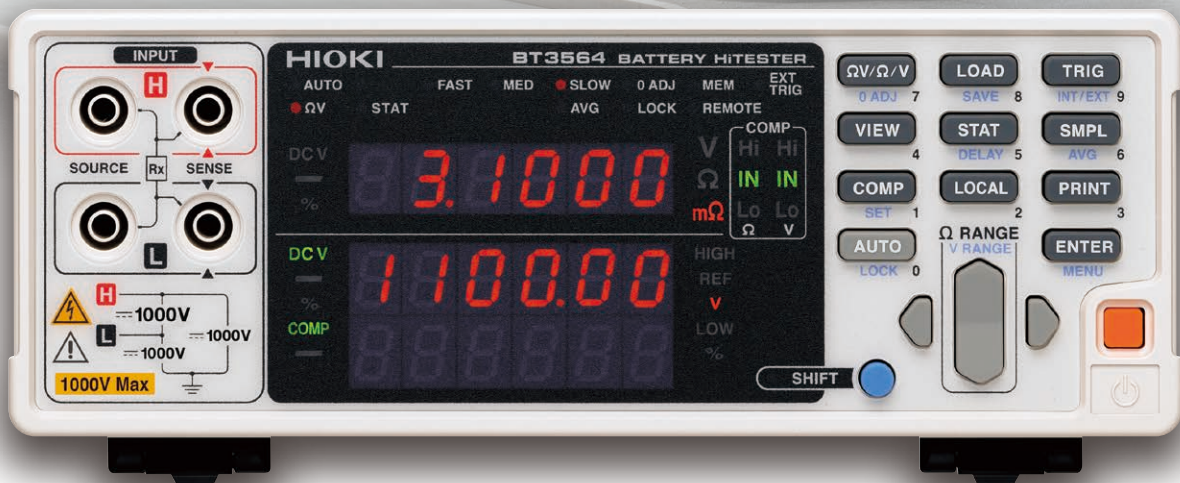


## Maximum input voltage 1000 V



## High Voltage Battery Tester for EV and PHEV

- DC voltage measurement up to 1000 V
- 0.1  $\mu\Omega$  to 3 k $\Omega$  internal resistance range  
(Pack total resistance, bus bar resistance)
- Built-in spark discharge reduction function
- Analog output function
- Probe supports 1000 V and high voltage battery packs  
(option)



# Maximum input voltage 1000 V

## For shipping and receiving inspections of battery packs with increasingly higher voltages

The BT3564 simultaneously measures both internal resistance and battery voltage with an input voltage of up to 1000 V. This battery tester is perfect for shipping and receiving inspections of battery packs ranging from increasingly higher voltage EV and PHEV batteries to home storage batteries.

