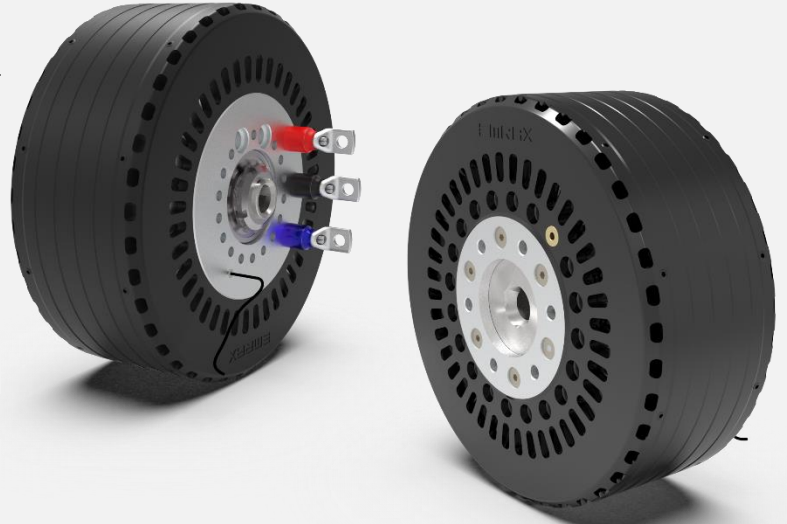


EMRAX 188 is a compact axial flux permanent magnet synchronous electric motor with high power/torque density.

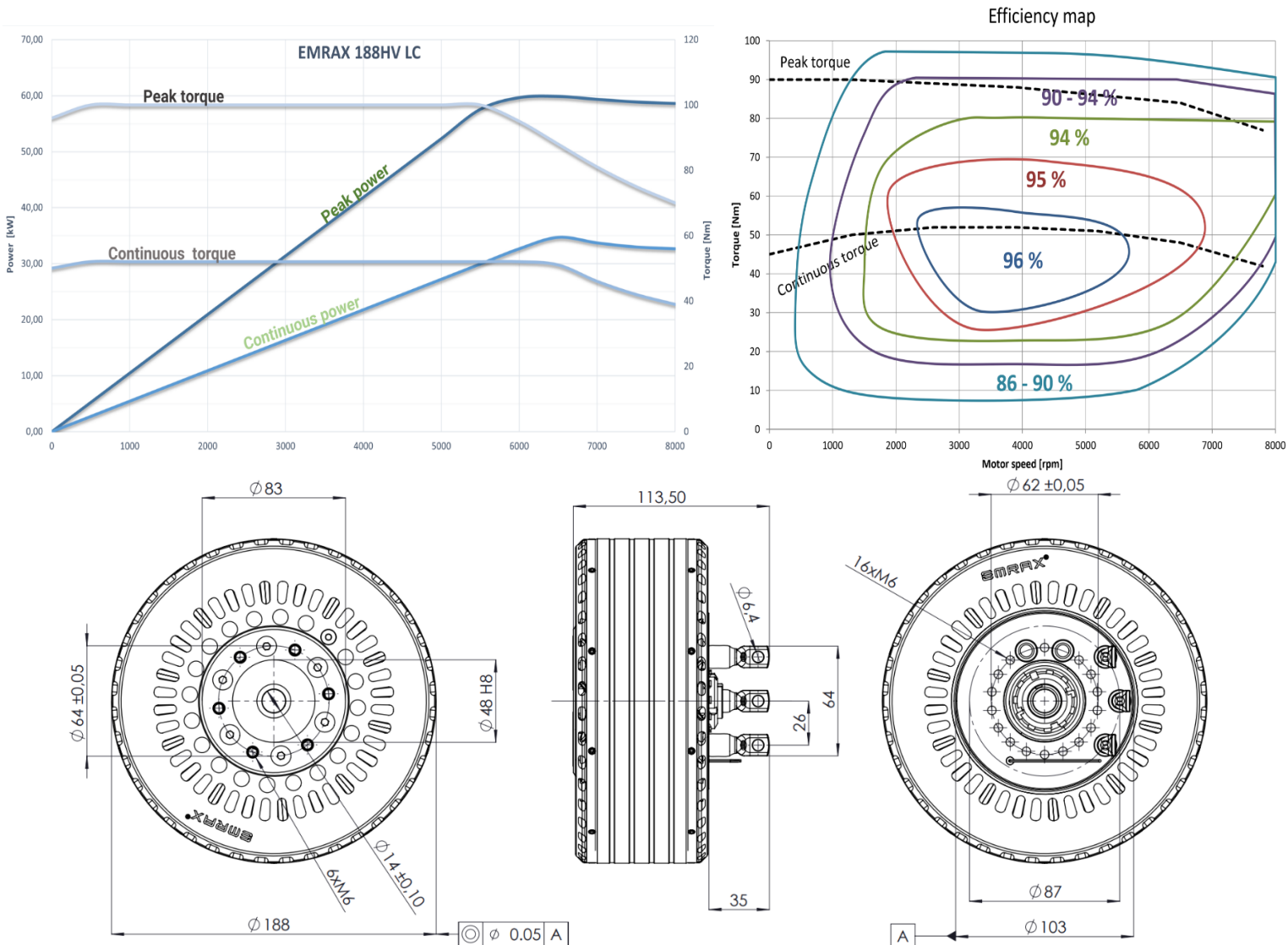
Because of its low weight, it is ideal for VTOL, ultralight aviation, motorcycles, automotive and marine outboard applications. It has gained a favorable status among FSAE competitors.

