

Need for a small precision device

## Business card size, work-ready servomotor

Moving parts of small precision devices require an ultra-small servomotor. Challenging the limits of the size and performance, YASKAWA introduces our ever-evolving  $\Sigma$ -7*mini*.



### Features

**Smallest in its class:**

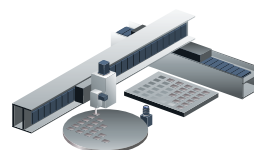
Flange size: 15 mm × 15 mm, 25 mm × 25 mm  
Length: 56 to 96 mm

**Maximum Motor Speed:**  
7000 min<sup>-1</sup>

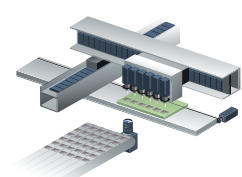
**Highest precision in its class:**  
A 20-bit encoder is mounted

### Application

Bonders



Chip mounter



AC Servo Drives

**NEW**

# $\Sigma$ -7*mini*

Servomotor : SGM7M

SERVOPACK: SGD□-□□□E, SGD7S, SGD7W

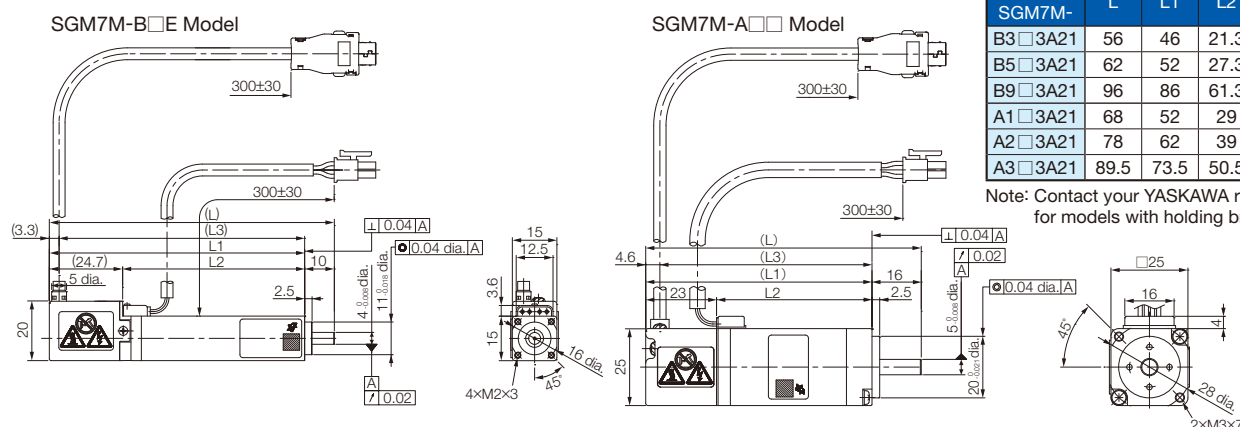
## Servomotor

### ● Ratings and Specifications

| Voltage                         |                                      | 24 VDC/48 VDC |         |        |               |        |        | 200 VAC       |        |        |
|---------------------------------|--------------------------------------|---------------|---------|--------|---------------|--------|--------|---------------|--------|--------|
| Model                           | SGM7M-                               | B3E           | B5E     | B9E    | A1E           | A2E    | A3E    | A1A           | A2A    | A3A    |
| Flange Size                     |                                      | 15 mm × 15 mm |         |        | 25 mm × 25 mm |        |        | 25 mm × 25 mm |        |        |
| Rated Output                    | W                                    | 3.3           | 5.5     | 11     | 11            | 22     | 33     | 11            | 22     | 33     |
| Rated Torque                    | N·m                                  | 0.0105        | 0.0175  | 0.0350 | 0.0350        | 0.0700 | 0.105  | 0.0350        | 0.0700 | 0.105  |
| Instantaneous Maximum Torque    | N·m                                  | 0.0263        | 0.0438  | 0.0875 | 0.105         | 0.210  | 0.306  | 0.105         | 0.210  | 0.315  |
| Rated Motor Speed               | min <sup>-1</sup>                    | 3000          |         |        |               |        |        |               |        |        |
| Maximum Motor Speed             | min <sup>-1</sup>                    | 7000          |         |        | 6000          |        | 7000   |               |        |        |
| Torque Constant                 | N·m / Arms                           | 0.00814       | 0.0132  | 0.0241 | 0.0153        | 0.0309 | 0.0421 | 0.0458        | 0.0928 | 0.126  |
| Motor Moment of Inertia         | × 10 <sup>-7</sup> kg·m <sup>2</sup> | 0.560         | 0.902   | 2.29   | 2.54          | 4.49   | 6.81   | 2.54          | 4.49   | 6.81   |
| Rated Power Rate                | kW / s                               | 1.97          | 3.40    | 5.35   | 4.82          | 10.9   | 16.2   | 4.82          | 10.9   | 16.2   |
| Rated Angular Acceleration Rate | rad / s <sup>2</sup>                 | 188000        | 194000  | 153000 | 138000        | 156000 | 154000 | 138000        | 156000 | 154000 |
| Motor Constant                  | N·m / $\sqrt{W}$                     | 0.00374       | 0.00618 | 0.0133 | 0.0149        | 0.0244 | 0.0310 | 0.0149        | 0.0245 | 0.0309 |
| Protective Structure            |                                      | IP42          |         |        | IP55          |        |        | IP55          |        |        |
| Applicable SERVOPACKs           | SGDV-                                | 1R7E          |         |        | 2R9E          |        |        | -             |        |        |
|                                 | SGD7S-                               | -             |         |        | -             |        |        | R90A, R90F*   |        |        |
|                                 | SGD7W-                               | -             |         |        | -             |        |        | 1R6A, 2R1F*   |        |        |

