

High Rate Discharge Testing Solutions

HRDT

MODEL	Continuous Power	Peak Power Rating
48V—925A	22.5kW	45kW
30V—1500A	22.5 kW	45 kW
30V—2500A	36 kW	72 kW
48V—1500A	36 kW	72 kW
48V—2000A	48 kW	96 kW
60V—1600A	48 kW	96 kW
48V—2500A	60 kW	120 kW
80V—1500A	60 kW	120 kW

The Arbin HRDT series is a single channel system designed for high rate discharge applications such as SLI battery cranking tests (cold or warm) for any battery chemistry. Users may define their own custom discharge profile for any large battery / capacitor testing application. Arbin's software offers incredibly flexible control over test control parameters and conditions.

Arbin offers several different hardware technologies that can be utilized in the HRDT systems for discharge-only, or *charge & discharge* capability. Systems are heavily engineered so the most appropriate technology is used to meet each testing requirement without adding excess cost for features not needed.

Standard models have been created for common lead acid as well as lithium and other advanced chemistries of battery.

Key Features

- Areas of application include Aircraft, Automotive, Locomotive and other battery types
- High rate discharge capability to simulate starter, lights and ignition cranking test
- Current range: up to 2500A; Voltage range up to 80V
- Air cooled design for compact floor space
- Modular design for ease of service
- Multiple layers of fusing and safety parameters to protect the device under test and hardware
- Voltage clamp to protect from over or under charge and discharge
- Auxiliary voltages input
- Auxiliary temperature input
- Optional charging capabilities if required



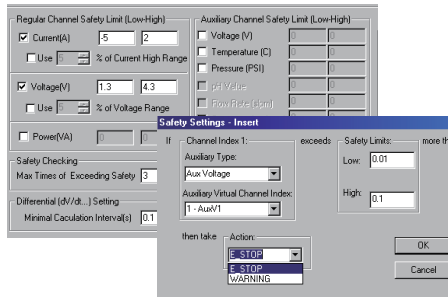
Optional Features

- Charge Capability can be added to a system so that it can recharge a battery under test in addition to its high-rate discharge capability. Charge rates are typically at a much lower current and can be customized based on user requirements.
- Digital input/output relay option is commonly used for triggering external conditions such as turning on or off an external charger or providing a trigger for a chamber door or other third party hardware. Available in TTL and Relay.
- Analog input/output module option is designed to measure and control third party devices that use a 0-10V control signal. The Analog I/O board offers control with closed loop (PID) or open loop communication depending on the application.
- Optional auxiliary voltage measurement channels are available to measure cell voltage in a multi-cell battery pack or to measure the reference electrode voltage in a multi-electrode setup. The value of voltage can be recorded in the results file or used to further control the experiment.
- Optional auxiliary temperature measurement channels can measure the temperature at any point in the setup using either a thermocouple module (type E, J, K, or T) or a thermistor module. The value of temperature can be recorded in the results file and/or used to further control the experiment.
- Arbin's temperature chamber interface option (MTCI) allows the system to communicate with a third-party temperature chamber controller during testing. The MTCI module tells the chamber controller what temperature set-point to use during each test step, allowing the user to program automatic temperature profiles in their tests.
- Arbin's Remote Monitoring software can be used to access and view test stations connected to the network. The Remote Desktop connection allows users to connect to all systems in the laboratory and one-by-one view the real time running tests.

Safety Features

All Arbin test stations are designed and manufactured based on industry regulations and arrive CE certified. The Arbin system includes an array of safety features that protect the user, the devices under test, and the test station.

- The system itself is secure internally to protect from unintentional misuse. The system is equipped with an emergency stop button and multiple levels of fusing are provided inside the system for protections at the channel/board and power supply level. Arbin's Watchdog circuit monitors the machine's internal communication between the PC and onboard microcontrollers and will stop all tests if there is a failure that poses a risk. A light tower array is used to visually alert the user to potential problems and the PC can be programmed to sound an audible alarm.

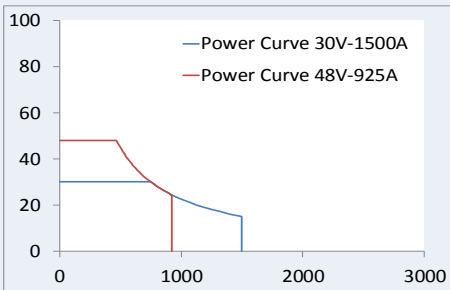
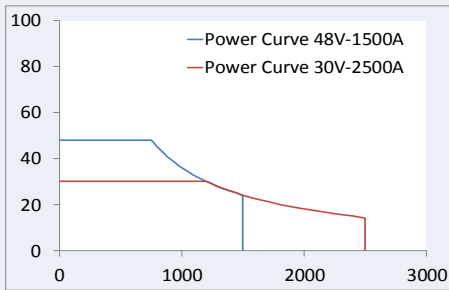


- The user is able to implement safety limits in the software for current, voltage, total power, as well as temperature or other auxiliary readings. These values can be programmed to send the system into a rest state for a period of time, or simply stop the test and disconnect the charge/discharge circuitry. There are separate limits available for each test schedule as a whole, and individual steps within the test schedule.

