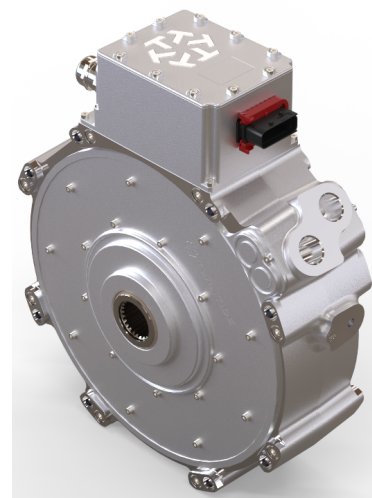


Turntide Axial Flux Motor S Series – AF400S

The Turntide Axial Flux Motor 400 Single Stack (AF400S) offers exceptional power density, with one of the highest peak power and torque ratings in its class, at over 8.4 kW/kg and 16.2 Nm/kg at 800V_{DC}.

The AF400S, with its short motor axial length, is well-suited for high-performance applications in a compact space claim. The unique magnetic topology coupled with electromagnetic, thermal, and manufacturing optimisation results in a breakthrough product offering with exceptional features. It offers smooth, quiet operation with low torque ripple while supporting inverter supply voltages of up to 850V_{DC}.



Features

- **Peak efficiency** of 96% at continuous load, equivalent to the highest efficiency class of IE4
- **Indirect liquid cooling** using standard medium of water - ethylene glycol for high power density
- **Through-shaft** female spline as per ISO 4156, enabling dual output system integration
- **Designed for operation** up to 850 VDC and peak overvoltage support up to 1 kV VDC
- **Low cogging and torque ripple**, allowing smooth system operation and low NVH characteristics
- **Axially stackable motor design platform**, enabling scaled torque and power levels
- **Product configuration** to provide flexibility in high voltage connections (glands or Amphenol Powerlok), top box orientation, stator turn-count, interface adaptors
- **Stator winding turn-count configuration options** allow the maximisation of the torque-speed performance envelope across different application voltage levels and current capabilities
- **Durable construction** with testing to ISO 16750 environmental standards
- **Ingress protection** rated to IP67 and IP6K9K

Applications

The AF400S delivers high torque across a wide operating speed range of 0 to 5,000 rpm, with a continuous power rating of 106 kW, making it well suited to traction applications in passenger vehicles, recreational vehicles, and light-duty commercial BEVs, as well as dual traction and generation duties in medium-duty hybrid commercial vehicles. Its compact axial-flux design enables flexible integration across off-highway, industrial, construction, agricultural, and commercial platforms, supporting applications such as hydraulic pump drives, cooling fan drives, slew and swing functions, auxiliary implements, and combined traction and generation systems where high-power density and efficient packaging are required.



TURNTIDE TECHNOLOGIES

Turntide Technologies designs and manufactures breakthrough electric motors, power electronics and energy storage solutions that optimize performance, reliability, and efficiency in all things that move.

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Details are correct at time of publishing

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Specification

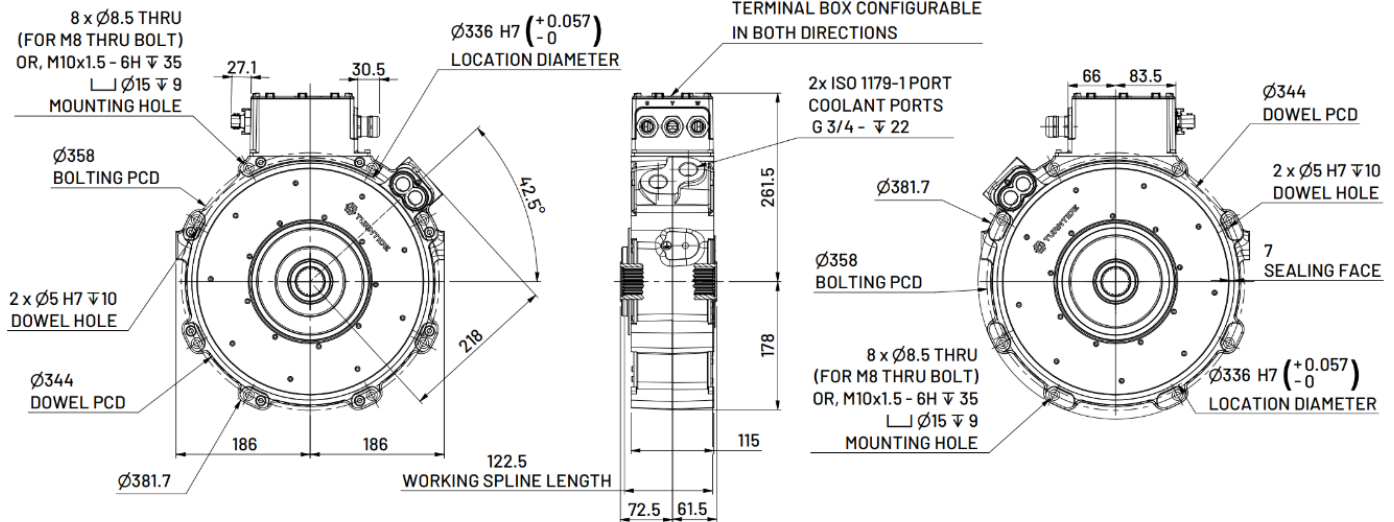
Performance	3 Turn, 800V _{DC}	6 Turn, 800V _{DC}	3 Turn, 400V _{DC}	6 Turn, 400V _{DC}
Motor Speed				
Max Speed* (rpm)	5,000	5,000	5,000	5,000
Peak Performance (S2-20 seconds)				
Maximum Torque* (Nm)	650	640	650	640
Maximum Power* (kW)	338	195	198	93
Maximum Current* (A_{rms})	588	288	588	288
Continuous Performance (S1-60 mins)				
Continuous Maximum Torque* (Nm)	290	290	290	290
Continuous Maximum Power* (kW)	106	76	76	39
Maximum Continuous Current* (A_{rms})	241	121	241	121

