

深圳市正弦电气股份有限公司 Shenzhen Sine Electric Co.,Ltd

Servo Selection Guide

Automated production and life



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Compacted size

Stock code 688395





01 **Company Profile**

Introduction to servo driver product line

03 EA350 series servo driver

Connection diagram of peripheral device	04
Model description and dimension diagram	06
Motor, driver and cable matching table	09

EA190 series servo driver

Connection diagram of peripheral device	12	
Model description and dimension diagram	14	

Terminal description

Technical specification

Terminal description

Technical specification

Motor, driver and cable matching tab

Industry scheme

18 EA196 series servo driver

Connection diagram of peripheral device	
Technical specification	



dimension diagram

Terminal description

20

22

13

24 EA180C/P series servo driver

EA180C Connection diagram of peripheral device

EA180P Terminal description

Technical specification

33

EA300E series servo driver

Connection diagram of peripheral device

Technical specification

EA190E series servo driver

Connection diagram of peripheral device

Technical specification

SER/SES series servo motor

Model description and common features	44	Holding brake specification	45
Installation dimension of SER series servo motor	46	Installation dimension of SES series servo motor	47
Pin distribution of the motor-side power terminal	48	Parameter table of SER series servo motor	49
Parameter table of SES series servo motor	50	Industry scheme	52



5	EA180C Terminal description	26
7	Model description and dimension diagram	28
0	Motor, driver and cable matching table	31

4	Terminal description	35
6	Motor, driver and cable matching table	37

9	Model description and dimension diagram	40
1	Motor, driver and cable matching table	42



SINEE

Wuxi.

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Customers Mechanical equipment manufacturer, electronic control system integrator and distributor



Since its establishment in 2003, SINEE (Shenzhen Sine Electric Co., Ltd.) has been focusing on the R&D, production and sales of motor drive and control systems in the field of industrial automation. With the mission of "automated production and life", it provides the most valuable products and services for users. In 2021, SINEE was listed on the Science and Technology Innovation Board of the Shanghai Stock Exchange (stock code: 688395). At present, it has R&D, production and service bases in Shenzhen, Wuhan and

SINEE has established key core technology platforms such as high-performance variable frequency vector control technology, high-precision servo drive technology, embedded computer control technology, and power electronic application technology. It mainly provides inverters, integrated units, servo system products and system solutions.



Operations Motor drive and control system solution provider



Competitiveness Industry market solution and customization

Introduction of servo driver product line



Servo driver



EA350

Analog quantity and

pulse type



EA190 Pulse type



EA196 Pulse type



EA190E EtherCAT bus type



EA300E EtherCAT bus type



EA180C CANopen bus type



EA180P PROFINET bus type



Single-phase 220 V ~ 240 V 0.1~1 kW Three-phase 220 V ~ 240 V 0.75~1.5 kW Three-phase 340 V ~ 460 V 1.5~30 kW



High performance



High electromagnetic compatibility



Multi-functional and expansible



Connection between EA350 analog pulse type servo driver and peripheral device



Terminal description of EA350 analog pulse type servo driver



ΡE

Housing

Note 1: When an external brake resistor is used, it is required to remove the short-circuiting piece between P+ and D, and correctly set the brake resistor parameter on the driver

Note 2: CN2 and CN3 are two RJ45 sockets with identically defined internal pins

Note 3: It is strongly recommended that the servo motor brake is defined by the servo driver as the D0 terminal of the BK function for control. The D0 terminal of the servo driver shall have its load capacity used only for driving an intermediate relay other than an electromagnetic contactor

04

Output voltage 0 V ~ 10 V, Maximum output current 1mA

Common ground of analog

Reserved Cannot be connected with any

- CN4 control terminal

CN2	and	CN3	communication	terminals
			communication	commune

Pin number	Signal name	Function
1	RS485+	Positive terminal of RS485 signal
2	RS485-	Negative terminal of RS485 signal
3	GND	Communication signal reference ground
4	RS232-RXD	RS232 signal receiving side
5	RS232-TXD	RS232 signal sending side

gr	nal name	Pin	Default f	unction
	DI1	5	S-ON	Servo on
	DI2	20	ALM-RST	Alarm fault resetting
	DI3	4	P-CLR	Pulse deviation counter clearing
	DI4	19	P-OT	Inhibit forward drive
	DI5	3	N-OT	Inhibit reverse drive
	DI6	18	INHIBIT	Pulse inhibited
	DI7	2	ORPG	Homing detection signal
	DI8	17	SHOM	Homing enable
	COM+	21	DI input common positive terminal	
	+24V	25/40	Internal 24 V power source, with the v	oltage range of
	COM	7/22/36	+20 V ~ 26 V, maximum output curren	t 200 mA.
′	+10V	44	+10V power maximum output of Em/	
	GND	29	+100 power, maximum output or 5m/	۸.
	DO1	8	S-RDY+	The servo is ready and can be
	D01-	37	S-RDY-	status can be received
	DO2	23	BK+	Brake control signal
1	DO2-	38	BK-	Drake control signal
t	DO3	9	COIN+	Desition reached signal
	DO3-	39	COIN-	Position reached signal
	DO4	24	ALM+	Connected upon occurrence
	DO4-	10	ALM-	of a fault
	PA+	28	A pulse frequency division output +	Maximum current 20 mA
	PA-	13	A pulse frequency division output -	Maximum current 20 mix
	PB+	12	B pulse frequency division output +	Maximum current 20 mA
	PB-	27	B pulse frequency division output -	
y	PZ+	11	Z pulse frequency division output +	Maximum current 20 mA
	PZ-	26	Z pulse frequency division output -	
	OCA	43		
	OCB	42	ABZ pulse open-collector output (NPI	N)
	OCZ	35	maximum allowable input current wit	IT OND OF 40 THA
	GND	29		
	AI1	15	Analog input signal, 16-bit resolution,	maximum allowable input
y	Al2	30	voltage: ±12V.	
	GND	29	Analog input signal ground	
	PULHIP	1	Positive terminal when 24V power source is used for position pulse	Way of pulso command is a st
	PULSE+	33	Position pulse command +	Differential pulse input, open collector input
	PULSE-	34	4 Position pulse command - 1 Differential position direction command + 1 Differential position direction 1 Differenti	
d	SIGN+	31		
	SIGN-	32	Differential position direction	pulse

Model description of EA350 series analog pulse type servo driver EA 350 X - 6R2 - 2 B - XX

	$\boxed{2} \overline{3} \overline{4} \overline{5} \overline{6} \overline{7}$	
①Product Servo driver	(4) Rated output current(6) Encoder type0R9-0.9AB: 17/23-bit serial encoder	
②series 350 series	-062-62A	
 Null:standard A: 16-bit high-precision analog input 	⑤Rated voltage of power supply⑦Non-standard specification1. Single-phase AC220 V2.Single / three-phase AC220 V3. Three-phase AC380 V	

<u>2-M4</u>

34

44

Installation hole making diagram

SINEE 220

O CHARGE

55

<u>3-M4</u>

55

Installation hole

making diagram

Appearance









EA350 -4R8-2B EA350 -6R2-2B







Specification of EA350 series analog pulse type servo driver

	Temperature	Working temperature 0~40°, storage temperature -20° ~85°				
Operating	Humidity	Working / storage: ≤ 90% RH (without dew condensation)				
conditions Altitude		≤ 1,000 m				
Cooling	Vibration	≤ 4.9 m/s², 10~60 l	Hz (no operatio	on at the point of resonance is permitted)		
Cooling me	ethod	Fan cooling	tral			
CONTROLINE	ethou	Speed control pos	ition control t	oraue control speed / position control toraue / speed control position /		
Six control	modes	torque control		טוקער בטוונטו, שביבש א שטונטו בטוונטו, נטוקער א שביבש בטוונטו, שטונטון		
Front pane	el	5 keys, 5-digit LED				
Regenerati	ive brake	Built-in brake unit resistor connected	(a built-in brak	e resistor is provided in partial specifications), which can have an external		
Feedback	mode	RS485 serial comm MAT is supported)	iunication enco	oder, RA-CODER or FA-FORMAT protocol (non-standard version of FA-FOR-		
		Input	Pulse disable	, forward drive disable, reverse drive disable, forward inch, backward inch		
Digital inpu	ut/output	Output	Servo ready, l speed reache alarm output	brake output, motor rotation output, zero-speed signal, speed approach, d, position approach, torque limit, rotating speed limit, warning output,		
Protective	Function	Hardware	Over-voltage, and so on.	under-voltage, over-speed, overheat, overload, over-speed, encoder alarm,		
Soltware		Software	Excessively la	rge position error, EEPROM fault, and so on.		
Alarm data function	a tracking	Record 4 groups of	historical alar	ms and relevant data		
Communio	cation function	Modbus RTU				
Encoder signal	Signal type	A, B, Z differential of A/B/Z pulse open-o	outputs, Z sign collector outpu	al open-collector output; Z signal width can be set. ut (NPN)		
output	Resolution	Any frequency divis	sion can be pro	ogrammed and output before or after frequency quadruplication		
	Maximum input pulse frequency	Differential input m Open-collector inp	ifferential input mode: 500 Kpps ipen-collector input mode: 200 Kpps			
	Pulse command mode	Pulse + symbol, A and B-phase orthogonal pulse, CW/CCW				
Position control	Command control mode	External pulse command, multi-segment position command				
mode	Command smoothing mode	Low-pass filtering,	ow-pass filtering, FIR filter, trapezoid-shaped smoothing of multi-segment position command			
	Electronic gear ratio	Electronic gear rati	lectronic gear ratio: N/M multiples (0.001 < N/M < 64000 = N: 1~2 ³⁰ , M: 1~230			
	Position accuracy	±1 pulse comman	±1 pulse command			
	Command control mode	External analog quantity command, digital speed command, multistage speed command, inching command				
	Command smoothing mode	Low-pass filtering, s	Low-pass filtering, smooth S curve			
	Analog command	Voltage range	-10 V ~ 10 V			
	input	Input impedance	10 ΚΩ			
0		Time constant	200 µs			
Speed	Torque limit	Digital setting or ex	ternal analog	quantity limit		
mode	speed regulation	1:5000 (23-bit enco	oder)	minimal speed/rated rotating speed of continuous stable operation under the rated load		
	Bandwidth	3,000 Hz (23-bit en	coder)			
		Load fluctuation (0~100%)	Maximum 0.1%			
	Speed fluctuation ratio	Supply voltage change ±10%	Maximum 0.1%	For a 23-bit encoder, when the speed command is the rated rotating speed, (rotating speed without load - rotating speed with full load)/rated rotating		
		Ambient temperature $(0 \sim 50^{\circ} \text{ C})$	Maximum 0.1%	speed.		
	Command con- trol mode	External analog command, digital torque command				
Terrer	Command smoothing mode	Low-pass filtering				
control	Shioothing mode	Voltage range -10 V ~ 10 V				
mode	Analog command	Input impedance 10 KΩ				
	input	Time constant 200 µs				
	Speed limit	Digital setting or external analog quantity limit				
	Accuracy	±1% (current repetition accuracy)				

EA350 series servo motor and driver matching table

		Servo driver			Motor	
	EA350	Model	Supply voltage	Motor	Power wattage	Adaptable motor model
SIZE A		EA350-0R9-1B EA350-1R6-1B EA350-2R5-1B	Single-phase AC220V		50W 100W 200W 400W	SES04-005-30-2FAY SES04-0R1-30-2FAY SES06-0R2-30-2FBY SES06-0R4-30-2FBY SES06-0R4-30-2FBY
SIZE B		EA350-4R8-2B EA350-6R2-2B	Single-phase or three-phase AC220V		750W 1000W	SES08-0R7-30-2FBY SES08-1R0-30-2FBY SES13-1R0-20-2FBY
SIZE C	SIZE C EA350-5R6-3B EA350-8R5-3B EA350-013-3B	Three-phase AC380V		850W 1.3KW 1.7KW	SES13-0R8-15-3FBY SES13-1R3-15-3FBY SES13-1R7-30-3FBY SES13-1R1-20-3FBY SES13-1R1-20-3FBY SES13-1R7-20-3FBY	
				1.8KW 2.4KW 2.6KW 2.9KW 3.6KW	SES13-2R6-30-3FBY SES13-1R8-15-3FBY SES13-2R4-20-3FBY SES13-3R6-30-3FBY SES18-2R9-15-3FBY	
SIZE C		EA350-011-2B	Three-phase AC220V		0.8KW 1.1KW 1.7KW	SES13-1R1-20-2FBY SES13-0R8-15-2FBY SES13-1R7-30-2FBY
SIZE		EA350-017-3B FA350-022-3B	Three phase AC2901/		4.4KW 5.5KW 7.5KW	SES18-4R4-15-3FBY SES18-5R5-15-3FBY SES18-7R5-15-3FBY
D		EA350-028-3B	Three-phase AC360V		11KW 13KW 15KW	SEC20-011-15-3FBY SEC20-011-20-3FBY SEC20-013-15-3FBY SEC20-015-15-3FBY SEC23-011-15-3FBY
SIZE E		EA350-038-3B EA350-052-3B EA350-062-3B	Three-phase AC380 V		15KW/18W/ 22KW/29KW	SEC23-015-15-3FBY SEC23-018-15-3FBY SEC23-022-15-3FBY SEC23-029-15-3FBY SEC23-029-15-3FBY

