EMRAX 348 Technical Data Table

It will be available for sale at the end of 2016. Orders are being collected.

Technical data / Type	EMRAX 348 High Voltage			EMRAX 348 Medium Voltage			EMRAX 348 Low Voltage		
Air cooled = AC Liquid cooled = LC Combined cooled = Air + Liquid cooled = CC	**AC**	**LC**	**CC**	**AC**	**LC**	**CC**	**AC**	**LC**	**CC**
Ingress protection	IP21	IP65	IP21	IP21	IP65	IP21	IP21	IP65	IP21
Cooling medium specification (Air Flow = AF; Water/glycol Flow = WF – if inlet water/glycol temperature and/or ambient temperature are lower, then continuous power is higher)	AF=20m/s ; AA=25°C	WF=8l/min at 50°C; AA=25°C	WF=8l/min at 50°C; AA=25°C	AF=20m/s ; AA=25°C	WF=8l/min at 50°C; AA=25°C	WF=8l/min at 50°C; AA=25°C	AF=20m/s ; AA=25°C	WF=8l/min at 50°C; AA=25°C	WF=8l/min at 50°C; AA=25°C
Weight [kg]	39	40	40	39	40	40	39	40	40
Diameter ø / width [mm]	348/107								
Maximal battery voltage [Vdc] and full load/no load RPM	800 Vdc (1800/2200 RPM)			800 Vdc (2800/3400 RPM)			130 Vdc (1200/1500 RPM) 340 Vdc (3200/4000 RPM)		
Peak motor power at max RPM (few min at cold start / few seconds at hot start) [kW]	**190**			**290**			**125 kW (at 1200 RPM load #)** **330 kW (at 3200 RPM load ##)**		
Continuous motor power at load RPM [kW]	**90**	**100**	**100**	**140**	**150**	**170**	**70 at #; 170 at ##**	**70 at #; 180 at ##**	**80 at #; 200 at ##**
Maximal rotation speed [RPM]	4000 (with maximal battery voltage or magnetic field weakening)								
Maximal motor current (for 2 min if it is cooled as described in Manual) [Arms]	280			450			1100		
Continuous motor current [Arms]	140			210			550		
Maximal motor torque (for a few seconds) [Nm]	**1000**								
Continuous motor torque [Nm]	**500**								
Torque / motor current [Nm/1Aph rms]	**3,8**			**2,5**			**0,9**		
Cogging torque [Nm]	5								
Maximal temperature of the copper windings in the stator and max. temp. of the magnets [°C]	120								
Motor efficiency [%]	**92 - 98**								
Internal phase resistance at 25 °C [mΩ]	32			14			5		
Input phase wire cross-section [mm^2]	10,2			15,2			38		
Wire connection	star								
Induction in Ld/Lq [µH]	418/452			180/195			24,3/26,3		
Controller / motor signal	sine wave								
AC voltage between two phases [Vrms/1RPM]	0,2320			0,1520			0,0560		
Specific idle speed (no load) [RPM/1Vdc]	**2,8**			**4,3**			**11,8**		
Specific - load speed (depends on the controller settings) [RPM/1Vdc]	**2,3 – 2,8**			**3,5 – 4,3**			**9,5 – 11,8**		
Magnetic field weakening (for higher RPM at the same power and lower torque) [%]	up to 100 %								
Magnetic flux – axial [Vs]	N/A			N/A			N/A		
Temperature sensor in the motor	kty 81/210								
Number of pole pairs	10								
Rotor inertia (mass dia=270 mm, m=20kg) [kg*cm²]	N/A								
Bearings (front:back) – SKF/FAG	6009:6009 (for radial forces) for axial-radial forces contact EMRAX Company								

*Controller for EMRAX 348 Low Voltage should have very high peak and continuous motor current (1100 Arms peak and 550 Arms continuous). It is difficult to find such a high current controller in the global market. The most suitable would be the emDrive 500 from the Emsiso Company,

which has 500 Arms continuous and 800 Arms peak motor current. Another possibility to get a high enough motor current is to connect 1 motor with 2 controllers by using 2 set of phase connectors (2x UWV) on the motor.

*Graphs for EMRAX 188 will be made in the end of 2016.