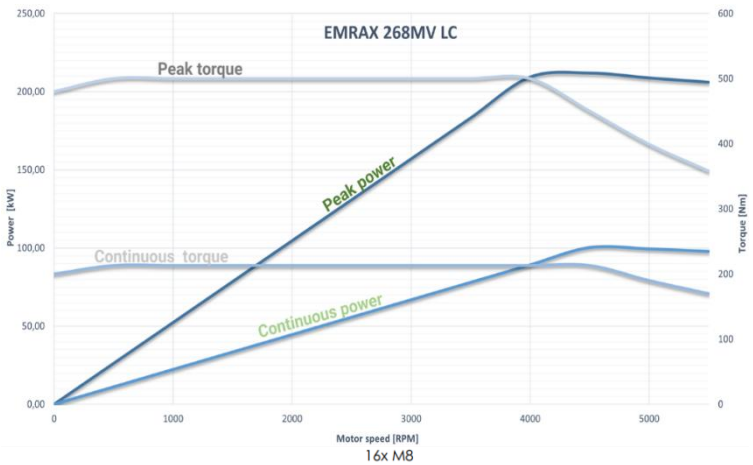
EMRAX 268 - C

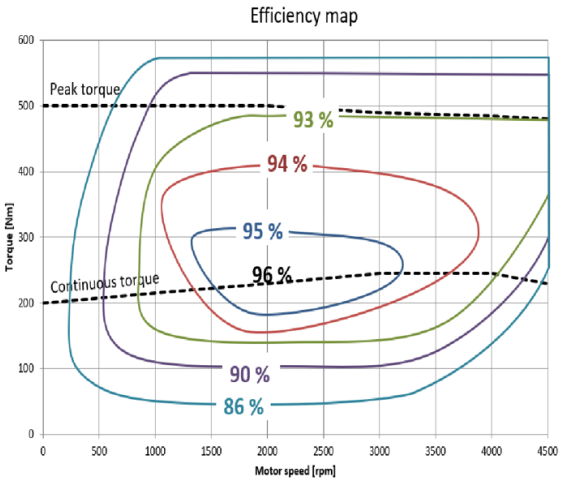
EMRAX
INNOVATIVE E-DRIVES

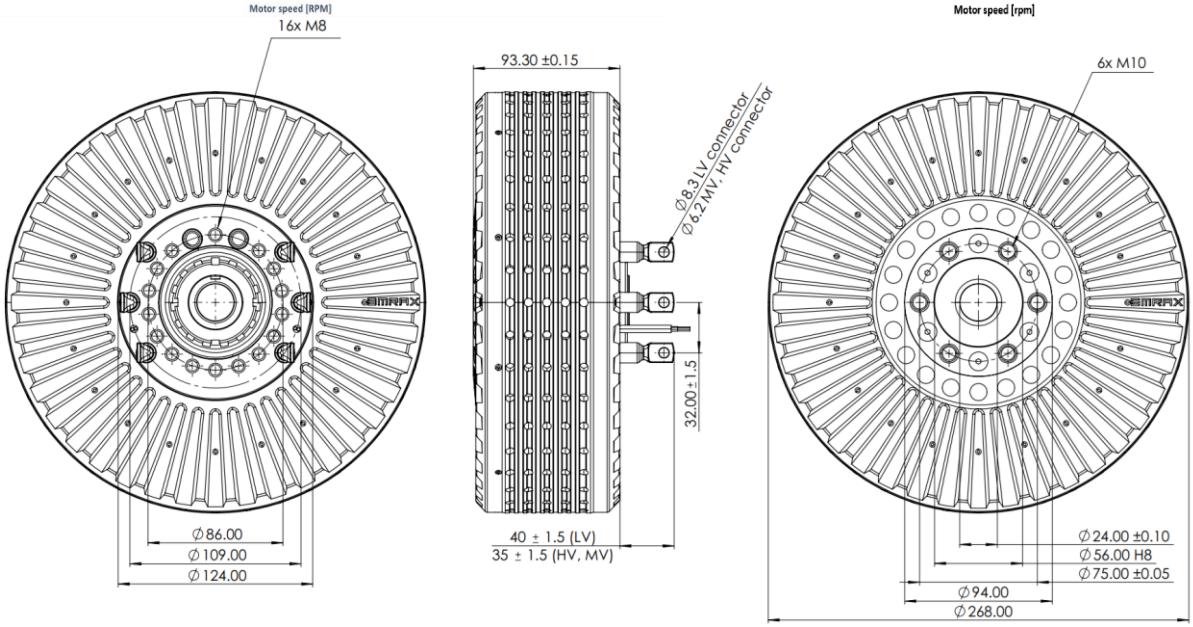
is a compact axial flux permanent magnet synchronous electric motor with high power/torque density. It is the favorite motor choice amongst light aviation, marine and traction applications. It can also be utilized as a hydraulic replacement unit or as a lightweight high power output generator. 268 is the first electric engine certified for use in General Aviation by EASA. ***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	**268 mm | 94 mm**
WEIGHT	**21,4-22,3 kg**
COOLING	**air / liquid / combined**
PEAK | CONTINUOUS POWER	**210 kW | 101 kW***
PEAK | CONTINUOUS TORQUE	**500 Nm | 226 Nm***
MAXIMUM SPEED	**4500 RPM**
OPERATING VOLTAGE	**100 - 830 V**
EFFICIENCY	**up to 96%***
POSITION SENSOR	**resolver / encoder**

