



Simultaneous high-speed measurement of internal resistance and battery voltage

## From large-cell to high-voltage battery testing - HIOKI is The Choice

The **BT3563, BT3562, and 3561 BATTERY HiTESTERS** support simultaneous high-speed measurement of internal resistance (IR) and battery voltage (OCV) for the ever-expanding production lines of increasingly larger lithium-ion low resistance batteries, and other battery packs for high voltage applications.

- Measure high-voltage battery packs up to 300V (with the BT3563)
- Ideal for high-precision cell voltage measurements (accurate to 0.01% of reading)
- Measurement circuitry employs enhanced current regulation
- Fast 10 ms response and 8 ms sampling time for high-speed measurements (with the BT3563 and BT3562)
- Ranges from 3 mΩ to 3000 Ω (with the BT3563 and BT3562) support coin-size to large-cell batteries

# Resistance and voltage measurements

## BATTERY HiTESTER BT3563 BT3562 3561



### ■ Measurement Parameters and Applications

- High-voltage battery pack testing
- Battery module testing
- Large (low-resistance) cell testing
- High-speed mass production testing of coin batteries
- Fuel cell stack measurements
- Battery research and development measurement applications

**BT3563**  
Up to  
**300V**

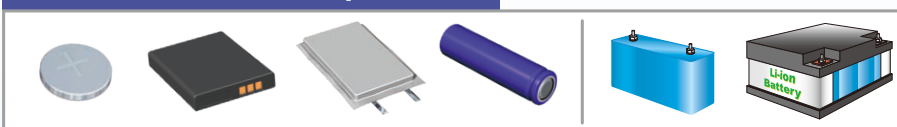
**BT3562**  
Up to  
**60V**



**Voltage measurement ranges:** 6V/60V/300V (BT3563)  
6V/60V (BT3562)

**Resistance measurement ranges:** 3mΩ/30mΩ/300mΩ/  
3Ω/30Ω/300Ω/3000Ω

### Lithium-Ion and Secondary Batteries



Cell phones



E-books



Electric bicycles



Electric scooters



EV/HEV

### Battery-Powered Devices

### ■ Advanced Functions

#### ● Four-Terminal AC Method

The four-terminal, 1-kHz AC method uses four contact probes to measure resistance independently of that of the measurement leads.

#### ● Measurement Error Detection

Detects test probe contact failure and broken leads, for 100% measurement reliability.

#### ● Self-Calibrating

Minor drift and gain fluctuations within the internal measurement circuitry are automatically corrected to maintain high accuracy.

#### ● Averaging Function

Stable readings can be consistently obtained by averaging two to 16 measurements.

# to confirm finished quality

## ■ Features of Battery HiTester Series

### High Precision

**Resistance**  
 $\pm 0.5\%$  rdg.  $\pm 5$  dgt.  
**Voltage**  
 $\pm 0.01\%$  rdg.  $\pm 3$  dgt.

Common to the BT3563, BT3562 and 3561

### High Resolution

**Resistance:  $0.1 \mu\Omega$ <sup>\*1</sup>**  
**(3 m $\Omega$  range)**  
**Voltage:  $10 \mu V$ <sup>\*1</sup>**  
**(6 V range)**

<sup>\*1</sup> BT3563 and BT3562

### Quick Response

**Resistance & Voltage**  
**Simultaneous measurements**  
**within 18 ms<sup>\*2</sup>**

<sup>\*2</sup> Sampling time + response time:  
 with EX.FAST sampling  
 BT3563 and BT3562

- The 3 m $\Omega$  range (with  $0.1 \mu\Omega$  resolution) is ideal for testing ever lower-resistance large cells (BT3563 and BT3562).
- The 6 V range (with  $10 \mu V$  resolution and 0.01% accuracy) is ideal for the high-precision voltage measurements required for cell testing (BT3563 and BT3562).

- Provides high-speed measurement of high-voltage<sup>\*3</sup> battery packs, for improving productivity (BT3563).

