

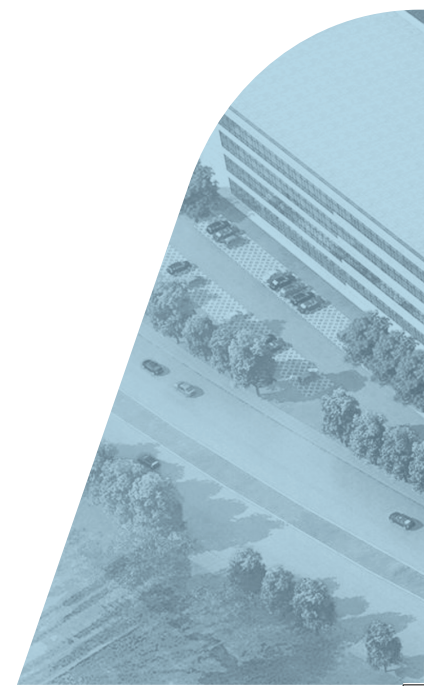
DA200

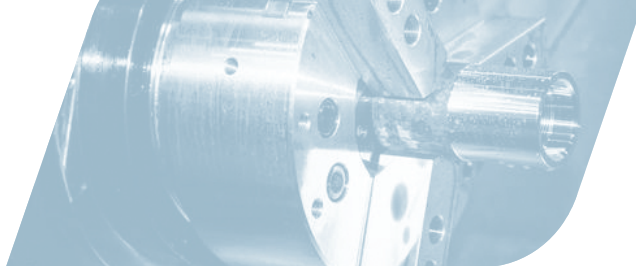
High Performance AC Servo System



Contents

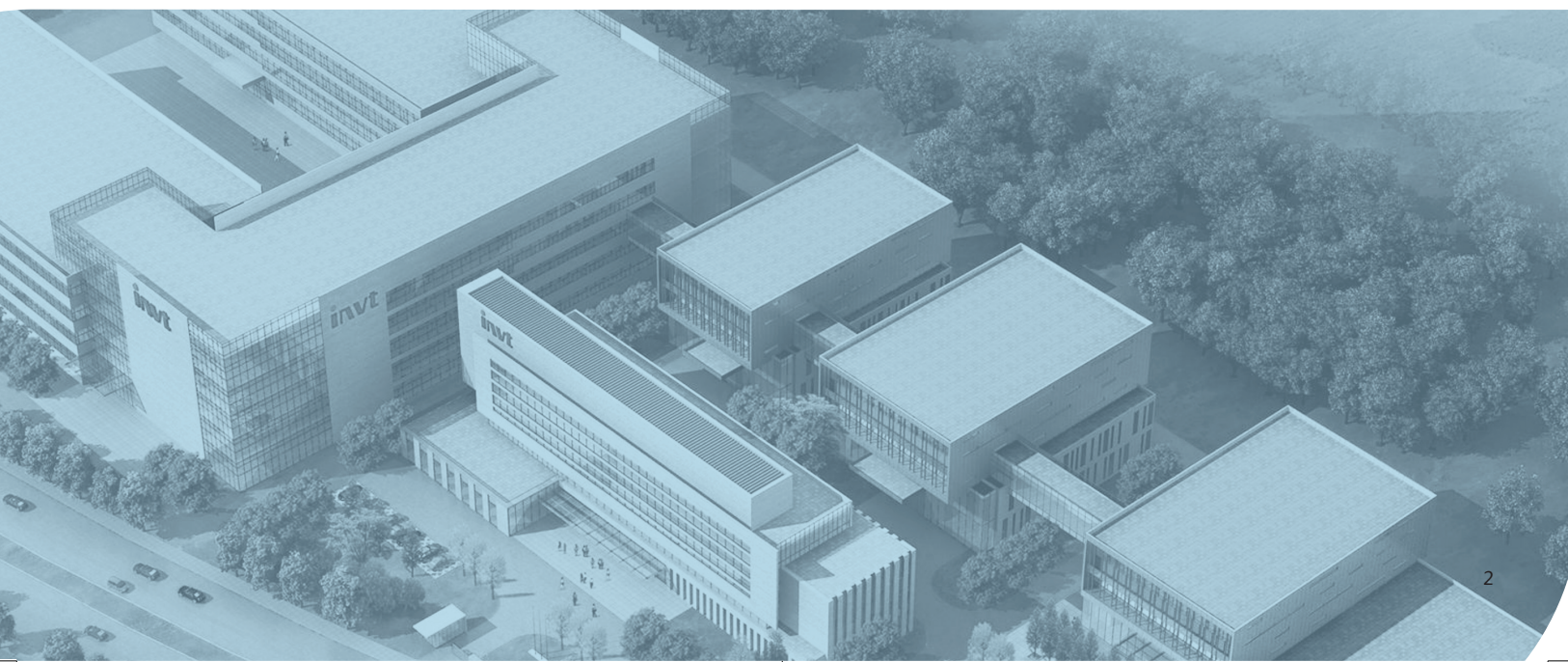
Introduction	2
Servo product family	3
Outstanding product performance	4
Abundant practical functions	5
Intelligence	7
User-friendly operation software	9
Application cases	11
Servo drive models	14
Servo drive technical parameters	17
Servo system configuration table	19
Servo motor models	20
Servo motor technical parameters	21
Servo motor installation dimensions	22
Servo motor torque-speed characteristics	25
Servo motor power cable models	27
Servo motor power cable wiring	28
Servo motor encoder cable models	29
Servo motor encoder cable wiring	30
Connection ports	31
System wiring	35
Standard wiring diagram	36
Ordering guide for servo system	40
Other INVT industrial control products	41
One-stop service & marketing network	42