*These performance values have been rated at 45°C ambient, 55°C inlet coolant, 8 lpm flow rate. At coolant temperatures over 55°C and/ or ambient over 45°C derating may be required. DC Voltage, winding turns and switching frequency will affect the performance envelope and input current requirements. Please contact Turntide for further information.

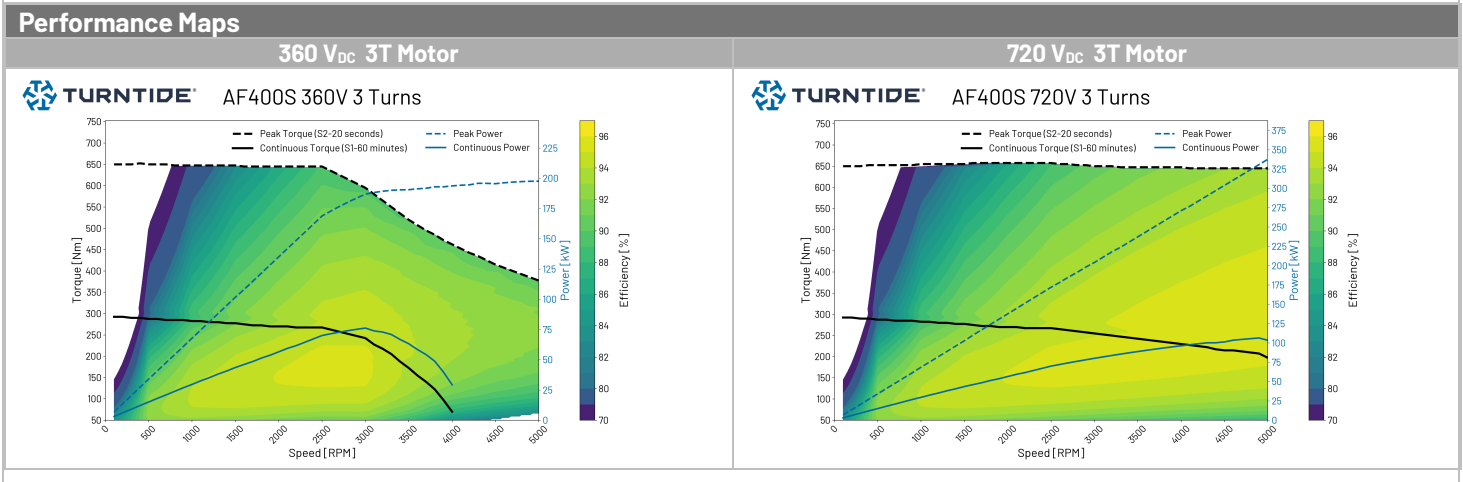
Operation Conditions			
Coolant Temperature Range	-20°C to 85°C	Max Winding Temperature	Up to 170°C
Ambient Temperature Range	-20°C to 90°C		
Coolant Type	BS6580-1992 or equivalent	IP Rating	IP67 and IP6k9k

Sensor Output			
Temperature Sensor Type (Located in the end windings)	2x PT1000, (1x Bearing RTD optional)	Resolver	1x TSY1040 (4PP)

Mass, Dimensions and Drawings			
Dry Weight (kg)	40	Depth (mm)	115
Diameter (mm)	381.7	Height (mm)	439.5



Shaft is a thru female spline, ISO 4156 (INT 25z x 1.5m x 30P x 5H). For alternative interface requirements, please contact Turntide for further information.



