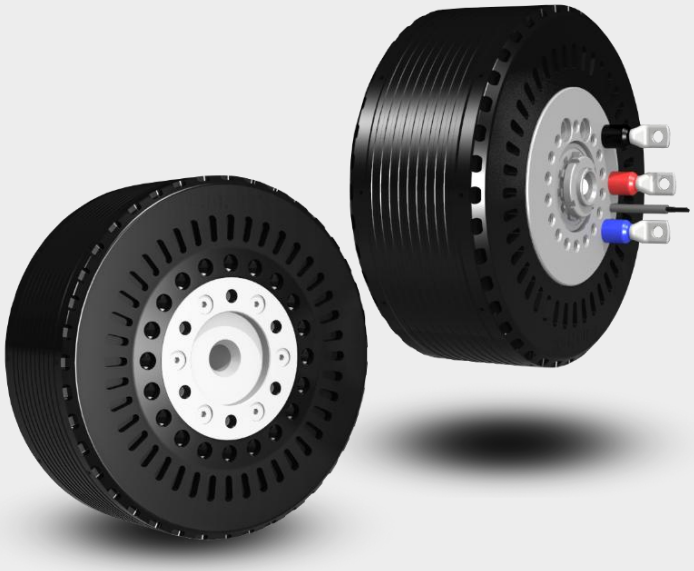
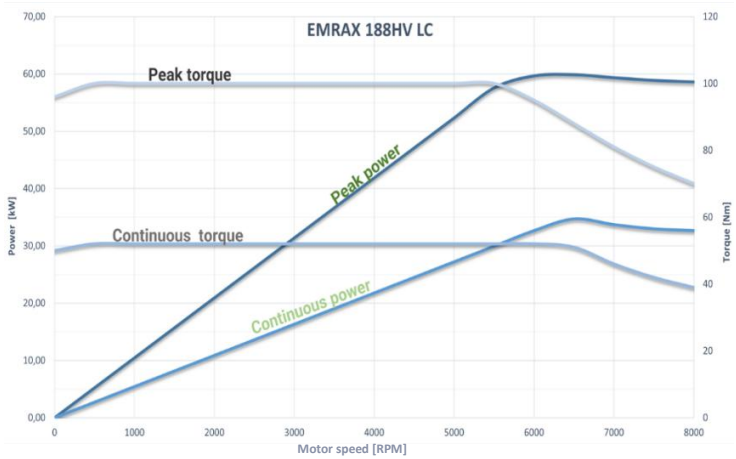
EMRAX 188

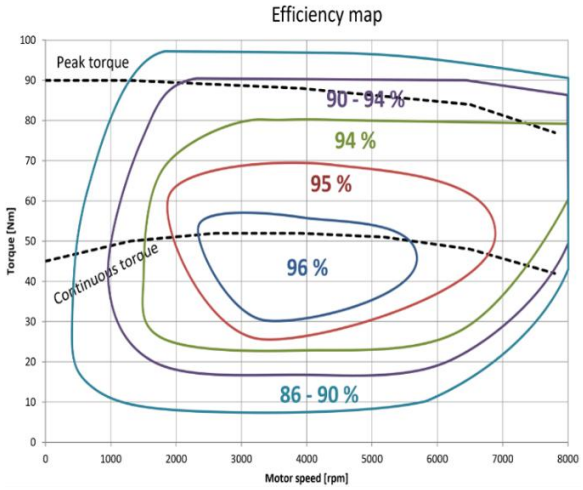
is a compact axial flux permanent magnet synchronous electric motor with high power/torque density. It offers the middle of the range performance and is a great fit for where high-power output if a small package is needed. Contact us to find out about its typical applications! ***IMPORTANT NOTICE: EMRAX 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.

