SINEE

Servo System Selection Guide

Reliable drives and solutions by technology

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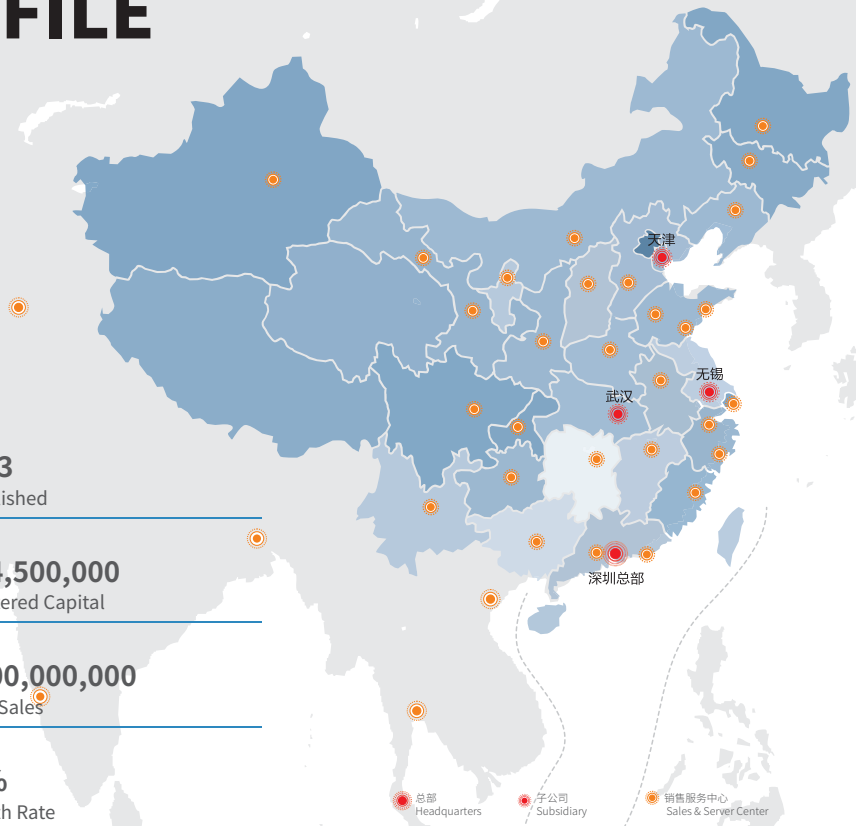
COMPANY PROFILE



2003
Established

¥ 64,500,000
Registered Capital

¥ 300,000,000
2018 Sales

30%
Growth Rate

~270
Employee

4
Regional Center

36
Sales & Server Center

HONOR CERTIFICATION

SINEE PRODUCT

SINEE CATALOG

EA180 product line introduction

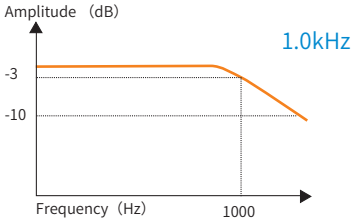
Controller & HMI	 Motion controller  HMI
Servo drive	 EA180E EtherCAT network type  EA180C CANopen network type
Servo motor	 SER motor series

Controller & HMI	 PLC  HMI
Servo drive	 EA180P PROFINET network type (to be released)  EA180 Analog & pulse type
Servo motor	 SES motor series

EA180 servo system – technical characteristics

High-speed response performance

- Up to 1.0KHz speed frequency response.
- Shortened positioning time.
- High-speed and high-accuracy real-time synchronous communication on basis of parallelized system design.

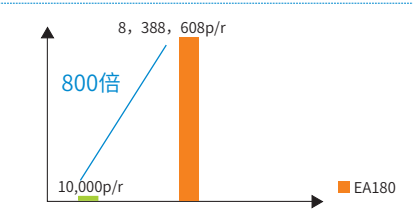


Small Size

- Size similar to Panasonic A6 series drive, matched with SINEE SES servo motor, can help to minimize the system volume.

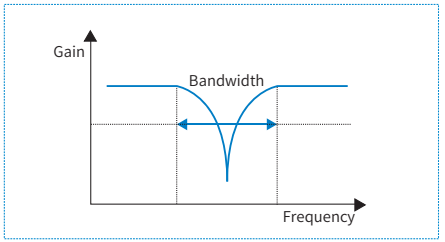
High-accuracy positioning

- Encoder of 17 bit incremental and 23 bit absolute value, with the powerful control performance, can make the positioning accuracy less than 5 encoder pulses.

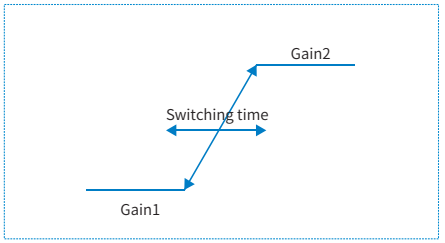


Intelligent controls

- Intelligentized resonance suppression
  The system has four (4) high-frequency resonance suppression notch filters, two (2) of them are the FFT-based ones; the others are manual ones.
  Synchronously the vibration suppression filters are provided to minimize the vibration of long arm machine.

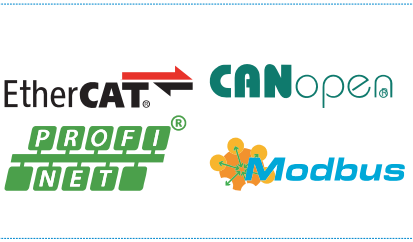


- Control gain switchover functions
  The control loop structure on the basis of PDFF may reduce overshooting efficiently.
  The parameter self-adjustment on the basis of inertia may enhance the site adaptability.



Abandant product series

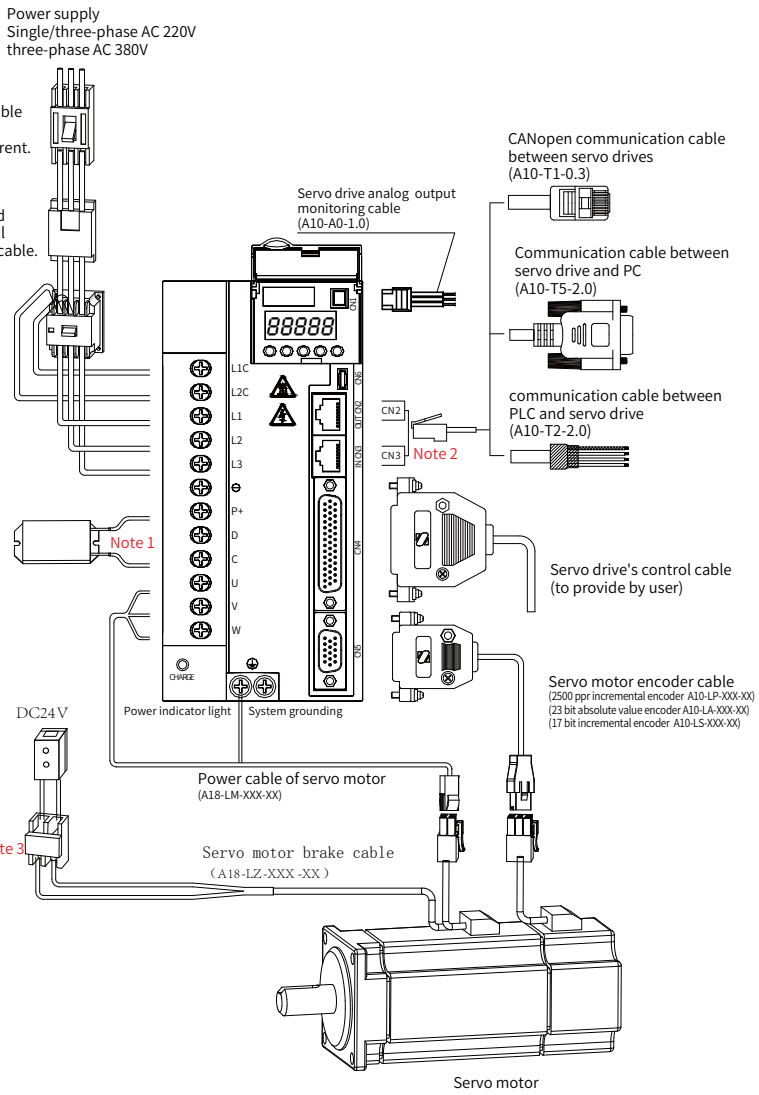
- Analog & pulse standard type and network type with EtherCATor CANopen or RS485 protocol supported;
- 2500 ppr or serial type with17 bit incremental or 23 bit absolute values encoder available



High reliability

- Complete protection function and EMC design
  Protection function design on the basis of overall reliability of motor and driver;
  EMC design on the basis of graded optimization and system adaptability.
- High-performance motor material and technology ensure the system to run reliably
  Containing dysprosium-neodymium-ferroboron magnetic steel, high-strength shaft, Tamagawa encoder, large-size bearing, encapsulated by resin.

EA180 Wiring for analog and pulse command type servo system



Servo Motor

Note 1: When using external brake resistance, the short connector between P+ and D must be removed and the brake resistance parameters must be set correctly on the driver.

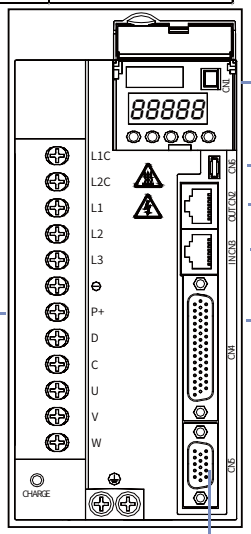
Note 2: CN2 and CN3 are the RJ45 sockets with completely same internal pin definitions.

Note 3: As for the brake of servo motor, it is highly recommended to control the Servo drive by using the DO terminal with BK functions; simultaneously, since the load capacity of the DO terminal of Servo drive can only drive the intermediate relay, it can not be used to drive the electromagnetic contactor.

