XINJE

All series of servo system

DS3E/DS3L/DS3-PTA/DS2 series

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XINJE

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Servo system

DS3E series DS3L series DS3-PTA series DS2 series

Servo system

DS series

DS3E series
DS3L series
DS3-PTA series
DS2 series

Continuous innovation, keep forging ahead
High response and rigidity of new DS3E series servo system
Entering a new era of motion fieldbus

Fieldbus motion control

Motion fieldbus control (only DS3E supported)

Motion control is real-time control the speed, position of mechanical components, make them move as setting track and parameters.

- The fieldbus PLC XDC series instead of pulse output mode, used fieldbus communication, 3Mbps baud rate, improved the system speed. The wiring is easy and shared.
- Use XINJE industry fieldbus protocol, support all the XINJE fieldbus products.

Fieldbus motion control features

pulse cumulative error

pulse output mode

PLC outputs the pulse, servo drive receives the pulse, it will lose the pulse and with cumulative error if there is interference.

Bad Good

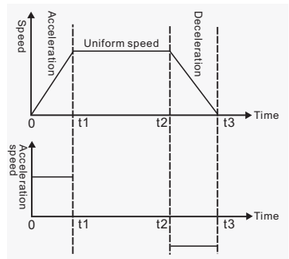
pulse cumulative error

The motion position, speed and other information are in the data package. PLC sends the package to servo drive. It will resend the package if there is error or interference. It has no cumulative error.

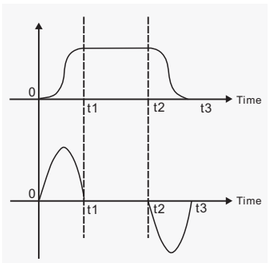
Better precision in high-speed condition

- XDC series PLC communicate with DS3E series servo drive via fieldbus, the data and sign bit also transfer via fieldbus.
- The data is two-way transmission between PLC and servo drive. PLC can send servo position, speed information, and read servo position feedback information.

S acceleration curve makes the process softer



Pulse output mode: acceleration has mutation



Fieldbus mode: acceleration has no mutation

Synchronous motion control

Synchronous motion

Multi-axis synchronous move or synchronize with high speed counter.

Application

It is applied to the system with electronic CAM such as dyeing, printing, paper, steel rolling, synchronous cutting.

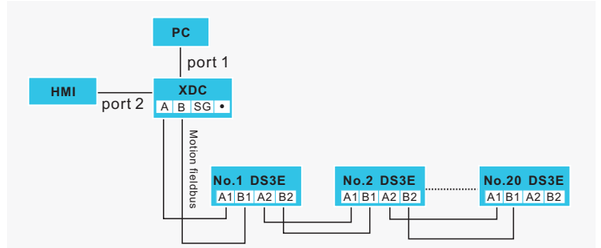
Easy and sharable wiring

Pulse output wiring mode

one channel needs pulse output, pulse direction, signal I/O, servo alarm, servo enable, encoder feedback port, the wiring is complicated.

Motion fieldbus wiring mode

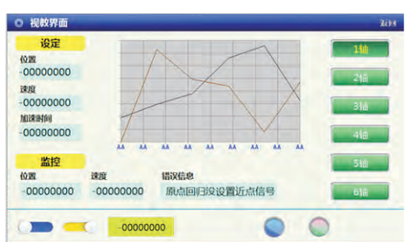
one fieldbus channel can connect 20-axis, and two extra pulse channels, save the wiring.



Powerful teaching function

Servo can jog, return to origin and so on via teaching function.

No need to make program, it only needs to modify the register value online to make it move. It can real-time modify the target position, speed, synchronous speed ratio in motion process.



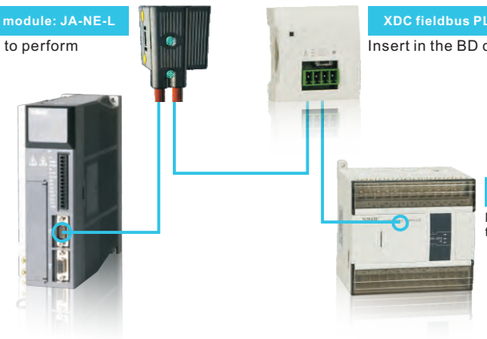
ordering informaiton for motion fieldbus

DS3E fieldbus servo drive matched module: JA-NE-L

Connect to CN1 port of servo drive to perform filedbus function.

XDC fieldbus PLC matched module: XD-NE-BD

Insert in the BD card slot of PLC to perform fieldbus function.



DS3E series fieldbus servo drive

New generation of servo drive has better response ability, more accurate positioning, stronger rigidity, fit for high performance requirements.

XDC series PLC

Motion fieldbus model, powerful motion control and teaching function.

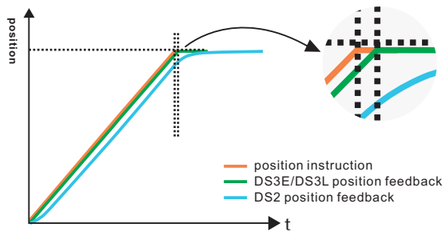
DS3E series
fieldbus type servo drive

DS3L series
pulse type servo drive

Outstanding performance

higher response, stronger rigidity, more accurate positioning

DS3E and DS3L series servo drive has advanced intelligent control system which has better anti-interference ability, stronger rigidity and shorter positioning time.

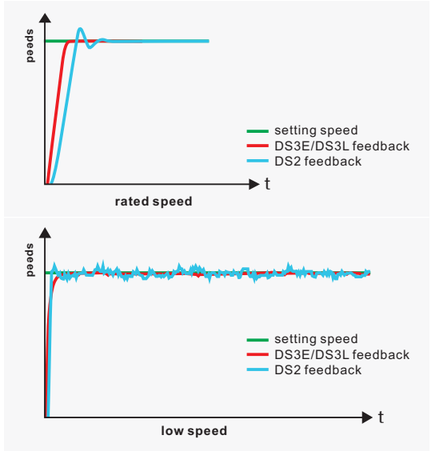


support motion fieldbus control system

*Note: DS3L cannot support motion fieldbus.

Smoother and faster speed response

DS3E and DS3L has built-in status monitoring device, the speed tracking is stable and accurate. It can effective suppress the mechanical vibration, reduce the motor speed fluctuation, smooth run at low speed(internal speed mode).



DS3-PTA series
high precision type servo drive

higher response, stronger rigidity, more accurate positioning

support motion fieldbus function

smoother and faster speed response

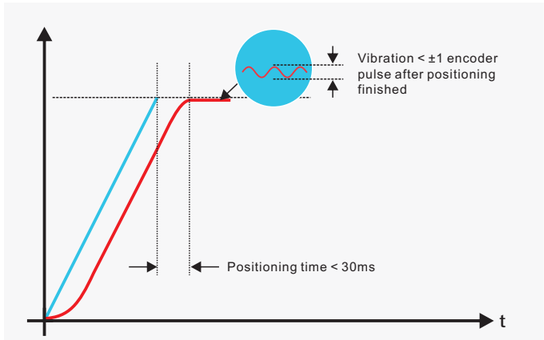
high resolution encoder perform high precision positioning

131072 pulses per circle (17 bits) absolute encoder supports high precision positioning and stable low speed running.

