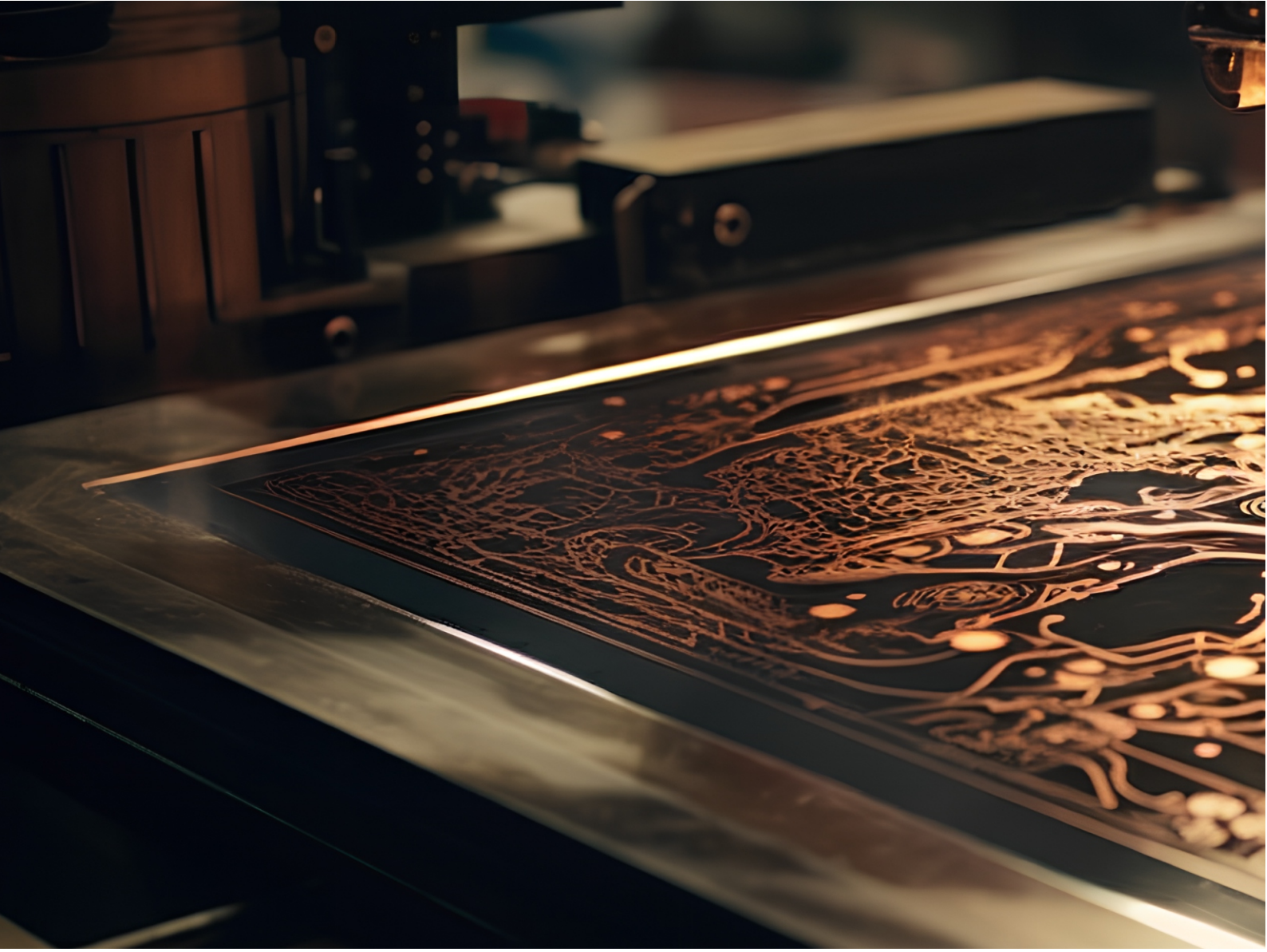
Servo Drive System

SD100P&SD300N/P

FRECON



ABOUT US

FRECON Electric (Shenzhen) Co., Ltd. is a national key high-tech enterprise, a dual-soft enterprise in Shenzhen, and a professional company in the fields of industrial automation, high efficiency and energy saving, and green new energy which was founded in 2013. We have more than 16 years of experience in the development and application of inverters, servo drives, energy-saving control cabinets, solar inverter systems etc.

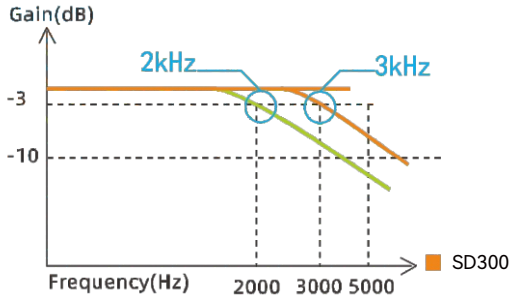
Product Overview

SD100P/SD300 series is FRECON new generation servo drive, supports pulse type (SD100P, SD300P) and bus type (SD300N). The pulse type supports various pulse input mode (pulse + direction, pulse + pulse, quadrature input), and support single-ended and differential signal inputs. The bus type uses EtherCAT communication, with synchronization cycle of 250 μs. with thin and light appearance design, superior performance, and multiple interfaces. Widely used in CNC machine, woodworking, laser, packaging, robots, 3C and other industries.

Features

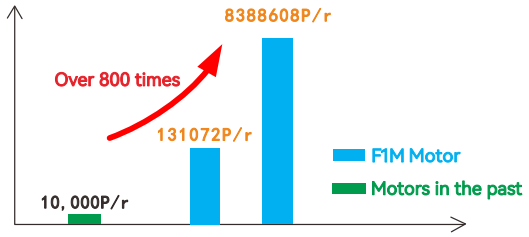
Superior performance

- Use high-performance motor control dedicated ARM chip (480 MHz) and large-scale programmable gate array (FPGA) dual-chip platform, the speed loop bandwidth is 3 kHz.



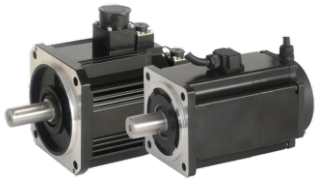
Precise positioning

- The F1M series motor supports 17bit and 23bit single-turn/multi-turn absolute encoders with high resolution and flexible response for different applications.



High protection, High speed, High overload

- The motor is IP65 protection grade, Maximum speed is 6000rpm ,Maximum torque is 3.5 times rated torque

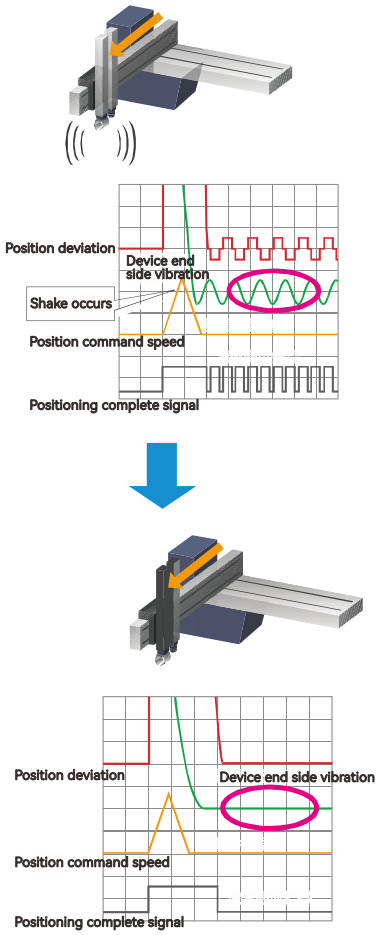


Use easy

- Support parameter upload/download, waveform analysis function, mode debugging function, which makes debugging more convenient..

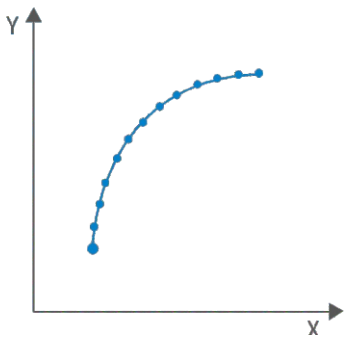
Suppress device vibration

- The servo drive can simultaneously suppress the two vibrations at the end of the device, which can bring higher mechanical response.



Synchronization cycle

- Use high-performance control chip to improve communication ability, supports 250μs synchronization cycle for EtherCAT type



Servo Drive

Servo Drive Model Description

SD300 P - 2S - 3R0

Product series
SD300: general servo drive
SD100: economical servo drive

Product Type
P:Pulse type
N: Bus type(Ethercat)

Input Voltage
2S: Single phase 220V input
2T: Three phase 220V input
4T:Three phase 380V input

220V: 1R8:1.8A
3R0:3.0A
5R5:5.5A
7R6:7.6A

380V: 5R4:5.4A
8R5:8.5A
012:12A
017:17A
021:21A
026:26A

Motor Model Description

F1 M - 40A 30 L 1 - A1 60

Product Series
F1:F1 series motor
F2:F2 series motor

Rotor inertia
M:medium inertia

Rated power(W)
A:×10
B:×100
For example:40A=400W
...

Rated speed
15=1500rpm
20=2000rpm
25=2500rpm
30=3000rpm

Input Voltage
L:AC220V
H:AC380V

Brake
1:Without brake
2:With brake

Encoder type
A:Magnetic Encoder
B:Optical Encoder
1:17-bit Absolute Value Single-turn
2:17-bit Absolute Value Multi-turn
4:23-bit Absolute Value Multi-turn

Motor flange
40:40 flange
60:60 flange
80:80 flange
13:130 flange
18:180 flange

Cable Model Description

LPG - 0 075 0 - 3.0 - G
① ② ③ ④ ⑤ ⑥

①Motor Power Cable
LPG:General 4-core power
LPB: Power cable with brake

②Drive Side Plug Type
O:U-shaped type terminal
1:Needle type terminal

③Wire Diameter(mm^2)
050: 0.5
075: 0.75
100: 1.0
150: 1.5
250: 2.5
...

④Motor Side Plug Type
0:4P-core Amp head
1: SC-MC6S(Gecko Head)
2: Aviation head18-6Z
3: Aviation head 22-A6
4: SC-MC6P-AB2G(Gecko Head)

⑤Cable Length
3.0: 3m
5.0: 5m
10.0: 10m
...

⑥Cable Type
G:General Cable
H:Super High-flex Cable(Bend endurance over 10 million cycles)

LEG - 0 0 - 3.0 - G
① ② ③ ④ ⑤

①Encoder Cables
LEG: Universal absolute encoder cables
LEB: Battery-powered absolute encoder cables

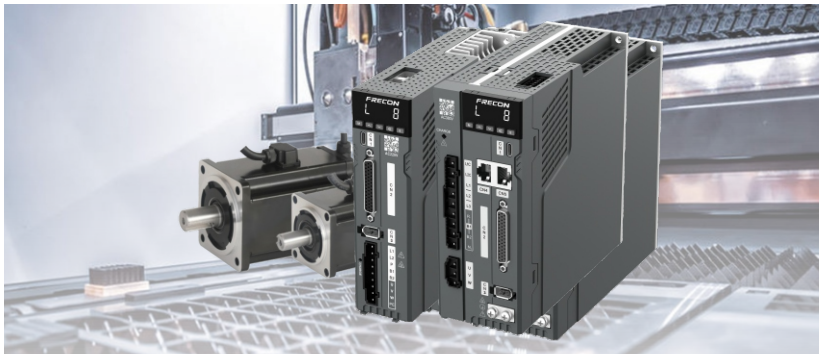
②Drive Side Plug Type
0:1394 Plug
1:DB15 Plug
2:DB9 Plug

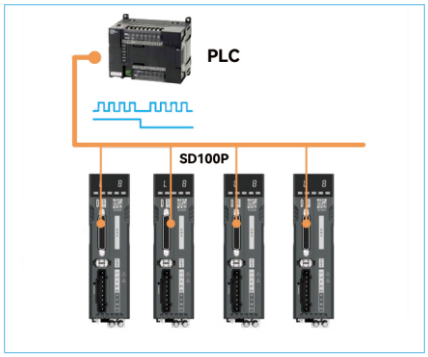
③Motor Side Plug Type
1: SC-MC7S(Gecko Head)
2: 10P aviation head

④Cable length
3.0:3m
5.0:5m
10.0:10m
...

⑤Cable Type
G:General Cable
H:Super High-flex Cable(Bend endurance over 10 million cycles)

SD100P Series Economical Servo Drive





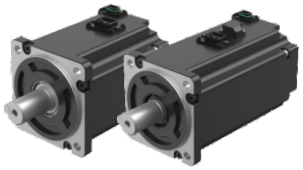
SD100P Servo Drive

SD100P is an economical pulse servo drive that supports multiple pulse input modes (pulse + direction, pulse + pulse, orthogonal input).Support single-ended and differential input.

