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CHAPTER 1 PRODUCT INFORMATION

1.1 Servo drive

1.1.1 Drive nameplate description

Model Description:

SD300 P - 2S - 3R0

① ② ③ ④

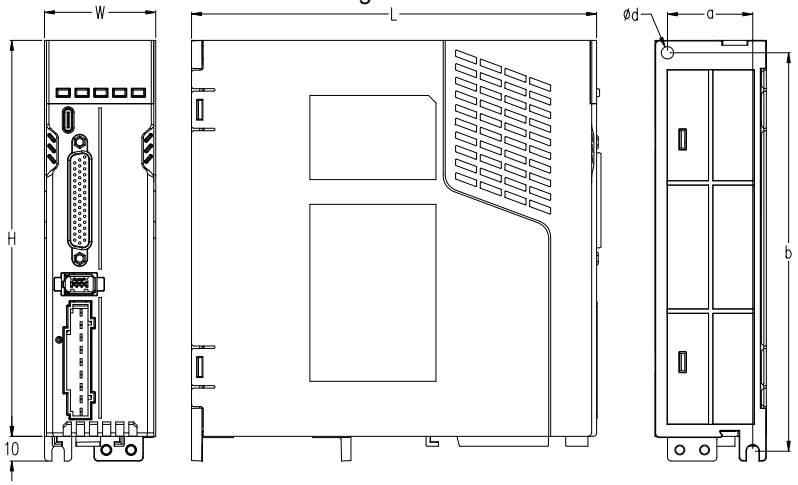
①Product Name SD300: General series servo drive	④Rated output current 220V: 1R8: 1.8A 3R0: 3.0A 5R5: 5.5A 7R6: 7.6A 380V: 5R4: 5.4A 8R5: 8.5A 012: 12A 017: 17A 021: 21A 025: 25A 030: 30A
②Product Type P: Pulse control type	
③Voltage Level 2S: Single phase 220V 2T: Three phase 220V 4T: Three phase 380V	

1.1.2 Drive model list

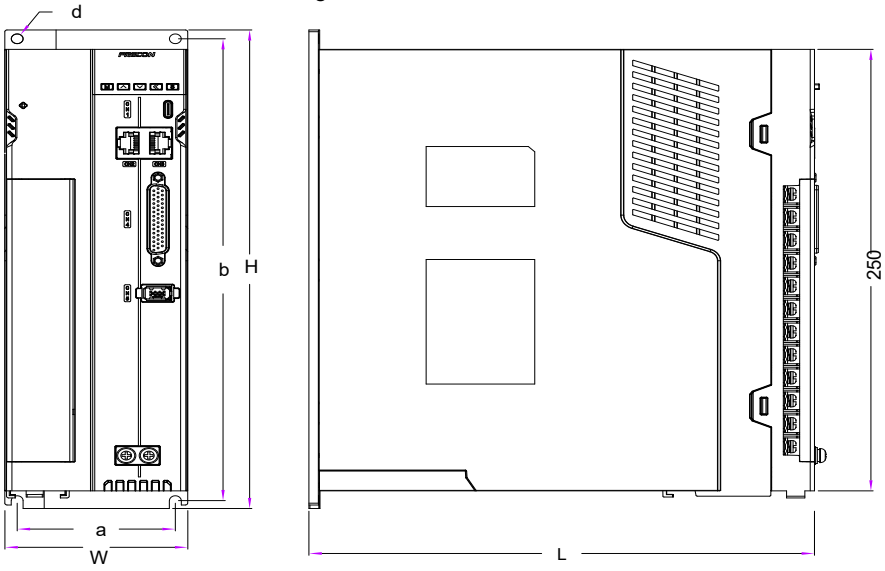
Size	Model	Input voltage	Adapted motor power kW	Rated current (A)	Max current (A)
A	SD300P-2S-1R8	Single phase 220V	0.2	1.8	5.6
	SD300P-2S-3R0		0.4	3	8.8
	SD300P-2S-5R5		0.75	5.5	11.3
B	SD300P-2T-7R6	Three-phase 220V	1	7.6	17
	SD300P-4T-5R4	Three-phase 380V	1.5	5.4	12.7
C	SD300P-2T-012	Three-phase 220V	1.5	12	32
	SD300P-4T-8R5	Three-phase 380V	2	8.5	17
	SD300P-4T-012		3	12	28
D	SD300P-4T-017	Three-phase 380V	5	17	35
	SD300P-4T-021		6	21	37
	SD300P-4T-025		7.5	25	39
	SD300P-4T-030		11	30	53

1.1.3 Drive product size

◆ SIZE A/B/C Dimensional diagram:



◆ SIZE D Dimensional diagram:

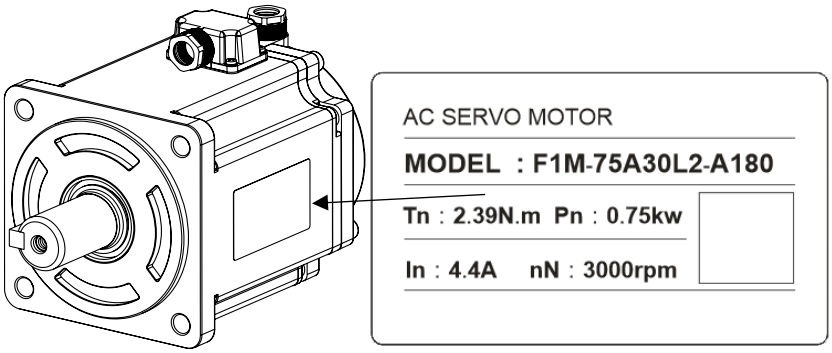


◆ Size Chart

Size	Product size (mm)					
	L	W	H	a	b	d
A	166	45	160	34.5	161	5
B	172	66	167	54.5	157.2	5
C	170	83	167	71.5	157.2	5
D	235	85	271	73.5	261.5	5.5

1.2 Servo motor

1.2.1 Motor nameplate description



◆ **Model Description:**

F1 M - 40A 30 L 1 - A1 60
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Product Series F1: F1 series motor F2: F2 series motor	④Rated Speed 15 = 1500 rpm 20 = 2000 rpm 25 = 2500 rpm 30 = 3000 rpm	⑦Encoder Type A: Magnetic Encoder B: Optical encoder 1: 17bit single turn 2: 17bit mult turn 4: 23bit mult turn
②Rotor Inertia M: Medium inertia	⑤Input Voltage L: AC220V H: AC380V	⑧Motor Flange 40: 40 flange 60: 60 flange 80: 80 flange 13: 130 flange 18: 180 flange
③Rated Power(W) A: x 10 B: x 100 eg.: 40A=400W	⑥Brake 1: without brake 2: with brake	

1.2.2 Motor model list

Motor models	Rated output kW	Voltage	Rated torque N.m	Rated current A	Rated speed/maximum speed rpm
F1M-20A30L□-□60	200W	220V	0.64	1.7	3000/6000
F1M-40A30L□-□60	400W	220V	1.27	2.5	3000/6000
F1M-60A30L□-□60	600W	220V	1.91	3.6	3000/6000
F1M-75A30L□-□80	750W	220V	2.39	4.4	3000/6000
F1M-10B30L□-□80	1000W	220V	3.18	5.8	3000/6000
F1M-12B30L□-□11	1200W	220V	3.82	5.2	3000/4500
F1M-12B30H□-□11	1200W	380V	3.82	3.1	3000/4500
F1M-18B30L□-□11	1800W	220V	5.73	6.8	3000/4000
F1M-18B30H□-□11	1800W	380V	5.73	4	3000/4000

Motor model table (continued):

Motor models	Rated output kW	Voltage	Rated torque N.m	Rated current A	Rated speed/maximum speed rpm
F1M-85A15L□-□13	850W	220V	5.41	4.6	1500/3000
F1M-85A15H□-□13	850W	380V	5.41	3.1	1500/3000
F1M-13B15L□-□13	1300W	220V	8.28	7.7	1500/3000
F1M-13B15H□-□13	1300W	380V	8.28	5.1	1500/3000
F1M-18B15L□-□13	1800W	220V	11.46	9.8	1500/3000
F1M-18B15H□-□13	1800W	380V	11.46	6.3	1500/3000
F1M-23B15L□-□13	2300W	220V	14.64	12.4	1500/3000
F1M-23B15H□-□13	2300W	380V	14.64	8.5	1500/3000
F2M-30B15H□-□13	3000W	380V	14.64	8.5	1500/3000
F2M-30B15H□-□18	3000W	380V	19.1	11.6	1500/2500
F2M-45B15H□-□18	4500W	380V	28.65	16.6	1500/2500
F2M-55B15H□-□18	5000W	380V	35	21.4	1500/2500
F2M-75B15H□-□18	7500W	380V	47.76	26.7	1500/2500

1.3 Cable

1. 3.1 Power 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	④Motor side plug type 0: 4-core Amp head 1: SC-MC6S (Gecko Head) 2: 6P-core aviation head
②Drive Side Plug Type 0: U-shaped type terminal 1: Needle type terminal	⑤Cable length 3.0: 3m 5.0: 5m 10.0: 10m ….
③Wire diameter(mm²) 050: 0.5 075: 0.75 100: 1.0 150: 1.5 250: 2.5 ….	⑥Cable type G: General Cable H: Super High-flex Cable(Bend endurance over 10 million cycles)

1.3.2 Encoder cable model description

LEG – 0 0 - 3.0 - G

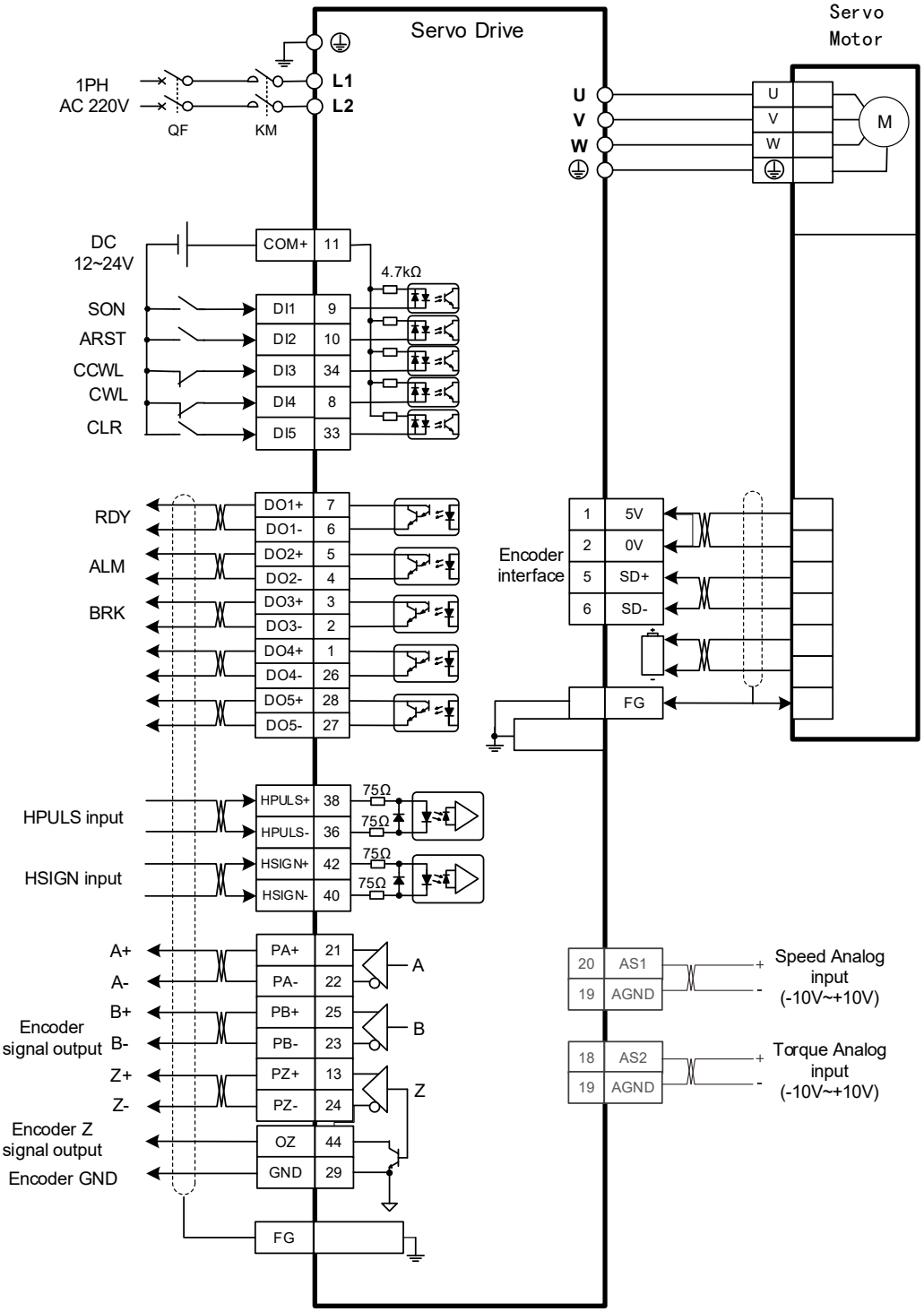
① ② ③ ④ ⑤

①Encoder cable LEG: Universal absolute encoder cables LEB: Battery-powered absolute encoder cables	④Cable length 3.0: 3m 5.0: 5m 10.0: 10m ...
②Drive side plug type 0:1394 plug 1:DB15 plug 2:DB9 plug	⑤Cable type G: General Cable H: Super High-flex Cable (Bend endurance over 10 million cycles)
③Motor side plug type 1:SC-MC7S (Gecko Head) 2:10P-core aviation plug	

