

PRODUCT SPECIFICATIONS

MSTAT4

Model number: MSTAT4 (-2V)-10V, 5A/0.1/0.001A



GENERAL DESCRIPTION

MSTAT4 contains four stations which enables multiple, independent PST/GST experiments to run simultaneously.

Category: Potentiostat/galvanostat stations are fine-tuned for Battery, Supercapacitor, and Electrochemistry.

Applications:

- Electrochemical research & development
- Half cell testing and materials research
- Cathode and anode research
- Primary & secondary battery testing
- Lead, lithium & alkaline battery cycling
- Small Direct Methanol Fuel Cells

Features:

- Four independent channels are available with each channel functioning as an independent PST/GST. Each channel can be referred to its own reference electrode (RE).
- Each channel comes with three current ranges with 16 bit resolution.
- In multi-electrode applications, each channel accommodates an individual RE or several channels can share one RE (such as in a combinatorial cell). This results in accurate control and measurement which enables individual IR drop compensation. Channels share ground as the counter electrode (CE).
- A unique mathematic filter is adapted in the software to reduce the fluctuation of current or voltage in nature of a digitalized control system.
- There are three current ranges available.
- The advanced software package, MITS Pro (Multiple Integrated Testing System, professional version), provides flexible scheduling; user-friendly interface; distributed system control; DAQ; and easy automatic or manual maintenance and calibration.
- Software will provide easy data plotting based on Microsoft Excel macro.

HARDWARE SPECIFICATION

Number of channels	4 channels
Circuit Type	Bipolar Linear
Voltage Range (max/min)	-2V to +10V standard -5 to 5V as an option ²
Accuracy of Voltage Control & Reading (0.02% FSR)	± 4mV
Minimum V at Maximum Current	-2V @ 5A
Voltage Clamp	Group voltage clamp
Voltage Measurements Input Impedance	~10GΩ
Maximum Current (charge/discharge)	+/- 5A
Current Ranges (0.02% FSR)	High: 5A ± 2mA Medium: 100mA ± 40uA Low: 1mA ± 400nA
Current Rising Time	50uS
Current and Voltage Resolution	16 bit or 0.0015% FSR
Maximum Continuous Power per channel	50 W

SYSTEM SPECIFICATION

Dimension (w x d x h)	12.5 in x 25 in x 10.5 in
Weight (estimation)	< 100 lbs
Maximum # of channels per chassis	4 channels; with expansion for auxiliaries only.
Connection for batteries	Standard 6 ft cables with alligator clips. Arbin provides a variety of battery holders that offer an easy engagement system to the battery tester. Please visit http://www.arbin.com/Store/store.htm for more information.
Connection for computer	TCP/IP
Ventilation Method	Air-cooled, front-to-rear airflow
Room Operating Temperature	10 to 35
Input Power	110V AC or 220V Selectable
Labeling requirements	Power input label Label with PN and serial number on the front of chassis Label each channel on the front panel



²Please add an additional week to delivery. Specifications subject to change without notice.

SOFTWARE CONTROL SPECIFICATION

Arbin Software	MITS Pro 4.0
Standard Types of Control	Current and voltage control via constant, ramp, staircase, pulse, or formula, Constant power, constant load Channel paralleling
End Conditions	Time, Voltage, Current, Capacity, Energy, ΔV , DV/dt , formula, meta-variables, and other combinations
Data Logging Rate	During the Standard Step: 60-100 data points per second, per PC. Faster logging during pulse mode.
Pulse Capability	Single pulse, GSM, CDMA, and other custom high speed pulse included for all channels. Minimum pulse width is 500 μ s.
Simulation for Non-Formulated Profile	Current, voltage, or power simulation, response at seconds
DC Resistance Measurement	DC pulse method, the time-domain analysis; average over 10 pulses, Pickup time of the second data point for DC resistance 50 μ s ~ 2.0ms
Network Capabilities	Provides TCP/IP access for networking
Data Result File	Imported into Microsoft Excel; Arbin's Excel Data Pro macro is included for easy data manipulation
Data File Content	Channel data: test time, step time, voltage, current, capacity, energy, first/second derivative of I or V, auxiliary input data (optional). Statistical data: Cycle #, Cycle Capacity/Energy, Max. voltage, etc.

AUXILIARIES OPTIONS & ACCESSORIES

Arbin Instruments provides a wide variety of auxiliary modules for expanding the capability of the main I, V control circuitry. Each module is a plug-in type to the bus board. These auxiliary modules are classified as input-only, input/output, and control modules.

Input Modules: Auxiliary inputs can be used to record desired data as well as to terminate or regulate charge and discharge processes, based upon measured conditions. Selectable inputs are V (voltage), T (temperature), P (pressure), and pH (pH value).

Input/Output Modules: Digital I/O is an integrated peripheral on/off control. The output is commonly used to control valves and switches. The input allows external control signal to control the testing procedure.

Control Modules: Arbin provides control modules for Auto-calibration, Smart Battery Testing, External Charger, Temperature chamber interface and AC impedance measurement. For more information please visit www.arbin.com/products/accessories/auxiliaries.htm.



SAFETY & UPS FEATURES

Several safety provisions are provided in the Arbin system. The system itself is secure from the inside to prevent user concern. There are three levels of fuses provided inside the system for further protection at the channel, board, and power supply level. The software also has several safety functions which the users can use to avoid over charging the cells, over discharging, over-heating, etc.

Smart UPS: This option uses a very small Smart UPS to back up power to the computer only. It allows the user to enable auto resume option to all or specific channels whenever stopped due to power interruption. The provision is provided for the user to intervene if they so desire before the channels resume. Smart UPS is a great option for a facility with an unreliable power source.

OPTIONS

Auxiliary Measurement Modules

Aux. Voltage Input module – 8 channels (w/o cables)³

Aux. Temperature Input Module (type T thermocouple) – 8 channels (w/o sensors)⁴

Cables and Sensors

Aux. Voltage Cables

Type T Thermocouples