EA350 series servo motor, driver and cable matching table

Motor specification/model	Adaptable driver model	Encoder cable	Motor cable	
SES04-005-30-2FAY	EA350-0R9-1B			
SES04-0R1-30-2FAY				
SES06-0R2-30-2FBY	EA320-1K0-1R	A10-LS-A000-m (without battery)	A18-LM-A007-m (motor power cable)	
SES06-0R4-30-2FBY 🗌	EA350-2R5-1B	A10-LA-A000-m (without battery)	A10-LZ-A005-m (brake cable for motor	
SES08-0R7-30-2FBY	EA350-4R8-2B	(introde battery)	with a brake)	
SES08-1R0-30-2FBY	EA350-6R2-2B			
SES13-1R1-20-2FBY	EA350-6R2-2B		A18-LM-M415-m (motor power cable) A18-LZ-H405-m (Brake line)	
SES13-0R8-15-2FBY				
SES13-1R7-30-2FBY 🗌	EA350-011-2B			
SES13-0R8-15-3FBY 🗌				
SES13-1R1-20-3FBY	EA330-3K0-3B		A18-LM-M420-m	
SES13-1R7-30-3FBY 🗌			(motor power cable) A18-LZ-H405-m	
SES13-1R3-15-3FBY 🗌	EASSU-SKO-SD	A18-LS-H400-m (without battery) A18-LA-H400-m (without battery)	(brake cable for motor with a brake)	
SES13-1R8-15-3FBY				
SES13-1R7-20-3FBY 🗌	EA350-8R5-3B			
SES13-2R6-30-3FBY				
SES18-2R3-15-3FBY			Without broke:	
SES13-2R4-20-3FBY	EA350-013-3B		A18-LM-M525-m	
SES13-3R6-30-3FBY			(motor power cable) With brake:	
SES18-2R9-15-3FBY 🗌	F4350-013-3B		A10-LM-M220-m (motor power cable)	
SES18-3R6-20-3FBY 🗌	EX220-012-2D		A18-LZ-H405-m	
SES18-4R4-15-3FBY 🗌	EA350-017-3B		(motor power cable)	
SES18-5R5-15-3FBY	EA350-022-3B		A10-LM-M240-m (motor power cable)	
SES18-7R5-15-3FBY 🗌	EA350-028-3B		A18-LZ-H405-m (brake cable for motor with a brake)	
SEC20-011-20-3FBY 🗌				
SEC20-011-15-3FBY 🗌				
SEC20-015-20-3FBY	EV3EU 030 3D			
SEC20-013-15-3FBY	EA330-020-3B			
SEC20-015-15-3FBY		A10-LS-H100-m (without battery)	Not provided	
SEC23-011-15-3FBY		A10-LA-H100-m (with batterv)	not provided	
SEC23-015-15-3FBY	EA350-038-3B	, , , , , , , , , , , , , , , , , , ,		
SEC23-018-15-3FBY	EN320 023 30			
SEC23-022-15-3FBY	LY370-A35			
SEC23-029-15-3FBY	EA350-062-3B			

EA190 series servo driver

Single/three-phase 220V ~ 240V 50W ~ 1kW

High-speed response



High-precision positioning



Note: Type A10/A18-LA encoder cable must be selected and used if the absolute position should be memorized upon power off, and Type A10/A18-LS encoder cable may be selected and used if the absolute position should be memorized without power off.



Intelligent control

Stable and reliable

Connection between EA190 pulse type servo driver and peripheral device



Note 1: When an external brake resistor is used, it is required to remove the short-circuiting piece between P+ and D, and correctly set the brake resistor parameter on the driver.

Note 2: CN2 and CN3 are two RJ45 sockets with identically defined internal pins. Note 3: It is strongly recommended that the servo motor brake is defined by the servo driver as the D0 terminal of the BK function for control. The D0 terminal of the servo driver shall have its load capacity used only for driving an intermediate relay other than an electromagnetic contactor.

Terminal description of EA190 pulse type servo driver (~)

rminal marking	Terminal name	Pin number	Signal na		Fu	nction		
1、12、13	AC power input terminal	1	RS485	+				
P+、D、C	Connecting terminal for an	2	RS485	RS485	communication p	ort		
P+. Θ		3	GND	RS48	5/RS232 communic	ation reference ground		
	Sono motor connecting terminal	4	R\$232-F	The tr	ansmitting termina	l of RS232 connects to		
DE	Crounding	5	P\$232_T	The re	ceiving terminal of eceiving terminal of	RS232 connects to the		
Π		CN6 USB co	ommunic	ation te	rminal			
U U	220V		CN4 cont	trol term	ninal			
Z			Signal	name	Pin number	Function description	1	
開設設置				DI1	5	Digital input, default function No. 1		
				DI2	20	Digital input, default function No. 2		
			Digital	DI3	4	Digital input, default function No. 13		
	A			DI4	19	Digital input, default function No. 14		
	+		input port	DI5	3	Digital input, default function No. 3		
	Č Z			DIG	18	Digital input, default function No. 12	t function No. 12 t function No. 20	
				DIT	2	Digital input, default function No. 20		
	2			DIS	17	Digital input, default function No. 21		
				COM+	21	Digital input common positive terminal Internal 24V power source, with the voltage r	range	
(1111)	10		Power	+24V	25/40	+20V ~ 26V Maximum output current 100mA	0-	
	C	7	supply	COM	7/22/36	Internal 24V power ground; digital input com	nmor	
				DO1	8			
				D01-	37	Digital output, default function No. 1		
Charge	L3			DO2	23	Digital autout default function No. 2		
- 14	- P+		Digital	D02-	38	Digital output, default function No. 2		
	D		output	DO3	9	Digital output default function No. 8		
				DO3-	39			
	v			DO4	24	Digital output, fixed function No. 12		
	W			D04-	10	6		
		-		DO5	41	Digital output, with ground COM. Default fun Positive terminal when 24V power source is t	ctior	
				PULHIP	1	command pulse		
5 encode	r terminal		Position	PULSE+	33 24	Position pulse command +		
			pulse	PIII HIC	16	Position pulse command - Positive terminal when 24V power source is used		
Pin numb	er Signal name		out/in	SIGNI+	31	command pulse		
	Jigharhaine			SIGN-	32	Position direction command -		
1	+5V			PA+	28	Differential frequency division output of puls	۵ ۵	
2	GND			PA-	13	maximum allowable current 20mA	сл,	
-				PB+	12	Differential frequency division output of puls	se R	
3	+5V		Frequency	PB-	27	maximum allowable current 20mA	,	
4	GND		division	PZ+	11	Differential frequency division output of puls	se B,	
	SU+		output	PZ-	26	maximum allowable current 20mA		
5	3171			OCZ	35	Z pulse open-collector output, maximum allo	ował	
5								
5	SD-			GND	29	current 40mA.		

Model description of EA190 pulse type servo driver

$\frac{\text{EA}}{\textcircled{1}} \quad \frac{190}{\textcircled{2}} \quad \frac{\text{X}}{\textcircled{3}} \quad \frac{6\text{R2}}{\textcircled{4}} \quad \frac{2}{\textcircled{5}} \quad \frac{\text{B}}{\textcircled{6}} \quad \frac{\text{XX}}{\textcircled{7}}$

 Product Servo driver Series 190 series 	 Rated output current 0R9-0.9A 6R2-6.2A 	Encoder typeB: Serial communication type
③Null:Pulse type	⑤Power voltage specification 1.Single-phase 220 V 2.Single / three-phase 220 V	⑦Special specifications

Dimension diagram of EA190 pulse type servo driver





44

EA190 - 0R9-1B EA190 - 1R6-1B EA190 - 2R5-1B



EA190 -4R8-2B EA190 -6R2-2B

Specification of EA190 pulse type servo driver

	Temperature	Working tem	perature 0~40°, sto	orage temperature	-20° ~85°				
Operating	Humidity	Working/sto	rage: ≤ 90% RH (w	ithout dew conden	isation)				
conditions	Altitude	≤ 1,000 m							
	Vibration	\leq 4.9 m/s ² , 1	\leq 4.9 m/s ² , 10~60 Hz (no operation at the point of resonance is permitted)						
Cooling method		Fan cooling							
Control meth	nod	SVPWM, vect	or control						
Six control m	nodes	Speed contro torque contro	ol, position control, ol	, torque control, sp	eed / position control, torque / speed control, position /				
Front panel		5 keys, 5-digi	t LED						
Regenerative	e brake	Built-in brake	e unit and resistor;	an external braking	g resistor can be connected				
Digital input	/ output	Input	Servo start, alarm tion selection, pos mode switching, p	resetting, position sition / speed mult pulse disable, forwa	pulse deviation counter clearing, speed command direc- i-segment switching, internal command trigger, control ard drive disable, reverse drive disable, forward jog, back-				
	· ·	Output	Servo ready, brake	e output, motor rot	ation output, zero-speed signal, speed approach, speed				
Protective FI	Inction	Hardware	Over-voltage, und so on.	er-voltage, over-sp	eed, overheat, overload, over-speed, encoder alarm, and				
FIOLECLIVETU	inction	Software	Excessively large p	position error, EEPF	ROM fault, and so on.				
Alarm data tr	racking function	Record 4 gro	ups of historical ala	arms and relevant of	data				
Communicat	tion function	Modbus RTU							
Encoder sign output resolu	al _{u-} Signal type	A, B, Z differe A/B/Z Pulse	A, B, Z differential outputs, Z signal open-collector output; Z signal width can be set. A/B/Z Pulse open collector output (NPN)						
tion	Resolution	Any frequence	Any frequency division can be programmed and output before or after frequency quadruplication						
	Maximum input pulse frequency	Differential input mode: 500 Kpps Open-collector input mode: 200 Kpps							
	Pulse command mode	Pulse + symbol, A and B-phase orthogonal pulse, CW/CCW							
Position	Command con- trol mode	External pulse command, multi-segment position command							
mode	Command smoothing mode	Low-pass filtering, FIR filter, trapezoid-shaped smoothing of multi-segment position command							
	Electronic gear ratio	Electronic ge	Electronic gear ratio: N/M multiples (0.001 < N/M < 64000 = N: 1~2 ³⁰ , M: 1 ~ 2 ³⁰						
	Position accura- cy	±1 pulse cor	±1 pulse command						
	Command con- trol mode	digital speed	command, multist	tage speed comma	nd, inching command				
	Command smoothing mode	Low-pass filtering, smooth S curve							
	Torque limit	Digital settin	g limit						
Speed control	Speed regula- tion ratio	1:5000 (23-b	it encoder)		Minimal speed/rated rotating speed of continuous stable operation under the rated load				
mode	Bandwidth	No less than	800 Hz (in case of a	a 23-bit encoder)					
		Load fluctuat	ion (0~100%)	Maximum 0.1%					
	Speed regula - tion ratio	Power voltag	e change ±10%	Maximum 0.1%	rated rotating speed, (rotating speed without load -				
		Environment (0~50°C)	temperature	Maximum 0.1%					
	Command con- trol mode	digital torque	e command						
Torque con- trol mode	Command smoothing mode	Low-pass filt	tering						
	Speed limit	Digital setting limit							
	Accuracy	±3% (current repetition accuracy)							

n	perature	-20°	~85°	
• •	peracare	~~	00	

EA190 series servo motor and driver matching table

		Servo driver			Motor	
	EA190	Model	Supply voltage	Motor	Power wattage	Adaptable motor model
SIZE A		EA190 □ -0R9-1B EA190 □ -1R6-1B EA190 □ -2R5-1B	Single-phase AC220V		50W 100W 200W 400W	SES04-005-30-2HAY SES04-0R1-30-2HAY SES06-0R2-30-2HBY SES06-0R4-30-2HBY SES06-0R4-30-2HBY
SIZE B		EA190 □ -4R8-2B EA190 □ -6R2-2B	Single-phase or three-phase AC220V		750W 1000W	SES08-0R7-30-2HBY SES08-1R0-30-2HBY SER13-1R0-10-2HBY SER13-1R0-20-2HBY SER13-1R0-30-2HBY SES13-1R1-20-2HBY



Motor specification / model	Adaptable driver model	Encoder cable	Motor cable
SES04-005-30-2HAY 🗌	EA190□-0R9-1B		
SES04-0R1-30-2HAY		A19-I S-A000-m	A18-I M-A007-m
SES06-0R2-30-2HBY	EA130[]-1K0-1R	(without battery)	(motor power cable)
SES06-0R4-30-2HBY 🗌	EA190□-2R5-1B	(with battery)	(brake cable for motor with a brake)
SES08-0R7-30-2HBY	EA190□-4R8-2B		
SES08-1R0-30-2HBY			
SER13-1R0-10-2HBY	EA190□-6R2-2B	A19-LS-H100-m	Without brake:
SER13-1R0-20-2HBY		(without battery) A19-LA-H100-m	A18-LM-H115-m With brake:
SER13-1R0-30-2HBY		(with battery)	A18-LB-H115-m

Intelligent logistics

Industrial demand

Rapid development of e-commerce and cold chain logistics in China brings new opportunities for the express delivery industry. The large delivery volume has expedited construction of sorting centers for express delivery of goods, while small modular sorting equipment and systems of high flexibility and performance-cost ratio have become a focus of fast delivery enterprises. "To accomplish each delivery" is the uppermost pursuit of delivery services. Accurate sorting is obviously a core procedure of delivery. Sorting error will not only cause inconvenience to customers, but also impair confidence of goods sellers and express delivery enterprises. Reliable intelligent sorting systems are helping distribution centers of express delivery enterprises realize "intelligent sorting, fast transfer and less people-dependent operation" of parcels.

