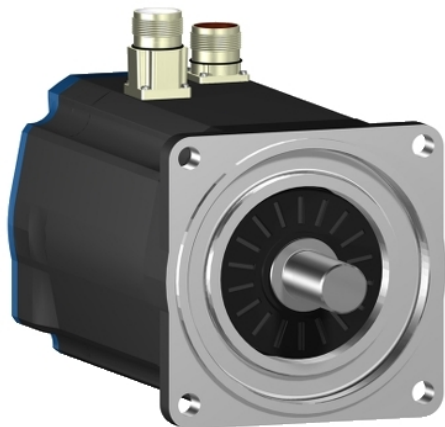


# BSH1003P31A1A

servo motor BSH, Lexium 05, 7.8N.m,  
2500rpm, 100mm, keyed shaft, Sincos single  
turn, without brake, IP65, straight





## Main

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product or component type | Servo motor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Device short name         | BSH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Maximum mechanical speed  | 6000 rpm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Continuous stall torque   | <p>8 N.M for LXM32.D30N4 at 10 A, 400 V, three phase</p> <p>8 N.M for LXM32.D30N4 at 10 A, 480 V, three phase</p> <p>7.8 N.M for LXM05CD28M2, 200...240 V, single phase</p> <p>7.8 N.M for LXM05AD28M2, 200...240 V, single phase</p> <p>7.8 N.M for LXM05BD28M2, 200...240 V, single phase</p> <p>7.8 N.M for LXM05BD34N4, 380...480 V, three phase</p> <p>7.8 N.M for LXM05BD42M3X, 200...240 V, three phase</p> <p>7.8 N.M for LXM05CD34N4, 380...480 V, three phase</p> <p>7.8 N.M for LXM05CD42M3X, 200...240 V, three phase</p> <p>6.7 N.M for LXM15LD21M3, 230 V, three phase</p> <p>6.7 N.M for LXM15LD17N4, 230 V, three phase</p> <p>6.7 N.M for LXM15LD17N4, 400 V, three phase</p> <p>6.7 N.M for LXM15LD17N4, 480 V, three phase</p> <p>7.8 N.M for LXM15LD28M3, 230 V, three phase</p> <p>7.8 N.M for LXM15MD28N4, 400 V, three phase</p> <p>7.8 N.M for LXM15MD28N4, 480 V, three phase</p> <p>7.8 N.M for LXM15MD40N4, 400 V, three phase</p> <p>7.8 N.M for LXM15MD40N4, 480 V, three phase</p> <p>7.8 N.M for LXM05AD34N4, 380...480 V, three phase</p> <p>7.8 N.m for LXM05AD42M3X, 200...240 V, three phase</p>                                       |
| Peak stall torque         | <p>28.3 N.M for LXM32.D30N4 at 10 A, 400 V, three phase</p> <p>28.3 N.M for LXM32.D30N4 at 10 A, 480 V, three phase</p> <p>19.69 N.M for LXM05AD28M2, 200...240 V, single phase</p> <p>19.69 N.M for LXM05BD28M2, 200...240 V, single phase</p> <p>19.69 N.M for LXM05CD28M2, 200...240 V, single phase</p> <p>15.5 N.M for LXM15LD21M3, 230 V, three phase</p> <p>12.5 N.M for LXM15LD17N4, 230 V, three phase</p> <p>12.5 N.M for LXM15LD17N4, 400 V, three phase</p> <p>12.5 N.M for LXM15LD17N4, 480 V, three phase</p> <p>19.69 N.M for LXM15LD28M3, 230 V, three phase</p> <p>19.69 N.M for LXM15MD28N4, 400 V, three phase</p> <p>19.69 N.M for LXM15MD28N4, 480 V, three phase</p> <p>23.17 N.M for LXM15MD40N4, 400 V, three phase</p> <p>23.17 N.M for LXM15MD40N4, 480 V, three phase</p> <p>23.01 N.M for LXM05AD34N4, 380...480 V, three phase</p> <p>23.17 N.M for LXM05AD42M3X, 200...240 V, three phase</p> <p>23.01 N.M for LXM05BD34N4, 380...480 V, three phase</p> <p>23.17 N.M for LXM05BD42M3X, 200...240 V, three phase</p> <p>23.01 N.M for LXM05CD34N4, 380...480 V, three phase</p> <p>23.17 N.m for LXM05CD42M3X, 200...240 V, three phase</p> |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal output power | 2000 W for LXM32.D30N4 at 10 A, 400 V, three phase<br>2600 W for LXM32.D30N4 at 10 A, 480 V, three phase<br>1100 W for LXM05AD28M2, 200...240 V, single phase<br>1100 W for LXM05BD28M2, 200...240 V, single phase<br>1100 W for LXM05CD28M2, 200...240 V, single phase<br>1100 W for LXM05AD42M3X, 200...240 V, three phase<br>1100 W for LXM05BD42M3X, 200...240 V, three phase<br>1100 W for LXM05CD42M3X, 200...240 V, three phase<br>1300 W for LXM15LD28M3, 230 V, three phase<br>1700 W for LXM15LD17N4, 230 V, three phase<br>1700 W for LXM15LD21M3, 230 V, three phase<br>1800 W for LXM05AD34N4, 380...480 V, three phase<br>1800 W for LXM05BD34N4, 380...480 V, three phase<br>1800 W for LXM05CD34N4, 380...480 V, three phase<br>2000 W for LXM15MD28N4, 400 V, three phase<br>2000 W for LXM15MD40N4, 400 V, three phase<br>2200 W for LXM15LD17N4, 400 V, three phase<br>2200 W for LXM15MD28N4, 480 V, three phase<br>2200 W for LXM15MD40N4, 480 V, three phase<br>2300 W for LXM15LD17N4, 480 V, three phase                   |