\*: Driving with 100 VAC

### ● Dimensions mm



### ● Model Designations (Servomotor)

**SGM7M - A1 A 3 A 2 1**  
 Σ-7 Series Servomotors SGM7M  
 1st+2nd 3rd 4th 5th 6th 7th digit

| 1st+2nd |               | Rated Output |               |
|---------|---------------|--------------|---------------|
| Code    | Specification | Code         | Specification |
| A1      | 11 W          | B3           | 3.3 W         |
| A2      | 22 W          | B5           | 5.5 W         |
| A3      | 33 W          | B9           | 11 W          |

| 3rd  |               | Power Supply Voltage |               |
|------|---------------|----------------------|---------------|
| Code | Specification | Code                 | Specification |
| A    | 200 VAC       |                      |               |
| E    | 24 VDC/48 VDC |                      |               |

| 4th  |                 | Serial Encoder |               |
|------|-----------------|----------------|---------------|
| Code | Specification   | Code           | Specification |
| 3    | 20-bit absolute |                |               |

| 5th  |               | Design Revision Order |               |
|------|---------------|-----------------------|---------------|
| Code | Specification | Code                  | Specification |
|      |               | A                     |               |

| 6th  |                                     | Shaft End |               |
|------|-------------------------------------|-----------|---------------|
| Code | Specification                       | Code      | Specification |
| 2    | Straight (standard)                 |           |               |
| A    | Straight with flat seats (optional) |           |               |

| 7th  |                              | Optional |               |
|------|------------------------------|----------|---------------|
| Code | Specification                | Code     | Specification |
| 1    | Without options              |          |               |
| C    | With holding brake (24 VDC)* |          |               |

\*: SGM7M-A1/-A2/-A3 only

| Model         | L    | L1   | L2   | L3   | Mass (g) |
|---------------|------|------|------|------|----------|
| SGM7M-B3□3A21 | 56   | 46   | 21.3 | 42.7 | 55       |
| B5□3A21       | 62   | 52   | 27.3 | 48.7 | 60       |
| B9□3A21       | 96   | 86   | 61.3 | 82.7 | 100      |
| A1□3A21       | 68   | 52   | 29   | 47.4 | 120      |
| A2□3A21       | 78   | 62   | 39   | 57.4 | 160      |
| A3□3A21       | 89.5 | 73.5 | 50.5 | 68.9 | 210      |

Note: Contact your YASKAWA representative for models with holding brakes.

## SERVOPACK

| Voltage                              |        | 24 VDC/48 VDC                |       | Three-phase, 200 VAC                 |      |      | Single-phase, 100 VAC                |      |
|--------------------------------------|--------|------------------------------|-------|--------------------------------------|------|------|--------------------------------------|------|
| SERVOPACK Model                      | SGDV-  | 1 R7E                        | 2R9E  | —                                    | —    | —    | —                                    | —    |
|                                      | SGD7S- | —                            | —     | R90A                                 | 1R6A | —    | R90F                                 | 2R1F |
|                                      | SGD7W- | —                            | —     | —                                    | 1R6A | 2R8A | —                                    | —    |
| Maximum Applicable Motor Capacity    | kW     | 0.011                        | 0.030 | 0.1                                  | 0.2  | 0.4  | 0.1                                  | 0.2  |
| Continuous Output Current            | Arms   | 1.7                          | 2.9   | 0.91                                 | 1.6  | 2.8  | 0.91                                 | 2.1  |
| Instantaneous Maximum Output Current | Arms   | 4.1                          | 8.6   | 3.2                                  | 5.9  | 9.3  | 3.2                                  | 6.5  |
| Main Circuit Power Supply            |        | 24 VDC ± 15%<br>48 VDC ± 15% |       | 200 VAC to 240 VAC,<br>− 15% to +10% |      |      | 100 VAC to 120 VAC,<br>− 15% to +10% |      |
| Control Power Supply                 |        | 24 VDC ± 15%                 |       |                                      |      |      |                                      |      |

## Compliance with Standards and Directives



Note: The old RoHS mark has been deleted due to support of the revised RoHS Directive.

# YASKAWA

YASKAWA ELECTRIC CORPORATION

### ● Product Information Site

<http://www.e-mechatronics.com/en/>

In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply. Specifications are subject to change without notice for ongoing product modifications and improvements.

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