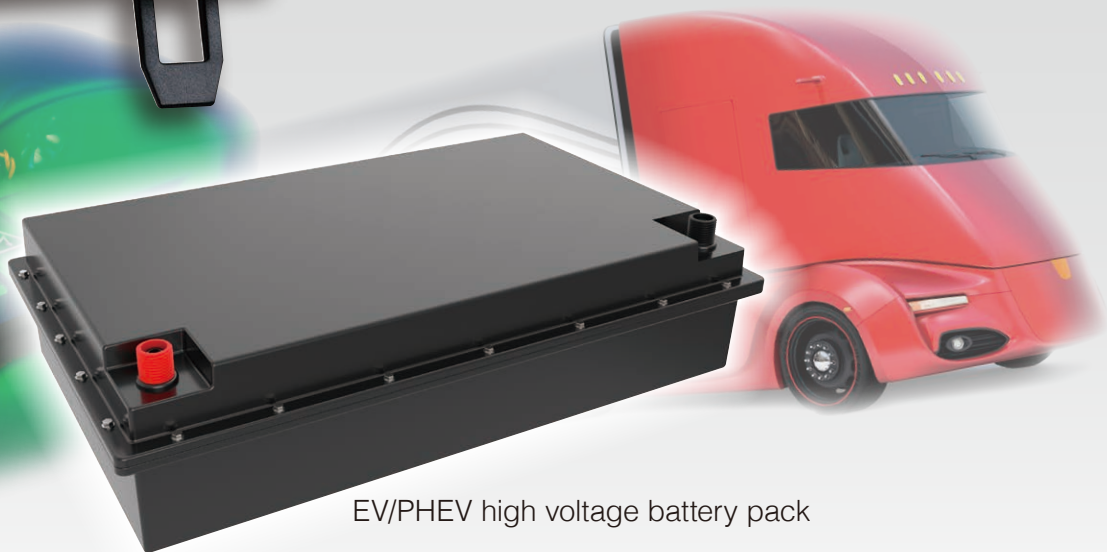


**High Precision**

Resistance :  $\pm 0.5\% \text{rdg.} \pm 5 \text{dgt.}$   
Voltage :  $\pm 0.01\% \text{rdg.} \pm 3 \text{dgt.}$

**High Resolution**

Resistance :  $0.1 \mu\Omega$  (3 m $\Omega$  range)  
Voltage :  $10 \mu\text{V}$  (10 V range)



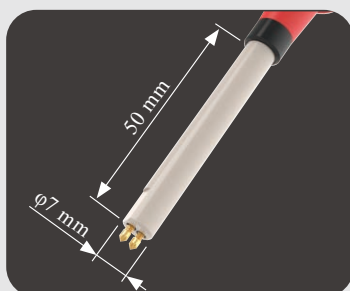
EV/PHEV high voltage battery pack

**Safely and smoothly measure high voltage battery packs with the 1000 V probe\*** \*Exclusive option

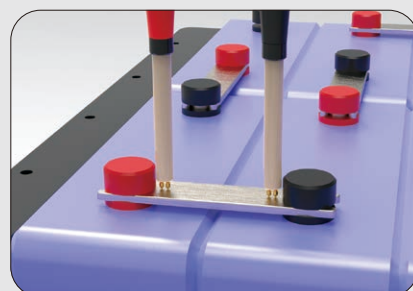
PIN TYPE LEAD  
L2110  
(option)



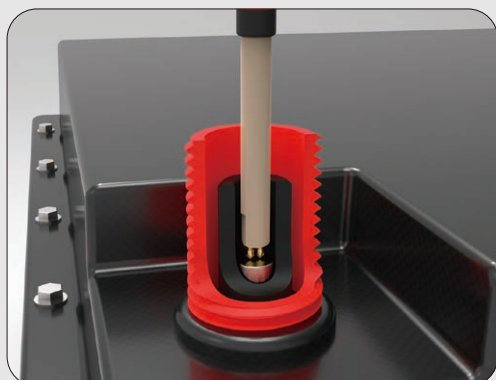
Measurement lead with long tip



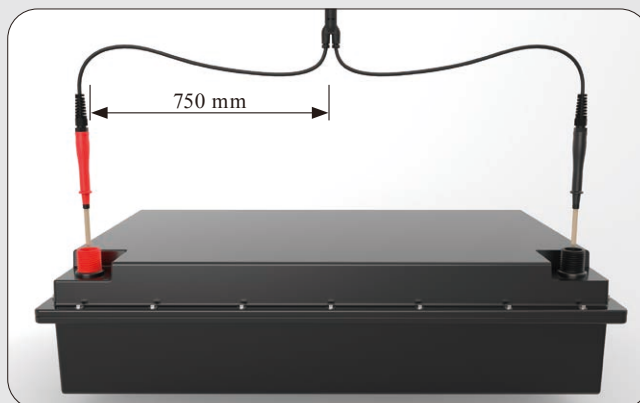
Tip length: 50 mm (1.97 in), Diameter: 7 mm (0.28 in)



Safely measure the resistance of high voltage bus bars



Measure deep-set terminals with the long tip  
(Figure: terminal cross-section)