| Nominal torque       | 6.3 N.M for LXM32.D30N4 at 10 A, 400 V, three phase<br>6.3 N.M for LXM32.D30N4 at 10 A, 480 V, three phase<br>3.7 N.M for LXM15LD17N4, 480 V, three phase<br>6.73 N.M for LXM05AD28M2, 200...240 V, single phase<br>6.73 N.M for LXM05BD28M2, 200...240 V, single phase<br>6.73 N.M for LXM05CD28M2, 200...240 V, single phase<br>4.6 N.M for LXM15MD28N4, 480 V, three phase<br>4.6 N.M for LXM15MD40N4, 480 V, three phase<br>4.7 N.M for LXM15LD17N4, 400 V, three phase<br>5 N.M for LXM15MD28N4, 400 V, three phase<br>5 N.M for LXM15MD40N4, 400 V, three phase<br>5.7 N.M for LXM05AD34N4, 380...480 V, three phase<br>5.7 N.M for LXM05BD34N4, 380...480 V, three phase<br>5.7 N.M for LXM05CD34N4, 380...480 V, three phase<br>6 N.M for LXM15LD17N4, 230 V, three phase<br>6 N.M for LXM15LD21M3, 230 V, three phase<br>6.3 N.M for LXM15LD28M3, 230 V, three phase<br>6.73 N.M for LXM05AD42M3X, 200...240 V, three phase<br>6.73 N.M for LXM05BD42M3X, 200...240 V, three phase<br>6.73 N.m for LXM05CD42M3X, 200...240 V, three phase |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal speed             | 3000 rpm for LXM32.D30N4 at 10 A, 400 V, three phase<br>4000 rpm for LXM32.D30N4 at 10 A, 480 V, three phase<br>4500 rpm for LXM15LD17N4, 400 V, three phase<br>6000 rpm for LXM15LD17N4, 480 V, three phase<br>1500 rpm for LXM05AD28M2, 200...240 V, single phase<br>1500 rpm for LXM05BD28M2, 200...240 V, single phase<br>1500 rpm for LXM05CD28M2, 200...240 V, single phase<br>1500 rpm for LXM05AD42M3X, 200...240 V, three phase<br>1500 rpm for LXM05BD42M3X, 200...240 V, three phase<br>1500 rpm for LXM05CD42M3X, 200...240 V, three phase<br>2000 rpm for LXM15LD28M3, 230 V, three phase<br>2500 rpm for LXM15LD17N4, 230 V, three phase<br>2500 rpm for LXM15LD21M3, 230 V, three phase<br>3000 rpm for LXM05AD34N4, 380...480 V, three phase<br>3000 rpm for LXM05BD34N4, 380...480 V, three phase<br>3000 rpm for LXM05CD34N4, 380...480 V, three phase<br>4000 rpm for LXM15MD28N4, 400 V, three phase<br>4000 rpm for LXM15MD40N4, 400 V, three phase<br>4500 rpm for LXM15MD28N4, 480 V, three phase<br>4500 rpm for LXM15MD40N4, 480 V, three phase |
| Product compatibility     | LXM05AD28M2 at 200...240 V single phase<br>LXM05BD28M2 at 200...240 V single phase<br>LXM05CD28M2 at 200...240 V single phase<br>LXM15LD21M3 at 230 V three phase<br>LXM05AD42M3X at 200...240 V three phase<br>LXM05BD42M3X at 200...240 V three phase<br>LXM05CD42M3X at 200...240 V three phase<br>LXM15LD17N4 at 230 V three phase<br>LXM15LD17N4 at 400 V three phase<br>LXM15LD17N4 at 480 V three phase<br>LXM15LD28M3 at 230 V three phase<br>LXM05AD34N4 at 380...480 V three phase<br>LXM05BD34N4 at 380...480 V three phase<br>LXM05CD34N4 at 380...480 V three phase<br>LXM15MD28N4 at 400 V three phase<br>LXM15MD28N4 at 480 V three phase<br>LXM15MD40N4 at 400 V three phase<br>LXM15MD40N4 at 480 V three phase<br>LXM32.D30N4 at 400 V three phase<br>LXM32.D30N4 at 480 V three phase                                                                                                                                                                                                                                                                 |
| Shaft end                 | Keyed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| IP degree of protection   | IP65 standard<br>IP67 with IP67 kit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Speed feedback resolution | 131072 points/turn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Holding brake             | Without                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Mounting support          | International standard flange                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Electrical connection     | Straight connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Complementary

