SINEE

EA180 Servo System Selection Guide

Reliable drives and solutions by technology

Shenzhen SINEE Electric Co., Ltd.

COMPANY PROFILE

天津子/分公司
无锡子/分公司
武汉子/分公司
深圳总部

◉ Marketing Office

✕ SINEE Service Centre

SINEE has the customer service centers in 19 cities of China, such as Shenyang, Shijiazhuang, Zhengzhou, Wuhan, Chongqing, Wuxi, Hangzhou, Shenzhen etc.

Founded in 2003 with the registered capital ¥64.50 million(around USD10 million), Shenzhen SINEE Electric Co., Ltd. is a professional industrial automation product and solution supplier; SINEE is focusing on researching, developing, producing and distributing electric transmission automation products, and serving the medium and high−end equipment manufacturers and system integrators.

SINEE, a national new high−tech enterprise of China and a renowned brand enterprise of Shenzhen, is always insisting in the technology and product innovation strategy, and has developed and established multiple core technology platforms for the high−performance variable−frequency vector control, servo drive, elevator control, power electronics etc. Additionally by following strictly the IPD flow, SINEE is developing new products in the fields of frequency converter, servo system, electric automobile's drive system, elevator's drive controller etc. SINEE is making the customized special products and solutions for customers and has owned the rich systematic products serving the industries of building hoisting machinery, engineering machinery, petrochemical industry, cable equipment, printing and packaging, metal processing etc.

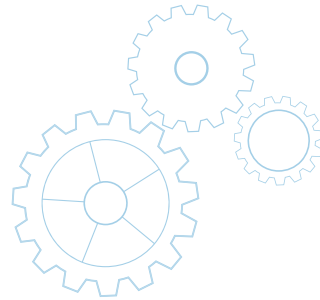Stock name: SINEE Electric   Stock code: 834933

武汉基地(在建设中)

深圳总部

HONOR CERTIFICATION

◆ Renowned brand of Shenzhen

◆ One of 10 top national low-voltage variable frequency inverter brands

◆ Leading enterprise of Nanshan District, Shenzhen

◆ Backbone enterprise of prospering country with quality in Shenzhen

◆ One of Top 100 small and medium-sized enterprise based on self-dependent innovation in Shenzhen

◆ Co-compiling enterprise of two national standards

◆ ISO9001, IATF 16949 system certification

◆ CE certified for series standard products

◆ National-level high-tech technology enterprise

◆ Advanced member enterprise of Frequency Converter Association

SINEE PRODUCT

SINEE CATALOG

EA180 product line introduction

Controller & HMI	Motion controller	HMI

EtherCAT

Motion controller

HMI

Servo drive		

EA180E
EtherCAT network type

EA180C
CANopen network type

Servo motor	

SER motor series

Controller & HMI	PLC	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.

Amplitude（dB）

1.0kHz

-3

-10

Frequency（Hz）   1000

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.

8，388，608p/r

800倍

10,000p/r

■ EA180

General products
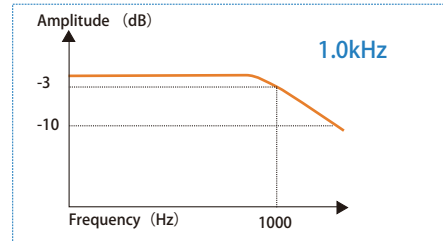
Small Size

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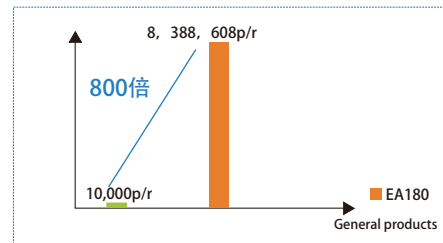
Intelligent controls

- 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.

Gain

Bandwidth

Frequency

Gain2

Switching time

Gain1
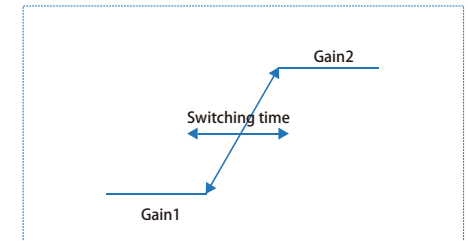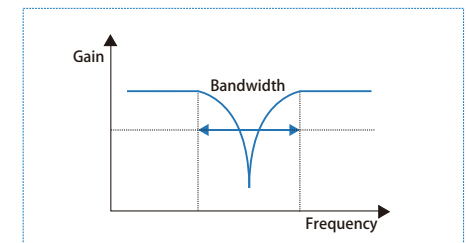
Abandant product series

- 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

EtherCAT   CANopen

PROFI
NET®

Modbus

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.

Left side (Wiring diagram)

Power supply
Single/three-phase AC 220V
three-phase AC 380V

Circuit breaker
Used for protecting power cable and switching off the power supply when there is overcurrent.

EMI filter
The noise filter to be installed can prevent from the external disturbance from the power cable.

Electromagnetic contactor
It is used to switch on/off the mains supply of Servo drive; the surge suppressor should be installed when it is used.

Braking resistor
When the built-in braking resistor or DC bus capacitor is small,, the external braking resistor can be connected via P+ and C terminal.

Brake power supply
DC24V power supply; which is used for the servo motor brake coil.

Electromagnetic contactor
It is used to switch on/off the brake power supply; where it is controlled by the brake control signal of servo brake via the intermediate relay.

Rs232 communication cable between servo drive and PC (A10-T0-2.0)

EtherCAT communication cable between servo drives (A10-T4-0.3)

EtherCAT communication cable between controller and servo drives (A10-T4-3.0)

Servo drive's control cable (to provide by user)

Servo motor encoder cable
(17 bit incremental encoder A10-LS-XXX-XX)
(23 bit absolute value encoder A10-LA-XXX-XX)

Power cable of servo motor (A10-LM-XXX-XX)

Servo motor

DC 24V

Power indicator light   System grounding

Note 1
Note 2

CHARGE

Servo Motor
Note 1: Please remove the short-cut connector between D and C when using the external braking resistor.
Note 2: 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.

Right side (Terminal descriptions)

CN 1 RS232 communication terminal

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

CN2, CN3 EtherCAT communication terminal

IN		OUT	
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-
FG	Connector hood	FG	Connector hood

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	29		
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
15/enclosure	shielded layer

Power supply
Single/three−phase AC 220V
three−phase AC 380V

Circuit breaker
Used for protecting power cable and switching off the power supply when there is overcurrent.

EMI filter
The noise filter to be installed can prevent from the external disturbance from the power cable.

Electromagnetic contactor
It is used to switch on/off the mains supply of Servo drive; the surge suppressor should be installed when it is used.

