HBC800 Series

E-Mobility 4kW DC/DC Isolated Bidirectional Power Converter Module

Product Overview

HBC800 is a series of rugged, highly efficient, 4kW liquid-cooled, bidirectional DC/DC power converters that convert 440-875V high side DC input voltage into a 12Vdc or 24Vdc isolated low side voltage, supporting 12/24V battery configurations.

HBC800 power converters incorporate a digitally controlled Dual Active Bridge topology with synchronous output rectification to achieve high efficiency and EMI performance. The compact thermally optimized IP67 ingress rated enclosure provides a high degree of shock and vibration resistance, suitable for deployment within harsh environments.

Bi-directional conversion capability:

- **Buck-Mode Direction:** Converts the high side input voltage (440-875Vdc) into a 12V/24V low side output.
- **Boost-Mode Direction:** Converts low side input of 12V/24V into the high side output voltage (440-875Vdc).

The comprehensive SAE J1939 compliant CAN digital interface, standard hardware signals including HVIL (High Voltage Interlock Loop) and the bi-directional conversion features make this series suitable for adaptation in industrial, agriculture, marine, mining and other E-mobility applications.

Features

- Bidirectional operation
- Wide high-side Input Voltage range: 440V to 875Vdc via robust Amphenol Powerlok series connector with integrated HVIL contacts
- 12Vdc and 24Vdc models, supporting 12/24V battery configurations
- CAN 2.0B SAE J1939 compliant digital communications interface for monitoring, control and configuration capability
- High efficiency; up to 96 percent
- Input to output safety isolation
- Liquid cooled, IP67 rugged enclosure: 359 (L) x 205 (W) x 78 (H) suitable in harsh environments
- Over-Current, Short-Circuit, and Over-Temperature fault protection
- E-Mark Pending

OPERATIONAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNITS
Operating Temperature	-40		+85	°C
Storage Temperature	-40		+95	°C

BUCK MODE

Parameter	Min.	Typ.	Max.	Units
Input Voltage Range	440	700	875	Vdc
Input Voltage Range at 100% Load	620		780	Vdc
Turn-on Voltage	430		440	Vdc
Turn-off Voltage	400	410	420	Vdc
Input Current			6	Adc
Input Over-Voltage Protection	885		900	Vdc
Efficiency	96			%

BOOST MODE

Parameter	Min.	Typ.	Max.	Units
Input Voltage Range	9	14	16	Vdc
Input Voltage Range at 100% Load	12		16	Vdc
Turn-on Voltage	8		9	Vdc
Turn-off Voltage	8		9	Vdc
Efficiency	96			%

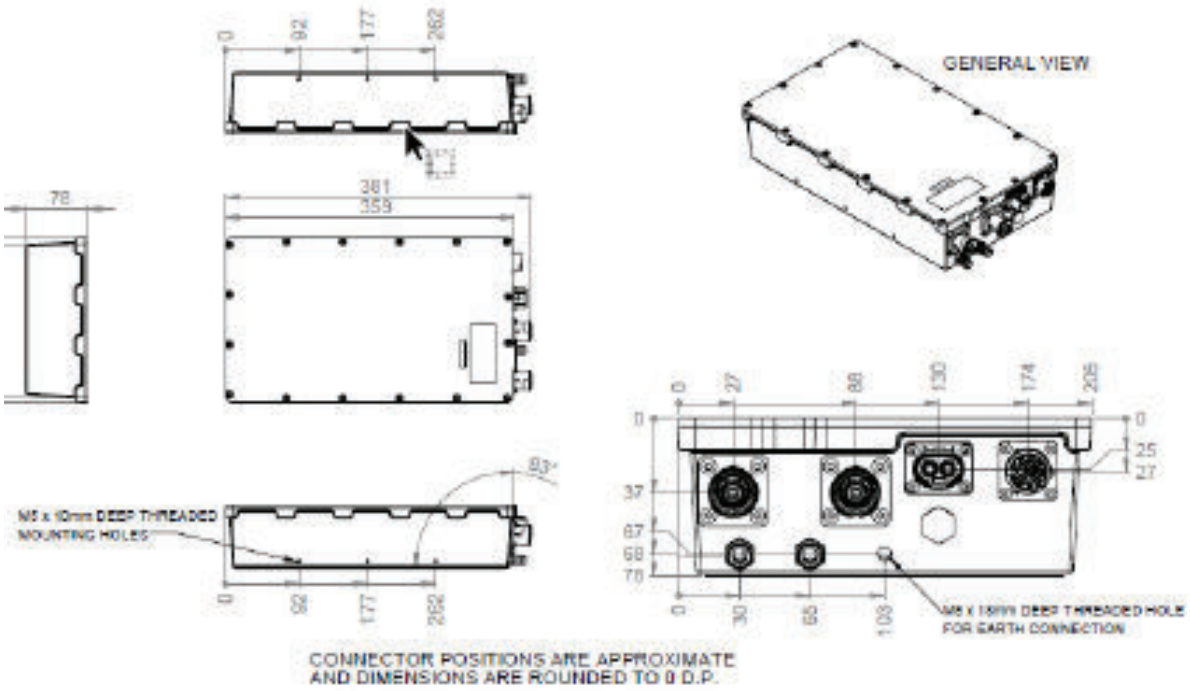
ORDERING GUIDE

Model	Input Voltage	Output Voltage	Output Current	Max. Output
800S12.4KOHBC	440-875Vdc	9-16Vdc	300A	4kW
800S24.4KOHBC		16-32Vdc	150A	

Mechanical Specification

MECHANICAL	DESCRIPTION	UNIT
Dimensions	359 (L) x 205 (W) x 78 (H)	mm
Weight	6	kg
Enclosure	Aluminum, anodized IP67	

OUTLINE DRAWING



MECHANICAL NOTES:

1. THIS DRAWING IS A GRAPHICAL REPRESENTATION OF THE POWER MODULE SHOWN FOR ILLUSTRATION PURPOSED. NOT ALL FINE DETAILS ARE SHOWN. PLEASE CONTACT CALEX FOR 3D MODEL OR F COMPONENT DRAWINGS FOR DETAILED DIMENSIONS AND MATERIAL INFORMATION
2. REFERENCE FILE: 210614_DRG1143-1A DC DC CONVERTER ASSEMBLY
3. DIMENSIONS: MM, MATERIAL: 0.80MM HOT DIPPED GALVANIZED STEEL, GRADE G60 MINIMUM SPANGLE FINISHED WITH A CR(6+) FREE CORROSION RESISTANT COATING
4. DIMENSIONS OF CONNECTOR LOCATIONS SHOWN TO CENTRE OF CONNECTORS
5. HOSE TAILS FOR COOLING CIRCUIT TO FIT 12MM INNER DIAMETER HOSE FOR BOTH INLET AND OUTLET FLOW
6. CONNECTOR LOCATIONS ARE APPROXIMATE
7. DIMENSIONS ARE ROUNDED TO 0 DP