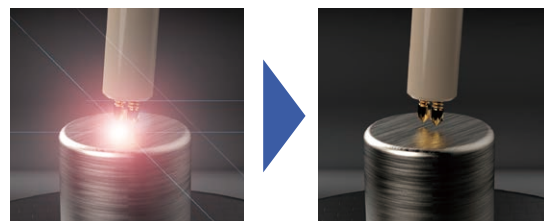
Easily measure terminals that are far apart thanks to the long lead

# Functions for Reliable, Easy Measurement

## Built-in spark discharge reduction function

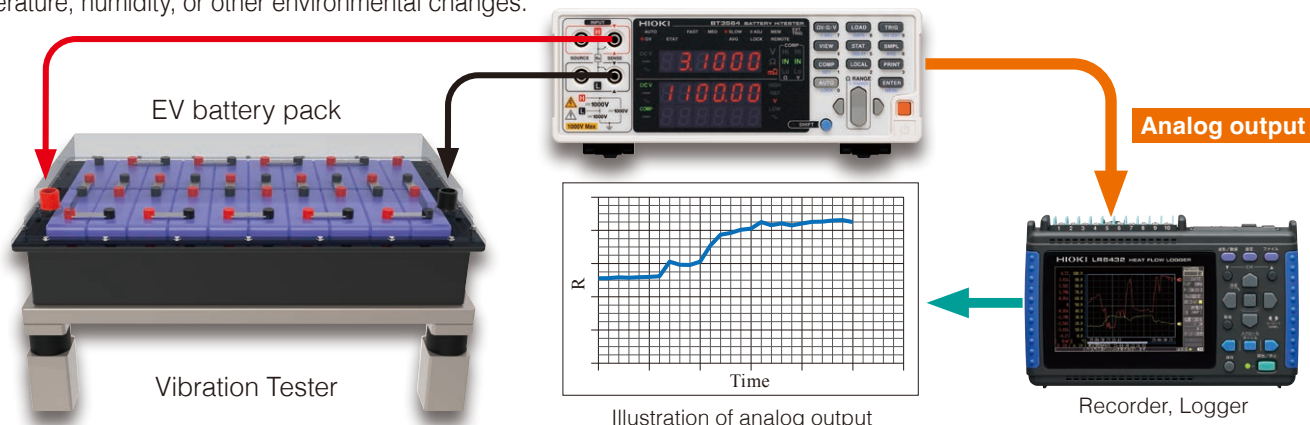
Spark discharges become more likely with measurements of higher voltages. The BT3564 limits the current that flows when contacting battery packs, thus reducing spark discharges.

Furthermore, the contact check function automatically switches to measurement mode as soon as it confirms contact between the probe and the battery pack terminal.



## Analog output function

Complete with a built-in resistance value analog output function. Combine it with a recorder or logger for total resistance value monitoring such as extended vibration testing or battery evaluation, and monitoring resistance changes due to temperature, humidity, or other environmental changes.



## Four-terminal AC method

Resistance measurement uses the 1 kHz AC 4 terminal method for measurement unaffected by wiring resistance, etc.

## Comparator function

Simultaneous, comprehensive output of resistance and voltage results.

## 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.

## Averaging function

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

## Measurement error detection

Detect poor contact or probe disconnections for highly-reliable measurements.

## Self-calibration

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

Conditions of  
Guaranteed Accuracy

- Temperature & humidity : 23 °C ±5 °C, 80% rh or less (non-condensating),
- Warm-up time : At least 30 min.
- After executing zero-adjustment
- Average of 4 measurements

## Resistance measurement range and accuracy

| 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 *3                 | ±0.5% rdg. ±10 dgt.        |           |           |          |          |          |          |
| Temperature coefficient       | (±0.05% rdg. ±1 dgt.) / °C |           |           |          |          |          |          |

\*1 Measurement current accuracy is ±10%

\*2 Other 30 mΩ Range : Add ±3 dgt. for FAST, or ±2 dgt. for MEDIUM    3 mΩ Range : Add ±10 dgt. for FAST, or ±5 dgt. for MEDIUM