Braking resistor
When the built−in braking resistor or DC bus capacitor is small,, the external braking resistor can be connected via P+ and C terminal.

Brake power supply
DC24V power supply; which is used for the servo motor brake coil.

Electromagnetic contactor
It is used to switch on/off the brake power supply; where it is controlled by the brake control signal of servo brake via the intermediate relay.

DC 24V

CANopen communication cable between servo drives
(A10−T1−0.3)

Communication cable between servo drive and PC
(A10−T5−2.0)

communication cable between PLC and servo drive
(A10−T2−2.0)

Servo drive's control cable
(to provide by user)

Servo drive analog output monitoring cable
(A10−A0−1.0)

Servo motor encoder cable
(2500 ppr incremental encoder A10−LP−XXX−XX)
(17 bit incremental encoder A10−LS−XXX−XX)
(23 bit absolute value encoder A10−LA−XXX−XX)

Power cable of servo motor
(A10−LM−XXX−XX)

Power indicator light   System grounding

Servo motor

Note 1

Note 2

Note 3

Servo Motor
Note 1: Please remove the short−cut connector between D and C when using the eternal braking resistor.
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.

Main circuit terminals

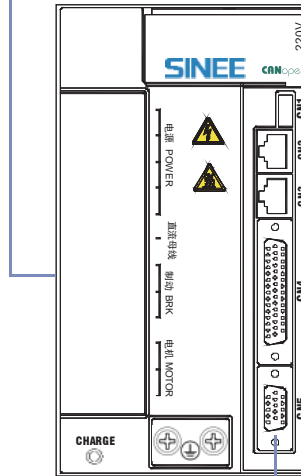| Terminal mark	Terminal name
L1C、L2C	Control power input terminal
L1、L2、L3	Main circuit AC power input terminal
P+、D、C	Terminal connecting with external braking resistor
P+、⊖	DC bus sharing terminal
U、V、W	Servo motor's connecting terminal
PE	Grounding

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

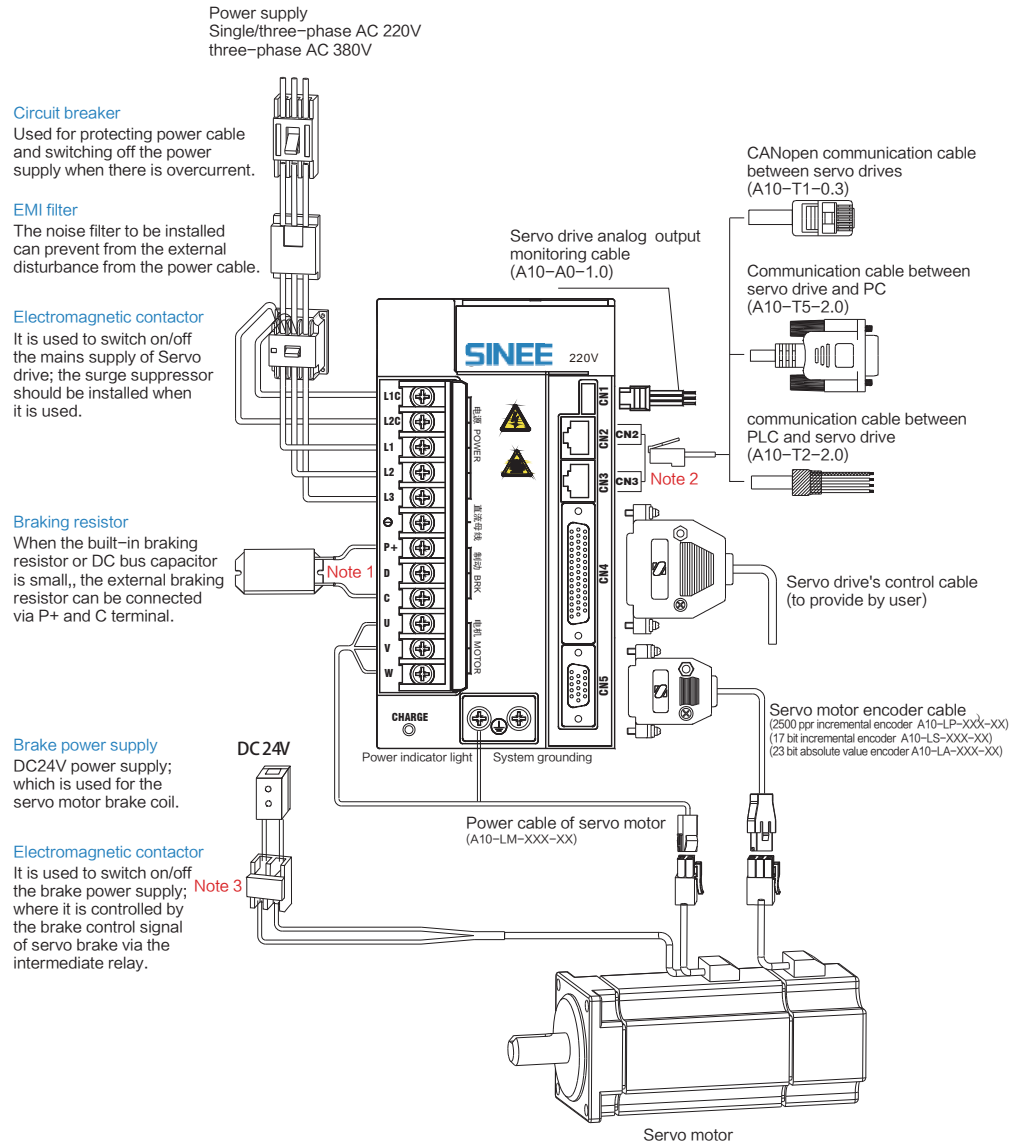| Pin No.	Signal name	Function	Pin No.	Signal name	Function
1	RS485+	RS485 signal positive terminal	5	RS232-TXD	RS232 signal transitting terminal
2	RS485-	RS485 signal negative terminal	6	GND	Communication signal reference grounding
3	GND	Communication signal reference grounding	7	CANH	CAN signal positive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

Note: CAN 2 and CN3 are the same.

CN4 control terminal

	Signal name	Pin No.	Default function	
Digital input	DI1	5	S-ON	Servo enabled
	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	GNUM0	Electronic gear ratio – selected numerator 0
	DI8	17	GNUM1	Electronic gear ratio – selected numerator 1
	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	
	GND	29		
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-	
Frequency division output	PA+	28	Pulse A frequency division output positive	Max. current 20mA
	PA-	13	Pulse A frequency division output negative	
	PB+	12	Pulse B frequency division output positive	Max. current 20mA
	PB-	27	Pulse B frequency division output negative	
	PZ+	11	Pulse Z frequency division output positive	Max. current 20mA
	PZ-	26	Pulse Z frequency division output negative	
	OCZ	35	Pulse Z open-collector output, maximum allowable input current 40mA	
	GND	14		

CN5 encoder terminal

Pin No.	Default function
1	SD+
3	SD-
5	+5V
10	GND
15/enclosure	shielded layer

Left page

Power supply
Single/three−phase AC 220V
three−phase AC 380V

Circuit breaker
Used for protecting power cable and switching off the power supply when there is overcurrent.

