FAGOR

FAGOR AUTOMATION

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# BCSD

## Digital AC servo drive system

# BCSD servo drive system

## Perfect solution with reduced drive and motor sizes and good cost/performance ratio for your automation application.


### *Excellent Performance*

The BCSD series servo drive with 23-bit series absolute encoder provides excellent performance and high stability due to its advanced control functions.

### *Simple and precise adjustment*

The BCSD series also has an self-adjusting system allowing for a quick and easy commissioning, even without previous experience.

### *Several Communication Functions*

BCSD series servo drive can communicate by USB with WinBCSD software running on PC, by CAN bus with FAGOR CNC 8037/8055 and by EtherCAT bus with FAGOR CNC 8060/8065/8070.

CANopen® EtherCAT®

## Model Comparison Table

| Rated torque [Nm] | Three-phase 200-230 V AC | | | Three-phase 380-440 V AC | | |
|---|---|---|---|---|---|---|
| | Servo Motor | Servo Drive | | Servo Motor | Servo Drive | |
| | | CAN | EtherCAT | | CAN | EtherCAT |
| 4.78 | **FBM-10ALB** | BCSD-10AMG | BCSD-10AEG-EC | **FBM-10DLB** | BCSD-10DMG | BCSD-10DEG-EC |
| 7.16 | **FBM-15ALB** | BCSD-15AMG | BCSD-15AEG-EC | **FBM-15DLB** | BCSD-15DMG | BCSD-15DEG-EC |
| 9.55 | **FBM-20ALB** | BCSD-20AMG | BCSD-20AEG-EC | **FBM-20DLB** | BCSD-20DMG | BCSD-20DEG-EC |
| 14.3 | **FBM-30ALA** | BCSD-30AMG | BCSD-30AEG-EC | **FBM-30DLA** | BCSD-30DMG | BCSD-30DEG-EC |
| 23.9 | **FBM-50ALA** | BCSD-50AMG | BCSD-50AEG-EC | **FBM-50DLA** | BCSD-50DMG | BCSD-50DEG-EC |

# BCSD servo drives

## General characteristics

| | |
|---|---|
| **Main circuit** | BCSD-10A/50A, three-phase 200-230 V AC, 50/60 Hz, (1 kW - 5 kW)<br>BCSD-10D/50D, three-phase 380-440 V AC, 50/60 Hz, (1 kW - 5 kW) |
| **Control circuit** | BCSD-10A/50A, single-phase 200-230 V AC, 50/60 Hz (1 kW - 5 kW)<br>BCSD-10D/50D, 24 V DC (1 kW - 5 kW) |
| **Control method** | SVPWM control |
| **Feedback** | 23 bit serial absolute encoder, 8388608 P/R |
| **Speed control range** | 1:3000 |
| **Regenerative processing functions** | Built-in regenerative resistor |
| **Protective functions** | Overcurrent, overvoltage, low voltage, overload, regeneration error, overspeed |
| **Communication functions** | CAN communication port, CANopen protocol<br>Ethercat communication module, CiA402 protocol |

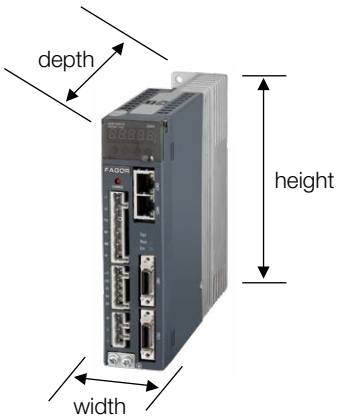
## Denominations

| BCSD- | 10 | A | M | G | |
|---|---|---|---|---|---|
| Servo drive model | Rated power | Voltage | Control Style | Designing sequence | Communication protocol |
| BCSD | **10: 1.0 kW**<br>15: 1.5 kW<br>20: 2.0 kW<br>30: 3.0 kW<br>50: 5.0 kW | **A: 220 V AC**<br>D: 400 V AC | **M: Pulse CANopen**<br>E: EtherCAT | **G: Self-adaption encoder** | **Blank space: CANopen**<br>EC: EtherCAT |

## Electrical data

| | 200-230 V AC | | | | | 380-440 V AC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **BCSD servo drive model** | **10A** | **15A** | **20A** | **30A** | **50A** | **10D** | **15D** | **20D** | **30D** | **50D** |
| Continuous output current (Arms) | 6.9 | 9.3 | 12.0 | 18.0 | 28.0 | 3.2 | 5.0 | 6.4 | 9.0 | 18.0 |
| Maximum output current (Arms) | 17.0 | 28.0 | 36.0 | 54.0 | 64.0 | 9.6 | 15.0 | 19.2 | 27.0 | 49.5 |
| Main input power supply capacity (kVA) | 1.8 | 2.5 | 3.5 | 4.5 | 7.5 | 1.8 | 2.8 | 3.5 | 5.0 | 8.2 |
| Rated output power (kW) | 1 | 1.5 | 2 | 3 | 5 | 1 | 1.5 | 2 | 3 | 5 |

