

GORE PRODUCT CATALOG



SANYO DENKI

SANYO DENKI AMERICA
CORE PRODUCT CATALOG

6th Edition Rev.A

SANMOTION

SANMOTION stepper and servo systems are continuously improved for exceptional performance and reliability, especially in multi-axis synchronous motion control applications.



SANMOTION G
AC SERVO SYSTEMS

>> Page 4



SANMOTION Model No. PB
CLOSED LOOP STEPPING SYSTEMS

>> Page 20

TECHNICAL SUPPORT

1 Product selection



2 Value added assembly

- Connector assembly
- Extension cables
- Actuator assembly

etc.

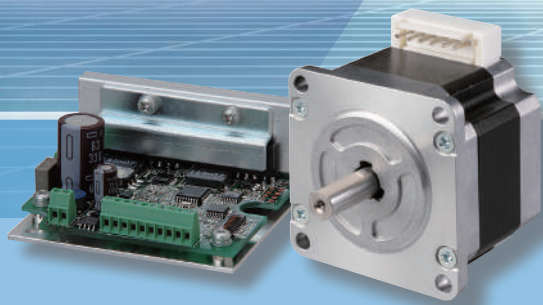


3 Software programming

- Servo parameter setting
- Controller programming

etc.





SANMOTION F2

2-PHASE STEPPING SYSTEMS

>> Page 26



SANMOTION C

MOTION CONTROLLER

>> Page 44

INFORMATION



www.sanyodenki.com/america



1.800.905.7989

ECO PRODUCTS



SANYO DENKI is working to develop products that incorporate the latest energy-saving technologies. Newly developed products are compared with commercially available and existing products, and those that satisfy the specified evaluation standards are certified as "eco-products" which reflect the fact they are environmentally-compatible products.



SANMOTION G

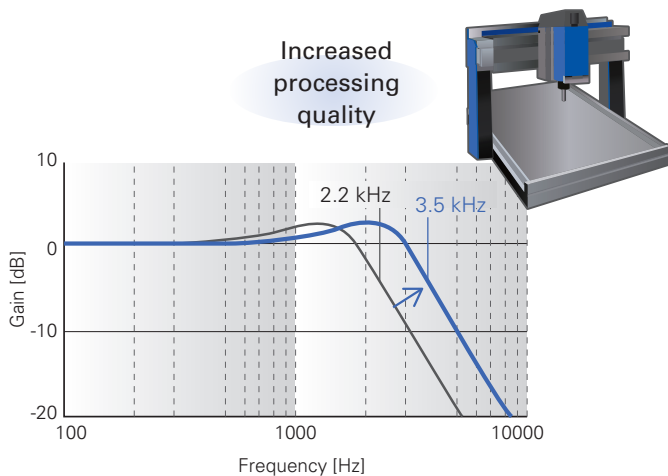
AC SERVO SYSTEMS

This is a brand new compact, lightweight, and energy-efficient AC servo system with evolved servo performance. This servo system provides high-speed and high-precision control of equipment, greatly improving the productivity and processing quality.



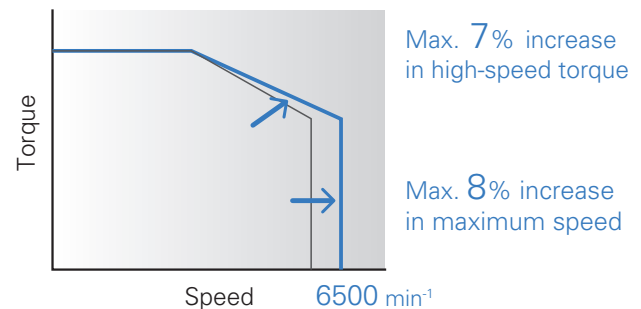
High-response control

With newly developed current control, speed frequency response has been increased to **3.5 kHz** (1.6 times higher than our conventional product). This helps improve the processing quality of machinery.



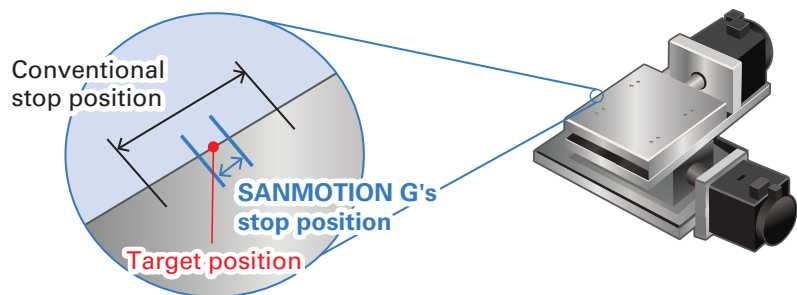
High-speed, high torque

The servo motor's maximum speed has been increased from 6000 min⁻¹ to **6500 min⁻¹** compared to our conventional product. Also, the new PWM control has increased the peak torque at high speeds by approximately **7%**, expanding the motor output range by up to **15%**. This enables the equipment to speed up without using a larger motor while achieving low cogging and low heat generation as well.



High-precision, stable positioning

This product comes with a **23-bit** encoder as standard (64 times that of our conventional model), and even an encoder with a maximum of **27-bit** high resolution can be selected as an option. The high-resolution encoder enables high-precision and stable positioning.



Conventional product
17-bit: 131,072 P/R

SANMOTION G
23-bit: 8,388,608 P/R
27-bit: 134,217,728 P/R

Compact size



Max.
22% Smaller
28% Lighter

Max.
5% Lighter



By optimizing the electromagnetic field and the brake structure, the motor length and mass have been reduced compared to our conventional product.

Motor length	Without brake :	12.2% shorter
	With brake :	11.9% shorter
Motor mass	Without brake :	10.5% lighter
	With brake :	11.4% lighter

The average value of all low- and medium-inertia servo motor models

With optimized thermal design and smaller components used, the servo amplifier has been made 5% lighter than the conventional product.

Compared to our conventional product, power consumption of servo motors and holding brakes has been reduced by up to 8.4% and 44%, respectively. The servo amplifier's power loss has been reduced by up to 26% in the main circuit thanks to the latest power device used and up to 16% in the control circuit thanks to a high-efficiency LSI (large-scale integrated) circuit.

Servo motor lineup

Input voltage	Motor size	Rated output [W]											
		30	50	100	150	200	400	600	750	1k	1.5k	1.2k	
200 Vac	40 mmsq.	30	50	100	150								
	60 mmsq.			100		200	400	600					
	80 mmsq.								750				
	86 mmsq.									1k			
	100 mmsq.											1.5k	
	130 mmsq.												1.2k

Model numbering system for servo motor

Series	Servo motor	Motor type	Power supply	Flange size	Rated output	Max. speed	Holding brake	Encoder type	Encoder resolution	Shaft spec.
GA	M	2	A	4	003	F0	X	R	K	0

Motor type	2: Medium inertia	Rated output	003: 30 W	060: 600 W	Holding brake	X: No brake C: 24 VDC brake
Power supply	A: 200 VAC		005: 50 W	075: 750 W	Encoder type	R: Battery-less absolute encoder
Flange size	4: 40 mm 9: 86 mm		010: 100 W	100: 1.0 kW	Encoder resolution	K: 23 bit
	6: 60 mm A: 100 mm		015: 150 W	120: 1.2 kW	Shaft spec.	0: Circular (without key) without oil seal
	8: 80 mm B: 130 mm	020: 200 W	150: 1.5 kW			
		040: 400 W				

Model numbering system for servo amplifier

Series	Servo amplifier	Input power supply voltage	Amplifier capacity	Option 1	Interface	Motor encoder type	Option 2
GA	D	SA	01	A	H	2	4

Input power supply voltage	SA: 200 VAC	Option 1	A: With built-in regenerative resistor & With DB resistor
Amplifier capacity	01: 10 A 03: 30 A 02: 20 A 05: 50 A	Interface	A: Analog/pulse, sinking type general-purpose output H: EtherCAT
		Motor encoder type	2: Absolute encoder for X3, Incremental encoder for X4
		Option 2	2: STO function (without delay circuit), Tandem operation function 4: STO function (with delay circuit), Tandem operation function

AC SERVO SYSTEMS

MOTOR SIZE

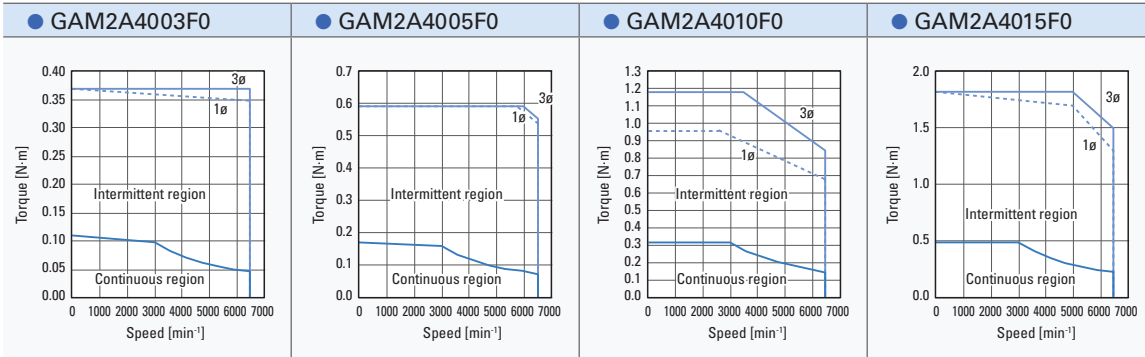
40 mmsq.



Motor specifications

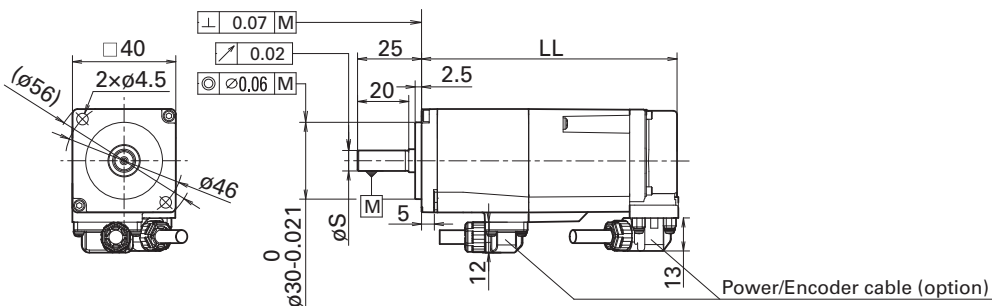
Servo motor model number		GAM2A4003F0	GAM2A4005F0	GAM2A4010F0	GAM2A4015F0	
Item	Unit					
Rated output	kW	0.03	0.05	0.10	0.15	
Rated torque	N·m	0.098	0.159	0.318	0.48	
Peak torque at stall	N·m	0.37	0.59	1.18	1.81	
Rated speed	min ⁻¹	3000	3000	3000	3000	
Maximum speed	min ⁻¹	6500	6500	6500	6500	
Rotor inertia	Without brake	×10 ⁻⁴ kg·m ² (GD ² /4)	0.0233	0.0324	0.0600	0.0876
	With brake		0.0303	0.0394	0.0670	0.0946
Encoder inertia		0.0025	0.0025	0.0025	0.0025	
Servo motor mass	Without brake	kg	0.25	0.29	0.40	0.50
	With brake		0.44	0.48	0.60	0.69
Motor length [LL]	Without brake	mm	51.5	55.5	68	80.5
	With brake		84	88	100.5	113
Motor shaft diameter [S]	mm	6 ⁰ _{-0.008}	8 ⁰ _{-0.009}	8 ⁰ _{-0.009}	8 ⁰ _{-0.009}	
Holding brake static friction torque	N·m	0.48 or greater	0.48 or greater	0.48 or greater	0.48 or greater	
Holding brake rated voltage	V	24 DC ±10%	24 DC ±10%	24 DC ±10%	24 DC ±10%	
Holding brake current consumption	A	0.26	0.26	0.26	0.26	
Compatible servo amplifier	—	GADSA01A (10A)	GADSA01A (10A)	GADSA01A (10A)	GADSA02A (20A)	

Speed-Torque characteristics



3φ: When the power supply voltage is 3-phase 1φ: When the power supply voltage is single-phase

Dimensions (Unit: mm)



MOTOR SIZE

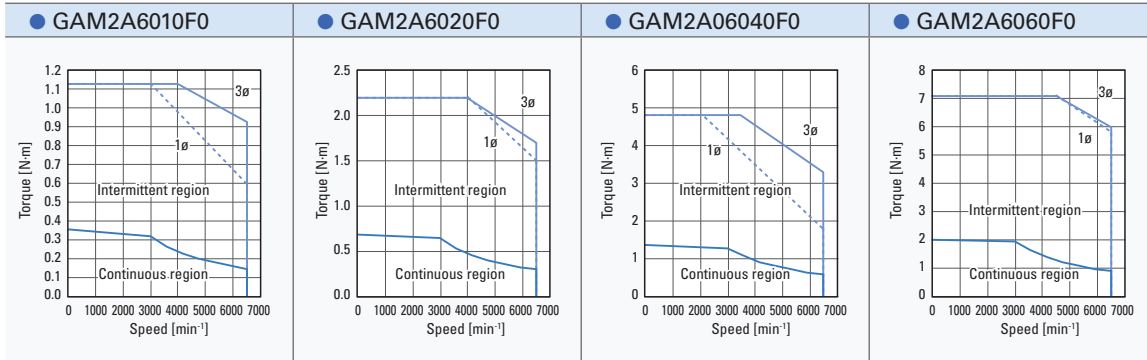
60 mmsq.



Motor specifications

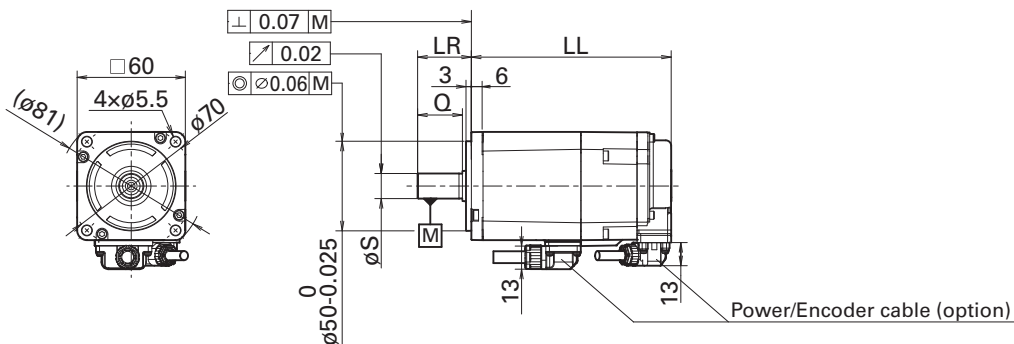
Servo motor model number		GAM2A6010F0	GAM2A6020F0	GAM2A6040F0	GAM2A6060F0
Item	Unit				
Rated output	kW	0.1	0.2	0.4	0.6
Rated torque	N·m	0.318	0.637	1.27	1.91
Peak torque at stall	N·m	1.13	2.2	4.8	7.1
Rated speed	min ⁻¹	3000	3000	3000	3000
Maximum speed	min ⁻¹	6500	6500	6500	6500
Rotor inertia	Without brake	0.143	0.247	0.466	0.685
	With brake				
Encoder inertia		0.0025	0.0025	0.0025	0.0025
Servo motor mass	Without brake	0.59	0.80	1.3	1.6
	With brake				
Motor length [LL]	Without brake	55.5	65.5	85.5	115.5
	With brake				
Motor shaft diameter [S]	mm	8 ⁰ _{-0.009}	14 ⁰ _{-0.011}	14 ⁰ _{-0.011}	14 ⁰ _{-0.011}
Holding brake static friction torque	N·m	0.36 or greater	1.37 or greater	1.37 or greater	1.91 or greater
Holding brake rated voltage	V	24 DC ±10%	24 DC ±10%	24 DC ±10%	24 DC ±10%
Holding brake current consumption	A	0.27	0.29	0.29	0.29
Compatible servo amplifier	—	GADSA01A (10A)	GADSA02A (20A)	GADSA02A (20A)	GADSA05A (50A)

Speed-Torque characteristics



3φ: When the power supply voltage is 3-phase 1φ: When the power supply voltage is single-phase

Dimensions (Unit: mm)



AC SERVO SYSTEMS

MOTOR SIZE

80 mmsq.

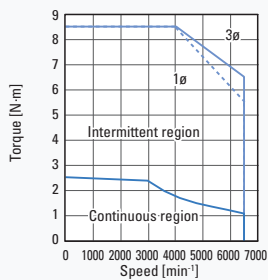


Motor specifications

Servo motor model number		GAM2A8075F0	
Item	Unit		
Rated output	kW	0.75	
Rated torque	N·m	2.39	
Peak torque at stall	N·m	8.5	
Rated speed	min ⁻¹	3000	
Maximum speed	min ⁻¹	6500	
Rotor inertia	Without brake	×10 ⁻⁴ kg·m ² (GD ² /4)	1.56
	With brake		1.76
Encoder inertia		0.0025	
Servo motor mass	Without brake	kg	2.2
	With brake		3.0
Motor length [LL]	Without brake	mm	92
	With brake		126
Motor shaft diameter [S]	mm	16 ⁰ _{-0.011}	
Holding brake static friction torque	N·m	3.18 or greater	
Holding brake rated voltage	V	24 DC ±10%	
Holding brake current consumption	A	0.33	
Compatible servo amplifier	—	GADSA05A (50A)	

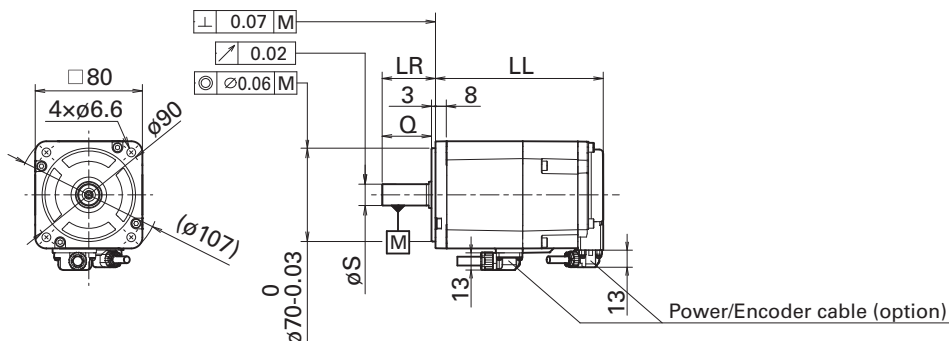
Speed-Torque characteristics

GAM2A8075F0



3φ: When the power supply voltage is 3-phase 1φ: When the power supply voltage is single-phase

Dimensions (Unit: mm)



MOTOR SIZE

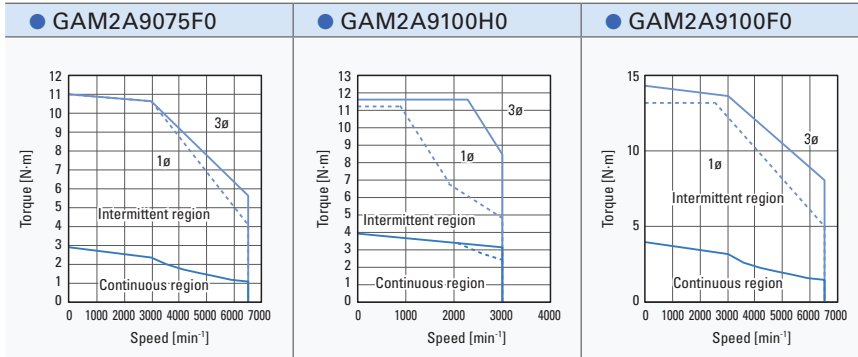
86 mmsq.



