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You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON SIGMA-II. You'll find the answers to all your questions on the OMRON SIGMA-II in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

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omron

SGMAH-□, SGMPH-□, SGMGH-□, SGMSSH-□, SGMUH-□, SGMBH-□

Sigma-II rotary servo motors

The ideal servo family for motion control.
Fast response, high speed, and high accuracy.

- 6 different designs provide a complete range of servo motors to meet the power, speed and performance required for each application.
- Peak torque 300% of nominal during 3 seconds
- Automatic motor recognition by servo drive
- IP57 and shaft oil seal available
- High resolution encoders
- Absolute multi-turn encoder solution
- Compact design and robust construction

Rated torque

- 230 VAC from 30 W to 1.5 k W (rated torque from 0.09 to 4.77 Nm)
- 400 VAC from 300 W to 55 k W (rated torque from 0.55 Nm to 350 Nm)

System configuration

(Refer to servo drive chapter)

Servo drive with option boards for flexible system configuration

Intelligent Servo Drive

MeaDrive

Drive options

Power and encoder cables

Power cable, Encoder cable, Servo cable, Power cable, Encoder cable

 SGMBH Servo Motor 1500 rpm (22 kW-55 kW)	 SGMAH Servo Motor 3000 rpm (20-750 W)	 SGMPPH Servo Motor 3000 rpm (100-1500 W)	 SGMGH Servo Motor 1500 rpm (450 W-15 kW)	 SGMUH Servo Motor 3000 rpm (1-5 kW)	 SGMSSH Servo Motor 6000 rpm (1-4 kW)
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Manual abstract:

Refer to the servo drive chapter for drive options selection and detailed specifications 164 AC servo systems Type designation Servo motor SGMAH - 01 A 1 A 6 S D - OY Sigma-II servo motor type SGMAH: Super high power rate type SGMPH: Cube type SGMGH: High-speed feed type SGMSH: Super high power rate type SGMUH: High speed type Capacity (kW) Code A3 A5 01 02 03 04 05 06 07 08 09 10 12 13 15 20 22 30 32 40 44 50 55 60 75 1A 1E SGMAH 3000 min-1 0.03 0.05 0.1 0.2 0.3 0.4 SGMPH 3000 min-1 SGMGH 1500 min-1 SGMSH 3000 min-1 SGMUH 6000 min-1 Connector specifications Blank D No option Hypertac connector (SGMAH,SGMPH) Brake, oil seal specifications 1 S B C D E F G H No brake, no oil/dust seal Oil seal 90 V brake 24 V brake Oil seal + 90 DC brake Oil seal + 24 VDC brake Dust seal Dust seal + 90 VDC brake Dust seal + 24 VDC brake 0.1 0.2 0.4 0.

45 Shaft end specifications Code Shaft end Straight, no key Straight, key Straight, key, tapped Straight, tapped : Standard : Option Type SGMAH SGMPH SGMGH SGMSH SGMUH 0.65 0.75 0.75 0.85 1.

0 1.3 1.5 1.8 2.9 1.

5 2.0 3.0 4.0 4.4 5.0 5.5 7.5 11 15 1.5 1.0 2 4 6 8 Design procedure: A: Standard E: SGMPH (IP67) 3.

0 4.0 F: SGMAH (prepared for oil seal mounting) Serial encoder specifications Code 1 2 A B C Encoder 16-bit absolute 17-bit absolute 13-bit incremental 16-bit incremental 17-bit incremental : Standard : Option Type SGMAH SGMPH SGMGH SGMSH SGMUH Voltage A: 230 V D: 400 V SGMBH - 2 B D 2 A Sigma-II series large Type : SGMBH Motor output 2B: 22 kW 4E: 45 kW 3Z: 30 kW 5E: 55 kW 3G: 37 kW Voltage D:400 V Option 1: Oil seal (V type) B: Oil seal (V type) and holding brake (90 VDC) C: Oil seal (V type) and holding brake (24 VDC) S: Oil seal (S type) D: Oil seal (S type) and holding brake (90 VDC) E: Oil seal (S type) and holding brake (24 VDC) Note : Options are not available for 55 kW motors. Encoder specifications 2:17-bit absolute (standard) C:17-bit incremental (standard) 3: 20-bit absolute (option) Design revision A: Max. torque 200% Motor specifications 2 : Flange, straight shaft 6

