

# CASCADIA MOTION

## PM150 Propulsion Inverter

6 (0-5V) Analog Inputs  
 2 RTD Inputs PT100/1000  
 8 Digital Inputs STB/STG  
 4 High Side Driver Outputs  
 2 Low Side Driver Outputs  
 1 Resolver Interface  
 1 Sin-Cos Encoder Interface  
 2 CAN 2.0A/B Ports .25-1MB adjustable rate and offset  
 RS232 Programming Port  
 M24 Cable Gland Connections  
 Designed to ISO16750 heavy vehicle climatic, mechanical, and environmental requirements  
 ISO20653 high pressure wash rated IP6K9K / IP67  
 Easy to use CAN-based network node  
 CAN Database (DBC) Available  
 Standard J1939 on request  
 Extensive feedback broadcast messaging for datalogging  
 Calibration with production tools  
 PC-based setup and programming tools available for free  
 AN6 coolant ports—can be adapted to any hose fitting, any angle  
 Robust, fault-tolerant IGBT power stage  
 No internal DC-link EMI Filter

**FUNCTIONAL SAFETY**  
 Compatible with ISO26262 vehicle safety certification (not standalone compliant)  
 Command Safety Watchdog  
 ISO6469 High Voltage Safety



Controller Model	PM150DX	PM150DZ	
DC Voltage – operating	50—400	100—800	$V_{DC}$
DC Overvoltage Trip	420	840	$V_{DC}$
Maximum DC Voltage – non-operating	500	900	$V_{DC}$
Motor Current Continuous	450	225	A
Motor Current Peak*	450	300	$A_{rms}$
Output Power Peak (elect)*	150	150	kW
DC Bus Capacitance	880	600	$\mu F$
Size and Volume	200 x 87 x 436 / 7.6		mm / L
Weight	10		kg
Active Discharge via motor winding to <50V	< 1		sec
Vehicle System Power	9 .. 16		$V_{DC}$
Inverter PWM Frequency	12 (6..16 adjustable pending)		kHz
Operating Temperature Range – coolant water	- 40 .. +80, (derate to zero 80..100)		$^{\circ}C$
Coolant Flow Rate	8 .. 10 (2 GPM min)		LPM
Coolant Pressure Drop (60 $^{\circ}C$ coolant /10 LPM)	0.4 (42kPa / 6psi)		bar
Maximum Coolant Pressure (absolute)	4.5 (450kPa / 65psia)		bar
Operating Shock (ISO 16750-3, Test 4.2.2.2)	500 (50g), pending		$m/s^2$
Operating Vibration (ISO 16750-3, 4.1.2.4—IV)	27.8 (3 $g_{rms}$ ), pending		$m/s^2$
Cable Gland Size	M32	M24	
Conductor Size min .. max recommended	#2/35..#000/75	#4/30..#1/50	AWG/ $mm^2$
Cable OD min .. max recommended**	11 .. 21	9 .. 16.5	mm

\* peak is 10seconds

Ratings subject to change without notice—consult factory

\*\* depending on cable type, if diameter is too small it may be necessary to sleeve the cable.

These Propulsion Inverter products are designed and manufactured to comply with the following international standards: ISO6469, ISO6493-3, ISO16750, ISO20653, IEC60950, <IEC61000 pending>

### PM150DZR Racing Version available under special order:

- provides 400Arms peak current in the smallest package for 800V-class applications

This version trades useful operating life for increased peak power handling in transients. Suitable for:

- Motorcycle racing
- Light Hybrid supercar



Cascadia Motion LLC

power electronics, motors and propulsion controls

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