AC SERVO DRIVES
Σ-Ⅱ SERIES

SERVOMOTOR TYPE: SGMAH–□□, SGMPH–□□,
SGMGH–□□, SGMSH–□□, SGMUH–□□
SERVOPACK TYPE : SGDH–□□

Certified by
ISO 9001

JQA-0386,-0422

YASKAWA

LITERATURE NO. KAE-S800-32D

Flexible Enough to Adapt to Different Playing Conditions

"He receives the ball and makes a quick, accurate pass. No. 2 fakes out his opponent. He shoots! He scores! What great team work! What a combo!!" The fans are spell-bound by such world-class plays that require quick speed, great accuracy, and good judgment.

Σ-II series can be the key player to increase your machine's performance and productivity. Servo drives must be more responsive, more quick, and more accurate than world class athletes. Together with our additional boards, our stars can use amazing combination plays regardless of your playing conditions.

Full conformance to CE markings

as well as cULus LISTED

Advantage 1
World top performance

Your production will be increased by Σ-II and bring your machine potential to its highest performance. Outstanding rapid response is achieved with **1/3 settling time** due to 1/2 CPU operation time and upgraded new control algorithms. **6000min^{-1} motor** is newly available.

Advantage 2
One on one set up/maintenance

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

Advantage 3
Flexible combination

Combine one of our full lineup SERVOPACKs and an **option board**, it plays an important part of network and even higher system performance. Moreover, conformance to international standards assures your operation standards worldwide.

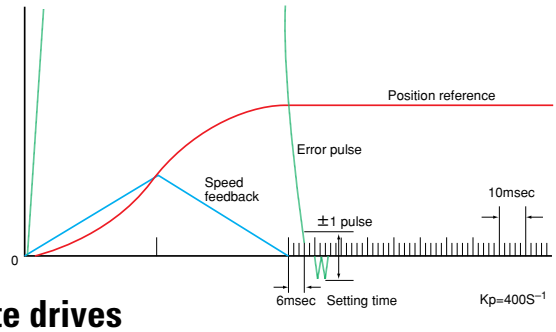
CONTENTS PAGE

Features

High Performance

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

6000min^{-1} is the highest speed available (Type SGMUH). Its flange is designed as IEC72. 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.

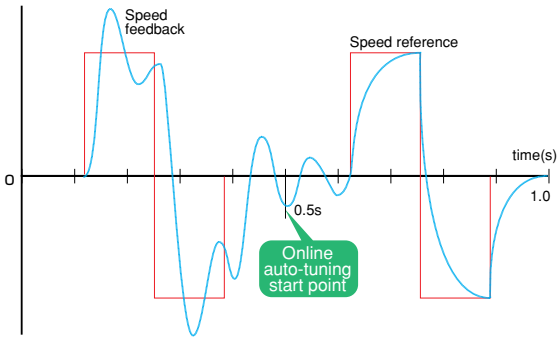
Easy Setup

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.

European-use connector provided

(made by Interconnection)

Easy Maintenance

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

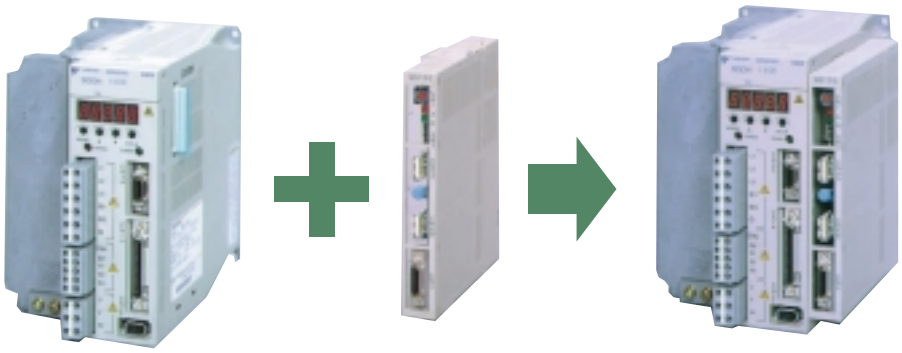
Flexible

Option boards for expansion

Option board attachments respond to your expanding needs. Just attach one to the side of SERVOPACK to link it to your motion controller or to perform highly precise positioning.

Option boards available : MECHATROLINK, full closed link I/F

Option boards to be available: Field bus links (Sercos, Profibus, CAN, DeviceNet, and others), MP940 (one-axis motion controller)



SGDH SERVOPACK | Option Board | Function Added SERVOPACK

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

400V class model lineups available as well as 230V class.

400VAC: Three-phase, 0.5 to 15kW

230VAC: Single-phase, 0.3 to 1.5kW

Three-phase, 0.5 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 and UL /cUL.

Environmental resistance (Servomotor)

■Enhanced protective enclosure

Complies with IP55 standard (Type SGMAH)

■Enhanced vibration resistance

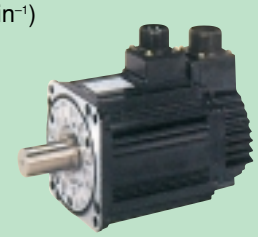
Safe for accelerations up to 49m/s^2 (Types SGMAH, SGMPH).

High harmonic countermeasures

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

Servomotor-SERVOPACK Combination

YASKAWA provides full lineup of servomotors and SERVOPACKs.
Choose the best drives according to your needs and specifications.

	Servomotor								
	Type	Outlines	Applications						
Small-capacity	**SGMAH** (3000min⁻¹) 	**Super High Power Rate Type** Large torque required at low inertia.	Chip Mounters	PCB Drillig Machines	Food Processing Machines	Robots	Material Handling Equipment		
	SGMPH (3000min⁻¹) 	**Cube Type** Short L-length. Good for narrow space installation.							
Medium-capacity	**SGMGH** (1500min⁻¹) 	**High Speed Feed Type** High speed rotation required without load.						Machine Tool Feeds	
	SGMSH (3000min⁻¹) 	**Super High Power Rate Type** Large torque required at low inertia.	Chip Mounters	PCB Drilling Machines					
	SGMUH (6000min⁻¹) 	**High Speed Type** Good for large torque production due to 6000min⁻¹ speed.							

Single-phase　Three-phase

230V

Three-phase

400V

	Voltage	Capacity	SERVOPACK Type SGDH-□□		
			230V		400V
			Single-phase	Three-phase	Three-phase
	230V	30W	A3AE	—	—
		50W	A5AE	—	—
		100W	01AE	—	—
		200W	02AE	—	—
		400W	04AE	—	—
		750W	08AE-S	—	—
	400V	300W	—	—	05DE
		650W	—	—	10DE
	230V	100W	01AE	—	—
		200W	02AE	—	—
		400W	04AE	—	—
		750W	08AE-S	—	—
		1500W	15AE-S	—	—
	400V	200W	—	—	05DE
		400W	—	—	05DE
		750W	—	—	10DE
		1500W	—	—	15DE
	230V	0.45kW	—	05AE	—
		0.85kW	—	10AE	—
		1.3kW	—	15AE	—
		1.8kW	—	20AE	—
		2.9kW	—	30AE	—
		4.4kW	—	50AE	—
		5.5kW	—	60AE	—
		7.5kW	—	75AE	—
		+Future larger	—	—	—
	400V	0.45kW	—	—	05DE
		0.85kW	—	—	10DE
		1.3kW	—	—	15DE
		1.8kW	—	—	20DE
		2.9kW	—	—	30DE
		4.4kW	—	—	50DE
		5.5kW	—	—	60DE
		7.5kW	—	—	75DE
		11kW	—	—	1ADE
		15kW	—	—	1EDE
	230V	1.0kW	—	10AE	—
		1.5kW	—	15AE	—
		2.0kW	—	20AE	—
		3.0kW	—	30AE	—
		4.0kW	—	50AE	—
		5.0kW	—	50AE	—
	400V	1.0kW	—	—	10DE
		1.5kW	—	—	15DE
		2.0kW	—	—	20DE
		3.0kW	—	—	30DE
		4.0kW	—	—	50DE
		5.0kW	—	—	50DE
	400V	1.0kW	—	—	10DE
		1.5kW	—	—	15DE
		3.0kW	—	—	30DE
		4.0kW	—	—	50DE

Type Designation

Servomotor

SGMPH - 01 A 1 A 2 S D

Σ-II Servomotor 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	SGMAH 3000 min⁻¹	SGMPH 3000 min⁻¹	SGMGH 1500 min⁻¹	SGMSH 3000 min⁻¹	SGMUH 6000 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					
07	0.65				
08	0.75	0.75			
09			0.85		
10				1.0	1.0
12					
13			1.3		
15		1.5		1.5	1.5
20			1.8	2.0	
22					
30			2.9	3.0	3.0
32					
40				4.0	4.0
44			4.4		
50				5.0	
55			5.5		
60					
75			7.5		
1A			11		
1E			15		

Voltage
- A: 230 V
- D: 400 V

Design Procedure: A

Serial Encoder Specifications

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

◎: Standard ○: Option

Shaft End Specifications

Code	Shaft End	Type SGMAH	SGMPH	SGMGH	SGMSH	SGMUH
2	Straight, No key	◎	◎	◎	◎	
4	Straight, Key	○	○			
6	Straight, Key, Tapped	○	○	○	○	◎
8	Straight, Tapped	○	○			

◎: Standard ○: Option

Brake, Oil Seal Specifications

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

Connector Specifications

Blank	No option
D	Interconnectron Connector (SGMAH,SGMPH)

SERVOPACK

SGDH - 04 A E - S

Σ-II SERVOPACK
- SGDH

Capacity

A3	30 W	15	1.5 kW
A5	50 W	20	2.0 kW
01	100 W	30	3.0 kW
02	200 W	50	5.0 kW
04	400 W	60	6.0 kW
05	500 W	75	7.5 kW
08	750 W	1A	11 kW
10	1.0 kW	1E	15 kW

Source Voltage
- A: 230V
- D: 400V

Model
- E: Speed, Torque, Position

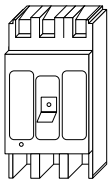
Phase

Blank	Three-phase (0.5 to 15kW) Single-phase (30 to 400W)
S	Single-phase (750W/1.5kW)

Configurations

Single-phase
30 to 1500W (230VAC)

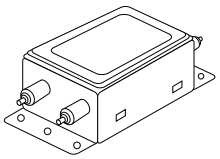
Molded-case Circuit Breaker (MCCB)



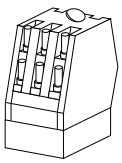
Protects the power line by shutting the circuit OFF when overcurrent is detected.

Noise Filter

Used to eliminate external noise from the power line.



Magnetic Contactor

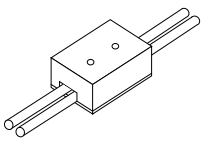


Turns the servo ON and OFF. Install a surge suppressor on the magnetic contactor.

