ITECH

YOUR POWER TESTING SOLUTION

Product

IT5100 Series Battery Testers

Features



Resistance + Voltage simultaneously measurement and display

3 voltage ranges, 10 μV~1000V
Optional 7 resistance ranges

4-terminal AC measurement

Comparator function

Statistics calculation

Measurement setting configurations storage

Abnormal measurement inspection

IT5100 Series Battery Testers

APPLICATIONS

- Automatic battery inspection line, R&D
- Button batteries
- Electric vehicle batteries
- Alkaline batteries
- Lithium batteries
- Lead-acid batteries

Your Power Testing Solution



IT5100 Series Battery Testers

IT5100 series is a series of battery internal resistance testers with high precision, high resolution and high speed. Resistance resolution is down to 0.1 μΩ, voltage resolution is 10 μV. IT5100 adopts AC 4-terminal sensing, that means the tester not only can test internal resistance and voltage simultaneously with high precision, but also support long-term statistical calculations. From 3 mΩ coin size to 3000 Ω large-cell batteries, IT5100 is an ideal solution for the batteries inspection and sorting.

Features

- Simultaneous resistance and voltage measurements
- Resistance measurement: 150 μΩ to 3000 Ω *1
- Voltage measurement: 10 μV to 1000 V *2
- 3 voltage ranges, 7 resistance ranges automatic or manual test *3
- Up to 125 measurements /s *4
- 4.3 inch LCD color display
- Built-in USB, LAN interfaces with SCPI support *5
- Statistics calculation and data storage function
- Comparator function
- Zero adjustment function
- 4-terminal AC measurement
- Measuring result alarm function

*1 IT5101E: 15 mΩ to 3 Ω
*2 IT5101/E: 10μV ～ 300V
*3 IT5101E is 2 resistance ranges
*4 In Ex_fast mode
*5 For any GPIB interface option request , check with ITECH for availability.

Applications

The wide measuring range and multi-functions makes the IT5100 series ideal for inspection and sorting of all types of batteries. It can be used to validate various types of DUT's requiring test of internal resistance, contact resistance, Equivalent Series Resistance (ESR) etc.
It is useful in both R&D, production test and other applications.

- High-voltage battery pack test e.g. electric vehicles, lithium battery etc.
- Battery module testing
- Large (low-resistance) cell testing
- High-speed mass production testing of coin batteries
- UPS inspection
- Deterioration & life assessment of alkaline batteries, lead-acid battery
- Various contact resistance test
- Equivalent Series Resistance (ESR) test

Lithium batteries and secondary batteries





Battery-powered Devices

High Precision and Fast Measurement

High Accuracy

Resistance: ±0.4%±0.05% FS
Voltage: ±0.01%±0.01% FS

High Resolution

Resistance: 0.1 μΩ*
Voltage: 10 μV
* The resolution is only for IT5101,IT5101E resolution is 10 μΩ.