/ Introduction

DA200 series high performance AC servo system is an INVT flagship product that is developed according to market needs and aims at assisting customers in industry upgrade. Applying the leading control performance to actual industrial needs achieves a perfect combination of the servo system and application environment.



Servo product family

Comprehensive product series support various networks and matching devices, facilitating the construction of required systems.

Drive layer



DA180 basic AC servo system



DA200 high performance AC servo system



DA300 intelligent AC servo system



DA212 dual-axis AC servo system



DA213 triple-axis AC servo system



MH800 electrohydraulic servo system



SL330 ELO and dual-ETO system



SL320 ELO and ETU system for loom



SL310 ETO system for loom

Execution layer



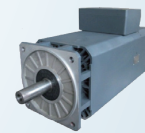
Small power servo motor



Medium power servo motor



Servo fluid-cooled spindle motor



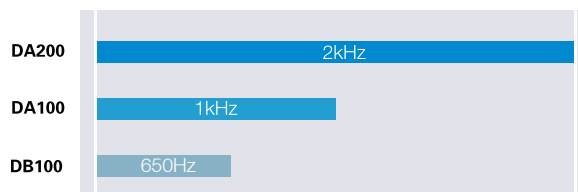
Synchronous motor

Outstanding product performance

Industry-leading speed response

The speed response frequency can reach 2.0kHz, improving the processing rate and reducing the tuning time, with the full use of advanced mechanical performance.

3 times
of a common product
2kHz

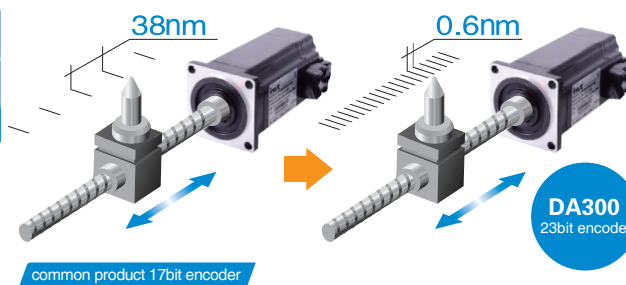


Accurate positioning

The support for the 23-bit encoder with the 0.15 arcsecond resolution achieves accurate positioning, stable machining at low speed, and bright and clean machined surface. The use of an absolute encoder ensures the motor will not lose the position origin in case of power-off.

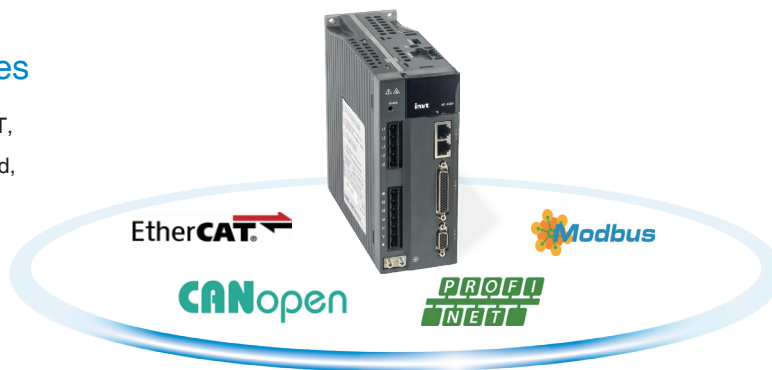
Applicable to scenarios that require absolute positions with high rigidity, such as robot, LED optical splitter, high speed drilling center, warp knitting machine, engraving and milling machine, turning and milling combined machine, and tool servo.

64 times
of a common product
23 bit



Enriched communication interfaces

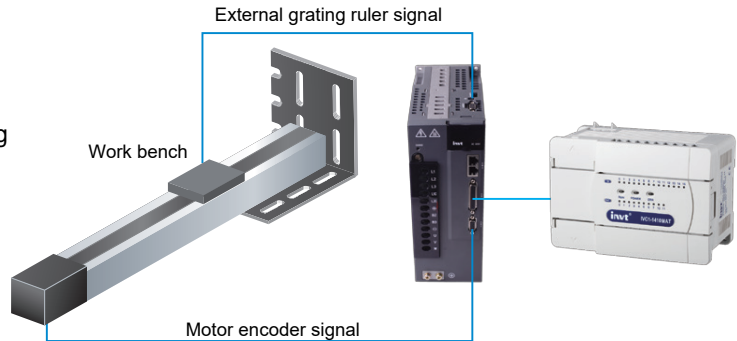
Networking based on Modbus, CANopen, PROFINET, or EtherCAT achieves remote, multi-shaft, high-speed, synchronous control.



