

## AC BRUSHLESS SERVOMOTORS - M5.3x



**M5** - Brushless Servomotors are AC PM Synchronous servomotors. They have been designed using latest generation of magnets and construction techniques to provide very high performance, low cogging and torque ripple. They can be supplied with resolver or Incremental / absolute encoder.

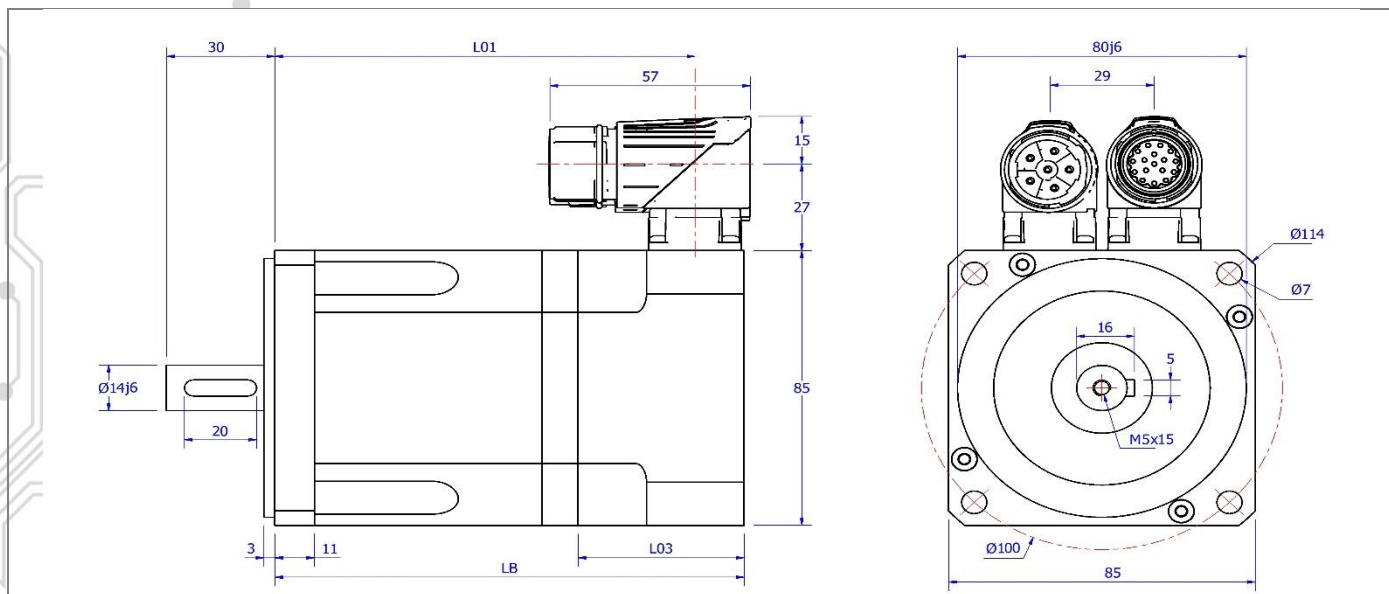
*Their main characteristics are:*

- Frame size 85mm
- Rare earth magnets for high performance
- 8 pole construction for high torque density
- Low cogging and torque ripple
- Sinusoidal back EMF
- Integrated PTC thermal protection
- Rotatable connectors
- Compact design
- High IP rating
- Smooth finish

Technical Data

Tab. 1

Description	Symbol	Motor	M5.31		M5.32		M5.33		M5.34	
			1	2	1	2	1	2	1	2
Stall Torque	$M_0$	Nm	1,5		2,9		4,2		5,3	
Maximum Torque	$M_{pk}$	Nm	5,1	4,8	10	10	14	14	18	18
Stall Current	$I_0$	A	1,65	1,1	3,2	2	4,6	2,9	5,8	3,4
Peak current	$I_{pk}$	A	6,6	4	13	8	19	12	24	15
Maximum mechanical revs	$N_{mec}$	min <sup>-1</sup>	7000		7000		7000		6000	
Maximum revs @ 230Vac	$N_{MAX}$	min <sup>-1</sup>	3100	1800	3200	1900	3300	2000	3300	1900
Maximum revs @ 400Vac	$N_{MAX}$	min <sup>-1</sup>	6000	3500	6000	3500	6000	3500	5000	3000
Voltage constant	$K_E$	V/krpm	55	86	55	88	55	88	55	93
Torque constant	$K_T$	Nm/A	0,91	1,42	0,91	1,45	0,91	1,45	0,91	1,54
Rotor Inertia	$J_R$	kg cm <sup>2</sup>	0,92		1,72		2,53		3,33	
Resist. @ 20°C	$R_{U-V}$	Ohm	9	23	3,4	8,3	1,9	5	1,4	4
Induct. @ 1 kHz	$L_{U-V}$	mH	16	35	7	18	4,5	12	3,5	11
Mass	$m$	kg	2,4		3,5		4,6		5,7	



