

## *Model 5400 Battery Testing System*

The Maccor Model 5400 Battery Testing System is a fully automated, computerized test system for qualification testing of large quantities of commercial batteries. Typical applications are:

- Recertification of cells or battery packs at repair/return centers for manufacturers of batteries or battery containing products (i.e. cell phones, laptops, handheld devices, cordless tools, etc.).
- Final QC of cells or battery packs for manufacturers of batteries or battery containing products (i.e. cell phones, laptops, handheld devices, cordless tools, etc.).

The system's interface consists of circuit boards, each approximately 10 cm high by 48 cm wide. Each of these circuit boards handles 8 test positions and incorporates the following:

- Battery contactors
- Green and red LED's for each battery position to indicate a passed or failed condition.
- A small alphanumeric display with push buttons for selecting/changing the procedure, starting tests, stopping tests, and clearing completed tests.
- LED's next to each alphanumeric display to indicate operating or completed tests.

Once the system has been configured, it operates as follows:

- The operator will take (up to) eight batteries, all of the same type, to one of the boards configured with the appropriate "battery contactor" and load the batteries into the positions.



*Model 5400 Cabinet*

- Using the push buttons and display, the operator selects the type of battery loaded from a list. The system will only display the battery types which can be mated into the installed “battery contactor”. If no new selection is made, the last selected battery type is assumed and indicated on the display.



- The operator initiates the testing of the set of loaded batteries by pushing the “go” button on the circuit board.
- The system runs the selected test on the batteries to determine whether the battery has the desired capacity and other selected parameters within the programmed tolerance. Optionally the test can also be programmed to initially measure the resistance between (up to two) additional pins and the ground pin to determine whether these resistances are within acceptable tolerance, for cells/batteries containing resistor devices.
- Upon completion of all eight tests on a board, for each battery, a green LED is lit for pass or a red LED is lit for fail and the “complete” LED is lit on the board to notify the operator that the batteries can be removed to allow these positions to be used for further testing.

The Model 5400 systems are available in sizes ranging from 128 to greater than 10,000 test positions. The “day to day” operator does not need to access the PC at any time to perform the function of separating good batteries from bad. Test data and summary data are available on the PC if necessary. In repetitive operations, the operator can test a group of cells/batteries by loading them, pushing a single button, then looking at the red and green LED’s on the front of the test cabinet once a test is completed.

Each of the system’s interface circuit boards has “battery contactors” for a specific battery model. As production needs vary, the board at any location can be swapped for a different board without powering down the system and without interrupting testing on other board positions. All eight positions on an interface board must be loaded with the same type of battery. However, all of the positions do not have to be loaded with batteries to run a test (i.e. if only three batteries of a particular model are available they can be tested without waiting for five more to arrive). Each board can be loaded, started and operated independently of the other boards.

The test cabinets are designed with front and rear doors providing easy access to the electronics.

Supplied as a complete turnkey system, the Model 5400 consists of a test cabinet, PC computer, tester software, and firmware. The test cabinet, with embedded microprocessors, and PC computer are connected via a 10 Base T LAN communications network.

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### Typical Specifications

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Total System Size	256 to > 10,000 cells
Measurement Voltage Range:	0V to +5 Volts †
Maximum Charge Current:	2.5 Amps †
Maximum Discharge Current:	2.5 Amps †
Voltage Measurement Accuracy:	±5 mVolts
Voltage Control Accuracy:	±5 mVolts
Current Measurement Accuracy:	±2 mAmps
Current Control Accuracy:	±2 mAmps
Capacity Accuracy:	±2 mAmp-hours at the C rate
Maximum Charge Voltage:	+ 5 Volts †
Minimum Discharge Voltage:	0.2 Volts or 0.55 * current (whichever is greater)

† Other voltage and current ranges are available as options.

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### AC Power Input

#### Power for Electronics

110 or 220/240 VAC Single-Phase  
50/60 Hertz

#### Power for Charge

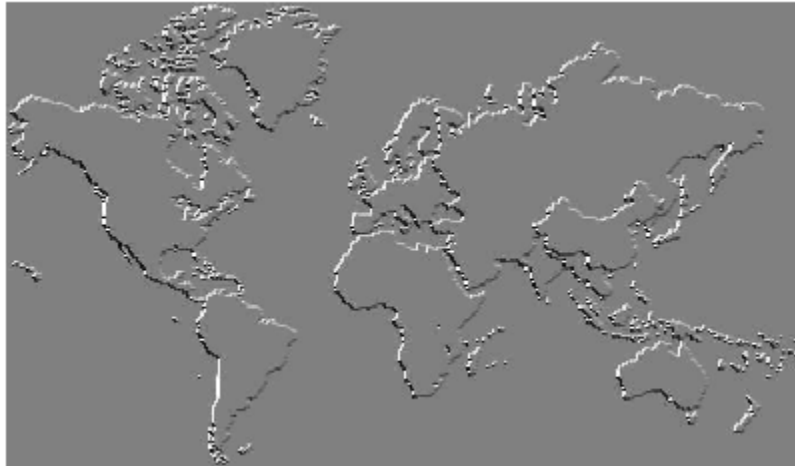
186 to 265 VAC Single-Phase or  
186 to 265 VAC Three-Phase  
50/60 Hertz

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