

# T100BT

AUTOMATIC BATTERY TESTER

Complete testing of battery cells, modules and packs.

- Accurate electrical parameter measurements
- Precise geometrical measurements
- High-resolution optical test
- Full configurability and modular composition



T100BT is an innovative, modular system able to combine, on a single test platform, all the tests required to detect any possible defect on battery cells, packs and modules: from defective cell wiring, to geometrical or surface irregularities, to out-of-specs performances.

The system is designed for the high-volume production test of battery modules composed by prismatic, cylindrical or pouch cells.

The complete configurability allows you to equip the system with the modules and tools you need to test your products, reaching the desired throughput.

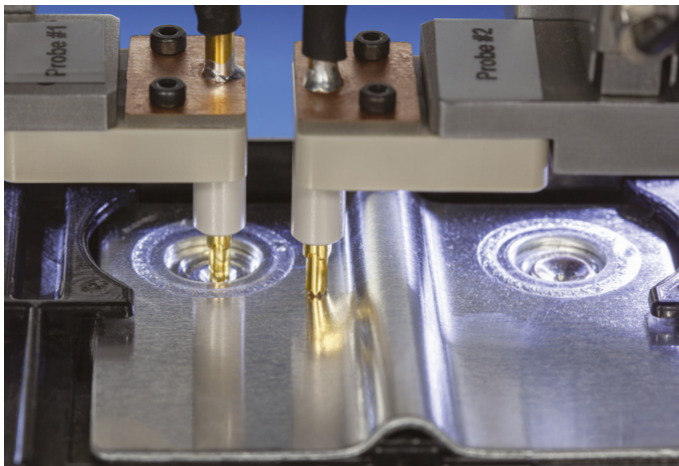
## TEST CAPABILITIES

### Electrical test

Electrical **parameters of each individual battery cell** are verified, so that defective products can be filtered out before entering the next stage of production, or before shipping to final customers at the end of the manufacturing process.

T100BT's electrical test capabilities include:

- **Welding micro-resistance** test
- **Hi-pot test** (withstand voltage and insulation resistance)
- **Output voltage** test
- **DC / AC IR** test



### Thermal test

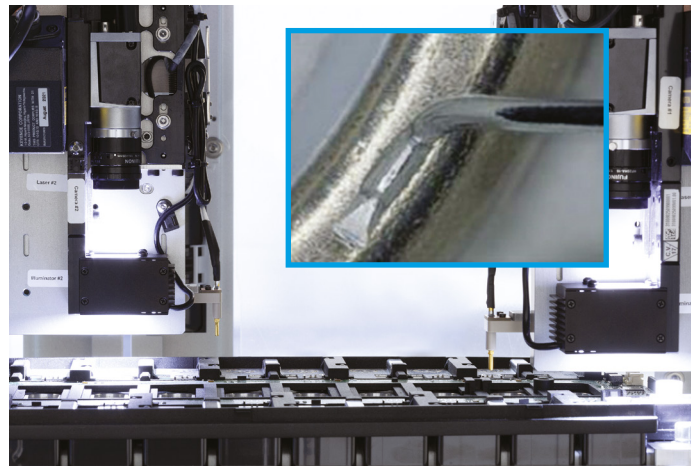
A highly accurate thermal sensor can **measure the slightest temperature differences** (0.025 K) on the battery surface.

This technique is used to **ensure the accuracy of the micro-resistance measurements**, and to **detect any unexpected warm temperature** on the battery module, which is symptom of operation anomalies.

### Optical test

High-resolution vision units, with **liquid lens autofocus** technology, perform an accurate optical test on the battery modules. **Vertical or angled illumination** is used to highlight any possible surface irregularity:

- **Wire welding or bonding** defects
- **Wire dimensional** defects
- **Wire path** irregularities
- Presence of **scratches, particles, stains**
- Presence of **damages, voids, lack of material**



### Geometrical test

A **high-speed, high-accuracy laser meter** measures the battery dimensions, and the planarity of either the whole module/pack surface or each individual cell, with **0.1µm repeatability** and **±0.02% linearity**.

Thanks to the T100BT's operating system - which features a clear and efficient user interface, and advanced generation algorithms - the **geometrical test can be automatically generated and performed**.

# FULL CONFIGURABILITY

## Multi-Tool, Mobile or Fixed Axes

T100BT can be equipped with 1 to 4 axes on the top and bottom side of the system, for a total of **up to 8 axes to test the batteries from both sides simultaneously**.

A set of test tools can be fitted on every axis, to perform the required combination of electrical, optical, geometrical and thermal test. Electrical probes can be composed in **multi-probe matrices**, to contact multiple points simultaneously, maximizing the overall throughput.

The axes can be fixed-position or they can be moved by a **state-of-the-art linear motion technology**, to guarantee fast movement and accurate probing of the device under test.

**Force-controlled Z actuators** provide the required regulation of speed, position and applied force during the probing. This ensures a **safe and gentle probing**, with no risk to mark or damage the surfaces.

## Automatic handling of large and heavy units

Different conveyor configurations are available, to transport units with maximum **weight of over 100 kg (200 lb)**.

The test area inside the system can be configured, as well, to house different sizes of devices, up to **1000 mm (3.3 ft)** in length and **845 mm (2.8 ft)** in width. Custom-designed solutions are available to test modules with up to **3000 mm (9.8 ft)** in length.