DS2 series
basic type servo drive

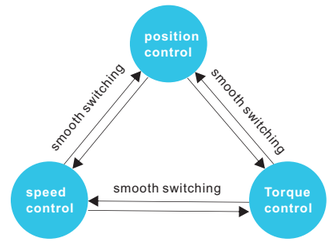
Good performance

- Up to 400Hz high response frequency
- High precision positioning, improve the equipment efficiency



Rich functions

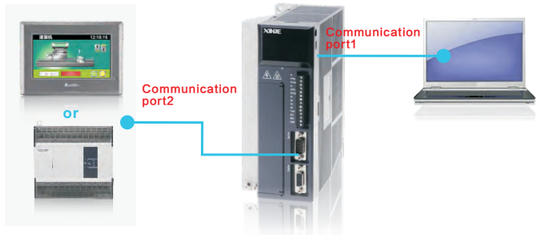
- Support position/speed/torque mode
- Any two modes can smooth switch



- Can leave out the controller, support internal position, internal speed, internal torque, analog speed, analog torque mode
- Support various commands: AB phase pulse, CW/CCW, pulse and direction, analog voltage

Communication function

- Two communication ports – Support RS232 and RS485 (cannot use at the same time)
- Monitor servo parameter, set servo position and torque through RS232/485 communication

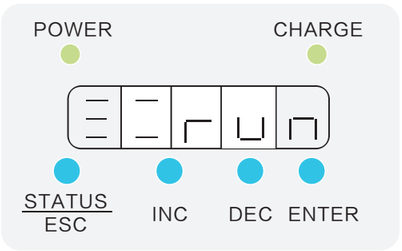


Flexible setting

- 2 channels high speed pulse input, max frequency 500KHz
- 2 channels 12 bits high precision -10~10V analog input
- 5 channels SI input, 3 channels SO output are user-defined
- 1 channel Z phase original point signal transistor output
- Encoder feedback output: differential signal (for collector signal, please purchase accessory – differential circuit board)

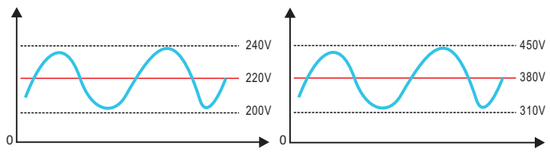
Easy operating interface

- Commonly used pulse input signal, I/O signal, European terminals, welding free
- Display the servo state through operate panel, there are 16 monitor parameters and error message, easy to debug



Safe and reliable

- IGBT can withstand high voltage 1200V, wide voltage input range, outstanding noise immunity ability, suitable for bad electromagnetic environment.



- Complete protection: over voltage, under voltage, over current, over load, over speed, etc.

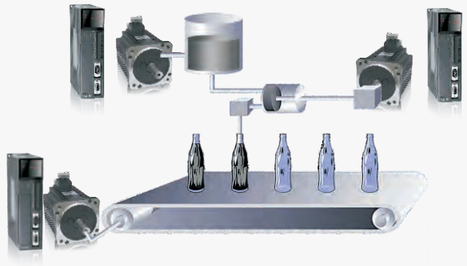
The matched motor has complete specifications, fit for different needs

- Middle inertia servo motor can improve the mechanical stability
- Small inertia servo motor can performance high speed acceleration and deceleration

DS series servo drive application

Applications

Combination control of position, speed and torque



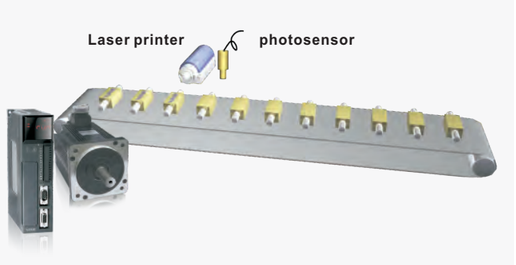
Functions:

The control modes of DS series servo include position, speed, torque. The diagram shows the liquid filling machine. The belt will stop when detected the products. The position control motor ensures the positioning of the belt. The motor is running to fill the liquid. The liquid is full when reach certain torque. The torque control motor ensures the liquid height in the bottle. The speed control motor runs forward or backward to press the liquid into the hydraulic cylinder.

Any two modes can switch smoothly, the torque can be limited in position or speed mode.

More applications:
Liquid filling machine, packing machine, screw tightening machine, butt-welding machine.

Interruption control



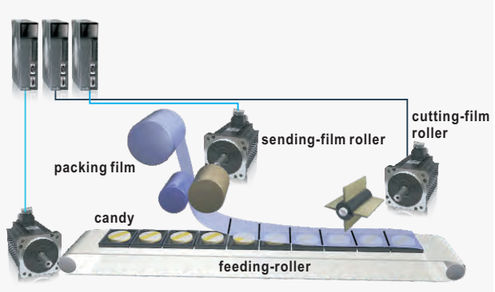
Functions:

The servo runs uncertain distance in internal position mode. It will run certain distance when detected the external sensor signal. The output signal will start the next process after positioning end. The laser printer will go to the next positioning process when the photoelectric switch touches the workpiece. The printer will print after positioning end. High speed interruption will deal with the photoelectric switch signal and ensure the printer position.

No need any controller to positioning, high positioning precision

More applications:
Laser printer, pipe cutting machine, etc.

