

# 4 KW DC-DC

## LIQUID COOLED SEALED MODULE FOR VEHICLE APPLICATIONS



The 4000W LSM power module is a high voltage liquid cooled DC-DC converter which steps down 700V 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 ecofriendly vehicles.

Specifications	
<b>Input</b>	
<b>Voltage</b>	550-850VDC. Power delivered in the operational range will depend on Operating Envelope
<b>Transient Voltage</b>	Up to 900VDC
<b>Inrush Current</b>	25A Maximum under cold start conditions
<b>Efficiency</b>	>90% Typical
<b>Output</b>	
<b>Voltage</b>	28VDC Nominal / 20 – 32VDC Adjustment
<b>Current</b>	150A Maximum
<b>Power</b>	4200W Maximum
<b>Ripple and Noise</b>	400mVp-p (20MHz Bandwidth)
<b>Load Regulation</b>	700mV Droop from No Load to Full Load (Designed to support droop current share when paralleled with other similar units)
<b>Parallel Use</b>	May be paralleled with other like units or for increased system output – Standard unit must be paralleled with a battery for normal operation.
<b>Temperature Coefficient</b>	<+/- 0.02% per °C
<b>Dimensions</b>	17 x 7.6 x 2.3" (483 x 194 x 59mm)
<b>Weight</b>	12.3lbs, 5.6kg
<b>Model Number</b>	LSM4k0-700-24

### Features:

- 150A Battery Charger
- Liquid Cooled
- IP67 and IP6k9k Environmental Protection
- 550-850VDC Input Voltage Range
- 20-32VDC Output Voltage Range
- Galvanic Isolation Input - Output
- High Efficiency - Greater than 90%
- Automotive Grade Components
- Field Configurable CAN parameters



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Electronic Control Inputs																			
Remote Enable	>7V input signal will enable the unit's Output.																		
Connectors																			
Input	IP67/IP6k9k connector rated to 750VDC																		
Output	Heavy Duty M10x1.5 Threaded Studs																		
Control	(Molex MX150L series)																		
Environmental Specifications																			
Coolant Medium / Mixture	60/40 Propylene or 50/50 Ethylene Glycol/Water																		
Coolant Flow	5.68 L/Min (1.5GPM) at 7kPa (1PSID)																		
Inlet / Outlet Coolant Connections	SAE-J1231 Type 1 beaded head fittings, hose dash size-8																		
Maximum Coolant Pressure:	350kpa (50psi)																		
Differential Pressure																			
<table border="1"> <caption>Pressure Drop vs Flow Rate Data</caption> <thead> <tr> <th>Flow Rate [L/min]</th> <th>Pressure Drop [kPa]</th> </tr> </thead> <tbody> <tr><td>1.0</td><td>1.0</td></tr> <tr><td>2.0</td><td>2.0</td></tr> <tr><td>3.0</td><td>3.5</td></tr> <tr><td>4.0</td><td>5.0</td></tr> <tr><td>5.0</td><td>7.0</td></tr> <tr><td>6.0</td><td>9.0</td></tr> <tr><td>7.0</td><td>11.0</td></tr> <tr><td>8.0</td><td>13.0</td></tr> </tbody> </table>		Flow Rate [L/min]	Pressure Drop [kPa]	1.0	1.0	2.0	2.0	3.0	3.5	4.0	5.0	5.0	7.0	6.0	9.0	7.0	11.0	8.0	13.0
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Inlet Coolant Temperature	-40 to +60°C																		
Working Ambient Temperature Mixture	-40 to +80°C																		
Low Temperature Turn On	-40°C minimum																		
Warm up Time	1 minute																		
Storage / Transportation	-40°C to +85°C																		
Vibration, Operating	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 Category 2 MIL-STD-810G, Method 514.6 (Ground Mobile)																		
Vibration, Transport	The packaged unit is designed to withstand, without damage MIL-STD-810G Method 514.6 Category 4-Common Carrier																		
Salt Fog	MIL-STD-810C, Method 509.5																		

Specifications	
Protection	
Output Over-Voltage	Output Hiccup on OV
Output Over-Current	The converter becomes a current source during OC, down to short circuit. Unit shuts off if output voltage drops below 15V.
Over-Temperature	Shutdown with auto recovery
Communication	
Communication Protocol	CAN Bus field configurable to J1939 or CAN open
CAN Bus Signals	DC In OK, Output OK, Output Current Monitor, Output Voltage, heat sink temperature