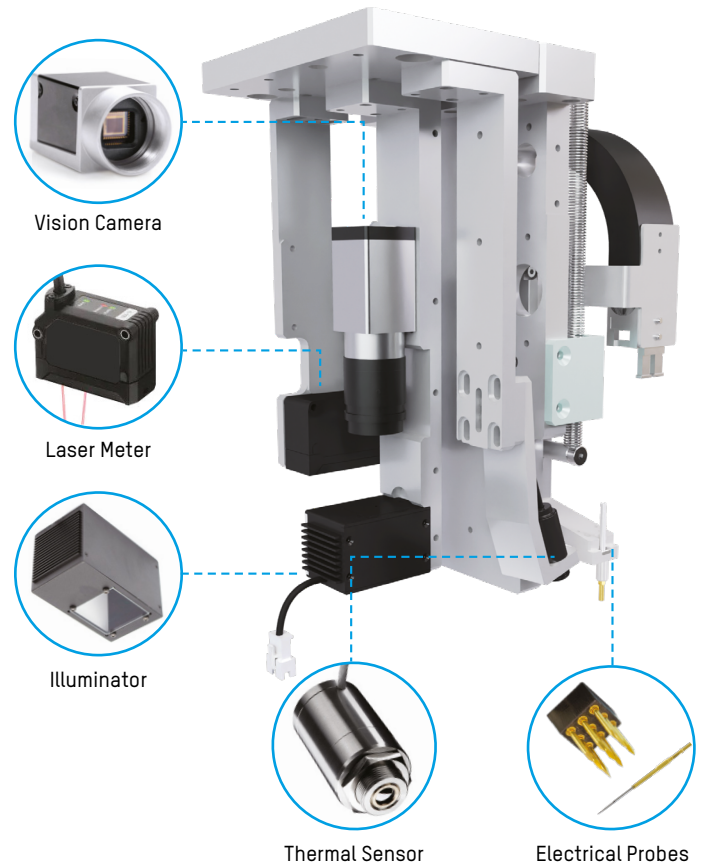
## MODULAR TEST CELLS

### Performance combined with throughput

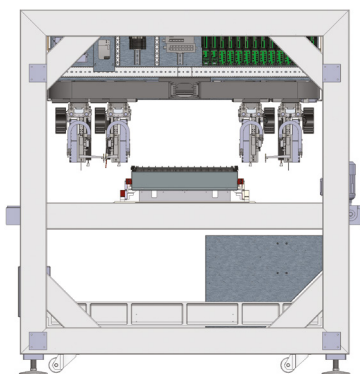
To cover all the quality requirements of your products, without sacrificing throughput capabilities, T100BT is designed to compose **multi-station test cells**. A test cell is composed by multiple T100BT units positioned in-line: every unit is dedicated to defined test operations, so as to reach the most complete test coverage.

### Lab/NPI version for engineering and prototypes

To support the test requirement during engineering, characterization and prototyping, T100BT is also available in lab/NPI versions, keeping **full compatibility with the setups for production test**.



Here below an example of multi-station test cell for complete, mass-production testing of battery modules:

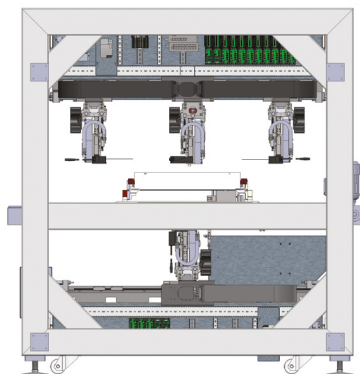


STATION #1

#### VOLTAGE + OPTICAL + THERMAL TEST

The system is configured with 4 top-side flying axes to perform micro-resistance voltage electrical test, optical test and temperature measurement.

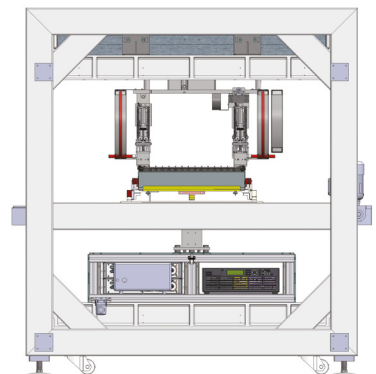
Force-controlled actuators are used for a high-accuracy probing.



STATION #2

#### GEOMETRICAL TEST

The system is configured with 3 top flying axes and 1 bottom axis, to perform dimensional and geometrical measures.



STATION #3

#### HV TEST

The system is configured with 4 top fixed axes and 1 bottom axis, with pneumatic Z actuators, to perform high-voltage measurements (withstand voltage and insulation resistance).

## USA

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## Italy (HQ)

Volpiano (Turin)

## Germany

Fernwald Steinbach (Frankfurt)

## China

Suzhou | Shenzhen | Chongqing



## Mexico

Ciudad Juarez

## Asia Pacific

Singapore | Bangkok | Manila | Penang

## Korea

Seoul

Discover how T100BT can enhance your test performance and efficiency.

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Europe, Asia, Americas: wherever you are, SPEA team will be happy to make you touch with your hands the advantages T100BT can bring to your test floor.



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