![INNO INSTRUMENT logo]

Battery Tester
SBT300/60

Highest Measurement Accuracy:
- Voltage: ±0.01% of reading ±3digits,
- Resistance: ±0.4% of reading ±5digits

High Resolution Display: Voltage up to 10μV, Resistance up to 0.1μΩ

AC 4-terminal Testing Method

Wide Resistance Range: 3mΩ ~ 3000Ω

Voltage Measurement up to 300V(SBT300), 60V(SBT60)

10ms response time + 20ms sampling time

Storage Function, Comparator Function, Comprehensive Judgement Results Output, Two setting methods, Manual comparison, Four Kinds of Beeping, Static Function, Correction Function, Analog Output Function

INNO Instrument is a leading provider of high-end equipment with a focus on quality and innovation. Drawing from years of dedicated research and development, our company delivers top-notch products that span various industries, including electric power, energy resources, transportation, automobiles, and telecommunications. Our advanced, reliable, and comprehensive test and measurement solutions are sought after by R&D companies and manufacturers. Through systematic approaches, we address the intricate demands of our customers, actively contributing to the continuous development and updating of global industries.

The SBT60/300 battery tester is a highly precise and high-resolution instrument widely utilized for testing various batteries, including lithium batteries for mobile phones, storage batteries, and power batteries. Using the AC four-terminal test method, it precisely measures the internal resistance and voltage of the battery. The built-in comparator function automatically verifies whether the battery parameters meet the standard, allowing for the calculation of the pass rate. This tester is well-suited for testing and sorting a variety of batteries.

Measurement Object and Purpose

- Be used for high voltage battery pack inspection
- Be used for battery module inspection
- Be used for the inspection of large(low impedance) components
- Be used for high speed mass production inspection of button batteries
- Be used for fuel battery pack measurement
- Be used for battery research, development and measurement
- Be suitable for high speed mass production inspection of small battery pack of mobile phone/portable electronic products
- Be suitable for high speed mass production inspection of small components

Functional Advantages and Features

AC four-terminal Test Method

The impedance measurement adopts AC four-terminal method, which is not affected by the wiring impedance of the test line.

High Accuracy Measurement

Resistance: ±0.4%rdg.±5dgt.
Voltage: ±0.01%rdg.±3dgt.

High Resolution Display

Resistance: 0.1μΩ
Voltage: 10μV

Storage Function

The measurement results (data) can be stored in the instrument memory or U flash disk in CSV format or MAT format, and the data stored in the memory can also be exported to U flash disk, so that the measurement results of the corresponding time can be viewed at any time.

Comparator Function

• Resistance and voltage can be checked simultaneously

With the independent comparison functions of resistance and voltage, Pass/Hi/IN/Lo can be judged. The results can be checked through screen display, beeping, external I/O output. The judgment results of both parties can be checked through image display at the same time.

• Comprehensive Judgment Results Output

In addition to the respective judgment results of resistance and voltage, the comprehensive judgment results can be output to the external I/O.

• Two Setting Methods

The following 2 modes can be set. Hi/Lo is set according to the respective upper and lower limits and the deviation (%) of any standard value.

• Manual Comparison

There are manual comparison method and automatic comparison method. The instrument adopts automatic comparison method by default. Only when EXT I/O is ON in manual comparison mode , the results of output comparator is suitable for pedal switch, PLC control and other occasions.

• Four Kinds of Beeping

Beeper settings include OFF, HL, IN, BT1 and BT2 modes. In BT1 and BT2 modes, IN or Hi/Lo can be set to different beeps.

Statistic Function

Calculate statistical indicators according to the measurement results, draw the normal distribution map, observe the normal distribution of the measurement results.

Correcting Function

Be used to compensate the offset voltage or gain drift of the internal circuit of the instrument to improve the test precision. There are automatic calibration and manual calibration. In the automatic correction mode, correction shall be conducted automatically once every 30 minutes; In manual mode, correction can be performed manually through Ext I/O and communication commands. During calibration, the measurement processing shall be suspended and the instrument shall be automatically corrected by default.

Analog Output Function

With SBT60/300 battery tester, analog output of the resistance measurement value can be conducted. By connecting the analog output quantity to the recorder, the change of the resistance value can be recorded. It is convenient to use the data acquisition instrument for long-term recording measurement and fuel battery evaluation.

