



# Newsletter



## Winter Wonderland



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## Linear High Power System

Crossing another milestone, Arbin has achieved what many in the industry thought otherwise, impractical. Arbin has devised a system using its air-cooled linear technology to test high power batteries. This technology has been proven to far supercede all other prevalent technologies but had previously known to pose a challenge for heat dissipation and thus, thought unsuitable for higher power applications. With this technology, Arbin customers can test the high power batteries without compromising on quality and flexibility of testing that they were previously accustomed to.

The linear circuit is preferable in some high power testing applications because of the benefits it has over the traditional PWM or SCR high

power circuits. The main advantages of linear circuit are:

1. Fast switching times
2. Very low noise
3. No discernable ripple
4. Ability to generate high speed pulses
5. Ability to conduct experiments at full power at 100% duty cycles
6. High accuracy

In the heart of the success of linear high power system is the excellent design of paralleling modular plug and play linear channel boards. Paralleling makes it possible to achieve high power while managing the heat dissipation efficiently. The high power output per channel is achieved by paralleling 2 or more channel boards of same voltage and current. The terms master and slave boards differentiate between the primary

channel-board from the other board(s) that it controls. On the master board, it has the actual connection to the battery under test, as well as the voltage control function that the slaves do not have. The paralleled boards are connected to a bus board for communication and a tin-plated copper bar for achieving total output current. The paralleled boards will give a total power output of (voltage x  $\Sigma$ (current per boards)). For example, a one-channel system of 60V and 150A or 9000W can be achieved by paralleling 10 boards of 60V and 15A per board with one board serving as master and the rest as the slaves. The number of boards that can be paralleled is only limited by power supply and the chassis size. ❄️



*A one-channel linear charge-discharge testing system of 60V, 150A, 9000W with three-current ranges 150A/50A/1A. The one channel is constructed from 10 individual channel boards with one serving as the master. The size of the system is 78"H x 25"W x 28"D.*



*A master and slaves boards looks similar as the above with dimension of 10"H x 3.5" W x 18"L.*



### Arbin Testing Services

If you've been putting off your testing needs because you are waiting for that budget proposal of yours to come through, we might have a solution for you. Why don't you try our battery testing services? Arbin has a fully equipped testing lab to provide testing services for customers who do not have long-term commitment or budgets to purchase a testing system.

Arbin offers services to test batteries of all sizes and chemistries, as well as chargers, supercapacitors, and fuel cells. The types of testing offered include, but not limited to, charge-discharge test-

ing, environmental effects testing, leakage current measurement, capacitance testing, screening and sorting. Testing can be performed for up to 200A and 400V range. Complete analysis report of the testing results will be prepared for customers.

Currently, Arbin testing service is managed by Dr. Derek Smith. Dr. Smith earns his doctorate degree in instrumental analytical chemistry from the University of Texas at Dallas with specialization in the design, prototyping and implementation of scientific instrumentation. ❄️



### Just Delivered—Fuel Cell Testing System



Another Arbin integrated fuel cell testing system has just been delivered this month to a research institute. This one-channel system can be used to test H<sub>2</sub>-O<sub>2</sub> and H<sub>2</sub>-air PEM (proton exchange membrane), as well as DMFC (direct methanol fuel cell) types of fuel cells. Complete with gas control and handling, humidifiers, and electronic load; the system is specifically designed to test fuel cell up to 24V, 50A or 500W range. A toxic gas alarm system is also installed for safety measurement. ❄️



### WE ARE MOVING!!!

Our new address after Christmas is:

762 Peach Creek Cut-Off Rd.

College Station, TX 77845

Phone: (979) 690-2751

Fax: (979) 690-2761

Our email and web addresses will stay the same.



The tentative date of December 21, 2001 has been set for our move to a new location. The new Arbin headquarter will be housed in a 25,000 square feet building on a 32 acres of land. The above picture was taken during the employees open house of the new building (still under construction). ❄️

August 27, 2001

I would like to thank Arbin for the tester that was recently delivered to us. We are now using the tester to test Lithium-Ion batteries with GSM protocol. The tester is performing well. I am pleased with the thorough checking the tester received before shipping, and the care used to package and ship the tester. After arrival ....., I had no difficulties setting up the tester and getting it operating. I did not need to re-calibrate the tester.

Some of the features I especially like are the testers' voltage, current, and timing accuracy, pulse rise time, multiple limit feature, and multiple options offered by the software. The software is capable of transporting the test results to Excel, and Excel is pre-programmed to plot the results. The application software has windows as the operating software. The application software is controlled with window commands. This helps the operator set up the tester to run his tests, and obtain required test results. The computer furnished with the tester has real power.