CHAPTER 2 TERMINALS AND WIRING

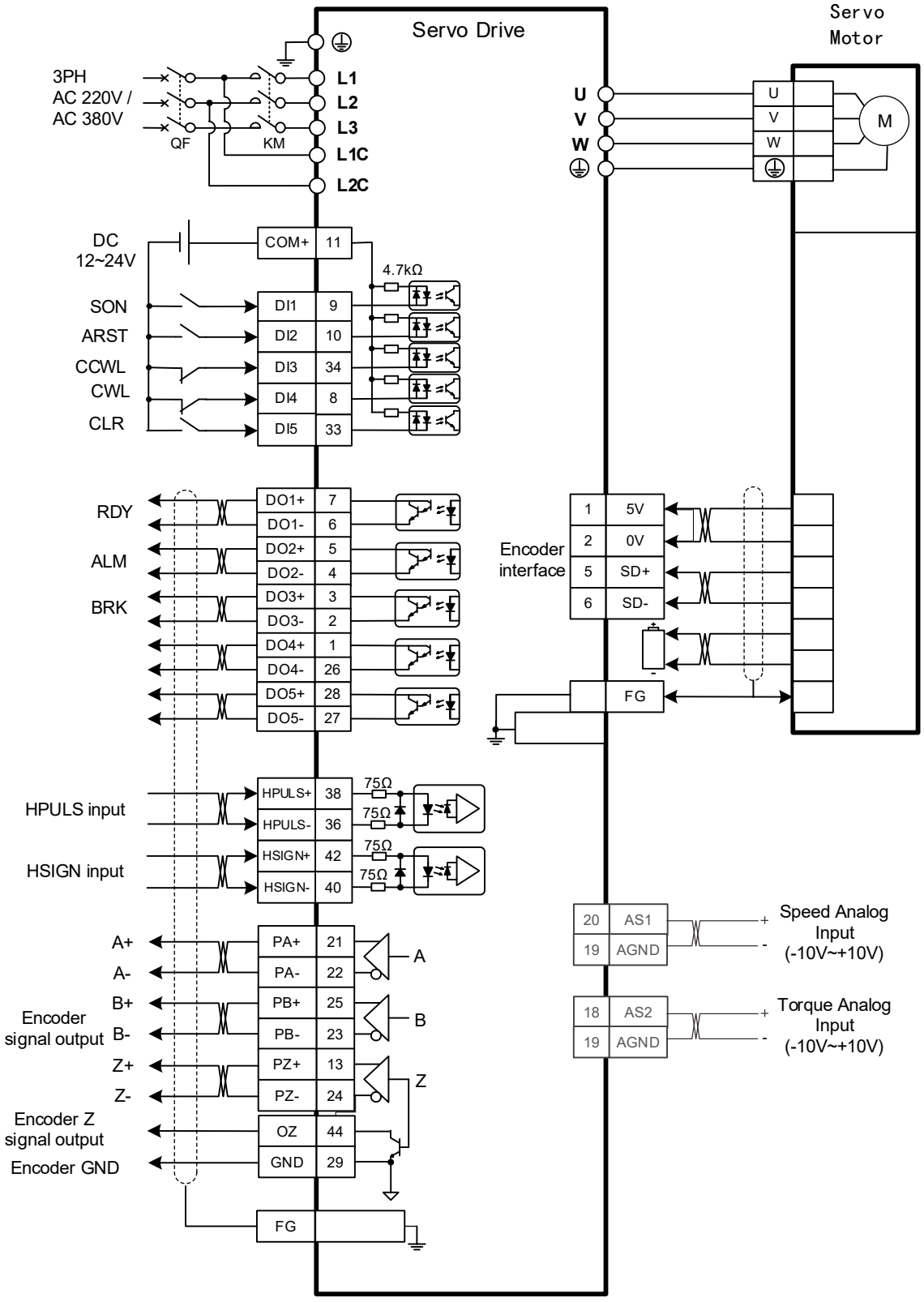
2.1 System wiring diagram

◆SD300P-2S single phase 220V:



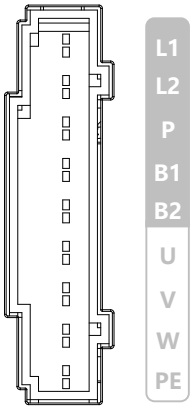
◆SD300P-2T 3PH 220V (L1, L2,L3), When used as a single-phase, connect any two of L1, L2, and L3：

◆SD300P-4T 3PH 380V (L1, L2,L3)：

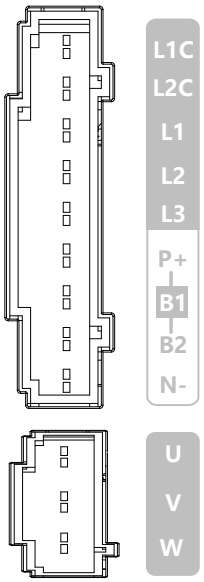


2.2 Terminal distribution and description

2.2.1 Main circuit terminals



1PH 220V main circuit terminals



3PH 380/220V main circuit terminals

Terminal function description:

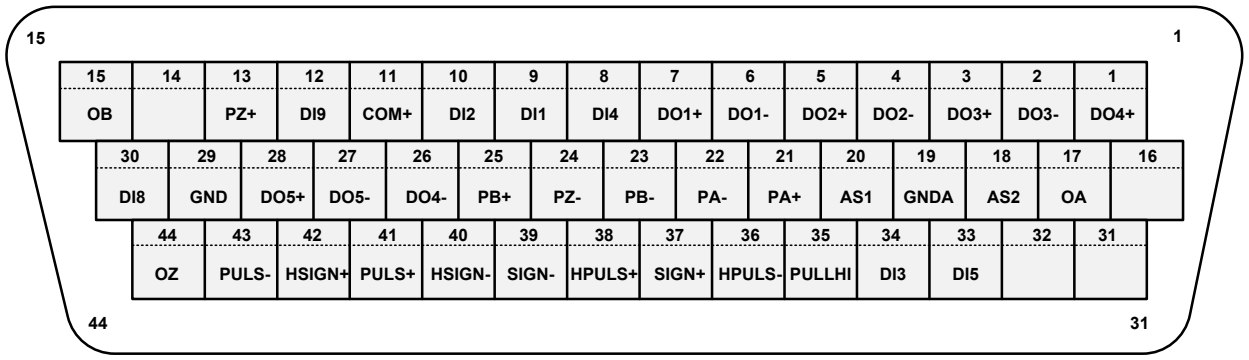
Name	Terminal symbol	Model	Detailed description
The main circuit Power terminal	L1, L2	SD300P-2S	To connect external AC power: Single phase 220VAC -15% ~ +10%50/60Hz
	L1, L2, L3	SD300P-2T	To connect external AC power: Three-phase 220VAC -15% ~ +10% 50/60Hz
	L1, L2, L3	SD300P-4T	To connect external AC power: Three phase 380 VAC -15% ~ +10% 50/60Hz
Control power terminal	L1C，L2C	SD300P-2T	1PH 220VAC
		SD300P-4	1PH 380VAC
Brake resistor terminals	P, B1, B2	SD300P-2S SD300P-2T SD300P-4T	Connect the external brake resistor between P and B1. Before use, disconnect B1 and B2. Default configuration is short circuit between B1 and B2, use internal brake resistor.
Motor connection terminal	U ,V,W	SD300 all series	Output to motor U VW power

◆ The factory default connection method of internal brake resistor: B1 and B2 are short-circuited.

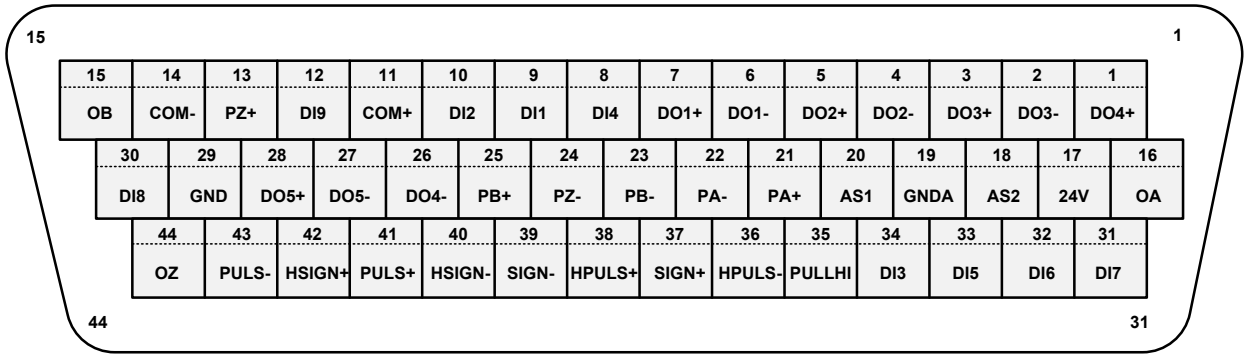
2.2.2 Control terminal

Control terminal diagram:

◆**SIZE A:**



◆**SIZE B/C/D:**



Terminal function description :

Signal name		Pin number	Terminal description	Function Description
Universal digital input	DI1	9	Digital input 1	Universal digital input terminal, COM+ is the input common terminal and needs to be used with an external 24V power supply. ◆If DI is low (0V) and valid, COM+ is connected to the external DC power supply (12V~24V); ◆If DI is high (12V~24V) and valid, then COM+ is connected to the corresponding signal reference ground
	DI2	10	Digital input 2	
	DI3	34	Digital input 3	
	DI4	8	Digital input 4	
	DI5	33	Digital input 5	
	DI6	31	Digital input 6	
	DI7	32	Digital input 7	
	DI8	30	Digital input 8	
	DI9	12	Digital input 9	
	COM+	11	Digital input common	
Universal digital output	DO1+, DO1-	7, 6	Digital output 1±	Universal digital output terminal ◆During PNP output, DOx+ is connected to the external power supply (12V~24V) and DOx- is connected to the positive terminal of the load. ◆When NPN is output, DOx- is connected to the corresponding signal reference ground, and DOx+ is connected to the negative terminal of the load.
	DO2+, DO2-	5, 4	Digital output 2±	
	DO3+, DO3-	3, 2	Digital output 3±	
	DO4+, DO4-	1, 26	Digital output 4±	
	DO5+, DO5-	28, 27	Digital output 5±	
Encoder signal input	PULS+/HPULS+	38/41	Pulse input positive	◆As a position command input terminal (valid only in position mode); ◆Input frequency: Low speed: 500KHz (differential), 200kHz (collector). High speed: differential mode 1M ◆High/low speed can be switched through
	PULS-/HPULS-	36/43	Pulse input negative	
	SIGN+/HSIGN+	37/42	Direction input is positive	
	SIGN-/HSIGN-	39/40	Direction input negative	
	PULLHI	35	Pulse input common terminal	