Product Overview
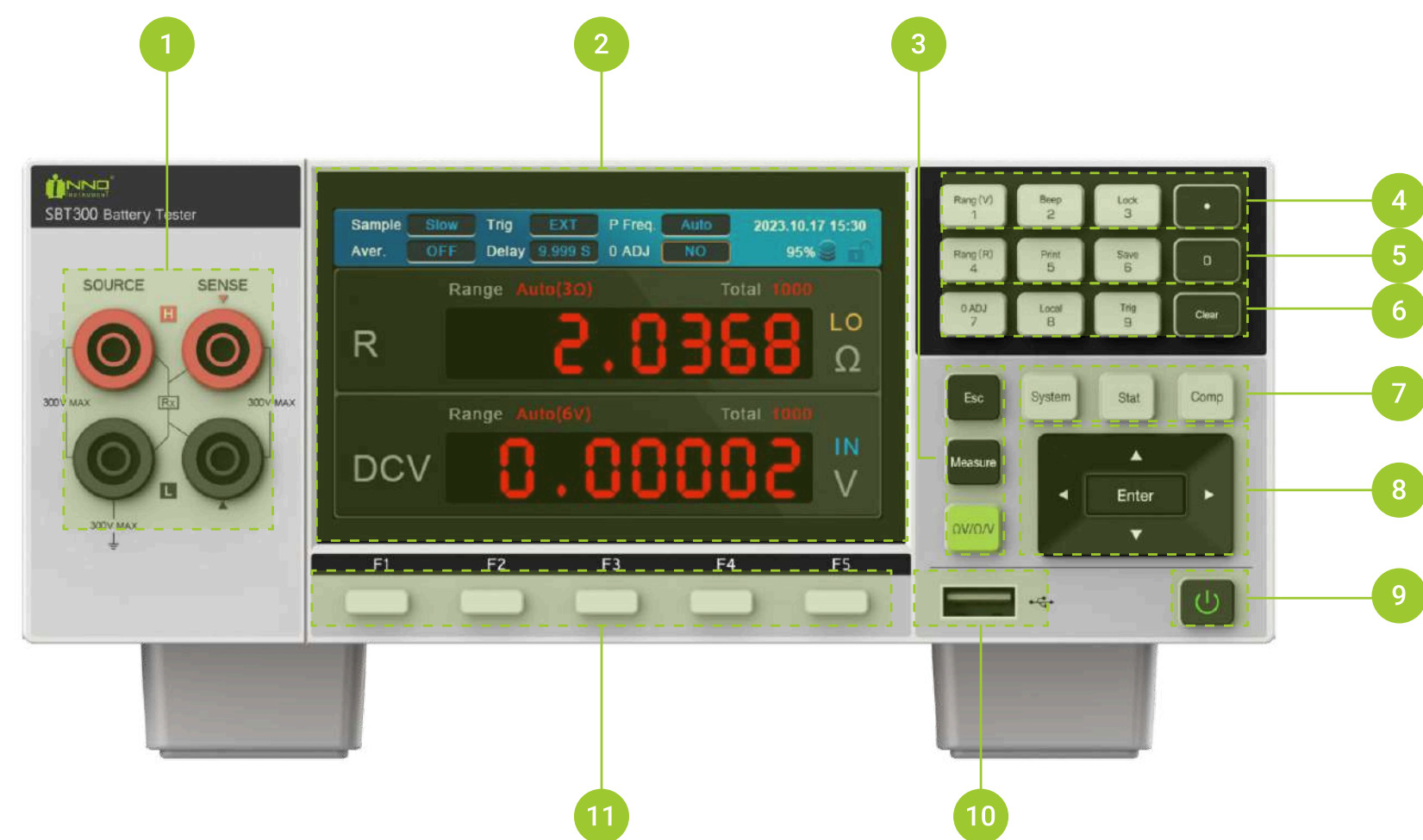
1. Input port
2. Display
3. Cancel or Back key/Measurement function menu key/measurement mode switch key
4. Voltage range key/volume key/locking key/decimal(.) key
5. Resistance range key/print shortcut key/save setting key/0 key
6. Reset key/cut-off remote control key/manual trigger key/Clear key
7. System setting menu key/statistics menu key/Compare function menu key
8. On-off key
9. Confirm key and direction selection key
10. USB interface
11. Softkey

1. Electric power line interface
2. Power switch
3. Ethernet interface
7. RS-232C interface
8. Analog output interface
9. EXT I/O interface

Technical Specifications

Basic Parameters

Item	Specification
Measuring Items	Resistance, voltage
Test Method	AC four-terminal test method
Functionalities	ΩV/Ω/V
Voltage Range	SBT60:6V/60V SBT300:6V/60V/300V
Resistance Range	3mΩ/30mΩ/300 mΩ/3Ω/30Ω/300Ω/3000Ω
Nominal Voltage	Rated input voltage: DC±60V(SBT60), DC±300V(SBT300) Maximum rated voltage to ground: DC±60V(SBT60), DC±300V(SBT300)
Input Impedance	DC input impedance 3MΩ
Sample Rate	FAST/MEDIUM/SLOW
Response Time	Measurement response time: about 10ms
Total Measurement Time	Response time +sampling time
Zero Set	Zero range: -1000~1000 counting values(resistance and voltage are the same), the zero range can be less than or equal to ±1000 dgt.
Trigger	Internal trigger/external trigger/manual trigger
Mean Average	On /OFF, average number of time: 2~16 times
Delays	On /OFF, delay time: 0~9.999 seconds
Statistics	On /OFF/ reset, operation content: maximum value, minimum value, average value, sampling standard deviation, parent standard deviation, process capability index, etc.
Comparator	Compare mode: AUTO/MANUAL, Beeper mode: OFF/HL/IN/BT1/BT2, Upper and lower resistance limits: 0~3000Ω, Upper and lower voltage limits: 0~60V(SBT60)/0~300V(SBT300), Resistance reference value: 0~3000Ω, Voltage reference value: 0~60V(SBT60)/0~300V(SBT300), Percentage: 0.00%~99.99%
Measurement Output	The measured value can be transmitted to the computer in real time through RS- 232C or LAN port
Memory	Maximum storage space 2.8G
Configuration Save and Reload	Maximum storage of 200 groups, measurement configuration items: measurement function, resistance range, voltage range, delay, delay time, sampling rate, average value, average number, self-correction, trigger mode, power frequency, comparator, statistical operation function, judgment beeping of comparator, storage

