

## AC BRUSHLESS SERVOMOTORS - M5.5x



**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.

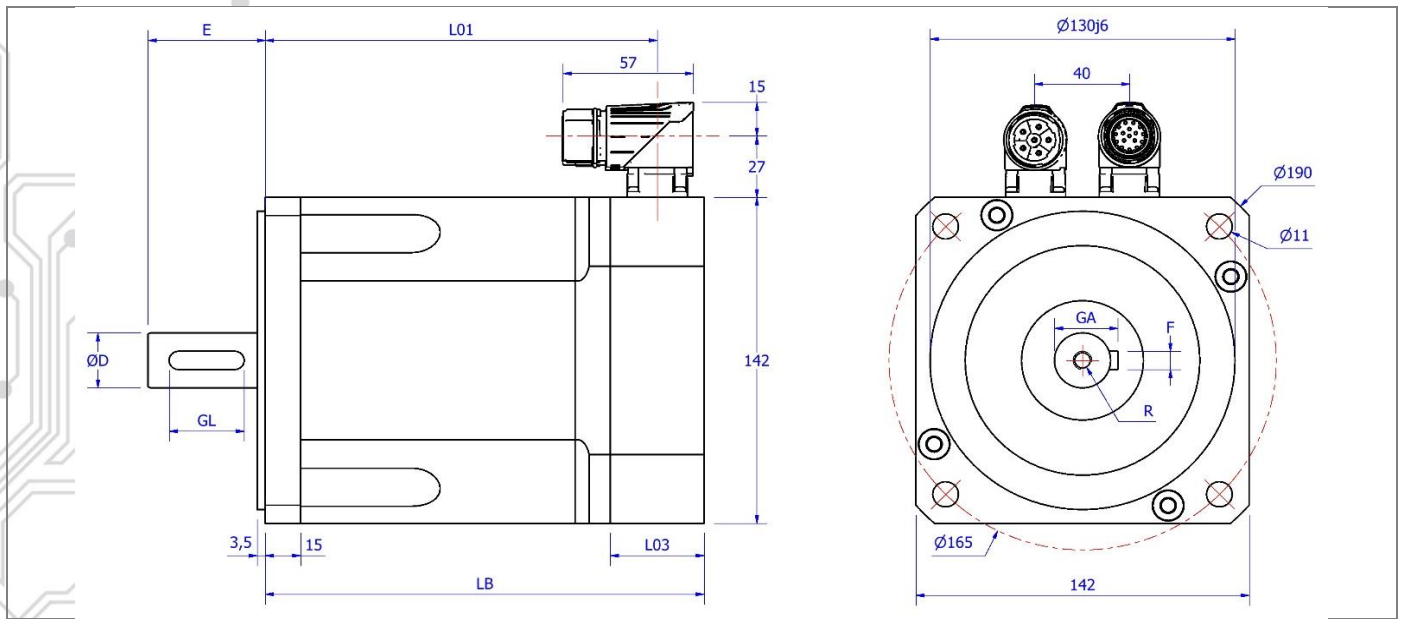
### Their main characteristics are:

- Frame size 142mm
- 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 Winding code	Symbol	Motor	M5.51		M5.52		M5.53		M5.54	
		UM	1	2	1	2	1	2	1	2
<b>Stall Torque</b>	M <sub>0</sub>	Nm	<b>10</b>		<b>19</b>		<b>27</b>		<b>35</b>	
<b>Maximum Torque</b>	M <sub>pk</sub>	Nm	36	34	65	66	93	93	119	118
<b>Stall Current</b>	I <sub>0</sub>	A	10,5	6,5	16	12,3	21	15,4	25	20
<b>Peak current</b>	I <sub>pk</sub>	A	42	26	64	50	84	62	100	80
<b>Maximum mechanical revs</b>	N <sub>mec</sub>	min-1	6500		6500		5500		5500	
<b>Maximum revs @ 230Vac</b>	N <sub>MAX</sub>	min <sup>-1</sup>	3000	1900	2600	2000	2400	1700	2200	1800
<b>Maximum revs @ 400Vac</b>	N <sub>MAX</sub>	min <sup>-1</sup>	5000	3000	4500	3000	4500	3000	4000	3000
<b>Voltage constant</b>	K <sub>E</sub>	V/krpm	62	93	72	93	78	106	85	106
<b>Torque constant</b>	K <sub>T</sub>	Nm/A	1,02	1,54	1,2	1,54	1,3	1,74	1,4	1,74
<b>Rotor Inertia</b>	J <sub>R</sub>	kg cm <sup>2</sup>	22		43		65		87	
<b>Resist. @ 20°C</b>	R <sub>U-V</sub>	Ohm	0,65	1,61	0,34	0,61	0,25	0,46	0,18	0,32
<b>Induct. @ 1 kHz</b>	L <sub>U-V</sub>	mH	2,6	7	1,9	3,3	1,7	2,7	1,7	1,9
<b>Mass</b>	m	kg	11		16		21		26	



Dimension in mm

Tab. 2

Feedback device	EQI1130, TTL 2048ppr, Resolver, SEL52			SinCos, EKS36		
Dimension	LB	L01	L03	LB	L01	L03
<b>M5.51</b>	174	154	27	187	167	40
<b>M5.52</b>	224	204		237	217	
<b>M5.53</b>	274	254		287	267	
<b>M5.54</b>	324	304		337	317	
<b>M5.51 Brake</b>	227,5	207,5		240,5	220,5	
<b>M5.52 Brake</b>	277,5	257,5		290,5	270,5	
<b>M5.53 Brake</b>	327,5	307,5		340,5	320,5	
<b>M5.54 Brake</b>	377,5	357,5		390,5	370,5	

Dimensions in mm

Tab. 3

Shaft	Dimension	
D	24j6	32k6
E	50	58
GL	32	45
GA	27	35
F	8	10
R	M8 x 15	M12 x 22

**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 ΔT=100K on the windings when fitted on an aluminium plate with dimensions 457 x 457 x 15 mm

## PART NUMBER COMPOSITION

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

**POS. DESCRIPTION**

**1-3 Product**

M = PM synchronous motor, self-cooled  
 DSF = PM synchronous motor, forced air-cooled  
 DSW = PM synchronous motor, water-cooled

**4 Motor type**

Series 5

**5 Motor size**

Size Five

**6 Motor length**

1 = Mo 10 Nm  
 2 = Mo 19 Nm  
 3 = Mo 27 Nm  
 4 = Mo 35 Nm

**7 Voltage**

1 = Winding code 1  
 2 = Winding code 2

**8 Holding brake**

0 = Without brake  
 1 = With holding brake Mb = 40 Nm - 22 W - 24 VDC PM - Jb = 10 kgcm<sup>2</sup> - mb = 1,4 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**

7 = M23 connectors 90° rotatable  
 9 = M40 connectors 90° rotatable I > 20A, feedback M23

**11-12 Special version**

26 = Smooth Shaft  
 32 = Shaft 32 x 58  
 66 = IP65 Shaft Protection  
 90 = Thermal Protection PT1000



---

## **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