EA180 Description for analog and pulse command type servo drive's terminal

Main circuit terminals

Terminal mark	Terminal name
L1C、L2C	Control power input terminal
L1、L2、L3	Main circuit AC power input terminal
P+、D、C	Terminal connecting with external braking resistor
P+、⊖	DC bus sharing terminal
U、V、W	Servo motor's connecting terminal
PE	Grounding



CN 1 analog quantity monitoring terminal

Pin No.	Signal name	Functions
1	AO1	Analog output voltage: 0V~10V Maximum output current: 1mA
2	AO2	
3	GND	Analog output signal common earthing
4	Reserved	Can not connect with any signal cable

CN2, CN3 communication terminal

Pin No.	Signal name	Function
1	RS485+	RS485 signal positive terminal
2	RS485-	RS485 signal negative terminal
3	GND	Communication signal reference grounding
4	RS232-RXD	RS232 signal receiving terminal
5	RS232-TXD	RS232 signal transitting terminal
6	GND	Communication signal reference grounding
7	-	-
8	-	-

CN6 USBCommunication terminal

According to the USB2.0 specification

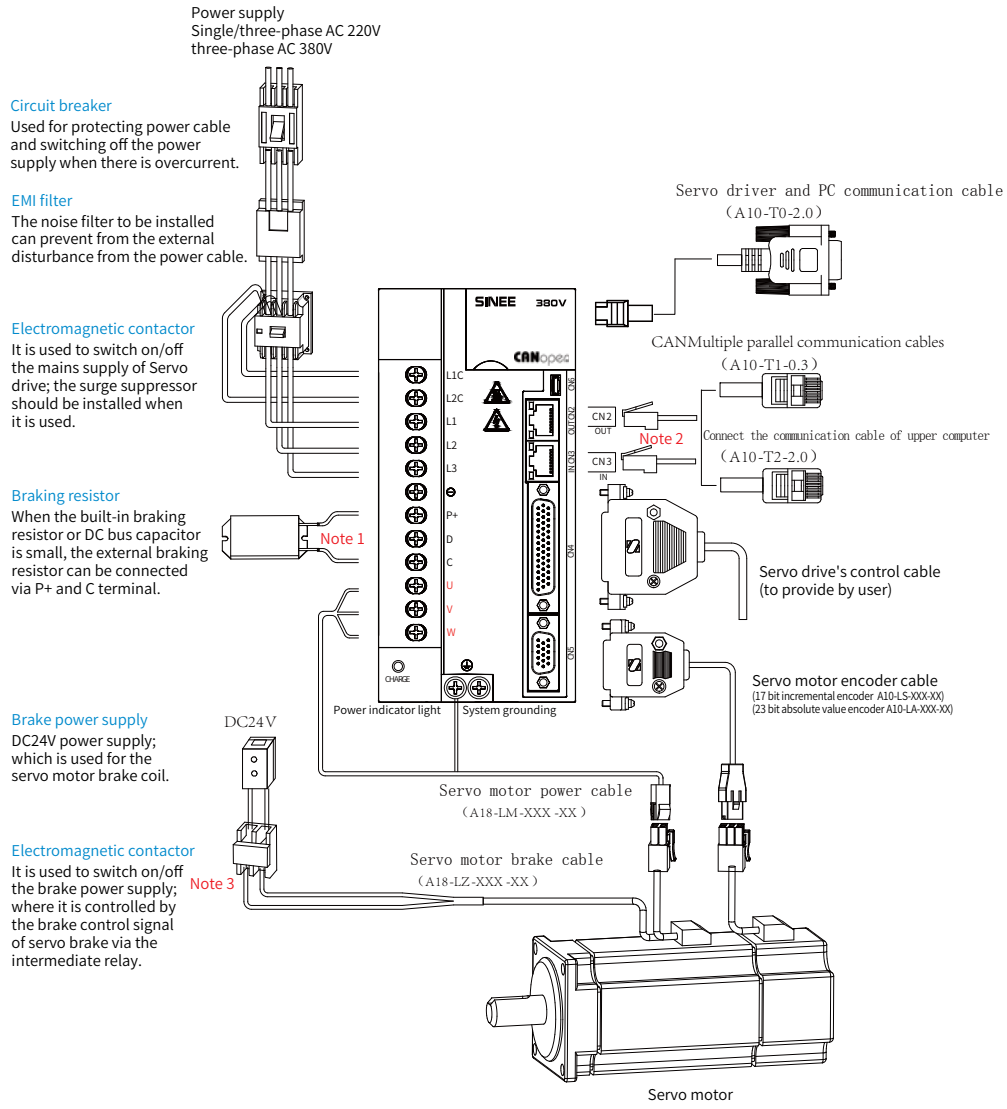
CN4 control terminal

Signal name		Pin No.	Default function	
Digital input	DI1	5	S-ON	Servo control Enable
	DI2	20	ALM-RST	Pulse error counter reset
	DI3	4	P-CLR	Inhibit positive drive
	DI4	19	P-OT	Inhibit Negative drive
	DI5	3	N-OT	Pulse inhibited
	DI6	18	INHIBIT	Pulse forbid
	DI7	2	ORPG	Origin regression detection signal
	DI8	17	SHOM	The origin of regression Enable
	COM+	21	DI input common front end	
Power supply	+24V	25/40	Internal 24V power supply, voltage range: +20V ~ 26V, maximum output current 200mA.	
	COM	7/22/36		
	+5V	6	+5V power supply, maximum output current 50mA +10v power supply, maximum output 5mA	
	+10V	44		
	GND	43		
Digital output	DO1	8	S-RDY+	Servo ready, connected as available for receiving S-ON signal
	DO1-	37	S-RDY-	
	DO2	23	BK+	Brake control signal
	DO2-	38	BK-	
	DO3	9	COIN+	Position arrival signal
	DO3-	39	COIN-	
	DO4	24	ALM+	Connected when there is fault
	DO4-	10	ALM-	
	DO5	41	Disabled	No preset features
Frequency division output	PA+	28	Pulse A frequency division positive	Max. current 20mA
	PA-	13	Pulse A frequency division negative	
	PB+	12	Pulse B frequency division positive	Max. current 20mA
	PB-	27	Pulse B frequency division negative	
	PZ+	11	Pulse Z frequency division positive	Max. current 20mA
	PZ-	26	Pulse Z frequency division positive	
	OCZ	35	Z pulse collector open circuit output, maximum permissible input current 40mA	
	GND	42		
Analog input	AI1	15	Analog quantity input signal, resolution 12 bits, maximum allowable input voltage ±12V.	
	AI2	30		
	GND	14/29	Analog input signal grounding	
Pulse position command	PULHIP	1	Position pulse uSER 24V power supply	Input pulse command style: Differential pulse input, open-collector input Input pulse form: Pulse + direction, A, B phase orthogonal pulse, CW/CCW pulse.
	PULSE+	33	Position pulse command +	
	PULSE-	34	Position pulse command -	
	PULHIS	16	Directional pulse uSER 24V power supply	
	SIGN+	31	Differential position's directional command +	
	SIGN-	32	Differentia position's directional command -	

CN5 encoder terminal

Pin No.	Signal name	
	2500 ppr encoder	17/23 bit encoder
1	Z+	SD+
2	U+	
3	V+	SD-
4	W+	
5	+5V	+5V
6	Z-	
7	U-	
8	V-	
9	W-	
10	GND	GND
11	B+	
12	B-	
13	A+	
14	A-	
shell	PE	PE

EA180C Wiring for CANopen network type Servo system



Note 1: when using external brake resistance, the short connector between P+ and D must be removed and the brake resistance parameters must be set correctly on the driver
Note 2: CN2 and CN3 are two internal pins that define exactly the same RJ45 socket.
Note 3 servo motor brakes are strongly recommended to be controlled by DO terminals defined as BK functions of the servo driver.At the same time, the DO terminal of the servo driver, whose load capacity can only drive the intermediate relay, cannot be used to drive the electromagnetic contactor.

EA180C Description for CANopen network Servo drive’s terminal

Main circuit terminals

Terminal mark	Terminal name
L1C、L2C	Control power input terminal
L1、L2、L3	Main circuit AC power input terminal
P+、D、C	Terminal connecting with external braking resistor
P+、⊖	DC bus sharing terminal
U、V、W	Servo motor’s connecting terminal
PE	Grounding

CN 1 analog quantity monitoring terminal

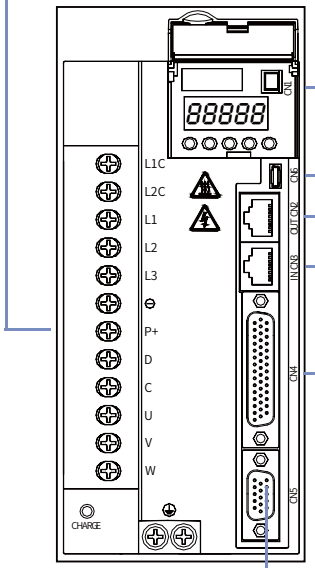
Pin No.	Signal name	Functions
1	AO1	Analog output voltage: 0V~10V Maximum output current: 1mA
2	AO2	
3	GND	Analog output signal common earthing
4	Reserved	Can not connect with any signal cable

CN2, CN3 communication terminal

Pin No.	Signal name	Function
1	RS485+	RS485 signal positive terminal
2	RS485-	RS485 signal negative terminal
3	GND	Communication signal reference grounding
4	RS232-RXD	RS232Signal receiving end
5	RS232-TXD	RS232 Signal sending end
6	GND	Reference point for communication signals
7	CANH	CANSignal positive pole
8	CANL	CANSignal negative pole