<sup>\*3</sup> BT3563: up to 300 V  
 BT3562: up to 60 V

## ■ Measurement Parameters and Applications

## BATTERY HiTESTER 3561

- For high-speed production line testing of small battery packs for mobile and portable communications devices
- For high-speed production line testing of small cells
- High-speed 10ms inspection in the 300 m $\Omega$  and 3  $\Omega$  ranges
- Improve inspection efficiency during mass production of compact cells

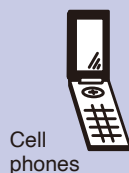
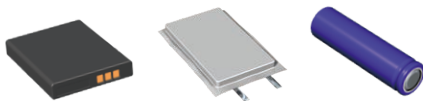
**3561**  
 Up to  
**20V**



**Voltage measurement ranges: 20 V**

**Resistance measurement ranges: 300 m $\Omega$ /3  $\Omega$**

### Lithium-Ion and Secondary Batteries



Cell phones



E-books

### Battery-Powered Devices

### Quick Response with small cell measurement

**Resistance & Voltage**  
**Simultaneous measurements**  
**within 10 ms<sup>\*4</sup>**

<sup>\*4</sup> Sampling time + response time:  
 with EX.FAST sampling  
 3561

## Battery HiTester Series

### ● Measurement Value Storage

Store up to 400 measurement values by external trigger input, for bulk transfer to a computer.

### ● Statistical Calculations

Apply statistical calculations to up to 30,000 data points to facilitate process and quality control.

### ● Save Measurement Setting Configurations

Up to 126 measurement configurations such as comparator setting criteria can be saved and reloaded. Saved configurations can be selected by external control.

# Automatic Testing Lines

## High Speed Interfaces

The fastest 10 ms measurement data can be transferred via the standard RS-232C interface at up to 38,400 bps.

Models with the -01 suffix include a GP-IB interface.

## Handler Interface

Triggering, measurement configuration loading, and zero adjustment can be externally controlled. Output signals provide comparator results, end-of-measurement events, and measurement errors. (Because the BT3563/BT3562 are different from the 3561, consult each model's Instruction Manual for specific details or designs.)

| BT3563, BT3562 and 3561 External I/O Items                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input (no-voltage contacts <sup>*1</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                                    | Output (open collector <sup>*1</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <ul style="list-style-type: none"> <li>Measurement trigger (<math>\overline{\text{TRIG}}</math>)</li> <li>Print (<math>\overline{\text{PRINT}}</math>)</li> <li>Zero adjustment (<math>\overline{\text{OAJ}}</math>)</li> <li>Calibrate (<math>\overline{\text{CAL}}</math>)</li> <li>Manual comparator (<math>\overline{\text{MANU}}</math>)</li> <li>Load panel settings (7 bits) (<math>\overline{\text{LOAD0}}</math> to <math>\overline{\text{LOAD6}}</math>)</li> </ul> | <ul style="list-style-type: none"> <li>End-of-Measurement (<math>\overline{\text{EOM}}</math>)</li> <li>Measurement-in-progress (<math>\overline{\text{INDEX}}</math>)</li> <li>Comparator results (<math>\overline{\text{R-Hi}}</math>, <math>\overline{\text{R-IN}}</math>, <math>\overline{\text{R-Lo}}</math>, <math>\overline{\text{V-Hi}}</math>, <math>\overline{\text{V-IN}}</math>, <math>\overline{\text{V-Lo}}</math>, <math>\overline{\text{PASS}}</math>, <math>\overline{\text{FAIL}}</math><sup>*2</sup>)</li> <li>Measurement error (<math>\overline{\text{ERR}}</math>)</li> <li>General-purpose output (<math>\overline{\text{OUT1}}</math> to <math>\overline{\text{OUT9}}</math>) (only 3561)</li> </ul> |

<sup>\*1</sup> The input and output signals of the BT3563 and BT3562 are isolated via photocouplers.