Synchro-position control



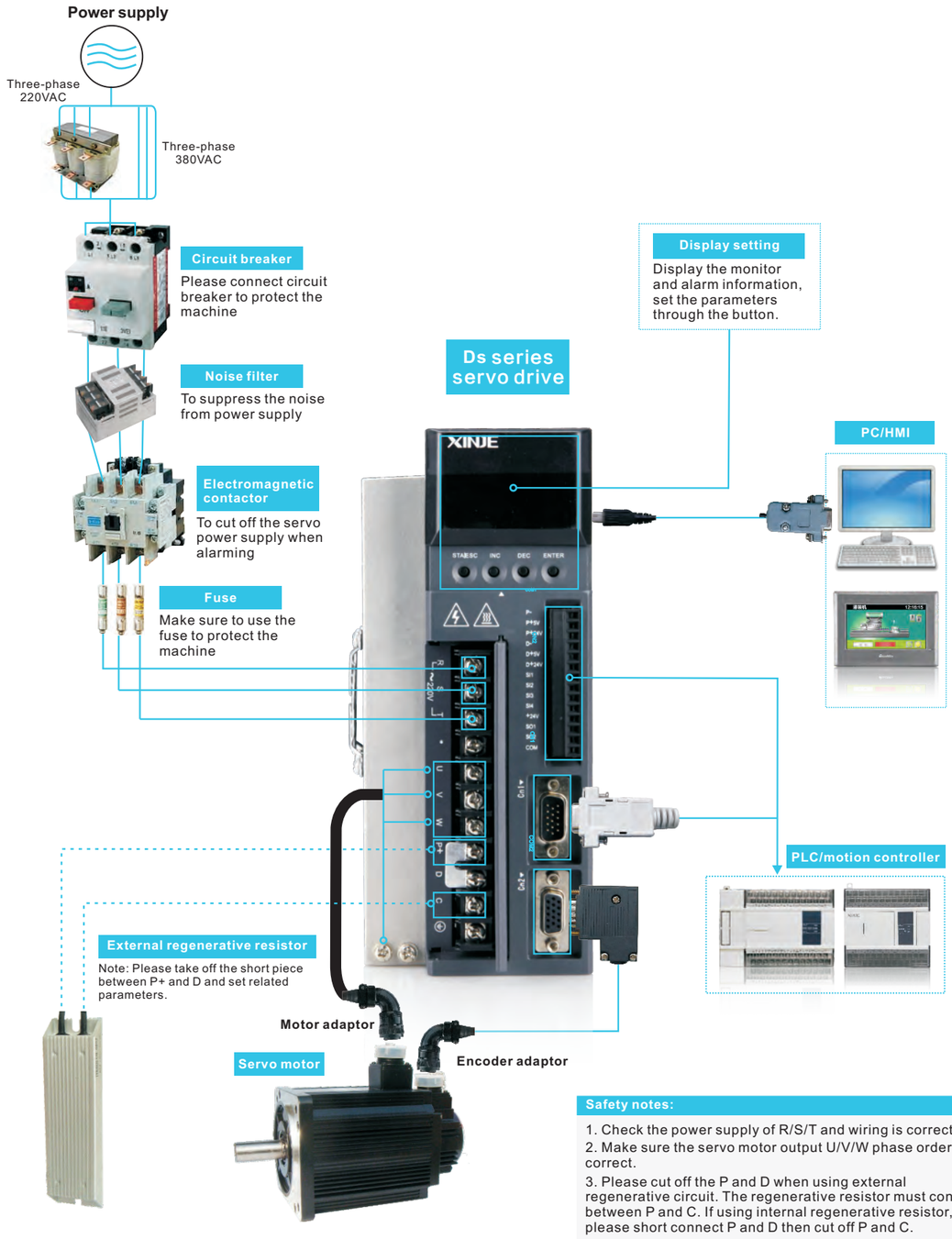
Functions:

Feeding-roller runs certain distance, cutting-film roller follows it to run certain angle, sending-film roller runs certain distance. The servo will ensure the consistency of three rollers height and the stability of running speed. The smoothness of speed control, position control, torque control can be adjusted through filter parameter. It also can adjust the smoothness of the whole motions and avoid skid.

Any two modes can switch smoothly, the torque can be limited in position or speed mode.

More applications:
Die cutting machine, feeding machine

Servo external device connection diagram



Safety notes:

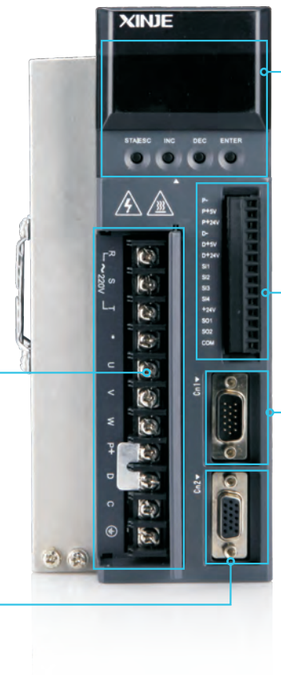
1. Check the power supply of R/S/T and wiring is correct.
2. Make sure the servo motor output U/V/W phase order is correct.
3. Please cut off the P and D when using external regenerative circuit. The regenerative resistor must connect between P and C. If using internal regenerative resistor, please short connect P and D then cut off P and C.

* **the diagram takes DS2-21P5-AS as an example**

Servo drive terminals

Input terminal of main circuit

Terminal	Function	Explanation
R/S/T	Power supply input of main circuit	Single phase or three-phase AC 220~240V, 50/60Hz
•	Vacant terminal	
U,V,W	Motor connection terminal	Connect to the motor: U – Brown; V – Black; W – Blue; PE – Yellow-green
P+,D,C	Use internal regenerative resistor	Short connect P+ and D, disconnect P+ and C
	Use external regenerative resistor	Connect regenerative resistor to P+ and C, take off the short wire between P+ and D
⏚	Ground terminal	Connect to ground terminal, the drive connects to the ground



Communication terminal

Pin number	Name	Explanation
1	TXD	RS232 send
2	RXD	RS232 receive
3	GND	RS232 signal ground

CN0 signal

Signal name	Default function	Pin number	Function
P–		1	Pulse input PUL -
P+5V		2	5V differential signal input
P+24V		3	Collector open circuit input
D–		4	Direction input DIR -
D+5V		5	5V differential signal input
D+24V		6	Collector open circuit input
SI1	S-ON	7	Servo ON: servo motor electrify
SI2	ALM-RST	8	Alarm reset: reset the servo alarm
SI3	P-OT	9	Forward driving prohibition
SI4	N-OT	10	Reverse driving prohibition
+24V	Input 24V	11	Input 24V power supply
SO1	COIN	12	Positioning finished signal
S02	ALM	13	Alarm output signal
COM	Output terminal ground	14	Output terminal ground

CN2 encoder terminal

No.	Name
1	A+
2	B+
3	Z+
4	U+
5	W+
6	A-
7	B-
8	Z-
9	U-
10	W-
11	connect to the shield layer
12	GND
13	5V
14	V+
15	V-

CN1 signal

Signal	Default function	Pin number	Function
NC	Reserved	1	Reserved
NC	Reserved	2	Reserved
SI5	SPD-A	3	Multi-segment speed choice
S03	S-RDY	4	Ready
B-		5	Encoder output B-
A+		6	Encoder output A+
A-		7	Encoder output A-
Z+		8	Encoder output Z+
Z-		9	Encoder output Z-
B+		10	Encoder output B+
T-REF		11	Torque analog input
V-REF		12	Speed analog input
GND		13	GND for analog input
A		14	RS485 communication +
B		15	RS485 communication -

* the diagram takes DS2-21P5-AS as an example

servo drive and motor model

DS3E/DS3L/DS3-PTA series servo drive

DS3E-20P7-PFA

display	series
DS3E	fieldbus type
DS3L	pulse type
DS3	high precision type

display	input voltage
2	three phase 220V AC
4	three phase 380V AC

display	power
0P2	0.2KW
0P4	0.4KW
0P7	0.75KW
1P5	1.5KW
2P3	2.3KW
2P6	2.6KW
3P0	3.0KW

display	configuration type
P	input command type: compatible with pulse type and fieldbus type
F	encoder type: Q – quadrature encoder, F – compatible saving wire encoder T – 17-bit absolute value encoder, N – 20-bit absolute value encoder
A	developing order: A

