



## AC BRUSHLESS SERVOMOTORS - DSM5.3x



**DSM5 - size THREE** Brushless Servomotors are AC PM Synchronous servomotors. They have been designed using the 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.

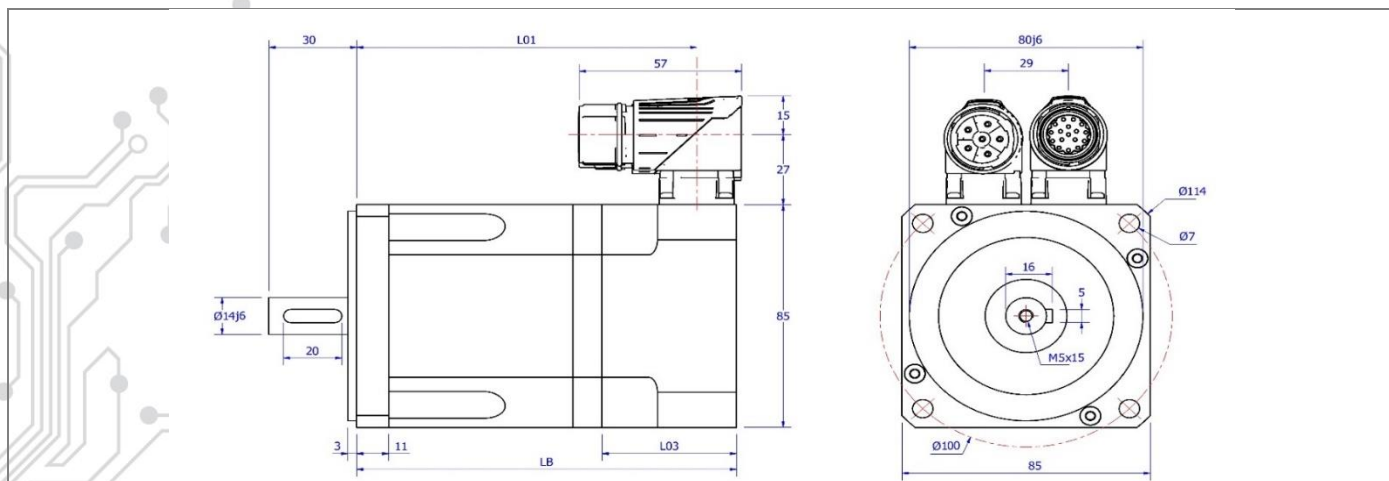
*Their main characteristics are:*

- 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<br><br>Winding code | Symbol    | Motor              | DSM5.31 |      | DSM5.32 |      | DSM5.33 |      | DSM5.34 |      |
|---------------------------------|-----------|--------------------|---------|------|---------|------|---------|------|---------|------|
|                                 |           | Units              | 1       | 2    | 1       | 2    | 1       | 2    | 1       | 2    |
| <b>Stall Torque</b>             | $M_0$     | Nm                 | 1,5     |      | 2,9     |      | 4,2     |      | 5,3     |      |
| <b>Maximum Torque</b>           | $M_{pk}$  | Nm                 | 5,2     |      | 10      |      | 14      |      | 18      |      |
| <b>Stall Current</b>            | $I_0$     | A                  | 1,65    | 1,1  | 3,2     | 2    | 4,6     | 2,9  | 5,8     | 3,4  |
| <b>Peak current</b>             | $I_{pk}$  | A                  | 6,6     | 4,0  | 12,8    | 8    | 18      | 11   | 23      | 14   |
| <b>Maximum mechanical revs</b>  | $N_{mec}$ | min <sup>-1</sup>  | 7000    |      | 7000    |      | 7000    |      | 6000    |      |
| <b>Maximum revs @ 230Vac</b>    | $N_{MAX}$ | min <sup>-1</sup>  | 3100    | 1800 | 3200    | 1900 | 3300    | 2000 | 3300    | 1900 |
| <b>Maximum revs @ 400Vac</b>    | $N_{MAX}$ | min <sup>-1</sup>  | 6000    | 3500 | 6000    | 3500 | 6000    | 3500 | 5000    | 3000 |
| <b>Voltage constant</b>         | $K_E$     | V/krpm             | 55      | 86   | 55      | 88   | 55      | 88   | 55      | 93   |
| <b>Torque constant</b>          | $K_T$     | Nm/A               | 0,91    | 1,42 | 0,91    | 1,46 | 0,91    | 1,46 | 0,91    | 1,54 |
| <b>Rotor Inertia</b>            | $J_R$     | kg cm <sup>2</sup> | 0,92    |      | 1,72    |      | 2,53    |      | 3,33    |      |
| <b>Resistance @ 20°C</b>        | $R_{U-V}$ | Ohm                | 9       | 23   | 3,4     | 8,3  | 1,9     | 5    | 1,4     | 4    |
| <b>Inductance @ 1 kHz</b>       | $L_{U-V}$ | mH                 | 16      | 35   | 7       | 18   | 4,5     | 12   | 3,5     | 11   |
| <b>Mass</b>                     | $m$       | kg                 | 2,4     |      | 3,5     |      | 4,6     |      | 5,7     |      |



