

# StackEIS-M

StackEIS-M512SE-L600V120A-X650A-W16kW

High-power H<sub>2</sub>FC EIS Analyzer Load System  
with Multichannel Simultaneous Acquisition

Version 1.3  
2021-08-08



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## Quick summary

❖ Load configuration	for parallelization with external DC load
❖ Input voltage	10 .. 600 V
❖ Input current	0 .. 650 A (internal+external load)
❖ Internal load	0 .. 120 A, max. 16 kW
❖ Cooling	Water
❖ EIS - Impedance spectroscopy	1 mHz .. 100 kHz
❖ EIS amplitude	0 .. 50 A
❖ Number of EIS channels	512
❖ EIS channel voltage range	±1.5 V

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## StackEIS-M

**StackEIS-M** is a precise testing system for **EIS analysis of H<sub>2</sub>FC stacks** with up to **512 cells** and current capacity of up to **650 A**. System is designed for cooperation with external DC load which handles most of the stack power (up to 300 kW). Maximum peak power dissipation of StackEIS-M system is **16 kW** and is **water-cooled**.

EIS acquisition is **simultaneous** on all 512 channels, so the system is suitable for rapid and precise end-of-line testing. System also provides continuous **cell voltage monitoring** feature, even during EIS acquisition.

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## Block diagram

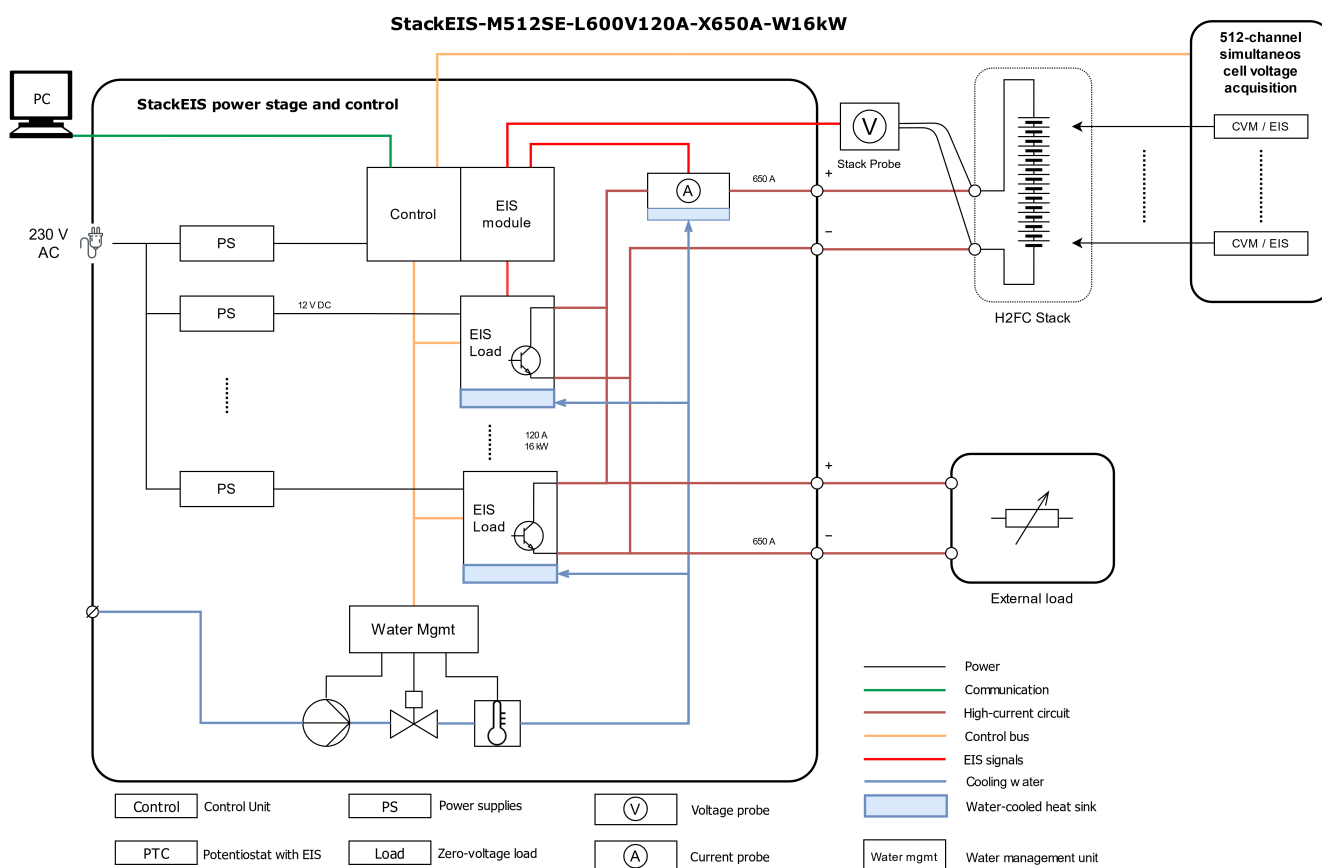


Image 1: Block diagram of StackEIS-M512SE-L600V60A-X650A-W16kW model system configuration

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## Technical Parameters

Power supply	230V AC / 50..60 Hz
Dimensions	19" rack cabinet, max. 40U height, max. 800 mm depth
Protection rating	IP20
Input voltage	10 .. 600 V
Total input current (internal+external load)	0 .. 650 A
Internal load current	0 .. 120 A
Max. internal load power dissipation	16 kW
Cooling	Water
Stack electrometer voltage range	-600 V ... +600 V
Sampling	24-bit ADCs, 1 ksps internal, 50 sps low-noise filtered sampling 24-bit ADCs, up to 2.5 Msps for EIS measurements
Measurement resolution	0.001 % of selected range for $\leq 1$ ksps sampling
Accuracy	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, I/V characteristics, current interruption impedance spectroscopy  programmable sequences of all available methods

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EIS frequency	1 mHz .. 100 kHz
EIS amplitude	up to 50 A for < 1 kHz
EIS channel voltage range	±1.5 V
Number of EIS channels	512
Other EIS features	Multi-sinus, Arbitrary wave generator, 512-channel oscilloscope mode, continuous CVM measurement, galvanically isolated input channels
Connection	USB 2.0, ethernet
Additional interfaces and I/Os	E-Stop / Interlock input, trigger input, CAN bus, digital I/Os for status and control
Software	Control software for MS Windows Features: measurement setup and control, data acquisition, processing and presentation, scripting, remote control by TCP/IP server for integration with top-level control system, user calibration tools, data storage and backup, health and safety monitoring
Control PC	Included, 64-bit system, MS Windows 10, Intel i7, 32 GB RAM, SSD, HDD RAID, 2x LCD 24", keyboard, mouse, accessories, interfaces for connection and system integration