AC SERVO DRIVES
Σ-Ⅱ SERIES

STANDARD FUNCTION SERIES

SERVOMOTOR TYPE: SGMAH–□, SGMPH–□, SGMGH–□,
SGMSH–□, SGMDH–□
SERVOPACK TYPE : SGDM–□

Certified for
ISO 9001

JQA-0386,-0422

YASKAWA

LITERATURE NO. KAE-S800-31C

Aggressive Servo, Σ-Ⅱ

Your Machinery Performance Rea ches its Full Potential.

It's a rapid, accurate pass.
He receives the ball, fakes out his opponent, and instantaneously make a strong, decisive shot!

A servo drive must be more responsive, more quick, and more accurate than world class athletes. A servo drive is the key component for your machine's optimum performance and productivity. YASKAWA has been aggressively challenging itself to enhance the servo performance and functions. Here comes the Σ-Ⅱ with a full lineup, that is easy-to-use and conforms to world standards.

C O N T E N T S

Advantage 1

World's top performer

The Σ-Ⅱ will increase your production and take your machine's potential to its highest performance ever.
Its outstanding rapid response is achieved with a 1/3 settling time due to 1/2 CPU operation time and upgraded new control algorithms.

Advantage 2

One on one set up/maintenance

Easy to start up your sophisticated system in a short time. Online auto-tuning automatically adjusts servo drives in accordance with your machine's characteristics.
Also, isolated main and control circuit power supplies and an alarm traceback function enable easy maintenance.

Advantage 3

Flexible and reliable availability

Full lineups Σ-Ⅱ models are available so you can make the optimum system for your needs. Motors with brake/gear/absolute encoders, are also available.
Full conformance to international standards assures your operation standards can be maintained worldwide.

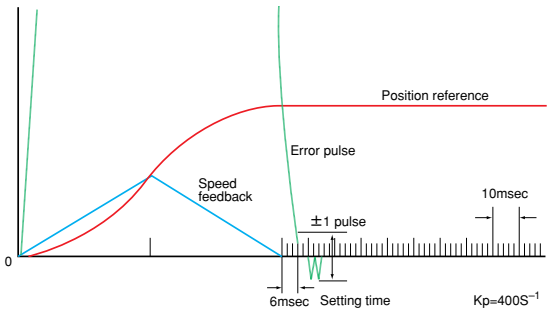
Features

High Performance

See P24 for supporting high performance functions.

Shortened settling time

The upgraded control algorithms have enhanced controls against vibration, such as the model follow-up control and the vibration suppression control. Position settling time can be reduced to a third of conventional models, even if your machine is not rigid.



High speed/highly accurate drives

5000r/min is the highest speed available (Types SGMAH/SGMPH/SGMSH).
High resolution serial encoder (16, 17 bits) has improved positioning accuracy. Also, the d-q current vector control system has improved torque control accuracy (repeatability) from ±5% to ±2%.

Smooth operation

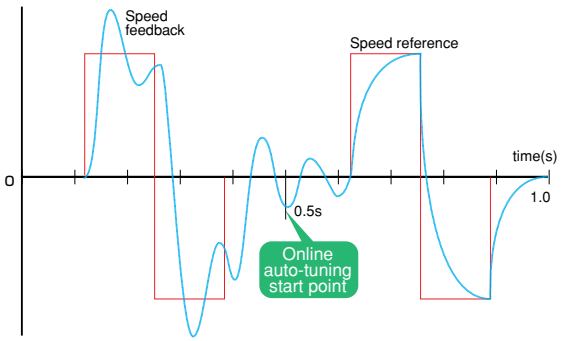
Speed observer control to reduce motor speed ripple. Operation is smooth at low speed.

Easy Setup

See P25 for supporting easy setup functions.

Online auto-tuning

Automatically adjusts to machine characteristics and sets servo gains. No need for troublesome adjustment.



Automatic motor discrimination function

SERVOPACK automatically discriminates servomotor capacity and type, and also automatically sets motor parameters.

Regenerative resistor connection terminals

Regenerative resistor can be connected easily due to standardization of regenerative resistor connection terminals for external mounting.

Easy Maintenance

See P25 for supporting easy setup maintenance functions.

Isolated main and control circuit power supplies

The power supplies for the main and control circuits are isolated from each other for easy maintenance. If an alarm occurs, only the main circuit can be shut down.

Parameter setting device built in

Direct parameter inputs from SERVOPACK.

Reduced wiring

Adoption of the serial encoder reduces the number of wires to half.

Absolute encoder: 15 to 7 wires
Incremental encoder: 9 to 5 wires

Flexible

See P26, 27 for supporting flexible adjustments.

All-in-one design

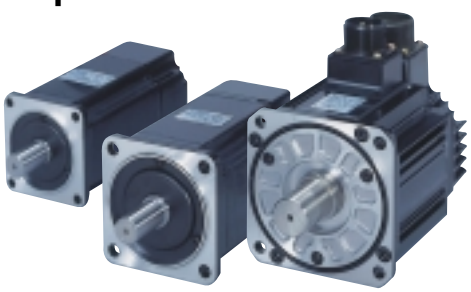
Can be used for control of torque, speed, or position by merely switching the appropriate parameters.

Support for wide range of motor specifications

Full lineups of motors available.

100VAC: Single-phase, 0.03 to 0.2kW
200VAC: Single-phase, 0.03 to 0.4kW
Three-phase, 0.45 to 7.5kW

Including motors with brakes, reduction gears, or absolute encoders.
Choose motors according to your specifications.



Reliable

International standards

Full conformance to CE marking, UL and cUL.

Environmental resistance (Servomotor)

■Enhanced protective enclosure
Complies with IP55 standard (Type SGMAH)
■Enhanced vibration resistance
Safe for accelerations up to 5G (types SGMAH, SGMPH).

High harmonic countermeasures

Power supplies are designed for minimum harmonics. DC reactor connection terminal provided.

Servomotor-SERVOPACK Combination

Servomotor				SERVOPACK Type SGDM-□			Applications
Series		Outlines	Capacity	100V	200V		
				Single-phase	Single-phase	Three-phase	
Small-capacity	SGMAH (3000min⁻¹)	**Super High Power Rate Series** Large torque required at low inertia.	30W	A3BDA	A3ADA	–	Chip Mounters, PCB Drilling Machines, Food Processing Machines, Robots, Material Handling Equipment
			50W	A5BDA	A5ADA	–	
			100W	01BDA	01ADA	–	
			200W	02BDA	02ADA	–	
			400W	–	04ADA	–	
			750W	–	–	08ADA	
	SGMPH (3000min⁻¹)	**Cube Type Series** Short L-length. Good for narrow space installation.	100W	01BDA	01ADA	–	
			200W	02BDA	02ADA	–	
			400W	–	04ADA	–	
			750W	–	–	08ADA	
			1500W	–	–	15ADA	
Midium-Capacity	SGMGH (1500min⁻¹)	**High Speed Feed Series** High speed rotation required without load.	0.45kW	–	–	05ADA	Transfer Machine, Food Processing Machines, Material Handling Equipment, Machine Tool Feeds
			0.85kW	–	–	10ADA	
			1.3kW	–	–	15ADA	
			1.8kW	–	–	20ADA	
			2.9kW	–	–	30ADA	
			4.4kW	–	–	50ADA	
			5.5kW	–	–	60ADA	
			7.5kW	–	–	75ADA	
	SGMGH (1000min⁻¹)		0.3kW	–	–	05ADA	
			0.6kW	–	–	08ADA	
			0.9kW	–	–	10ADA	
			1.2kW	–	–	15ADA	
			2.0kW	–	–	20ADA	
			3.0kW	–	–	30ADA	
			4.0kW	–	–	50ADA	
			5.5kW	–	–	60ADA	
	SGMSH (3000min⁻¹)	**Super High Power Rate Series** Large torque required at low inertia.	1.0kW	–	–	10ADA	Chip Mounters, PCB Drilling Machines, Machine Tool Feeds
			1.5kW	–	–	15ADA	
			2.0kW	–	–	20ADA	
			3.0kW	–	–	30ADA	
			4.0kW	–	–	50ADA	
			5.0kW	–	–	50ADA	
	SGMDH (2000min⁻¹)	**Flat Series** Short L-length. Good for narrow. space installation.	2.2kW	–	–	30ADA	Food Processing Machines, Robots, Material Handling Equipment
			3.2kW	–	–	50ADA	
			4.0kW	–	–	50ADA	

Type Designation

Servomotor

SGMPH - 01 A A A 2 S

Σ-Ⅱ Servomotor Series
- SGMAH: Super High Power Rate Series
- SGMPH: Cube Type Series
- SGMGH: High-speed Feed Series
- SGMSH: Super High Power Rate Series
- SGMDH: Flat Series

Capacity (kW)

Code	SGMAH	SGMPH	SGMGH		SGMSH	SGMDH
	3000 min⁻¹	3000 min⁻¹	1500 min⁻¹	1000 min⁻¹	3000 min⁻¹	2000 min⁻¹
A3	0.03					
A5	0.05					
01	0.1	0.1				
02	0.2	0.2				
03				0.3		
04	0.4	0.4				
05			0.45			
06				0.6		
08	0.75	0.75				
09			0.85	0.9		
10					1.0	
12				1.2		
13			1.3			
15		1.5			1.5	
20			1.8	2.0	2.0	
22						2.2
30			2.9	3.0	3.0	
32						3.2
40				4.0	4.0	4.0
44			4.4			
50					5.0	
55			5.5	5.5		
60						
75			7.5			

Voltage
- A: 200 V
- B: 100 V

Brake, Oil Seal Specifications

1	No Brake, No Oil Seal
S	Oil Seal
B	90VDC Brake
C	24VDC Brake
D	Oil Seal, +90VDC Brake
E	Oil Seal, +24VDC Brake

Shaft End Specifications

Code	Specifications	SGMAH	SGMPH	SGMGH	SGMSH	SGMDH
2	Straight, No key	◎	◎	◎	◎	◎
3	Taper 1/10, Parallel key			○	○	○
4	Straight, Key	○	○			
5	Taper 1/10, Woodruff key			○	○	
6	Straight, Key, Tap	○	○	○	○	○
8	Straight, Tap	○	○			

◎: Standard ○: Option

Design Procedure
- A: SGMAH, SGMPH, SGMGH (1500min⁻¹), SGMSH, SGMDH
- B: SGMGH (1000min⁻¹)
- C: SGMGH (1500min⁻¹) High Precision Machinery
- D: SGMGH (1000min⁻¹) High Precision Machinery
- E: SGMPH (IP67 water-proof specifications)

Serial Encoder Specifications

Code	Encoder	Series				
		SGMAH	SGMPH	SGMGH	SGMSH	SGMDH
1	16-bit Absolute	◎	◎			
2	17-bit Absolute			◎	◎	◎
A	13-bit Incremental	◎	◎			
B	16-bit Incremental	○	○			
C	17-bit Incremental			◎	◎	◎

