H-Series

PEM Fuel Cell Systems

Horizon
Fuel Cell Technologies

www.horizonfuelcell.com

The smallest and the lightest.

The H-series Polymer Electrolyte Membrane (PEM) fuel cells designed by Horizon are semi-integrated, efficient, reliable systems that minimize the use of peripherals. As such, they are the most compact and lightweight air-cooled, self-humidified fuel cells available on the market, bringing new product innovation possibilities to engineers around the world.

H-SERIES PEM Fuel Cell Systems

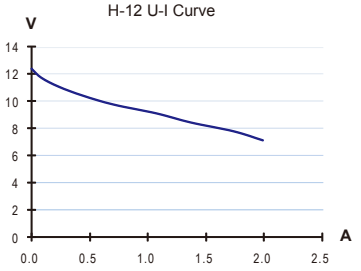
H-12
FCS-B12

Semi-integrated 12W fuel cell system

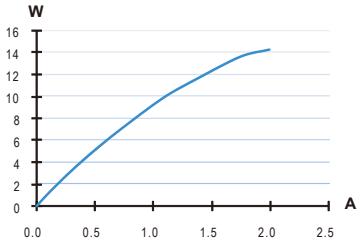
Including:
- Integrated fan and casing
- 12W stack with blower

Type of fuel cell ..... PEM
Number of cells.....13
Rated power.....12W
Rated Performance.....7.8V@1.6A
Output voltage range.....6V-12V
Weight (with fan & casing)..... 225g(0.496lbs)
Size.....76x64x47mm(3x2.5x1.85in)
Reactants..... Hydrogen and Air
Rated H_2 consumption.....180ml/min(11in³/min)
Hydrogen pressure..... 0.3-0.4Bar(4.3-5.8PSI)
Purging valve voltage..... 6V
Blower voltage..... 5V
Ambient temperature.....5-35°C(41-95°F)
Max stack temperature..... 55°C(131°F)
Hydrogen purity..... 99.999% dry H2
Humidification.....Self-humidified
Cooling.....Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system.....40% at full power

H-12 U-I Curve



H-12 P-I Curve



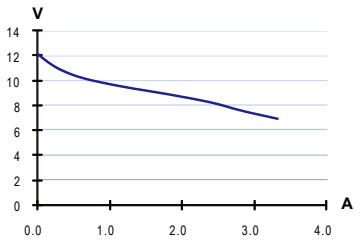
H-20
FCS-B20

Semi-integrated 20W fuel cell system

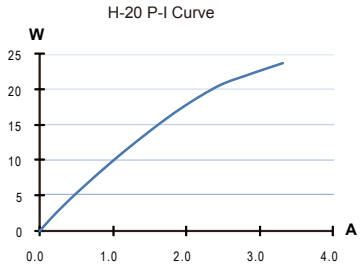
Including:
- Miniature electronic valve
- Control electronics
- Integrated fan and casing
- Low pressure protection
- 20W stack with blower

Type of fuel cell ..... PEM
Number of cells..... 13
Rated power..... 20W
Rated performance.....7.8V@2.6A
Output voltage range.....6V-12V
Weight (with fan & casing)..... 230g(0.5lbs)
Size.....76x64x47mm(3x2.5x1.85in)
Reactants.....Hydrogen and Air
Rated H_2 consumption..... 280ml/min(17in³/min)
Hydrogen pressure..... 0.3-0.4Bar(4.3-5.8PSI)
Purging valve voltage..... 6V
Blower voltage..... 5V
Ambient temperature.....5-35°C(41-95°F)
Max stack temperature..... 55°C(131°F)
Hydrogen purity..... 99.999% dry H2
Humidification.....Self-humidified
Cooling..... Air (integrated cooling fan)
Start up time.....30s (room temperature)
Efficiency of system.....40% at full power