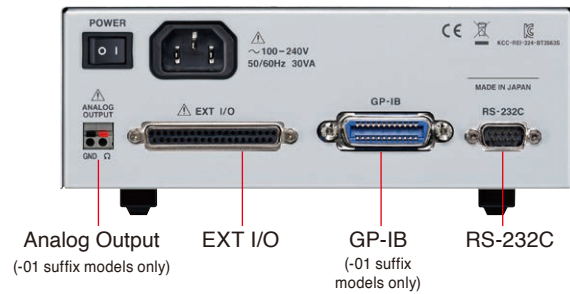
### EXT I/O Connectors (BT3563 and BT3562, accessories not supplied)

|                                      |                                                                                                                     |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Installed connector (HiTester side): | 37-pin D-SUB accepts #4-40 screws                                                                                   |
| Mating connectors:                   | DC-37P-ULR (solder type) or DCSP-JB37PR (welded type) from Japan Aviation Electronics Industry, Ltd., or equivalent |

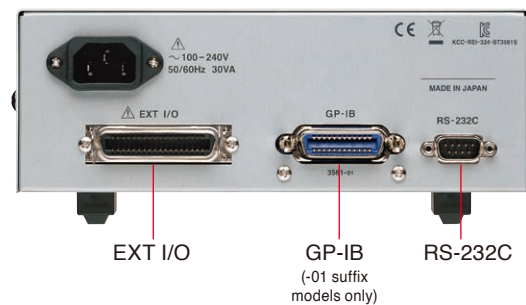
### EXT I/O Connectors (3561, accessories not supplied)

|                                      |                                                                     |
|--------------------------------------|---------------------------------------------------------------------|
| Installed connector (HiTester side): | 57RE-40360-730B (D29) (DDK)                                         |
| Mating connectors:                   | 57-30360 (DDK), RC30-36P (Hirose Electric Co., Ltd.), or equivalent |

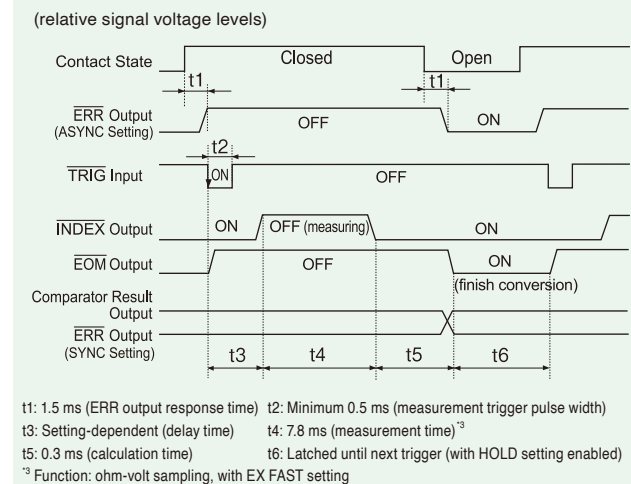
BT3563-01 and BT3562-01 Rear Panel



3561-01 Rear Panel



### BT3563 and BT3562 External I/O Timing Chart



## Comparator Functions

### Judges Resistance & Voltage Simultaneously

Resistance and voltage can be simultaneously judged Hi/IN/Lo by independent comparators. Judgment results are provided on the display, beeper, and external I/O. The display allows confirming both results at a glance.



Resistance comparator settings



Voltage comparator settings

### Composite Judgment Result Output

External I/O provides both separate and combined outputs of resistance and voltage judgment results, so composite results can be monitored.

### Alternative Setting Methods

Set judgment thresholds by specifying high/low (Hi/Lo) values or by specifying a standard value and deviation (%).

### Manual Comparator

Comparator judgments can be executed only when required, supporting flexible control by footswitch or PLC.

### Dual Beep Tones

Different beep tones distinguish IN and Hi/Lo judgments. Both tones can be independently enabled or disabled.



