840 Advanced Fuel Cell Test System

New!!!

- ✓ Integrated Turn-Key Test System
- ✓ Increased Flow Rate Capability 6-12 SLPM
- ✓ Humidifier Bypass for Wet/Dry Testing
- ✓ Multiple Current Ranges for Accurate Measurement Over Wide Dynamic Range
- ✓ Impedance Spectroscopy & HFR Option
- ✓ Anode & Cathode Gas Mixing Options

Features:

- Suitable for up to 50 cm^2 cells & small stacks
- **890e Electronic Load**: 125W (5/25/50A or 10/50/100A) 20V; or 500W (12/62/125A or 25/125/250A) 20V
- **892e Data Acquisition Module**: 16 channels of voltage/temperature integrated with FuelCell®
- **Dual Anode & Cathode** mass flow controllers for enhanced accuracy over wide flow range
- **New:** Automated Anode & Cathode input gas selector valves
- Automated humidifier by-pass for wet/dry cycling
- Large capacity Anode & Cathode SS humidifiers with automatic water fill
- Flexible SS temperature controlled heated gas transfer lines
- *FuelCell*® software for user-friendly computer-controlled cell operation & experimentation
- Constant or stoichiometric-controlled reactant flow rate
- Constant current, voltage or power control modes
- Continuous, real time cell resistance measurement by Current Interrupt & HFR
- High impedance whole cell & reference electrode voltage sense inputs
- Simultaneous 3 channel whole and half-cell EIS
- Automatic shutdown & purge for safe, reliable operation
- Single USB interface

Available Options:

- **Anode & Cathode backpressure – standard & high capacity**
- **Built-in impedance analyzer for EIS & HFR**
- **32 channel stack voltage monitor**
- **Additional MFCs for gas mixing on Anode & Cathode**

From the makers of:

ScribnerAssociates incorporated

Specifications:

Electronic Load:	
Maximum Load Current:	5/25/50A; 10/50/100A; 12/62/125A; 25/125/250A (config. dependent)
Maximum Load Power:	125 W or 500 W (configuration dependent)
Minimum Load Resistance:	< 2 mΩ (100 mV @ 50 A at load terminals)
Current Resolution:	1 mA at low currents – up to 100mA (current setting dependent)
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
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 (humidifiers, flow path, valves and mass flow controllers) with Swagelok® fittings Temperature controlled reactant transfer lines
Mass Flow Control:	Anode 6 SLPM (1 + 5 SLPM) and Cathode 12 SLPM (2 + 10 SLPM) Dual rate software controlled mass flow controllers Automatic N_2 purge valves
Alarm Inputs:	Gas supply pressures (3), humidifier water levels (2), external (1), System alarm output (1)
Backpressure Control(Optional):	Standard: manual control, 0 – 30 PSIG High Capacity: forced air condensers with large tanks and SS regulators
Temperature Controllers:	Five: cell, anode humidifier, anode line, cathode humidifier, cathode line
Set & Report Accuracy:	±0.25% of span, ±1 least significant digit
Sensor Type:	Thermocouple, Type T for cell (Type K optional for high temperature)
Humidifiers:	Dual sparger-type, passivated 316L, 1650 W heaters per bottle
Temperature Range:	Ambient to 99 °C
Fill Method:	Automatic Water fill (requires 45 PSIG min., or 20 PSIG above back pressure water feed)
Environment:	
Operating Temperature:	5 to 35 °C
Power Source:	220-240 V, 50-60 Hz, 20 A
Enclosure Type:	Single bench top enclosure
Size and Weight:	32” H x 24” W x 24” D (+ 16” for heated gas lines), 120 lbs. 32” H x 24” W x 24” D (+ 16” for heated gas lines), 120 lbs.
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

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

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