

PROTEAN Drive

Protean Electric is an automotive technology innovator, and the world-leading developer of ProteanDrive in-wheel motors, a fully integrated in-wheel drive solution.

ProteanDrive in-wheel motors offer a combination of packaging advantages, new vehicle design freedoms and performance benefits to deliver product differentiation, margin and market share opportunities.

The Generation 5 platform is a suite of technologies that delivers a high volume, low cost and scalable in-wheel motor series of products. The Pd5300 is the first product in the family with other products using common technologies to follow.

Key benefits:

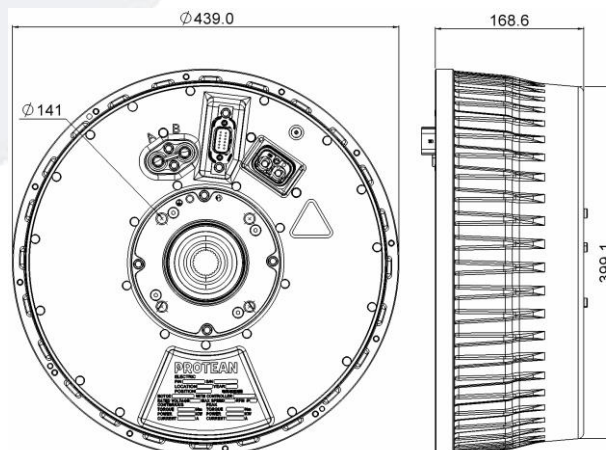
- Design lifetime of 300,000km and 15 years with verification through bench and vehicle durability testing, including water and dirt ingress, shock and vibration, pot-holes and kerb strike.
- AUTOSAR compliant software platform, aligning to standardized automotive software framework.
- Improved safety architecture, developed in accordance with the ISO26262 functional safety standards.

Key Features:

- High torque direct drive (no gearing)
- Integrated power and control electronics
- Permanent magnet synchronous machine with outer rotor
- Peak (dc to wheel) efficiency >93%

Standard automotive wheel bearing

- Integrated friction brake available for front and rear applications



DATA SHEET

Parameters

Characteristic		Pd18 5300	Units
Peak Output Power ¹	450V, 50°C coolant.	103	kW
Continuous Output Power ¹		54	kW
Peak Torque		1400 (10s), 1250 (30s)	Nm
Continuous Torque		650	Nm
Motor Mass (including power electronics, excluding bearing, brake and cables)		~42 (front axle) ~39 (rear axle)	kg
Maximum Speed ³		1600	rpm
Motor and brakes package within		18 x 7.5 J wheel rim	
HV DC Supply Voltage Range (for full performance) ¹		250 to 450	Vdc
Coolant Inlet Temperature Range (for full performance)		-20 to +50	°C
Cooling Fluid		50/50 Water/Glycol	
Coolant Connection		Hose barbs from customisable coolant manifold	
Ambient Temperature Range		-40 to +90	°C
Control Interface (torque demand) ⁶		CAN 2.0b / CAN-FD	
Software Platform		AUTOSAR	
Power and Control Electronics		Integrated	
High Voltage Connection		Integrated Automotive Connector	
Low Voltage Connection		Integrated Automotive Connector	
Ingress Protection Rating		IP6K9K	
Brake Disc Interface		Integrated into Rotor Housing	
Maximum Load Capacity Per Axle ⁴		1650 kg (SD) / 2600 kg (HD)	
Standard Hub (SD) Bearing Interface (1650 kg variant)		5x112 M14x1.5 / 66.4mm spigot Involute Spline 24/48 Diametrical	
Heavy Duty Hub (HD) Bearing Interface (2600 kg variant)		5x130 M14x1.5 / 76.1mm spigot Involute Spline 24/48 Diametrical	
Service Life ⁵		15 Years / 300,000km / 8,000 hrs	

¹ Peak power is approximately proportional to HV DC supply voltage. Figures given for 450V.

³ Higher speed variant available on application

⁴ Load capacity is a function of vehicle geometry, so this is a guideline based on our standard wheel bearing using typical geometry.

⁵ Service Life is duty cycle dependant, greater life may be achievable, depending on vehicle usage life cycle, and maintenance. This guideline is based on a standard passenger car duty cycle.

⁶ optional redundant CAN