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SV-E3
High performance servo system

Contents

Servo Drive

Pluse type servo drive

Servo motor

50w motor

100w motor

200w motor

400w motor

750w motor

1kw motor

1.5kw motor

2kw motor

Type selection table

Table

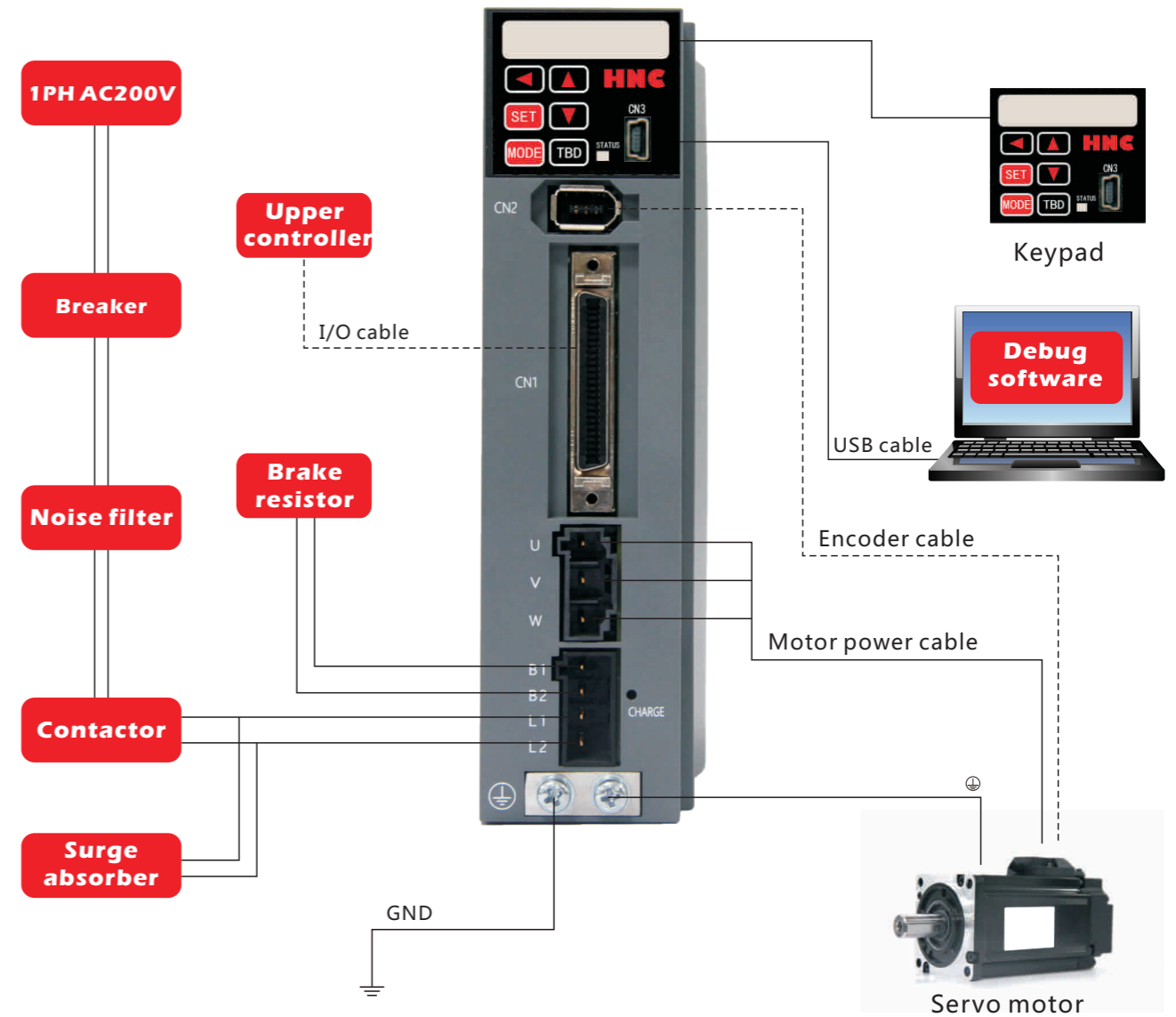


Products are widely used in robots, manipulators, 3C equipment,
Electronics, woodworking, printing, hardware, welding, CNC, glass,
Machine tools, packaging, die-cut labeling equipment, lithium battery equipment, etc.





SERVO MOTOR & SERVO DRIVE



*When the length of the I/O cable is longer than 50cm, please use a shielded wire.

*When wiring, the length of the encoder cable should be less than 20m.

*Please refer to the instruction manual for the wiring method of multi-axis servo drives.

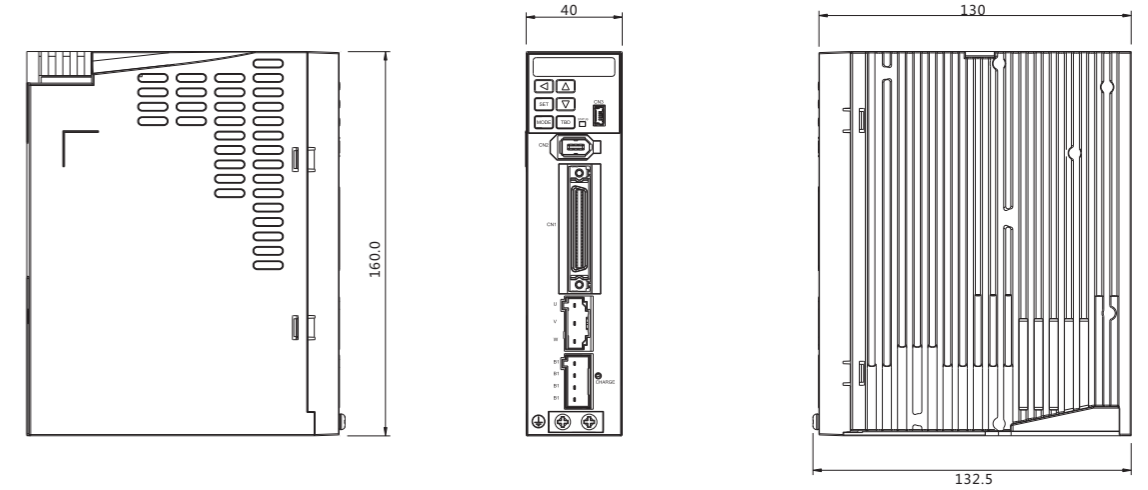
*The dotted line in the wiring diagram indicates a non-hazardous voltage circuit.

Drive model naming rule

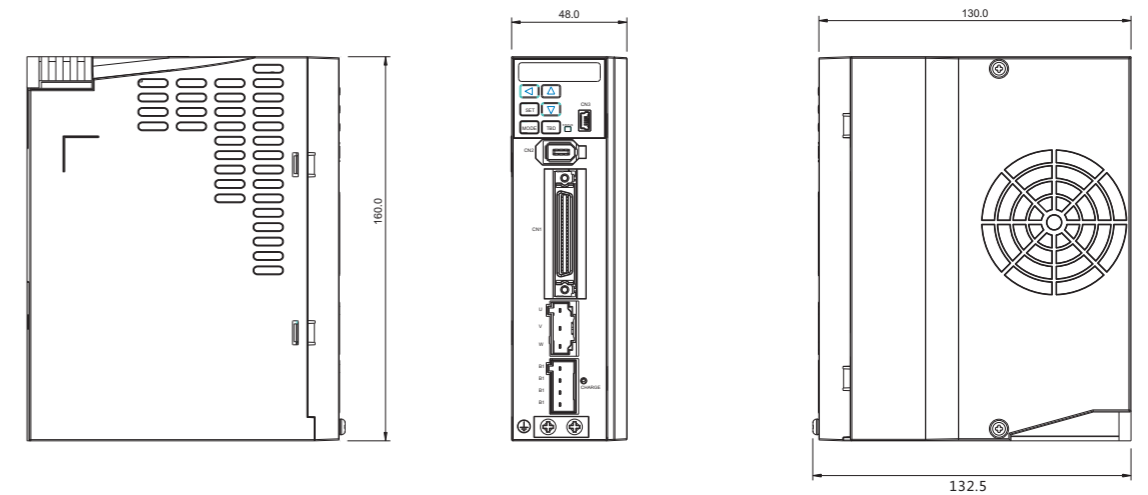
SV	-	E	3	P	075	A	2	A
Servo			3 series	P Pulse type	005 50W	A AC	2 220V	A Standard
			5 series	B BUS type	010 100W	D DC	3 380V	B Classic
					020 200W		4 48V	C CANopen
					040 400W		8 80V	E EtherCAT
					075 750W			
					100 1000W			
					150 1500W			

Standard version specifications

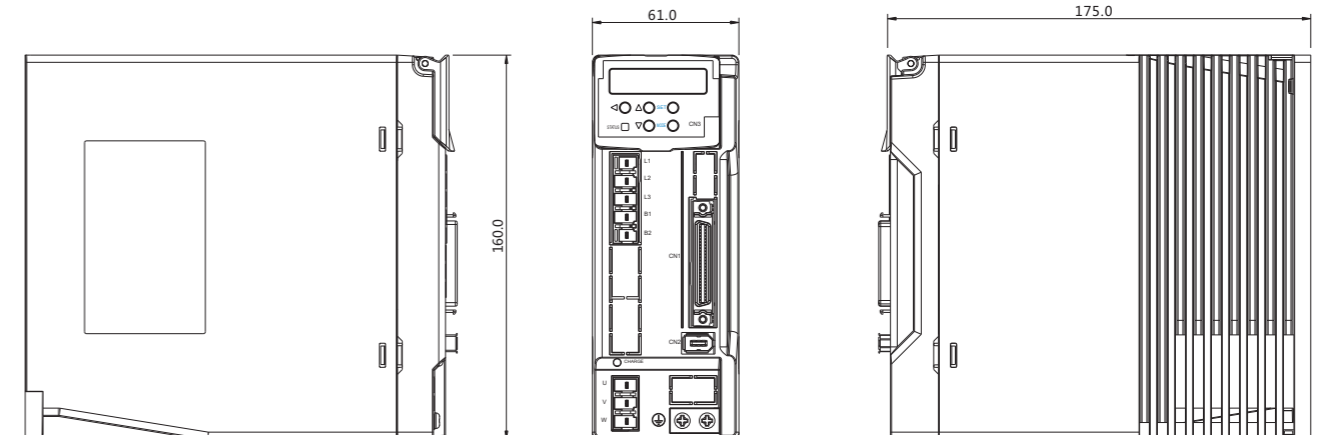
Item	Specification								
Model	SV-E3P005**A	SV-E3P010**A	SV-E3P020**A	SV-E3P040**A	SV-E3P075**A	SV-E3P100**A	SV-E3P150**A	SV-E3P200**A	
Motor	50W	100W	200W	400W	750W	1000W	1500W	2000W	
W(mm)	40			48		61			
	160			160		160			
	130			130		175			
Weight(Kg)	0.7			0.8		1.6			
Input	Main	1Phase 200~240V±10% 50/60Hz				3Phase 200~240V±10%			
	Power	Note 1: Only 2 phases are connected when a 3-phase power supply is used						50/60Hz	
	Control	DC24V±10%							
Control	Power	140mA Typ			220mA Typ		240mA Typ		
	Control mode	Three-phase PWM inverter sine wave drive							
Encoder	17-bit serial incremental/absolute encoder								
DI	8 points (DC24V series optocoupler input isolation) switch under control mode								
DO	8 points (DC24V series optocoupler output isolation) switch under control mode								
Pulse	Input	EIA-422 differential							
	Output	Open collector (OC type)							
		A/B/Z EIA-422 differential							
Communication	Open collector output is only available for Z phase								
	USB: PC communication								
	EIA-485: (support multi-station)								
Driver status	Display normal/abnormal through LED (STATUS)								
Power indicator	Normal power ON: green light on/power OFF: off/abnormal power ON: red light flashing								
Regeneration	Support external brake resistor								
Dynamic brake	Short-circuit braking via software								
Control mode	Position control, speed control, torque control								