CN6 USBCommunication terminal

According to the USB2.0 specification



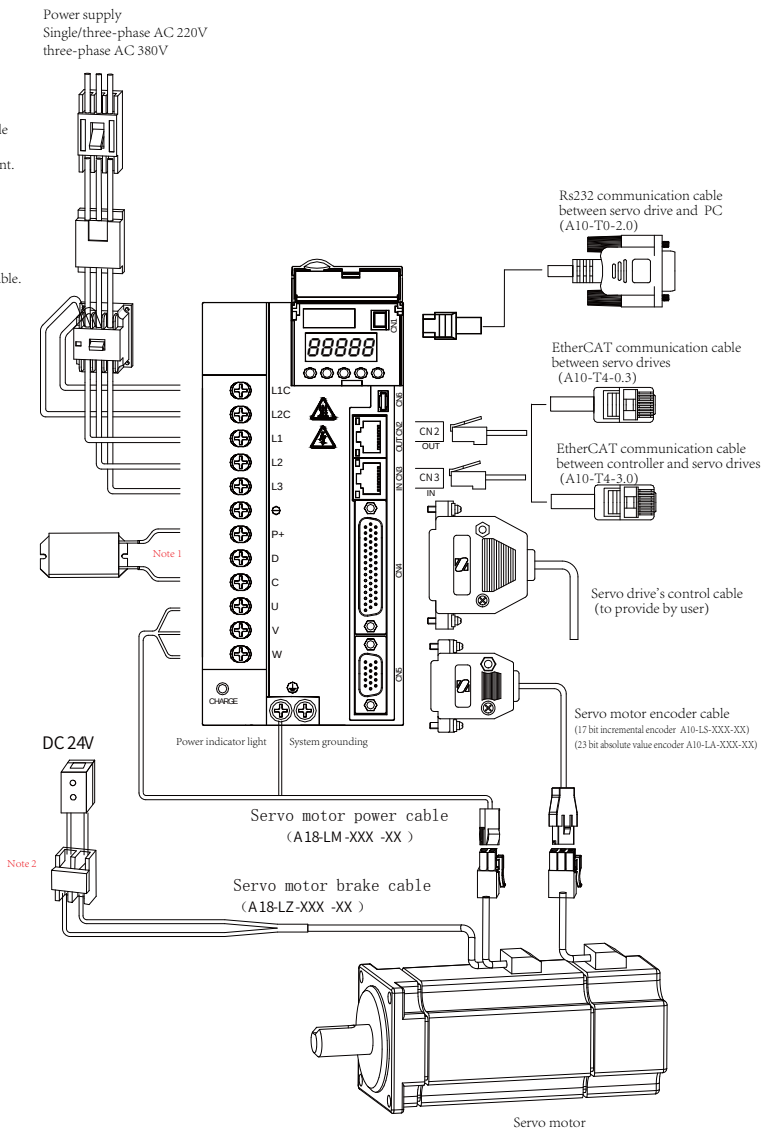
CN4 control terminal

Signal name		Pin No.	Default function	
Digital input	DI1	5	S-ON	Servo Enable
	DI2	20	ALM-RST	Alarm fault reset
	DI3	4	P-CLR	Pulse error counter reset
	DI4	19	P-OT	Inhibit positive drive
	DI5	3	N-OT	Inhibit Negative drive
	DI6	18	INHIBIT	Pulse Inhibited
	DI7	2	ORPG	Origin regression detection signal
	DI8	17	SHOM	The origin of regression Enable
	COM+	21	DI input common positive port	
Power supply	+24V	25/40	Internal 24V power supply, voltage range +20V~26V, maximum output current 200mA	
	COM	7/22/36		
	+5V	6	+5V power supply, maximum output current 50mA +10V power supply, maximum output 5mA	
	+10V	44		
	GND	43		
Digital output	DO1	8	S-RDY+	Servo motor ready, receive S-ON Signal time link
	DO1-	37	S-RDY-	
	DO2	23	BK+	Brake control signal
	DO2-	38	BK-	
	DO3	9	COIN+	Position arrival signal
	DO3-	39	COIN-	
	DO4	24	ALM+	Link when failure occurs
	DO4-	10	ALM-	
	DO5	41	Disabled	No preset features
Frequency division output	PA+	28	A pulse frequency division output positive	Maximum current 20mA
	PA-	13	A pulse frequency division output negative	
	PB+	12	B pulse frequency division output positive	Maximum current 20mA
	PB-	27	B pulse frequency division output negative	
	PZ+	11	Z pulse frequency division output positive	Maximum current 20mA
	PZ-	26	Z pulse frequency division output negative	
	OCZ	35	Z pulse collector open circuit output, maximum permissible input current 40mA	
	GND	42		
Analog	AI1	15	Analog input signal, resolution ratio 12 place, Maximum permissible input voltage±12V	
	AI2	30		
	GND	14/29	Analog input signal end	

C N5 Encoder terminal

Pin No.	Signal name
1	SD+
3	SD-
5	+5V
10	GND
shell	PE

EA180E Wiring for EtherCAT network type Servo system

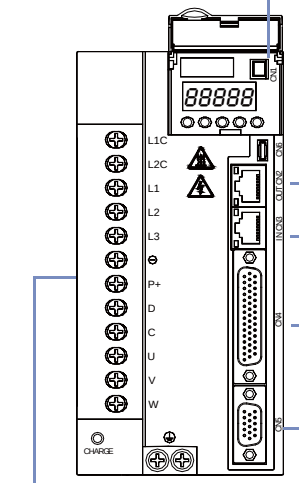


Note 1: when using external brake resistance, the short connector between P+ and D must be removed and the brake resistance parameters must be set correctly on the driver
Note 2 servo motor brakes are strongly recommended to be controlled by DO terminals defined as BK functions of the servo driver.At the same time, the servo driver DO terminal, its load capacity is only Can drive intermediate relays and cannot be used to drive electromagnetic contactors.

EA180E Description for EtherCAT network Servo drive's terminal

CN 1 RS232 communication terminal

Pin No.	Signal name	Functions
1	RS232-RXD	RS232 signal receiving terminal
2	Reserved	Can not connect with any signal cable
3	RS232-TXD	RS232 signal transmiting terminal
4	GND	RS232 communication reference grounding



CN2, CN3 EtherCAT communication terminal

IN CN3		OUT CN2	
Pin No.	Signal name	Pin No.	Signal name
1	TD+	1	TD+
2	TD-	2	TD-
3	RD+	3	RD+
4		4	
5		5	
6	RD-	6	RD-
7		7	
8		8	

CN4 control terminal

Signal name		Pin No.	Default function	
Digital input	DI1	5	P-OT	Positive drive Inhibited
	DI2	20	N-OT	Negative drive Inhibited
	DI3	4	ORPG	Homing detection signal
	DI4	19	ALM-RST	Alarm fault reset
	DI5	3	GAIN-SEL	Gain switch
	DI6	18	J-SEL	Ratio of inertias changeover
	DI7	2	P-CLR	Pulse error counter reset
	DI8	17	INHIBIT	Pulse Inhibited
	COM+	21	Digital input common positive port	
Power supply	+24V	25/40	Internal 24V power supply, voltage range: +20V ~ 26V, maximum output current 200mA.	
	COM	7/22/36		
	+5V	6	+5V power supply, maximum output current: 50mA	
	GND	43		
Digital output	DO1	8	S-RDY+	Servo ready, connected as available for receiving S-ON signal
	DO1-	37	S-RDY-	
	DO2	23	BK+	Brake control signal
	DO2-	38	BK-	
	DO3	9	COIN+	Position arrival signal
	DO3-	39	COIN-	
	DO4	24	ALM+	Connected when there is fault
	DO4-	10	ALM-	

Main circuit terminals

Terminal mark	Terminal name
L1C、L2C	Control power input terminal
L1、L2、L3	Main circuit AC power input terminal
P+、D、C	Terminal connecting to external braking resistor
P+、⊖	DC bus sharing terminal
U、V、W	Servo motor's connecting terminal
PE	Grounding

CN5 Encoder terminal

Pin No.	Signal name
1	SD+
3	SD-
5	+5V
10	GND
shell	PE

Instruction for EA180 servo drive

EA ① 180 ② E ③ - 6R2 ④ - 2 ⑤ B ⑥ - XX ⑦

① Product: Servo drive ② Series: 180 series	④ Rated output current: 0R9 — 0.9A 026 — 26A	⑥ Type of encoder A: 2500ppr encoder B: Tamagawa serial encoder
③ Empty: Analog & pulse type E:EtherCAT network type C: CANopen network type P: PROFINET network type	⑤ Rated power supply and voltage 1. Single-phase AC220V 2. Three-phase AC220V 3. Three-phase AC380V	⑦ Special specifications

Voltage	Drive model	Rated motor power (KW)	Rated current (A)	Max. current (A)	Structure	Adapting motor encoder
Single/three-phase 220V	EA180□-0R9-1□	0.05	0.9	3.15	SIZE A	□-A: 2500 ppr incremental type □-B: Tamagawa serial encoder
	EA180□-1R6-1□	0.2	1.6	5.6		
	EA180□-2R5-1□	0.4	2.5	9.0		
	EA180□-4R8-2□	0.75	4.8	14.4	SIZE B	
	EA180□-6R2-2□	1	6.2	18.6		
Three-phase 220V	EA180□-011-2□	1.5	11	30	SIZE C	
Three-phase 380V	EA180□-5R6-3□	1.5	5.6	15		
	EA180□-8R5-3□	2	8.5	20		
	EA180□-013-3□	3	13	30		
	EA180□-018-3□	4.4	18	45	SIZE D	□-B: Tamagawa serial encoder
	EA180□-021-3□	5.5	21	55		
	EA180□-026-3□	7.5	26	65		