EMI filter
The noise filter to be installed can prevent from the external disturbance from the power cable.

Electromagnetic contactor
It is used to switch on/off the mains supply of Servo drive; the surge suppressor should be installed when it is used.

Braking resistor
When the built−in braking resistor or DC bus capacitor is small,, the external braking resistor can be connected via P+ and C terminal.

Brake power supply
DC24V power supply; which is used for the servo motor brake coil.

Electromagnetic contactor
It is used to switch on/off the brake power supply; where it is controlled by the brake control signal of servo brake via the intermediate relay.

CANopen communication cable between servo drives (A10−T1−0.3)

Servo drive analog output monitoring cable (A10−A0−1.0)

Communication cable between servo drive and PC (A10−T5−2.0)

communication cable between PLC and servo drive (A10−T2−2.0)

Note 2

Servo drive's control cable (to provide by user)

Servo motor encoder cable
(2500 ppr incremental encoder A10−LP−XXX−XX)
(17 bit incremental encoder A10−LS−XXX−XX)
(23 bit absolute value encoder A10−LA−XXX−XX)

Power cable of servo motor (A10−LM−XXX−XX)

DC 24V

Power indicator light   System grounding

Servo motor

Note 1

Note 3

SINEE 220V

POWER BRK MOTOR

CN1 CN2 CN3 CN4 CN5

CHARGE

L1C L2C L1 L2 L3 P+ D C U V W

Servo Motor
Note 1: Please remove the short−cut connector between D and C when using the eternal braking resistor.
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.

Right page

Main circuit terminals

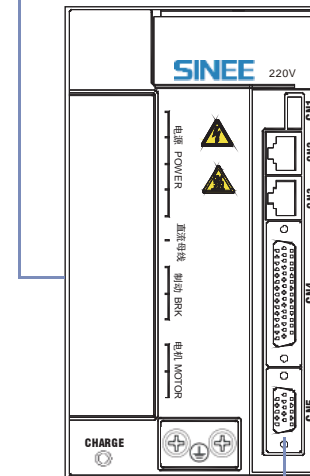| Terminal mark	Terminal name
L1C、L2C	Control power input terminal
L1、L2、L3	Main circuit AC power input terminal
P+、D、C	Terminal connecting with external braking resistor
P+、⊖	DC bus sharing terminal
U、V、W	Servo motor's connecting terminal
PE	Grounding

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

Note: CAN 2 and CN3 are the same.

CN4 control terminal

	Signal name	Pin No.		Default function
Digital input	DI1	5	S-ON	Servo enabled
	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	GNUM0	Electronic gear ratio−selected numerator 0
	DI8	17	GNUM1	Electronic gear ratio−selected numerator 1
	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	29		
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-	
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 negative	
	OCZ	35	Pulse Z open-collector output, maximum allowable input current 40mA	
	GND	14		
Analog input	AI1	15	Analog quantity input signal, resolution 12 bits, maximum allowable input voltage ±12V.	
	AI2	30		
	GND	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
	PULSE+	33	Position pulse command +	
	PULSE-	34	Position pulse command -	Input pulse form: Pulse + direction, A, B phase orthogonal pulse, CW/CCW pulse.
	PULHIS	16	Directional pulse uSER 24V power supply	
	SIGN+	31	Differential position's directional command +	
	SIGN-	32	Differential position's directional command -	

CN5 encoder terminal

	Signal name			Signal name	
Pin No.	2500 ppr encoder	Serial encoder	Pin No.	2500 ppr encoder	Serial encoder
1	Z+	SD+	9	W-	-
2	U+	-	10	GND	GND
3	V+	SD-	11	B+	-
4	W+	-	12	B-	-
5	+5V	+5V	13	A+	-
6	Z-	-	14	A-	-
7	U-	-	15/enclosure	Shielded layer	Shielded layer
8	V-	-	-	-	-

SINEE 220V

POWER BRK MOTOR

CHARGE

Motor model	Motor's rated power (W)	Servo drive model	Encoder cable	Motor power cable
SES04-0R1-30-2G□□□	100	EA180□-1R6-1A	A10-LF-A000-m	A10-LM-A010-m (Servo motor power cable)
SER06-0R2-30-2A□□□	200			
SER06-0R4-30-2A□□□	400	EA180□-2R5-1A	A10-LP-A000-m (2500ppr AMP joint)	
SER08-1R0-30-2A□□□	1000			A10-LZ-A005-m (Braking power cable of motor with brake)
SER08-0R7-30-2A□□□	750	EA180□-5R5-2A		
SER08-0R7-20-2A□□□				
SER09-0R7-30-2A□□□				
SER11-0R6-30-2A□□□	600	EA180□-2R5-1A		
SER11-1R2-30-2A□□□	1200	EA180□-7R6-2A		
SER11-1R8-30-2A□□□	1800			
SER11-1R0-20-2A□□□	1000	EA180□-7R6-2A	A10-LP-H100-m (2500ppr aviation joint)	A10-LM-H120-m (Servo motor power cable)
SER13-1R0-10-2A□□□				
SER13-1R0-20-2A□□□				
SER13-1R0-30-2A□□□				
SER13-0R7-20-2A□□□	750	EA180□-5R5-2A		A10-LB-H120-m (Power cable of motor with brake + braking power cable)
SER13-1R5-20-2A□□□	1500	EA180□-010-2A		
SER13-1R5-10-3A□□□		EA180□-8R4-3A		
SER13-1R5-20-3A□□□				
SER13-1R5-30-3A□□□		EA180□-5R4-3A		
SER13-2R0-20-3A□□□	2000	EA180□-8R4-3A		
SER13-2R0-30-3A□□□				
SER13-3R0-20-3A□□□	3000	EA180□-012-3A		
SER13-3R0-30-3A□□□				

