



DC-DC Converter for Hybrid Electric and Fuel Cell Systems

PRODUCT OVERVIEW:

The DC12 Series of converters has been designed for medium and heavy duty hybrid electric and fuel cell vehicles. It is used in wide variety of mobile and stationary applications. It uses our advanced Digital and Analog processing and high frequency ZVS switching to achieve high power density with low noise.

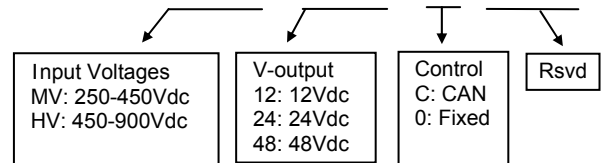


FEATURES:

- DC Input Voltage Range: 250-900Vdc
- DC output range: 12-30Vdc
- Efficiency: 95% rated, > 94% from 40% to 100% load.
- Output Current: 200A at 13.8V, 120A at 27.8V.
- Ground voltage isolation detection and fault protection.
- Protection; Short Circuit, Over Current, Over/Under Voltage and Over Temp.
- Output voltage 12 V to 30 V, programmable via CAN.
- Input and output voltages, currents, power and temperature reporting.
- CAN command, control and diagnostics. Output voltage can be regulated via CAN/Analog command.
- Can be used in parallel configurations.
- Low noise ZVS/ZCS architecture.

PART NUMBERING:

DC12□□ □□ □ □



APPLICATIONS:

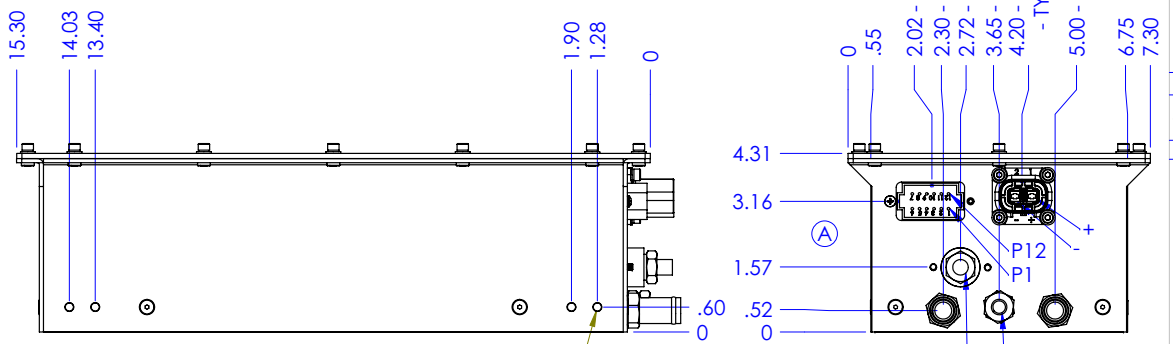
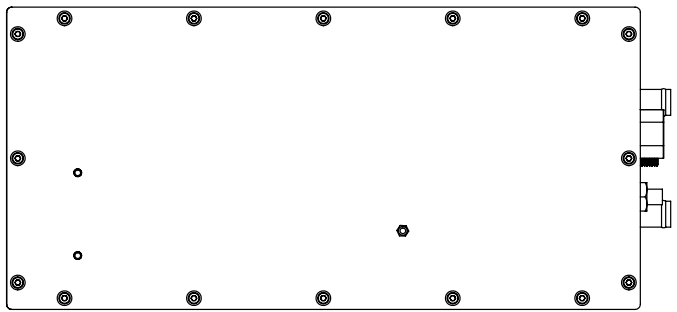
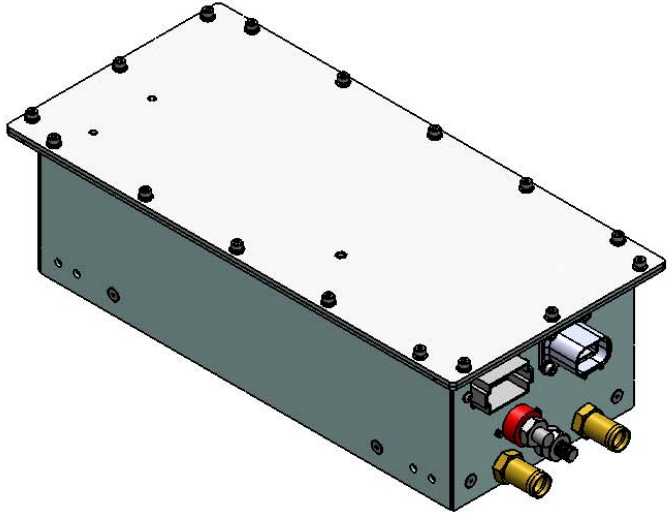
Electric, Hybrid and Fuel Cell Vehicles, Light Rail, Off-road equipment and Battery Charging systems.

