

## BSH0702P02F2A

servo motor BSH, Lexium 05, 2.2N.m,  
3000rpm, 70mm, untapped shaft, Sincos multi  
turn, with brake, IP50





## Main

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device short name         | BSH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Product or Component Type | Servo motor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Maximum mechanical speed  | 8000 rpm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Continuous stall torque   | <p>19.5 Lbf.In (2.2 N.m) LXM32.D12N4 3 A, 400 V, three phase</p> <p>19.5 Lbf.In (2.2 N.m) LXM32.D12N4 3 A, 480 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05AD10M2, 200...240 V, single phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05AD10M3X, 200...240 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05BD10M2, 200...240 V, single phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05BD10M3X, 200...240 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05CD10M2, 200...240 V, single phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05CD10M3X, 200...240 V, three phase</p> <p>19.5 Lbf.In (2.2 N.m) LXM15LD13M3, 230 V, single phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05AD17M2, 200...240 V, single phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05BD17M2, 200...240 V, single phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05CD17M2, 200...240 V, single phase</p> <p>19.5 Lbf.In (2.2 N.m) LXM15LD10N4, 480 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05AD17M3X, 200...240 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05AD14N4, 380...480 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05BD17M3X, 200...240 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05BD14N4, 380...480 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05CD17M3X, 200...240 V, three phase</p> <p>18.76 Lbf.In (2.12 N.m) LXM05CD14N4, 380...480 V, three phase</p> <p>19.5 Lbf.In (2.2 N.m) LXM15LD10N4, 230 V, three phase</p> <p>19.5 lbf.in (2.2 N.m) LXM15LD10N4, 400 V, three phase</p> |

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| Peak stall torque    | 67.3 Lbf.In (7.6 N.m) LXM32.D12N4 3 A, 400 V, three phase<br>67.3 Lbf.In (7.6 N.m) LXM32.D12N4 3 A, 480 V, three phase<br>49.83 Lbf.In (5.63 N.m) LXM15LD13M3, 230 V, single phase<br>40.45 Lbf.In (4.57 N.m) LXM05AD10M2, 200...240 V, single phase<br>49.83 Lbf.In (5.63 N.m) LXM05AD17M2, 200...240 V, single phase<br>40.45 Lbf.In (4.57 N.m) LXM05BD10M2, 200...240 V, single phase<br>49.83 Lbf.In (5.63 N.m) LXM05BD17M2, 200...240 V, single phase<br>40.45 Lbf.In (4.57 N.m) LXM05CD10M2, 200...240 V, single phase<br>49.83 Lbf.In (5.63 N.m) LXM05CD17M2, 200...240 V, single phase<br>42.93 Lbf.In (4.85 N.m) LXM15LD10N4, 230 V, three phase<br>42.93 Lbf.In (4.85 N.m) LXM15LD10N4, 400 V, three phase<br>42.93 Lbf.In (4.85 N.m) LXM15LD10N4, 480 V, three phase<br>40.45 Lbf.In (4.57 N.m) LXM05AD10M3X, 200...240 V, three phase<br>49.83 Lbf.In (5.63 N.m) LXM05AD17M3X, 200...240 V, three phase<br>49.83 Lbf.In (5.63 N.m) LXM05AD14N4, 380...480 V, three phase<br>40.45 Lbf.In (4.57 N.m) LXM05BD10M3X, 200...240 V, three phase<br>49.83 Lbf.In (5.63 N.m) LXM05BD17M3X, 200...240 V, three phase<br>49.83 Lbf.In (5.63 N.m) LXM05BD14N4, 380...480 V, three phase<br>40.45 Lbf.In (4.57 N.m) LXM05CD10M3X, 200...240 V, three phase<br>49.83 Lbf.In (5.63 N.m) LXM05CD17M3X, 200...240 V, three phase<br>49.83 lbf.in (5.63 N.m) LXM05CD14N4, 380...480 V, three phase |
| Nominal output power | 850 W LXM32.D12N4 3 A, 400 V, three phase<br>850 W LXM32.D12N4 3 A, 480 V, three phase<br>1000 W LXM15LD10N4, 400 V, three phase<br>597 W LXM15LD13M3, 230 V, single phase<br>600 W LXM05AD10M2, 200...240 V, single phase<br>600 W LXM05AD17M2, 200...240 V, single phase<br>600 W LXM05BD10M2, 200...240 V, single phase<br>600 W LXM05BD17M2, 200...240 V, single phase<br>600 W LXM05CD10M2, 200...240 V, single phase<br>600 W LXM05CD17M2, 200...240 V, single phase<br>1300 W LXM15LD10N4, 480 V, three phase<br>597 W LXM15LD10N4, 230 V, three phase<br>600 W LXM05AD10M3X, 200...240 V, three phase<br>600 W LXM05AD14N4, 380...480 V, three phase<br>600 W LXM05AD17M3X, 200...240 V, three phase<br>600 W LXM05BD10M3X, 200...240 V, three phase<br>600 W LXM05BD14N4, 380...480 V, three phase<br>600 W LXM05BD17M3X, 200...240 V, three phase<br>600 W LXM05CD10M3X, 200...240 V, three phase<br>600 W LXM05CD14N4, 380...480 V, three phase<br>600 W LXM05CD17M3X, 200...240 V, three phase                                                                                                                                                                                                                                                                                                                                                                                     |