Motor specifications

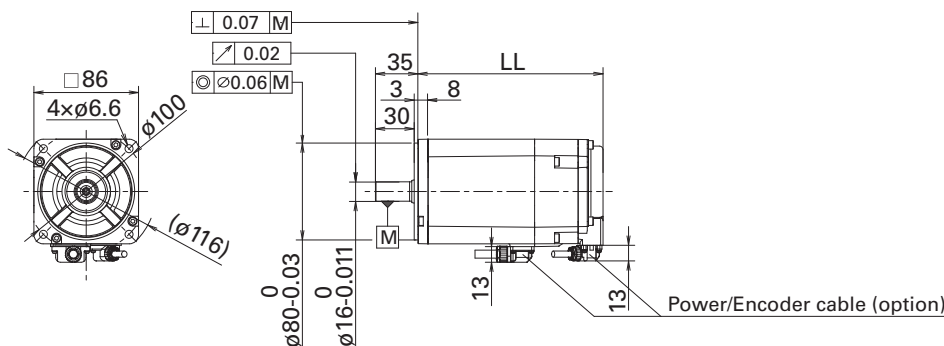
Servo motor model number		GAM2A9075F0	GAM2A9100H0	GAM2A9100F0
Item	Unit			
Rated output	kW	0.75	1.0	1.0
Rated torque	N·m	2.38	3.18	3.18
Peak torque at stall	N·m	11.0	11.6	14.3
Rated speed	min ⁻¹	3000	3000	3000
Maximum speed	min ⁻¹	6500	3000	6500
Rotor inertia	Without brake	1.57	2.45	2.45
	With brake	1.87	2.75	2.75
Encoder inertia		0.0025	0.0025	0.0025
Servo motor mass	Without brake	2.7	3.4	3.4
	With brake	3.5	4.2	4.2
Motor length [LL]	Without brake	104.5	127	127
	With brake	130	153	153
Holding brake static friction torque	N·m	3.92 or greater	3.92 or greater	3.92 or greater
Holding brake rated voltage	V	24 DC ±10%	24 DC ±10%	24 DC ±10%
Holding brake current consumption	A	0.34	0.34	0.34
Compatible servo amplifier	—	GADSA05A (50A)	GADSA03A (30A)	GADSA05A (50A)

Speed-Torque characteristics



3φ: When the power supply voltage is 3-phase 1φ: When the power supply voltage is single-phase

Dimensions (Unit: mm)



AC SERVO SYSTEMS

MOTOR SIZE

100 mmsq.

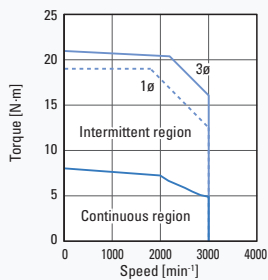


Motor specifications

Servo motor model number		GAM2AA150H0
Item	Unit	
Rated output	kW	1.5
Rated torque	N·m	7.2
Peak torque at stall	N·m	21.0
Rated speed	min ⁻¹	2000
Maximum speed	min ⁻¹	3000
Rotor inertia	×10 ⁻⁴ kg·m ² (GD ² /4)	6.10
Encoder inertia		0.0025
Servo motor mass	kg	7.5
Motor length [LL]	mm	161
Compatible servo amplifier	—	GADSA05A (50A)

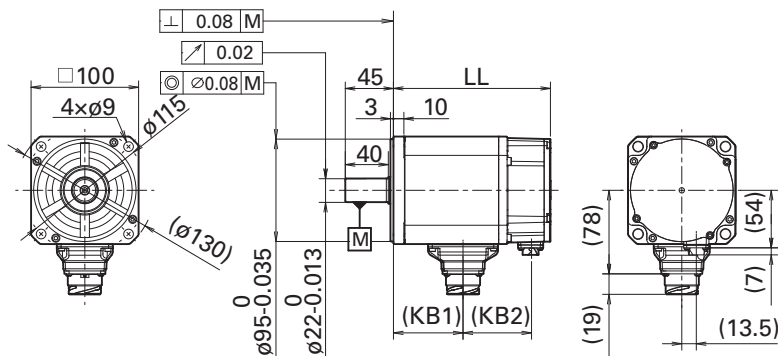
Speed-Torque characteristics

GAM2AA150H0



3φ: When the power supply voltage is 3-phase 1φ: When the power supply voltage is single-phase

Dimensions (Unit: mm)



MOTOR SIZE

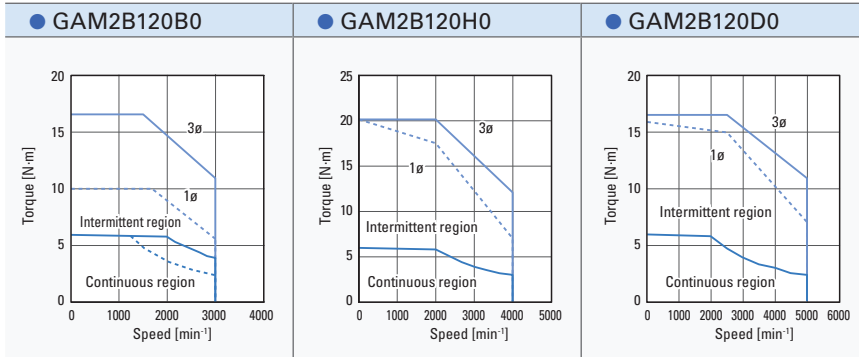
130 mmsq.



Motor specifications

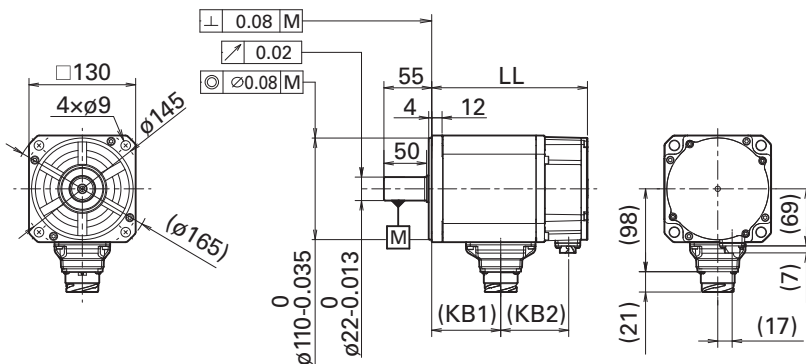
Servo motor model number		GAM2AB120B0	GAM2AB120H0	GAM2AB120D0
Item	Unit			
Rated output	kW	1.2	1.2	1.2
Rated torque	N·m	5.8	5.8	5.8
Peak torque at stall	N·m	16.5	20.0	16.5
Rated speed	min ⁻¹	2000	2000	2000
Maximum speed	min ⁻¹	3000	4000	5000
Rotor inertia	Without brake	7.78	7.78	7.78
	With brake	8.86	8.86	8.86
Encoder inertia		0.0025	0.0025	0.0025
Servo motor mass	Without brake	5.5	5.5	5.5
	With brake	7.1	7.1	7.1
Motor connector position [KB1]	mm	56.5	56.5	56.5
Encoder connector position [KB2]	Without brake	35	35	35
	With brake	59	59	59
Motor length [LL]	Without brake	110.5	110.5	110.5
	With brake	135.5	135.5	135.5
Holding brake static friction torque	N·m	13 or greater	13 or greater	13 or greater
Holding brake rated voltage	V	24 DC ±10%	24 DC ±10%	24 DC ±10%
Holding brake current consumption	A	0.39	0.39	0.39
Compatible servo amplifier	—	GADSA03A (30A)	GADSA05A (50A)	GADSA05A (50A)

Speed-Torque characteristics



3φ: When the power supply voltage is 3-phase 1φ: When the power supply voltage is single-phase

Dimensions (Unit: mm)

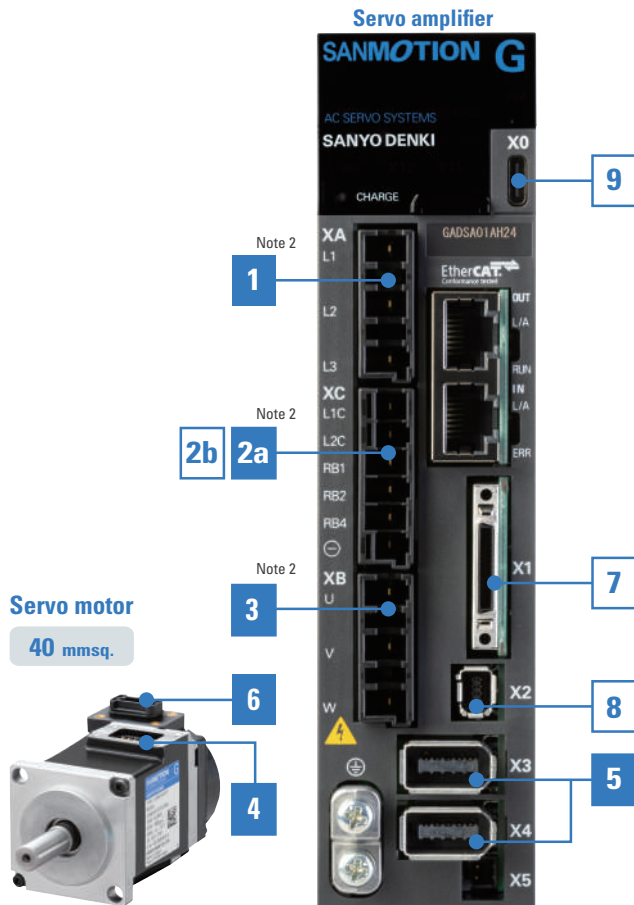


AC SERVO SYSTEMS

EtherCAT interface amplifier – 40 mmsq. motor



System configuration



Note 1) All items highlighted in blue must be included to build a complete system.
 Note 2) Item 10 is required for the connectors for items 1, 2a, 2b, and 3.

No.	Code	Description	Model
1	Main power supply connection		
	XA	Connector	AL-01111794-01
2a	Control circuit power supply / Built-in regenerative resistor		
	XC	Connector with short-circuit jumper	AL-AP000439-01
2b	Control circuit power supply / External regenerative resistor		
	XC	Connector without short-circuit jumper	AL-01111793-01
3	Motor power connection (amplifier side)		
	XB	Connector Extension cable, 10 ft	AL-01111795-01 MPEXTG1810FT
4	Motor power connection (motor side)		
	—	Cable (flying leads), 1 m Cable for extension cable, 1 m	GSSF0100S GSSF0100SE01
5	Encoder connection (amplifier side)		
	X3 X4	Connector Extension cable, 10 ft	AL-00530312-01 EEXTKABS2410FT
6	Encoder connection (encoder side)		
	—	Cable (flying leads), 1 m Cable for extension cable, 1 m	GESF0100S GESF0100SE01
7	Input / Output signals		
	X1	Connector	AL-01131482-01
8	Safety Torque Off (STO) function		
	X2	STO wiring connector	AL-00718252-01
9	Connect to SANMOTION Motor setup software		
	X0	USB cable (type A to C), 1 m USB cable (type C to C), 1 m	AL-Y0020355-01 AL-Y0021049-01
10	Connector tool for XA/XB/XC		
	OT	Connector tool for XA/XB/XC	AL-00961844-01
—	Power connector set A		
	XA	Main power supply connection	AL-01135740-01
	XB	Motor power connection	
	XC	Connector with short-circuit jumper	
OT	Connector tool for XA/XB/XC		

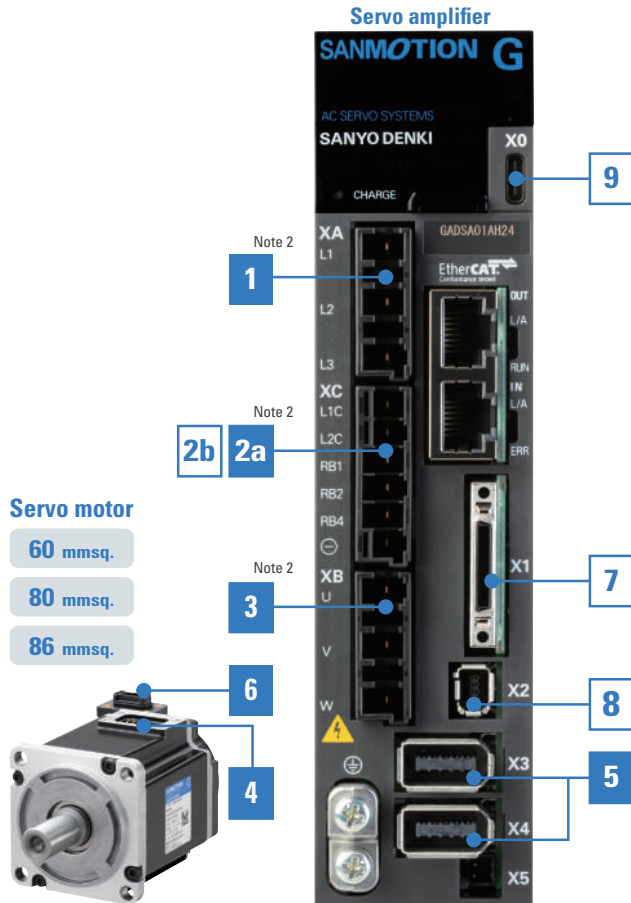
Amplifier specifications

Servo amplifier model number		GADSA01AH24	GADSA02AH24
Capacity		10 A	20 A
Main circuit power supply	Input voltage range	3-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz) Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)	
	Input current (3-/single-phase)	1.2/2.0 Arms	2.2/3.9 Arms
Control circuit power supply	Input voltage range	Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)	
	Input current	0.5 Arms	0.5 Arms
Operating environment		Ambient temperature: 0 to +60°C, Operating altitude: 2000 m max.	
Interface		EtherCAT	
Performance	Velocity control range	1:5000 (Internal velocity command)	
	Frequency characteristics	3500 Hz (With 400 W or lower motors in high-speed command mode)	
	Allowable range of load inertia	10 times the motor rotor inertia	
Safety standard		ISO13849-1 (Cat3, PL=e), IEC61508 (SIL 3)	
Built-in functions		Protection functions (alarm), digital operator, dynamic brake circuit, regenerative circuit, monitoring functions	
Size	Dimensions	W40×H160×D130 mm	W40×H160×D130 mm
	Mass:	0.80 kg	0.80 kg

EtherCAT interface amplifier – 60, 80, 86 mmsq. motor



System configuration



Note 1) All items highlighted in blue must be included to build a complete system.
 Note 2) Item 10 is required for the connectors for items 1, 2a, 2b, and 3.

No.	Code	Description	Model
1	XA	Connector	AL-01111794-01
	Main power supply connection		
2a	XC	Connector with short-circuit jumper	AL-AP000439-01
	Control circuit power supply / Built-in regenerative resistor		
2b	XC	Connector without short-circuit jumper	AL-01111793-01
	Control circuit power supply / External regenerative resistor		
3	XB	Connector	AL-01111795-01
	Motor power connection (amplifier side)		
4	—	Cable (flying leads), 1 m	GMSF0100S
	Motor power connection (motor side)		
5	X3	Connector	AL-00530312-01
	Encoder connection (amplifier side)		
6	—	Cable (flying leads), 1m	GESF0100S
	Encoder connection (encoder side)		
7	X1	Connector	AL-01131482-01
	Input / Output signals		
8	X2	STO wiring connector	AL-00718252-01
	Safety Torque Off (STO) function		
9	X0	USB cable (type A to C), 1 m	AL-Y0020355-01
	Connect to SANMOTION Motor setup software		
10	OT	Connector tool for XA/XB/XC	AL-00961844-01
	Connector tool for XA/XB/XC		
—	XA	Main power supply connection	AL-01135740-01
	XB	Motor power connection	
	XC	Connector with short-circuit jumper	
	OT	Connector tool for XA/XB/XC	

Amplifier specifications

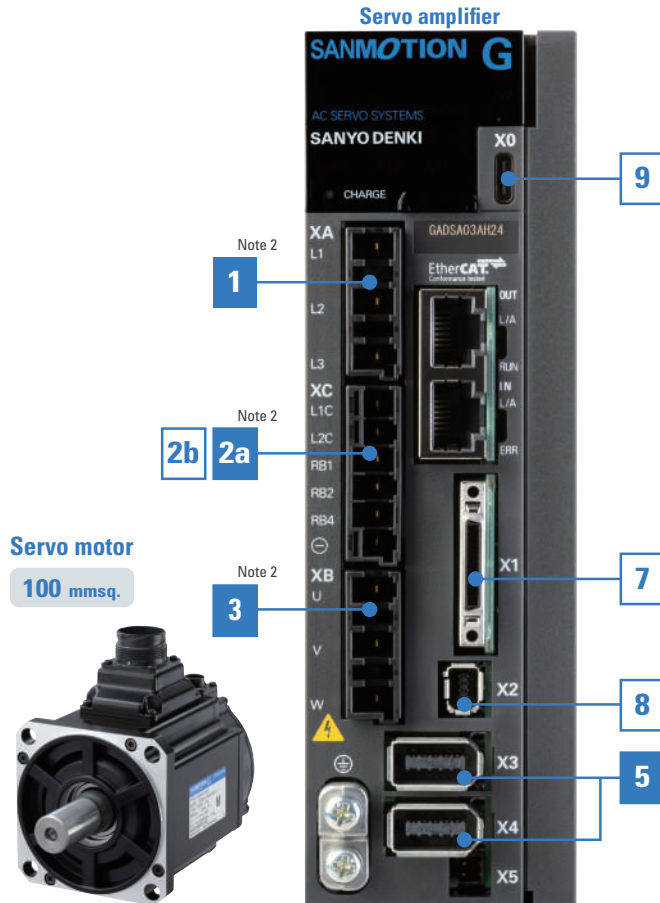
Servo amplifier model number		GADSA01AH24	GADSA02AH24	GADSA03AH24	GADSA05AH24
Capacity		10 A	20 A	30 A	50 A
Main circuit power supply	Input voltage range	3-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz) Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)			
	Input current (3-/single-phase)	1.2/2.0 Arms	2.2/3.9 Arms	6.9/7.0 Arms	11.0/11.6 Arms
Control circuit power supply	Input voltage range	Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)			
	Input current	0.5 Arms	0.5 Arms	0.5 Arms	0.3 Arms
Operating environment		Ambient temperature: 0 to +60°C, Operating altitude: 2000 m max.			
Interface		EtherCAT			
Performance	Velocity control range	1:5000 (Internal velocity command)			
	Frequency characteristics	3500 Hz (With 400 W or lower motors in high-speed command mode)			
	Allowable range of load inertia	10 times the motor rotor inertia			
Safety standard		ISO13849-1 (Cat3, PL=e), IEC61508 (SIL 3)			
Built-in functions		Protection functions (alarm), digital operator, dynamic brake circuit, regenerative circuit, monitoring functions			
Size	Dimensions	W40×H160×D130 mm	W40×H160×D130 mm	W50×H160×D130 mm	W85×H160×D130 mm
	Mass	0.80 kg	0.80 kg	0.90 kg	1.50 kg

AC SERVO SYSTEMS

EtherCAT interface amplifier – 100 mmsq. motor



System configuration



No.	Code	Description	Model
1	Main power supply connection		
	XA	Connector	AL-01111794-01
Control circuit power supply / Built-in regenerative resistor			
2a	XC	Connector with short-circuit jumper	AL-AP000439-01
Control circuit power supply / External regenerative resistor			
2b	XC	Connector without short-circuit jumper	AL-01111793-01
Motor power connection (amplifier side)			
3	XB	Connector	AL-01111795-01
		Extension cable, 10 ft	MEXTG14JN10FT
Encoder connection (amplifier side)			
5	X3	Connector	AL-00530312-01
	X4	Extension cable, 10 ft	EEXTKABS2410FT
Input / Output signals			
7	X1	Connector	AL-01131482-01
Safety Torque Off (STO) function			
8	X2	STO wiring connector	AL-00718252-01
Connect to SANMOTION Motor setup software			
9	X0	USB cable (type A to C), 1 m	AL-Y0020355-01
		USB cable (type C to C), 1 m	AL-Y0021049-01
Connector tool for XA/XB/XC			
10	OT	Connector tool for XA/XB/XC	AL-00961844-01
Power connector set A			
—	XA	Main power supply connection	AL-01135740-01
	XB	Motor power connection	
	XC	Connector with short-circuit jumper	
	OT	Connector tool for XA/XB/XC	

Note 1) All items highlighted in blue must be included to build a complete system.

Note 2) Item 10 is required for the connectors for items 1, 2a, 2b, and 3.