Motor model	Motor's rated power (W)	Servo drive model	Encoder cable	Motor power cable
SES04-0R1-30-2B□□□	100	EA180□-1R6-1B	A10-LS-A000-m (17 bit incremental type) (AMP joint) (without battery)	A10-LM-A010-m (Servo motor power cable)
SER06-0R2-30-2B□□□	200			
SER06-0R4-30-2B□□□	400	EA180□-2R5-1B		A10-LZ-A005-m (Braking power cable of motor with brake)
SER08-1R0-30-2B□□□	1000			
SER08-0R7-30-2B□□□	750	EA180□-5R5-2B		
SER08-0R7-20-2B□□□				
SER09-0R7-30-2B□□□				
SER11-0R6-30-2B□□□	600	EA180□-2R5-1B		
SER11-1R2-30-2B□□□	1200	EA180□-7R6-2B		
SER11-1R8-30-2B□□□	1800			
SER11-1R0-20-2B□□□	1000	EA180□-7R6-2B	A10-LS-H100-m (17 bit incremental type) (aviation joint) (without battery)	A10-LM-H120-m (Servo motor power cable)
SER13-1R0-10-2B□□□				
SER13-1R0-20-2B□□□				
SER13-1R0-30-2B□□□				
SER13-0R7-20-2B□□□	750	EA180□-5R5-2B		A10-LB-H120-m (Power cable of motor with brake + braking power cable)
SER13-1R5-20-2B□□□	1500	EA180□-010-2B		
SER13-1R5-10-3B□□□		EA180□-8R4-3B		
SER13-1R5-20-3B□□□				
SER13-1R5-30-3B□□□		EA180□-5R4-3B		
SER13-2R0-20-3B□□□	2000	EA180□-8R4-3B		
SER13-2R0-30-3B□□□				
SER13-3R0-20-3B□□□	3000	EA180□-012-3B		
SER13-3R0-30-3B□□□				
SER18-4R5-15-3F□□□ [*1]	4500	EA180□-018-3B		A10-LM-M220-m (Servo motor power cable) The power cable of brake is not provided
SER18-5R6-15-3F□□□ [*1]	5600	EA180□-021-3B		A10-LM-M240-m (Servo motor power cable) The power cable of brake is not provided
SER18-7R5-15-3F□□□ [*1]	7500	EA180□-026-3B		

Note: As for 180mm flange motor, the absolute value type is only provided; which can be used as the incremental type; however the power cable must be matched.

Motor model	Motor's rated power (W)	Servo drive model	Encoder cable	Motor power cable
SES04-0R1-30-2F□□□	100	EA180□-1R6-1B	A10-LA-A000-m (23 bit absolute type) (AMP joint) (with battery)	A10-LM-A010-m (Servo motor power cable)
SER06-0R2-30-2F□□□	200			
SER06-0R4-30-2F□□□	400	EA180□-2R5-1B		A10-LZ-A005-m (Braking power cable of motor with brake)
SER08-1R0-30-2F□□□	1000			
SER08-0R7-30-2F□□□	750	EA180□-5R5-2B		
SER08-0R7-20-2F□□□				
SER11-1R2-30-2F□□□	1200	EA180□-7R6-2B		
SER11-1R8-30-2F□□□	1800			
SER11-1R0-20-2F□□□	1000	EA180□-7R6-2B		
SER13-1R0-10-2F□□□				
SER13-1R0-20-2F□□□				
SER13-1R0-30-2F□□□				A10-LM-H120-m (Servo motor power cable)
SER13-0R7-20-2F□□□	750	EA180□-5R5-2B		
SER13-1R5-20-2F□□□	1500	EA180□-010-2B	A10-LA-H100-m (23 bit absolute type) (aviation joint) (with battery)	A10-LB-H120-m (Power cable of motor with brake + braking power cable)
SER13-1R5-10-3F□□□		EA180□-8R4-3B		
SER13-1R5-20-3F□□□		EA180□-5R4-3B		
SER13-1R5-30-3F□□□				
SER13-2R0-20-3F□□□	2000	EA180□-8R4-3B		
SER13-2R0-30-3F□□□				
SER13-3R0-20-3F□□□	3000	EA180□-012-3B		
SER13-3R0-30-3F□□□				
SER18-3R0-15-3F□□□				
SER18-3R0-15-3F□□□				A10-LM-M220-m (Servo motor power cable) The power cable of brake is not provided
SER18-4R5-15-3F□□□	4500	EA180□-018-3B		
SER18-5R6-15-3F□□□	5600	EA180□-021-3B		A10-LM-M240-m (Servo motor power cable) The power cable of brake is not provided
SER18-7R5-15-3F□□□	7500	EA180□-026-3B		

EA 180 Servo drive model number description

$$\text{EA } 180 \; \square \text{ - 8R4 - 3 B } \; XX$$
①　　②　③　　④　　⑤⑥　　⑦

①Product: Servo drive	④Rated output current: 1R6 — 1.6A ; 026 — 26A
②Series: 180 series	
③ Empty: Analog & pulse type	⑤Rated power supply and voltage
E:EtherCAT network type	1. Single-phase AC220V
C: CANopen network type	2. Three-phase AC220V
P: PROFINET network type	3. Three-phase AC380V
⑥Type of encoder A: pulse incremental type B: serial communication type	
⑦Special specifications	

Voltage	Drive model	Rated motor power (KW)	Rated current (A)	Max. current (A)	Structure	Adapting motor encoder
Single/three-phase 220V	EA180□-1R6-1□	0.2	1.6	5.6	SIZE A/B	□-A : 2500 ppr incremental type □-B : 17 bit incremental type 23 bit absolute value
	EA180□-2R5-1□	0.4	2.5	9.0		
	EA180□-5R5-2□	0.75	5.5	16.9		
Three-phase 220V	EA180□-7R6-2□	1.0	7.6	17		
	EA180□-010-2□	1.5	10	30		
Three-phase 380V	EA180□-5R4-3□	1.5	5.4	14	SIZE C	
	EA180□-8R4-3□	2.0	8.4	20		
	EA180□-012-3□	3.0	12	30		
	EA180□-018-3□	4.5	18	45	SIZE D	□-A : 2500 ppr incremental type □-B : 17 bit incremental type 23 bit absolute value
	EA180□-021-3□	5.6	21	55		
	EA180□-026-3□	7.5	26	65		

EA 180 series Servo drive size
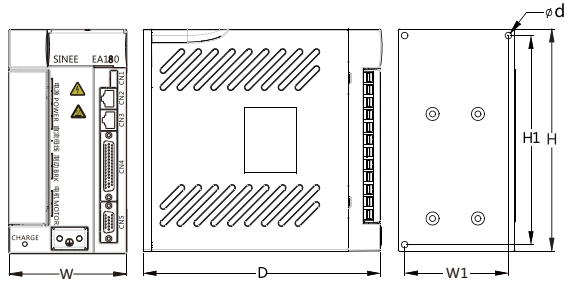
Structure	SIZE A	SIZE B	SIZE C	SIZE D
W(mm)	44	65	90	110
H(mm)	168	170	170	283
D(mm)	148	171	184	233
W1(mm)	34	55	80	95
H1(mm)	158	160	160	272

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 D15 (CMD0), D16 (CMD1), D17 (CMD2), D18 (CMD3) signal mix is used to realize 16-section speed selection
Position control mode	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
	Input signal	Multi-stage position command		Allowing to set the D15 (CMD0), D16 (CMD1), D17 (CMD2), D18 (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.

