

## DC20

### DC-DC Converter (Isolated) for Hybrid Electric & Fuel Cell Systems

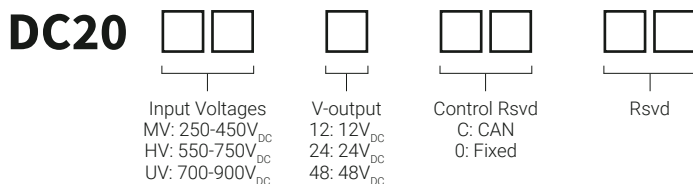
#### OVERVIEW

The DC20 Series of converters has been designed for medium and heavy duty electric, hybrid and fuel cell commercial vehicles. It uses advanced digital control with J1939 communications and diagnostics featuring secondary analog controller and high frequency magnetics utilizing advanced ZVS/ZCS switching to achieve high power density and efficiency. DC20 products are FCC Class A and SAE J1455 compliant. MIL-STD-1275 option available.

#### PRODUCT FEATURES

- DC Input Voltage Range: 250-900V<sub>DC</sub>
- DC Output Range: 12-30V<sub>DC</sub>
- Efficiency: 95% Rated, > 94% from 40% to 100% Load
- Output Current: 300A at 27.8V<sub>DC</sub>, 9 kW, or 450A at 13.6V, DC Can Be Paralleled Externally
- Short Circuit, Over Current, Over/Under Voltage & Over Temperature Protection
- Output Voltage 12 to 30 V<sub>DC</sub> (42-57V<sub>DC</sub> Optional), Programmable Via CAN
- Input and Output Voltage, Current, Power & Temperature Reporting
- CAN Command, Control and Diagnostics. (Output Voltage Can Be Regulated Via CAN)
- Can Be Used in Parallel Configurations
- High Efficiency ZVS/ZCS Architecture
- FCC Class A EMI/EMC Compliance (MIL-STD-1275 Optional)
- SAE J1455 Vibration Compliant
- IP65 Rated (IP67 Optional)

