

PRODUCT DATASHEET

# ES-SM-A02-060S-TOP64NM-200W-002

## AC Servo Motors

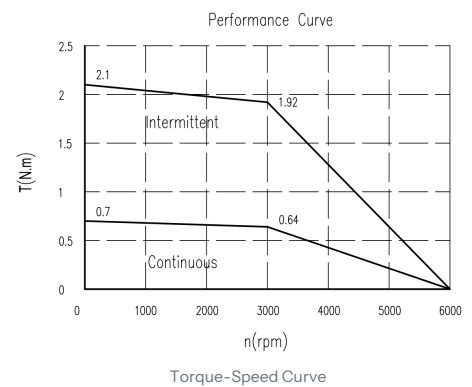
AC Servo Motors | ES-SM-A02-060S High-Response 60 mm AC Servo Motor Series

### Product Overview

AC Servo Motors with rated Torque 0.64 Nm, instantaneous Maximum Torque 1.92 Nm and rated Speed 3000 rpm.

### Key Specifications

| PARAMETER                     | VALUE | UNIT  |
|-------------------------------|-------|-------|
| Rated Torque                  | 0.64  | N·m   |
| Instantaneous Maximum Torque  | 1.92  | N·m   |
| Rated Speed                   | 3000  | rpm   |
| Continuous Rated Output Power | 200   | W     |
| Instantaneous Maximum Current | 4.8   | A     |
| Flange Size                   | 60    | mm    |
| Torque Constant               | 0.48  | N·m/A |
| Rated Voltage                 | 220   | V AC  |
| Rated Line Voltage            | 220   | V     |



## Technical Specifications

| PARAMETER                     | SPECIFICATION                | UNIT |
|-------------------------------|------------------------------|------|
| PERFORMANCE                   |                              |      |
| Rated Torque                  | 0.64                         | Nm   |
| Instantaneous Maximum Torque  | 1.92                         | Nm   |
| Rated Speed                   | 3000                         | rpm  |
| Continuous Rated Output Power | 200                          | W    |
| Rated Power                   | 200                          | W    |
| Torque Constant               | 0.48                         | Nm/A |
| ELECTRICAL                    |                              |      |
| Rated Voltage                 | 220                          | V AC |
| Rated Line Voltage            | 220                          | V    |
| Instantaneous Maximum Current | 4.8                          | A    |
| Position Feedback Device      | 2500 PPR incremental encoder |      |

## Technical Specifications

| PARAMETER                         | SPECIFICATION                   | UNIT        |
|-----------------------------------|---------------------------------|-------------|
| ELECTRICAL                        |                                 |             |
| Insulation Class                  | F                               |             |
| Maximum Allowed Voltage Slew Rate | 8                               | KV/ $\mu$ s |
| Pole Pairs                        | 3                               |             |
| Rated Current                     | 1.6                             | A           |
| Rotational Back-EMF Constant      | 29                              | V/krpm      |
| Electrical Time Constant          | 2.03                            | ms          |
| Motor Outlet Mode                 | HPO18-series aviation connector |             |
| MECHANICAL                        |                                 |             |
| Flange Size                       | 60                              | mm          |
| Inertia Level                     | Low inertia                     |             |
| Holding Brake Available           | Without holding brake           |             |

## Technical Specifications

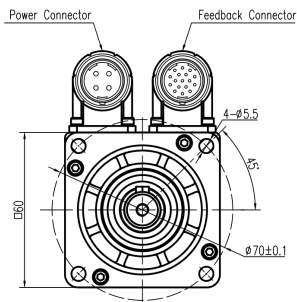
| PARAMETER                     | SPECIFICATION                                                       | UNIT | NOTES                              |
|-------------------------------|---------------------------------------------------------------------|------|------------------------------------|
| MECHANICAL                    |                                                                     |      |                                    |
| Mechanical Time Constant      | 2.26                                                                | ms   |                                    |
| Rotor Inertia                 | 0.375 kg·cm <sup>2</sup> / 0.375 Kg·cm <sup>2</sup>                 |      | Brake Configuration: without_brake |
| Bearing Radial Force Capacity | 180                                                                 | N    |                                    |
| Bearing Axial Force Capacity  | 90                                                                  | N    |                                    |
| ENVIRONMENTAL                 |                                                                     |      |                                    |
| Altitude and Derating Rule    | Maximum altitude 4000 m; above 1000 m, power derates 1.5% per 100 m |      |                                    |
| 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                                                |      |                                    |
| CONFIGURATION                 |                                                                     |      |                                    |
| Output Shaft Type             | Keyed shaft                                                         |      |                                    |

## Dimensional & Integration Overview

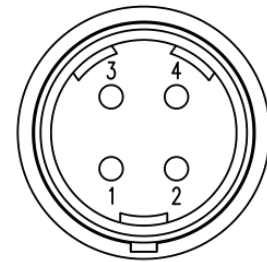
### Mechanical Overview

| PARAMETER                     | VALUE                                              | UNIT |
|-------------------------------|----------------------------------------------------|------|
| Flange Size                   | 60                                                 | mm   |
| Inertia Level                 | Low inertia                                        |      |
| Holding Brake Available       | Without holding brake                              |      |
| Mechanical Time Constant      | 2.26                                               | ms   |
| Rotor Inertia                 | 0.375 kgcm <sup>2</sup> / 0.375 Kg·cm <sup>2</sup> |      |
| Bearing Radial Force Capacity | 180                                                | N    |

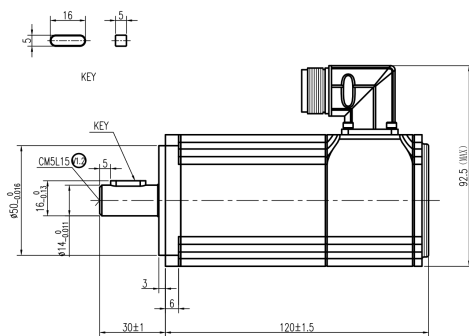
### Dimensional Drawings



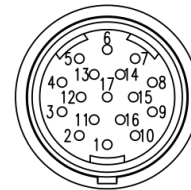
Mechanical View 1



Power Connector Pinout



Mechanical View 3



Feedback Connector Pinout

## 2D Drawing Dimensions & Callouts

| VIEW              | FIELD                                              | VALUE                |
|-------------------|----------------------------------------------------|----------------------|
| Mechanical View 1 | Mounting Hole Diameter and Quantity                | 4 holes, Ø5.5 mm     |
|                   | Mounting Hole Angular Position                     | 45°                  |
|                   | Square Flange Side Length                          | 60 mm × 60 mm square |
|                   | Mounting Hole Pitch Circle Diameter with Tolerance | Ø70 ±0.1 mm          |
| Mechanical View 3 | Keyway width                                       | 16 mm                |
|                   | Keyway depth                                       | 5 mm                 |
|                   | Keyway width                                       |                      |
|                   | Shaft diameter with tolerance                      | Φ50 0/-0.016 mm      |
|                   | Keyway depth with tolerance                        | 16 0/-0.13 mm        |
|                   | Hole diameter with tolerance                       | Φ14 0/-0.011 mm      |
|                   | Mounting spacing                                   | 3 mm                 |
|                   |                                                    | 6 mm                 |
|                   | Axial length with tolerance                        | 30±1 mm              |
|                   | Overall length with tolerance                      | 120±1.5 mm           |
|                   | Maximum height                                     | 92.5 mm (MAX)        |

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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.