	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 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, undervoltage, 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, undervoltage, 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 series servo motor model number description

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 (to be released)	04: 40mm 06: 60mm 08: 80mm 09: 86mm	0R1: 100W 0R2: 200W 0R4: 400W 0R7: 750W 0R8: 850W 1R0: 1000W 1R2: 1200W 1R3: 1300W

Position 4 - motor's rated speed	11: 110mm 13: 130mm 18: 180mm	1R5: 1500W 1R8: 1800W 2R0: 2000W 3R0: 3000W 4R0: 4000W 4R3: 4300W 4R5: 4500W 5R6: 5600W 7R5: 7500W
10: 1000rpm 15: 1500rpm 20: 2000rpm 25: 2500rpm 30: 3000rpm		

Position 5 - voltage classes	Position 7 - type of inertia
2: 220V 3: 380V	A: low inertia B: intermediate inertia C: high inertia

Position 6 - type of encoder	Position 8 - shaft end	Position 9 - type selection
A: 2500 ppr incremental encoder B: 17 bit incremental encoder F: 23 bit absolute value encoder	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 10 - special specification

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 servo motor – common characteristics

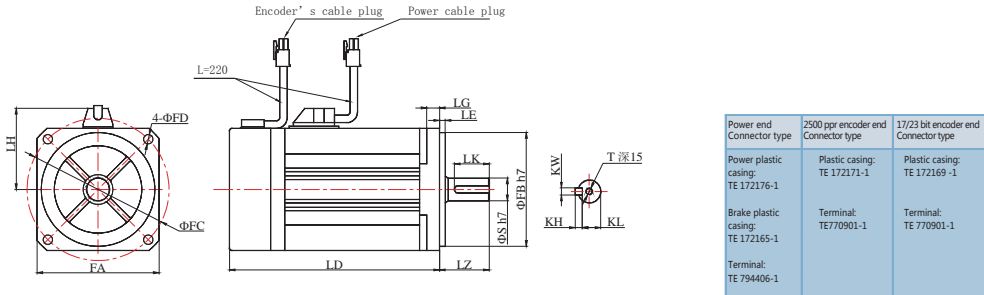|	
Motor's insulation class	F class
Voltage resistance of insulation	1500V 60s
Insulation resistance	DC500V, 10MΩ or above
Motor's temperature resistance class	B
Degree of protection	Totally closed self-cooling IP 65 (except for shaft through part)
Operating environment	Ambient temperature: 0 ~ 40℃ Relative 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.

Keeping Brake specification

Motor flange size	40	60	80	86	110	130	180	180
Rated voltage	DC 24~26.4V							
Static friction torque	0.35 N.m	2 N.m	3 N.m	3 N.m	10 N.m	20 N.m	40 N.m	80N.m
Rated power * note	3.5W	6.3W	10.4W	10.4W	11.6W	19.5W	25W	49W
Sealing voltage	18V DCmax							
Release voltage	1.5V DCmin							
Rated action time	150ms							

Note: the rated power tolerance is ±7%; the power value is 49W; however it is only limited to 7.5KW servo motor.

1. The keeping brake will only keep the motor locked after power off, It can not be used to brake motor when motor is running.
2. The 24V power supply required by the keeping brake should be provided by user independently; the 24V power supply of the drive can not be used for the keeping brake absolutely.
3. The action time of the keeping brake varies according to different the circuit; it should be confirmed according to the product.
4. The static friction torque is the one provided by the brake when the motor stops and keeps still; if there is external impact, there is no guarantee to keep the motor still.
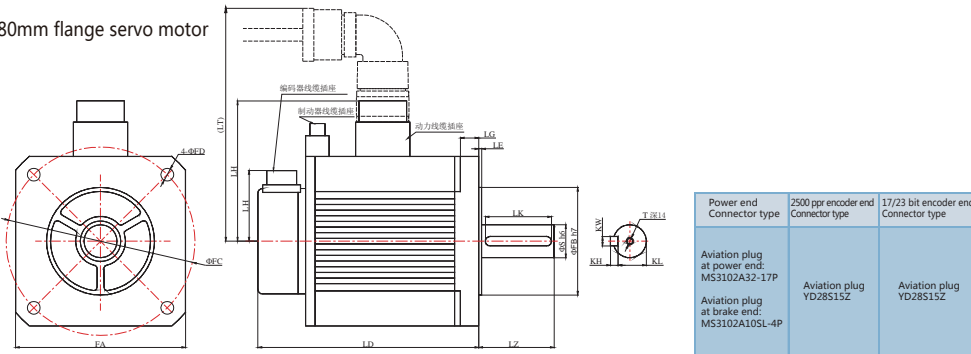
40, 60, 80, 86 flange servo motor

Encoder's cable plug   Power cable plug

L=220

4-ΦFD

LG
LE
LK
ΦFB h7
KW
T 深15
KH   KL
LH
ΦFC
FA
LD
LZ
ΦS h7

Power end Connector type	2500 ppr encoder end Connector type	17/23 bit encoder end Connector type
Power plastic casing: TE 172176-1	Plastic casing: TE 172171-1	Plastic casing: TE 172169 -1
Brake plastic casing: TE 172165-1	Terminal: TE770901-1	Terminal: TE 770901-1
Terminal: TE 794406-1		

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)
SES 04 -0R1 -30-□□□□□	100.5(133.5)	40	30	46	4.5	25.5	14	3	8	35	-	-	8	6.3	3	3	M3	0.47 (0.67)
SER06 -0R2 -30-□□□□□	113.5 (147)	60	50	70	5.5	30	22.5	3	8	44	-	-	14	11	5	5	M5	1.01(1.40)
SER06 -0R4 -30-□□□□□	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-□□□□□	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-□□□□□	171.5(203)	80	70	90	6.5	35	25	3	8	55	-	-	19	15.5	6	6	M5	3.40 (4.10)
SER08 -1R0 -30-□□□□□	171.5(203)	80	70	90	6.5	35	25	3	8	55	-	-	19	15.5	6	6	M5	3.40 (4.10)
SER09 -0R7 -30-□□□□□	148(183)	86	80	100	6.5	35	25	3	9	58	-	-	16	13	5	5	M5	3.24 (3.94)