H-20 U-I Curve



H-20 P-I Curve



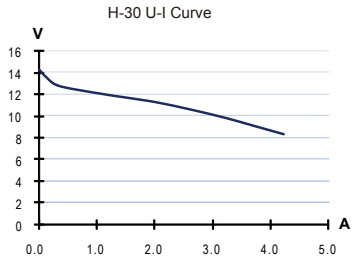
H-30
FCS-B30

Semi-integrated 30W fuel cell system

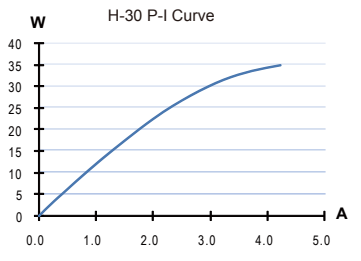
Including:
- Miniature electronic valve
- Control electronics
- Integrated fan and casing
- Low pressure protection
- 30W stack with blower

Type of fuel cell ..... PEM
Number of cells.....12
Rated power..... 30W
Rated Performance.....9V@3.4A
Output voltage range.....7V-14V
Weight (with fan & casing)..... 235g(0.52lbs)
Size.....80x64x46mm(3.1x2.5x1.8in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 420ml/min(26in³/min)
Hydrogen pressure..... 0.3-0.4Bar(4.3-5.8PSI)
Purging valve voltage..... 6V
Blower voltage..... 5V
Ambient temperature.....5-35°C(41-95°F)
Max stack temperature..... 55°C(131°F)
Hydrogen purity..... 99.999% dry H2
Humidification.....Self-humidified
Cooling..... Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system.....40% at full power

H-30 U-I Curve



H-30 P-I Curve



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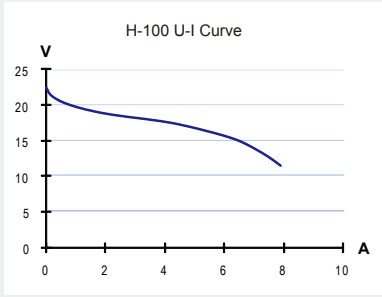
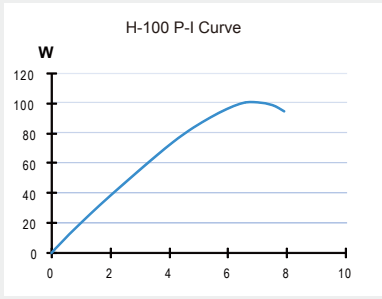
H-SERIES PEM Fuel Cell Systems

H-100
FCS-B100

Type of fuel cell ..... PEM
Number of cells..... 24
Rated power..... 100W
Rated performance..... 14V@7.2A
Output voltage range..... 13V-23 V
Weight (with fan & casing)..... 0.95kg(2.1lbs)
Size..... 143x109x94mm(5.6x4.3x3.7in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 1.4l/min(83in³/min)
Hydrogen pressure..... 0.4-0.45Bar(5.8-6.5PSI)
Controller weight..... 0.4kg(0.88lbs)
Hydrogen supply valve voltage..... 12V
Purging valve voltage..... 12V
Blower voltage..... 12V
Ambient temperature..... 5-35°C(41-95°F)
Max stack temperature..... 65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification..... Self-humidified
Cooling..... Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@14V



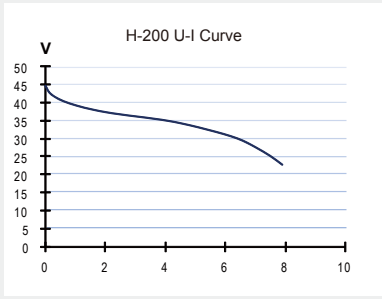


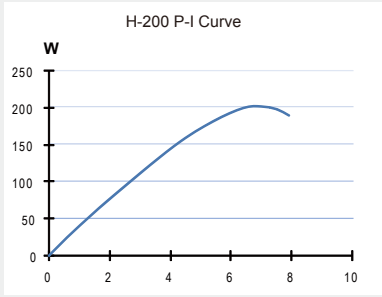
Semi-integrated 100W fuel cell system

Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 100W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

H-200
FCS-B200

Type of fuel cell ..... PEM
Number of cells..... 48
Rated power..... 200W
Rated performance..... 28V@7.2A
Output Voltage range..... 26V-46V
Weight (with fan & casing)..... 1.5kg(3.3lbs)
Size..... 223x109x94mm(8.8x4.3x3.7in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 2.8l/min(178in³/min)
Hydrogen pressure..... 0.4-0.45Bar(5.8-6.5PSI)
Controller weight..... 0.4kg/0.88lbs
Hydrogen supply valve voltage..... 12V
Purging valve voltage..... 12V
Blower voltage..... 12V
Ambient temperature..... 5-30°C(41-86°F)
Max stack temperature..... 65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification..... Self-humidified
Cooling..... Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@28V