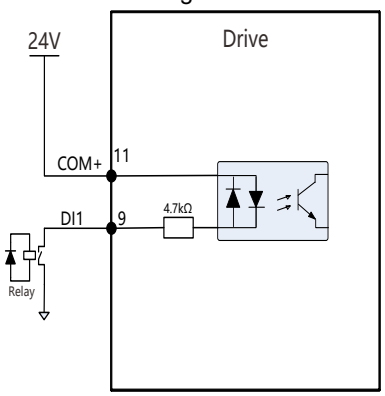
				F05.01
Encoder signal output	PA+, PA-	21, 22	Encoder A phase differential output	◆The output A-phase pulse and B-phase pulse are still orthogonal. During forward rotation, phase A leads B phase by 90°, and during reverse rotation, B phase leads phase A by 90°; ◆Can be divided by any integer; ◆The output signal is not isolated.
	PB+, PB-	25, 23	Encoder B-phase differential output	
	PZ+, PZ-	13, 24	Encoder Z phase differential output	
	OA	17	Encoder A phase open drain output	Output the open-drain signal of A phase without isolation.
	OB	15	Encoder B phase open drain output	Output B phase open-drain signal without isolation.
	OZ	44	Encoder Z phase open drain output	Output the Z-phase open-drain signal without isolation.
Analog input	AS1	20	Analog input 1	Its output function definition can be set, and its range and offset settings can be set.
	AS2	18	Analog input 2	
	GNDA	19	Analog signal ground	
Other	GND	29	internal power ground	internal power ground
Power output	+24V	17	24VPower (SIZE B/C/D)	24Vpower output
	COM-	14		

2.3 Terminal wiring

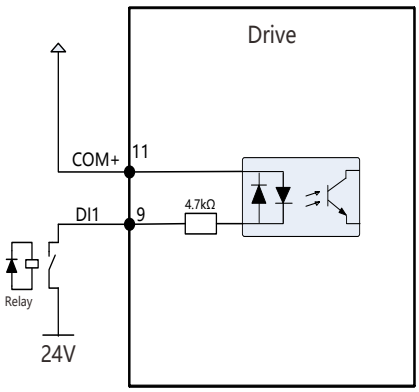
2.3.1 Universal input terminal wiring

Take DI 1 as an example: the interface circuits from DI 2 to DI9 are the same

- Universal wiring:

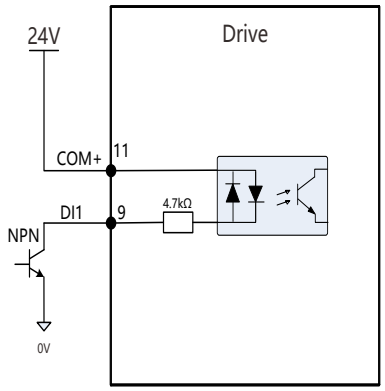


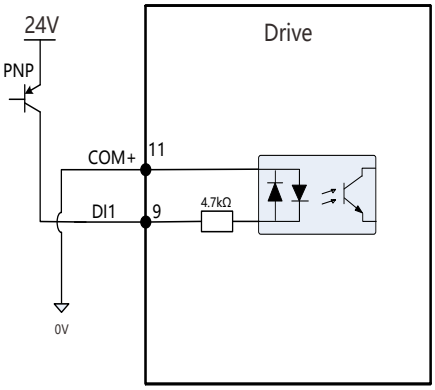
Common anode wiring



Common cathode wiring

- When the upper device is collector output, the wiring diagram is as follows:

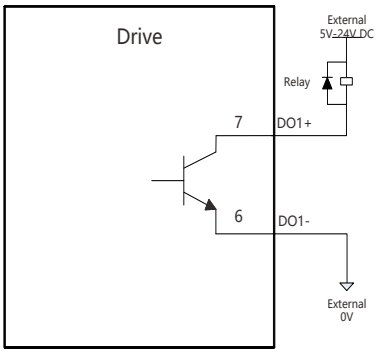


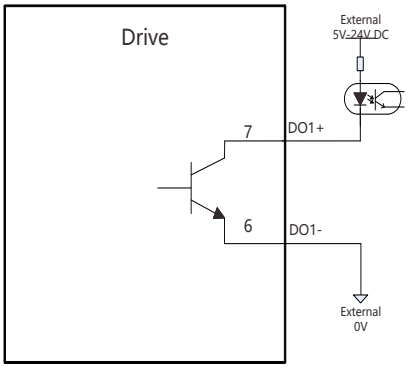


Note: Mixed use of PNP and NPN inputs is not supported .

2.3.2 Universal output terminal wiring

Take DO1 as an example: the electrical circuits of the DO2 to DO5 interfaces are the same.

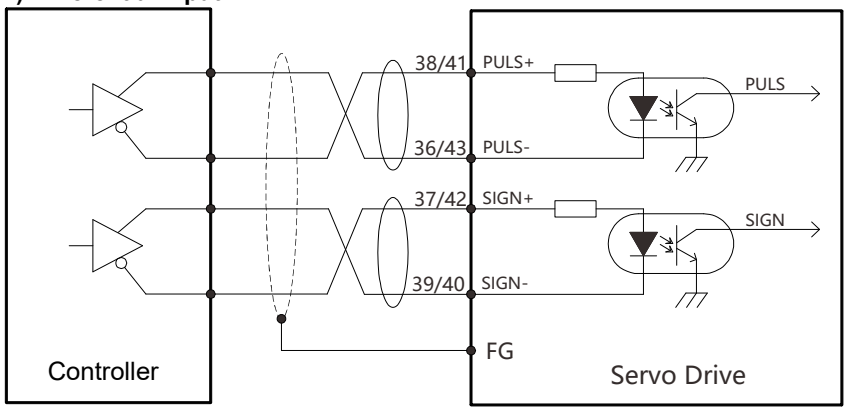




The upper device is a relay. The upper device is an optocoupler input.

2.3.3 pulse input terminal wiring

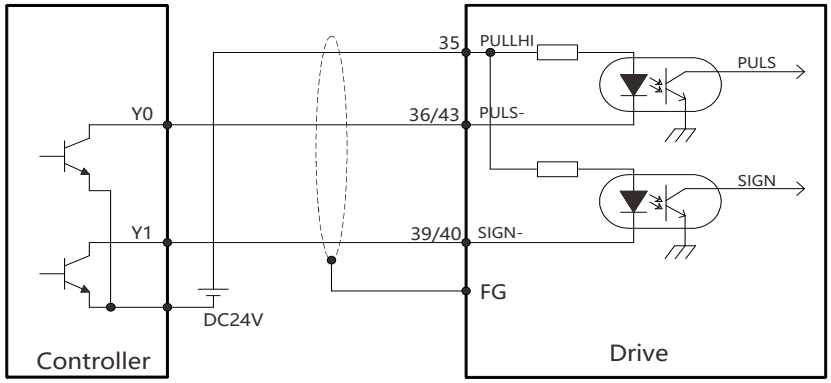
1) Differential input:



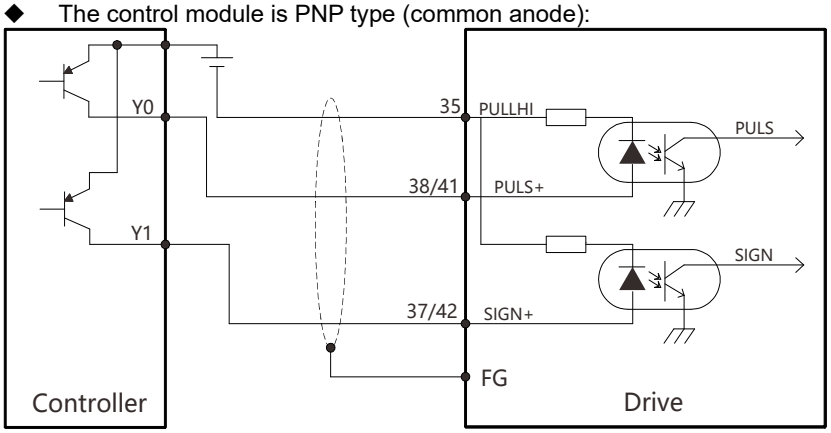
- Differential pulse input signal voltage ±5V, maximum frequency 500 K Hz;
- This signal transmission method has the best anti-noise ability, and it is recommended to use this connection method first.

2) Open collector mode 1:

- The control module is NPN type (common cathode):



- The control module is PNP type (common anode):

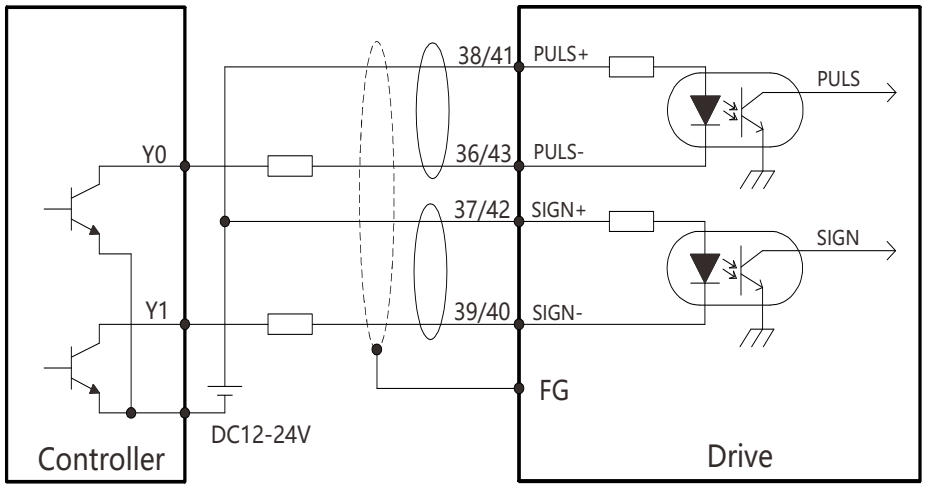


*Note: The maximum input pulse frequency is 200kHz; user-prepared 24V power supply, no need to connect current limiting resistor.

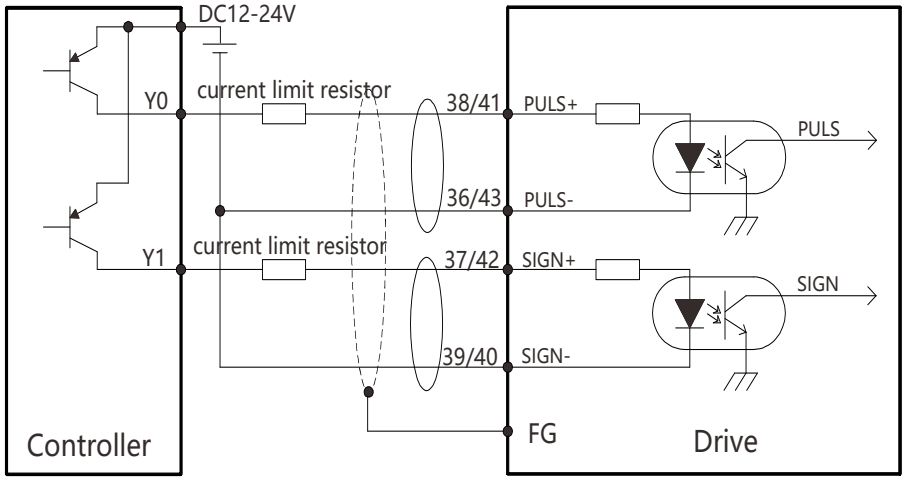
Generally, most Japanese PLC are of NPN type, while European PLC are mostly of PNP type.