: Flange, straight shaft For 45 kW or less (with key and tap) K : Foot mount, straight shaft L : Foot mount, straight shaft For 37 kW or more (with key and tap) Sigma-II rotary servo motors 165 Servo motor specifications Type SGMAH, 230 V/400 V Ratings and specifications Applied voltage Servo motor model SGMAH- @ Rated output W Rated torque N-m Instantaneous peak torque N-m Rated current A (rms) Instantaneous max. current A (rms) Rated speed min-1 Max. speed min-1 Torque constant N-m/A (rms) Rotor moment of inertia (JM) kg-m²x10-4 Allowable load moment of inertia (JL) Multiple of (JM) Rated power rate kW/s Rated angular acceleration rad/s² Applicable encoder Standard Option Holding brake moment of inertia J kg-m²x10-4 Time rating Insulation class Ambient temperature Ambient humidity Vibration class Enclosure Vibration resistance Mounting A3A@ 30 0.096 0.286 0.44 1.3 A5A@ 50 0.

159 0.477 0.64 2.0 230 V 01A@ 02A@ 100 200 0.318 0.

637 0.955 1.91 0.91 2.1 2.

8 6.5 3000 5000 0.238 0.017 0.268 0.022 0.378 0.036 0.327 0.106 0.

498 0.173 0.590 0.672 20 84.8 35500 52.9 55300 63.8 30800 0.837 0.173 1.02 0.

672 400 V 04A@ 400 1.27 3.82 2.8 8.5 08A@ 750 2.

39 7.16 4.4 13.4 03D@ 300 0.955 3.

82 1.3 5.1 07D@ 650 2.07 7.16 2.2 7.7 30 5.49 11.5 27.8 38.

2 93.7 57500 72300 87400 60100 73600 Incremental encoder (13 bits) Incremental/absolute encoder (16 bits) 0.0085 0.058 Continuous Class B 0 to +40 °C 20 to 80% (non-condensing) 15 µm or below Totally-enclosed, self-cooled, IP55 (excluding shaft opening) Vibration acceleration 49 m/s² Flange-mounted 0.14 0.058 0.14 Torque-speed characteristics Basic specifications (A : Continuous duty zone B : Intermittent duty zone) SGMAH-A3A 5000 4000 3000 SPEED (min-1) 2000 1000 0 A B SPEED (min-1) 2000 1000 0 5000 4000 3000 A B SGMAH-A5A 5000 4000 3000 SPEED (min-1) 2000 1000 0 0.15 0.3 0.45 0.

6 TORQUE (N · m) SGMAH-01A A B 0 0.1 0.2 0.3 0.4 0 0.

25 0.5 0.75 1 TORQUE (N · m) TORQUE (N · m) SGMAH-02A 5000 4000 3000 SPEED (min-1) 2000 1000 0 A B SPEED (min-1) 2000 1000 0 5000 4000 3000 SGMAH-04A 5000 4000 3000 A B SPEED (min-1) 2000 1000 0 SGMAH-08A A B 0 0.5 1 1.5 2 0 1 2 3 4 0 2 4 6 8 TORQUE (N · m) TORQUE (N · m) TORQUE (N · m) SGMAH-03D 5000 4000 3000 SPEED (min-1) 2000 1000 0 A B SPEED (min-1) 2000 1000 0 5000 4000 3000 SGMAH-07D A B 0 1 2 3 4 0 2 4 6 8 TORQUE (N · m) TORQUE (N · m) 166 AC servo systems Type SGMPH, 230 V/400 V Ratings and specifications Applied voltage Servo motor model SGMPH- @ Rated output W Rated torque N-m Instantaneous peak torque N-m Rated current A (rms) Instantaneous max.

