PRODUCT DATASHEET

# ES-SM-A03-180G-T47P8NM-7500W-001

AC Servo Motors

AC Servo Motors | ES-SM-A03-180G Compact 180 mm AC Servo Motor Series

## Product Overview

AC Servo Motors with rated Torque 47.8 N·m, instantaneous Maximum Torque 119.5 N·m and rated Speed 1500 rpm.

## Key Specifications

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Rated Torque | 47.8 | N·m |
| Instantaneous Maximum Torque | 119.5 | N·m |
| Rated Speed | 1500 | rpm |
| Continuous Rated Output Power | 7500 | W |
| Rated Voltage | 380 | V AC |
| Instantaneous Maximum Current | 62.5 | A |
| Flange Size | 180 | mm |
| Torque Constant | 2.18 | N·m/A |
| Altitude and Derating Rule | highest altitude2000m,1000mabove,every rise100m,Power drop1.5% | |

# Technical Specifications

| PARAMETER | SPECIFICATION | UNIT |
|---|---|---|
| **PERFORMANCE** | | |
| Rated Torque | 47.8 | N·m |
| Instantaneous Maximum Torque | 119.5 | N·m |
| Rated Speed | 1500 | rpm |
| Continuous Rated Output Power | 7500 | W |
| Torque Constant | 2.18 | N·m/A |
| Rated Power | 7500 | W |
| **ELECTRICAL** | | |
| Rated Voltage | 380 | V AC |
| Instantaneous Maximum Current | 62.5 | A |
| Back EMF Constant | 128 | V/krpm |
| Insulation Class | F | |
| Motor Outlet Mode | Standard socket | |
| Pole Pairs | 5 | |
| Rated Current | 25 | A |
| Rotational Back-EMF Constant | 128 | V/krpm |
| Electrical Time Constant | 17.1 | ms |

# Technical Specifications

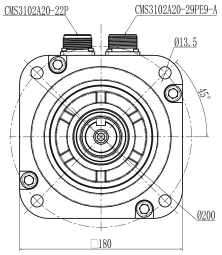
| PARAMETER | SPECIFICATION | UNIT | NOTES |
|---|---|---|---|
| **ELECTRICAL** | | | |
| Position Feedback Device | 17-bit multi-turn communication magnetic absolute encoder | | |
| **MECHANICAL** | | | |
| Flange Size | 180 | mm | |
| Inertia Level | High inertia | | |
| Holding Brake Available | Without holding brake | | |
| Mechanical Time Constant | 0.71 | ms | Brake Configuration: without_brake |
| Rotor Inertia | 146.43 / 140 | Kg·cm 2 | Brake Configuration: without_brake |
| Bearing Radial Force Capacity | 1470 | N | |
| Bearing Axial Force Capacity | 490 | N | |
| **ENVIRONMENTAL** | | | |
| Altitude and Derating Rule | highest altitude2000m,1000mabove,every rise100m,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 | false | | |

# Dimensional & Integration Overview

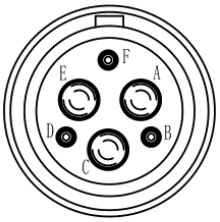
## Mechanical Overview

| PARAMETER | VALUE | UNIT |
|---|---|---|
| Flange Size | 180 | mm |
| Inertia Level | High inertia | |
| Holding Brake Available | Without holding brake | |
| Mechanical Time Constant | 0.71 | ms |
| Rotor Inertia | 146.43 / 140 | Kg·cm2 |
| Bearing Radial Force Capacity | 1470 | N |

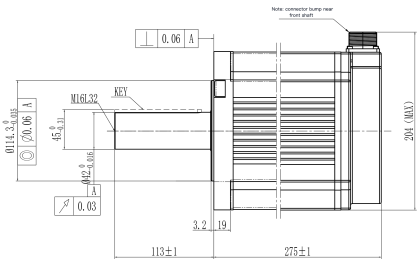
## Dimensional Drawings



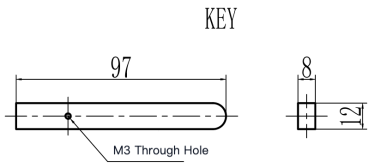

Mechanical View 1



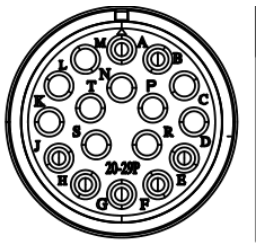

Power Connector Pinout




Mechanical View 3




Mechanical View 4




Feedback Connector Pinout

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 1 | Mounting hole diameter | Ø13.5 |
| | Flange mounting bolt circle diameter | Ø200 |
| | Square flange side length | 180 |
| Mechanical View 3 | Shaft diameter (front output shaft) | Ø42 +0/-0.016 mm |
| | Keyway specification | M16L32 |
| | Keyway dimension 1 | 3.2 mm |
| | Keyway dimension 2 | 19 mm |
| | Mounting flange diameter | Ø114 +0/-0.035 mm |
| | Overall length (maximum) | 204 mm maximum |
| | Section length 1 | 113±1 mm |
| | Overall length between datums | 275±1 mm |
| | Perpendicularity tolerance to datum A | ⊥0.06 A |
| | Circular runout tolerance | Ø0.06 |
| | Angularity tolerance to datum A | ↗0.03 A |
| | Datum A (mounting face) | Datum A |

## 2D Drawing Dimensions & Callouts

| VIEW | FIELD | VALUE |
|---|---|---|
| Mechanical View 4 | Keyway identifier | KEY |
| | Keyway length | 97 |
| | Keyway width | 8 |
| | Keyway depth | 12 |
| | Through hole specification | M3 Through Hole |

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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.