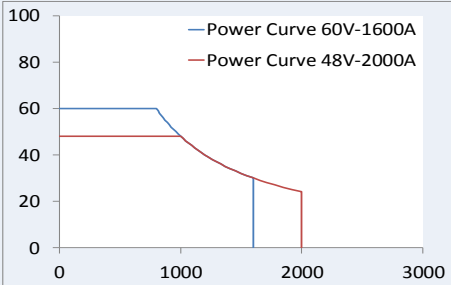
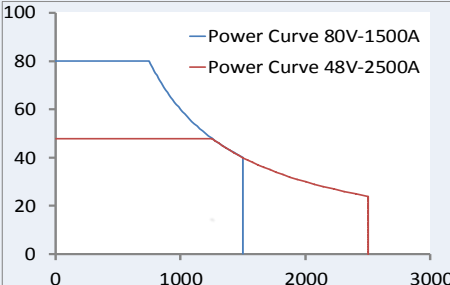
- A Redundant Safety System can be provided to independently monitor the devices under test, and can disconnect the device if a safety setting has been exceeded. Safety is the highest priority when testing high power devices, and Arbin's Redundant Safety System provides an additional safety system, independent of the Arbin hardware and software, to ensure a safe testing environment. The system has the ability to monitor current, voltage, and temperature. If any user-defined safety settings are reached, the device under test will be disconnected from the Arbin test channel. A hardware interlock can also be provided with this system to completely power off the Arbin test station.
- The reliability of testing can be increased even further by adding a smart UPS to the controlling PC. This will allow tests to automatically resume after a brief power failure if they are in a safe condition and permits user intervention in the process. There is provision for the user to intervene if desired before the channels resume. This is an essential component for any user with an unreliable power source unless the entire facility is on backup power.



Hardware Specifications

	22.5kW		36kW	
Model	48V – 925A	30V – 1500A	30V – 2500A	48V – 1500A
Voltage Range (0V option available)	2 to 48V	2V to 30V	2V to 30V	2V to 48V
Voltage Accuracy	0.05% FSR +/- 48mV	0.05% FSR +/-30mV	0.05% FSR +/-30mV	0.05% FSR +/-48mV
Minimum V at Maximum Discharge	2V @ 925A	2V @ 1500A	2V @ 2500A	2V @ 1500A
Maximum Discharge Current	925A	1500A	2500A	1500A
Current Range and Accuracy (0.05% FSR)	925A ± 0.925A 100A ± 0.1A	1500A ± 1.5A 100A ± 0.1A	2500A ± 2.5A 200A ± 0.2A	1500A ± 1.5A 100A ± 0.1A
Maximum Peak Power	45 kW Peak Power is rated at 1 sec		72 kW Peak Power is rated at 1 sec	
Maximum Continuous Power	22.5 kW		36kW	
Current and Voltage Resolution	16-bit			
Current Rise Time	~5ms			
Voltage Input Impedance	~10MOhm			
Auxiliary Voltage Measurement (±5V)	16 channels		32 channels	16 channels
Auxiliary Temperature Measurement	8T-type Thermocouples			
Ventilation Method	Air Cooled			
Room Operating Temperature	10°C to 35°C			
Software and PC	PC with 22” flat-screen monitor is included, preloaded w/ our MITS Pro testing software			
Power Curve				

Hardware Specifications (continued)

	48kW		60kW	
Model	48V - 2000A	60V - 1600A	48V - 2500A	80V - 1500A
Voltage Range *0V option available	2 to 48V	2 to 60V	2 to 48V	2 to 80V
Voltage Accuracy	0.05% FSR +/- 48mV	0.05% FSR +/- 60mV	0.05% FSR +/- 48mV	0.05% FSR +/- 80mV
Minimum V at Maximum Discharge	2V @ 2000A	2V @ 1600A	2V @ 2500A	2V @ 1500A
Maximum Discharge Current	2000A	1600A	2500A	1500A
Current Ranges and Accuracy (0.05% FSR)	2000A ± 2A 200A ± 0.2A	1600A ± 1.6A 100A ± 0.1A	2500A ± 2.5A 200A ± 0.2A	1500A ± 1.5A 100A ± 0.1A
Maximum Peak Power	96kW Peak Power is rated at 1 sec		120kW Peak Power is rated at 1 sec	
Maximum Continuous Power	48 kW	48 kW	60 kW	60 kW
Current and Voltage Resolution	16-bit			
Current Rise Time	~5ms			
Voltage Input Impedance	~10MΩ			
Auxiliary Voltage Measurement (+/- 5V)	32 channels	16 channels	32 channels	16 channels
Auxiliary Temperature Measurement	8T-type Thermocouples			
Ventilation Method	Air Cooled			
Room Operating Temperature	10°C to 35°C			
Software and PC	PC with 22" flat-screen monitor is included, preloaded w/ our MITS Pro testing software			
Power Curve				

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