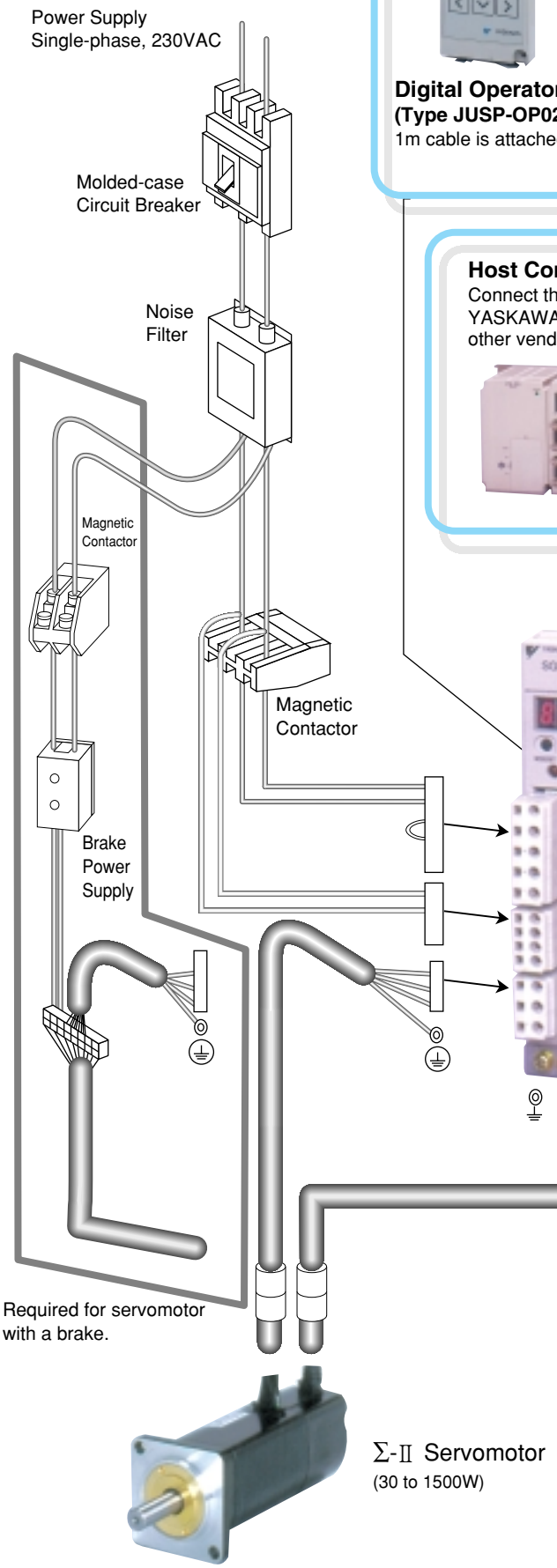
Brake Power Supply*

Type LPSE-2H01(200V input)

Used for SGM□ Servomotor with a brake.



* See P34 for details.



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

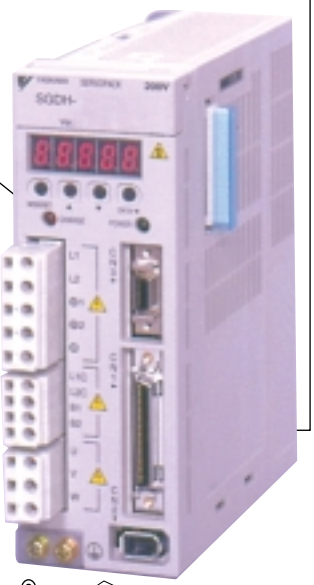
Personal Computer

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

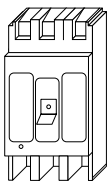


Σ-Ⅱ SERVOPACK
Types SGDH-A3AE to -15AE-S

Σ-Ⅱ Servomotor
(30 to 1500W)

Three-phase
0.5 to 7.5kW (230 VAC)

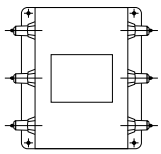
Molded-case Circuit Breaker (MCCB)



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

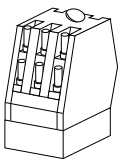
Noise Filter

Used to eliminate external noise from the power line.



Magnetic Contactor

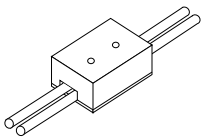
Turns the servo ON and OFF. Install a surge suppressor on the magnetic contactor.



Brake Power Supply*1

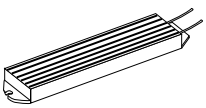
Type LPSE-2H01

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.



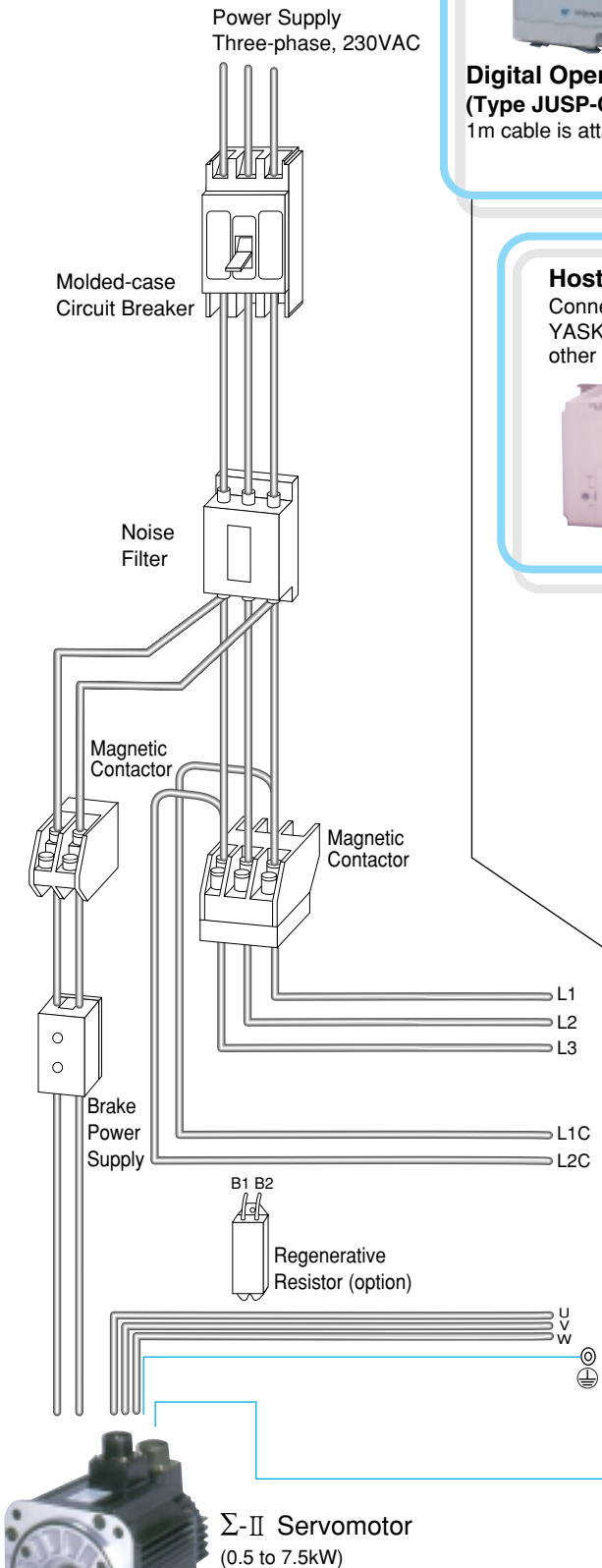
Digital Operator (Type JUSP-OP02A-2)
1m cable is attached.

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



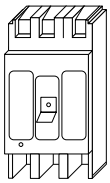
Σ-Ⅱ SERVOPACK
Types SGDH-05AE to -75AE*2

Σ-Ⅱ Servomotor
(0.5 to 7.5kW)

*1 See P34 for details.
*2 The external terminals are different in accordance with SERVOPACK type.

Three-phase
0.5 to 15kW (400 VAC)

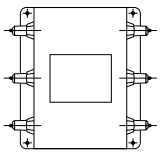
Molded-case Circuit Breaker (MCCB)



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

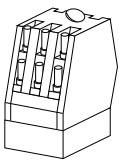
Noise Filter

Used to eliminate external noise from the power line.



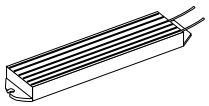
Magnetic Contactor

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



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

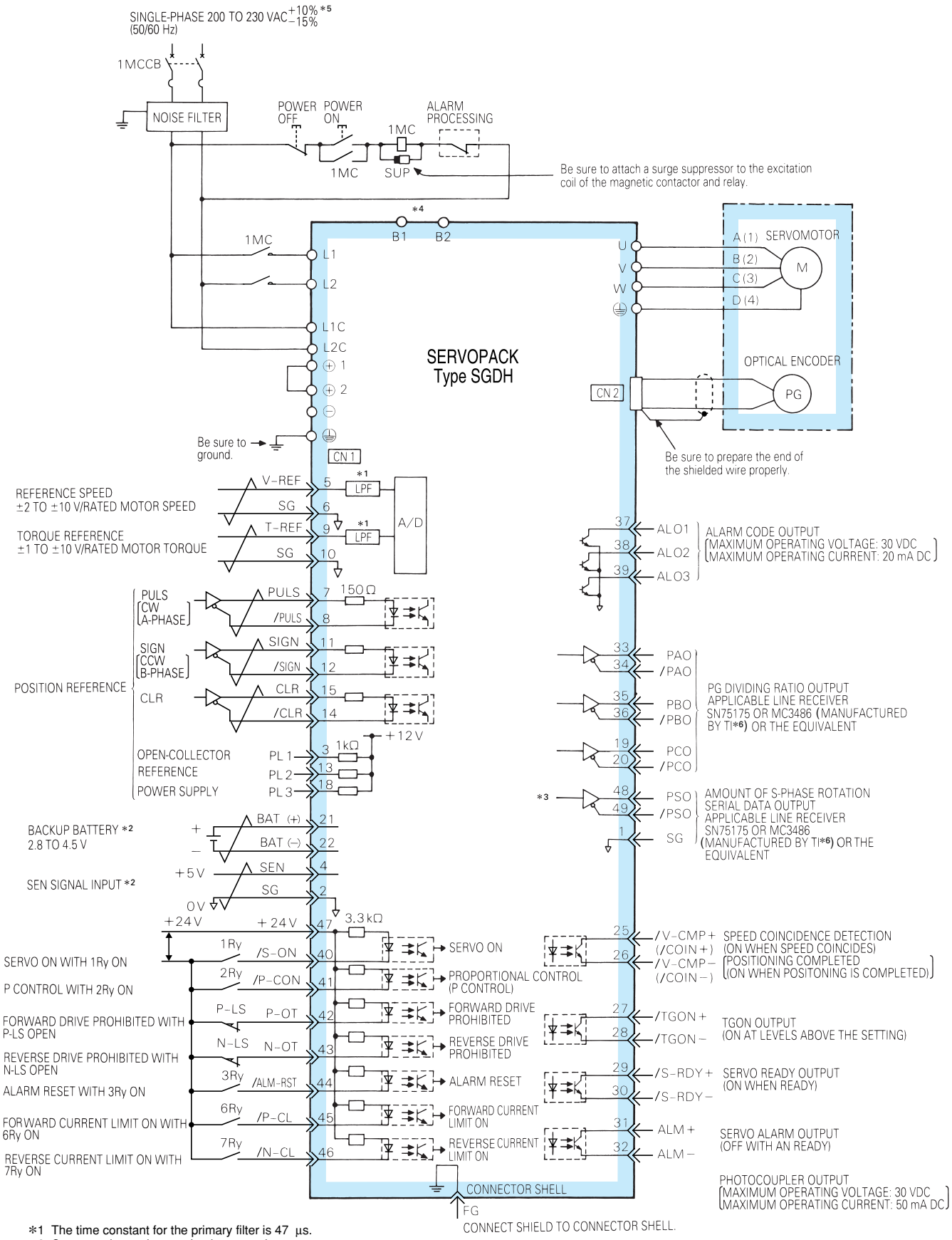
Connect the SGDH SERVOPACK to a YASKAWA host controller or one made by other vendors. (Analog input, pulse train input available.)

MP920

* The external terminals are different in accordance with SERVOPACK type.