Abundant practical function

Fully-closed loop control

Support for external connection to an encoder or grating ruler installed at the load end, implementing fully-closed loop control, reducing back clearance impact caused by mechanical drive, and improving machine-end positioning accuracy.



Internal position control

Achieving 128-segment internal position control with combination of input terminal commands (external I/O or bus control). For simple motion control, the internal program design can help simplify the PLC and optimize the external configuration plan.

PIP0.00	Control word of segment 00	Setting range	Default	Unit	Control mode
		0-0x7FFFFFFF	0	-	P

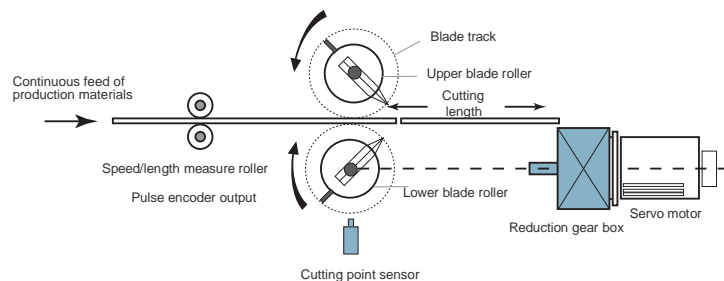
Overall description		
Data bit	Name	Function
Bit0-3	MODE	PTP running mode.
Bit4-7	OPT	Segment attribute.
Bit8-11	ACC	ACC/DEC time index.
Bit12-15	SPD	Target speed index.
Bit16-19	DLY	Delay time index.
Bit20-23	CYL	Segment execution cycles.
Bit24-30	JMP	Jumps to the next segment.

Description for MODE	
MODE	Meaning
0	Stops after executing the current segment.
1	Jumps to the next segment after executing the current segment.
2	Stops after circular execution. If CMD is 1, circulation is invalid.
3	Jumps to the next segment after circular execution. If CMD is 1, circulation is invalid.

Description for OPT		
Data bit	Name	Function
Bit4	INS	Insertion. The current segment has the execution termination privilege over segments that are being executed or not executed.
Bit5	OVLP	Overlap. The current and next segments can be overlapped for execution.
Bit6-7	CMD	Position command type. 0: incremental position; 1: absolute

Electronic cam

- The cam profile can consist of 3600 points.
- Automatic smooth interpolation can be implemented between two points of a curve, making mechanical motions more smooth.
- The ServoPlover software supports cam planning and setting.
- Applicable to master/slave application scenarios such as flying and rotary shears.



■ Linear motor control

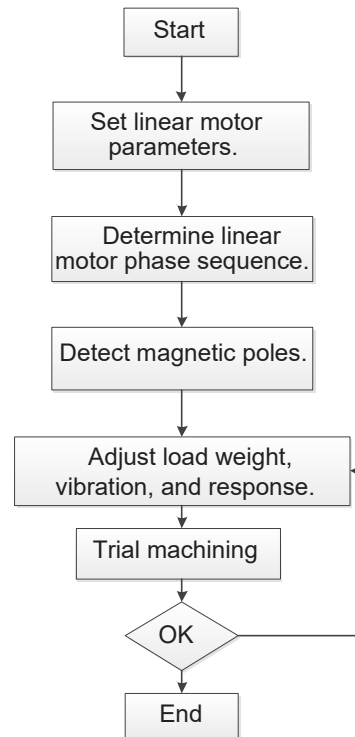
Support for control on linear motors, including those without magnetic sensors. After magnetic pole detection is enabled, the motor executes minor FWD-and-RVS motions for detection. After the detection is completed, the servo is ready for motion control.

Function description

To work with 3rd-party linear motors, position sensor signals should be 5V differential ABZ signals. The maximum allowed pulse signal frequency of the drive is single-channel 3MHz or orthogonal 12MHz. Magnetic sensor signals (optional) support differential input.

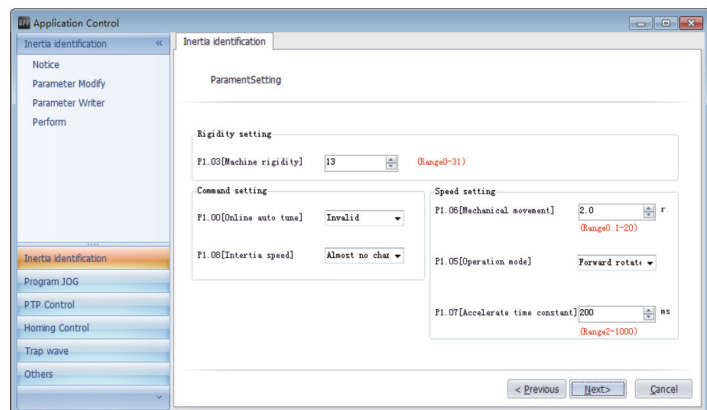
Features

If a linear motor without magnetic sensors is used, it executes first power-on or using magnetic pole detection signals. The minor FWD-and-REV motions for the pole detection after the rotor moving range is within 2mm (configurable). The internal stalling protection function ensures linear motor safety. The ASR bandwidth can reach 1kHz or higher, and the position tuning time is less than 5ms.