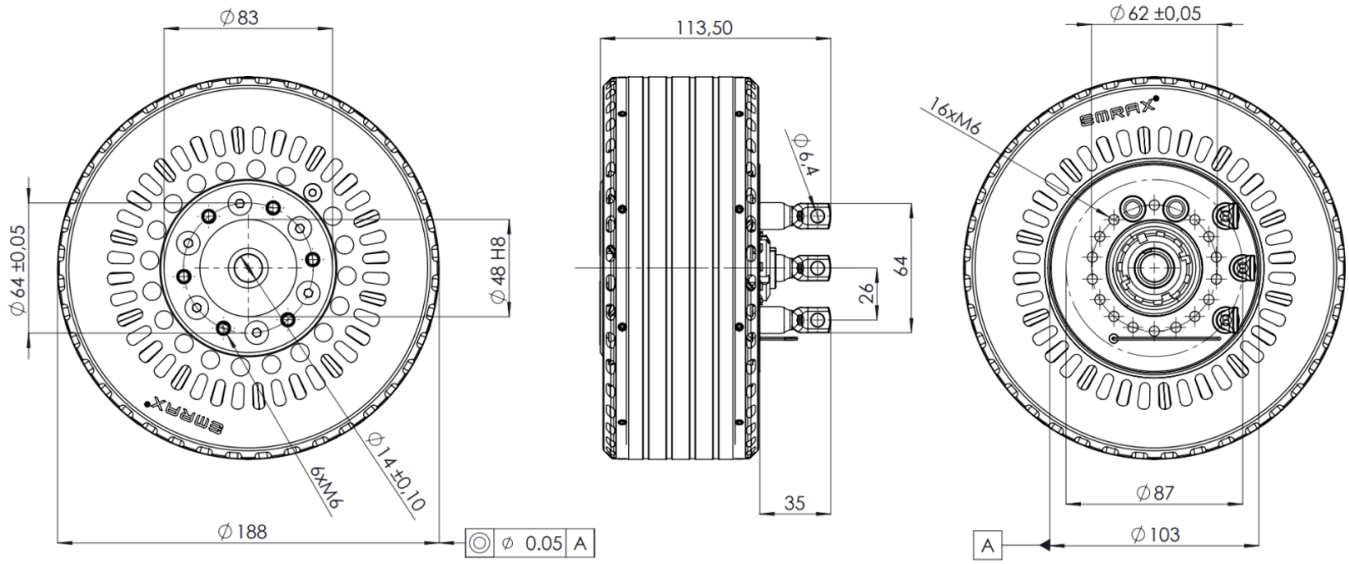
DIAMETER | LENGTH	**188 mm | 79 mm**
WEIGHT	**7,1-7,9 kg**
COOLING	**air / liquid / combined**
PEAK | CONTINUOUS POWER	**60 kW | 33 kW***
PEAK | CONTINUOUS TORQUE	**100 Nm | 48 Nm***
MAXIMUM SPEED	**8000 RPM**
OPERATING VOLTAGE	**50 - 830 V**
EFFICIENCY	**up to 96%***
POSITION SENSOR	**resolver / encoder**



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







EMRAX d.o.o., Molkova pot 5, 1241 Kamnik, Slovenia | +386 (0)8 205 38 50 | support@emrax.com

