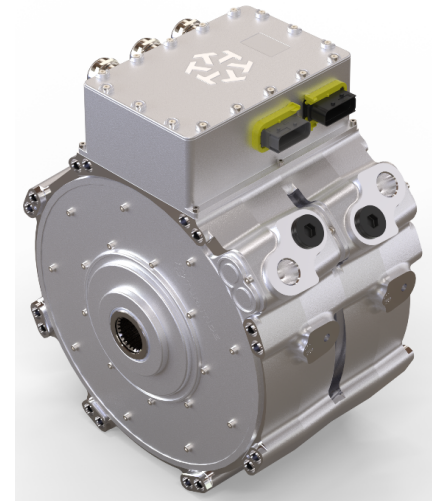


## Turntide Axial Flux Motor D Series - AF400D

The Turntide Axial Flux Motor 400 Double stack (AF400D) 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 800 V<sub>DC</sub>.

The AF400D, with its short 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 850 V<sub>DC</sub>.



### 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 AF400D delivers the same high torque and smooth operation as the AF400S across a 0 to 5,000 rpm operating range, while scaling performance to support double the continuous power (around 213 kW). This makes it well suited to higher-duty traction and power-dense applications, including medium-duty hybrid and fully electric commercial vehicles and demanding industrial systems.

Its scalable axial-flux design also supports off-highway, construction, and agricultural vehicles where both traction and auxiliary power are required, as well as industrial applications such as hydraulic pump drives, cooling fans, and combined traction-generation systems that benefit from high torque density and dependable performance.



#### 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

TTG-MAN-011  
V3.0 – 06/05/2026

# Specification

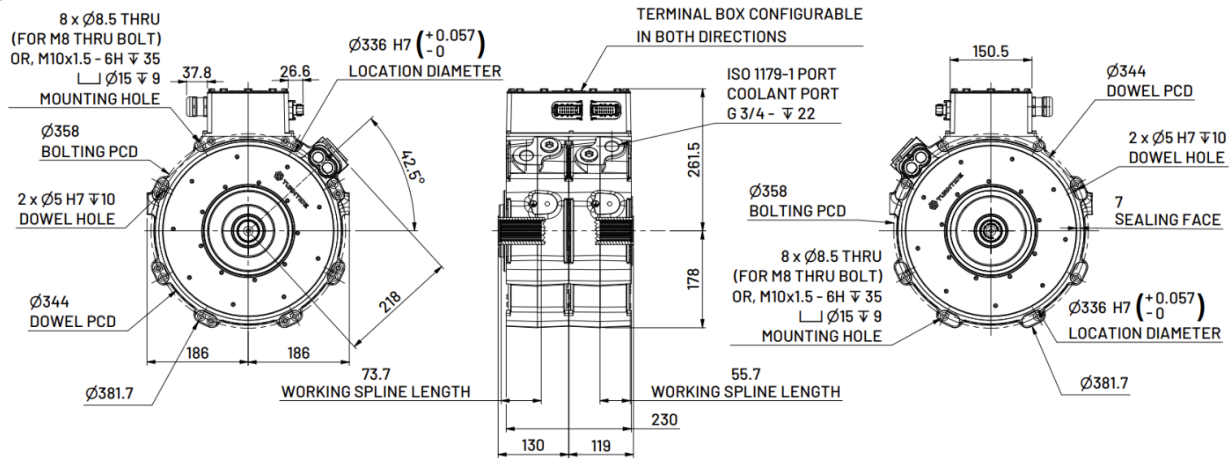
Performance	3 Turn, 800V <sub>DC</sub>	6 Turn, 800V <sub>DC</sub>	3 Turn, 400V <sub>DC</sub>	6 Turn, 400V <sub>DC</sub>
<b>Motor Speed</b>				
<b>Max Speed (rpm)</b>	5,000	5,000	5,000	5,000
<b>Peak Performance (S2-20 seconds)</b>				
<b>Maximum Torque* (Nm)</b>	1300	1280	1300	1280
<b>Maximum Power* (kW)</b>	676	390	396	186
<b>Maximum Current** (A<sub>rms</sub>)</b>	1176	576	1176	576
<b>Continuous Performance (S1-60 mins)</b>				
<b>Continuous Maximum Torque* (Nm)</b>	580	580	580	580
<b>Continuous Maximum Power* (kW)</b>	213	152	152	79
<b>Maximum Continuous Current** (A<sub>rms</sub>)</b>	482	242	482	242

