

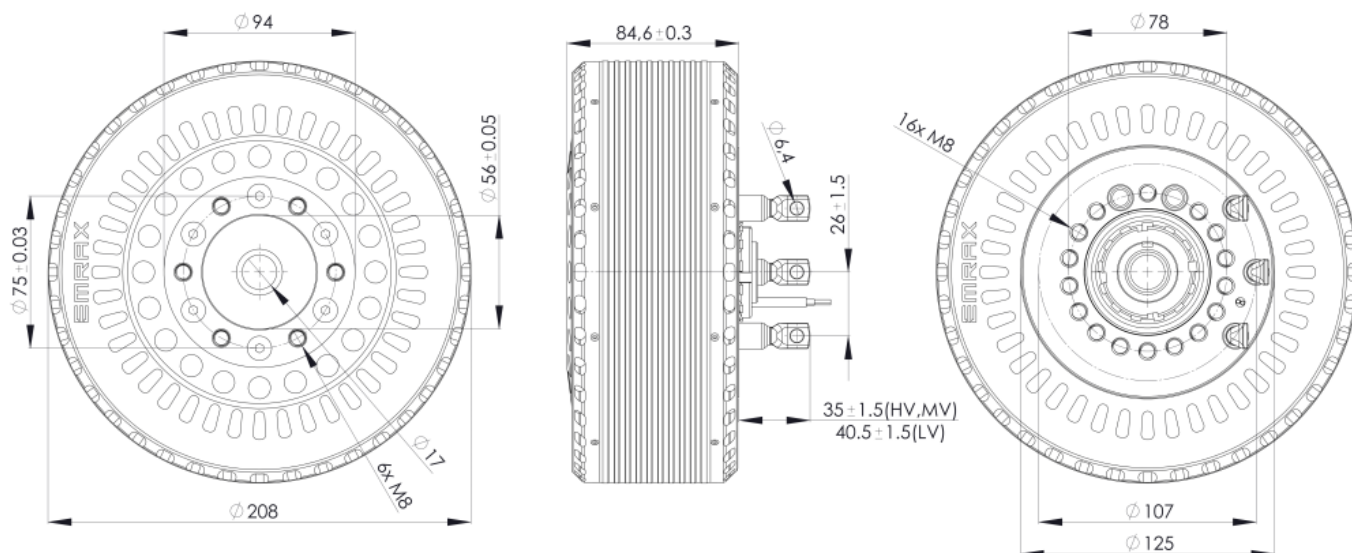
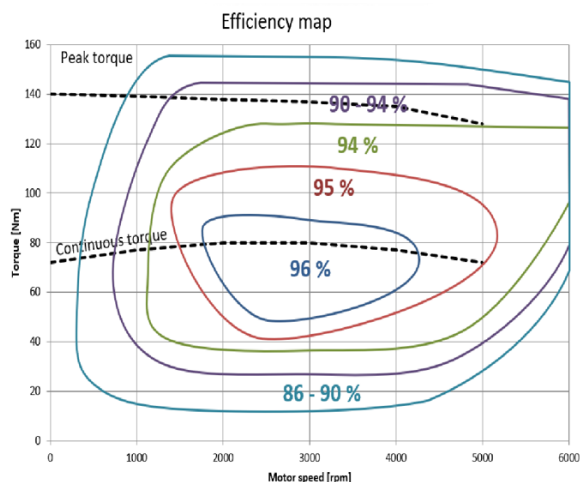
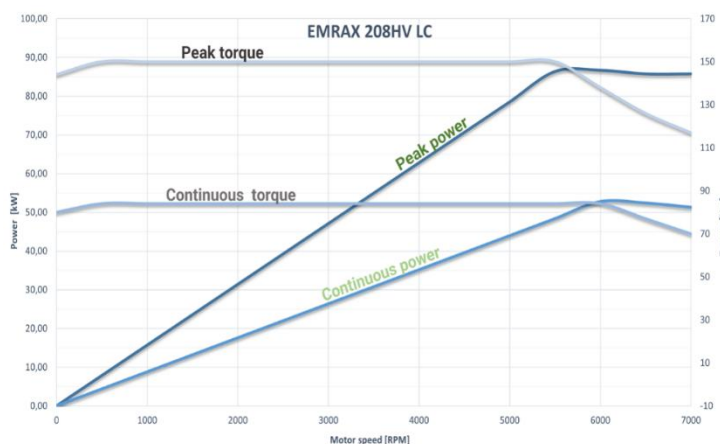
EMRAX 208

is a compact axial flux permanent magnet synchronous electric motor with high power/torque density. It was the first motor developed by EMRAX, with development starting in 2005 for the founder's glider aircraft project, enabling electric propulsion. Since then, the motor has continuously evolved and now serves a wide range of applications. Contact us for more details! *****EMRAX is transitioning to NEXT-GENERATION electric motors, and the current EMRAX 188, 208, 228, 268 and 348 models will gradually be out of production. Envelope dimensions remain the same, while the outer diameter is only slightly larger — 4% for the smallest motor and 2% for the largest.**

DIAMETER LENGTH	208 mm 85 mm
WEIGHT	9,4-10,3 kg
COOLING	air / liquid / combined
PEAK CONTINUOUS POWER	86 kW 52 kW*
PEAK CONTINUOUS TORQUE	150 Nm 83 Nm*
MAXIMUM SPEED	7000 RPM
OPERATING VOLTAGE	50 - 830 V
EFFICIENCY	up to 96%*
POSITION SENSOR	resolver / encoder