## Dimensions




| Power | 200-230 V AC | 380-440 V AC |
|---|---|---|
| (kW) | W×H×D (mm) | W×H×D (mm) |
| 1.0 | 84x186x180 | 100x186x180 |
| 1.5 | 100x186x180 | 100x186x180 |
| 2.0 | 100x186x180 | 100x186x180 |
| 3.0 | 125x271x205 | 125x271x205 |
| 5.0 | 125x271x205 | 125x271x205 |

# FBM servo motors

## General characteristics

| FBM servomotor model | AL | DL |
|---|---|---|
| Voltage | 200 V AC | 400 V AC |
| Rated speed | 2000 rpm | |
| Maximum speed | 3000 rpm | |
| Encoder | 23 bit absolute encoder 8388608P/R | |
| Rated voltage of brake | DC 24 V ±10% | |
| Thermal endurance class | F | |
| Ambient temperature | 0°C - 40°C (no freezing) | |
| Ambient humidity | 20% - 80% (non-condensing) | |
| Vibration performance | 24.5 m/s² | |
| Protected mode | Fully enclosed, self-cooling, IP65 | |

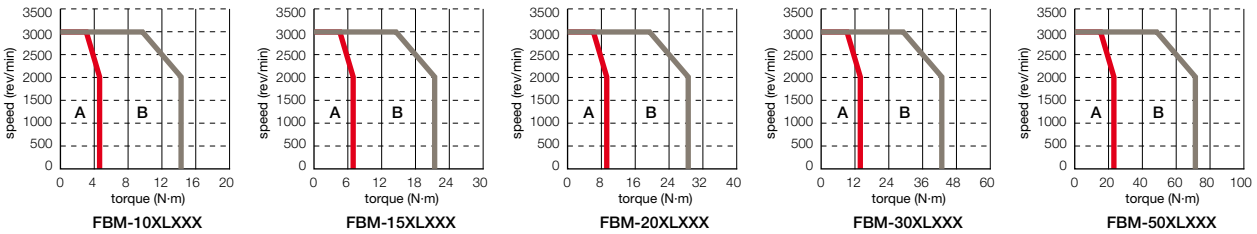
## Denominations

| FBM- | 30 | D | L | A | 1 | 2 |
|---|---|---|---|---|---|---|
| **Motor model** | **Rated power** | **Voltage** | **Encoder** | **Designing sequence** | **Shaft end** | **Optional parts** |
| **FBM** | 10: 1.0 kW<br>15: 1.5 kW<br>20: 2.0 kW<br>**30: 3.0 kW**<br>50: 5.0 kW | A: 220 V AC<br>**D: 400 V AC** | L: 23-bit absolute 8388608 P/R | **A: Embedded rotator**<br>B: SMT rotator | **1: Flat, without keys**<br>2: Flat, with keys, with screw thread | **2: With oil seal and without brake**<br>4: With oil seal and brake (24 V DC) |

## Electromechanical data

| | 200-230 V AC | | | | | 380-440 V AC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **FBM servomotor model** | **10AL** | **15AL** | **20AL** | **30AL** | **50AL** | **10DL** | **15DL** | **20DL** | **30DL** | **50DL** |
| Rated torque (Nm) | 4.78 | 7.16 | 9.55 | 14.30 | 23.90 | 4.78 | 7.16 | 9.55 | 14.30 | 23.90 |
| Instantaneous max. torque (Nm) | 14.3 | 21.5 | 28.7 | 43.0 | 76.0 | 14.3 | 21.5 | 28.7 | 43.0 | 76.0 |
| Rated current (Arms) | 5.8 | 8.2 | 11.3 | 18.0 | 28.0 | 3.0 | 4.3 | 5.7 | 8.8 | 15.0 |
| Instantaneous max. current (Arms) | 17.4 | 24.6 | 33.9 | 54.0 | 84.0 | 9.0 | 12.9 | 17.1 | 26.4 | 45.0 |
| Moment of inertia without brake (10-4 kg·m²) | 13.2 | 18.4 | 23.5 | 41.3 | 65.7 | 13.2 | 18.4 | 23.5 | 41.3 | 65.7 |
| Moment of inertia with brake (10-4 kg·m²) | 14.3 | 19.5 | 24.6 | 44.5 | 68.9 | 14.3 | 19.5 | 24.6 | 44.5 | 68.9 |
| Rated power of brake (W) | 19.5 | | | 35 | | 19.5 | | | 35 | |
| Hold torque of brake (Nm) | 12 | | | 40 | | 12 | | | 40 | |