|                          |                                     |
|--------------------------|-------------------------------------|
| Range compatibility      | Lexium 32<br>Lexium 05<br>Lexium 15 |
| Supply voltage max       | 480 V                               |
| Network number of phases | Three phase                         |
| Continuous stall current | 6.6 A                               |
| Maximum continuous power | 3.14 W                              |

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum current Irms                  | 28.3 A for LXM15LD21M3<br>28.3 A for LXM15LD28M3<br>28.3 A for LXM15LD17N4<br>28.3 A for LXM15MD28N4<br>28.3 A for LXM15MD40N4<br>28.3 A for LXM05AD28M2<br>28.3 A for LXM05AD42M3X<br>28.3 A for LXM05AD34N4<br>28.3 A for LXM05BD28M2<br>28.3 A for LXM05BD42M3X<br>28.3 A for LXM05BD34N4<br>28.3 A for LXM05CD28M2<br>28.3 A for LXM05CD42M3X<br>28.3 A for LXM05CD34N4<br>28.3 A for LXM32.D30N4 |
| Maximum permanent current             | 28.3 A                                                                                                                                                                                                                                                                                                                                                                                                |
| Switching frequency                   | 8 kHz                                                                                                                                                                                                                                                                                                                                                                                                 |
| Second shaft                          | Without second shaft end                                                                                                                                                                                                                                                                                                                                                                              |
| Shaft diameter                        | 19 mm                                                                                                                                                                                                                                                                                                                                                                                                 |
| Shaft length                          | 40 mm                                                                                                                                                                                                                                                                                                                                                                                                 |
| Key width                             | 30 mm                                                                                                                                                                                                                                                                                                                                                                                                 |
| Feedback type                         | Single turn SinCos Hiperface                                                                                                                                                                                                                                                                                                                                                                          |
| Motor flange size                     | 100 mm                                                                                                                                                                                                                                                                                                                                                                                                |
| Number of motor stacks                | 3                                                                                                                                                                                                                                                                                                                                                                                                     |
| Torque constant                       | 1.22 N.m/A at 120 °C                                                                                                                                                                                                                                                                                                                                                                                  |
| Back emf constant                     | 77 V/krpm at 120 °C                                                                                                                                                                                                                                                                                                                                                                                   |
| Number of motor poles                 | 8                                                                                                                                                                                                                                                                                                                                                                                                     |
| Rotor inertia                         | 3.22 kg.cm <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                               |
| Stator resistance                     | 1.43 Ohm at 20 °C                                                                                                                                                                                                                                                                                                                                                                                     |
| Stator inductance                     | 8.8 mH at 20 °C                                                                                                                                                                                                                                                                                                                                                                                       |
| Stator electrical time constant       | 6.15 ms at 20 °C                                                                                                                                                                                                                                                                                                                                                                                      |
| Maximum radial force Fr               | 1050 N at 1000 rpm<br>660 N at 4000 rpm<br>730 N at 3000 rpm<br>830 N at 2000 rpm                                                                                                                                                                                                                                                                                                                     |
| Maximum axial force Fa                | 0.2 x Fr                                                                                                                                                                                                                                                                                                                                                                                              |
| Type of cooling                       | Natural convection                                                                                                                                                                                                                                                                                                                                                                                    |
| Length                                | 240.5 mm                                                                                                                                                                                                                                                                                                                                                                                              |
| Centring collar diameter              | 95 mm                                                                                                                                                                                                                                                                                                                                                                                                 |
| Centring collar depth                 | 3.5 mm                                                                                                                                                                                                                                                                                                                                                                                                |
| Number of mounting holes              | 4                                                                                                                                                                                                                                                                                                                                                                                                     |
| Mounting holes diameter               | 9 mm                                                                                                                                                                                                                                                                                                                                                                                                  |
| Circle diameter of the mounting holes | 115 mm                                                                                                                                                                                                                                                                                                                                                                                                |
| Net weight                            | 7.4 kg                                                                                                                                                                                                                                                                                                                                                                                                |