Drive dimensions


50-200W



400-750W



1-2KW and above

Classic version specifications

Item	Specification				
Model	SV-E3P005**B	SV-E3P010**B	SV-E3P020**B	SV-E3P040**B	SV-E3P075**B
Motor	50W	100W	200W	400W	750W
W(mm)	40		48		48
	160		160		160
	130		130		130
Weight(Kg)	0.7		0.8		0.8
Input	Main	1Phase 200~240V±10% 50/ 0Hz			
	Power	Note 1: Only 2 phases are connected when a 3-ph se power s			
	Control	DC24V±10%			
Control	Power	140mA Typ		220mA Typ	
	Control mode	Three-phase PWM inverter sine wave drive			
Encoder	17-bit serial incremental/absolute encoder				
DI	2 points Isolated input				
DO	5 points Isolated output				
Pulse	Input	EIA-422 differential			
	Output	Open collector (OC type)			
		A/B/Z EIA-422 differential			
Communication	Open collector output is only available for Z phase				
	USB: PC communication				
	EIA-485: (support multi-station)				
Driver status	Display normal/abnormal through LED (STATUS)				
Power indicator	Normal power ON: green light on/power OFF: off/abnormal power ON: red light flashing				
Regeneration	Support external brake resistor				
Dynamic brake	Short-circuit braking via software				
Control mode	Position control				

Note 1) When using two phases of a three-phase power supply, please confirm the power supply specifications according to the specific situation of each country.

Drive connector specifications

Name	Sign	Pin	Signal Name	Content	
750W and below	Brake resistor	B1	1	VP	Brake resistor P side
		B2	2	Regen-out	Brake resistor N side
	1PH AC200V input	L1	3	Primary-Power 1	L1
		L2	4	Primary-Power 2	L2
1KW and above	3PH AC200V input	L1	1	Primary-Power 1	L1 'L1 for single-phase use'
		L2	2	Primary-Power 2	L2 'No use for single-phase use)
		L3	3	Primary-Power 3	L3 'L2 for single-phase use'
	Brake resistor	B1	4	VP	Brake resistor P side
		B2	5	Regen-out	Brake resistor N side
	Motor power cable	U/V/W	1	U	Motor U phase
2			V	Motor V phase	
3			W	Motor W phase	
Encoder	CN2	1	VCC	Encoder 5V power supply output	
		2	GND	GND	
		3	NC	-	
		4	NC	-	
		5	+D	Encoder signal Data input/output	
		6	-D	Encoder signal Data input/output	
		-	SHIELD	SHIELD wire to the shell of driver	
PC communication	CN3	1	VBUS	USB power supply	
		2	D-	USB DATA-	
		3	D+	USB DATA+	
		4	NC	-	
		5	GND	USB GND	
User I/O	CN1	Refer to another table			

Driver function & control specifications

Position control	DI function		SVON, Alarm reset, prohibited command input, deviation counter clear, torque limit selection, CCW/CW prohibited	
	DO function		Alarm status	
	Pulse input	Maximum command pulse frequency	EIA-422 differential : 4Mpps Open collector : 200kpps	
		Pulse type	Pulse+directionI, AB phase pulse, CW+CCW pulse	
		Pulse division	Supported	
		Smoothing	Supported	
	Pulse output	Pulse type	Encoder position pulse output in the following manner: A-/B-phase orthogonal phase difference pulse and Z-phase index pulse released in RS-422 differential format, Z-phase index pulse released through open collector	
	Vibration suppression function		Supported	
	Speed control	DI function		Servo ON, alarm reset, prohibit command input (zero speed clamp), torque limit selection, CCW/CW prohibition
		DO function		Alarm status, servo preparation, brake release, servo status
Analog input		Speed command input	Input voltage -10V to +10V (Maximum speed occurs at ±10V)	
		Smoothing	Supported	
Pulse output	Pulse type	Encoder position pulse output in the following manner: A-/B-phase orthogonal phase difference pulse and Z-phase index pulse released in RS-422 differential format, Z-phase index pulse released through open collector		
Internal speed control	DI function		Servo ON, alarm reset, internal speed command-start/stop, internal speed command selection 8 segments speed, torque limite	
	DO function		Alarm status, servo preparation, brake release, servo status	
	Pulse output	Pulse type	Encoder position pulse output in the following manner: A-/B-phase orthogonal phase difference pulse and Z-phase index pulse released in RS-422 differential format, Z-phase index pulse released through open collector	
General	Robust observer		Supported	
	Feedforward compensation		Supported	
	Mechanical resonance suppression		Supported	
	Automatic gain adjustment		Supported	
	Encoder output frequency division		Supported	
	Adjustment/function setting		Adjust by software	
	Protection		Hardware alarm/software alarm	

Environmental requirements

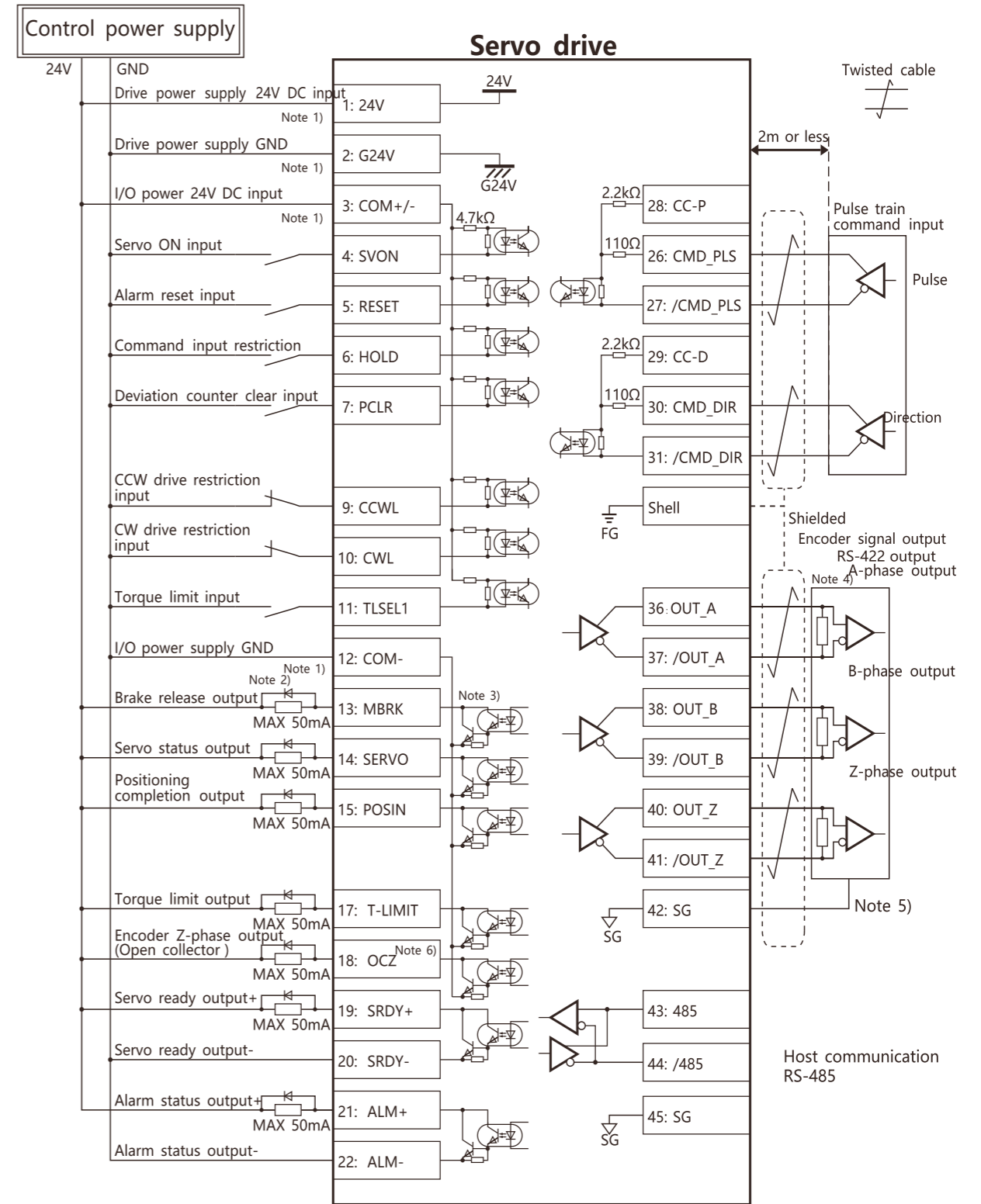
Temperature	Working temperature	0~55°C (No condensation)
	Storage temperature	-20~65°C (No condensation)
Humidity	Working humidity	Below 20~85%RH (No condensation)
	Storage humidity	Below 20~85%RH (No condensation)
Working & Storage Atmospheric Environment		Indoor (no direct sunlight), no corrosive odor, flammable gas, oil mist, dust
Altitude		Below 1000m
Vibration		Below 5.8m/s ² (0.6G) 10~60HZ (Can not be used continuously at resonance frequency)
Insulation & Withstand Voltage		1 time-FG is AC1500V, 1 minute
Precautions		·Must be grounded, Class I corresponding product ·Over voltage category II "Over voltage category II" corresponding products ·Pollution degree 2 corresponding products