- ▷ Compact size: thin book-like design, side-by-side installation
- ▷ Power range: 220V 100W~1.0kW
- ▷ Rich functions: 7 DI, 5 DO
- ▷ High response performance: 2kHz speed bandwidth
- ▷ Multiple pulse modes: pulse+direction, pulse+pulse, orthogonal input

SD100P Drive Models List

Frame	Model	Input Voltage(V)	Rated Current(A)	Maximum Current(A)
SIZE A	SD100P-2S-1R8	Single phase 220V	1.8	5.4
	SD100P-2S-3R0		3	9
	SD100P-2S-5R5		5.5	14
SIZE B	SD100P-2T-7R6	Three phase 220V	7.6	18

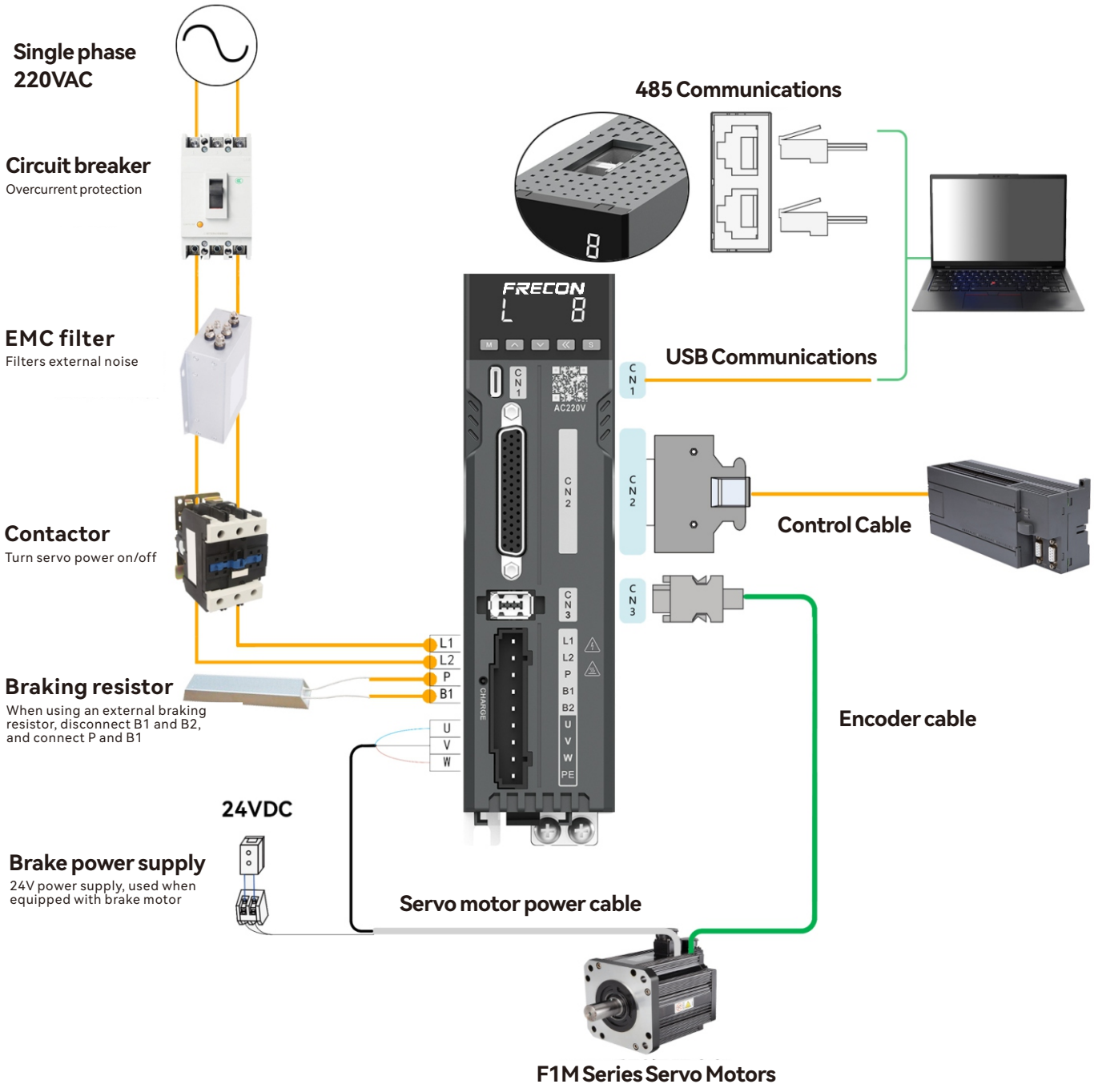
	SIZE A	SIZE B
Servo Drive		
	SD100P-2S-1R8 SD100P-2S-3R0 SD100P-2S-5R5	SD100P-2T-7R6
Servo Motor		
	100W,200W,400W,600W,750W	850W,1.0kW
	F1M-10A30L□-□□40 F1M-20A30L□-□□60 F1M-40A30L□-□□60 F1M-60A30L□-□□60 F1M-75A30L□-□□80	F1M-10B30L□-A180 F1M-85A15L□-A113 F1M-12B30L□-A111

SD100P Serie

SD100P Drive Technical Specifications

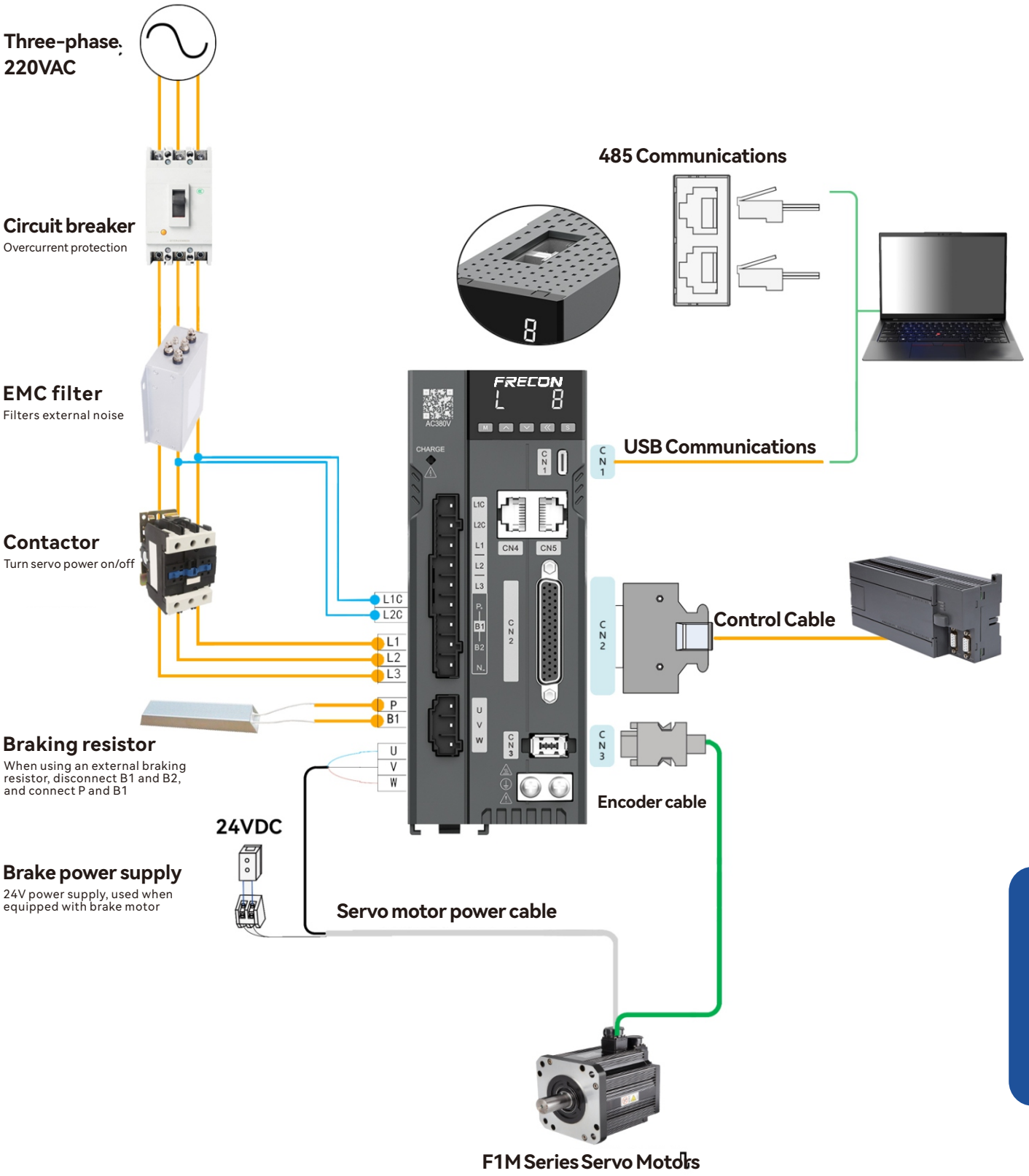
SD100P Drive Technical Specifications			
Control method			IGBT PWM control, sinusoidal current drive mode; 220V: single-phase or three-phase full-wave rectification
Environment	Temperature		Working/Storage: 0℃ ~ 55℃ (ambient temperature above 45℃, the rating derate by 10% for every 5℃ increase)/-20℃ ~ 70℃
	Humidity		Working/Storage: Below 90%RH (no condensation)
	Vibration		4.9m/s2 / 19.6m/s2
	Atmospheric		86kPa ~ 106kPa
IP grade			IP20
Altitude			The maximum altitude is 2000m. No derating is required for use at 1000m and below. Derating is 1% for every 100m increase above 1000m.
Encoder			Single-turn/multi-turn absolute encoder (Tamagawa protocol)
Locationmode	Input signal	Pulse type	Direction + pulse, A, B phase orthogonal pulse, forward / reverse pulse three command forms
		Input form	Differential input, open collector
		Input frequency	Low speed: ≤500kHz (differential input); ≤200kHz (single-ended input) High speed: ≤4MHz (differential input)
	Location output	Output form	Phase A, Phase B: differential output Phase Z: differential output
		Frequency division ratio	Any frequency division ratio (electronic gear ratio 1, electronic gear ratio 2)
Speed torque mode	Speed mode	Instruction source	Parameter setting (internal speed 1~internal speed 4)
		Command acceleration and deceleration	Parameter setting
	Torque mode	Instruction source	Parameter setting (internal speed 1~internal speed 4)
		Speed Limit	Parameter setting
Input and output signals	Digital input signal	Input signal function selection	DI1~DI5 digital signal input maximum frequency 1kHz (the current limiting resistor is greater than 2.4kΩ will decrease)DI8~DI9 digital signal input hardware delay less than 1ms (current limiting resistor 2.4kΩ)DI functions are as follows:Servo enable, alarm clear, forward drive prohibition, reverse drive prohibition, forward torque limit, reverse torque limit,emergency stop, electronic gear selection 1, electronic gear selection 2, position deviation clear, pulse input prohibition, etc.
	Digital output signal	Output signal function selection	5 DO, programmable output terminal (photoelectric isolation)DO functions are as follows: servo ready, alarm, positioning completed, speed reached, electromagnetic brake, torque limit, etc.
Built-in Function	Overtravel (OT) prevention function		P-OT and N-OT work will stop immediately
	Electronic gear ratio		Numerator/denominator: 1-32767/1-32767
	LED display		5-digit LED display
	Monitoring function		Speed, current position, position deviation, motor torque, motor current, command pulse frequency, bus voltage, module internal temperature, etc.
	Protection function		Overspeed, overvoltage, overcurrent, overload, abnormal braking, encoder abnormality, position error, etc.
	Communication		Modbus RTU
	Host computer interface		USB supports parameter reading and writing, online upgrade, and wave recording functions

SD100P Drive Wiring-Signal Phase 220V

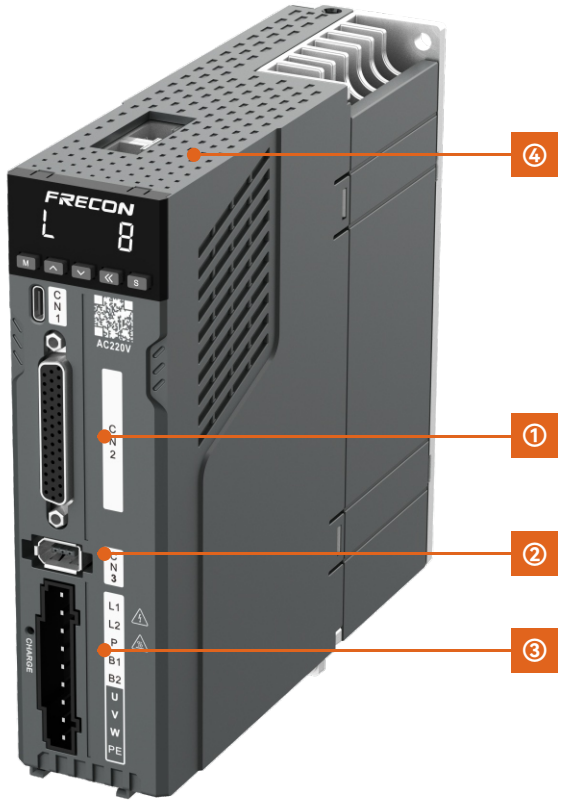


SD100P Serie

SD100P Drive Wiring- Three Phase 220V



SD100P Drive Port Definition



①CN2 Control terminal definition

Signal Name		Default function	Pin Number	Terminal Function
Universal terminal signal	DI1	S-ON	9	Servo enable
	DI2	ALM-RST	10	Alarm fault reset
	DI3	P-OT	24	Forward overtravel
	DI4	N-OT	8	Reverse overtrave
	DI5	ClrPosErr	33	Clear position deviation
	DI8	Reserve	30	-
	DI9	Reserve	12	-
	COM+		11	DI input terminal common end
	DO1+	S-RDY+	7	Servo ready
	DO1-	S-RDY-	6	
	DO2+	COIN+	5	Positioning completed
	DO2-	COIN-	4	
	DO3+	ZERO+	3	Zero speed signal
	DO3-	ZERO-	2	
	DO4+	ALM+	1	Fault output
	DO4-	ALM-	26	
	DO5+	HomeAttain+	28	Home return completion
	DO5-	HomeAttain-	27	
Position command	PULSE+		41	Input pulse command mode: Differential drive input, collector open circuit Input pulse form: Direction + pulse, A, B phase orthogonal pulse, CW/CCW pulse
	PULSE-		43	
	SIGN+		37	
	SIGN-		39	
	HPULSE+		38	High-speed input pulse command
	HPULSE-		36	
	HSIGN+		42	
	HSIGN-		40	
	PULLHI		35	External power input interface for command pulse
	GND		29	Signal ground

②CN3 Encoder Connection Terminal

Pin number	Definition	Describe
1	+5V	5V Power
2	GND	
3	Reserve	-
4	Reserve	-
5	SD+	Encoder signal
6	SD-	

③Main circuit terminal definition (SIZE A)