# Multiple Recording Methods

## ■ Analog Output (BT3563-01 and BT3562-01 only)

The BT3563-01 and BT3562-01 provide analog output of resistance measurement values. This is convenient for combining recorded data from multiple locations or of various data types, such as for logging long-term measurements and for fuel cell evaluation.

|                 |                                                                |
|-----------------|----------------------------------------------------------------|
| Output contents | Measured resistance (displayed value)                          |
| Output rate     | 0 to 3.1 V DC (corresponding to displayed value of 0 to 31000) |
| Resolution      | 12 bits                                                        |
| Response time   | 10 ms                                                          |

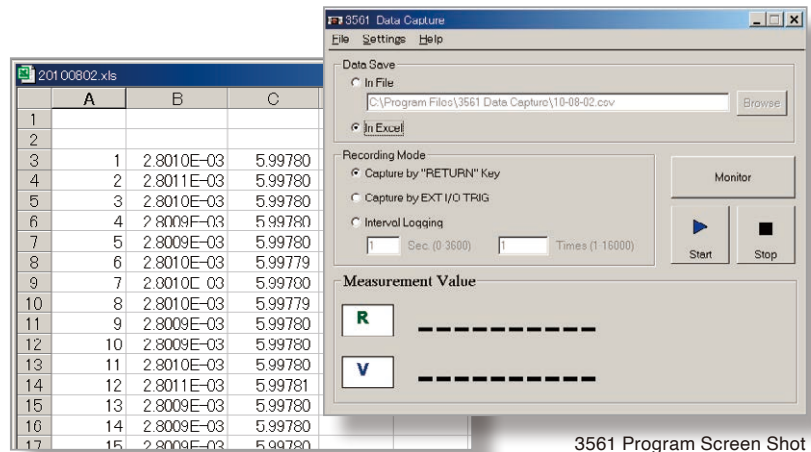


## ■ PC Application Program

Measurement data can be transferred to a PC for importing to a spreadsheet program or storage as CSV files. Interval and manual measurements can be triggered by a keystroke or external trigger signal.

Download the PC application program from our website:

<https://www.hioki.com/>



3561 Program Screen Shot

Excel Import Example

## ■ Data Printing

Measurement values, and those including judgment results and statistical calculation results can be printed using an RS-232C-compatible printer.

### ● Interval Printing

Elapsed time and measurement values can be printed over a specified interval. The interval can be set from 1 to 3,600 seconds.

### ● Requirement specification (printer)

The requirements for a printer to be connected to the instrument are as follows. Confirm compatibility and make the appropriate settings on the printer before connecting it to the instrument.

|                     |               |                                                                                     |                                         |     |
|---------------------|---------------|-------------------------------------------------------------------------------------|-----------------------------------------|-----|
| Interface           | : RS-232C     |  | BT3563/BT3562/3561<br>(9-pin) Connector |     |
| Characters per line | : At least 40 |                                                                                     |                                         |     |
| Communication speed | : 9600 bps    |                                                                                     |                                         |     |
| Data bits           | : 8           |                                                                                     |                                         |     |
| Parity              | : none        |                                                                                     |                                         |     |
| Stop bits           | : 1           |                                                                                     |                                         |     |
| Flow control        | : none        |                                                                                     |                                         |     |
|                     |               | Function                                                                            | Signal name                             | Pin |
|                     |               | Receive Data                                                                        | R x D                                   | 2   |
|                     |               | Transmit Data                                                                       | T x D                                   | 3   |
|                     |               | Signal or Common Ground                                                             | GND                                     | 5   |

ASCII data will be sent from the BT3563/BT3562/3561. Please use a printer that can output plain text.

For the RS-232C cable, the connector at the instrument end should be a molded type. The metal type (with hooks preventing the surface from being flat) will not fit due to the instrument's design.

### Printout Examples

```

1 2.5375mOhm, 4.70056 V
2 - 0.9730mOhm, 4.70055 V
3 0.F., 0.F.
4 -----
5 15.039 Ohm, - 50.254 V
6 200.12 Ohm, 11.3176 V
7 2.9984kOhm, -11.3099 V
8 0.1615 Ohm, -4.70054 V
9 0.166 Ohm, - 4.7006 V
10 0.16 Ohm, - 4.700 V

```

Measurement Values

```

50 5.033 Ohm Hi, 1.60427 V
51 5.033 Ohm Hi, -0.00001 V
52 17.865mOhm IN
53 18.354mOhm Hi
54 15.322mOhm Lo

