348

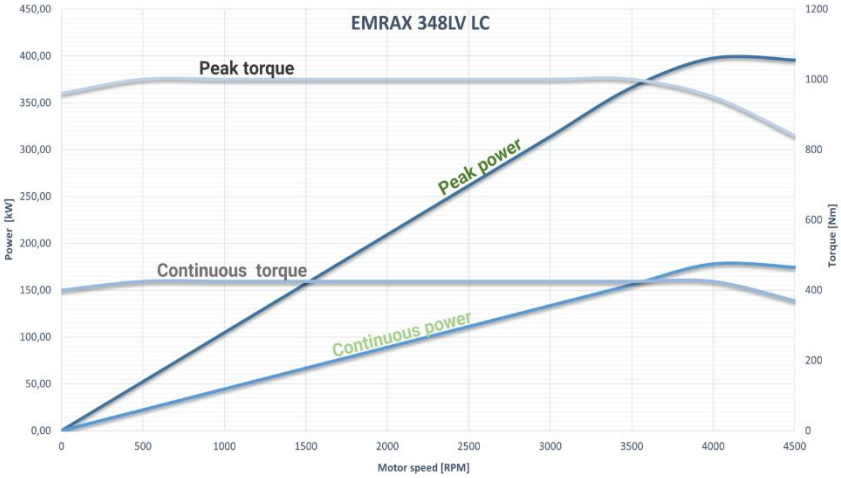
EMRAX 348 is a compact axial flux permanent magnet synchronous electric motor with high power/torque density.

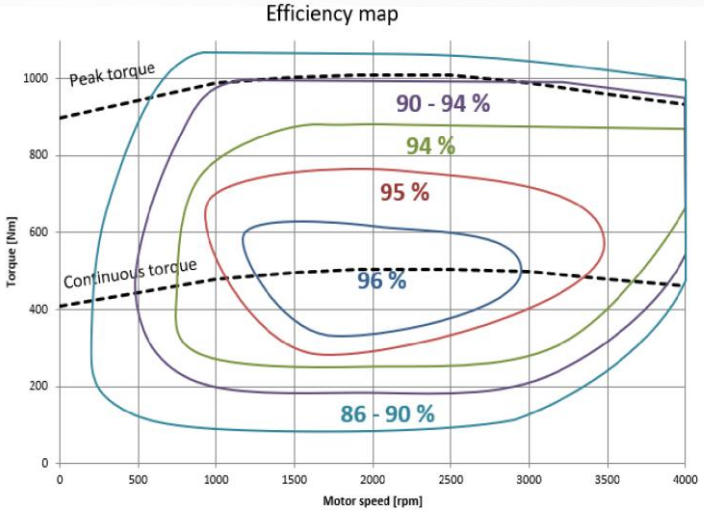
The 348 is the biggest motor in our offering. It can output impressive torque figures directly on the driveshaft. It has found its uses in aviation sector, marine, heavy machinery as well as a traction motor for some impressive vehicles. Contact us to find out more!

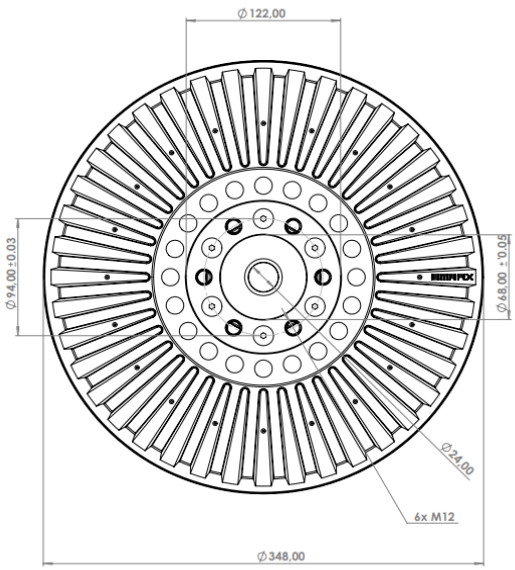
EMRAX 348

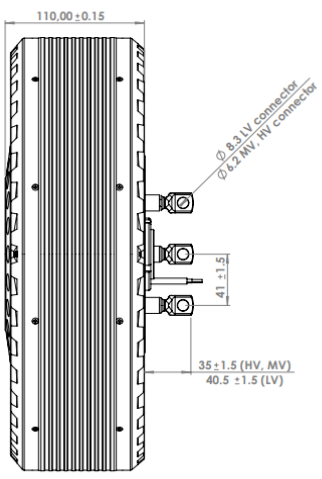
DIAMETER | LENGTH	348 mm | 112 mm
WEIGHT	43,1-43,9 kg
COOLING	air / water / combined
PEAK | CONTINUOUS POWER	340 kW | 145 kW*
PEAK | CONTINUOUS TORQUE	1000 Nm | 425 Nm*
MAXIMUM SPEED	3250 RPM
OPERATING VOLTAGE	100 - 830 V
EFFICIENY	up to 96%*
POSITION SENSOR	resolver / encoder

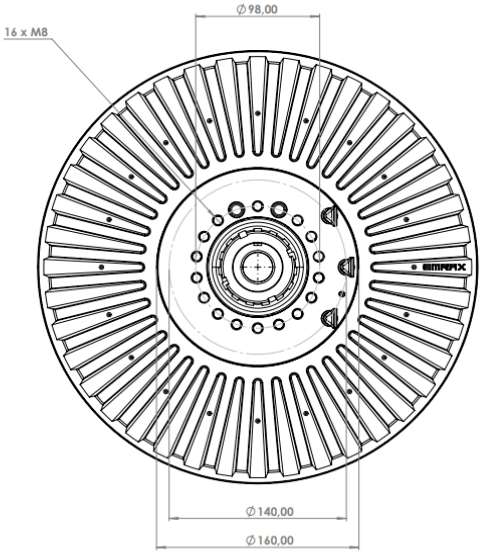
*Subject to motor configuration, drive cycle, thermal conditions, and controller capability.