## Packing Units

|                              |         |
|------------------------------|---------|
| Unit Type of Package 1       | PCE     |
| Number of Units in Package 1 | 1       |
| Package 1 Height             | 15.4 cm |
| Package 1 Width              | 16.3 cm |
| Package 1 Length             | 40.7 cm |
| Package 1 Weight             | 7.5 kg  |

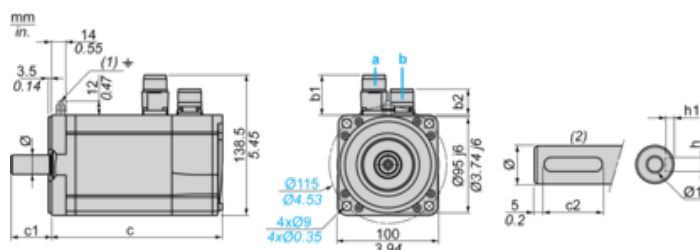
## Offer Sustainability

|                          |                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Sustainable offer status | Green Premium product                                                                                                      |
| REACH Regulation         |  <a href="#">REACH Declaration</a>      |
| EU RoHS Directive        | Pro-active compliance (Product out of EU RoHS legal scope)                                                                 |
| Mercury free             | Yes                                                                                                                        |
| China RoHS Regulation    |  <a href="#">China RoHS Declaration</a> |

|                             |                                                                                                                                 |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| RoHS exemption information  |  Yes                                            |
| Environmental Disclosure    |  <a href="#">Product Environmental Profile</a> |
| Circularity Profile         | No need of specific recycling operations                                                                                        |
| WEEE                        | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins     |
| PVC free                    | Yes                                                                                                                             |
| <b>Contractual warranty</b> |                                                                                                                                 |
| Warranty                    | 18 months                                                                                                                       |

## Servo Motors Dimensions

### Example with Straight Connectors



- a: Power supply for servo motor brake  
b: Power supply for servo motor encoder  
(1) M4 screw  
(2) Shaft end, keyed slot (optional)

Dimensions in mm

| Straight connectors |      | Rotatable angled connectors |      | c (without brake) | c (with brake) | c1 | c2 | h    | h1                               | Ø     | Ø1 for screws |
|---------------------|------|-----------------------------|------|-------------------|----------------|----|----|------|----------------------------------|-------|---------------|
| b1                  | b2   | b1                          | b2   |                   |                |    |    |      |                                  |       |               |
| 39.5                | 25.5 | 39.5                        | 39.5 | 241               | 272            | 40 | 30 | 6 N9 | 3.5 <sup>+0.1</sup> <sub>0</sub> | 19 k6 | M6 x 16       |

Dimensions in in.

| Straight connectors |      | Rotatable angled connectors |      | c (without brake) | c (with brake) | c1   | c2   | h       | h1                                | Ø       | Ø1 for screws |
|---------------------|------|-----------------------------|------|-------------------|----------------|------|------|---------|-----------------------------------|---------|---------------|
| b1                  | b2   | b1                          | b2   |                   |                |      |      |         |                                   |         |               |
| 1.55                | 1.00 | 1.55                        | 1.55 | 9.48              | 10.70          | 1.57 | 1.18 | 0.24 N9 | 0.14 <sup>+0.1</sup> <sub>0</sub> | 0.75 k6 | M6 x 0.63     |

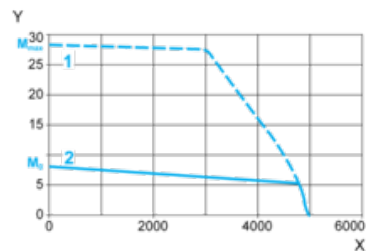
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### 400 V 3-Phase Supply Voltage

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#### Torque/Speed Curves

Servo motor with LXM32•D30N4 servo drive



X Speed in rpm

Y Torque in Nm

1 Peak torque

2 Continuous torque

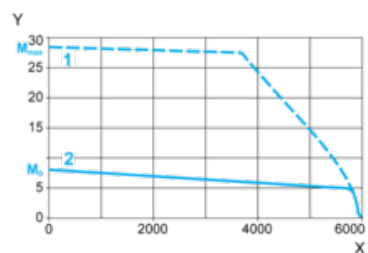
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### 480 V 3-Phase Supply Voltage

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#### Torque/Speed Curves

Servo motor with LXM32•D30N4 servo drive



X Speed in rpm

Y Torque in Nm

1 Peak torque

2 Continuous torque