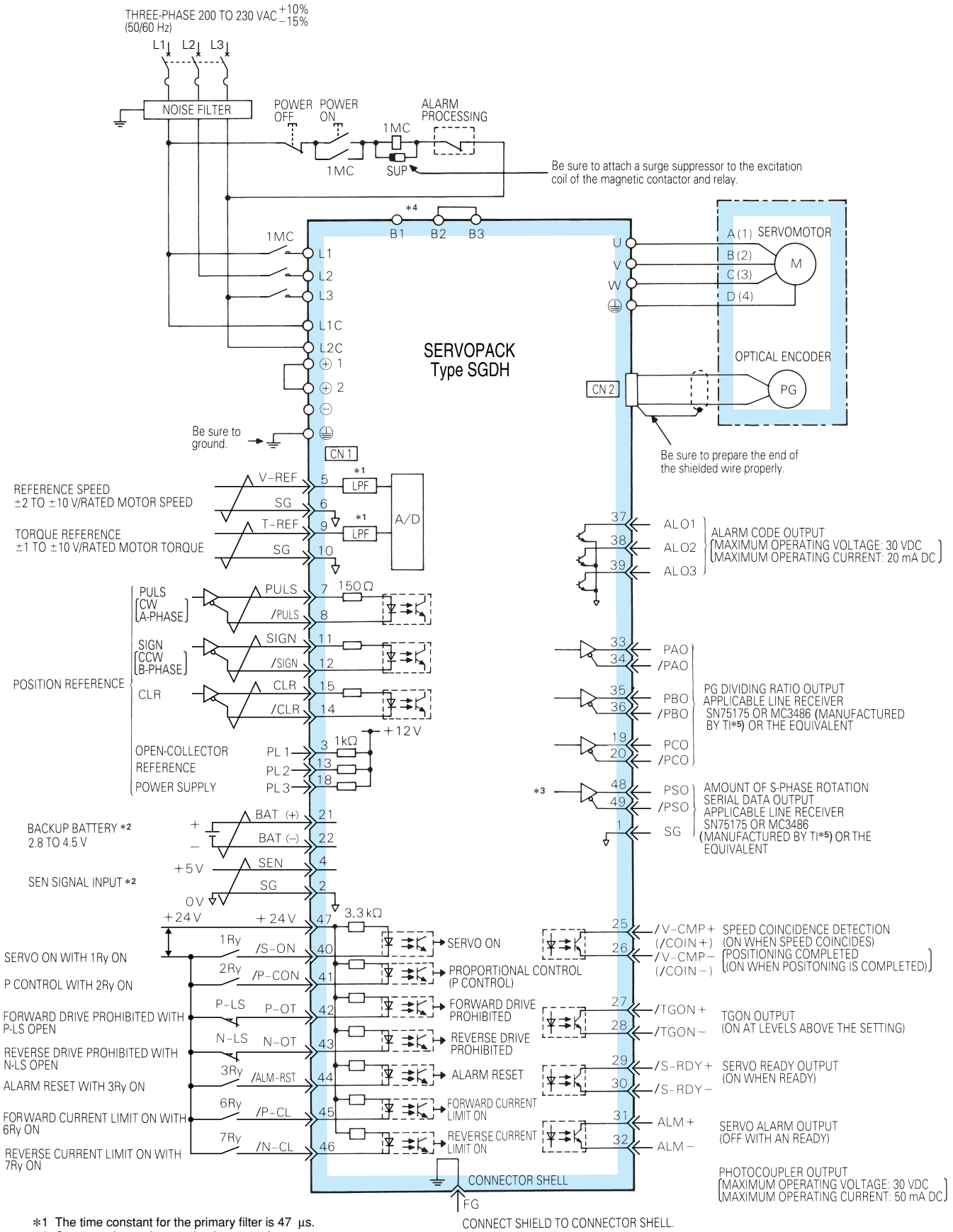
Connection Diagrams

Single-phase, 230VAC



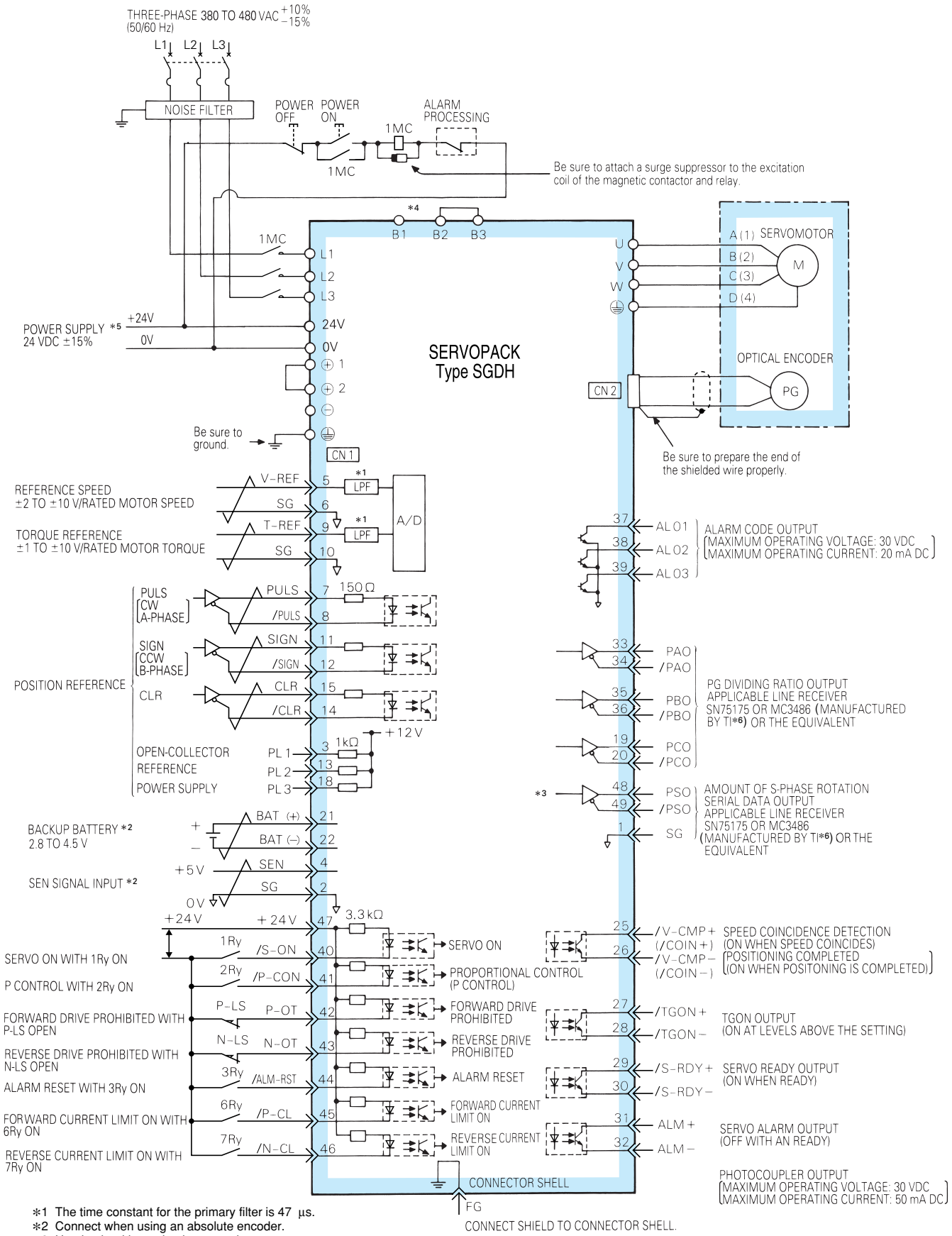
*1 The time constant for the primary filter is 47 µs.
*2 Connect when using an absolute encoder.
*3 Used only with an absolute encoder.
*4 Regenerative resistor can be connected between B1 and B2.
*5 For types SGDH-08AE-S and SGDH-15AE-S, voltage is 220 to 230 VAC +10% −15%.
*6 TI stands for Texas Instruments Inc.

Three-phase, 230VAC



*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.
(For 6/7.5kW SERVOPACK, connect a regenerative resistor unit.)
*5 TI stands for Texas Instruments Inc.

Three-phase, 400VAC



*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.
(Be sure to connect a regenerative resistor unit to SERVOPACK of 6/7.5/11/15kW)
*5 It is the user's responsibility to obtain 24VDC power supply.
*6 TI stands for Texas Instruments Inc.

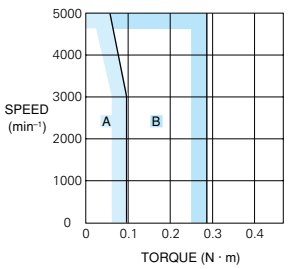
Type SGMAH, 230/400V

● Ratings and Specifications

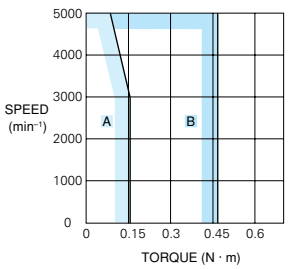
Applied Voltage		230V						400V	
Servomotor Type SGMAH-□□□		A3A	A5A	01A	02A	04A	08A	03D	07D
Rated Output	W	30	50	100	200	400	750	300	650
Rated Torque	N·m	0.0955	0.159	0.318	0.637	1.27	2.39	0.955	2.07
Instantaneous Peak Torque	N·m	0.286	0.477	0.955	1.91	3.82	7.16	3.82	7.16
Rated Rotation Speed	min^{-1}	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	0.173	0.672
Allowable Load Moment of Inertia (J_L)	as much as the Moment of Inertia	30 times or less				20 times or less			
Rated Power Rate	kW/s	5.49	11.5	27.8	38.2	93.7	84.8	52.9	63.8
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 $49m/s^2$							
Basic Specifications: Mounting		Flange-mounted							

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

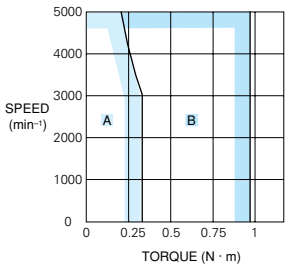
SGMAH-A3A



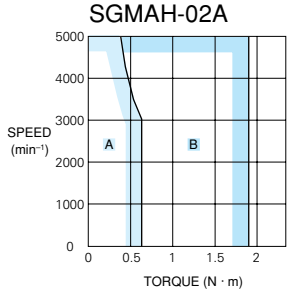
SGMAH-A5A



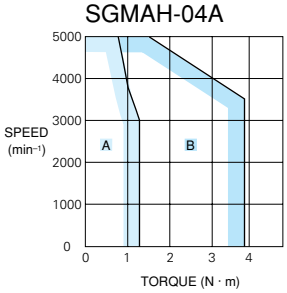
SGMAH-01A



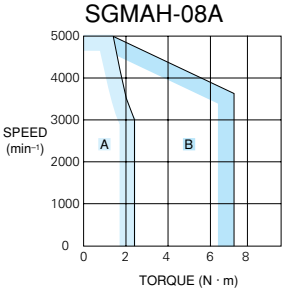
SGMAH-02A



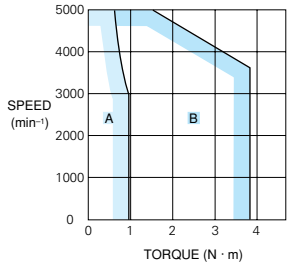
SGMAH-04A



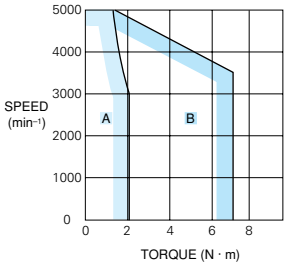
SGMAH-08A



SGMAH-03D



SGMAH-07D



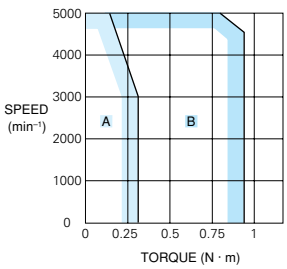
Type SGMPH, 230/400V

● Ratings and Specifications

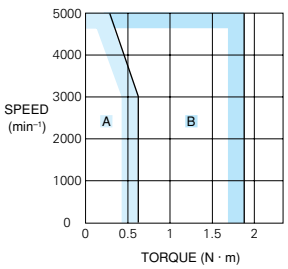
Applied Voltage			230V					400V			
Servomotor Type SGMPH-□□□□			01A	02A	04A	08A	15A	02D	04D	08D	15D
Rated Output		W	100	200	400	750	1500	200	400	750	1500
Rated Torque		N·m	0.318	0.637	1.27	2.39	4.77	0.637	1.27	2.39	4.77
Instantaneous Peak Torque		N·m	0.955	1.91	3.82	7.16	14.3	1.91	3.82	7.16	14.3
Rated 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	0.193	0.331	2.10	4.02
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		15 times or less	7 times or less	5 times or less	
Rated Power Rate		kW/s	20.6	21.0	49.0	27.1	56.7	21.0	49.0	27.1	56.7
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 $49m/s^2$								
	Mounting		Flange-mounted								

