Lexium 32 and Motors
BSH servo motors

BSH servo motor with rotatable angled connectors

BSH servo motor with straight connectors

BSH servo motor with rotatable angled connectors

Presentation

BSH servo motors offer an excellent solution to the need for high dynamic performance. With five flange sizes and a variety of lengths, there is a suitable solution for many applications, covering a continuous stall torque range from 0.5 to 33.4 Nm for speeds up to 9,000 rpm.
Thanks to their new winding technology based on salient poles, BSH servo motors are far more compact and offer a higher power density than conventional servo motors.
BSH servo motors are UL Recognized and conform to standard UL1004 as well as to European directives (CE marking).
They are available with the following variants:

- 5 flange sizes: 40, 55, 70, 100, and 140 mm/*1.57, 2.28, 2.76, 3.94, and 5.51 in*
- 2 degrees of protection for the shaft end: IP 50 or IP 65 in accordance with standard IEC/EN 60529. The degree of protection of the casing is IP 65 (IP 67 with the conformity kit, which is available as an option).
- With or without holding brake
- Straight or elbow connectors for power and encoder connection
- Integrated single-turn or multi-turn SinCos Hiperface® encoder (medium or high resolution)
- Smooth or keyed shaft end

Special features

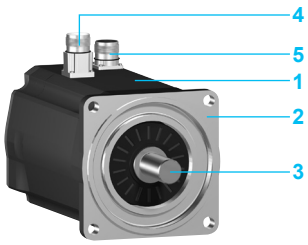
BSH servo motors have been developed to comply with the following main specifications:

- Ambient operating temperature: - 20...+ 40 °C /*- 4...+ 104 °F* without derating, in accordance with standard IEC 60721-3-3, category 3K3, and up to 55 °C/*131 °F* with derating of 1% of the nominal output power per additional °C above 40 °C/*104 °F*.
- Maximum operating altitude: 1,000 m/*3,280 ft* without derating, 2,000 m/ *6,561 ft* with k = 0.86, and 3,000 m/*9,842 ft* with k = 0.8 *(1)*.
- The relative humidity that the servo motor can withstand is in line with standard IEC 60721-3-3, categories 3K3, 3Z12, and 3Z2.
- The windings are insulation class F (maximum temperature for windings 155 °C/ *311 °F*) in accordance with standard IEC 60034-1.
- Mounting positions permitted: horizontal mounting (IMB5) or vertical mounting (IMV1 with shaft end at the top and IMV3 with shaft end at the bottom) in accordance with standard IEC 60034-7.

Sizing

The Lexium Sizer tool is available on our website to help you size your servo motor.

(1) k: derating factor



Presentation (continued)

Holding brake

BSH servo motors can be equipped with an electromagnetic holding brake.

⚠ Do not use the holding brake as a dynamic brake for deceleration, as this will quickly damage the brake.

Integrated encoder

BSH servo motors are equipped with a single-turn (131,072 points/turn) *(1)* or multi-turn (131,072 points/turn x 4,096 turns) *(1)* SinCos Hiperface® high-resolution absolute encoder giving an angular shaft position precise to less than ± 1.3 arc minutes.
This encoder performs the following functions:

- Gives the absolute position of the motor so that flows can be synchronized
- Measures the servo motor speed via the associated Lexium 32 servo drive (this information is used by the servo drive's speed controller)
- Measures the position information for the servo drive's position controller
- Sends data from the servo motor to the servo drive, which provides automatic identification of the motor when the servo drive starts

Description

BSH servo motors, with a 3-phase stator and a 6 to 10-pole rotor (depending on model) with Neodymium Iron Borium (NdFeB) magnets, consist of:

1 Casing with RAL 9005 opaque black paint protective coating
2 A 4-point axial mounting flange
3 A smooth or keyed shaft end (depending on the model)
4 A threaded sealed male straight connector for the power cable *(2)*
5 A threaded sealed male straight connector for the control cable (encoder) *(2)*

Cables and connectors to be ordered separately, for connection to Lexium 32 servo drives (see page 44).
Schneider Electric has taken particular care over the compatibility of BSH servo motors and Lexium 32 servo drives. This compatibility is only possible when using cables and connectors sold by Schneider Electric (see page 44).

(1) Encoder resolution given for use with a Lexium 32 servo drive.
(2) For other model with rotatable elbow connector, see page 43.

Lexium 32 and Motors
BSH servo motors

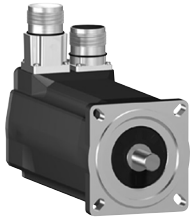
F19_MOT_CPFJR16001A

BSH040●●●●●2A

105990

BSH055●●●●●1A

105991



BSH070●●●●●1A

105992

BSH100●●●●●1A

105993

BSH1401P●●●1A

BSH servo motors

The BSH servo motors shown below are supplied without a gearbox.
For gearboxes, please consult "GBX and GBY planetary gearboxes"catalog or on our website .