Terminal Identification	Terminal function
L1、L2	Main circuit power input terminal
P、B1、B2	When use external brake resistor, disconnect between B1 and B2,and connect the external brake resistor across P and B1,not connected to B2
U、V、W	Output to motor U V W power
PE	PE motor ground terminal

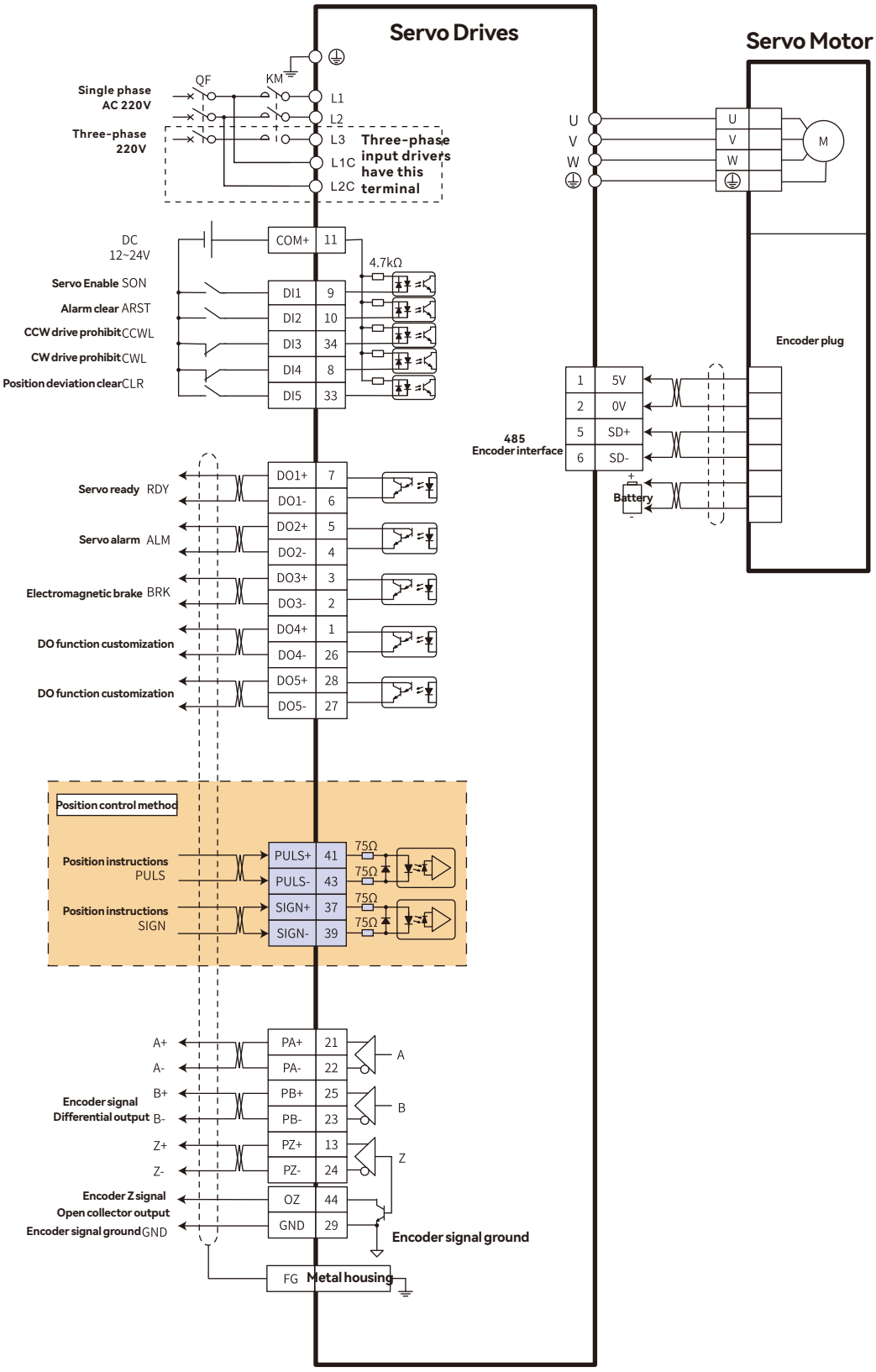
③Main circuit terminal definition (SIZE B)

Terminal Identification	Terminal function
L1C、L2C	Control circuit power input terminal
L1、L2、L3	Main circuit power input terminal
P+、N-	Servo bus terminal
P、B1、B2	When use external brake resistor, disconnect between B1 and B2,and connect the external brake resistor across P and B1,not connected to B2
U、V、W	Output to motor U V W power
PE	PE motor ground terminal

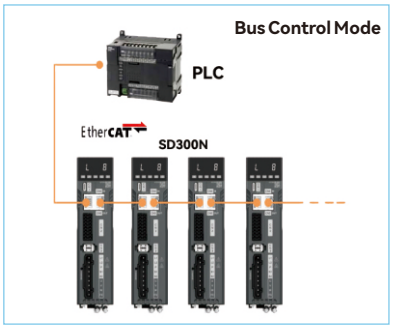
④CN5&CN6 Communication terminal

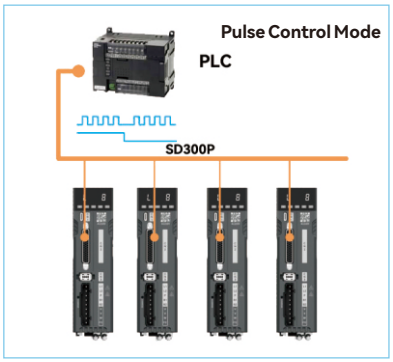
Pin number	Signal name	Describe
1	MBS-	Modubus communication data negative terminal
2	MBS+	Modubus communication data positive terminal
3	PE	Ground terminal
4	NC	Reserve
5	NC	Reserve
6	GND	Internal power ground
7	PE	The drive is grounded and connected to the power supply and motor ground terminals
8	NC	Reserve

SD100P Control Wiring Diagram – position mode control wiring



SD300 General Series Servo Drive





SD300 Servo Drive

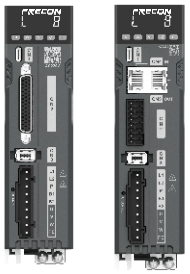
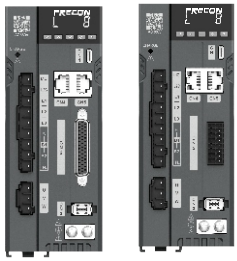
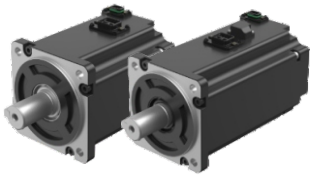
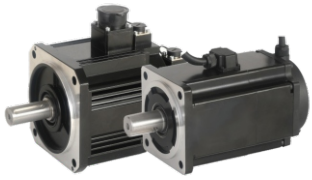
Modbus EtherCAT

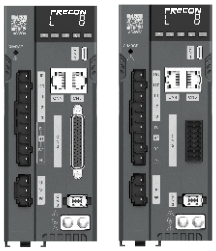
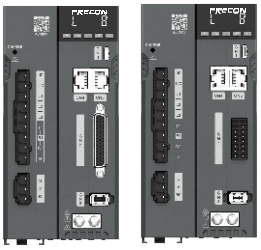
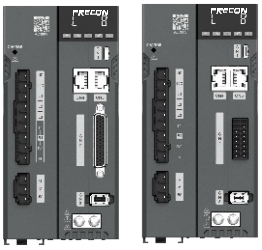
▷ Thin book design, side by side installation
▷ Rich functionality: 7 D1, 5 DO, 2 (16-bit) AI
▷ Responsive Performance:3kHz speed bandwidth
▷ Power Range:220V 100W~2.3kW; 380V 850W~7.5kW
▷ Control Type: Plus type control, EtherCAT Bus type control

SD300 Drive Models List

Frame	Model	Input Voltage(V)	Rated Current(A)	Maximum Current(A)
SIZE A	SD300□-2S-1R8	Single phase 220V	1.8	5.4
	SD300□-2S-3R0		3	9
	SD300□-2S-5R5		5.5	14
SIZE B	SD300□-2T-7R6	Three phase 220V	7.6	18
	SD300□-4T-5R4	Three phase 380V	5.4	14
SIZE C	SD300□-2T-012	Three phase 220V	12	32
	SD300□-4T-8R5	Three phase 380V	8.5	19
	SD300□-4T-012	Three phase 380V	12	30
SIZE D	SD300□-4T-017	Three phase 380V	17	40
	SD300□-4T-021	Three phase 380V	21	50
	SD300□-4T-026	Three phase 380V	26	60

SD300 Configuration Table

220V	SIZE A	SIZE B
Servo Drive		
	SD300□-2S-1R8 SD300□-2S-5R5 SD300□-2S-3R0	SD300□-2T-7R6
Servo Motor		
	100W,200W,400W,600W,750W	850W,1.0kW
	F1M-10A30L□-□□40 F1M-75A30L□-□□80 F1M-20A30L□-□□60 F1M-40A30L□-□□60 F1M-60A30L□-□□60	F1M-10B30L□-□□80 F1M-85A15L□-□□13 F1M-12B30L□-□□11 F1M-18B30L□-□□11

380V	SIZE B	SIZE C	SIZE D
Servo Drive			
	SD300□-4T-5R4	SD300□-4T-8R5 SD300□-4T-012	SD300□-4T-017 SD300□-4T-021 SD300□-4T-026
Servo Motor			
	850W,1.2kW,1.3kW	1.8kW,2.3kW,2.9kW	4.5kW,5.5kW,7.5kW
	F1M-85A15H□-□□13 F1M-13B30H□-□□13 F1M-12B30H□-□□11	F1M-18B15H□-□□13 F1M-18B30H□-□□11 F1M-23B15H□-□□13 F2M-30B15H□-□□18	F2M-45B15H□-□□18 F2M-55B15H□-□□18 F2M-75B15H□-□□18

SD300 Drive Technical Specifications

SD300 drive general technical specifications		
Control method		IGBT PWM Control, sine wave current drive method, 220V, 380V: single-phase or three-phase full-wave rectification
Environment	Temperature	Working/Storage: 0°C~55°C (the ambient temperature is above 45°C, derate by 10% for every 5°C increase)/-20°C~70°C
	Humidity	Working/Storage: Below 90%RH (no condensation)
	Vibration	4.9m/s2 / 19.6m/s2
	Atmospheric	86kPa ~ 106kPa
IP grade		IP20
Altitude		Maximum altitude is up to 2000m. No derating is required for use at 1000m and below. Derating by 1% for every 100m above 1000m.
Encoder		Single-turn/multi-turn absolute encoder (Tamagawa protocol)

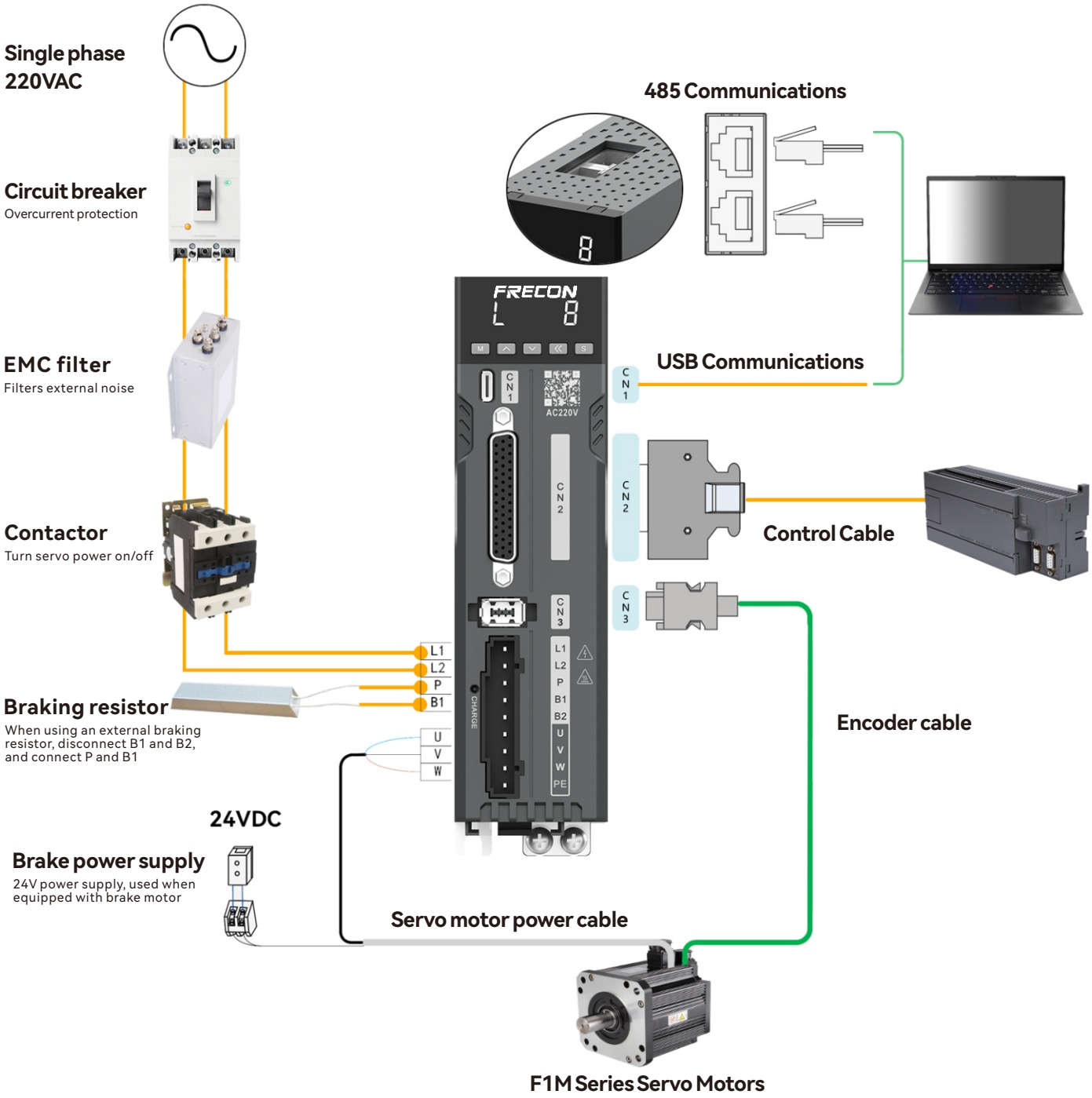
SD300P drive technical specifications			
Position Mode	Input signal	Input pulse type	Three command formats:Direction + Pulse; A, B Phase Quadrature Pulse;Forward/Reverse Pulse
		Input Mode	Differential input, Collector Open Circuit
		Input Frequency	Low speed:≤500kHz(differential input) ; ≤200kHz(single-ended input) High speed:≤4MHz(differential input)
	Built-in open collector power supply		Drive(B, Driver (B, C, D type) supports 24V power output
	Position output	Output mode	Phase A, Phase B: differential output Phase Z: differential output or open collector output
		Frequency division ratio	Any frequency division ratio
Speed Mode	Analog command input		-10V ~ +10V, input impedance 10kΩ
	Command acceleration and deceleration		Parameter settings
Torque mode	Instruction source		Analog quantity, parameter setting
	Analog command input		-10V ~ +10V, input impedance 10kΩ
	Speed Limit		Parameter settings
Input and output signals	Digital input signal	Input signal function selection	7-channel DI DI1~DI5 digital signal input maximum frequency 1kHz (will decrease when the current limiting resistor is greater than 2.4kΩ).DI8~DI9 digital signal input hardware delay is less than 1ms (current limiting resistor is 2.4kΩ) DI functions are as follows:Servo enable, alarm clear, forward drive prohibition, reverse drive prohibition, forward torque limit, reverse torque limit,Emergency stop, electronic gear selection 1, electronic gear selection 2, position deviation clear, pulse input prohibition, etc.
	Digital output signal	Output signal function selection	5-way DO, programmable output terminal (photoelectric isolation) DO functions are as follows: servo ready, alarm, positioning completed, speed reached, electromagnetic brake, torque limit, etc.
Analog input signal			Voltage input specification: -10V ~ +10V; Maximum allowable voltage: ±12V
Built-in functions	Overtravel(OT) prevention function		Stop immediately when P-OT, N-OT is in action
	Electronic gear ratio		Numerator/denominator: 1-32767/1-32767
	LED Display		5-digit LED display
	Monitoring function		Speed, current position, position deviation, motor torque, motor current, command pulse frequency, bus voltage, module internal temperature, etc.
	Protective function		Overspeed, overvoltage, overcurrent, overload, abnormal braking, encoder abnormality, position error, etc.
	Communication		Modbus RTU
	Host computer interface		USB, supports parameter reading and writing, waveform recording, and online upgrade

