

**Product**

IT5101 & IT5101E Battery Testers

**Features**

Resistance + Voltage simultaneously measurement and display



3 voltage ranges, 10  $\mu$ V~300 V  
Optional 7 resistance ranges



4-terminal AC measurement



Comparator function



Statistics calculation



Measurement setting configurations storage



Abnormal measurement inspection

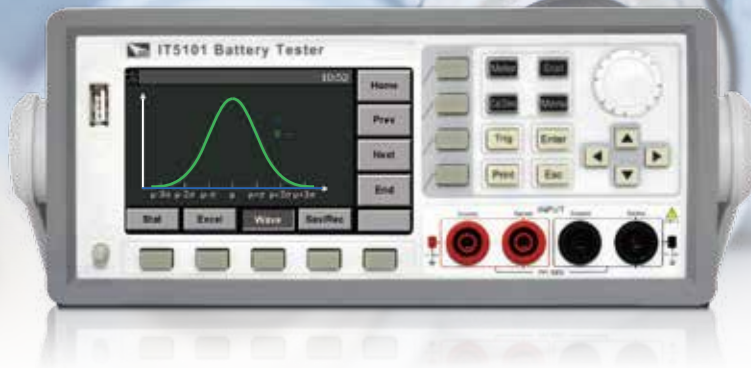


# IT5101 & IT5101E Battery Testers

**APPLICATIONS**

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

*Your Power Testing Solution*



# IT5101 & IT5101E Battery Testers

IT5100 series (IT5101 & IT5101E) is a series of battery internal resistance testers with high precision, high resolution and high speed. Resistance resolution is down to  $0.1 \mu\Omega$ , voltage resolution is  $10 \mu\text{V}$ . 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  $3 \text{ m}\Omega$  coin size to  $3000 \Omega$  large-cell batteries, IT5100 is an ideal solution for the batteries inspection and sorting.

## Features

- Simultaneous resistance and voltage measurements
- Up to 125 measurements/s<sup>\*1</sup>
- 4.3 inch LCD color display
- Voltage measurement:  $10 \mu\text{V}$  to  $300 \text{ V}$
- Resistance measurement:
  - IT5101:  $150 \mu\Omega$  to  $3000 \Omega$
  - IT5101E:  $15 \text{ m}\Omega$  to  $3 \Omega$
- Built-in GPIB, USB, LAN interfaces with SCPI support
- Statistics calculation and data storage function
- Comparator function
- Zero adjustment function
- 4-terminal AC measurement
- Measuring result alarm function

\*1. In Ex\_fast mode

## 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



Cellphones



Digital  
Cameras



Unmanned Aerial Vehicles  
(UAV)



Electromobiles



New Energy Vehicles

Battery-powered Devices

# Your Power Testing Solution

## IT5101 & IT5101E Battery Testers



### High Precision and Fast Measurement

#### High Accuracy

Resistance:  $\pm 0.4\% \pm 0.05\%$  FS  
Voltage:  $\pm 0.01\% \pm 0.01\%$  FS

#### High Resolution

Resistance:  $0.1 \mu\Omega^*$   
Voltage:  $10 \mu V$

\* The resolution is only for IT5101, IT5101E resolution is  $10 \mu\Omega$ .

#### High Speed

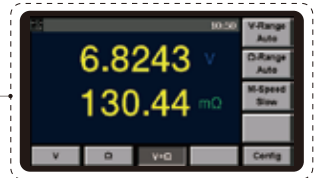
Resistance+Voltage simultaneously sampling time  $< 8$  ms  
Single sampling time (Resistance or Voltage)  $< 4$  ms



### 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 300 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  $\mu V$  ~ Max. 300 V

#### Resistance measurement

Select the performance and cost required for your application.

IT5101: 150  $\mu\Omega$  to 3000 Ω

IT5101E: 15 mΩ to 3 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 $\mu\Omega$	30 mΩ	1 $\mu\Omega$	300 mΩ	10 $\mu\Omega$	3 Ω	0.1 mΩ	300 Ω	10 mΩ	3000 Ω	0.1 Ω
IT5101E	-	-	-	-	300 mΩ	10 $\mu\Omega$	3 Ω	0.1 mΩ	-	-	-	-
Model	Voltage											
	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			