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







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	EMRAX 268 High Voltage (HV)			EMRAX 268 Medium Voltage (MV)			EMRAX 268 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 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]	**830**			**830**			**360**		
Motor peak efficiency [%]	**96%**								
Peak power S2 30 s [kW]	**135 kW at 2400 RPM[4]**			**210 kW at 4250 RPM**			**210 kW at 4250 RPM**		
Continuous power S1 [kW]	**58**	**82**	**90**	**64**	**91**	**101**	**64**	**91**	**101**
Peak torque [Nm]	**500**								
Continuous torque [Nm]	**144**	**205**	**226**	**144**	**205**	**226**	**144**	**205**	**226**
Limiting speed [RPM]	**4500**								
K_V constant at no load [RPM/V_{DC}]	**5,83**			**8,68**			**23,56**		
K_V constant at nominal load [RPM/V_{DC}]	**4,72**			**7,59**			**19,48**		
K_V constant at peak load [RPM/V_{DC}]	**3,20**			**5,17**			**13,26**		
K_T constant [Nm/ A_{RMS}]	**1,83**			**1,20**			**0,44**		
Peak motor current [A_{RMS}]	**320**			**500**			**1300**		
Continuous motor current (LC) [A_{RMS}]	**130**			**220**			**550**		
Internal phase resistance at 25 °C [mΩ][5]	**22,62**			**9,67**			**1,90**		
L_D/L_Q inductance of 1 phase [µH]	**299/321**			**129/138**			**17/18**		
K_e constant [V_{RMS}/RPM]	**0,12120**			**0,08150**			**0,03001**		
Magnetic flux – axial [VS]	**0,12211**			**0,08000**			**0,02947**		
Temperature sensor on the stator windings	**KTY 81/210**								
Number of pole pairs	**10**								
Winding configuration	**star**								
Rotor Inertia LC/AC&CC [kg*m²]	**0,0949/0,0941**								
Bearing configuration	**6208 | 3207**								
Weight [kg]	**21,4**	**22,3**	**21,9**	**21,4**	**22,3**	**21,9**	**21,4**	**22,3**	**21,9**

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 VDC maximum voltage.
[4] HV versions operate below the limiting speed due to the 830 VDC voltage limitation.
[5] Phase-to-phase resistance measured at 25 °C and divided by 2.

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	EMRAX 268 Low Voltage (LV) + 43%			EMRAX 268 Low Voltage (LV) + 100%			EMRAX 268 Medium Voltage (MV) + 42%			EMRAX 268 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**	**AC**	**LC**	**CC**
Ingress protection	**IP21**	**IP66**	**IP21**	**IP21**	**IP66**	**IP21**	**IP21**	**IP66**	**IP21**	**IP21**	**IP66**	**IP21**
Cooling specifications	**ambi-ent air 20°C 20 m/s**	**min. 6 l/min, max. 50°C T_{amb}≤ 30°C**	**AC+LC**	**ambi-ent air 20°C 20 m/s**	**min. 6 l/min, max. 50°C T_{amb}≤ 30°C**	**AC+LC**	**ambi-ent air 20°C 20 m/s**	**min. 6 l/min, max. 50°C T_{amb}≤ 30°C**	**AC+LC**	**ambi-ent 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]	**485**			**640**			**830**			**830**		
Motor peak efficiency [%]	**96%**											
Peak power S2 30 s [kW]	**210 kW at 4250 RPM**			**210 kW at 4250 RPM**			**152 kW at 2900 RPM [6]**			**96 kW at 1800 RPM [6]**		
Continuous power S1 [kW]	**64**	**91**	**101**	**64**	**91**	**101**	**58**	**82**	**90**	**38**	**55**	**60**
Peak torque [Nm]	**500**											
Continuous torque [Nm]	**144**	**205**	**226**	**144**	**205**	**226**	**144**	**205**	**226**	**144**	**205**	**226**
Limiting speed [RPM]	**4500**											
K_V constant at no load [RPM/V_{DC}]	**16,49**			**11,78**			**6,11**			**4,08**		
K_V constant at nominal load [RPM/V_{DC}]	**13,62**			**9,74**			**5,35**			**3,33**		
K_V constant at peak load [RPM/V_{DC}]	**9,27**			**6,63**			**3,64**			**2,26**		
K_T constant [Nm/ A_{RMS}]	**0,63**			**0,88**			**1,71**			**2,59**		
Peak motor current [A_{RMS}]	**880**			**650**			**350**			**220**		
Continuous motor current (LC) [A_{RMS}]	**380**			**280**			**150**			**100**		
Internal phase resistance at 25 °C [mΩ] [5]	**3,51**			**5,61**			**19,05**			**48,85**		
L_D/L_Q inductance of 1 phase [µH]	**34,9/35,5**			**69,7/74,9**			**183/196**			**423/454**		
K_e constant [V_{RMS}/RPM]	**0,0429**			**0,06002**			**0,11575**			**0,17350**		
Magnetic flux – axial [VS]	**0,04211**			**0,05944**			**0,11368**			**0,17263**		
Temperature sensor on the stator windings	**KTY 81/210**											
Number of pole pairs	**10**											
Winding configuration	**star**											
Rotor Inertia [kg*m²]	**0,0949/0,0941**											
Bearing configuration	**6208 | 3207**											
Weight [kg]	**21,4**	**22,3**	**21,9**	**21,4**	**22,3**	**21,9**	**21,4**	**22,3**	**21,9**	**21,4**	**22,3**	**21,9**

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

[6] MV+42% and HV+42% versions operate below the limiting speed due to the 830 VDC voltage limitation.

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