180mm flange servo motor

编码器线缆插座
制动器线缆插座
动力线缆插座
4-ΦFD
LG
LE
LK
ΦFB h6
KW
T 深14
KH   KL
ΦFC
FA
LD
LZ
(LT)
LH

Power end Connector type	2500 ppr encoder end Connector type	17/23 bit encoder end Connector type
Aviation plug at power end: MS3102A32-17P		
	Aviation plug YD28S15Z	Aviation plug YD28S15Z
Aviation plug at brake end: MS3102A10SL-4P		

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)
SER18 -3R0 -15-□□□□□	173.5(222)	180	114.3	200	13.5	79.9	70	3	19.5	-	150	230	35	38	8	10	M8	13.5 (18.50)
SER18 -3R0 -15-□□□□□	202.5(251)	180	114.3	200	13.5	79.9	70	3	19.5	-	150	230	35	38	8	10	M8	17.7 (22.60)
SER18 -4R5 -15-□□□□□	202.5(251)	180	114.3	200	13.5	79.9	70	3	19.5	-	150	230	35	38	8	10	M8	17.7 (22.60)
SER18 -5R6 -15-□□□□□	252.5(323.5)	180	114.3	200	13.5	79.9	70	3	19.5	-	150	230	35	38	8	10	M8	25.6 (33.60)
SER18 -7R5 -15-□□□□□	312.5(392.5)	180	114.3	200	13.5	79.9	70	3	19.5	-	150	230	35	38	8	10	M8	34.9 (42.90)

110, 130 flange servo motor
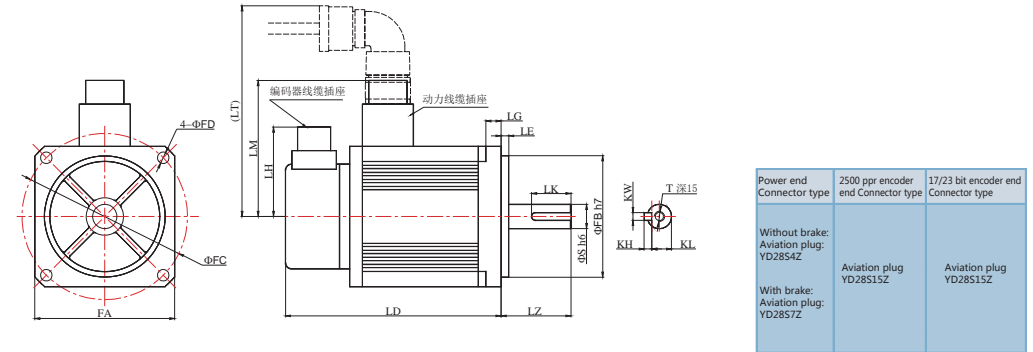
编码器线缆插座   动力线缆插座
4-ΦFD
LG
LE
LK
ΦFB h7
KW
T 深15
KH   KL
ΦFC
FA
LD
LZ
(LT)
LM
LH
ΦS h6

Power end Connector type	2500 ppr encoder end Connector type	17/23 bit encoder end Connector type
Without brake: Aviation plug: YD28S4Z	Aviation plug YD28S15Z	Aviation plug YD28S15Z
With brake: Aviation plug: YD28S7Z		

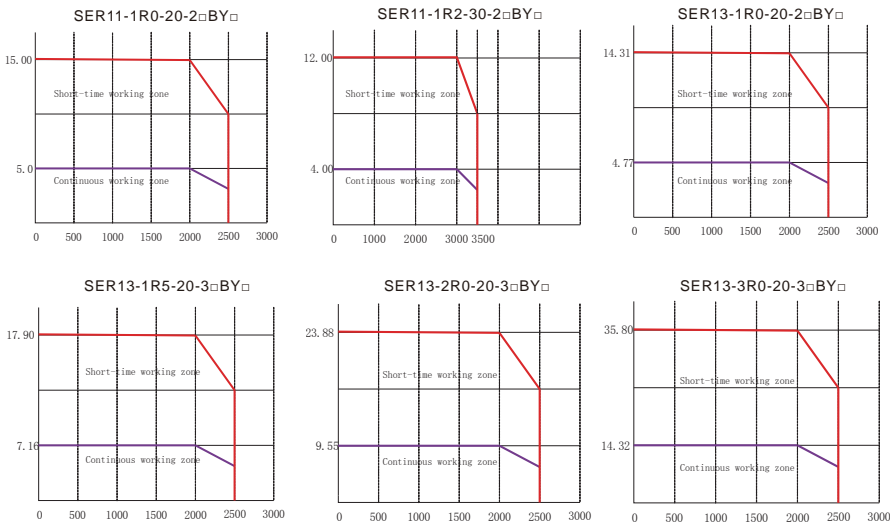| Motor model number	LD (mm)	FA (mm)	FB (mm)	FC (mm)	FD (mm)	LZ (mm)	LK (mm)	LE (mm)	LG (mm)	LH (mm)	LM (mm)	LT (mm)	S (mm)	KL (mm)	KH (mm)	KW (mm)	T (mm)	Mass (kg)
SER11 -0R6 -30-□□□□□	155.5(210.5)	110	95	130	9	55	31	6	9	-	107	176	19	15.5	6	6	M6	3.93(5.39)
SER11 -1R0 -20-□□□□□	205.5(260.5)	110	95	130	9	55	31	6	9	-	107	176	19	15.5	6	6	M6	6.42(7.88)
SER11 -1R2 -30-□□□□□	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-□□□□□	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-□□□□□	150(205)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	5.20(6.90)
SER13 -1R0 -10-□□□□□	215(270)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	10.12(11.67)
SER13 -1R0 -20-□□□□□	165(220)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	6.41(7.94)
SER13 -1R0 -30-□□□□□	150(205)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	5.31(6.89)
SER13 -1R5 -10-□□□□□	265(320)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	13.82(15.40)
SER13 -1R5 -20-□□□□□	185(240)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	7.89(9.43)
SER13 -1R5 -30-□□□□□	165(220)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	6.40(7.96)
SER13 -2R0 -20-□□□□□	215(270)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	10.12(11.67)
SER13 -2R0 -30-□□□□□	185(240)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	7.85(9.47)
SER13 -3R0 -20-□□□□□	265(320)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	13.81(15.34)
SER13 -3R0 -30-□□□□□	215(270)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	10.12(11.67)

Note: The value in the brackets is the data of the one with the keeping brake.