3) Open collector mode 2:

◆ The control module is NPN type (common cathode)



◆ The control module is PNP type (common anode)



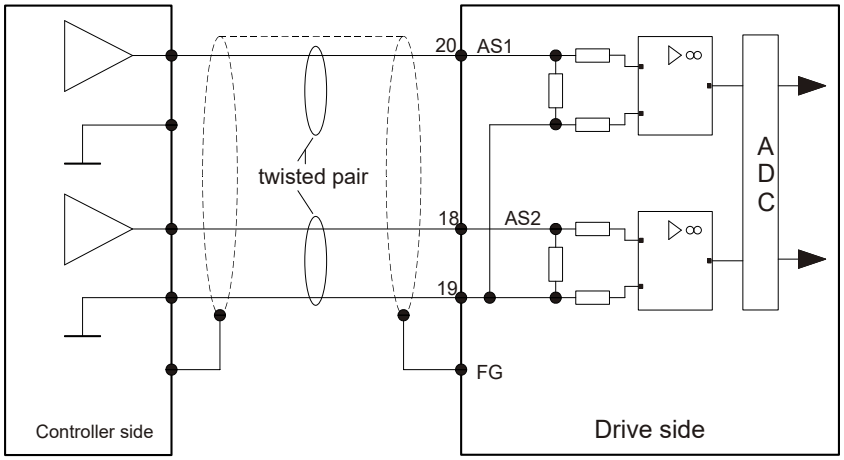
*Note: The input pulse frequency is 200kHz; the user's own 12~24V power supply requires an external current-limiting resistor. The size of the current-limiting resistor is selected according to the table:

DC 12V	1kΩ , 1 / 4W
DC 24V	2kΩ , 1 / 2W

Resistance value calculation formula:

(VDC -1.5)/(R+150)=10 mA

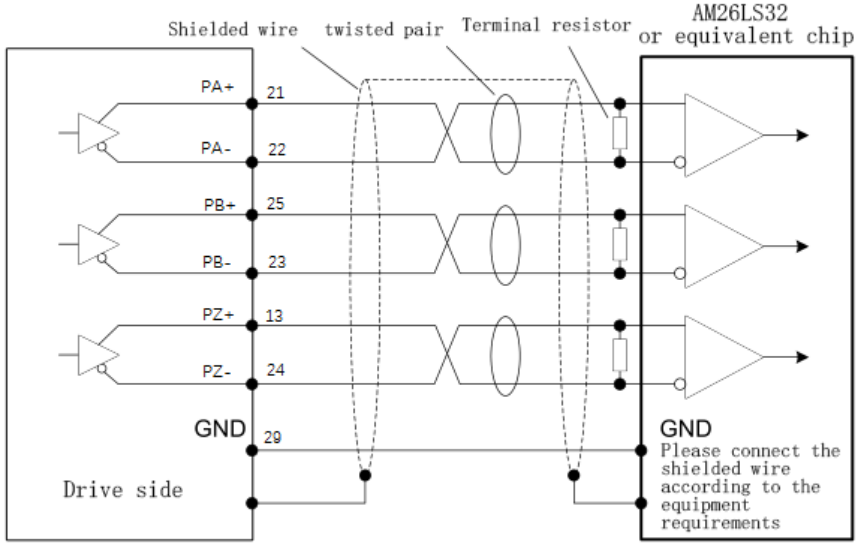
2.3.4 Analog input terminal wiring



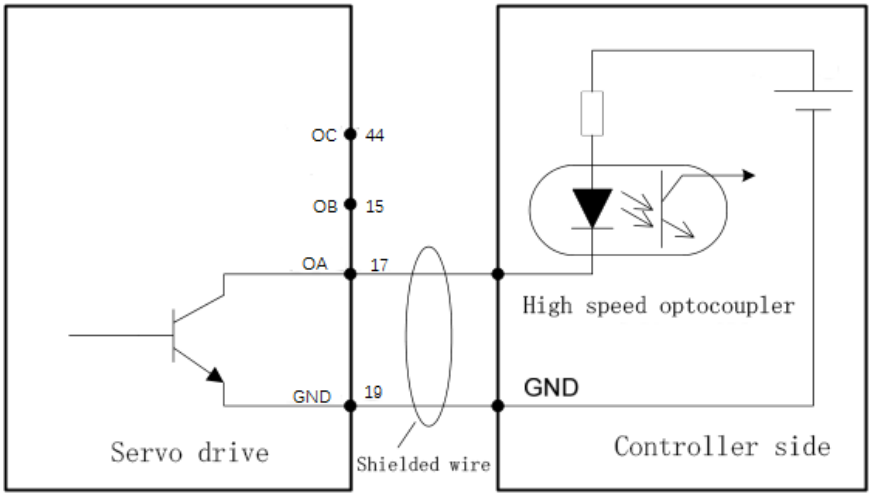
●Two analog input circuits, AS1 and AS2 have an accuracy of 12 bits. Input impedance 10kΩ; input voltage range -10V~+10V .

2.3.5 Encoder signal frequency division output

1) Differential output mode



2) Open collector output mode:



●The A, B, and Z phases of the encoder all provide differential output and open collector output signals.

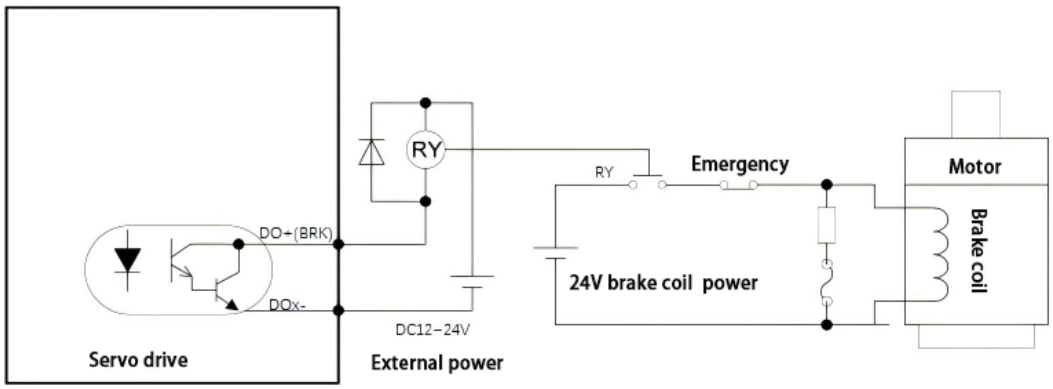
● For differential output signals, it is recommended that users use AM26C32 or equivalent differential receiving chips, and be sure to add a terminal matching resistor of approximately 220Ω.

● For open-collector output A, B, Z phase signals, since the signal pulse width is very narrow, the user needs to use a high-speed optocoupler to receive this signal.

● Both output circuits are not isolated.

2.3.6 Electromagnetic Brake Wiring

When a servo motor is used on a vertical axis, an electromagnetic brake can be used to stop or maintain the speed of a falling load when the servo drive is powered off. The connection of the electromagnetic brake is shown in the following diagram:



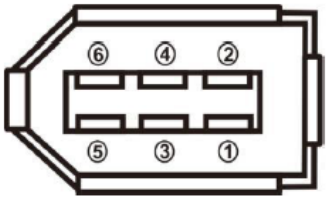
●The electromagnetic brake requires a separate 24V power supply; it must not be shared with the control signal power supply.

●The diagram (RY) shows a relay coil; please note the diode's orientation.

●The electromagnetic brake is for holding purposes only and cannot be used for normal stop.

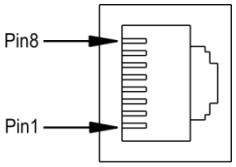
●Although the electromagnetic brake can prevent or hold heavy objects from falling, users must also install an external braking device.

2.3.7 1394 Encoder interface



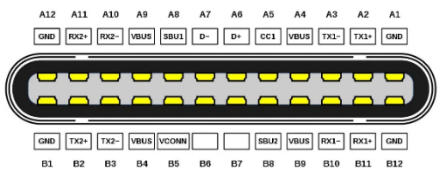
Signal Name		Pin Number	Function Description
Encoder signal power	5V	1	The encoder uses a 5 V power supply provided by the drive. When the cable length exceeds 20 m, multiple wires or thicker wires should be used for the power and ground lines to prevent the encoder voltage from dropping.
	0V	2	
Absolute encoder communication +	SD+	5	Absolute encoder communication +
Absolute encoder communication -	SD-	6	Absolute encoder communication -
NC		3	Reserved
NC		4	Reserved

2.3.8 RJ45 Communication interface



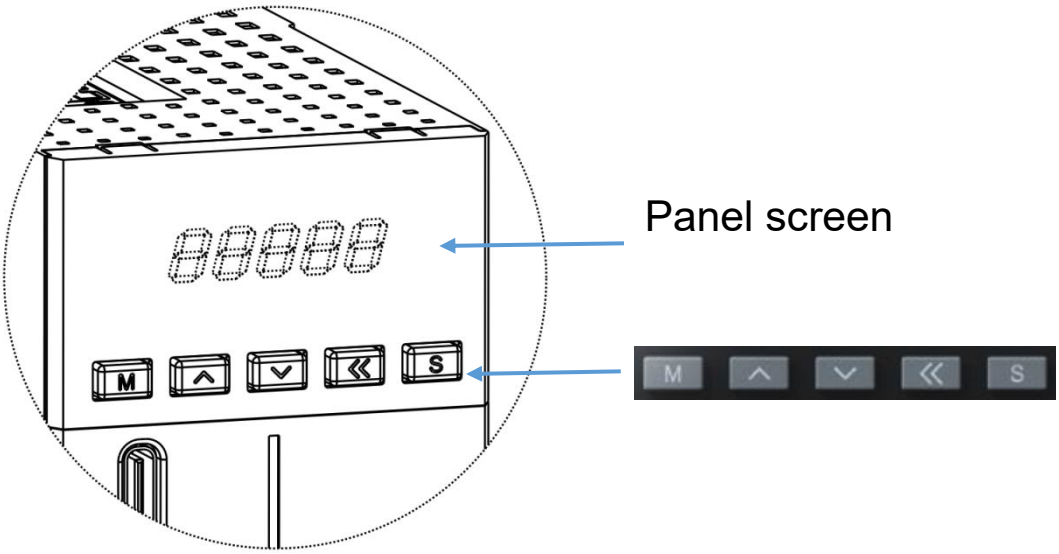
Signal Name		Pin Number	Function Description
Modbus data -	MBS-	1	Modbus communication data -
Modbus data +	MBS+	2	Modbus communication data +
Ground	PE	3	Used for drive grounding; connect to the grounding terminals of the power supply and the motor
NC	NC	4	Reserved
NC	NC	5	Reserved
Internal power supply ground	GND	6	Internal power supply ground
Ground	PE	7	Used for drive grounding; connect to the grounding terminals of the power supply and the motor
NC	NC	8	Reserved

2.3.9 TYPE-C Communication interface



Use a standard Type-C data cable.

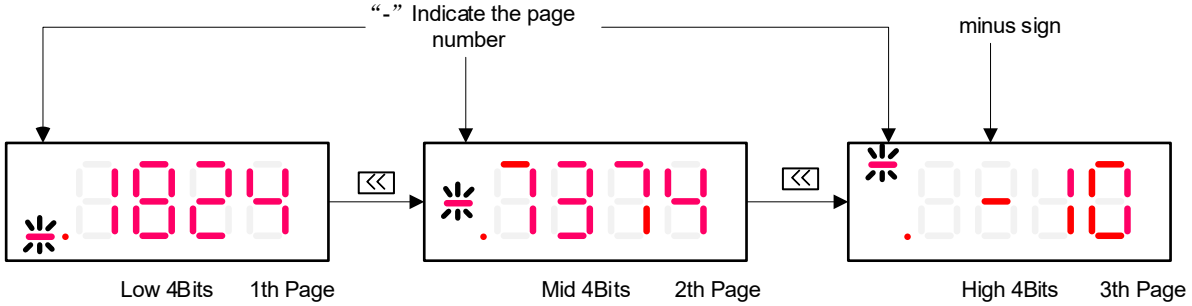
CHAPTER 3 OPERATION AND DISPLAY



The panel of the SD300P servo drive consists of a display (5-digit 8-segment LED digital tube) and 5 buttons. It can be used for various displays, parameter settings, user password settings and general function execution of the servo drive. Taking parameter setting as an example, the general functions of the keys are as shown in the following table:

Name	Picture	General functions
MODE key	M	Switch between modes. Return to the previous menu.
UP key	^	Increase the number of flashing digits of the LED digital tube.
DOWN key	v	Reduce the number of blinking digits of the LED digital tube.
SHIFT key	<<	Change the LED digital tube flash bit. View the high-order value of data longer than 5 digits.
SET key	S	Enter the next level menu. Execute commands such as storing parameter settings.

Attention:
Signed numbers with more than 4 digits or unsigned numbers with more than 5 digits
Display in pages by digit position from low to high, with every 5 digits constituting one page. Display method: current page + current page value, as shown in the figure below. Switch to the current page by long pressing "<<" for more than 2 seconds.