SD300 Drive Technical Specifications

SD300N drive technical specifications			
Input and output signals	Digital input signal		4 programmable input DI terminals (photoelectric isolation)2 high-speed optocoupler input DI terminals (high-speed latch), supporting up to 200kHzDI functions as follows: Servo enable, Alarm reset, Gain switch, Mode switch 1, Mode switch 2, Zero-point fix enable, Forward over travel switch, Reverse over travel switch, Zero command, Positive external torque limit, Forward jog, Reverse jog, Electronic gear selection, Command setting direction, Home switch, Home return enable, Emergency stop, Clear position deviation, Set current position as home
	Digital output signal		3 programmable output DO terminals, DO load capacity 50mA, voltage range 5V ~ 30V DO functions as follows: Servo ready for output, zero speed, positioning completed, approaching position, torque limit, speed limit, brake engaged output, warning output, fault output, home return completed, electrical home return output, torque reached output, speed reached output, DB brake output
Location mode	Performance	Feedforward compensation	0~100%
	Input signal	Position command input	EtherCAT communication mode: CSP (Cyclic Synchronous Position Mode) / PP (Profile Position Mode) / HM (Home Mode)
Speed torque control mode	Speed control range		1: 5000 (The lower limit of the speed control range is the condition for not stopping at rated torque load)
	Torque control accuracy		±2%
	Input signal	Speed command input	EtherCAT communication mode: CSV (cyclic synchronous speed mode) / PV (contour speed mode)
		Torque command input	EtherCAT communication mode: CST (Cyclic Synchronous Torque Mode) / PT (Profile Torque Mode)
Built-in functions	Overtravel prevention function		Stop immediately when P-OT, N-OT is in action
	Protection function		Overcurrent, overvoltage, undervoltage, overload, main circuit detection abnormality, radiator overheating, overspeed, encoder abnormality, CPU abnormality, parameter abnormality
	LED display function		5-digit LED display
	Communication		EtherCAT, maximum number of slaves 255
	Other Features		Gain adjustment, alarm recording, JOG operation, dynamic braking

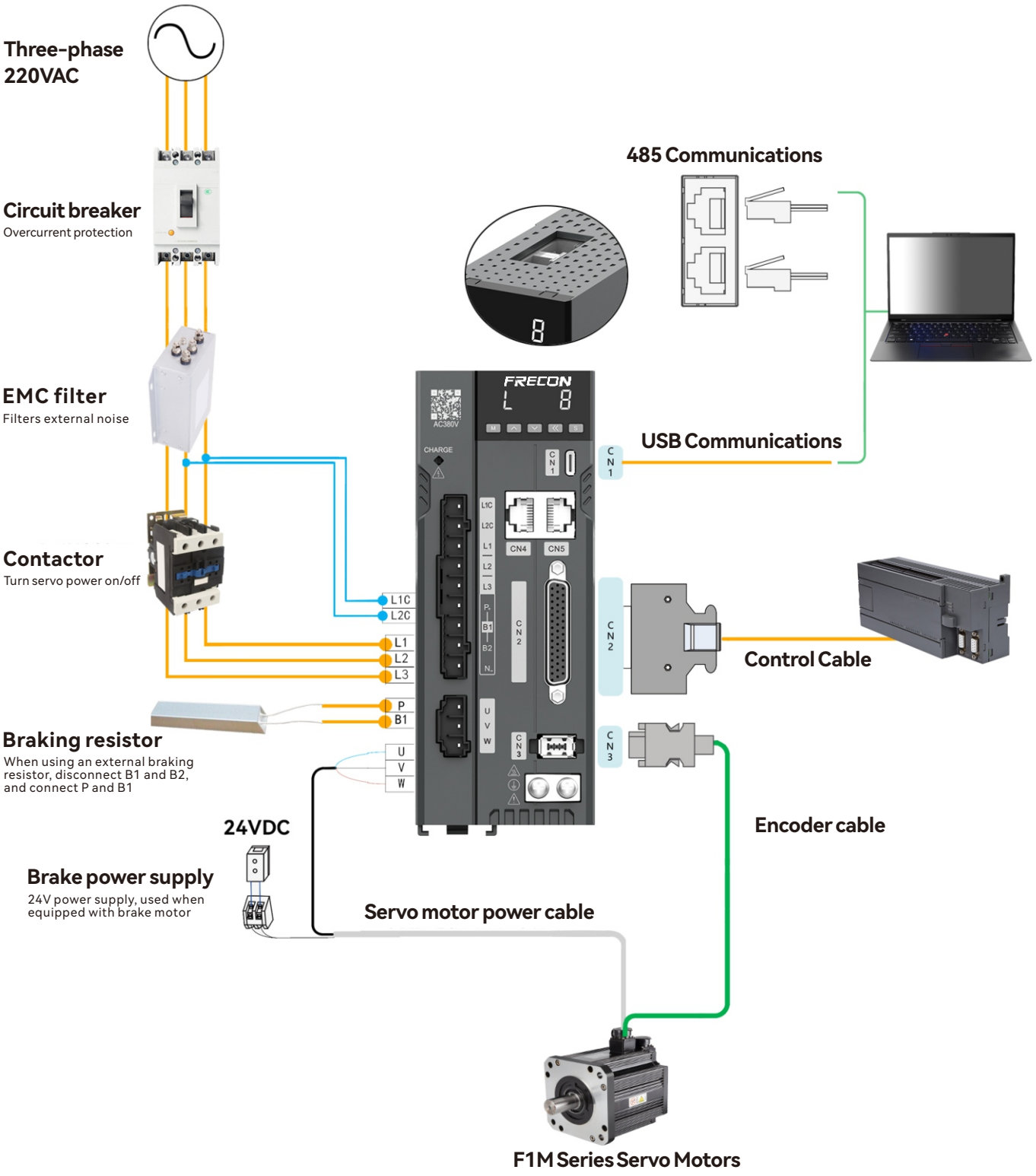
EtherCAT Slave Communication Specifications	
Communication protocol	EtherCAT
Support services	COE（PDO、SDO）
Synchronously	DC- Distributed Clocks
Physical layer	100BASE-TX
Baud rate	100 Mbit/s (100Base-TX)
Duplex mode	Full Duplex
Topology	Linear
Transmission medium	Shielded Category 5 or Category 6 or above network cables
Transmission distance	Less than 100M between two nodes (good environment, good cables)
Number of slaves stations	Protocol supports up to 65535, but the actual number of devices used does not exceed 100
EtherCAT frame length	44 bytes ~1498 bytes
Process data	Maximum size of a single Ethernet frame is 1486 bytes.
Synchronizing cycle	250μs

SD300P Drive Wiring-Signal Phase 220V



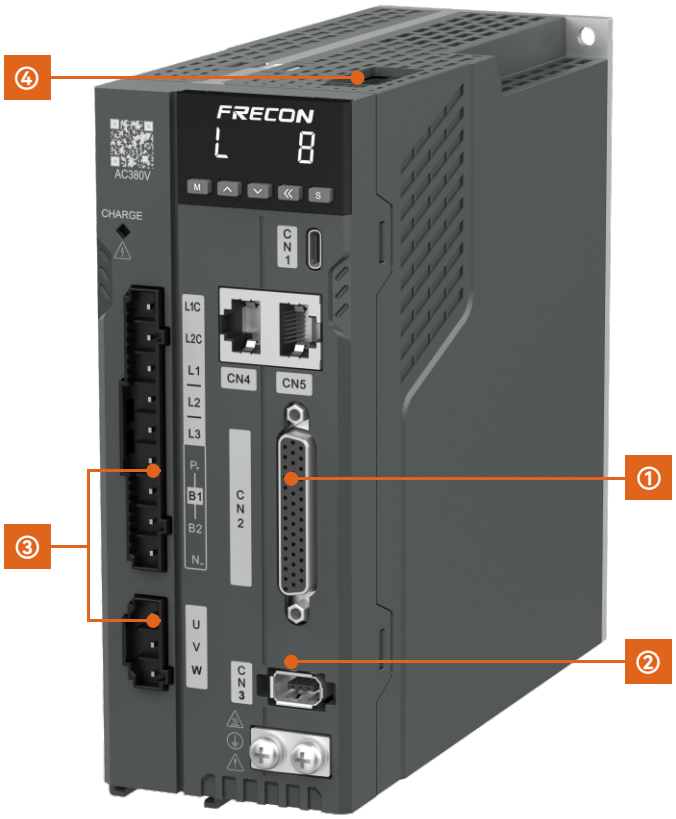
SD300 Serie

SD300P Drive Wiring- Three Phase 220V/380V



SD300 Serie

SD300P Drive Port Definition



①CN2 Control terminal definition

Signal Name		Default function	Pin Number	Terminal Function
Universal terminal signal	DI1	S-ON	9	Servo enable
	DI2	ALM-RST	10	Alarm fault reset
	DI3	P-OT	24	Forward overtravel
	Di4	N-OT	8	Reverse overtrave
	DI5	ClrPosErr	33	Clear position deviation
	DI8	Reserve	30	-
	DI9	Reserve	12	-
	COM+		11	DI input terminal common end
	DO1+	S-RDY+	7	Servo ready
	DO1-	S-RDY-	6	
	DO2+	COIN+	5	Positioning completed
	DO2-	COIN-	4	
	DO3+	ZERO+	3	Zero speed signal
	DO3-	ZERO-	2	
	DO4+	ALM+	1	Fault output
	DO4-	ALM-	26	
	DO5+	HomeAttain+	28	Home return completion
	DO5-	HomeAttain-	27	
Position command	PULSE+		41	Input pulse command mode: Differential drive input, collector open circuit Input pulse form: Direction + pulse, A, B phase orthogonal pulse, CW/CCW pulse
	PULSE-		43	
	SIGN+		37	
	SIGN-		39	
	HPULSE+		38	High-speed input pulse command
	HPULSE-		36	
	HSIGN+		42	
	HSIGN-		40	
	PULLHI		35	External power input interface for command pulse
	GND		29	Signal ground

③Main circuit terminal definition

Terminal Identification	Terminal function
L1C、L2C	Control circuit power input terminal
L1、L2、L3	Main circuit power input terminal
P+、N-	Servo bus terminal
P、B1、B2	When use external brake resistor, disconnect between B1 and B2,and connect the external brake resistor across P and B1,not connected to B2
U、V、W	Output to motor U V W power
PE	PE motor ground terminal