```

Measurement Values and Judgment Results

```

*** RESISTANCE ***
Number      85
Valid       85
Average     13.06 Ohm
Max         13.78 mOhm ( 74)
Min         12.10 mOhm ( 3)
Sn          0.38mOhm
Sn-1        0.38mOhm
Op          1.32
OpK         0.09
Comp Hi     40
Comp IN     45
Comp Lo     0

*** VOLTAGE ***
Number      85
Valid       85
Average     10.0074 V
Max         10.0197 V ( 57)
Min         9.9938 V ( 31)
Sn          0.0068 V
Sn-1        0.0068 V
Op          0.35
OpK         0.32
Comp Hi     10
Comp IN     59
Comp Lo     16

```

Statistical Calculations and Judgment Results

■ Specifications

● BT3563,BT3562 and 3561 Specifications

|                               |                                                                                                                                                                                                                                                                               |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement types             | Resistance and voltage                                                                                                                                                                                                                                                        |
| Resistance measurement method | Four-terminal AC (1 kHz) method                                                                                                                                                                                                                                               |
| Functions                     | ΩV, Ω and V                                                                                                                                                                                                                                                                   |
| Rated voltage                 | [BT3563(-01)]<br>±300 VDC rated input voltage<br>±300 VDC maximum rated voltage to ground<br>[BT3562(-01)]<br>±60 VDC rated input voltage<br>±70 VDC maximum rated voltage to ground<br>[3561(-01)]<br>±22 VDC rated input voltage<br>±60 VDC maximum rated voltage to ground |
| Input resistance              | [BT3563(-01) and BT3562(-01)]<br>3 mΩ/30 mΩ/300 mΩ ranges: Approx. 90 kΩ<br>3 Ω/30 Ω/300 Ω/3000 Ω ranges: Approx. 1 MΩ<br>[3561(-01)]<br>Approx.1MΩ                                                                                                                           |
| Sampling rate                 | Four steps – Extra Fast, Fast, Medium or Slow                                                                                                                                                                                                                                 |
| Response time                 | [BT3563(-01) and BT3562(-01)]<br>Approx. 10 ms for measurements<br>Note: Response time depends on reference values and the measurement object.<br>[3561(-01)]<br>Approx. 3 ms for measurements<br>Note: Response time depends on reference values and the measurement object. |
| Total measurement time        | Sampling time + Response time                                                                                                                                                                                                                                                 |

|                                   |                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Zero-adjustment                   | 1000 count range (both resistance and voltage)                                                                                                                                                                                                                                                                                             |
| Triggering                        | Internal or external                                                                                                                                                                                                                                                                                                                       |
| Delay time                        | On/off, 0 to 9.999 seconds                                                                                                                                                                                                                                                                                                                 |
| Averaging samples                 | On/off, 2 to 16 samples                                                                                                                                                                                                                                                                                                                    |
| Statistical calculations          | Total data count; valid data count; maximum, minimum and average values; standard deviation; population standard deviation and process capability indices                                                                                                                                                                                  |
| Measurement value output function | Measurement values are output via RS-232C upon trigger input                                                                                                                                                                                                                                                                               |
| Measurement value memory          | Up to 400 measurements                                                                                                                                                                                                                                                                                                                     |
| Panel save/load                   | Up to 126 configuration settings<br><b>Save Frequently Used Settings in Memory:</b><br>Measurement function, resistance measurement range, auto-range setting, zero-adjust setting data, sampling rate, trigger source, delay setting, averaging and comparator settings, statistical calculation setting, display switching and key-lock. |
| Analog Output                     | [BT3563-01 and BT3562-01 only]<br>Measured resistance (displayed value, from 0 to 3.1 VDC)                                                                                                                                                                                                                                                 |
| External interface                | External I/O, RS232C (9600, 19200 or 38400 bps), Printer RS-232C (all models), GP-IB (Model BT3563-01, BT3562-01 and 3561-01 only)                                                                                                                                                                                                         |
| Other functions                   | Over-range display, measurement error detection, self-calibration, dual comparators, key-lock                                                                                                                                                                                                                                              |