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



	EMRAX 208 High Voltage (HV)			EMRAX 208 Medium Voltage (MV)			EMRAX 208 Low Voltage (LV)		
AC = Air Cooled LC = Liquid Cooled CC = Combined Cooled (Air + Liquid) ¹	AC	LC	CC	AC	LC	CC	AC	LC	CC
Ingress protection	IP21	IP66	IP21	IP21	IP66	IP21	IP21	IP66	IP21
Cooling specifications	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C T _{amb} ≤ 30°C	AC+LC	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C T _{amb} ≤ 30°C	AC+LC	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C T _{amb} ≤ 30°C	AC+LC
Maximum motor temperature [°C]	integrated temperature sensor / rotor surface / integrated parts absolute limit 100/80/120								
Motor connection type	UVW or 2x UVW ²								
Voltage required for peak power [V _{DC}] ³	690			420			170		
Motor peak efficiency [%]	96%								
Peak power S2 30 s [kW]	86 kW at 6000 RPM								
Continuous power S1 [kW]	33	47	52	33	47	52	33	47	52
Peak torque [Nm]	150								
Continuous torque [Nm]	53	75	83	53	75	83	53	75	83
Limiting speed [RPM]	7000								
K _V constant at no load [RPM/V _{DC}]	15,53			25,02			64,01		
K _V constant at nominal load [RPM/V _{DC}]	11,67			18,94			48,19		
K _V constant at peak load [RPM/V _{DC}]	8,64			14,16			35,76		
K _T constant [Nm/ A _{RMS}]	0,62			0,38			0,15		
Peak motor current [A _{RMS}]	240			400			1000		
Continuous motor current (LC) [A _{RMS}]	140			220			560		
Internal phase resistance at 25 °C [mΩ] ⁴	12,77			5,54			1,11		
L _D /L _Q inductance of 1 phase [μH]	110/115			47,2/49,4			6,3/6,5		
K _e constant [V _{RMS} /RPM]	0,04556			0,02966			0,01177		
PM Flux Linkage [Vs]	0,03867			0,02533			0,00933		
Temperature sensor on the stator windings	KTY 81/210								
Number of pole pairs	10								
Winding configuration	star								
Rotor Inertia LC/AC and CC [kg*m²]	0,0239/0,0236								
Bearing configuration	6206 3206								
Weight [kg]	9,4	10,3	10,0	9,4	10,3	10,0	9,4	10,3	10,0

Actual performance depends on installation details and operating conditions. Contact EMRAX for application-specific guidance.

¹ CC motors require both liquid cooling and sufficient airflow to achieve the specified performance and cannot be operated as air-cooled motors only. All EMRAX motors require adequate airflow (approximately 0.4 m³/min per 1 kW of power) and must not be completely enclosed. For cooling and installation requirements, refer to the EMRAX Motor Manual.

² All values given are for a standard 3 phase UVW version, please consult EMRAX on 2x UVW values. 2*R_{1UVW}=R_{2UVW}

³ All motors are tested up to 833 V_{DC} maximum voltage.

⁴ Phase-to-phase resistance measured at 25 °C and divided by 2.

	EMRAX 208 Low Voltage (LV) + 43%			EMRAX 208 Low Voltage (LV) + 100%			EMRAX 208 High Voltage (HV) + 42%		
AC = Air Cooled LC = Liquid Cooled CC = Combined Cooled (Air + Liquid) ¹	AC	LC	CC	AC	LC	CC	AC	LC	CC
Ingress protection	IP21	IP66	IP21	IP21	IP66	IP21	IP21	IP66	IP21
Cooling specifications	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C T _{amb} ≤ 30°C	AC+LC*	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C T _{amb} ≤ 30°C	AC+LC*	ambient air 20°C 20 m/s	min. 6 l/min, max. 50°C T _{amb} ≤ 30°C	AC+LC*
Maximum motor temperature [°C]	integrated temperature sensor / rotor surface / integrated parts absolute limit 100/80/120								
Motor connection type	UVW or 2x UVW								
Voltage required for peak power [V _{DC}] ³	240			340			830		
Motor peak efficiency [%]	96%								
Peak power S2 30 s [kW]	86kW at 6000 RPM			86kW at 6000 RPM			76kW at 4900 RPM ⁵		
Continuous power S1 [kW]	33	47	52	33	47	52	33	47	52
Peak torque [Nm]	150								
Continuous torque [Nm]	53	75	83	53	75	83	53	75	83
Limiting speed [RPM]	7000								
K _V constant at no load [RPM/V _{DC}]	44,77			32,01			10,93		
K _V constant at nominal load [RPM/V _{DC}]	33,70			24,10			8,34		
K _V constant at peak load [RPM/V _{DC}]	25,00			17,88			6,02		
K _T constant [Nm/A _{RMS}]	0,21			0,30			0,88		
Peak motor current [A _{RMS}]	720			500			170		
Continuous motor current (LC) [A _{RMS}]	400			280			95		
Internal phase resistance at 25 °C [mΩ] ⁴	2,04			3,65			25,68		
L _D /L _Q inductance of 1 phase [μH]	13,1/13,7			25,6/26,8			220/230		
K _e constant [V _{RMS} /RPM]	0,01674			0,02560			0,06337		
PM Flux Linkage [Vs]	0,01333			0,01867			0,05867		
Temperature sensor on the stator windings	KTY 81/210								
Number of pole pairs	10								
Winding configuration	star								
Rotor Inertia LC/AC and CC [kg*m²]	0,0239/0,0236								
Bearing configuration	6206 3206								
Weight [kg]	9,4	10,3	10,0	9,4	10,3	10,0	9,4	10,3	10,0

Actual performance depends on installation details and operating conditions. Contact EMRAX for application-specific guidance.

⁵ HV+42% versions operate below the limiting speed due to the 830 V_{DC} voltage limitation.