DS2 series servo drive

DS2 - 2 1P5 - AS

display	series
DS2	series name

display	input voltage
2	3 phase 220V AC (1.5KW and below can use single phase 220V AC)
4	3 phase 380V AC (fit for 1.5KW, 5.5KW and up)

display	power	display	power
0P2	0.2KW	3P0	3.0KW
0P4	0.4KW	5P5	5.5KW
0P7	0.75KW	7P5	7.5KW
1P5	1.5KW	11P0 NEW	11KW
2P3	2.3KW		

display	configuration type
AS	encoder feedback (differential output mode), analog input, RS485
AS2	no encoder feedback, no analog input, no RS485
AS6	encoder feedback (differential output mode), analog input, can accept AB phase pulse, RS485
BS	no encoder feedback, no analog input, no RS485
BSW	
BS6	no encoder feedback, no analog input, no RS485, can accept AB phase pulse
BSW6	

MS series servo drive

MS - 80 ST E - M 024 30 A Z S - 2 0P7-S

display	series
MS	series name

display	Base number
40	40Base
60	60Base
80	80Base
90	90Base
110	110Base
130	130Base
180	180Base
220	220Base

display	Product name
ST	Sine wave drives the motor

display	Oil seal
vacancy	no oil seal(130ST and up has oil seal, the model has no E)
E	oil seal

display	feedback component
M	incremental encoder (2500ppr photoelectric encoder)
F	wire saving incremental encoder (2500ppr photoelectric encoder)
T	17-bit absolute value Tamagawa encoder

display	Rated torque
003	0.32
006	0.637
013	1.27
024	2.39
035	3.5
040	4.0
050	5.0
060	6.0
077	7.7
100	10.0
150	15.0
190	19.0
215	21.5
270	27.0
350	35.0
480	48.0
700	70.0
960	96.0

display	Voltage level
2	220V
4	380V

display	Body length
-	Normal type
s	Short body

display	Power loss brake
-	No power loss brake
z	Power loss brake

display	Bearing key
A	No key
B	Key

display	Rated speed (rpm)
15	1500
20	2000
25	2500
30	3000

display	Shaft length
-	Normal type
s	Short type

* Only 180ST has such differences

display	Rated power (Kw)
0P1 NEW	0.1
0P2	0.2
0P4	0.4
0P7	0.75
1P2	1.2
1P5	1.5
2P0	2.0
2P3	2.3
3P0	3.0
4P3	4.3
4P5	4.5
5P5	5.5
7P5	7.5
11P0 NEW	11.0
15P0	15.0

DS3E, DS3L, DS3-PTA, DS2 series servo drive comparison table

item			fieldbus type	pulse type	high precision type	basic type
			DS3E-□□P□-PFA series	DS3L-□□P□-PFA series	DS3-□□P□-PTA series	DS2 series
basic specification	power range		0.1KW ~ 3.0KW	0.1KW ~ 3.0KW	0.2KW ~ 1.5KW	0.2KW ~ 11.0KW
	input power supply		single/3 phase AC200~240V, 50/60Hz; 3 phaseAC340~440V, 50/60Hz			
	encoder feedback		2500ppr incremental encoder	2500ppr incremental encoder	17-bit absolute value encoder	2500ppr incremental encoder
	control mode		3 phase full-wave rectifier, IPM PWM control, sine wave current drive mode			
	using environment	environment temperature	20 run: 0℃~50℃ (no freeze)/storage: -20℃ ~75℃(no freeze)			
		environment humidity	21 run/storage: below 90% RH (no condensation)			
		Vibration/impact toleration	4.9m/s2 / 19.6m/s2			
	function	protection function	overvoltage, undervoltage, overheat, overcurrent, overload, overspeed, analog input error, position offset too large, output short circuit, encoder error, regenerative error, overrange protection, etc			
		dynamic brake	–			
		communication	RS232: Modbus RTU protocol RS485: Modbus RTU protocol XNET fieldbus (max 20 axes)	RS232: Modbus RTU protocol	RS232: Modbus RTU protocol RS485: Modbus RTU protocol XNET fieldbus (max 20 axes)	RS232: Modbus RTU protocol RS485: Modbus RTU protocol
		brake resistor	Built-in brake resistor, can connect external brake resistor			
		display and operate	395-bit LED light, power LED light, 4 buttons			
	load change rate		400~100% load: below ±0.1%(rated speed)			
	voltage change rate		41Rated voltage ±10%: 0%(rated speed)			
	1temperature change rate		4220±25℃: below ±0.1%(rated speed)			
	2frequency features		250Hz (JL≤JM)			
I/O signal	Position output	Output mode	–	–	–	-AS/AS6: differential output -BS/BSW/AS2: not support encoder feedback output
		Frequency division output	–	–	–	–
		Collector Z phase output	–	–	support	support
	Analog input		–	–	–	-AS/AS6: 2 channels input(12-bit A/D) -BS/BSW/AS2: not support
	Digital input		4 channels SI input	4 channels SI input	4 channels SI input	5 channels SI input
			servo enable, alarm reset, forward banned, reverse banned, torque limit option, internal speed option, gear ratio switch, mode switch, gain switch, pulse input banned, zero speed locked, position offset reset, internal position switch step signal, internal control mode direction switch			
	Digital output		2 channels SO output	2 channels SO output	2 channels SO output	3 channels SO output
			Positioning completion, servo ready, alarm output, torque limit output, same speed detection, rotation detection, speed reached, brake release output, warn output			
Position control mode	Max input pulse frequency		Differential input: 500kpps; collector open circuit : 200kpps			
	Pulse command mode		Can accept 3.3V~24V pulse and direction, AB phase pulse		Can accept 3.3V~24V pulse and direction, AB phase pulse, CW/CCW signal	External pulse/internal position/motion fieldbus
	Control mode		External pulse/internal position/ motion fieldbus	External pulse/internal position	External pulse/motion fieldbus	External pulse/internal position
	Feedforward compensation		0~100% (resolution is 1%)			
	Positioning completed width		750~250 command unit(resolution is 1 command unit)			
	Electronic gear ratio		1/100≤B/A≤100			
Speed control mode	Control mode		Internal 3-segment speed, external speed mode			Internal 3-segment speed, external analog, external speed mode
	Command filter		Low pass filter, smoothing filter			
	Analog input	Voltage range	–	–	–	–10V~+10V (resolution 12-bit)
		Input resistance	–	–	–	13KΩ
	Torque limit		Internal parameters	Internal parameters	Internal parameters	Intertnal parameters/external analog
	Speed change rate		Load rated change 0~100%: below ±0.01%(rated speed)			
			Rated voltage ±10%: 0.01% (rated speed)			
			Environment temperature 20±25℃: below ±0.01%(rated speed)			
Torque control mode	Control mode		Internal torque mode			Internal 3-segment speed, external analog
	Command filter		Low pass filter, smoothing filter			
	Analog input	Voltage range	–	–	–	–10V~+10V (resolution 12-bit)
		Input resistance	–	–	–	13KΩ
	Speed limit		Internal parameters	Internal parameters	Internal parameters	Intertnal parameters/external analog
Fieldbus mode	Axis number		20 axes	–	20 axes	–
	Communication protocol		XNET protocol	–	XNET protocol	–