\*3 Average function OFF    Other 30 mΩ Range : Add ±8 dgt. for FAST, or ±4 dgt. for MEDIUM, or ±2 dgt. for SLOW  
3 mΩ Range : Add ±20 dgt. for FAST, or ±10 dgt. for MEDIUM, or ±5 dgt. for SLOW

## Voltage measurement range and accuracy

| Range                   | 10 V                          | 100 V               | 1000 V                                                                      |
|-------------------------|-------------------------------|---------------------|-----------------------------------------------------------------------------|
| Maximum display value   | ±9.9999 V                     | ±99.9999 V          | ±1100.00 V                                                                  |
| Resolution              | 10 μV                         | 100 μV              | 1 mV (0.000 V~999.999 V)<br>10 mV (1000.0 V~1100.0 V)                       |
| Accuracy*4 *5           | ±0.01% rdg. ±0.03 mV          | ±0.01% rdg. ±0.3 mV | ±0.01% rdg. ±3 mV<br>Guaranteed accuracy temperature:<br>0.000 V~±999.999 V |
| Temperature coefficient | (±0.001% rdg. ±0.3 dgt.) / °C |                     |                                                                             |

\*4 Add ±4 dgt. for FAST, or ±2 dgt. for MEDIUM

\*5 Average function OFF    Add ±8 dgt. for FAST, or ±4 dgt. for MEDIUM, or ±2 dgt. for SLOW

## Sampling times

| Function    | FAST  | MEDIUM | SLOW   |
|-------------|-------|--------|--------|
| Ω V (50 Hz) | 28 ms | 88 ms  | 384 ms |
| (60 Hz)     |       | 74 ms  | 359 ms |
| Ω (50 Hz)   | 12 ms | 42 ms  | 276 ms |
| (60 Hz)     |       | 35 ms  | 253 ms |
| V (50 Hz)   | 16 ms | 46 ms  | 281 ms |
| (60 Hz)     |       | 39 ms  | 257 ms |

Items in the parentheses ( ) indicate supply frequency settings.

Tolerance: ±5 ms for SLOW, ±1 ms otherwise

For an external trigger source, if the measurement current mode is set to Pulse, or if continuous measurement is OFF: Add 1 ms for the Ω and V function, or 4 ms for the Ω and V function respectively.

## BT3564 specifications (Accuracy guaranteed for 1 year, Product Warranty for 3 year)

|                               |                                                                                                                                                                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement signals           | Resistance, Voltage                                                                                                                                                                                                              |
| Measurement method            | Four-terminal AC method (1 kHz $\pm 0.2$ Hz)                                                                                                                                                                                     |
| Measurement range             | Resistance measurement range: 0 $\Omega$ to 3.1 $\Omega$ (Minimum resolution 0.1 $\mu\Omega$ )<br>Voltage measurement range: DC 0 V to $\pm 999.999$ V (Minimum resolution 10 $\mu$ V)<br>Voltage display range: $\pm 1100.00$ V |
| Resistance measurement range  | 3 m $\Omega$ / 30 m $\Omega$ / 300 m $\Omega$ / 3 $\Omega$ / 30 $\Omega$ / 300 $\Omega$ / 3000 $\Omega$                                                                                                                          |
| Voltage measurement range     | 10 V / 100 V / 1000 V                                                                                                                                                                                                            |
| DC Input resistance           | 5 M $\Omega$                                                                                                                                                                                                                     |
| Open-circuit terminal voltage | 25 V <sub>peak</sub>                                                                                                                                                                                                             |
| Function                      | $\Omega$ V / $\Omega$ / V                                                                                                                                                                                                        |
| Maximum input voltage         | $\pm 1000$ V DC rated input voltage<br>$\pm 1000$ V DC maximum rated voltage to ground                                                                                                                                           |
| Sampling rate                 | Three steps – FAST/MEDIUM/SLOW                                                                                                                                                                                                   |
| Response time                 | 700 ms for measurements                                                                                                                                                                                                          |
| 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                                                                                                                                                                                                          |
| Comparator function           | Judges: Hi/IN/Lo (Resistance and voltage measurement values are independently judged)<br>PASS/FAIL decision: AND calculation of resistance and voltage measurement results (EXT. I/O output)                                     |