EA 180 series Servo drive size

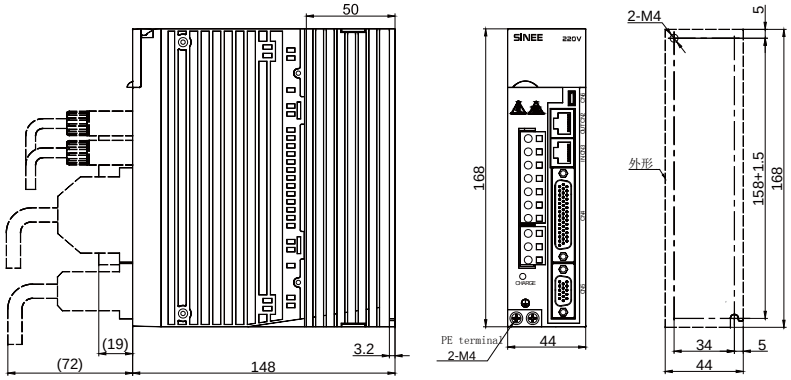


Figure for installation hole

EA180-0R9-1□ EA180-1R6-1□ EA180-2R5-1□
SIZE A

EA180 series Servo drive size

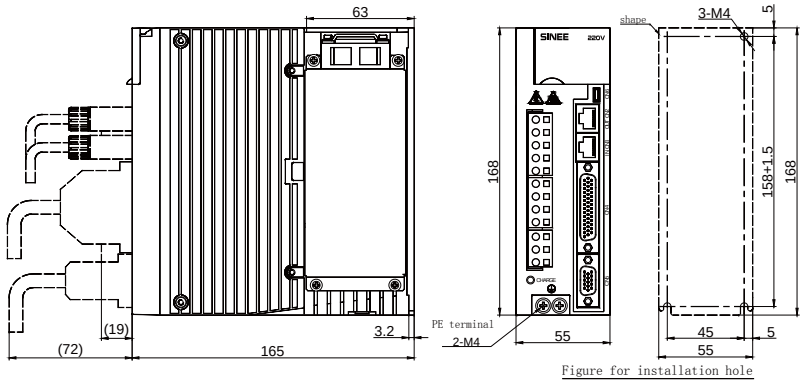


Figure for installation hole

EA180-4R8-2□ EA180-6R2-2□
SIZE B

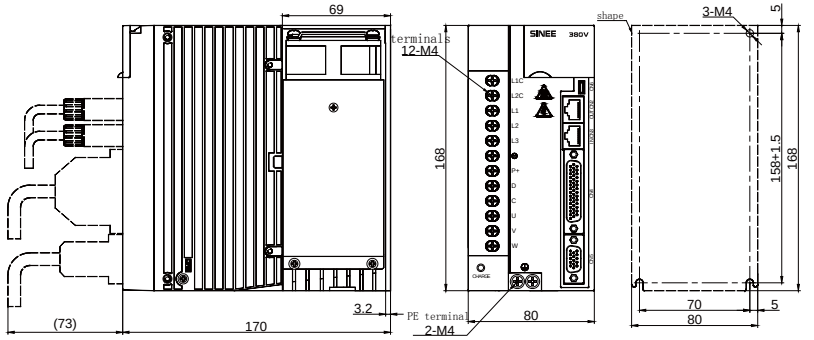


Figure for installation hole

EA180-5R6-3□ EA180-8R5-3□ EA180-013-3□ EA180-011-2□
SIZE C

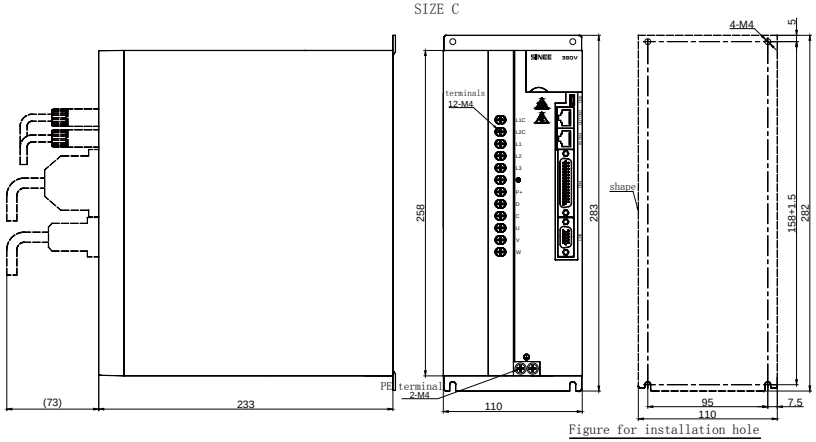


Figure for installation hole

EA180-018-3□ EA180-021-3□ EA180-026-3□
SIZE D

Note: Size D will be changed with the product updated, notification might delay.

Technical specification

EA180 Servo drive

Item				Specification	
Basic specification	Control type			IGBT PWM control sine wave current driving	
	Feedback			Supporting incremental 2500 ppr encoder, 17 bit incremental encoder, 23 bit absolute encoder	
	Six (6) control modes			Speed control, position control, torque control, speed/position control, torque/speed control, position/torque control	
	Front panel			5 buttons, 5 LED places	
	Regenerative brake (note 1)			Built in braking unit and resistor, allowing to connect with the external braking resistor.	
	Use condition	Ambient temperature		Operating temperature 0~40°, storage temperature: -20°~85°	
		Ambient humidity		Operating/storage: ≤90%RH (without condensation)	
		Altitude		≤1,000m	
		Vibration-resisting impact strength		Oscillation: ≤4.9m/s2 (no work is allowed at the point of resonance); impact: ≤19.6m/s2	
		Protection degree		IP10	
		Class of pollution		2	
	Type of cooling (note2)			Fan cooling	
Performance	Speed torque control mode	Speed fluctuation ratio	Load variance	0~100% load: 0.3% maximally	On the basis of 23 bit encoder and at the rated speed
			Power voltage variance	Rated voltage ±10%: 0.3% maximally	
			Ambient temperature	0~50°: 0.3% maximally	
		Speed ratio		1:3000 (2500ppr encoder) 1:5000 (17 bit and 23 bit encoder)	Continuous and stable operating at rated load: minimum speed/rated speed
		Frequency bandwidth		800Hz (17 bit encoder)	
		Torque control accuracy		±3% (current repeated accuracy)	
		Soft start time setting		0~30s (setting acceleration and deceleration respectively)	
	Position control mode	Feed-forward compensation		0~100% (setting the resolution 1%)	
		Positioning completion width		1~65535 command unit (setting the resolution 1 command unit)	
		Minimum setting time		5ms (no-load, when the positioning completes at the rated speed)	

EA180 analog & pulse type servo drive

Item				Specification
Speed torque control mode	Input signal	Speed command input	Command voltage	+/10v resolution 12 bits (the motor rotates positively when there is positive command note3)
			Input impedance	5.1 ohm approximately
			Circuit constant	200μs
		Torque command input	Command voltage	±10V resolution 12 bits
			Input impedance	5.1 ohm approximately
			Circuit constant	200μs
		Multi-stage speed command		The default use of DI5 (CMD0), DI6 (CMD1), DI7 (CMD2), DI8 (CMD3) signal mix is used to realize 16-section speed selection
Position control mode	Input signal	Command pulse	Input form	Differential drive: open-collector circuit
			Pulse form	Pulse + direction: orthogonal pulse ; CW/CCW
			Input pulse frequency	Differential drive: max. 500Kpps; open-collector circuit: max. 200Kpps
			Command pulse wave filtration	Allowing to setting the pulse filtering parameters
		Multi-stage position command		Allowing to set the DI5 (CMD0), DI6 (CMD1), DI7 (CMD2), DI8 (CMD3) signal mix to realize 16-section position selection (the one with the terminal capable of making CTRG trigger signal is provided separately).
				16-section position progressive mode, using CTRG terminal single triggering
		Command sliding mode		Lowpass filtering, moving-average filters
		Internal open-collector power		+24V
		Internal current-limiting resistance		Open-collector circuit: 2.2KΩ Differential drive: 200Ω
Input/output signal	Position output	Output form		Phase A, B and Z: differential output Phase Z: OC output The pulse width of the Phase Z can be adjusted, max.3ms
		Frequency dividing ratio		Random frequency dividing; the number of frequency dividing can be the one of 4 times before frequency or after frequency.

Note1:without built-in brake resistor below 2R8
Note2:natural cooling below 2R8
Note3:face to shaft, shaft anticlockwise rotation is positive rotation.

Input/output signal	Digital input	Modifiable signal distribution	8-way DI
			Servo enabled, fault resetting, position pulse error counter clearing, speed command direction selection, position/speed multi-stage switch, zero-position fixing enabled, internal command triggering, control mode switch, pulse Inhibited, positive drive Inhibited, Negative drive Inhibited, second torque limit, positive inching, negative inching, others
	Digital input	Modifiable signal distribution	4-way DO
			Servo ready, brake output, motor rotary output , zero-speed signal, speed proximity, speed arrival, position proximity, position arrival, torque limit, speed limit, warning output, fault output, others
Internal functions	Overrun prevention function		P-OT, N-OT take effect, deceleration stop
	Origin return		Optional 35 origin return modes
	Electronic gear ratio		N/M time N: 1~65535 M: 1~65535
			Allowing to switch the molecule of 4 types of electronic gear ratios via terminal
	LED display		5-bit LED display: main circuit CHARGE
	Protection function		Overvoltage, undervotage , overcurrent, overspeed, IGBT overheat, overload, encoder abnormality, large position error, EEPROM fault, others
	Analog quantity output for observation		2-way AO: DC0~10V, maximum output current: 1mA
			Allowing to set the observation object
	Communication function	Communication mode	RS232, RS485
		Communication protocol	Modbus RTU、
	Others		Two-stage gain switch, automatic gain adjustment, 4 groups of alarm records, JOG operation

EA180E EtherCAT network type Servo drive

Item			Specification
Input/output signal	Digital input	Modifiable signal distribution	8-way DI
			Servo enabled, fault resetting, position pulse error counter clearing, speed command direction selection, position/speed multi-stage switch, zero-position fixing enabled, internal command triggering, control mode switch, pulse Inhibited, positive drive Inhibited, Negative driveInhibited, second torque limit, positive inching, negative inching, others
	Digital output	Modifiable signal frequency dividing	4-way DO
			Servo ready, brake output, motor rotary output , zero-speed signal, speed proximity, speed arrival, position proximity, position arrival, torque limit, speed limit, warning output, fault output, others
Internal functions	Overrun prevention function		P-OT, N-OT take effect, deceleration stop
	LED display		5-bit LED display: main circuit CHARGE
	Protection function		Overvoltage, undervotage, overcurrent, overspeed, IGBT overheat, overload, encoder abnormality, large position error, EEPROM fault, others
	Others		Two-stage gain switch, automatic gain adjustment, 4 groups of alarm records, JOG operation
Communication functions	Communication mode		RS232, EtherCAT
	EtherCAT bus communication		Synchronizing cycle: 1ms or its integral multiple
			Supporting COE protocol and the following operation modes: Profile position mode Profile velocity mode Profile torque mode Interpolation position mode Cyclic synchronous position mode Cyclic synchronous velocity mode Cyclic synchronous torque mode Homing mode

■EA180C CANopen network Servo drive

Item			Specification
Input/output signal	Digital input	Modifiable signal distribution	8-way DI
			Servo enabled, fault resetting, position pulse error counter clearing, speed command direction selection, position/speed multi-stage switch, zero-position fixing enabled, internal command triggering, control mode switch, pulse Inhibited, positive drive Inhibited, Negative driveInhibited, second torque limit, positive inching, negative inching, others
	Digital output	Modifiable signal frequency dividing	4-way DO
			Servo ready, brake output, motor rotary output , zero-speed signal, speed proximity, speed arrival, position proximity, position arrival, torque limit, speed limit, warning output, fault output, others
Internal functions	Overrun prevention function		P-OT, N-OT take effect, deceleration stop
	LED display		5-bit LED display: main circuit CHARGE
	Protection function		Overvoltage, undervotage, overcurrent, overspeed, IGBT overheat, overload, encoder abnormality, large position error, EEPROM fault, others
	Others		Two-stage gain switch, automatic gain adjustment, 4 groups of alarm records, JOG operation
Communication functions	Communication mode		RS232、RS485、CANopen
			Synchronizing cycle: 1ms or its integral multiple
			Supporting the following operation modes: Profile position mode Profile velocity mode Profile torque mode Homing mode

SER/SES series servo motor model number descrip

SER 08 - 0R7- 30- 2 F A Y 1 -XX

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Position 1 - series	Position 2 - motor flange size	Position 3 - motor's rated output power
SER: standard servo motor SES: high-performance servo motor	04: 40mm 06: 60mm 08: 80mm 09: 86mm 11: 110mm 13: 130mm 18: 180mm	0R1: 100W 0R2: 200W 0R4: 400W 0R7: 750W 0R8: 850W 1R0: 1000W 1R2: 1200W 1R3: 1300W 1R5: 1500W 1R8: 1800W 2R0: 2000W 3R0: 3000W 4R0: 4000W 4R4: 4400W 5R5: 5500W 7R5: 7500W
Position 4 - motor's rated speed	**Position 7 - type of inertia**	
10: 1000rpm 15: 1500rpm 20: 2000rpm 25: 2500rpm 30: 3000rpm	A: low inertia B: intermediate inertia C: high inertia	
Position 5 - voltage classes	**Position 8 - shaft end**	**Position 9 - type selection**
2: 220V 3: 380V	Y: with the U-type key slot, with the screw holes(note1) Z: with the double round key slots, with the screw holes	Empty: no selection 1: with brake (DC24V) 2: with oil seal 3: with brake and oil seal
Position 6 - type of encoder		**Position 10 - special specification**
A: 2500 ppr incremental encoder B: 17 bit incremental encoder F: 23 bit absolute value encoder		

Note1: some products may have the double-cyclic key slots; except for 130 flange motor, the width and height of key is as same as that of the U-shape key slot.

