresses individually through all steps of the formation program without stopping, independent of the status of the other cells.
- **Full Data Collection Capability** - The system can be programmed to record data on every cell as fast as once every one (1) minute or multiple thereof. The data record includes Voltage, Current, Test Time, Step Time, Capacity (Ah), Energy (Wh), Cycle, Step No., and Channel Status. With a data server PC (optional) this data can be automatically backed-up along with the system's configuration & calibration files. The data server also allows for automatic reports to be printed and can convert the raw data files to ASCII format.
- **Individual Cell Control & Measurement** - The current to each cell is individually controlled. Relay contacts ensure that current is truly disconnected from the cell at the end of the formation, or if there is a problem with the cell. The voltage and current of each cell is measured independently, and a data file is generated for each cell as well as for each cell tray location..
- **Cell Grading** - Cells can be graded by capacity (Ah). Any number of grade profiles can be programmed and stored, with an unlimited number of grades in each profile. Grades can be printed out after the formation is complete for the sorting of cells.
- **Power Failure** - The PC computer stores the system status on power failure. When power is restored, the system status can be uploaded to the formation system and the formation continued from where it was suspended.

Specifications

System Size	From 512 to > 100,000 cell positions
Measurement Voltage Range	0 to +5.0 Volts
Maximum Charge Voltage	+5.0 Volts
Minimum Discharge Voltage	+2.2 Volts
Voltage Measurement Accuracy	± 0.1% FSR
Voltage Control Accuracy	± 0.1% FSR
Ripple	0 (no measurable ripple)
Maximum Charge Current	Refer to Note 1
Maximum Discharge Current	Refer to Note 1
Current Control Range	0.5% to 100% Full-Scale
Current Measurement Accuracy	± 0.1% FSR
Current Control Accuracy	± 0.1% FSR

Note1: Available in current ranges of 15A, 7.5A, 3.75A, 1A, 500mA, 250mA, 150mA, 20mA, or 5mA.

Modes of Operation

Fixed (Constant) Current	Fixed (Constant) Power
Fixed (Constant) Resistance	Fixed (Constant) Voltage

Time

Control, Measurement, and Adjustment	every 500 mS
Data	every 1 minute or multiple thereof

Options

Fixed 1kHz AC Impedance	Allows the fixed 1kHz AC Impedance of the device to be measured. This measurement can be programmed at any step in the formation procedure
Increased Charge Voltage	Allows each of the channels to charge to a higher maximum voltage (i.e. 10V, 20V, 30V, etc.)
Discharge to 0 Volts	Allows each of the channels to discharge to a minimum voltage of 0 volts
Bar Coding	Bar code based cell handling addition to the formation system which allows for automated operation of the system, tracking of individual cells and their data, and makes data available for other equipment (i.e. cell sorter)
Cell Fixturing	Available for a variety of cell sizes and formats (i.e. cylindrical, prismatic, etc.)
Automation	Added automation hardware (i.e. materials handling, sorting machines, cell storage, end of line QC tester, etc.)
Appropriately Sized Uninterruptible Power Supply	
Calibration and Maintenance Service	

AC Power Input Options

208 – 240 VAC Single-Phase
208/380/480 VAC 3-Phase
50/60 Hertz

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