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

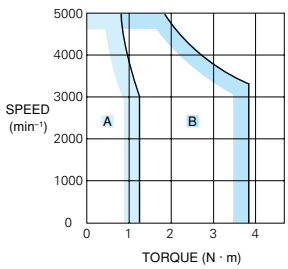
SGMPH-01A



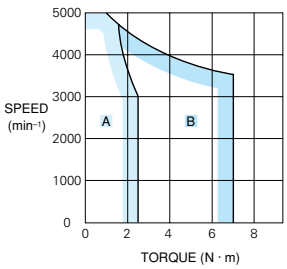
SGMPH-02A



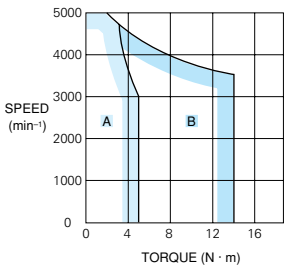
SGMPH-04A



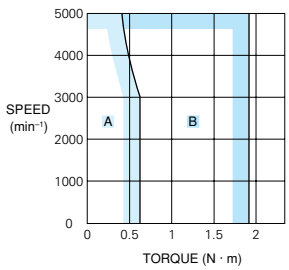
SGMPH-08A



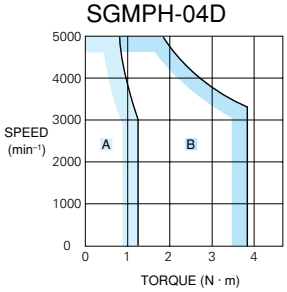
SGMPH-15A



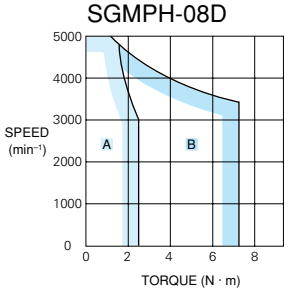
SGMPH-02D



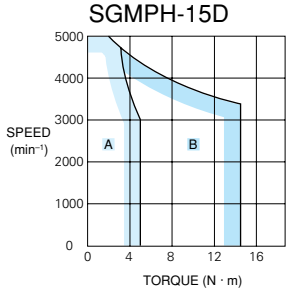
SGMPH-04D



SGMPH-08D



SGMPH-15D



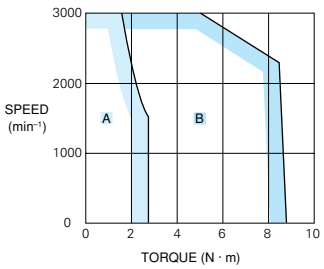
Type SGMGH, 230V

● Ratings and Specifications

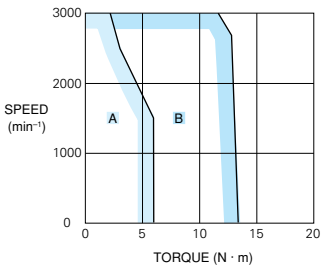
Servomotor Type SGMGH-□□□		05A□A	09A□A	13A□A	20A□A	30A□A	44A□A	55A□A	75A□A
Rated Output	kW	0.45	0.85	1.3	1.8	2.9	4.4	5.5	7.5
Rated Torque	N·m	2.84	5.39	8.34	11.5	18.6	28.4	35.0	48.0
Instantaneous Peak Torque	N·m	8.92	13.8	23.3	28.7	45.1	71.1	87.6	119
Rated Rotation Speed	min^{-1}	1500							
Max. Rotation 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: 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/s²							
Basic Specifications: Mounting		Flange-mounted							

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

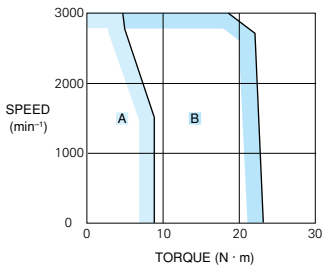
SGMGH-05A□A



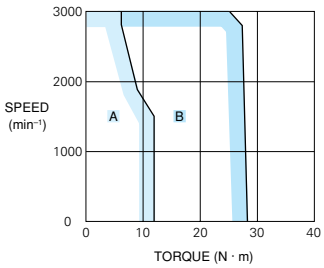
SGMGH-09A□A



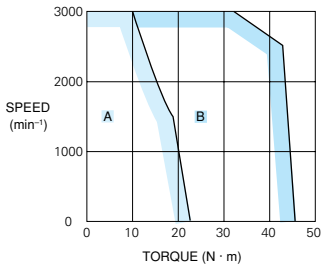
SGMGH-13A□A



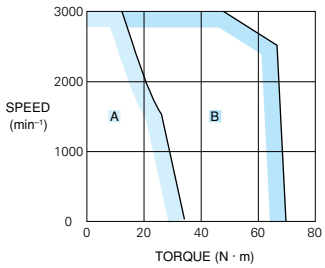
SGMGH-20A□A



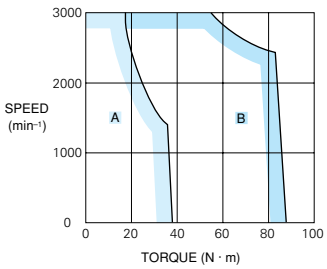
SGMGH-30A□A



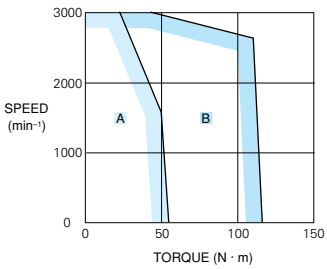
SGMGH-44A□A



SGMGH-55A□A



SGMGH-75A□A



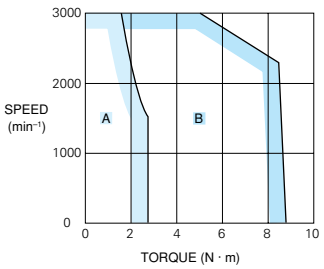
Type SGMGH, 400V

● Ratings and Specifications

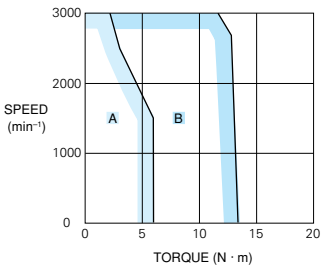
Servomotor Type SGMGH-□□□		05D□A	09D□A	13D□A	20D□A	30D□A	44D□A	55D□A	75D□A	1AD□A	1ED□A
Rated Output	kW	0.45	0.85	1.3	1.8	2.9	4.4	5.5	7.5	11	15
Rated Torque	N·m	2.84	5.39	8.34	11.5	18.6	28.4	35.0	48.0	70.0	95.4
Instantaneous Peak Torque	N·m	8.92	13.8	23.3	28.7	45.1	71.1	90.7	123	175	221
Rated Rotation 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	281	315
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	174	289
Applicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R)									
	Option	Absolute Encoder (17 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									
Basic Specifications: Mounting		Flange-mounted									

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

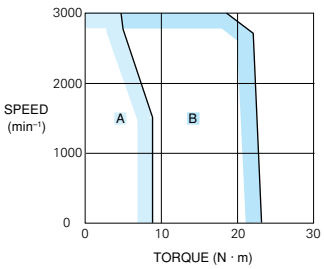
SGMGH-05D□A



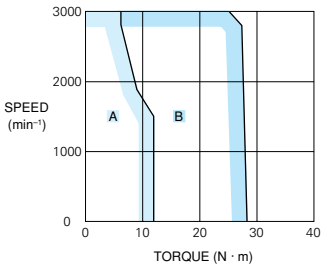
SGMGH-09D□A



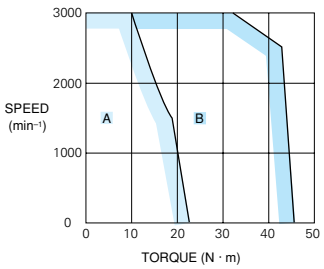
SGMGH-13D□A



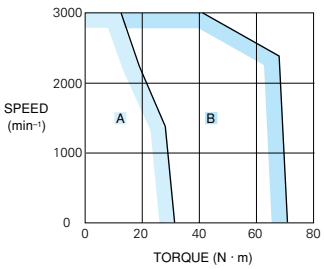
SGMGH-20D□A



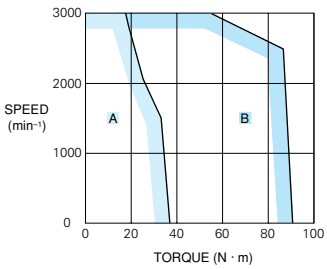
SGMGH-30D□A



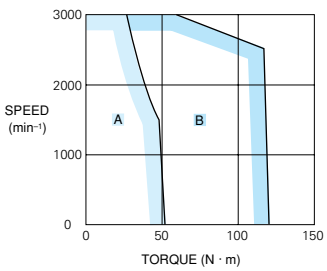
SGMGH-44D□A



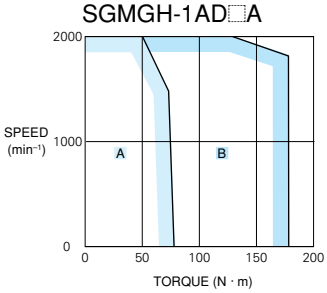
SGMGH-55D□A



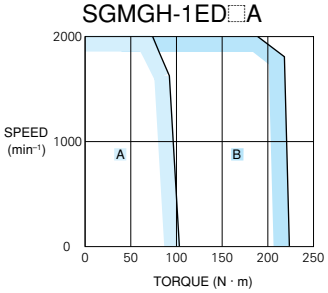
SGMGH-75D□A



SGMGH-1AD□A



SGMGH-1ED□A



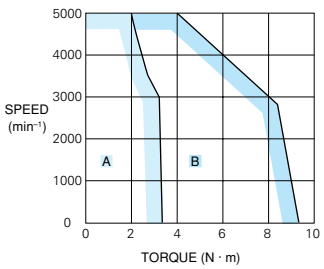
Type SGMSH, 230V

● Ratings and Specifications

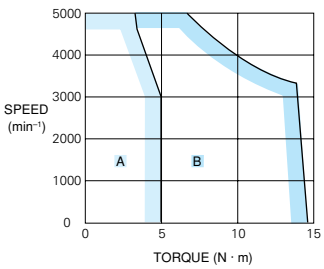
Servomotor Type SGMSH-□□□		10A□A	15A□A	20A□A	30A□A	40A□A	50A□A
Rated Output	kW	1.0	1.5	2.0	3.0	4.0	5.0
Rated Torque	N·m	3.18	4.90	6.36	9.80	12.6	15.8
Instantaneous Peak Torque	N·m	9.54	14.7	19.1	29.4	37.8	47.6
Rated Rotation Speed	min^{-1}	3000					
Max. Rotation Speed	min^{-1}	5000					
Moment of Inertia (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: 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/s^2					
Mounting		Flange-mounted					