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|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal torque | 14.52 Lbf.In (1.64 N.m) LXM32.D12N4 3 A, 400 V, three phase<br>14.52 Lbf.In (1.64 N.m) LXM32.D12N4 3 A, 480 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05AD10M2, 200...240 V, single phase<br>16.8 Lbf.In (1.9 N.m) LXM05AD17M2, 200...240 V, single phase<br>16.8 Lbf.In (1.9 N.m) LXM05BD10M2, 200...240 V, single phase<br>16.8 Lbf.In (1.9 N.m) LXM05BD17M2, 200...240 V, single phase<br>16.8 Lbf.In (1.9 N.m) LXM05CD10M2, 200...240 V, single phase<br>16.8 Lbf.In (1.9 N.m) LXM05CD17M2, 200...240 V, single phase<br>16.8 Lbf.In (1.9 N.m) LXM15LD13M3, 230 V, single phase<br>13.72 Lbf.In (1.55 N.m) LXM15LD10N4, 480 V, three phase<br>14.60 Lbf.In (1.65 N.m) LXM15LD10N4, 400 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05AD10M3X, 200...240 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05AD14N4, 380...480 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05AD17M3X, 200...240 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05BD10M3X, 200...240 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05BD14N4, 380...480 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05BD17M3X, 200...240 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05CD10M3X, 200...240 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05CD14N4, 380...480 V, three phase<br>16.8 Lbf.In (1.9 N.m) LXM05CD17M3X, 200...240 V, three phase<br>16.8 lbf.in (1.9 N.m) LXM15LD10N4, 230 V, three phase |
| Nominal speed  | 5000 rpm LXM32.D12N4 3 A, 400 V, three phase<br>5000 rpm LXM32.D12N4 3 A, 480 V, three phase<br>3000 rpm LXM05AD10M2, 200...240 V, single phase<br>3000 rpm LXM05BD10M2, 200...240 V, single phase<br>3000 rpm LXM05CD10M2, 200...240 V, single phase<br>3000 rpm LXM05AD10M3X, 200...240 V, three phase<br>3000 rpm LXM05AD14N4, 380...480 V, three phase<br>3000 rpm LXM05BD10M3X, 200...240 V, three phase<br>3000 rpm LXM05BD14N4, 380...480 V, three phase<br>3000 rpm LXM05CD10M3X, 200...240 V, three phase<br>3000 rpm LXM05CD14N4, 380...480 V, three phase<br>3000 rpm LXM15LD13M3, 230 V, single phase<br>3000 rpm LXM05AD17M2, 200...240 V, single phase<br>3000 rpm LXM05BD17M2, 200...240 V, single phase<br>3000 rpm LXM05CD17M2, 200...240 V, single phase<br>3000 rpm LXM05AD17M3X, 200...240 V, three phase<br>3000 rpm LXM05BD17M3X, 200...240 V, three phase<br>3000 rpm LXM05CD17M3X, 200...240 V, three phase<br>8000 rpm LXM15LD10N4, 480 V, three phase<br>3000 rpm LXM15LD10N4, 230 V, three phase<br>6000 rpm LXM15LD10N4, 400 V, three phase                                                                                                                                                                                                                                                                                          |