Continuous stall torque	Peak stall torque	Nominal servo motor output power	Nominal speed	Maximum mechanical speed	Associated LXM32 servo drive	Reference *(1)*	Weight *(2)*
Nm	Nm	W	rpm	rpm			kg/*lb*
0.21	0.8	77	4,000	10,000	●U45M2	**BSH0401P●●●●A**	0.400/ *0.881*
		166	9,000	10,000	●U60N4	**BSH0401P●●●●A**	0.400/ *0.881*
0.38	1.37	152	4,000	10,000	●U45M2	**BSH0402P●●●●A**	0.600/ *1.322*
		275	9,000	10,000	●U60N4	**BSH0402P●●●●A**	0.600/ *1.322*
0.5	1.4	300	6,000	9,000	●U45M2	**BSH0551T●●●●A**	1.160/ *2.557*
	1.5	150	3,000	9,000	●U90M2	**BSH0551T●●●●A**	1.160/ *2.557*
		300	6,000	9,000	●U60N4	**BSH0551P●●●●A**	1.160/ *2.557*
0.8	1.9	250	3,000	9,000	●U45M2	**BSH0552T●●●●A**	1.470/ *3.241*
	2.5	450	6,000	9,000	●U90M2	**BSH0552T●●●●A**	1.470/ *3.241*
		400	6,000	9,000	●U60N4	**BSH0552P●●●●A**	1.470/ *3.241*
1.05	3.5	400	6,000	9,000	●U60N4	**BSH0553P●●●●A**	1.760/ *3.880*
1.2	3	550	6,000	9,000	●U90M2	**BSH0553T●●●●A**	1.760/ *3.880*
	3.3	350	3,000	9,000	●D18M2		
1.3	3.5	500	5,000	8,000	●U90M2	**BSH0701T●●●●A**	2.200/ *4.850*
1.4	3.5	350	2,500	8,000	●D18M2	**BSH0701T●●●●A**	2.200/ *4.850*
		700	5,000	8,000	●D12N4	**BSH0701P●●●●A**	2.200/ *4.850*
2.2	6.1	550	2,500	8,000	●D30M2	**BSH0702T●●●●A**	2.890/ *6.371*
	7.2	950	5,000	8,000	●D18M2		
	7.6	850	5,000	8,000	●D12N4	**BSH0702P●●●●A**	2.890/ *6.371*
2.6	7.4	900	4,000	8,000	●D18M2	**BSH0703T●●●●A**	3.620/ *7.981*
2.7	7.5	900	4,000	6,000	●D18M2	**BSH1001T●●●●A**	4.200/ *9.259*
3.1	11.3	1,300	5,000	8,000	●D18N4	**BSH0703P●●●●A**	3.620/ *7.981*
3.3	6.3	700	2,500	6,000	●D30M2	**BSH1001T●●●●A**	4.200/ *9.259*
	9.6	1,100	4,000	6,000	●D18N4	**BSH1001P●●●●A**	4.200/ *9.259*
5.8	16.4	1,500	4,000	6,000	●D30M2	**BSH1002T●●●●A**	5.900/ *13.007*
	18.3	1,700	4,000	6000	●D18N4	**BSH1002P●●●●A**	5.900/ *13.007*
8	28.3	2,000	3,000	6,000	●D30N4	**BSH1003P●●●●A**	7.400/ *16.314*
		2,600	4,000	6,000	●D30N4	**BSH1003P●●●●A**	7.400/ *16.314*
10	37.9	2,100	2,500	6,000	●D30N4	**BSH1004P●●●●A**	9.500/ *20.944*
		2,600	3,000	6,000	●D30N4	**BSH1004P●●●●A**	9.500/ *20.944*
11.1	27	2,500	2,500	4,000	●D30N4	**BSH1401P●●●●A**	11.200/ *24.692*
		3,000	3,000	4,000	●D30N4	**BSH1401P●●●●A**	11.200/ *24.692*
19.5	59.3	3,900	3,000	4,000	●D72N4	**BSH1402T●●●●P**	16.000/ *35.274*
27.8	90.2	4,100	3,000	4,000	●D72N4	**BSH1403T●●●●P**	21.200/ *48.738*
33.4	103.6	5,000	2,500	4,000	●D72N4	**BSH1404P●●●●P**	26.500/ *58.422*

(1) To complete each reference see the table on page 43.
(2) Weight of servo motor without brake, no packaging. To obtain the weight of the servo motor with holding brake, please consult our website

BSH servo motors (continued)

