



Materials Research & Testing Solutions

MSTAT

The MSTAT 4 contains four potentiostat/galvanostat stations fine tuned for Battery, Supercapacitor, and Electrochemistry allowing multiple, independent PST/GST experiments to run simultaneously.

MODEL	VOLTAGE	CURRENT
MSTAT4	-2V to 10V	±5A/100mA/1mA

Primary 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

- Four independent channels with each channel capable of 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 and enables individual IR drop compensation. Channels share ground as the counter electrode (CE).
- A unique mathematic filter is adapted in software to reduce the fluctuation of current or voltage in nature of a digitalized control system.
- Three current ranges
- Advance software package, MITS Pro (Multiple Integrated Testing System, professional versions), provides flexible scheduling, user-friendly interface, distributed system control and DAQ, and easy automatic or manual maintenance and calibration.
- Software must provide easy data plotting based on Microsoft Excel macro.

Key Features



MSTAT

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

Hardware Specifications

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

Dimension (w x d x h)	12.5in x 25in x 10.5in
Weight (estimate)	<100 lbs
Maximum # of channels per chassis	4 channels with expansion for auxiliaries only
Connection for batteries	Standard 6ft cables with alligator clips Arbin can also provide different battery holder configurations. Please visit www.arbin.com/Store/store.htm
Connection for computer	TCP/IP
Ventilation Method	Air-cooled, front-to-rear airflow
Room Operating Temperature	10 to 35
Input Power	110V or 220V AC selectable
Labeling requirements	Power input label Label with PN and serial number on the front of chassis Label each channel on the front panel

System Specifications



MSTAT

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

Software Control Specifications

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	50ms per point per channel per computer during Standard Step. Faster times available in pulse mode
Pulse Capability	Single pulse, GSM, CDMA, and other custom high-speed pulse included for all channels. 500 μ s minimum pulse width
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	Provide TCP/IP access for networking
Data Result File	Imported into Microsoft Excel; Arbin's Excel Data Pro macro 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.

Arbin Instruments provides a wide variety of auxiliary modules for expanding the capability of the main I and V control circuitry. Each module plugs securely 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 of 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 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

Auxiliaries Options & Accessories



MSTAT

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

Safety & UPS Features

Several safety provisions are provided in every Arbin system. The system itself is secure from the inside so the users do not have to worry about it. There are three levels of fusing provided inside the system for further protection at the channel, board, and power supply level. The software also has several safety functions with which the user can avoid over charging the cells, over discharging, overheating, etc.

Smart UPS: This option uses a very small Smart UPS to back up power to the computer only. This allows the user to enable auto resume options to all of specific channels after a stop due to power interruption. Provision is provided for the user to intervene if they so desire before the channels resume. This is an essential component for any user with an unreliable power source unless you have the whole facility on backup power.

Auxiliary Measurement Modules

Aux Voltage Input module—8 channels (w/o cables)	\$1,586.00
Aux Temperature input module (type T thermocouple) - 8 channels (w/o sensors)	\$1,386.00

Cables and Sensors

Aux Voltage Cables (each)	\$27.73
Type T Thermocouples (each)	\$76.64

Options