Servo motor parameters

Voltage level		220V													
Motor model MS-		40ST-	60ST-				80ST-				90ST-	110ST-			130ST-
		M00330	M00630	M01330			M02430			M03520	M02430	M04030	M05030		M04030
		□□-20P1	□□-20P2	□□-20P4		□□S-20P4	□□S-20P7	□□−20P7				□□-21P2	□□-21P5		□□-21P2
Motor code		1002	1003	0004	1004	F004	F011	0011	1011	0012	0021	0031	0032	1032	1031
Rated power (KW)		0.1	0.2	0.4	0.4	0.4	0.75					1.2	1.5	1.5	1.2
Rated current (A)		1.0	1.8	2.5	2.0	2.5	3.5	3.0	3.2	3.0	3.0	5.0	6.0	6.5	6.7
Rated speed (rpm)		3000	3000	3000	3000	3000	3000	3000	3000	2000	3000	3000	3000	3000	3000
Max speed (rpm)		4000	4000	4000	4000	5000	5000	4000	4000	2500	4000	3500	3500	4000	4000
Rated torque (N·m)		0.32	0.637	1.27	1.27	1.27	2.4	2.39	2.39	3.5	2.4	4	5	5	4
Peak torque (N·m)		0.96	1.91	3.8	3.8	3.82	7.2	7.1	7.1	10.5	7.1	12	15	15	10
Back EMF constant (V/krpm)		11	26	28	162	36	36	48	56.6	71	51	54	62	51	33
Torque coefficient (N·m/A)		0.18	0.37	0.5	0.68	0.51	0.51	0.8	0.92	1.17	0.8	0.8	0.83	0.77	0.54
Rotor inertia (Kg·m2)		0.04×10^{-4}	0.18×10^{-4}	0.438×10^{-4}	0.53×10^{-4}	0.34×10^{-4}	1.08×10^{-4}	1.82×10^{-4}	1.05×10^{-4}	2.63×10^{-4}	2.45×10^{-4}	0.54×10^{-3}	0.63×10^{-3}	$0.44*10^{-3}$	0.54×10^{-3}
Winding resistor (Ω)		3.4	3.50	3.49	3.80	2.90	2.9	2.88	2.7	3.65	3.20	1.09	1.03	0.77	2.6
Winding inductance (mH)		2.7	8.32	8.47	11.51	10.4	10.4	6.40	6.25	8.80	7.00	3.30	3.43	8	12
Electrical time constant (ms)		0.8	2.38	2.43	3.03	3.6	3.6	2.22	2.3	2.41	2.19	3.03	3.33	10.4	4.62
Weight (Kg)		0.55	1.1	1.8	1.7	1.3	2.6	2.9	2.87	3.7	3.4	5.5	6.1	6.15	5.9
Encoder ppr (ppr)		2500													
Pole pairs		4													
Motor insulation level		Class B (130℃)													
Protection level		IP65													
Using ambient	Ambient temperature	−15℃ ~ +40℃													
	Ambient humidity	relative humidity < 90% (no condensation)													

Voltage level		220V											380V		
Motor model MS-		130ST-											110ST-		130ST-
		M10010	M06025		M10015		M10015G	M07725	M15015	M15015G	M07730	M10025	M04030	M05030	M06025
		□□-21P0	□□-21P5		□□-21P5		□□-21P5	□□-22P0	□□-22P3	□□-22P3	□□-22P4	□□-22P6	□□-41P2	□□-41P5	□□-41P5
Motor code		1040	0042	1042	0044	1044	104A	0043	0046	1046	104B	0045	0131	0132	0142
Rated power (KW)		1.0	1.5	1.5	1.5	1.5	1.5	2.0	2.3	2.3	2.4	2.6	1.2	1.5	1.5
Rated current (A)		6.2	6.0	7.4	6.0	8.0	8.9	7.5	9.5	9	10.5	10.0	3.0	3.9	3.7
Rated speed (rpm)		1000	2500	2500	1500	1500	1500	2500	1500	1500	3000	2500	3000	3000	2500
Max speed (rpm)		2000	3000	3000	2000	2000	2500	3000	2000	2000	4000	3000	3500	3500	3000
Rated torque (N·m)		10	6	6	10	10	10	7.7	15	15.1	8	10	4	5	6
Peak torque (N·m)		30	18	18	25	25	26.7	22	30	30.2	16	25	12	15	18
Back EMF constant (V/krpm)		106.7	65	82	103	61	73.3	68	114	101	52.8	70	89	90	110
Torque coefficient (N·m/A)		1.612	1.0	0.81	1.67	1.25	1.12	1.03	1.58	1.68	0.76	1.0	1.33	1.11	1.62
Rotor inertia (Kg·m2)		1.105×10^{-3}	1.26×10^{-3}	0.84×10^{-3}	1.94×10^{-3}	1.272×10^{-3}	$1.62*10^{-3}$	1.53×10^{-3}	2.77×10^{-3}	$2.63*10^{-3}$	$1.27*10^{-3}$	1.94×10^{-3}	0.54×10^{-3}	0.63×10^{-3}	1.26×10^{-3}
Winding resistor (Ω)		1.02	1.21	0.70	1.29	0.3	0.7	1.01	1.10	0.8	0.331	0.73	3.30	2.28	3.50
Winding inductance (mH)		3.57	3.87	5.07	5.07	1.29	11	2.94	4.45	14	4.7	2.45	8.78	7.40	10.75
Electrical time constant (ms)		3.5	3.20	7.24	3.93	4.3	15.7	2.91	4.05	17.5	14.2	3.36	2.66	3.25	3.07
Weight (Kg)		8.434	8.9	7.2	11.5	9.340	-	10.0	14.4	12.6	9.8	9.8	5.5	6.1	8.9
Encoder ppr (ppr)		2500													
Pole pairs		4													
Motor insulation level		Class B (130℃)													
Protection level		IP65													
Using ambient	Ambient temperature	−15℃ ~ +40℃													
	Ambient humidity	relative humidity < 90% (no condensation)													