O Highlights of the scheme

- Accurate location with a precise high-speed response controller
- Frequency division output, subject to closed-loop configuration control
- Smooth acceleration and deceleration; fast and stable parcel loading
- High sorting efficiency, with single-machine sorting speed of 6-8 K/h



O Scheme composition

EA196, EA190 series servo motor EtherCAT bus communication Customized motor cable



Note 1: When an external brake resistor is used, it is required to remove the short-circuiting piece between P+ and D, and correctly set the brake resistor parameter on the driver

CN3

Note 2: CN2 and CN3 are two RJ45 sockets with identically defined internal pins Note 3: It is strongly recommended that the servo motor brake is defined by the servo driver as the DO terminal of the BK function for control. The DO terminal of the servo driver shall have its load capacity used only for driving an intermediate relay other than an electromagnetic contactor.

Connection between EA196 pulse type servo driver and peripheral device



Servo motor

Terminal description of EA196 pulse type servo driver

Main circuit terminal

Terminal marking	Terminal name
L1、L2	AC power input terminal
P+、D、C	Connecting terminal for an external braking resistor
P+、⊖	Common DC bus terminal
U、V、W	Servo motor connecting terminal
PE	Grounding

CN2 and CN3 communication terminals

n mber	Signal name	Function
1	RS485+	DC 40E communication part
2	RS485-	RS485 communication port
3	GND	RS485/RS232 communication reference ground
4	RS232-RXD	The transmitting terminal of RS232 conne -cts to the receiving terminal of the upper computer
5	RS232-TXD	The receiving terminal of RS232 connects to the transmitting terminal of the upper computer

CN6 USB communication terminal

CN4 control terminal

Signal	name	Pin number	Function description
	DI1	18	Digital input, default function No. 1
	DI2	6	Digital input, default function No. 2
Digital	DI3	4	Digital input, default function No. 13
input	DI4	17	Digital input, default function No. 14
port	DI5	5	Digital input, default function No. 3
	COM+	19	Digital input common positive terminal
Power +24 supply CC	+24V	7	Internal 24V power source, voltage range +20V~26V, maximum output current 100mA
	СОМ	16	Internal 24V power ground; digital input common ground
	DO1+	8	Digital output default function No. 1
	D01-	20	
Digital	DO2+	21	Digital output default function No. 2
output	DO2-	9	Digital output, default function No. 2
	DO3+	22	Digital output default function No. 12
	DO3-	10	
	PULHIP	1	Positive terminal when 24V power source is used for command pulse
Position	PULSE+	15	Position pulse command +
input	PULSE-	3	Position pulse command -
mput	SIGN+	14	Position direction command +
	SIGN-	2	Position direction command -

CN5 encoder terminal -

Pin number	Signal name
1	+5V
2	GND
3	+5V
4	GND
5	SD+
6	SD-
Housing	PE

Specification of EA196 pulse type servo driver

	Temperature	Working ter	mperature 0~40	°, storage temp	
Operating	Humidity	Working/st	orage: ≤ 90%RI	H (without dew)	
conditions	Altitude	≤ 1000m			
Vibration		\leq 4.9m/s ² ,	10~60Hz (no op	eration at the p	
C	ooling method	Fan cooling	Ş		
C	ontrol method	SVPWM, ve	ctor control		
Six	control modes	Speed cont	rol, position cor	ntrol, torque cor	
	Front panel	5 keys, 5-di	git LED		
Reg	generative brake	Built-in bra	ke unit and resis	stor; an external	
Fe	eedback mode	17-bit incre	mental/23-bit a	bsolute encode	
Digi	ital input/output	Input	Servo start, ala position/speed Mode switching	rm resetting, po multi-segment g, pulse disable,	
		Output	Servo ready, br tion approach,	ake output, mot torque limit, rot	
Pro	tective Function	Hardware	Over-voltage, u	nder-voltage, ov	
		Software	Excessively larg	ge position error	
Alarm d	ata tracking function	Record 4 groups of historical alarms and re			
Comm	Communication function		Modbus RTU		
	Maximum input pulse frequency	Differential input mode: 500Kpps Open-collector input mode: 200Kpps			
	Pulse command mode	Pulse + symbol, A and B-phase orthogonal			
Position control	Command control mode	External pulse command, multi-segment p			
mode	Command smoothing mode	Low-pass filtering, FIR filter, trapezoid-sha			
	Electronic gear ratio	Electronic §	gear ratio: N/M n	nultiples (0.001<	
	Position accuracy	± 1 pulse c	ommand		
	Command control mode	External pu	lse, digital spee	d command, mu	
	Command smoothing mode	Low-pass fi	ltering, smooth	S curve	
	Torque limit	Digital setti	ng limit		
Speed con-	Speed regulation ratio	1:5000 (23-	bit encoder)		
trot mode	Bandwidth	No less tha	n 400Hz (23-bit	encoder)	
		Load fluctu	ation (0~100%)	Maximum 0.1%	
	Speed fluctuation ratio	Supply volt $\pm 10\%$	age change	Maximum 0.1%	
		Environme (0~50°C)	nt temperature	Maximum 0.1%	
	Command control mode	Digital torq	ue command		
Torque control	Command smoothing mode	Low-pass fi	ltering		
mode	Speed limit	Digital setti	ng limit		
	Accuracy	\pm 3% (current repetition accuracy)			

perature -20° ~85°

condensation)

oint of resonance is permitted)

ntrol, speed/position control, torque/speed control, position/torque control

l braking resistor can be connected

osition pulse deviation counter clearing, speed command direction selection, t switching, internal command trigger, control , forward drive disable, reverse drive disable, forward inch, backward inch

otor rotation output, zero-speed signal, speed approach, speed reached, posistating speed limit, warning output, alarm output.

ver-speed, overheat, overload, over-speed, encoder alarm, and so on.

r, EEPROM fault, and so on.

elevant data

pulse

position command

ped smoothing of multi-segment position command

< N/M< 64000 = N: 1~2³⁰, M: 1~2³⁰

ultistage speed command, inching command

Minimal speed/rated rotating speed of continuous stable operation under the rated load

For a 23-bit encoder, when the speed command is the rated rotating speed, (rotating speed without load - rotating speed with full load)/rated rotating speed.

Dimension of EA196 pulse type servo driver



EA196 series servo motor and driver matching table

Servo driver			Motor			
	EA196	Model	Supply voltage	Motor	Power	Adaptable motor model
SIZE A		EA196 -2R5-1B	Single-phase AC220V		200W 400W	SES06-0R2-30-2HBY SES06-0R4-30-2HBY
SIZE B		EA196 -4R8-1B	Single-phase AC220V		750W	SES08-0R7-30-2HBY

EA196 series servo motor and driver matching table

Motor specification/model	Adaptable driver model	Encoder cable	Motor cable
SES06-0R2-30-2HBY		A19-LS-A000-m	A18-LM-A007-m
SES06-0R4-30-2HBY		(without battery) A19-LA-A000-m	(motor power cable) A18-LZ-A005-m
SES08-0R7-30-2HBY	EA190□-4R8-2B	(with battery)	(brake cable for motor with a brake)

Printing & packaging

Front-edge paper feeder

Industrial demand

• It is the core demand of front-edge paper feeding device to make several groups of rubber axles of feed roller and meet the required precision of the customer after paper feeding.

O Highlights of the scheme

• Motion controller scheme: 350 high-performance servo driver + ultra-low inertia motor + motion controller, with high speed and high accuracy of paper feeding, simple commissioning and convenient maintenance.

O Adaptable motor model

• Motion controller scheme: 350 high-performance servo driver + ultra-low inertia motor + motion controller, with high speed and high accuracy of paper feeding, simple commissioning and convenient maintenance.





coordinate with paper feeding at a certain time sequence according to the real-time position of the printing roller

EA180C/P servo driver

Single-phase 220V~240V 0.1~1kW Three-phase 220V~240V 0.75~1.5kW Three-phase 340V~460V 1.5~30kW



High-speed response



High-precision positioning



Easy to use

Bus control



Connection between EA180 CANopen bus servo driver and peripheral device



Note 1: When an external brake resistor is used, it is required to remove the short-circuiting piece between P+ and D, and correctly set the brake resistor parameter on the driver Note 2: CN2 and CN3 are two RJ45 sockets with identically defined internal pins Note 3: It is strongly recommended that the servo motor brake is defined by the servo driver as the DO terminal of the BK function for control. The DO terminal of the servo driver shall have its load capacity used only for driving an intermediate relay other than an electromagnetic contactor.

Terminal description of EA180 CANopen servo driver

Main circuit terminal

CN1 analog quantity monitoring terminal CN2 and CN3 communication terminals

erminal marking	Terminal name	F r	Pin number	Signal name	Fu
L1C、L2C	Control power input terminal		1	AO1	Output volta
	AC power input terminal of		2	AO2	-ximum out
	main circuit Connecting terminal for an		2	CNID	Common g
P+, D, C			3	GND	output sign
	external braking resistor		4	D	Cannot be
$P+ \Theta$	Common DC bus terminal		4	Reserved	any signal l
U、V、W	Servo motor connecting terminal				
PE Grounding			CN6 USB commun		mmunica
			Accord	ing to USB	2.0 specificati

		■±***
•		CANopea
0	L2C	
•	L1 👗	
•	L2 🔥	
0	L3	
0	Θ	0
	P+	
	D	IIII. —
()	c	C
•	U	
•	v	0
•	w	
•	•	CNS
charge		0

CN!	5 enc	oder	term	inal	
····					•

Pin number	Signal name
1	SD+
3	SD-
5	+5V
10	GND
Housing	PE

ial ie	Function	Pin number	Signal name	Function
1	Output voltage 0V ~ 10V, ma	1	RS485+	Positive terminal of RS485 signal
2	-ximum output current 1mA	2	RS485-	Negative terminal of RS485 signal
D	Common ground of analog	3	GND	Communication signal reference ground
	output signal	4	RS232-RXD	RS232 signal receiving side
ved	Cannot be connected with	5	RS232-TXD	RS232 signal sending side
communication terminal		6	GND	Communication signal reference ground
		7	CANH	CAN communication reference ground
JSB	2.0 specification	8	CANL	Negative terminal of CAN signal

CN4 control terminal

ignal	name	Pin number	Default function		
	DI1	5	S-ON	Servo on	
	DI2	20	ALM-RST	Alarm fault resetting	
	DI3	4	P-CLR	Pulse deviation counter clearing	
tal ut	DI4	19	P-OT	Inhibit forward drive	
	DI5	3	N-OT	Inhibit reverse drive	
ort	DI6	18	INHIBIT	Pulse inhibited	
	DI7	2	ORPG	Homing detection signal	
	DI8	17	SHOM	Homing enable	
	COM+	21	DI input common positive terminal		
	+24V	25/40	Internal 24V power source, voltage rang	ge +20V~26V,	
ver COM		7/22/36	maximum output current 200mA		
1.2	+10V	44	+10V power, maximum output of 10mA	A	
	DO1	8	S-RDY+	The servo is ready and can	
	DO1-	37	S-RDY-	signal status can be received	
	DO2	23	BK+	Brako control signal	
ital	D02-	38	BK-	Diake control signal	
put	DO3	9	COIN+	"Desition reached" signal	
	D03-	39	COIN-	Position reactied signal	
	DO4	24	ALM+	Connected upon occurrence	
	DO4-	10	ALM-	of a fault	
	DO5	41	Disabled	No function predefined	
	PA+	28	A pulse frequency division output +	Maximum current 20mA	
	PA-	13	A pulse frequency division output -	Maximum current 20mA	
	PB+	12	B pulse frequency division output +	Maximum current 20mA	
ency ion	PB-	27	B pulse frequency division output -	Maximum current 20mA	
	PZ+	11	Z pulse frequency division output +	Maximum current 20mA	
	PZ-	26	Z pulse frequency division output -	Maximum current 2011A	
	OCZ	35	7 pulso opon collector output movimu	m allowable current 40m	
	GND 29 2 puise open-collector output, maximum allowable		חו מנוטשטופ כעודפות 4011A.		