②CN3 encoder connection terminal

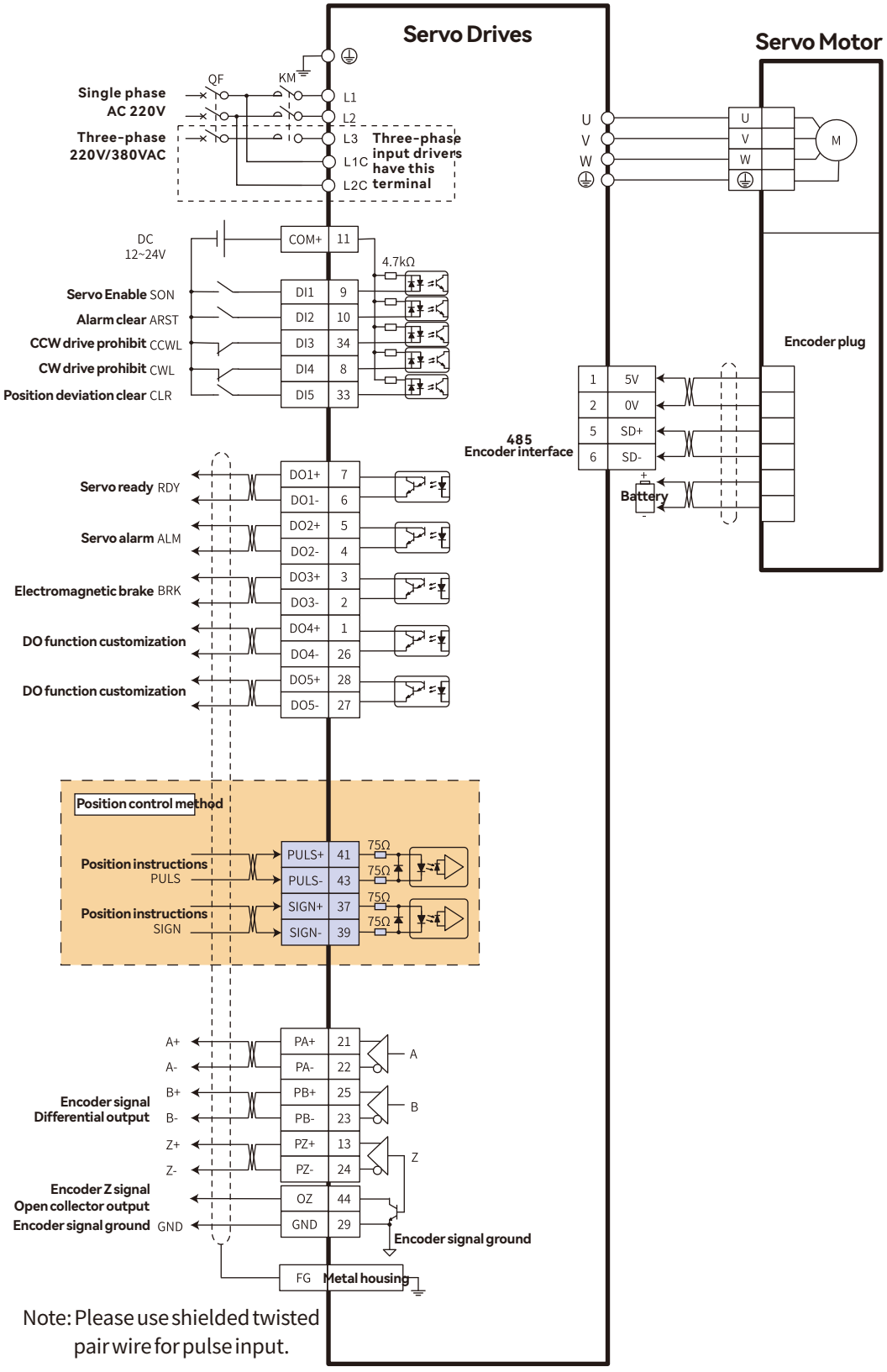
Pin number	Definition	Describe
1	+5V	5V Power
2	GND	
3	Reserve	-
4	Reserve	-
5	SD+	Encoder signal
6	SD-	

④CN4/CN5 Communication terminal

Pin Number	Signal name	Describe
1	MBS-	Modubus communication data negative terminal
2	MBS+	Modubus communication data positive terminal
3	PE	Ground terminal
4	NC	Reserve
5	NC	Reserve
6	GND	Internal power ground
7	PE	The drive is grounded and connected to the power supply and motor ground terminals
8	NC	Reserve

Note: For single-phase 220V models, there is no L1C, L2C control loop terminal, and no N-terminal

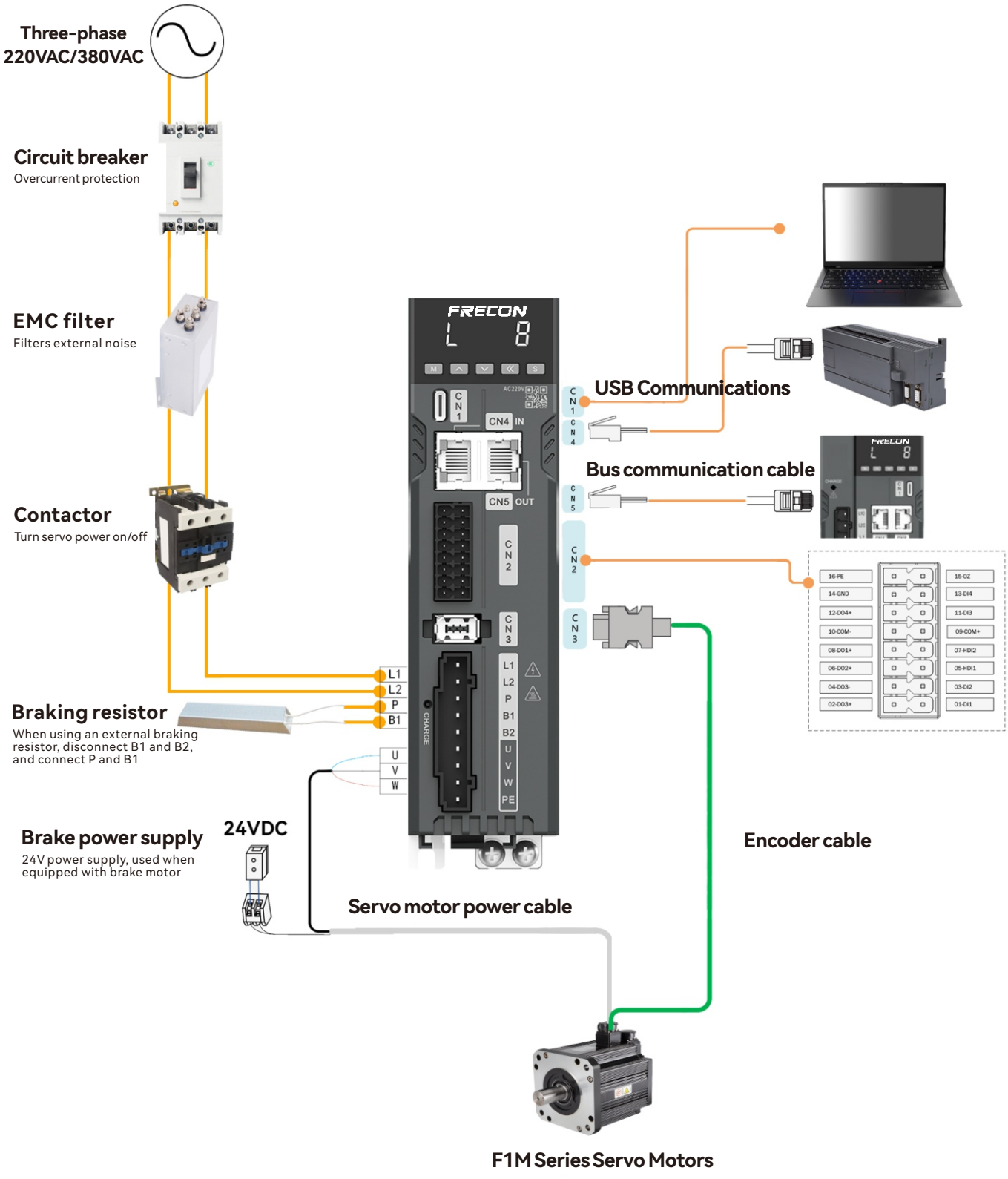
SD300P Drive Port Definition



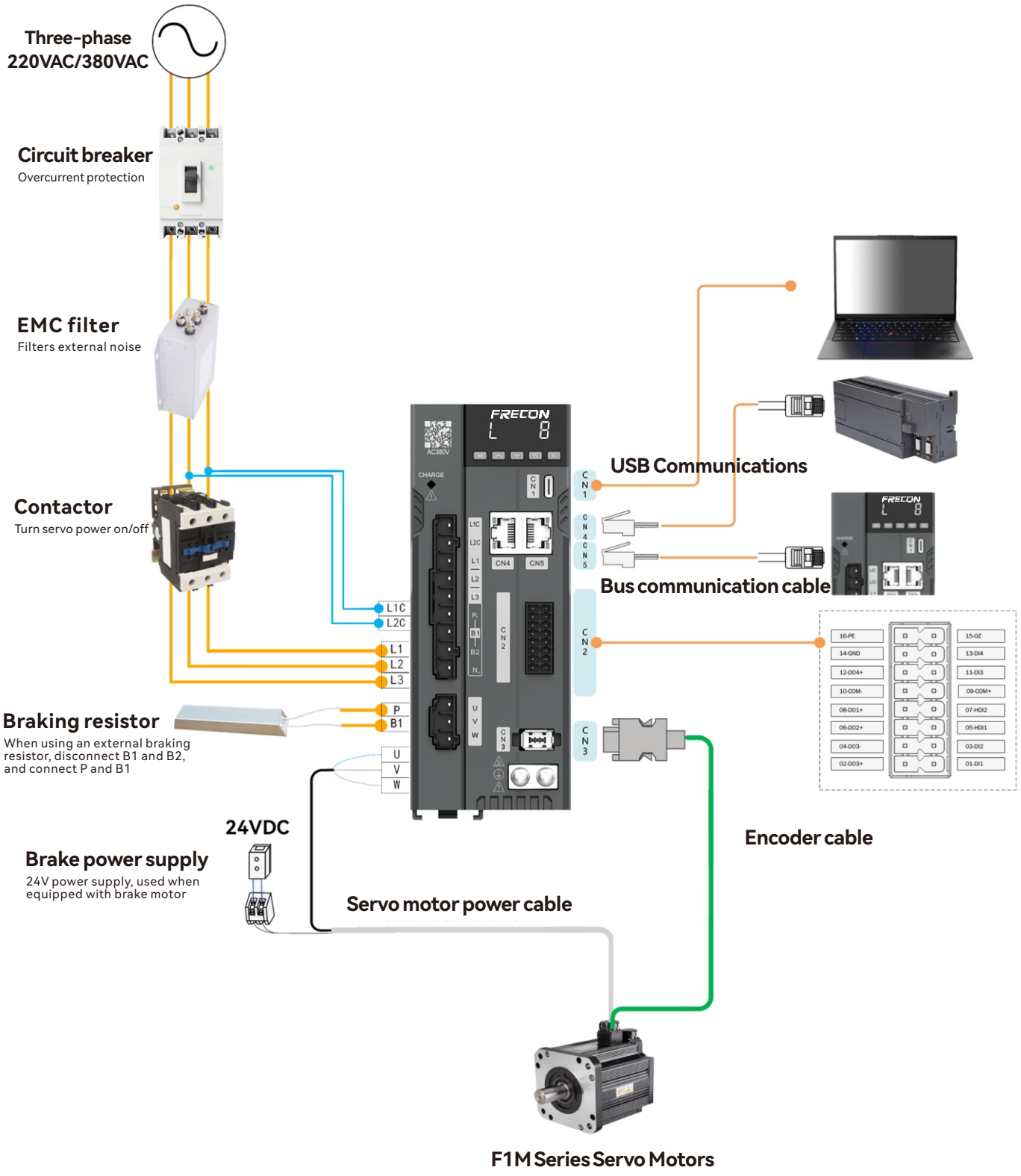
Note: Please use shielded twisted pair wire for pulse input.

SD300 Serie

SD300N Drive Wiring - Single Phase 220V

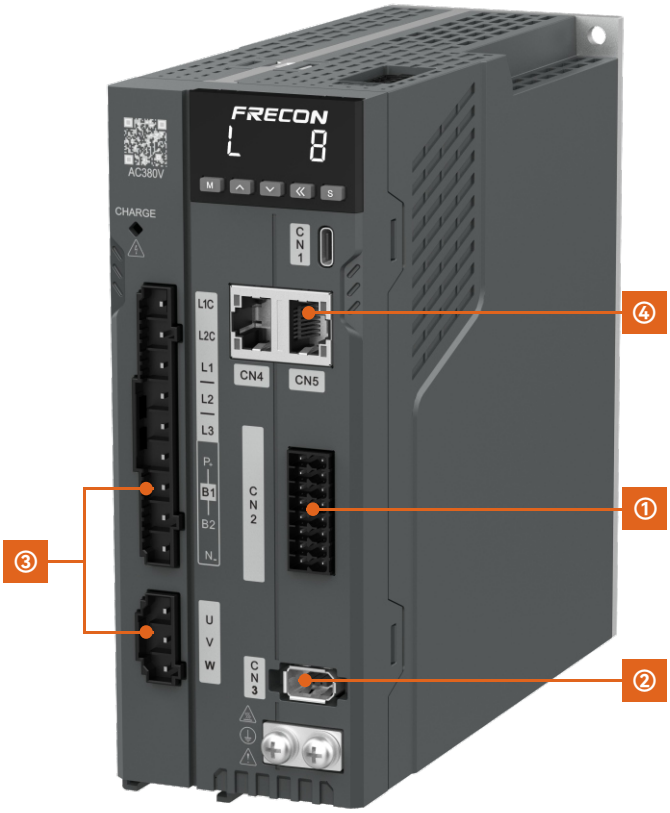


SD300N Drive Wiring - Three Phase 220V/380V



SD300 Serie

SD300N Drive Port Definition



①CN2 control terminal definition

Signal Name		Default Function	Pin Number	Terminal Function
Universal terminal signal	DI1	S-ON	1	Servo enable
	DI2	ALM-RST	3	Alarm fault reset
	DI3	P-OT	11	Forward over range
	DI4	N-OT	13	Reverse over range
	COM+		9	Digital input common
	HDI1		5	High speed digital input 1
	HDI2		7	High speed digital input 2
	DO1+,COM-	S-RDY	8,10	Servo ready
	DO2+,COM-	ALM	6,10	Fault output
	DO3+,DO3-	BK	3,2	Brake
	DO4+,COM-	Reserve	12,10	-
	COM-	-	10	DO output common terminal