current A (rms) Rated speed min-1 Max. speed min-1 Torque constant N-m/A (rms) Rotor moment of inertia (JM) kg-m²x10-4 Allowable load moment of inertia (JL) Multiple of (JM) Rated power rate kW/s Rated angular acceleration rad/s² Applicable encoder Standard Option Holding brake moment of inertia J kg-m²x10-4 Time rating Insulation class Ambient temperature Ambient humidity Vibration class Enclosure Vibration resistance Mounting 01A@ 100 0.318 0.955 0.89 2.8 02A@ 200 0.637 1.91 2.0 6.0 230 V 04A@ 400 1.

27 3.82 2.6 8.0 08A@ 750 2.39 7.16 4.1 13.9 15A@ 1500 4.77 14.3 7.

5 23.0 3000 5000 0.687 4.02 02D@ 200 0.637 1.

91 1.4 4.6 400 V 04D@ 08D@ 400 750 1.27 2.39 3.

82 7.16 1.4 2.6 4.4 7.8 15D@ 1500 4.77 14.3 4.5 13.7 0.

392 0.349 0.535 0.641 0.481 0.963 0.0491 0.193 0.331 2.10 0.

193 0.331 25 15 7 5 15 7 20.6 21.0 49.0 27.

1 56.7 21.0 49.0 64800 33000 38500 11400 11900 33000 38500 Incremental encoder (13 bits) Incremental/absolute encoder (16 bits) 0.029 0. 109 0.875 0.109 Continuous Class B 0 to +40 °C 20 to 80% (non-condensing) 15 µm or below Totally-enclosed, self-cooled, IP55 (excluding shaft opening) Vibration acceleration 49 m/s² Flange-mounted 0.994 2.10 5 27.1 11400 1.14 4.02 56.7 11900 0.875 Torque-speed characteristics Basic specifications (A : Continuous duty zone B : Intermittent duty zone) SGMPH-01A 5000 4000 3000 SPEED (min-1) 2000 1000 0 A B SPEED (min-1) 2000 1000 0 5000 4000 3000 A B SPEED (min-1) 2000 1000 0 SGMPH-02A 5000 4000 3000 SGMPH-04A A B 0 0.

25 0.5 0.75 1 0 0.5 1 1.5 2 0 1 2 3 4 TORQUE (N · m) TORQUE (N · m) TORQUE (N · m) SGMPH-08A 5000 4000 3000 SPEED (min-1) 2000 1000 0 A B SPEED (min-1) 2000 1000 0 5000 4000 3000 SGMPH-15A 5000 4000 3000 SGMPH-02D A B SPEED (min-1) 2000 1000 0 A B 0 2 4 6 8 0 4 8 12 16 0 0.5 1 1.5 2 TORQUE (N · m) TORQUE (N · m) TORQUE (N · m) SGMPH-04D 5000 4000 3000 SPEED (min-1) 2000 1000 0 A B SPEED (min-1) 2000 1000 0 5000 4000 3000 SGMPH-08D 5000 4000 3000 SGMPH-15D A B SPEED (min-1) 2000 1000 0 A B 0 1 2 3 4 0 2 4 6 8 0 4 8 12 16 TORQUE (N · m) TORQUE

*(N · m) TORQUE (N · m) Sigma-II rotary servo motors 167 Type SGMGH, 400 V Ratings and specifications Applied voltage Servo motor model SGMGH- @
Rated output kW Rated torque N·m Instantaneous peak torque N·m Rated current A (rms) Instantaneous max.*



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current A (rms) Rated speed min-1 Max. speed min-1 Torque constant N-m/A (rms) Rotor moment of inertia (JM) kg-m²x10⁻⁴ Allowable load moment of inertia (JL) Multiple of (JM) Rated power rate kW/s Rated angular acceleration rad/s² Applicable encoder Standard Option Holding brake moment of inertia J kg-m²x10⁻⁴ Time rating Insulation class Ambient temperature Ambient humidity Vibration class Enclosure Vibration resistance Mounting 05D@ 0.45 2.

