







Simplify your Solution Automation

EV Battery Testing

Regulatory compliance for electric vehicular battery cells, modules, and pack production systems rely on precision electrical instruments to reliably detect anomalies and safety issues

Features:

-  Easy integration of bar code readers and/or label printers
-  Automated collection of test results for product traceability
-  Adapt to increasingly strict testing requirements
-  Set-up of the base system is via web server interface
-  Integrate into complex and diverse automated systems
-  Test sequences can integrate different tester/multiplexer combinations to reduce cycle time

FEATURING

E.L.L.I.O.T
INTEGRATION

Tester Integration and Data Collection



System

- System is a Codesys® application running on a Siemens Sematic IOT2040® PLC supporting up to 16 switches, 4 logical testers and 8 test sequences
- Logical testers can be comprised of a single four wire tester and any number of multiplexers that connect to four wire test leads
- Multiple test sequences integrate one or more logical testers with automated data collection into a single record



Switch Device Selection

- Operation and configuration of multiplexing switches offered by Elliot Integration
 - Operation and configuration of multiplexing switches offered by Hioki
 - Operation and configuration of Hioki BT Series® battery testers via Ethernet or Serial Ports (two maximum)
 - Operation and configuration of BK Precision BA6010 Series® and BA8100 Series® battery testers via serial ports (two maximum)
 - Support for networking serial ports on testers with Advantech BB-VESP211-232 adapters



Standard Test Features

- Definition of test sequences with multiple switches and testers in the same sequence
- Test sequences with multiple logical testers will cycle the testers simultaneously to provide a minimum cycle time
- Test Sequences can support individual high/low test limits (both impedance and voltage) and test head positions for each individual point
- Support for loading/storing test sequences from CSV files



Communications

- Integration with industrial automation via Modbus TCP®, Ethernet IP® or PROFINET with support for starting tests, aborting tests, sending preset configurations, Internet of Things (box) numbers, monitoring tester operation, controlling/monitoring test head movement, and reading test results.
- Integration with factory monitoring and databases via OPC UA or optional products including, FTP, MQTT, Azure, OPC Pub-Sub, and MSSQL. Test results are stored in CSV file format with the time/date, tester number, relay number, test results, pass/fail, and test limits recorded for each point. The file name contains the date and time the test finished as well as the product lot (box) number.



Special Test Applications

- An optional development package allows end-users and/or integrators to add applications directly to the appliance controller with Codesys®
- Set-up of the base system is via a web server interface

Additional Battery Testing Products



Tester Multiplexer Switches

- Designed for 4) wire voltage and impedance testing of cells and batteries up to 250 volts
- Units are industrial control panels meeting UL508 standards
- Units can have various multiplexing points: 130, 65, 26 or 13

For every 13 connection points, there is one 62 pin D shell connector. Each battery tester connection has 4 banana plugs. The wiring is designed so that the connection paths from the battery test to the test point are very close to the same length for each circuit. The larger 130 point and 65 point panels can have up to 4 individual battery tester lead busses and connection points. Each panel has a 120VAC supply connection, and 2 or 3 - M12 ethernet connectors. All connections are available on panel exterior.

Our multiplexers can be provided with a built-in testing integration appliance, allowing one multiplexer to act as master controller for other multiplexers and provide an interface to the automation. A 130 point multiplexer with 4 battery tester busses and a tester integration appliance would be capable of integrating 4 BT3561 battery testers for a very competitive price. On the medium speed setting of the BT3561, the system could test a complete box of 10 rows of 13 lithium-ion cells in 3.3 seconds. An equivalent Hioki multiplexing system would require 4 SW1001 mainframes and 12 SW9001 multiplexer cards to support 4 BT3561 testers as well as custom software support integration with automation and data collection.



Turn-key Systems

- Turn-key battery testing systems for full boxes (or sub-assemblies) of cells
- Turn-key systems integrate barcode readers, label printers and material handling
- Turn-key systems can be customized to serialize boxes to aid in subsequent handling

Elliot Integration offers three Turn-key Systems:

01

Standalone manual tester where boxes are placed into the tester and removed at the same place.

02

Systems where boxes of all good cells are separated from boxes with bad cells at the exit. A fieldbus interface can be provided for advancing good boxes into down line automation streams. In this system, boxes will generally exit on the opposite of where they enter.

03

Systems where boxes of all good cells are advanced. However, boxes with bad cells are passed into a gantry cell handling unit and sorted into boxes of all bad cells and boxes of all good cells. The good cells are placed back into the production stream and the boxes of bad cells are removed from the system. A fieldbus interface can be provided for advancing good boxes into down line automation streams.

The turn-key system can be customized to serialized boxes (especially boxes with bad cells) so that test results can be retrieved and used for handling boxes. Other available options are barcode readers and label printers as well as material handling sections for accumulation, equipment (or interfaces to equipment) that directly removes cells from boxes and handling of empty boxes on automated lines.