\*These performance values have been rated at 45 °C ambient, 55 °C inlet coolant, 16 lpm flow rate. At coolant temperatures over 55 °C and/ or ambient over 45 °C derating may be required. DC Voltage, number of 3-phase sets, winding turns and switching frequency will affect the performance envelope and input current requirements. \*\*Maximum current applies to a single inverter with 3 HV cables. In a dual 3-phase setup (6 HV cables), maximum current is split between both inverters. Please contact Turntide for further information.

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

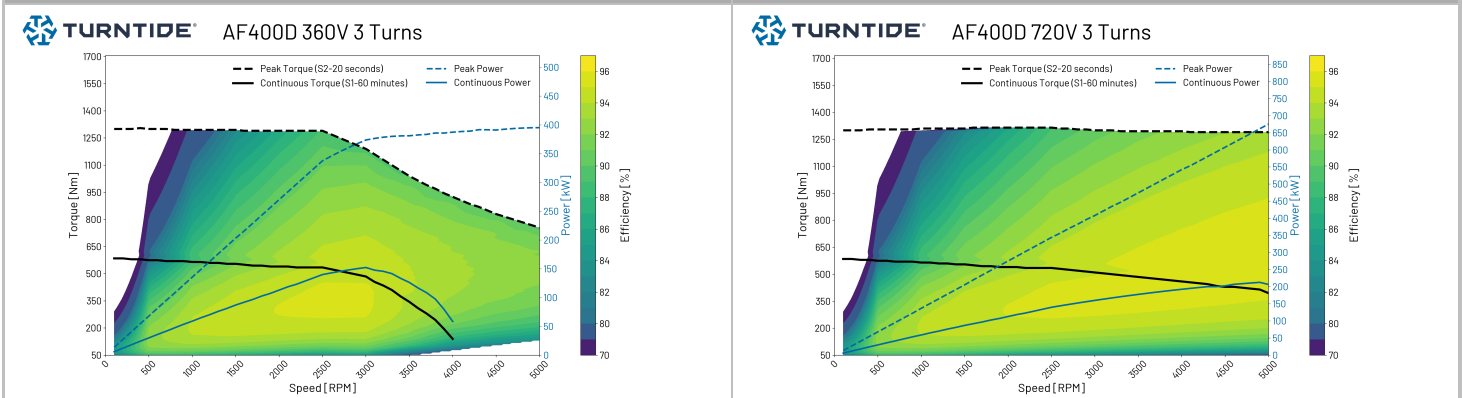
Sensor Output			
<b>Temperature Sensor Type (Located in the end windings)</b>	4x PT1000, (2x Bearing RTD optional)	<b>Resolver</b>	3 Phase: 1x TSY1040 (4PP) 6 Phase: 2x TSY1040 (4PP)

Mass, Dimensions and Drawings			
<b>Dry Weight (kg)</b>	80	<b>Depth (mm)</b>	230
<b>Diameter (mm)</b>	381.7	<b>Height (mm)</b>	439.5