● BT3563,BT3562 and 3561 General Specifications

|                                            |                                                |
|--------------------------------------------|------------------------------------------------|
| Operating temperature & humidity           | 0 to 40°C, 80% rh or less (non-condensating)   |
| Storage temperature & humidity             | -10 to 50°C, 80% rh or less (non-condensating) |
| Guaranteed accuracy temperature & humidity | 23°C ±5°C, 80% rh or less (non-condensating)   |
| Operating conditions                       | Indoors, below 2000 m ASL                      |
| Rated supply voltage                       | 100 to 240 VAC (auto-selecting)                |
| Rated supply frequency                     | 50/60 Hz                                       |
| Rated power consumption                    | 30 VA                                          |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation withstand potential | [BT3563(-01), BT3562(-01)]<br>1.39 kV AC for 15 s (with 10 mA cut-off current) between all mains supply terminals and protective ground terminal<br>2.224 kV AC for 15 s (with 1 mA cut-off current) between all measurement jacks and interfaces<br>1.39 kV AC for 15 s (with 1 mA cut-off current) between all measurement jacks and protective ground terminal<br>[3561(-01)]<br>1.69 kVAC for 15 s (with 10 mA cutoff current) between all mains supply terminals and protective ground, interfaces, and measurement jacks |
| Dimensions                     | Approx. 215W × 80H × 295D mm (without projections)                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Mass                           | Approx. 2.4 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Accessories                    | Power Cord (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Applicable Standards           | <b>Safety</b><br>EN61010-1<br><b>EMC</b><br>EN61326<br>EN61000-3-2<br>EN61000-3-3                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| ● BT3563 and BT3562<br>[ Sampling Times ] |         |         |       |        |        |
|-------------------------------------------|---------|---------|-------|--------|--------|
| Function                                  |         | EX.FAST | FAST  | MEDIUM | SLOW   |
| ΩV                                        | (50 Hz) | 8 ms    | 24 ms | 84 ms  | 259 ms |
|                                           | (60 Hz) |         |       | 70 ms  | 253 ms |
| Ω                                         | (50 Hz) | 4 ms    | 12 ms | 42 ms  | 157 ms |
|                                           | (60 Hz) |         |       | 35 ms  | 150 ms |
| V                                         | (50 Hz) | 4 ms    | 12 ms | 42 ms  | 157 ms |
|                                           | (60 Hz) |         |       | 35 ms  | 150 ms |

Items in the parentheses ( ) indicate supply frequency settings; Tolerance: ±5 ms for SLOW sampling, and ±1 ms for other settings.

| ● 3561   |         |         |       |        |        |
|----------|---------|---------|-------|--------|--------|
| Function |         | EX.FAST | FAST  | MEDIUM | SLOW   |
| ΩV       | (50 Hz) | 7 ms    | 23 ms | 83 ms  | 258 ms |
|          | (60 Hz) |         |       | 69 ms  | 252 ms |
| Ω        | (50 Hz) | 4 ms    | 12 ms | 42 ms  | 157 ms |
|          | (60 Hz) |         |       | 35 ms  | 150 ms |
| V        | (50 Hz) | 4 ms    | 12 ms | 42 ms  | 157 ms |
|          | (60 Hz) |         |       | 35 ms  | 150 ms |

Items in the parentheses ( ) indicate supply frequency settings; Tolerance: ±5 ms for SLOW sampling, and ±1 ms for other settings.

## Measurement Ranges and Accuracy (Accuracy guaranteed for 1 year; Post-adjustment accuracy guaranteed for 1 year)

### ● BT3563, BT3562 and 3561 Conditions of Guaranteed Accuracy

Temperature & humidity:

23 °C ±5 °C, 80% rh or less (non-condensating)

Zero-adjustment: After executing zero-adjustment

Warm-up time: At least 30 min.

Self-calibration:

Unless using SLOW sampling, execute self-calibration after warm-up and restrict temperature fluctuations to within ±2 °C after calibration.

### ● About Accuracy

Accuracy is calculated from the reading error (±% rdg.) determined by the measurement value and range, and the digit error (± dgt.).

#### Calculation Example

Measurement value: 1 Ω, Measurement range: 3 Ω

Specified accuracy (from table below): ±0.5% rdg., ±5 dgt.