Connector CN1 I/O definitions

Pin No	Signal name	Classification	Control mode	Contents
1	VCC	Power supply	All	Drive control power supply 24V input
2	G24V	Power supply	All	Drive control power supply GND
3	COM1	Power supply	All	I/O power supply 24V input
4	I1	Input	All	Servo ON
5	I2	Input	All	Alarm reset
6	I3	Input	Position	Command input prohibition
			Analog speed	Command input prohibition (Zero speed clamp)
			Internal speed	Internal speed command-start 1
7	I4	Input	Position	Deviation counter clear
			Analog speed	Reserved
			Internal speed	Internal speed command-start 2
8	I5	Input	Position	Reserved
			Analog speed	Reserved
			Internal speed	Internal speed command-speed command selection 1
9	I6	Input	Position	CCW drive prohibition
			Analog speed	CCW drive prohibition
			Internal speed	Internal speed command-speed command selection 2
10	I7	Input	Position	CCW drive prohibition
			Analog speed	CCW drive prohibition
			Internal speed	Internal speed command-speed command selection 3
11	I8	Input	All	Torque limit
12	COM2	Power supply	All	I/O power supply GND
13	O1	Output	All	Brake release
14	O2	Output	All	Servo status output
15	O3	Output	Position	Positioning completion output
			Analog speed	Reserved
			Internal speed	Reserved
16	O4	Output	All	Reserved
17	O5	Output	All	Reserved
18	O6	Output	All	Encoder Z phase output
19	O7+	Output	All	Servo ready +
20	O7-	Output	All	Servo ready -
21	O8+	Output	All	Alarm ready +
22	O8-	Output	All	Alarm ready -
23	VCC	—	—	Reserved
24	Sp1	—	—	Reserved
25	Sp2	—	—	Reserved
26	CMD_PLS	Input	Position	Differential input]
				①Pulse + direction pulse
				②Orthogonal phase difference A phase
27	/CMD_PLS	Input	Position	③CCW + CW pulse CCW [5V open collector circuit]
				④Pulse + direction pulse
				⑤Orthogonal phase difference A phase
28	CC-P	Input	Position	⑥CCW + CW pulse CCW
				[24V open collector circuit input]
				①24V of /CMD_PLS
29	CC-D	Input	Position	[24V open collector circuit input]
				①24V of /CMD_DIR
				30
①Pulse + direction direction				
②Orthogonal phase difference B phase				
31	/CMD_DIR	Input	Position	③CCW + CW pulse CW [5V open collector circuit]
				④5V power supply input of /CMD_DIR
				32
①Pulse + direction /direction				
②Orthogonal phase difference / B phase				
33	A_GND	Input	Analog speed	③CCW + CW pulse /CW [5V/24V open collector circuit]
				④Pulse + direction direction
				⑤Orthogonal phase difference B phase
34	A_TRQ	Input	—	⑥CCW + CW pulse CW
				①Pulse + direction pulse
				②Orthogonal phase difference A phase
35	A_GND	Input	—	③CCW + CW pulse CCW [5V open collector circuit]
				④5V power input of /CMD_PLS
				36
⑥5V power input of /CMD_PLS				
37	OUT_/A	Output	All	
				⑧5V power input of /CMD_PLS
				38
⑩5V power input of /CMD_PLS				
39	OUT_/B	Output	All	
				⑫5V power input of /CMD_PLS
				40
⑭5V power input of /CMD_PLS				
41	OUT_/Z	Output	All	
				⑯5V power input of /CMD_PLS
				42
⑱5V power input of /CMD_PLS				
43	485	Input	All	
				⑳5V power input of /CMD_PLS
				44
㉒5V power input of /CMD_PLS				
45	SG	Power supply	All	
				㉔5V power input of /CMD_PLS
				46
㉖5V power input of /CMD_PLS				
47	SP3	—	—	
				㉘5V power input of /CMD_PLS
				48
㉚5V power input of /CMD_PLS				
49	EDM+	—	—	
				㉜5V power input of /CMD_PLS
				50
㉞5V power input of /CMD_PLS				

Pin No	Signal name	Classification	Control mode	Contents
27	/CMD_PLS	Input	Position	[Differential input] ①Pulse + direction / pulse ②Orthogonal phase difference / A phase ③CCW + CW pulse CCW [5V open collector circuit] ④Pulse + direction pulse ⑤Orthogonal phase difference A phase ⑥CCW + CW pulse CCW
28	CC-P	Input	Position	[24V open collector circuit input] ①24V of /CMD_PLS
29	CC-D	Input	Position	[24V open collector circuit input] ①24V of /CMD_DIR
30	CMD_DIR	Input	Position	[Differential input] ①Pulse + direction direction ②Orthogonal phase difference B phase ③CCW + CW pulse CW [5V open collector circuit] ④5V power supply input of /CMD_DIR
31	/CMD_DIR	Input	Position	[Differential input] ①Pulse + direction /direction ②Orthogonal phase difference / B phase ③CCW + CW pulse /CW [5V/24V open collector circuit] ④Pulse + direction direction ⑤Orthogonal phase difference B phase ⑥CCW + CW pulse CW
32	A_SPEED	Input	Analog speed / torque	Analog speed / torque command input
33	A_GND	Input	Analog speed	Analog ground
34	A_TRQ	Input	—	Reserved
35	A_GND	Input	—	Reserved
36	OUT_A	Output	All	Encoder A phase
37	OUT_/A	Output	All	Encoder /A phase
38	OUT_B	Output	All	Encoder B phase
39	OUT_/B	Output	All	Encoder /B phase
40	OUT_Z	Output	All	Encoder Z phase
41	OUT_/Z	Output	All	Encoder /Z phase
42	SG	Power supply	All	Signal ground
43	485	Input	All	EIA-485 communication
44	/485	Input	All	EIA-485 communication
45	SG	Power supply	All	Signal ground
46	G24	—	—	Reserved
47	SP3	—	—	Reserved
48	SP4	—	—	Reserved
49	EDM+	—	—	Reserved
50	EDM-	—	—	Reserved

Diagram of differential pulse input - Position mode



Note: Pin6,7,8,9,10,11,19,20,32,33,34,35 are not available for classic models.

