

# HIOKI

## BATTERY HiTESTER BT3561A, BT3562A, BT3563A

**NEW** Preview

Renewal of HIOKI's world-leading battery tester



BT3563A



The de facto standard for accurate measurement of large battery packs up to 300V



BT3562A



The de facto standard for accurate measurement of large xEV and ESS battery cells, as well as 72V and 96V packs



BT3561A



For high-performance battery cell applications in electric bikes and power tools.  
Ideal for battery packs of up to 60V

## Designing automatic battery testing systems is easier and faster than ever before

- Double the total line resistance, so measurement errors are less likely to occur when using long measurement cables
- Stable operation regardless of increased total line resistance due to probe and relay degradation
- LAN is equipped as a standard for easy system design and layout, and excellent noise resistance for stable operation

# Lineup

| Application                                                                                                                             |                                               | Acceptance inspection of general-purpose, small cells installed in a high-speed sorters | Fully automated production line testing of small cells for power motors or small packs of up to 60 V | Fully automated production line testing of large cells for xEVs or mid-size packsup of to 100 V  | Fully automated production line testing of large packs for xEVs or large packs up of to 300 V     |
|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Model                                                                                                                                   |                                               | 3561, 3561-01                                                                           | BT3561A                                                                                              | BT3562A                                                                                          | BT3563A                                                                                           |
| Appearance                                                                                                                              |                                               |        | <b>NEW</b><br>      | <b>NEW</b><br> | <b>NEW</b><br> |
| Measurement method                                                                                                                      |                                               | AC four-terminal method                                                                 | AC four-terminal method                                                                              | AC four-terminal method                                                                          | AC four-terminal method                                                                           |
| Measurement frequency                                                                                                                   |                                               | 1 kHz $\pm 0.2$ Hz                                                                      | 1 kHz $\pm 0.2$ Hz                                                                                   | 1 kHz $\pm 0.2$ Hz                                                                               | 1 kHz $\pm 0.2$ Hz                                                                                |
| Measurement parameters                                                                                                                  | Resistance measurement ranges                 | 3 m $\Omega$                                                                            | N/A                                                                                                  | N/A                                                                                              | 3.1000 m $\Omega$ , 0.1 $\mu\Omega$ , 100 mA                                                      |
|                                                                                                                                         |                                               | 30 m $\Omega$                                                                           | N/A                                                                                                  | 31.000 m $\Omega$ , 1 $\mu\Omega$ , 100 mA                                                       | 31.000 m $\Omega$ , 1 $\mu\Omega$ , 100 mA                                                        |
|                                                                                                                                         |                                               | 300 m $\Omega$                                                                          | 310.00 m $\Omega$ , 10 $\mu\Omega$ , 10 mA                                                           | 310.00 m $\Omega$ , 10 $\mu\Omega$ , 10 mA                                                       | 310.00 m $\Omega$ , 10 $\mu\Omega$ , 10 mA                                                        |
|                                                                                                                                         |                                               | 3 $\Omega$                                                                              | 3.1000 $\Omega$ , 100 $\mu\Omega$ , 1 mA                                                             | 3.1000 $\Omega$ , 100 $\mu\Omega$ , 1 mA                                                         | 3.1000 $\Omega$ , 100 $\mu\Omega$ , 1 mA                                                          |
|                                                                                                                                         |                                               | 30 $\Omega$                                                                             | N/A                                                                                                  | 31.000 $\Omega$ , 1 m $\Omega$ , 100 $\mu\text{A}$                                               | 31.000 $\Omega$ , 1 m $\Omega$ , 100 $\mu\text{A}$                                                |
|                                                                                                                                         |                                               | 300 $\Omega$                                                                            | N/A                                                                                                  | 310.00 $\Omega$ , 10 m $\Omega$ , 10 $\mu\text{A}$                                               | 310.00 $\Omega$ , 10 m $\Omega$ , 10 $\mu\text{A}$                                                |
|                                                                                                                                         | Max. display, resolution, measurement current | 3 k $\Omega$                                                                            | N/A                                                                                                  | 3.1000 k $\Omega$ , 100 m $\Omega$ , 10 $\mu\text{A}$                                            | 3.1000 k $\Omega$ , 100 m $\Omega$ , 10 $\mu\text{A}$                                             |
|                                                                                                                                         |                                               | Basic accuracy                                                                          | 3 m $\Omega$ range<br>30 m $\Omega$ range or more                                                    | N/A<br>$\pm 0.5\%$ rdg. $\pm 5$ dgt.                                                             | $\pm 0.5\%$ rdg. $\pm 10$ dgt.<br>$\pm 0.5\%$ rdg. $\pm 5$ dgt.                                   |
|                                                                                                                                         | Voltage measurement ranges                    | 6 V                                                                                     | N/A                                                                                                  | 6.00000 V, 10 $\mu\text{V}$                                                                      | 6.00000 V, 10 $\mu\text{V}$                                                                       |
|                                                                                                                                         |                                               | 20 V                                                                                    | 19.9999 V, 100 $\mu\text{V}$                                                                         | N/A                                                                                              | N/A                                                                                               |