Sampling Time

Functionalities		Fast	Medium	Slow
ΩV	(50Hz)	40ms	80ms	320ms
	(60Hz)			
Ω	(50Hz)	20ms	40ms	200ms
	(60Hz)			
V	(50Hz)	20ms	40ms	200ms
	(60Hz)			

Measurement Range and Accuracy

Accuracy Guarantee Condition

Temperature and humidity range: 23±5°C, below 80%rh (no condensation)
Zero setting: after zero setting
Preheating time: above 30 minutes
Automatic correction: when the sampling rate is not slow, it shall be corrected automatically after preheating.
Temperature change is within ±2°C after automatic correction.

Accuracy

The overall error is jointly determined by the reading error of the measured value and the digital error of the measured range.
For example:
Standard value: 1Ω, measuring span: 3Ω
Based on the table below, the reading error is ±0.4% rdg, digital error is ±5dgt, and the reading error (±%rdg.) is 1Ω×±0.4%=±0.004Ω
Digital error (±dgt.): the current minimum resolution is 0.0001 Ω range, so ±5dgt.= ±0.0005Ω
The overall error: reading error + number error, namely ±0.0045Ω
Based on the calculation, relative to the standard value of 1 Ω, the precision range of the instrument is 0.9955 ~ 1.0045 Ω.

Impedance Measurement

Range	3mΩ	30mΩ	300mΩ
Maximum Display Value	3.1000mΩ	31.000mΩ	310.00mΩ
Resolution	0.1µΩ	1µΩ	10µΩ
Measurement Current *1	100mA	100mA	10mA
Measurement Current Frequency		1kHz±0.2Hz	
Accuracy *2	±0.4%rdg.±10dgt.	±0.4%rdg.±5dgt.	
Temperature Coefficient	(±0.05%rdg.±1dgt.)/°C	(±0.05%rdg.±0.5dgt.)/°C	
Open Port Voltage		25V peak	

Impedance Measurement

Range	3Ω	30Ω	300Ω	3000Ω
Maximum Display Value	3.1000Ω	31.000Ω	310.00Ω	3100.0Ω
Resolution	100µΩ	1mΩ	10mΩ	100mΩ
Measurement Current *1	1mA	100µA	10µA	10µA
Measurement Current Frequency		1kHz±0.2Hz		
Accuracy *2	±0.4%rdg.±5dgt.		±0.4%rdg.±5dgt.	
Temperature Coefficient	(±0.05%rdg.±1dgt.)/°C		(±0.05%rdg.±0.5dgt.)/°C	
Open Port Voltage	25V peak		10V peak	

*1:measurement current error is within ±10%
*2:Add ±2dgt. for FAST and ±2dgt for MEDIUM.
Add ±10dgt. for FAST and ±5dgt. for MEDIUM (3mΩ range)

Voltage Measurement

Range	60V	300V (SBT300)
Maximum Display Value	±60.0000V	±300.000V
Resolution	100µV	1mV
	Display value 6V : Resolution: 10µV	
Accuracy	±0.01%rdg.±3dgt.	
Temperature Coefficient *3	(±0.001%rdg.±0.3dgt.)/°C	

*3:Add 2dgt for FAST and 2dgt for MEDIUM.

External Interface

Item	Specification
Analog Output	Screw terminal
Type A USB	Conform to USB Rev. 2.0 USB flash disk file format FAT32
EXT I/O	DB-37 (hole type)
RS-232	DB-7 (hole type), comply with EIA-574 (EIA- 232(RS-23) 9-pin type standard)

General Specifications

Item	Specification
Preheating Time	About 30 minutes
Working Environment	5°C~40°C, below 80%RH (no moisture condensation)
Storage Environment	-25°C~60°C, below 80%RH (no moisture condensation)
Operating Environment	Indoor
Working Altitude	2,000m or below
Rated Supply Voltage	100~240VAC(±10%)
Rated Power Supply Frequency	50/60Hz(±2%)
Maximum Power Consumption	35VA
Dimensions	306mm*232mm*108.5mm
Weight	About 3kg

Model and Code

Name	Model No.	Description
Main Frame	SBT60/300	Battery tester
Optional Interface	/CE	Ethernet interface
	/DA	Analog output (D/A) interface
	/IO	EXT I/O interface
Optional Components	BZ-1001	Zero setting panel
	BL-1001	Four- terminal test line (pin type)
	BL-1002	Four- terminal test line (clip type)

INNO Instrument Inc

Website: www.innoinstrument.com

Email: support@innoinstrument.com