Diagram of 24V OC type pulse input - Position mode

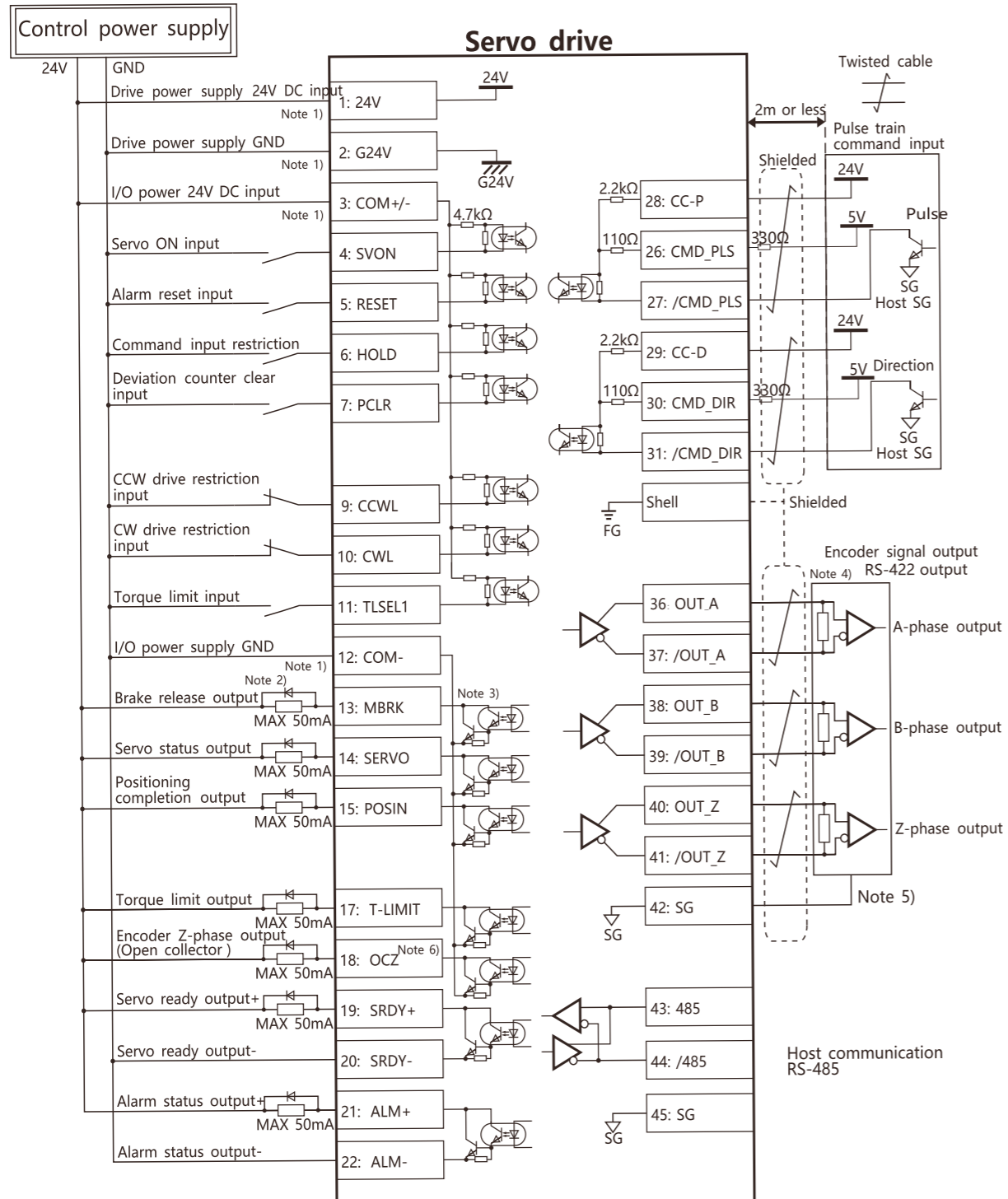


Diagram of analog speed & torque mode

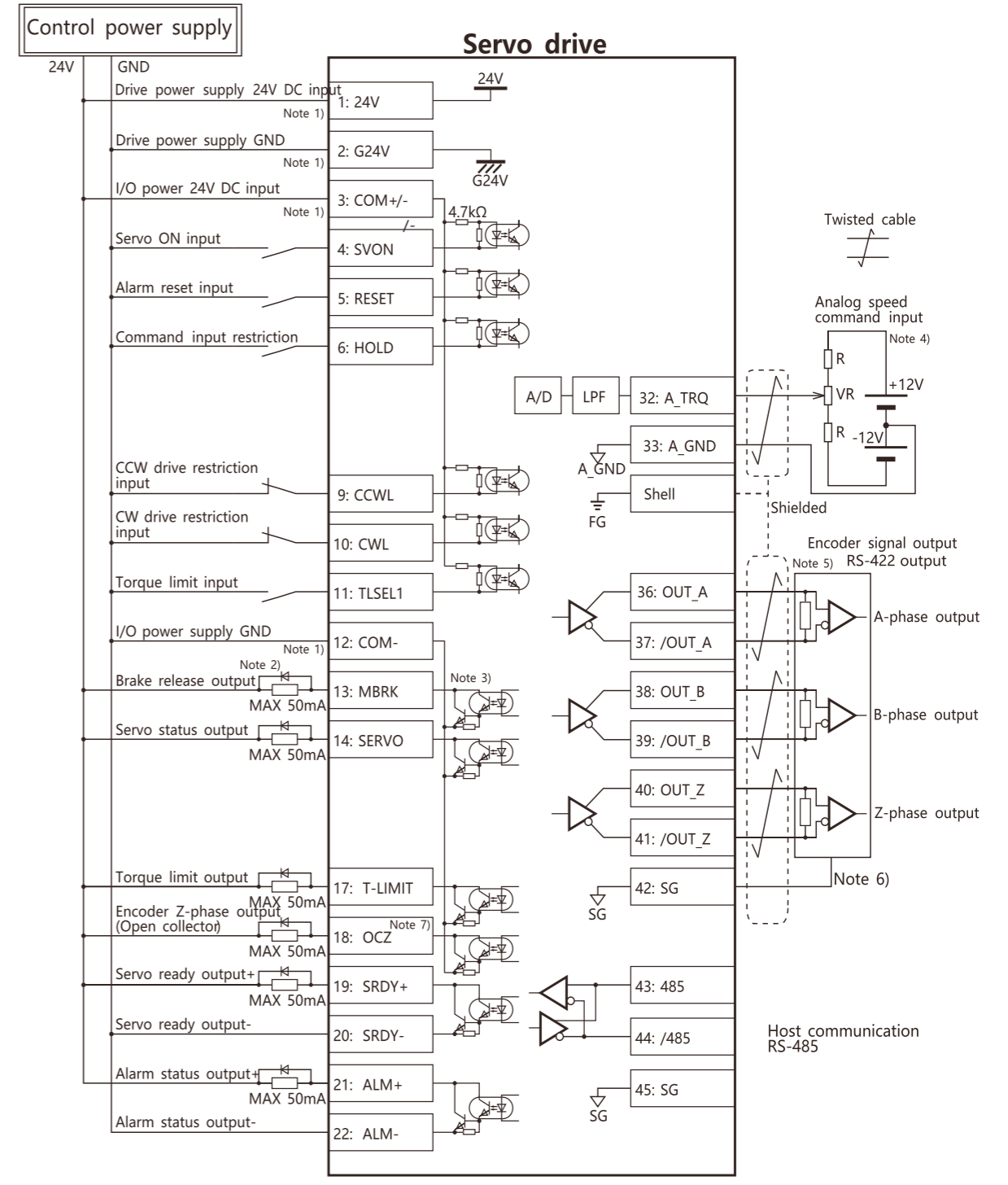
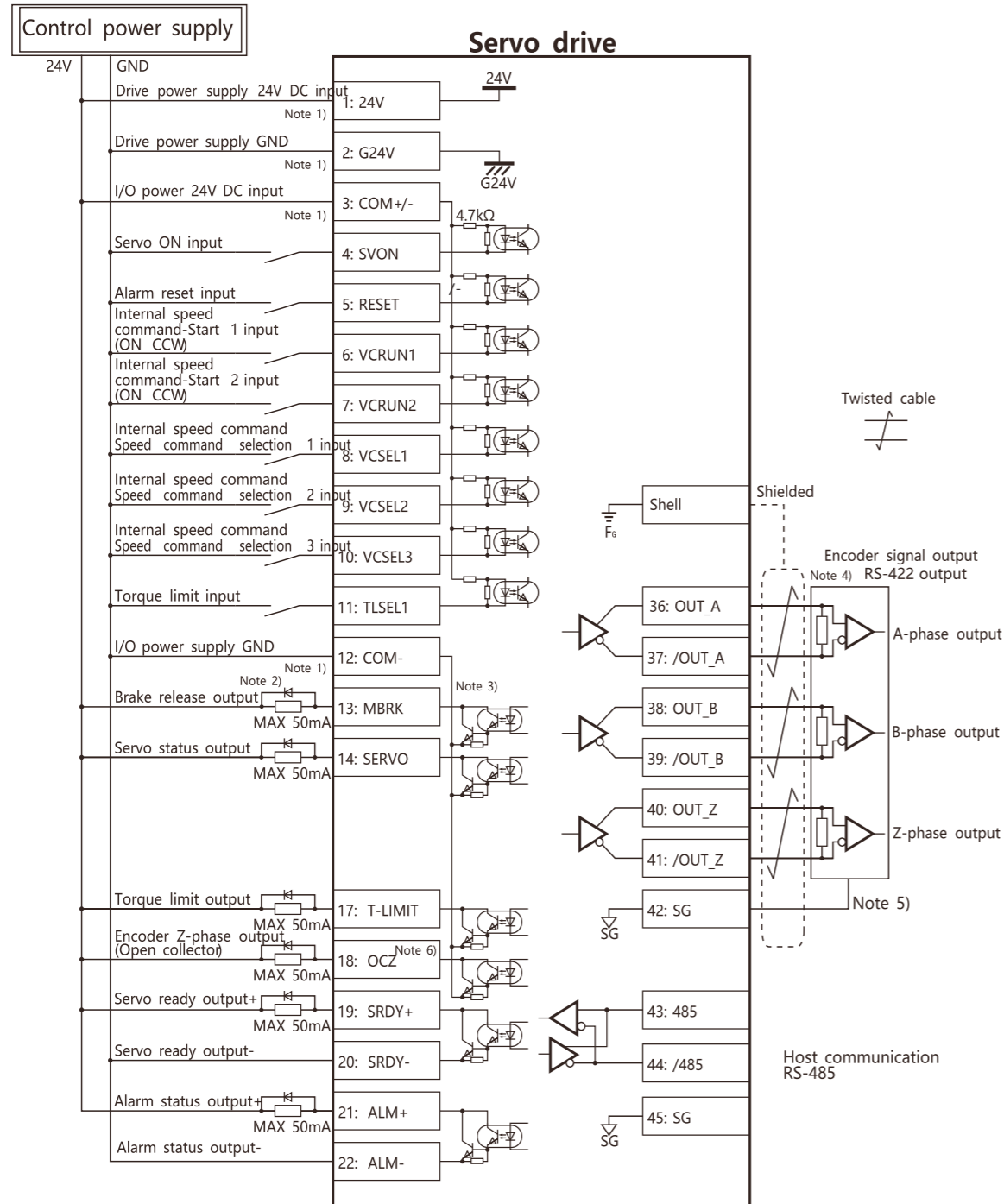


Diagram of internal speed mode



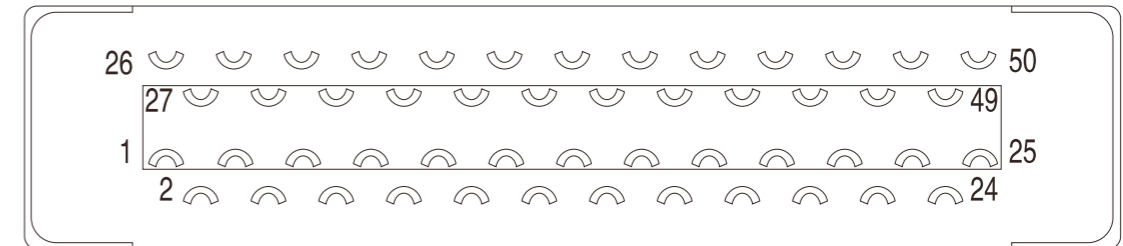
- Note 1) Control power supply(24V, G24V) and I/O power (COM+, COM-) share the same power supply(For the models of 750W or less).
- Note 2) If there is drive inductive load(relay), please use protective circuits(diode).
- Note 3) Transistor output is an open collector output circuit of the Darlington-connected. It should be connected with relay or optocoupler. Please don't connect transistor directly because the voltage VCE(SAT) between collector and emitter is about 1V which cannot meet the required voltage VIL of TTL IC when transistor is ON.
- Note 4) Terminal resistance must be connected as shown in the wiring diagram.
- Note 5) Connect the signal ground on the host control device of output signal of the encoder. The connection of signal ground and power supply GND may cause malfunction.