◎: Standard ○: Option

SERVOPACK

SGDM - 04 A D A

Σ-Ⅱ SGDM SERVOPACK

Design Procedure

Model
- D: Speed, Torque, Position

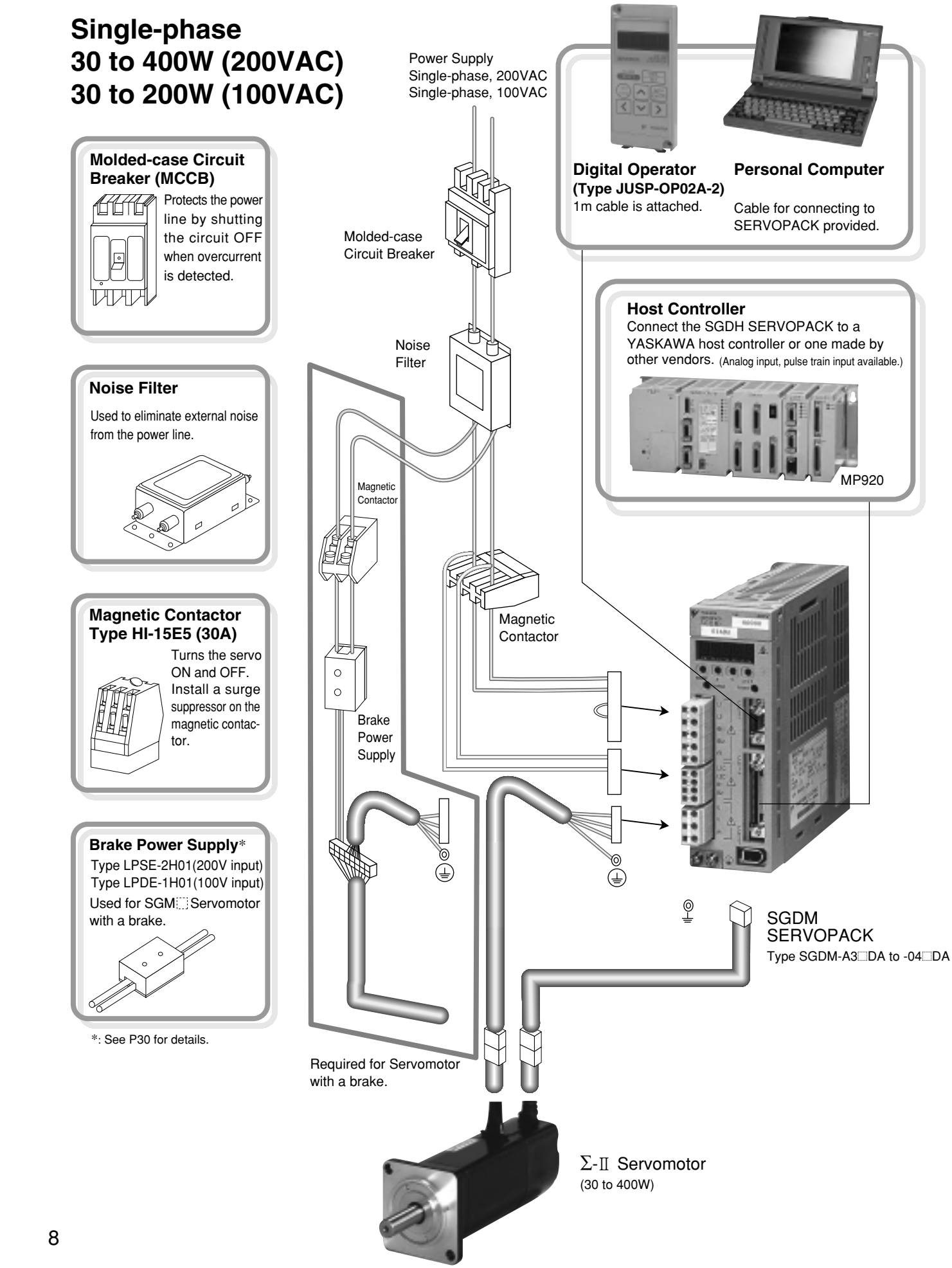
Source Voltage
- A: 200V (Single-/three-phase)
- B: 100V (Single-phase)

Capacity

A3	30 W	10	1.0 kW
A5	50 W	15	1.5 kW
01	100 W	20	2.0 kW
02	200 W	30	3.0 kW
04	400 W	50	5.0 kW
05	500 W	60	6.0 kW
08	750 W	75	7.5 kW

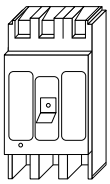
Configurations

Single-phase
30 to 400W (200VAC)
30 to 200W (100VAC)



Three-phase
0.5 to 7.5kW (200 VAC)

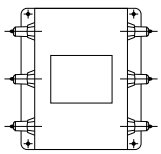
Molded-case Circuit Breaker (MCCB)



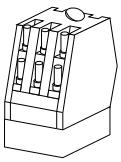
Protects the power line by shutting the circuit OFF when overcurrent is detected.

Noise Filter

Used to eliminate external noise from the power line.



Magnetic Contactor HI Series

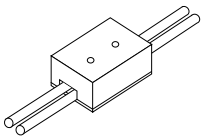


Turns the servo ON and OFF. Install a surge suppressor on the magnetic contactor.

Brake Power Supply*1

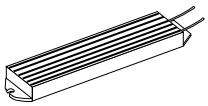
Type LPSE-2H01 (200V input)

Used for SGM□ Servomotor with a brake.



Regenerative Resistor

For insufficient built-in regenerative resistor capacity, disconnect B2-B3 and connect the external resistor with B1-B2.



Digital Operator (Type JUSP-OP02A-2)
1m cable is attached.

Personal Computer

Cable for connecting to SERVOPACK provided.

Host Controller

Connect the SGDH SERVOPACK to a YASKAWA host controller or one made by other vendors. (Analog input, pulse train input available.)

MP920

*1. See P30 for details.
*2. The external terminals are different in accordance with SERVOPACK type.

Servomotor Specifications

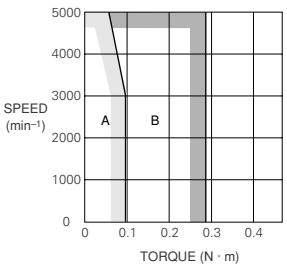
SGMAH Series

● Ratings and Specifications

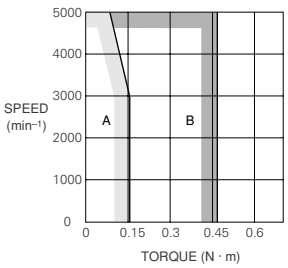
Applied Voltage		200VAC						100VAC			
Servomotor Type SGMAH-□□□		A3A	A5A	01A	02A	04A	08A	A3B	A5B	01B	02B
Rated Output	W	30	50	100	200	400	750	30	50	100	200
Rated Torque	N·m	0.0955	0.159	0.318	0.637	1.27	2.39	0.0955	0.159	0.318	0.637
Instantaneous Peak Torque	N·m	0.286	0.477	0.955	1.91	3.82	7.16	0.286	0.477	0.955	1.91
Rated Rotation Speed	min^{-1}	3000									
Max. Rotation Speed	min^{-1}	5000									
Moment of Inertia (J_M)	$kg·m^2×10^{-4}$	0.0166	0.0220	0.0364	0.106	0.173	0.672	0.0166	0.0220	0.0364	0.106
Allowable Load Moment of Inertia (J_L)	as much as the Moment of Inertia	30 times or less				20 times or less		30 times or less			
Rated Power Rate	kW/s	5.49	11.5	27.8	38.2	93.7	84.8	5.49	11.5	27.8	38.2
Applicable Encoder	Standard	Incremental Encoder (13 bits: 2048P/R)									
	Option	Incremental Encoder (16 bits: 16384P/R), Absolute Encoder (16 bits: 16384P/R)									
Basic Specifications: Time Rating		Continuous									
Basic Specifications: Insulation Class		Class B									
Basic Specifications: Ambient Temperature		0 to +40°C									
Basic Specifications: Ambient Humidity		20 to 80% (non-condensing)									
Basic Specifications: Vibration Class		15μm or below									
Basic Specifications: Enclosure		Totally-enclosed, self-cooled, IP55 (excluding shaft opening)									
Basic Specifications: Vibration Resistance		Vibration acceleration 49m/s^2 (5G)									
Basic Specifications: Mounting		Flange-mounted									

● Torque-Speed Characteristics (A : Continuous Duty Zone B : Intermittent Duty Zone)

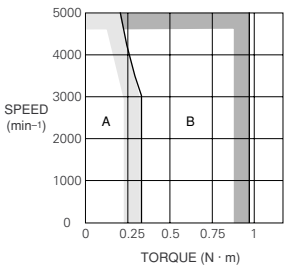
SGMAH-A3A



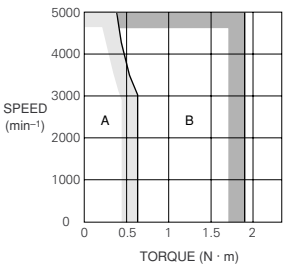
SGMAH-A5A



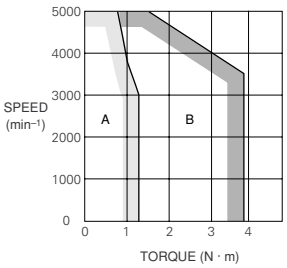
SGMAH-01A



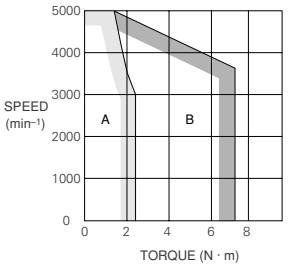
SGMAH-02A



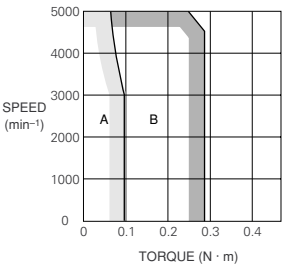
SGMAH-04A



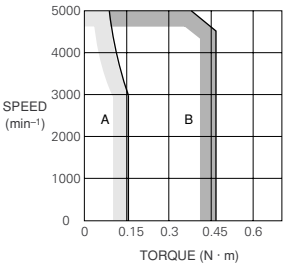
SGMAH-08A



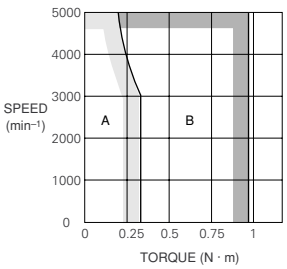
SGMAH-A3B



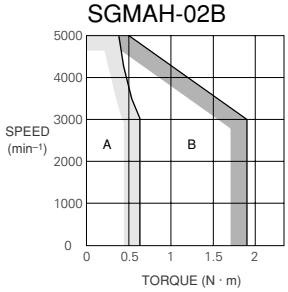
SGMAH-A5B



SGMAH-01B



SGMAH-02B



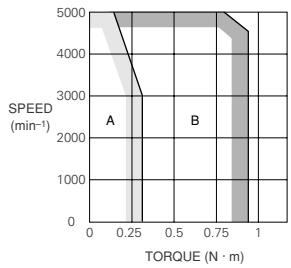
SGMPH Series

● Ratings and Specifications

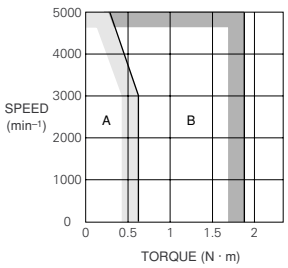
Applied Voltage			200VAC					100VAC	
Servomotor Type SGMPH-□□□			01A	02A	04A	08A	15A	01B	02B
Rated Output		W	100	200	400	750	1500	100	200
Rated Torque		N·m	0.318	0.637	1.27	2.39	4.77	0.318	0.637
Instantaneous Peak Torque		N·m	0.955	1.91	3.82	7.16	14.3	0.955	1.91
Rated Rotation Speed		min^{-1}	3000						
Max. Rotation Speed		min^{-1}	5000						
Moment of Inertia (J_M)		$kg·m^2×10^{-4}$	0.0491	0.193	0.331	2.10	4.02	0.0491	0.193
Allowable Load Moment of Inertia (J_L)		as much as the Moment of Inertia	25 times or less	15 times or less	7 times or less	5 times or less		25 times or less	12 times or less
Rated Power Rate		kW/s	20.6	21.0	49.0	27.1	56.7	20.6	21.0
Applicable Encoder		Standard	Incremental Encoder (13 bits: 2048P/R)						
		Option	Incremental Encoder (16 bits: 16384P/R), Absolute Encoder (16 bits: 16384P/R)						
Basic Specifications	Time Rating		Continuous						
	Insulation Class		Class B						
	Ambient Temperature		0 to +40°C						
	Ambient Humidity		20 to 80% (non-condensing)						
	Vibration Class		15μm or below						
	Enclosure		Totally-enclosed, self-cooled, IP55 (excluding shaft opening)						
	Vibration Resistance		Vibration acceleration $49m/s^2$ (5G)						
	Mounting		Flange-mounted						

● Torque-Speed Characteristics (A : Continuous Duty Zone B : Intermittent Duty Zone)

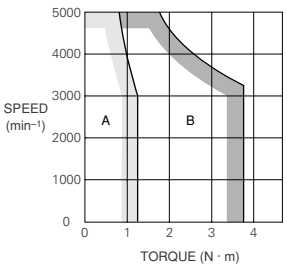
SGMPH-01A



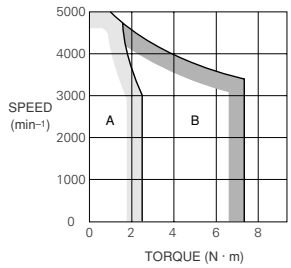
SGMPH-02A



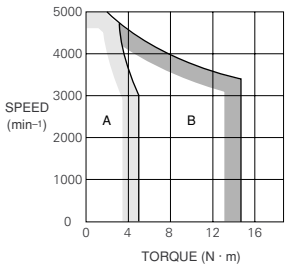
SGMPH-04A



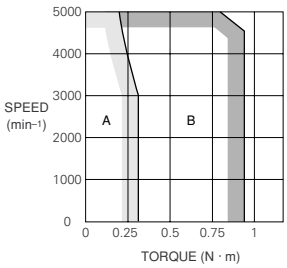
SGMPH-08A



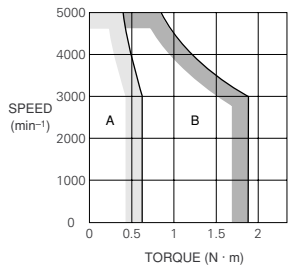
SGMPH-15A



SGMPH-01B



SGMPH-02B



SGMGH Series (1500min^{-1})

