PRODUCT DATASHEET

# ES-SM-L03-180G-V96-T23P88NM-5000W-001

Low-Voltage Servo Motors

Low-Voltage Servo Motors | ES-SM-L03-180G 96V 180 mm Low-Voltage Servo Motor Series

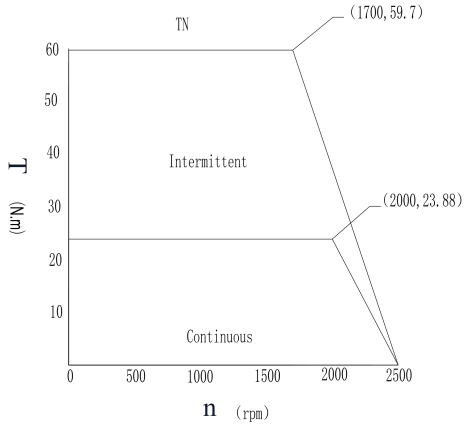
## Product Overview

Low-Voltage Servo Motors with rated Torque 23.88 N·m, rated Speed 2000 rpm and continuous Rated Output Power 5000 W.

| | |
|---|---|
| **Configuration Context** | Feedback device: Multi-turn communication magnetic absolute encoder |

## Key Specifications

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Rated Torque | 23.88 | N·m |
| Rated Speed | 2000 | rpm |
| Continuous Rated Output Power | 5000 | W |
| Rated Voltage | 96 | VDC |
| Rated Line Voltage | 96 | V |
| Continuous Rated Current | 62.5 | A |
| Instantaneous Maximum Current | 156 | A |
| Flange Size | 180 | mm |
| Allowable Axial Force | 490 | N |




Torque-Speed Curve

# Technical Specifications

| PARAMETER | SPECIFICATION | UNIT |
|---|---|---|
| **PERFORMANCE** | | |
| Rated Torque | 23.88 | N·m |
| Rated Speed | 2000 | rpm |
| Continuous Rated Output Power | 5000 | W |
| **ELECTRICAL** | | |
| Rated Voltage | 96 | VDC |
| Rated Line Voltage | 96 | V |
| Continuous Rated Current | 62.5 | A |
| Instantaneous Maximum Current | 156 | A |
| Pole Pairs | 4 | |
| Rotational Back-EMF Constant | 25.2 ±10% | V/krpm |
| Electrical Time Constant | 12.4 | ms |
| Insulation Class | F | |
| Motor Outlet Mode | Dedicated motor socket | |
| **MECHANICAL** | | |
| Flange Size | 180 | mm |

# Technical Specifications

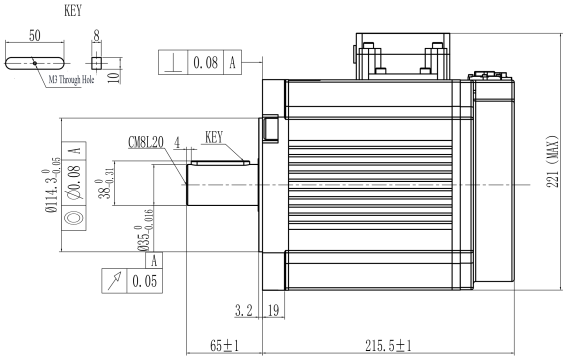
| PARAMETER | SPECIFICATION | UNIT | NOTES |
|---|---|---|---|
| **MECHANICAL** | | | |
| Inertia Level | High inertia | | |
| Allowable Radial Force | 1470 | N | |
| Mechanical Time Constant | 1.78 | ms | Brake Configuration: without_brake / Brake Configuration: with_brake |
| Rotor Inertia | 81 | Kg·cm 2 | Brake Configuration: without_brake / Brake Configuration: with_brake |
| Allowable Axial Force | 490 | N | |
| **INTEGRATION** | | | |
| Feedback Device | Multi-turn communication magnetic absolute encoder | | |
| **ENVIRONMENTAL** | | | |
| Operating Environment | Free from corrosive or flammable gases, oil droplets, and dust | | |
| Operating Humidity | ≤90% RH, non-condensing | %RH | |
| Altitude and Derating Rule | Maximum 2,000 m; derate power 1.5% per 100 m above 1,000 | m | |
| Operating Temperature | -20 to 40 | °C | |
| Protection Grade | IP54 | | |
| **CONFIGURATION** | | | |
| Output Shaft Type | Keyed shaft | | |
| **ADDITIONAL SPECIFICATIONS** | | | |
| Cooling Method | Fully enclosed, self-cooled | | |