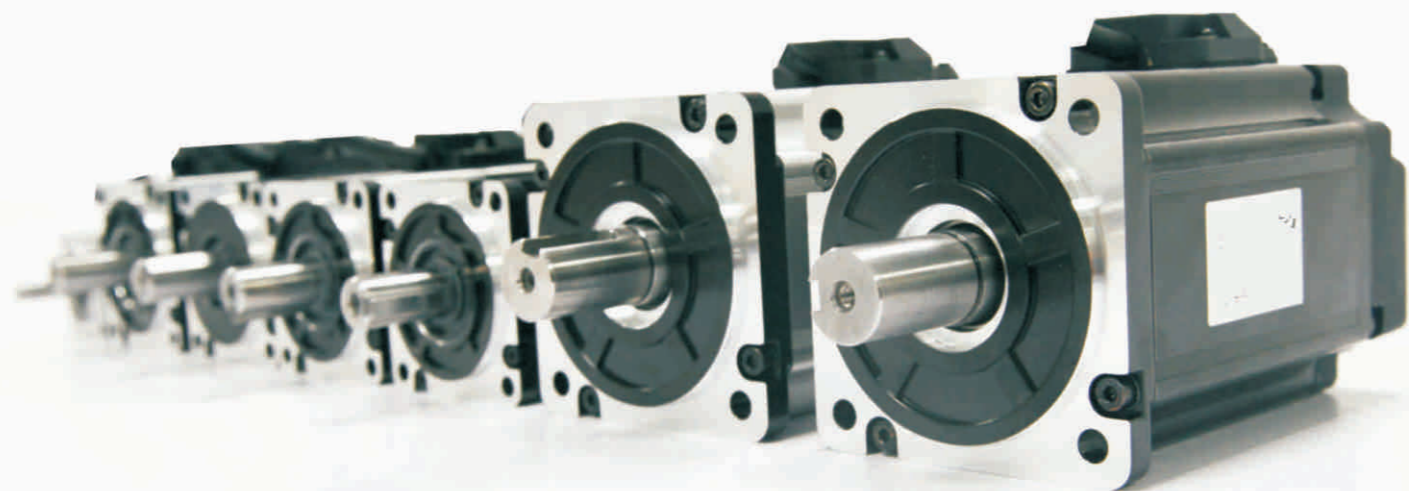
Connector CN1 pins layout

Description of User I/O connector (CN1) terminal arrangements

26	28	30	32	34	36	38	40	42	44	46	48	50
CMD_PLS	CC-P	CMD_DIR	A_SPEED	A_TRQ	OUT_A	OUT_B	OUT_Z	SG	/485	G24	SP4	EDM-
27	29	31	33	35	37	39	41	43	45	47	49	
/CMD_PLS	CC-D	/CMD_DIR	A_GND	A_GND	OUT_/A	OUT_/B	OUT_/Z	485	SG	SP3	EDM+	
1	3	5	7	9	11	13	15	17	19	21	23	25
VCC	COM1	I2(RESET)	I4(PCLR)	I6(CCWL)	I8(TLSEL1)	O1(MBRK)	O3(POSIN)	O5	O7+(SRDY+)	O8+(ALM+)	VCC	SP2
2	4	6	8	10	12	14	16	18	20	22	24	
G24	I1(SVON)	I3(HOLD)	I5	I7(CWL)	COM2	O2(SERVO)	O4	O6(OCZ)	O7-(SRDY-)	O8-(ALM-)		

Connector





HSM-E series Servo Motor

Our company has produced magnetic encoder of 17bit resolution with excellent environmental resistance (no matter in dust, oil mist or vibration). We also produce the SV-E3 servo motor of high quality by means of its simple production structure and international brands of raw materials.



Motor model identification method

SE60	—	2	—	013		L		30		B	—	I1	
SE series		Power supply		Inertia		Inertia		Rated speed		Brake		Encoder	
Flange size:	2	AC220V		002	0.16N.m	L	Low	20	2000rpm	B	Brake	I1	Incremental 17bits
40mm	4	AC380V		003	0.32N.m	M	Medium	30	3000rpm	Null	No brake	A1	Absolute 17bits
60mm				006	0.64N.m	H	High						
80mm				013	1.27N.m								
130mm				024	2.39N.m								
				048	4.76N.m								
				072	7.15N.m								
				095	9.45N.m								

Environmental conditions

Items	Units	Specification
Ambient temperature for use	°C	0~40(Without condensation) Note 1)
Ambient humidity for use	%RH	20~85(Without condensation)
Ambient temperature for storage	°C	-20~65(Highest temperature guaranteed: 80 degrees, 72hours) Note 2)
Ambient humidity for storage	%RH	20~85(Without condensation)
Atmosphere for use/storage	—	Indoors(Not subject to rainwater or direct sunlight); free from corrosive gas, flammable gas, flammables, grinding fluid, oil mist, or dust
Insulation class	—	Class B
Insulation resistance	—	1000 VDC megger 5MΩ or more
Dielectric strength	—	At 1500 V AC 50/60 Hz for 1 minute 10mA or less
Vibration class	—	V 15
Vibration resistance	m/s ²	49 (5G)
Impact resistance	m/s ²	98 (10G)
Protective construction	—	IP65(Excluding shaft penetrating section and connectors)
Time rating	—	Continuous
Operating position	—	All directions
Direction of rotation	—	Normal: CW, Reverse: CCW



*Note 1) The temperature for use is the temperature measured at a point 5cm apart from the motor.
 *Note 2) This is a temperature that can be tolerated only for a short period such as during transportation.

Encoder specifications

Items	Units	Specification
Motor Model Name	—	SE□□□□□□□□I1 SE□□□□□□□□A1
Encoder specification	—	17 bit (incremental) 17 bit (absolute)
Encoder room temperature	°C	0~85
Resistance to external magnetic field	mT	±2 (20G) or less
Rated voltage	V	DC 4.5V~5.5V
External battery voltage	V	DC 2.4V~5.5V
Current consumption	mA	160 typ
State of low power consumption	μA	Typ 10μA
Single revolution resolution	—	131,072(17bit)
Multi-revolution count	count/turn	65,536 Count
Maximum speed	r/min	6,000
Input/ Output form	—	EIA - 422B(half-duplex)
Count-up direction	—	CCW
Communication specification	Transmission method	Half-duplex asynchronous serial communication
	Communication speed	2.5

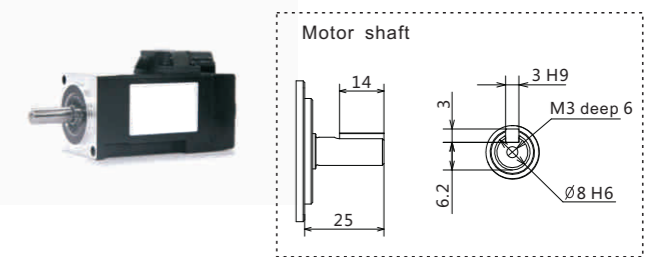
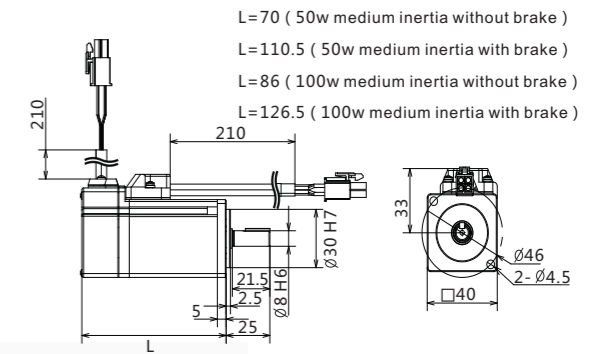
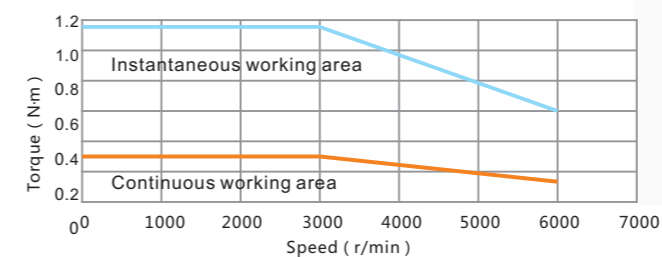
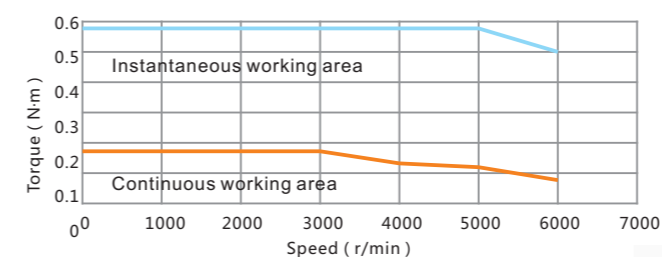


Count-up direction CCW

Motor specification (50-100W)

Item	Unit	50W medium inertia	100W medium inertia
Motor model	/	SE40-2-002M30(B)	SE40-2-003M30(B)
Mounting flange size	mm	40	40
Weight	No brake	0.4	0.5
	With brake	0.6	0.8
Rated voltage	V	AC200~240V	AC200~240V
Rated power	W	50	100
Rated torque	N·m	0.16	0.32
Momentary maximum torque	N·m	0.56	1.12
Rated current	Arms	0.68	0.95
Momentary maximum current	Arms	2.4	3.2
Rated speed	r/min	3000	3000
Max. speed	r/min	6000	6000
Torque constant	N·m/A	0.25	0.36
Induction voltage constant of each phase	mV/(r/min)	8.8	12.5
Rated power ratio	No brake	5.6	13.6
	With brake	4.7	12.3
Mechanical time constant	No brake	2.6	1.69
	With brake	3.06	1.87
Electrical time constant	ms	0.64	0.76
Rotor inertia	No brake	0.045	0.074
	With brake	0.053	0.082
Brake specifications	Function	-	For keeping the stopped state
	Rated voltage	V	DC24V±10%
	Rated current	A	0.25
	Static friction torque	N·m	Above 0.16
	Close time	ms	Below 35ms (at DC24V)
	Release time	ms	Below 20ms (at DC24V)
	Release voltage	V	Above DC1V
			Above DC1V