CHAPTER 4 PARAMETER SUMMARY

F00 Servo motor parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F00.08	Encoder type	0: Encoder automatic recognition 1: Tamagawa Absolute Value Encoder	0	-	Power on again	0x2008
F00.11	Rated current	0.1~400.0	2.7	A	Power on again	0x200b
F00.12	Rated torque	0.1~400.0	1.3	Nm	Power on again	0x200c
F00.13	Maximum torque percentage	0~1000	300	%	Power on again	0x200d
F00.14	Rated speed	1~10000	3000	rpm	Power on again	0x2014
F00.15	Maximum speed percentage	0~300	200	%	Power on again	0x200f
F00.16	Moment of inertia	0.001~32.767	0	10^ -3kgcm2	Power on again	0x2010
F00.17	Number of motor pole pairs	1~50	5	-	Power on again	0x2011
F00.18	Stator phase resistance	0.01~327.67	1.72	Ω	Power on again	0x2012
F00.19	Stator phase inductance Lq	0.01~327.67	5.8	mH	Power on again	0x2013
F00.20	Stator phase inductance Ld	0.01~327.67	5.8	mH	Power on again	0x2014
F00.21	Line back electromotive force coefficient	1~32767	33	V/KRPM	Power on again	0x2015
F00.28	Encoder zero offset	-360.0~360.0	123	℃	Power on again	0x201c
F00.31	Encoder resolution	4~31	23	-	Power on again	0x201f
F00.56	Motor rotation direction	0: UVW sequence 1: UWV sequence	0	-	Power on again	0x2038
F00.57	Encoder multi-turn number	0-24	0	-	Power on again	0x2039
F00.58	Motor 1 parameter source	0: Parameter table 1: Read from the encoder	1	-	Power on again	0x203A

F01 Drive parameters

Parameter	Function	range	Default	Unit	Effective method	Address
F01.00	MCU software version	-	-	-	show	0x2064
F01.02	Servo drive model	-	-	-	show	0x2066
F01.30	Rated DC voltage	1-3000	300	V	Power on again	0x2082
F01.31	Current sensor gain	1~20000	2048	1/A	Power on again	0x2083
F01.32	IPM maximum current	0.1~400.0	5.0	A	Power on again	0x2084
F01.33	IPM overload detection point	0 ~100	95	%	Power on again	0x2085
F01.34	IPM overload detection filter time constant	0~32767	60	s	Power on again	0x2086
F01.35	IPM dead time	1.0~10.0	2.0	us	Power on	0x2087

					again	
F01.36	IPM minimum pulse width	0.0~20.0	4.0	us	Power on again	0x2088
F01.37	PWM cycle time	20.00~300.00	125.00	us	show	0x2089
F01.40	Over-current detection point	1~32767	16380	-	Power on again	0x208c
F01.41	Continuous times of overcurrent detection	1~10000	10	-	Power on again	0x208d
F01.42	Power board maximum current	0.1~400.0	2.7	A	Power on again	0x208e
F01.43	Power board adapts to power	0.01~300.00	1.50	KW	Power on again	0x208f
F01.44	Power board rated current	0.1~400.0	0.7	A	Power on again	0x2090
F01.45	Bus voltage protection action time	0.01~40.00	3.00	s	Power on again	0x2091
F01.51	Is dynamic braking onboard?	0-1	0	-	show	0x2097
F01.52	Onboard NTC type	0~255	0	-	show	0x2098
F01.53	Power board current sampling bootsnotch filter	0-1	0	-	show	0x2099
F01.54	Power board NTC temperature alarm point	50~125	120	-	Power on again	0x209a
F01.60	Current loop gain	1-600	110	Hz	Power on again	0x20a0
F01.61	Current loop integration time constant	1-1000	10	%	Power on again	0x20a1
F01.63	Overload characteristic point	1-1000	200	%	Power on again	0x20a3
F01.64	Overload characteristic point duration	1~30000	10	ms	Power on again	0x20a4
F01.65	IIT thermal overload point	0-300	112	%	Power on again	0x20a5
F01.66	IIT thermal overload detection filter time constant	0-32767	3000	s	Power on again	0x20a6
F01.67	Moment of inertia unit multiple	1~10000	1	-	Power on again	0x20a7
F01.68	Inductance unit multiple	1~10000	1	-	Power on again	0x20a8
F01.70	Open loop run speed	0~3000	60rpm	rpm	Power on again	0x20aa
F01.71	Open loop run current	0~100	20	%	Power on again	0x20ab
F01.72	Encoder to zero current	0-500	50	%	Power on again	0x20ac
F01.73	Encoder to zero point high speed	1-3000	50	-	Power on again	0x20ad
F01.74	Encoder is slow to zero	1 ~1000	7	-	Power on again	0x20ae
F01.76	Encoder counting maximum error	0~10000	25	pulse	Power on again	0x20b0
F01.77	Encoder disconnection detection times	1~1000	35	-	Power on again	0x20b1
F01.78	Encoder Z signal loss detection turns	0 ~300	3	rpm	Power on again	0x20b2
F01.80	Voltage during power board self-test	0~1000	310	V	Power on again	0x20b4
F01.81	Power board AD sampling value conversion voltage coefficient	0~3000	32	-	Power on again	0x20b5
F01.83	Fan temperature point	25~125	50	℃	Effective immediately	0x20b7

F02 Basic control parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F02.00	Control mode selection	0: Position mode 1: Speed mode 2: Torque mode 3: Position/speed mode4: Position/torque mode 5: Speed/torque mode	0	-	Effective immediately	0x20c8
F02.01	Absolute value system selection	0: Single turn absolute mode 1: Multi turn absolute mode 2: Incremental mode	0	-	Power on again	0x20c9
F02.03	Output pulse phase	0: A ahead of B 1: A lags behind B	0	-	Power on again	0x20cb
F02.09	Delay from brake output ON to command reception	0-1000	0	ms	Effective immediately	0x20d1
F02.10	In static state, the delay from brake output OFF to motor enable OFF	0-2000	150	ms	Effective immediately	0x20d2
F02.11	Rotation state, speed when brake output is OFF	0-3000	100	rpm	Effective immediately	0x20d3
F02.12	Rotation state, delay from servo enable OFF to brake output OFF	0-2000	0	rpm	Effective immediately	0x20d4
F02.22	Built-in brake resistor rated power	2-10000	-	W	Power on again	0x20de
F02.23	Built-in brake resistor value	10-750		Ω	Power on again	0x20df
F02.25	Brake resistor settings	0: Use built-in braking resistor 1: Use an external braking resistor	0	-	Effective immediately	0x20e1
F02.26	Rated power of external braking resistor	1-10000	-	W	Power on again	0x20e2
F02.27	External brake resistor value	1-750	-	Ω	Power on again	0x20e3
F02.30	user password	0-9999	0	-	Power on again	0x20e6
F02.31	System parameter initialization	0: No operation 1: Restore factory settings 2: Clear fault records	0	-	Power on again	0x20e7
F02.32	Panel default display function	0-99	0	-	Effective immediately	0x20e8
F02.40	CWL, CCWL direction prohibition method	0: Limit the torque in this direction to 0 1: Prohibit pulse input in this direction	0	-	Effective immediately	0x20f0
F02.41	Speed/torque corresponding analog channel selection	0: AS1 channel and AS2 channel correspond to speed command and torque command respectively 1: AS1 channel and AS2 channel correspond to torque command and speed command respectively	0	-	Effective immediately	0x20f1
F02.44	Acceleration and deceleration time in stop mode	0-10000	1000	ms	Effective immediately	0x20f4
F02.55	Regenerative brake voltage	1-1000	-	-	Power on again	0x20ff
F02.56	Maximum peak brake power	5-10000	-	W	Power on again	0x2100
F02.57	Maximum average brake power	5-10000	-	W	Power on again	0x2101
F02.58	Peak brake power detection filter time constant	0-32767	-	10ms	Power on again	0x2102
F02.59	Average brake power detection filter time constant	0-32767		s	Power on again	0x2103

F02.61	Dynamic brake action wait time	30-1000	100	ms	Effective immediately	0x2105
F02.62	Dynamic brake action speed	0-100	50	%	Effective immediately	0x2106
F02.64	Dynamic brake mode	0: Dynamic braking is invalid 1: Dynamic braking takes effect	0	%	Power on again	0x2108
F02.69	Position deviation clear method	0: DI signal high level 1: DI signal rising edge	0	-	Effective immediately	0x210d
F02.70	emergency shutdown mode	0: Motor stops freely 1: Control the motor to decelerate and stop according to the deceleration time set in F02.44	0	-	Effective immediately	0x210e
F02.97	Ignore drive ban	0: CWL enable, CCWL enable 1: CWL enable, CCWL disable 2: CWL disable, CCWL enable 3: CWL disable, CCWL enable	3	-	Effective immediately	0x2129
F02.98	Force drive enable ON	0: Driver enable ON controlled by other conditions 1: Force the driver to enable ON	0	-	Effective immediately	0x212a

F03 Ditital input/output parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F03.00	DI1 terminal function selection	**When set to a negative number, the terminal is inverse logic.** DI terminal functions are as follows: FunIN.1 : Servo enable FunIN.2: Fault and warn reset FunIN.3: Gain switching FunIN.10: Mode switch 1 FunIN.11: Mode switch 2 FunIN.12: Zero position fixed enable FunIN.13: Zero instruction FunIN.14: Forward overtravel switch FunIN.15: Reverse overtravel switch FunIN.16: Forward external torque limit FunIN.17: Reverse external torque limit FunIN.18: Forward jog FunIN.19: Reverse jog FunIN.24: Electronic gear selection FunIN.27: Command direction setting FunIN.31: home switch FunIN.32: home return enable FunIN.34: Emergency shutdown FunIN.35: Clear position deviation FunIN.37: Pulse command prohibited FunIN.41: Set the current position as the home FunIN.43: Internal speed selection 1 FunIN.44 : Internal speed selection 2 FunIN.46: Internal torque selection 1 FunIN.47: Internal torque selection	1	-	Effective immediately	0x212c
F03.01	DI2 terminal function selection		2	-	Effective immediately	0x212d
F03.02	DI3 terminal function selection		14	-	Effective immediately	0x212e
F03.03	DI4 terminal function selection		15	-	Effective immediately	0x212f
F03.04	DI5 terminal function selection		35	-	Effective immediately	0x2130
F03.05	DI6 terminal function selection		0	-	Effective immediately	0x2131
F03.06	DI7 terminal function selection		0	-	Effective immediately	0x2132
F03.07	DI8 terminal function selection		0	-	Effective immediately	0x2133
F03.08	DI9 terminal function selection		0	-	Effective immediately	0x2134

		2 FunIN.49 : Proportional control				
F03.10	DI1 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x2136
F03.11	DI2 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x2137
F03.12	DI3 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x2138
F03.13	DI4 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x2139
F03.14	DI5 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x213a
F03.15	DI6 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x213b
F03.16	DI6 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x213c
F03.17	DI8 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x213d
F03.18	DI9 input filter time	0.1~100.0	2.0	ms	Effective immediately	0x213e
F03.20	DI function is forced to be valid 1	Bit0: FunIN. 0 is meaningless Bit1: FunIN.1(SON) Bit2: FunIN.2(ALM RST) Bit3: FunIN.3(GAIN SEL) Bit4: FunIN. 4 is meaningless	0000	-	Effective immediately	0x2140
F03.21	DI function is forced to be valid 2	00000~11111 (meaningless)	0000	-	Effective immediately	0x2141
F03.22	DI function is forced to be valid 3	Bit0: FunIN.10(M1-SEL) Bit1: FunIN.11(M2-SEL) Bit2: FunIN.12(ZCLAMP) Bit3: FunIN.13(INHIBIT) Bit4: FunIN.14(P-OT)	0000	-	Effective immediately	0x2142
F03.23	DI function is forced to be valid 4	Bit0: FunIN.15(N-OT) Bit1: FunIN.16(P-CL) Bit2: FunIN.17(N-CL) Bit3: FunIN.18 meaningless	0000	-	Effective immediately	0x2143
F03.24	DI function is forced to be valid 5	00000~11111(meaningless)	0000	-	Effective immediately	0x2144
F03.25	DI function is forced to be valid 6	Bit0: FunIN.25 meaningless Bit1: FunIN.26 meaningless Bit2: FunIN.27(DIR-SEL) Bit3: FunIN.28 meaningless Bit4: FunIN.29 meaningless	0000	-	Effective immediately	0x2145
F03.26	DI function is forced to be valid 7	Bit0: FunIN.30 meaningless Bit1: FunIN.31(HomeSwitch) Bit2: FunIN.32(HomingStart) Bit3: FunIN.33 meaningless Bit4: FunIN.34(EmergencyStop)	0000	-	Effective immediately	0x2146
F03.27	DI function is forced to be valid 8	Bit0: FunIN.35(ClrPosErr) Bit1: FunIN.36 meaningless Bit2: FunIN.37(PulseInhibit) Bit3: FunIN.38 meaningless Bit4: FunIN.39 meaningless	0000	-	Effective immediately	0x2147
F03.28	DI function is forced to be valid 9	Bit0: FunIN.40 meaningless Bit1: FunIN.41 meaningless Bit2: FunIN.42 meaningless Bit3: FunIN.43(SP1) Bit4: FunIN.44(SP2)	0000	-	Effective immediately	0x2148
F03.29	DI function is forced to be valid 10	Bit0: FunIN.45(SP3) Bit1: FunIN.46(TRQ1) Bit2: FunIN.47(TRQ2) Bit3: FunIN.48 meaningless Bit4: FunIN.49(PC)	0000	-	Effective immediately	0x2149
F03.30	DI function is forced to be valid 11	00000~11111 (meaningless)	0000	-	Effective immediately	0x214a
F03.31	DI function is forced to be valid 12	00000~11111 (meaningless)	0000	-	Effective immediately	0x214b
F03.32	DI function is forced to	00000~11111 (meaningless)	0000	-	Effective	0x214c