■ Load inertia identifying

Providing online and offline inertia identifying. Automatically identifying gain parameters in the system reduces system tuning time.



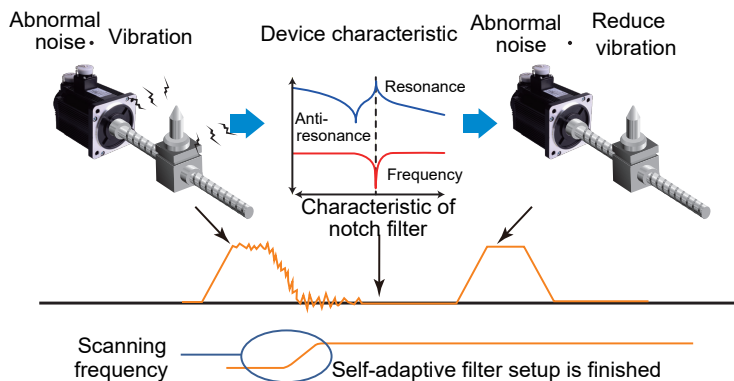
Intelligence

Automatic/manual notch filter

Simplified notch filter setup achieves automatic vibration detection without vibration frequency measuring.

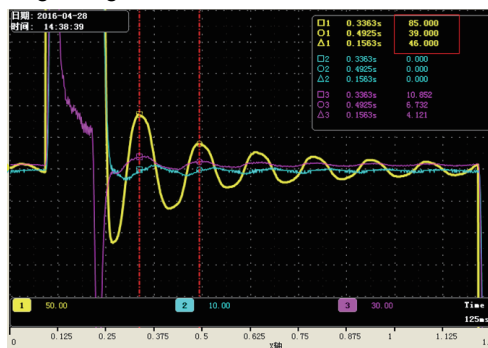
Abnormal noise and vibration caused by mechanical devices can be greatly reduced by using a notch filter.

DA200 series product carries four notch filters, each of which has frequency designated to 50Hz –5000Hz and adjustable depth. (Two of the filters can be automatically set.)

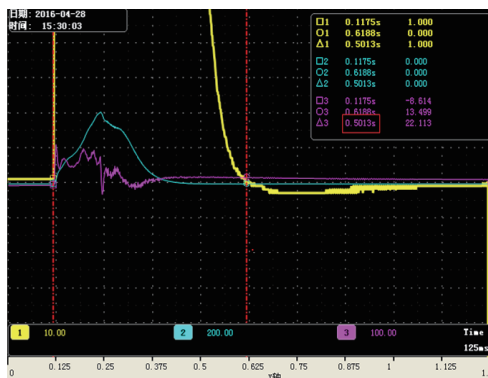


Low frequency vibration control

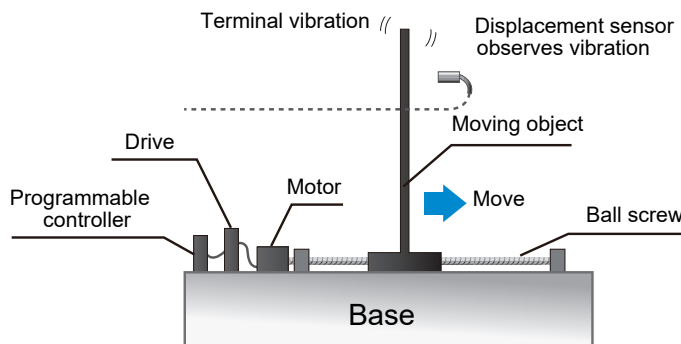
Special low frequency vibration control algorithms can be used to effectively control low frequency mechanical resonance and control oscillation at long swing arm end.



