IE-POWER

Powering the hydrogen future™ with our outstanding fuel cells and service.

IE-POWER 4

IE-POWER fuel cell systems for power generation, telecoms, micro-grids and critical infrastructure.

Intelligent Energy's IE-POWER 4 is our 4kW fuel cell module designed for use in telecoms, micro-grids, power generation and critical infrastructure.

IE-POWER 4 fuel cell modules are designed to work with a range of batteries, delivering a charge voltage up to 56VDC. They can be configured to deliver power when the battery voltage falls to a pre-set level and switch off once the charge current drops.

Energy is delivered via an electrochemical reaction between hydrogen (H_2) and oxygen (O) resulting in quiet operation with the only emission being water vapour (H_2O). This means no CO_2, NO_x or SO_x.

The product is designed to fit into a 19" data rack and deliver up to 4kW of power at 48VDC using 99.9% gaseous hydrogen from cylinders, electrolysers and reformers.

IE-LIFT 804 fuel cell module benefits include:

- High power density, small and compact
- Lightweight for ease of handling and maintenance
- Configurable to meet the needs of your installation
- Zero Emissions – no Greenhouse Gases, CO_2, NO_x or SO_x
- Low maintenance with no servicing
- Quiet operation
- Simple integration

Applications

- Telecommunications
- Disaster recovery
- Portable power generation
- Backup power
- Emergency power
- Off-grid power
- Microgrids
- Auxiliary power units
- Material handling equipment

IE-POWER 4 specifications

Performance	Rated net power [1, 2, 11]	4.0kW @ 48V or 2.88kW @ 24V
	Output voltage and regulation	20V – 56V via factory configuration parameters Typically for use with 24 or 48V battery Supply -ve connected to chassis/earth Voltage regulation to ETSI 300-132-2 @ 48V
	Rated current	83A@48V, 120A@24V
	Emissions [3]	Water vapour in warm exhaust air
Fuel	Fuel type	Hydrogen gas
	Fuel pressure [4]	0.5 – 0.7 bar gauge
	Fuel consumption [5]	Less than 70g per kWh
	Fuel supply and storage	Designed for use with external fuel storage or production, (not included). Use of reformer and electrolyser gas subject to suitable pressure and purification.
	Fuel composition [6]	99.9% gaseous hydrogen or better
Operations and maintenance	Manual start/stop [7]	Connections provided for 'enable/reset' and 'run' switch or signal. Accessory switches available
	Automatic start/stop [2, 7]	Operation governed by factory configurable time, voltage and current levels in 'run' state. Level set to suit application battery and load
	Status display	In-built status display screen as standard
	Start-up time [8]	Less than 20 seconds
	IP rating	IP20
Safety and certification	Certification	CE & FCC
	Health monitoring [7, 9]	Options available
Physical	Mass	~20kg
	Max dimensions [10]	450mm (W) × 300mm ('7U') (H) × 500mm (D)
	Connections, gas	G1/8 parallel BSP threaded port with face seal, female
	Connections, electrical power and comms/signal	Power terminals 2 x M8 bolts, chassis/earth 1 x M8 stud 1 x FCM run input, 1 x FCM enable input 1 x CAN hi/low/gnd, 4 x PFCs
	Mechanical mounting points	4 mounting points on a 19" rack '7U' face
	Vibration (to IEC/EN 60068-2-6)	5 to 30Hz, 10mm peak 5G 30 to 200Hz, 2.5G 10 minutes per sweep, 4 hours for each of 3 axis
	Repetitive shock (to IEC/EN 60068-2-27)	10G, 1000 times, for each of 2 directions, 3 axis
	Non-repetitive shock (to IEC/EN 60068-2-27)	30G, 3 times, for each of 2 directions, 3 axis
Normal operating conditions	Altitude [8, 11]	0 – 4000m
	Operating temperature range [11]	+5°C to +40°C
	Operating humidity range [11]	10 to 90%
	Storage temperature	-40°C to +70°C

1 >95% duty cycle.

2 Typically hybridised with external battery allowing higher combined peak power. Available load power reduced during battery charge. Multiple units may be operated in parallel to increase power.

3 No production of CO, CO_2, or NO_x. Contains safety permitted trace levels of hydrogen.

4 +/- 100mbar pressure transients on purge permitted.

5 Achieved at 25°C, beginning of life.

6 According to quality characteristics of Type 1, Grade E and Category 3 hydrogen fuel specified in BS ISO 14687-3:2014(E).

7 Please contact us to discuss your requirements.

8 Start-up time based on optimal conditions and will vary

9 Options available for continuous health monitoring and predictive maintenance scheduling for high system availability.

10 Dimensions excludes protruding fasteners, mating connectors, 19" rack mount flanges/ears and accessories. Vertical height fits within '7U' 19" rack space.

11 Derated power when system and integration is not optimised, including combinations of :

- High ambient temperature, >35°C
- High altitude, >1500m
- Low RH, <30%"

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