PRODUCT DATASHEET

# ES-SM-A03-060D-T1P27NM-400W-004

AC Servo Motors

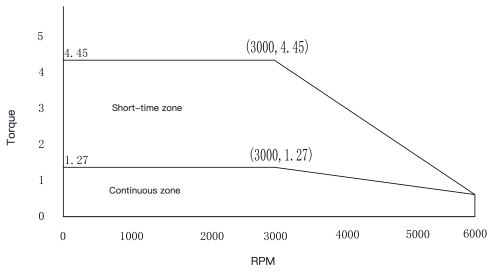
AC Servo Motors | ES-SM-A03-060D Compact 60 mm AC Servo Motor Series

## Product Overview

AC Servo Motors with rated Torque 1.27 N·m, instantaneous Maximum Torque 4.45 N·m and rated Speed 3000 rpm.

## Key Specifications

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Rated Torque | 1.27 | N·m |
| Instantaneous Maximum Torque | 4.45 | N·m |
| Rated Speed | 3000 | rpm |
| Continuous Rated Output Power | 400 | W |
| Rated Voltage | 220 | V AC |
| Instantaneous Maximum Current | 9 | A |
| Flange Size | 60 | mm |
| Torque Constant | 0.6 | N·m/A |
| Altitude and Derating Rule | highest altitude2000m(1000mfor each increase above100m,Power drop1.5%) | |




Torque-Speed Curve

# Technical Specifications

| PARAMETER | SPECIFICATION | UNIT |
|---|---|---|
| **PERFORMANCE** | | |
| Rated Torque | 1.27 | N·m |
| Instantaneous Maximum Torque | 4.45 | N·m |
| Rated Speed | 3000 | rpm |
| Continuous Rated Output Power | 400 | W |
| Torque Constant | 0.6 | N·m/A |
| Rated Power | 400 | W |
| **ELECTRICAL** | | |
| Rated Voltage | 220 | V AC |
| Instantaneous Maximum Current | 9 | A |
| Back EMF Constant | 36 | V/krpm |
| Insulation Class | F | |
| Motor Outlet Mode | Standard socket | |
| Pole Pairs | 5 | |
| Rated Current | 2.3 | A |
| Rotational Back-EMF Constant | 36 | V/krpm |
| Electrical Time Constant | 1.93 | ms |

# Technical Specifications

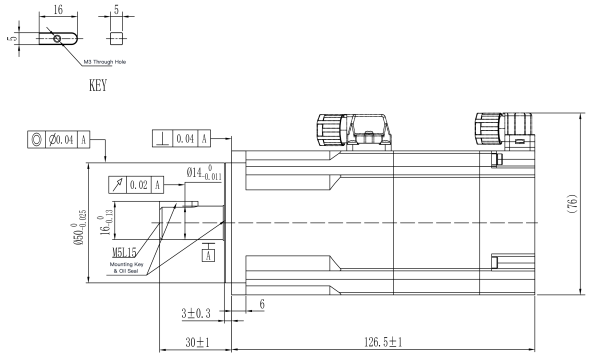
| PARAMETER | SPECIFICATION | UNIT | NOTES |
|---|---|---|---|
| **ELECTRICAL** | | | |
| Position Feedback Device | 23-bit multi-turn communication optical absolute encoder | | |
| **MECHANICAL** | | | |
| Flange Size | 60 | mm | |
| Inertia Level | Medium inertia | | |
| Holding Brake Available | With holding brake | | |
| Mechanical Time Constant | 1.03 / 0.99 | ms | Brake Configuration: without_brake |
| Rotor Inertia | 0.51 / 0.49 | Kg·cm 2 | Brake Configuration: without_brake |
| Bearing Radial Force Capacity | 245 | N | |
| Bearing Axial Force Capacity | 74 | N | |
| **ENVIRONMENTAL** | | | |
| Altitude and Derating Rule | highest altitude2000m(1000mfor each increase above100m,Power drop1.5%) | | |
| Operating Environment | Keep away from corrosive or flammable gases, oil droplets and dust | | |
| Operating Humidity | ≤90% RH, non-condensing | | |
| Operating Temperature | -20 to 40°C (no freezing) | | |
| Protection Rating | IP65, shaft end IP54 (Note: with shaft-end oil seal IP54, without oil seal IP50) | | |
| **CONFIGURATION** | | | |
| Output Shaft Type | Keyed shaft | | |
| **ADDITIONAL SPECIFICATIONS** | | | |
| Holding Brake | 1 | | |