Terminal description of EA180 PROFINET bus servo driver A

CN1 RS232 communication terminal

5 6

7 8

Pin number	Signal name	Function
1	RS232-TXD	RS232 signal sending side
2	RS232-RXD	RS232 signal receiving side
3	GND	RS232 communication signal reference ground
4	Reserved	Cannot be connected with any signal line





Main circuit terminal

Terminal marking	Terminal name
L1C、L2C	Control power input terminal
L1、L2、L3	AC power input terminal of main circuit
P+、D、C	Connecting terminal for an extern -al braking resistor
P+、 \ominus	Common DC bus terminal
U, V, W	Servo motor connecting terminal
PE	Grounding

1 Hou

Note: For connection between EA180P PROFINET bus servo driver and peripheral device, use connection between EA300EETHERCAT bus servo driver and peripheral device for reference.

CN2 and CN3 PROFINET communication terminals

CI PRFINE	N3 T Port1	CN2 PRFINET Port2		
nber	Signal name	Pin number	Signal name	
	TD+	1	TD+	
	TD-	2	TD-	
	RD+	3	RD+	
		4		
		5		
	RD-	6	RD-	
		7		
		8		

CN4 control terminal

ame	Pin number	Default function			
DI1	5	P-OT	Inhibit forward drive		
012	20	N-OT	Inhibit reverse drive		
013	4	ORPG	Homing detection signal		
DI4	19	ALM-RST	Alarm fault resetting		
+MC	21	Digital input common po	ositive terminal (12~24V)		
24V	25/40	Internal 24V power source, voltage range +20V~26V, maximum output current 200mA			
ОМ	7/22/36	Internal 24V power ground; common negative terminal of digital input			
001	8	S-RDY+	The servo is ready and can be connected		
01-	37	S-RDY-	when S-ON signal status can be received		
002	23	BK+	Drake control signal		
02-	38	BK-	Drake control signal		
003	9	COIN+	"Desition meshed" simpl		
03-	39	COIN-	Position reached signal		
04	24	ALM+	Connected upon accurrence of a fault		
04-	10	ALM-	connected upon occurrence of a fault		

CN5 encoder terminal

umber	Signal name
1	SD+
3	SD-
5	+5V
.0	GND
ising	PE

Model description of Series EA180C/P servo driver

	$\frac{\text{EA}}{1}$	$\frac{180}{2} \frac{C}{3} = \frac{6R2}{4} = \frac{2}{5} \frac{B}{6} = \frac{XX}{7}$	
 Product Servo driver Series 180 series 		④ Rated output current 0R9-0.9A⑥ Encoder type B: 17/23-bit serial encoder028-28A	
③ C: CANOpen bus P: PROFINET bus		⑤ Power voltage specification⑦ Non-standard specification1. Single-phase 220V2. Single/three-phase 220V3. Three-phase 380V800	

Supply voltage	Driver model	Rated motor power (KW)	Rated current (A)	Maximum current (A)	Structure	Adaptive motor encoder	
	EA180 🗆 -0R9-1 🗌	0.05	0.9	3.15			
Single-phase 220V	EA180 🗆 -1R6-1 🗌	0.02	1.6	5.6	SIZE A		
	EA180 🗆 -2R5-1 🗌	0.4	2.5	9.0			
Single-phase	EA180 🗌 -4R8-2 🗌	0.75	4.8	14.4			
or three-phase 220V	EA180 🗌 -6R2-2 🗌	1	6.2	18.6	SIZE D	□ -B: 17/23-bit serial encoder	
Three-phase 220V	EA180 🗌 -011-2 🗌	1.5	11	30			
	EA180 🗌 -5R6-3 🗌	1.5	5.6	15			
	EA180 🗌 -8R5-3 🗌	2	8.5	20	SIZEC		
Three-phase	EA180 🗌 -013-3 🗌	3	13	30			
380V	EA180 🗌 -017-3 🗌	4.4	17	42.5			
	EA180 🗌 -022-3 🗌	5.5	22	55	SIZE D	□ -B: 17/23-bit serial encoder	
	EA180 🗌 -028-3 🗌	7.5	28	70			

Dimension diagram of Series EA180C/P servo driver













EA180 -017-3 EA180 -022-3 EA180 -028-3

EA180 - 0R9-1 EA180 - 1R6-1 EA180 - 2R5-1



Technical specification of Series EA180C/P bus servo driver

• EA180C CANopen and EA180P PROFINET bus servo driver

Item					Specification	
	Control method			IGBT PWM control sine-wave current drive		
	Feedback			17-bit incremental/encoder, 23-bit absolute encoder		
	Six control modes			Speed control, position control, torque control, speed/position control, torque/speed control, position/torque control		
	Front panel			5 keys, 5-digit LED		
	Regenerative brak	e		Built-in brake unit and resistor; an external braking resistor can be connected		
Basic		Environm	ent temperature	Working temperature 0~40°	, storage temperature -20° ~85°	
specification		Ambient	humidity	Working/storage: ≤ 90%RH	(without dew condensation)	
		Altitude		≤ 1,000m		
	Use conditions	Anti-vibration impact strength		Vibration: $\leq 4.9m/s^2$ (no operation at the point of resonance is permitted), impact: $\leq 19.6m/s^2$		
		Protection level		IP10		
		Pollution level		2 level		
	Cooling method			Fan cooling		
	Speed-torque control mode	Speed fluctua- tion ratio	Load fluctuation	0~100 load: Maximum 0.3%		
			Supply voltage change	At rated voltage ± 10%: Maximum 0.3%	Based on 23bit encoder, at rated speed	
			Environment temperature	0~50°C : Maximum 0.3%		
		Speed regulation ratio		1:5000 (17bit and 23bit encoder)	Minimal speed/rated rotating speed of con- tinuous stable operation under the rated load	
Performance		Frequenc	y bandwidth	1.2kHZ (23-bit encoder)		
		Torque control accuracy		±3% current repetition accuracy		
		Soft start	time setting	0~30s (acceleration and deceleration can be set respectively)		
	Position control	Feedforward compensation		Resolution 0~100% (set resolution 1%)		
	mode	Positioni	ng completion width	1~655,335 instruction units (set resolution to 1 instruction unit)		
		Min setting time		5ms (no load, from rated speed to positioning completion)		

• EA180 CANopen and EA180P PROFINET bus servo driver

	Item			Specification
	Input/output	Digital input port	Variable signal distribu- tion	8 DI Fault reset, position pulse deviation counter clearing, pulse disable, forward drive disable, reverse drive disable, second torque limit, forward inch, backward inch, oth- ers
FA180C	signal	Digital output	Variable signal frequen- cy division	4 DO Servo ready, brake output, motor rotation output, zero-speed signal, speed ap- proach, speed reached, position approach, torque limit, rotating speed limit, warn- ing output, fault output, others
				Slow down and stop when P-OT and N-OT are valid
		LED displa	у	5-digit LED display: Main circuit CHARGE
	Built-in function	Protective Function		Over-voltage, under-voltage, over-current, over-speed, IGBT overheat, overload, en- coder exception, excessive position error, EEPROM fault, abnormal communication, others
				Two-stage gain switching, automatic gain adjustment, 4 groups of alarm record, JOG operation
	Input/output	Digital input port	Function allocation available	Fault reset, forward drive disable, reverse drive disable, forward inch, backward inch, electronic gear ratio switching etc.
	signal	Digital output	Function allocation available	Servo ready, brake output, motor rotation output, zero-speed signal, torque limit, rotating speed limit, warning output, fault output etc.
		Over-trave	l prevention function	Stopped immediately when P-OT and N-OT are activated.
FA180P		Electronic	gear ratio	$1.0 \leq B/A \leq 64000.0$
LATON	Built-in function	Built-in Protective Function function	Function	Over-voltage, under-voltage, over-speed, overheat, overload, over-speed, over-tem- perature, encoder fault, braking resistor overload fault, EEPROM fault, abnormal communication etc.
		Alarm data	tracking function	Record 4 groups of historical alarms and relevant data
		RS232 communication		Status display, user parameter setting, monitoring display, alarm tracking display, JOG operation and automatic adjustment operation, speed instruction signal etc.
		Communio	cation mode	RS232, RS485, CANopen
EA180C Communica- tion function		CANopen bus control		Synchronizing cycle: 1ms or its integral multiple The following running modes are supported: Profile Position; Profile Velocity Mode Profile Torque Mode: Homing Mode

EA180C/P series servo motor, driver and cable matching table

		Servo driver			Motor	
	EA180	Model	Supply voltage	Motor	Power	Adaptable motor model
SIZE A		EA180□-0R9-1 □ EA180□-1R6-1 □ EA180□-2R5-1 □	Single-phase AC220V		50W 100W 200W 400W	SES04-005-30-2FAY SES04-0R1-30-2FAY SES06-0R2-30-2FBY SES06-0R4-30-2FBY SES06-0R4-30-2FBY
SIZE B		EA180□-4R8-2 □ EA180□-6R2-2 □	Single-phase or three-phase AC220V		750W 1000W	SES08-0R7-30-2FBY SER13-1R0-10-2FBY SER13-1R0-20-2FBY SER13-1R0-30-2FBY SER13-1R0-30-2FBY
		EA180□-5R6-3 □	Three-phase AC380V		850W 1.3kW 1.8kW	SES13-0R8-15-3FBY SES13-1R3-15-3FBY
SIZE	SNEE - 2				2.9kW	SES13-1R8-15-3FBY 🗆
С		EA1800-885-3 0 EA1800-013-3 0			1.5kW 2kW 3kW	SER13-1R5-10-3FBY SER13-1R5-20-3FBY SER13-1R5-30-3FBY SER13-2R0-20-3FBY SER13-2R0-30-3FBY SER13-3R0-20-3FBY SER13-3R0-3FBY SER13-3R0-3FBY SER13-3R0-3FBY SER13-3R0-3FBY SER13-3R0-3FBY SER13-3R0-3FBY SER13-3R0-3FBY SER13-3FBY SER
SIZE D		EA180□-011-2 □	Three-phase AC220V		1.5kW	SER13-1R5-10-2FBY SER13-1R5-20-2FBY SER13-1R5-30-2FBY
SIZE E		EA180□-017-3 □ EA180□-022-3 □ EA180□-028-3 □	Three-phase AV380V		4.4kW 5.5kW 7.5kW	SES18-4R4-15-3FBY □ SES18-5R5-15-3FBY □ SES18-7R5-15-3FBY □

EA180C/P series servo motor, driver and cable matching table

Motor specification/model	Adaptable driver model	Encoder cable	Motor cable
SER13-1R0-10-2FBY			A18-LM-H115-m (Power cable for motor without brake) A18-LB-H115-m (Power cable for motor with a brake)
SER13-1R0-20-2FBY	EA180 🗌 -6R2-2B		
SER13-1R0-30-2FBY			
SER13-1R5-10-2FBY			
SER13-1R5-20-2FBY	EA180 🗆 -011-2B		
SER13-1R5-30-2FBY		A10-LS-H100-m (without battery)	
SER13-1R5-10-3FBY	EA180 🗆 -5R6-3B	A10-LA-H100-m (with battery)	A18-LM-H120-m (Power cable for motor without brake)
SER13-1R5-20-3FBY			
SER13-1R5-30-3FBY			(Power cable for motor with a brake)
SER13-2R0-20-3FBY			
SER13-2R0-30-3FBY	EAIOU 🗌 -ORJ-JD		
SER13-3R0-20-3FBY			
SER13-3R0-30-3FBY	EATON -013-3B		

Note: When the encoder is used, A10-LA-xxxx-m encoder cable must be selected and used if the absolute position should be memorized upon power off, and A10-LS-xxxx-x encoder cable may be selected and used if the absolute position should be memorized without power off.