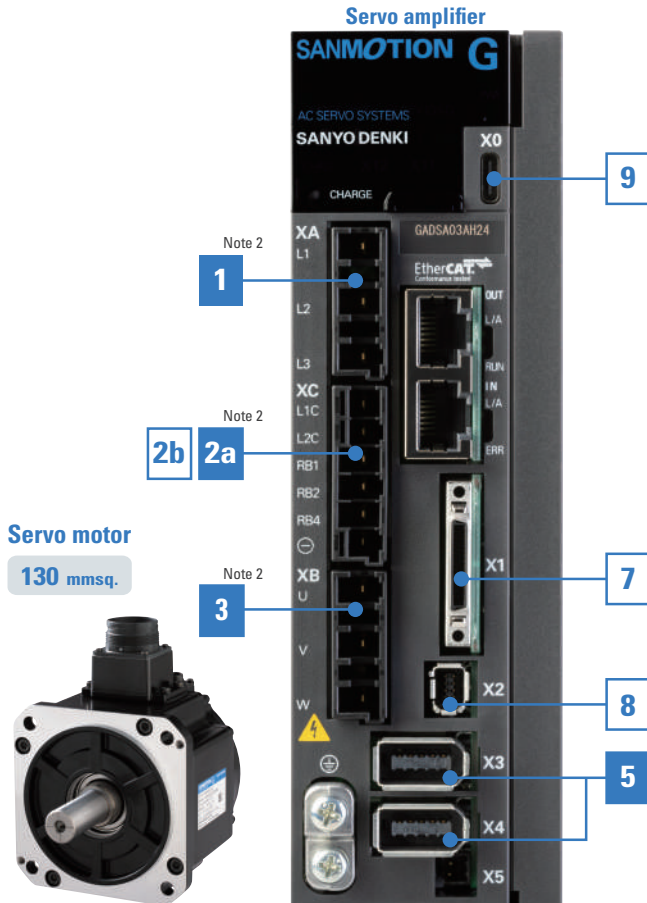
Amplifier specifications

Servo amplifier model number		GADSA05AH24
Capacity		50 A
Main circuit power supply	Input voltage range	3-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz) Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)
	Input current (3-/single-phase)	11.0/11.6 Arms
Control circuit power supply	Input voltage range	Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)
	Input current	0.3 Arms
Operating environment		Ambient temperature: 0 to +60°C, Operating altitude: 2000 m max.
Interface		EtherCAT
Performance	Velocity control range	1:5000 (Internal velocity command)
	Frequency characteristics	3500 Hz (With 400 W or lower motors in high-speed command mode)
	Allowable range of load inertia	10 times the motor rotor inertia
Safety standard		ISO13849-1 (Cat3, PL=e), IEC61508 (SIL 3)
Built-in functions		Protection functions (alarm), digital operator, dynamic brake circuit, regenerative circuit, monitoring functions
Size	Dimensions	W85×H160×D130 mm
	Mass	1.50 kg

EtherCAT interface amplifier – 130 mmsq. motor



System configuration



No.	Code	Description	Model
1	Main power supply connection		
	XA	Connector	AL-01111794-01
Control circuit power supply / Built-in regenerative resistor			
2a	XC	Connector with short-circuit jumper	AL-AP000439-01
Control circuit power supply / External regenerative resistor			
2b	XC	Connector without short-circuit jumper	AL-01111793-01
Motor power connection (amplifier side)			
3	XB	Connector	AL-01111795-01
		Extension cable, 10 ft	MEXTBG14JN10FT
Encoder connection (amplifier side)			
5	X3	Connector	AL-00530312-01
	X4	Extension cable, 10 ft	EEXTKABS2410FT
Input / Output signals			
7	X1	Connector	AL-01131482-01
Safety Torque Off (STO) function			
8	X2	STO wiring connector	AL-00718252-01
Connect to SANMOTION Motor setup software			
9	X0	USB cable (type A to C), 1 m	AL-Y0020355-01
		USB cable (type C to C), 1 m	AL-Y0021049-01
Connector tool for XA/XB/XC			
10	OT	Connector tool for XA/XB/XC	AL-00961844-01
Power connector set A			
—	XA	Main power supply connection	AL-01135740-01
	XB	Motor power connection	
	XC	Connector with short-circuit jumper	
	OT	Connector tool for XA/XB/XC	

Note 1) All items highlighted in blue must be included to build a complete system.
 Note 2) Item 10 is required for the connectors for items 1, 2a, 2b, and 3.

Amplifier specifications

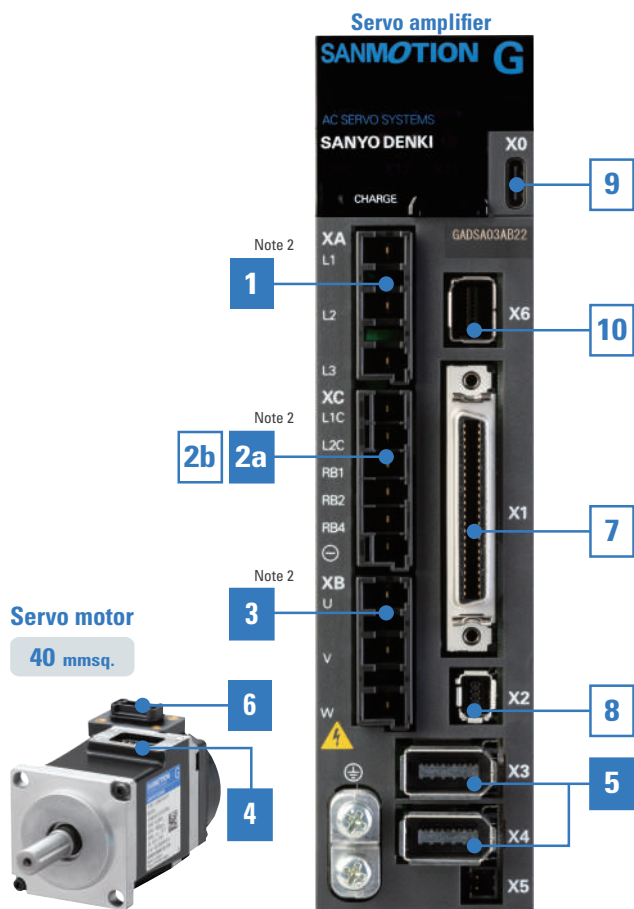
Servo amplifier model number		GADSA03AH24	GADSA05AH24
Capacity		30 A	50 A
Main circuit power supply	Input voltage range	3-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz) Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)	
	Input current (3-/single-phase)	6.9/7.0 Arms	11.0/11.6 Arms
Control circuit power supply	Input voltage range	Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)	
	Input current	0.5 Arms	0.3 Arms
Operating environment		Ambient temperature: 0 to +60°C, Operating altitude: 2000 m max.	
Interface		EtherCAT	
Performance	Velocity control range	1:5000 (Internal velocity command)	
	Frequency characteristics	3500 Hz (With 400 W or lower motors in high-speed command mode)	
	Allowable range of load inertia	10 times the motor rotor inertia	
Safety standard		ISO13849-1 (Cat3, PL=e), IEC61508 (SIL 3)	
Built-in functions		Protection functions (alarm), digital operator, dynamic brake circuit, regenerative circuit, monitoring functions	
Size	Dimensions	W50×H160×D130 mm	W85×H160×D130 mm
	Mass	0.90 kg	1.50 kg

AC SERVO SYSTEMS

Analog interface amplifier – 40 mmsq. motor



System configuration



Note 1) All items highlighted in blue must be included to build a complete system.
 Note 2) Item 11 is required for the connectors for items 1, 2a, 2b, and 3.

No.	Code	Description	Model
1	Main power supply connection		
	XA	Connector	AL-01111794-01
2a	Control circuit power supply / Built-in regenerative resistor		
	XC	Connector with short-circuit jumper	AL-AP000439-01
2b	Control circuit power supply / External regenerative resistor		
	XC	Connector without short-circuit jumper	AL-01111793-01
3	Motor power connection (amplifier side)		
	XB	Connector	AL-01111795-01
		Extension cable, 10 ft	MPEXTG1810FT
4	Motor power connection (motor side)		
	—	Cable (flying leads), 1 m	GSSF0100S
		Cable for extension cable, 1 m	GSSF0100SE01
5	Encoder connection (amplifier side)		
	X3	Connector	AL-00530312-01
	X4	Extension cable, 10 ft	EEXTKABS2410FT
6	Encoder connection (encoder side)		
	—	Cable (flying leads), 1 m	GESF0100S
		Cable for extension cable, 1 m	GESF0100SE01
7	Input / Output signals		
	X1	Connector	AL-00385594
8	Safety Torque Off (STO) function		
	X2	STO wiring connector	AL-00718252-01
9	Connect to SANMOTION Motor setup software		
	X0	USB cable (type A to C), 1 m	AL-Y0020355-01
		USB cable (type C to C), 1 m	AL-Y0021049-01
10	Tandem operation		
	X6	Tandem cable, 0.2 m	AL-01134653-01
11	Connector tool for XA/XB/XC		
	OT	Connector tool for XA/XB/XC	AL-00961844-01
—	Power connector set A		
	XA	Main power supply connection	AL-01135740-01
	XB	Motor power connection	
	XC	Connector with short-circuit jumper	
	OT	Connector tool for XA/XB/XC	

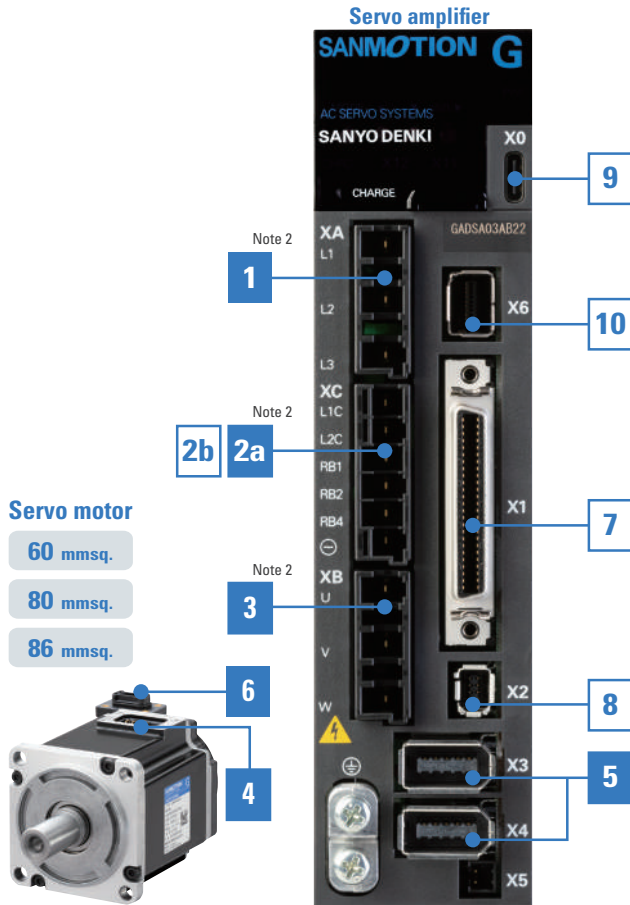
Amplifier specifications

Servo amplifier model number		GADSA01AA22	GADSA02AA22
Capacity		10 A	20 A
Main circuit power supply	Input voltage range	3-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz) Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)	
	Input current (3-/single-phase)	1.2/2.0 Arms	2.2/3.9 Arms
Control circuit power supply	Input voltage range	Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)	
	Input current	0.5 Arms	0.5 Arms
Operating environment		Ambient temperature: 0 to +60°C, Operating altitude: 2000 m max.	
Interface		Analog / Pulse	
Performance	Velocity control range	1:5000 (Internal velocity command)	
	Frequency characteristics	3500 Hz (With 400 W or lower motors in high-speed command mode)	
	Allowable range of load inertia	10 times the motor rotor inertia	
Safety standard		ISO13849-1 (Cat3, PL=e), IEC61508 (SIL 3)	
Built-in functions		Protection functions (alarm), digital operator, dynamic brake circuit, regenerative circuit, monitoring functions	
Size	Dimensions	W40×H160×D130 mm	W40×H160×D130 mm
	Mass:	0.80 kg	0.80 kg

Analog interface amplifier – 60, 80, 86 mmsq. motor



System configuration



Note 1) All items highlighted in blue must be included to build a complete system.
 Note 2) Item 11 is required for the connectors for items 1, 2a, 2b, and 3.

No.	Code	Description	Model
1	Main power supply connection		
	XA	Connector	AL-01111794-01
2a	Control circuit power supply / Built-in regenerative resistor		
	XC	Connector with short-circuit jumper	AL-AP000439-01
2b	Control circuit power supply / External regenerative resistor		
	XC	Connector without short-circuit jumper	AL-01111793-01
3	Motor power connection (amplifier side)		
	XB	Connector	AL-01111795-01
		Extension cable, 10 ft	MPEXTG1810FT
4	Motor power connection (motor side)		
	—	Cable (flying leads), 1 m	GMSF0100S
		Cable for extension cable, 1 m	GMSF0100SE01
5	Encoder connection (amplifier side)		
	X3	Connector	AL-00530312-01
	X4	Extension cable, 10 ft	EEXTKABS2410FT
6	Encoder connection (encoder side)		
	—	Cable (flying leads), 1 m	GESF0100S
		Cable for extension cable, 1 m	GESF0100SE01
7	Input / Output signals		
	X1	Connector	AL-00385594
8	Safety Torque Off (STO) function		
	X2	STO wiring connector	AL-00718252-01
9	Connect to SANMOTION Motor setup software		
	X0	USB cable (type A to C), 1 m	AL-Y0020355-01
		USB cable (type C to C), 1 m	AL-Y0021049-01
10	Tandem operation		
	X6	Tandem cable, 0.2 m	AL-01134653-01
11	Connector tool for XA/XB/XC		
	OT	Connector tool for XA/XB/XC	AL-00961844-01
—	Power connector set A		
	XA	Main power supply connection	AL-01135740-01
	XB	Motor power connection	
	XC	Connector with short-circuit jumper	
	OT	Connector tool for XA/XB/XC	

Amplifier specifications

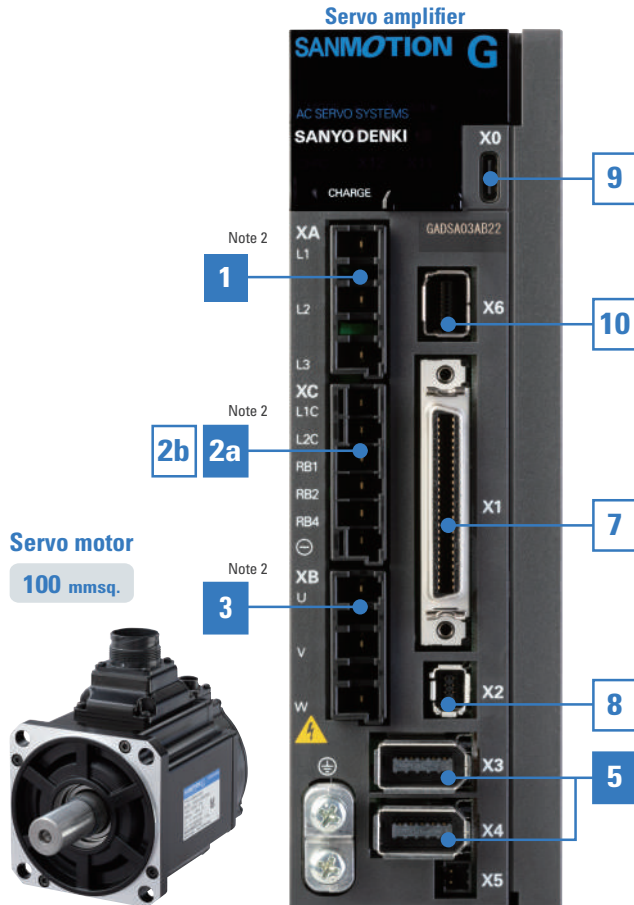
Servo amplifier model number		GADSA01AA22	GADSA02AA22	GADSA03AA22	GADSA05AA22
Capacity		10 A	20 A	30 A	50 A
Main circuit power supply	Input voltage range	3-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz) Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)			
	Input current (3-/single-phase)	1.2/2.0 Arms	2.2/3.9 Arms	6.9/7.0 Arms	11.0/11.6 Arms
Control circuit power supply	Input voltage range	Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)			
	Input current	0.5 Arms	0.5 Arms	0.5 Arms	0.3 Arms
Operating environment		Ambient temperature: 0 to +60°C, Operating altitude: 2000 m max.			
Interface		Analog / Pulse			
Performance	Velocity control range	1:5000 (Internal velocity command)			
	Frequency characteristics	3500 Hz (With 400 W or lower motors in high-speed command mode)			
	Allowable range of load inertia	10 times the motor rotor inertia			
Safety standard		ISO13849-1 (Cat3, PL=e), IEC61508 (SIL 3)			
Built-in functions		Protection functions (alarm), digital operator, dynamic brake circuit, regenerative circuit, monitoring functions			
Size	Dimensions	W40×H160×D130 mm	W40×H160×D130 mm	W50×H160×D130 mm	W85×H160×D130 mm
	Mass	0.80 kg	0.80 kg	0.90 kg	1.50 kg

AC SERVO SYSTEMS

Analog interface amplifier – 100 mmsq motor



System configuration



No.	Code	Description	Model
1	Main power supply connection		
	XA	Connector	AL-01111794-01
2a	Control circuit power supply / Built-in regenerative resistor		
	XC	Connector with short-circuit jumper	AL-AP000439-01
2b	Control circuit power supply / External regenerative resistor		
	XC	Connector without short-circuit jumper	AL-01111793-01
3	Motor power connection (amplifier side)		
	XB	Connector	AL-01111795-01
5	Encoder connection (amplifier side)		
	X3	Connector	AL-00530312-01
7	Input / Output signals		
	X1	Connector	AL-00385594
8	Safety Torque Off (STO) function		
	X2	STO wiring connector	AL-00718252-01
9	Connect to SANMOTION Motor setup software		
	X0	USB cable (type A to C), 1 m	AL-Y0020355-01
10	Tandem operation		
	X6	Tandem cable, 0.2 m	AL-01134653-01
11	Connector tool for XA/XB/XC		
	OT	Connector tool for XA/XB/XC	AL-00961844-01
—	Power connector set A		
	XA	Main power supply connection	AL-01135740-01
	XB	Motor power connection	
	XC	Connector with short-circuit jumper	
OT	Connector tool for XA/XB/XC		

Note 1) All items highlighted in blue must be included to build a complete system.

Note 2) Item 11 is required for the connectors for items 1, 2a, 2b, and 3.

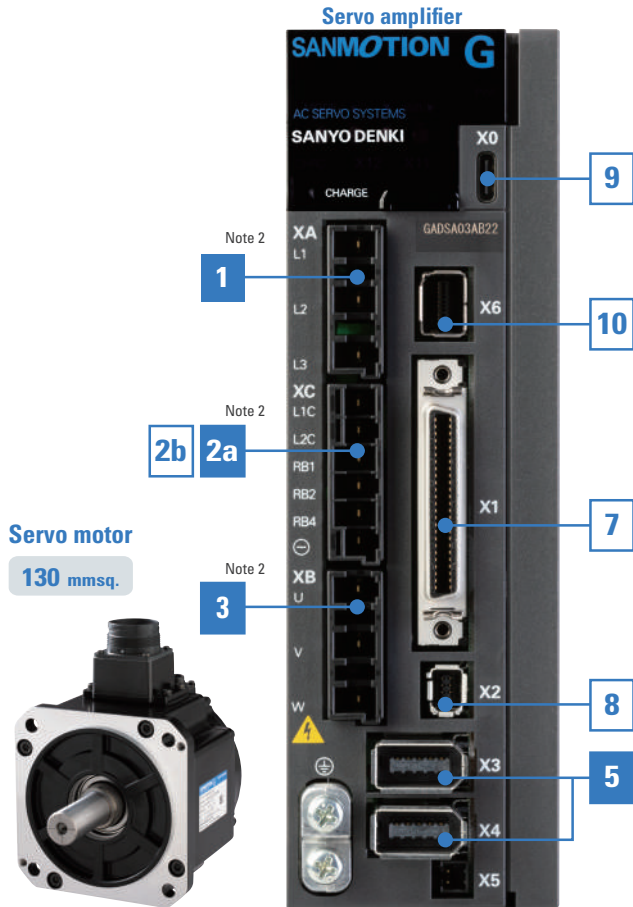
Amplifier specifications

Servo amplifier model number		GADSA05AA22
Capacity		50 A
Main circuit power supply	Input voltage range	3-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz) Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)
	Input current (3-/single-phase)	11.0/11.6 Arms
Control circuit power supply	Input voltage range	Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)
	Input current	0.3 Arms
Operating environment		Ambient temperature: 0 to +60°C, Operating altitude: 2000 m max.
Interface		Analog / Pulse
Performance	Velocity control range	1:5000 (Internal velocity command)
	Frequency characteristics	3500 Hz (With 400 W or lower motors in high-speed command mode)
	Allowable range of load inertia	10 times the motor rotor inertia
Safety standard		ISO13849-1 (Cat3, PL=e), IEC61508 (SIL 3)
Built-in functions		Protection functions (alarm), digital operator, dynamic brake circuit, regenerative circuit, monitoring functions
Size	Dimensions	W85×H160×D130 mm
	Mass	1.50 kg

Analog interface amplifier – 130 mmsq motor



■ System configuration



No.	Code	Description	Model
1	XA	Main power supply connection	
		Connector	AL-01111794-01
2a	XC	Control circuit power supply / Built-in regenerative resistor	
		Connector with short-circuit jumper	AL-AP000439-01
2b	XC	Control circuit power supply / External regenerative resistor	
		Connector without short-circuit jumper	AL-01111793-01
3	Motor power connection (amplifier side)		
	XB	Connector	AL-01111795-01
		Extension cable, 10 ft	MEXTBG14JN10FT
5	Encoder connection (amplifier side)		
	X3	Connector	AL-00530312-01
		Extension cable, 10 ft	EEXTKABS2410FT
7	Input / Output signals		
	X1	Connector	AL-00385594
8	Safety Torque Off (STO) function		
	X2	STO wiring connector	AL-00718252-01
9	Connect to SANMOTION Motor setup software		
	X0	USB cable (type A to C), 1 m	AL-Y0020355-01
		USB cable (type C to C), 1 m	AL-Y0021049-01
10	Tandem operation		
	X6	Tandem cable, 0.2 m	AL-01134653-01
11	Connector tool for XA/XB/XC		
	OT	Connector tool for XA/XB/XC	AL-00961844-01
—	Power connector set A		
	XA	Main power supply connection	AL-01135740-01
	XB	Motor power connection	
	XC	Connector with short-circuit jumper	
	OT	Connector tool for XA/XB/XC	

Note 1) All items highlighted in blue must be included to build a complete system.
 Note 2) Item 11 is required for the connectors for items 1, 2a, 2b, and 3.