	EMRAX 188 High Voltage (HV)			EMRAX 188 Medium Voltage (MV)			EMRAX 188 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 20ºC 20 m/s**	**min. 6 l/min, max. 50°C**	**AC+LC**	**ambient air 20ºC 20 m/s**	**min. 6 l/min, max. 50°C**	**AC+LC**	**ambient air 20ºC 20 m/s**	**min. 6 l/min, max. 50°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]	**660**			**390**			**160**		
Motor peak efficiency [%]	**96%**								
Peak power S2 30s [kW]	**60 kW at 6500 RPM**								
Continuous power S1 [kW]	**23**	**29**	**33**	**23**	**29**	**33**	**23**	**29**	**33**
Peak torque [Nm]	**100**								
Continuous torque [Nm]	**34**	**43**	**48**	**34**	**43**	**48**	**34**	**43**	**48**
Limiting speed [RPM]	**8000**								
K_V constant at no load [RPM/V_{DC}]	**17,73**			**29,58**			**72,82**		
K_V constant at nominal load [RPM/V_{DC}]	**13,61**			**22,83**			**56,21**		
K_V constant at peak load [RPM/V_{DC}]	**9,81**			**16,61**			**40,87**		
K_T constant [Nm/ A_{RMS}]	**0,54**			**0,32**			**0,13**		
Peak motor current [A_{RMS}]	**190**			**310**			**900**		
Continuous motor current (LC) [A_{RMS}]	**100**			**160**			**400**		
Internal phase resistance at 25 °C [mΩ][4]	**14,24**			**6,31**			**1,05**		
L_D/L_Q inductance of 1 phase [µH]	**92/102**			**40/44**			**5,2/5,8**		
K_e constant [V_{RMS}/RPM]	**0,03844**			**0,02522**			**0,00978**		
PM Flux Linkage [Vs]	**0,03600**			**0,02133**			**0,00867**		
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]	**0,0147/0,0144**								
Bearing configuration	**6205 | 3204**								
Weight [kg]	**7,1**	**7,9**	**7,6**	**7,1**	**7,9**	**7,6**	**7,1**	**7,9**	**7,6**

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 d.o.o., Molkova pot 5, 1241 Kamnik, Slovenia | +386 (0)8 205 38 50 | support@emrax.com

	EMRAX 188 Low Voltage (LV) + 28%			EMRAX 188 Low Voltage (LV) + 43%			EMRAX 188 Low Voltage (LV) + 100%		
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 20ºC 20 m/s**	**min. 6 l/min, max. 50°C T_{amb}≤ 30°C**	**AC+LC***	**ambient air 20ºC 20 m/s**	**min. 6 l/min, max. 50°C T_{amb}≤ 30°C**	**AC+LC***	**ambient air 20ºC 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]	**200**			**230**			**320**		
Motor peak efficiency [%]	**96%**								
Peak power S2 30s [kW]	**60 kW at 6500 RPM**								
Continuous power S1 [kW]	**23**	**29**	**33**	**23**	**29**	**33**	**23**	**29**	**33**
Peak torque [Nm]	**100**								
Continuous torque [Nm]	**34**	**43**	**48**	**34**	**43**	**48**	**34**	**43**	**48**
Limiting speed [RPM]	**8000**								
K_V constant at no load [RPM/V_{DC}]	**56,89**			**50,93**			**36,43**		
K_V constant at nominal load [RPM/V_{DC}]	**43,91**			**39,31**			**28,11**		
K_V constant at peak load [RPM/V_{DC}]	**31,93**			**28,58**			**20,43**		
K_T constant [Nm/A_{RMS}]	**0,17**			**0,19**			**0,26**		
Peak motor current [A_{RMS}]	**590**			**530**			**390**		
Continuous motor current (LC) [A_{RMS}]	**310**			**280**			**200**		
Internal phase resistance at 25 °C [mΩ][4]	**1,55**			**1,94**			**4,65**		
L_D/L_Q inductance of 1 phase [µH]	**8,9/9,8**			**10,9/12,1**			**21,5/23,8**		
K_e constant [V_{RMS}/RPM]	**0,0125**			**0,01405**			**0,0212**		
PM Flux Linkage [Vs]	**0,01123**			**0,01267**			**0,01733**		
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]	**0,0147/0,0144**								
Bearing configuration	**6205 | 3204**								
Weight [kg]	**7,1**	**7,9**	**7,6**	**7,1**	**7,9**	**7,6**	**7,1**	**7,9**	**7,6**

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

EMRAX d.o.o., Molkova pot 5, 1241 Kamnik, Slovenia | +386 (0)8 205 38 50 | support@emrax.com