Motor specification/model	Adaptable driver model	Encoder cable	Motor cable
SES04-005-30-2FAY 🗌	EA180 🗌 -0R9-1B	EA180 🗆 -0R9-1B	
SES04-0R1-30-2FAY			
SES06-0R2-30-2FBY	EV180 🗔 -1K0-1R	A10-LS-A000-m (without battery) A10-LA-A000-m (with battery)	A18-LM-A007-m (motor power cable)
SES06-0R4-30-2FBY	EA180 🗌 -2R5-1B		A10-LZ-A005-m (brake cable for motor with a brake)
SES08-0R7-30-2FBY	EA180 🗌 -4R8-2B		
SES08-1R0-30-2FBY	EA180 🗌 -6R2-2B		
SES13-0R8-15-2FBY	EA180 🗌 -011-2B		
SES13-0R8-15-3FBY			A18-LM-M420-m (motor power cable) A18-LZ-H405-m (brake cable for motor with a brake)
SES13-1R3-15-3FBY	EA160 🖂 -3K0-3D		
SES13-1R8-15-3FBY	EA180 🗆 -8R5-3B		
SES18-2R9-15-3FBY		A18-LS-H400-m (without battery)	Without brake: A18-LM-M525-m
SES18-3R6-20-3FBY	EA180 🗌 -013-3B	A18-LA-H400-m (with battery)	(motor power cable) With brake: A10-LM-M220-m
SES18-4R0-30-3FBY			(motor power cable) A18-LZ-H405-m
SES18-4R4-15-3FBY 🗌	EA180 🗌 -017-3B		(brake cable for motor with a brake)
SES18-5R5-15-3FBY 🗌	EA180 🗌 -022-3B		A10-LM-M240-m (motor power cable)
SES18-7R5-15-3FBY	-15-3FBY 🗆 EA180 🗆 -028-3B		A18-LZ-H405-m (brake cable for motor with a brake)

EA300E servo driver

Single-phase 220V~240V 0.1~1kW Three-phase 220V~240V 0.75~1.5kW Three-phase 340V~460V 1.5~30kW





High-precision positioning









Connection between EA300 EtherCAT bus servo driver and peripheral device

Terminal description of EA300 Ether CAT bus servo driver



Note 1: When an external brake resistor is used, it is required to remove the short-circuiting piece between P+ and D, and correctly set the brake resistor parameter on the driver

Note 2: It is strongly recommended that the servo motor brake is defined by the servo driver as the DO terminal of the BK function for control. The DO terminal of the servo driver shall have its load capacity used only for driving an intermediate relay other than an electromagnetic contactor.

N CN3	OUT	CN2
Signal name	Pin number	Signal name
TD+	1	TD+
TD-	2	TD-
RD+	3	RD+
	4	
	5	
RD-	6	RD-
	7	
	8	

CN4 control terminal

n number	Default function			
5	P-OT	Inhibit forward drive		
20	N-OT	Inhibit reverse drive		
4	ORPG	Homing detection signal		
19	ALM-RST	Alarm fault resetting		
3	GAIN-SEL	Gain switching		
18	J-SEL	Inertia ratio switching		
2	P-CLR	Pulse deviation counter clearing		
17	INHIBIT Pulse inhibited			
21	DI input common positive terminal			
25/40	Internal 24V power source, voltage range +20V~26V, maximum			
7/22/36	output current 200mA			
8	S-RDY+	The servo is ready and can be connected		
37	S-RDY-	when S-ON signal status can be received		
23	BK+	Duralia an interal size al		
38	BK-	brake control signal		
9	COIN+	"Desition reached" signal		
39	COIN-	rosition reactieu signal		
24	ALM+			
10	ALM-	connected upon occurrence of a fault		

10

Housing

Signal name
SD+
SD-
+5V
GND
PE

Specification of EA300 EtherCAT bus servo driver

	Control method			ntrol method	IGBT: PWM control, sine-wave currer	nt drive type.		
			Enco	oder feedback	17bit serial incremental encoder 23	hit serial absolute encoder		
			F	Front panel	5 kevs. 5-digit LED display, main power CHARGE			
			Rege	enerative brake	Can be basically built-in and externally installed			
- ·				Environment temperature	Working temperature 0~40°	,		
Basic spe	cifica-			Ambient humidity	Working/storage: ≦ 90%RH (withou	t dew condensation)		
tion		Use co	nditions	Anti-vibration/ impact strength	4.9m/s ² /19.6m/s ²			
				Protection level	IP10			
				Pollution level	2 level			
				Altitude	Less than 1,000m			
			Coo	oling method	Fan cooling			
				Communication protocol	EtherCAT protocol			
				Support services	CoE(PDO, SDO)			
				Instruction synchronization cycle	1ms or its integral multiple			
				Synchronization method	DC- distributed clock			
				Physical layer	100BASE-TX			
				Baud rate	100Mbit/s			
		EtherC	AT basic	Duplex mode	Full duplex			
		specif	fication	Topological structure	Linear			
				Transmission medium	Shielded Cat-5E or better network ca	able		
				Transmission distance	Less than 50m between two nodes			
				Quantity of slave stations	No more than 100			
				EtherCAT frame length	44~1,498 bytes			
EtherCAT	slave			Process data	44~1,498 bytes			
specification				(bit error rate)	1/100000000			
				FMMU unit	4			
				Storage synchronization	4			
		EtherCAT configuration unit		Process data PAM	ΔK			
				Distributed clock	64 digits			
				EFPROM capacity	16K			
		Support running mode CIA402			Profile Position Mode Profile Velocity Mode Profile Torque Mode Interpolation Position Mode Cyclic Synchronous Position Mode Cyclic Synchronous Velocity Mode Cyclic Synchronous Torque Mode			
				Load fluctuation	At 0~100% load: Maximum 0.3%			
			Speed	Supply voltage change	At rated voltage \pm 10%: Maximum	_		
			fluctua-		0.3%	At rated speed		
	Speed	d-torque	lion fallo	temperature	0~50°C : Maximum 0.3%			
Perfor-	contr	ol mode	S	peed regulation ratio	1:5000	Minimal speed/rated rotating speed of continuous stable oper ation under the rated load		
mance			Fr	requency bandwidth	1.0KHz (17bit and 23bit encoder)			
			То	rque control accuracy	\pm 3% (current repetition accuracy)			
			S	oft start time setting	0~30s (acceleration and deceleration	n can be set respectively)		
	Posit	ion con-	Feed	Iforward compensation	Resolution 0~100% (set resolution 1	%)		
	trol	mode	POSILI	Min sotting time	1~655,335 instruction units (set resolution to 1 instruction unit)			
				Mill Setting time	Servo enable alarm resetting pulse	deviation counter clearing speed command direction selection		
Input/out-	Digit si	al input gnal	Func	tion allocation available	position/speed multi-segment switching, internal command trigger, control mode switching, pulse disable, forward drive disable, reverse drive disable, forward inch, backward inch			
put signat	Digita si	l output gnal	Func	tion allocation available	Servo ready, brake output, motor rot reached, position approach, torque	tation output, zero-speed signal, speed approach, speed limit, rotating speed limit, warning output, alarm output		
		Over-ti	ravel (OT)	prevention function	Stopped immediately when P-OT an	d N-OT are activated.		
			Electron	ic gear ratio	1.0 ≤ B/A ≤ 64000.0			
Built-in function			Protectiv	ve Function	Over-voltage, under-voltage, over-sp alarm, braking resistor overload alar cation etc.	eed, overheat, overload, over-speed, over-temperature, encode m, excessive position error, EEPROM alarm, abnormal commun		
			RS232 cor	nmunication	Status display, user parameter settin automatic tuning operation, speed,	g, monitoring display, alarm tracking display, JOG operation an torque instruction signal etc.		
	Others			thers	Gain adjustment, alarm record, JOG	operation		

EA300E series servo motor, driver and cable matching table

		Servo driver		Motor			
	EA300E	Model	Supply voltage	Motor	Power	Adaptable motor model	
SIZE A		EA300E-0R9-1B EA300E-1R6-1B EA300E-2R5-1B	Single-phase AC220V		50W 100W 200W 400W	SES04-005-30-2FAY SES04-0R1-30-2FAY SES06-0R2-30-2FBY SES06-0R4-30-2FBY	
SIZE B		EA300E-4R8-2B EA300E-6R2-2B	Single-phase or three-phase AC220V		750W 1000W	SES08-0R7-30-2FBY SES08-1R0-30-2FBY SES13-1R1-20-2FBY	
SIZE		EA300E-5R6-3B EA300E-8R5-3B EA300E-013-3B	Three-phase AC3801/		850W 1.3KW 1.7KW	SES13-0R8-15-3FBY SES13-1R3-15-3FBY SES13-1R7-30-3FBY SES13-1R1-20-3FBY SES13-1R1-20-3FBY	
			Three phase resouv		1.8kW 2.4kW 2.6kW 2.9kW 3.6kW	SES13-2R6-30-3FBY SES13-1R8-15-3FBY SES13-2R4-20-3FBY SES13-3R6-30-3FBY SES13-3R6-30-3FBY SES18-2R9-15-3FBY	
SIZE C		EA300E-011-2B	Three-phase AC220V		0.8kW 1.1kW 1.7kW	SES13-1R1-20-2FBY SES13-0R8-15-2FBY SES13-1R7-30-2FBY	
SIZE		EA300E-017-3B	Three-phase AC 3801/		4.4kW 5.5kW 7.5kW	SES18-4R4-15-3FBY SES18-5R5-15-3FBY SES18-7R5-15-3FBY	
D		EA300E-022-3B EA300E-028-3B	Three-phase Ac560V		11kW 13kW 15kW	SEC20-011-15-3FBY SEC20-011-20-3FBY SEC20-013-15-3FBY SEC20-015-15-3FBY SEC23-011-15-3FBY	
SIZE E		EA300E-038-3B EA300E-052-3B EA300E-062-3B	Three-phase AC380V		15kW 18kW 22kW 29kW	SEC23-015-15-3FBY SEC23-018-15-3FBY SEC23-022-15-3FBY SEC23-029-15-3FBY	

EA190 servo driver

Single-phase 220V~240V 0.1~1kW



Stable and reliable



High-precision positioning



Bus control

Easy to use

, ⇒ 220\ | 1 L3 P+

Connection between Series EA190E bus servo driver and peripheral device A



Servo motor

Model description of EA190E bus servo driver

$\frac{\text{EA}}{1} \quad \frac{190}{2} \quad \frac{\text{X}}{3} = \frac{6\text{R2}}{4} = \frac{2}{5} \quad \frac{\text{B}}{6} = \frac{\text{XX}}{7}$

①Product Servo driver	(4) Rated output current(7) OR9-0.9A(6) GR2-6.2A	6 Encoder typeB: 17/23-bit serial encoder
190 series		
③ Null: Pulse type E: EtherCAT bus type	Dower voltage specificationSingle-phase 220VSingle/three-phase 220V	⑦ Special specifications

Dimension diagram of EA190E bus servo driver





Model	D	Н	W	W1	H1
EA190E-0R9-1B EA190E-1R6-1B EA190E-2R5-1B	150	168	44	34	158
EA190E-4R8-2B EA190E-6R2-2B	168	168	55	45	158



A	Specification	of Series	EA190E b)

		IGBT: PWM contr	
		Front panel	5 keys, 5-digit LE
	F	Regenerative brake	Can be basically
		Environment temperature	Working temper
Basic		Ambient humidity	Working/storage
specification	Use	Anti-vibration/ impact strength	4.9m/s ² /19.6m/s
	CONDITIONS	Protection level	IP20
		Pollution level	2 level
		Altitude	Less than 1,000r
		Cooling method	Natural (specific
		Communication protocol	EtherCAT protoc
		Support services	CoE(PDO, SDO)
		Instruction synchronization cycle	1ms or its integr
		Synchronization method	DC- distributed of
		Physical layer	100BASE-IX
	EtherCAT	Baud rate	100Mbit/s
	basic	Duplex mode	Full duplex
	specification	Topological structure	Linear
		Transmission medium	Snielded Cat-5E
			Less than 50m b
		Quantity of slave stations	NO more than 10
F (1) O (T)		Process data	44~1,498 Dytes
EtherCAT		Communication REP (bit arrow	44~1,498 Dytes
specification		rate)	1/100000000
specification		FMMU unit	4
		Storage synchronization man-	
	EtherCAT configuration	agement unit	4
		Process data RAM	4K
	unit	Distributed clock	64 digits
		EEPROM capacity	16K
	Suppo	Profile Position Profile Velocity I Profile Torque M Interpolation Pc Cyclic Synchron Cyclic Synchron Cyclic Synchron Homing Mode	
		Load fluctuation	At 0~100% load
	Speed fluctu-	Supply voltage change	At rated voltage
	diomatio	Environment temperature	0~50°C · Maximi
Speed-torque control mode	Sp	1:5000	
	Fre	1.0KHz (17bit an	
	Tor	que control accuracy	±3% (current re
	Sc	oft start time setting	0~30s (accelerat
	Feed	forward compensation	Resolution 0~10
Position con-	Positio	oning completion width	1~655,335 instru
trot mode		Min setting time	5ms (no load, fro
Digital input signal	Funct	Servo enable, al selection, positi mode switching	
Digital output Function allocation available			Servo ready, bra speed reached, alarm output
Ov	er-travel (OT) p	prevention function	Stopped immed
	Electroni	c gear ratio	$1.0 \ll B/A \leqslant 640$
	Protectiv	e Function	ture, encoder al alarm, abnorma
	RS232 con	nmunication	Status display, u
	Ot	hers	Gain adjustmen
	51		

ous servo driver

trol, sine-wave current drive type								
ED display, main power CHARGE								
/ built-in and externally installed								
ature 0~40°								
e: ≤ 90%RH (without dew condensation)								
's ²	,2							
5								
M	2DE)/fer appling (appecifications 4D9 (D2)							
cations uky, 1kb,	2R5)/ fan cooling (specifications 4R8, 6R2)							
COL								
ral multiple								
clock								
or better networ	rk cable							
Jelween two hod	es							
.00								
M								
Mode								
Node								
osition Mode								
nous Position Mod	de							
nous Velocity Mod	le							
nous Torque Mode	e							
: Maximum 0.3%								
e ± 10%: Maxi-	At rated speed							
um 0 3%								
uni 0.370	Minimal speed/rated rotating speed of continuous stable							
	operation under the rated load							
nd 23bit encoder)								
, epetition accurac	y)							
tion and decelera	ition can be set respectively)							
00% (set resolutio	on 1%)							
uction units (set r	esolution to 1 instruction unit)							
om rated speed t	o positioning completion)							
larm resetting, pu	ulse deviation counter clearing, speed command direction							
ion/speed multi-s	segment switching, internal command trigger, control							
ake outnut moto	r rotation output zero-sneed signal sneed approach							
position approad	ch, torque limit, rotating speed limit, warning output.							
diately when P-O	「and N-OT are activated.							
000.0								
nder-voltage, ove	r-speed, overheat, overload, over-speed, over-tempera-							
larm, braking resi	stor overload alarm, excessive position error, EEPROM							
	1 Ell.							
user narameter se								

user parameter setting, monitoring display, alarm tracking display, JOG automatic tuning operation, speed, torque instruction signal etc. ht, alarm record, JOG operation

