4.0KW 400VDC-24VDC
LIQUID COOLED SEALED CONVERTER FOR VEHICLE APPLICATIONS

The 4000W LSM power module is a high voltage liquid cooled DC-DC converter which steps down 400V and provides 24V output, common in hybrid and electric vehicle applications. The output voltage is electrically isolated from the input voltage and suits the conventional 24V accessories and HVAC system requirements of industrial and eco-friendly vehicles.

Features:

- Liquid Cooled DC-DC Converter
- IP67 and IP6k9k Environmental Protection
- 290-430VDC Input Voltage Range
- 22 – 30VDC Output Voltage Range
- Galvanic Isolation Input – Output
- High Efficiency – up to 94%
- CAN Bus Interface, Field Configurable
- Bulkhead mounting
- Host of Safety/Protection Functions

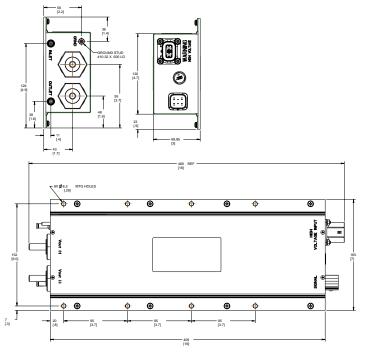| Specifications	
Input	
Voltage	290 – 430VDC. Power delivered in the operational range will depend on Operating Envelope
Transient Voltage	Up to 450VDC, down to 280V
Inrush Current	25A Maximum under cold start conditions
Efficiency	Up to 94%
Over-current Protection	User-supplied external 20A fuse
Output	
Voltage	28.3VDC Nominal / 22–30VDC Adjustment Range via CAN command with 50mV resolution
Current	150A DC Maximum
Power	4000W Maximum
Ripple and Noise	<400mVp-p (20MHz Bandwidth)
Load Regulation	2.5% Droop from No Load to Full Load (Designed to support droop current share when paralleled with other similar units) Lower droop options available
Parallel Use	For increased system output, like units may be paralleled
Temp. Coefficient	<± 0.02% per °C
Dimensions	H409 x W165.1 x D69.9 mm (see outline drawing)
Weight	5.6kg (12.3lb)
PROTECTION	
Input Under-Voltage	<280V
Input Over-Voltage	Shutdown >450V
Output Under-Voltage	Shuts down <15V
Output Over-Voltage	Shutdown >31V
Output Over-Current	The converter becomes a current source during OC, down to short circuit
Over-Temperature	Shutdown with auto recovery
Reverse Polarity Protection	Keyed input connector, dynamic reverse polarity protection on output

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Specifications	
Communication	
Communication Protocol	J1939 CAN Bus
CAN Bus Status Message	Output Current, Output Voltage, Input Power (calculated), Heat Sink Temperature and fault signals
Electronic Control Inputs	
Remote Enable:	Application of >7.8V input signal will enable the units Output. Less than 7.8V, or open circuit on this pin disables output
Connectors:	
Input	IP67/IP6k9k connector rated to 600VDC
Output	Heavy Duty Studs 3/8-16
Control	IP67/IP6k9k connector (Molex MX150L series)
ENVIRONMENTAL SPECIFICATIONS	
Coolant Medium / Mixture:	60/40 Propylene or 50/50 Ethylene Glycol/Water
Coolant Flow	3.0 L/min, min 2.5L/min
Inlet / Outlet Coolant Connections	SAE-J1231 Type 1 beaded head fittings
Maximum Coolant Pressure	310 KPa (44.96psi)

LiquaCore Flow Curve

Storage / Transportation	-40°C to +85°C
Humidity Operating and Storage	0% to 100% RH (condensing)

Specifications	
ENVIRONMENTAL SPECIFICATIONS	
Inlet Coolant Temp.	-30 to +60°C
Working Ambient Temp	-40 to +85°C
Low Temp Turn On	-40°C minimum
Warm up Time	1 minute
Vibration	The converter is designed to meet vibration profiles used in automotive applications IEC 60068-2-64 Spectrum A.3 (Equipment in wheeled vehicles, Category 1 and 2 and MIL-STD-810G, Method 514.6 (Ground Mobile)
Salt Fog	MIL-STD-810G Method 509.5
SAFETY AND REGULATORY AGENCY COMPLIANCE	
Input to Ground Isolation	10M-Ohm at 500VDC
Output to Ground Isolation	10M-Ohm at 50VDC
Hazardous Substances	Complies with RoHS lead exemption directive.
EMI:	The EMI performance of Liquacore® DC/DC solutions has been successfully evaluated against a wide range of conducted, radiated and susceptibility EMI requirements applicable to vehicular environments. Consult TDI power for more details of the product's EMI performance
PART ORDERING CODE	
	LSM4k0-400-24