③Main circuit terminal definition

Terminal Identification	Terminal Function
L1C、L2C	Control circuit power input terminal
L1、L2、L3	Connect external AC power supply: Signal-phase 220V AC,-15%~+10%,50/60Hz
P+、N-	Servo bus terminal
P、B1、B2	When use external brake resistor, disconnect between B1 and B2,and connect the external brake resistor across P and B1, not connected to B2
U、V、W	Output to motor U V W power
PE	PE motor ground terminal

④CN4/CN5 connection terminal

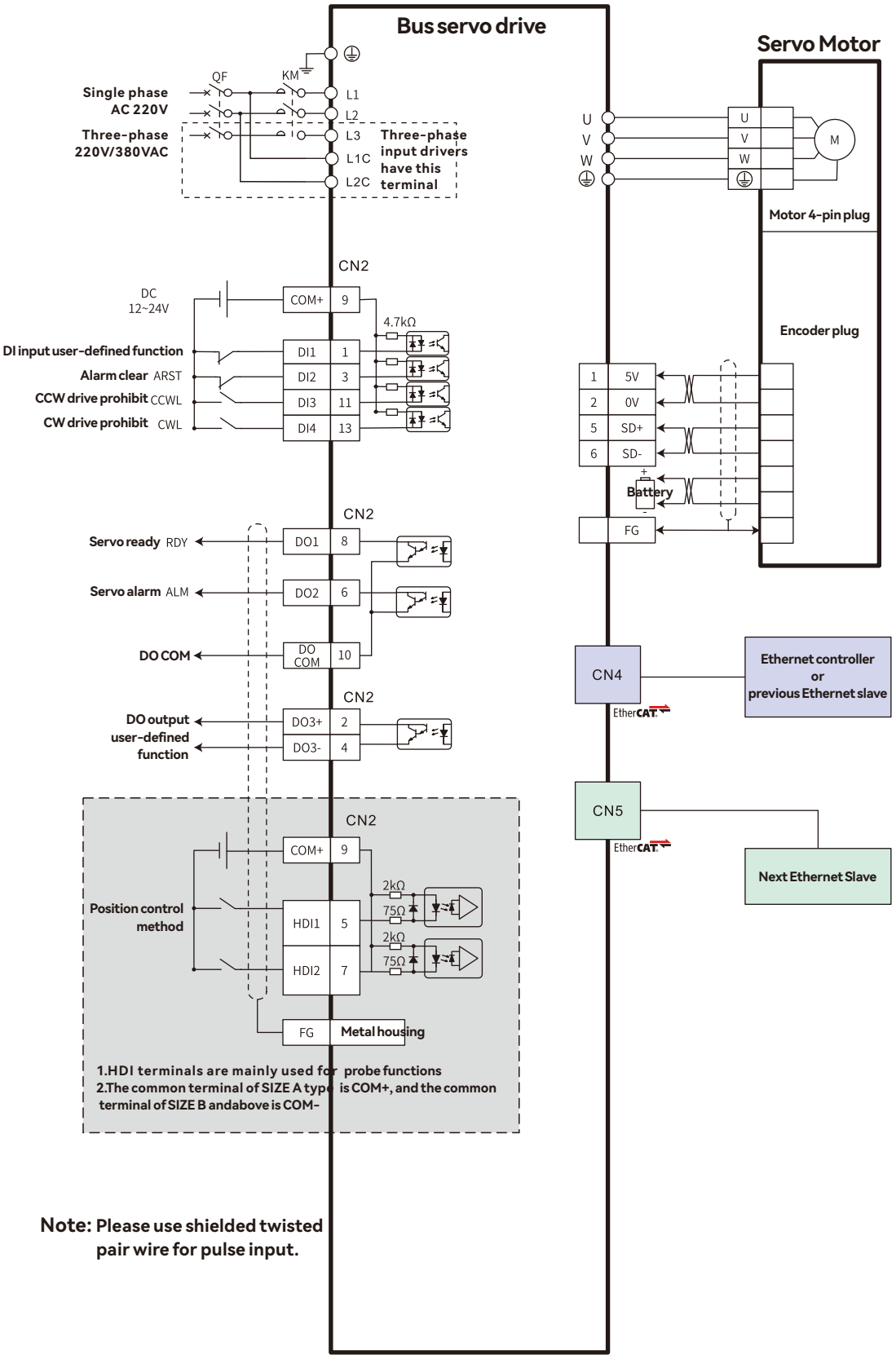
Pin Number	Signal Name	Description
1	MBS-	Modubus communication data negative terminal
2	MBS+	Modubus communication data positive terminal
3	PE	Ground terminal
4	NC	Reserve
5	NC	Reserve
6	GND	Internal power ground
7	PE	The drive is grounded andconnected to the power supply and motor ground terminal
8	NC	Reserve

②CN3 encoder connection terminal

Pin Number	Terminal Description	Function Description
1	+5V	5V Power
2	GND	
3	Reserve	-
4	Reserve	-
5	SD+	Encoder signal
6	SD-	

Note: For single-phase 220V models, there is no L1C, L2C control loop terminal, and no N-terminal

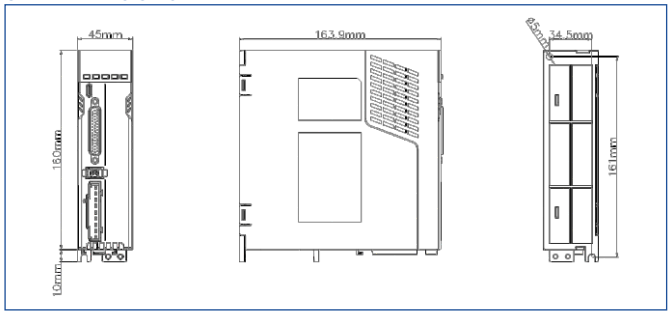
SD300N Control Wiring



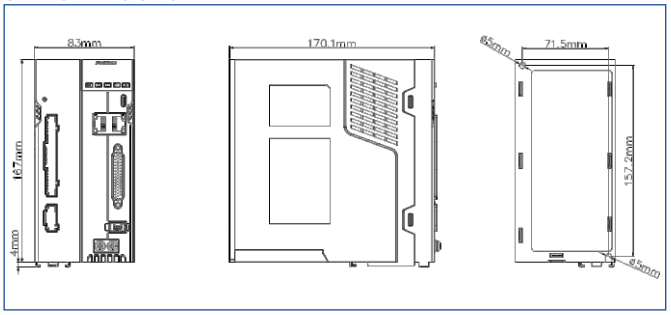
SD300 Serie

Drive Size

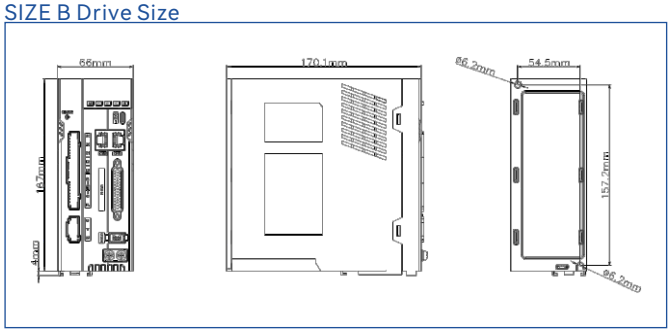
SIZE A Drive Size



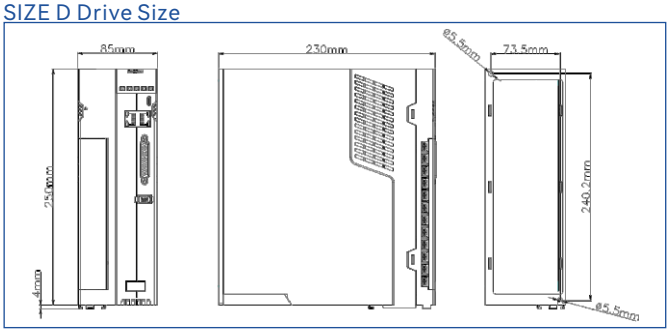
SIZE C Drive Size



SIZE B Drive Size



SIZE D Drive Size



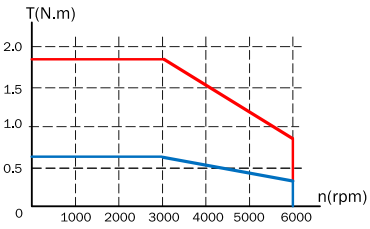
Drive Size							
Frame	Model	Production size(mm)					
		L	W	H	a	b	d
SIZE A	SD100□-2S-1R8	166	45	160	34.5	161	5
	SD100□-2S-3R0						
	SD100□-2S-5R5						
	SD300□-2S-1R8						
	SD300□-2S-3R0						
	SD300□-2S-5R5						
SIZE B	SD100□-2T-7R6	172	66	167	54.5	157.2	5
	SD300□-2T-7R6						
	SD300□-4T-5R4						
SIZE C	SD300□-2T-012	170	83	167	71.5	157.2	5
	SD300□-4T-8R5						
	SD300□-4T-012						
SIZE D	SD300□-4T-017	230	85	250	73.5	240.2	5.5
	SD300□-4T-021						
	SD300□-4T-026						

Servo Motor Specifications

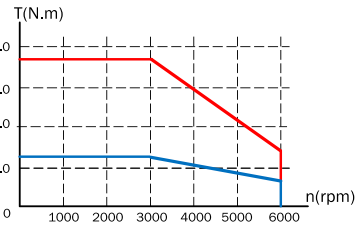
Motor model	Rated output (W)	Input voltage (V)	Rated torque (N.m)	Max torque (N.m)	Rated current (A)	Moment max Current (A)	Rotor inertia (x10-4kg.m2)	Rated speed/Most speed(rpm)
F1M-10A30L□-□40	100W	220V	0.318	0.954	1.1	3.5	0.066	3000/6000
F1M-20A30L□-□60	200W	220V	0.64	1.92	1.7	5.7	0.28	3000/6000
F1M-40A30L□-□60	400W	220V	1.27	3.81	2.5	8.4	0.52	3000/6000
F1M-60A30L□-□60	600W	220V	1.91	5.73	3.6	11.2	0.76	3000/6000
F1M-75A30L□-□80	750W	220V	2.39	7.17	4.4	13.8	1.48	3000/6000
F1M-10B30L□-□80	1000W	220V	3.18	9.54	5.8	18.1	1.97	3000/6000
F1M-12B30L□-□11	1200W	220V	3.82	11.46	5.2	16.4	5.2	3000/4500
F1M-12B30H□-□11	1200W	380V	3.82	11.46	3.1	9.3	5.2	3000/4500
F1M-18B30L□-□11	1800W	220V	5.73	17.19	6.8	20.5	7.8	3000/4000
F1M-18B30H□-□11	1800W	380V	5.73	17.19	4	12	7.8	3000/4000
F1M-85A15L□-□13	850W	220V	5.41	16.23	4.6	14.2	12.1	1500/3000
F1M-85A15H□-□13	850W	380V	5.41	16.23	3.1	9.5	12.1	1500/3000
F1M-13B15L□-□13	1300W	220V	8.28	24.84	7.7	23.7	17.5	1500/3000
F1M-13B15H□-□13	1300W	380V	8.28	24.84	5.1	15.6	17.5	1500/3000
F1M-18B15L□-□13	1800W	220V	11.46	34.38	9.8	30.2	23.7	1500/3000
F1M-18B15H□-□13	1800W	380V	11.46	34.38	6.3	19.2	23.7	1500/3000
F1M-23B15L□-□13	2300W	220V	14.64	43.92	12.4	38.4	31.2	1500/3000
F1M-23B15H□-□13	2300W	380V	14.64	43.92	8.5	26.2	31.2	1500/3000
F2M-30B15H□-□18	2900W	380V	18.6	54	10	29	44	1500/2500
F2M-45B15H□-□18	4400W	380V	28.65	71	12.8	31.8	66	1500/2000
F2M-55B15H□-□18	5500W	380V	35	87.5	14	35	102	1500/2000
F2M-75B15H□-□18	7500W	380V	47.76	96	23	46	146	1500/2000

