

FPS Engine — FPS Series

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The heart of Alteryg's FPS is an advanced fuel cell engine offered in either 24 or 48 VDC configuration. The cells that make up a fuel cell stack are constructed from durable stainless steel and plastic. The fuel cell stack is integrated with the balance of plant including thermal management, fuel management, power and voltage management, creating a complete FPS Engine. The engines are designed with a plug-n-play feature that allows them to operate in a stand-alone mode or to be combined with additional engines to produce a range of power outputs up to 30 kW. Alteryg's plug-n-play design also allows optional peripherals to interface seamlessly into the FPS.

Each engine features an integrated supervisory control system that consists of a 32-bit digital



Front View

signal controller with on-board diagnostics. This control system manages the function of the fuel cell, including real-time system monitoring and control, as well as thermal management. Sensors include fuel pressure



Rear View

leak detection, ambient temperature and humidity, stack and electronics temperature, mass air flow, fan and filter conditions, stack and output currents and voltages, and tampering detection and reporting. In addition to optional user-definable factors, it communicates via a Graphic User Interface (GUI) to provide system and site status and allows user input of operating parameters. External communications and monitoring are facilitated by USB, RS-232 and ethernet connections, as well as 4 user-defined digital Input/Outputs. Power conditioning and regulation is performed by a fully digital, multi-phase, interleaved DC/DC converter that delivers precisely regulated DC power output.

Product Information

The Alteryg Freedom Power™ System (FPS)¹ Specifications

Model Number	FPS - 524	FPS - 548	FPS - 1024	FPS - 1048	FPS - 1524	FPS - 1548	FPS - 2024	FPS - 2048	FPS - 2524	FPS - 2548	FPS - 3024	FPS - 3048
Output	Rated Standby Power (kW) 210	5 105	10 420	15 210	20 630	25 315	30 840	35 420	40 1050	45 525	50 1260	55 630
Voltage	Rated Current (A) 24	48	24	48	24	48	24	48	24	48	24	48
	Rated (VDC) 21 to 29	42 to 58	21 to 29	42 to 58	21 to 29	42 to 58	21 to 29	42 to 58	21 to 29	42 to 58	21 to 29	42 to 58
Physical (Engines Only)	Dimensions ² (w x d x h in.) 21 x 33 x 25 / 53 x 83 x 63 cm	21 x 33 x 25 / 53 x 83 x 63 cm	21 x 33 x 50	21 x 33 x 75	46 x 33 x 50	46 x 33 x 50	69 x 33 x 50	69 x 33 x 50	69 x 33 x 50	69 x 33 x 50	69 x 33 x 50	69 x 33 x 50
	Weight (lbs) 179	378	557	746	945	1144						
Mounting	Standard 23" rack, shelf mount or Alteryg approved enclosure											
Type and Grade	Gaseous hydrogen, industrial grade, 99.95 % pure											
Fuel	40 to 100 psig / 2.75 to 6.89 bar											
Consumption (SLPM)	60	120	180	240	300	360						
Ambient Temperatures³	-40 °C to 50 °C / -40 °F to 122 °F											
Relative Humidity	5 % to 100 % non- condensing											
Location	Indoors with suitable air management or outdoors with suitable enclosure											
Altitude	10,000 ft / 3048 m											
Clean	California Air Resources Board (CARB) certified as a zero emission electrical power generator. By-product is water											
Green	Can recycle residual heat to increase fuel and system efficiency. Can use "Green" hydrogen fuel (generated from biomass, hydroelectric, solar or wind powered electrolysis)											
Noise	<60dBA @ 1 meter											
Supervisory Control	32-Bit Digital Signal Controller w/on-board, real time diagnostics, communications, thermal & systems management. Sensorless brushless direct current motor control											
Power Conditioning	Fully digital, multi-phase, interleaved DC/DC converter											
Monitoring Software	Real time control communicates with GUI to provide system and site status and allow user input of operating parameters. Field upgrades through communication port											
I/O Interfaces	USB, RS-232, RS-485 and Ethernet supported. Four user defined dry contacts. Optional wireless											
Sensors	Fuel pressure, leak detection, ambient temperature & humidity, stack & electronics temperatures, fan & filter conditions, stack & output currents and voltages, tampering											
Safety/Certification/Compliance	CSA/ANSI FC 1-2004 Standard, FCC 47CFR Part 15, Subpart B, Class A, NEBS Level 3											

1. Up to six 5 kW FPS Engines can be paralleled to achieve between 5 to 30 kW of rated standby power output.
 2. Dimensions include additional clearances to assure proper airflow and cooling in an enclosure. See Alteryg installation manual for details.
 3. 10 °C (50 °F) and below requires low temperature configuration, 40 °C (104 °F) or higher requires high temperature configuration.
 4. Some certifications pending.

Specifications subject to change without notice



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