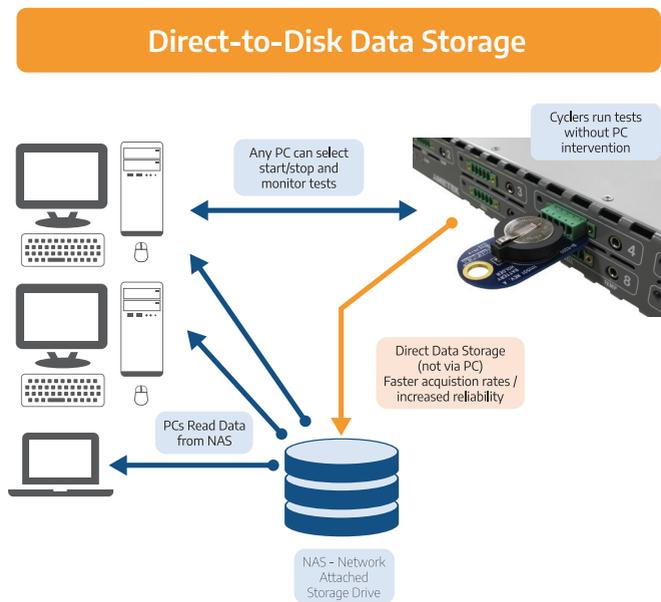


Speed and Reliability

Solartron Analytical has developed a unique, innovative approach to data storage that enables fast data capture with increased system reliability.

The weakest link in battery test systems is often the PC, especially when overloaded collecting and storing data from hundreds of channels.

Solartron's unique patent-pending approach enables cyclers to save data direct-to-disk, thus the PC is not involved in the data storage process.



Advantages:

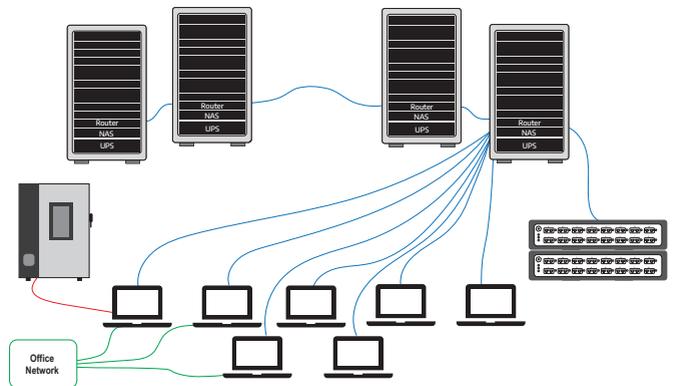
- High-speed data collection up to 1,000 points per second on unlimited number of channels without system limit – enable fast transient / pulse analysis on all channels.
- PC is never overloaded as it is not involved in saving data – PC only needs to start / stop / monitor tests and analyze the data.
- PC can be removed from network at any time without affecting tests that are in progress – take the PC home and reconnect to view latest results.
- Tests run autonomously on high-performance cycler hardware with instant switching between charge and discharge and between different test modes.

Multi-User Systems

The Aspire software can be installed on as many PCs as you wish. From a simple single PC system to a fully networked, multi operator solution – the software is fully scalable.

PCs, cyclers, data storage drives and ancillary equipment are networked to allow easy access from anywhere on the system.

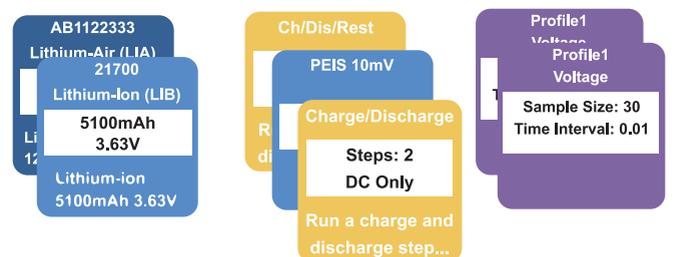
Any PC / user can connect to any cycler channel to start / stop / monitor test progress. Data analysis is available on all PCs.



Shareable Libraries

The centralized NAS (Network Attached Storage) drive enables one or more libraries to be available to all system users, reducing unnecessary rework while ensuring consistency of data.

- Cell Library – Cell data and safety limits
- Test Procedures – CC-CV, Cycles, EIS, Profiles
- Graph Library – For presentation of data
- Data Analysis Library – includes EIS fitting
- Waveform Library – Urban Profiles / Waveforms



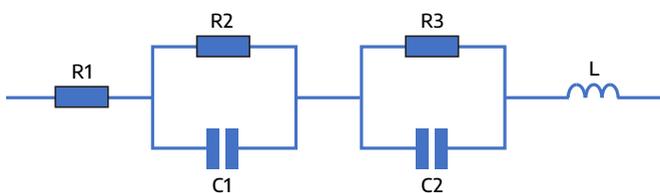
Loop Variables

Loops can automatically sequence control parameters using multiple variables. This makes it easy to create loops that partially charge or discharge cells and characterize their EIS at each State of Charge (SoC).