SER/SES servo motor – common characteristic

Motor's insulation class	F class
Voltage resistance of insulation	1500V 60s
Insulation resistance	DC500V, 10MΩ or above
Motor's temperature resistance class	B
Degree of protection	Totally closed self-cooling IP 65 (except for shaft through part)
Operating environment	Ambient temperature: 0 ~ 40°C Relative humidity: 20 ~ 80% (without condensation)
Installation mode	Flange installation
Direction of rotation	Anticlockwise (CCW) rotation when watching from the load side under the positive rotation command.

Specification for brake

Motor Type	Motor's rated torque (N.m)	Brake's friction torque (N.m)	Input voltage (V±10%)	Rated power for DC 24V (W±7%)	brake time (ms)	close time (ms)
SES04-005/0R1-30-□□□□1	0.16/0.32	0.35	DC 24	4	15	30
SER/SES06-0R2-30-□□□□1	0.64	2		6.3	30	90
SER/SES06-0R4-30-□□□□1	1.27					
SER/SES08-0R7-□□-□□□□1	2.4/3.5	4		10.4	40	100
SER/SES08-1R0-30-□□□□1	3.2					
SER09-0R7-30-□□□□1	2.4					
SER11-0R6-30-□□□□1	2	10		11.6	50	120
SER11-1R0-20-□□□□1	5					
SER11-1R2-30-□□□□1	4					
SER11-1R8-30-□□□□1	6					
SER13-1R0-□□-□□□□1	3.27/4.77/9.55	20		19.5	80	140
SER13-1R5-□□-□□□□1	4.78/7.16/14.3					
SER13-2R0-□□-□□□□1	6.5/9.55					
SER13-3R0-□□-□□□□1	9.55/14.32					
SES13-0R8-15-□□□□1	5.39	10				
SES13-1R3-15-□□□□1	8.34	20				
SES13-1R8-15-□□□□1	11.5					
SES18-2R9-15-□□□□1	18.6	40		25	100	230
SES18-4R4-15-□□□□1	28.4					
SES18-5R5-15-□□□□1	35					
SES18-7R5-15-□□□□1	48	80		49	120	250

Note:

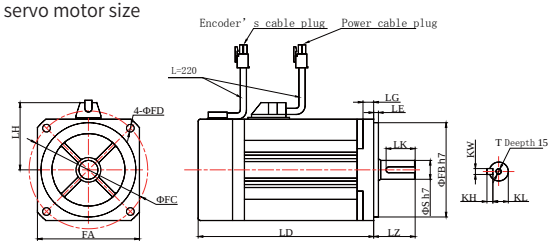
1: Brake only can be used at motor standstill

2: 24V control power is supplied by customer

3: The brake time changes with the specific product

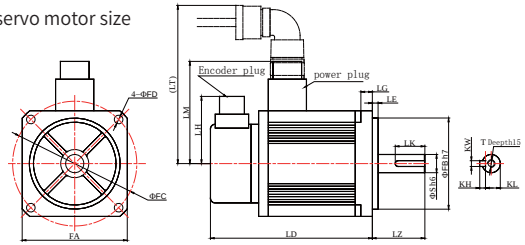
SER series servo motor installation size

- SER series 60、80、86 flange servo motor size



Motor model number	LD (mm)	FA (mm)	FB (mm)	FC (mm)	FD (mm)	LZ (mm)	LK (mm)	LE (mm)	LG (mm)	LT (mm)	S (mm)	KL (mm)	KH (mm)	KW (mm)	T (mm)	Mass (kg)	Connector type at cable side	
SER06-0R2-30-2□A□□	113.5 (147)	60	50	70	5.5	30	22.5	3	8	44	14	11	5	5	M5	1.01 (1.40)	Motor power plug: 172159-1 Motor brake plug: 172157-1 reed : 170362-1	Encoder plug: 172161-1 reed : 170361-1
SER06-0R4-30-2□A□□	134 (168)	60	50	70	5.5	30	22.5	3	8	44	14	11	5	5	M5	1.37 (1.78)		
SER08-0R7-30-2□A□□	141.5 (173)	80	70	90	6.5	35	25	3	8	55	19	15.5	6	6	M5	2.47 (3.33)		
SER08-0R7-20-2□A□□	171.5 (203)	80	70	90	6.5	35	25	3	8	55	19	15.5	6	6	M5	3.4 (4.10)		
SER08-1R0-30-2□A□□	171.5 (203)	80	70	90	6.5	35	25	3	8	55	19	15.5	6	6	M5	3.4 (4.10)		
SER09-0R7-30-2□B□□	148 (183)	86	80	100	6.5	35	25	3	9	58	16	13	5	5	M5	3.24 (3.94)		

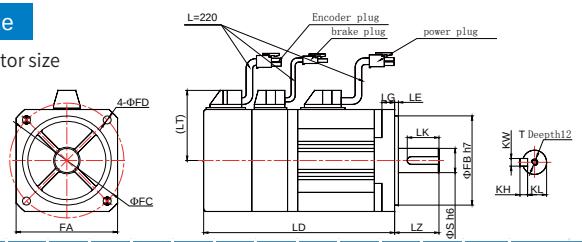
- SER series110、130flange servo motor size



Motor model number	LD (mm)	FA (mm)	FB (mm)	FC (mm)	FD (mm)	LZ (mm)	LK (mm)	LE (mm)	LG (mm)	LH (mm)	LM (mm)	LT (mm)	S (mm)	KL (mm)	KH (mm)	KW (mm)	T (mm)	Mass (kg)	Connector type at cable side	
SER11-0R6-30-2□B□□	155.5 (210.5)	110	95	130	9	55	31	6	9	–	107	176	19	15.5	6	6	M6	3.93 (5.39)	Motor power plug: YD28MKT Motor power with brake plug:YD28K7T	The aviation plug YD28K15TS
SER11-1R0-20-2□B□□	205.5 (260.5)	110	95	130	9	55	31	6	9	–	107	176	19	15.5	6	6	M6	6.42 (7.88)		
SER11-1R2-30-2□B□□	185.5 (240.5)	110	95	130	9	55	31	6	9	–	107	176	19	15.5	6	6	M6	5.46 (6.92)		
SER11-1R8-30-2□B□□	218.5 (273.5)	110	95	130	9	55	31	6	9	–	107	176	19	15.5	6	6	M6	7.26 (8.72)		
SER13-0R7-20-2□C□□	150 (205)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	5.2 (6.90)		
SER13-1R0-10-2□B□□	215 (270)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	10.12 (11.67)		
SER13-1R0-20-2□B□□	165 (220)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	6.41 (7.94)		
SER13-1R0-30-2□B□□	150 (205)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	5.31 (6.89)		
SER13-1R5-10-□□B□□	265 (320)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	13.82 (15.40)		
SER13-1R5-20-□□B□□	185 (240)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	7.89 (9.43)		
SER13-1R5-30-□□B□□	165 (220)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	6.4 (7.96)		
SER13-2R0-20-3□B□□	215 (270)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	10.12 (11.67)		
SER13-2R0-30-3□B□□	185 (240)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	7.85 (9.47)		
SER13-3R0-20-3□B□□	265 (320)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	13.81 (15.34)		
SER13-3R0-30-3□B□□	215 (270)	130	110	145	9	58	45	6	12	–	117	186	22	18	7	8	M6	10.12 (11.67)		

SES series servo motor installation size

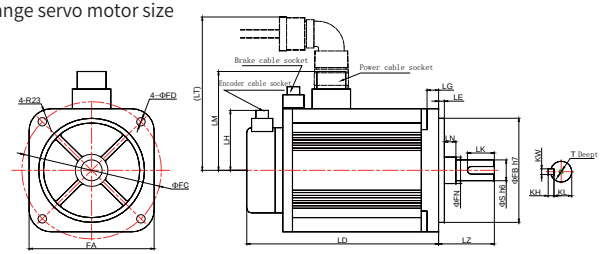
- SES series 40、60、80 flange servo motor size



Motor model number	LD (mm)	FA (mm)	FB (mm)	FC (mm)	FD (mm)	LZ (mm)	LK (mm)	LE (mm)	LG (mm)	LT (mm)	S (mm)	KL (mm)	KH (mm)	KW (mm)	T (mm)	Mass (kg)	Connector type at cable side	
SES04-005-30-2□AY□	86.5 (119.5)	40	30	46	4.5	25.5	14	3	8	37	8	6.3	3	3	M3	0.4 (0.6)	Motor power plug: 172159-1 Brake plug: 172157-1 reed: 170362-1	Encoder plug: 172161-1 reed: 170361-1
SES04-0R1-30-2□AY□	100.5 (133.5)	40	30	46	4.5	25.5	14	3	8	37	8	6.3	3	3	M3	0.47 (0.67)		
SES06-0R2-30-2□BY□	93.7 (120.2)	60	50	70	4.5	30	20	3	8	48	14	8.5	4	4	M4	1.01 (1.4)		
SES06-0R4-30-2□BY□	110.7 (137.2)	60	50	70	4.5	30	25	3	8	48	14	11	5	5	M5	1.37 (1.78)		
SES08-0R7-30-2□BY□	122.4 (150.6)	80	70	90	6.3	35	25	3	10	58	19	15.5	6	6	M5	2.47 (3.33)		
SES08-1R0-30-2□BY□	136.4 (164.6)	80	70	90	6.3	35	25	3	10	58	19	15.5	6	6	M5	3.4 (4.1)		