	be valid 13				immediately	
F03.51	AS1 analog command filter time constant	0.20~50.00	0.2	ms	Power on again	0x215f
F03.53	AS1 analog command dead zone	0~13000	0	mV	Power on again	0x2161
F03.54	AS1 analog command zero offset compensation	-1500.0~1500.0	0.0	mV	Power on again	0x2162
F03.56	AS2 analog command filter time constant	0.20~50.00	0.2	ms	Power on again	0x2164
F03.58	AS2 analog command dead zone	0~13000	0	mV	Power on again	0x2166
F03.59	AS2 analog command zero offset compensation	-1500.0~1500.0	0.0	mV	Power on again	0x2167
F03.65	Analog speed command gain	10-3000	300	rpm/V	Effective immediately	0x216d
F03.66	Analog torque command gain	1~300	30	%/V	Effective immediately	0x216e
F03.70	DO1 terminal function selection	**When set to a negative number, the terminal is inverse logic.** DO terminal functions are as follows: FunOUT.1 : Servo ready output FunOUT.3: Zero speed FunOUT.6: Position completed FunOUT.7: Torque limit FunOUT.8: Speed limit FunOUT.9: Brake output FunOUT.10: warn output FunOUT.11: Fault output FunOUT.16: home return completed FunOUT.17: Electrical zero return output FunOUT.18: Torque arrival output FunOUT.19: Speed arrival output FunOUT.21: DB brake output FunOUT.26: Servo is running	0	-	Effective immediately	0x2172
F03.71	DO2 terminal function selection		0	-	Effective immediately	0x2173
F03.72	DO3 terminal function selection		0	-	Effective immediately	0x2174
F03.73	DO4 terminal function selection		0	-	Effective immediately	0x2175
F03.74	DO5 terminal function selection		0	-	Effective immediately	0x2176
F03.80	DO output is forced to be valid	Bit0: 1 (DO1 forces the output of Bit0 content from F03.82), 0 (DO1 output internal functional status) Bit1: 1 (DO2 forces the output of Bit1 content from F03.82), 0 (DO2 output internal functional status) Bit2: 1 (DO3 forces the output of Bit2 content from F03.82), 0 (DO3 output internal functional status) Bit3: 1 (DO4 forces the output of Bit3 content from F03.82), 0 (DO4 output internal functional status) Bit4: 1 (DO5 forces output of Bit4 content from F03.82), 0 (DO5 output internal functional status)	00000	-	Effective immediately	0x217c
F03.82	DO output mandatory content	Bit0:1 (DO1 output 1), 0 (DO1 output 0) Bit1:1 (DO2 output 1), 0 (DO2 output 0) Bit2:1 (DO3 output 1), 0 (DO3	00000	-	Effective immediately	0x217e

		output 0) Bit3:1 (D04 output 1), 0 (D04 output 0) Bit4:1 (D05 output 1), 0 (D05 output 0)				

F05 Postion control parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F05.01	Pulse command input terminal selection	0: Low speed, single-ended input up to 200K, differential input up to 500K 1: High speed, differential input maximum frequency 1M	0	-	Power on again	0x21f5
F05.02	Number of position commands per motor rotation	1 ~1048576	10000	P/r	Power on again	0x21f6
F05.04	Position command exponential smoothing filter time	0~1000	0	ms	Power on again	0x21f8
F05.06	Position command linear filter time	0~256	0	ms	Power on again	0x21fa
F05.07	Electronic gear ratio 1 numerator	1 ~1073741824	1	-	Power on again	0x21fb
F05.09	Electronic gear ratio 1 denominator	1 ~1073741824	1	-	Power on again	0x21fd
F05.11	Electronic gear ratio 2 numerator	1 ~1073741824	1	-	Power on again	0x21ff
F05.13	Electronic gear ratio 2 denominator	1 ~1073741824	1	-	Power on again	0x2201
F05.15	Command pulse input method	0: Pulse and direction 1: Forward and reverse pulse 2: Orthogonal pulse	0	-	Power on again	0x2203
F05.17	Number of encoder pulse output lines	1 ~ 16384	2500	-	Power on again	0x2205
F05.21	Position completion range	0~32767	10	P	Effective immediately	0x2209
F05.22	Position proximity range	0~32767	500	P	Effective immediately	0x220a
F05.23	Position completion return difference	0~32767	5	p	Effective immediately	0x220b
F05.24	Position proximity return difference	0~32767	50	p	Effective immediately	0x220c
F05.28	Home position delay	0~3000	50	ms	Effective immediately	0x2210
F05.29	Home return completion signal delay	1~3000	100	ms	Effective immediately	0x2211
F05.30	Home return enable mode	1: High level triggering of FunIN.32 signal input by DI 2: Triggered by the rising edge of FunIN.32 signal input from DI 3: Power on automatic execution	1	-	Effective immediately	0x2212
F05.31	Home return action mode	0-37	1	-	Effective immediately	0x2213
F05.32	High-speed search home switch signal speed	1~3000	500	r/min	Effective immediately	0x2214
F05.33	Low speed search home switch signal speed	1~3000	50	r/min	Effective immediately	0x2215
F05.34	Search the acceleration and deceleration time of the home	0~30000	0	ms	Effective immediately	0x2216
F05.36	Offset of mechanical home	-1073741824 ~ 1073741824	0	pulse	Effective immediately	0x2218

F05.38	A B pulse output selection	0: Encoder frequency division output 1: Pulse command synchronous output	0	-	Power on again	0x221a
F05.41	Z pulse output polarity selection	0: Positive polarity 1: Negative polarity	0	-	Power on again	0x221d
F05.42	Z pulse output width selection	0: 1 times the pulse width of A 1: 4 times the pulse width of A	0	-	Power on again	0x221e
F05.70	Command pulse input signal filter	0-31	0	-	Power on again	0x223a
F05.72	Command pulse input direction signal polarity	0: SIGN positive 1: SIGN Reverse	0	-	Effective immediately	0x223c
F05.73	Command pulse input signal logic	0: PULS positive, SIGN positive 1: PULS reverse, SIGN forward 2: PULS forward, SIGN reverse 3: PULS reverse, SIGN reverse	0	-	Power on again	0x223d
F05.75	Command pulse input signal filter mode	0: Simultaneous filtering of PULS and SIGN signals 1: Only filter PULS signal, do not filter SIGN signal	0	-	Power on again	0x223f

F06 Speed control parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F06.04	JOG speed setting value	0~7500	100	rpm	Effective immediately	0x225c
F06.05	Speed command ramp acceleration time	0~30000	0	ms	Effective immediately	0x225d
F06.06	Speed command ramp deceleration time	0~30000	0	ms	Effective immediately	0x225e
F06.07	Maximum speed limit	0~7500	5000	rpm	Effective immediately	0x225f
F06.15	Zero speed detection threshold	0~1000	10	rpm	Effective immediately	0x2267
F06.18	Speed reaches signal threshold	-5000~5000	500	rpm	Effective immediately	0x226a
F06.20	Zero speed detection hysteresis	0-1000	30	rpm	Effective immediately	0x226c
F06.26	Speed arrival hysteresis	0-5000	30	rpm	Effective immediately	0x2272
F06.27	Speed reaches polarity	0: F06.18>0 Speed detection regardless of direction 1: F06.18>0 only detects positive speed, F06.18<0 only detects negative speed	0	-	Effective immediately	0x2273
F06.59	Speed command source	0: Analog speed command 1: Internal speed command 2: Analog speed command+internal speed command	0	-	Effective immediately	0x2293
F06.60	Analog speed command direction	0: Analog positive voltage ->forward speed command, analog negative voltage ->reverse speed command 1: Analog positive voltage ->reverse speed command, analog negative voltage ->forward speed command	0	-	Effective immediately	0x2294
F06.61	Analog speed command polarity	0: Both positive and negative analog voltages are valid 1: Only analog positive	0	-	Effective immediately	0x2295

		voltage is valid, negative voltage forces the speed command to be 0 2: Only analog negative voltage is valid, positive voltage forces the speed command to be 0				
F06.66	Speed detection filter time constant	0.01~50.00	2.00	ms	Effective immediately	0x229a
F06.80	Internal speed 1	-5000~5000	0	rpm	Effective immediately	0x22a8
F06.81	Internal speed 2	-5000~5000	0	rpm	Effective immediately	0x22a9
F06.82	Internal speed 3	-5000~5000	0	rpm	Effective immediately	0x22aa
F06.83	Internal speed 4	-5000~5000	0	rpm	Effective immediately	0x22ab
F06.90	Zero fixed mode selection	0: The motor position is fixed at the moment when the function is turned on, and internal position control is connected at this time 1: When the function is turned on, the speed command is forced to be 0, but the internal control is still speed control	0	-	Effective immediately	0x22b2

F07 Torque control parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F07.05	Torque command filter time constant	0.01~50.00	1.00	ms	Effective immediately	0x22c1
F07.06	2nd torque command filter time constant	0.01~50.00	1.00	ms	Effective immediately	0x22c2
F07.07	Torque limit source	0: Internal/External Restrictions (F07.09~F07.12) 1: Analog limit 2: Internal torque command as a limitation	0	-	Effective immediately	0x22c3
F07.09	Internal forward torque limit	0-500	300	%	Effective immediately	0x22c5
F07.10	Internal reverse torque limit	-500~0	-300	%	Effective immediately	0x22c6
F07.11	External forward torque limit	0-500	100	%	Effective immediately	0x22c7
F07.12	External reverse torque limit	-500~0	-1.00	%	Effective immediately	0x22c8
F07.17	Speed limit source selection	0: Basic speed limit F07.62 1: Basic speed limit+analog speed command limit 2: Basic speed limit+internal speed command limit	0	-	Effective immediately	0x22cd
F07.59	Torque command source	0: Analog torque command 1: Internal torque command 2: Analog torque command+internal torque command	0	-	Effective immediately	0x22f7
F07.60	Analog torque command direction	0: Analog positive voltage is the forward torque command, analog negative voltage is the reverse torque command 1: Analog positive voltage is the reverse torque command, and analog negative voltage	0	-	Effective immediately	0x22f8

		is the forward torque command				
F07.61	Analog torque command polarity	0: Both positive and negative analog voltages are valid 1: Only analog positive voltage is valid, negative voltage forces torque command to be 0 2: Only analog negative voltage is valid, positive voltage forces torque command to be 0	0	-	Effective immediately	0x22f9
F07.62	Speed limit during torque control	0 ~5000	3000	rpm	Effective immediately	0x22fa
F07.80	Internal torque 1	-300~300	0	%	Effective immediately	0x230c
F07.81	Internal torque 2	-300~300	0	%	Effective immediately	0x230d
F07.82	Internal torque 3	-300~300	0	%	Effective immediately	0x230e
F07.83	Internal torque 4	-300~300	0	%	Effective immediately	0x230f
F07.84	Torque reaches signal threshold	-300~300	0	%	Effective immediately	0x2310
F07.85	Torque arrival return difference	0~300	5	%	Effective immediately	0x2311
F07.86	Torque reaches polarity	0: F07.84>0 Speed detection regardless of direction 1: F07.84>0 only detects positive torque, F07.84<0 only detects negative torque	0	-	Effective immediately	0x2312