# Dimensional & Integration Overview

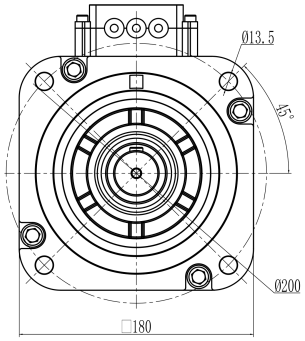
## Mechanical Overview

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Flange Size | 180 | mm |
| Inertia Level | High inertia | |
| Allowable Radial Force | 1470 | N |
| Mechanical Time Constant | 1.78 | ms |
| Rotor Inertia | 81 | Kg·cm2 |
| Allowable Axial Force | 490 | N |

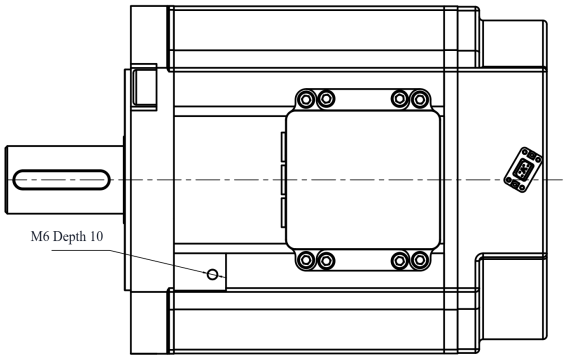
## Dimensional Drawings



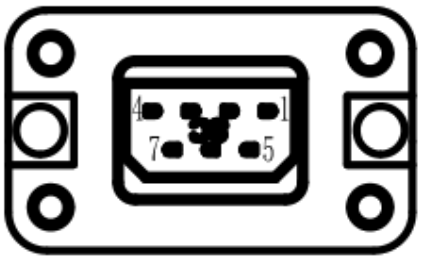

Mechanical View 1




Mechanical View 2




Mechanical View 3




Feedback Connector Pinout

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 1 | Shaft diameter | Ø50 mm |
| | Keyway width | 8 mm |
| | Keyway depth | 10 mm |
| | Position tolerance | Position 0.08 relative to datum A |
| | M3 through hole | |
| | Quantity | 4 units |
| | Maximum length | 221 mm maximum |
| | Datum A | |
| | Shaft section diameter | Ø114.3 mm with tolerance 0/-0.05 |
| | Circular runout tolerance | Circular runout Ø0.08 relative to datum A |
| | Shaft section length | 38 mm with tolerance 0/-0.31 |
| | Shaft section diameter | Ø35 mm with tolerance 0/-0.016 |
| | Surface finish or tolerance | 0.05 mm |
| | Dimension | 3.2 mm |
| | | 19 mm |
| | Overall length | 65±1 mm |
| | | 215.5±1 mm |

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 2 | Mounting hole diameter | Ø13.5 |
| | Mounting flange bolt circle diameter | Ø200 |
| | Mounting flange square side length | 180 |
| Mechanical View 3 | Threaded hole specification | M6 depth 10 mm |

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01 Specifications are subject to change without notice. Verify the current product configuration before final design release.

02 2D drawings, CAD files and integration documentation are controlled documents and are supplied separately on request.