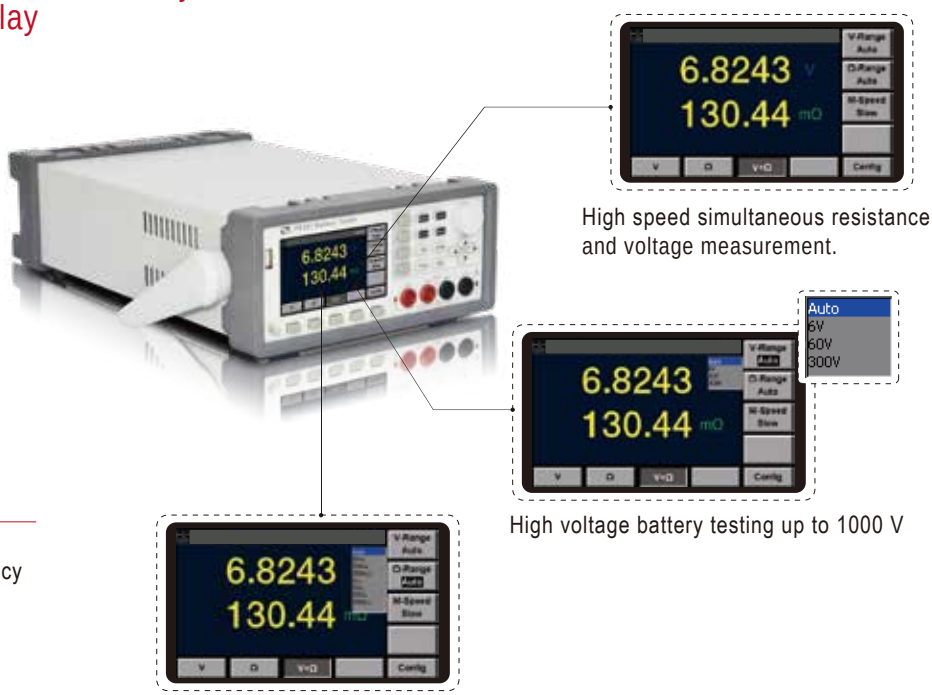
High Speed

Resistance+Voltage simultaneously sampling time < 8 ms
Single sampling time (Resistance or Voltage) < 4 ms

Resistance + Voltage simultaneously measurement and display

4.3 inch LCD screen

IT5100 series provides 4.3 inch LCD screen. The color screen makes the whole testing and statistics calculation process visible and simple. Support resistance & voltage simultaneous test and display, speed up to 125 measurements/s.



High speed simultaneous resistance and voltage measurement.

High voltage battery testing up to 1000 V

From 3 mΩ coin size to 3000 Ω large-cell batteries, IT5100 is the choice.

Wide measuring range

Voltage measurement

High voltage range, fitted for fast battery measurement and production line efficiency improvement.
Min.10 μV ~ Max.1000 V

Resistance measurement

Select the performance and cost required for your application.
150 μΩ to 3000 Ω

Model	Resistance											
	Measuring range	Resolution	Measuring range	Resolution	Measuring range	Resolution	Measuring range	Resolution	Measuring range	Resolution	Measuring range	Resolution
IT5101	3 mΩ	0.1 μΩ	30 mΩ	1 μΩ	300 mΩ	10 μΩ	3 Ω	0.1 mΩ	300 Ω	10 mΩ	3000 Ω	0.1 Ω
IT5101E	-	-	-	-	300 mΩ	10 μΩ	3 Ω	0.1 mΩ	-	-	-	-
IT5101H	3mΩ	0.1μΩ	30mΩ	1μΩ	300mΩ	10μΩ	3Ω	0.1mΩ	300Ω	10mΩ	3000Ω	0.1Ω

	Voltage		
Model	Measuring range	Measuring range	Measuring range
IT5101	-6 V ~ +6 V	-60 V ~ +60 V	-300 V ~ +300 V
IT5101E	-6 V ~ +6 V	-60 V ~ +60 V	-300 V ~ +300 V
IT5101H	-10V ~ +10V	-100V ~ +100V	-1000V ~ +1000V

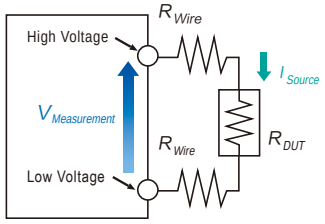
Your Power Testing Solution
IT5100 Series Battery Testers

Excellent performance

4-terminal AC Measurement

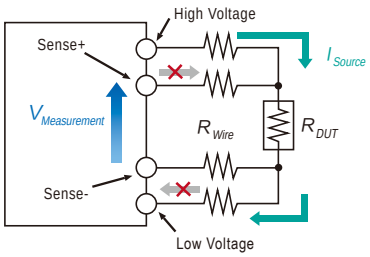
To avoid the influence caused by testing wire and ensure test precision, IT5100 series adopt AC 4-terminal sensing. This means the tester can test not only internal resistance and voltage simultaneously with high precision, but also support long-term statistical calculations.

2-terminal measurement



VS

4-terminal AC measurement



High precision
Resistance: ±0.01% ± 0.01% FS
Voltage: ±0.4% ± 0.05% FS

High resolution
Resistance: 0.1 μΩ (IT5101E is 1 μΩ)
Voltage: 10 μV

High speed
Resistance + voltage
Simultaneous test < 8 ms
Single test < 4 ms

Multifunction

Abnormal measurement inspection

IT5100 series provides 4.3 inch LCD screen. The color screen makes the whole testing and statistics calculation process to be visible and simple. Support simultaneous resistance and voltage test at speed up to 125 times/s.



Averaging function

To ensure test stability and reliability, IT5101 provides calculation functions with easy to use operation.