|                                                                                                                                         |                                               | 60 V                                                                                    | N/A                                                                                                  | 60.0000 V, 100 $\mu\text{V}$                                                                     | 60.0000 V, 100 $\mu\text{V}$                                                                      |
|                                                                                                                                         |                                               | 100 V                                                                                   | N/A                                                                                                  | 100.000 V, 1 mV                                                                                  | N/A                                                                                               |
|                                                                                                                                         | Max. display, resolution                      | 300 V                                                                                   | N/A                                                                                                  | N/A                                                                                              | 300.000 V, 1 mV                                                                                   |
|                                                                                                                                         |                                               | 1000 V                                                                                  | N/A                                                                                                  | N/A                                                                                              | N/A                                                                                               |
|                                                                                                                                         | Basic accuracy                                | $\pm 0.01\%$ rdg. $\pm 3$ dgt. <sup>*1</sup>                                            | $\pm 0.01\%$ rdg. $\pm 3$ dgt.                                                                       | $\pm 0.01\%$ rdg. $\pm 3$ dgt.                                                                   | $\pm 0.01\%$ rdg. $\pm 3$ dgt.                                                                    |
| Response time <sup>*2</sup>                                                                                                             |                                               | 3 ms                                                                                    | 10 ms                                                                                                | 10 ms                                                                                            | 10 ms                                                                                             |
| Sampling period <sup>*3</sup>                                                                                                           | $\Omega$ or V                                 | 4 ms, 12 ms, 35 ms, 150 ms                                                              | 4 ms, 12 ms, 35 ms, 150 ms                                                                           | 4 ms, 12 ms, 35 ms, 150 ms                                                                       | 4 ms, 12 ms, 35 ms, 150 ms                                                                        |
|                                                                                                                                         | EX.FAST, FAST, MEDIUM, SLOW                   | 7 ms, 23 ms, 69 ms, 252 ms                                                              | 8 ms, 24 ms, 70 ms, 253 ms                                                                           | 8 ms, 24 ms, 70 ms, 253 ms                                                                       | 8 ms, 24 ms, 70 ms, 253 ms                                                                        |
| Allowable total line resistance <sup>*2,4</sup> (within accuracy)<br>Ranges: 3 m $\Omega$ , 30 m $\Omega$ , 300 m $\Omega$ , 3 $\Omega$ | SENSE line                                    | N/A, N/A, 20 $\Omega$ , 20 $\Omega$                                                     | N/A, 4 $\Omega$ , 30 $\Omega$ , 30 $\Omega$                                                          | 4 $\Omega$ , 4 $\Omega$ , 30 $\Omega$ , 30 $\Omega$                                              | 4 $\Omega$ , 4 $\Omega$ , 30 $\Omega$ , 30 $\Omega$                                               |
|                                                                                                                                         | SOURCE line                                   | N/A, N/A, 20 $\Omega$ , 20 $\Omega$                                                     | N/A, 4 $\Omega$ , 20 $\Omega$ , 40 $\Omega$                                                          | 4 $\Omega$ , 4 $\Omega$ , 20 $\Omega$ , 40 $\Omega$                                              | 4 $\Omega$ , 4 $\Omega$ , 20 $\Omega$ , 40 $\Omega$                                               |
| Allowable total line resistance <sup>*2,4</sup> (error detection)<br>Ranges: 3 m $\Omega$ , 30 m $\Omega$ , 300 m $\Omega$ , 3 $\Omega$ | SENSE line                                    | N/A, N/A, 20 $\Omega$ , 20 $\Omega$                                                     | N/A, 6 $\Omega$ , 30 $\Omega$ , 30 $\Omega$                                                          | 6 $\Omega$ , 6 $\Omega$ , 30 $\Omega$ , 30 $\Omega$                                              | 6 $\Omega$ , 6 $\Omega$ , 30 $\Omega$ , 30 $\Omega$                                               |
|                                                                                                                                         | SOURCE line                                   | N/A, N/A, 20 $\Omega$ , 20 $\Omega$                                                     | N/A, 6 $\Omega$ , 20 $\Omega$ , 200 $\Omega$                                                         | 6 $\Omega$ , 6 $\Omega$ , 20 $\Omega$ , 200 $\Omega$                                             | 6 $\Omega$ , 6 $\Omega$ , 20 $\Omega$ , 200 $\Omega$                                              |
| Open terminal voltage<br>Ranges: 30 m $\Omega$ or less, 300 m $\Omega$ , 3 $\Omega$ or more                                             |                                               | N/A, 7 V, 7 V peak                                                                      | 25 V, 7 V, 4 V peak                                                                                  | 25 V, 7 V, 4 V peak                                                                              | 25 V, 7 V, 4 V peak                                                                               |
| Interface                                                                                                                               | LAN (TCP/IP, 10BASE-T/100BASE-TX)             | N/A                                                                                     | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
|                                                                                                                                         | RS-232C <sup>*5</sup> (Max. 38.4 kbps)        | ✓ (9.6 kbps fixed)                                                                      | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
|                                                                                                                                         | USB                                           | N/A                                                                                     | N/A                                                                                                  | N/A                                                                                              | N/A                                                                                               |
|                                                                                                                                         | GP-IB                                         | ✓ (3561-01 Only)                                                                        | N/A                                                                                                  | N/A                                                                                              | N/A                                                                                               |