Servo Motor Characteristic Curve

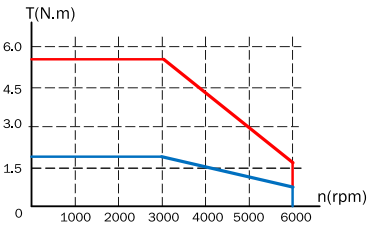
F1M-20A30L□-□60



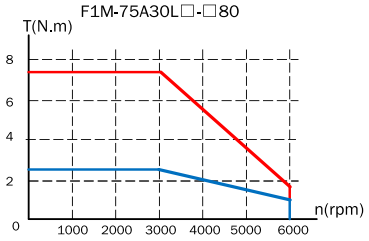
F1M-40A30L□-□60



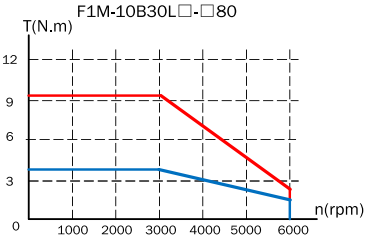
F1M-60A30L□-□60



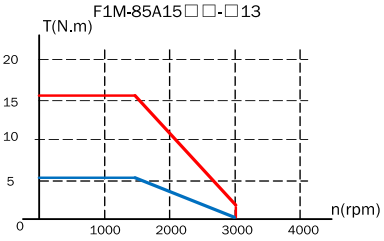
F1M-75A30L□-□80



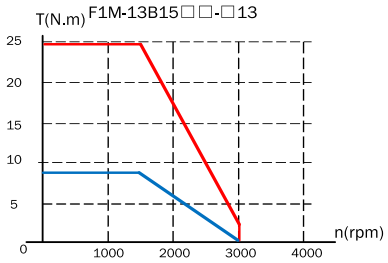
F1M-10B30L□-□80



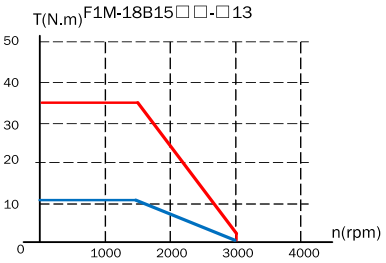
F1M-85A15□□-□13



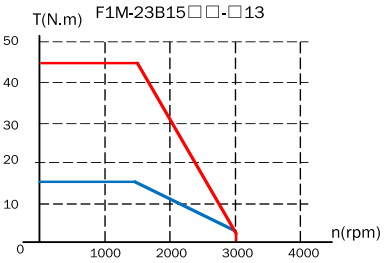
F1M-13B15□□-□13



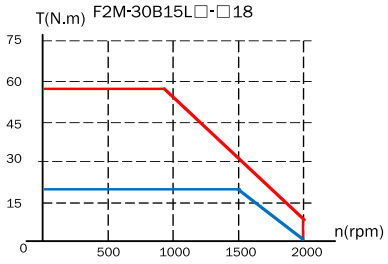
F1M-18B15□□-□13



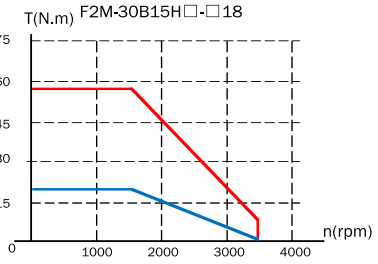
F1M-23B15□□-□13



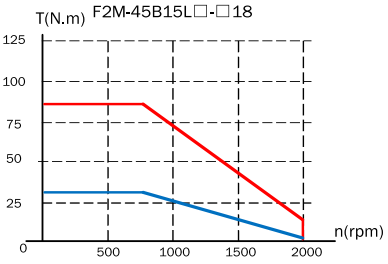
F2M-30B15L□-□18



F2M-30B15H□-□18



F2M-45B15L□-□18



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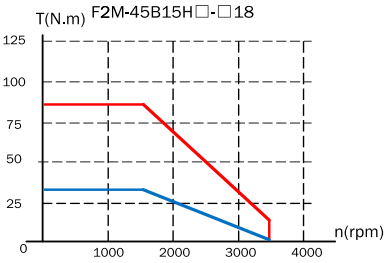
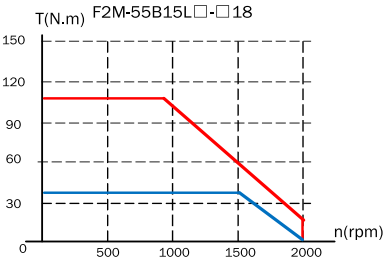
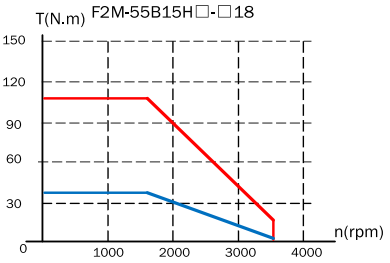


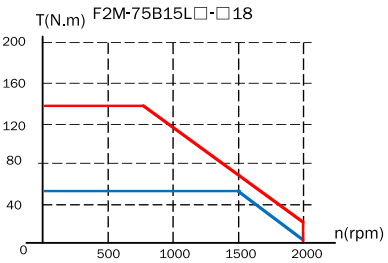
F2M-55B15L□-□18



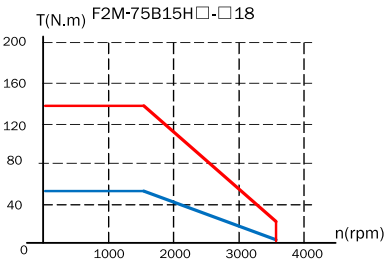
F2M-55B15H□-□18



F2M-75B15L□-□18



F2M-75B15H□-□18

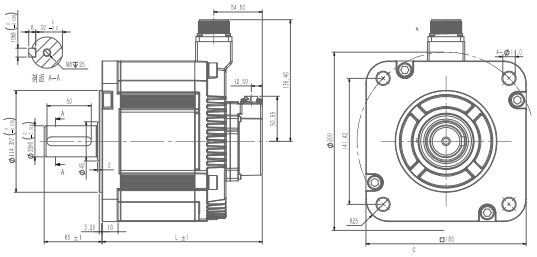


Note: The blue line is the rated torque, and the red line is the instantaneous torque

Servo Motor Appearance and Installation Dimensions

40 Flange

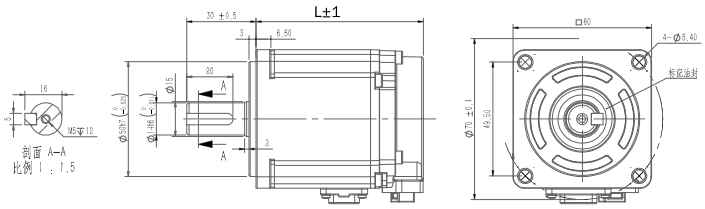
Model	L(mm)	Brake
F1M-10A30L1-□40	78.8	Without
F1M-10A30L2-□40	105.5	With



Note: If need other encoder types, please contact FRECON.

60 Flange

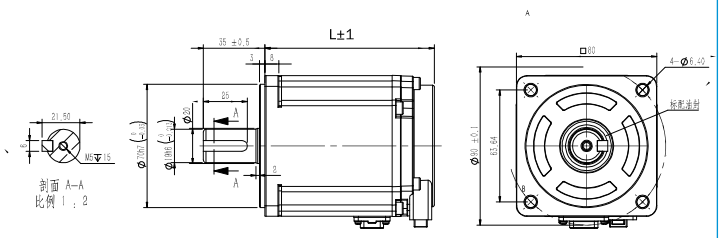
Model	L(mm)	Brake
F1M-20A30L1-□60	73	Without
F1M-20A30L2-□60	102.5	With
F1M-40A30L1-□60	90	Without
F1M-40A30L2-□60	119.5	With
F1M-60A30L1-□60	107	Without
F1M-60A30L1-□60	136.5	With



Note: If need other encoder types, please contact FRECON.

80 Flange

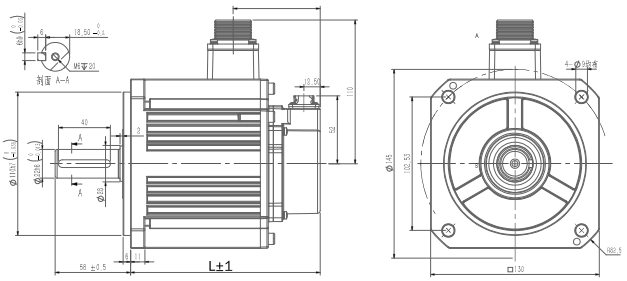
Model	L(mm)	Brake
F1M-75A30L1-□80	96.5	Without
F1M-75A30L2-□80	130.5	With
F1M-10B30L1-□80	109.5	Without
F1M-10B30L2-□80	143.5	With



Note: If need other encoder types, please contact FRECON.

110 Flange

Model	L(mm)	Brake
F1M-12B30□1-□11	140	Without
F1M-12B30□2-□11	165.5	With
F1M-18B30□1-□11	163	Without
F1M-18B30□2-□11	188.5	With

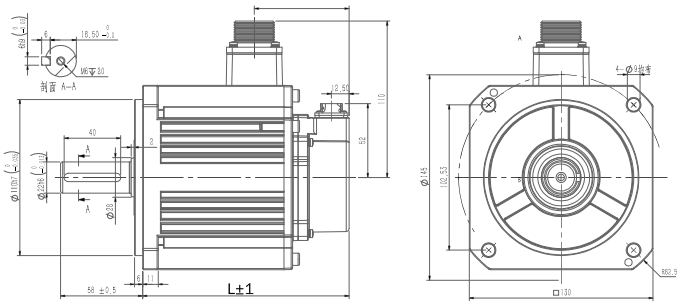


Note: If need other encoder types, please contact FRECON.

Servo Motor Appearance and Installation Dimensions

130 Flange

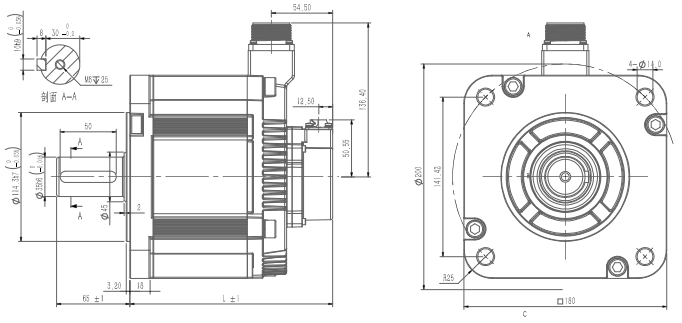
Model	L(mm)	Brake
F1M-85A15□1-□13	130	Without
F1M-85A15□2-□13	155.5	With
F1M-13B15□1-□13	146	Without
F1M-13B15□2-□13	171.5	With
F1M-18B15□1-□13	164	Without
F1M-18B15□2-□13	189.5	With
F1M-23B15□1-□13	186	Without
F1M-23B15□2-□13	211.5	With



Note: If need other encoder types, please contact FRECON.

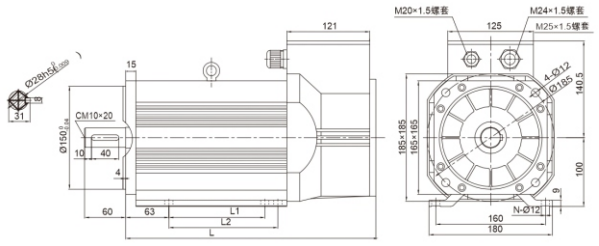
180 Flange

Model	L(mm)	Brake
F2M-30B15H1-B418	156	Without
F2M-30B15H2-B418	193	With
F2M-45B15H1-B418	180	Without
F2M-45B15H2-B418	217	With
F2M-55B15H1-B418	205	Without
F2M-55B15H2-B418	242	With
F2M-75B15H1-B418	250	Without
F2M-75B15H2-B418	287	With



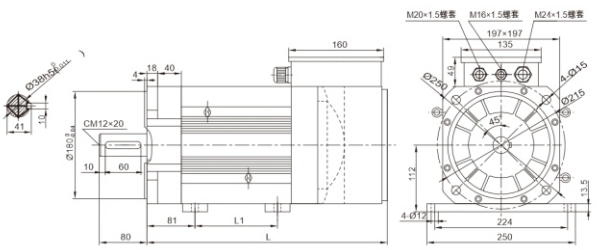
Note: If need other encoder types, please contact FRECON.

165 series



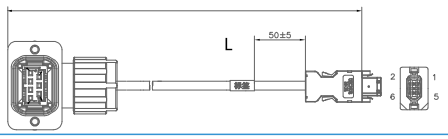
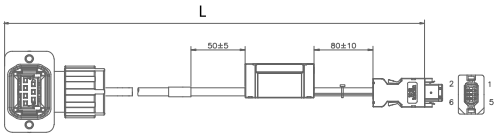
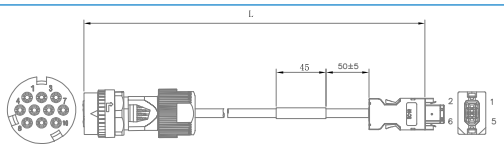
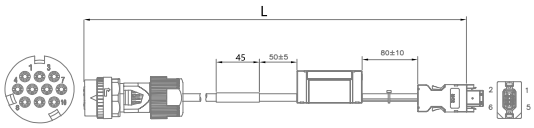
Frame No.	L(mm)	L1(mm)	L2(mm)
165L	130	140	159

200 series

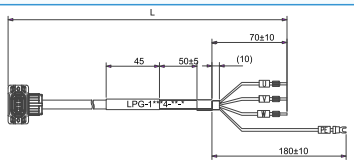
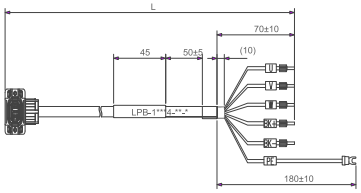
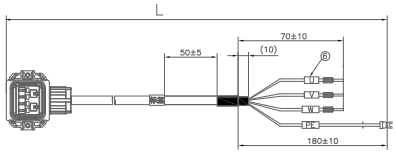
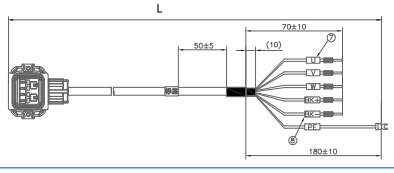