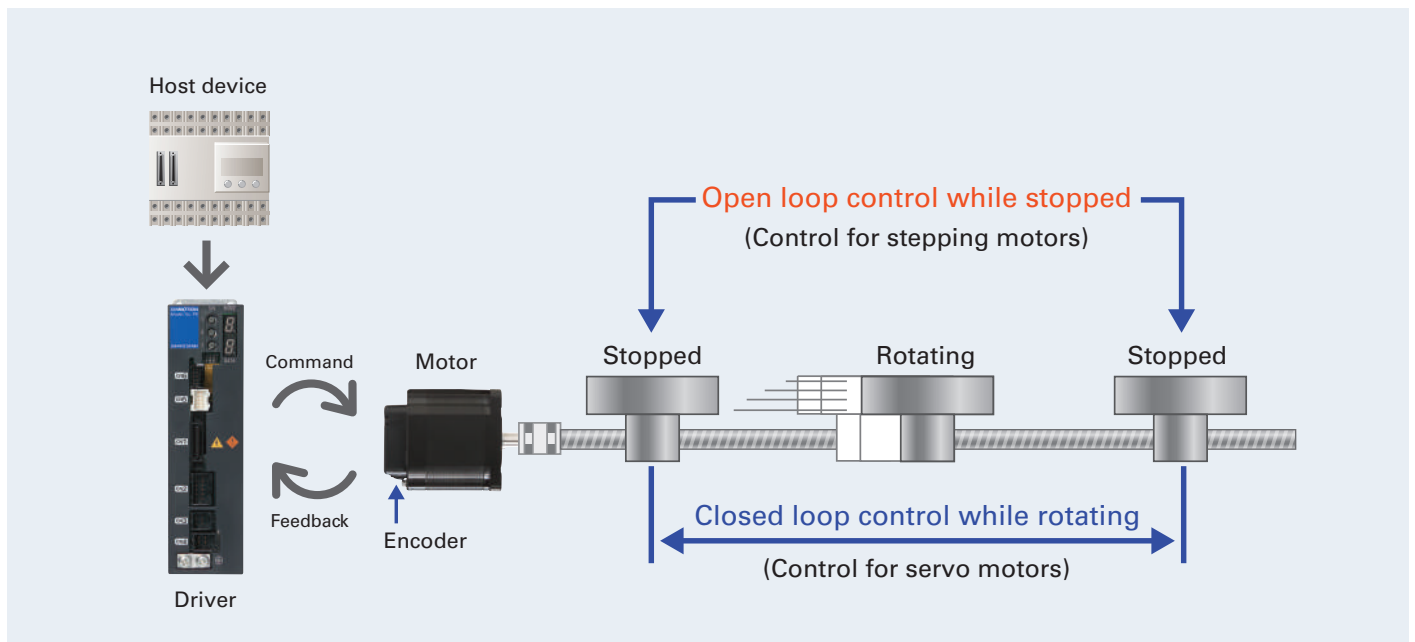
■ Amplifier specifications

Servo amplifier model number		GADSA03AA22	GADSA05AA22
Capacity		30 A	50 A
Main circuit power supply	Input voltage range	3-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz) Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)	
	Input current (3-/single-phase)	6.9/7.0 Arms	11.0/11.6 Arms
Control circuit power supply	Input voltage range	Single-phase: 200 to 240 VAC (+10, -15%), 50/60 Hz (±3 Hz)	
	Input current	0.5 Arms	0.3 Arms
Operating environment		Ambient temperature: 0 to +60°C, Operating altitude: 2000 m max.	
Interface		Analog / Pulse	
Performance	Velocity control range	1:5000 (Internal velocity command)	
	Frequency characteristics	3500 Hz (With 400 W or lower motors in high-speed command mode)	
	Allowable range of load inertia	10 times the motor rotor inertia	
Safety standard		ISO13849-1 (Cat3, PL=e), IEC61508 (SIL 3)	
Built-in functions		Protection functions (alarm), digital operator, dynamic brake circuit, regenerative circuit, monitoring functions	
Size	Dimensions	W50×H160×D130 mm	W85×H160×D130 mm
	Mass	0.90 kg	1.50 kg

SANMOTION Model No.PB

CLOSED LOOP STEPPING SYSTEMS

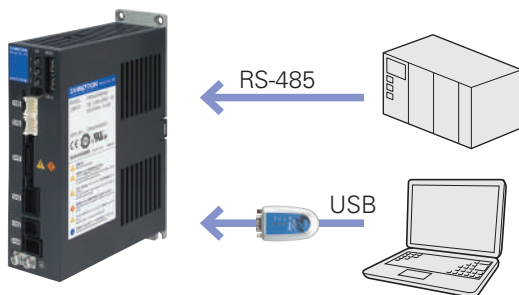
The closed loop stepping system SANMOTION Model No.PB combines the ease of use of stepping motors and the reliability of servo motors. Closed loop control based on feedback is made possible by the position-detecting encoder mounted on the stepping motor.



Interface

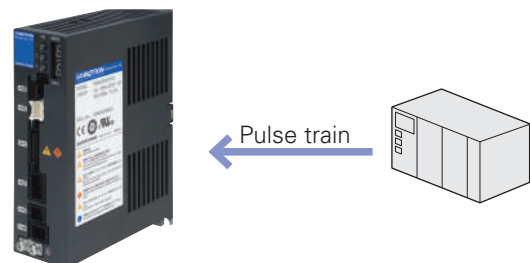
Network control with serial communication

Uses serial data transmission for speed, acceleration/ deceleration speed, and displacement control



Control with pulse generator

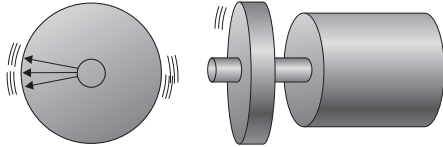
Operates in response to the pulse input command from the host device



Stable stop

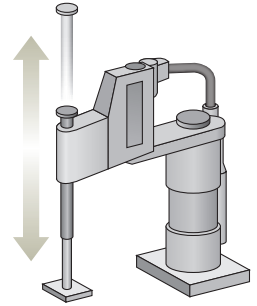
This system stops in a stable manner without the hunting (micro vibration) seen with servo motors thanks to holding torque, a feature of stepping motors.

Hunting



Push operation

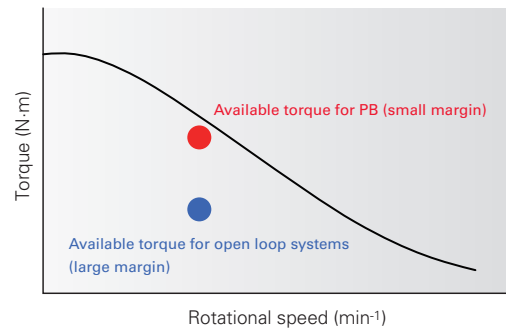
Replacement of pneumatic systems is easy as pushing loads can be controlled. It is also suitable for mounters and testers, where driving in the z-axis is required.



Reduces positioning time

A high torque can be obtained in a low speed area, which makes this system suitable for applications where moving a short distance with short quick steps is required.

(Short stroke, high hit rate) Motor torque can be utilized to the maximum when accelerating and decelerating, shortening positioning time.



■ Closed loop stepping motor lineup

Input voltage	Motor size	Max. stall torque [N·m]			
100 Vac 200 Vac	40 mmsq.	0.35			
	60 mmsq.		1.3	1.9	
	86 mmsq.				3.1 6.1

■ Model numbering system for closed loop stepping motor

Series	Motor size	Motor length	Power input	Option code	Encoder type	Specification identification		Standard identification
PBM	60	3	F	X	K	30	—	M

Power supply	F: AC input
Option code	X: Standard model (without option)
Encoder type	K: 16000 (4000x4) P/R with Z-phase output

Specification identification	30: Standard
Standard identification	M: UL and CE compliant

■ Model numbering system for closed loop stepping driver

Series	Power input	Motor excitation current	Interface type	Encoder type	Specification identification
PB4	A	002	R	3	00

Power input	A: AC
Motor excitation current	002: 2 A
Interface type	R: RS-485 + Parallel I/O P: Pulse train

Encoder type	3: Optical incremental, 16000 P/R
Specification identification	00: 100 VAC input 01: 200 VAC input

CLOSED LOOP STEPPING SYSTEMS

MOTOR SIZE

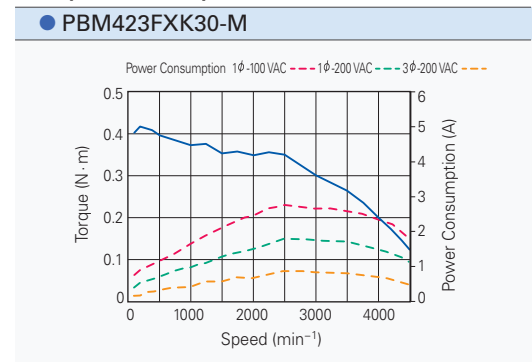
42 mmsq.



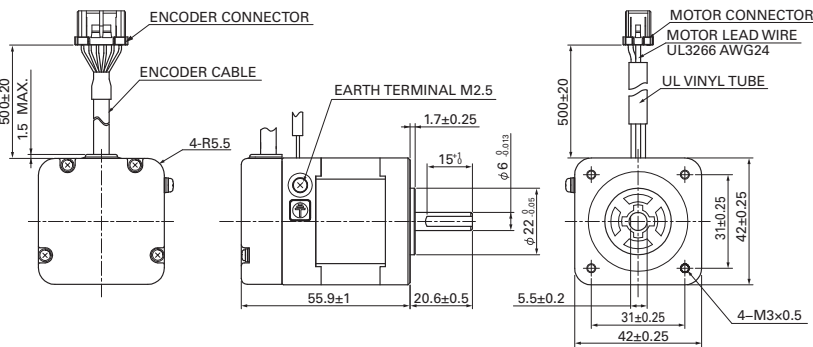
Motor specifications

Motor model number		PBM423FXK30-M
Item	Unit	
Maximum stall torque	N·m	0.35
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.056
Allowable thrust load	N	9.8
Allowable radial load	N	47
Motor mass	kg	0.35
Motor length	mm	55.9
Compatible driver	Type P	PB4A002P30□
	Type R	PB4A002R30□

Speed-Torque characteristics



Dimensions (Unit: mm)



MOTOR SIZE

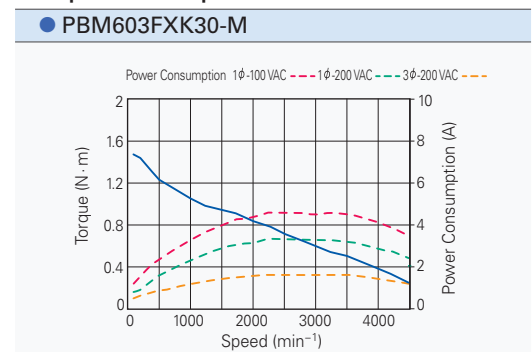
60 mmsq.



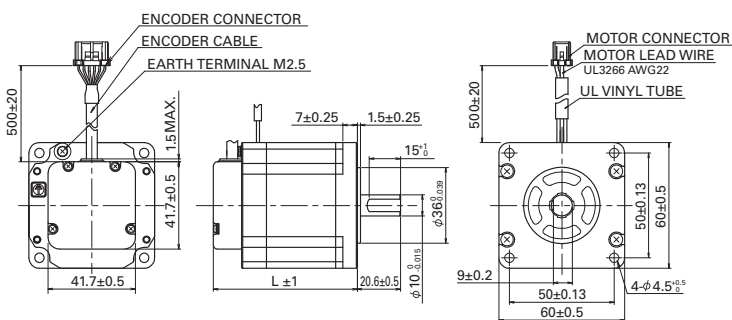
Motor specifications

Motor model number		PBM603FXK30-M	PBM604FXK30-M
Item	Unit		
Maximum stall torque	N·m	1.3	1.9
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.4	0.84
Allowable thrust load	N	14.7	14.7
Allowable radial load	N	190	190
Motor mass	kg	0.85	1.42
Motor length	mm	70.3	102.3
Compatible driver	Type P	PB4A002P30□	PB4A002P30□
	Type R	PB4A002R30□	PB4A002R30□

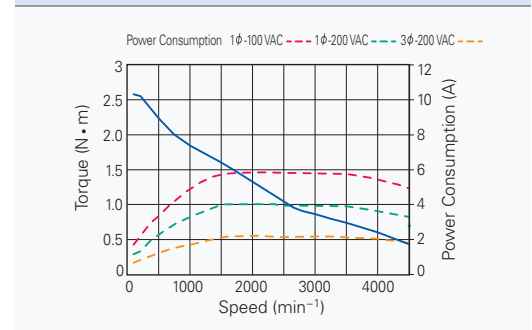
Speed-Torque characteristics



Dimensions (Unit: mm)



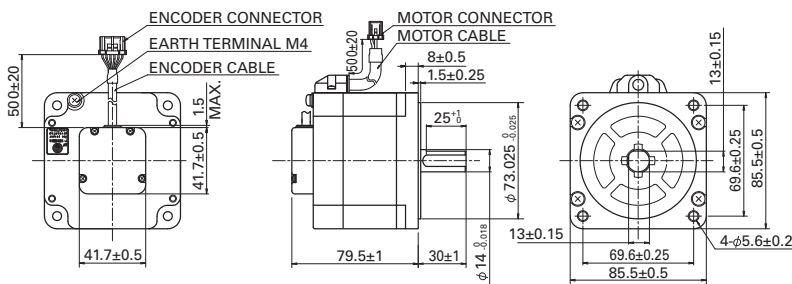
Speed-Torque characteristics



Motor specifications

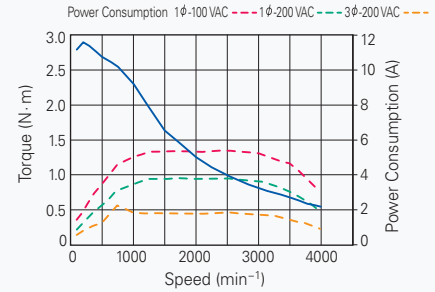
Motor model number		PBM861FXK30-M	PBM862FXK30-M
Item	Unit		
Maximum stall torque	N·m	3.1	6.1
Rotor inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	1.48	3
Allowable thrust load	N	60	60
Allowable radial load	N	200	200
Motor mass	kg	1.9	3.1
Motor length	mm	79.5	109.1
Compatible driver	Type P	PB4A002P30□	PB4A002P30□
	Type R	PB4A002R30□	PB4A002R30□

Dimensions (Unit: mm)

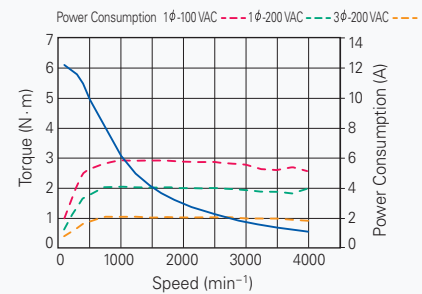


Speed-Torque characteristics

● PBM861FXK30-M



● PBM862FXK30-M

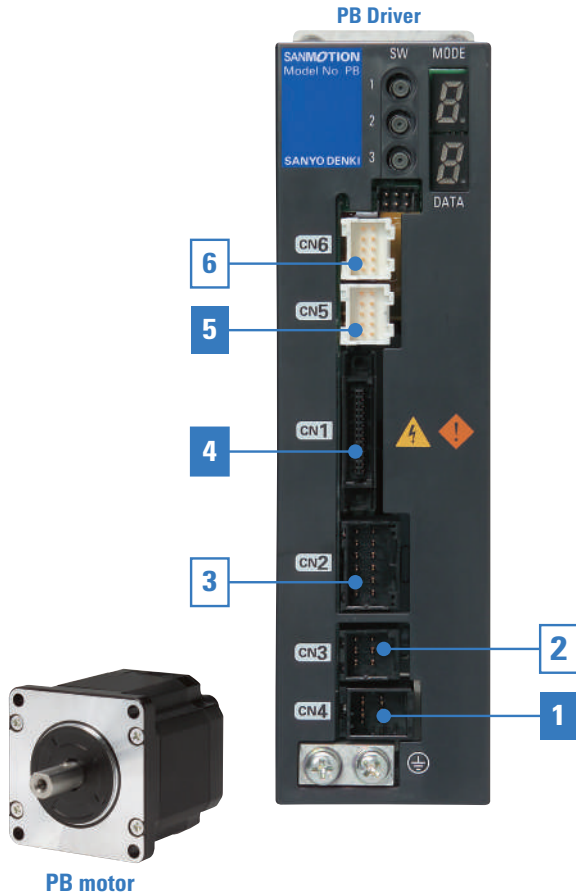


CLOSED LOOP STEPPING SYSTEMS

Closed loop stepping driver – Indexer model: type R



System configuration



No.	Port	Description	Model
1		Power supply connection	
	CN4	One side flying lead cable, 1 m	PBC8P0010A
2		Motor power connection	
	CN3	Extension cable, 3 m	PBC7M0030A
3		Encoder connection	
	CN2	Extension cable, 3 m	PBC7E0030A
4		Input/Output signals	
	CN1	26 pin, unshielded cable, 1 m	PBC5S0010A
5		Communication converter unit (connect to SPBALL-01 software)	
	CN5	USB/RS-485 conversion	PBFM-U6
6		Communication between drivers	
	CN6	Both side connector cable, 0.3 m	PBC6C0003A

Note) All items highlighted in blue must be included to build a complete system.

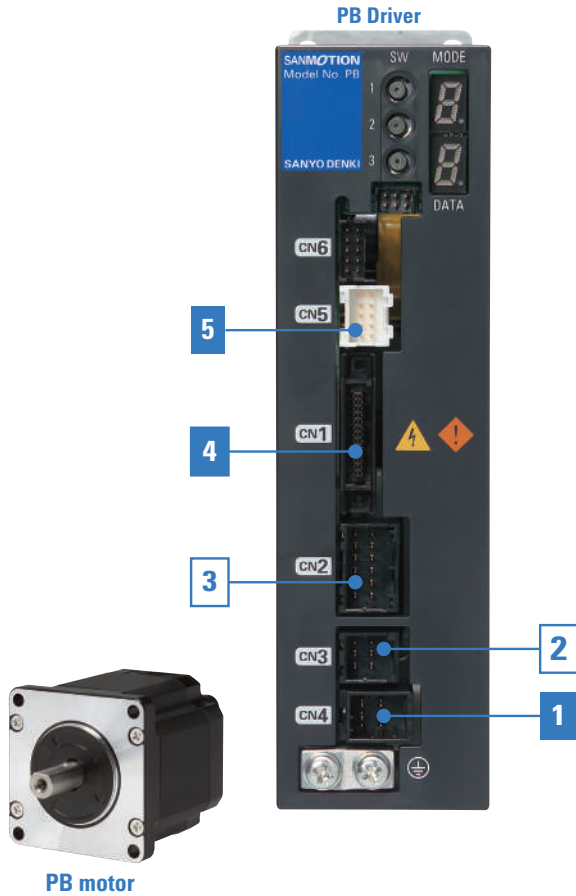
Amplifier specifications

Model		PB4A002R300	PB4A002R301
Power supply	Input voltage range	Single-phase 100 to 115 VAC (-15%, +10%) 50/60 Hz	Single-phase 200 to 230 VAC (-15%, +10%) 50/60 Hz 3-phase 200 to 230 VAC (-15%, +10%) 50/60 Hz
	Input current (3-/single-phase)	6 Arms	2.5/4.5 Arms
Operating environment		Ambient temperature: 0 to +55°C, humidity: 90% RH max. (non-condensing), operating altitude: 1000 m max.	
Communication specifications		RS-485 Start / stop synchronization, half-duplex communication Baud rate: 9600, 38400, 115200, 307200 bps	
Performance	Rotation Speed	0 to 4500 min ⁻¹ (0 to 4000 min ⁻¹ for 86 mm sq. motors)	
	Command resolution (P/R)	500, 1000, 2000, 4000, 5000, 10000, 16000, 32000 Can be set in fine steps in the range of 100 to 32000 with an electronic gear.	
Built-in functions		Protection functions (alarm), 7-seg LED display, digital operator	
Input signal	Function	ALMCLR, General-purpose input ×8 (select from Point, STOP, EXE, SELECT, HOME sensor, Limit, Deviation clear, Pause, Jog, and Inter lock)	
	Electrical specifications	General-purpose input: Bidirectional input photocoupler 5 to 24 VDC	
Output signal	Function	ALM, General-purpose output ×7 (select from Point No, Ack, Busy, HOME END, Push END, ZONE, Input monitor, In-Position, and Bit Out)	
	Electrical specifications	General-purpose output: Open collector 30 VDC, 15 mA or less	
Size	Dimensions	W42×H150×D120 mm	
	Mass	Approx. 0.65 kg	

Closed loop stepping driver – Pulse input model: type P



■ System configuration



No.	Port	Description	Model
1		Power supply connection	
	CN4	One side flying lead cable, 1 m	PBC8P0010A
2		Motor power connection	
	CN3	Extension cable, 3 m	PBC7M0030A
3		Encoder connection	
	CN2	Extension cable, 3 m	PBC7E0030A
4		Input/Output signals	
	CN1	26 pin, shielded cable, 1 m	PBC5S0010C
5		Communication converter unit (connect to SPBALL-01 software)	
	CN5	USB/RS-485 conversion	PBFM-U6

Note) All items highlighted in blue must be included to build a complete system.