(A) Reading error (±% rdg.): 1 [Ω] × 0.5% = ±0.005 [Ω]

(B) Digit error (± dgt.): ±5 dgt. = ±0.0005 [Ω] (at 0.0001 Ω resolution)

(C) Total error (A + B): ±0.0055 [Ω]

Applying total error (C) to the measurement value of 1 Ω gives an error limit of 0.9945 to 1.0055 Ω.

### ● BT3563 and BT3562 [Resistance Measurement]

| Range                         | 3 mΩ                       | 30 mΩ     | 300 mΩ                       | 3 Ω      | 30 Ω     | 300 Ω    | 3000 Ω   |
|-------------------------------|----------------------------|-----------|------------------------------|----------|----------|----------|----------|
| Maximum display Value         | 3.1000 mΩ                  | 31.000 mΩ | 310.00 mΩ                    | 3.1000 Ω | 31.000 Ω | 310.00 Ω | 3100.0 Ω |
| Resolution                    | 0.1 μΩ                     | 1 μΩ      | 10 μΩ                        | 100 μΩ   | 1 mΩ     | 10 mΩ    | 100 mΩ   |
| Measurement Current*1         | 100 mA                     | 100 mA    | 10 mA                        | 1 mA     | 100 μA   | 10 μA    | 10 μA    |
| Measurement Current Frequency | 1 kHz ±0.2 Hz              |           |                              |          |          |          |          |
| Accuracy*2                    | ±0.5% rdg. ±10 dgt.        |           | ±0.5% rdg. ±5 dgt.           |          |          |          |          |
| Temperature coefficient       | (±0.05% rdg. ±1 dgt.) / °C |           | (±0.05% rdg. ±0.5 dgt.) / °C |          |          |          |          |
| Open-Circuit Voltage          | 25 Vpeak                   |           | 7 Vpeak                      | 4 Vpeak  |          |          |          |

\*1 Measurement current accuracy is ±10%.

\*2 30 mΩ to 3000 Ω ranges: Add ±3 dgt. for EX FAST, or ±2 dgt. for FAST and MEDIUM  
3mΩ range: Add ±30 dgt. for EX FAST, or ±10 dgt. for FAST, or ±5 dgt. for MEDIUM

### [Voltage Measurement]

| Range                   | 6 V                           | 60 V       | 300 V (only BT3563) |
|-------------------------|-------------------------------|------------|---------------------|
| Maximum display Value   | ±6.00000 V                    | ±60.0000 V | ±300.000 V          |
| Resolution              | 10 μV                         | 100 μV     | 1 mV                |
| Accuracy*3              | ±0.01% rdg. ±3 dgt.           |            |                     |
| Temperature coefficient | (±0.001% rdg. ±0.3 dgt.) / °C |            |                     |

\*3 Add ±3 dgt. for EX FAST, or ±2 dgt. for FAST and MEDIUM

### ● 3561 [Resistance Measurement]

| Range                         | 300 mΩ                       | 3 Ω      |
|-------------------------------|------------------------------|----------|
| Maximum display Value         | 310.00 mΩ                    | 3.1000 Ω |
| Resolution                    | 10 μΩ                        | 100 μΩ   |
| Measurement Current*4         | 10 mA                        | 1 mA     |
| Measurement Current Frequency | 1 kHz ±0.2 Hz                |          |
| Accuracy*5                    | ±0.5% rdg. ±5 dgt.           |          |
| Temperature coefficient       | (±0.05% rdg. ±0.5 dgt.) / °C |          |
| Open-Circuit Voltage          | 7 Vpeak                      |          |

\*4 Measurement current accuracy is ±10%.