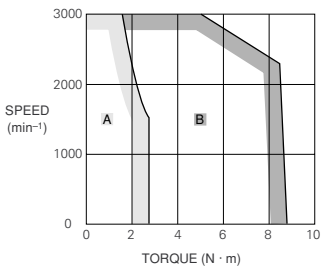
● Ratings and Specifications

Applied Voltage		200VAC							
Servomotor Type SGMGH-□□□□		05A□A	09A□A	13A□A	20A□A	30A□A	44A□A	55A□A	75A□A
Rated Output	kW	0.45	0.85	1.3	1.8	2.9	4.4	5.5	7.5
Rated Torque	N·m	2.84	5.39	8.34	11.5	18.6	28.4	35.0	48.0
Instantaneous Peak Torque	N·m	8.92	13.8	23.3	28.7	45.1	71.1	87.6	119
Rated Rotation Speed	min^{-1}	1500							
Max. Rotation Speed	min^{-1}	3000							
Moment of Inertia (J)	kg·m^2×10^{-4}	7.24	13.9	20.5	31.7	46.0	67.5	89.0	125
Allowable Load Moment of Inertia	as much as the Moment of Inertia	5 times or less							
Rated Power Rate	kW/s	11.2	20.9	33.8	41.5	75.3	120	137	184
Applicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R*)							
	Option	Absolute Encoder (17 bits/20 bits: 16384P/R*)							
Basic Specifications: Time Rating		Continuous							
Basic Specifications: Insulation Class		Class F							
Basic Specifications: Ambient Temperature		0 to +40°C							
Basic Specifications: Ambient Humidity		20 to 80% (non-condensing)							
Basic Specifications: Vibration Class		15μm or below							
Basic Specifications: Enclosure		Totally-enclosed, self-cooled, IP67 (excluding shaft opening)							
Basic Specifications: Vibration Resistance		Vibration acceleration 24.5m/s^2 (2.5G)							
Basic Specifications: Mounting		Flange-mounted							

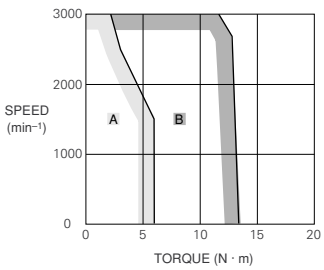
* : For 17-bit and 20-bit encoders (without divider), pulses output from SERVOPACK are also 16384 P/R.

● Torque-Speed Characteristics (A : Continuous Duty Zone B : Intermittent Duty Zone)

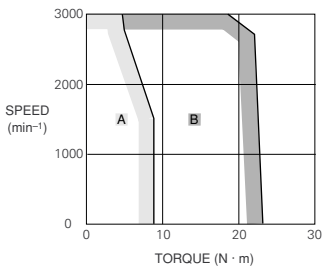
SGMGH-05A□A



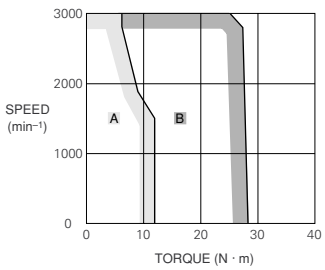
SGMGH-09A□A



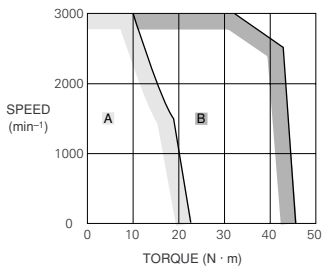
SGMGH-13A□A



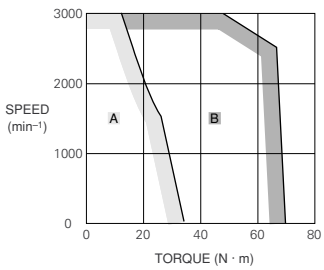
SGMGH-20A□A



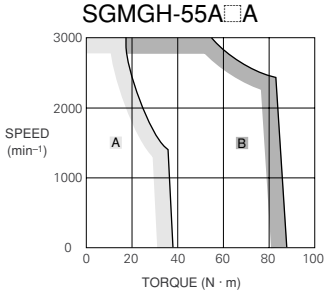
SGMGH-30A□A



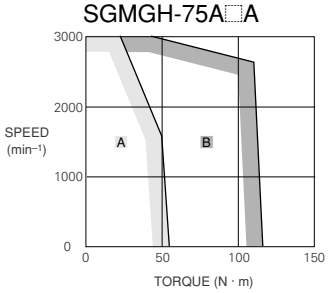
SGMGH-44A□A



SGMGH-55A□A



SGMGH-75A□A



SGMGH Series (1000min^{-1})

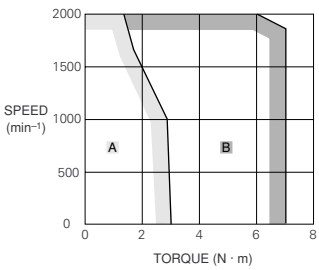
● Ratings and Specifications

Applied Voltage		200VAC							
Servomotor Type SGMGH-□□□□		03A□B	06A□B	09A□B	12A□B	20A□B	30A□B	40A□B	55A□B
Rated Output	kW	0.3	0.6	0.9	1.2	2.0	3.0	4.0	5.5
Rated Torque	N·m	2.84	5.68	8.62	11.5	19.1	28.4	38.2	52.6
Instantaneous Peak Torque	N·m	7.17	14.1	19.3	28.0	44.0	63.7	107	136.9
Rated Rotation Speed	min^{-1}	1000							
Max. Rotation Speed	min^{-1}	2000							
Moment of Inertia (J)	kg·m^2×10^{-4}	7.24	13.9	20.5	31.7	46.0	67.5	89.0	125
Allowable Load Moment of Inertia	as much as the Moment of Inertia	5 times or less							
Rated Power Rate	kW/s	11.2	23.2	36.3	41.5	79.4	120	164	221
Applicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R*)							
	Option	Absolute Encoder (17 bits/20 bits: 16384P/R*)							
Basic Specifications: Time Rating		Continuous							
Basic Specifications: Insulation Class		Class F							
Basic Specifications: Ambient Temperature		0 to +40°C							
Basic Specifications: Ambient Humidity		20 to 80% (non-condensing)							
Basic Specifications: Vibration Class		15μm or below							
Basic Specifications: Enclosure		Totally-enclosed, self-cooled, IP67 (excluding shaft opening)							
Basic Specifications: Vibration Resistance		Vibration acceleration 24.5m/s^2 (2.5G)							
Basic Specifications: Mounting		Flange-mounted							

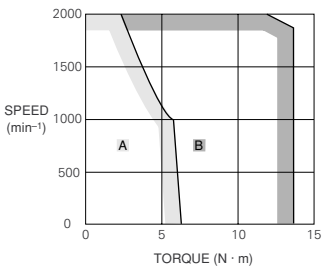
* : For 17-bit and 20-bit encoders (without divider), pulses output from SERVOPACK are also 16384 P/R.

● Torque-Speed Characteristics (A : Continuous Duty Zone B : Intermittent Duty Zone)

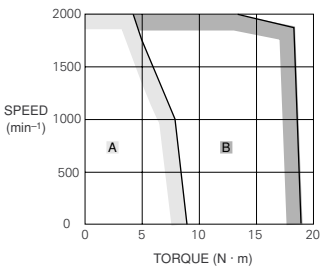
SGMGH-03A□B



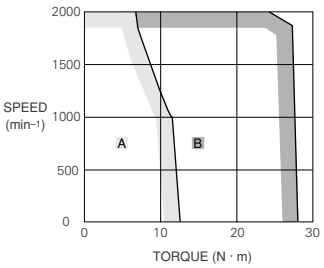
SGMGH-06A□B



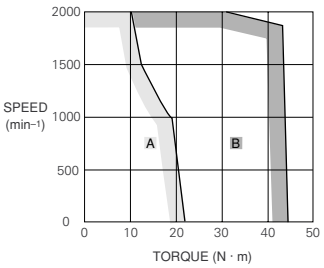
SGMGH-09A□B



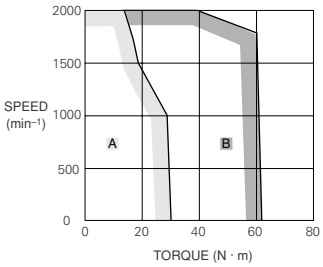
SGMGH-12A□B



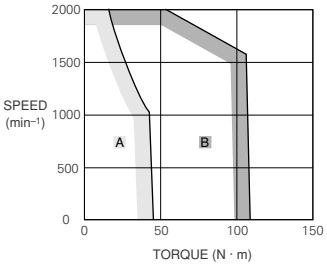
SGMGH-20A□B



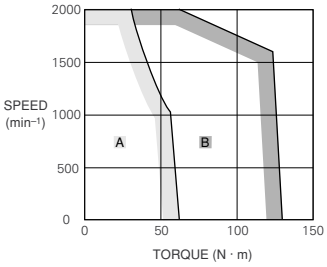
SGMGH-30A□B



SGMGH-40A□B



SGMGH-55A□B



SGMSH Series

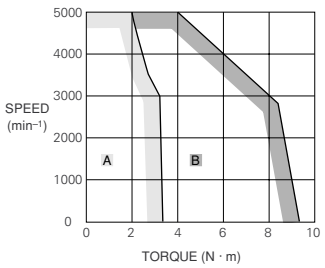
● Ratings and Specifications

Applied Voltage			200VAC					
Servomotor Type SGMSH-□□□□			10A□A	15A□A	20A□A	30A□A	40A□A	50A□A
Rated Output		kW	1.0	1.5	2.0	3.0	4.0	5.0
Rated Torque		N·m	3.18	4.90	6.36	9.80	12.6	15.8
Instantaneous Peak Torque		N·m	9.54	14.7	19.1	29.4	37.8	47.6
Rated Rotation Speed		min^{-1}	3000					
Max. Rotation Speed		min^{-1}	5000					
Moment of Inertia (J)		$kg·m^2×10^{-4}$	1.74	2.47	3.19	7.00	9.60	12.3
Allowable Load Moment of Inertia	as much as the Moment of Inertia		5 times or less					
Rated Power Rate		kW/s	57.9	97.2	127	137	166	202
Applicable Encoder		Standard	Incremental Encoder (17 bits: 16384P/R*)					
		Option	Absolute Encoder (17 bits/20 bits: 16384P/R*)					
Basic Specifications	Time Rating		Continuous					
	Insulation Class		Class F					
	Ambient Temperature		0 to +40°C					
	Ambient Humidity		20 to 80% (non-condensing)					
	Vibration Class		15μm or below					
	Enclosure		Totally-enclosed, self-cooled, IP67 (excluding shaft opening)					
	Vibration Resistance		Vibration acceleration 24.5m/s² (2.5G)					
	Mounting		Flange-mounted					

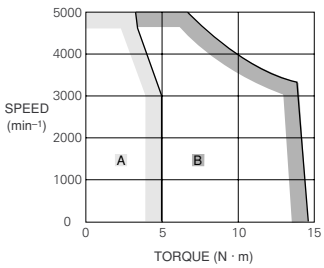
* : For 17-bit and 20-bit encoders (without divider), pulses output from SERVOPACK are also 16384 P/R.