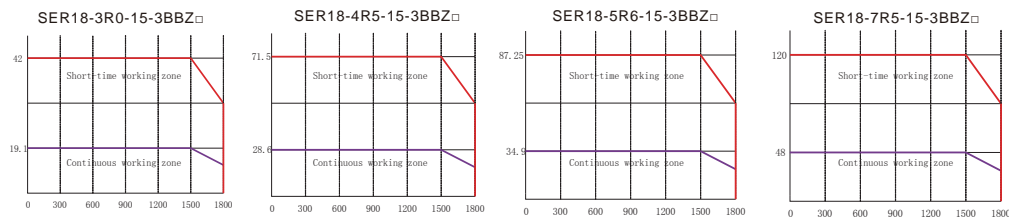## SER series servo motor torque and speed characteristic curve graph

■ 40, 60, 80 flange servo motor torque and speed characteristic curve graph
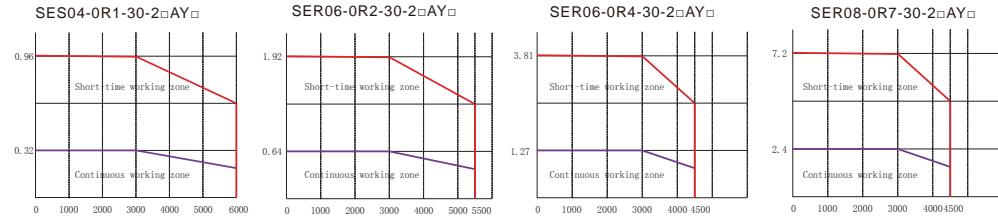
SES04-0R1-30-2□AY□   SER06-0R2-30-2□AY□   SER06-0R4-30-2□AY□   SER08-0R7-30-2□AY□

■ 110, 130 flange servo motor torque and speed characteristic curve graph

SER11-1R0-20-2□BY□   SER11-1R2-30-2□BY□   SER13-1R0-20-2□BY□

SER13-1R5-20-3□BY□   SER13-2R0-20-3□BY□   SER13-3R0-20-3□BY□

■ 180mm flange servo motor torque and speed characteristic curve graph

SER18-3R0-15-3BBZ□   SER18-4R5-15-3BBZ□   SER18-5R6-15-3BBZ□   SER18-7R5-15-3BBZ□

SER series servo motor parameter table
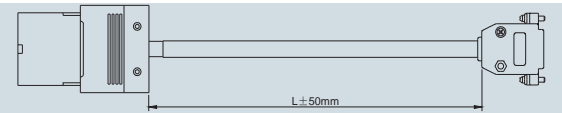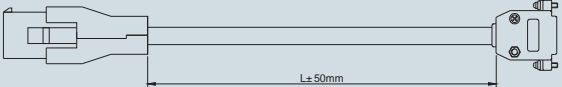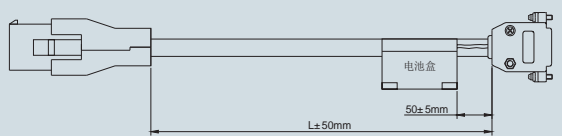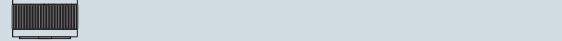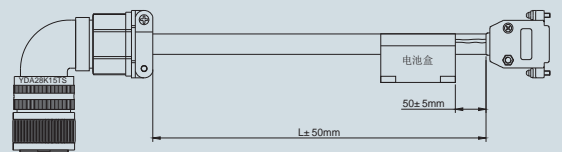
Servo motor model	Voltage	Rated power (W)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Instantaneous maximum current	Rated torque (Nm)	Instantaneous maximum torque	Torque constant	Rotational inertia (Kg.m2*10-4)	Adapting driver
SES04-0R1-30-2□AY□		100	3000	6000	1.1	3.3	0.32	0.96	0.29	0.04(0.04 *1)	1R6-1□
SER06-0R2-30-2□AY□		200	3000	5500	1.2	3.6	0.64	1.92	0.53	0.18(0.18 *1)	
SER06-0R4-30-2□AY□		400	3000	4500	2.3	6.9	1.27	3.81	0.55	0.3(0.3 *1)	2R5-1□
SER08-0R7-30-2□AY□			3000	4500	4.3	12.9	2.4	7.20	0.56	1.01(1.02 *1)	
SER08-0R7-20-2□AY□ *2		750	2000	3000	3.0	9.0	3.5	10.50	1.17	1.59(1.6 *1)	5R5-2□
SER09-0R7-30-2□BZ□ *3			3000	4000	3.4	10.2	2.4	7.20	0.71	2.42(2.43 *1)	
SER13-0R7-20-2□CY□			2000	2500	3.88	11.6	3.65	10.95	0.94	6.17(6.19 *1)	
SER11-0R6-30-2□BY□ *3		600	3000	4000	2.5	7.5	2.0	6.00	0.8	3.03(3.05 *1)	2R5-1□
SER11-1R2-30-2□BY□ *3		1200	3000	3500	4.9	14.7	4.0	12.00	0.82	5.54(5.56 *1)	7R6-2□
SER11-1R8-30-2□BY□ *3		1800	3000	3500	6.6	19.8	6.0	18.00	0.91	8.55(8.57 *1)	
SER08-1R0-30-2□AY□	AC 220		3000	4000	4.0	12.0	3.5	10.50	0.88	1.59(1.6 *1)	5R5-2□
SER11-1R0-20-2□BY□ *3			2000	2500	5.0	15.0	5.0	15.00	1.0	7.22(7.24 *1)	
SER13-1R0-10-2□BY□		1000	1000	1500	4.72	14.2	9.55	28.65	2.02	17.14(17.16 *1)	7R6-2□
SER13-1R0-10-2BBZ			1000	1500	4.72	14.2	9.55	28.65	2.02	17.14	
SER13-1R0-20-2□BY□			2000	2500	4.72	14.2	4.77	14.31	1.01	8.71(8.73 *1)	
SER13-1R0-30-2□BY□			3000	3500	4.96	14.9	3.27	9.81	0.66	6.17(6.19 *1)	
SER13-1R5-20-2□BY□			2000	2500	6.87	20.61	7.16	21.48	1.042	12.08 (12.10 *1)	010-2□
SER13-1R5-10-3□BY□		1500	1000	1500	6.76	16.9	14.32	35.80	2.12	25.58(25.6 *1)	8R4-3□
SER13-1R5-20-3□BY□			2000	2500	4.1	10.3	7.16	17.90	1.75	12.08(12.1 *1)	5R4-3□
SER13-1R5-30-3□BY□			3000	3500	6.4	16.0	4.78	11.95	0.75	8.71(8.73 *1)	
SER13-2R0-20-3□BY□			2000	2500	6.5	16.3	9.55	23.88	1.47	17.14(17.16 *1)	8R4-3□
SER13-2R0-30-3□BY□		2000	3000	3500	5.8	14.5	6.5	16.25	1.12	12.08(12.1 *1)	
SER13-2R0-20-3BBZ1			2000	2500	6.5	19.5	9.55	28.65	1.469	17.16	
SER13-3R0-20-3□BY□	AC 380		2000	2500	9.6	24.0	14.32	42.96	1.49	25.58(25.6 *1)	012-3□
SER13-3R0-20-3BBZ□		3000	2000	2500	9.6	28.8	14.32	42.96	1.49	25.58(25.6 *1)	
SER13-3R0-30-3□BY□			3000	3500	8.3	20.8	9.55	23.88	1.15	17.14(17.16 *1)	
SER18-3R0-15-3FBZ□			1500	1800	11.5	28.8	19.1	42.00	1.66	25.95 (26.22 *1)	012-3B
SER18-3R0-15-3FCZ□					7.5	18.8	19.1	47.75	2.55	45.51 (45.78 *1)	
SER18-4R5-15-3FBZ□		4500	1500	1800	11.0	27.5	28.6	71.50	2.6	45.51 (45.78 *1)	018-3B
SER18-5R6-15-3FBZ□		5600			15.0	37.5	34.9	87.25	2.33	79.89 (81.01 *1)	021-3B
SER18-7R5-15-3FBZ□		7500			20.3	50.8	48.0	120.00	2.36	120.36(121.48 *1)	026-3B

