



High Current Testing Solutions

A multiple independent channel test station fine-tuned for testing batteries, supercapacitors, and other energy storage devices. The 0 to 5V, High Current Series provides individual voltage clamp safety limits to help prevent damage to devices being tested. Includes a PC preloaded with our MITS Pro and Data Watcher software for writing test schedules, monitoring real-time data, and reviewing and plotting test results.

BT-5HC

High Current Series

Voltage Range of 0 to 5V

Current Ranges from 25A to 1,500A

Primary Applications:

- Lithium, Lead-acid, Nickel, & Alkaline Battery Testing
- Cylindrical and Prismatic Cells
- Small Battery Packs
- Primary and Secondary Battery Testing
- Supercapacitor Testing

- Multiple channels, where each channel functions independently to run various experiments simultaneously
- Each channel come with three current ranges with 16 bit resolution
- Advanced software package, MITS Pro (Multiple Integrated Testing System, professional version), provides flexible scheduling, user-friendly interface, distributed system control and data acquisition
- Software provides easy data analysis and plotting based in Data Watcher or Microsoft Excel
- On-the-fly test schedule modification allows changes to be made to a test while it is running, without the need to stop or pause the test

Key Features

Individual Voltage Clamp

A hardware based voltage clamp is available for additional safety protection and to provide a smooth current to voltage mode transition. Each channel in the test station is controlled by its own voltage clamp value. This value is set by the user within the software and is then applied at the hardware level. The system provides options for setting low and high voltage clamp values. Once set, the system will not allow the voltage to go above or below the set clamp values on all channels to keep batteries within the safety settings.



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High Current Series

Voltage Range of 0 to 5V

Current Ranges from 25A to 100A

Hardware Specifications

MODEL NUMBER	25A	50A	100A
Bipolar Linear Circuit Type	Provides zero switching time between charge and discharge circuit board:		
	2243-2		SCT200
Voltage Range (max/min)	0V to 5V		
Accuracy of Voltage Control & Reading	±5mV, 0.05% Full Scale Accuracy		
Current Ranges Provided	High: 25A ± 25mA	High: 50A ± 50mA	High: 100A ± 100mA
0.05% Full Scale Accuracy	Medium: 5A ± 5mA	Medium: 5A ± 5mA	Medium: 10A ± 10mA
	Low: 100mA ± 100uA	Low: 100mA ± 100uA	Low: 1A ± 1mA
Minimum V at Maximum Current	0V @ 25A	0V @ 50A	0V @ 100A
Maximum Continuous Power Output/Channel	125 W	250 W	500 W
Voltage Measurements Input Impedance	~10GΩ		
Current Rise Time	100-150μS	100-150μS	100-250μS
	Time required for current output to get from 10%-90% of requested value		
Current and Voltage Resolution	16 bit		
Voltage Clamp	Individual / Channel Based Voltage Clamp		
Connection for Batteries	Standard 6 ft. cables with alligator clips. Arbin can also provide different battery holder options to allow easy engagement of the device to the test station.		
Connection to Computer	TCP/IP		
Ventilation Method	Air cooled, front-to-rear airflow		
Room Operating Temperature	10 to 35 degrees C		
Computer Specifications	PC with 22" flat-screen monitor is included, preloaded with our MITS Pro testing software		
CHASSIS SIZE OPTIONS	Number of Channels—Available Options		
20.5U: 30" X 30" X 45"	8	8	4
30U: 30" X 30" X 65"	16	16	8
37U: 30" X 40" X 77"	32	32	16

Arbin can provide input power options of 110V or 220V Single Phase, or 208V, 380V or 480V Three Phase System power input options are determined by customer site and system power required.

*For additional auxiliary channels, must upgrade to next largest size chassis.

BT-5HC

High Current Series

Voltage Range of 0 to 5V

Current Ranges from 200A to 400A

Hardware Specifications

MODEL NUMBER	200A	300A	400A
Bipolar Linear Circuit Type	Provides zero switching time between charge and discharge circuit board:		
	SCT200		
Voltage Range (max/min)	0V to 5V		
Accuracy of Voltage Control & Reading	±5mV, 0.05% Full Scale Accuracy		
Current Ranges Provided	High: 200A ± 200mA	High: 300A ± 300mA	High: 400A ± 400mA
0.05% Full Scale Accuracy	Medium: 20A ± 20mA	Medium: 30A ± 30mA	Medium: 40A ± 40mA
	Low: 5A ± 5mA	Low: 5A ± 5mA	Low: 5A ± 5mA
Minimum V at Maximum Current	0V @ 200A	0V @ 300A	0V @ 400A
Maximum Continuous Power Output/Channel	1,000 W	1,500 W	2,000 W
Voltage Measurements Input Impedance	~10GΩ		
Current Rise Time	250-500μS	400-600μS	450-650μS
	Time required for current output to get from 10%-90% of requested value		
Current and Voltage Resolution	16 bit		
Voltage Clamp	Individual / Channel Based Voltage Clamp		
Connection for Batteries	Standard 6 ft. cables with alligator clips. Arbin can also provide different battery holder options to allow easy engagement of the device to the test station.		
Connection to Computer	TCP/IP		
Ventilation Method	Air cooled, front-to-rear airflow		
Room Operating Temperature	10 to 35 degrees C		
Computer Specifications	PC with 22" flat-screen monitor is included, preloaded with our MITS Pro testing software		
CHASSIS SIZE OPTIONS	Number of Channels—Available Options		
20.5U: 30" X 30" X 45"	n/a	2	1
30U: 30" X 30" X 65"	4	4	2
37U: 30" X 40" X 77"	8	8	4