EA190E series servo motor and driver matching table

		Servo driver		Motor		
EA190		Model	Supply voltage	Motor	Power	Adaptable motor model
SIZE A		EA190E-0R9-1B EA190E-1R6-1B EA190E-2R5-1B	Single-phase AC220V		50W 100W 200W 400W	SES04-005-30-2HAY SES04-0R1-30-2HAY SES06-0R2-30-2HBY SES06-0R4-30-2HBY SES06-0R4-30-2HBY
SIZE B		EA190E-4R8-2B EA190E-6R2-2B	Single-phase or three-phase AC220V		750W 1000W	SES08-0R7-30-2HBY SES08-1R0-30-2HBY SER13-1R0-10-2HBY SER13-1R0-20-2HBY SER13-1R0-30-2HBY SES13-1R1-20-2HBY

EA190E series servo motor and driver matching table

Motor specification/model	Adaptable driver model	Encoder cable	Motor cable	
SES04-005-30-2HAY 🗌	EA190□-0R9-1B			
SES04-0R1-30-2HAY				
SES06-0R2-30-2HBY	EA130[]-1K0-1D	A19-LS-A000-m (without battery)	A18-LM-A007-m (motor power cable) A18-LZ-A005-m (brake cable for motor with a brake)	
SES06-0R4-30-2HBY	EA190□-2R5-1B	A19-LA-A000-m (with battery)		
SES08-0R7-30-2HBY	EA190□-4R8-2B	(with buttery)		
SES08-1R0-30-2HBY				
SER13-1R0-10-2HBY		A19-LS-H100-m	Without brake: A18-LM-H115-m With brake:	
SER13-1R0-20-2HBY	EA190LJ-0KZ-2D	(without battery) A19-LA-H100-m		
SER13-1R0-30-2HBY		(with battery)	A18-LB-H115-m	





Model description of SER/SES series servo motor

$\frac{\text{SES}}{\textcircled{1}} \quad \frac{08}{\textcircled{2}} \quad - \quad \frac{0R7}{\textcircled{3}} \quad - \quad \frac{30}{\textcircled{4}} \quad - \quad \frac{2}{\textcircled{5}} \quad \frac{F}{\textcircled{6}} \quad \frac{B}{\textcircled{7}} \quad \frac{Y}{\textcircled{8}} \quad \frac{1}{\textcircled{9}} \quad - \quad \frac{XX}{\textcircled{10}}$

1 series	②flange size of the motor	③ rated output power of the motor	
SER: Standard servo motor	04: 40mm	005: 50W	
SES: High-performance servo	06: 60mm	0R1: 100W	
motor	08: 80mm	0R2: 200W	
④rated speed of the motor	09: 86mm	0R4: 400W	
10: 1000rpm	11: 110mm	0R7: 750W	
15: 1500rpm	13: 130mm	1R0: 1000W	
20: 2000rpm	18: 180mm	1R5: 1500W	
25: 2500rpm	20: 200mm	2R0: 2000W	
30: 3000rpm		3R0: 3000W 4R4: 4400W	
	⑦inertia type		
	A: Low inertia	5R5: 5500W	
⑤voltage level	B: Medium inertia	7R5: 7500W	
2: 220V	C. Figit illertia	Optional accessory	
3: 380V		Null: No optional accessory	
6 encoder type	⑧bit Shaft end	1: With holding brake (DC24V) 2: With oil seal	
A:2500ppr incremental encoder B:17bit incremental encode H:17bitincremental magnetic encoder E:23bit absolute type encoder	X:Optical axis, without key slot ^{*1} Y:Y: With U-shaped key slot and screw hole ^{*2} Z:With double-circular key slot and screw hole	3: With holding brake and oil seal 4: With fans 5: With brake and fans	
K:17bitabsolute type magnetic encoder		10 special specification	

Note 1: Generally not provided. Can be used as optical axis when the key is taken off. Note 2: Partial varieties can be of double-circular key slots; except for motors with flange 130, the key width and height are the same with the U-shaped key slots.

Note 3: Random combination of various elements above is not available.

Common features of SER/SES series servo motors

Motor insulation level	FClass			
Withstand voltage of insulation	1500V 60s			
Insulation resistance	DC500V, above 10M Ω			
Thermal resistance level of the motor	В			
Protection level	Fully-closed self-cooling type, IP65 (except for the shaft running-through part)			
Service environment	Ambient temperature 0-40°, RH 20%~80% (without dew condensation)			
Installation method	Flange installation			
Rotation direction	Rotate counterclockwise (CCW) under a forward command if viewed from the load side			

A Holding brake specification

Motor flange size	Rated torque of motor	Rated voltage	Static friction torque	Rated power	Closing voltage	Release voltage	Set the closing action time	Set the release action time		
mm	Nm	VDC	Nm	W	VDC	VDC	ms	ms		
40	0.32 ≤		0.35	3.5			62	EE		
60	0.64~1.27		2	6.3			05	55		
80	1.3~3.5		4	10.4			87 72			
86	3.2~3.5		4	10.4				72		
110	2~6	24	10	11.6	าา	15				
130	3.2~15	24	20	19.5	22	1.5	110	95		
180	17~35		44	25			140	120		
180	≥ 36		74	45					152	130
200	35~95.5		120	95			165	140		
230	70~184		200	120			230	180		

1: The holding brake is used to keep the motor locked after stop, and cannot be used for braking. 2: A 24V power source shall be provided by the user for the holding brake, and it is prohibited to connect the holding brake to the 24V power in the servo driver. The 24V power source shall have a capacity that is at least 1.5 times the rated power of the holding brake (excluding capacity of any 24V power source for other devices).

3: The action time of the holding brake may differ for different circuits. The time provided above is only for reference, and the actual time depends on the physical product.

SINEE 220V

4: Static friction torque refers to the static friction torque provided by the brake when the motor is static; if there is external impact, keeping the motor static cannot be assured.



SINEE 220V





Installation dimension of SER series servo motor A

• Dimensions of SER series servo motors with flanges 110 and 130



Motor specification/model	LD (mm)	FA (mm)	FB (mm)	FC (mm)	FD (mm)	LZ (mm)	LK (mm)	LE (mm)	LG (mm)	LH (mm)	LM (mm)	LT (mm)		KL	KH	KW		Weight (kg)	Cable c m	onnector odel
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)		
SER13-1R0-10-2 🗆 B 🗆	215 (270)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	10.12 (11.67)	8K4T <7T	
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)	Jg YD2 YD28P	STS
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)	ion plu n plug	028K1
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)	: Aviat Aviatio	JV gulo
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)	: brake prake: /	iation
SER13-1R5-30- 🗆 B 🗆	165 (220)	130	110	145	9	58	45	6	12	-	117	186	22	18	7	8	M6	6.40 (7.96)	/ithout With b	Av
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)	5	
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)		



Installation dimension of SES series servo motor A

• Dimensions of SES series servo motors with flanges 40, 60 and 80



Motor specification/model	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)	Weight (kg)	Cable co mo	nnector del
SES04-005-30-2 🗆 AY 🗌	85 (119.5)	40	30	46	4.5	25.5	14	3	8	37	8	6.3	3	3	М3	0.4 (0.6)		
SES04-0R1-30-2 🗆 AY 🗆	100 (133.5)	40	30	46	4.5	25.5	14	3	8	37	8	6.3	3	3	М3	0.47 (0.67)	9-1	51-1
SES06-0R2-30-2 🗆 BY 🗆	93.7 (120.2)	60	50	70	4.5	30	20	3	8	48	14	8.5	4	4	M5	1.01 (1.4)	172159 172157 0362-1	e: 1721(0361-1
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)	er side:J e side:170 eed: 170	ler side eed: 17
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	2.4 (2.8)	Pow Brak Re	Encoc Re
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	3.0 (3.4)		

Note: An SES04 motor has two installation holes at the two shadowed locations as shown in the figure

• Dimensions of SES series servo motors with flanges 130 and 180



Motor specification/model	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)	Weight (kg)	Cal conne mo	ole ector del
SES13-0R8-15-3FBY SES13-1R7-30-3FBY SES13-1R1-20-3FBY	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)	18-105 15-5-T-V	
SES13-1R3-15-3FBY SES13-1R7-20-3FBY SES13-2R6-30-3FBY SES13-2R6-30-3FBY	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)	ide: MS3108A1 ide: SM10-SP2	
SES13-1R8-15-3FBY □ SES13-2R4-20-3FBY □ SES13-3R6-30-3FBY □	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)	Power: Brake s	N-T-V
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)	422-22S 2S-S-T-V	M10-SP10S-1
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)	rside: MS3108/ side: SM10-SF	coder side:S.
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)	Power Brake :	Ë
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)	IS3102A32-17S A10-SP2S-S-T-V	
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 side: N Brakeside: SN	



Pin distribution of the motor-side power terminal

Connector type	Pin dist	ribution	Pin number	Function definition		
		h	1	U		
TE 170150 1			2	V		
TE 172159-1		34	3	W		
	-		4	PE		
VD28K4TS		5	1	PE		
The diameter of contact pairs	(F 3)		2	U		
is 3*¢3.5mm	(hz)		3	V		
+1*φ2.5mm		<i></i>	4	W		
			1	PE		
		7	2	U		
	(a	$p^1 p^2$	3	V		
The diameter of YD28K7TS contact pairs is 7*Ф2.5mm		p^4 f	4	W		
	∭°°,	$o^7 O^5$	5	24V (brake)		
			6	0V (brake)		
			7	Null		
			А	U		
MS3105A18-10S	Ő	ô	В	V		
MS3108A22-22S MS3105A32-17S	Ő	ô //	С	W		
		<i>IJ</i>	D	PE		

• Pin distribution of the motor-side encoder terminal

		TE 172	2163-1		TE 11	72161-1		YD28	K15TS		CM10-SP10S-MD		
Connector type			3) 4) (8) 9) (1 3) (14) (1			2)3 5)6 8)9			01 0 0 0 0 0 0 0 14			0 0^{3} 0 0^{7} 0 0_{10}	
	Signal	Pin number	Signal	Pin number			Signal	Pin number	Signal	Pin number			
	A+	9	V+	10			A+	4	V+	11			
	A-	13	V-	12			A-	7	V-	14			
	B+	4	W+	11			B+	5	W+	12			
2500ppr	B-	14	W-	15			B-	8	W-	15			
incremental encoder	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					
					Signal	Pin number	Si	gnal	Pin n	umber	Signal	Pin number	
					+5V	1	+	5V	-	2	+5V	4	
					GND	2	GI	ND		3	GND	9	
17/23-bit encoder					SD+	5	S	D+	4	4	SD+	1	
2.720 Sit encoder					SD-	6	S	D-		7	SD-	2	
					VD+	3	V	D+	1	4	VD+	6	
					VD-	4	V	D-	1	5	VD-	5	
					PE	9	F	РЕ		1	PE	10	