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

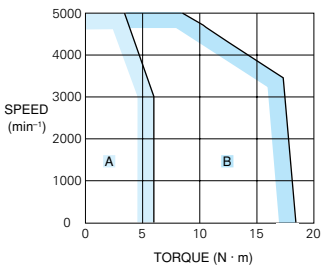
SGMSH-10A□A



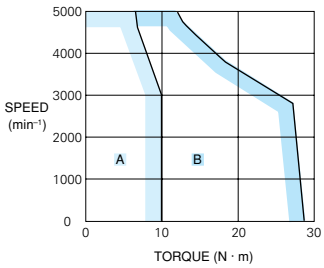
SGMSH-15A□A



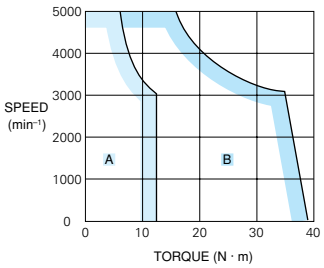
SGMSH-20A□A



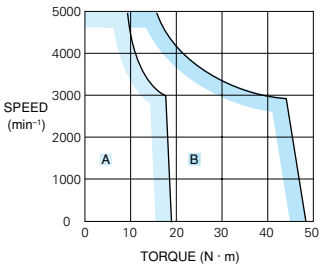
SGMSH-30A□A



SGMSH-40A□A



SGMSH-50A□A



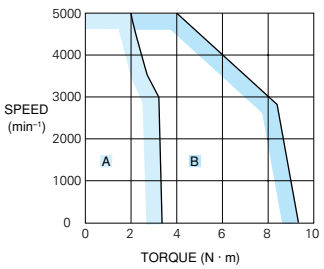
Type SGMSH, 400V

● Ratings and Specifications

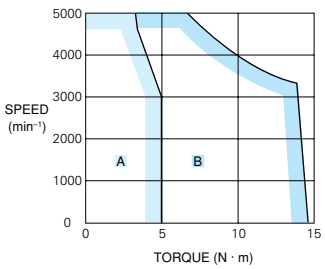
Servomotor Type SGMSH-□□□		10D□A	15D□A	20D□A	30D□A	40D□A	50D□A
Rated Output	kW	1.0	1.5	2.0	3.0	4.0	5.0
Rated Torque	N·m	3.18	4.90	6.36	9.80	12.6	15.8
Instantaneous Peak Torque	N·m	9.54	14.7	19.1	29.4	37.8	47.6
Rated Rotation Speed	min^{-1}	3000					
Max. Rotation Speed	min^{-1}	5000					
Moment of Inertia (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: 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					
Basic Specifications: Mounting		Flange-mounted					

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

SGMSH-10D□A



SGMSH-15D□A



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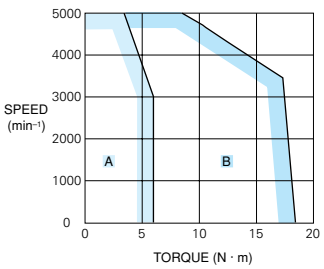
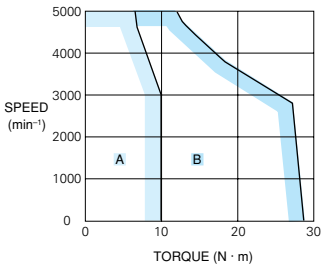
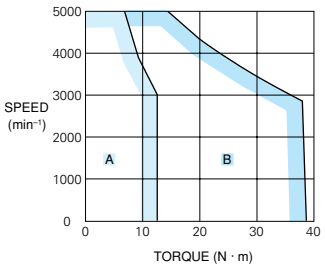


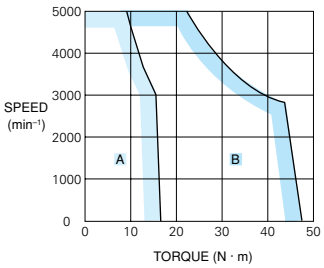
SGMSH-30D□A



SGMSH-40D□A



SGMSH-50D□A



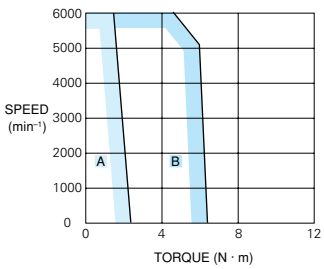
Type SGMUH, 400V

● Ratings and Specifications

Servomotor Type SGMUH-□□□			10D□A	15D□A	30D□A	40D□A
Rated Output		kW	1.0	1.5	3.0	4.0
Rated Torque		N·m	1.59	2.45	4.9	6.3
Instantaneous Peak Torque		N·m	6.5	11	21.5	29
Rated Rotation Speed		min^{-1}	6000			
Max. Rotation Speed		min^{-1}	6000			
Moment of Inertia (J)		$kg·m^2×10^{-4}$	1.74	2.47	7.00	9.60
Allowable Load Moment of Inertia	as much as the Moment of Inertia		5 times or less			
Rated Power Rate		kW/s	14.5	24.3	34.3	41.3
Applicable Encoder	Standard		Incremental Encoder (17 bits: 16384P/R)			
	Option		–			
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 $24.5m/s^2$			
	Mounting		Flange-mounted			

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

SGMUH-10D□A



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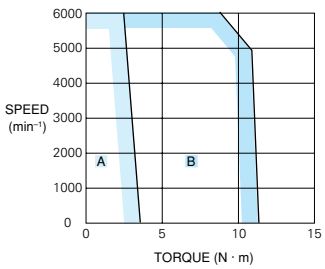
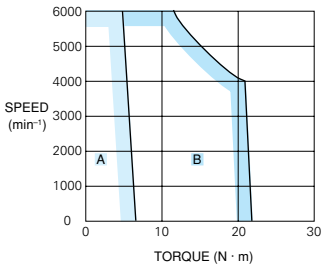
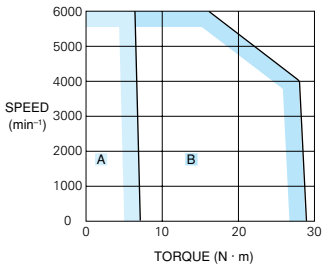


SGMUH-30D□A



SGMUH-40D□A



Characteristics

●Single-phase, 230V

SERVOPACK Type		SGDH-□□□□□	A3AE	A5AE	01AE	02AE	04AE	08AE-S	15AE-S
Applicable Servomotor		SGMAH-□□□□□	A3A	A5A	01A	02A	04A	08A	–
		SGMPH-□□□□□	–	–	01A	02A	04A	08A	15A
Basic Specifications	Input Power Supply	Main Circuit	For single-phase, 200 to 230VAC +10 to −15% (50/60Hz)					220 to 230VAC +10 to −15% (50/60Hz)	
		Control Circuit	For single-phase, 200 to 230VAC +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)						
	Conditions	Usage/storage Temperature	0 to +55°C/ -20 to +85°C						
		Usage/storage Humidity	90%RH or less (non-condensing)						
		Altitude	1000m or less above sea level						
		Vibration/Shock Resistance	4.9m/s^2 /19.6m/s^2						
	Configuration		Base mounted (Rack mount is also available)						
	Approx. Mass	kg	0.8				1.1	1.7	3.8

●Three-phase, 230V

SERVOPACK Type		SGDH-□□□□□	05AE	10AE	15AE	20AE	30AE	50AE	60AE	75AE
Applicable Servomotor		SGMGH-□□□□□	05A□A	09A□A	13A□A	20A□A	30A□A	44A□A	55A□A	75A□A
		SGMSH-□□□□□	–	10A□A	15A□A	20A□A	30A□A	40A□A 50A□A	–	–
Basic Specifications	Input Power Supply	Main Circuit	For three-phase, 200 to 230VAC +10 to −15% (50/60Hz)							
		Control Circuit	For three-phase, 200 to 230VAC +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)							
	Conditions	Usage/storage Temperature	0 to +55°C/ -20 to +85°C							
		Usage/storage Humidity	90%RH or less (non-condensing)							
		Altitude	1000m or less above sea level							
		Vibration/Shock Resistance	4.9m/s^2 /19.6m/s^2							
	Configuration		Base mounted (Rack mount is also available)							
	Approx. Mass	kg	1.7		2.8		3.8	5.5	15	

●Three-phase, 400V

SERVOPACK Type		SGDH-□□□□□	05DE	10DE	15DE	20DE	30DE	50DE	60DE	75DE	1ADE	1EDE
Applicable Servomotor		SGMGH-□□□□□	05D□A	09D□A	13D□A	20D□A	30D□A	44D□A	55D□A	75D□A	1AD□A	1ED□A
		SGMSH-□□□□□	–	10D□A	15D□A	20D□A	30D□A	40D□A 50D□A	–	–	–	–
		SGMUH-□□□□□	–	10D□A	15D□A	–	30D□A	40D□A	–	–	–	–
Basic Specifications	Input Power Supply	Main Circuit	For three-phase, 380 to 480VAC +10 to −15% (50/60Hz)									
		Control Circuit	24VDC ±15%									
	Control Method		Three-phase full-wave rectification / IGBT / PWM / sine-wave current drive method									
	Feedback		Serial encoder (incremental/absolute value)									
	Conditions	Usage/storage Temperature	0 to +55°C/ -20 to +85°C									
		Usage/storage Humidity	90%RH or less (non-condensing)									
		Altitude	1000m or less above sea level									
		Vibration/Shock Resistance	4.9m/s^2 /19.6m/s^2									
	Configuration		Base mounted (Rack mount is also available)									
	Approx. Mass	kg	2.8			3.8		5.5	15		22	

Specifications

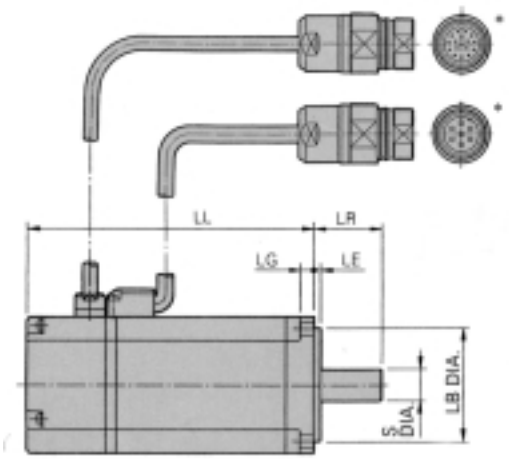
●Common for All

Speed/Torque Control Mode	Performance	Speed Control Range		1:5000
		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 $J_L = J_M$)
		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 command 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: 6 to 15kW)

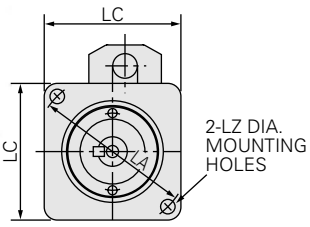
Servomotor Dimensions in mm

● Type SGMAH (230/400V)

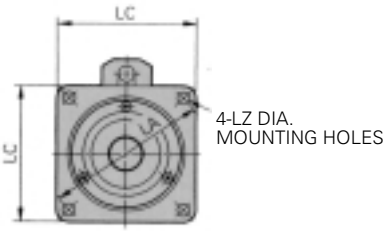
Type SGMAH	LL	LC	LA	LZ	LG	LB	LE	S	LR	Approx. Mass kg
- A3 □	69.5	40	46	4.3	5	$30^{0}_{-0.021}$	2.5	$6^{0}_{-0.008}$	25	0.3
- A5 □	77									0.4
- 01 □	94.5							$8^{0}_{-0.009}$		0.5
- 02 □	96.5	60	70	5.5	6	$50^{0}_{-0.025}$	3	$14^{0}_{-0.011}$	30	1.1
- 03 D	124.5									1.7
- 04 A										
- 07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



∗ Made by Interconnectron



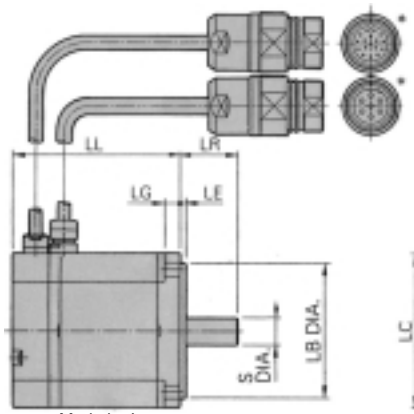
SGMAH-A3,-A5,-01

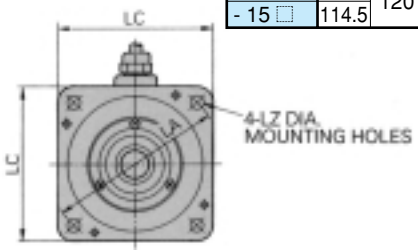


SGMAH-02,-04,-08

● Type SGMPH (230/400V)