NT characteristics and dimensions

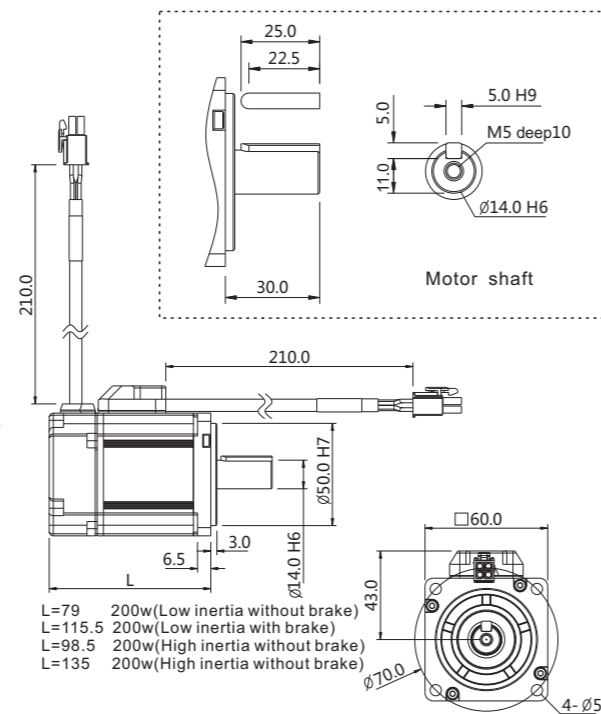
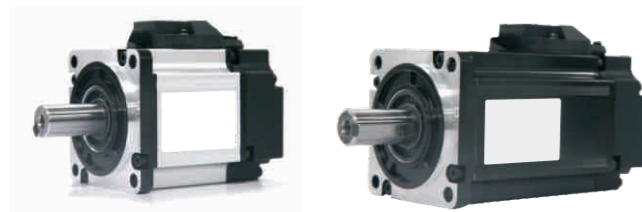
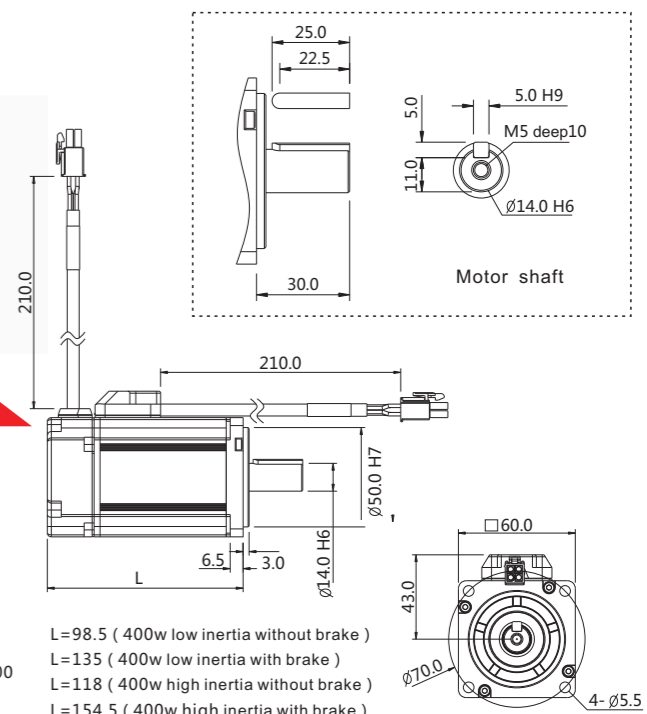
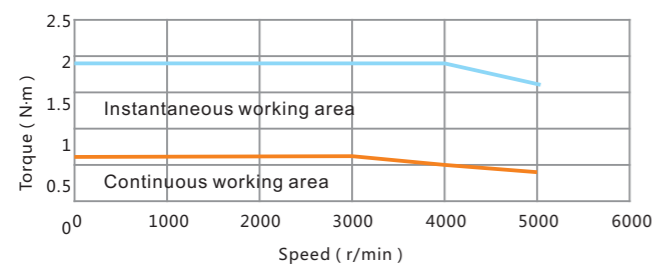
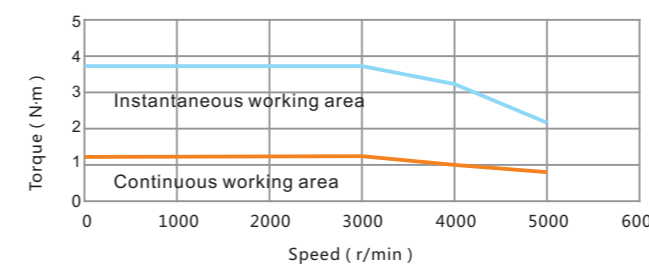


Motor specification (200W)

Item	Unit	200W low inertia	200W high inertia
Motor model	/	SE60-2-006L30(B)	SE60-2-006H30(B)
Mounting flange size	mm	60	60
Weight	No brake	0.9	1
	With brake	1.4	1.5
Rated voltage	V	AC200~240V	AC200~240V
Rated power	W	200	200
Rated torque	N·m	0.64	0.64
Momentary maximum torque	N·m	1.9	1.9
Rated current	Arms	1.72	1.72
Momentary maximum current	Arms	5.15	5.15
Rated speed	r/min	3000	3000
Max. speed	r/min	6000	6000
Torque constant	N·m/A	0.41	0.41
Induction voltage constant of each phase	mV/(r/min)	14.5	14.5
Rated power ratio	No brake	23.8	9.3
	With brake	19.5	8.6
Mechanical time constant	No brake	1.12	2.87
	With brake	1.37	3.12
Electrical time constant	ms	1.99	1.99
Rotor inertia	No brake	0.17	0.43
	With brake	0.21	0.47
Brake specifications	Function	-	For keeping the stopped state
	Rated voltage	V	DC24V±10%
	Rated current	A	0.3
	Static friction torque	N·m	Above 1.26
	Close time	ms	Below 50ms (at DC24V)
	Release time	ms	Below 15ms (at DC24V)
	Release voltage	V	Above DC1V

Motor specification (400W)

Item	Unit	400W low inertia	400W high inertia
Motor model	/	SE60-2-013L30(B)	SE60-2-013H30(B)
Mounting flange size	mm	60	60
Weight	No brake	1.3	1.5
	With brake	1.8	2
Rated voltage	V	AC200~240V	AC200~240V
Rated power	W	400	400
Rated torque	N·m	1.27	1.27
Momentary maximum torque	N·m	3.82	3.82
Rated current	Arms	2.7	2.7
Momentary maximum current	Arms	8	8
Rated speed	r/min	3000	3000
Max. speed	r/min	6000	6000
Torque constant	N·m/A	0.49	0.49
Induction voltage constant of each phase	mV/(r/min)	17.4	17.4
Rated power ratio	No brake	58.7	23.5
	With brake	51.9	22.4
Mechanical time constant	No brake	0.67	1.66
	With brake	0.75	1.75
Electrical time constant	ms	2.47	2.47
Rotor inertia	No brake	0.28	0.69
	With brake	0.31	0.72
Brake specifications	Function	-	For keeping the stopped state
	Rated voltage	V	DC24V±10%
	Rated current	A	0.3
	Static friction torque	N·m	Above 1.26
	Close time	ms	Below 50ms (at DC24V)
	Release time	ms	Below 15ms (at DC24V)
	Release voltage	V	Above DC1V

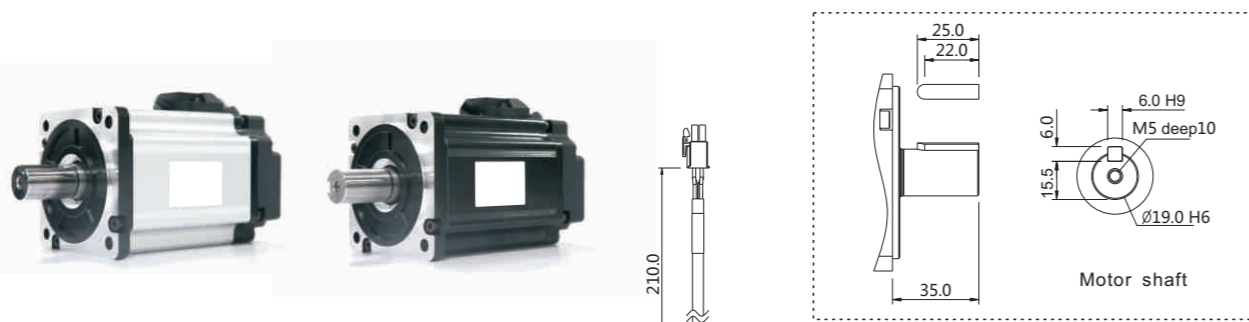

NT characteristics and dimensions

NT characteristics and dimensions


Motor specification (750W)

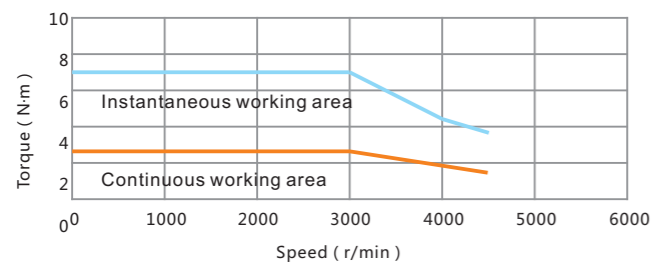
Item	Unit	750W low inertia	750W high inertia
Motor model	/	SE80-2-024L30(B)	SE80-2-024H30(B)
Mounting flange size	mm	80	80
Weight	No brake	2.5	2.7
	With brake	3.3	3.5
Rated voltage	V	AC200~240V	AC200~240V
Rated power	W	750	750
Rated torque	N·m	2.39	2.39
Momentary maximum torque	N·m	7.1	7.1
Rated current	Arms	4.3	4.3
Momentary maximum current	Arms	12.8	12.8
Rated speed	r/min	3000	3000
Max. speed	r/min	4500	4500
Torque constant	N·m/A	0.6	0.6
Induction voltage constant of each phase	mV/(r/min)	21.3	21.3
Rated power ratio	No brake	64.1	35.6
	With brake	52.8	32.1
Mechanical time constant	No brake	0.53	0.94
	With brake	0.64	1.06
Electrical time constant	ms	4.3	4.3
Rotor inertia	No brake	0.89	1.59
	With brake	1.08	1.78
Brake specifications	Function	-	For keeping the stopped state
	Rated voltage	V	DC24V±10%
	Rated current	A	0.4
	Static friction torque	N·m	Above 2.39
	Close time	ms	Below 70ms (at DC24V)
	Release time	ms	Below 20ms (at DC24V)
	Release voltage	V	Above DC1V

Motor specification (1000W)

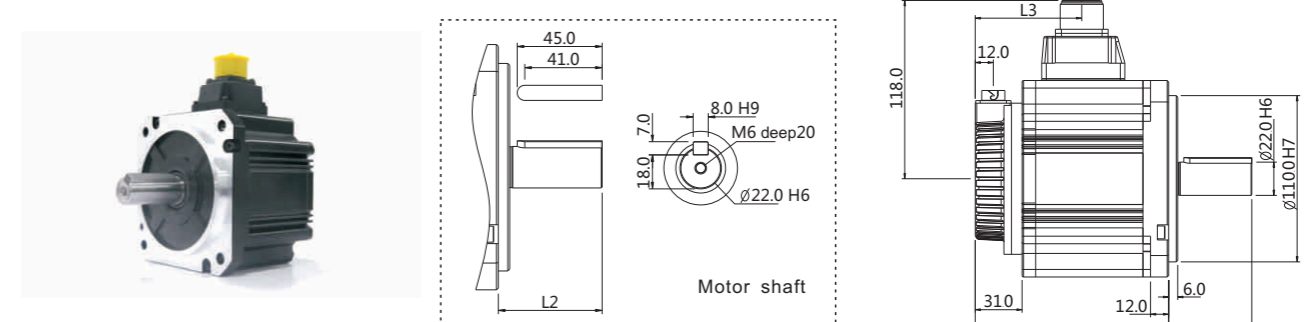
Item	Unit	1000W medium inertia	1000W high inertia
Motor model	/	SE130-2-048M20(B)	SE130-2-048H20(B)
Mounting flange size	mm	130	130
Weight	No brake	5.6	7.6
	With brake	7	9
Rated voltage	V	AC200~240V	AC200~240V
Rated power	W	1000	1000
Rated torque	N·m	4.76	4.76
Momentary maximum torque	N·m	14.3	14.3
Rated current	Arms	5.6	5.6
Momentary maximum current	Arms	15.9	15.9
Rated speed	r/min	2000	2000
Max. speed	r/min	3000	3000
Torque constant	N·m/A	0.88	0.88
Induction voltage constant of each phase	mV/(r/min)	30.9	30.9
Rated power ratio	No brake	50	9.4
	With brake	36.5	8.6
Mechanical time constant	No brake	0.76	4.21
	With brake	1.05	4.43
Electrical time constant	ms	10.2	10.2
Rotor inertia	No brake	4.57	24.9
	With brake	6.24	26.4
Brake specifications	Function	-	For keeping the stopped state
	Rated voltage	V	DC24V±10%
	Rated current	A	1
	Static friction torque	N·m	Above 9.55
	Close time	ms	Below 120ms (at DC24V)
	Release time	ms	Below 30ms (at DC24V)
	Release voltage	V	Above DC1V