Vibration control is not conducted

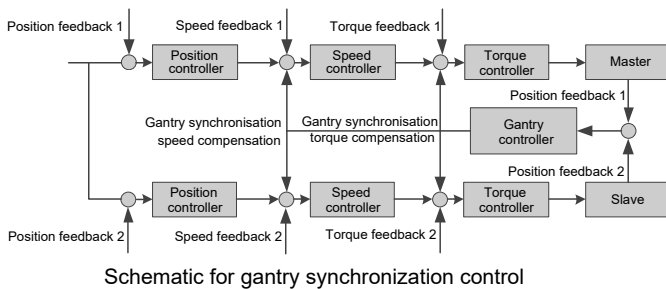


Vibration control is conducted

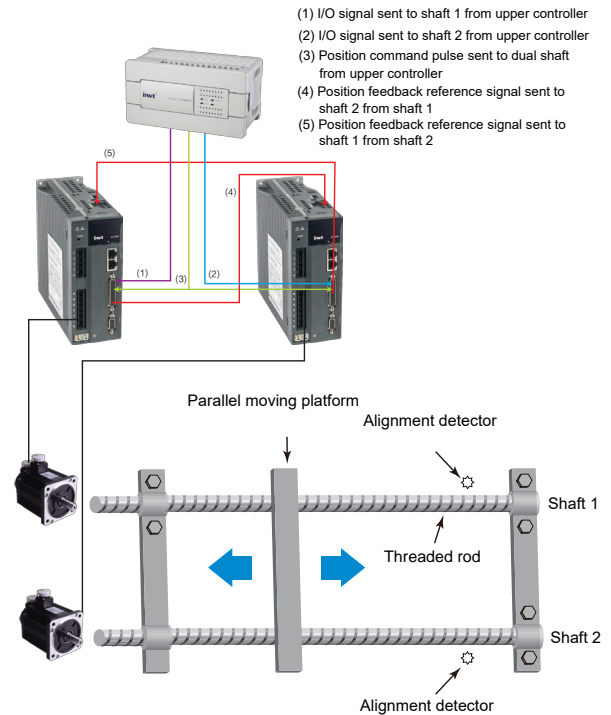


■ Gantry synchronism

Support for dual-shaft alignment and synchronous following. The controller conducts synchronous control automatically without the complicated upper PC control. When position deviation exceeds the allowed value, an alarm is reported to stop system running.



Schematic for gantry synchronization control



■ Disturbance control

Equipped with the disturbance control function to compensate for the control performance impact caused by load disturbance and parameter changes, enhancing system robustness and greatly improving command following performance.

■ Friction torque compensation

Equipped with the friction torque compensation function to reduce the impact caused by static friction during motor commutation and improve command following performance at low speed running.

■ Simple gain adjusting and switching

The speed and position loop gains and filter time constant can be automatically adjusted by setting rigidity levels, effectively reducing commissioning complicity.

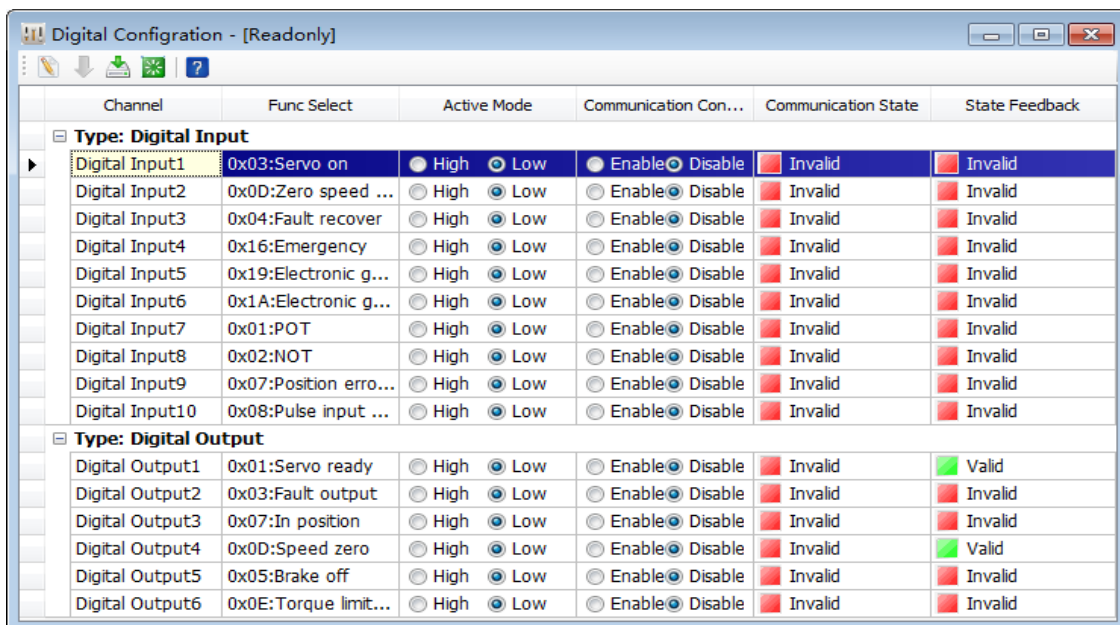
Two groups of gain can be set, and the gains can be switched through I/O input, communication, or internal variables, fulfilling flexible process demands.