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|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product compatibility     | LXM05AD10M2 200...240 V single phase<br>LXM05AD17M2 200...240 V single phase<br>LXM05BD10M2 200...240 V single phase<br>LXM05BD17M2 200...240 V single phase<br>LXM05CD10M2 200...240 V single phase<br>LXM05CD17M2 200...240 V single phase<br>LXM15LD13M3 230 V single phase<br>LXM05AD10M3X 200...240 V three phase<br>LXM05BD10M3X 200...240 V three phase<br>LXM05CD10M3X 200...240 V three phase<br>LXM05AD14N4 380...480 V three phase<br>LXM05BD14N4 380...480 V three phase<br>LXM05CD14N4 380...480 V three phase<br>LXM15LD10N4 400 V three phase<br>LXM05AD17M3X 200...240 V three phase<br>LXM05BD17M3X 200...240 V three phase<br>LXM05CD17M3X 200...240 V three phase<br>LXM32.D12N4 400 V three phase<br>LXM32.D12N4 480 V three phase<br>LXM15LD10N4 230 V three phase<br>LXM15LD10N4 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                                                                                                                                                                                                                                                                                                                                                                                                          |
| Phase                     | Three phase                                                                                                                                                                                                                                                                                                                                                                                                    |
| Continuous stall current  | 2.9 A                                                                                                                                                                                                                                                                                                                                                                                                          |
| Maximum continuous power  | 1.51 W                                                                                                                                                                                                                                                                                                                                                                                                         |
| Maximum current Irms      | 11.8 A LXM15LD13M3<br>11.8 A LXM15LD10N4<br>11.8 A LXM05AD10M2<br>11.8 A LXM05AD17M2<br>11.8 A LXM05AD10M3X<br>11.8 A LXM05AD17M3X<br>11.8 A LXM05AD14N4<br>11.8 A LXM05BD10M2<br>11.8 A LXM05BD17M2<br>11.8 A LXM05BD10M3X<br>11.8 A LXM05BD17M3X<br>11.8 A LXM05BD14N4<br>11.8 A LXM05CD10M2<br>11.8 A LXM05CD17M2<br>11.8 A LXM05CD10M3X<br>11.8 A LXM05CD17M3X<br>11.8 A LXM05CD14N4<br>11.8 A LXM32.D12N4 |
| Maximum permanent current | 11.8 A                                                                                                                                                                                                                                                                                                                                                                                                         |
| Switching frequency       | 8 kHz                                                                                                                                                                                                                                                                                                                                                                                                          |
| Second shaft              | Without second shaft end                                                                                                                                                                                                                                                                                                                                                                                       |
| Shaft diameter            | 0.4 in (11 mm)                                                                                                                                                                                                                                                                                                                                                                                                 |
| Shaft length              | 0.9 in (23 mm)                                                                                                                                                                                                                                                                                                                                                                                                 |
| Feedback type             | Multiturn SinCos Hiperface                                                                                                                                                                                                                                                                                                                                                                                     |
| Holding torque            | 17.7 lbf.in (2 N.m) holding brake                                                                                                                                                                                                                                                                                                                                                                              |
| Motor flange size         | 2.8 in (70 mm)                                                                                                                                                                                                                                                                                                                                                                                                 |
| Number of motor stacks    | 2                                                                                                                                                                                                                                                                                                                                                                                                              |
| Torque constant           | 0.77 N.m/A 248.0000000000 °F (120 °C)                                                                                                                                                                                                                                                                                                                                                                          |
| Back emf constant         | 48 V/krpm 248.0000000000 °F (120 °C)                                                                                                                                                                                                                                                                                                                                                                           |
| Number of motor poles     | 6                                                                                                                                                                                                                                                                                                                                                                                                              |
| Rotor inertia             | 0.482 kg.cm <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                       |

