

SiC Motor Control Inverter Pulse Ultra S400

ADVANCED PRODUCT BRIEF

KEY FEATURES

- 1200V SiC power module
- High power density
- Ultra-fast motor control
- Customizable inverter software
- DC link capacitor & EMC filters
- Liquid cooling

Key specifications

- Operating DC bus voltage: 50V – 850V
- Continuous motor current: 400A_{RMS}
- Continuous output power: 400kW



COMPACT & EFFICIENT

Powered by SiC technology, advanced e-motor control, and liquid cooling, for high performance in a compact footprint.

MODULAR

Designed with an open architecture, scalable power modules, and configurable software for flexible system integration.

SAFE

ISO 26262-certified building blocks unite functionally and electrically safe hardware, with functionally safe software, enabling safety from the ground up.

COMMUNICATION INTERFACES

- 1 x CAN FLEXIBLE DATA RATE INTERFACE UP TO 8 MBit/s
- 1 x CAN HIGH SPEED RATE INTERFACE UP TO 1 MBit/s
- PROGRAMMING AND CONFIGURATION VIA CAN
- OPTIONAL: CAN 2.0 A/B, CANOPEN, J1939

STANDARD INTERFACE

- MOTOR TEMPERATURE MEASUREMENT WITH SIGNAL CONDITIONING (PT100/PT1000/KTY84/NTC)
- RESOLVER INTERFACE (EXC/SIN/COS)
- LOW VOLTAGE BATTERY
- HIGH VOLTAGE INTERLOCK LOOP (HVIL)
- DIGITAL INPUT SIGNALS
- DIGITAL OUTPUT SIGNALS

FUNCTIONAL SAFETY

- PROCESSOR & SOFTWARE:
ISO 26262 ASIL-D CERTIFIED
- INVERTER CONTROL MODULE:
ISO 26262 ASIL-C READY CERTIFIED

INVERTER SOFTWARE

- ADVANCED MODULATIONS (SVPWM, DPWM)
- FIELD ORIENTED CONTROL (FOC)
- HIGH CONTROL LOOP AND SWITCHING FREQUENCIES
- FLUX WEAKENING FOR EXTENDED SPEED
- OPTIMIZED DEAD TIME COMPENSATION
- IMPROVED TOTAL HARMONICS DISTORTION (THD)
- REDUCED HVDC LINK VOLTAGE RIPPLE



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Inverter characteristics	Pulse Ultra CPS-INV08S400	Units
Minimum DC Bus Voltage VDC (Operating)	50	V _{DC}
Maximum DC Bus Voltage (Operating)	850	V _{DC}
Maximum DC Bus Voltage (Non-operating)	900	V _{DC}
Continuous Motor Current	400 ⁽¹⁾	A _{RMS}
Motor Current Peak (60s)	500 ⁽²⁾	A _{RMS}
Continuous Output Power at Max VDC	400	kW
Output Power Peak (60s) at Max VDC	500	kW
Output Frequency	DC to 2000	Hz
DC Bus Discharge Time (passive)	<60	s
DC Bus Discharge Time (active)	<5	s
Inverter PWM frequency	<30 ⁽³⁾	kHz
Auxiliary Supply Voltage	6 to 30	V _{DC}
Operating Temperature Range	-40 to +85	°C
Coolant Temperature Range (coolant)	5 to +65	°C
Coolant Flow Rate	2 to 10	L/min
Outline dimensions	332 x 460 x 89 mm	mm
Peak Efficiency	99.1 @ 400kW, 700V, 400ARMS, 10kHz 99.5 @ 200kW, 700V, 200ARMS, 10kHz	%

1. Current limit imposed by the connectors
2. Limited by current sensing
3. Contact CISOÏD for higher PWM frequencies