■ Speed observer

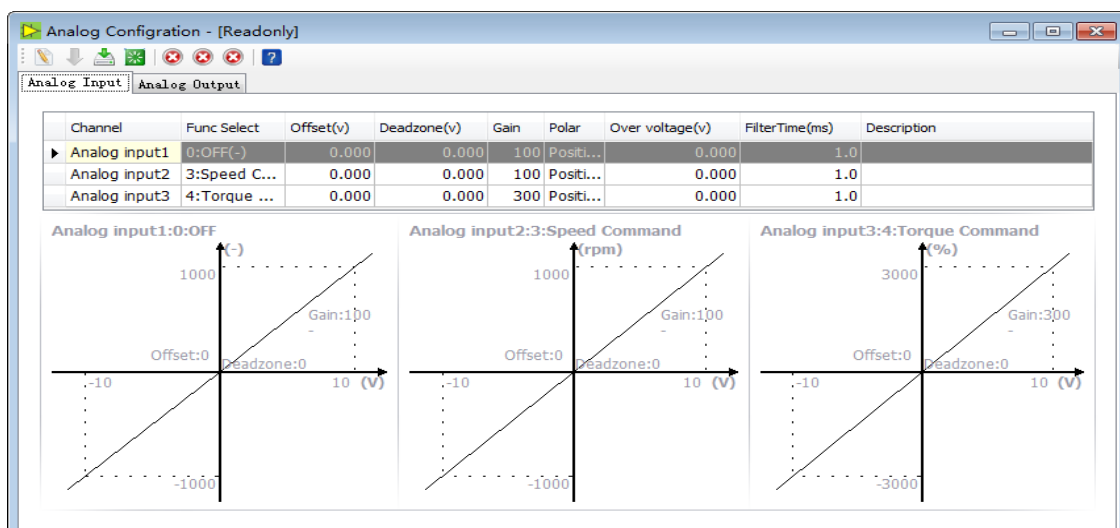
Using a speed observer to reduce the noise signal impact and improve command following performance.

User-friendly operation software

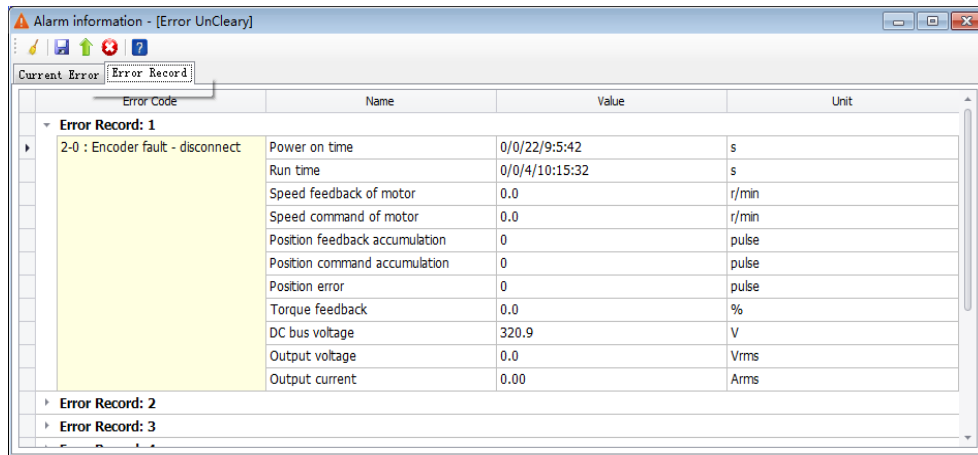
- Convenient and friendly user interface
- Enriched functions, easy to use
- Built-in instruction manual, practical for commissioning



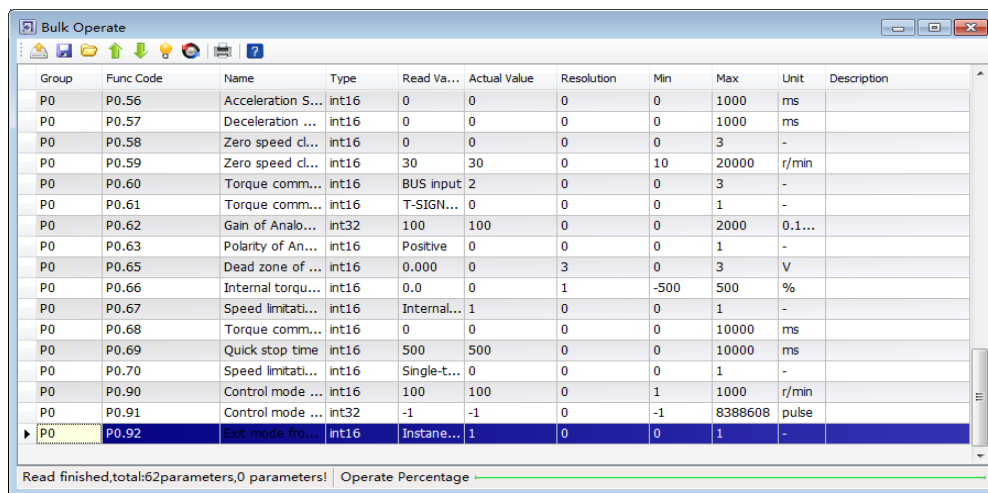
Digital I/O can directly select effective terminal logic and function distribution