● Torque-Speed Characteristics (A : Continuous Duty Zone B : Intermittent Duty Zone)

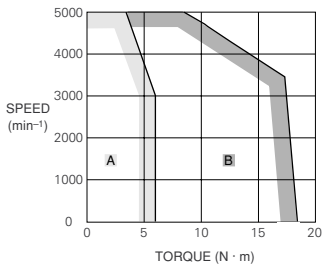
SGMSH-10A□A



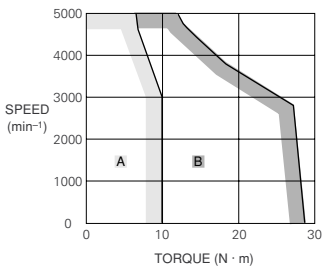
SGMSH-15A□A



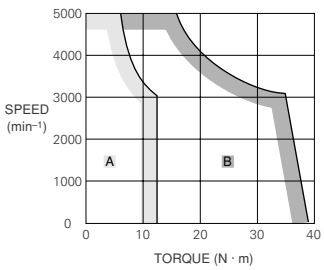
SGMSH-20A□A



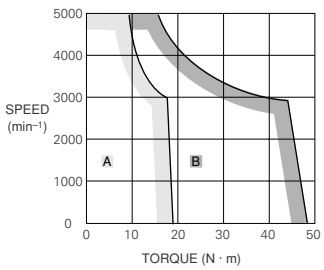
SGMSH-30A□A



SGMSH-40A□A



SGMSH-50A□A



SGMDH Series

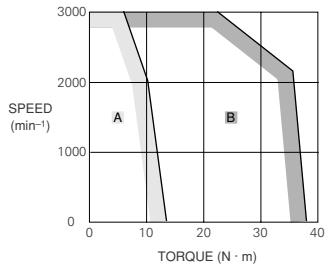
● Ratings and Specifications

Applied Voltage			200VAC		
Servomotor Type SGMDH-□□□□			22A□A	32A□A	40A□A
Rated Output		kW	2.2	3.2	4.0
Rated Torque		N·m	10.5	15.3	19.1
Instantaneous Peak Torque		N·m	36.7	53.5	66.9
Rated Rotation Speed		min^{-1}	2000		
Max. Rotation Speed		min^{-1}	3000		
Moment of Inertia (J)		$kg·m^2×10^{-4}$	56.6	74.2	91.8
Allowable Load Moment of Inertia	as much as the Moment of Inertia		5 times or less		
Rated Power Rate		kW/s	19.5	31.5	39.7
Applicable Encoder		Standard	Incremental Encoder (17 bits: 16384P/R*)		
		Option	Absolute Encoder (17 bits: 16384P/R*)		
Basic Specifications	Time Rating		Continuous		
	Insulation Class		Class F		
	Ambient Temperature		0 to +40°C		
	Ambient Humidity		20 to 80% (non-condensing)		
	Vibration Class		15μm or below		
	Enclosure		Totally-enclosed, self-cooled, IP67 (excluding shaft opening)		
	Vibration Resistance		Vibration acceleration 24.5m/s² (2.5G)		
	Mounting		Flange-mounted		

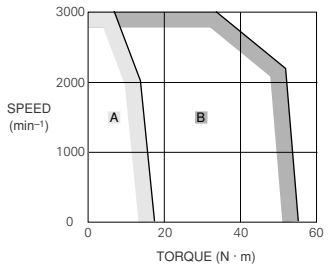
* : For 17-bit encoder (without divider), pulses output from SERVOPACK are also 16384 P/R.

● Torque-Speed Characteristics (A : Continuous Duty Zone B : Intermittent Duty Zone)

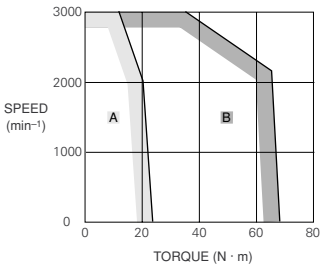
SGMDH-22A□A



SGMDH-32A□A



SGMGH-40A□A



Characteristics

●Single-phase

SERVOPACK Type SGDM-□□□□□			3ADA	5ADA	01ADA	02ADA	04ADA	3BDA	5BDA	01BDA	02BDA
Applicable Servomotor	SGMAH-□□□□□		A3A	A5A	01A	02A	04A	A3B	A5B	01B	02B
	SGMPH-□□□□□		–	–	01A	02A	04A	–	–	01B	02B
Max.Applicable Motor Capacity		kW	0.03	0.05	0.1	0.2	0.4	0.03	0.05	0.1	0.2
200V	Continuous Output Current	A rms	0.44	0.64	0.91	2.1	2.8	–	–	–	–
	Max. Output Current	A rms	1.3	2.0	2.8	6.5	8.5	–	–	–	–
100V	Continuous Output Current	A rms	–	–	–	–	–	0.66	0.95	2.4	3.0
	Max. Output Current	A rms	–	–	–	–	–	2.0	2.9	7.2	9.0
Input Power Supply	Main Circuit		Single-phase 200 to 230VAC +10 to −15% (50/60Hz)					Single-phase 100 to 115VAC +10 to −15% (50/60Hz)			
	Control Circuit		Single-phase 200 to 230VAC +10 to −15% (50/60Hz)					Single-phase 100 to 115VAC +10 to −15% (50/60Hz)			
Control Method			Single-phase full-wave rectification / IGBT / PWM / sine-wave current drive method								
Feedback			Serial encoder (incremental/absolute value)								
Configuration			Base mounted (Rack mount is also available)								
Approx. Mass		kg	0.8				1.1	0.8			1.1

●Three-phase

SERVOPACK Type SGDM-□□□□□			05ADA	08ADA	10ADA	15ADA	20ADA	30ADA	50ADA	60ADA	75ADA
Applicable Servomotor	SGMAH-□□□□□		–	08A	–	–	–	–	–	–	–
	SGMPH-□□□□□		–	08A	–	15A	–	–	–	–	–
	SGMGH-□□□□□	(1500min⁻¹)	05A □ A	–	09A □ A	13A □ A	20A □ A	30A □ A	44A □ A	55A □ A	75A □ A
	SGMGH-□□□□□	(1000min⁻¹)	03A □ B	06A □ B	09A □ B	12A □ B	20A □ B	30A □ B	40A □ B	55A □ B	–
	SGMSH-□□□□□		–	–	10A	15A	20A	30A	40A / 50A	–	–
	SGMDH-□□□□□		–	–	–	–	–	22A	32A / 40A	–	–
Max.Applicable Motor Capacity		kW	0.5	0.75	1.0	1.5	2.0	3.0	5.0	6.0	7.5
Continuous Output Current		A rms	3.8	5.7	7.6	11.6	18.5	24.8	32.9	46.9	54.7
Max. Output Current		A rms	11.0	13.9	17	28	42	56	84	110	130
Input Power Supply	Main Circuit		Three-phase 200 to 230V +10 to −15% (50/60Hz)								
	Control Circuit		Single-phase 200 to 230V +10 to −15% (50/60Hz)								
Control Method			Three-phase full-wave rectification / IGBT / PWM / sine-wave current drive method								
Feedback			Serial encoder (incremental/absolute value)								
Configuration			Base mounted (Rack mount is also available)								Base mounted*
Approx. Mass		kg	1.7			2.8	3.8		5.5	15	

* : Duct ventilation is also available.