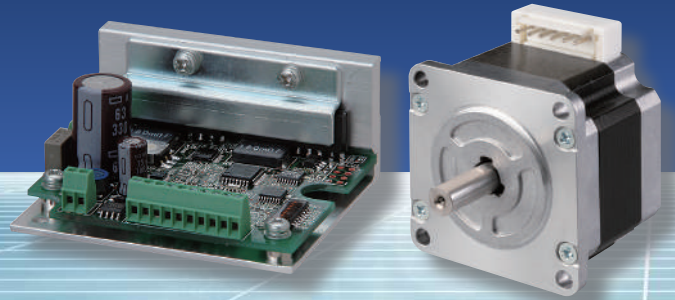
■ Amplifier specifications

Model		PB4A002P300	PB4A002P301
Power supply	Input voltage range	Single-phase 100 to 115 VAC (-15%, +10%) 50/60 Hz	Single-phase 200 to 230 VAC (-15%, +10%) 50/60 Hz 3-phase 200 to 230 VAC (-15%, +10%) 50/60 Hz
	Input current (3-/single-phase)	6 Arms	2.5/4.5 Arms
Operating environment		Ambient temperature: 0 to +55°C, humidity: 90% RH max. (non-condensing), operating altitude: 1000 m max.	
Performance	Rotation Speed	0 to 4500 min ⁻¹ (0 to 4000 min ⁻¹ for 86 mm sq. motors)	
	Command resolution (P/R)	500, 1000, 2000, 4000, 5000, 10000, 16000, 32000 Can be set in fine steps in the range of 100 to 32000 with an electronic gear*.	
Built-in functions		Protection functions (alarm), 7-seg LED display, digital operator	
Input signal	Function	Pulse input, STOP, ALMCLR General-purpose input×2 (select from Deviation clear, HOME, Push, Brake control, and Counter reset)	
	Electrical specifications	Pulse input: Line receiver 1 or 2 input type General-purpose input: Bidirectional input photocoupler 5 to 24 VDC	
Output signal	Function	Encoder signal (A/B/Z), ALM, In-Position General-purpose output×2 (select from HOME END, Push END, ZONE, and input monitor)	
	Electrical specifications	Pulse signal output: Line driver 4000 P/R. Z-phase / phase origin signal is only output at 200 mm ⁻¹ or less. General-purpose output: Open collector 30 VDC, 15 mA or less	
Size	Dimensions	W42×H150×D120 mm	
	Mass	Approx. 0.65 kg	

SANMOTION F2

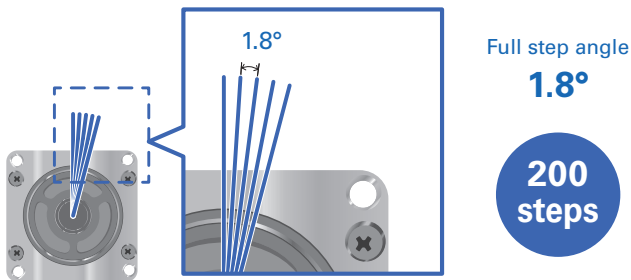
2-PHASE STEPPING SYSTEMS

The SANMOTION F2 is a 2-phase stepping system that provides precise positioning with easy control.



Full step angle

Stepping motors rotate precisely at a fixed angle (step angle) with each pulse the driver receives from a pulse generator. SANMOTION F2 motors typically have a full step angle of 1.8°.



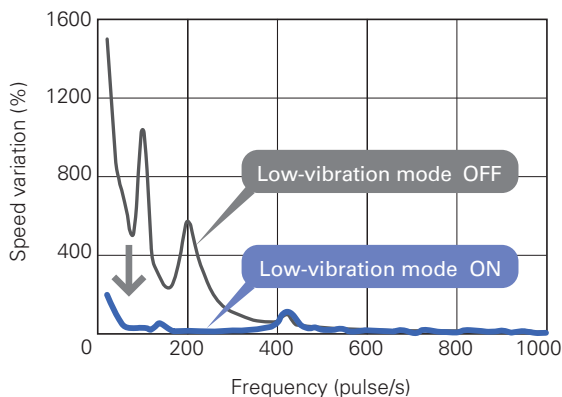
Ease of use

Stepping motors use open-loop control without an encoder (position detection sensor), helping build simple and low-cost systems. Ease of use is a key point. In addition, they use holding force when stopped, and feature stable stopping without micro-vibrations.



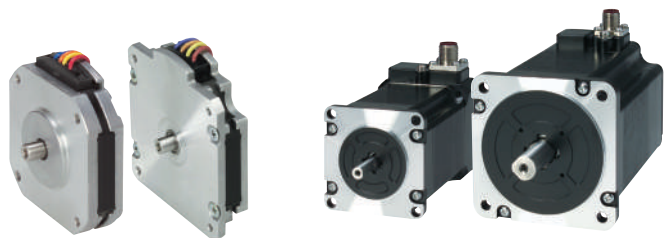
Low vibration

This driver features approximately 10% less vibration compared with our conventional product. Also, a low-vibration mode function provides smooth driving, even with one-division (full-step) and two-division (half-step) coarse resolution settings. This allows vibrations to be suppressed without control system restrictions.



Different types of motors

A variety of motors for different applications such as the flat-shaped stepping motors that have industry-leading thinness and IP65-rated motors that have superior water and dust resistance and can be safely utilized in harsh or wet environments.



Flat-shaped motors

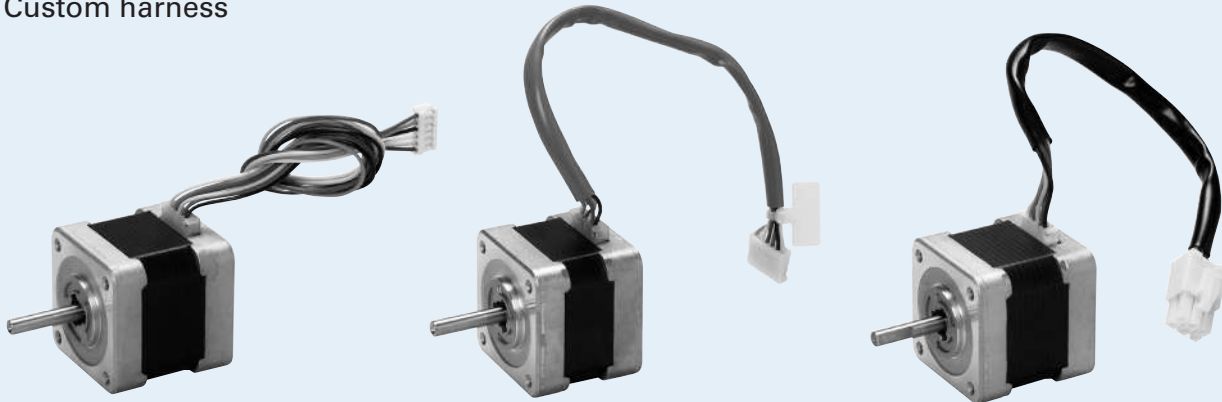
IP65-rated motors

Stepping motor lineup

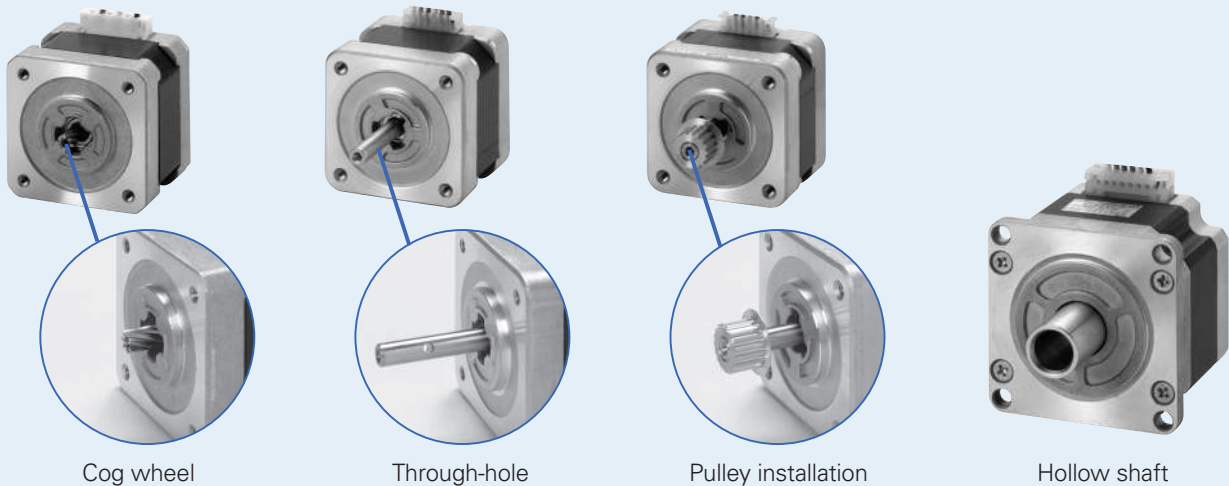
Motor size	Step angle [deg/step]	Current [A/phase]	Holding torque [N·m]
14 mmsq. (NEMA 6)	1.8	0.3, 0.4	0.0065 — 0.01
28 mmsq. (NEMA 11)	1.8	1	0.07 — 0.145
42 mmsq. (NEMA 17)	0.9	2	0.23 — 0.48
	1.8	1	0.29 — 0.8
42 mmsq. (NEMA 17) Flat-shaped	1.8	1	0.83 — 0.186
50 mmsq. Flat-shaped	1.8	1	0.1 — 0.215
56 mmsq. (NEMA 23)	1.8	2, 4, 6	0.75 — 2.5

Motor size	Step angle [deg/step]	Current [A/phase]	Holding torque [N·m]
56 mmsq. (NEMA 23) IP65-rated	1.8	3	1.0 — 1.7
60 mmsq. (NEMA 23 mounting)	0.9	2	0.69 — 2.15
	1.8	4.4	1.1
86 mmsq. (NEMA 34)	1.8	4, 6	3.3 — 9
86 mmsq. (NEMA 34) IP65-rated	1.8	3	6.4 — 9
106 mmsq. (NEMA 42)	1.8	6	13.2 — 19

Custom harness



Custom shaft



* Custom options availability varies depending on the requested customization and quantity. Contact us for details.

MOTOR SIZE

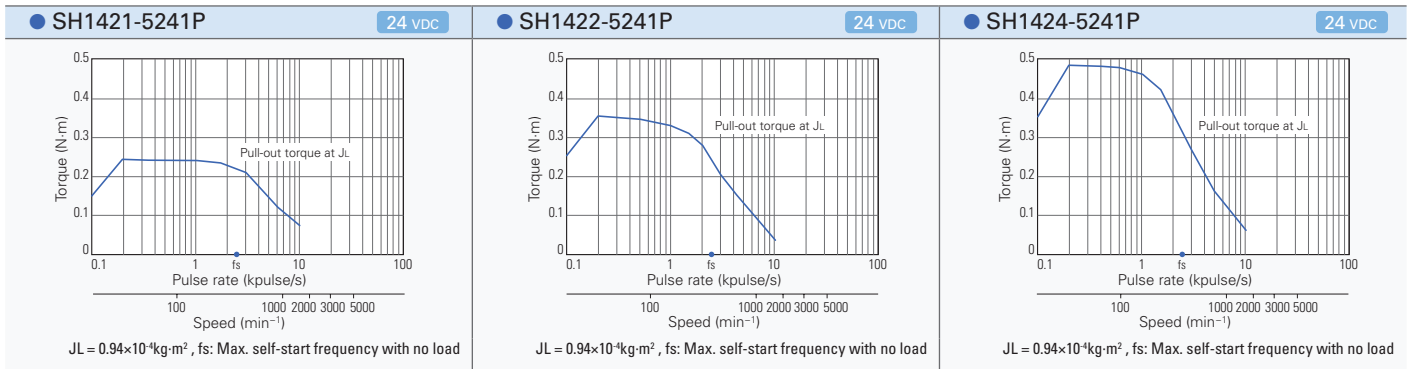
42 mmsq. (NEMA 17)

Bipolar, 0.9 °/step RoHS

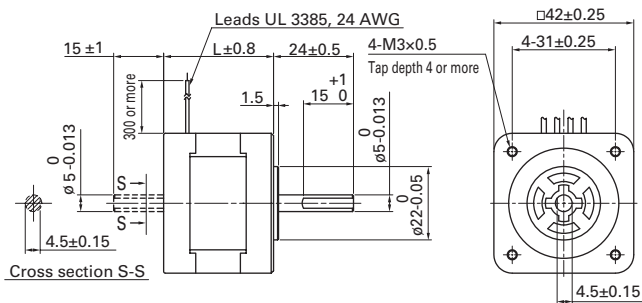
Motor specifications

Motor model number	Single shaft	SH1421-5241P	SH1422-5241P	SH1424-5241P
Holding torque	N·m	0.23	0.34	0.48
Rated current	A/phase	2	2	2
Winding resistance	Ω/phase	0.85	1.05	1.25
Winding inductance	mH/phase	2.1	3.6	3.75
Rotor inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	0.044	0.066	0.089
Motor mass	kg	0.24	0.29	0.38
Motor length [L]	mm	33	39	48

Speed-Torque characteristics



Dimensions (Unit: mm)



2-PHASE STEPPING SYSTEMS

MOTOR SIZE

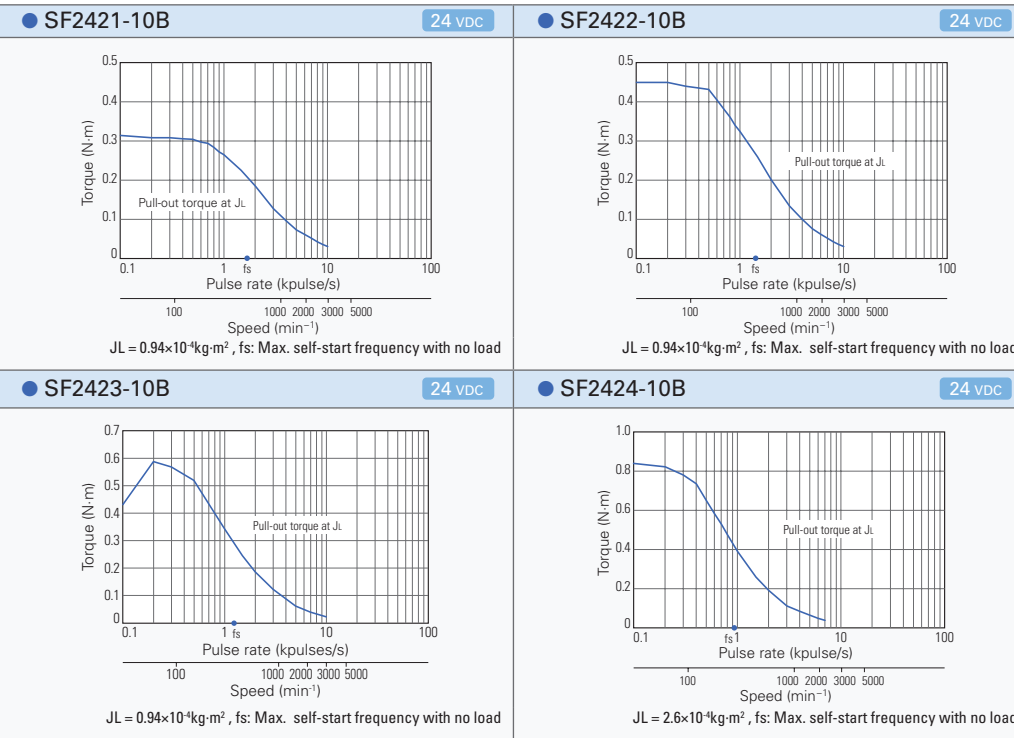
42 mmsq. (NEMA 17)

Bipolar, 1.8 °/step RoHS

Motor specifications

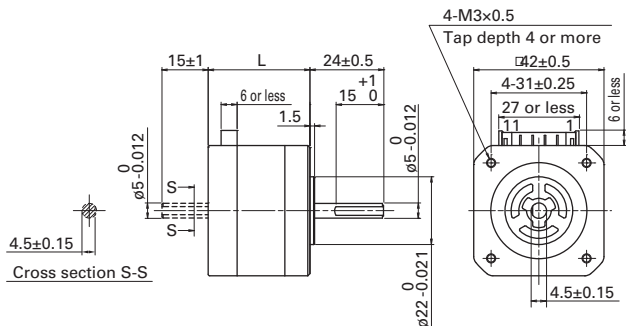
Motor model number	Single shaft	SF2421-10B41	SF2422-10B41	SF2423-10B41	SF2424-10B41
	Double shaft	SF2421-10B11	SF2422-10B11	SF2423-10B11	SF2424-10B11
Holding torque	N·m	0.29	0.43	0.56	0.8
Rated current	A/phase	1	1	1	1
Winding resistance	Ω/phase	3.6	4.6	5.3	6.5
Winding inductance	mH/phase	7	9.6	12.5	16
Rotor inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	0.031	0.046	0.063	0.094
Motor mass	kg	0.23	0.3	0.38	0.51
Motor length [L]	mm	33 ± 0.5	39 ± 0.5	48 ± 0.5	59.5 ± 1

Speed-Torque characteristics



Dimensions (Unit: mm)

Motor Cable Model Number: 4835775-1



MOTOR SIZE

42 mmsq. (NEMA 17)

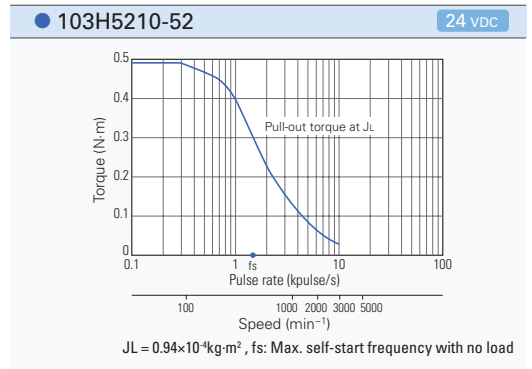
Bipolar, 1.8 °/step, Encoder mounting hole, Brake

RoHS

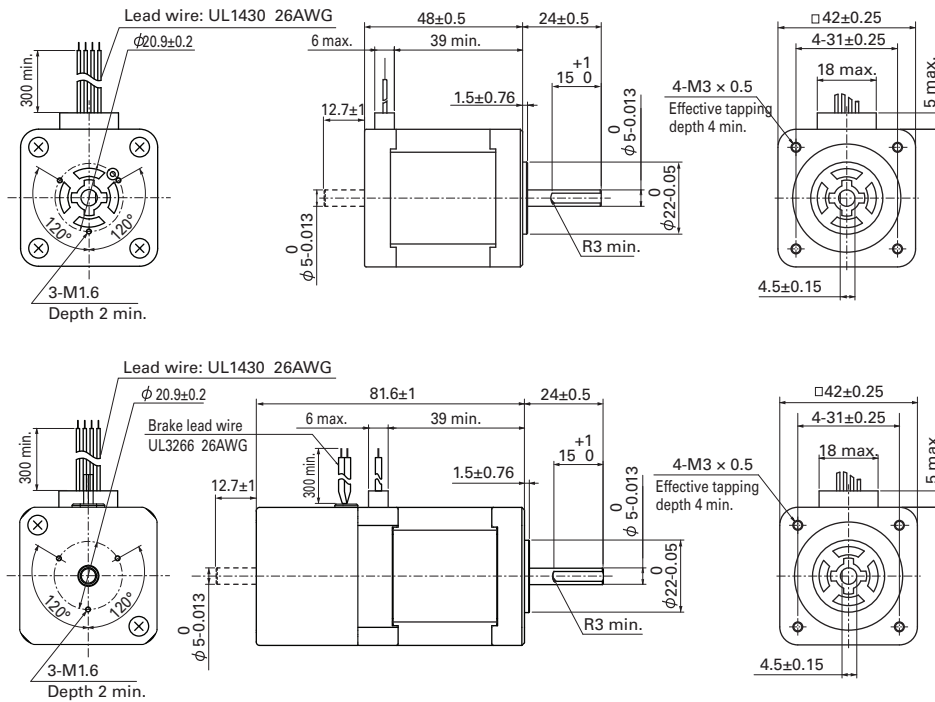
Motor specifications

Motor model number	Double shaft	103H5210-5214	
	with Brake		103H5210-52XB12
Holding torque	N·m	0.51	0.51
Rated current	A/phase	1	1
Winding resistance	Ω/phase	4.8	4.8
Winding inductance	mH/phase	9.5	9.5
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.074	0.089
Motor mass	kg	0.37	0.487
Motor length [L]	mm	48	81.6
Brake	Power source	VDC / W	24 / 2.4
	Static friction torque	N·m	0.3 Min.

