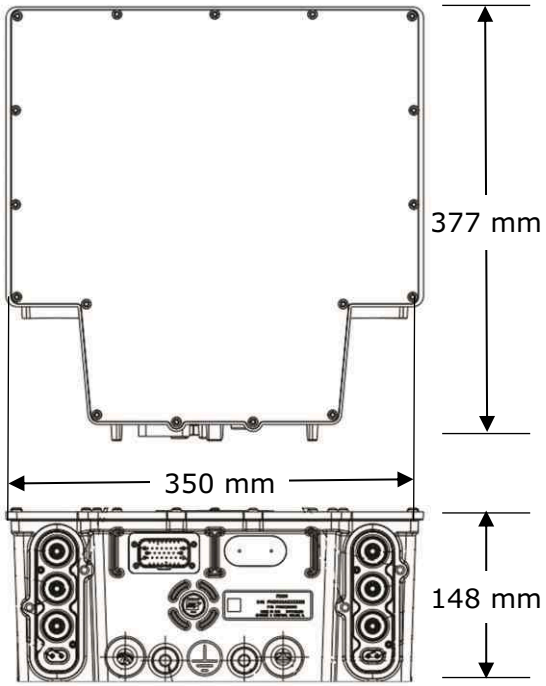
PD300 Inverter for Motor Control

Providing advanced control for hybrid electric applications.

John Deere Electronic Solutions has created a family of inverters designed to provide advanced control for AC motor applications. The product line covers a wide range of power levels (up to 300 KVA) and utilizes common motor control software for efficient control of IPM or induction motors.

The PD300 inverter is based on high performance DSP real-time embedded software to support advanced features such as field-oriented control. The high-voltage, high-power modules are designed to work at maximum efficiency with complete monitoring capabilities to enable control under the various operating conditions. The thermal management system is liquid-cooled for robust and reliable performance over the life of the system.

Dimensions

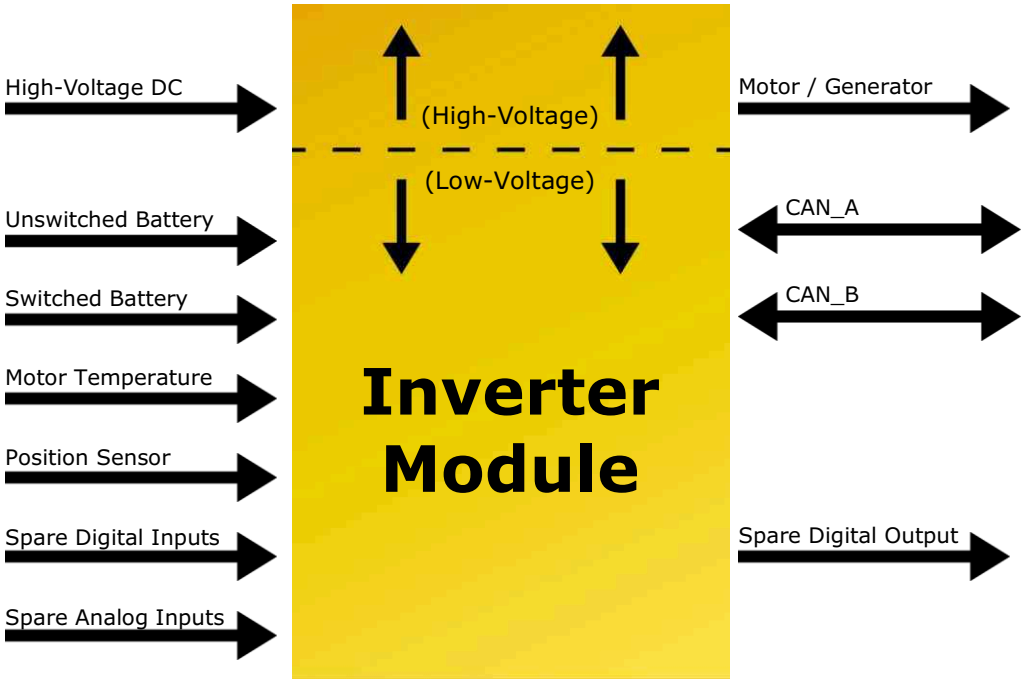


Features

- Compact and extremely rugged high-power AC motor inverters provide speed, torque, and voltage control
- Models rated from 80 KVA to 300 KVA
- Used in wide range of high-voltage DC bus systems (180 to 750 VDC systems)
- Sealed enclosure (IP67) with liquid-cooled power section
- Tested to strict off-road vehicle standards for extreme environments including CISPR25 class 3 and ISO11452-1 for EMC
- Meets applicable IEC 62477-1 component requirements
- External bus interface for system control
- Dual high-speed CAN
- Space vector and discontinuous PWM output voltage control
- High-performance AC field-oriented motor control
- Efficient control of induction or IPM machines

Preliminary Specifications	
Output Power	200 KVA (700 V)
Weight	17 kg (dry, no coolant)
Current Rating	300 A (at 4 kHz PWM, 70°C cooling, 10 lpm)
High-Voltage Bus	180 V to 750 VDC (wide range of operation)
Parasitic Current	Off-state low-battery drain < 350 uA
Protection	Over-current, over-voltage, short-circuit, reverse-polarity (battery), over-temperature (motor and inverter), over-speed
PWM Frequency	2 kHz to 20 kHz
Bus Interface	CAN (two ports)
Hardware Interface	Digital/analog motor position, sensor supply (5 V or 12 V) output, motor temp sensor, two analog or two digital spare inputs, one digital spare output, wake-up, controlled power-down
Low-Voltage	12 V or 24 VDC systems (wide range of operation 9 V to 32 V)
DC Link Pre-charge	Variable set point (up to 600 V)
Position Sensor	Resolver, quadrature encoder, digital hall (X5), analog hall (X2)
Control Modes	Torque, speed, voltage
Operating Temperature	Coolant -40°C to 70°C, ambient -40°C to 85°C

Block Diagram



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