PD400 Dual Inverter for Motor Control

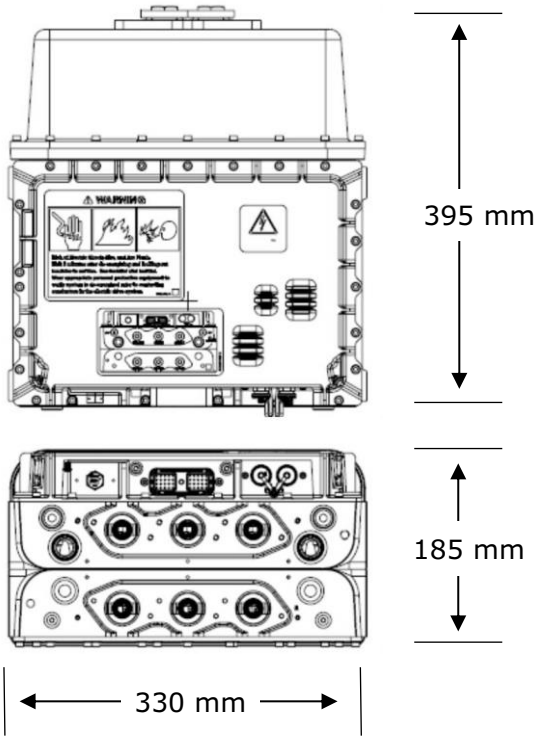
JOHN DEERE

Modular Power Electronics Platform for Medium and Heavy Duty OEM Applications

John Deere Electronic Solutions PD series of Inverters is based on a modular concept and enhances the Power Drives family of products. The PD modular components include, Power Stage, Bus Capacitor, and optional Brake Chopper, with a common Control Module.

The PD common Control Module is combined with the Power Stage (choose from multiple power levels combined in a single or dual inverter) and two Bus Capacitor sizes that match with single or dual configurations, with or without the optional Brake Chopper to form a PD configuration. The internal high voltage bus structure is common to all configurations and the Control Card electronics architecture supports the full suite of Power Drives software functionality. The high-voltage, high-power modules are designed to work at maximum efficiency with complete monitoring capabilities to ensure control under all conditions. The thermal management system is liquid-cooled for robust and reliable performance over the life of the system.

Dimensions



Features

- PD400 is a dual inverter (400A max continuous current each half at up to 5kHz switching frequency) with a 2.0 mF bus capacitor
- Parallel output configuration also supported
- Modular, compact, and extremely rugged high-power AC motor inverters providing speed, torque, and voltage control
- Configurations rated from 150 KVA to 300 KVA
- Used in wide range of high-voltage DC bus systems (500 to 760 VDC systems)
- Sealed enclosure with liquid-cooled power section
- Tested to strict EMC vehicle standards
- External bus interface for system control
- Dual high-speed CAN
- High-performance AC field-oriented motor control
- Efficient control of induction or IPM machines

GENERALNY DYSTRYBUTOR:

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Environmental Specifications	
Operating Temperature	Ambient -40°C to 70°C, coolant -40°C to 70°C, 50/50 weg at 30lpm

Operational Specifications	
Output Voltage	Space vector modulated PWM, discontinuous PWM
Control Modes	Torque, speed, voltage
PWM Frequency	2kHz to 10kHz
Parasitic Current	Off-state low voltage battery drain < 300uA

Hardware Specifications	
High-Voltage Bus	500V to 700VDC nominal and up to 800V transients (wide range of operation)
Low-Voltage	12 VDC or 24 VDC Systems (wide range of operation, 9 to 36 VDC)
Hardware Interface	Digital/analog motor position, sensor supply (5 V or 12 V) output, motor temp sensor, 2 analog or 2 digital spare inputs, 1 digital spare output, wake up, controlled power-down
Protection	Over-current, over-voltage, short-circuit, reverse-polarity (battery), over-temperature (motor and inverter), over-speed
Position Sensor	Resolver (standard), digital, analog
Bus Interface	CAN (2 ports)

Power Module Specifications		
Module Designator	**PDX400 Single**	**PD400 Dual**
Continuous Current Rating	400A (@70°C coolant and 5kHz PWM)	2 x 400A (@70°C coolant and 5kHz PWM)
Peak Current Rating	550A (5 sec), 500A (60 sec)	550A (5 sec), 500A (60 sec)
Bus Capacitor Specifications		
Bus Capacitance	Single: 1.0mF	Dual: 2.0mF

Optional Brake Chopper Specifications	
Capacity	113 arms continuous, 200 arms peak
Voltage Range	HW protection above 760 VDC with 2ms worst case turn on configurable software protection between 500-760 VDC

PD Configuration Examples			
Part Number	**PD400-1.0**	**PD400-2.0 Dual**	**PD400-2.0-bc-Dual**
Description	400A single inverter 1.0mF bus cap No brake chopper	2 x 400A dual inverter 2.0mF bus cap No brake chopper	2 x 400A dual inverters 2.0mF bus cap With brake chopper
Weight	17.3 kg	30.9 kg	38.2 kg