84 8.92 1.9 5.5 09D@ 0.85 5.
39 13.8 3.5 8.5 13D@ 1.3 8.
34 23.3 5.4 14 20D@ 1.8 11.5 28.7 8.4 20 400 V 30D@ 44D@ 2.9 4.4 18.6 28.

4 45.1 71.1 11.9 16.5 28 40.5 1500 1.82 67.5 55D@ 5.5 35.0 90.
7 20.8 55 75D@ 7.5 48.0 123 25.4 65 1AD@ 11 70.
0 175 28.1 70 1ED@ 15 95.4 221 37.2 85 1.64 7.
24 1.65 13.9 1.68 20.5 3000 1.46 1.66 31.7 46.0 2000 1.74 89.

0 137 3930 2.0 125 184 3850 2.56 281 174 2490 2.64 315 289 3030 5 11.2 20.9 33.8 41.5 75.3 120 3930 3880 4060 3620 4050 4210 Incremental encoder (17 bits) Absolute encoder (17 bits) 2.10 8.

50 Continuous Class F 0 to +40 °C 20 to 80% (non-condensing) 15 µm or below Totally-enclosed, self-cooled, IP67 (excluding shaft opening) Vibration acceleration 24.5 m/s² Flange-mounted 18.8 37.5 Torque-speed characteristics Basic specifications (A : Continuous duty zone B : Intermittent duty zone) SGMGH-05D 3000 3000 SGMGH-09D 3000 SGMGH-13D 2000 SPEED (min-1) 1000uous Class F 0 to +40 °C 20 to 80% (non-condensing) 15 µm or below Totally-enclosed, self-cooled, IP67 (excluding shaft opening) Vibration acceleration 24.5 m/s² Flange-mounted 2.

10 Torque-speed characteristics Basic specifications (A : Continuous duty zone B : Intermittent duty zone) SGMUH-10D 6000 5000 4000 SPEED 3000 (min-1) 2000 1000 0 A B 6000 5000 4000 SPEED 3000 (min-1) 2000 1000 0 A B SGMUH-15D 0 4 8 12 0 5 10 15 TORQUE (N · m) TORQUE (N · m) SGMUH-30D 6000 5000 4000 SPEED 3000 (min-1) 2000 1000 0 A B 6000 5000 4000 SPEED 3000 (min-1) 2000 1000 0 SGMUH-40D A B 0 10 20 30 0 10 20 30 TORQUE (N · m) TORQUE (N · m) 170 AC servo systems Type SGMBH, 400 V Ratings and specifications Type SGMBH-@ Rated output Rated torque Stalling torque Instantaneous peak torque Rated current Innstantaneous max. current Rated/max. speed Rotor inertia Protective enclosure Mounting method Standard Option 2BD@A kW N-m N-m N-m A(rms) A(rms) min-1 kg-m² 22 140 140 280 58 120 3ZD@A 30 191 191 382 80 170 3GD@A 37 236 236 471 100 210 1500/2000 0.139 IP44 4ED@A 45 286 286 572 127 260 5ED@A 55 350 350 700 150 310 Performance 0.0592 0.

