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TECHNICAL PRODUCT INFORMATION

Test & measurement instruments

- ▶ high - quality
- ▶ moderate prices
- ▶ excellent precision

Your contact:

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Short Description

The Battery Impedance Meters of the BIM family are economical, easy to use and compact test instruments. They allow quick testing of battery cells and battery modules up to 60V, independently of the battery technology.

The instruments measure the voltage and the impedance at single frequencies as well as complete spectral scans (Nyquist charts). The BTC1 offers an additional capacity measurement for small batteries.

The temperature can be measured via a second input.

The test objects are connected via special Kelvin cables in 4-wire-technique. The battery parameters are measured within seconds, the results are communicated to a PC via USB interface which also provides electrical power.

Operation is via a graphical user interface (GUI) for Windows-PC which operates and displays the results; English, German or Chinese are selectable languages.

For applications in production with remote control via PLC, the BIM2 is also available with RS232 interface.



Versions

	BIM1B	BIM2B	BTC1B	BIM300B
Impedance ranges	10mΩ-1Ω	1mΩ-1Ω	1mΩ-1Ω	3Ω-300Ω
Frequency range	1-1000Hz	0,1-1000Hz	0,1-1000Hz	0,1-1000Hz
Battery voltage	0-60V	0-60V	0...60V	0...60V
Temperature (ext. PT1000)	----	✓	✓	----
Capacity (discharge ≤2A)	----	----	✓	----
Communication interface	USB	USB or RS232	USB	USB

Application Example

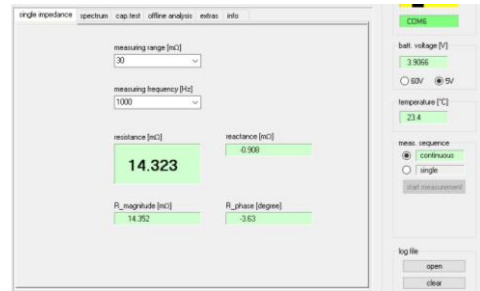
Test system for the complete characterization of battery cells (format 18650, 21700 or 26650) in terms of voltage, internal resistance, capacity and temperature, consisting of BTC1 and precision cell test adapter CTA.



Functions

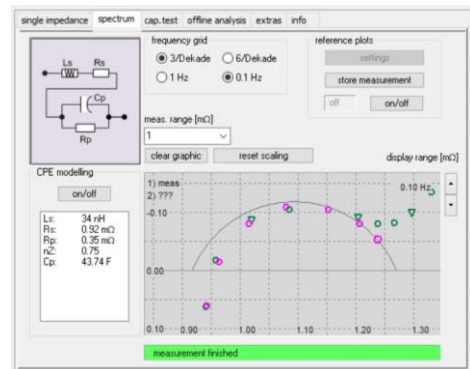
Single Frequency Impedance Measurements

- Continuous or single (triggered) measurement mode
- 24 fixed frequency values between 0.1Hz and 1kHz
- Results presented as resistance/reactance (ohmic part/capacitive part) and as magnitude/phase



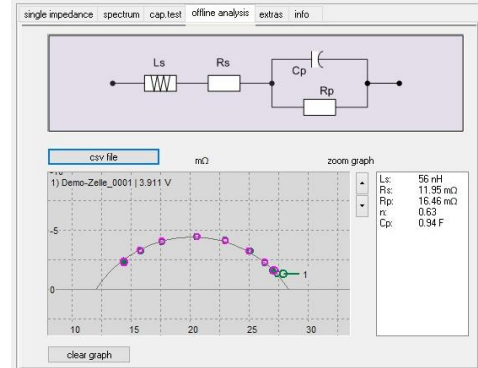
Spectral Impedance Measurements (EIS: electrical impedance spectroscopy)

- Frequency scan with selectable grid and stop frequency
- Presentation of the spectral impedance as Nyquist chart
- Calculation of model parameters of the Randles equivalent circuit.



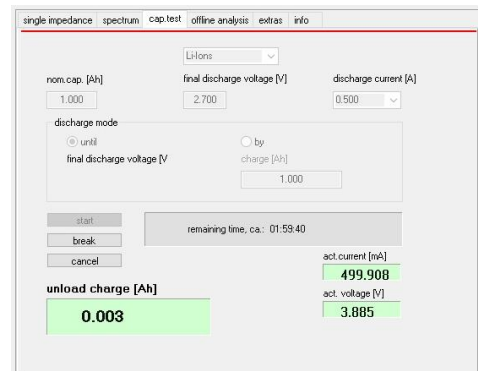
Offline Analysis

- Import of data in csv format
- Comparison and analysis of Nyquist plots
- Autonomous calculation of model parameters




Capacity Measurement (BTC1 only)

- Measurement of the capacity of a fully charged battery with discharge currents up to 2A
- Conditioning: discharging by a defined charge



Specifications

Parameter	Value
Impedance ranges	BIM1: 10mΩ-1Ω; BIM2/BTC1: 1mΩ-1Ω; BIM300: 3Ω-300Ω
Resolution; accuracy	0,1%; 1% (magnitude), 1° (Phase)
Presentation	Resistance / reactance (= ohmic / capacitive part) or magnitude / phase
Measurement Modes	continuous or single; measurement is discharging
Frequency range	BIM1: 1 Hz-1 kHz; BIM-2, BTC1, BIM300: 0.1 Hz -1 kHz
Duration of single frequency measurement	<1 sec (3Hz...1000Hz), ca. 2/f below
Duration for complete scan	12 sec...84 sec
Min. voltage	1V; ≥1,5V in the ranges 1mΩ and 3mΩ
Voltage measurement	0...5V / 0...60V switchable
Resolution; accuracy	1mV/10mV; 0,1%
Temperature measurement	via ext. temperature sensor (RTD)
Temperature measuring range	0°C ... +60°C
Resolution; accuracy	0,1°C ; 1°C
Capacity measurement (BTC1)	ca. 25mAh...ca.10Ah
Accuracy	1%
Data output	USB, galvanically isolated
Data export	As log file or as CSV file in single measurement
Power supply	via USB port, galvanically isolated
Operating temperature range	0 ... +40 °C
Dimensions	120 x 80 x 42 mm aluminum housing, protected against shocks
	The device meets the requirements of the EC Directive 2004/108/EC (EMC Directive)

Measuring cables



Depending on the application, different measuring cables can be ordered.

As universal cable, we recommend the MK-L with 4 lab plugs (left).

Temperature measurements can be performed with a measurement cable with RTD (PT1000) (right).



An overview of all measurement cables can be found in a separate document.

Scope of delivery

- Instrument with USB cable
- Printed English Manual