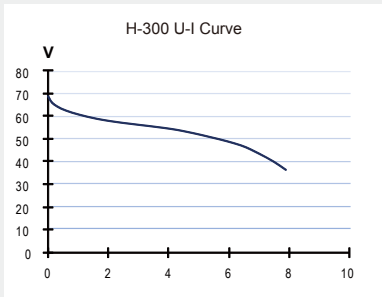


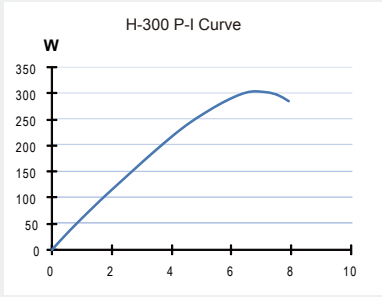
Semi-integrated 200W fuel cell system

Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 200W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

H-300
FCS-B300

Type of fuel cell ..... PEM
Number of cells..... 72
Rated power..... 300W
Rated performance..... 43V@7.2A
Output Voltage range..... 39V-69V
Weight (with fan & casing)..... 2kg(4.4lbs)
Size..... 324x109x94mm(12.8x4.3x3.7in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 4.2l/min(259in³/min)
Hydrogen pressure..... 0.4-0.45Bar(5.8-6.5PSI)
Controller weight..... 0.4kg(0.88lbs)
Hydrogen supply valve voltage..... 12V
Purging valve voltage..... 12V
Blower voltage..... 12V
Ambient temperature..... 5-30°C(41-86°F)
Max stack temperature..... 65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification..... Self-humidified
Cooling..... Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@43V





Semi-integrated 300W fuel cell system

Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 300W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

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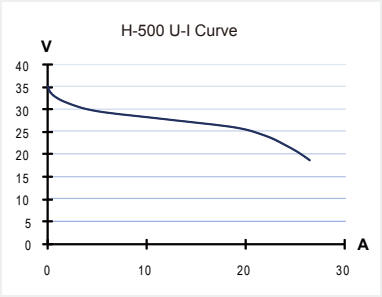
H-SERIES PEM Fuel Cell Systems

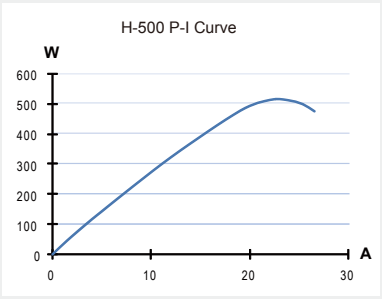
H-500
FCS-B500

Semi-integrated 500W fuel cell system

Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 500W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

Type of fuel cell ..... PEM
Number of cells..... 36
Rated power..... 500W
Rated performance..... 21V@24A
Output voltage range..... 19V-35V
Weight (with fan & casing)..... 2.8kg(6.2lbs)
Size..... 250x190x75mm(9.8x7.5x3in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 7l/min(398in³/min)
Hydrogen pressure..... 0.5-0.6Bar(7.2-9.4PSI)
Controller weight..... 0.45kg(0.99lbs)
Hydrogen supply valve voltage..... 12V
Purging valve voltage..... 12V
Blower voltage..... 12V
Ambient temperature..... 5-30°C(41-86°F)
Max stack temperature..... 65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification..... Self-humidified
Cooling..... Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@21V