Torque-speed characteristic curve of Series SER/SES servo motors

• Torque-speed characteristic curve of 40, 60 & 80 servo motors with flanges



• Torque-speed characteristic curve of 130 servo motors with flanges





• Torque-speed characteristic curve of 180 servo motors with flanges





Parameter table of SER series servo motor

Servo motor model	Voltage class V	Rated power W	Rated rotating speed rpm	Maximum rotating speed rpm	Rated current A	Maximum instantaneous current A	Rated torque Nm	Maximum instantaneous torque NM	Torque constant Nm/A	Rotating inertia Kg.cm ^{2*} 10 ⁻⁴	Adaptable driver
SER11-1R0-20-2 🗆 BY 🗆		1000	2000	2500	5.0	15.0	5.0	15.00	1.0	7.22(7.24)	6D2 2 🗆
SER11-1R2-30-2 🗆 BY 🗆		1200	3000	3500	4.9	14.7	4.0	12.00	0.82	5.54(5.56)	ORZ-Z
SER11-1R8-30-2 🗆 BY 🗆	AC220V	1800	3000	3500	6.6	19.8	6.0	18.00	0.91	8.55(8.57)	011-2 🗆
SER13-1R0-10-2 🗆 BY 🗆	AC220V		1000	1500	4.72	14.2	9.55	28.65	2.02	17.14(17.16)	
SER13-1R0-20-2 🗆 BY 🗆		1000	2000	2500	4.72	14.2	4.77	14.31	1.01	1 8.71(8.73) 6R	6R2-2 🗌
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 🗆			1000	1500	5.4	13.5	14.32	35.80	2.65	25.58(25.6)	
SER13-1R5-20-3 🗌 BY 🗌		1500	2000	2500	4.1	10.3	7.16	17.90	1.75	12.08(12.1)	5R6-3 🗌
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 🗆	AC 380	2000	2000	2500	6.5	16.3	9.55	23.88	1.47	17.14(17.16)	
SER13-2R0-30-3 🗆 BY 🗆		2000	3000	3500	5.8	14.5	6.5	16.25	1.12	12.08(12.1)	orj-j ∐
SER13-3R0-20-3 🗌 BY 🗌		3000	2000	2500	9.6	24.0	14.32	35.80	1.49	25.58(25.6)	012.2 🗆
SER13-3R0-30-3 🗆 BY 🗆			3000	3500	8.3	20.8	9.55	23.88	1.15	17.14(17.16)	012-2

Note 1: Value in () is the value in case a brake is provided; 2: When an oil seal is provided, it shall be derated by 10% for use