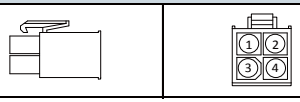
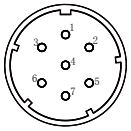
Note: Only two shadowed hole is available for SES04 motor

- SES series 130、180 flange servo motor size

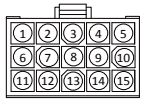
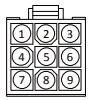
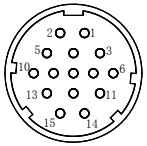
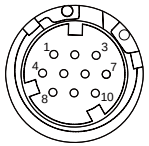


Motor model number	LD (mm)	FA (mm)	FB (mm)	FC (mm)	FD (mm)	LZ (mm)	LK (mm)	LE (mm)	LG (mm)	LH (mm)	LM (mm)	LT (mm)	LN (mm)	FN (mm)	S (mm)	KL (mm)	KH (mm)	KW (mm)	T (mm)	Mass (kg)	Connector type at cable side	
SES13-0R8-15-3FBY□	150.9 (183.4)	130	110	145	9	58	27.5	6	12	63.3	105	230	12	28	19	16	5	5	M5	5.83 (17.8)	Motor power plug: MS3106A18-1S Brake plug: M10-SP2S-MD	Encoder plug: CM10-SP10S-MD
SES13-1R3-15-3FBY□	166.9 (199.4)	130	110	145	9	58	28	6	12	63.3	105	230	12	28	22	18.5	6	6	M5	7.25 (9.3)		
SES13-1R8-15-3FBY□	184.9 (217.4)	130	110	145	9	58	29	6	12	63.3	105	230	12	28	24	20	8	8	M5	8.8 (10.8)		
SES18-2R9-15-3FBY□	173.3 (231)	180	114.3	200	13.5	79	65	3.2	18	63.3	135.5	230	0	35	35	30	8	10	M12	13 (19.5)	Motor power plug: MS3106B22-22S Brake plug: CM10-SP2S-MD	
SES18-3R6-20-3FBY□	197.3 (324)	180	114.3	200	13.5	79	65	3.2	18	63.3	135.5	230	0	35	35	30	8	10	M12	17.5 (24)		
SES18-4R4-15-3FBY□	197.3 (324)	180	114.3	200	13.5	79	65	3.2	18	63.3	135.5	230	0	35	35	30	8	10	M12	17.5 (24)		
SES18-5R5-15-3FBY□	236.3 (278)	180	114.3	200	13.5	113	96	3.2	18	114.3	145.5	230	0	42	42	37	10	12	M16	22 (27.8)	Motor power plug: MS3102A32-17S Brake plug: M10-SP2S-MD	
SES18-7R5-15-3FBY□	282.3 (324)	180	114.3	200	13.5	113	96	3.2	18	114.3	145.5	230	0	42	42	37	10	12	M16	29.5 (35)		

Power terminal pin layout at motor side

Connector type	Pin layout	Pin No	Function
TE 172159-1		1	U
		2	V
		3	W
		4	PE
YD28K4TS		1	PE
		2	U
		3	V
		4	W
YD28K7TS		1	PE
		2	U
		3	V
		4	W
		5	24V (brake)
		6	0V (brake)
		7	空
MS3108A18-10S MS3108A22-22S MS3108A32-17S		A	U
		B	V
		C	W
		D	PE

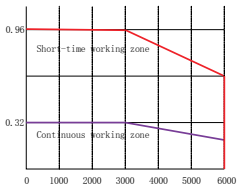
■ Encoder terminal pin layout at motor side

Connector type	TE 172163-1				TE 172161-1		YD28K15TS				CM10-SP10S-MD	
												
2500ppr incremental encoder	Signal name	Pin No	Signal name	Pin No			Signal name	Pin No	Signal name	Pin No		
	A+	9	V+	10			A+	4	V+	11		
	A−	13	V−	12			A−	7	V−	14		
	B+	4	W+	11			B+	5	W+	12		
	B−	14	W−	15			B−	8	W−	15		
	Z+	7	+5V	2			Z+	6	+5V	2		
	Z−	5	GND	3			Z−	9	GND	3		
	U+	6	PE	1			U+	10	PE	1		
	U−	8					U−	13				
17/23bit encoder					Signal name	Pin No	Signal name	Pin No	Signal name	Pin No		
					+5V	1	+5V	2	+5V	4		
					GND	2	GND	3	GND	9		
					SD+	5	SD+	4	SD+	1		
					SD−	6	SD−	7	SD−	2		
					VD+	3	VD+	14	VD+	6		
					VD−	4	VD−	15	VD−	5		
					PE	9	PE	1	PE	10		

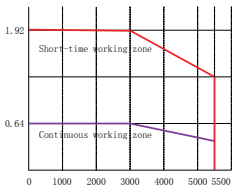
SER/SES series servo motor torque and speed characteristic curve graph

■ 40、60、80 flange servo motor torque and speed characteristic curve graph

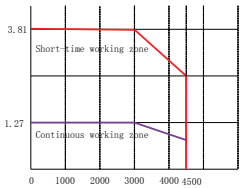
SES04-0R1-30-2□AY□



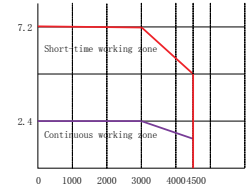
SER06-0R2-30-2□AY□



SER06-0R4-30-2□AY□

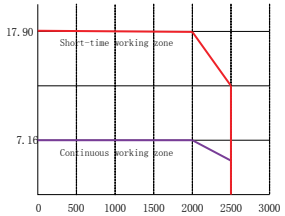


SER08-0R7-30-2□AY□

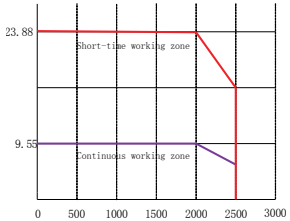


■ 130 flange servo motor torque and speed characteristic curve graph

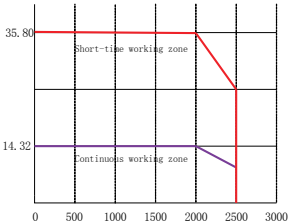
SER13-1R5-20-3□BY□



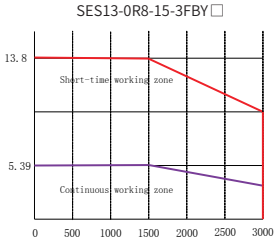
SER13-2R0-20-3□BY□



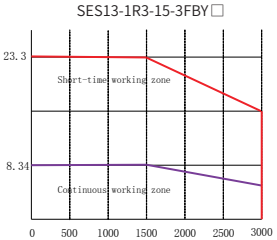
SER13-3R0-20-3□BY□



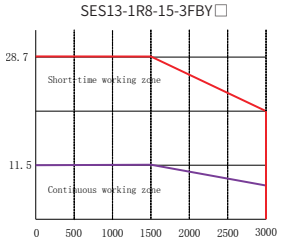
SES13-0R8-15-3FBY□



SES13-1R3-15-3FBY□

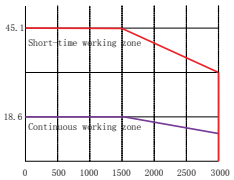


SES13-1R8-15-3FBY□

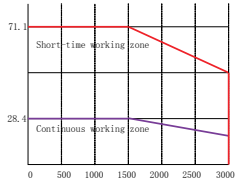


■ 180 flange servo motor torque and speed characteristic curve graph

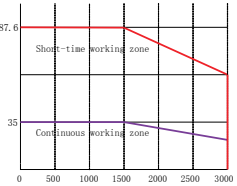
SES18-2R9-15-3FBY□



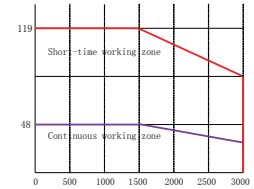
SES18-4R4-15-3FBY□



SES18-5R5-15-3FBY□



SES18-7R5-15-3FBY□



SER series servo motor parameter table

Servo motor model	Voltage	Rated power	Rated speed	Max. speed	Rated current	Instantaneous maximum current	Rated torque	Instantaneous maximum torque	Torque constant	Rotational inertia	Adapting driver EA180-
	V	W	rpm	rpm	A	A	Nm	Nm	Nm/A	Kg. cm^2*10^{-4}	
SER06-0R2-30-2□AY□	AC 220	200	3000	5500	1.2	3.6	0.64	1.92	0.53	0.18(0.18)	1R6-1□
SER06-0R4-30-2□AY□		400	3000	4500	2.3	6.9	1.27	3.81	0.55	0.3(0.3)	2R5-1□
SER08-0R7-30-2□AY□		750	3000	4500	4.3	12.9	2.4	7.2	0.56	1.01(1.02)	4R8-2□
SER08-0R7-20-2□AY□			2000	3000	3	9	3.5	10.5	1.17	1.59(1.6)	
SER08-1R0-30-2□AY□		1000	3000	4000	4	12	3.2	10.5	0.88	1.59(1.6)	
SER09-0R7-30-2□BZ□		750	3000	4000	3.4	10.2	2.4	7.2	0.71	2.42(2.43)	
SER11-0R6-30-2□BY□		600	3000	4000	2.5	7.5	2	6	0.8	3.03(3.05)	2R5-1□
SER11-1R0-20-2□BY□		1000	2000	2500	5	15	5	15	1	7.22(7.24)	6R2-2□
SER11-1R2-30-2□BY□		1200	3000	3500	4.9	14.7	4	12	0.82	5.54(5.56)	
SER11-1R8-30-2□BY□		1800	3000	3500	6.6	19.8	6	18	0.91	8.55(8.57)	011-2□
SER13-0R7-20-2□BY□		750	2000	2500	3.88	11.6	3.65	10.95	0.94	6.17(6.19)	4R8-2□
SER13-1R0-10-2□BY□		1000	1000	1500	4.72	14.2	9.55	28.65	2.02	17.14(17.16)	6R2-2□
SER13-1R0-20-2□BY□			2000	2500	4.72	14.2	4.77	14.31	1.01	8.71(8.73)	
SER13-1R0-30-2□BY□			3000	3500	4.96	14.9	3.27	9.81	0.66	6.17(6.19)	
SER13-1R5-10-3□BY□	AC 380	1500	1000	1500	5.4	13.5	14.32	35.8	2.65	25.58(25.6)	5R6-3□
SER13-1R5-20-3□BY□			2000	2500	4.1	10.3	7.16	17.9	1.75	12.08(12.1)	
SER13-1R5-30-3□BY□			3000	3500	4.2	10.5	4.78	11.95	1.14	8.71(8.73)	
SER13-2R0-20-3□BY□		2000	2000	2500	6.5	16.3	9.55	23.88	1.47	17.14(17.16)	8R5-3□
SER13-2R0-30-3□BY□			3000	3500	5.8	14.5	6.5	16.25	1.12	12.08(12.1)	
SER13-3R0-20-3□BY□		3000	2000	2500	9.6	24	14.32	35.8	1.49	25.58(25.6)	013-3□
SER13-3R0-30-3□BY□			3000	3500	8.3	20.8	9.55	23.88	1.15	17.14(17.16)	