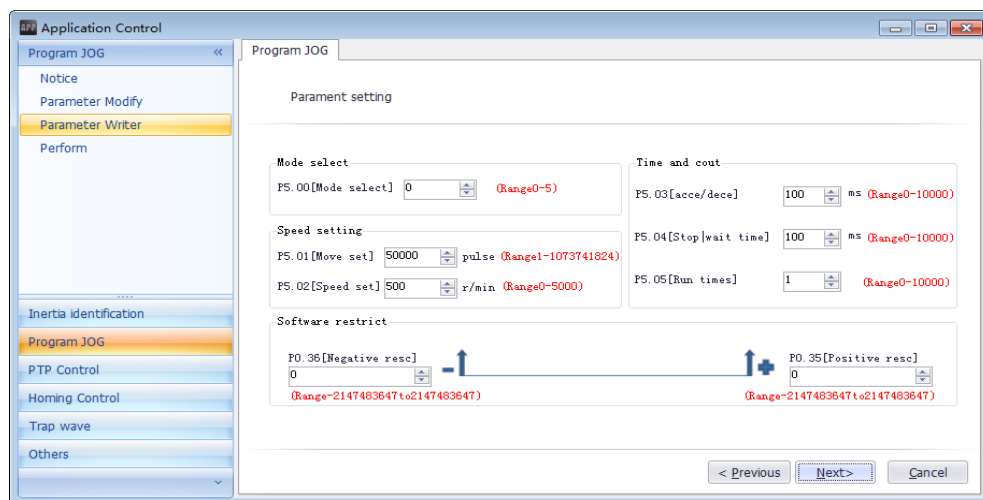
Analog I/O can set parameters such as gain, zero offset and deadzone, as shown above



Display fault info. in real time and read fault record info.



Bulk reading function can store parameters to files for easy parameter copying



Abundant application control function for convenient pilot run and commissioning

/ Application cases

Mechanical arm/Robot

Function description

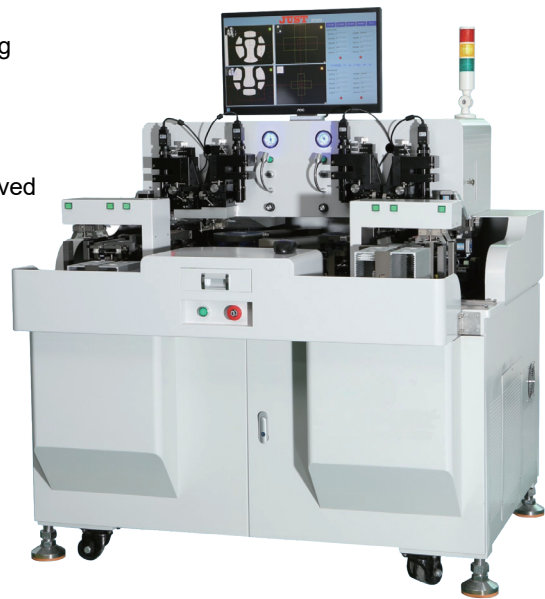
- High speed and accuracy: DA200 EtherCAT bus servo uses the 23-bit absolute encoder, achieving the repeated positioning accuracy of $\pm 0.01\text{mm}$ and the response frequency of 2.0kHz.
- High rigidity and flexibility: The high speed and accuracy control on continuous tracks in three dimensions ensures flexibility and accuracy of robot motions, applicable to processes such as high-efficiency dispensing, soldering, cutting, and coating, and compatible with any articulated robot controller.
- Automatic gain adjusting achieves optimum servo performance for each joint.



LED die bonder

Function description

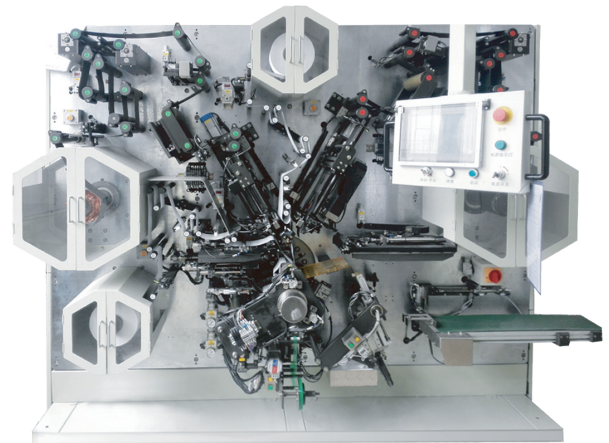
- DA200 supports linear motors, no need for intermediate drive, featuring stronger torque output, quicker dynamic response, and greater ACC, making full use of advanced mechanical performance.
- Improving the die bonder production efficiency through the quick high-accuracy positioning and repeated positioning with the accuracy improved through linear position detection closed-loop feedback control.
- Achieving comprehensive vibration control and excellent disturbance control: fully-closed loop vibration control, low frequency vibration control, disturbance control friction torque compensation, and manual/automatic notch filter.
- Die bonding cycle reduced to 100ms.



Lithium cell winding

Function description

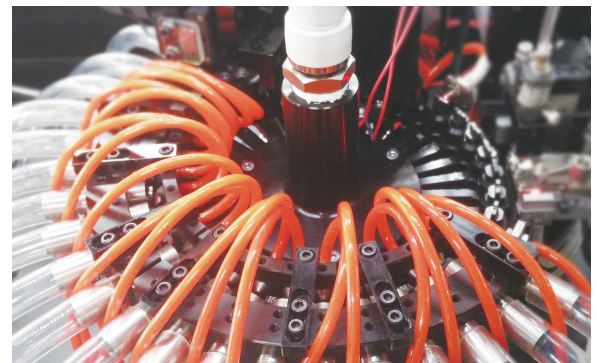
- DA200 EtherCAT bus, with high speed and real time features, supports a maximum of 64 axes, meeting control requirements on winding and soldering machines, and improving assembly efficiency.
- Integrated unwinding and rectification program and excellent algorithms, achieving quick winding, high accuracy cutting, with less tension fluctuation, stable constant linear speed control improving action response.
- Built-in electric cam, easily achieving variable/constant speed winding and quick type change through one key without setting any winding needle dimension parameter.
- Nearby installation for remote I/O, reducing wiring and maintenance costs.
- Winding curves achieved completely through autotuning, without the need to set any winding needle parameters.