Voltage level		380V														
Motor model MS-		130ST-				180ST-										220ST-
		M10015		M07725	M15015	M10030	M19015		M21520	M27015		M35015		M48015		M70015
		□□-41P5		□□-42P0	□□-42P3	□□-43P0	□□-43P0		□□-44P5	□□-44P3		□□-45P5		□□-47P5		□□-411P0
Motor code		0144	2144	1143	1146	1148	0156	1052	0150	2151	0151	1152	0152	0153	1153	1157
Rated power (KW)		1.5	1.5	2.0	2.3	3.0	3.0	3.0	4.5	4.3	4.3	5.5	5.5	7.5	7.5	11.0
Rated current (A)		3.5	5.6	6.4	7.3	6.4	7.5	8.5	9.5	8.0	10.0	8.5	12.0	20.0	15.6	25
Rated speed (rpm)		1500	1500	2500	1500	3000	1500	1500	2000	1500	1500	1500	1500	1500	1500	1500
Max speed (rpm)		2000	2000	3000	2000	3500	2000	2000	3000	2000	2000	2000	2000	2000	1800	2000
Rated torque (N·m)		10	10	7.7	15	10	19	19	21.5	27	27	35	35	48	48.3	70
Peak torque (N·m)		25	20	19.25	45	25	47	50	53	54	67	87.5	70	96	72	105
Back EMF constant (V/krpm)		177	61	61	124	88.3	158	138	140	210	172	250	181	156	196.7	170
Torque coefficient (N·m/A)		2.86	1.25	1.2	2	1.56	2.53	2.56	2.26	3.37	2.70	4.1	2.92	2.40	3.07	2.8
Rotor inertia (Kg·m2)		1.94×10^{-3}	1.272×10^{-3}	1.272×10^{-3}	2.44×10^{-3}	1.13×10^{-3}	3.8×10^{-3}	2.8×10^{-3}	4.7×10^{-3}	7.2×10^{-3}	6.1×10^{-3}	9.18×10^{-3}	8.6×10^{-3}	9.5×10^{-3}	$9.5*10^{-3}$	23.5×10^{-3}
Winding resistor (Ω)		4.37	0.3	0.3	1.8	0.46	1.15	0.67	0.71	0.59	0.796	1.1	0.62	0.273	0.428	0.46
Winding inductance (mH)		15.00	1.29	1.29	11.6	1.52	6.40	2.68	4.00	14.4	4.83	15.1	4.00	2.14	14.6	5.54
Electrical time constant (ms)		3.46	4.3	4.3	6.44	3.33	5.57	4.00	5.63	24.4	6.07	13.7	6.45	7.84	34.11	12
Weight (Kg)		11.5	9.34	9.34	11.1	11.4	20.5	17.1	22.2	23.3	25.5	27.70	30.5	40.0	-	55.0
Encoder ppr (ppr)		2500														
Pole pairs		4													5	4
Motor insulation level		Class B (130℃)														
Protection level		IP65														
Using ambient	Ambient temperature	−15℃ ~ +40℃														
	Ambient humidity	relative humidity < 90% (no condensation)														

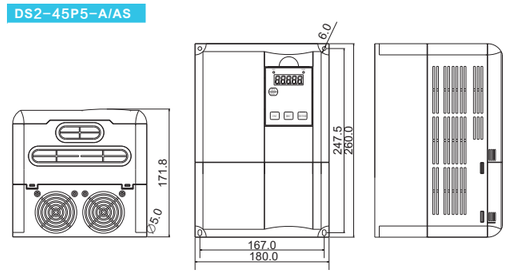
* note: S short body high-speed motor

Compatible table of servo motor and drive

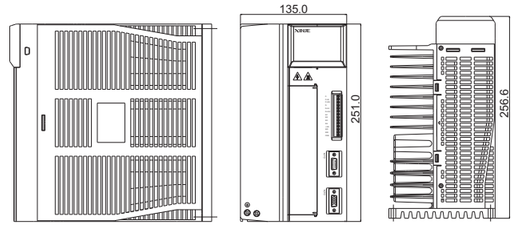
Motor model	Motor code	Suitable drive	Voltage level
MS-40ST-M00330-20P1	1002	DS3-20P2-PQA DS3E/L-20P2-PFA	single/3 phase 220V
MS-60ST-M00630-20P2	1003	DS2-20P2-AS/AS6 DS3E/L-20P2-PFA DS3-20P2-PQA	single/3 phase 220V
MS-60ST-M01330-20P4	0004/1004/ F004	DS2-20P4-AS/AS6 DS2-20P4-BS/BS6 DS3E/L-20P4-PFA DS3-20P4-PQA	single/3 phase 220V
MS-80ST-M02430-20P7	0011/1011/ F011	DS2-20P7-AS/AS6 DS2-20P7-BSW/BSW6 DS3E/L-20P7-PFA DS3-20P7-PQA	single/3 phase 220V
MS-80ST-M03520-20P7	0012		
MS-90ST-M02430-20P7	0021		
MS-110ST-M04030-21P2	0031	DS2-21P5-AS/AS2/AS6 DS3E/L-21P5-PFA DS3-21P5-PQA	single/3 phase 220V
MS-110ST-M05030-21P5	0032		
MS-130ST-M04030-21P2	1031		
MS-130ST-M06025-21P5	0042/1042		
MS-130ST-M10015-21P5	0044/1044		
MS-130ST-M07725-22P0	0043	DS2-22P3-AS/AS6 DS3E/L-22P3-PFA DS3-22P3-PQA	3 phase 220V
MS-130ST-M15015-22P3	0046		

Motor model	Motor code	Suitable drive	Voltage level
MS-110ST-M04030-41P2	0131	DS2-41P5-AS/AS6 DS3E-41P5-PFA	3 phase 380V
MS-110ST-M05030-41P5	0132		
MS-130ST-M06025-41P5	0142		
MS-130ST-M10015-41P5	0144/2144		
MS-130ST-M07725-42P0	1143	DS2-43P0-AS/AS6	
MS-130ST-M15015-42P3	1146	DS2-43P0-AS/AS6 DS3E-43P0-PFA DS3-43P0-PQA	
MS-130ST-M10030-43P0	1148		
MS-180ST-M19015-43P0	0156/1052		
MS-180ST-M21520-44P5	0150	DS2-45P5-A/AS DS3-45P5-PQA	
MS-180ST-M27015-44P3	0151/2151		
MS-180ST-M35015-45P5	0152/1152		
MS-180ST-M48015-47P5	0153/1153	DS2-47P5-A	
MS-220ST-M70015-411P0	1157	DS2-411P0-A	

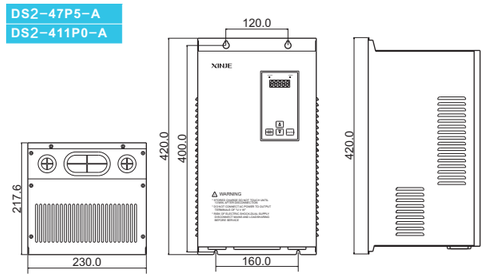
DS2-45P5-A/AS



DS3-45P5-PQA

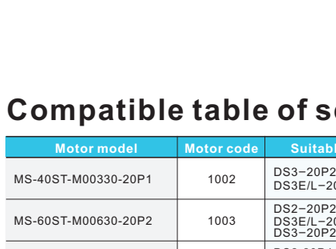


DS2-47P5-A
DS2-411P0-A



DS2 servo drive dimension (unit: mm)

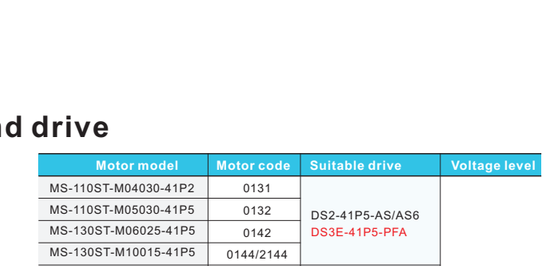
DS2-20P2-AS/AS6/BS
DS2-20P4-AS/AS6/BS/BS6
DS2-20P7-AS/AS6