Speed-Torque characteristics



Dimensions (Unit: mm)



Other hole patterns for encoder mounting are also available. Please contact us.

2-PHASE STEPPING SYSTEMS

MOTOR SIZE

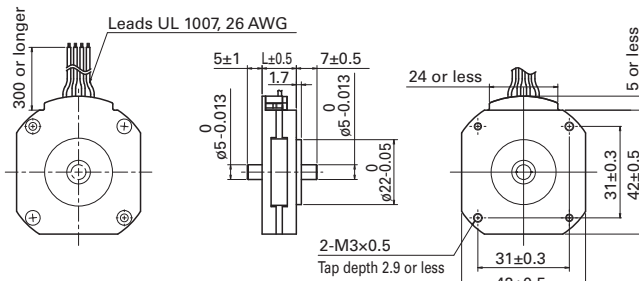
42 mmsq. (NEMA 17)

Bipolar, 1.8 °/step, Flat-shaped type RoHS

Motor specifications

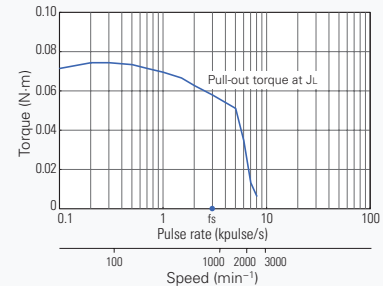
Motor model number	Single shaft	SS2421-5041P	SS2422-5041P
Holding torque	N·m	0.83	0.186
Rated current	A/phase	1	1
Winding resistance	Ω/phase	3.5	5.4
Winding inductance	mH/phase	1.2	2.9
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.015	0.028
Motor mass	kg	0.07	0.14
Motor length [L]	mm	11.6	18.6

Dimensions (Unit: mm)



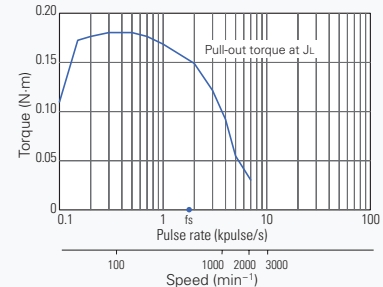
Speed-Torque characteristics

● SS2421-5041P 24 vdc



J_L = 0.33×10⁻⁴kg·m², fs: Max. self-start frequency with no load

● SS2422-5041P 24 vdc



J_L = 0.33×10⁻⁴kg·m², fs: Max. self-start frequency with no load

MOTOR SIZE

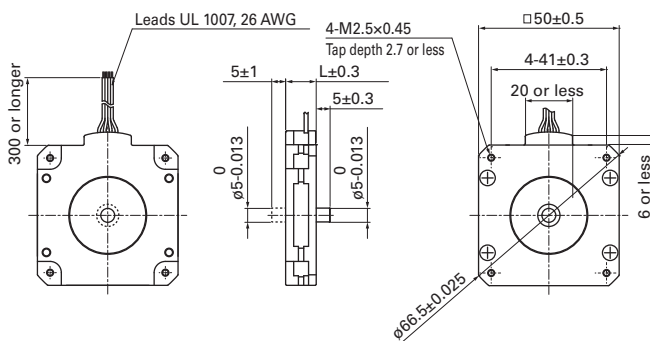
50 mmsq.

Bipolar, 1.8 °/step, Flat-shaped type RoHS

Motor specifications

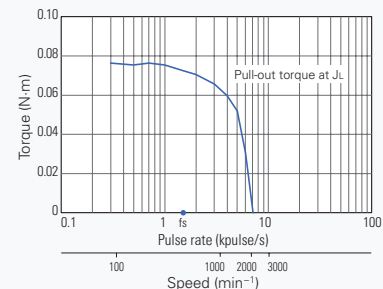
Motor model number	Single shaft	SS2501-8040P	SS2502-8040P
Holding torque	N·m	0.1	0.215
Rated current	A/phase	1	1
Winding resistance	Ω/phase	4.5	5.9
Winding inductance	mH/phase	2	3.2
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.026	0.049
Motor mass	kg	0.09	0.15
Motor length [L]	mm	11.4	16.4

Dimensions (Unit: mm)



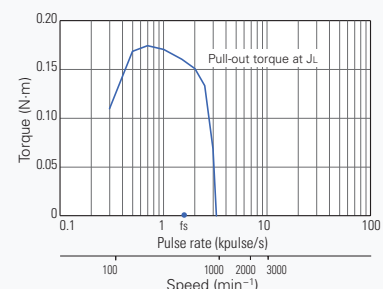
Speed-Torque characteristics

● SS2501-8040P 24 vdc



J_L = 0.01×10⁻⁴kg·m², fs: Max. self-start frequency with no load

● SS2502-8040P 24 vdc



J_L = 0.01×10⁻⁴kg·m², fs: Max. self-start frequency with no load

MOTOR SIZE

56 mmsq.

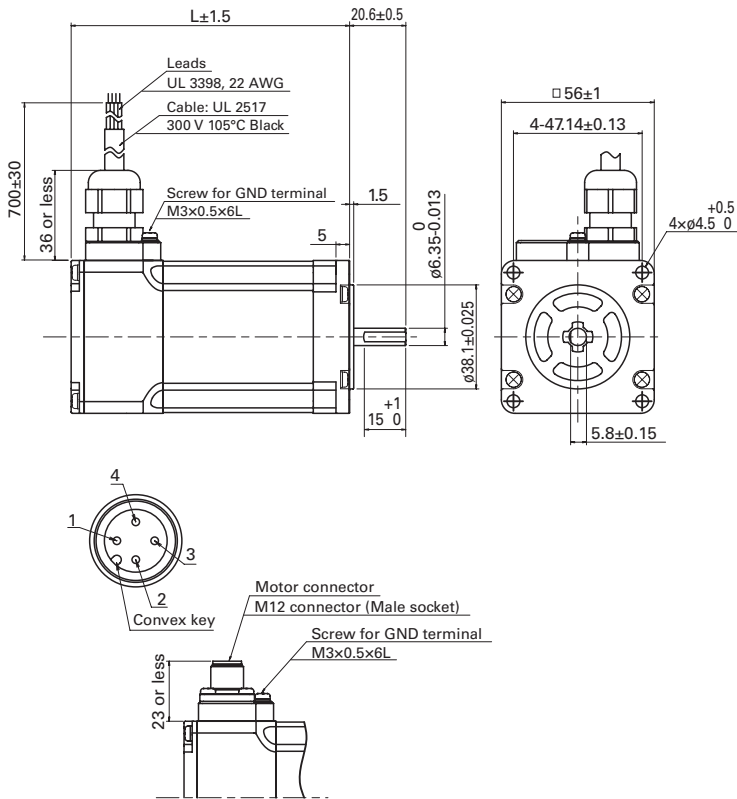
Bipolar, 1.8 °/step, IP65-rated type



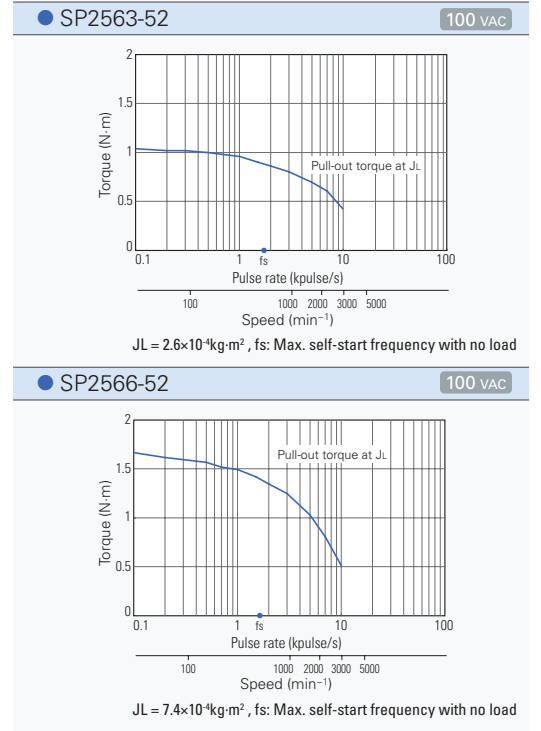
Motor specifications

Motor model number	Cable type	SP2563-5260	SP2566-5260
	Connector type	SP2563-5200	SP2566-5200
Holding torque	N·m	1	1.7
Rated current	A/phase	3	3
Winding resistance	Ω/phase	0.75	1
Winding inductance	mH/phase	3.4	4.4
Rotor inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	0.21	0.36
Motor mass	kg	0.9	1.2
Motor length [L]	mm	80	102

Dimensions (Unit: mm)



Speed-Torque characteristics



2-PHASE STEPPING SYSTEMS

MOTOR SIZE

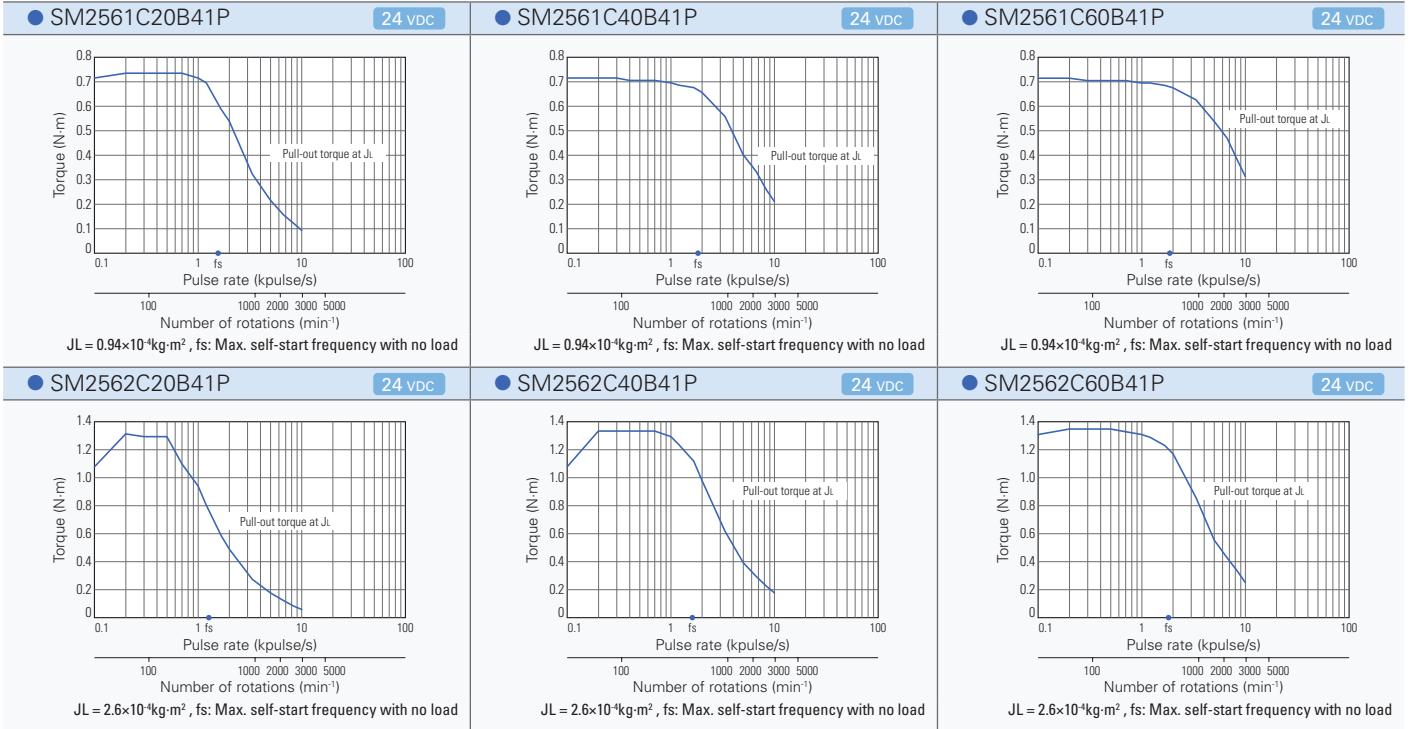
56 mmsq. (NEMA 23)

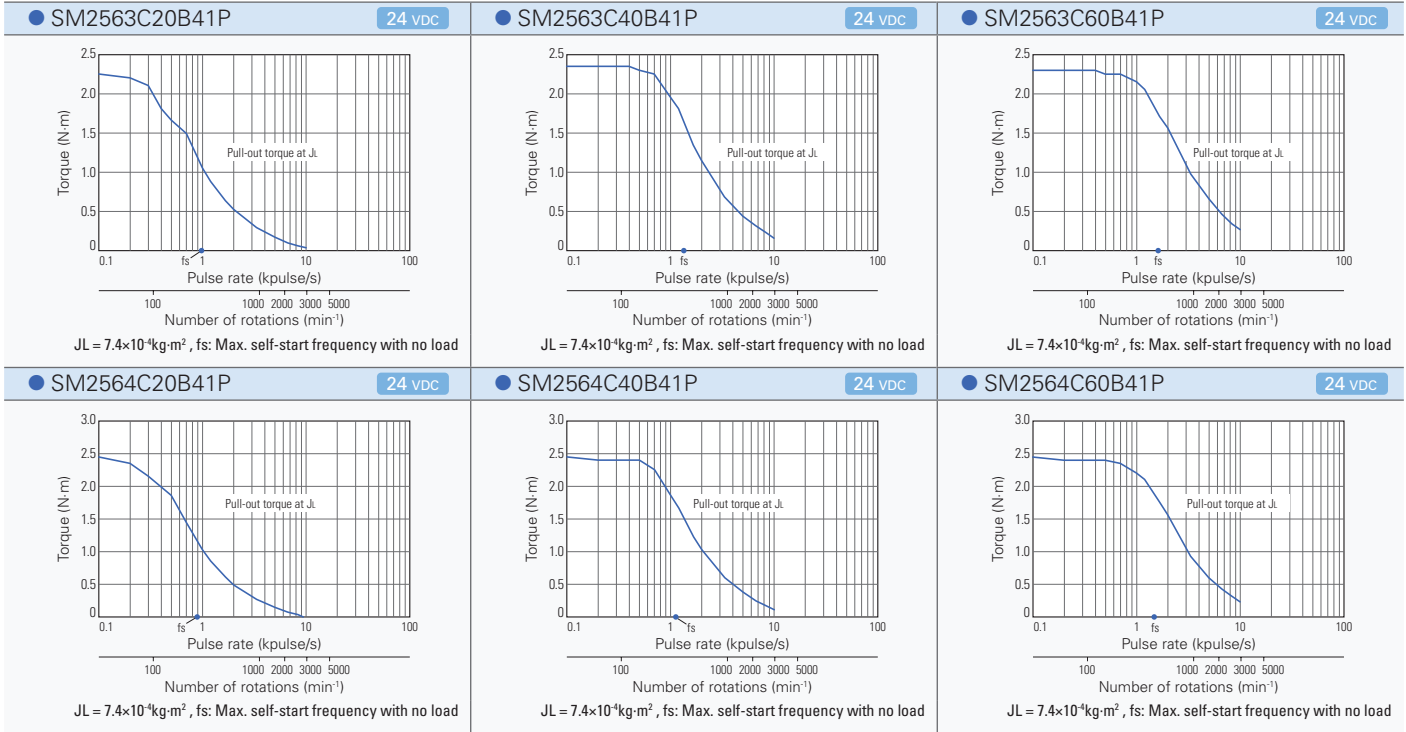
Motor specifications

Motor model number	Single shaft	SM2561C20B41P	SM2561C40B41P	SM2561C60B41P	SM2562C20B41P	SM2562C40B41P	SM2562C60B41P
Holding torque	N·m	0.75	0.75	0.75	1.4	1.4	1.4
Rated current	A/phase	2	4	6	2	4	6
Winding resistance	Ω /phase	1.1	0.28	0.14	1.5	0.37	0.18
Winding inductance	mH/phase	3.5	0.85	0.38	6.5	1.5	0.72
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.14	0.14	0.14	0.28	0.28	0.28
Motor mass	kg	0.49	0.49	0.49	0.69	0.69	0.69
Motor length [L]	mm	41.8	41.8	41.8	53.8	53.8	53.8

Motor model number	Single shaft	SM2563C20B41P	SM2563C40B41P	SM2563C60B41P	SM2564C20B41P	SM2564C40B41P	SM2564C60B41P
Holding torque	N·m	2.35	2.35	2.35	2.5	2.5	2.5
Rated current	A/phase	2	4	6	2	4	6
Winding resistance	Ω /phase	2.1	0.52	0.25	2.1	0.59	0.27
Winding inductance	mH/phase	9.5	2.4	1.05	11	2.8	1.15
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.5	0.5	0.5	0.6	0.6	0.6
Motor mass	kg	1.1	1.1	1.1	1.27	1.27	1.27
Motor length [L]	mm	75.8	75.8	75.8	85.8	85.8	85.8

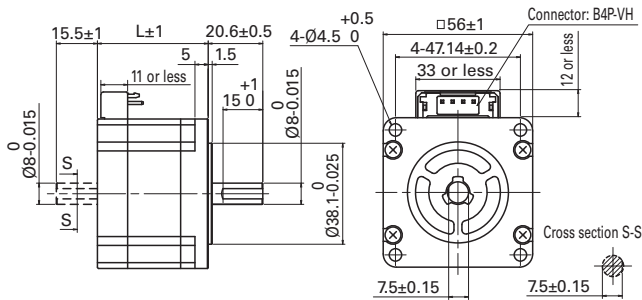
Speed-Torque characteristics





■ Dimensions (Unit: mm)

Motor Cable Model Number: 4837961-1



2-PHASE STEPPING SYSTEMS

MOTOR SIZE

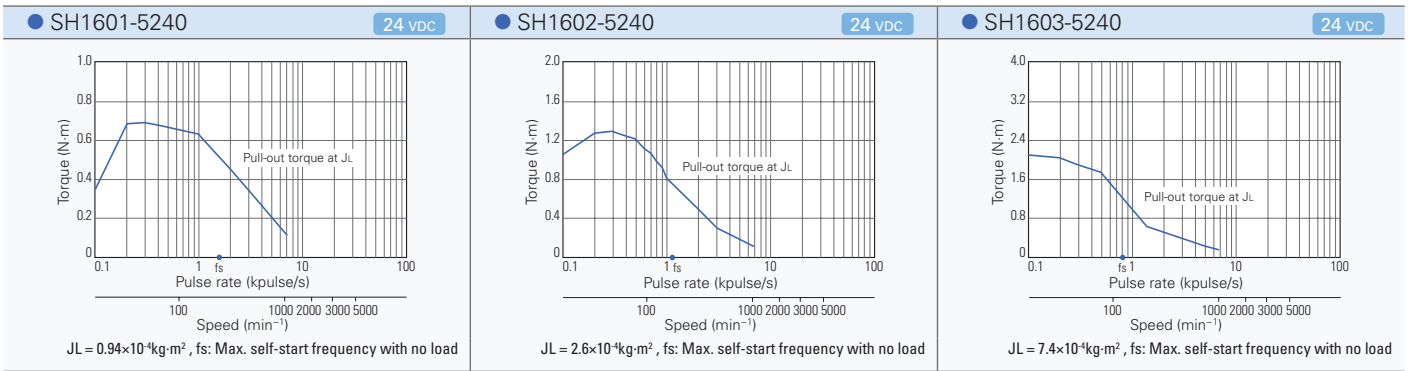
60 mmsq.