F08 Gain related parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F08.00	Speed loop gain	1~3000	40	Hz	Effective immediately	0x2320
F08.01	Speed loop integration time constant	1.0~1000.0	20.0	ms	Effective immediately	0x2321
F08.02	Position loop gain	1~1000	40	1/s	Effective immediately	0x2322
F08.03	2nd speed loop gain	1~3000	40	Hz	Effective immediately	0x2323
F08.04	2nd speed loop integration time constant	1.0~1000.0	20.0	ms	Effective immediately	0x2324
F08.05	2nd position loop gain	1~1000	40	1/s	Effective immediately	0x2325
F08.06	2nd torque filter frequency	100-5000	5000	Hz	Effective immediately	0x2326
F08.07	2nd torque filter quality factor	1~100	50	-	Effective immediately	0x2327
F08.09	Gain switch selection	0: Fixed 1st gain 1: Fixed 2nd gain 2: Determined by the FunIN.3 signal level input from DI 3: Command pulse frequency control 4: Pulse deviation control 5: Motor speed control	0	-	Effective immediately	0x2329
F08.10	Gain switch delay time	0~3000	5	ms	Effective immediately	0x232a
F08.11	Gain switch level	0~32767	100	-	Effective immediately	0x232b
F08.12	Gain switch time lag	0~32767	5	-	Effective immediately	0x232c
F08.13	Position gain switch time	0~3000	5	ms	Effective	0x232d

					immediately	
F08.15	Load inertia ratio	0.0-200.0	1.0	times	Power on again	0x232f
F08.18	Speed feedforward filter time constant	0-100	0	%	Power on again	0x2332
F08.19	Speed feedforward gain	0-100	0	%	Power on again	0x2333
F08.24	Speed loop PDFF control coefficient	0~100	100	%	Effective immediately	0x2338
F08.38	speed observer gain	10~1000	120	Hz	Effective immediately	0x2346
F08.39	Speed observer compensation coefficient	0~1000	150	%	Effective immediately	0x2347
F08.40	Speed observer feedback speed source	0-1	0	-	Effective immediately	0x2348
F08.42	Model tracking control switch	0: Invalid model tracking 1: Suitable for rigid loads 2: Reserved 3: Universal type	0	-	Effective immediately	0x234a
F08.43	Model tracking control gain	10-2000	40	Hz	Effective immediately	0x234b
F08.44	Model tracking control attenuation coefficient	50-200	100	-	Effective immediately	0x234c
F08.46	Model tracking control speed compensation coefficient	0~100	100	%	Effective immediately	0x234e
F08.47	Model tracking control forward deviation compensation coefficient	0-1000	100	%	Effective immediately	0x234f
F08.48	Model tracking control reverse deviation compensation coefficient	0-1000	100	%	Effective immediately	0x2350
F08.49	Model tracking control speed loop gain	1-3000	40	Hz	Effective immediately	0x2351
F08.50	Model tracking control speed loop integral time constant	1.0-1000.0	20.0	ms	Effective immediately	0x2352
F08.51	Model tracking control acceleration feedforward filter time	0.10~50.00	0.50	ms	Effective immediately	0x2353
F08.52	Medium frequency vibration suppression 1 switch	0: Disable 1: Manually set the vibration frequency point 2: Automatic detection of vibration point frequency	0	-	Effective immediately	0x2354
F08.53	Medium frequency vibration suppression 1 vibration frequency	50~2000	100	Hz	Effective immediately	0x2355
F08.54	Medium frequency vibration suppression 1 damp coefficient	0 ~300	150	%	Effective immediately	0x2356
F08.56	Medium frequency vibration suppression 1 compensation coefficient	1 ~1000	100	%	Effective immediately	0x2358
F08.58	Medium frequency vibration suppression 2 switch	0: Disable 1: Manually set the vibration frequency point 2: Automatic detection of vibration point frequency	0	-	Effective immediately	0x235a
F08.59	Medium frequency vibration suppression 2 vibration frequency	50~2000	100	Hz	Effective immediately	0x235b
F08.60	Medium frequency vibration suppression 2 damp coefficient	0 ~300	150	%	Effective immediately	0x235c
F08.61	Medium frequency vibration suppression 2 compensation coefficient	1 ~1000	100	%	Effective immediately	0x235d

F09 Automatically adjust parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F09.01	Rigidity level selection	0-22	0	-	Effective immediately	0x2385
F09.05	Inertia estimation mode	0: Disable inertia estimation 1: Reserved for manufacturer's use 2: Online inference mode	0	-	Effective immediately	0x2389
F09.06	Inertia estimation gain level	0: Low gain 1: Medium gain 2: High gain	0	-	Effective immediately	0x238a
F09.12	1st resonance notch filter frequency	50-5000	5000	Hz	Effective immediately	0x2390
F09.13	1st resonance notch filter quality factor	1-100	7	-	Effective immediately	0x2391
F09.14	1st resonance notch filter depth	0-60	0	dB	Effective immediately	0x2392
F09.15	2nd resonance notch filter frequency	50-5000	5000	Hz	Effective immediately	0x2393
F09.16	2nd resonance notch filter quality factor	1-100	7	-	Effective immediately	0x2394
F09.17	2nd resonance notch filter depth	0-60	0	dB	Effective immediately	0x2395
F09.18	3rd resonance notch filter frequency	50-5000	5000	Hz	Effective immediately	0x2396
F09.19	3rd resonance notch filter quality factor	1-100	7	-	Effective immediately	0x2397
F09.20	3rd resonance notch filter depth	0-60	0	dB	Effective immediately	0x2398
F09.21	4th resonance notch filter frequency	50-5000	5000	Hz	Effective immediately	0x2399
F09.22	The 4th resonance notch filter quality factor	1-100	7	-	Effective immediately	0x239a
F09.23	4th Resonance notch filter Depth	0-60	0	dB	Effective immediately	0x239b
F09.33	Friction Compensated Disturbance Observer Switch	0: Friction compensation disturbance observer closed 1: Friction compensation disturbance observer activated	0	-	Effective immediately	0x23a5
F09.34	Friction Compensated Disturbance Observer Gain	10~1000	100	-	Effective immediately	0x23a6
F09.35	Friction compensation disturbance observer compensation coefficient	0-1000	0	-	Effective immediately	0x23a7
F09.36	Friction Compensation Disturbance Observer Torque Coefficient	0-1200	400	Hz	Effective immediately	0x23a8
F09.38	End vibration suppression period	0~1000	0	ms	Effective immediately	0x23aa
F09.39	End vibration suppression compensation coefficient	1.0-100.0	1.0	-	Effective immediately	0x23ab
F09.44	End vibration detection filter frequency	10~2000	200	Hz	Effective immediately	0x23b0
F09.46	End vibration suppression mode	0: Disable vibration suppression function 1: Automatically detect vibration frequency, suitable for situations where inertia changes little 2: Automatically detect vibration frequency, suitable for situations where inertia always changes 3: Manually set the vibration frequency, suitable for situations where the vibration	0	-	Effective immediately	0x23b2

		frequency is known				
F09.47	Minimum detection amplitude of end vibration	3~32767	5	P	Effective immediately	0x23b3
F09.55	Vibration detection alarm time	0 ~100	0	s	Effective immediately	0x23bb

F0A Fault/protection parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F0A.04	Overload protection detection gain	0-500	117	%	Effective immediately	0x23ec
F0A.08	Speeding detection percentage	0-400	140	%	Effective immediately	0x23f0
F0A.10	Excessive position deviation detection threshold	0.00-327.67	4.00	lock up	Effective immediately	0x23f2
F0A.25	Speed feedback display value filter time parameter	0.1~1000.0	80.0	ms	Power on again	0x2401
F0A.36	Encoder multi-turn overflow fault selection	0: Detecting encoder multi turn overflow fault 1: Shielding encoder multiple loop overflow fault	1	-	Power on again	0x240c
F0A.50	Forward torque overload alarm threshold	0-300	300	%	Power on again	0x241a
F0A.51	Reverse torque overload alarm threshold	-300 – 0	-300	%	Power on again	0x241b
F0A.52	Torque overload alarm duration threshold	0-10000	0	10ms	Power on again	0x241c
F0A.60	Protection detection program run cycle	5-100	5	ms	Power on again	0x2424
F0A.61	Speed feedback monitoring value filter time parameter	0.0-300.0	2.0	ms	Power on again	0x2425
F0A.62	Speed read value filter time parameter	0.1-300.0	0.1	ms	Power on again	0x2426
F0A.63	Pulse command frequency detection filter time constant	0.1-1000.0	4.0	ms	Effective immediately	0x2427
F0A.64	Current feedback monitor value filter time constant	1-3000	24	ms	Effective immediately	0x2428
F0A.65	Torque feedback monitor value filter time constant	1-3000	24	ms	Effective immediately	0x2429
F0A.66	Brake power feedback pre-detection filter time constant	1-3000	40	ms	Effective immediately	0x242a
F0A.67	Average load rate feedback detection filter time constant	1-3000	30	ms	Effective immediately	0x242b
F0A.68	Peak detection data statistics time	1-30	10	s	Power on again	0x242c
F0A.70	Motor static speed detection threshold	0-1000	5	rpm	Power on again	0x242e
F0A.72	Switch position control mode speed detection threshold	0-3000	15	rpm	Power on again	0x2430
F0A.75	UVW phase loss detection enable switch	0: Do not detect phase loss 1: Detecting phase loss	0		Power on again	0x2433

F0b Monitored parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F0B.00	Motor actual speed	-9999~9999	0	rmp	Display	0x244c
F0B.01	Speed command	-9999~9999	0	rmp	Display	0x244d
F0B.02	Internal torque command	-300-300	0	%	Display	0x244e

F0B.03	Input signal monitor DI	0~65535	0	-	Display	0x244f
F0B.05	Output signal monitor DO	0~65535	0	-	Display	0x2451
F0B.07	Absolute position counter	-2147483648~2147483647	0	P	Display	0x2453
F0B.09	Mechanical angle	0~65535	0	°	Display	0x2455
F0B.12	Average load value	0-800	0	%	Display	0x2458
F0B.13	Input instruction counter	-21474836482~147483647	0	P	Display	0x2459
F0B.15	Encoder position deviation counter	-21474836482~147483647	0	P	Display	0x245b
F0B.17	Feedback pulse counter	-21474836482~147483647	0	P	Display	0x245d
F0B.21	Analog channel 1 voltage sampling value	- 10.00~10.00	0	V	Display	0x2461
F0B.22	Analog channel 2 voltage sampling value	- 10.00~10.00	0	V	Display	0x2462
F0B.24	Phase current effective value	0.0~6553.5	0	A	Display	0x2464
F0B.26	Bus voltage value	0.0~6553.5	0	A	Display	0x2466
F0B.27	Module humidity value	-20~200	0	℃	Display	0x2467
F0B.33	Fault record	0: Current fault 1: Last fault 2: Last 2 fault ... 7: Last 7 fault	0	-	Effective immediate ly	0x246d
F0B.34	Selected number of fault codes	~	0	-	Display	0x246e
F0B.37	Motor speed at selected fault	-32767~32767	0	rpm	Display	0x2471
F0B.38	Motor U-phase current at selected fault	-32767~32767	0	A	Display	0x2472
F0B.39	Motor V-phase current at selected fault	-32767~32767	0	A	Display	0x2473
F0B.40	Bus voltage at selected fault	0.0~6553.5	0	V	Display	0x2474
F0B.41	Input terminal status at selected fault	0~65535	0	-	Display	0x2475
F0B.43	Output terminal status at selected fault	0~65535	0	-	Display	0x2477
F0B.53	Position deviation counter	-2147483648~2147483647	0	P	Display	0x2481
F0B.55	Motor actual speed	-2147483648~2147483647	0	rpm	Display	0x2483
F0B.58	Mechanical absolute position	-2147483648~2147483647	0	p	Display	0x2486
F0B.60	Mechanical absolute position	-2147483648~2147483647	0	P	Display	0x2488
F0B.64	Real-time input instruction counter	-2147483648~2147483647	0	-	Display	0x2480
F0B.70	Absolute encoder revolutions	0~2147483647	0	P	Display	0x2492
F0B.71	Position within 1 revolution of absolute encoder	0~2147483647	0	P	Display	0x2493
F0B.77	Absolute value position	-2147483648~2147483647	0	P	Display	0x2499
F0B.79	Absolute value position	-2147483648~2147483647	0	P	Display	0x249b
F0B.87	Current absolute position	0~65535	0	P	Display	0x24a3
F0B.90	Firmware version date	-	-	-	Display	0x24a6
F0B.91	Encoder error count	0~65535	0	P	Display	0x24a7
F0B.92	Power board error count	0~65535	0	P	Display	0x24a8
F0B.98	U phase current sampling value	0 ~FFFF	0	-	Display	0x24ae
F0B.99	W phase current sampling value	0 ~FFFF	0	-	Display	0x24af

F0C Communication parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F0C.00	Drive device address	1-32	1	-	Power on again	0x24b0
F0C.02	Modbus communication baud rate setting	1: 4800 2: 9600	2	-	Power on again	0x24b2

		3: 19200 4: 38400 5: 57600 6: 115200				
F0C.03	Modbus communication wave mode	0-2:Reserved 3: RTU, data length 8, no checksum, stop bit 1 4: RTU, data length 8, even parity check, stop bit 1 5: RTU, data length 8, odd parity, stop bit 1	3	-	Power on again	0x24b3