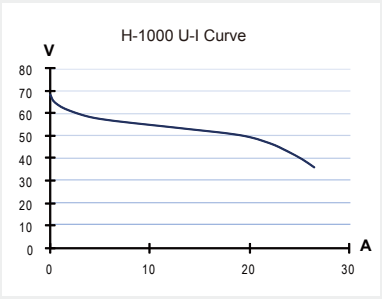


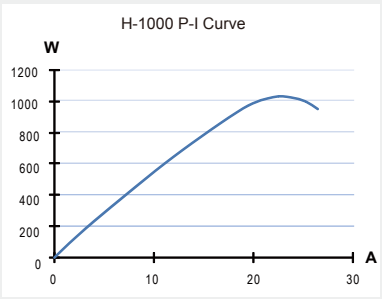
H-1000
FCS-B1000

Semi-integrated 1000W fuel cell system

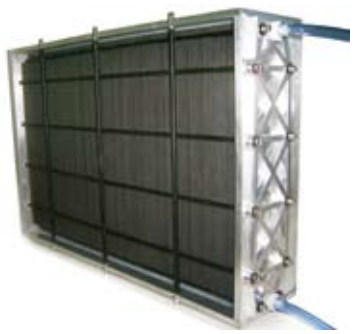
Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 1000W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

Type of fuel cell ..... PEM
Number of cells..... 72
Rated power..... 1000W
Rated performance..... 43V@23.5A
Output voltage range..... 39V-69V
Weight (with fan & casing)..... 4.2kg(9.3lbs)
Size..... 324x220x122mm(12.8x8.7x4.8in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 14l/min(847in³/min)
Hydrogen pressure..... 0.5-0.6Bar(7.2-9.4PSI)
Controller weight..... 0.45kg(0.99lbs)
Hydrogen supply valve voltage..... 12V
Purging valve voltage..... 12V
Blower voltage..... 12V
Ambient temperature..... 5-30°C(41-86°F)
Max stack temperature..... 65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification..... Self-humidified
Cooling..... Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@43V





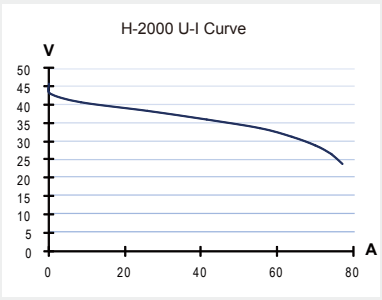
H-2000
FCS-B2000

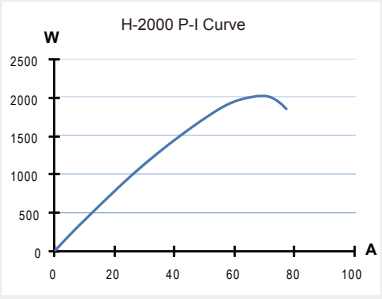


Semi-integrated 2000W fuel cell system

Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 2000W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

Type of fuel cell ..... PEM
Number of cells..... 48
Rated power..... 2000W
Rated performance..... 28.8V@70A
Output voltage range..... 26V-46V
Weight (with fan & casing)..... 7.7kg(16.9lbs)
Size..... 380x160x200mm(15x6.3x7.9in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 28l/min(0.99ft³/min)
Hydrogen pressure..... 0.5-0.6Bar(7.2-9.4PSI)
Controller weight..... 1kg(2.2lbs)
Hydrogen supply valve voltage..... 12V
Purging valve voltage..... 12V
Blower voltage..... 12V
Ambient temperature..... 5-30°C(41-86°F)
Max stack temperature..... 65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification..... Self-humidified
Cooling..... Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@28.8V





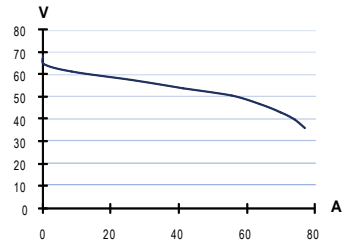
Horizon Fuel Cell Technologies

H-SERIES PEM Fuel Cell Systems

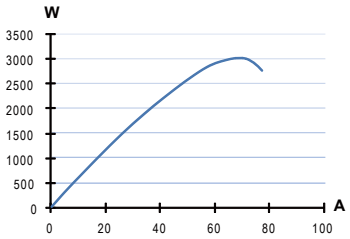
H-3000
FCS-B3000

Type of fuel cell ..... PEM
Number of cells..... 72
Rated power.....3000W
Rated performance..... 43.2V@70A
Output voltage range..... 39V-69V
Weight (with fan & casing).....11kg(24.2lbs)
Size..... 380x160x280mm(15x6.3x11in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 42l/min(1.48ft³/min)
Hydrogen pressure..... 0.5-0.6Bar(7.2-9.4PSI)
Controller weight.....1kg(2.2lbs)
Hydrogen supply valve voltage..... 12V
Purging valve voltage.....12V
Blower voltage.....12V
Ambient temperature..... 5-30°C(41-86°F)
Max stack temperature.....65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification..... Self-humidified
Cooling.....Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@43.2V