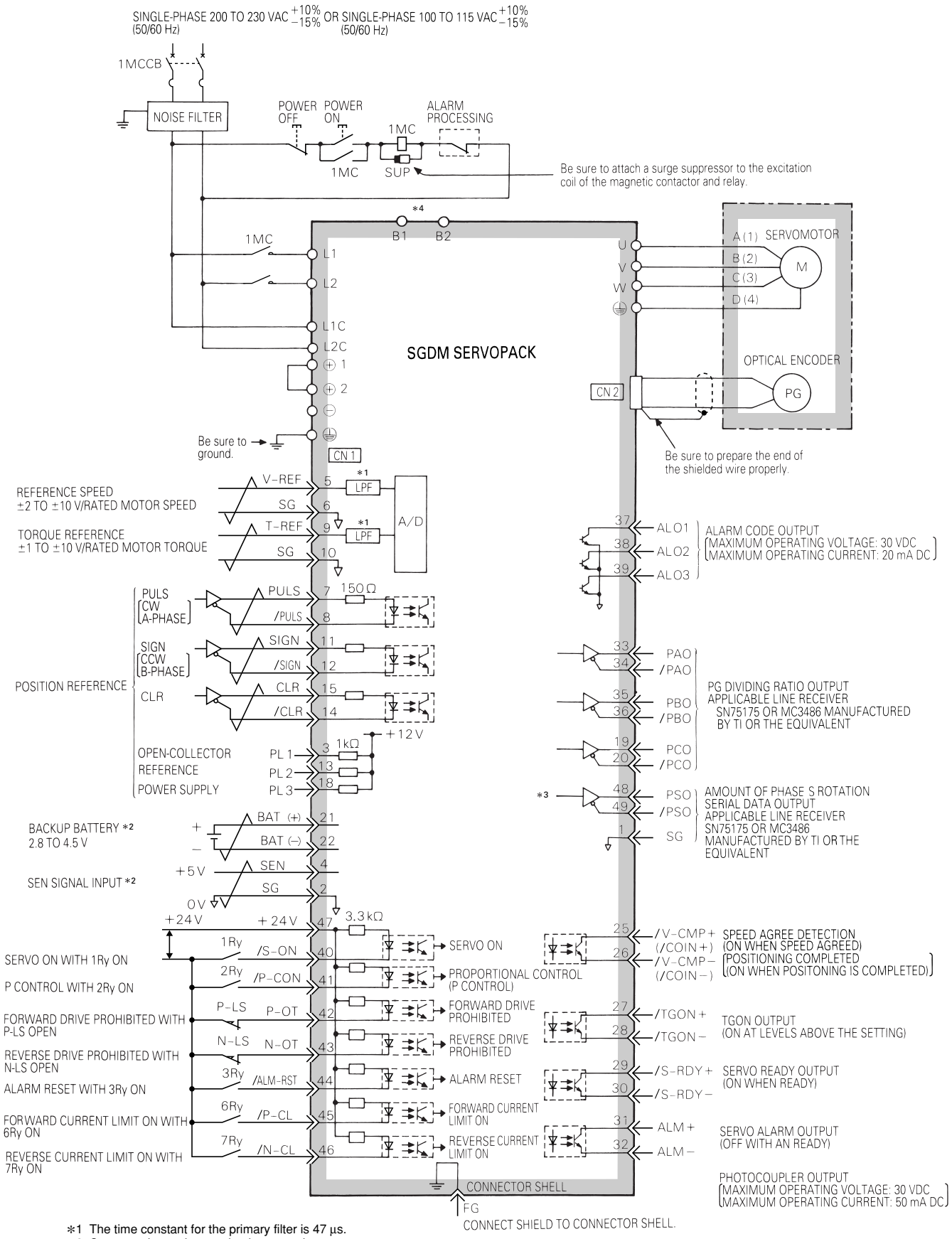
Specifications

●Common for All

Basic Specifications	Operating Conditions	Operating/storage Temperature		0 to 55°C / -20 to +85°C
		Operating/storage Humidity		90% RH or less (non-condensing)
		Altitude		1000m or less
		Vibration/shock Resistance		4.9m/s² / 19.6m/s²
Speed/Torque Control Mode	Performance	Speed Control Range		1:5000 (The lower limit is within the range not to stop at the rated torque load.)
		Speed Variance	Load Variance	During 0 to 100% load: ±0.01% max. (at rated speed)
			Voltage Variance	Rated voltage ±10%: 0% (at rated speed)
			Temperature Variance	25 ±25°C: ±0.1% max. (at rated speed)
		Frequency Characteristics		400Hz (at JL = JM)
		Torque Control Accuracy (Reproducibility)		±2%
		Soft Start Time Setting		0 to 10s (Acceleration, deceleration can each be set.)
	Input Signal	Speed Reference Input	Reference Voltage	±6VDC (forward motor rotation if positive reference) at rated speed: Set at delivery Variable setting range: ±2 to ±10VDC at rated speed / max. input voltage: ±12V
			Input Impedance	Approx. 14kΩ
			Circuit Time Constant	–
		Torque Reference Input	Reference Voltage	±3VDC (forward rotation torque if positive reference) at rated speed: set at delivery Variable setting range: ±1 to ±10VDC at rated torque reference
			Input Impedance	Approx. 14kΩ
			Circuit Time Constant	Approx. 47μs
Position Control Mode	Performance	Bias Setting		0 to 450 min⁻¹. (setting resolution: 1 min⁻¹)
		Feed Forward Compensation		0 to 100% (setting resolution: 1%)
		Position Completed Width Setting		0 to 250 command units (Setting resolution: 1 command unit)
	Input Signal	Command Pulse	Input Pulse Type	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase + B-phase), or CCW/CW pulse train
			Input Pulse Form	Line driver (+5V level), open collector (+5V or +12 level)
			Input Pulse Frequency	0 to 500kpps (200kpps max. at open collector)
		Control Signal		Clear signal (input pulse is same as reference pulse)
I/O Signal	Position Signal Output			A-phase, B-phase, C-phase, (S-phase): Line driver output S-phase is for absolute encoder only.
	Sequence Input Signal			Servo ON, P control (or control mode switching, zero clamp, command pulse inhibit), forward/reverse run prohibit, alarm reset, forward/ reverse current limit (or internal speed switching)
	Sequence Output Signal			Servo alarm, alarm codes (3-bit output): CN1 output terminal is fixed.
				It is possible to output three types of signals from among: positioning complete (speed agree), motor rotation, servo ready, current limit, speed limit, brake release, warning, NEAR, and zero point pulse signal
Integrated Functions	Communications		Interface	Digital operator (hand-held type), RS-422A port for PCs, etc. (RS-232C ports under some conditions)
			1:N Communications	N may equal up to 14 when an RS-422A port is used.
			Axis Address Setting	Set by user setting.
			Functions	Status display, user constant setting, monitor display, alarm traceback display, JOG run / autotuning operations, and graphing functions for speed/torque reference signal, etc.
	Auto Tuning Function			Position/speed loop gain and integral time constant can be automatically set.
	Dynamic Brake (DB)			Operates during main power OFF, servo alarm, servo OFF or overtravel
	Regenerative Processing			Regenerative resistor externally mounted (option)
	Overtravel (OT) Prevention Function			DB stop, deceleration stop or coast to stop during P-OT, N-OT operation
	Encoder Divider Function			Optional division possible
	Electronic Gearing			0.01<A/B<100
	Internal Speed Setting Function			3 speeds may be set internally
	Protective Functions			Overcurrent, overvoltage, insufficient voltage, overload, main circuit sensor error, heatsink overheat, power phase loss, overflow, overspeed, encoder error, runaway,CPU error, parameter error, etc.
	Analog Monitor Functions for Supervision			Integrates analog monitor connectors for supervision of the speed and torque reference signals, etc.
	Display Functions			CHARGE, POWER, 7-segment LED×5 (Integrated digital operator function)
	Others			Reverse connection, zero search, automatic motor discrimination function, and DC reactor connection terminal for high frequency power suppression function (except: 6kW and 7kW)

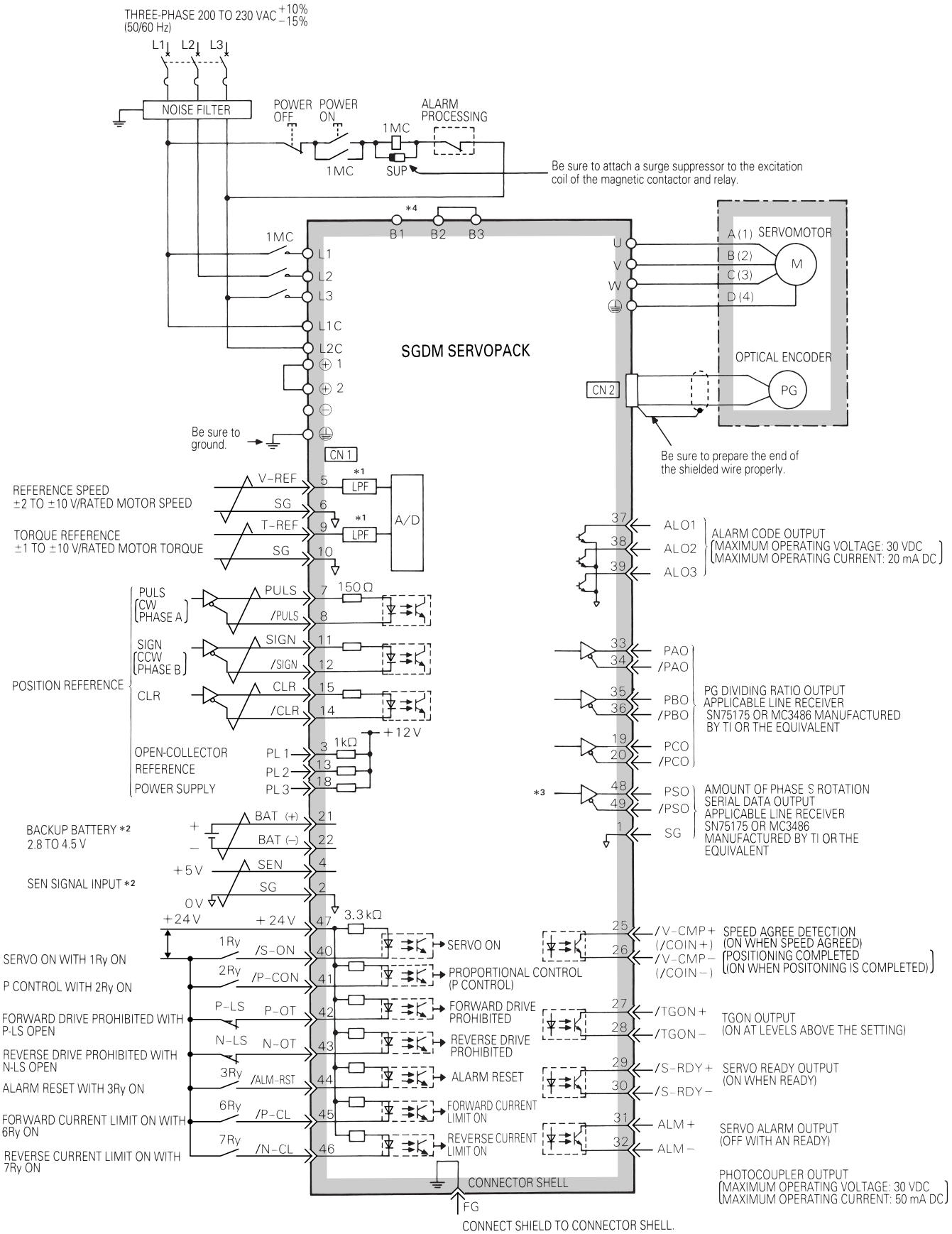
Connection Diagrams

Single-phase



*1 The time constant for the primary filter is 47 μs.
*2 Connect when using an absolute encoder.
*3 Used only with an absolute encoder.
*4 Regenerative resistor can be connected between B1 and B2.

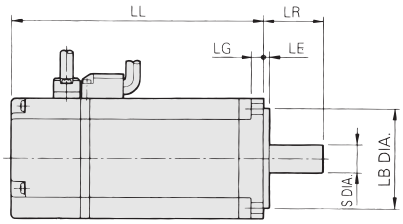
Three-phase

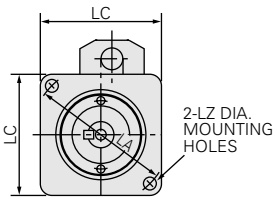


*1 The time constant for the primary filter is 47 μs.
*2 Connect when using an absolute encoder.
*3 Used only with an absolute encoder.
*4 For using an external regenerative resistor, connect it between B1 and B2.

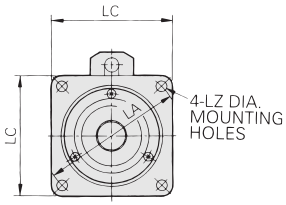
Servomotor Dimensions in mm

● SGMAH Series





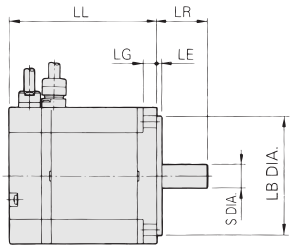
SGMAH-A3,-A5,-01

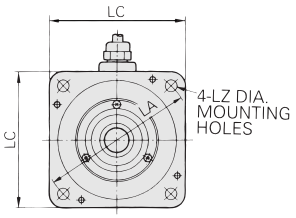


SGMAH-02,04,-08

Type SGMAH	LL	LC	LA	LZ	LG	LB	LE	S	LR	Approx. Mass kg
- A3 □	69.5	40	46	4.3	5	$30^{\ 0}_{-0.021}$	2.5	$6^{\ 0}_{-0.008}$	25	0.3
- A5 □	77									0.4
- 01 □	94.5							$8^{\ 0}_{-0.009}$		0.5
- 02 □	96.5	60	70	5.5	6	$50^{\ 0}_{-0.025}$	3	$14^{\ 0}_{-0.011}$	30	1.1
- 04 A	124.5									1.7
- 08 A	145	80	90	7	8	$70^{\ 0}_{-0.03}$	3	$16^{\ 0}_{-0.011}$	40	3.4

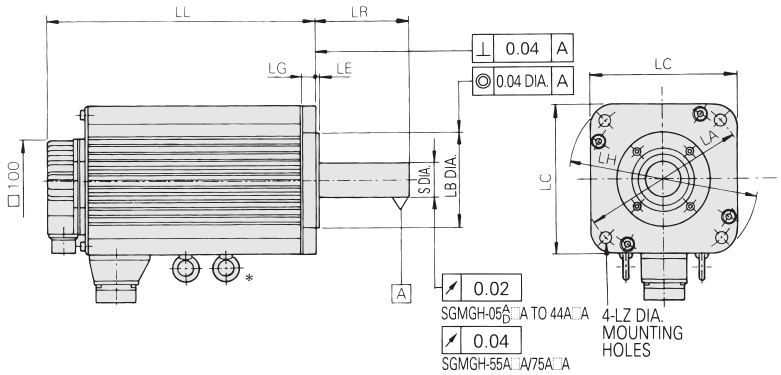
● SGMPH Series

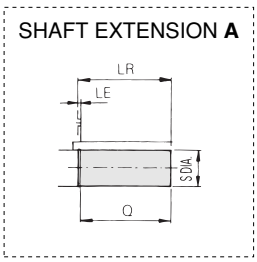


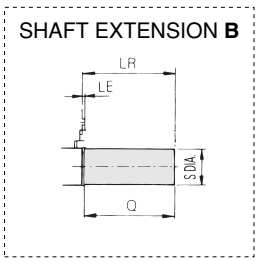


Type SGMPH	LL	LC	LA	LZ	LG	LB	LE	S	LR	Approx. Mass kg
- 01 □	62	60	70	5.5	6	$50^{\ 0}_{-0.025}$	3	$8^{\ 0}_{-0.009}$	25	0.7
- 02 □	67	80	90	7	8	$70^{\ 0}_{-0.03}$	3	$14^{\ 0}_{-0.011}$	30	1.4
- 04 A	87									2.1
- 08 A	86.5	120	145	10	10	$110^{\ 0}_{-0.035}$	3.5	$16^{\ 0}_{-0.011}$	40	4.2
- 15 A	114.5							$19^{\ 0}_{-0.013}$		6.6

● SGMGH Series



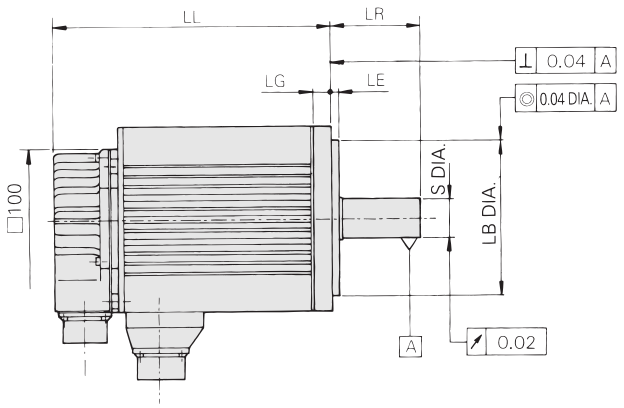


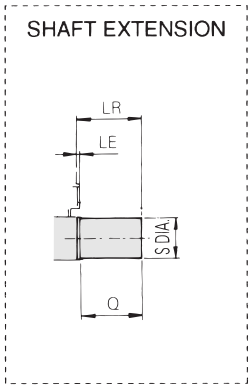


∗ : Eyebolts are not mounted on SGMGH -05 $^{A}_{D}$□A to 44A□A.