|                                  |                                                                                                                                                                                                                                                                                                                   |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Statistical calculations         | Total data count; valid data count; maximum, minimum and average values; standard deviation; population standard deviation and process capability indices (Cp, CpK)                                                                                                                                               |
| Measurement value output         | Measurement values are output via RS-232C upon trigger input                                                                                                                                                                                                                                                      |
| Measurement value storage        | Up to 400 measurements                                                                                                                                                                                                                                                                                            |
| Panel save function              | Up to 126 configuration setting<br>Measurement function, resistance measurement range, voltage 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                    | Output value: Measured resistance (displayed value)<br>Output voltage: DC 0 V to DC 3.1 V                                                                                                                                                                                                                         |
| Other functions                  | Measurement error detection, self-calibration, key-lock, power frequency setting, reset                                                                                                                                                                                                                           |
| Interface                        | RS-232C, GP-IB, EXT.I/O, analog output                                                                                                                                                                                                                                                                            |
| Operating temperature & humidity | 0°C to 40°C, 80% rh or less (non-condensating)                                                                                                                                                                                                                                                                    |
| Storage temperature & humidity   | -10°C to 50°C, 80% rh or less (non-condensating)                                                                                                                                                                                                                                                                  |
| Operating conditions             | Indoors, below 2000 m ASL                                                                                                                                                                                                                                                                                         |
| Power supplies                   | AC 100 V to 240 V (50/60Hz), 30 VA                                                                                                                                                                                                                                                                                |
| Applicable standards             | Safety: EN61010, EMC: EN61326 Class A                                                                                                                                                                                                                                                                             |
| Dimensions and mass              | Approx. 215W $\times$ 80H $\times$ 329D mm (8.46W $\times$ 3.15H $\times$ 12.95D in), Approx. 2.6 kg (91.7 oz)                                                                                                                                                                                                    |
| Accessories                      | Power cord $\times 1$ , Instruction manual $\times 1$ , Usage precautions $\times 1$                                                                                                                                                                                                                              |

## Instrument



### Model : BATTERY HiTESTER BT3564

Model No. (Order Code) (Note)

**BT3564**

Note:

Measurement lead is not included. Please purchase an optional lead that matches your measurement application.

## Options

1000 V compliant measurement leads (for measuring high voltage batteries)

**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.

**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.

**TIP PIN 9772-90**  
To replace the tip on the Pin type lead 9772, L2100/L2110, (one piece)

Zero adjustment board Measurement leads (for measuring batteries up to 60 V)

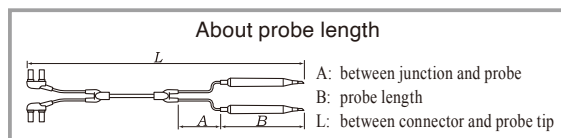
**ZERO ADJUSTMENT BOARD Z5038**  
for L2110, L2100

**PIN TYPE LEAD 9770**  
A: 260 mm (10.24 in), B: 140 mm (5.51 in), L: 850 mm (2.79 ft), 70V DC

**PIN TYPE LEAD 9771**  
A: 260 mm (10.24 in), B: 138 mm (5.43 in), L: 850 mm (2.79 ft), 70V DC

**CLIP TYPE LEAD L2107**  
A: 130 mm (5.12 in), B: 83 mm (3.27 in), L: 1100 mm (3.61 ft), 70 V DC

**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 V DC



### Interface Connection cables

**RS-232C CABLE 9637**  
For the PC, 9pin - 9pin, cross, 1.8 m (5.91 ft) length

**GP-IB CONNECTOR CABLE 9151-02**  
2 m (6.56 ft) length

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