# Dimensional & Integration Overview

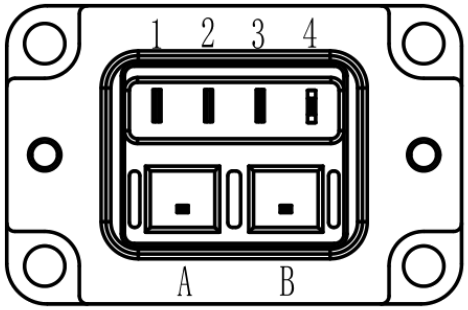
## Mechanical Overview

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Flange Size | 60 | mm |
| Inertia Level | Medium inertia | |
| Holding Brake Available | With holding brake | |
| Mechanical Time Constant | 1.03 / 0.99 | ms |
| Rotor Inertia | 0.51 / 0.49 | Kg·cm2 |
| Bearing Radial Force Capacity | 245 | N |

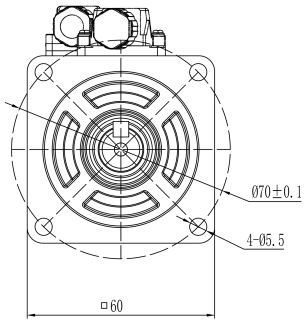
## Dimensional Drawings



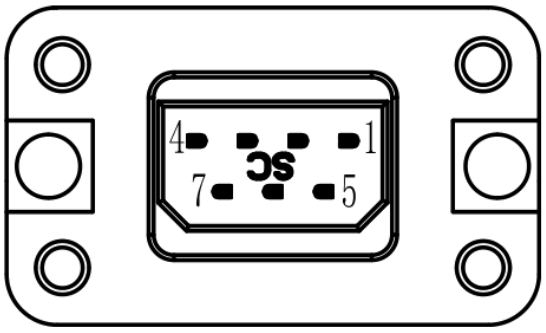

Mechanical View 1




Power Connector Pinout




Mechanical View 3




Feedback Connector Pinout

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 1 | Key feature length | 16 mm |
| | Key feature width | 5 mm |
| | M3 through hole | |
| | Key feature label | KEY |
| | Geometric tolerance with diameter tolerance zone to datum A | Diameter tolerance zone 0.04 relative to datum A |
| | Perpendicularity tolerance to datum A | 0.04 relative to datum A |
| | Shaft diameter | Diameter 14 mm, +0/-0.011 mm |
| | Geometric tolerance relative to datum A | 0.02 relative to datum A |
| | Reference overall height | 76 mm reference |
| | Diameter 50 feature | Diameter 50 mm, +0/-0.025 mm |
| | Keyway 16 dimension with tolerance | 16 mm, +0/-0.13 mm |
| | Threaded hole specification | M5 thread, length/depth 15 mm |
| | Mounting key and oil seal note | Mounting key and oil seal |
| | Datum A | |
| | End step distance | 6 mm |
| | End offset distance | 3 mm ±0.3 mm |
| | Main body length | 126.5 mm ±1 mm |
| | Shaft extension length | 30 mm ±1 mm |

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 3 | Mounting hole pitch circle diameter | Pitch circle diameter Ø70 ±0.1 |
| | Mounting hole quantity and diameter | 4 holes, diameter Ø5.5 |
| | Square flange outside size | Square flange size □60 |

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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.