Type SGMGH	L	LL	LM	LR	Flange							Shaft Extension			Approx. Mass kg
					LA	LB	LC	LE	LG	LH	LZ	Dwg.	S	Q	
- 05 A □ A 03 A □ B	196	138	92	58	145	$110^{\ 0}_{-0.035}$	130	6	12	165	9	A	$19^{\ 0}_{-0.013}$	40	5.5
- 09 A □ A 06 A □ B	219	161	115												7.6
- 13 A □ A 09 A □ B	243	185	139										$22^{\ 0}_{-0.013}$		9.6
- 20 A □ A 12 A □ B	245	166	119	79	200	$114.3^{\ 0}_{-0.025}$	180	3.2	18	230	13.5	B	$35^{+0.01}_{\ 0}$	76	14
- 30 A □ A 20 A □ B	271	192	145												18
- 44 A □ A 30 A □ B	305	226	179												23
- 55 A □ A - 40 A □ B	373	260	213	113									$42^{\ 0}_{-0.016}$	110	30
- 75 A □ A - 55 A □ B	447	334	287												40

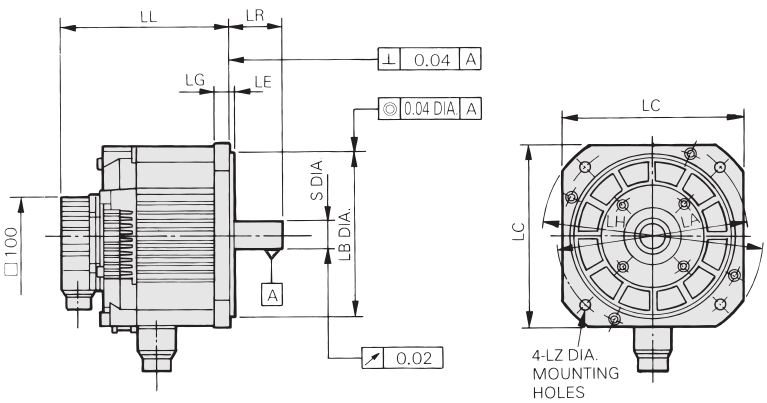
● SGMSH Series

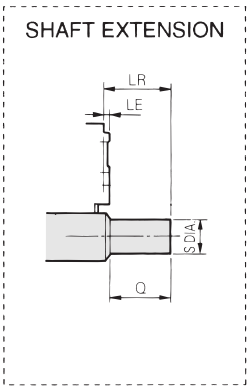




Type SGMSH	LL	LR	Flange						Shaft Extension		Approx. Mass kg
			LA	LB	LC	LE	LG	LZ	S	Q	
- 10 A □ A	149	45	115	$95^{0}_{-0.035}$	100	3	10	7	$24^{0}_{-0.013}$	40	4.6
- 15 A □ A	175										5.8
- 20 A □ A	198										7.0
- 30 A □ A	199	63	145	$110^{0}_{-0.035}$	130	6	12	9	$28^{0}_{-0.013}$	55	11
- 40 A □ A	236										14
- 50 A □ A	276										17

● SGMDH Series

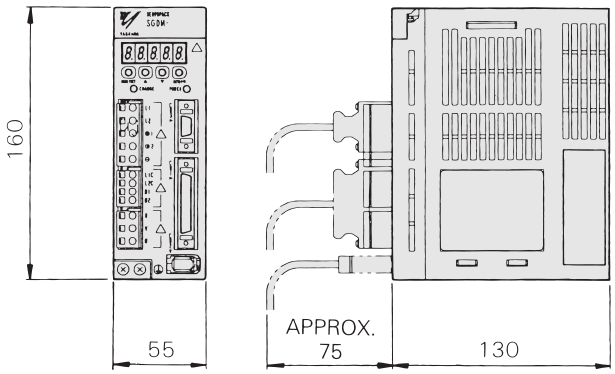




Type SGMDH	LL	LR	Flange							Shaft Extension		Approx. Mass kg
			LA	LB	LC	LE	LG	LH	LZ	S	Q	
- 22 A □ A	187	55	235	$200^{0}_{-0.046}$	220	4	18	270	13.5	$28^{0}_{-0.013}$	50	15.5
- 32 A □ A	199											18.5
- 40 A □ A	209	65								$32^{0}_{-0.016}$	60	21

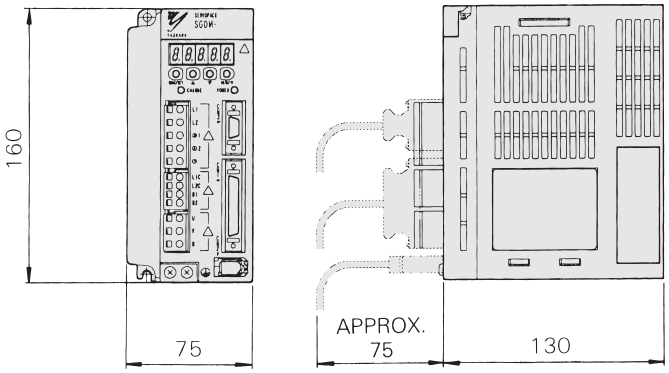
SERVOPACK Dimensions in mm

● SGDM -A3ADA to -02ADA -A3BDA to -01BDA



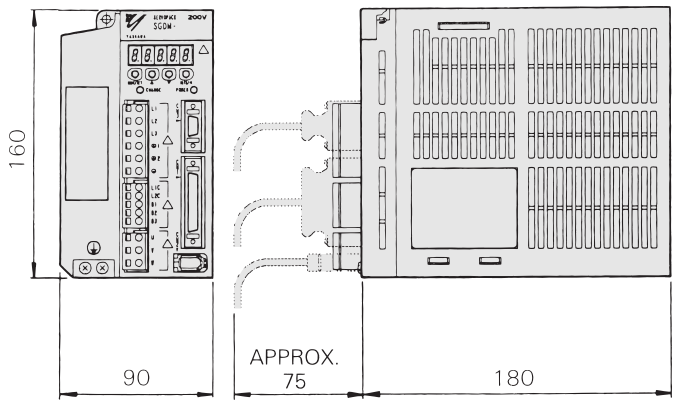
Approx. mass: 0.8kg

● SGDM -04ADA, -02BDA



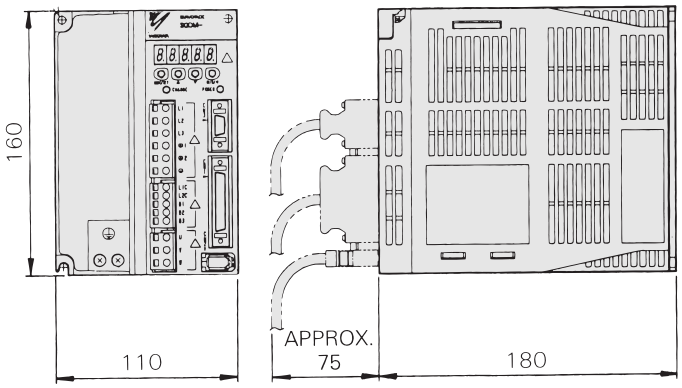
Approx. mass: 1.1kg

● SGDM -05ADA, 08ADA, 10ADA



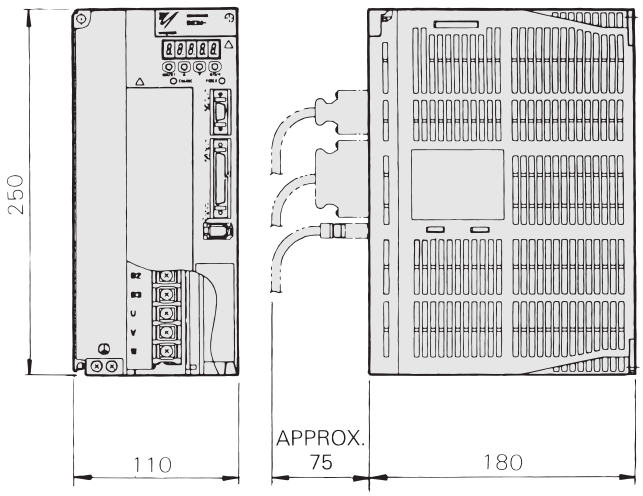
Approx. mass: 1.7kg

● SGDM -15ADA



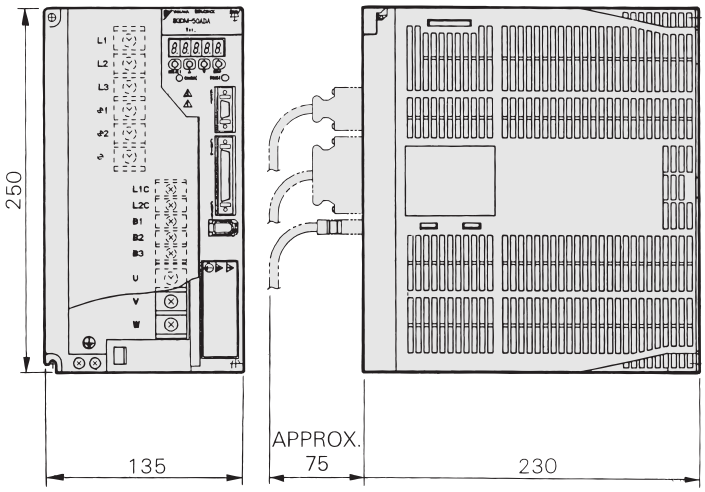
Approx. mass: 2.8kg

● SGDM -20ADA, 30ADA



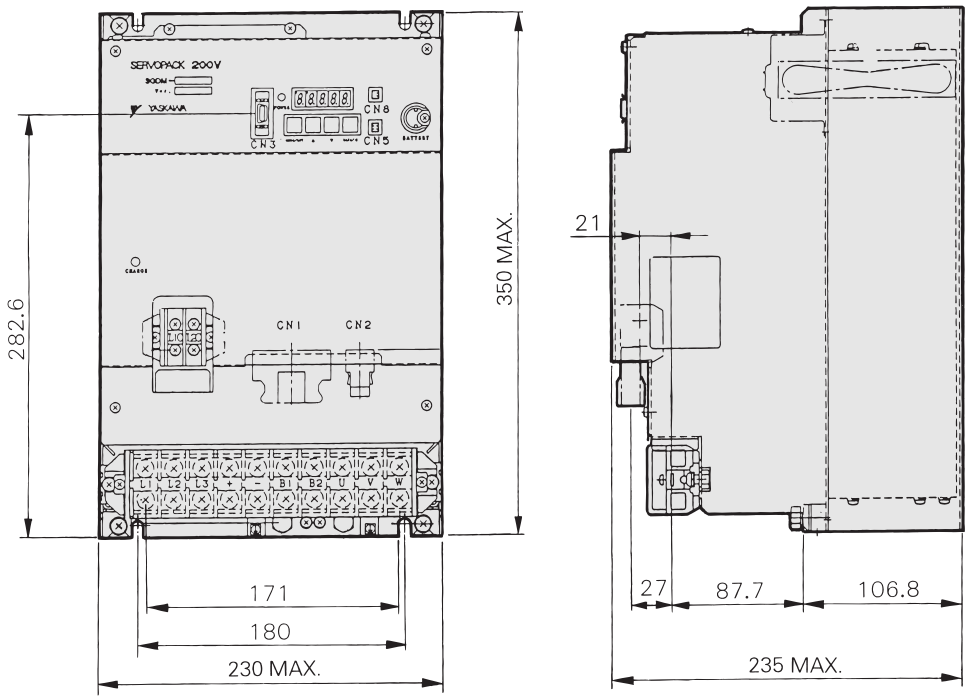
Approx. mass: 3.8kg

● SGDM -50ADA



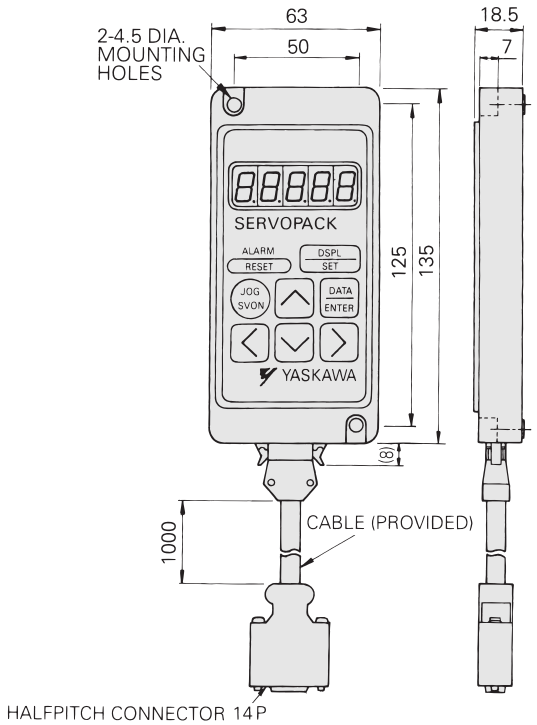
Approx. mass: 5kg

● SGDM -60ADA, -75ADA



Approx. mass: 15kg

Digital Operator (Type JUSP-OP02A-2)



Approx. mass: 0.2kg

For High Performance

New Model follow-up control

A mechanical system is modeled to compensate for system delay and suppress vibrations when a machine has a low characteristic frequency. This function reduces the settling time of rigid machinery.