|                                                                                                                                         | EXT. I/O (37-pin Handler interface)           | ✓                                                                                       | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
|                                                                                                                                         | Analog output (DC 0 V to 3.1 V)               | N/A                                                                                     | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
| Function                                                                                                                                | Contact check                                 | ✓                                                                                       | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
|                                                                                                                                         | Zero adjustment ( $\pm 1000$ counts)          | ✓                                                                                       | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
|                                                                                                                                         | Pulse measurement                             | ✓                                                                                       | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
|                                                                                                                                         | Comparator                                    | Hi/ IN/ Lo                                                                              | Hi/ IN/ Lo                                                                                           | Hi/ IN/ Lo                                                                                       | Hi/ IN/ Lo                                                                                        |
|                                                                                                                                         | Statistical calculations                      | Max. 30,000                                                                             | Max. 30,000                                                                                          | Max. 30,000                                                                                      | Max. 30,000                                                                                       |
|                                                                                                                                         | Delay                                         | ✓                                                                                       | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
|                                                                                                                                         | Average                                       | 2 to 16 times                                                                           | 2 to 16 times                                                                                        | 2 to 16 times                                                                                    | 2 to 16 times                                                                                     |
|                                                                                                                                         | Panel saving/loading                          | 126                                                                                     | 126                                                                                                  | 126                                                                                              | 126                                                                                               |
|                                                                                                                                         | Memory storage                                | 400                                                                                     | 400                                                                                                  | 400                                                                                              | 400                                                                                               |
|                                                                                                                                         | LabVIEW <sup>®</sup> driver <sup>*6</sup>     | N/A                                                                                     | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
| Applicable standards                                                                                                                    |                                               | Safety: EN61010<br>EMC: EN61326 Class A                                                 | Safety: EN61010<br>EMC: EN61326 Class A                                                              | Safety: EN61010<br>EMC: EN61326 Class A                                                          | Safety: EN61010<br>EMC: EN61326 Class A                                                           |
| Effect of radiated radio-frequency electromagnetic field (10 V/m) <sup>*7</sup>                                                         |                                               | Resistant                                                                               | Resistant                                                                                            | Resistant                                                                                        | Resistant                                                                                         |
| Effect of conducted radio-frequency electromagnetic field                                                                               | 10 V                                          | N/A                                                                                     | Resistant                                                                                            | Resistant                                                                                        | Resistant                                                                                         |
|                                                                                                                                         | 0.15 MHz to 80 MHz, 80% AM                    | Resistant                                                                               | Resistant                                                                                            | Resistant                                                                                        | Resistant                                                                                         |
| CE                                                                                                                                      |                                               | ✓                                                                                       | ✓                                                                                                    | ✓                                                                                                | ✓                                                                                                 |
| CSA <sup>*8</sup>                                                                                                                       |                                               | N/A                                                                                     | Certification in progress                                                                            | Certification in progress                                                                        | Certification in progress                                                                         |

\*1: rdg. stands for *reading*, dgt. stands for *digits* \*2: Typical value \*3: When the power supply frequency is 60 Hz

\*4: Total line resistance = wiring resistance + contact resistance + DUT resistance \*5: Available as printer I/F

\*6: LabVIEW<sup>®</sup> Driver is a registered trademark of National Instruments Corporation \*7: Test conditions were 80 MHz to 1 GHz at 10 V/m and 1 GHz to 6 GHz at 3 V/m, all at 80% AM

\*8: Canadian Standards Association