IE-LIFT™

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

IE-LIFT 1T/1U

IE-LIFT™ fuel cell systems for power generation, telecoms, micro-grids and material handling equipment.

IE-LIFT 1T/1U compact fuel cell modules match the needs of portable power, stationary power and materials handling equipment (MHE) with battery tanks down to 210mm wide.

Ease of use and installation is aided with horizontal and vertical installation flexibility together with variants that allow cooling air to flow either through-the-unit or in-and-out-on-a-single-face.

1kW of regulated DC power is generated, typically at 24, 36 or 48VDC using 99.9% gaseous hydrogen from cylinders, electrolysers and reformers.

Just water vapour and heat are emitted by the quiet electrochemical reaction that makes this all possible. CO_2, NO_x or SO_x are not produced.

IE-LIFT 1T/1U fuel cell module benefits include:

- High power density, small and compact
- Zero Emissions – no Greenhouse Gases, CO_2, NO_x or SO_x
- Lightweight for ease of handling and maintenance
- 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
- Industrial trucks
- 24, 36 or 48V electric trucks
- Tow tractors and tugs
- Warehouse trucks
- Airport auxillary & service vehicles

IE-LIFT™ specification

Preliminary

Performance	Rated net power	1.0kW [1, 2] 1.2kW max >24V [3]
	Output voltage and regulation	16 to 58V via factory configuration parameters. Typically for use with 24, 36 or 48V battery. User configurable for -ve, +ve or floating earth Voltage regulation to ETS I 300-132-2 @ 48V
	Rated current	50A max @ ≤ 24V, 25A @ 48V
	Emissions	Water vapour in warm exhaust air [4]
Fuel	Fuel type	Hydrogen gas
	Fuel pressure	0.5 - 0.7 bar gauge [5]
	Fuel consumption	Less than 70g per kWh [6]
	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	99.9% gaseous hydrogen or better [7]
Operations and maintenance	Manual start/stop	Customer interface connections provided for 'enable/reset' and 'run' switch or signal. Accessory switches available [8]
	Automatic start/stop	Operation governed by factory configurable time, voltage and current levels in 'run' state. Level set to suit application battery and load [2, 8]
	Status display	7 state LED status indication Status info (CAN/Serial) on Customer Port Accessory Port allows use of accessory display [8]
	Start-up time	Less than 20 seconds [9]
Safety & certification	Certification of IE-LIFT™	CE & FCC for Indoor Industrial Truck (MHE), Outdoor Portable Power and Stationary use
	Health monitoring	Options available [8, 10]
Physical	Mass	~10.4kg
	Max dimensions	196mm (W) × 294mm (H) × 294mm (D)[11]
	Connections, gas	5/16" SAE J2044 MALE SPIGOT [12]
	Connections, electrical power	Amphenol SurLok Plus 5.7mm (120A) receptacles Positive red with SR2 key Negative black with SB0 key
	Connection, chassis/earth	M6 stud
	Connections, Customer Comms/Signal	26-way high density female D-sub connector Enable/Reset; Run; Status; CAN/Serial; Index
	Connections, Accessory Comms/Signal	15-way high density female D-sub connector Proprietary connections for accessories Interlock loop
	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
	Non-repetitive shock (to IEC/EN 60068-2-27)	50G, 10 times, for each of 2 directions, 3 axis
	Audible Noise	A-weighted emission sound pressure level does not exceed 70 dB(A) [17]
Normal operating conditions	Altitude	0m to 1500m [8, 13]
	Operating temperature range	+5°C to +35°C [14, 15, 16]
	Operating humidity range	10% to 90% [8, 16]
	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 Rated power available when above 24V.
4 No production of CO, CO_2 or NO_x. Contains safety permitted trace levels of hydrogen.
5 +/- 100mbar pressure transients on purge permitted.
6 Achieved at 25°C, beginning of life.
7 According to quality characteristics of Type 1, Grade E and Category 3 hydrogen fuel specified in BS ISO 14687-3:2014(E).
8 Please contact us to discuss your requirements.
9 Up to 5 minutes when below 5°C.
10 Options available for continuous health monitoring and predictive maintenance scheduling for high system availability.
11 Dimensions excludes protruding fasteners, mating connectors and accessories. Unit designed to be used with either the H-axis vertical or rotated so the W-axis is vertical. Any single axis may be +/-15°.
12, 13, 14, 15 Future capability improvement planned.
16 De-rated power when RH is less than 30%.
17 Conditions: Distance 1m; Height of 1.6m; Power 1.2kW; Temperature 20°C; Humidity 50% RH; Sea level elevation.

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