



POLARIS® FUEL CELL POWER CONVERTER FD FAMILY



Introduction

Domestic Power DC/DC converters are a key element in the hydrogen fuel cell based systems. These converters provide a controlled output voltage with a wide range of input voltage from the fuel cell stack.

The high efficiency converters are used in range of applications from automotives to stationary power plants.

The state-of-the-art controls, performance, and quality allow the best performance for the end applications.

Smart Features

- Flexible configuration, applicable for various fuel cell specifications and applications;
- Configurable output voltage range to meet a custom output voltage requirements;
- Multiple output connectors to provide power distribution for air compressor, PTC, etc;
- CAN communication, supports CAN port program upgrade and parameter configuration;
- Small size and light weight, flexible to adapt to various vehicle models.

Protection & Performance

• Isolation option

Galvanically isolated input and output provides high flexibility in end system design with simplified grounding and protection scheme.

The converter output provides full short circuit protection to prevent stack failure.

• Resonant soft switching technology

Isolated Option: High efficiency (96%) conversion with 1:12 boost range.

Non-isolated Option: SiC is used as the core component, ensuring an average efficiency of $\geq 98\%$.

• Fast and good system transient response

With excellent dynamic regulation capability, it can swiftly respond to a wide and random variations of the output of the fuel cell stacks, and fulfill the maneuverability requirements of fuel cell vehicles.



Specifications

TYPE	Isolated		Non-Isolated
MODEL	FDIA30-60	FDIA50-100	FDIA150-300
LOW VOLTAGE SIDE (INPUT)			
Nominal Input Operating Voltage and Current	60V×500A	100V×500A	300V×500A
Input Voltage Range	60-120VDC	100-220VDC	30-500VDC
Maximum Input Current	500A	500A	500A
Rated Input Power	30KW	50KW	150KW
HIGH VOLTAGE SIDE (OUTPUT)			
Output Voltage Range	250-950VDC (Rated voltage: 388/510/528/600/640V)		450-750VDC (Unidirectional boost)
Efficiency	96%		98%
AUXILIARY HIGH VOLTAGE DISTRIBUTION			
Number of Auxiliary High Voltage Distributions	4		
AUXILIARY POWER INPUT			
Input Voltage Range	10-36VDC		
Operating Power	≤ 30W		
SYSTEM			
IP Level	IP67		
Operating Temperature Range	-40°C ~ 85°C		
Altitude	13000ft (above sea level)		
Cooling Method	Liquid cooling		
Communication	CAN2.0B		
Reference Standards	ECE-R10, GB/T 24347, GB/T 18488, GB/T 18384, GB/T 18655, GB/T 17619		
Protection	HV input undervoltage protection, HV input overvoltage protection, HV input overcurrent protection, HV output undervoltage protection, HV output overvoltage protection, HV output overcurrent protection, communication fault protection, over temperature protection		
	Short Circuit Protection	x	
DIMENSIONS & WEIGHT			
Dimensions (W*D*H, inch)	17.7*17.7*4.7		
Weight	70.5±1lb	77.2±1lb	

SYSTEM BLOCK DIAGRAM