Frame No.	L(mm)	L1(mm)
200M	405	139
200L	455	189
200H	505	239

Encoder Cable Selection Table

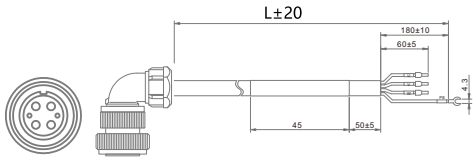
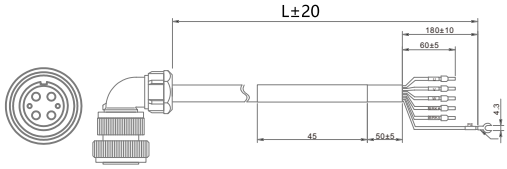
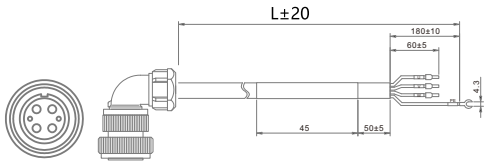
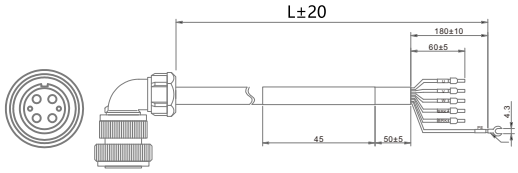
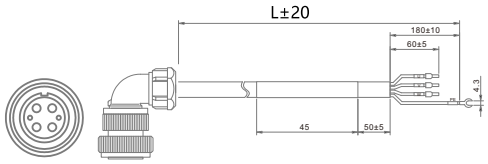
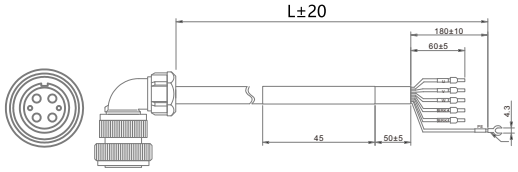
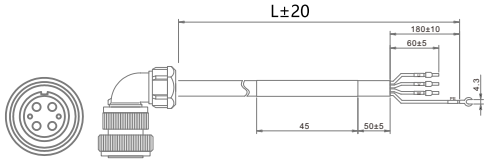
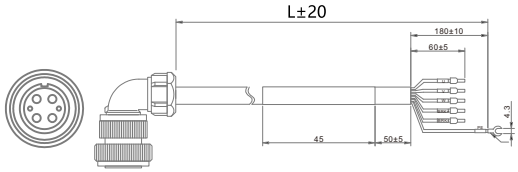
Motor Model	Cable Name	Cable Model	Length(m)	Cable Appearance Diagram
F1M terminal type motor (40/60/80 flange motor)	Signal-turn	LEG-01-3.0-G	3	
		LEG-01-5.0-G	5	
		LEG-01-10.0-G	10	
	Multi-turn	LEB-01-3.0-G	3	
		LEB-01-5.0-G	5	
		LEB-01-10.0-G	10	
F1M aviation plug motor (110flange,130flange) F2M aviation plug motor (180flange)	Signal-turn	LEG-02-3.0-G	3	
		LEG-02-5.0-G	5	
		LEG-02-10.0-G	10	
	Multi-turn	LEB-02-3.0-G	3	
		LEB-02-5.0-G	5	
		LEB-02-10.0-G	10	

Power Cable Selection Table

Motor Model	Cable Name	Cable Model	Length(m)	Cable Appearance Diagram
F1M terminal type motor (40 flange motor)	Power cable without brake	LPG-10504-3.0-G	3	
		LPG-10504-5.0-G	5	
		LPG-10504-10.0-G	10	
	Power cable with brake	LPB-10504-3.0-G	3	
		LPB-10504-5.0-G	5	
		LPB-10504-10.0-G	10	
F1M terminal type motor (60/80 flange motor)	Power cable without brake	LPG-10501-3.0-G	3	
		LPG-10501-5.0-G	5	
		LPG-10501-10.0-G	10	
	Power cable with brake	LPB-10501-3.0-G	3	
		LPB-10501-5.0-G	5	
		LPB-10501-10.0-G	10	

Servo Drive

Power Cable Selection Table

Motor Model	Cable Name	Cable Model	Length(m)	Cable appearance
F1M aviation plug-in motor (110 flange 1.2kW; 130 flange, 0.85kW, 1.5kW;)	No brake	LPG-11002-3.0-G	3	
		LPG-11002-5.0-G	5	
		LPG-11002-10.0-G	10	
	Brake	LPB-11002-3.0-G	3	
		LPB-11002-5.0-G	5	
		LPB-11002-10.0-G	10	
F1M aviation plug-in motor (110 flange 1.8kW; 130 flange, 1.8kW, 2.3kW)	No brake	LPG-11502-3.0-G	3	
		LPG-11502-5.0-G	5	
		LPG-11502-10.0-G	10	
	Brake	LPB-11502-3.0-G	3	
		LPB-11502-5.0-G	5	
		LPB-11502-10.0-G	10	
F2M aviation plug-in motor (180 flange, 3.0kW)	No brake	LPG-11503-3.0-G	3	
		LPG-11503-5.0-G	5	
		LPG-11503-10.0-G	10	
	Brake	LPB-11503-3.0-G	3	
		LPB-11503-5.0-G	5	
		LPB-11503-10.0-G	10	
F2M aviation plug-in motor (180 flange, 4.5kW, 5.5kW, 7.5kW)	No brake	LPG-02503-3.0-G	3	
		LPG-02503-5.0-G	5	
		LPG-02503-10.0-G	10	
	Brake	LPB-02503-3.0-G	3	
		LPB-02503-5.0-G	5	
		LPB-02503-10.0-G	10	

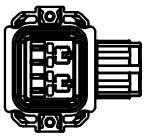
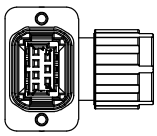
Motor, drive and cable correspondence table

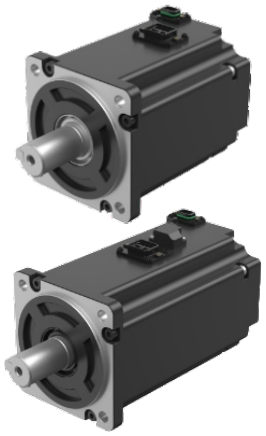
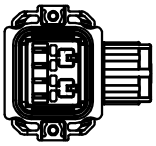
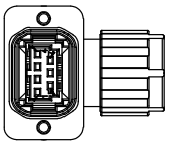
Motor Model	Flange	Rated current (A)	Rated torque (N.m)	Voltage (V)	Adapter drive	Encoder line	Power Line
F1M-10A30L□-□40	40	1.1	0.32	220V	SD300□-2S-1R8 SD100P-2S-1R8	LEG-01-3.0-G (Without battery) LEB-01-3.0-G (With battery)	LPG-10504-3.0-G4 LPB-10504-3.0-G (With brake)
F1M-20A30L□-□60	60	1.7	0.64				LPG-10501-3.0-G LPB-10501-3.0-G (With brake)
F1M-40A30L□-□60	60	2.5	1.27		SD300□-2S-3R0 SD100P-2S-3R0		
F1M-60A30L□-□60	60	3.6	1.91		SD300□-2S-5R5 SD100P-2S-5R5		
F1M-75A30L□-□80	80	4.4	2.39				
F1M-10B30L□-□80	80	5.8	3.18		SD300□-2T-7R6 SD100P-2T-7R6		
F1M-12B30L□-□11	110	5.2	3.82			LEG-02-3.0-G (Without battery) LEB-02-3.0-G (With battery)	LPG-11002-3.0-G LPB-11002-3.0-G (With brake)
F1M-12B30H□-□11	110	3.1	3.82	380V	SD300□-4T-5R4		
F1M-18B30L□-□11	110	6.8	5.73	220V	SD300□-4T-5R4		
F1M-18B30H□-□11	110	4.0	5.73	380V	SD300□-4T-7R6		
F1M-85A15L□-□13	130	4.6	5.41	220V	SD300□-2T-7R6		
F1M-85A15H□-□13	130	3.1	5.41	380V	SD300□-4T-5R4		
F1M-13B15L□-□13	130	7.7	8.28	220V	SD300□-2T-012		
F1M-13B15H□-□13	130	5.1	8.28	380V	SD300□-4T-5R4		
F1M-18B15L□-□13	130	9.8	11.46	220V	SD300□-2T-012		LPG-11502-3.0-G LPB-11502-3.0-G (With brake)
F1M-18B15H□-□13	130	6.3	11.46	380V	SD300□-4T-8R5		
F1M-23B15L□-□13	130	12.4	14.64	220V	SD300□-2T-012		
F1M-23B15H□-□13	130	8.5	14.64	380V	SD300□-4T-012		
F2M-30B15H□-□18	180	11.6	19.1	380V	SD300□-4T-012		LPG-11503-3.0-G LPB-11503-3.0-G (With brake)
F2M-45B15H□-□18	180	16.6	28.65	380V	SD300□-4T-017		LPG-02503-3.0-G LPB-02503-3.0-G (With brake)
F2M-55B15H□-□18	180	21.4	35	380V	SD300□-4T-021		
F2M-75B15H□-□18	180	26.7	47.76	380V	SD300□-4T-025		

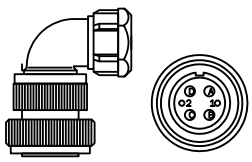
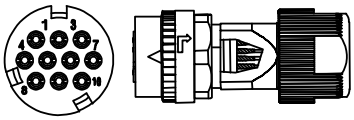
Motor Model List

Model	Rated Power	Rated speed (rpm)	Maximum speed (rpm)	Rated current (A)	Rated torque (N.m)
FRYB-380-165L-15-60/80-004	4.0kW	1500	6000/8000	8.8	25.5
FRYB-380-200M-15-60/80-5R5	5.5kW	1500	6000/8000	11.7	35
FRYB-380-200L-15-60/80-7R5	7.5kW	1500	6000/8000	15.4	48
FRYB-380-200H-15-60/80-011	11kW	1500	6000/8000	22.7	70

Cable Terminal

40 flange motor side terminal definition	Motor power cable 6P connector		Motor encoder 7P connector	
				
	Pin number	Signal name	Pin number	Signal name
	1	W	1	5V
	2	V	2	0
	3	U	3	SD+
	4	PE	4	SD−
	5	BK+	5	PE
	6	BK−	6	BAT+
			7	BAT−

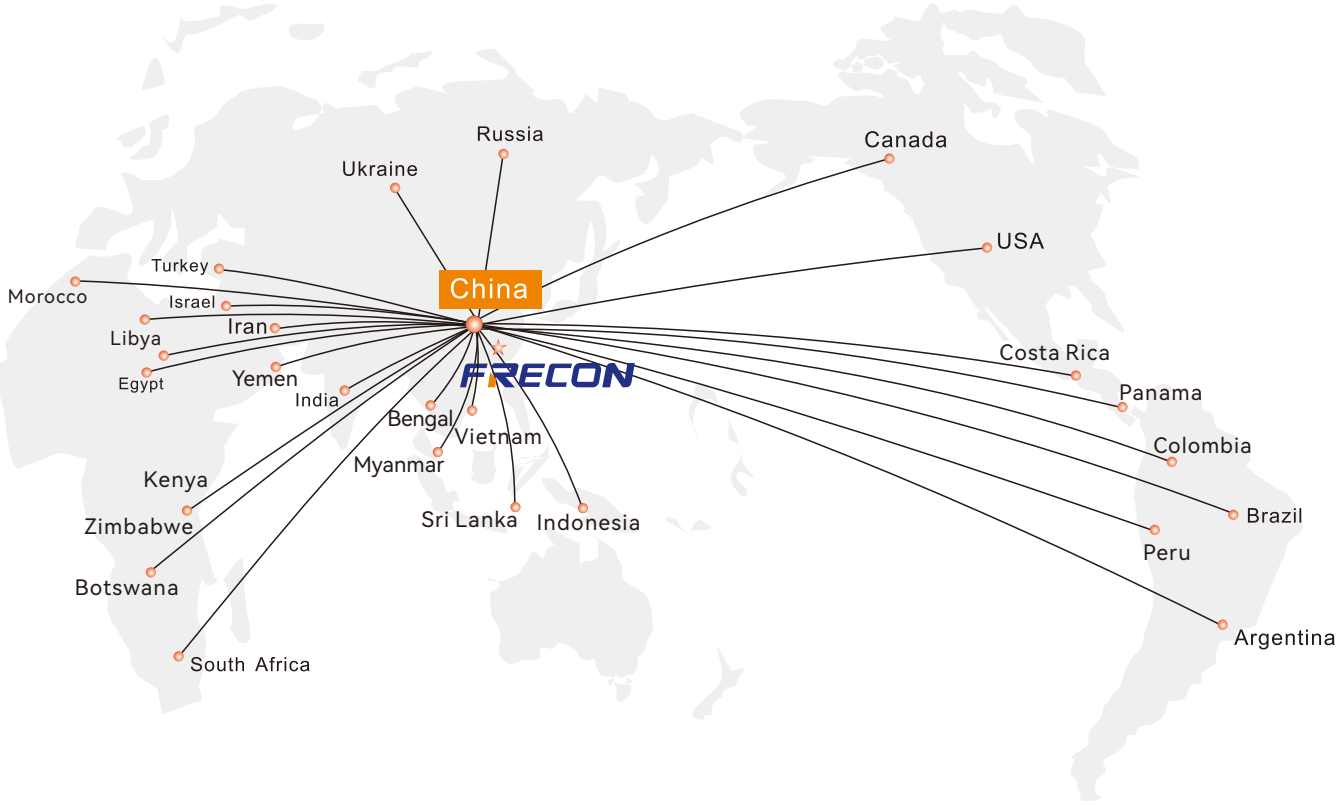
60/80 flange motor side terminal definition	Motor power cable 6P connector		Motor encoder 7P connector	
				
	Pin number	Signal name	Pin number	Signal name
	1	W	1	5V
	2	V	2	0
	3	U	3	SD+
	4	PE	4	SD−
	5	BK+	5	PE
	6	BK−	6	BAT+
			7	BAT−

110/130/180 flange motor side terminal definition	Motor power 6P aviation head		Motor encoder 10P aviation head	
				
	Pin number	Signal name	Pin number	Signal name
	A	W	1	/
	B	V	2	E−
	C	U	3	E+
	D	PE	4	SD−
	1	BK+	5	0V
	2	BK−	6	SD+
			7	5V
			8	/
			9	/
			10	PE

Accessory List

Accessory Name	Accessory Parameter	Accessory Appearance
Pulse 44pin control terminal head	-	
Bus control terminal 16pin	-	
Main loop plug terminal 100-750W	L1, L2,P,B1,B2,U,V,W,PE	
Main loop plug and unplug terminals 1000-3000W	L1C,L2C,L1,L2,L3,P+,B1,B2,N-	
	U,V,W	
Plug and remove the terminal crimping clip	-	
9P/13P control cable 1.5m	9P:PULSE+, PULSE-, SIGN+, SIGN-, DI1, COM+, DO1+, DO1-, GND 13P:PULSE+, PULSE-, SIGN+, SIGN-, PULLHI, DI1, DI2, COM+, DO1+, DO1-, DO2+, DO2-, GND	
EtherCAT dedicated network cable (Category 5)	Length is 0.3m， 2m	

Application



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