Data Analysis

Data Analysis is a very important feature of the Aspire software and is expanding in capability with every new release.

EIS data fitting is fully integrated in the software. Circuits can be set up using drag and drop techniques or conveniently can be set up via entering equations.



$$\text{Equation} = R+R/C+R/C+L$$

Differential Capacity is directly available in Aspire software, no need to export data. This feature is particularly well matched with Solartron cycler hardware that makes use of 24-bit high resolution ADC technology and moving window averaging.

Urban Profiles (FUDS cycles)

Direct to Disk technology is particularly suited to reproduction of Urban Profiles (arbitrary waveform). The NAS drive can contain multiple arbitrary waveforms that are unlimited in length.

These profile files are read directly by the cyclers one segment at a time. The files can be any length and offer time-base resolution down to 1 millisecond.

Multiple waveforms can be automatically sequenced and can even be combined with EIS and standard charge / discharge tests.

Ancillary Equipment

Tests often require use of ancillary (third party) equipment such as climate chambers and data loggers.

Aspire test procedures automatically sequence cell environmental temperature and humidity whenever required. Data from chambers and data loggers are automatically saved together with the test data – allowing convenient correlation of electrical and temperature related events – no need to export and align data.

Aspire software makes use of device drivers that can easily be setup for any new equipment.



Third Party Software

Aspire software allows open access to all capabilities of the system by use of API calls. In this way tests can be controlled from your own software written in Python, C# etc. The API interface enables:

- Tests to be controlled – start / stop etc.
- Monitor Tests that are in process
- Read collected data in any format – Cycle data, time domain, EIS
- Control ancillary devices

Aspire includes a massive range of facilities and we are very much open to adding new capabilities to the software. The API enables control of the system if you have specialized requirements.

Aspire Energy vs Standard Cycler Software.

Aspire uses an intuitive state-of-the-art icon-based smartphone style graphical user interface. Multiple or single PC / user operation are both supported. Start / stop tests on any channel and analyze data from any PC. Shareable libraries save setup time and ensure data consistency. Industry leading software platform together with Solartron Analytical's reference grade cycler equipment – an unrivalled combination.

Minimum Computer Specification

Lower specification can be used but system performance and usability may be adversely affected.

Type	Desktop or Laptop as preferred
Operating System (minimum)	Windows 10 Pro, 64-bit
Processor	Intel Core i7
Memory	16 GB DDR4 RAM
Local Disk Space	<ul style="list-style-type: none">• 512 GB Drive• SSD Solid State Boot Drive for fast startup
Data Storage	Network Attached Storage (NAS), or Shared USB Network Drive, or Internal PC drive (requires Admin. permissions)
Display Size / Resolution	<ul style="list-style-type: none">• Large Screen at least 24" diagonal• Resolution at least 1920 x 1080
Communications	Dual networks recommended: <ul style="list-style-type: none">• Ethernet office network for printing, email etc.• Separate network for cycler connection using second ethernet port or USB to Ethernet adapter
USB ports	At least two USB 2.0 or 3.0 (can be via a hub) depending on the peripherals to be controlled

Supported Hardware

Battery Analyzers Supported	<ul style="list-style-type: none">• SI-9300R Multi-channel Battery Cycler / Analyzer• SI-6200 Multi-channel Battery Cycler / Analyzer
Ancillary Equipment	<ul style="list-style-type: none">• Climate Chambers – contact us for latest supported list• Data Loggers – contact us for latest supported list

Test Capability

DC Test	<ul style="list-style-type: none">• Charge / Discharge CC-CV (constant current / voltage)• Discharge CP-CV (constant power / voltage)• Discharge CR-CV (constant resistance / voltage)• Constant Voltage and Current• Cyclic Voltammetry• Voltage and Current pulses and ramps
EIS (Impedance)	Voltage and Current controlled EIS (per channel)
Arbitrary Waveform (e.g., US FUDS Federal Urban Driving Schedule)	Unlimited number of steps Maximum time-base resolution 1 millisecond
Cycles / Loops	<ul style="list-style-type: none">• Charge / discharge capacity is typically tested while cycling cells• Loops can additionally be used to set temperature or for incremental partial charge discharge tests
Variables	Variables enable parameters to be auto-sequenced during loops
Step Termination	Voltage, current, capacity, dV / dt , auxiliary voltages

► Learn more at www.ameteki.com.