Signal Connector: DEUTSCH DT15-12PA	
1	GND
2	BIAS_ENABLE
3	CAN_H
4	CAN_L
5	RS232_TX
6	RS232_RX
7	GND
8	#BOOT_SCI
9	NC
10	#FAULT (active low OC)
11	RESERVED
12	RESERVED
Power Connector: LAPP 52106990 (SKINDICHT)	

Line regulation ($\pm 10\%$)	$\pm 1\%$
Load regulation	$\pm 2\%$
Ripple	$< \pm 1\% + 100 \text{ mVp-p}$
Load transient (10-90%)	$< 5\%$ typical
Response time	50 ms typical
Turn-on rise time	Soft-start, 450 ms typical
Output protection	Overload and short circuit
Cooling	Liquid cooled $< 60^\circ\text{C}$, 12 Lpm
Operating temperature	-20°C to $+70^\circ\text{C}$
Load de-rating	2.5% / $^\circ\text{C}$ from 60°C liquid
Storage temperature	-40°C to $+85^\circ\text{C}$
Efficiency	$> 93\%$ (40%-100% load)
Isolation resistance	$> 1 \text{ M}\Omega$ at 700Vdc
Weight	9 kg.



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	3/18/2010	DON KANG

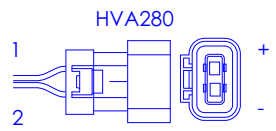


UNIT NUMBER	OUTPUT VOLTAGE	INPUT VOLTAGE
DC12A000AA	30V	500-712 Vdc
DC12B000AA	14.5V	500-712 Vdc
DC12C000AA	13.8V	300-425Vdc

8X M5X0.8 ∇ 0.45" - MOUNTING LOCATIONS

NOTES: UNLESS OTHERWISE SPECIFIED

- DC/DC CONVERTER WEIGHT: 7.2 kg (15.9 LBS.).
- COOLANT: 50/50 ETHYLENE GLYCOL / WATER.
- MIN FLOW: 11.4L / MIN (3.0 GPM).
- PRESSURE DROP: 9.65 kPa (1.4 PSI) @ MINIMUM FLOW.
- PRESSURE DROP: 14.05 kPa (2.1 PSI) @ 40°C.
- INLET TEMP: -20°C TO 60°C.
- OPTIONAL 3/8 NPT HOSE FITTINGS: 3/4", 3/8" OR 90 DEG. FITTINGS.
- TORQUE 3/8-16 FASTENERS TO 150 LB/IN.
- INPUT MATING CONNECTOR: TYCO HVA280 (P/N# 1587902-9).
- SIGNAL MATING CONNECTOR: DEUTSCH P/N# DT06-12SA.



J2 - PIN Table	
SIGNAL GND	1
BIAS ENABLE	2
CAN H	3
CAN L	4
RS232 TX	5
RS232 RX	6
SIGNAL GND	7
#CDC FLT	8
EXT BIAS	9
# BOOT	10
RESERVED	11
RESERVED	12

NAME	DATE	 US HYBRID
F.ERICKSON	3-14-11	
DRAWN		TITLE:
CHECKED		DC-DC CONVERTER OUTLINE & MOUNTING
ENG APPR.		
MFG APPR.		
Q.A.		
<small>PROPRIETARY AND CONFIDENTIAL</small> <small>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF US HYBRID. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF US HYBRID IS PROHIBITED.</small>		
SIZE	DWG. NO.	REV
B	DC120000DA	A
SCALE: 1:3		SHEET 1 OF 1

DC120000DA A 3-14-11