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BT-5HC

High Current Series

Voltage Range of 0 to 5V

Current Ranges from 500A to 1,500A

Hardware Specifications

MODEL NUMBER	500A	1000A	1500A
Bipolar Linear Circuit Type	Provides zero switching time between charge and discharge circuit board:		
	SCT200		
Voltage Range (max/min)	0V to 5V		
Accuracy of Voltage Control & Reading	±5mV, 0.05% Full Scale Accuracy		
Current Ranges Provided	High: 500A ± 500mA	High: 1000A ± 1A	High: 1500A ± 1.5A
0.05% Full Scale Accuracy	Medium: 50A ± 50mA	Medium: 100A ± 100mA	Medium: 150A ± 150mA
	Low: 5A ± 5mA	Low: 10A ± 10mA	Low: 15A ± 15mA
Minimum V at Maximum Current	0V @ 500A	0V @ 1000A	0V @ 1500A
Maximum Continuous Power Output/Channel	2,500 W	5,000 W	7,500 W
Voltage Measurements Input Impedance	~10GΩ		
Current Rise Time	500-700μS	600-750μS	700-900μS
	Time required for current output to get from 10%-90% of requested value		
Current and Voltage Resolution	16 bit		
Voltage Clamp	Individual / Channel Based Voltage Clamp		
Connection for Batteries	Standard 6 ft. cables with alligator clips. Arbin can also provide different battery holder options to allow easy engagement of the device to the test station.		
Connection to Computer	TCP/IP		
Ventilation Method	Air cooled, front-to-rear airflow		
Room Operating Temperature	10 to 35 degrees C		
Computer Specifications	PC with 22" flat-screen monitor is included, preloaded with our MITS Pro testing software		
CHASSIS SIZE OPTIONS	Number of Channels—Available Options		
20.5U: 30" X 30" X 45"	1	n/a	n/a
30U: 30" X 30" X 65"	2	1	n/a
37U: 30" X 40" X 77"	4	2	1

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Voltage Range of 0 to 5V

Current Ranges from 25A to 1,500A

Software Control Specifications

Current (A)	Outputs constant current to the cell or battery at the value specified Positive current refers to charge and negative current refers to discharge
Voltage (V)	Outputs constant voltage to the cell or battery at the value specified
C-Rate	C-Rate is a method for indicating the discharge as well as the charge current of a battery. It can be expressed as $I=M*C$ where I=current A; C=battery capacity; M is the C-rate value
Rest	The battery is disconnected from the charge/discharge circuit but remains connected to the voltage measurement circuit to enable open-circuit voltage measurement
Power (W)	Outputs constant power to the cell of battery at the value specified. This is accomplished by iteratively measuring the battery voltage and calculating the current necessary according to Ohm's law in order to achieve the power level set by the user. Each time the channel is sampled, the calculation is performed allowing the current to quickly stabilize at the desired power level and maintain this power level as the voltage changes.
Load (Ohm)	Applies a constant resistance load to the battery at the value specified. A positive value for load will result in a positive current and a negative value for load will result in a negative current
Set Variable(s)	Change test related variables including channel capacity, energy, and all test counter variables
Current Ramp	Generates a current ramp with a positive scan rate for increasing current and a negative scan rate to generate decreasing current ramp
Current Staircase	Generates a current staircase with increasing current and negative decreasing current staircase with adjustable step amplitude
Current & Power Simulation	Non standard time domain functions may be interrupted from external sources such as ASCII data streams and used as control parameters for repetitive test
DC Internal Resistance	This function applies a 10-pulse train with 1ms pulse width of the specified magnitude following a constant-current charge or discharge
CCCV	Allows users to implement a constant current-constant voltage charge regime in one step. Users specify the charge rate (CC) and the voltage limit (CV); with a specified current or time limit termination value.
CC-CP	Combine constant current control and constant voltage control into one stage "CC-CP"
End Conditions	Time, Voltage, Current, Capacity, Energy, ΔV , DV/dt , formula, meta-variables, and other combinations
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.

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Auxiliary Options & Accessories

Arbin Instruments provides a wide variety of auxiliary modules for expanding the capability of the main I, V control circuitry. Each module plugs securely to the bus board. These auxiliary modules are classified as input, 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), and P (pressure).

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

Several safety provisions are provided in every Arbin system. There are three levels of fusing provided inside the system for further protection at the channel, board, and power supply levels. The software also has several safety functions with which the user can avoid over charging the cells, over discharging, overheating, etc.

Safety & UPS Features

**Smart UPS:
(optional)** 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.