NT characteristics and dimensions



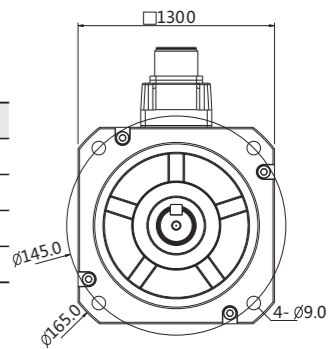
L=112 750w(Low inertia without brake)
 L=149 750w(Low inertia with brake)
 L=127 750w(High inertia without brake)
 L=164 750w(High inertia with brake)



NT characteristics and dimensions



Model	L1	L2	L3
SE130-2-048M20	128	55	70.5
SE130-2-048M20B	153	55	95.5
SE130-2-048H20	163	70	70.5
SE130-2-048H20B	188	70	95.5

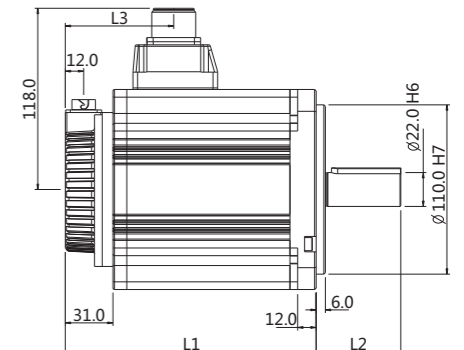
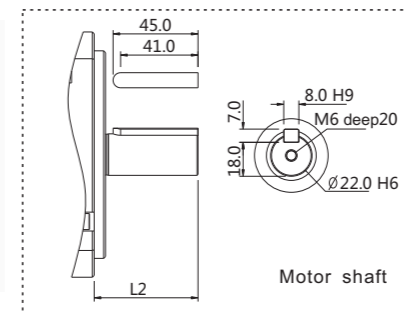
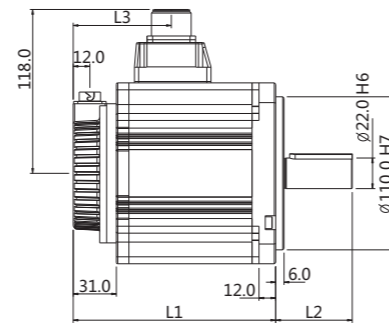
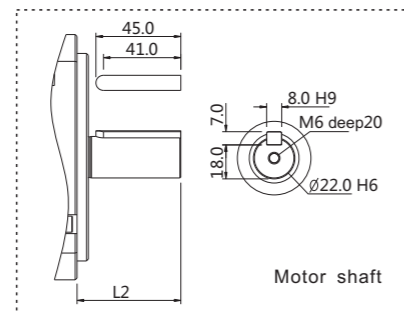
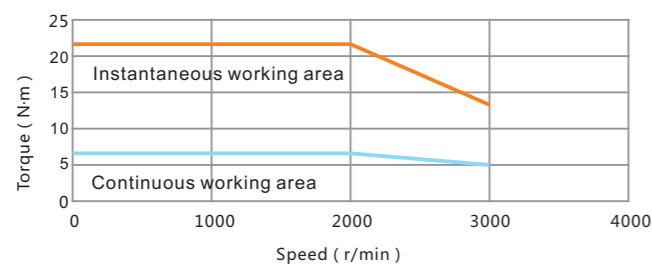


Motor specification (1500W)

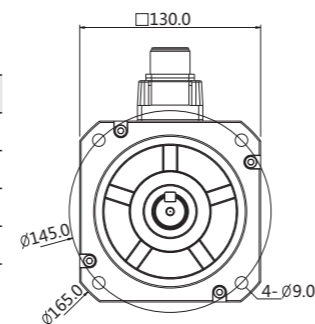
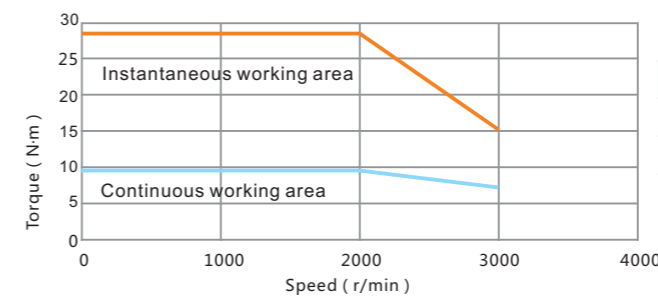
Item	Unit	1500W medium inertia	1500W high inertia
Motor model	/	SE130-2-072M20(B)	SE130-2-072H20(B)
Mounting flange size	mm	130	130
Weight	No brake	7	9
	With brake	8.4	10.4
Rated voltage	V	AC200~240V	AC200~240V
Rated power	W	1500	1500
Rated torque	N·m	7.15	7.15
Momentary maximum torque	N·m	21.5	21.5
Rated current	Arms	9.9	9.9
Momentary maximum current	Arms	27.3	27.3
Rated speed	r/min	2000	2000
Max. speed	r/min	3000	3000
Torque constant	N·m/A	0.81	0.81
Induction voltage constant of each phase	mV/(r/min)	28.4	28.4
Rated power ratio	No brake	76.9	13.7
	With brake	61.5	13.2
Mechanical time constant	No brake	0.6	3.32
	With brake	0.75	3.48
Electrical time constant	ms	12.2	12.2
Rotor inertia	No brake	4.56	37.1
	With brake	8.38	38.69
Brake specifications	Function	-	For keeping the stopped state
	Rated voltage	V	DC24V±10%
	Rated current	A	1
	Static friction torque	N·m	Above 9.55
	Close time	ms	Below 120ms (at DC24V)
	Release time	ms	Below 30ms (at DC24V)
	Release voltage	V	Above DC1V

Motor specification (2000W)

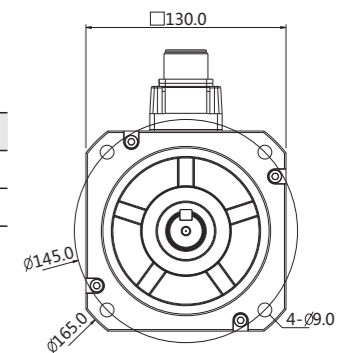
Item	Unit	2000W medium inertia	
Motor model	/	SE130-2-095M20(B)	
Mounting flange size	mm	130	
Weight	No brake	8.4	
	With brake	9.8	
Rated voltage	V	AC200~240V	
Rated power	W	2000	
Rated torque	N·m	9.45	
Momentary maximum torque	N·m	28.6	
Rated current	Arms	12.2	
Momentary maximum current	Arms	35.7	
Rated speed	r/min	2000	
Max. speed	r/min	3000	
Torque constant	N·m/A	0.85	
Induction voltage constant of each phase	mV/(r/min)	29.6	
Rated power ratio	No brake	104.9	
	With brake	86.9	
Mechanical time constant	No brake	0.58	
	With brake	0.71	
Electrical time constant	ms	12.2	
Rotor inertia	No brake	8.7	
	With brake	10.35	
Brake specifications	Function	-	
	Rated voltage	V	DC24V±10%
	Rated current	A	1
	Static friction torque	N·m	Above 9.55
	Close time	ms	Below 120ms (at DC24V)
	Release time	ms	Below 30ms (at DC24V)
	Release voltage	V	Above DC1V


NT characteristics and dimensions


Model	L1	L2	L3
SE130-2-072M20	145.5	55	70.5
SE130-2-072M20B	170.5	55	95.5
SE130-2-072H20	180.5	70	70.5
SE130-2-072H20B	205.5	70	95.5


NT characteristics and dimensions


Model	L1	L2	L3
SE130-2-095M20	163	55	70.5
SE130-2-095M20B	188	55	95.5



750w and below

Item	Pin	Sign	Content	Motor connector model	Connector model	Manufacturer
Motor power input	1	U	U phase	NA	NA	NA
	2	V	V phase			
	3	W	W phase			
	4	FG	Motor frame ground			
Brake ^[Note1]	1	BRK+	Brake power DC24V	NA	NA	NA
	2	BRK-	Brake power GND			
Encoder (incremental)	1	-	Nc	NA	NA	NA
	2	+D	Serial communication data +			
	3	-D	Serial communication data-			
	4	VCC	Encoder power 5V			
	5	GND	GND			
	6	SHIELD	SHIELD			
Encoder (absolute)	1	BAT	External battery ^[Note2]	NA	NA	NA
	2	CAP	External capacitor ^[Note2]			
	3	SHIELD	SHIELD			
	4	+D	Serial communication data +			
	5	-D	Serial communication data-			
	6	IC	Internal connection ^[Note3]			
	7	VCC	Encoder power 5V			
	8	GND	GND			
	9	IC	Internal connection ^[Note3]			

1000W and above

Item	Pin	Sign	Content	Motor connector model	Connector model	Manufacturer
Motor power input	A	U	U phase	NA	NA	NA
	B	V	V phase			
	C	W	W phase			
	D	FG	Motor frame ground			
Brake	1	BRK+	Brake power DC24V	NA	NA	NA
	2	BRK-	Brake power GND			
Encoder(Incremental)	1	VCC	Encoder power 5V	NA	NA	NA
	2	GND	GND			
	3	-	NC			
	4	-	NC			
	5	+D	Serial communication data +			
	6	-D	Serial communication data-			
	7	-	NC			
	8	-	NC			
	9	-	NC			
	10	SHIELD	SHIELD			
Encoder(Absolute)	1	VCC	Encoder power 5V	NA	NA	NA
	2	GND	GND			
	3	CAP	External capacitor ^[Note2]			
	4	BAT	External battery ^[Note2]			
	5	+D	Serial communication data +			
	6	-D	Serial communication data-			
	7	IC	Internal connection ^[Note3]			
	8	IC	Internal connection ^[Note3]			
	9	GND	GND			
	10	SHIELD	SHIELD			

Note 1) For a motor with brake.

