

High-Power EIS Analysis

MegaEIS™ System ME-40L200

Up to 200 V • 200 A • 40 Channels
Bi-Directional Source Up to 30 kW

 Simultaneous 40-Channel EIS

 High-Current Capability

 Precision & Reliability

 Fuel Cell Stacks

 Electrolyzers

 Batteries



MegaEIS™ System



Testing system for a variety of essential electrochemical methods • Simultaneous multi-channel EIS analysis across all cells, eliminating the need for time-consuming multiplexing • Precise current, voltage, and impedance measurement • Load, source, or combined configuration • Wide range of applications

Highlights

Simultaneous 40-Channel Measurement

MegaEIS™ provides one current sensor, three full-voltage sensors, and 40 low-voltage channels for cell measurement. Data acquisition runs simultaneously across all channels, making the system ideal for rapid and precise analysis in R&D, quality assurance in manufacturing, and service diagnostics.

Precise at High Currents

MegaEIS™ ME-40L200 handles high currents up to 200 A. The unique low-impedance current sensor is placed in series with an external booster. This topology eliminates the parasitic effects of the booster and ensures accurate measurement of both AC and DC currents flowing through the device under test (DUT).

Accurate and Reliable Data

Thanks to our state-of-the-art sigma-delta synchronized ADCs, you achieve exceptional 0.1% accuracy at a high speed of 1.25 Msps, ensuring precise and reliable measurements for your applications.

Technical Support

At Kolibri, we value close collaboration with our customers. Our technical team strives to provide support throughout the commissioning, implementation, and operation of the instrument.

Designed for EIS

Electrochemical impedance spectroscopy (EIS) is a powerful method for investigating the electrochemical processes occurring within the DUT, providing key insights that lead to improved performance and durability. The MegaEIS™ is an excellent tool equipped with multichannel EIS, allowing simultaneous scans of the DUT and all its cells. The unique simultaneous multi-channel EIS eliminates time-consuming multiplexing and effectively prevents state shifts in the DUT during testing. The EIS frequency range extends from 1 mHz to 100 kHz, and the instrument offers impedance measurements with up to 1% accuracy.

Wide Range of Electrochemical Methods

MegaEIS™ offers DC cell voltage monitoring and supports a variety of essential electrochemical methods, including:

- Electrochemical Impedance Spectroscopy
- Cyclic Amperometry
- Cyclic Voltammetry
- Linear Sweep Voltammetry
- Linear Sweep Amperometry
- Constant Voltage
- Constant Current
- Chronopotentiometry
- Chronoamperometry
- Open Circuit Voltage

The instrument enables programmable sequencing of all available methods.

Technical Parameters



Power supply	110 ... 230 VAC / 50 ... 60 Hz, 3x 400 VAC for high-power devices	
Dimensions	Modular design for 19" rack cabinet	
Protection rating	IP20	
Input voltage	0 ... 200 V	
Total input current (internal + external load)	Up to 300 A	
Internal load current	0 ... 200 A	
Maximum internal load power dissipation	4 kW	
Cooling	Water	
Stack electrometer voltage range	Up to ± 200 V	
Sampling	24-bit ADCs, low-noise 50/60 Hz filtered sampling Up to 1.25 Msps for EIS measurements	
Measurement resolution	0.001% of selected range	
Accuracy Voltage	Voltage	$\leq 0.1\%$ of range + 0.1% of reading
	Current	$\leq 0.1\%$ of range + 0.5% of reading
Acquisition methods	constant V, I, open circuit, manual control chronoamperometry, chronopotentiometry linear sweeps, polarization curves, current interruption load cycling/profiling EIS – electrochemical impedance spectroscopy programmable sequences of all available methods	
EIS frequency	1 mHz ... 100 kHz	
EIS amplitude	Up to 20% of maximum internal current for < 1 kHz	
EIS channel voltage range	± 5 V (max. voltage span over one EVM8 module: 24 V / each 8 channels)	
Number of EIS channels	Up to 40 (limited by max. voltage) 8 channels per one module	
Connection	USB 2.0, Ethernet	
Software	Control software for MS Windows Features: measurement setup and control, data acquisition, processing and visualization, pascal or python scripting, remote control by TCP/IP server for integration with top-level control system, examples for remote control using Python or LabVIEW.	



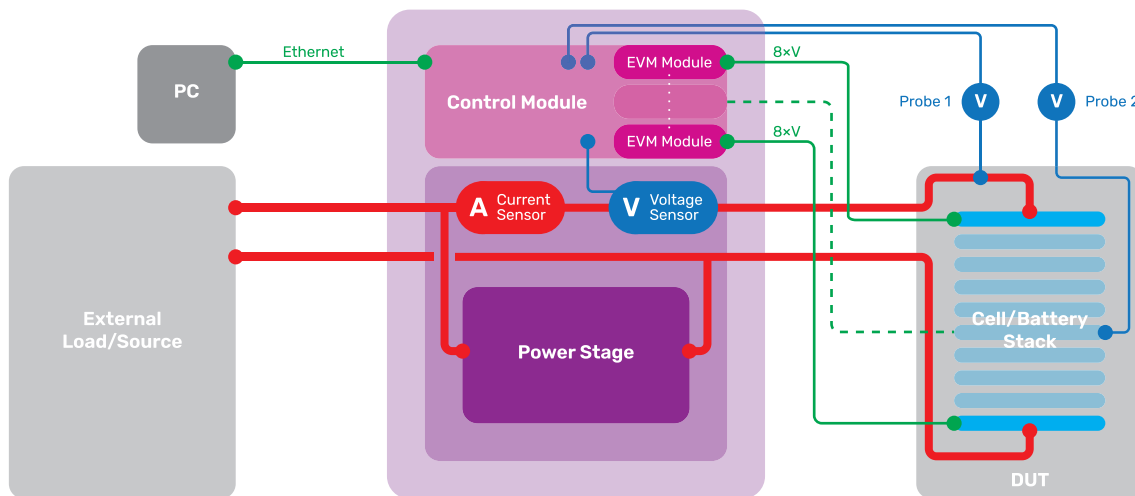
Fuel Cell and Electrolyzer Stacks

The MegaEIS™ ME-40L200, a load in the combination with a source, represents an ideal solution for electrolyzer stack and solid oxide fuel cell stack testing. It can also be used for testing other fuel cell types, including PEMFC, AFC, MCFC, and PAFC. The simultaneous multi-channel EIS provides insight into the state and performance of each individual cell and the stack as a whole.

Battery Modules

The investigation of a battery module's state and performance through charging/discharging cycling can be greatly enhanced by simultaneous multi-channel EIS. The MegaEIS™ is suitable for any type of battery (e.g., Li-Ion, Redox Flow) and enables the characterization of an entire module through simultaneous single-cell EIS measurements, eliminating the need for manual voltage probe reconnection and time-consuming multiplexing. EIS can be performed in a steady state of the battery module to precisely characterize its state or while charging/discharging to investigate its behavior under a driving profile.

Block Schema



MegaEIS™ ME-40L200 connection schema with External Load/Source and DUT (Device Under Test)

Have questions or need more details?

Contact us today and let us show you how Kolibrík can make a difference for you!

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