Shaft is a 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



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

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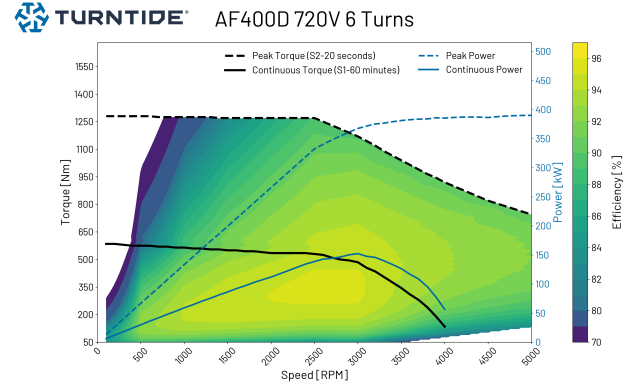
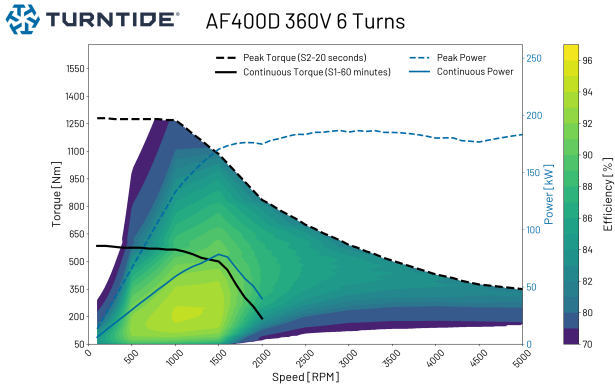
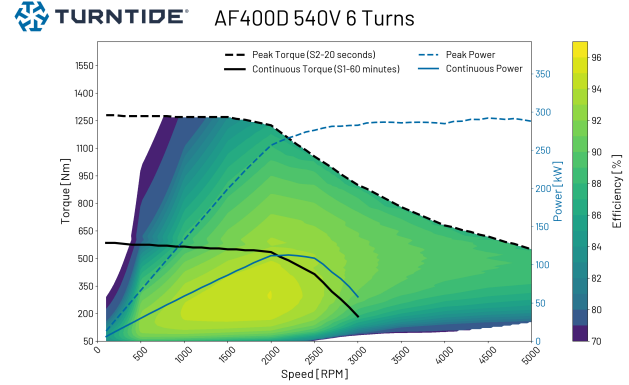
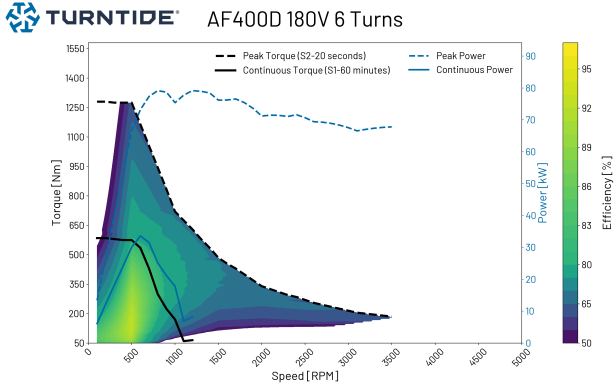
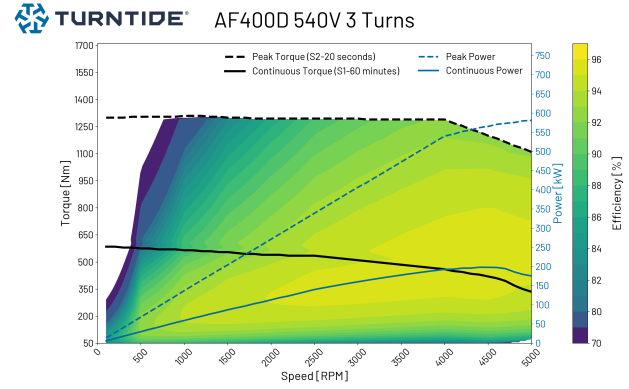
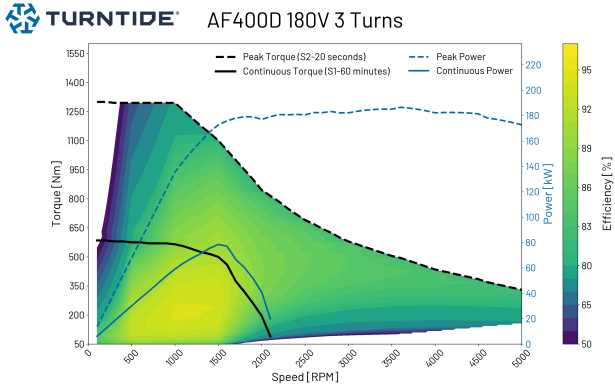
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**Additional Performance Data Examples**

180 V<sub>DC</sub> - 360V<sub>DC</sub> - 540V<sub>DC</sub> - 720V<sub>DC</sub>



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**TURTTIDE TECHNOLOGIES**

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