Bipolar, 0.9 °/step RoHS

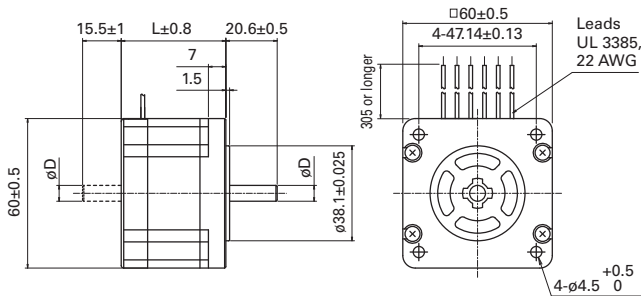
Motor Specifications

Motor model number	Single Shaft	SH1601-5240	SH1602-5240	SH1603-5240
Holding torque	N·m	0.69	1.28	2.15
Rated current	A/phase	2	2	2
Winding resistance	Ω/phase	1.2	1.65	2.3
Winding inductance	mH/phase	3.5	6.1	8.8
Rotor inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	024	0.4	0.75
Motor mass	kg	0.55	0.8	1.2
Motor length [L]	mm	42	54	76
Shaft diameter [D]	mm	$6.35^{0}_{-0.013}$	$6.35^{0}_{-0.013}$	$8^{0}_{-0.015}$

Speed-Torque Characteristics



Dimensions (Unit: mm)



MOTOR SIZE

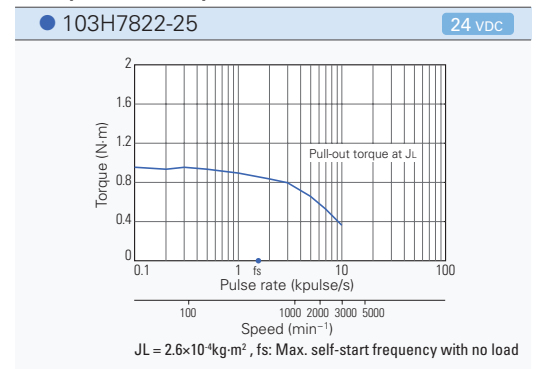
60 mmsq.

Unipolar, 1.8°/step, Encoder mounting hole, Brake RoHS

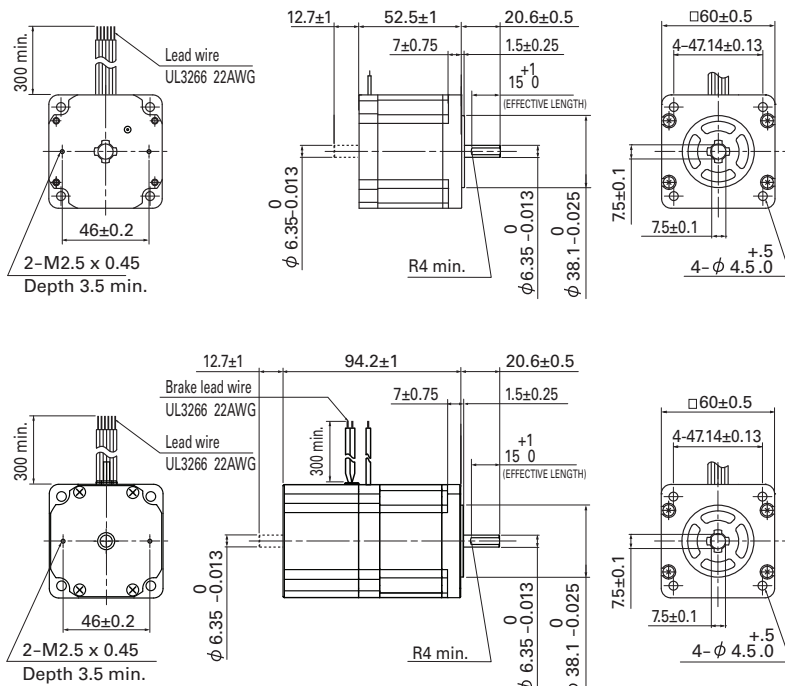
Motor specifications

Motor model number	Double shaft	103H7822-2511	
	with Brake		103H7822-25XB12
Holding torque	N·m	1.1	1.1
Rated current	A/phase	4.4	4.4
Winding resistance	Ω/phase	0.4	0.4
Winding inductance	mH/phase	0.61	0.61
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.4	0.56
Motor mass	kg	0.77	1.2
Motor length [L]	mm	52.5	94.2
Brake	Power source	VDC / W	24 / 6
	Static friction torque	N·m	0.8 Min.

Speed-Torque characteristics



Dimensions (Unit: mm)



Other hole patterns for encoder mounting are also available. Please contact us.

2-PHASE STEPPING SYSTEMS

MOTOR SIZE

86 mmsq. (NEMA 34)

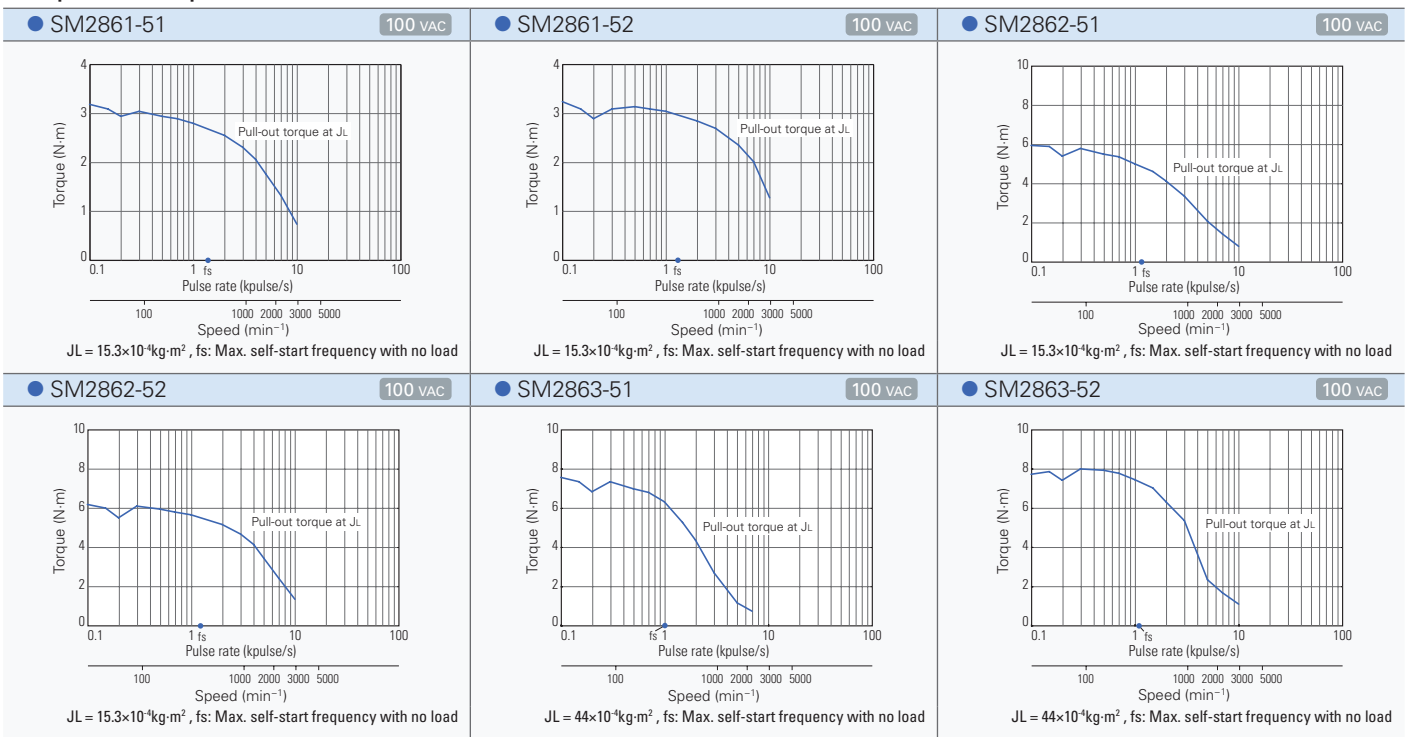
Bipolar, 1.8 °/step, Encoder mounting hole

RoHS

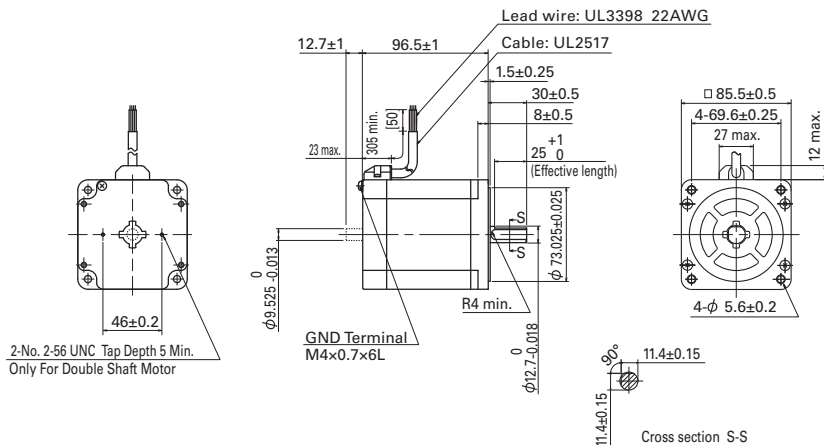
Motor specifications

Motor model number	Single shaft	SM2861-5152	SM2861-5252	SM2862-5152	SM2862-5252	SM2863-5152	SM2863-5252
	Double shaft	SM2861-5122		SM2862-5122		SM2863-5122	
Holding torque	N·m	3.3	3.3	6.4	6.4	9	9
Rated current	A/phase	4	6	4	6	4	6
Winding resistance	Ω/phase	0.56	0.29	0.83	0.36	1.0	0.46
Winding inductance	mH/phase	3.7	1.7	6.4	2.8	7.9	3.8
Rotor inertia	$\times 10^{-4}$ kg·m ²	1.48	1.48	3.0	3.0	4.5	4.5
Motor mass	kg	1.75	1.75	2.9	2.9	4.0	4.0
Motor length [L]	mm	66	66	96.5	96.5	127	127

Speed-Torque characteristics



Dimensions (Unit: mm)



Other hole patterns for encoder mounting are also available. Please contact us.

MOTOR SIZE

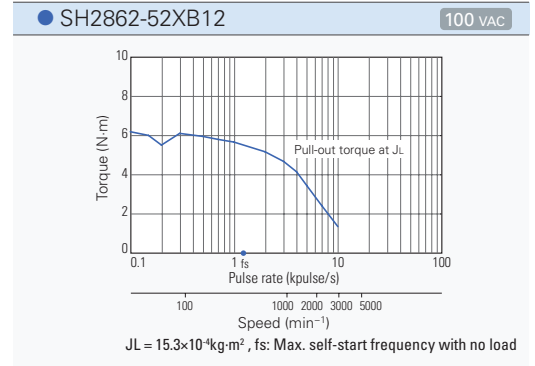
86 mmsq. (NEMA 34)

Bipolar, 1.8 °/step, Encoder mounting hole, Brake RoHS

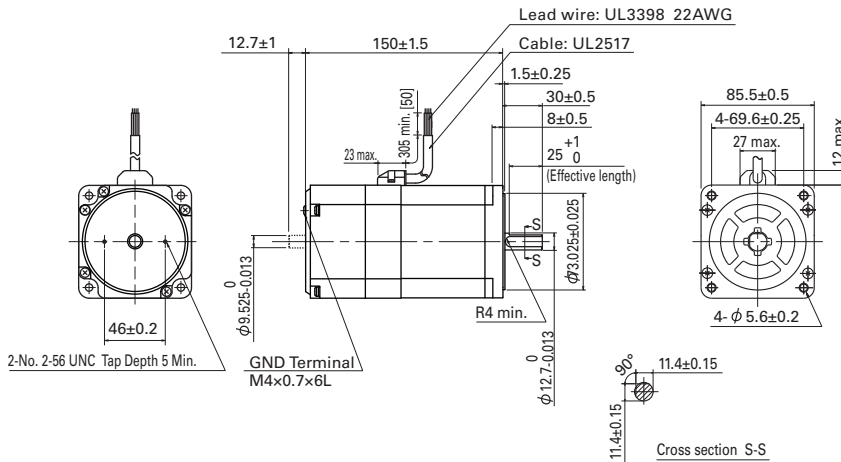
Motor specifications

Motor model number	Double shaft	SH2862-52XB12
Holding torque	N·m	6.4
Rated current	A/phase	6
Winding resistance	Ω/phase	0.36
Winding inductance	mH/phase	2.8
Rotor inertia	$\times 10^{-4}$ kg·m ²	3.8
Motor mass	kg	3.7
Motor length [L]	mm	150
Brake	Power source	VDC / W
	Static friction torque	N·m
		24 / 10
		5 Min.

Speed-Torque characteristics



Dimensions (Unit: mm)



Other hole patterns for encoder mounting are also available. Please contact us.

2-PHASE STEPPING SYSTEMS

MOTOR SIZE

86 mmsq.

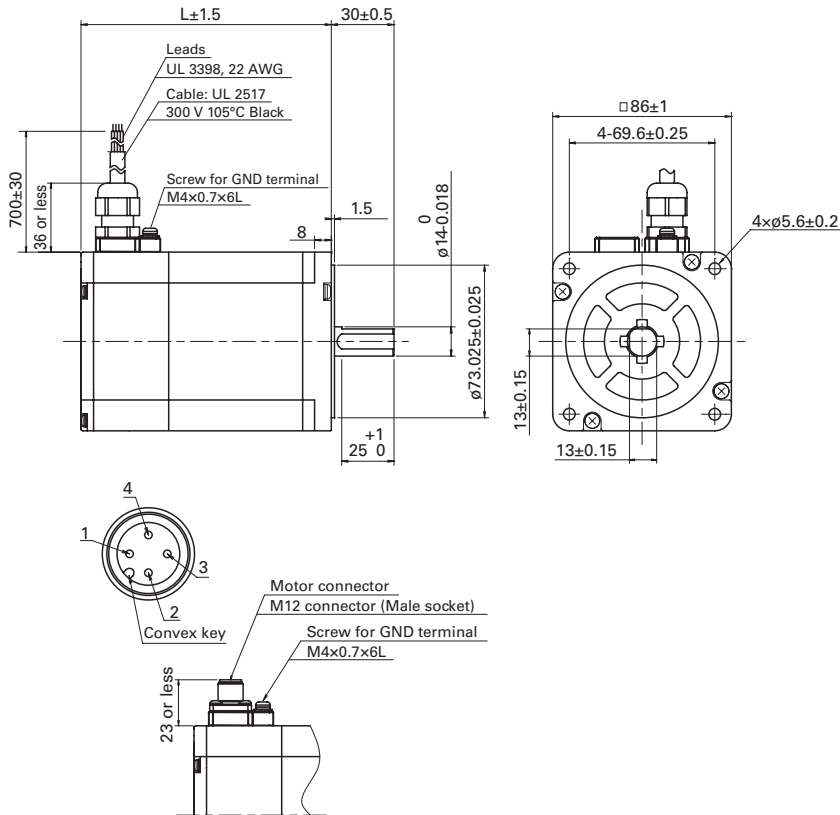
Bipolar, 1.8 °/step, IP65-rated type



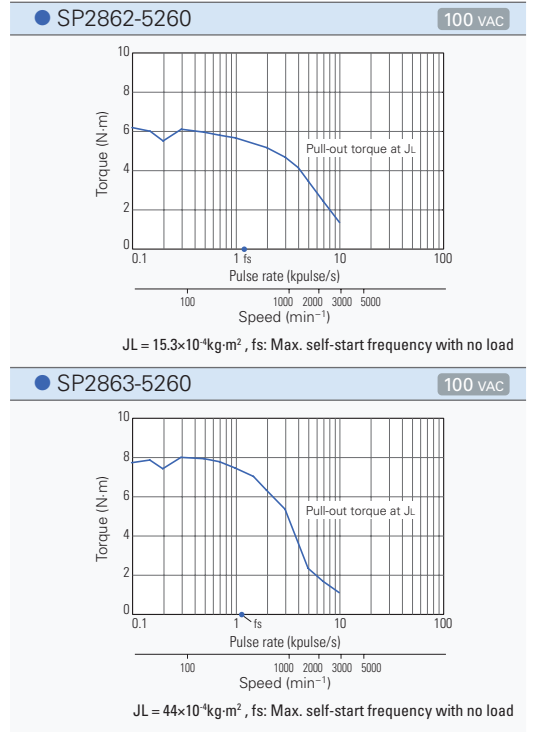
Motor specifications

Motor model number	Cable type	SP2862-5260	SP2863-5260
Holding torque	N·m	6.4	9
Rated current	A/phase	6	6
Winding resistance	Ω/phase	0.41	0.53
Winding inductance	mH/phase	2.8	3.8
Rotor inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	3	4.5
Motor mass	kg	3.1	4.2
Motor length [L]	mm	120	150

Dimensions (Unit: mm)



Speed-Torque characteristics



MOTOR SIZE

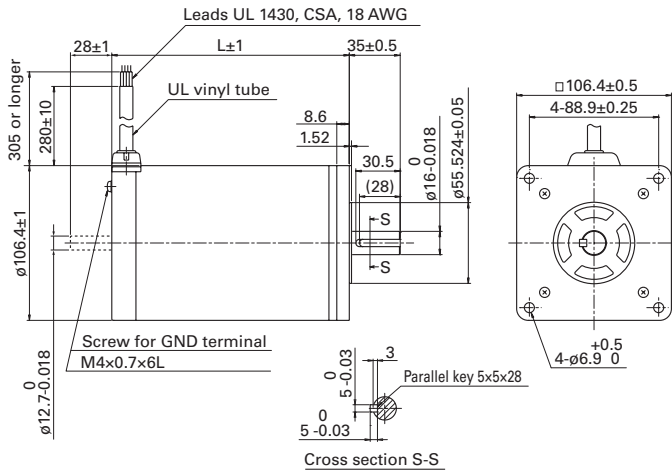
106 mmsq. (NEMA 43)

Bipolar, 1.8 °/step RoHS

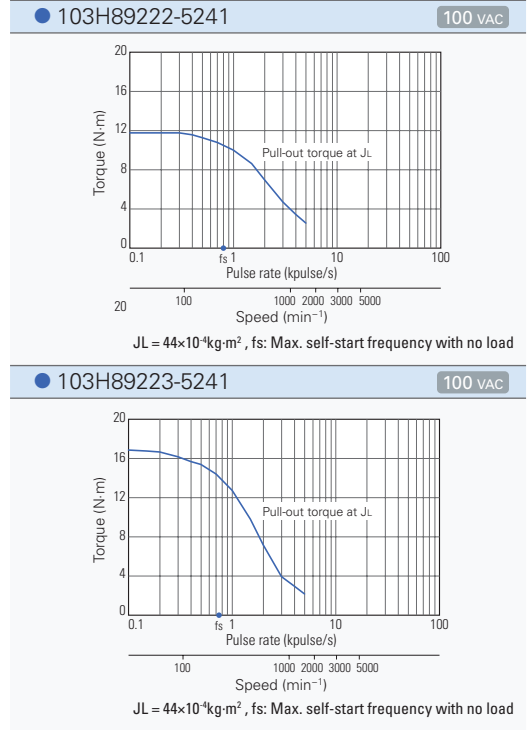
Motor specifications

Motor model number	Single shaft	103H89222-5241	103H89223-5241
Holding torque	N·m	13.2	19
Rated current	A/phase	6	6
Winding resistance	Ω/phase	0.45	0.63
Winding inductance	mH/phase	5.4	8
Rotor inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	14.6	22
Motor mass	kg	7.5	10.5
Motor length [L]	mm	163.3	221.3

Dimensions (Unit: mm)

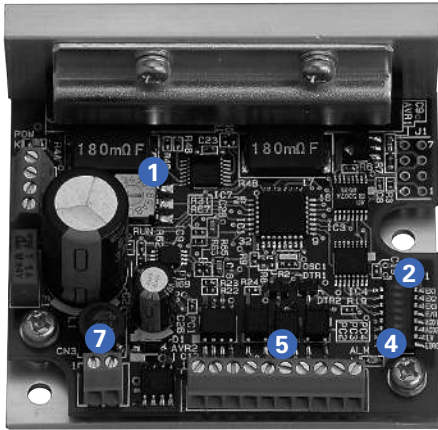


Speed-Torque characteristics



2-PHASE STEPPING SYSTEMS

Driver controls and connectors



1 Operating current selection switch (RUN)

The value of the motor current can be set when operating.

Dial	0	1	2	3	4	5	6	7
Stepping motor current (A)	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3
Dial	8	9	A	B	C	D	E	F
Stepping motor current (A)	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5

- The factory setting is F (0.5 A).
Select the current after checking the rated current of the combination motor.

2 Function selection DIP switchpack

Select the function depending on your specification.

