



850e Multi-Range Fuel Cell Test System

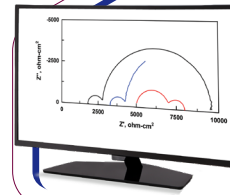
The complete test station for operation and measurement of PEM, AEM & DM fuel cells

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

The 850e 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 N₂ 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 plus 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

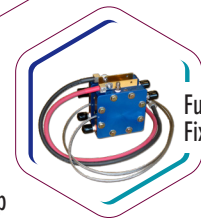
OPTIONS



Electrochemical Impedance Spectroscopy



Liquid Pump



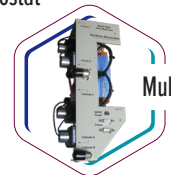
Fuel Cell Fixture



Back Pressure



885 HS Fuel Cell Potentiostat



MultGas Selector

SPECIFICATIONS: 850e 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 Resolution	1 mV

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

Safety Features:

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

Fuel System:

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 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
Set & Report Accuracy	±0.25% of span, ±1 least significant digit

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

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

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