

EMRAX 228 Technical Data Table

Type	EMRAX 228 High Voltage			EMRAX 228 Medium Voltage			EMRAX 228 Low Voltage		
Technical data	AC	LC	CC	AC	LC	CC	AC	LC	CC
Air cooling = AC Liquid cooling = LC Combined cooling = Air + Liquid cooling = CC									
Ingress protection	IP21	IP65	IP21	IP21	IP65	IP21	IP21	IP65	IP21
Cooling medium specification (Air Flow = AF; Water Flow = WF – if inlet water temperature and/or ambient temperature are lower, then continuous power is higher)	AF speed 25 m/s; 25°C	inlet WF 8 l/min - 40°C; ambient air 25°C	inlet WF 8 l/min - 40°C; ambient air 25°C	AF speed 25 m/s; 25°C	inlet WF 8 l/min - 40°C; ambient air 25°C	inlet WF 8 l/min - 40°C; ambient air 25°C	AF speed 25 m/s; 25°C	inlet WF 8 l/min - 40°C; ambient air 25°C	inlet WF 8 l/min - 40°C; ambient air 25°C
Weight [kg]	12,0	12,3	12,3	12,0	12,3	12,3	12,0	12,3	12,3
Diameter ø / width [mm]	228 / 86								
Battery voltage range [Vdc]	50 – 600 (*700 – to get 6500 RPMp)			50 – 450 (*540 – to get 6500 RPMp)			24 – 150 (*180 – to get 6500 RPMp)		
Peak motor power (few min at cold start / few seconds at hot start) [kW]	100								
Continuous motor power (depends on the motor RPM 3000 - 5000) [kW]	28 - 42	28 - 42	35 - 55	28 - 42	28 - 42	35 - 55	28 - 42	28 - 42	35 - 55
Maximal rotation speed [RPM]	5500 (*6500 RPM peak)								
Maximal motor current (for 2 min if cooled as described in Manual for EMRAX) [Arms]	240			340			900		
Continuous motor current [Arms]	115			160			450		
Maximal motor torque (for a few seconds) [Nm]	240								
Continuous motor torque [Nm]	125								
Torque / motor current [Nm/1Aph rms]	1,1			0,75			0,27		
Maximal temperature of the copper windings in the stator and also max. temp. of the magnets [°C]	120								
Motor efficiency [%]	93 – 98								
Internal phase resistance at 25 °C [mΩ]	18			8,0			1,12		
Input phase wire cross-section [mm²]	10,2			15,2			38		
Induction in Ld/Lq [μH]	175/180			75/80			10,6/11,2		
Controller / motor signal	sine wave								
Specific idle speed (no load RPM) [RPM/1Vdc]	9,8			14			40		
Specific load speed (depends on the controller settings) [RPM/1Vdc]	8 – 9,8			11 – 14			34 – 40		
Magnetic field weakening (for higher RPM at low torque) [%]	up to 100								
Magnetic flux – axial [Vs]	0,0542			0,0355			0,0131		
Temperature sensor in the motor	kty 81/210								
Number of pole pairs	10								
Rotor inertia (mass dia=175mm, m=5,5kg) [kg*cm²]	421								
Bearings SKF FAG	R/R 6206/6206 or R/AR 6206/7206 or AR/AR 7206/7206 («O» orientation)								

*For a few seconds.

Maximal battery voltage is 700 Vdc (EMRAX 228 High Voltage). Maximal RPM must not be exceeded.

It is possible to weaken the magnetic field (up to 100%) to get higher RPM at existing battery voltage. Maximal RPM must not be exceeded.

These data are valid for the motors, which were sold after January 2014.

EMRAX motors that had been made before May 2012 have 30% lower power/torque and RPM than new generation of EMRAX motors.