To order a BSH servo motor, complete each reference with:

			eg: BSH0401P	●	●	●	●	●
Shaft end	IP 50	Smooth		**0**				
		Keyed		**1**				
	IP 65/IP 67 *(1)*	Smooth		**2**				
		Keyed		**3**				
Integrated sensor	High resolution, optical	Single-turn, SinCos Hiperface® 131,072 points/turn, 128 Sin/Cos periods per revolution			**1**			
		Multi-turn, SinCos Hiperface® 131,072 points/turn x 4,096 turns, 128 Sin/Cos periods per revolution			**2**			
	Medium resolution, capacitive	Single-turn, SinCos Hiperface® 32768 points/turn, 16 Sin/Cos periods per revolution *(2)*			**6**			
		Multi-turn, SinCos Hiperface® 32768 points/turn x 4,096 turns, 16 Sin/Cos periods per revolution *(2)*			**7**			
Holding brake	Without					**A**		
	With					**F**		
Connections	Straight connectors						**1**	
	Rotatable right angle elbow connectors						**2**	
Flange	International standard							**A** or **P** *(3)*

***Note**: The example above is for a **BSH0401P** servo motor. For other servo motors, replace **BSH0401P** with the relevant reference.*

Dimensions (overall)

Servo motors	Flange	W x H x D *(4)*	
		Without holding brake	With holding brake
	mm/*in*	mm/*in*	mm/*in*
BSH0401P●	40 x 40/ *1.57 x 1.57*	40 x 73.4 x 98.4 *1.57 x 2.88 x 3.87*	40 x 99.4 x 124.4 *1.57 x 3.91 x 4.89*
BSH0402P●	40 x 40/ *1.57 x 1.57*	40 x 93.4 x 118.4/ *1.57 x 3.67 x 4.66*	40 x 119.4 x 144.4/ *1.57 x 4.70 x 5.68*
BSH0551●	55 x 55/ *2.16 x 2.16*	55 x 94.5 x 132.5/ *2.16 x 3.72 x 5.22*	55 x 94.5 x 159/ *2.16 x 3.72 x 6.26*
BSH0552●	55 x 55/ *2.16 x 2.16*	55 x 94.5 x 154.5/ *2.16 x 3.72 x 6.08*	55 x 94.5 x 181/ *2.16 x 3.72 x 7.13*
BSH0553●	55 x 55/ *2.16 x 2.16*	55 x 94.5 x 176.5/ *2.16 x 3.72 x 6.95*	55 x 94.5 x 203/ *2.16 x 3.72 x 7.99*
BSH0701●	70 x 70/ *2.76 x 2.76*	70 x 111.5 x 154/ *2.76 x 4.39 x 6.06*	70 x 111.5 x 180/ *2.76 x 4.39 x 7.09*
BSH0702●	70 x 70/ *2.76 x 2.76*	70 x 111.5 x 187/ *2.76 x 4.39 x 7.36*	70 x 111.5 x 213/ *2.76 x 4.39 x 8.39*
BSH0703●	70 x 70/ *2.76 x 2.76*	70 x 111.5 x 220/ *2.76 x 4.39 x 8.66*	70 x 111.5 x 254/ *2.76 x 4.39 x 10.00*
BSH1001●	100 x 100/ *3.94 x 3.94*	100 x 138.5 x 169/ *3.94 x 5.45 x 6.65*	100 x 138.5 x 200/ *3.94 x 5.45 x 7.87*
BSH1002●	100 x 100/ *3.94 x 3.94*	100 x 138.5 x 205/ *3.94 x 5.45 x 8.07*	100 x 138.5 x 236/ *3.94 x 5.45 x 9.29*
BSH1003●	100 x 100/ *3.94 x 3.94*	100 x 138.5 x 241/ *3.94 x 5.45 x 9.49*	100 x 138.5 x 272/ *3.94 x 5.45 x 10.71*
BSH1004●	100 x 100/ *3.94 x 3.94*	100 x 138.5 x 277/ *3.94 x 5.45 x 10.91*	100 x 138.5 x 308/ *3.94 x 5.45 x 12.13*
BSH1401●	140 x 140/ *5.51 x 5.51*	140 x 178 x 218/ *5.51 x 7.01 x 8.58*	140 x 178 x 256/ *5.51 x 7.01 x 10.08*
BSH1402●	140 x 140/ *5.51 x 5.51*	140 x 192.5*(5)* x 273/ *5.51 x 7.58 (5) x 10.75*	140 x 192.5 *(5)* x 311/ *5.51 x 7.58 (5) x 12.24*
BSH1403●	140 x 140/ *5.51 x 5.51*	140 x 192.5 *(5)* x 328/ *5.51 x 7.58 (5) x 12.91*	140 x 192.5 *(5)* x 366/ *5.51 x 7.58 (5) x 14.41*
BSH1404●	140 x 140/ *5.51 x 5.51*	140 x 192.5 *(5)* x 383/ *5.51 x 7.58 (5) x 15.08*	140 x 192.5 *(5)* x 421/ *5.51 x 7.58 (5) x 16.58*

(1) IP 67 with the VW3M230● IP 67 conformity kit supplied as an option (see page 44).
(2) Only available for BSH040●●●.
(3) "A" or "P" depending on the model (see table of references on page 42).
(4) D = motor length (excluding shaft end).
(5) 192.5 mm/7.58 in with straight connector, 198.5 mm/7.82 in with rotatable elbow connector.