## EMRAX 188

DIAMETER   LENGTH	188 mm   79 mm
WEIGHT	7,1-7,9 kg
COOLING	air / water / combined
PEAK   CONTINUOUS POWER	60 kW   37 kW*
PEAK   CONTINUOUS TORQUE	100 Nm   56 Nm*
MAXIMUM SPEED	8000 RPM
OPERATING VOLTAGE	50 - 490 V
EFFICIENCY	up to 96%*
POSITION SENSOR	resolver / encoder



\*Subject to motor configuration, drive cycle, thermal conditions, and controller capability.



**EMRAX 188  
High Voltage**
**EMRAX 188  
Medium Voltage**
**EMRAX 188  
Low Voltage**

AC = Air cooled LC = Liquid cooled CC = Combined cooled (Air + liquid)	AC	LC	CC	AC	LC	CC	AC	LC	CC
<b>Ingress protection</b>	IP21	IP65	IP21	IP21	IP65	IP21	IP21	IP65	IP21
<b>Cooling specifications</b>	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C	AC+LC*	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C	AC+LC*	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C	AC+LC*
<b>Maximum motor temperature [°C]</b>	120								
<b>Motor connection type</b>	UVW or 2x UVW			UVW or 2x UVW			UVW or 2x UVW		
<b>Design voltage - nominal [V<sub>DC</sub>]</b>	490 Vdc			330 Vdc			120 Vdc		
<b>Motor peak efficiency [%]</b>	96%								
<b>Peak power S2 2min [kW]</b>	60 kW at 6500 RPM								
<b>Continuous power S1 (kW)</b>	27	34	37	27	34	37	27	34	37
<b>Peak torque [Nm]</b>	100								
<b>Continuous torque [Nm]</b>	40	52	56	40	52	56	40	52	56
<b>Limiting speed [RPM]</b>	8000								
<b>Motor constant K<sub>v</sub></b>	17,72			29,52			72,68		
<b>Motor constant K<sub>T</sub></b>	0,54			0,32			0,13		
<b>Peak motor current [A<sub>RMS</sub>]</b>	190			310			900		
<b>Continuous motor current [A<sub>RMS</sub>]</b>	100			160			400		
<b>Internal phase resistance at 25 °C [mΩ]</b>	14,37			5,04			1,02		
<b>Induction between two phases [μH]</b>	188,5			40,2			12,5		
<b>Induced voltage [V<sub>RMS</sub>/RPM]</b>	0,04201			0,02521			0,01024		
<b>Magnetic flux – axial [V<sub>s</sub>]</b>	0,03275			0,01965			0,00798		
<b>Temperature sensor on the stator windings</b>	KTY 81/210								
<b>Number of pole pairs</b>	10								
<b>Winding configuration</b>	star								
<b>Rotor Inertia [kg*m<sup>2</sup>]</b>	0,00989								
<b>Bearing configuration</b>	6205   3204								
<b>Weight [kg]</b>	7,1	7,9	7,6	7,1	7,9	7,6	7,1	7,9	7,6

\*Combined cooled motor (CC) requires cooling specifications from air and liquid cooled motors, to reach its specifications. It cannot only be cooled as an air-cooled motor. Every EMRAX motor requires sufficient air circulation. The motors should not be completely enclosed in any condition. Please check EMRAX motor manual to learn more. Performance in your application will depend on your installation details and boundary conditions. Please contact us to learn more.

Values given are for a standard 3 phase UVW version, please consult EMRAX on 2x UVW values.