Dimension in mm

Tab. 2

Feedback device	EQI1130, TTL 2048ppr, Resolver, SEL52				SinCos, EKS36					
Dimension	LB		L01		L03	LB		L01		L03
Shaft - ØD	14	19	14	19		14	19	14	19	
<b>M5.31</b>	115	125	101	111	31	130	140	116	126	46
<b>M5.32</b>	145	155	131	141		160	170	146	156	
<b>M5.33</b>	175	185	161	171		190	200	176	186	
<b>M5.34</b>	205	215	191	201		220	230	206	216	
<b>M5.31 Brake</b>	163	163	149	149		178	178	164	164	
<b>M5.32 Brake</b>	193	193	179	179		208	208	194	194	
<b>M5.33 Brake</b>	223	223	209	209		238	238	224	224	
<b>M5.34 Brake</b>	253	253	283	283		268	268	254	254	

Dimension in mm

Tab. 3

Flange	56B5	63B5
N	80j6	95j6
M	100	115
S	7	9

Dimension in mm

Tab. 4

Shaft	Dimension	
D	14j6	19j6
E	30	40
GL	20	32
GA	16	21,5
F	5	6
R	M5 x 15	M6 x 16

**Values in this catalogue are true for the following conditions:**

- Max Temperature ambient 40° C
- Min temperature ambient 0 °C
- Max Altitude 1000 m (above sea level)
- Insulation class F (materials F & H)
- RMS values
- Insulation system conforms to UL
- IP65 enclosure protection with seal
- Motor Installation B5 – V5
- Cooling IC0041
- Typical tolerance value ±10%
- Continuous ratings apply with a rise of Δ 100K on the windings when fitted on an aluminium plate with dimensions 254 x 254 x 8mm

## PART NUMBER COMPOSITION

1	2	3	4	5	6	7	8	9	10	11	12
-	-	<b>M</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>x</b>	<b>x</b>

**POS. DESCRIPTION**

- 1-3 **Product**  
M= PM synchronous motor, self-cooled
- 4 **Motor type**  
Series 5
- 5 **Motor size**  
Size Three
- 6 **Motor length**  
1 = Mo 1,5 Nm  
2 = Mo 2,9 Nm  
3 = Mo 4,2 Nm  
4 = Mo 5,3 Nm
- 7 **Voltage**  
1 = Winding code 1  
2 = Winding code 2
- 8 **Holding brake**  
0 = Without brake  
1 = With holding brake Mb = 9 Nm 18 W 24 VDC PM Jb = 1,1 kgcm<sup>2</sup> mb = 0,8 kg
- 9 **Feedback**  
0 = Sensor-less  
1 = Heidenhain encoder EQI1130 EnDat multi-turn  
4 = Encoder 2048ppr TTL LD + hall sensors  
6 = Encoder 4096ppr TTL LD + hall sensors  
7 = Encoder 1Vpp + position sin-cos  
9 = Resolver size 15 2p 7V 10KHz  
G = Sick encoder SEL52 Hiperface multi-turn  
W = Sick encoder EKS36 Hiperface DSL single-turn no SIL 17bit  
Y = Sick encoder EKM36 Hiperface DSL multi-turn no SIL 17bit  
Z = Sick encoder SKM36 Hiperface 128ppr multi-turn
- 10 **Connection type**  
1 = Flying leads with cable glands  
7 = M23 connectors 90° rotatable
- 11-12 **Special version**  
23 =Shaft 19 x 40mm Flange 63B5  
66 = IP65 Shaft Protection  
90 = Thermal protection PT1000



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## MOTORS & MOTION CONTROL

- M5 BRUSHLESS SERVOMOTORS
- DSG SYNCHRONOUS PM GENERATORS
- RARE EARTH SC DC SERVOMOTORS
- DSW WATER-COOLED
- LOW-COST SOLUTIONS
- PLANETARY GEARS
- CUSTOMISED SOLUTIONS
- TORQUE MOTORS
- FRAMELESS SPINDLE MOTORS



ISD : E220486