*A Satisfied Customer in Silicon Valley*

## Ventilation Panel Makeover

Last month, Arbin sent out a couple of systems with the new front ventilation panel design for the first time. The new front panel has a distinctive look with dark-colored filter. Compared to the old front panel that is made from steel with built-in ventilation grid and filter gauze attached, the new panel is made from laminated plastic with detachable/replaceable plastic filter with gauze screen attached.

The laminated plastic is chosen from the family of garolite, also known as phenolic material, specifically the G-10/FR4 Garolite type. This material consists of continuous, woven glass fabric laminated with epoxy resin formed under pressure and heat. This material features excellent mechanical properties, superior electrical insulator, and high moisture resistance over a wide range of temperatures (to a maximum 284°F). Some of the favorable mechanical properties it

presents are: lightweight; dimensionally stable; high dielectric and impact strength; resistant to heat, moisture, chemicals, oil, corrosive solutions, acids, alkalis, and solvents.

Aside from the benefits inherited from the plastic material as mentioned above, the most important benefit of this new panel design is the detachable/replaceable plastic filter. Frequent changes of this filter will prevent accumulation of dust inside the system and thus greatly improve the efficiency of the heat sink performance and other delicate electronic parts. The plastic front panel and filter are sold separately. Customers may order extra filter for their systems and replace the filter themselves. There is no need to send the panel back to us just to replace the filter, as it was the case with the old panel design. Furthermore, customers whose systems use the steel panel can easily re-

place it with the new plastic panel and filter. Currently there are 12 types of the plastic panel and 2 types of the filter we have available. Each of the old, steel panel will have its corresponding plastic panel to replace. Call our sales engineers to give your system a ventilation makeover today! \*



Garolite panel with detachable filter.



64-channel BT2000 and 8-channel GSM/CDMA combination with 5V/6A per channel, 3 current ranges and 30W maximum power and new ventilation panels. The system dimension is 25"H x 25"W x 30"D

## North-Eastern US & Canada Support

Adding to the satellite system of Arbin customer service network, is Mr. Joe Cheng, who will be situated in Toronto, Canada to make service visit to customers in Canada and northeastern USA.

Mr. Cheng is a 1982 graduate of Nankai University in China with a degree in solid physics. He immigrated to Canada with his family in July 2000 and joined Arbin in August 2000. His previous work experience



15 years.

If he is not traveling around visiting customers or getting trained at Arbin headquarters in College Station, TX, he can be reached at his permanent address in Canada at:

40 Tyndall Ave. Unit 701  
Toronto, ON M6K 2E4  
Phone: (416) 537-8488  
Cell: (979) 575-5384  
Email: joe.c@arbin.com  
\*

involves working as an engineer with a semiconductor research institute and an advanced technology development firm in China for almost

### Arbin Factory Training 2002

Jan 7-8 & 21-22  
Feb 4-5 & 18-19  
Mar 4-5 & 18-19  
Apr 8-9 & 22-23  
May 6-7 & 20-21  
Jun 3-4 & 17-18  
Jul 8-9 & 22-23  
Aug 5-6 & 19-20  
Sep 9-10 & 23-24  
Oct 7-8 & 21-22  
Nov 4-5 & 18-19  
Dec 2-3 & 16-17

Contact: Kevin Duff  
kevin.d@arbin.com  
(979) 693-0260 x154



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### Software FAQ Corner

**Q:** My PC locked up while running. What could be the cause?

**A:** One of the most frequent calls to Customer Support concerns lock-ups or freezing of the computer controlling the Arbin tester. This can sometimes be the result of little or no preventive maintenance of the PC.

Generally, data logging onto the hard disk is a communications bottleneck during high-speed, multi-channel data acquisition. There is a point when file fragmentation will reduce system performance. In serious cases, data loss or system freeze can result. Therefore, periodic file maintenance should be a regular routine. The interval for this maintenance should be keyed to tester usage and data collection projected from desired test schedules. The heavier the load of data generation, the more frequently maintenance is required.

There are two types of file maintenance in regard to the Arbin tester. The first is available within the Arbin software itself and is known as "Compact & Repair". This particular function works on the Arbin generated files only. Every two weeks is an appropriate interval.

The procedure for maintaining files is as follows. (1) Stop all tests. (2) Close Monitor & Control window, DAQ (or DAQ and LOG in MITS'97). (3) Move finished data files from the HD to a server computer or Zip or Jaz disk through "My Computer". (4) Right-click "MITS Files" of the tab "Files" on the MITS first window, then click 'Compact & Repair all files'. (5) Re-launch MITS communication after completion of Compact & Repair, then resume any unfinished tests. ❄