DS2-20P7-BSW/BSW6
DS3L-20P2/4/7-PFA

DS3E-20P2/4/7-PFA
DS3E-21P0-PFA

DS3-20P2/4/7-PQA
DS3-20P2/4-PNA
DS3-20P7-PTA

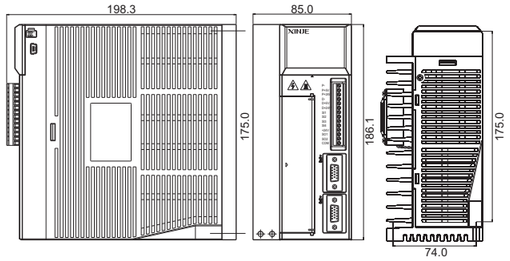


DS2-21P5-AS/AS6/AS2
DS2-22P3-AS/AS6
DS2-41P5-AS/AS6

DS3-21P5-PTA
DS3-22P3-PTA
DS3-21P5-PQA
DS3-22P3-PQA

DS3E-21P5-PFA
DS3E-41P5-PFA
DS3E-22P3-PFA
DS3E-22P6-PFA

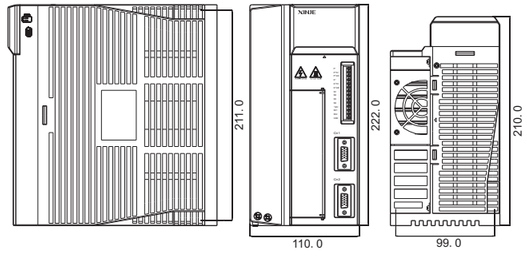
DS3L-21P5-PFA
DS3L-22P3-PFA
DS3L-22P6-PFA



DS2-43P0-AS/AS6

DS3E-43P0-PFA

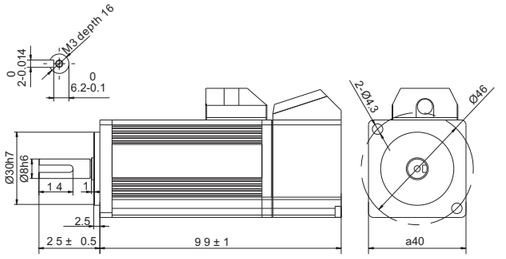
DS3-43P0-PQA



servo motor dimension (unit: mm)

40 series motor

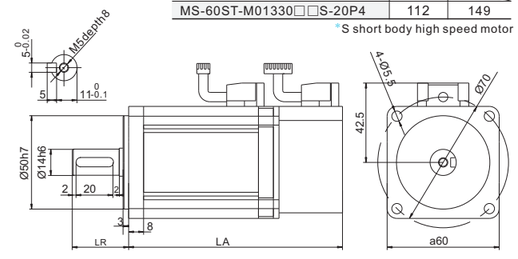
motor model	LA	
	normal	with brake
X2-40ST-M00330□□-20P1	99±1	



60 series motor

motor model	LA	
	normal	with brake
MS-60ST-M00630□□-20P2	115.5±1	159.5±1
MS-60ST-M01330□□-20P4	145±1	189±1
X2-60ST-M01330□□-20P4	133±1	
MS-60ST-M01330□□S-20P4	112	149

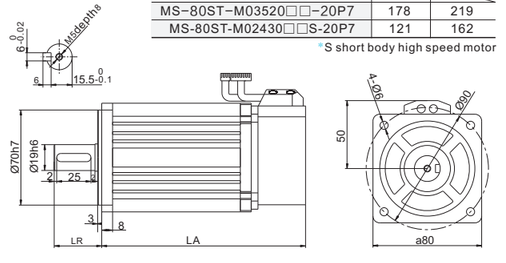
*S short body high speed motor



80 series motor

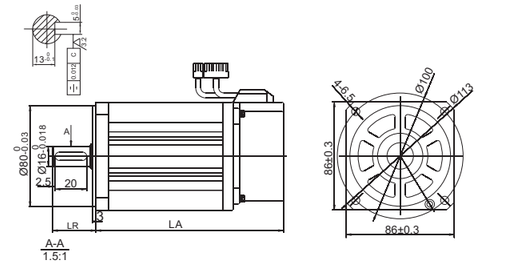
motor model	LA	
	normal	with brake
MS-80ST-M02430□□-20P7	151±1	199±1
X2-80ST-M02430□□-20P7	151±1	
MS-80ST-M03520□□-20P7	178	219
MS-80ST-M02430□□S-20P7	121	162

*S short body high speed motor



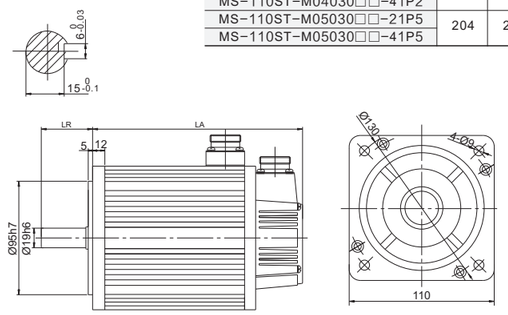
90 series motor

motor model	LA	
	normal	with brake
MS-90ST-M02430□□-20P7	149	194



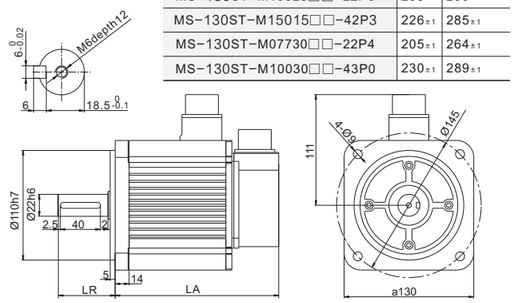
110 series motor

motor model	LA	
	normal	with brake
MS−110ST−M04030□□−21P2	189	263
MS−110ST−M04030□□−41P2		
MS−110ST−M05030□□−21P5	204	278
MS−110ST−M05030□□−41P5		



130 series motor

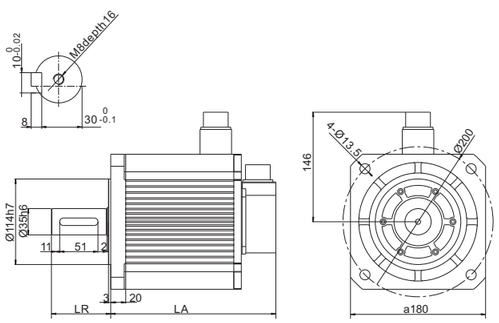
motor model	LA	
	normal	with brake
MS−130ST−M10010□□−21P0	194±1	
MS−130ST−M04030□□−21P2	165±1	
MS−130ST−M06025□□−21P5	180±1	239±1
MS−130ST−M06025□□−41P5	179	265±1
MS−130ST−M10015□□−21P5	206±1	265±1(8N.m) 294(16N.m)
MS−130ST−M10015G□□−21P5	193±1	264±1
MS−130ST−M10015□□−41P5	213	270(8N.m) 294(16N.m)
MS−130ST−M07725□□−22P0	192	249
MS−130ST−M07725□□−42P0	205	264
MS−130ST−M15015□□−22P3	241	298(8N.m) 322(16N.m)
MS−130ST−M15015G□□−22P3	235±1	294±1
MS−130ST−M10025□□−22P6	209	290
MS−130ST−M15015□□−42P3	226±1	285±1
MS−130ST−M07730□□−22P4	205±1	264±1
MS−130ST−M10030□□−43P0	230±1	289±1