0773 0.151 0.197 Structure Flange Incremental, absolute: 17 bits Absolute: 20 bits 0 to 40 °C 20 to 80% (non-condensing) Flange foot mount 1 Foot mount Encoder Usage temperature Usage humidity Note: 1. 37 kW and 45 kW motors with brakes are foot mount type. Torque-speed characteristics Speed (min-1) 2000 Speed (min-1) 2000 Speed (min-1) 2000 A 1000 B 1000 A B 0 0 100 200 SGMBH-2BD#A 300 Torque (N·m) 0 0 100 200 300 400 Torque (N·m) SGMBH-3ZD#A Speed (min-1) 2000 0 0 100 200 300 400 500 Torque (N·m) SGMBH-3GD#A Speed (min-1) 2000 A: Continuous duty zone B: Intermittent duty zone A 1000 B 1000 A B 0 0 200 400 600 Torque (N·m) SGMBH-4ED#A 0 0 200 400 600 800 Torque (N·m) SGMBH-5ED#A Sigma-II rotary servo motors 171 Dimensions Servo motors Type SGMAH (230/400 V) Dimensions (mm) Model SGMAH-A3A@A6@D-OY SGMAH-A5A@A6@D-OY SGMAH-01A@A6@D-OY SGMAH-02A@A6@D-OY SGMAH-03D@A6@D-OY SGMAH-04A@A6@D-OY SGMAH-07D@A6@D-OY SGMAH-08A@A6@D-OY Without brake L LL 94.5 102.0 119.5 126.5 154.5 185 69.

5 77 94.5 96.5 124.5 145 With brake L LL 126 133.5 160 166 194 229.5 101 108.5 135 136 164 189.5 LR LA 25 46 LB Flange surface LC LE LG 40 2.5 5 LZ 4.3 S 6h6 8h6 14h6 QK 14 Shaft end Approx.

Mass (Kg) W T U Tap × depth Without With brake brake 2 2 1.2 M2.5 x 5L 0.3 0.6 0.
4 0.7 3 3 1.8 M3 x 6L 0.5 0.8 5 5 3 M5 x8L 1.
1 1.6 1.7 2.2 1.7 2.2 3.4 4.3 3.4 4.3 30h7 30 70 50h7 60 3 6 5.

5 20 40 90 70h7 80 3 8 7 16h6 30 300 ±30 300 ±30 Shaft end U W 300 ±30 L LL LG 300 ±30 T LR LE L LL LG LR LC LE 2-fLZ LC fS QK fS QK fLA fLB fLB fLA Tap × Depth Holding brake 4-fLZ Tap × Depth Models without brake Models with brake SGMAH-A3,-A5,-01 SGMAH-02 to -08 Type SGMPH (230/400 V) Dimensions (mm) Model SGMPH-01@@@6@D-OY SGMPH-02@@@6@D-OY SGMPH-04@@@6@D-OY SGMPH-08@@@6@D-OY SGMPH-15@@@6@D-OY 300 ±30 Without brake L LL 87 97 117 126.5 154.5 62 67 87 86.5 114.5 With brake L LL 116 128.5 148.5 160 188 91 98.5 118.5 120 148 LR LA 25 30 40 70 90 LB Flange surface LC LE LG 60 80 3 3 3.5 6 8 10 LZ 5.