Factory settings

	OFF	ON	
EX1	<input type="checkbox"/>	<input type="checkbox"/>	Partition number: 8
EX2	<input type="checkbox"/>	<input type="checkbox"/>	
EX3	<input type="checkbox"/>	<input type="checkbox"/>	
F/R	<input type="checkbox"/>	<input type="checkbox"/>	Input method 2 (CW/CCW pulse input)
ACD1	<input type="checkbox"/>	<input type="checkbox"/>	Stopping current: 40% of driving current
ACD2	<input type="checkbox"/>	<input type="checkbox"/>	
LV	<input type="checkbox"/>	<input type="checkbox"/>	Micro step operation
EORG	<input type="checkbox"/>	<input type="checkbox"/>	Phase origin

1. Step angle select (EX1, EX2, EX3)

Select the partition number of the basic step angle.

EX1	EX2	EX3	Partition number
ON	ON	ON	1-division
OFF	ON	OFF	2-division
ON	OFF	OFF	4-division
OFF	OFF	OFF	8-division
OFF	OFF	ON	16-division

2. Input method select (F/R)

Select input pulse type.

F/R	Input pulse type
ON	1 input (CK, U/D)
OFF	2 input (CW, CCW)

3. Current selection when stopping (ACD1, ACD2)

Select the current value of the motor when stopping.

ACD2	ACD1	Current value of the motor
ON	ON	100% of driving current
ON	OFF	60% of driving current
OFF	ON	50% of driving current
OFF	OFF	40% of driving current

- Initial configuration of factory shipment is set to 40% of rated value. Driver and motor should be operated at around 50% of rated value to reduce heat.

4. Low-vibration mode select (LV)

Provides low-vibration, smooth operation even if resolution is coarse (1-division, 2-division, etc).

LV	Operation
ON	Auto-micro function
OFF	Micro-step

5. Excitation select (EORG)

The excitation phase when the power supply is engaged is selected.

EORG	Original excitation phase
ON	Excitation phase at power shut off
OFF	Phase origin

- By turning on the EORG, the excitation phase during power OFF will be saved. Therefore, there will be no shaft displacement when turning the power ON.

3 LED for power supply monitor (POW)

Lit up when the main circuit power supply is connected.

4 LED for alarm display (ALM)

Lights in the following conditions:

- Motor cable is broken.
- Switching element in driver is faulty.
- The main circuit voltage is out of specifications range (19 VDC max.).

When "ALM" is displayed, the winding current of the stepping motor is cut off and it is in a "non-excitation" state. At the same time, an output signal (photocoupler ON) is transmitted from the alarm output terminal (AL) to an external source. When the alarm circuit is operating, this state is maintained until it is reset by switching on the power supply again. When an alarm condition has occurred, please take corrective actions to rectify the cause of the alarm before switching on the power supply again.

5 I/O signal terminal block (CN1)

Connect the I/O signal.

6 Motor terminal block (CN2)

Connect the motor's power line.

7 Power supply terminal block (CN3)

Connect the main circuit power supply.

Driver specifications

Driver model	BS1D200P10
Input source	24/36 VDC ± 10%
Source current	3 A
Operating environment	Ambient temperature: 0 to +50°C Humidity: 30 to 85% RH (non-condensing) Operating altitude: 1000 m max.
Command pulse input signal	Photocoupler input system, input resistance: 220 Ω input signal "H" level: 4.0 to 5.5 V, input signal "L" level: 0 to 0.5 V Maximum input frequency: 150 kpulse/s
Dimensions	W64×H56×D29 mm
Mass	Approx. 0.09 kg

SANMOTION C

MOTION CONTROLLER

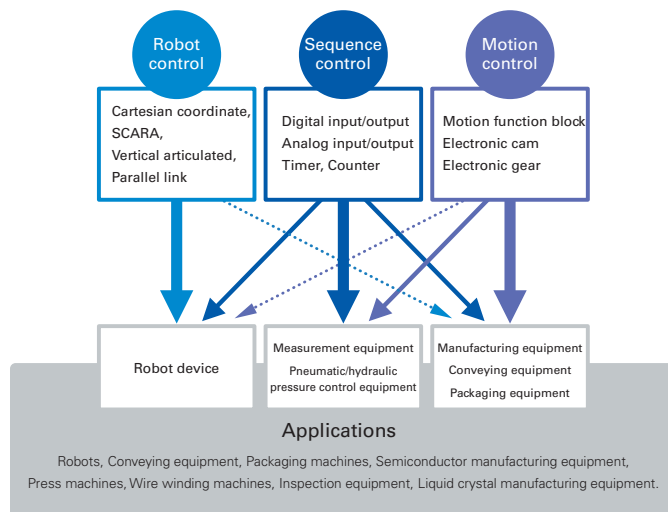
Motion controllers that seamlessly integrate motion control, robot control, and sequence control. Structured programming with standardized PLC programming languages simplifies program development, and contributes significantly to making software assets shareable.



EtherCAT®

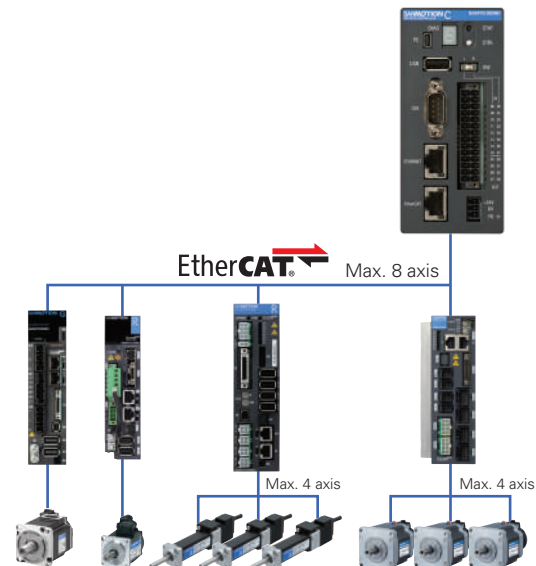
Controller with three control functions

The SANMOTION C has the three functions of motion control, robot control, and sequence control and makes it easy to build a variety of application systems.



EtherCAT interface

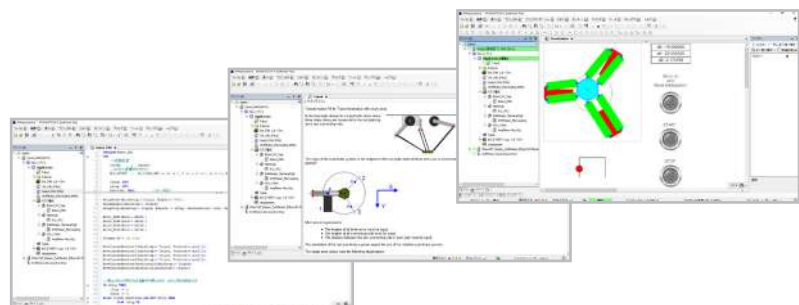
EtherCAT interface is provided as standard. With 100 Mbps high-speed and high-reliability communications, this fieldbus speeds up the system control capability and improves responsiveness. The takt time is significantly shortened.



Integrated development software SANMOTION C Software Tool

Software features various functions for system development.

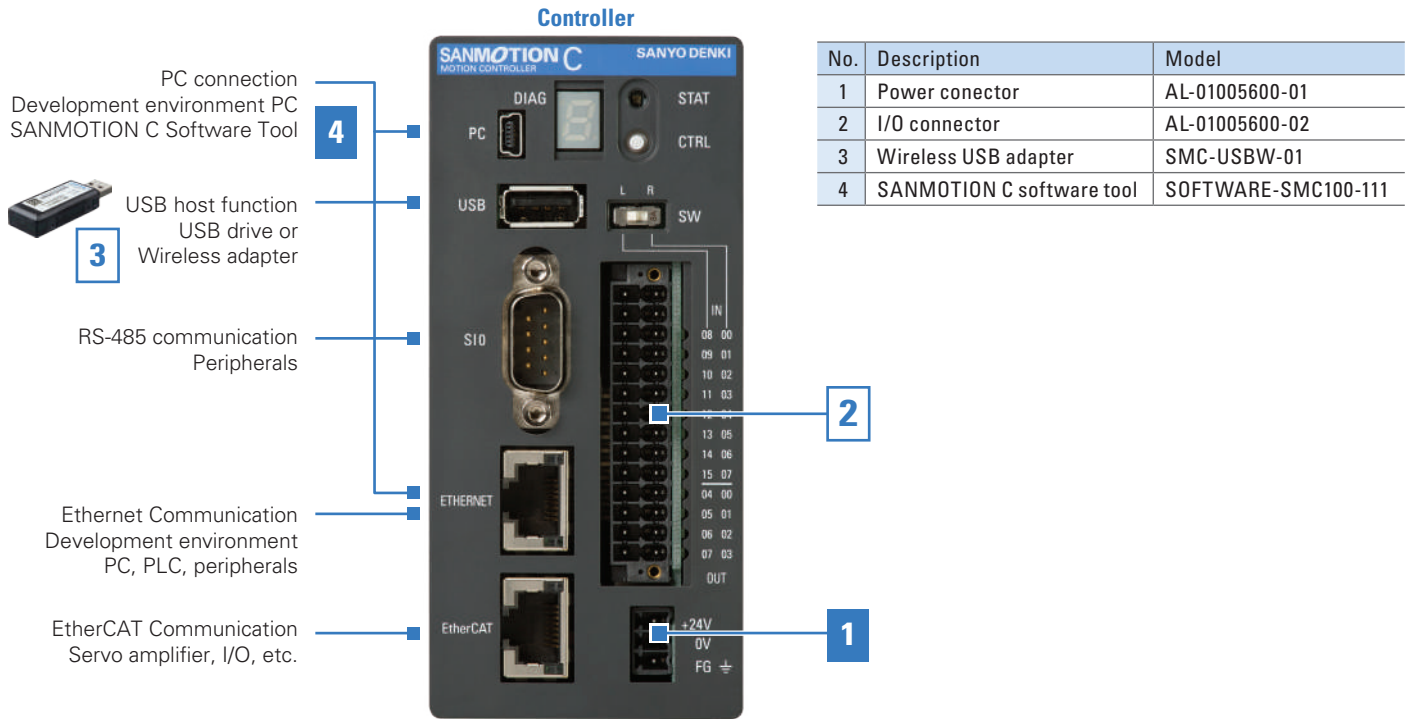
- Programming tool
- Configuration tool
- Simple HMI (human machine interface) tool
- Analysis and diagnostic tool



Motion controller



■ System configuration



Note) All items highlighted in blue must be included to build a complete system.

■ Controller specifications

Model	SMC100-A	SMC100-B
Interface	EtherCAT (100 Mbps) master function	
	Ethernet (10/100/1000 Mbps) protocols (Modbus TCP, OPC-UA)	
	RS-485 (9600 to 115200 bps)	
	USB 2.0 (for data storage and wireless adapter)	
Digital I/O	Digital input: 16 points; rated input voltage: 24 VDC; positive/negative common input	
	Digital output: 8 points; load voltage range: 19.2 to 30 VDC; max. load current: 0.5 A/point; sink output Min. cycle time: 0.5 msec	
Input power supply	Main power supply	Rated voltage: 24 VDC; load voltage range: 19.2 to 30 VDC; Rated current: 0.8 A
	I/O power supply	Rated voltage: 24 VDC; load voltage range: 19.2 to 30 VDC; Rated current: 20 mA
Power consumption	19.2 W	
Cooling method	Passive	
Dimensions, Mass	W55×H120×D110 mm, 300 g	
Max. no. of controllable axes	8	
Control functions	Sequence control Motion control (Electronic cam, electronic gear, linear interpolation, circular interpolation) Robot control (Cartesian coordinate, SCARA, and parallel link robots)	Sequence control Motion control (PTP control)
	Programming languages conforming to international standard (IEC 61131-3) G-code (SMC100-A only)	
EtherNet/IP function	Communication	Scanner function: Network master [up to 4 units] / Adapter function: Network slave [up to 12 units] (Note: Cannot be used at the same time.) Please consult with the application engineer for additional information.
	Conformance testing	ODVA conformance (Conformance test 16 passed)
Software function supported	FoE, parameter transfer, security pass code, data monitor	

CORE PRODUCT LIST

Model Number	Category	Type
A		
AL-00385594	AC Servo	Connector
AL-00530312-01	AC Servo	Connector
AL-00718252-01	AC Servo	Connector
AL-00961844-01	AC Servo	Connector
AL-01005600-01	AC Servo	Connector
AL-01005600-02	AC Servo	Connector
AL-01111793-01	AC Servo	Connector
AL-01111794-01	AC Servo	Connector
AL-01111795-01	AC Servo	Connector
AL-01131482-01	AC Servo	Connector
AL-01134653-01	AC Servo	Cable
AL-01135740-01	AC Servo	Connector
AL-AP000439-01	AC Servo	Connector
AL-Y0020355-01	AC Servo	Cable
AL-Y0021049-01	AC Servo	Cable
B		
BS1D200P10	2-phase step	Driver
E		
EEXTKABS2410FT	AC Servo	Cable
EEXTKABS24JN10FT	AC Servo	Cable
G		
GADSA01AA22	AC Servo	Amplifier
GADSA01AH24	AC Servo	Amplifier
GADSA02AA22	AC Servo	Amplifier
GADSA02AH24	AC Servo	Amplifier
GADSA03AA22	AC Servo	Amplifier
GADSA03AH24	AC Servo	Amplifier
GADSA05AA22	AC Servo	Amplifier
GADSA05AH24	AC Servo	Amplifier
GAM2A4003F0CRK0	AC Servo	Motor
GAM2A4003F0XRK0	AC Servo	Motor
GAM2A4005F0CRK0	AC Servo	Motor
GAM2A4005F0XRK0	AC Servo	Motor
GAM2A4010F0CRK0	AC Servo	Motor
GAM2A4010F0XRK0	AC Servo	Motor
GAM2A4015F0CRK0	AC Servo	Motor
GAM2A4015F0XRK0	AC Servo	Motor
GAM2A6010F0CRK0	AC Servo	Motor
GAM2A6010F0XRK0	AC Servo	Motor
GAM2A6020F0CRK0	AC Servo	Motor
GAM2A6020F0XRK0	AC Servo	Motor
GAM2A6040F0CRK0	AC Servo	Motor
GAM2A6040F0XRK0	AC Servo	Motor
GAM2A6060F0CRK0	AC Servo	Motor
GAM2A6060F0XRK0	AC Servo	Motor
GAM2A8075F0CRK0	AC Servo	Motor
GAM2A8075F0XRK0	AC Servo	Motor
GAM2A9075F0CRK0	AC Servo	Motor
GAM2A9075F0XRK0	AC Servo	Motor
GAM2A9100F0CRK0	AC Servo	Motor
GAM2A9100F0XRK0	AC Servo	Motor
GAM2A9100H0CRK0	AC Servo	Motor
GAM2A9100H0XRK0	AC Servo	Motor

Model Number	Category	Type
GAM2AA150H0XRK0	AC Servo	Motor
GAM2AB120B0CRK0	AC Servo	Motor
GAM2AB120B0XRK0	AC Servo	Motor
GAM2AB120D0CRK0	AC Servo	Motor
GAM2AB120D0XRK0	AC Servo	Motor
GAM2AB120H0CRK0	AC Servo	Motor
GAM2AB120H0XRK0	AC Servo	Motor
GESF0100S	AC Servo	Cable
GESF0100SE01	AC Servo	Cable
GMSF0100S	AC Servo	Cable
GMSF0100SE01	AC Servo	Cable
GSSF0100S	AC Servo	Cable
GSSF0100SE01	AC Servo	Cable
M		
MEXTBG14JN10FT	AC Servo	Cable
MEXTG14JN10FT	AC Servo	Cable
MPEXTG1810FT	AC Servo	Cable
P		
PB4A002P300	Closed Loop Step	Drvier
PB4A002P301	Closed Loop Step	Drvier
PB4A002R300	Closed Loop Step	Drvier
PB4A002R301	Closed Loop Step	Drvier
PBC5S0010A	Closed Loop Step	Cable
PBC5S0010C	Closed Loop Step	Cable
PBC6C0003A	Closed Loop Step	Cable
PBC7E0030A	Closed Loop Step	Cable
PBC7M0030A	Closed Loop Step	Cable
PBC7S0010A	Closed Loop Step	Cable
PBC8P0010A	Closed Loop Step	Cable
PBFM-U6	Closed Loop Step	Accessory
PBM423FXK30-M	Closed Loop Step	Motor
PBM603FXK30-M	Closed Loop Step	Motor
PBM604FXK30-M	Closed Loop Step	Motor
PBM861FXK30-M	Closed Loop Step	Motor
PBM862FXK30-M	Closed Loop Step	Motor
S		
SF2421-10B11	2-phase step	Motor
SF2421-10B41	2-phase step	Motor
SF2422-10B11	2-phase step	Motor
SF2422-10B41	2-phase step	Motor
SF2423-10B11	2-phase step	Motor
SF2423-10B41	2-phase step	Motor
SF2424-10B11	2-phase step	Motor
SF2424-10B41	2-phase step	Motor
SH1421-5241P	2-phase step	Motor
SH1422-5241P	2-phase step	Motor
SH1424-5241P	2-phase step	Motor
SH1601-5240	2-phase step	Motor
SH1602-5240	2-phase step	Motor
SH1603-5240	2-phase step	Motor
SH2141-5511P	2-phase step	Motor
SH2141-5541P	2-phase step	Motor
SH2145-5611P	2-phase step	Motor
SH2145-5641P	2-phase step	Motor

Model Number	Category	Type
SH2281-5731	2-phase step	Motor
SH2281-5771	2-phase step	Motor
SH2285-5731	2-phase step	Motor
SH2285-5771	2-phase step	Motor
SH2862-52XB12	2-phase step	Motor
SM2561C20B41P	2-phase step	Motor
SM2561C40B41P	2-phase step	Motor
SM2561C60B41P	2-phase step	Motor
SM2562C20B41P	2-phase step	Motor
SM2562C40B41P	2-phase step	Motor
SM2562C60B41P	2-phase step	Motor
SM2563C20B41P	2-phase step	Motor
SM2563C40B41P	2-phase step	Motor
SM2563C60B41P	2-phase step	Motor
SM2564C20B41P	2-phase step	Motor
SM2564C40B41P	2-phase step	Motor
SM2564C60B41P	2-phase step	Motor
SM2861-5122	2-phase step	Motor
SM2861-5152	2-phase step	Motor
SM2861-5252	2-phase step	Motor
SM2862-5122	2-phase step	Motor
SM2862-5152	2-phase step	Motor
SM2862-5252	2-phase step	Motor
SM2863-5122	2-phase step	Motor
SM2863-5152	2-phase step	Motor
SM2863-5252	2-phase step	Motor
SMC100-A	Controller	Controller
SMC100-B	Controller	Controller
SMC-USBW-01	Controller	Accessory
SOFTWARE-SMC100-111	Controller	Software
SP2563-5200	2-phase step	Motor
SP2563-5260	2-phase step	Motor
SP2566-5200	2-phase step	Motor
SP2566-5260	2-phase step	Motor
SP2862-5260	2-phase step	Motor
SP2863-5260	2-phase step	Motor
SS2421-5041P	2-phase step	Motor
SS2422-5041P	2-phase step	Motor
SS2501-8040P	2-phase step	Motor
SS2502-8040P	2-phase step	Motor
Number		
103H5210-5214	2-phase step	Motor
103H5210-52XB12	2-phase step	Motor
103H7822-2511	2-phase step	Motor
103H7822-25XB12	2-phase step	Motor
103H89222-5241	2-phase step	Motor
103H89223-5241	2-phase step	Motor
4835775-1	2-phase step	Cable
4837961-1	2-phase step	Cable



SANYO DENKI

SANYO DENKI AMERICA, INC.

Website URL <https://www.sanyodenki.com/america/>

1. U.S. Headquarters

Address: 468 Amapola Ave., Torrance, CA 90501
Phone: 800 905 7989
Fax: 310 212 6686

2. Silicon Valley Office

Address: 1500 Wyatt Dr. Suite 5, Santa Clara, CA 95054
Phone: 408 988 1700
Fax: 408 982 1700

3. Chicago Office

Address: 1340 Remington Road Suite E, Schaumburg, IL 60173
Phone: 224 353 6420
Fax: 224 353 6302

4. Detroit Office (Repair Service)

Address: 37511 Schoolcraft Road, Livonia, MI 48150
Phone: 734 525 1806
Fax: 734 525 3367

■ Precautions For Adoption

Failure to follow the precautions below may cause moderate injury and property damage, or in some circumstances, could lead to a serious accident. Always follow all listed precautions.

Cautions

- The products in this brochure are designed to be used with general industrial devices. Read the accompanying Instruction Manual carefully prior to using the product.
- Do not use this product in an environment where vibration is present, such as in moving vehicles or shipping vessels.
- Do not perform any retrofitting, re-engineering, or modification to the product.
- Please contact us beforehand if you intend to use this product in the following applications.
- Medical equipment that may have an effect on human life.
- Systems or equipment that may have a major impact on society or on the public.
- Special applications related to aviation and space, nuclear power, electric power, submarine repeaters, etc.