Comparator function

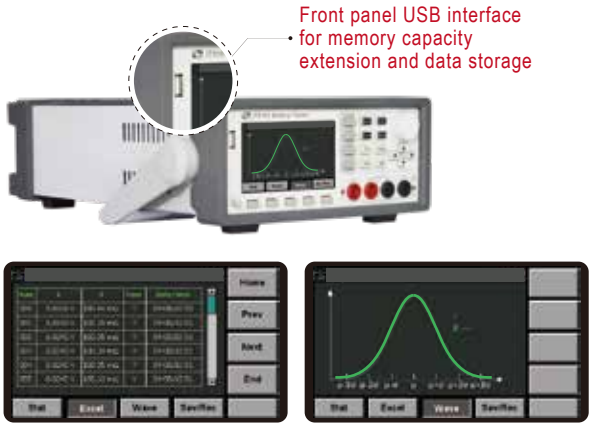
IT5100 series provides built-in comparator function, the function can distinguish whether the test parameters are compliant with the related standard and automatically counts the pass/fail rate.



- Test resistances & voltage simultaneously
- Alternative setting method
- An alarm signal will be generated when the actual value exceeds the preset (Hi/Lo) range.
- Two setting methods are available for users, the upper and lower limit absolute value or the relative percentage of voltage and resistance. Users can choose depending on their need.
- Manual comparator

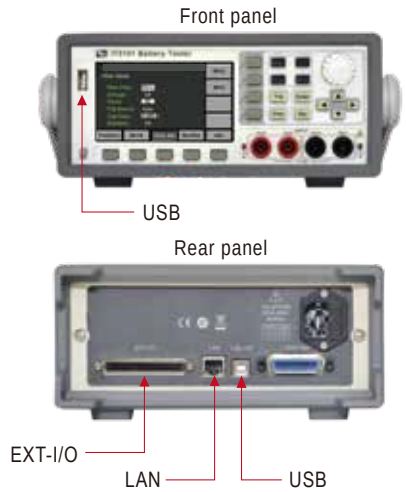
Statistics calculation & Measurement setting configurations storage

Combined with an external USB disk, IT5100 can be used for statistical calculation, which greatly simplifies the process and provides convenience to quality control.
The data storage capacity up to 1000 groups, maximum measurement setting configurations storage capacity up to 126 pcs. And the measurement data of IT5100 series can be stored as .csv file.



Built-in multi-interface

IT5100 series supports SCPI protocol and provides built-in USB, LAN interfaces and external control Interface. Simplifying the configuration process and adding flexibility to change interface used without adding additional cost.



Built-in USB, LAN interfaces,supports SCPI protocol.

EXT I/O Interface

Triggering, measuring configuration, and zero adjustment can be controlled by EXT I/O interface.
Available for outputting signals, includes comparator results, end of measurement events and measurement errors etc.
Suited for industrial PLC control or synchronization.

IT5100 Series External I/O	
Input	Output
Measurement trigger (TRIG)	End-of-Measurement (EOM)
Print	Measurement-in-Process (INDEX)
Zero adjustment (0ADJ)	Comparator results (R-Hi, R-IN, R-Lo, V-Hi, V-IN, V-Lo, PASS, FAIL)
Manual comparator (MANU)	Measurement error (ERR)
Load panel settings (7 bit) (LOAD 0 ~ LOAD 6)	General-purpose output (OUT1~OUT9)

Advantages for automatic inspection line measurement

- Built-in LAN, USB interface
- External control interface
- Comparator function
- Impedance & voltage simultaneously judgment
- Beep : When exceeds high/low preset measuring range
- Judgment result in time display
- External I/O output
- Manual comparison
- Used for footswitch or PLC control etc.



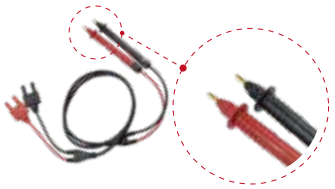




Optional accessories

ITECH provides multiple optional accessories for IT5100 series battery testers, including 4 types of testing wires with different probes and zero adjustment board.

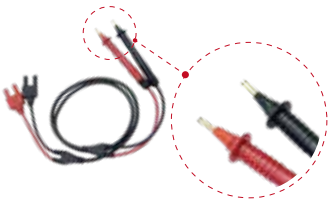
4 types of optional testing wires (600 Vdc max.)