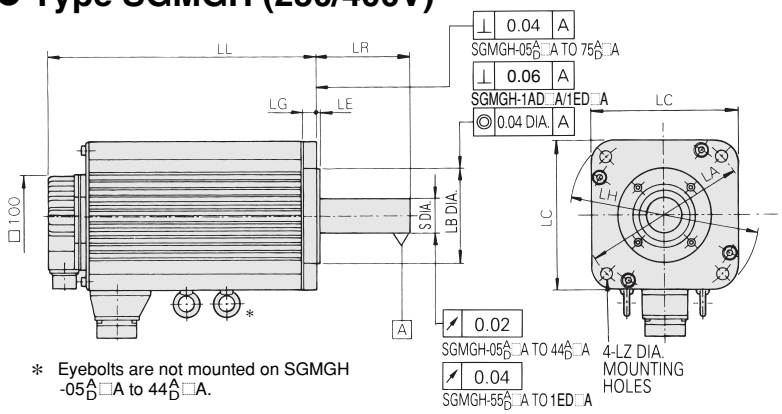
Type SGMPH	LL	LC	LA	LZ	LG	LB	LE	S	LR	Approx. Mass kg
- 01 □	62	60	70	5.5	6	$50^{0}_{-0.025}$	3	$8^{0}_{-0.009}$	25	0.7
- 02 □	67	80	90	7	8	$70^{0}_{-0.03}$	3	$14^{0}_{-0.011}$	30	1.4
- 04 □	87									2.1
- 08 □	86.5	120	145	10	10	$110^{0}_{-0.035}$	3.5	$16^{0}_{-0.011}$	40	4.2
- 15 □	114.5							$19^{0}_{-0.013}$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



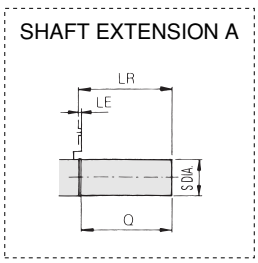


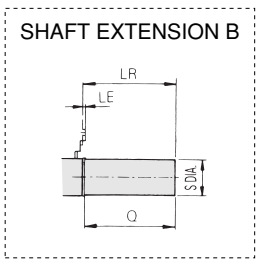
∗ Made by Interconnectron

● Type SGMGH (230/400V)



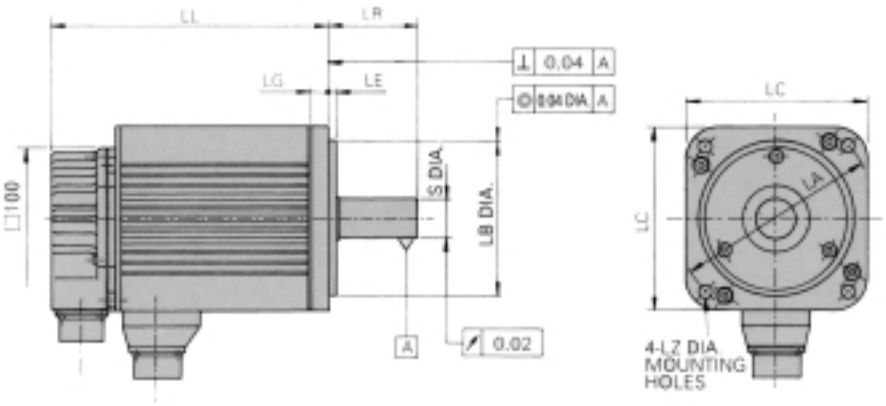
∗ Eyebolts are not mounted on SGMGH -05□A to 44□A.



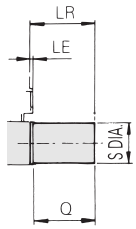


Type SGMGH	L	LL	LR	Flange							Shaft Extension			Approx. Mass kg
				LA	LB	LC	LE	LG	LH	LZ	Dwg.	S	Q	
- 05 $^{A}_{D}$ □ A	196	138	58	145	$110^{0}_{-0.035}$	130	6	12	165	9	A	$19^{0}_{-0.013}$	40	5.5
- 09 $^{A}_{D}$ □ A	219	161												7.6
- 13 $^{A}_{D}$ □ A	243	185										$22^{0}_{-0.013}$		9.6
- 20 $^{A}_{D}$ □ A	245	166	79	200	$114.3^{0}_{-0.025}$	180	3.2	18	230	13.5	B	$35^{+0.01}_{0}$	76	14
- 30 $^{A}_{D}$ □ A	271	192												18
- 44 $^{A}_{D}$ □ A	305	226												23
- 55 $^{A}_{D}$ □ A	373	260	113									$42^{0}_{-0.016}$	110	30
- 75 $^{A}_{D}$ □ A	447	334												40
- 1AD □ A	454	338	116	235	$200^{0}_{-0.045}$	220	4	18	270	13.5	A	$42^{0}_{-0.016}$	110	57.5
- 1ED □ A	573	457						20				$55^{+0.030}_{-0.011}$		86

● Type SGMSH (230/400V)

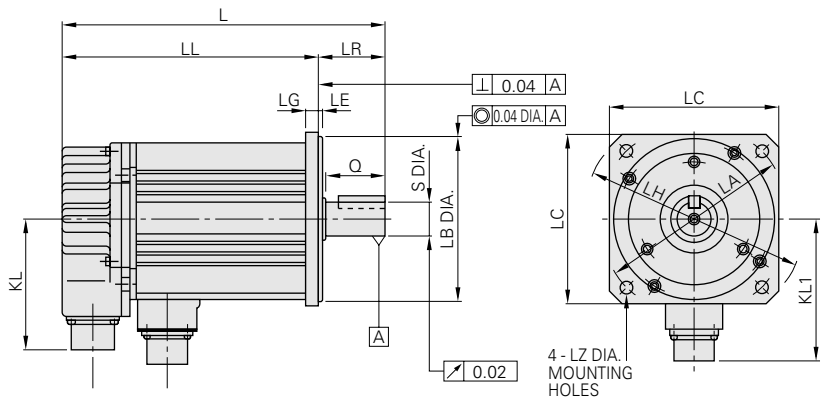


SHAFT EXTENSION

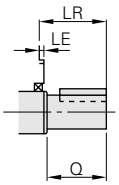


Type SGMSH	LL	LR	Flange						Shaft Extension		Approx. Mass kg
			LA	LB	LC	LE	LG	LZ	S	Q	
- 10 A/D □ A	149	45	115	$95^{0}_{-0.035}$	100	3	10	7	$24^{0}_{-0.013}$	40	4.6
- 15 A/D □ A	175										5.8
- 20 A/D □ A	198										7.0
- 30 A/D □ A	199	63	145	$110^{0}_{-0.035}$	130	6	12	9	$28^{0}_{-0.013}$	55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

● Type SGMUH (400V)



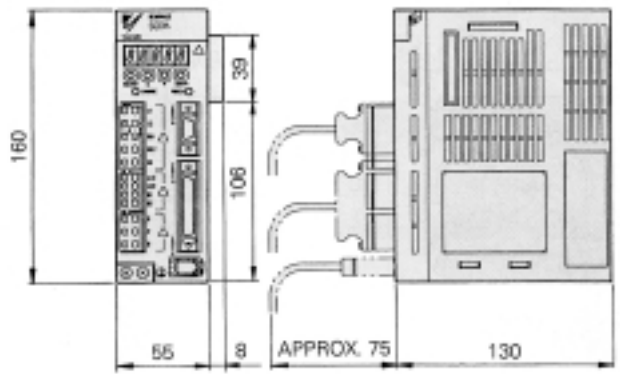
SHAFT EXTENSION



Type SGMUH	L	LL	LR	KL	Flange						Shaft Extension		Approx. Mass kg
					LA	LB	LC	LE	LG	LZ	S	Q	
- 10 D □ A	194	174	45	88	130	$110^{+0.006}_{-0.009}$	116	3.5	10	9	$24^{0}_{-0.013}$	40	4.6
- 15 D □ A	220	200											5.8
- 30 D □ A	262	227	60	88	165	$130^{+0.014}_{-0.011}$	155	3.5	12	11	$28^{0}_{-0.013}$	55	11
- 40 D □ A	299	239											14

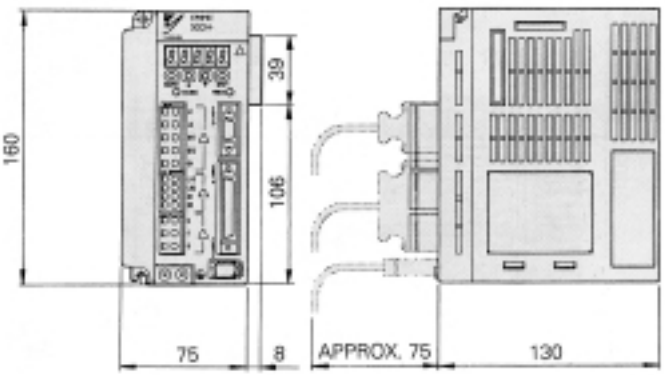
SERVOPACK Dimensions in mm

● SGDH-A3AE to -02AE
(Single-phase, 230V, 30 to 200W)



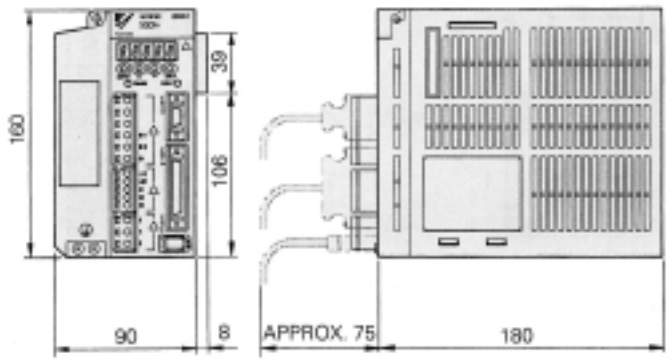
Approx. mass: 0.8kg

● SGDH-04AE
(Single-phase, 230V, 400W)



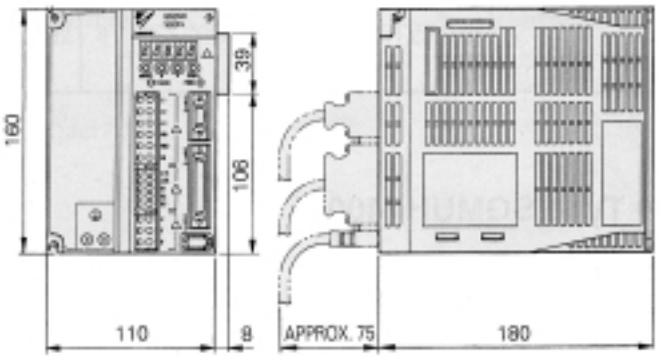
Approx. mass: 1.1kg

● SGDH-05AE to -10AE
(Three-phase, 230V, 0.5 to 1.0kW)
SGDH-08AE-S
(Single-phase, 230V, 750W)



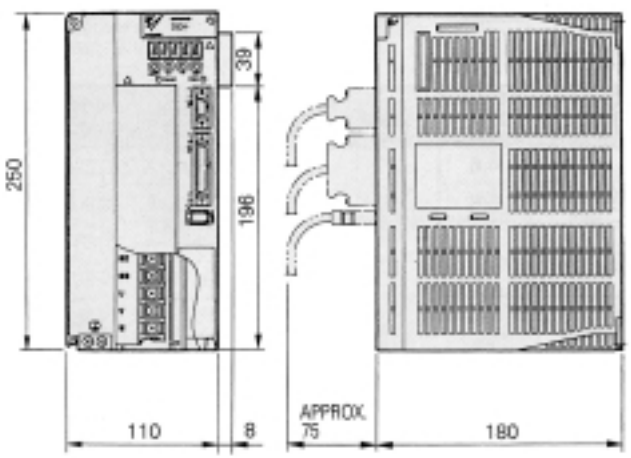
Approx. mass: 1.7kg

● SGDH-15AE
(Three-phase, 230V, 1.5kW)
SGDH-05DE to -15DE
(Three-phase, 400V, 0.5 to 1.5kW)