Note 2) Please use GND as the reference potential for external capacitors and batteries.

Note 3) Internal wiring (IC) refers to the internal connection to the control board, so please do not connect any equipment here.

Peripheral equipment and wiring instructions

Items	Description
Peripheral device	Conform to European EC Directive. Select the device which meets corresponding standards and install them in accordance with User's Manual.
Installation environment	Install the servo drive to the environment which conform to Pollution degree 2 or 1 of IEC60664-1.
Power supply 1: 200~240VAC (main circuit)	This product can be used under the conditions that conform to IEC60664-1 and overvoltage category II.
Power supply 2: 24VDC ♦control power supply of drive ♦I/O power supply ♦Power supply for brake release	The specification of 24VDC external power supply should satisfy the following conditions. Using SELV power supply(※) and power less than 150W. This is the CE corresponding conditions. ※SELV: safety extra low voltage (Reinforced insulation is needed for safety extra low voltage, non-dangerous voltage and dangerous voltage.)
Wiring	Please use withstand voltage cables which are equivalent to AWG18/600V or AWG14/600V for motor power cable, encoder cable, AC220 input cable, FG cable and main circuit power distribution cable under multi-axis drive structure respectively when drives are less than 750W or more than 1kW.
Breaker	Switch off the power supply to protect power cord when overcurrent occurs. Make sure to use the breaker between power supply and interference filter that conforms to IEC specification and UL recognition in accordance with the User manual. Please use the breaker with leakage function recommended by HNC in order to meet EMC standards.
Interference filter	To prevent the outside interference from power cables. Please use the interference filter recommended by HNC in order to meet EMC standards.
Magnetic contactor	Switch main power supply (ON/OFF). And use it after installing a surge absorber.
Surge absorber	Please use the surge absorber recommended by HNC in order to meet EMC standards.
Interference filter for signal cable / ferrite filter	Please use the interference filter recommended by HNC in order to meet EMC standards.
Regenerative resistor	This product is not equipped with regenerative resistor. The external regenerative resistor is necessary when the internal capacitor cannot absorb more regenerative power. Confirm the regenerative status on the panel. When the regenerative voltage alarm is ON, a regenerative resistor is needed. For the reference specification of regenerative resistor, please refer to user manual. Use a built-in thermostat and set overheat protect circuit.
Grounding	This product belongs to Class 1 and need grounding protection. Using protection grounding terminal. Grounding should be executed by the case and cabinet that conforms to EMC. The following symbol indicates the protection grounding terminal.

Standard Servo Drive Selection Table

Image	Model	Color	Description	Specification
	SV-E3P005A2-A	gray	50W pulse servo drive	Drive power: single-phase AC 200V~240V input Control mode: three-phase PWM frequency conversion sine wave drive Control signal: input optocoupler isolation input, output DC24V open collector Pulse signal: RS-422 differential, open collector Communication function: USB.RS485 (multi-point control) Regeneration function: external regenerative resistance Control mode: position, speed, torque
	SV-E3P010A2-A	gray	100W pulse servo drive	
	SV-E3P020A2-A	gray	200W pulse servo drive	
	SV-E3P040A2-A	gray	400W pulse servo drive	
	SV-E3P075A2-A	gray	750W pulse servo drive	
	SV-E3P100A2-A	gray	1KW pulse servo drive	Drive power: single-phase AC 200V~240V input Control mode: three-phase PWM frequency conversion sine wave drive Control signal: input optocoupler isolation input, output DC24V open collector Pulse signal: RS-422 differential, open collector Communication function: USB.RS485 (multi-point control) Regeneration function: external regenerative resistance Control mode: position control, speed, torque
	SV-E3P150A2-A	gray	1.5KW pulse servo drive	
	SV-E3P200A2-A	gray	2KW pulse servo drive	

50W motor selection table

Image	Model	Color	Inertia	Brake	Encoder	Key	Oil seal
	SE40-2-002M30-I1	black	medium	○	Incremental 17-bit	●	●
	SE40-2-002M30B-I1	black	medium	●	Incremental 17-bit	●	●
	SE40-2-002M30-A1	black	medium	○	Absolute 17-bit	●	●
	SE40-2-002M30B-A1	black	medium	●	Absolute 17-bit	●	●

100W motor selection table

Image	Model	Color	Inertia	Brake	Encoder	Key	Oil seal
	SE40-2-003M30-I1	black	medium	○	Incremental 17-bit	●	●
	SE40-2-003M30B-I1	black	medium	●	Incremental 17-bit	●	●
	SE40-2-003M30-A1	black	medium	○	Absolute 17-bit	●	●
	SE40-2-003M30B-A1	black	medium	●	Absolute 17-bit	●	●

200W motor selection table

Image	Model	Color	Inertia	Brake	Encoder	Key	Oil seal
	SE60-2-006L30-I1	Silver	low	○	Incremental 17-bit	●	●
	SE60-2-006L30B-I1	Silver	low	●	Incremental 17-bit	●	●
	SE60-2-006L30-A1	Silver	low	○	Absolute 17-bit	●	●
	SE60-2-006L30B-A1	Silver	low	●	Absolute 17-bit	●	●
	SE60-2-006H30-I1	Silver	high	○	Incremental 17-bit	●	●
	SE60-2-006H30B-I1	Silver	high	●	Incremental 17-bit	●	●
	SE60-2-006H30-A1	Silver	high	○	Absolute 17-bit	●	●
	SE60-2-006H30B-A1	Silver	high	●	Absolute 17-bit	●	●


400W motor selection table

Image	Model	Color	Inertia	Brake	Encoder	Key	Oil seal
	SE60-2-013L30-I1	Silver	low	○	Incremental 17-bit	●	●
	SE60-2-013L30B-I1	Silver	low	●	Incremental 17-bit	●	●
	SE60-2-013L30-A1	Silver	low	○	Absolute 17-bit	●	●
	SE60-2-013L30B-A1	Silver	low	●	Absolute 17-bit	●	●
	SE60-2-013H30-I1	Silver	high	○	Incremental 17-bit	●	●
	SE60-2-013H30B-I1	Silver	high	●	Incremental 17-bit	●	●
	SE60-2-013H30-A1	Silver	high	○	Absolute 17-bit	●	●
	SE60-2-013H30B-A1	Silver	high	●	Absolute 17-bit	●	●


Classic Servo Drive Selection Table

Image	Model	Color	Description	Specification
	SV-E3P005A2-B	black	50W pulse servo drive	Drive power: single-phase AC 200V~240V input Control mode: three-phase PWM frequency conversion sine wave drive Control signal: input optocoupler isolation input, output DC24V open collector Pulse signal: RS-422 differential, open collector Communication function: USB.RS485 (multi-point control) Regeneration function: external regenerative resistance Control mode: position
	SV-E3P010A2-B	black	100W pulse servo drive	
	SV-E3P020A2-B	black	200W pulse servo drive	
	SV-E3P040A2-B	black	400W pulse servo drive	
	SV-E3P075A2-B	black	750W pulse servo drive	


750W motor selection table

Image	Model	Color	Inertia	Brake	Encoder	Key	Oil seal
	SE80-2-024L30-I1	Silver	low	○	Incremental 17-bit	●	●
	SE80-2-024L30B-I1	Silver	low	●	Incremental 17-bit	●	●
	SE80-2-024L30-A1	Silver	low	○	Absolute 17-bit	●	●
	SE80-2-024L30B-A1	Silver	low	●	Absolute 17-bit	●	●
	SE80-2-024H30-I1	Silver	high	○	Incremental 17-bit	●	●
	SE80-2-024H30B-I1	Silver	high	●	Incremental 17-bit	●	●
	SE80-2-024H30-A1	Silver	high	○	Absolute 17-bit	●	●
	SE80-2-024H30B-A1	Silver	high	●	Absolute 17-bit	●	●


1000W motor selection table

Image	Model	Color	Inertia	Brake	Encoder	Key	Oil seal
	SE130-2-048M20-I1	black	medium	○	Incremental 17-bit	●	●
	SE130-2-048M20B-I1	black	medium	●	Incremental 17-bit	●	●
	SE130-2-048M20-A1	black	medium	○	Absolute 17-bit	●	●
	SE130-2-048M20B-A1	black	medium	●	Absolute 17-bit	●	●
	SE130-2-048H20-I1	black	high	○	Incremental 17-bit	●	●
	SE130-2-048H20B-I1	black	high	●	Incremental 17-bit	●	●
	SE130-2-048H20-A1	black	high	○	Absolute 17-bit	●	●
	SE130-2-048H20B-A1	black	high	●	Absolute 17-bit	●	●

1500W motor selection table

Image	Model	Color	Inertia	Brake	Encoder	Key	Oil seal
	SE130-2-072M20-I1	black	medium	○	Incremental 17-bit	●	●
	SE130-2-072M20B-I1	black	medium	●	Incremental 17-bit	●	●
	SE130-2-072M20-A1	black	medium	○	Absolute 17-bit	●	●
	SE130-2-072M20B-A1	black	medium	●	Absolute 17-bit	●	●
	SE130-2-072H20-I1	black	high	○	Incremental 17-bit	●	●
	SE130-2-072H20B-I1	black	high	●	Incremental 17-bit	●	●
	SE130-2-072H20-A1	black	high	○	Absolute 17-bit	●	●
	SE130-2-072H20B-A1	black	high	●	Absolute 17-bit	●	●

2000W motor selection table

Image	Model	Color	Inertia	Brake	Encoder	Key	Oil seal
	SE130-2-095M20-I1	black	medium	○	Incremental 17-bit	●	●
	SE130-2-095M20B-I1	black	medium	●	Incremental 17-bit	●	●
	SE130-2-095M20-A1	black	medium	○	Absolute 17-bit	●	●
	SE130-2-095M20B-A1	black	medium	●	Absolute 17-bit	●	●