|                                       |                                                                                                          |
|---------------------------------------|----------------------------------------------------------------------------------------------------------|
| Stator resistance                     | 4.2 Ohm 68.0000000000 °F (20 °C)                                                                         |
| Stator inductance                     | 19 mH 68.0000000000 °F (20 °C)                                                                           |
| Stator electrical time constant       | 4.52 ms 68.0000000000 °F (20 °C)                                                                         |
| Maximum radial force Fr               | 390 N 6000 rpm<br>410 N 5000 rpm<br>450 N 4000 rpm<br>490 N 3000 rpm<br>560 N 2000 rpm<br>710 N 1000 rpm |
| Maximum axial force Fa                | 0.2 x Fr                                                                                                 |
| Brake pull-in power                   | 10 W                                                                                                     |
| Type of cooling                       | Natural convection                                                                                       |
| Length                                | 8.4 in (212.5 mm)                                                                                        |
| Centring collar diameter              | 2.4 in (60 mm)                                                                                           |
| Centring collar depth                 | 0.10 in (2.5 mm)                                                                                         |
| Number of mounting holes              | 4                                                                                                        |
| Mounting holes diameter               | 0.2 in (5.5 mm)                                                                                          |
| Circle diameter of the mounting holes | 3.2 in (82 mm)                                                                                           |
| Net Weight                            | 6.6 lb(US) (3 kg)                                                                                        |

### Ordering and shipping details

|                   |               |
|-------------------|---------------|
| Category          | US1PC5318282  |
| Discount Schedule | PC53          |
| GTIN              | 3389118136250 |
| Returnability     | No            |
| Country of origin | DE            |

### Packing Units

|                              |                       |
|------------------------------|-----------------------|
| Unit Type of Package 1       | PCE                   |
| Number of Units in Package 1 | 1                     |
| Package 1 Height             | 4.8 in (12.3 cm)      |
| Package 1 Width              | 5.04 in (12.8 cm)     |
| Package 1 Length             | 14.8 in (37.7 cm)     |
| Package 1 Weight             | 7.17 lb(US) (3.25 kg) |

### Offer Sustainability

|                            |                                                                                                                                                                                                                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainable offer status   | Green Premium product                                                                                                                                                                                                                                                                       |
| California proposition 65  | WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</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 |  <a href="#">Yes</a>                                                                                                                                                                                     |
| 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                                                                                                                                                                                                                                                                                         |

### Contractual warranty

|          |           |
|----------|-----------|
| 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 | c3  | h    | h1                               | Ø     | Ø1 for screws |
|---------------------|------|-----------------------------|------|-------------------|----------------|----|----|-----|------|----------------------------------|-------|---------------|
| b1                  | b2   | b1                          | b2   |                   |                |    |    |     |      |                                  |       |               |
| 39.5                | 25.5 | 39.5                        | 39.5 | 187               | 213            | 23 | 18 | 2.5 | 4 N9 | 2.5 <sup>+0.1</sup> <sub>0</sub> | 11 k6 | M4 x 10       |

Dimensions in in.

| Straight connectors |      | Rotatable angled connectors |      | c (without brake) | c (with brake) | c1   | c2   | c3   | h       | h1                                  | Ø       | Ø1 for screws |
|---------------------|------|-----------------------------|------|-------------------|----------------|------|------|------|---------|-------------------------------------|---------|---------------|
| b1                  | b2   | b1                          | b2   |                   |                |      |      |      |         |                                     |         |               |
| 1.55                | 1.00 | 1.55                        | 1.55 | 7.36              | 8.38           | 0.90 | 0.70 | 0.09 | 0.16 N9 | 0.01 <sup>+0.004</sup> <sub>0</sub> | 0.43 k6 | M4 x 0.39     |

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### 400 V 3-Phase Supply Voltage

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#### Torque/Speed Curves

Servo motor with LXM32•D12N4 servo drive



X Speed in rpm

Y Torque in Nm

1 Peak torque

2 Continuous torque

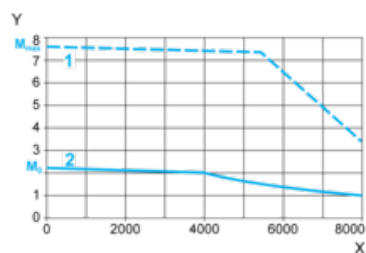
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### 480 V 3-Phase Supply Voltage

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#### Torque/Speed Curves

Servo motor with LXM32•D12N4 servo drive



X Speed in rpm

Y Torque in Nm

1 Peak torque

2 Continuous torque