180 series motor

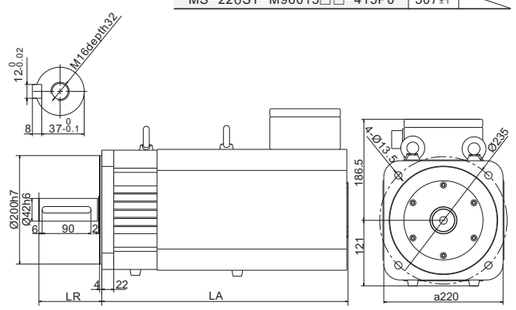
motor model	motor code	LR	LA	
			normal	with brake
MS−180ST−M19015□□−43P0	1052	79	221±1	303±1
MS−180ST−M19015□□−43P0-S*1	1052	65	221±1	303±1
	0156	65	232	289
MS−180ST−M21520□□−44P5	0150	65	243	300
MS−180ST−M27015□□−44P3	2151	79	247±1	329±1
MS−180ST−M27015□□−44P3−S*1	2151	65	247±1	329±1
	0151	65	262	319
MS−180ST−M35015□□−45P5	1152	79	277±1	359±1
MS−180ST−M35015□□−45P5-S*1	1152	65	277±1	359±1
	0152	65	292	349
MS−180ST−M48015□□−47P5	1153	79	308±1	390±1
MS−180ST−M48015□□−47P5-S*1	1153	65	308±1	390±1
	0153	65	346	403

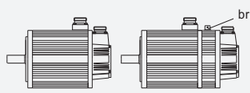
*note: as the needs for 180ST motor shaft length, it has −S short body model, please confirm the model before ordering.



220 series motor

motor model	LA	
	normal	with brake
MS−220ST−M70015□□−411P0	454±1	
MS−220ST−M96015□□−415P0	507±1	





★ the appearance difference between normal model and power loss brake model

Accessories

Fast terminal

● Easy and flexible wiring mode

Power supply connection

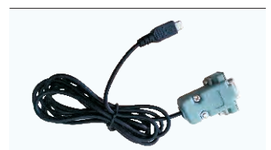
● 3 meters cable or customized length cable
● Brake motor has brake power supply connector

Encoder cable

● 3 meters cable or customized length cable

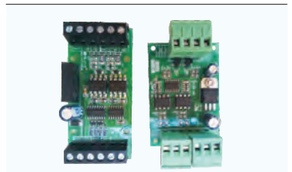
RS232 communication cable

● 1.5 meters cable for communicating with controller



ABZ signal transformation

● The encoder output is collector signal or differential signal. The two modes can switch to each other.



Regenerative resistor

● Release the regenerative voltage of capacitance

DS3E fieldbus servo drive matched module JA-NE-L NEW

● Connect to servo drive CN1 port, perform fieldbus function.

regenerative resistor table

Servo drive model	Internal regenerative resistor	Recommended external regenerative resistor
DS2-20P4-AS/AS6 DS2-20P7-AS/AS6	No internal regenerative resistor	External regenerative resistor 40Ω-100Ω, up 500W, connect between P+ and PB (there is 100Ω, 100W resistor in the packing box, if the discharge specification is not enough, please purchase recommended resistor)
DS2-45P5-A/AS DS2-47P5-A	No internal regenerative resistor	External regenerative resistor 25Ω-65Ω, up 2000W, connect between P+ and PB (there is 20Ω, 1000W resistor in the packing box, if the discharge specification is not enough, please purchase recommended resistor)
DS2-20P7-BSW/BSW6 DS3E-20P7-PFA DS3L-20P7-PFA DS3-20P7-PTA DS3E-20P4-PFA DS3L-20P4-PFA DS3-20P4-PTA	Internal regenerative resistor 100Ω 100W, short connect P+ and D (already short connected when out of factory), disconnect P+ and C. DS2 set P0-10 to 0, DS3 set P0-24 to 0.	connect the regenerative resistor between P+ and C, move the short connector between P+ and D, DS2 set P0-10 to 1, DS3 set P0-24 to 1. External regenerative resistor is 40Ω to 100Ω, up 500W. External regenerative resistor needs to buy.
DS2-21P5-AS/AS6 DS2-21P5-AS2 DS3E-21P5-PFA DS3L-21P5-PFA DS3-21P5-PTA DS2-22P3-AS/AS6 DS3E-22P3-PFA DS3L-22P3-PFA DS3E-22P6-PFA DS3L-22P6-PFA	Internal regenerative resistor 75Ω 150W, short connect P+ and D (already short connected when out of factory), disconnect P+ and C. DS2 set P0-10 to 0, DS3 set P0-24 to 0.	connect the regenerative resistor between P+ and C, move the short connector between P+ and D, DS2 set P0-10 to 1, DS3 set P0-24 to 1. External regenerative resistor is 25Ω to 50Ω, up 1000W. External regenerative resistor needs to buy.
DS2-41P5-AS/AS6	Internal regenerative resistor 75Ω 150W, short connect P+ and D (already short connected when out of factory), disconnect P+ and C. DS2 set P0-10 to 0, DS3 set P0-24 to 0.	connect the regenerative resistor between P+ and C, move the short connector between P+ and D, set P0-10 to 1. External regenerative resistor is 55Ω to 100Ω, up 1000W. External regenerative resistor needs to buy.
DS2-43P0-AS/AS6 DS3E-43P0-PFA DS3L-43P0-PFA DS3-43P0-PTA	Internal regenerative resistor 75Ω 150W, short connect P+ and D (already short connected when out of factory), disconnect P+ and C. DS2 set P0-10 to 0, DS3 set P0-24 to 0.	connect the regenerative resistor between P+ and C, move the short connector between P+ and D, DS2 set P0-10 to 1, DS3 set P0-24 to 1. External regenerative resistor is 55Ω to 75Ω, up 1000W. External regenerative resistor needs to buy.
DS3E-20P2-PFA DS3L-20P2-PFA	Internal regenerative resistor 50Ω 100W, short connect P+ and D (already short connected when out of factory), disconnect P+ and C. DS2 set P0-10 to 0, DS3 set P0-24 to 0.	connect the regenerative resistor between P+ and C, move the short connector between P+ and D, set P0-24 to 1. External regenerative resistor is 50Ω to 100Ω, up 200W. External regenerative resistor needs to buy.