

850e Multi Range Fuel Cell Test System

New!
CE Approved
220-240 V

- ✓ Multiple Current Ranges for Accurate Measurement Over Wide Dynamic Range
- ✓ Fully-Integrated, Turn-Key Test System
- ✓ Low Cost, Quick Delivery
- ✓ FuelCell® Software Included
- ✓ Experimental Methods Manual Included
- ✓ Options: EIS & HFR, Pump, Gas Mixing, MultiGas Selector, Wet/Dry By-Pass, Potentiostat, Back Pressure and More!

Features:

- Suitable for up to 50 cm² cells & small stacks
- Load: 5/25/50 A or 10/50/100 A, 100 W, 20 V
- FuelCell® software for user-friendly computer-controlled cell operation & experimentation
- Anode & cathode stainless steel humidifiers
- Up to 5 mass flow controllers
- SS core flexible heated gas transfer lines
- Constant or stoichiometric-controlled reactant flow rate
- Current, voltage or power control modes
- Real-time cell resistance by current interrupt & HFR
- Automatic shutdown & purge for safe, reliable operation
- High-impedance whole cell & reference electrode voltage sense inputs
- Simultaneous 3-channel impedance measurement
- Cell main terminals & sense inputs tolerant of non-isolated cell
- GPIB-USB Interfac



Available Options:

- **New:** Automated MultiGas Selector
- **New:** 885 Fuel Cell Potentiostat
- **New:** Automated Humidifier By-pass Valves
- High Temperature & Automated Back Pressure
- Built-in Impedance Analyzer for EIS & HFR
- Automatic Water Fill
- High Temperature Operation to 120 °C
- Pump for Liquid Fuels
- Reformate Simulation



Auto MultiGas Selector



Integrated Potentiostat



Back Pressure Unit

Specifications:

Electronic Load:

Maximum Load Current:	5/25/50 A or 10/50/100 A (configuration dependent)
Maximum Load Power:	100 W
Minimum Load Resistance:	< 2 m Ω (100 mV @ 50 A at load terminals)
Current Resolution:	1 mA for 5/25/50 A; 10 mA for 10/50/100 A
Current Accuracy:	$\pm 0.3\%$ of full scale current of selected range

Voltage Measurement and Data Acquisition:

Max. Whole Cell Voltage:	20 V
Max. Reference Electrode Voltage:	9.999 V
Voltage Resolution:	1 mV
Voltage Accuracy:	± 3 mV $\pm 0.3\%$ of reading
Voltage & Current Data Update Rate:	100 Hz
Whole Cell Sense Input Resistance:	> 35 k Ω
Reference Electrode Input Resistance:	> 10 ⁹ Ω

Impedance Analyzer (Optional 880):

Internal Impedance Analyzer Type:	Single sine, one generator and two gain/phase measurement channels
Internal Analyzer Frequency Range:	1 mHz to 10 kHz
Measurement Channels:	Three: whole cell plus two half cell vs. Reference Electrode

Reactant Gas Control System:

All 316 SS construction of humidifiers, flow path, valves and mass flow controllers, with Swagelok® fittings and heated reactant delivery lines

Mass Flow Control:

Anode to 2 SLPM, Cathode to 5 SLPM
Software controlled mass flow controllers
Automatic N₂ purge valves on Anode and Cathode

Alarms:

Gas supply pressures (3), Humidifier water levels (2), External (1), System alarm output (1)

Backpressure Control:

Manual, 0 - 30 PSIG, requires Optional 850BP accessory

Temperature Controllers:

Set & Report Accuracy:	$\pm 0.25\%$ of span, ± 1 least significant digit
Sensor Type:	Thermocouple, Type T for cell (Type K optional for high temperature)

Humidifiers:

Temperature Range:	Dual sparger-type, passivated 316L, 360 W heaters per bottle Ambient to 99 °C; Optional: 120 °C
Water Fill Method:	Manual or Automatic (requires water feed at 30 PSIG min. or 20 PSIG above back pressure)

Environment:

Operating Temperature:	5 to 35 °C
Power Source:	120V 50-60 Hz 10A (Export model 220-240V, 50-60 Hz, 5A)
Enclosure Type:	Single bench top enclosure
Size and Weight:	18" H x 11" W x 19" D (+ 11" for heated gas lines); 50 lb. 46 cm x 28 cm x 48 cm (+ 28 cm); 23 kg

Safety Features:

Automatic shutdown and N₂ purge on under-voltage, over-current, over-temperature, loss of reactant or purge gas pressure, low water, communications failure or external alarm
Emergency Stop switch for manual operator shutdown

Specifications given for 25 °C ambient temperature unless otherwise noted.

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150 E. Connecticut Ave, Southern Pines, North Carolina 28387 USA
Tel: +1-910-695-8884 · Fax: +1-910-695-8886 · www.scribner.com · info@scribner.com