# Your Power Testing Solution

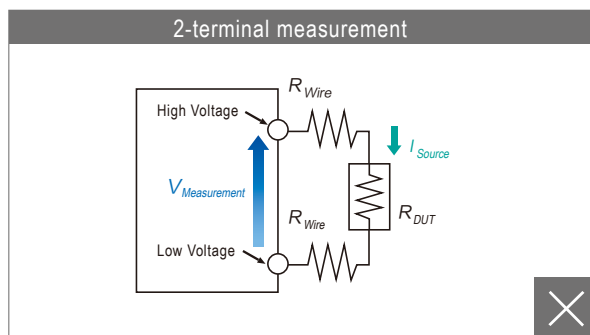
## IT5101 & IT5101E Battery Testers

### Excellent performance

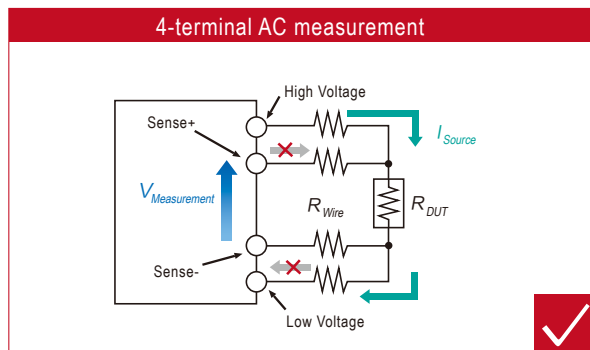


#### 4-terminal AC Measurement

To avoid the influence caused by testing wire and ensure test precision, IT5101 and IT5101E 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.



VS



#### High precision

Resistance:  $\pm 0.01\% \pm 0.01\%$  FS

Voltage:  $\pm 0.4\% \pm 0.05\%$  FS

#### High resolution

Resistance: 0.1  $\mu\Omega$  (IT5101E is 1  $\mu\Omega$ )

Voltage: 10  $\mu\text{V}$

#### 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

IT5101/E 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

# Your Power Testing Solution

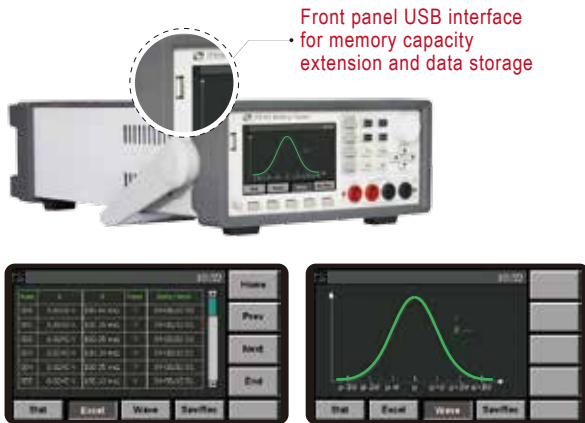
## IT5101 & IT5101E Battery Testers



### Statistics calculation & Measurement setting configurations storage

Combined with an external USB disk, IT5101 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.

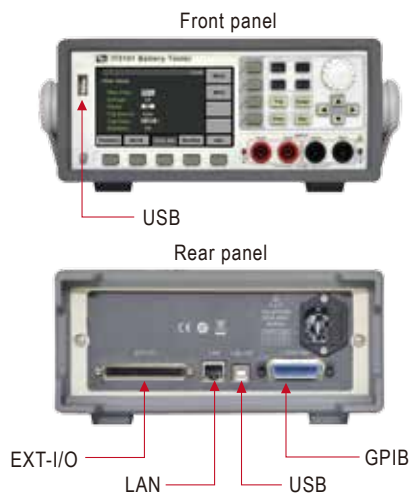


Front panel USB interface for memory capacity extension and data storage



### Built-in multi-interface

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



Built-in GPIB, 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.

IT5101 & IT5101E 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, GPIB, 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.