Parameter table of SES series servo motor

SES04-005-30-2 AY 50 300 600 0.6 1.8 0.16 0.48 0.26 0.020.02 0.84 1.6 SES04-0R1-30-2 AY 300 600 1.1 3.33 0.32 0.96 0.20 0.400.00 1.61 1.55 SES06-0R2-30-2 BY 300 600 1.6 4.88 0.64 1.92 0.44 0.200.00 1.61 1.55 SES06-0R2-30-2 BY 500 600 1.6 4.88 0.64 1.92 0.44 0.200.00 1.61 1.55 SES08-0R7-30-2 BY 750 3000 5000 6.00 1.80 3.20 2.44 7.2 0.653 1.56(1.60 4.88-2 0.55 SES08-0R7-30-2 BY 500 500 500 6.0 1.80 3.20 9.60 0.53 2.03(2.1) 6.82-2 0.53 1.55(1.60 4.88-2 0.55 0.53 1.55(1.60 4.88-2 0.55 0.53 1.55(1.60 4.88-2 0.55 0.53 1.55(1.60 4.88-2 0.55 0.53 1.55(1.60 4.88-2 0.55 0.53 1.55(1.60 0.00 0.00 1.00 0.00 1.01 1.01 0.0	Servo motor model	Voltageclass V	Rated power W	Rated rotating speed rpm	Maximum rotating speed rpm	Rated current A	Maximum instantaneous current A	Rated torque Nm	Maximum instantaneous torque Nm	Torque constant Nm/A	Rotating inertia Kg.cm2*10-4	Adaptable driver EA180-
SES04-0R1-30-2 AY I00 3000 6000 1.1 3.3 0.32 0.96 0.29 0.4(0.0) 1R61 I SES06-0R2-30-2 BY SES06-0R4-30-2 BY 0.44 0.29(0.3) 1R61 I SES06-0R4-30-2 BY SES06-0R4-30-2 BY 0.440 0.29(0.4) 1R61 I SES06-0R4-30-2 BY SES06-0R4-30-2 BY 0.500 6000 2.3 6.69 1.27 3.81 0.59 0.56(0.6) 2.85 I 0.500 6.00 1.8 3.2 9.6 0.538 2.03(2.13) 6R2-2 I SES13-R8-15-2FBY I000 3000 5000 6.9 1.7 5.39 1.4.15 0.75 1.395(16.1) 011-2 I<	SES04-005-30-2 🗆 AY 🗌		50	3000	6000	0.6	1.8	0.16	0.48	0.26	0.02(0.02)	0R9-1 🗌
SESG6-0R2-30-2 BY SESG6-0R4-30-2 BY SESG6-0R4-30-2 BY SESG6-0R4-30-2 BY SESG6-0R4-30-2 BY SESG6-0R4-30-2 BY SESG6-0R7-30-2 BY SESG8-1R0-30-2 BY SESG8-1R1-20-2 BY SESG8-1R1-20-2 BY SESG8-1R1-30-2 BY SESG8-1R1-30-2 BY SESG8-1R1-30-2 BY SESG8-1R1-30-3 BY SESG8-1S-3FBY SSS SESG8-1R1-30-3 BY SESG8-1R1-30-3 BY SESG8-1R1-30-3 BY SESG8-1R1-30-3 BY SESG8-1R1-30-3 BY SESG8-1R1-18-1-5-3FBY	SES04-0R1-30-2 🗆 AY 🗌		100	3000	6000	1.1	3.3	0.32	0.96	0.29	0.04(0.04)	1R6-1 🗌
SESG6-0R4-30-2 BY A220 400 3000 6000 2.3 6.9 1.27 3.81 0.59 0.56(0.61) 2R5-1 SES08-0R7-30-2 BY SES08-0R7-30-2 BY 750 3000 5000 4.0 12 2.4 7.2 0.653 1.56(1.60) 4R8-2 2.5 SES13-0R3-15-2FBY SES13-0R3-15-2FBY 850 1500 3000 6.00 188 3.2 9.6 0.538 2.03(2.13) 6R2-2 0.5 SES13-1R1-20-2 BY 1000 3000 5000 6.9 1.7 5.39 13.8 1.72 13.95(16.1) 0.12-2 SES13-1R7-30-2 BY 1700 3000 5000 9.2 24.1 5.39 14.15 0.69 13.95(16.1) 0.12-2 SES13-1R7-30-3 BY 3000 5000 5.3 13.9 5.39 14.15 1.02 13.95(16.1) 5.6-36 SES13-1R7-30-3 BY 1000 3000 5.4	SES06-0R2-30-2 🗆 BY 🗌		200	3000	6000	1.6	4.8	0.64	1.92	0.44	0.29(0.34)	1R6-1 🗆
SES08-0R7-30-2 BY AC22 T50 3000 5000 4.0 12 2.4 7.2 0.653 1.56(1.66) 4R8-2 C SES08-1R0-30-2 BY SES08-1R0-30-2 BY 3000 5000 6.0 18 3.2 9.6 0.538 2.03(2.13) 6R2-2 C SES13-1R1-20-2 BY SES13-1R1-20-2 BY 1100 2000 4000 7.2 18.9 5.39 14.15 0.75 13.95(16.1) 011-26 SES13-1R7-30-2 BY 1700 3000 5000 9.2 24.1 5.39 14.15 0.69 13.95(16.1) 011-26 SES13-1R7-30-3 BY SS 1500 3000 5.3 13.9 14.15 1.02 13.95(16.1) 5.69 SS SS 13.53 14.15 1.02 13.95(16.1) 5.69 SS SS 1.13 5.39 14.15 1.02 13.95(16.1) 5.69 SS SS SS SS SS	SES06-0R4-30-2 🗆 BY 🗌		400	3000	6000	2.3	6.9	1.27	3.81	0.59	0.56(0.61)	2R5-1 🗌
SES08-1R0-30-2 [] BY [] 1000 3000 5000 6.0 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) 011-26 SES13-1R1-20-2 [] BY [] 1100 2000 4000 7.2 18.9 5.39 14.15 0.69 13.95(16.1) 011-26 SES13-1R7-30-2 [] BY [] 1700 3000 5000 9.2 24.1 5.39 14.15 0.69 13.95(16.1) 011-26 SES13-1R7-30-3 [] BY [] 850 1500 3000 3.55 8.5 5.39 13.8 1.72 13.95(16.1) 5.66-36 SES13-1R7-30-3 [] BY [] 100 2000 4000 4.3 11.3 5.39 14.15 1.02 13.95(16.1) 5.66-36 SES13-1R7-30-3 [] BY [] 1000 2000 4000 7.5 22.5 8.34 23.3 1.04 19.95(2.1) 5.67-36 SES13-1R8-15	SES08-0R7-30-2 🗆 BY 🗌	AC 220	750	3000	5000	4.0	12	2.4	7.2	0.653	1.56(1.66)	4R8-2 🗌
SES13-0R8-15-2FBY [] 850 1500 3000 6.9 17 5.39 13.8 1.72 13.95(16.1) 011-26 SES13-1R1-20-2 [] BY [] 1100 2000 4000 7.2 18.9 5.39 14.15 0.69 13.95(16.1) 011-26 SES13-1R7-30-2 [] BY [] 1700 3000 5000 9.2 24.1 5.39 14.15 0.69 13.95(16.1) 011-26 SES13-0R8-15-3FBY [] 850 1500 3000 3.5 8.5 5.39 13.8 1.72 13.95(16.1) 5R6-36 SES13-1R7-30-3 [] BY [] 850 1500 3000 5.3 13.9 5.39 14.15 1.02 13.95(16.1) 5R6-36 SES13-1R1-20-3 [] BY [] 1100 2000 4000 5.3 11.3 5.39 14.15 1.25 13.95(16.1) 5R6-36 SES13-1R3-15-3FBY [] 1300 1500 3000 5.4 14 8.34 23.3 1.78 19.95(2.1) 5R6-36 SES13-1R8-15-3FBY [] 1300 1500 3000 5.4 22.5 8.34 23.3	SES08-1R0-30-2 🗆 BY 🗌		1000	3000	5000	6.0	18	3.2	9.6	0.538	2.03(2.13)	6R2-2 🗌
SES13-1R1-20-2 BY [1100 2000 4000 7.2 18.9 5.39 14.15 0.75 13.95(16.1) 011-24 SES13-1R7-30-2 BY [1700 3000 5000 9.2 24.1 5.39 14.15 0.69 13.95(16.1) 011-24 SES13-0R8-15-3FBY [\$ 850 1500 3000 3.5 8.5 5.39 13.8 1.72 13.95(16.1) 5R6-36 SES13-1R7-30-3 BY [\$ 1700 3000 5000 5.3 13.9 5.39 14.15 1.02 13.95(16.1) 5R6-36 SES13-1R7-30-3 BY [\$ 1700 3000 5000 5.3 11.3 5.39 14.15 1.02 13.95(16.1) 5R6-36 SES13-1R7-30-3 BY [\$ 1100 2000 4000 7.5 22.5 8.34 23.3 1.78 19.95(2.1) 5R6-36 SES13-1R7-30-3 BY [\$ 1700 2000 4000 7.5 22.5 8.34 23.3 1.04 19.95(2.1) 8R5-36 SES13-1R7-13-SFBY [\$ 1600 3000 5000	SES13-0R8-15-2FBY 🗌		850	1500	3000	6.9	17	5.39	13.8	1.72	13.95(16.1)	011-2B
SES13-1R7-30-2 BY 1700 3000 5000 9.2 24.1 5.39 14.15 0.69 13.95(16.1) 011-24 SES13-0R8-15-3FBY 850 1500 3000 3.5 8.5 5.39 13.8 1.72 13.95(16.1) 5R6-36 SES13-1R7-30-3 BY 1700 3000 5000 5.3 13.9 5.39 14.15 1.02 13.95(16.1) 5R6-36 SES13-1R1-20-3 BY 1100 2000 4000 4.3 11.3 5.39 14.15 1.02 13.95(16.1) 5R6-36 SES13-1R1-20-3 BY 1100 2000 4000 4.3 11.3 5.39 14.15 1.25 13.95(16.1) 5R6-36 SES13-1R7-30-3 BY 1300 1500 3000 5.4 14 8.34 23.3 1.11 19.95(2.1) 5R6-36 SES13-1R7-30-3 BY 1700 2000 4000 7.5 22.5 8.34 23.3 1.04 19.95(2.1) 8R5-36 SES13-1R8-15-3FBY 2600 3000 5000 8.4 20 11.5 2.8.7 1.5 2.61(28	SES13-1R1-20-2 🗆 BY 🗌		1100	2000	4000	7.2	18.9	5.39	14.15	0.75	13.95(16.1)	011-2B
SES13-0R8-15-3FBY [] 850 1500 3000 3.5 8.5 5.39 13.8 1.72 13.95(16.1) 5R6-3E SES13-1R7-30-3 [] BY [] 1700 3000 5000 5.3 13.9 5.39 14.15 1.02 13.95(16.1) 5R6-3E SES13-1R1-20-3 [] BY [] 1100 2000 4000 4.3 11.3 5.39 14.15 1.02 13.95(16.1) 5R6-3E SES13-1R3-15-3FBY [] 1300 1500 3000 5.4 14 8.34 23.3 1.78 19.95(2.1) 5R6-3E SES13-1R7-30-3 [] BY [] 1700 2000 4000 7.5 22.5 8.34 23.3 1.04 19.95(2.1) 8R5-3E SES13-1R5-3FBY [] 2600 3000 5000 8 22.35 8.34 23.3 1.04 19.95(2.1) 8R5-3E SES13-2R6-30-3 [] BY [] AC38 1500 3000 5000 8 22.35 8.34 23.3 1.04 19.95(2.1) 8R5-3E SES13-2R4-20-3 [] BY [] 1800 1500 3000 8.9 22.2 11.5	SES13-1R7-30-2 🗆 BY 🗌		1700	3000	5000	9.2	24.1	5.39	14.15	0.69	13.95(16.1)	011-2B
SES13-1R7-30-3 [] BY [] SES13-1R7-30-3 [] BY [] 1700 3000 5000 5.3 13.9 5.39 14.15 1.02 13.95(16.1) 5R6-3E SES13-1R1-20-3 [] BY [] SES13-1R3-15-3FBY [] 1100 2000 4000 4.3 11.3 5.39 14.15 1.02 13.95(16.1) 5R6-3E SES13-1R3-15-3FBY [] 1300 1500 3000 5.4 14 8.34 23.3 1.78 19.95(22.1) 5R6-3E SES13-1R7-30-3 [] BY [] 1700 2000 4000 7.5 22.55 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-2R6-30-3 [] BY [] 1800 1500 3000 5000 8 22.35 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-2R4-20-3 [] BY [] 1800 1500 3000 8.4 20 11.5 28.7 1.5 26.1(28.1) 013-3E SES13-3R6-30-3 [] BY [] 2400 2000 4000 8.9 22.2 11.5 28.7 1.07 26.1(28.1) 013-3E SES13-3R6-30-3 [] BY [] 3600 3000 <td>SES13-0R8-15-3FBY 🗌</td> <td></td> <td>850</td> <td>1500</td> <td>3000</td> <td>3.5</td> <td>8.5</td> <td>5.39</td> <td>13.8</td> <td>1.72</td> <td>13.95(16.1)</td> <td>5R6-3B</td>	SES13-0R8-15-3FBY 🗌		850	1500	3000	3.5	8.5	5.39	13.8	1.72	13.95(16.1)	5R6-3B
SES13-1R1-20-3 [] BY [] SES13-1R3-15-3FBY [] 1100 2000 4000 4.3 11.3 5.39 14.15 1.25 13.95(16.1) 5R6-3E SES13-1R3-15-3FBY [] 1300 1500 3000 5.4 14 8.34 23.3 1.78 19.95(22.1) 5R6-3E SES13-1R7-30-3 [] BY [] SES13-2R6-30-3 [] BY [] 2600 3000 5000 8 22.35 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-1R8-15-3FBY [] 2600 3000 5000 8 22.35 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-1R8-15-3FBY [] 1800 1500 3000 84 20 11.5 28.7 1.5 26.1(28.1) 8R5-3E SES13-2R4-20-3 [] BY [] 2400 2000 4000 8.9 22.2 11.5 28.7 1.5 26.1(28.1) 013-3E SES13-3R6-30-3 [] BY [] 3600 3000 5000 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES18-2R9-15-3FBY [] 2900 2000 10.8 27<	SES13-1R7-30-3 🗆 BY 🗌		1700	3000	5000	5.3	13.9	5.39	14.15	1.02	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) 5R6-3E SES13-1R7-30-3 [] BY [] SES13-2R6-30-3 [] BY [] 1700 2000 4000 7.5 22.5 8.34 25 1.11 19.95(22.1) 8R5-3E SES13-2R6-30-3 [] BY [] 2600 3000 5000 8 22.35 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-1R8-15-3FBY [] 2600 3000 5000 8 22.35 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-1R8-15-3FBY [] 2600 3000 5000 8 22.35 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-2R4-20-3 [] BY [] 1800 1500 3000 8.4 20 11.5 28.7 1.5 26.1(28.1) 013-3E SES13-3R6-30-3 [] BY [] 2400 2000 4000 8.9 22.2 11.5 28.7 1.07 26.1(28.1) 013-3E SES13-3R6-30-3 [] BY [] 3600 3000 5000 10.8 27 <t< td=""><td>SES13-1R1-20-3 🗆 BY 🗌</td><td></td><td>1100</td><td>2000</td><td>4000</td><td>4.3</td><td>11.3</td><td>5.39</td><td>14.15</td><td>1.25</td><td>13.95(16.1)</td><td>5R6-3B</td></t<>	SES13-1R1-20-3 🗆 BY 🗌		1100	2000	4000	4.3	11.3	5.39	14.15	1.25	13.95(16.1)	5R6-3B
SES13-1R7-30-3 BY [] SES13-1R7-30-3 BY [] SES13-2R6-30-3 BY [] 2600 3000 5000 8 22.35 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-1R8-15-3FBY [] SES13-1R8-15-3FBY [] 1800 1500 3000 8.4 20 11.5 28.7 1.5 26.1(28.1) 8R5-3E SES13-2R4-20-3 BY [] SES13-3R6-30-3 BY [] 2400 2000 4000 8.9 22.2 11.5 28.7 1.29 26.1(28.1) 013-3E SES13-3R6-30-3 BY [] 3600 3000 5000 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES18-2R9-15-3FBY [] 2900 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES18-2R9-15-3FBY [] 2900 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES10 4PA 15 SERV [] 14400 10.9 28 18.6 45.1 1.7 46.0 (53.9) 013-3E	SES13-1R3-15-3FBY 🗌		1300	1500	3000	5.4	14	8.34	23.3	1.78	19.95(22.1)	5R6-3B
SES13-2R6-30-3 [] BY [] AC 380 3000 5000 8 22.35 8.34 23.3 1.04 19.95(22.1) 8R5-3E SES13-1R8-15-3FBY [] 1800 1500 3000 8.4 20 11.5 28.7 1.5 26.1(28.1) 8R5-3E SES13-2R4-20-3 [] BY [] 2400 2000 4000 8.9 22.2 11.5 28.7 1.29 26.1(28.1) 013-3E SES13-3R6-30-3 [] BY [] 3600 3000 5000 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES18-2R9-15-3FBY [] 2900 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES10 4PA 15 SEPX [] 14400 19.9 28 18.6 45.1 1.7 46.0 (53.9) 013-3E	SES13-1R7-30-3 🗆 BY 🗌		1700	2000	4000	7.5	22.5	8.34	25	1.11	19.95(22.1)	8R5-3B
SES13-1R8-15-3FBY [] AC 380 1800 1500 3000 8.4 20 11.5 28.7 1.5 26.1(28.1) 8R5-3E SES13-2R4-20-3 [] BY [] 2400 2000 4000 8.9 22.2 11.5 28.7 1.29 26.1(28.1) 013-3E SES13-3R6-30-3 [] BY [] 3600 3000 5000 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES18-2R9-15-3FBY [] 2900 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES18-2R9-15-3FBY [] 2900 11.9 28 18.6 45.1 1.7 46.0 (53.9) 013-3E SES10 4PA 15 SERV [] 4400 16.5 40.5 29.4 71.1 1.02 67.5 (75.4) 013-3E	SES13-2R6-30-3 🗆 BY 🗌		2600	3000	5000	8	22.35	8.34	23.3	1.04	19.95(22.1)	8R5-3B
SES13-2R4-20-3 BY AC 380 2400 2000 4000 8.9 22.2 11.5 28.7 1.29 26.1(28.1) 013-3E SES13-3R6-30-3 BY 3600 3000 5000 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES18-2R9-15-3FBY 2900 11.9 28 18.6 45.1 1.7 46.0 (53.9) 013-3E SES10 4PA 15 SERV 4400 16.5 40.5 29.4 71.1 1.02 67.5 (75.4) 013-3E	SES13-1R8-15-3FBY 🗌	AC 200	1800	1500	3000	8.4	20	11.5	28.7	1.5	26.1(28.1)	8R5-3B
SES13-3R6-30-3 □ BY □ 3600 3000 5000 10.8 27 11.5 28.7 1.07 26.1(28.1) 013-3E SES18-2R9-15-3FBY □ 2900 11.9 28 18.6 45.1 1.7 46.0 (53.9) 013-3E	SES13-2R4-20-3 🗌 BY 🗌	AC 380	2400	2000	4000	8.9	22.2	11.5	28.7	1.29	26.1(28.1)	013-3B
SES18-2R9-15-3FBY [] 2900 11.9 28 18.6 45.1 1.7 46.0 (53.9) 013-3E SES18 4PA 15 2FPV [] 4400 10.5 40.5 29.4 71.1 1.02 67.5 (75.4) 017.25	SES13-3R6-30-3 🗆 BY 🗌		3600	3000	5000	10.8	27	11.5	28.7	1.07	26.1(28.1)	013-3B
	SES18-2R9-15-3FBY 🗌		2900			11.9	28	18.6	45.1	1.7	46.0 (53.9)	013-3B
SES18-4K4-13-3FBY 4400 1F00 2000 1b.5 40.5 28.4 (1.1 1.93 67.5 (75.4) 017-3E	SES18-4R4-15-3FBY 🗌		4400	1500	2000	16.5	40.5	28.4	71.1	1.93	67.5 (75.4)	017-3B
SES18-5R5-15-3FBY S5500 S000 S000 S000 S000 S000 S000 S0	SES18-5R5-15-3FBY 🗌		5500	1200	3000	20.8	52	35	87.6	1.8	89.0(96.9)	022-3B
SES18-7R5-15-3FBY 🗌 7500 25.7 65 48 119 1.92 125.0(133) 028-3E	SES18-7R5-15-3FBY 🗌		7500			25.7	65	48	119	1.92	125.0(133)	028-3B
SES18-3R6-20-3FBY 🗌 3600 2000 2500 9.5 28.5 16.7 50.16 2.1 46.0(53.9) 013-3E	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: Value in () is the value in case a brake is provided;

CNC machine tool

O Industrial demand

Machines and equipment have become a part of human production and life. Where machines and equipment are used, machine tools are needed. Machine tools can machine parts with high precision and surface roughness requirements by casting, forging, welding, pressing, extruding or otherwise for manufacture of equipment. Manufacturing is a pillar industry for economic development of a country. Strength of the machine tool industry is one of the key indicators that reflect the manufacturing development level of the country. CNC machines tools have become a mainstream development trend of modern machine tools due to their high precision, good flexibility, high work efficiency, compound functions, intelligent control and other features.

O Highlights of the scheme

- Adaptable to multiple motor types
- Different types of interfaces for connection to CNC systems of different brands
- Accommodated to multiple types of machining processes: 6,000~24,000 r high-speed precision machining, C-axis function, low-speed heavy cutting machining, rigid tapping, independent positioning function, spindle swing function

$\odot\,$ Scheme composition

- Multi-axis synchronous control approach
- Electric screw press approach



Semiconductor, silicon wafer machining

Industrial demand

O Highlights of the scheme

- It has high work efficiency, capable of producing several hundred of products at a time
- It has high precision and small cutting loss in product machining
- It features a constant swing bar output torque, steady tension of metal wires and swing bar jitter angle of less
- Stably operating FPC can realize automatic deviation rectification and direction switching
- Spindles are directly coupled to realize synchronous closed-loop control between the spindles without additional linking mechanism and fast dynamic response
- The maximum linear cutting speed is 2000 m/min

Scheme composition

Comprising three parts, i.e. touch screen, motion controller and servo motor



O Industrial demand

As consumption level constantly improves and recreational activities diversify, new performance venues and forms emerge one after another in the market, large-scale stage machinery and theater equipment of high technology are introduced, and equipment used is generally becoming more complicated. To render spectators better visual experience requires diversified stage performances and innovation, which can not only promote creativity conversion and art presentation, but also enhance the overall effect of stage scenes and treat the spectators with a feast of aesthetic enjoyment. SINEE stage control systems, featuring high safety, diversity, flexibility and easy operation, are powerful aids for stage scenes and actions.

O Highlights of the scheme

Scheme composition

- Support multi-mode switch control
- Support multiple protection functions
- Easy and simple cable connection
- Support storage of massive formula data with stable communication

EA180 series servo system