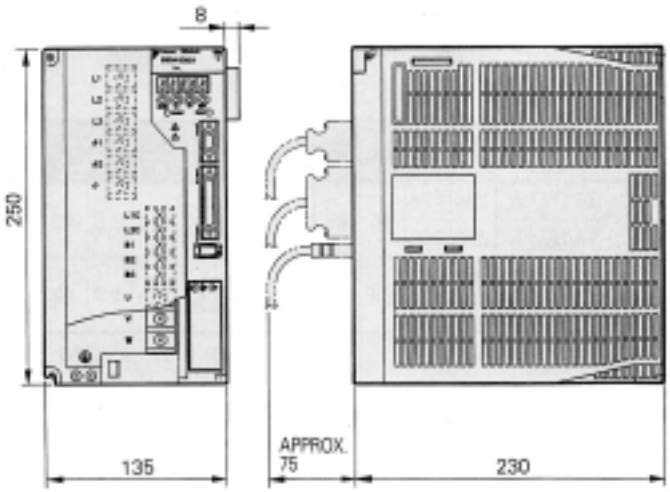
Approx. mass: 2.8kg

● SGDH-20AE/30AE (Three-phase, 230V, 2/3kW)
SGDH-15AE-S (Single-phase, 230V, 1.5kW)
SGDH-20DE/30DE (Three-phase, 400V, 2/3kW)



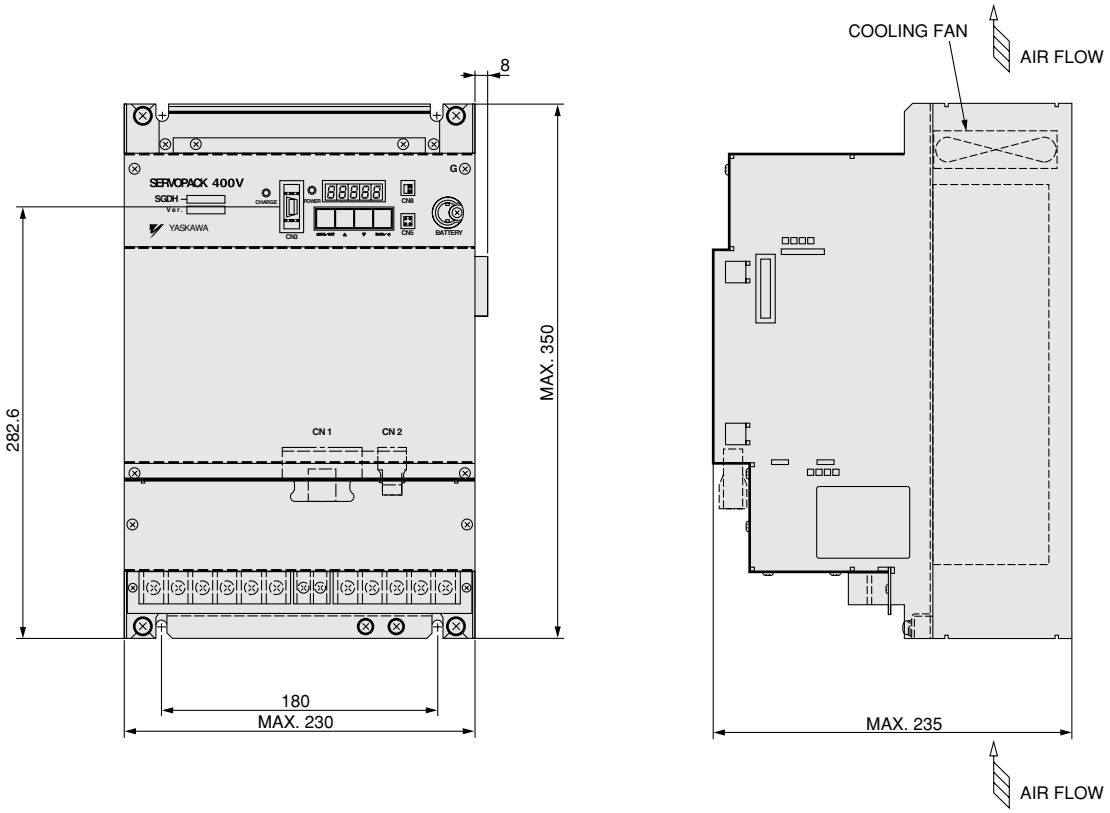
Approx. mass: 3.8kg

● SGDH-50AE (Three-phase, 230V, 5kW)
SGDH-50DE (Three-phase, 400V, 5kW)



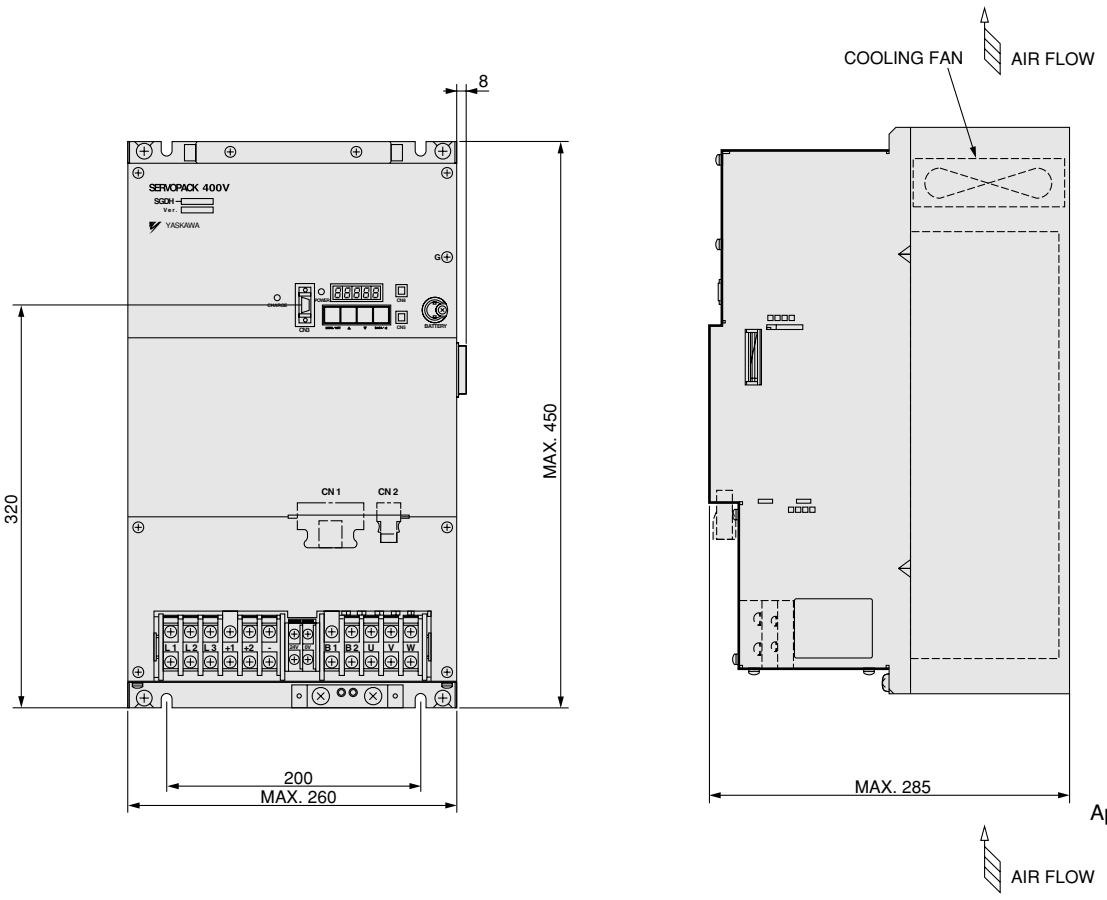
Approx. mass: 5.5kg

● SGDH-60/75AE (Three-phase, 230V, 6/7.5kW)
SGDH-60/75DE (Three-phase, 400V, 6/7.5kW)



Approx. mass: 15kg

● SGDH-1ADE/1EDE (Three-phase, 400V, 11/15kW)



Approx. mass: 22kg

Function Description

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

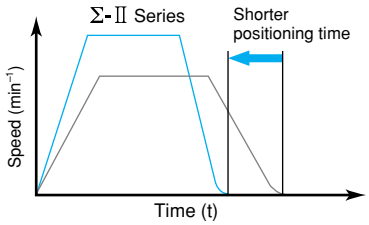
Resonance is suppressed by setting the vibration suppression filter in accordance with mechanical system resonance frequency when a high frequency resonance noise is made by the machine.

Torque reference filter

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

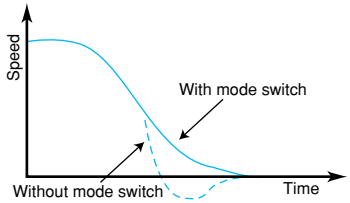
New Speed observer control

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.

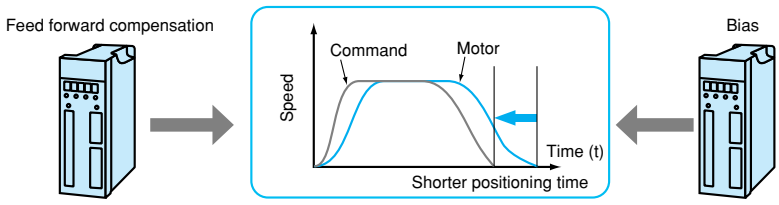


New Feed forward compensation

Feed forward compensation provides reduced positioning time.

New Bias

Can be optimized with load conditions to shorten positioning time.



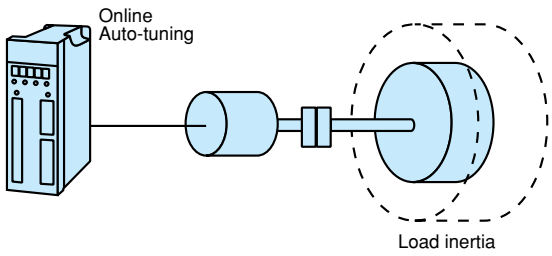
New Zero clamp operation

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

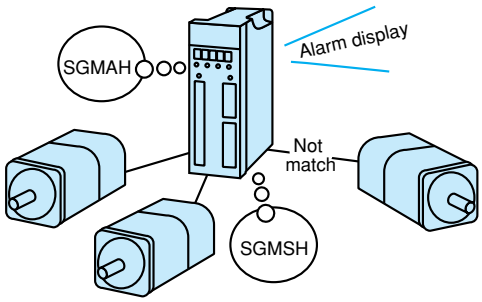
New Online auto-tuning

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

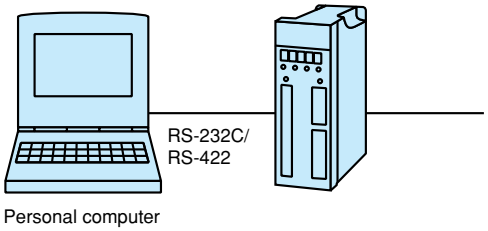
It is possible to issue a warning before a regenerative overload alarm is triggered.

New Password

Prevents unauthorized alteration of user constants.

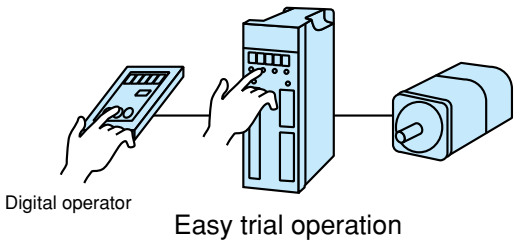
PC interface standard

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.



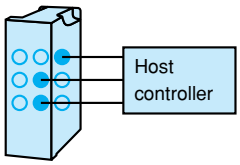
Alarm traceback

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

For Flexible Adjustment

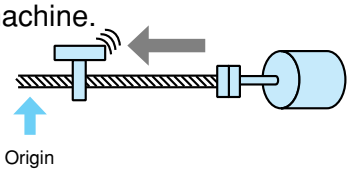
New I/O signal mapping function

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



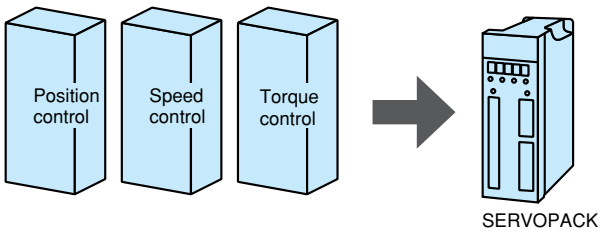
New Origin search

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



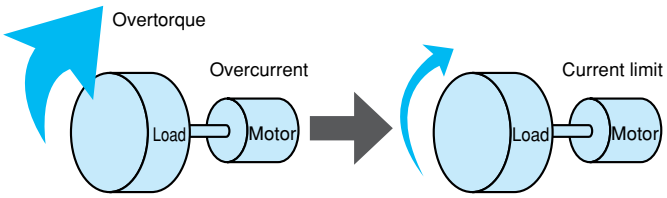
All-in-one control

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



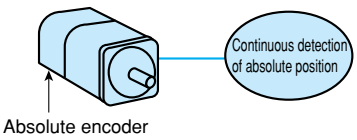
Current (torque) limit

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



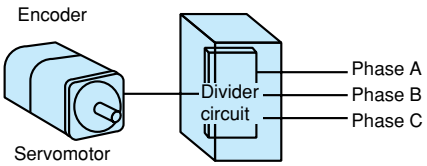
Absolute encoder support

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

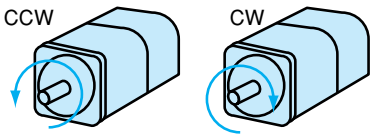
The encoder pulse can be set to any divider, and the positioning resolution for the host controller can be set freely.



