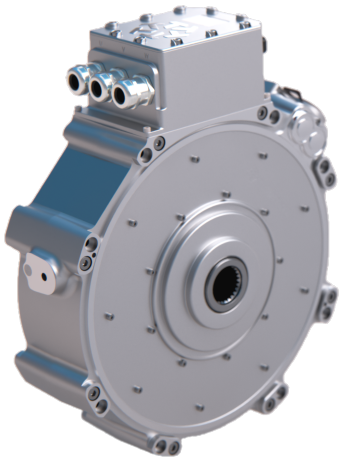
Turntide Axial Flux Motor S Series – AF400S

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 kW/kg and 15.5 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 and through-torque transmission
- **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 85 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 effective packaging are required.

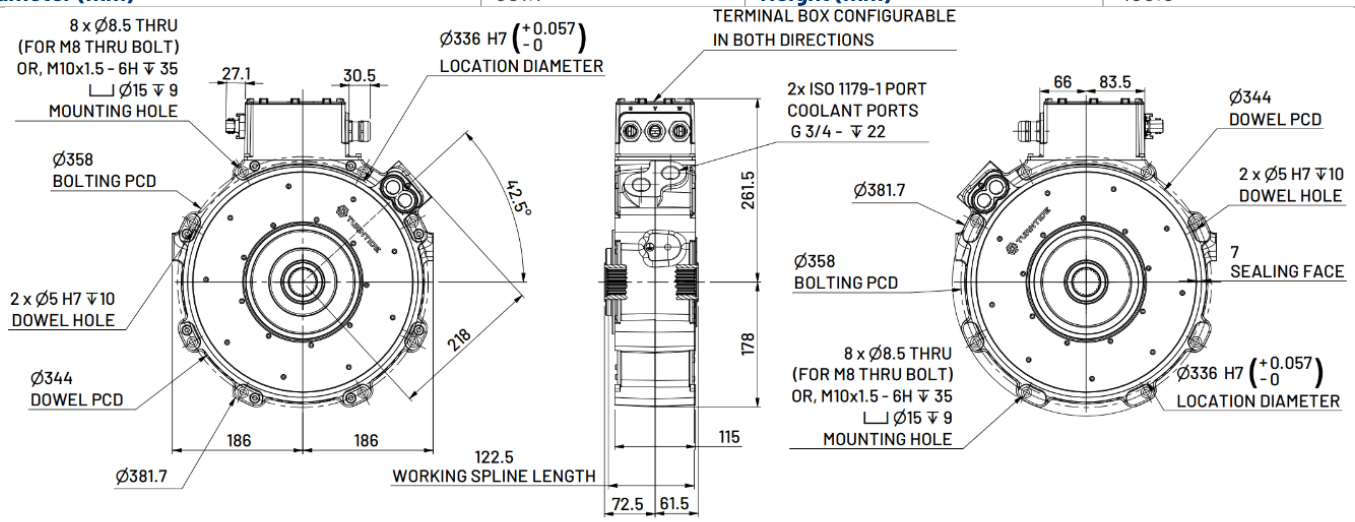


Specification

Performance	3 Turn, 720V_{DC}	3 Turn, 360V_{DC}
Motor Speed		
Maximum Speed* (rpm)	5,000	5,000
Peak Performance (S2-20 seconds)		
Maximum Torque* (Nm)	621	621
Maximum Power* (kW)	322	213
Maximum Current* (A_{rms})	539	539
Continuous Performance (S1-60 mins)		
Continuous Maximum Torque* (Nm)	277	277
Continuous Maximum (Rated) Power* (kW)	85	72
Maximum Continuous Current* (A_{rms})	224	224

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.

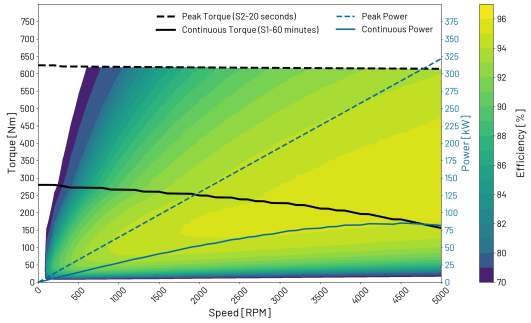
Operation Conditions			
Coolant Temperature Range	-20°C to 85°C	**Max Winding Temperature**	Up to 170°C
Ambient Temperature Range	-20°C to 90°C		
Coolant Type	BS6580-1992 or equivalent	**IP Rating**	IP67 and IP6K9K
Sensor Output			
Temperature Sensor Type (Located in the end windings)	2x PT1000, (1x 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



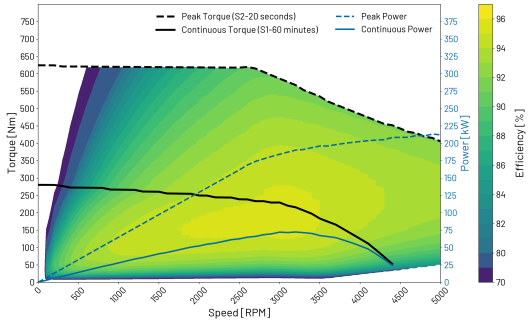
Shaft is a thru female spline, ISO 4156 (INT 25z x 1.5m x 30P x 5H). For alternative interface requirements, please contact Turntide for further information.

Performance Maps

TURNTIDE AF400S 720V 3 Turns



TURNTIDE AF400S 360V 3 Turns



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

For more information on this product or Turntide's range of inverters, motors, batteries, pumps and fans, please visit our website or contact our team of experts at electrificationsales@turntide.com