Battery Analyzers
BA6010 Series

The BA6010 Series battery analyzers measure voltage and resistance of modern battery technologies with high accuracy, resolution, and speed. Additionally, these instruments provide auxiliary measurement parameters inductance, dissipation factor, impedance, quality factor, reactance, phase angle in degrees, and capacitance in farads.

The BA6010 Series is suitable for characterizing battery chemistries that are responsive to a 1 kHz AC stimulus signal, including lead acid, lithium and alkaline type batteries used in consumer products, electric vehicles, power backup, security, and fire alarm systems. Model BA6011 supports voltage measurements of battery packs up to 300 V whereas the BA6010 features a 6 V measurement range ideal for battery cell testing. The handler and remote interfaces expands the analyzer’s application to R&D and automated manufacturing environments.

Features & Benefits
- 4.3 inch color LCD display
- Trace function for graphical display of voltage and resistance with on-screen cursor measurements
- 4-wire kelvin test leads with fault monitoring of drive and sense lines
- Compare and sort using 9 bins with statistical evaluations
- Δ% mode for quickly determining the percent difference between batteries
- Pass/Fail indicator with audible tone
- Fast test speed up to 50 measurements per second to increase manufacturing throughput
- Trigger modes internal, manual, bus and external
- 100 internal and external storage locations for setup and screen save
- Handler interface for easy integration with a component handler or integration with PLC
- Standard RS232, USB (USBTMC and virtual COM) interfaces

Wide range of measurements
Two user-selected measurements can be displayed simultaneously, along with stimulus signals Vm and Im. Unlike comparable battery testers that only support voltage and resistance measurements, users can also characterize additional parameters such as battery capacitance thus providing additional insight into a battery’s condition.

<table>
<thead>
<tr>
<th>Model</th>
<th>Input voltage range</th>
<th>Basic voltage accuracy</th>
<th>Voltage resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA6010</td>
<td>6 V / 60 V</td>
<td>0.05 %</td>
<td>100 µV</td>
</tr>
<tr>
<td>BA6011</td>
<td>30 V / 300 V</td>
<td>0.05 %</td>
<td>1 mV</td>
</tr>
</tbody>
</table>

Main measurement parameters

Simplified Randles cell

Auxiliary measurement parameters

Technical data subject to change
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www.bkprecision.com
Battery Analyzers
BA6010 Series

Front panel

Bright LCD display
Navigation keys
Display and setup keys
Numeric keypad
Function keypad

Power button
Menu function keys
Input terminals
USB host port

Large 4.3 inch color LCD screen for easy viewing of configuration and measurements. 4-terminal front panel connection and quick connect test fixture for high accuracy measurements.

Rear panel

AC input terminal
Fuse line selector box
Handler interface

Chassis ground terminal
BNC Trigger terminal
USB interface
RS232 interface

Standard RS232, USB (USBTMC and virtual COM) interfaces, handler interface and external BNC trigger input are useful for production automation.
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Flexible operation

Improved measurement accuracy
The 4-terminals on the front of the BA6010 Series are used together with the Kelvin clip test fixture. This system minimizes the influence of the test lead resistance and improves measurement accuracy.

Binning function
Quickly sort components using up to 9 bins. The bin results are displayed on-screen with each cycle. The handler interface includes dedicated signal pins for each bin. Pass/Fail and end of measurement. The handler interface is suitable for integration with device handler systems or programmable logic controllers (PLC) used in production automation.

Comparator function
The comparator function evaluates measurements against a user specified upper and lower limit for pass/fail (Go/No Go) style testing. Comparative evaluations can be made using primary, secondary or both measurements. The front panel PASS / FAIL indicator will illuminate and a sounder can be enabled for audible confirmation.

Statistical function
The analyzers can perform statistical calculations on the measurements and display the results on-screen.

Trace function
The trace function samples and plots two user-selected measurement readings over a specified time. Enable cursors for viewing plotted values and time stamp information.

Flexible operation

Improved measurement accuracy
On screen monitoring system detects test probe contact failure and damaged leads for reliable measurements.

Binning function

Comparator function

Statistical function

Trace function

Error: HI drive open
Error: LO drive open
Error: HI sense open
Error: LO sense open
Error: Measure line open
Specifications

All specifications apply to the unit after a temperature stabilization time of 15 minutes over an ambient temperature range of 20 °C ± 5 °C. Specifications are subject to change without notice.