\*5 Add ±3 dgt. for EX FAST, or ±2 dgt. for FAST and MEDIUM

\*6 Add ±3 dgt. for EX FAST, or ±2 dgt. for FAST and MEDIUM

### ● 3561 [Voltage Measurement]

| Range                   | 20V                           |
|-------------------------|-------------------------------|
| Maximum display Value   | ±19.9999 V                    |
| Resolution              | 0.1 mV                        |
| Accuracy*6              | ±0.01% rdg. ±3 dgt.           |
| Temperature coefficient | (±0.001% rdg. ±0.3 dgt.) / °C |

## Main unit

Model : BATTERY HiTESTER BT3563

Model No. (Order Code) (Note)

BT3563 **Discontinued**

BT3563-01 (Built in GP-IB and analog output)

Model : BATTERY HiTESTER 3561

Model No. (Order Code) (Note)

3561

3561-01 (Built in GP-IB interface)

- Measurement leads are not included. Purchase the appropriate lead option for your application separately.
- The male (system side) of the EXT I/O connector is also available. Please inquire with your Hioki distributor.

Model : BATTERY HiTESTER BT3562

Model No. (Order Code) (Note)

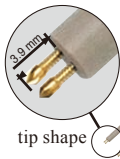
BT3562 **Discontinued**

BT3562-01 (Built in GP-IB and analog output)



## ● Options (measurement leads)

Measurement lead (for measuring high voltage batteries with Models BT3563 and BT3562)



tip shape

PIN TYPE LEAD L2110

A:750 mm (29.53 in.), B:215 mm (8.46 in.), L:1880 mm (9.17 ft.), for high voltage battery measurements, 1000 V DC max.



tip shape

PIN TYPE LEAD L2100

A:300 mm (11.81 in.), B:172 mm (6.77 in.), L:1400 mm (4.59 ft.), for high voltage battery measurements, 1000 V DC max.

Zero adjustment board (for L2110, L2100 only)



0 ADJ BOARD Z5038

For L2110, L2020, 9465-10, 9772

Cannot be used for zero adjusting the 9770 and 9771 Pin Type Leads



For tip replacement (Common to L2110, L2100)

TIP PIN 9772-90

To replace the tip on the Pin type lead 9772, L2100/L2110, (one piece)

Measurement leads (for measuring batteries up to 60 V with BT3563, BT3562, or 3561)



CLIP TYPE LEAD L2107

A:130 mm (5.12 in.), B:83 mm (3.27 in.), L:1100 mm (3.61 ft.), 60 VDC



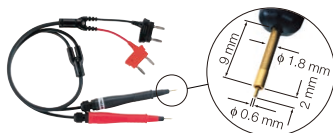
LARGE CLIP TYPE LEAD 9467

A:300 mm (11.81 in.), B:131 mm (5.16 in.), L:1350 mm (4.43 ft.), tip  $\phi$  28 mm (1.10 in.), 50 VDC

Mainly for Small Secondary Batteries (with very small terminals)

1.8 mm dia. single-axis type for measuring small electrodes

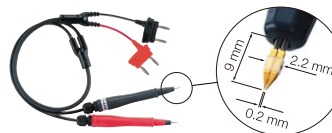
0.2 mm parallel pyramid-type pins for measuring at thru holes and sub-millimeter objects



PIN TYPE LEAD 9770

A:260 mm (10.24 in.), B:140 mm (5.51 in.), L:850 mm (2.79 ft.), 60V DC

9770 tip shape

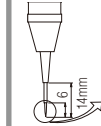


PIN TYPE LEAD 9771

A:260 mm (10.24 in.), B:138 mm (5.43 in.), L:850 mm (2.79 ft.), 60V DC

9771 tip shape

Measurement leads (for maximum precision, 3561 only)

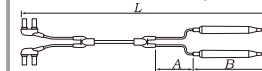


$\phi$  0.8  
Current  
Voltage  
 $\pm 0.2$  mm /  $\phi$  0.2

PIN TYPE LEAD 9455

A:260 mm (10.24 in.), B:136 mm (5.35 in.), L:890 mm (2.92 ft.), Not CE marked. Note: The 9455 is a precision instrument. Exercise appropriate care when handling it.

About probe length



A: From junction to probe  
B: Probe part  
L: Whole length

## ● Options (Interface cables)

Interface (RS-232C and GP-IB) Connection cables



RS-232C CABLE 9637

For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft.) length



GP-IB CONNECTOR CABLE 9151-02

2 m (6.56 ft.) length

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