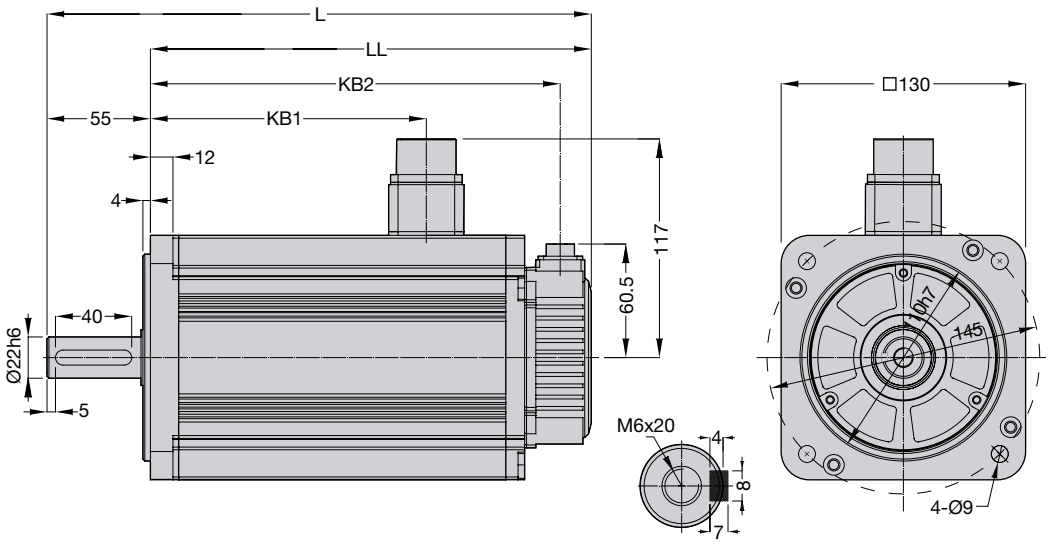
## Torque-Speed Feature




A: Continuous Working Area B: Repeatedly Working Area

## Dimensions

# FBM-XXALXXX | FBM-XXDLXXX

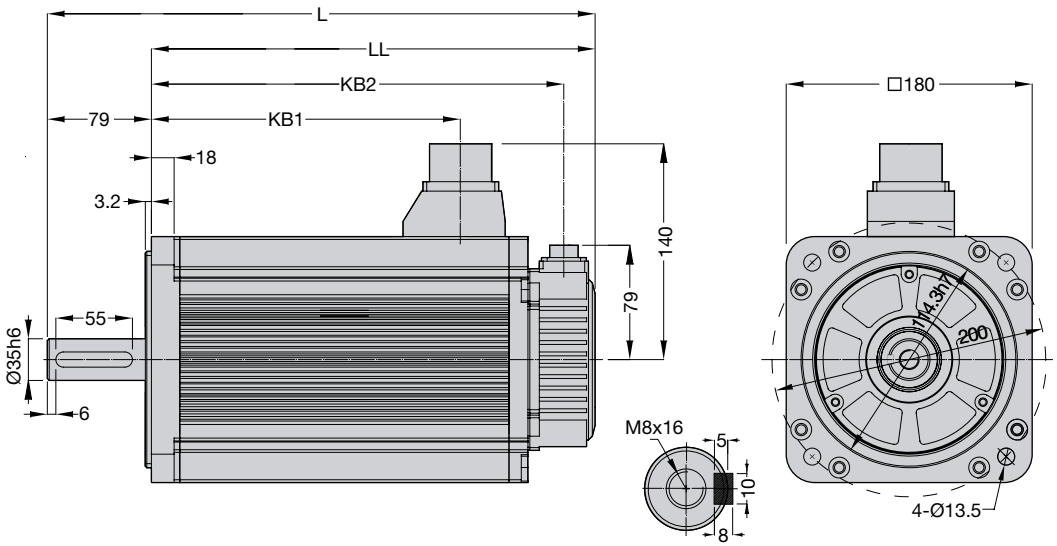



UNITS in mm — WHITHOUT BRAKE

| SERVO MOTOR MODEL | L | LL | KB1 | KB2 |
|---|---|---|---|---|
| FBM 10xLxx2 | 203 | 148 | 80 | 131.5 |
| FBM 15xLxx2 | 225 | 170 | 102 | 153.5 |
| FBM 20xLxx2 | 247 | 192 | 124 | 175.5 |

UNITS in mm — WITH BRAKE

| SERVO MOTOR MODEL | L | LL | KB1 | KB2 |
|---|---|---|---|---|
| FBM 10xLxx4 | 245.5 | 150.5 | 103.2 | 174 |
| FBM 15xLxx4 | 267.5 | 212.5 | 125.2 | 196 |
| FBM 20xLxx4 | 289.5 | 234.5 | 147.2 | 218 |




UNITS in mm — WHITHOUT BRAKE

| SERVO MOTOR MODEL | L | LL | KB1 | KB2 |
|---|---|---|---|---|
| FBM 30xLxx2 | 307 | 228 | 143 | 203 |
| FBM 50xLxx2 | 507 | 278 | 183 | 253 |

UNITS in mm — WITH BRAKE

| SERVO MOTOR MODEL | L | LL | KB1 | KB2 |
|---|---|---|---|---|
| FBM 30xLxx4 | 378 | 299 | 143 | 274 |
| FBM 50xLxx4 | 428 | 349 | 183 | 324 |

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EPS - BCSD EN 0220


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