Note: 1.The value in ( ) means the one with brake
2.Derating 10% with oil seal used

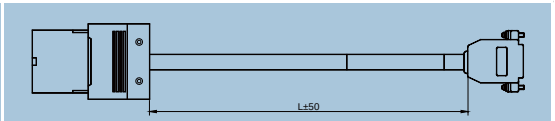
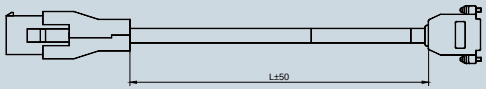
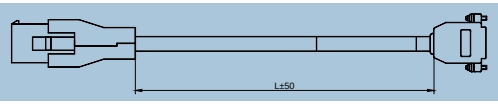
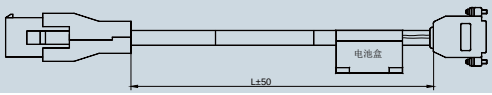
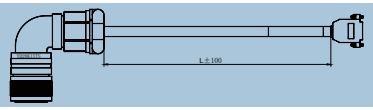
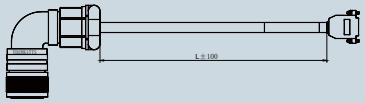
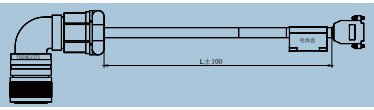
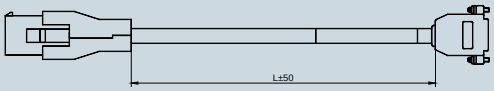
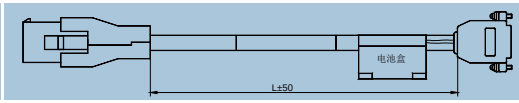
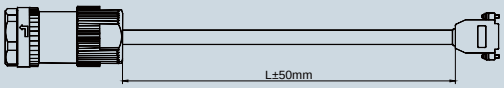
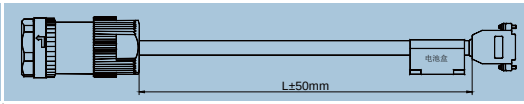
SES Series servo motor Specific product parameters table

Servo motor model	Voltage	Rated power	Rated speed	Max. speed	Rated current	Instantaneous maximum current	Rated torque	Instantaneous maximum torque	Torque constant	Rotational inertia	Adapting driver EA180□-
	V	W	rpm	rpm	A	A	Nm	Nm	Nm/A	Kg. cm2*10-4	
SES04-005-30-2□AY□	AC 220	50	3000	6000	0.6	1.8	0.16	0.48	0.26	0.02(0.02)	0R9-1□
SES04-0R1-30-2□AY□		100	3000	6000	1.1	3.3	0.32	0.96	0.29	0.04(0.04)	1R6-1□
SES06-0R2-30-2□AY□		200	3000	6000	1.6	4.8	0.64	1.92	0.44	0.29(0.34)	1R6-1□
SES06-0R4-30-2□AY□		400	3000	6000	2.3	6.9	1.27	3.81	0.59	0.56(0.61)	2R5-1□
SES08-0R7-30-2□AY□		750	3000	6000	4	12	2.4	7.2	0.653	1.56(1.66)	4R8-2□
SES08-1R0-30-2□AY□		1000	3000	6000	6	18	3.2	9.6	0.538	2.03(2.13)	6R2-2□
SES13-0R8-15-2FBY□		850	1500	3000	6.9	17	5.39	13.8	1.72	13.95(16.1)	011-2B
SES13-0R8-15-3FBY□	AC 380	850	1500	3000	3.5	8.5	5.39	13.8	1.72	13.95(16.1)	5R6-3B
SES13-1R3-15-3FBY□		1300	1500	3000	5.4	14	8.34	23.3	1.78	19.95(22.1)	5R6-3B
SES13-1R8-15-3FBY□		1800	1500	3000	8.4	20	11.5	28.7	1.5	26.1(28.1)	8R5-3B
SES18-2R9-15-3FBY□		2900	1500	3000	11.9	28	18.6	45.1	1.7	46.0 (53.9)	013-3B
SES18-4R4-15-3FBY□		4400	1500	3000	16.5	40.5	28.4	71.1	1.93	67.5 (75.4)	018-3B
SES18-5R5-15-3FBY□		5500	1500	3000	20.8	52	35	87.6	1.8	89.0(96.9)	021-3B
SES18-7R5-15-3FBY□		7500	1500	3000	25.7	65	48	119	1.92	125.0(133)	026-3B
SES18-3R6-20-3FBY□		3600	2000	2500	9.5	28.5	16.7	50.16	2.1	46.0(53.9)	013-3B

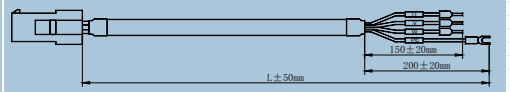
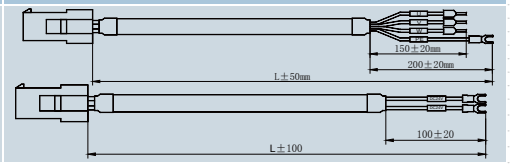
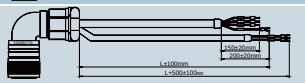
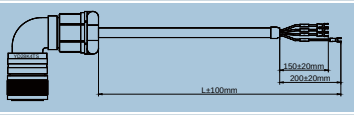
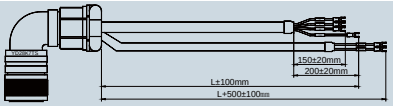
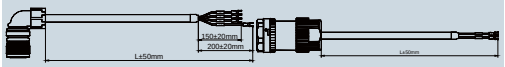
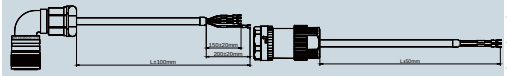
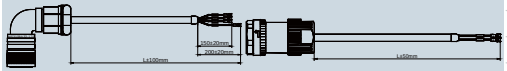
Note: 1.The value in ( ) means the one with brake
2.Derating 10% with oil seal used

EA180 series servo product – optional part

Servo motor encoder cable

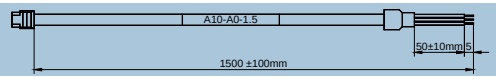
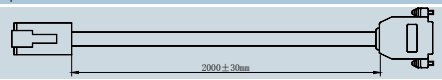
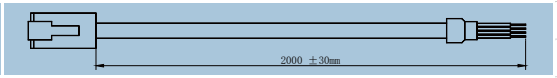
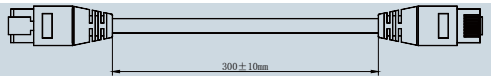
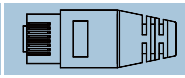
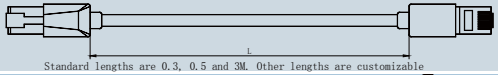
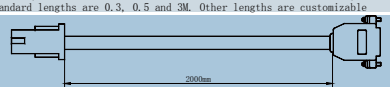
Motor model	Name	Extent	Model	appearance design
SER06-0R2-30-2AAY□ SER06-0R4-30-2AAY□ SER08-0R7-30-2AAY□ SER08-0R7-20-2AAY□ SER08-1R0-30-2AAY□ SER09-0R7-30-2AAY□	2500ppr encoder cable with AMP connector and U/V/W line included	□	A10-LP-A000-□	
SER06-0R2-30-2BAY□ SER06-0R4-30-2BAY□ SER08-0R7-30-2BAY□ SER08-0R7-20-2BAY□ SER08-1R0-30-2BAY□ SER09-0R7-30-2BAY□	Communication type increamental encoder cable with AMP connector	□	A10-LS-A000-□	
SER06-0R2-30-2FAY□ SER06-0R4-30-2FAY□ SER08-0R7-30-2FAY□ SER08-0R7-20-2FAY□ SER08-1R0-30-2FAY□ SER09-0R7-30-2FAY□	Communication type increamental encoder cable with AMP connector	□	A10-LS-A000-□	
	Communication type absolute encoder cable with AMP connector	□	A10-LA-A000-□	
SER11 0.6~1.8kW SER13 0.75~3.0kW	2500ppr encoder cable with YD28 connector and U/V/W line included	□	A10-LP-H100-□	
SER11 0.6~1.8kW SER13 0.75~3.0kW	Communication type increamental encoder cable with YD28 connector	□	A10-LS-H100-□	
SER11 0.6~1.8kW SER13 0.75~3.0kW	Communication type absolute encoder cable with YD28 connector	□	A10-LA-H100-□	
SES04-005-30-2FAY□ SES04-0R1-30-2FAY□ SES06-0R2-30-2FBY□ SES06-0R4-30-2FBY□ SES08-0R7-30-2FBY□ SES08-1R0-30-2FBY□	Communication type increamental encoder cable with AMP connector	□	A10-LS-A000-□	
	Communication type absolute encoder cable with AMP connector	□	A10-LA-A000-□	
SES13-0R8-15-3FBY SES13-1R3-15-3FBY SES13-1R8-15-3FBY SES18-2R9-15-3FBY SES18-4R4-15-3FBY SES18-5R5-15-3FBY SES18-7R5-15-3FBY	Communication type increamental encoder cable with CM10 connector	□	A18-LS-H400-□	
	Communication type absolute encoder cable with CM10 connector	□	A18-LA-H400-□	