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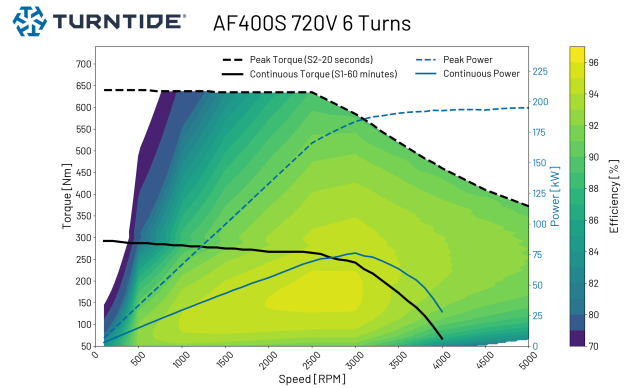
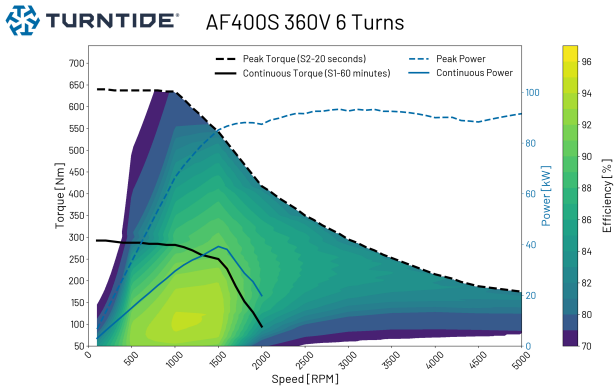
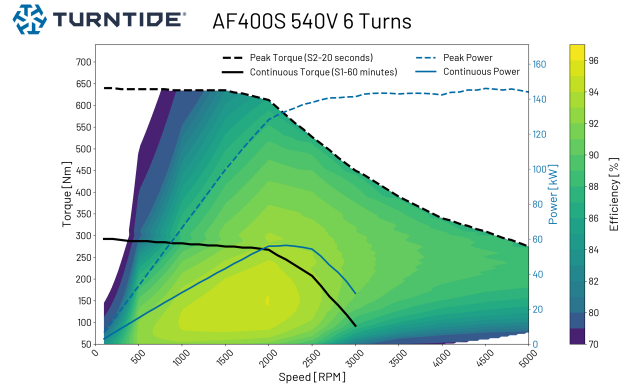
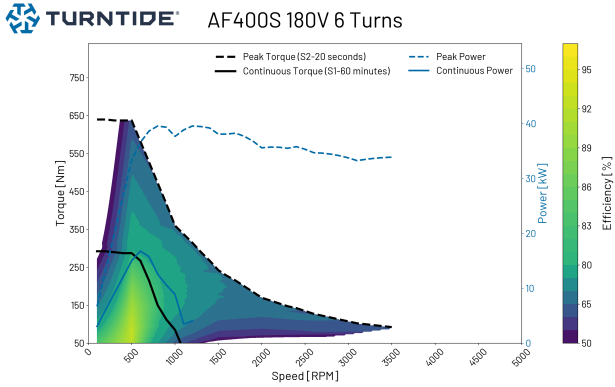
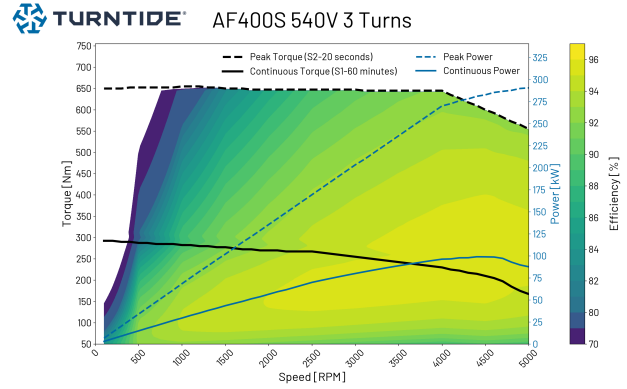
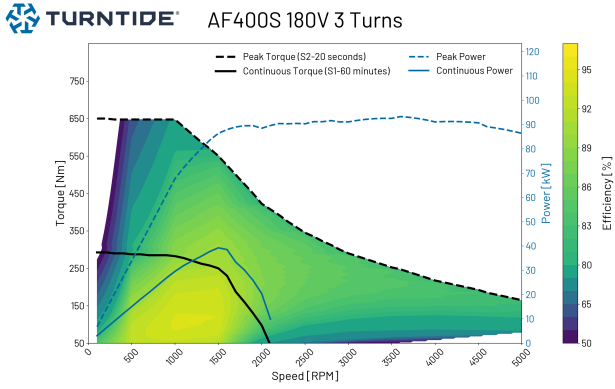
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Additional Performance Data Examples

180V_{DC} - 360V_{DC} - 540V_{DC} - 720V_{DC}



Efficiency and performance are indicative only and may vary depending on voltage, motor configuration, application, and installation.