Reverse mode

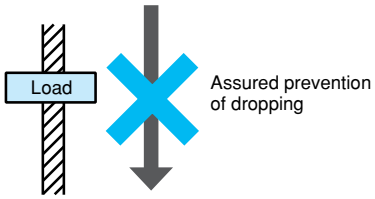
Motor normal and reverse rotation directions can be defined through a simple user constant, without having to rewire motor or encoder.

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



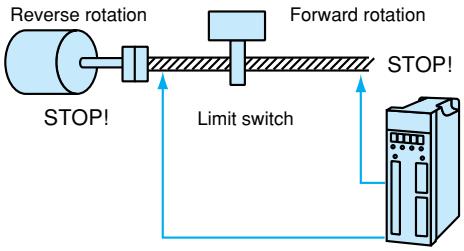
Brake interlock

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.



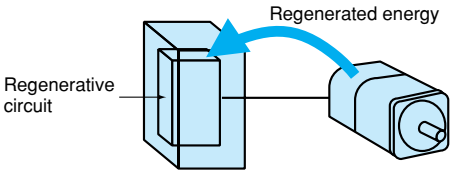
Overtravel prevention

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



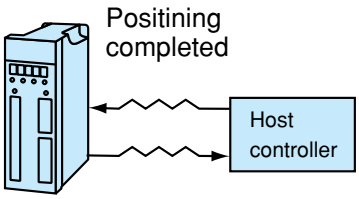
Regenerative processing

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.

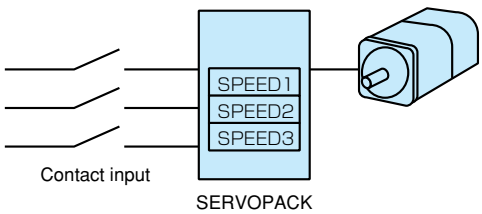


Dynamic brake

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	User Constant 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 Application 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	User Constant 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	Brake 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.

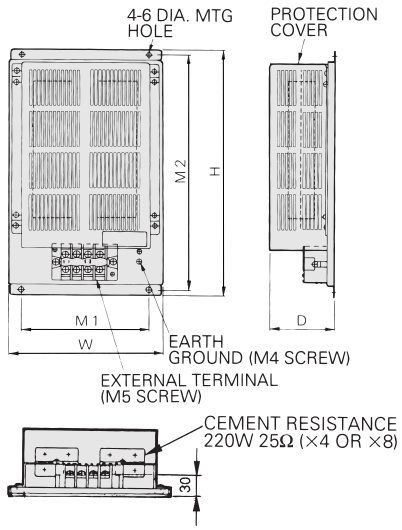
Alarm Display

Monitor Panel Display	Alarm Code Output AL01	AL02	AL03	Alarm Content
A02	×	×	×	SERVOPACK EEPROM data error (Parameter Damage)
A03				Main circuit detection error
A04				Parameter setting error
A05				Motor, SERVOPACK capacity mismatch
A10	○	×	×	Overcurrent or heatsink overheat
A30	○	○	×	Regen error (resistor cutoff, transistor short failure)
A32				Regenerative overload
A40	×	×	○	Overvoltage
A41				Insufficient voltage
A51	○	×	○	Overspeed
A71	○	○	○	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	×	×	×	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	○	×	○	Runaway
AC8				Encoder clear error, Multi-turn limit setting error
AC9				Encorder communication error
ACA				Encoder parameter error
ACb				Encoder echoback error
Ad0	○	○	×	Excessive position offset
AF1	×	○	×	Power line lost phase

○: Low Signal, ×: High Signal

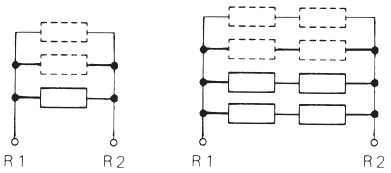
Regenerative Resistor

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



SERVOPACK Type	Regenerative Resistor Unit Type	Dimensions in mm					Approx. Mass kg
		W	H	D	M1	M2	
SGDH-60AE	JUSP-RA04	220	350	92	180	335	4
SGDH-75AE	JUSP-RA05	300	350	95	250	335	7
SGDH-$^{60}_{75}$DE	JUSP-RA18	220	350	92	180	335	4
SGDH-$^{1A}_{1E}$DE	JUSP-RA19	300	350	95	250	335	7

Terminal Number



JUSP-RA $^{04}_{05}$ JUSP-RA $^{18}_{19}$

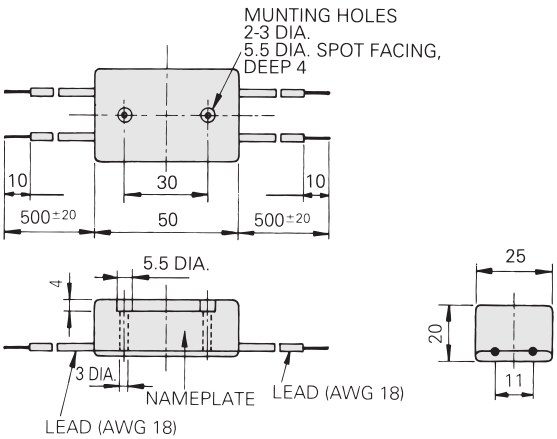
Brake Power Supply

● Specifications

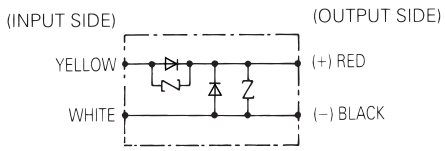
Type	Rated		Lead Connection (Color)	
	Input Power Supply	Output Power Supply	Input Side	Output Side
LPSE-2H01	200VAC (180 to 230VAC) 50/60Hz	90VDC	Yellow, White	Red (+) Black (−)

Notes:
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

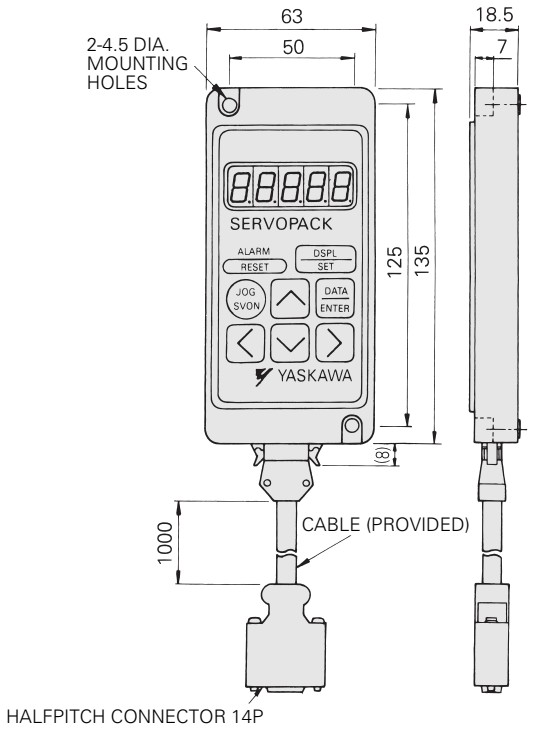


● Circuit Diagram



Digital Operator (Type JUSP-OP02A-2)

● Dimensions in mm



Approx. mass: 0.2kg

Σ-Ⅱ SERIES

IRUMA BUSINESS CENTER
480, Kamifujisawa, Iruma, Saitama 358-8555, Japan
Phone 81-42-962-5696 Fax 81-42-962-6138

YASKAWA ELECTRIC AMERICA, INC.
2121 Norman Drive South, Waukegan, IL 60085, U.S.A.
Phone 1-847-887-7000 Fax 1-847-887-7370

MOTOMAN INC. HEADQUARTERS
805 Liberty Lane West Carrollton, OH 45449, U.S.A.
Phone 1-937-847-6200 Fax 1-937-847-6277

YASKAWA ELÉTRICO DO BRASIL COMÉRCIO LTD.A.
Avenida Fagundes Filho, 620 Bairro Saude-Sao Pãulo-SP, Brazil CEP: 04304-000
Phone 55-11-5071-2552 Fax 55-11-5581-8795

YASKAWA ELECTRIC EUROPE GmbH
Am Kronberger Hang 2, 65824 Schwalbach, Germany
Phone 49-6196-569-300 Fax 49-6196-569-398

Motoman Robotics Europe AB
Box 504 S38525 Torsås, Sweden
Phone 46-486-48800 Fax 46-486-41410

Motoman Robotec GmbH
Kammerfeldstraβe1, 85391 Allershausen, Germany
Phone 49-8166-90-100 Fax 49-8166-90-103

YASKAWA ELECTRIC UK LTD.
1 Hunt Hill Orchardton Woods Cumbernauld, G68 9LF, United Kingdom
Phone 44-1236-735000 Fax 44-1236-458182

YASKAWA ELECTRIC KOREA CORPORATION
Kfpa Bldg #1201, 35-4 Youido-dong, Yeongdungpo-Ku, Seoul 150-010, Korea
Phone 82-2-784-7844 Fax 82-2-784-8495

YASKAWA ELECTRIC (SINGAPORE) PTE. LTD.
151 Lorong Chuan, #04-01, New Tech Park Singapore 556741, Singapore
Phone 65-6282-3003 Fax 65-6289-3003

YASKAWA ELECTRIC (SHANGHAI) CO., LTD.
4F No.18 Aona Road, Waigaoqiao Free Trade Zone, Pudong New Area, Shanghai 200131, China
Phone 86-21-5866-3470 Fax 86-21-5866-3869

YATEC ENGINEERING CORPORATION
4F., No.49 Wu Kong 6 Rd, Wu-Ku Industrial Park, Taipei, Taiwan
Phone 886-2-2298-3676 Fax 886-2-2298-3677

YASKAWA ELECTRIC (HK) COMPANY LIMITED
Rm. 2909-10, Hong Kong Plaza, 186-191 Connaught Road West, Hong Kong
Phone 852-2803-2385 Fax 852-2547-5773

BEIJING OFFICE
Room No. 301 Office Building of Beijing International Club, 21
Jianguomenwai Avenue, Beijing 100020, China
Phone 86-10-6532-1850 Fax 86-10-6532-1851

TAIPEI OFFICE
9F, 16, Nanking E. Rd., Sec. 3, Taipei, Taiwan
Phone 886-2-2502-5003 Fax 886-2-2505-1280

SHANGHAI YASKAWA-TONGJI M & E CO., LTD.
27 Hui He Road Shanghai China 200437
Phone 86-21-6553-6060 Fax 86-21-5588-1190

BEIJING YASKAWA BEIKE AUTOMATION ENGINEERING CO., LTD.
30 Xue Yuan Road, Haidian, Beijing P.R. China Post Code: 100083
Phone 86-10-6233-2782 Fax 86-10-6232-1536

SHOUGANG MOTOMAN ROBOT CO., LTD.
7, Yongchang-North Street, Beijing Economic Technological Investment & Development Area,
Beijing 100076, P.R. China
Phone 86-10-6788-0551 Fax 86-10-6788-2878

YASKAWA ELECTRIC CORPORATION

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