#### PART NUMBERING



#### DC20 Fuel Cell

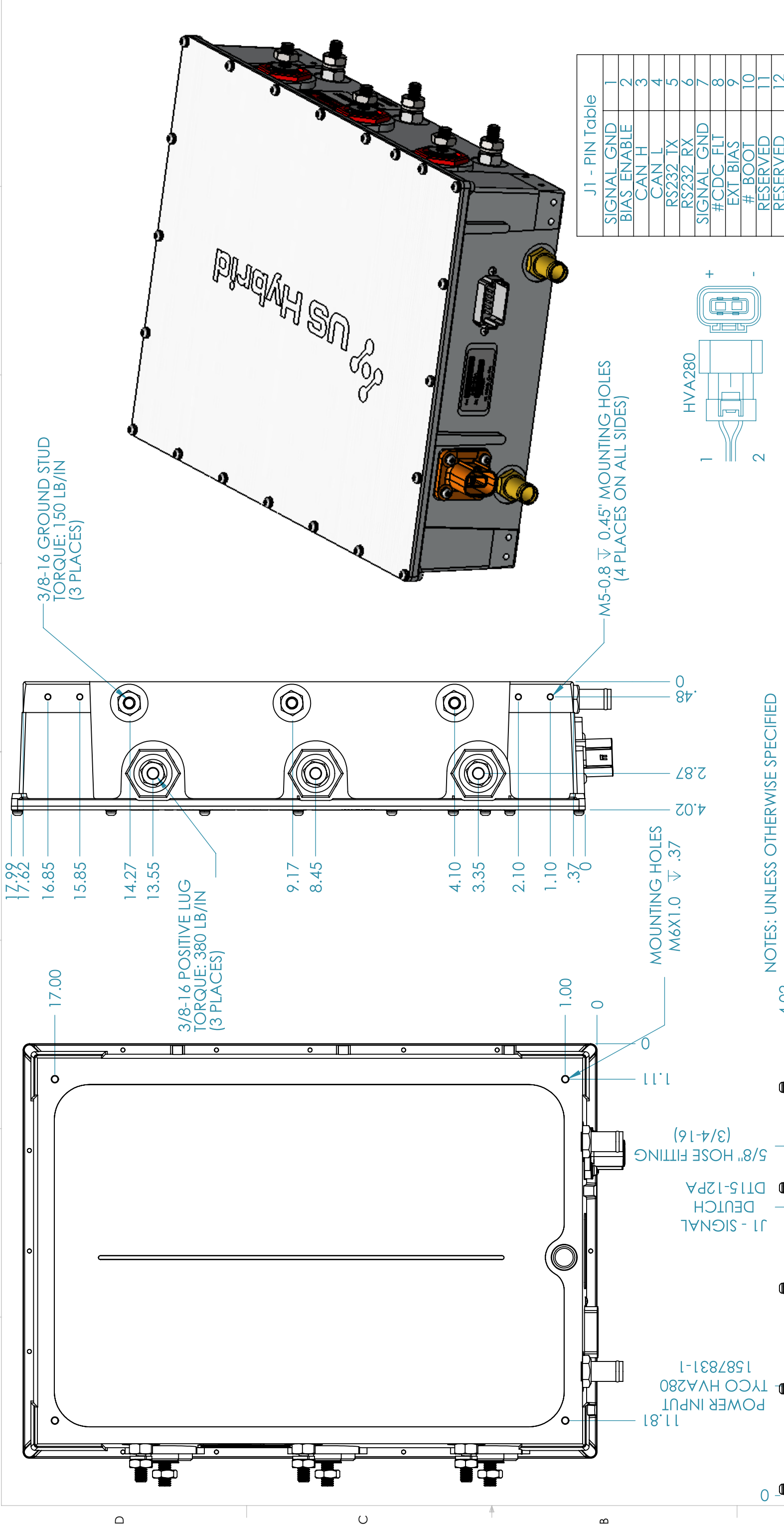


#### APPLICATIONS

Electric, hybrid, and fuel cell vehicles, light rail, off-road equipment, and battery charging systems. DC20 can be customized to meet your most stringent applications requirements.

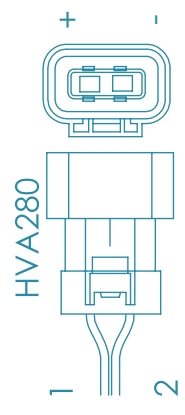
- **Line Regulation (±10%)** | ±1 %
- **Load Regulation** | ±2%
- **Ripple** | < ±1% + 100 mVp-p
- **Load Transient (10-90%)** | < 5% Typical
- **Response Time** | 50 ms Typical
- **Turn-On Rise Time** | Soft-start, 450 ms Typical
- **Output Protection** | Overload and Short Circuit
- **Cooling** | Liquid Cooled < 60°C, 12 Lpm
- **Operating Temperature** | -20°C to +70°C
- **Load De-Rating** | 2.5% /°C from 60°C Liquid
- **Storage Temperature** | -40°C to +105°C
- **Efficiency** | 95%
- **Isolation Resistance** | > 1 MΩ at 700Vdc
- **Weight** | 15 kg
- **Environmental Rating** | IP65 (IP67 Optional)
- **EMI/EMC** | FCC Class A
- **SAE** | J1455

1 2 3 4 5 6 7 8



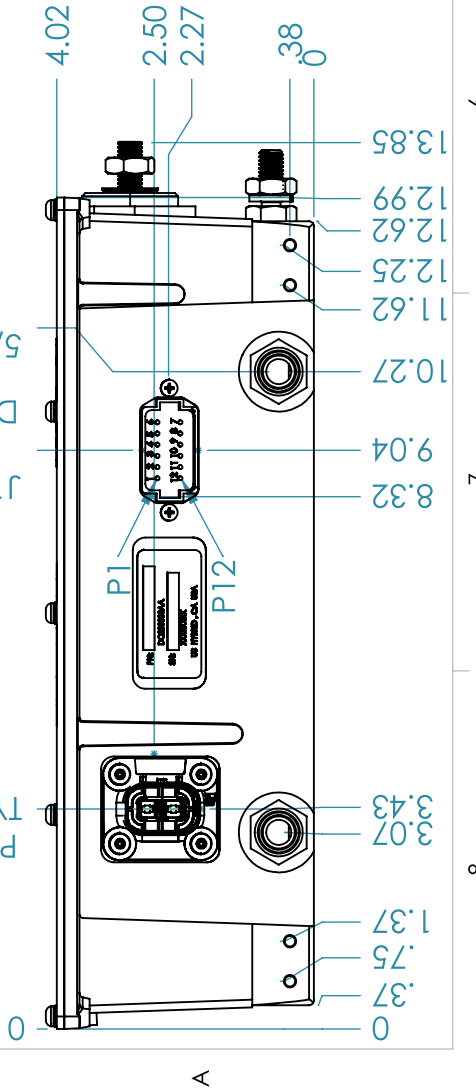
**J1 - PIN Table**

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



NOTES: UNLESS OTHERWISE SPECIFIED

- DC/DC CONVERTER WEIGHT: 12.7 kg (28 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 3/4-16 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.



**TITLE:**  
DC-DC CONVERTER  
OUTLINE & MOUNTING

SIZE	DWG. NO.	REV
<b>B</b>	<b>DC20000DA</b>	<b>A</b>
SCALE: 1:3		SHEET 1 OF 1

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