Notes:

1. The values in the brackets is the rotational inertia of the one with the brake.
2. As for 17 bit incremental type, the one with the band-type brake is available for supply.
3. Currently 2500 ppr and 17 bit incremental type are corresponding.
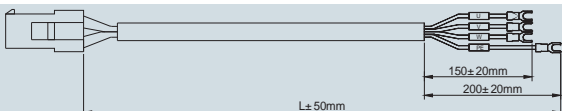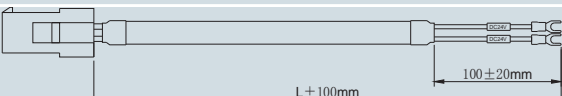4. If there is oil seal, please reduce the rated value by 10%.

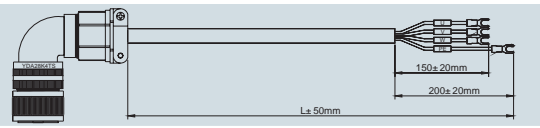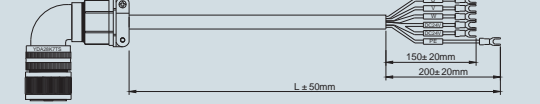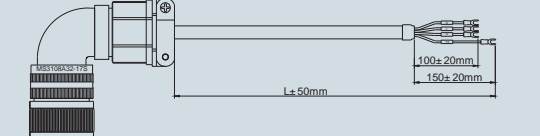## EA180 series servo product – optional part

■ Servo motor encoder cable

Motor flange size	Type	Model Number	Dimensional drawing
40/60/80/86	2500 ppr Encoder cable	A10-LP-A000-m	L±50mm
	17 bit incremental Encoder cable	A10-LS-A000-m	L±50mm
	23 bit absolute value Encoder cable	A10-LA-A000-m	电池盒 50±5mm L±50mm
110/130/180	2500 ppr Encoder cabe	A10-LP-H100-m	YDA28K15TS L±50mm
	17 bit incremental Encoder cable	A10-LS-H100-m	
	23 bit absolute value Encoder cable	A10-LA-H100-m	YDA28K15TS 电池盒 50±5mm L±50mm

*: m is the length of cable; its standard specification is 3.0, 5.0, 7.0 and 9.0; each of which refers to the length of 3.0m, 5.0m, 7.0m, 9.0m.
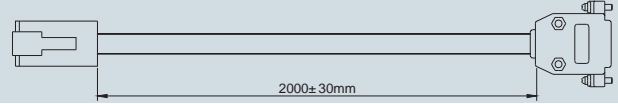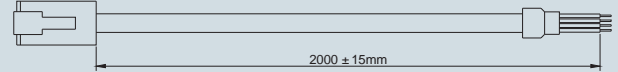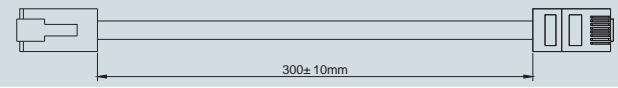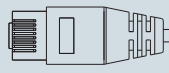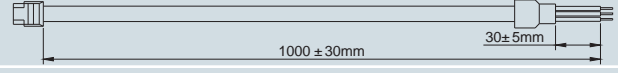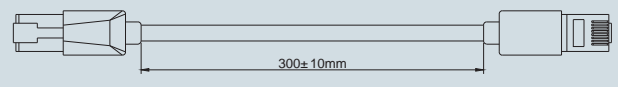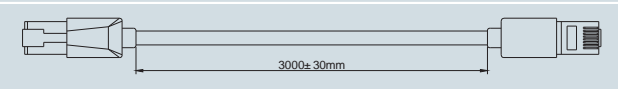
■ Servo motor power cable

Motor flange size	Type	Model Number	Dimensional drawing
40/60/80/86	Power cable	A10-LM-A010-m	150±20mm 200±20mm L±50mm
	Braking cable	A10-LZ-A005-m	DC24V DC24V 100±20mm L±100mm

Motor flange size	Type	Model Number	Dimensional drawing
110/130	Power cable without brake	A10-LM-H120-m	YDA28K41TS 150±20mm 200±20mm L±50mm
	Power cable with brake	A10-LB-H120-m	YDA28K41TS 150±20mm 200±20mm L±50mm
180	Power cable	(3\4.5kW) A10-LM-M220-m (5.6\7.5kW) A10-LM-M240-m	MS3108A32-17S 100±20mm 150±20mm L±50mm

*: m is the length of cable; its standard specification is 3.0, 5.0, 7.0 and 9.0; each of which refers to the length of 3.0m, 5.0m, 7.0m, 9.0m.

■ Servo drive communication cable

Servo drive	Description	Model Number	Dimensional drawing
EA180	PC and Servo drive RS232 communication cable	A10-T5-2.0	2000±30mm
	PLC and Servo drive CAN and RS485 communication cable	A10-T2-2.0	2000±15mm
	Servo drive CAN and RS485 multi-unit parallel connection cable	A10-T1-0.3	300±10mm
	Servo drive CAN and RS485 communication terminal – matching resistance	A10-T3	
	Analog quantity output cable	A10-A0-1.0	30±5mm 1000±30mm
EA180E	EtherCAT multi-unit parallel connection able	A10-T4-0.3	300±10mm
	EtherCAT controller and Servo drive communication cable	A10-T4-3.0	3000±30mm
	PC and Servo drive RS232 communication cable	A10-T0-2.0	2000±30mm