

## Turntide Axial Flux Motor AF430S

The Turntide Axial Flux Motor 430 Single Stack (AF430S) offers exceptional power density, with one of the highest peak power and torque ratings, in its class, at over 7.2 kW/kg and 20.5 Nm/kg at 800V<sub>DC</sub>.

The AF430S, with its short and compact 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<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 torque 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
- **Stator winding turn-count configuration options** allow the maximisation of the Torque-Speed performance envelope while utilising different inverters, across different application voltage levels
- **Durable construction** with testing to ISO 16750 environmental standards
- **Ingress protection** rated to IP67 and IP6K9K

### Applications



#### 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 Stators at 800V <sub>DC</sub>
Motor Speed	
<b>Max Speed* (rpm)</b>	3700
Peak Performance (S2-20 seconds)	
<b>Maximum Torque* (Nm)</b>	875
<b>Maximum Power* (kW)</b>	310
Continuous Performance (S1-60 mins)	
<b>Continuous Maximum Torque* (Nm)</b>	375
<b>Continuous Maximum Power* (kW)</b>	120
<b>Maximum Continuous Current* (A<sub>rms</sub>)</b>	220

\*These performance values have been rated at 45°C ambient, 55°C inlet coolant, 12 lpm flow rate. At coolant temperatures over 55°C and ambient over 45°C derating may be required. DC Voltage and winding turns will affect the performance envelope and input current requirements. Please contact Turntide for further information.

## Operation Conditions

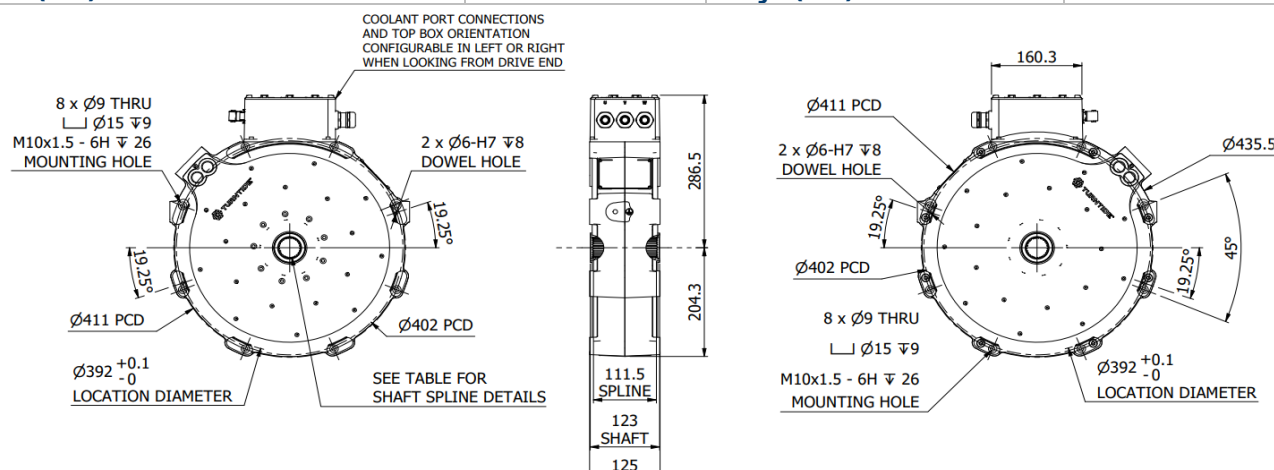
<b>Coolant Temperature Range</b>	-20°C to 85°C	<b>Max Winding Temperature</b>	Up to 170°C
<b>Ambient Temperature Range</b>	-20°C to 90°C		
<b>Coolant Type</b>	BS6580-1992 or equivalent	<b>IP Rating</b>	IP67 and IP6k9k

## Sensor Output

<b>Temperature Sensor Type</b> (Located in the end windings)	2x PT100	<b>Resolver</b>	1x TSY1040
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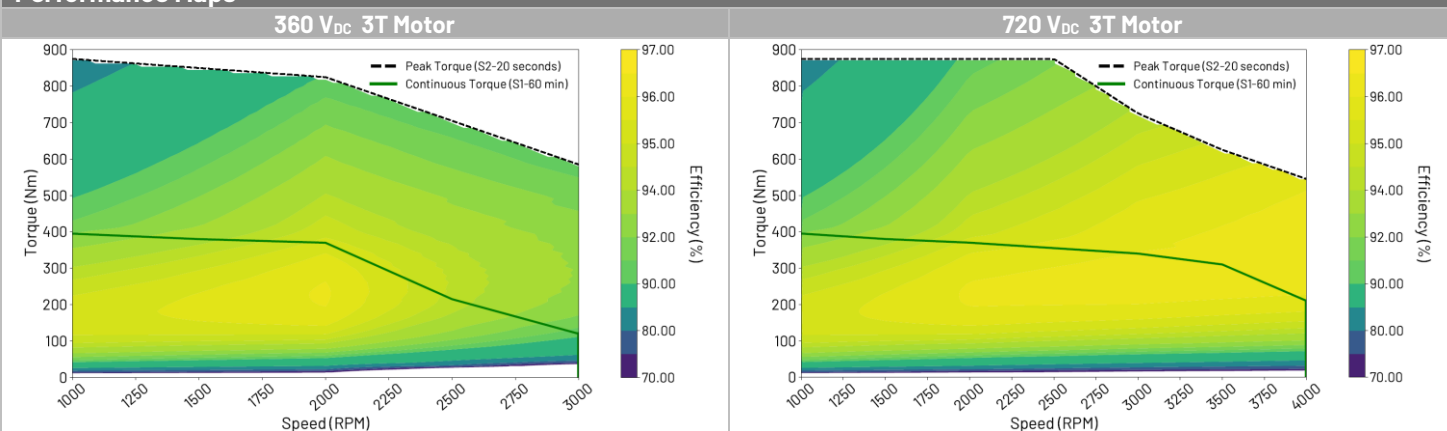
## Mass, Dimensions and Drawings

<b>Weight (kg)</b>	42.6, Dry weight	<b>Depth (mm)</b>	125
<b>Diameter (mm)</b>	435.4	<b>Height (mm)</b>	490.7



The standard ISO 4156 shaft spline is shown. Other available interface are available, please contact Turntide for further information.

## Performance Maps



Efficiency will vary based on voltages and motor configuration. Graph data is indicative of machine performance, performance may vary based on 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](mailto:electrificationsales@turntide.com)

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