H-3000 U-I Curve



H-3000 P-I Curve



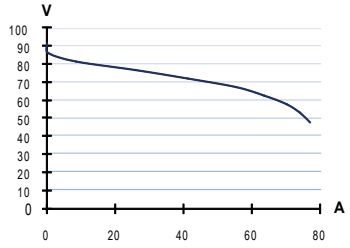
Semi-integrated 3000W fuel cell system

Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 3000W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

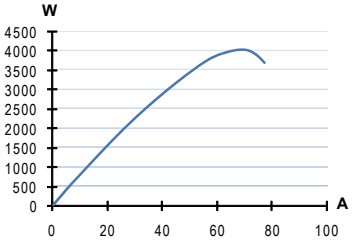
H-4000
FCS-B4000

Type of fuel cell ..... PEM
Number of cells..... 96
Rated power.....4000W
Rated performance..... 57.6V@70A
Output voltage range.....52V-92V
Weight (with fan & casing).....14kg(30.9lbs)
Size.....380x160x360mm(15x6.3x14in)
Reactants..... Hydrogen and Air
Rated H_2 consumption..... 56l/min(1.98ft³/min)
Hydrogen pressure.....0.5-0.6Bar(7.2-9.4PSI)
Controller weight.....1kg(2.2lbs)
Hydrogen supply valve voltage..... 12V
Purging valve voltage.....12V
Blower voltage.....12V
Ambient temperature..... 5-30°C(41-86°F)
Max stack temperature..... 65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification..... Self-humidified
Cooling.....Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@57.6V

H-4000 U-I Curve



H-4000 P-I Curve



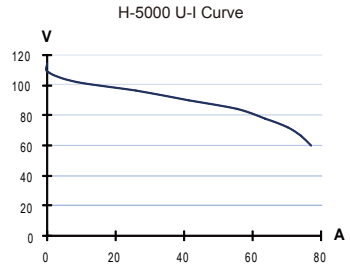
Semi-integrated 4000W fuel cell system

Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 4000W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

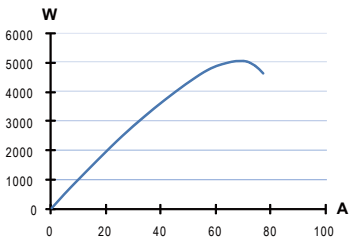
H-5000
FCS-B5000

Type of fuel cell ..... PEM
Number of cells.....120
Rated power..... 5000W
Rated performance..... 72V@70A
Output voltage range..... 64V-114V
Weight (with fan & casing).....17kg(37.5lbs)
Size..... 380x160x460mm(15x6.3x18in)
Reactants..... Hydrogen and Air
Rated H_2 consumption.....70l/min(2.47ft³/min)
Hydrogen pressure..... 0.5-0.6Bar(7.2-9.4PSI)
Controller weight.....1kg(2.2lbs)
Hydrogen supply valve voltage..... 12V
Purging valve voltage.....12V
Blower voltage.....12V
Ambient temperature..... 5-30°C(41-86°F)
Max stack temperature..... 65°C(149°F)
Hydrogen purity..... 99.999% dry H2
Humidification.....Self-humidified
Cooling.....Air (integrated cooling fan)
Start up time..... 30s (room temperature)
Efficiency of system..... 40%@72V

H-5000 U-I Curve



H-5000 P-I Curve



Semi-integrated 5000W fuel cell system

Including:
- Connections/Tubing
- Electronic valves
- Electronic control box
- 5000W stack with blower
- Fuel cell ON/OFF switch
- SCU ON/OFF switch

Sales contact & Pricing information:

email: sales@horizonfuelcell.com

Custom and specialty development (aerospace grade):

email: aerospace@horizonfuelcell.com