850
Multi-Range Fuel Cell Test System

The complete test station for operation and measurement of PEM, AEM & DM fuel cells

The 850 is designed for single cell testing and diagnostics in a research lab environment.

The 850 features

- Multiple current range electronic load choices: 5/25/50 A or 10/50/100 A, 100 W, 20 V
- *FuelCell*® software for user-friendly computer controlled cell operation & experimentation
- Temperature controlled high performance 316L stainless steel humidifiers, and heated gas transfer lines
- Computer control of anode and cathode mass flow rates
- Automatic control of N_2 purge gas to cell
- Detection of pressure loss for reactant and purge gasses
- Current, voltage or power control modes
- Continuous real time cell resistance and IR-free voltage measurement by Current Interrupt
- Whole cell voltage plust two high-impedance reference inputs for half-cell data
- Cell main terminals and sense inputs tolerant of a non-isolated cell
- Automatic Water Fill for humidifiers
- Safety features include detection of alarm conditions and automatic hardware shutdown for safe, reliable operation

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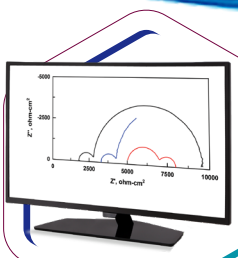
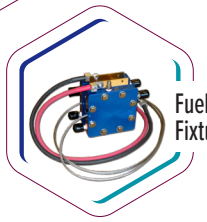
OPTIONS


Electrochemical Impedance Spectroscopy


Fuel Cell Fixture


Liquid Pump

Back Pressure

885 HS Fuel Cell Potentiostat


MulitGas Selector

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SPECIFICATIONS: 850 Multi-Range Fuel Cell Test System

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 mΩ (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	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 Accuracy	±3 mV ±0.3% of reading
Voltage & Current Data Update Rate	100 Hz
Whole Cell Sense Input Resistance	> 35 kΩ
Reference Electrode Input Resistance	> 10^9 Ω

Impedance Analyzer (Optional 881):

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

Fuel System:

Reactant Gas Control System	All 316 SS construction of humidifiers, flow path, valves and mass flow controllers, with Swage-lok® fittings and heated reactant delivery lines
Mass Flow Control	Anode to 2 SLPM, Cathode to 5 SLPM, Software controlled mass flow controllers, Automatic N_2 purge valves on Anode and Cathode
Alarms	Gas supply pressures(3), Humidifier water levels(2), External (1), System alarm output (1)
Back Pressure Control	Manual or Automatic, 0 - 2 bar (0 – 30 PSIG), requires optional 850BP or Auto BP accessory
Temperature Controllers	Three: cell, anode humidifier, cathode humidifier

Temperature:

Sensor Type	Thermocouple, Type T for cell (Type K optional for high temperature)
Humidifiers	Dual sparger-type, passivated 316L, 360 W heaters per bottle
Temperature Range	Ambient to 99 ° C; Optional: 120 ° C
Set & Report Accuracy	±0.25% of span, ±1 least significant digit

Environment:

Operating Temperature	5 to 35 ° C
Power Source	120 V, 50-60 Hz, 10 A (Export model 220-240 V, 50-60 Hz, 5 A)
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 N_2 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.