Servo motor power cable

Motor model	Name	Extent	Model	appearance design
SER06-0R2-30-2□AY SER06-0R4-30-2□AY SER08-0R7-30-2□AY SER08-0R7-20-2□AY SER08-1R0-30-2□AY SER09-0R7-30-2□AY SES06-0R2-30-2□BY SES06-0R4-30-2□BY SES08-0R7-30-2□BY SES08-1R0-30-2□BY	Motor power cable Adapt the following drives: EA180□-0R9-1□ EA180□-1R6-1□ EA180□-2R5-1□ EA180□-4R8-2□ EA180□-6R2-2□	□	A18-LM-A007-□	
SER06-0R2-30-2□AY1 SER06-0R4-30-2□AY1 SER08-0R7-30-2□AY1 SER08-0R7-20-2□AY1 SER08-1R0-30-2□AY1 SER09-0R7-30-2□AY1 SES06-0R2-30-2□BY1 SES06-0R4-30-2□BY1 SES08-0R7-30-2□BY1 SES08-1R0-30-2□BY1	Motor power cable +Brake cable Adapt the following drives: EA180□-0R9-1□ EA180□-1R6-1□ EA180□-2R5-1□ EA180□-4R8-2□ EA180□-6R2-2□	□	Motor power cable A18-LM-A007-□ Brake cable A10-LZ-A005-□	
SER11-0R6-30-2□BY SER11-1R0-20-2□BY SER11-1R2-30-2□BY SER13-0R7-20-2□BY SER13-1R0-□□-2□BY	Motor power cable Adapt the following drives: EA180□-4R8-2□ EA180□-6R2-2□	□	A18-LM-H115-□	
SER11-0R6-30-2□BY1 SER11-1R0-20-2□BY1 SER11-1R2-30-2□BY1 SER13-0R7-20-2□CY1 SER13-1R0-□□-2□BY1	Motor power cable +Brake cable Adapt the following drives: EA180□-4R8-2□ EA180□-6R2-2□	□	A18-LB-H115-□	
SER11-1R8-30-2□BY SER13-1R5-□□-2□BY SER13-1R5-□□-3□BY SER13-2R0-□□-3□BY SER13-3R0-□□-3□BY	Motor power cable Adapt the following drives: EA180□-011-2□ EA180□-5R6-3□ EA180□-8R5-3□ EA180□-013-3□	□	A10-LM-H120-□	
SER11-1R8-30-2□BY1 SER13-1R5-□□-2□BY1 SER13-1R5-□□-3□BY1 SER13-2R0-□□-3□BY1 SER13-3R0-□□-3□BY1	Motor power cable +Brake cable Adapt the following drives: EA180□-011-2□ EA180□-5R6-3□ EA180□-8R5-3□ EA180□-013-3□	□	A10-LB-H120-□	
SES13-0R8-15-3FBY SES13-1R3-15-3FBY SES13-1R8-15-3FBY	Motor power cable	□	A1 8-LM-M420-□	
SES13-0R8-15-3FBY1 SES13-1R3-15-3FBY1 SES13-1R8-15-3FBY1	Motor power cable +Brake cable	□	Motor power cable A18-LM-M420-□ Brake cable A18-LZ-H405-□	
SES18-2R9-15-3FBY SES13-4R4-15-3FBY	Motor power cable	□	A18-LM-M525-□	
SES18-2R9-15-3FBY1 SES13-4R4-15-3FBY1	Motor power cable +Brake cable	□	Motor power cable A10-LM-M220-□ Brake cable A18-LZ-H405-□	
SES18-5R5-15-3FBY SES13-7R5-15-3FBY	Motor power cable	□	A10-LM-M240-□	
SES18-5R5-15-3FBY1 SES13-7R5-15-3FBY1	Motor power cable +Brake cable	□	Motor power cable A10-LM-M240-□ Brake cable A18-LZ-H405-□	

EA180 series servo product – optional part

■ Servo drive communication cable

Name	Length	Model	Appearance design
EA180 analog pulse driver Output cable for EA180	1.5m	A10-A0-1.5	
RS232 communication cable between PC and EA180	2.0m	A10-T5-2.0	
CAN & RS485 communication cable between PLC and EA180 or EA180C	2.0m	A10-T2-2.0	
CAN & RS485 communication cable for EA180 or EA180C connection each other	0.3m	A10-T1-0.3	
Terminal resistor for CAN & RS485 communication of EA180 or EA180C	-	A10-T3	
EhterCAT communication cable for EA180E	□m	A10-T4-□	 Standard lengths are 0.3, 0.5 and 3M. Other lengths are customizable
RS232 communication cable between PC and EA180E	2.0m	A10-T0-2.0	

Configuration table for motor & servo drive & cable

Motor Type	Servo Type	Encoder cable	Motor cable
SER06-0R2-30-2BAY□ SER06-0R2-30-2FAY□	EA180□-1R6-1B	A10-LS-A000-m (without battery) A10-LA-A000-m (with battery)	A18-LM-A007-m (motor power cable) A10-LZ-A005-m (Brake cable)
SER06-0R4-30-2BAY□ SER06-0R4-30-2FAY□	EA180□-2R5-1B		
SER08-0R7-30-2BAY□ SER08-0R7-30-2FAY□	EA180□-4R8-2B		
SER08-0R7-20-2BAY□ SER08-0R7-20-2FAY□			
SER08-1R0-30-2BAY□ SER08-1R0-30-2FAY□			
SER13-0R7-20-2FCY□		A10-LS-H100-m (without battery) A10-LA-H100-m (with battery)	A18-LM-H115-m (motor power cable) A18-LB-H115-m (motor power cable with brake line)
SER13-1R0-10-2FBY□	EA180□-6R2-2B		
SER13-1R0-20-2FBY□			
SER13-1R0-30-2FBY□			
SER13-1R5-10-2FBY□	EA180□-011-2B		A10-LM-H120-m (motor power cable) A10-LB-H120-m (motor power cable with brake line)
SER13-1R5-20-2FBY□			
SER13-1R5-30-2FBY□			
SER13-1R5-10-3FBY□	EA180□-5R6-3B		
SER13-1R5-20-3FBY□			
SER13-1R5-30-3FBY□			
SER13-2R0-20-3FBY□	EA180□-8R5-3B		
SER13-2R0-30-3FBY□			
SER13-3R0-20-3FBY□	EA180□-013-3B		
SER13-3R0-30-3FBY□			

Note: While Absolute encoder is used, A10-LA-XXXX-m cable must be selected with the absolute position application, and A10-LS-XXXX-m with other application.

Configuration table for motor & servo drive & cable

Motor Type	Servo Type	Encoder cable	Motor cable
SER06-0R2-30-2BAY□ SER06-0R2-30-2FAY□	EA180□-1R6-2A	A10-LP-A000-m	A18-LM-A007-m (motor power cable) A10-LZ-A005-m (Brake cable)
SER06-0R4-30-2BAY□ SER06-0R4-30-2FAY□	EA180-2R5-2A		
SER08-0R7-30-2A□□□	EA180-4R8-2A		
SER08-0R7-20-2A□□□			
SER08-1R0-30-2A□□□			
SER09-0R7-30-2A□□□			
SER11-0R6-30-2A□□□		A10-LP-H100-m	A18-LM-H115-m (motor power cable) A18-LB-H115-m (motor power cable with brake line)
SER11-1R0-20-2A□□□	EA180-6R2-2A		
SER11-1R2-30-2A□□□			
SER13-0R7-20-2A□□□			
SER13-1R0-10-2A□□□			
SER13-1R0-20-2A□□□			
SER13-1R0-30-2A□□□			
SER11-1R8-30-2A□□□	EA180-011-2A		A10-LM-H120-m (motor power cable) A10-LB-H120-m (motor power cable with brake line)
SER13-1R5-10-2A□□□			
SER13-1R5-20-2A□□□			
SER13-1R5-30-2A□□□			
SER13-1R5-10-3A□□□	EA180-8R5-3A		
SER13-1R5-20-3A□□□	EA180-5R6-3A		
SER13-1R5-30-3A□□□			
SER13-2R0-20-3A□□□	EA180-8R5-3A		
SER13-2R0-30-3A□□□			
SER13-3R0-20-3A□□□	EA180-013-3A		
SER13-3R0-30-3A□□□			

Motor Type	Servo Type	Encoder cable	Motor cable
SES04-005-30-2BAY□ SES04-005-30-2FAY□	EA180□-0R9-1B	A10-LS-A000-m (without battery) A10-LA-A000-m (with battery)	A18-LM-A007-m (motor power cable) A10-LZ-A005-m (Brake cable)
SES04-0R1-30-2BAY□ SES04-0R1-30-2FAY□	EA180□-1R6-1B		
SES06-0R2-30-2BBY□ SES06-0R2-30-2FBY□	EA180□-1R6-1B		
SES06-0R4-30-2BBY□ SES06-0R4-30-2FBY□	EA180□-2R5-1B		
SES08-0R7-30-2BBY□ SES08-0R7-30-2FBY□	EA180□-4R8-2B		
SES08-1R0-30-2BBY□ SES08-1R0-30-2FBY□	EA180□-6R2-2B		
SES13-0R8-15-2FBY□	EA180□-011-2B	A18-LS-H400-m (without battery) A18-LA-H400-m (with battery)	A18-LM-M420-m (motor power cable) A18-LZ-H405-m (Brake cable)
SES13-0R8-15-3FBY□	EA180□-5R6-3B		
SES13-1R3-15-3FBY□	EA180□-5R6-3B		
SES13-1R8-15-3FBY□	EA180□-8R5-3B		
SES18-2R9-15-3FBY	EA180□-013-3B		No brake: A18-LM-M525-m (motor power cable) brake: A10-LM-M220-m (motor power cable) A18-LZ-H405-m (Brake cable)
SES18-3R6-20-3FBY	EA180□-013-3B		
SES18-4R4-15-3FBY	EA180□-018-3B		
SES18-2R9-15-3FBY1	EA180□-013-3B		
SES18-3R6-20-3FBY1	EA180□-013-3B		
SES18-4R4-15-3FBY1	EA180□-018-3B		
SES18-5R5-15-3FBY□	EA180□-021-3B		A10-LM-M240-m (motor power cable) A18-LZ-H405-m (Brake cable)
SES18-7R5-15-3FBY□	EA180□-026-3B		

Note: While Absolute encoder is used, A1□-LA-□□XX-m cable must be selected with the absolute position application, and A1□-LS-□□XX-m with other application.