F0d Auxiliary function parameters

Parameter	Function	Range	Default	Unit	Effective method	Address
F0D.10	Analog channel zero adjustment	0: No action 1: Trigger analog channel AS1 to zero 2: Trigger analog channel AS2 to zero	0	-	Effective immediately	0x251e
F0D.11	Speed 100% torque JOG run	0: No action 1: Trigger the motor to run at 100% rated torque at the set speed	-	-	Effective immediately	0x251f
F0D.12	Speed 300% torque JOG run	0: No action 1: Trigger the motor to run at 300% rated torque at the set speed	-	-	Effective immediately	0x2520
F0D.13	Speed test run	0: No action 1: Trigger the motor to switch back and forth between positive and negative rated speeds for operation 2: Trigger the motor to switch operation according to the internal set speed queue 1 3: Trigger the motor to switch operation according to the internal set speed queue 2	0	-	Effective immediately	0x2521
F0D.20	Absolute encoder operation	0: No action 1: Trigger encoder fault reset operation 2: Trigger encoder fault reset and multi turn zeroing operation 3: Trigger parameter writing to encoder EEPROM operation	0	-	Effective immediately	0x2528
F0D.24	Open loop run	0: No action 1: Trigger open-loop operation 2: Trigger open-loop test	0	-	Effective immediately	0x252c
F0D.25	Encoder operates on zero	0: No action 1: Trigger encoder to zero operation	0	-	Effective immediately	0x252d
F0D.29	Power board self-test	0: No action 1: Trigger power board self-test	0	-	Effective immediately	0x2531

CHAPTER 5 DETAILED EXPLANATION OF GENERAL IO FUNCTIONS

5.1 Detailed explanation of universal input function

Signal name	Symbol	Applicable mode	Function code	Instructions for use
Servo enable	S -ON	ALL	FunIN.1	To reset a resettable fault, you need to turn off the servo enable signal before use this function.
Fault and warn reset	ALM -RST	ALL	FunIN.2	◆The driver will process it internally according to edge validity. ◆To reset a resettable fault, you need to turn off the servo enable signal (S -ON is set to OFF) before using this function. ◆Depending on the alarm type, the servo can continue to work after some alarms are reset.
Gain switch	GAIN -SEL	ALL	FunIN.3	When F08.09=1: ◆ Invalid -speed control loop is PI control. ◆ valid -speed control loop is P control. When F08.09=2: ◆ Invalid -fixed to the first group of gains. ◆ valid -fixed to the second set of gains.
Mode switch 1	M1 -SEL	ALL	FunIN.10	Accord to the selected control mode (3, 4, 5), switch between speed, position and torque.
Mode switch 2	M2 -SEL	ALL	FunIN.11	Accord to the selected control mode (6), switch between speed, position and torque.
Zero fixed enable	ZCLAMP	ALL	FunIN.12	◆Valid -enable the zero position fix function. ◆Invalid -and disabled zero position fix function.
zero instruction	INHIBIT		FunIN.13	◆ Valid -command pulse input prohibited. ◆Invalid -command pulse input is allowed.
Forward overtravel switch	CCWL	ALL	FunIN.14	When the mechanical movement exceeds the movable range, the overtravel prevention function is entered: ◆Valid -reverse drive is prohibited. ◆Invalid -allows reverse drive. ◆Valid mode: level
Reverse overtravel switch	CWL	ALL	FunIN.15	
Positive external torque limit	P -CL	ALL	FunIN.16	Accord to the selection of F07.07, the torque limit source is switched.
Anti-external torque limit	N -CL	ALL	FunIN.17	Accord to the selection of F07.07, the torque limit source is switched.
Forward jog	JOGCMD+	ALL	FunIN.18	◆Valid -Input accord to the given command. ◆ Invalid - Run command stop input.
Negative jog	JOGCMD-	ALL	FunIN.19	◆Valid -input in reverse direction according to the given command. ◆ Invalid - Run command stop input..
Electronic gear selection	GEAR_SEL	ALL	FunIN.24	◆Invalid -electronic gear ratio 1. ◆Valid -electronic gear ratio 2.
Command direction setting	dIRS	ALL	FunIN.27	◆Invalid, the actual command direction is the same as the set position command direction. ◆Valid, the actual command direction is opposite to the set command direction.
Home switch	HomeSwitch	ALL	FunIN.31	◆It is recommended to assign it to the fast DI terminal. If set to 2 (valid on rise edge), the driver will be forced to change to 1 (valid on high level) internally. If set to 3 (valid on falling edge), the drive will be forced to change to 0 (valid on low level) internally. If it is set to 4 (valid on both rise and falling edges), the driver will be forced to change to 0 internally (valid on low level)
Home return enabled	HomingStart	ALL	FunIN.32	◆Invalid -prohibition. ◆Valid -enabled.
Emergency shutdown	Emergency Stop	ALL	FunIN.34	◆ Valid-position lock after zero speed stop. ◆Invalid -has no impact on the current running status.

Clear position deviation	V_LmtSel	P	FunIN.36	◆ Valid-position deviation clear. ◆Invalid -position deviation is not cleared. ◆This DI function is recommended to be configured on the DI8 or DI9 terminal.
Internal speed limit source	V_LmtSel	S	FunIN.36	◆Invalid -F07.19 is used as the internal forward/reverse speed limit value. ◆Valid -F07.20 is used as the internal forward/reverse speed limit value.
Pulse command prohibited	PulseInhibit	P	FunIN.37	In position control mode, when the position command source is pulse command (F05.00=0): ◆Invalid - can respond to pulse command. ◆Valid - not responding to pulse command.
Set the current position as the home	HomeRecord	P	FunIN.41	◆invalid - not trigger. ◆Valid - trigger with current position as home.
Internal speed selection	SP1	S	FunIN.43	When speed control and speed limit, select internal speed ◆00: Internal speed 1 (F06.80) ◆01: Internal speed 2 (F06.82) ◆10: Internal speed 3 (F06.82) ◆ 11: Internal speed 4 (F06.83)
Internal speed selection	SP2	S	FunIN.44	
Internal torque selection	TRQ1	T	FunIN.46	For torque control and torque limitation, select internal torque ◆00: Internal torque 1 (F07.80) ◆01: Internal torque 2 (F07.81) ◆10: Internal torque 3 (F07.82) ◆11: Internal torque 4 (F07.83)
Internal torque selection	TRQ2	T	FunIN.47	
Proportional control	PC	S	FunIN.49	◆Valid - speed loop P control ◆Invalid - speed loop PI control

5.2 Detailed explanation of general output function

Signal name	Symbol	mode	Function code	Instructions for use
Servo is ready to output	S -RDY	ALL	FunOUT.1	The servo state is ready and can receive the S -ON valid signal: ◆Valid -servo is ready. ◆Invalid -servo is not ready.
Motor rotation output	TGON	ALL	FunOUT.2	◆Invalid - the absolute value of the motor speed after filter is less than the setting value of function code F06.16. ◆Valid - the absolute value of motor speed after filter reaches the setting value of function code F06.16.
zero speed	ZERO	ALL	FunOUT.3	◆Invalid - When the difference between the motor's speed feedback and the given value is greater than the setting value of function code F06.15. ◆Valid - when the difference between the motor's speed feedback and the given value is not greater than the setting value of function code F06.15.
consistent speed	V -CMP	ALL	FunOUT.4	During speed control, it is valid when the absolute value of the difference between the servo motor speed and the speed command is less than the F06.17 speed deviation setting value.
Positioning completed	COIN	P	FunOUT.5	During position control, the position deviation pulse is valid when it reaches the positioning completion range F05.21.
Positioning close to	NEAR	P	FunOUT.6	During position control, the position deviation pulse is effective when it reaches the position approach signal amplitude F05.22 setting value.
Torque limit	C -LT	T	FunOUT.7	Confirmation signal of torque limit: ◆Valid -motor torque is limited. ◆Invalid -motor torque is not limited.
RPM limit	v -LT	T	FunOUT.8	Confirmation signal of limited speed during torque control: ◆Valid -motor speed is limited. ◆Invalid -motor speed is not limited.
Brake output	BK	P	FunOUT.9	◆Valid -close and release the brake. ◆Invalid -start brake.
warning output	WARN	ALL	FunOUT.10	The warn output signal is valid. (turn on)
fault output	ALM	ALL	FunOUT.11	The status is valid when a fault is detected. (turn on when normal, disconnected when fault occurs)
Home return completed	HomeAttain	ALL	FunOUT.16	◆Valid -home return to zero. ◆Invalid -home does not return to zero.

Electrical zero return output	ElecHome Attain	P	FunOUT.17	◆Valid -electrical home return to zero. ◆Invalid -electrical home does not return to zero.
Torque reaches output	ToqReach	T	FunOUT.18	◆ -The absolute value of effective torque reaches the set value. ◆ -The absolute value of invalid torque is less than the set value.
Speed reaches output	V-Arr	ALL	FunOUT.19	◆Valid -speed feedback reaches the set value. ◆Invalid -speed feedback does not reach the set value.
DB brake output	DB	P.S.	FunOUT.21	◆Valid -dynamic brake relay is disconnected. ◆Invalid -dynamic brake relay is activated.
Servo is running	RUN		FunOUT.26	◆Valid - servo enable ON ◆Invalid - servo enable OFF

CHAPTER 6 LIST OF FAULTS AND WARN

6.1 Category 1 (NO.1) fault table

Category 1 (NO.1) non-reset fault table

Show	Fault name	Fault type	Can it be reset?
Er.101	The servo internal parameters are abnormal.	NO.1	no
Er.102	Programmable logic fault	NO.1	no
Er.103	Programmable logic device check error	NO.1	no
Er.108	Parameter storage failure	NO.1	no
Er.109	Software security check error	NO.1	no
Er.120	Product match failure	NO.1	no
Er.124	Auxiliary encoder setting error	NO.1	no
Er.126	Power board communication failure	NO.1	no
Er.136	The data verification in the motor ROM is incorrect or the parameters are not stored.	NO.1	no
Er.201	Overcurrent 2	NO.1	no
Er.611	Over torque	NO.1	no
E r.627	Dynamic brake failure	NO.1	no
E r.653	Module temperature alarm	NO.1	no
Er.735	Encoder multi-turn count overflow	NO.1	no
Er.739	Encoder recognition error	NO.1	no
Er.740	Encoder interference	NO.1	no
Er.741	Pulse encoder signal error	NO.1	no
E r.742	Pulse encoder counting error	NO.1	no
E r.743	Pulse encoder Z signal lost	NO.1	no
Er.744	Encoder overspeed	NO.1	no
E r.745	Encoder overheating	NO.1	no
E r.800	Current sampling error	NO.1	no
Er.A33	Encoder data abnormality	NO.1	no
Er.A34	Encoder feedback verification exception	NO.1	no
E r.A35	Encoder frame data error	NO.1	no
Er.A36	Encoder EEPROM read error	NO.1	no
Er.207	D/Q axis current overflow fault	NO.1	yes
Er.400	Main circuit voltage overvoltage	NO.1	yes
Er.410	Main circuit voltage undervoltage	NO.1	yes
Er.500	Over speed	NO.1	yes
Er.610	Drive overload	NO.1	yes
Er.620	Motor overload	NO.1	yes
Er.650	Radiator overheated	NO.1	yes
Er.B00	Position deviation is too large	NO.1	yes
Er.B01	Position error overflow	NO.1	yes

6.2 Category 2 (NO.2) fault table

Show	Fault name	Fault type	Can it be reset?
Er.420	Main circuit electrical phase loss	NO.2	yes
Er.430	Control voltage undervoltage	NO.2	yes
Er.660	Excessive vibration	NO.2	yes
Er.731	Encoder battery failure	NO.2	yes
Er.939	Motor power cable is broken	NO.2	yes

6.3 Category 3 (NO.3) warn table

Show	Fault name	Fault type	Can it be reset?
Er.603	The signal for returning to zero and find the reference point exceeds the limit.	NO.3	yes
Er.604	Return to zero point Z signal exceeds the limit	NO.3	yes
Er.652	Module temperature warn	NO.3	yes
Er.730	Encoder battery warn	NO.3	yes
Er.920	Brake resistor overload	NO.3	yes
Er.924	Drain pipe overtemperature warn	NO.3	yes
Er.950	Forward overtravel warn	NO.3	yes
Er.952	Reverse overtravel warn	NO.3	yes
Er.954	Driver disabled exception	NO.3	yes