<table>
<thead>
<tr>
<th>Model</th>
<th>BA6010, BA6011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement Parameters</td>
<td>Main V, R</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>L, C, D, Z, X, Q, θd, and θr</td>
</tr>
<tr>
<td>Test Frequency</td>
<td>1 kHz ± 0.2 Hz</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>5 digits (SLOW &amp; MED), 4 digits (FAST)</td>
</tr>
<tr>
<td>Measurement Speed</td>
<td>SLOW, approx. 6.25 measurements/sec MED, approx. 10 measurements/sec FAST, approx. 50 measurements/sec</td>
</tr>
<tr>
<td>Voltage Measurement (BA6010)</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>Maximum Display Value</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------</td>
</tr>
<tr>
<td>SLOW, MED</td>
<td>6 V</td>
</tr>
<tr>
<td></td>
<td>60 V</td>
</tr>
<tr>
<td>FAST</td>
<td>6 V</td>
</tr>
<tr>
<td></td>
<td>60 V</td>
</tr>
<tr>
<td>Voltage Measurement (BA6011)</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>Maximum Display Value</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------</td>
</tr>
<tr>
<td>SLOW, MED</td>
<td>30 V</td>
</tr>
<tr>
<td></td>
<td>300 V</td>
</tr>
<tr>
<td>FAST</td>
<td>30 V</td>
</tr>
<tr>
<td></td>
<td>300 V</td>
</tr>
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Battery Analyzers
BA6010 Series

Specifications

Resistance Measurement

<table>
<thead>
<tr>
<th>Range</th>
<th>Maximum Display Value</th>
<th>Resolution</th>
<th>Measurement Current</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLOW, MED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 mΩ</td>
<td>33.000 mΩ</td>
<td>1 µΩ</td>
<td>100 mA (± 10 %)</td>
<td>±(0.3 % + 0.1 % FS)</td>
</tr>
<tr>
<td>300 mΩ</td>
<td>330.00 mΩ</td>
<td>10 µΩ</td>
<td>100 mA (± 10 %)</td>
<td></td>
</tr>
<tr>
<td>3 Ω</td>
<td>3.300 Ω</td>
<td>100 µΩ</td>
<td>10 mA (± 10 %)</td>
<td></td>
</tr>
<tr>
<td>30 Ω</td>
<td>33.00 Ω</td>
<td>1 mΩ</td>
<td>1 mA (± 10 %)</td>
<td></td>
</tr>
<tr>
<td>300 Ω</td>
<td>330.00 Ω</td>
<td>10 mΩ</td>
<td>100 µA (± 10 %)</td>
<td></td>
</tr>
<tr>
<td>3 kΩ</td>
<td>3.500 kΩ</td>
<td>100 mΩ</td>
<td>10 µA (± 10 %)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FAST</th>
<th></th>
<th></th>
<th></th>
<th>±(0.5 % + 0.3 % FS)</th>
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<tr>
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Accuracy of Auxiliary Measurement Parameters

| L, C, D, Z, X, Q, θd, and θr | 5 % typical** |

** see user manual for more details

Bin Comparator Function

- Limit Setting Mode: Tolerance (TOL) or Absolute (ABS) value
- Number of Bins: 9 sorting bins BIN1-BIN9
- Beep Warning: OFF, PASS, FAIL

Trace Function

- Total Time: 1 s - 99999 s
- Sampling Interval: 1 s - 86400 s

General

- Save/Recall: Instrument Settings
  - Save / Recall Internal or External Memory: Up to 100
  - Measurements, Bin Comparator Results, Screenshots
  - Save External Memory: Up to 100
- Remote Interface: USBTMC / USB (Virtual COM), RS232
- Display: 4.3”, 480 x 272 LCD display
- AC Input: 110 V ±10 % or 220 V ± 10 %, 47 to 63 Hz
- Power Consumption: 15 VA Max.
- Operating Temperature: 0 °C to 40 °C
- Storage Temperature: -10 °C to 70 °C
- Relative Humidity: up to 80 %
- Dimension (W×H×D): 9.25” x 4.1” x 14.17” (235 x 104 x 360 mm)
- Weight: 7.9 lbs (3.6 kg)

Three-Year Warranty

Included Accessories: User manual (downloadable), power cord, 4-wire kelvin clip test fixture (T1kBI), certificate of calibration & test report
Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

B&K Precision:
BA6010  BA6011  TLKB1