

# BSH1003P02F2A

servo motor BSH, Lexium 05, 7.8N.m,  
2500rpm, 100mm, untapped shaft, Sincos multi  
turn, with brake, IP50





## 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> |

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

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|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                 | Untapped                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| IP degree of protection   | IP50 standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Speed feedback resolution | 131072 points/turn x 4096 turns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Holding brake             | With                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Mounting support          | International standard flange                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Electrical connection     | Rotatable right-angled connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Complementary

|                          |                                     |
|--------------------------|-------------------------------------|
| Range compatibility      | Lexium 05<br>Lexium 15<br>Lexium 32 |
| 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                                                                                                                                                                                                                                                                                                                                                                                                 |
| Feedback type                         | Multiturn SinCos Hiperface                                                                                                                                                                                                                                                                                                                                                                            |
| Holding torque                        | 9 N.m holding brake                                                                                                                                                                                                                                                                                                                                                                                   |
| 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                         | 3.838 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                                                                                                                                                                                                                                                                                                                                                                                              |
| Brake pull-in power                   | 18 W                                                                                                                                                                                                                                                                                                                                                                                                  |
| Type of cooling                       | Natural convection                                                                                                                                                                                                                                                                                                                                                                                    |
| Length                                | 271.5 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                            | 8 kg                                                                                                                                                                                                                                                                                                                                                                                                  |

### Packing Units

|                              |         |
|------------------------------|---------|
| Unit Type of Package 1       | PCE     |
| Number of Units in Package 1 | 1       |
| Package 1 Height             | 21.0 cm |
| Package 1 Width              | 18.0 cm |
| Package 1 Length             | 58.5 cm |
| Package 1 Weight             | 8.15 kg |

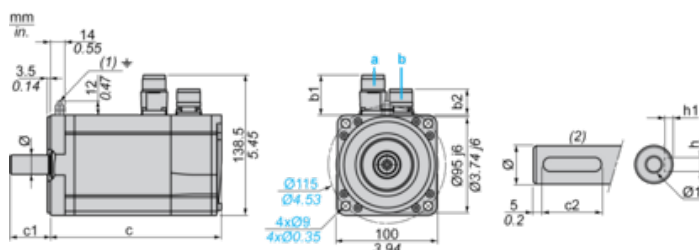
### Offer Sustainability

|                          |                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 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 | $3.5^{+0.1}_0$ | 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 | $0.14^{+0.1}_0$ | 0.75 k6 | M6 x 0.63     |

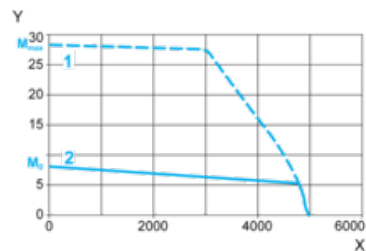
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### 400 V 3-Phase Supply Voltage

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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

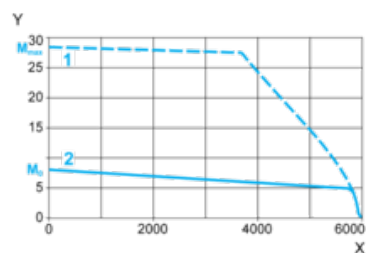
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### 480 V 3-Phase Supply Voltage

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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