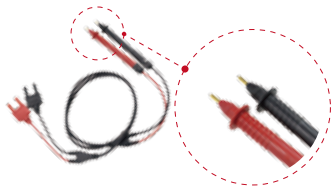
# Your Power Testing Solution

## IT5101 & IT5101E Battery Testers

### 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.)



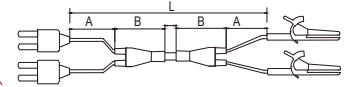
IT-E601  
Pin type lead



IT-E602  
Large clip type lead



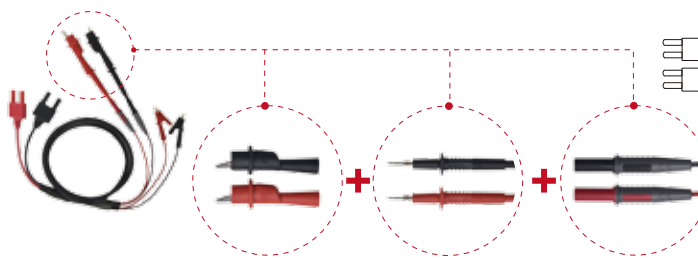
IT-E603  
Pin type lead



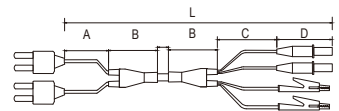
A: 100 mm  
B: 59.7 mm  
L: 1219.4 mm  
DC: 600 V



IT-E605  
Zero adjustment board  
(For pin testing wire)



IT-E604



A: 100 mm  
B: 59.7 mm  
C: 150 mm  
D: 67 mm  
L: 1269.4 mm  
DC: 600 V

### 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



### IT5101 Resistance Measurement

Measuring range	3 mΩ	30 mΩ	300 mΩ	3 Ω	30 Ω	300 Ω	3000 Ω
Resolution	0.1 μΩ	1 μΩ	10 μΩ	0.1 mΩ	1 mΩ	10 mΩ	0.1 Ω
Accuracy*1	±(0.4%+0.1% FS)			±(0.4%+0.05% FS)			
Temp. coefficient	±(0.04%+0.01% FS)			±(0.04%+0.005% FS)			

### IT5101E Resistance Measurement

Measuring range	-	-	300 mΩ	3 Ω	-	-
Resolution	-	-	10 μΩ	0.1 mΩ	-	-
Accuracy*1	±(0.4%+0.05% FS)					
Temp. coefficient	±(0.04%+0.005% FS)					

Note:

\*1. 30mΩ to 3000Ω ranges: Add ±0.01%FS for Med, Add ±0.02%FS for Fast, Add ±0.03%FS for Ex\_fast