New Vibration suppression control

The observer reduces the vibration, and high servo gain drive is achieved when a machine drive system is subject to vibrations. This function enhances the servo characteristics.

New Mechanical resonance suppression filter

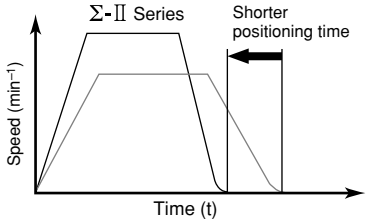
Resonance is suppressed by setting the vibration suppression filter in accordance with mechanical system resonance frequency when a high frequency resonance noise is made by the machine.

Torque reference filter

In the event that shaft resonance causes vibration in the servo system, the torque reference filter automatically suppresses resonance.

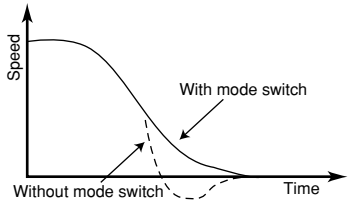
New Speed observer control

Use of the speed observer provides smooth motion even at low speeds, and shorter position settling time.



Mode switch

To improve transient characteristics during motor acceleration and deceleration, the system can be switched between speed loop PI (proportional integral) and P (proportional) control, helping to prevent overshoot and undershoot.

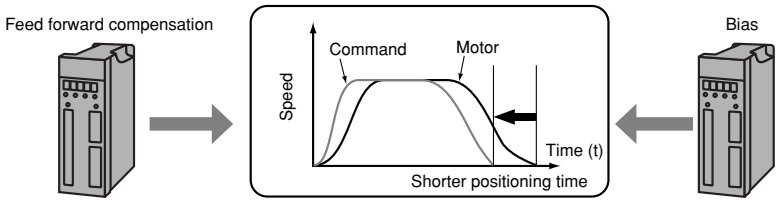


New Feed forward compensation

Feed forward compensation provides reduced positioning time.

New Bias

Can be optimized with load conditions to shorten positioning time.



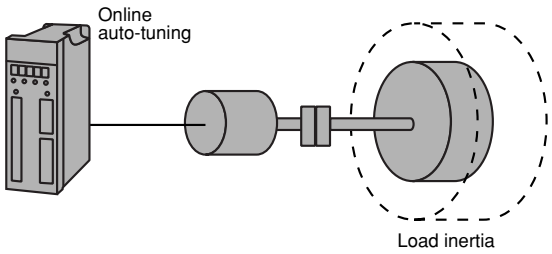
New Zero clamp operation

When speed control is used, drift may occur even with a speed command of 0V. The zero clamp function uses a position loop to stop servo-lock below a preset speed command.

For Easy Setup / Maintenance

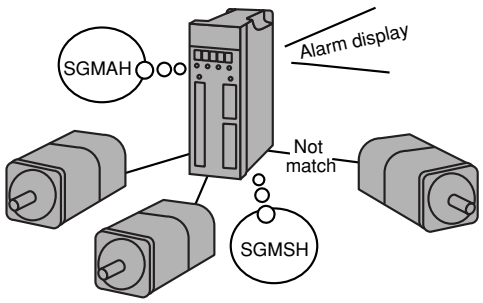
New Online auto-tuning

Simple set-up: Just plug-and-play.
Enhanced inertia matching precision eliminates the need for servo gain adjustment.



New Automatic motor discrimination function

The use of the serial encoder makes it possible for the servopack to automatically sense motor capacity and type, and set motor parameters accordingly.

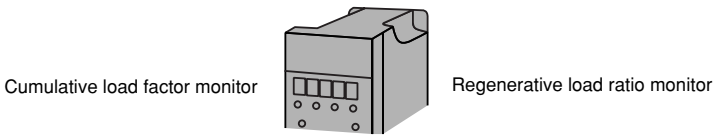


New Cumulative load factor monitor

Allows monitoring of effective torque for torque command.

New Regenerative load ratio monitor

Allows monitoring of regenerative load ratio.



New Regenerative overload warning

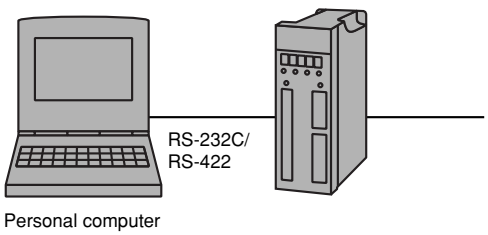
It is possible to issue a warning before a regenerative overload alarm is triggered.

New Password

Prevents unauthorized alteration of user constants.

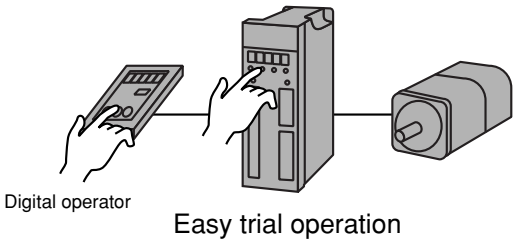
PC interface standard

Supports monitor waveform display for speed and torque references, easy user constant specification, and 1:n communication (n≤14).



Jog operation

The motor can be controlled through the digital operator, even without inputting speed commands. Handy for trial operation.



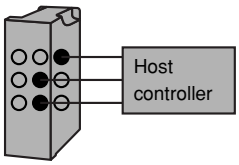
Alarm traceback

Even if the power is turned OFF, data for the last ten alarms is stored, simplifying troubleshooting.

For Flexible Adjustment

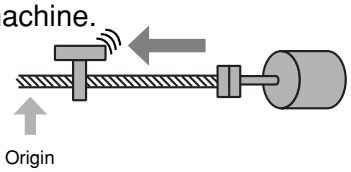
New I/O signal mapping function

Functional allocation of I/O signals is more flexible than ever. Select three types from nine signals.



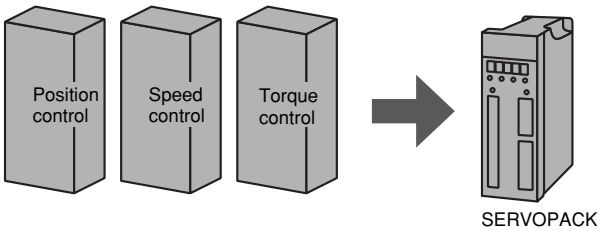
New Origin search

The encoder moves to the origin pulse position and then stops: handy for positioning motor shaft and machine.



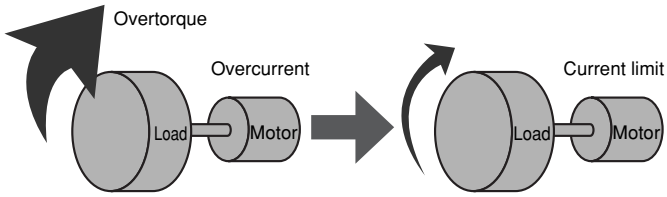
All-in-one control

Position, torque and speed can be controlled independently, with simple switching between control modes.



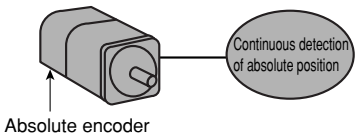
Current (torque) limit

The peak current input to the motor can be limited to minimize occurrence of overtorque, and reduce machinery damage.



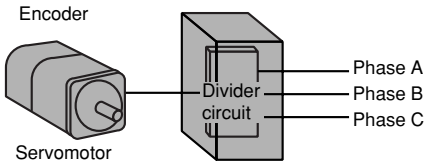
Absolute encoder support

Can also be used with an absolute encoder, in which case return-to-origin operation is unnecessary, and operation is possible immediately after power is restored in the event of a power loss.



Encoder divider

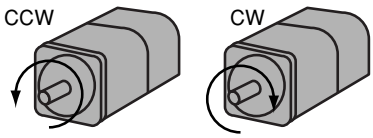
The encoder pulse can be set to any divider, and the positioning resolution for the host controller can be set freely.



Reverse mode

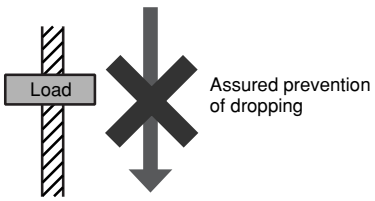
Motor normal and reverse rotation directions can be defined through a simple user constant, without having to rewire motor or encoder.

	Standard mode	Reverse mode
Forward command	CCW	CW
Reverse command	CW	CCW



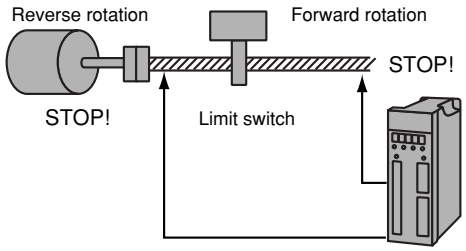
Brake interlock

Brake ON/OFF signals can be output for motors equipped with brakes. Because the motor conductance state and rotation speed can be interlocked, brake hold is assured.



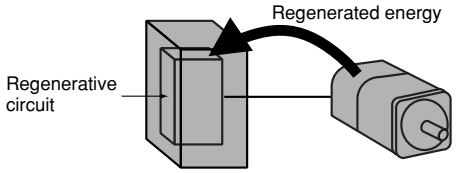
Overtravel prevention

Motor drive can be stopped when the machinery exceeds its defined motion range.



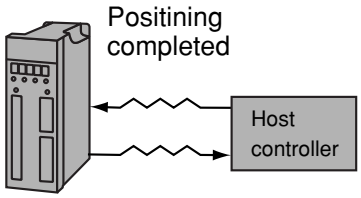
Regenerative processing

The electric power regenerated during motor deceleration is absorbed by the SERVOPACK regenerative circuit. If load inertia is great, depending on the specific operating conditions, external regenerative resistance with a larger capacity may be required.



Positioning complete signal

Detects when the remaining pulses from the offset counter are within the positioning complete range specified as a user constant.

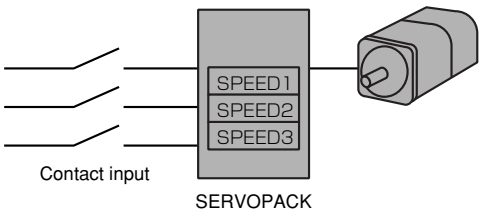


Dynamic brake

In the event there is a power loss during machine operation, the dynamic brake absorbs generated motor energy in motor resistance and external resistance, resulting in a rapid stop which minimizes damage and accidents.

Selection of internal speed presets

The motor can be operated at any of the three preset user speeds.



Command pulses

Supports all types of command pulses: Sign+pulse train, 90° phase displacement, 2-phase pulse, CCW/CW pulse train

Soft start

Used to set the motor acceleration and deceleration times.

