

# 890ZV

## Advanced SOFC Fuel Cell Test Loads

Includes Zero Volt Operation

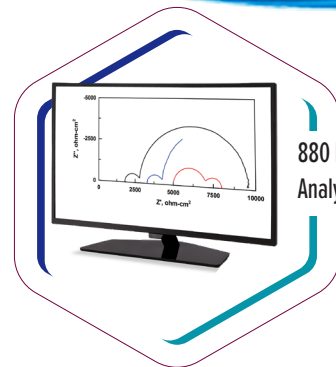


The 890ZV is an air-cooled, multi-range programmable electronic load with integrated Zero Volt Boost Supply.

### The 890ZV features

- Electronic load with two current ranges: 5 / 25 A, 10 V, 50 W
- Ramping cell/furnace temperature control
- Control signals for two (2) main mass flow controllers plus five (5) additional mass flow controllers
- Continuous real-time cell resistance and IR-free voltage measurement by current interrupt
- Whole cell voltage plus two high-impedance reference electrode inputs for half-cell data
- Optional internal impedance analyzer for EIS and continuous real-time high frequency resistance (HFR)
- Cell main terminals and sense inputs tolerant of non-isolated cell
- Three (3) internal controllers for anode and cathode humidifier and cell temperatures
- Current, voltage or power control mode
- Contact inputs for three pressure sensors or alarms
- Low voltage output signal to control purge gas valves and to indicate alarm condition
- RS485 digital interface for supported external devices
- The 890ZV requires a custom or third-party fuel management unit to make a complete test station.
- Safety features include detection of alarm conditions and automatic hardware shutdown for safe, reliable operation

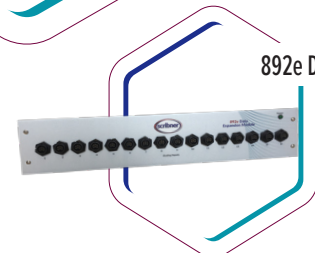
### OPTIONS



880 Impedance Analyzer for EIS



885 HS Potentiostat



892e Data Expansion



## SPECIFICATIONS: 890ZV Advanced SOFC Fuel Cell Test Loads

### Electronic Load:

Maximum Load Current (2 ranges)	5, 25 A
Maximum Load Voltage	10 V
Maximum Load Power	50 W
Minimum Load Resistance	3.3 V power supply used to allow zero load voltage at full current with up to 3.2V drop in cell wiring
Current Resolution:	1 mA
Current Accuracy	0.3% of full scale current of selected range

### Voltage Measurement and Data Acquisition:

Max . Whole Cell Voltage	10.000 V
Max . Reference Electrode Voltage:	9.999 V
Whole Cell Sense Input Resistance	> 35 kΩ
Voltage Resolution	1 mV
Voltage Accuracy	±3 mV ±0.3% of reading
Voltage & Current Data Update Rate	100 Hz

### Fuel Interface:

Outputs for anode, cathode flow controllers	Two, Analog (0-5 V)
Outputs for reformat flow controllers	Five, Analog (0-5 V) (optional)
Alarm Inputs	Six, Three for gas pressures, three auxillary
Alarm Outputs	One, 5 V logic
Fuel Solenoid Control	One, 5 V output (external relay needed, included with interface box)

### Temperature Controllers:

Quantity	Three (Anode, Cathode and Cell / Furnace)
Type	On/off 5 V output (external SSR required)
Set & Report Accuracy	0.25% of span, ±1 least significant digit
Sensor Type	Thermocouple, Type T, K, or S optional

### Impedance Measurements:

Interface for Internal or External Analyzers	Voltage and current output channels with variable DC bias rejection, generator input channel with selectable attenuation
Internal Impedance Analyzer Type	Single sine, two gain/phase measurement channels, one generator output channel
Internal Analyzer Frequency Range	1 mHz to 10 kHz
Measurement Channels	Three: whole cell plus two half cell vs. reference electrode

### Environment:

Operating Temperature	5 to 35 ° C
Power Source	100 - 240 VAC, 50/60 Hz (auto select)
Size	3U std rack mount, 19" W x 5.25" H x 21" D

### Safety Features:

Automatic shutdown and N <sub>2</sub> 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
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