5 7 10 S 8h6 14h6 16h6 19h6 QK 14 16 22 50h7 70h7 145 110h 120 7 Shaft end Approx. @@@@D-OY SGMPH-@@@@@D-OY SGMPH-@@@@@A@@@1D-OY SGMPH-(01/02/04/08)A@@@41D-OY For 200 V servo motors with brake SGMAH-@@@@@CD-OY SGMPH-(01/02/04/08)A@@@4CD-OY For 200 V servo motors without brake SGMPH-15A@@@1D-OY For 200 V servo motors with brake SGMPH-15A@@@CD-OY For 400 V servo motors without brake SGMAH-@@@@@1D-OY SGMPH-@@@@@1D-OY For 400 V servo motors with brake SGMAH-@@@@@CD-OY SGMPH-@@@@@B-E) is needed For 400 V servo motors SGMGH-55D@ For servomortors with brake, a separate cable (R88A-CAWC0@@B-E) is needed For 400 V servo motors SGMGH-(75/1A)D@ For servomortors with brake, a separate cable (R88A-CAWC0@@B-E) is needed 3m 5m 10 m 15 m 20 m 3m 5m 10 m 15 m 20 m 3m 5m 10 m 15 m 20 m 3m 5m 10 m 15 m 20 m 3m 5m 10 m 15 m 20 m 3m 5m 10 m 15 m 20 m 3m 5m 10 m 15 m 20 m Model R88A-CAWA003S-DE R88A-CAWA005S-DE R88A-CAWA010S-DE R88A-CAWA015S-DE R88A-CAWA020S-DE R88A-CAWA003B-DE R88A-CAWA005B-DE R88A-CAWA010B-DE R88A-CAWA015B-DE R88A-CAWA020B-DE R88A-CAWB003S-DE R88A-CAWB005S-DE R88A-CAWB010S-DE R88A-CAWB015S-DE R88A-CAWB020S-DE R88A-CAWB003B-DE R88A-CAWB005B-DE R88A-CAWB010B-DE R88A-CAWB015B-DE R88A-CAWB020B-DE R88A-CAWK003S-DE R88A-CAWK005S-DE R88A-CAWK010S-DE R88A-CAWK015S-DE R88A-CAWK020S-DE R88A-CAWK003B-DE R88A-CAWK005B-DE R88A-CAWK010B-DE R88A-CAWK015B-DE R88A-CAWK020B-DE R88A-CAWC003S-E R88A-CAWC005S-E R88A-CAWC010S-E R88A-CAWC015S-E R88A-CAWC020S-E R88A-CAWD003S-E R88A-CAWD005S-E R88A-CAWD010S-E R88A-CAWD015S-E R88A-CAWD020S-E R88A-CAWG003S-E R88A-CAWG005S-E R88A-CAWG010S-E R88A-CAWG015S-E R88A-CAWG020S-E R88A-CAWF003S-E R88A-CAWF005S-E R88A-CAWF010S-E R88A-CAWF015S-E R88A-CAWF020S-E R88A-CAWH003S-E R88A-CAWH005S-E R88A-CAWH010S-E R88A-CAWH015S-E R88A-CAWH020S-E R88A-CAWJ003S-E R88A-CAWJ005S-E R88A-CAWJ010S-E R88A-CAWJ015S-E R88A-CAWJ020S-E Appearance Brake cable (for SGMGH/SH/UH Motors) Symbol E Specifications Brake cable only.

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For 400 V servo motors with brake SGMGH-@@D@ SGMSH-@@D@ SGMUH-@@D@ 3m 5m 10 m 15 m 20 m Model R88A-CAWC003B-E R88A-CAWC005B-E R88A-CAWC010B-E R88A-CAWC015B-E R88A-CAWC020B-E Appearance Sigma-II rotary servo motors 179 Connectors Specification Hypertac power connector IP67 (for 200 V motors SGMAH/PH-@@A@@@D-OY) Hypertac power connector IP67 (for 400 V motors SGMAH/PH-@@D@@@D-OY) Hypertac encoder connector IP67 (for motors SGMAH/PH-@@@@@D-OY) Military power connector IP67 (for 400 V motors SGMGH-(05/10/13)D@, SGMSH-(10/15/20)D@, SGMUH-(10/15)D@) (for SGMBH-@ fan) Military power connector IP67 (for 400 V motors SGMGH-(20/30/44)D@, SGMSH-(30/40/50)D@, SGMUH-(30/40)D@) Military power connector IP67 (for 400 V motors SGMGH-(55/75/1A/1E)D@) Military brake connector IP67 (for 400 V servo motors SGMGH-@, SGMSH-@, SGMUH-@) Military encoder connector IP67 (for motors SGMGH-@, SGMSH-@, SGMUH-@, SGMBH-@) Spare part, hypertac power connector male (connector included with the motor for 200 V models SGMAH/PH-@@A@@@D-OY) Spare part, hypertac power connector male (connector included with the motor for 400 V motors SGMAH/PH-@@D@@@@@D-OY) To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527. Cat. No.



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