User Constants

Type	Parameter No.	Name	Unit	Lower Limit	Upper Limit	Factory Setting
Function Selection Constants	Pn000	Function Selection Basic Switch*3	—	—	—	0000
	Pn001	Function Selection Application Switch 1*1*3	—	—	—	0000
	Pn002	Function Selection Application Switch 2*3	—	—	—	0000
	Pn003	Function Selection Application Switch 3	—	—	—	0002
Gain-Related Constants	Pn100	Speed Loop Gain	Hz	1	2000	40
	Pn101	Speed Loop Integral Time Constant	0.01ms	15	51200	2000
	Pn102	Position Loop Gain	1/s	1	2000	40
	Pn103	Inertia Ratio	%	0	10000	0
	Pn104	2nd Speed Loop Gain	Hz	1	2000	40
	Pn105	2nd Speed Loop Integral Time Constant	0.01ms	15	51200	2000
	Pn106	2nd Position Loop Gain	1/s	1	2000	40
	Pn107	Bias	min^{-1}	0	450	0
	Pn108	Bias Addition Band	Command Unit	0	250	7
	Pn109	Feed Forward	%	0	100	0
	Pn10A	Feed Forward Filter Time Constant	0.01ms	0	6400	0
	Pn10B	Gain-Related Aplication Switch*3	—	—	—	0000
	Pn10C	Mode Switch (Torque Command)	%	0	800	200
	Pn10D	Mode Switch (Speed Command)	min^{-1}	0	10000	0
	Pn10E	Mode Switch (Acceleration)	$10min^{-1}/s$	0	3000	0
	Pn10F	Mode Switch (Offset Pulse)	Command Unit	0	10000	0
	Pn110	Online Autotuning-Related Switch*3	—	—	—	0010
	Pn111	Reserved Constant (Do not handle)*2	—	1	100	100
	Pn112	Reserved Constant (Do not handle)	—	0	1000	100
	Pn113	Reserved Constant (Do not handle)	—	0	10000	1000
	Pn114	Reserved Constant (Do not handle)	—	0	400	200
	Pn115	Reserved Constant (Do not handle)	—	0	1000	32
	Pn116	Reserved Constant (Do not handle)	—	0	1000	16
	Pn117	Reserved Constant (Do not handle)	—	20	100	100
	Pn118	Reserved Constant (Do not handle)	—	50	100	100
Position-Related Constants	Pn200	Position Control Command Form Selection Switch*3	—	—	—	0000
	Pn201	PG Divider*3*5	P/r	16	16384	16384
	Pn202	Electronic Gear Ratio (Numerator)*3	—	1	65535	4
	Pn203	Electronic Gear Ratio (Denominator)*3	—	1	65535	1
	Pn204	Position Command Accel/Decel Time Constant	0.01ms	0	6400	0
	Pn205	Multi-Turn Limit Setting*1*3	rev	0	65535	65535
Speed-Related Constants	Pn300	Speed Command Input Gain	0.01V/Rated Speed	150	3000	600
	Pn301	Internal Setting Speed 1	min^{-1}	0	10000	100
	Pn302	Internal Setting Speed 2	min^{-1}	0	10000	200
	Pn303	Internal Setting Speed 3	min^{-1}	0	10000	300
	Pn304	JOG Speed	min^{-1}	0	10000	500
	Pn305	Soft Start Acceleration Time	ms	0	10000	0
	Pn306	Soft Start Deceleration Time	ms	0	10000	0
	Pn307	Speed Command Filter Time Constant	0.01ms	0	65535	40
	Pn308	Speed F/B Filter Time Constant	0.01ms	0	65535	0
Torque-Related Constants	Pn400	Torque Command Input Gain	0.1V/Rated Torque	10	100	30
	Pn401	Torque Command Filter Time Constant	0.01ms	0	65535	100
	Pn402	Forward Torque Limit	%	0	800	800
	Pn403	Reverse Torque Limit	%	0	800	800
	Pn404	External Input Forward Torque Limit	%	0	800	100
	Pn405	External Input Reverse Torque Limit	%	0	800	100
	Pn406	Emergency Stopping Torque	%	0	800	800
	Pn407	Speed Limit During Torque Control	min^{-1}	0	10000	10000
Sequence-Related Constants	Pn500	Positioning Completion Band	Command Unit	0	250	7
	Pn501	Zero-Clamp Level	min^{-1}	0	10000	10
	Pn502	Rotation Detection Level	min^{-1}	1	10000	20
	Pn503	Speed Conformance Signal Detection Band	min^{-1}	0	100	10

Type	Parameter No.	Name	Unit	Lower Limit	Upper Limit	Factory Setting
Sequence -Related Constants	Pn504	NEAR Signal Band	Command Unit	1	250	7
	Pn505	Overflow Level	256 Command Unit	1	32767	1024
	Pn506	Bake Command-Servo OFF Delay Time	10ms	0	50	0
	Pn507	Brake Command Output Speed Level	min^{-1}	0	10000	100
	Pn508	Servo OFF-Brake Command Waiting Time	10ms	10	100	50
	Pn509	Momentary Hold Time	ms	20	1000	20
	Pn50A	Input Signal Selection 1*3	—	—	—	2100
	Pn50B	Input Signal Selection 2*3	—	—	—	6543
	Pn50C	Input Signal Selection 3*3	—	—	—	8888
	Pn50D	Input Signal Selection 4*3	—	—	—	8888
	Pn50E	Output Signal Selection 1*3	—	—	—	3211
	Pn50F	Output Signal Selection 2*3	—	—	—	0000
	Pn510	Output Signal Selection 3*3	—	—	—	0000
Other Constants	Pn600	Regenerative Resistor Capacity*4	10W	0*4	10000*6	0*4
	Pn601	Reserved Constant (Do not use)	—	0	10000*6	0

∗1. The multi-turn limit is enabled only when Pn002.2, the absolute encoder usage method, is set to [2]. When set to anything else, numerous rotation data is processed within -32768 to +32767.
Change in the multi-turn limit is necessary only in special applications. Do not arbitrarily change this data.
∗2. Enabled when the speed observer user constant Pn110.1 is [0].
∗3. When this user constant has been changed, it is necessary to shut the main and control power OFF, and then to turn them ON again (Power re-feed operation) in order to enable this function.
∗4. The normal setting is [0]. The capacity (W) of the regenerative resistor is set when an external regenerative resistor is used.
∗5. When encorder dividing ratio is 13-bit encoder (2048 P/R), encoder does not devide at more than 2048 setting.
∗6. The upper limit is the maximum output capacity of applicable SERVOPACK.

Alarm Display

Monitor Panel Display	Alarm Code Output			Alarm Content
	AL01	AL02	AL03	
A02	H	H	H	SERVOPACK EEPROM data error (Parameter damage)
A03				Main circuit detection error
A04				Parameter setting error
A05				Motor, SERVOPACK capacity mismatch
A10	L	H	H	Overcurrent or heatsink overheat
A30	L	L	H	Regenerative error (resistor cut off, transistor short failure)
A32				Regenerative overload
A40	H	H	L	Overvoltage
A41				Insufficient voltage
A51	L	H	L	Overspeed
A71	L	L	L	Overload (Momentary maximum load)
A72				Overload (Continuous maximum load)
A73				DB Overload
A74				Surge resistor overload
A7A				Heatsink overheat (Displayed when 30W to 1000W)
A81	H	H	H	Encoder backup alarm
A82				Encoder SUM check alarm
A83				Encoder battery alarm
A84				Encoder absolute alarm
A85				Encoder overspeed
A86				Encoder overheat
Ab1				Speed reference A/D error
Ab2				Torque reference A/D error
AC1	L	H	L	Runaway
AC8				Encoder clear error, Multi-turn limit setting error
AC9				Encorder communication error
ACA				Encoder parameter error
ACb				Encoder echoback error
Ad0	L	L	H	Excessive position offset
AF1	H	L	H	Power line lost phase

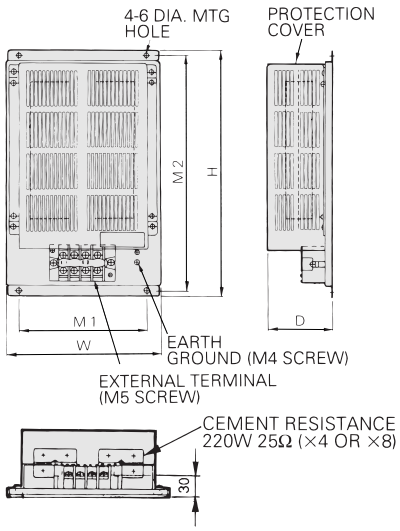
L: Low Signal, H: High Signal

Options

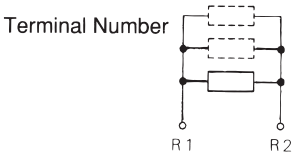
Regenerative Resistor

Externally mount the regenerative resistor for more than 5.5kW SERVOPACK (SGDM-60 or Later).
Choose a regenerative resistor in accordance with SERVOPACK type.

● Dimensions in mm



SERVOPACK Type	Regenerative Resistor Unit Type	Dimensions in mm					Approx. Mass kg
		W	H	D	M1	M2	
SGDM-60ADA	JUSP-RA04	220	350	92	180	335	4
SGDM-75ADA	JUSP-RA05	300	350	95	250	335	7



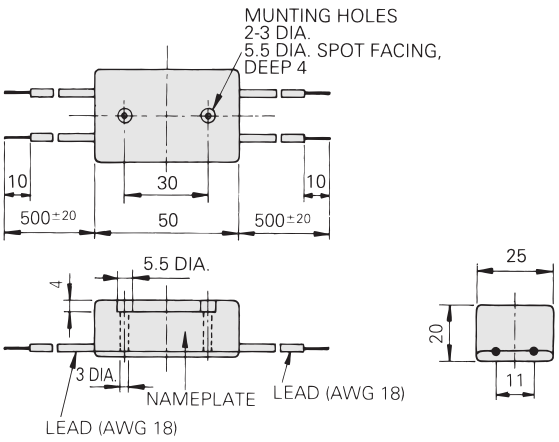
Brake Power Supply

● Specifications

Type	Rated		Lead Connection (Color)	
	Input Power Supply	Output Power Supply	Input Side	Output Side
LPSE-2H01	200VAC (180 to 230VAC) 50/60Hz	90VDC	Yellow, White	Red (+) Black (−)
LPDE-1H01	100VAC (90 to 120VAC) 50/60Hz		Blue, White	

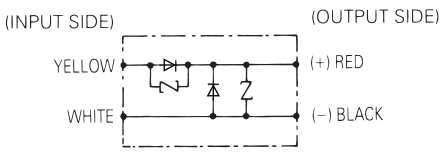
Note:
1. Insulation Resistance: 100MΩ or more at 500V Megger.
2. Withstand Voltage : 1500VAC for a minute or 1800VAC for a second.
3. Operating Voltage : 90VDC Max. 1ADC.
4. Ambient Temperature: Max. 60°C

● Dimensions in mm

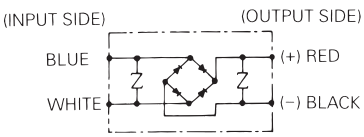


● Circuit Diagram

Type LPSE-2H01

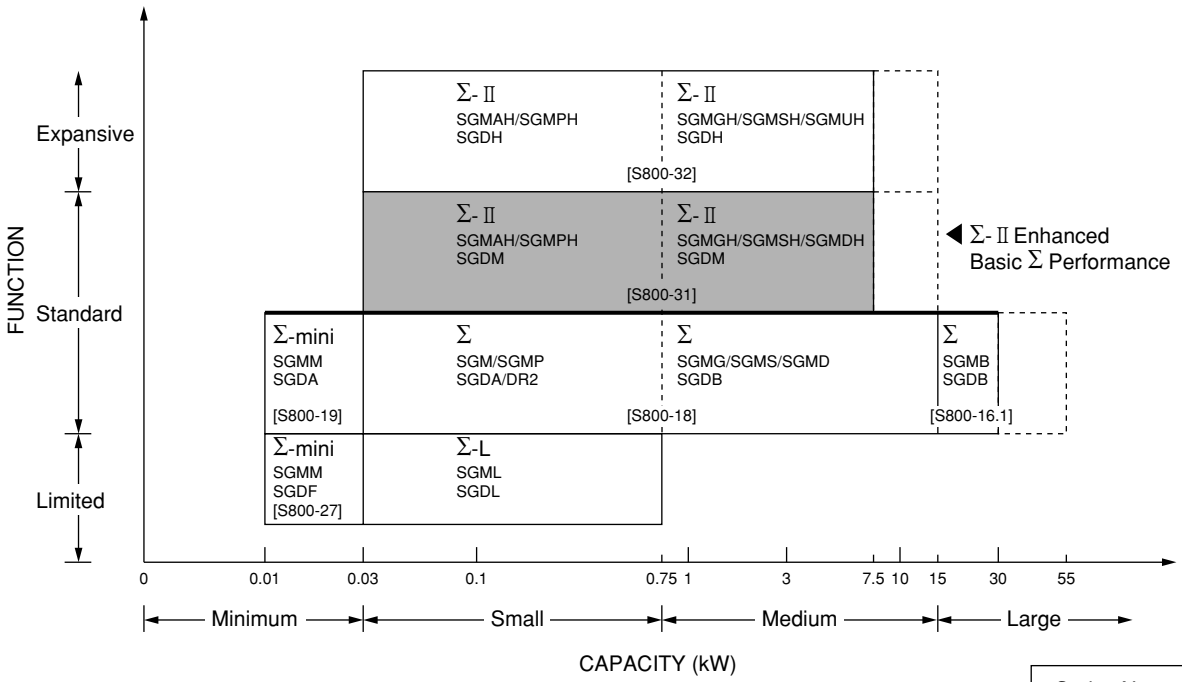


Type LPDE-1H01



Full Lineup of Σ / Σ-Ⅱ Series

YASKAWA provides full line up of servo drives according to functions / capacity you require. Contact your YASKAWA representative for ordering other series.



Series Name
Servomotor Type
SERVOPACK Type
(Reference Catalog No.
KAE-)

: To be available soon.

Σ-Ⅱ SERIES

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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.

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