Dimension in mm

Tab. 2

| Feedback device      | EQI1131, TTL 2048ppr, Resolver |     |     |     | SinCos, SKM36 |     |     |     |     |     |
|----------------------|--------------------------------|-----|-----|-----|---------------|-----|-----|-----|-----|-----|
| Dimension            | LB                             |     | L01 |     | L03           | LB  |     | L01 |     | L03 |
| Shaft - ØD           | 14                             | 19  | 14  | 19  |               | 14  | 19  | 14  | 19  |     |
| <b>DSM5.31</b>       | 115                            | 125 | 101 | 111 | 31            | 130 | 140 | 116 | 126 | 46  |
| <b>DSM5.32</b>       | 145                            | 155 | 131 | 141 |               | 160 | 170 | 146 | 156 |     |
| <b>DSM5.33</b>       | 175                            | 185 | 161 | 171 |               | 190 | 200 | 176 | 186 |     |
| <b>DSM5.34</b>       | 205                            | 215 | 191 | 201 |               | 220 | 230 | 206 | 216 |     |
| <b>DSM5.31 Brake</b> | 163                            | 163 | 149 | 149 |               | 178 | 178 | 164 | 164 |     |
| <b>DSM5.32 Brake</b> | 193                            | 193 | 179 | 179 |               | 208 | 208 | 194 | 194 |     |
| <b>DSM5.33 Brake</b> | 223                            | 223 | 209 | 209 |               | 238 | 238 | 224 | 224 |     |
| <b>DSM5.34 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    |
| AC     | 85   | 100  |

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 |

**Information** Bold data refers to standard version dimensions.

Values in this catalogue are true for the following conditions:

- Max ambient temperature 40° C
- Min ambient temperature 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 shaft seal
- Motor Installation B5 – V5
- Cooling IC410
- 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

Sangalli reserves the right to amend the specification of this product without prior notification.

## PART NUMBER COMPOSITION

|          |          |          |          |          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       | 11       | 12       |
| <b>D</b> | <b>S</b> | <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> |

|             |                    |
|-------------|--------------------|
| <b>POS.</b> | <b>DESCRIPTION</b> |
|-------------|--------------------|

1-3 **Product**  
DSM= 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 = Permanent Magnet Brake  $24V_{DC} \pm 6\%$   $M_{br} = 9Nm$   $18W$   $J_{br} = 0,6kgcm^2$   $m=1,0$  kg

9 **Feedback**  
0 = Sensorless  
3 = Heidenhain Encoder EQI1131 Endat Multi Turn 2.2  
4 = Incremental Encoder 2048 PPR + hall  
6 = Incremental Encoder 4096 PPR + hall  
7 = Encoder sin-cos 1 Vpp 2048 with CD channels  
9 = Resolver 2p 7V 10KHz  
C = Encoder Sangalli Servomotori ME29 Biss-C MT at battery cell  
W = Sick encoder EKS36 17bit NO SIL, DSL  
Y = Sick encoder EKM36 18bit Multi turn NO SIL, DSL  
Z = Sick encoder SKM36 Hiperface 128i PPT Multi turn

*Available on request SIL option on some types of encoders*

10 **Connection type**  
1 = Cable gland + cable 30-40 cm  
7 = M23 90° 6 poles power connector / M23 90° feedback

11-12 **Special version** *(Below some examples, for further details please contact our technical support.)*  
23 =Shaft 19 x 40mm Flange 63B5  
66 = IP65 Shaft Protection  
90 = Thermal protection PT1000  
xx = Special Shaft and Flanges (on request)

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## **MOTORS & MOTION CONTROL**

- **DSM5 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