IT-E601 300V
IT-E601H 1000V
Pin type lead



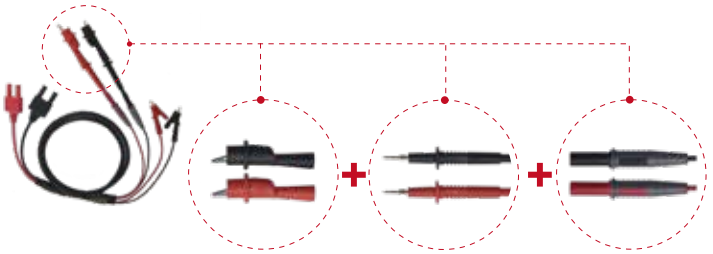
IT-E602 300V
IT-E602H 1000V
Large clip type lead



IT-E603 300V
IT-E603H 1000V
Pin type lead



IT-E605
Zero adjustment board



IT-E604 300V / IT-E604H 1000V

PC Application Program

Measurement data can be transferred to a PC and stored as CSV files.

Num	Voltage	Resistance	Voltage State	Resistance State	Date/Time
0	4.99471	0.0546145	0	0	01-07/20:16
1	4.99505	0.5614076	0	0	01-07/20:16
2	4.99517	0.5672807	0	0	01-07/20:16
3	4.99517	0.0548138	0	0	01-07/20:16
4	4.99522	0.0213158	0	0	01-07/20:16
5	4.99519	0.0311247	0	0	01-07/20:16
6	4.99526	0.5600239	0	0	01-07/20:16
7	4.99527	0.0548351	0	0	01-07/20:16



IT5100 Specifications

Model		IT5101		IT5101E	IT5101H		
		Measuring range					
Voltage value	Range	-6V~+6V	-60V~+60V	-300V~+300V	-10V~+10V	-100V~+100V	-1000V~+1000V
	Resolution	10μV	0.1mV	1mV	10uV	0.1mV	1mV
	Accuracy	±(0.01%+0.01%FS)			±(0.01%+0.01%FS)		
	Temperature drift	±(0.001%+0.001%FS)/℃			±(0.001%+0.001%FS)/℃		
Resistance value valuevalue	Range/Resolution	3mΩ/0.1μΩ		/	3mΩ/0.1μΩ		
	Range/Resolution	30mΩ/1μΩ		/	30mΩ/1μΩ		
	Range/Resolution	300mΩ/10μΩ		300mΩ/10μΩ	300mΩ/10μΩ		
	Range/Resolution	3Ω/0.1mΩ		3Ω/0.1mΩ	3Ω/0.1mΩ		
	Range/Resolution	30Ω/1mΩ		/	30Ω/1mΩ		
	Range/Resolution	300Ω/10mΩ		/	300Ω/10mΩ		
	Range/Resolution	3000Ω/0.1Ω		/	3000Ω/0.1Ω		
	Accuracy	±(0.4%+0.05%FS)		±(0.4%+0.05%FS)	±(0.4%+0.05%FS)		
		±(0.4%+0.1%FS) (3mΩRange)			±(0.4%+0.1%FS) (3mΩRange)		
	Temperature drift	±(0.04%+0.005%FS)		±(0.04%+0.005%FS)	±(0.04%+0.005%FS)		
		±(0.04%+0.01%FS) (3mΩRange)			±(0.04%+0.01%FS) (3mΩRange)		

	Specification
Response time	10ms
	(The response time is a reference when measuring pure resistance, which varies depending on the device to be measured)
Input resistance	≥1mΩ
Rated input	DC±300V
Communication Interface	USB/LAN*
Operating temperature	0°C~40°C 80%RH below (No condensation)
Storage temperature	-10°C~50°C 80%RH below (No condensation)
Size	384*230*105 (mm)
weight	2.4KG

1. Add ±0.01%FS for Med, Add ±0.02%FS for Fast, Add ±0.03%FS for Ex_fast
2. 3mΩ range: Add ±0.1%FS for Med, Add ±0.2%FS for Fast, Add ±0.5%FS for Ex_fast
3. Above data is applicable to > 5%FS condition

* For any GPIB interface option request , check with ITECH for availability.

* This information is subject to change without notice