	EMRAX 348 High Voltage			EMRAX 348 Medium Voltage			EMRAX 348 Low Voltage		
AC = Air cooled LC = Liquid cooled CC = Combined cooled (Air + liquid)	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. 8 l/min, max. 40°C, T_{amb}≤ 30°C	AC+LC*	ambient air 20ºC 20 m/s	min. 8 l/min, max. 40°C, T_{amb}≤ 30°C	AC+LC*	ambient air 20ºC 20 m/s	min. 8 l/min, max. 40°C, T_{amb}≤ 30°C	AC+LC*
Maximum motor [°C]	integrated temperature sensor / rotor surface / internal parts absolute limit 100/80/120								
Motor connection type	UVW or 2x UVW			UVW or 2x UVW			UVW or 2x UVW		
Voltage required for peak power [V_{DC}]**	830 Vdc			830 Vdc			500 Vdc		
Motor peak efficiency [%]	96%								
Peak power S2 (30s) [kW]	145 kW at 1400 RPM			230 kW at 2200 RPM			340 kW at 3250 RPM		
Continuous power S1 (kW)	82	90	95	120	136	145	120	136	145
Peak torque (30 s) [Nm]	1000								
Continuous torque [Nm]	350	400	425	350	400	425	350	400	425
Limiting speed [RPM]	3250								
K_V constant at no load [rpm/V_{DC}]	3,19			4,89			13,11		
K_V constant at nominal load [rpm/V_{DC}]	2,58			3,96			10,58		
K_V constant at peak load [rpm/V_{DC}]	1,62			2,48			6,56		
K_T constant [Nm/A_{RMS}]	2,94			1,92			0,74		
Peak motor current (30s) [A_{RMS}]	375			570			1500		
Continuous motor current [A_{RMS}]	150			230			550		
Internal phase resistance at 25 °C [mΩ]***	29,41			13,15			4,45		
L_D inductance of 1 phase [µH]	425,2			185,3			28,5		
Induced voltage [V_{RMS}/RPM]	0,22982			0,15024			0,05405		
Magnetic flux – axial [V_S]	0,17918			0,11714			0,04443		
Temperature sensor on the stator windings	KTY 81/210								
Number of pole pairs	10								
Winding configuration	star								
Rotor Inertia [kg*m²]	0,22042								
Bearing configuration	6210 | 3208								
Weight [kg]	43,1	43,9	43,5	43,1	43,9	43,5	43,1	43,9	43,5

*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. To cool down the rotor approximately **0,4 m3/min per 1 kW of power** is required. 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.
**All motors are tested for 833V maximum voltage.
***Measured Phase to Phase, then divided by 2.

High and medium voltage options are operating at speeds lower than its limiting, due to 830V voltage limitations.

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

	EMRAX 348 LV + 43%			EMRAX 348 LV + 100%			EMRAX 348 HV + 42%		
AC = Air cooled LC = Liquid cooled CC = Combined cooled (Air + liquid)	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. 8 l/min, max. 40°C, T_{amb}≤ 30°C	AC+LC	ambient air 20ºC 20 m/s	min. 8 l/min, max. 40°C, T_{amb}≤ 30°C	AC+LC*	ambient air 20ºC 20 m/s	min. 8 l/min, max. 40°C, T_{amb}≤ 30°C	AC+LC
Maximum motor temperature [°C]	integrated temperature sensor/rotor surface/internal motor parts 100/80/120								
Motor connection type	UVW or 2x UVW			UVW or 2x UVW			UVW or 2x UVW		
Voltage required for peak power [V_{DC}]**	700 Vdc			830 Vdc			830 Vdc		
Motor peak efficiency [%]	96%								
Peak power S2 (30s) [kW]	340 kW at 3250 RPM			290 kW at 2800 RPM			105 kW at 1000 RPM		
Continuous power S1 (kW)	120	136	145	120	136	145	61	63	66
Peak torque (30s) [Nm]	1000								
Continuous torque [Nm]	350	400	425	350	400	425	350	400	425
Limiting speed [RPM]	3250								
K_V constant at no load [rpm/V_{DC}]	9,16			6,56			2,24		
K_V constant at 425 Nm [rpm/V_{DC}]	7,39			5,29			1,82		
K_V constant at 1000 Nm [rpm/V_{DC}]	4,59			3,28			1,14		
K_T constant [Nm/A_{RMS}]	1,03			1,44			4,19		
Peak motor current (30s) [A_{RMS}]	1070			760			260		
Continuous motor current [A_{RMS}]	450			300			105		
Internal phase resistance at 25 °C [mΩ]***	4,74			7,65			63,15		
L_D inductance of 1 phase [µH]	52,0			103,0			871,5		
K_e Induced voltage [V_{RMS}/RPM]	0,08015			0,11210			0,32634		
Magnetic flux – axial [V_S]	0,06249			0,08740			0,25443		
Temperature sensor on the stator windings	KTY 81/210								
Number of pole pairs	10								
Winding configuration	star								
Rotor Inertia [kg*m²]	0,22042								
Bearing configuration	6210 | 3208								
Weight [kg]	43,1	43,9	43,5	43,1	43,9	43,5	43,1	43,9	43,5

*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.
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Performance in your application will depend on your installation details and boundary conditions. Please contact us to learn more.
**All motors are tested for 833V maximum voltage.
***Measured Phase to Phase, then divided by 2.

LV+100% and HV+42% option is operating at speeds lower than its limiting, due to 830 V voltage limitations.

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