3mΩ range: Add ±0.1%FS for Med, Add ±0.2%FS for Fast, Add ±0.5%FS for Ex\_fast

### IT5101 & IT5101E Voltage Measurement

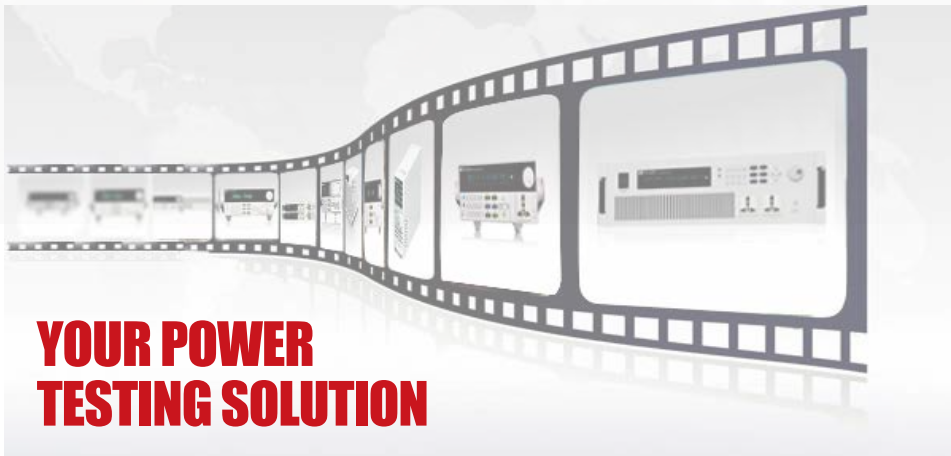
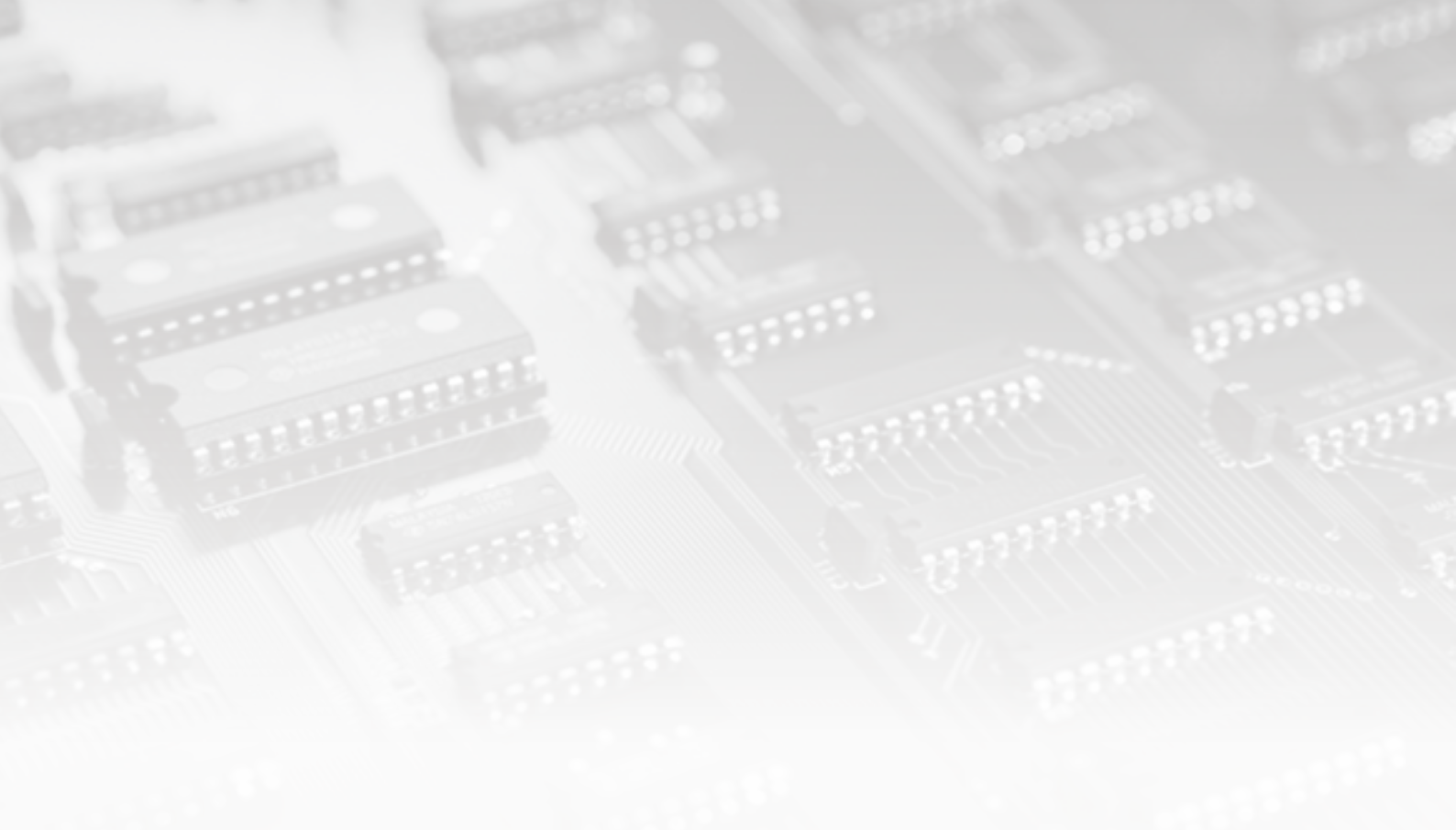
Voltage	Measuring range	-6 V ~ +6 V	-60 V ~ +60 V	-300 V ~ +300 V
	Resolution	10 μV	0.1 mV	1 mV
	Accuracy	±(0.01%+0.01% FS)		
	Temp. coefficient	±(0.001%+0.001% FS)/°C		

### IT5101 & IT5101E Specification

Response time*2	10 ms
Input resistance	≥1 MΩ
Rating input	DC ±300 V
Interfaces	GPIO/USB/LAN
Operation temperature	0°C ~ 40°C 80% RH or less (Non-condensating)
Storage temperature	-10°C ~ 50°C 80% RH or less (Non-condensating)
Dimension	384*230*105 (mm)
Weight	2.4 KG

Note:

\*2. The actual response time may change due to different DUTs, above value is from pure resistance measuring and for reference only.



## **YOUR POWER TESTING SOLUTION**

This information is subject to change without notice.

For more information, please contact ITECH.

**[www.itechate.com](http://www.itechate.com)**

### **Taiwan**

TEL: 03-668-4333

FAX: 03-667-6466

E-mail: [taiwan@itechate.com.tw](mailto:taiwan@itechate.com.tw)

### **China**

TEL: +86-25-52415098

FAX: +86-25-52415268

E-mail: [info@itechate.com](mailto:info@itechate.com)



**ITECH**