LED sorting machine

Function description

- Utilizing DA200 featuring high speed and excellent response can increase motor frequency width and improve the gains with quick dynamic response and short tuning time, optimizing overall running.
- Using the customized large torque motor with advanced algorithms can achieve high accuracy positioning control and low-speed stable running with high rigidity without microvibrations.
- The max. speed has reached 72K/h, highest level in the industry.
- Rotary table with large inertia, load rate slowed, motor temperature lowered, and noise reduced.
- Working efficiency improved by 80% and yield rate improved greatly.



/ Application cases

Fully auto SMT machine

Function description

- For excellent vibration control, DA200 can fully eliminate resonance and control vibration with quick response, ensuring the machine runs stably.
- Outstanding gantry dual-drive control algorithms ensure running accuracy.
- Excellent online position change function achieves real time change of target positions.
- The high speed and accuracy features help improve SMT production efficiency.



Glass engraving and milling machine

Function description

- Using DA200 to compensate for disturbance, friction, and reverse gap enables the machine to achieve cutting without marks and smooth lines and arcs.
- Excellent disturbance control compensates for load disturbance control and performance impact caused by parameter changes, improving system robustness and command following performance.
- Import of CADs for any graphs and auto optimization of glass cutting traces.
- 4MHz command pulse input.
- Intelligent gain adjusting and switching, implemented through one key.
- Built-in drive protection, featuring excellent environment adaptability and highly waterproof.



Servo drive models

SV-DA200-0R4-2-E 0-XXXX

① ② ③ ④ ⑤ ⑥ ⑦

①

Symbol	Product category
SV	Servo system product

②

Symbol	Product category
DA200	Servo drive

Symbol	Rated power
0R1	100W
0R2	200W
0R4	400W
0R7	750W
1R0	1.0kW
1R5	1.5kW
2R0	2.0kW
3R0	3.0kW
4R4	4.4kW
5R5	5.5kW
7R5	7.5kW
011	11kW
015	15kW
022	22kW
037	37kW
045	45kW
055	55kW

③

④

Symbol	Rated voltage
2	220VAC
4	400VAC

⑤

Symbol	Drive type
E	Pulse type
S	Standard type
C	CANopen bus type
N	EtherCAT bus type
F	PROFINET bus type
D	PROFIdrive bus type

⑥

Symbol	Encoder type
0	Photoelectric encoder ⁽¹⁾
7	Resolver

⑦

Symbol	Lot no.
XXXX	Manufacturer lot no. ⁽²⁾
00Z0	Linear motor lot no.

Remark:
 (1) Photoelectric encoders include 2500-PPR incremental, 17-bit multiturn absolute, and 23-bit multiturn absolute encoders.
 (2) Lot no. 00Z0 is for linear motors, and s should be 0 (namely, encoder type should be photoelectric encoder.)

Function by drive type (small power range: 100W–5.5kW)

Drive type	Symbol	Pulse input	16-bit analog input	2 nd encoder	STO	RS485	CANopen	PROFINET	PROFIdrive	EtherCAT	Photoelectric encoder	Resolver
Pulse	E0	✓	X	✓	X	✓	X	X	X	X	✓	X
Standard	S0	✓	✓	✓	✓	✓	X	X	X	X	✓	X
	S7	✓	✓	✓	✓	✓	X	X	X	X	X	✓
Bus	C0	X	X	✓	X	X	✓	X	X	X	✓	X
	F0	X	X	✓	X	✓	X	✓	X	X	✓	X
	N0	X	X	✓	X	X	X	X	X	✓	✓	X
	D0	X	X	✓	X	✓	X	X	✓	X	✓	X

Function by drive type (medium power range: 7.5W–55kW)

Drive type	Symbol	Pulse input	16-bit analog input	2 nd encoder	STO	RS485	CANopen	PROFINET	PROFIdrive	EtherCAT	Photoelectric encoder	Resolver
Standard	S0	✓	✓	✓	✓	✓	✓	X	X	X	✓	X
	S7	✓	✓	✓	✓	✓	✓	X	X	X	X	✓
Bus	N0	X	X	✓	✓	X	X	X	X	✓	✓	X
	N7	X	X	✓	✓	X	X	X	X	✓	X	✓
	F0	X	✓	✓	✓	✓	X	✓	X	X	✓	X
	F7	X	✓	✓	✓	✓	✓	✓	X	X	X	✓

Servo drive models

Drive models and frame sizes

Model	Input		Output		Frame size
	Voltage (V)	Rated current (A)	Power (kW)	Rated current (A)	
SV-DA200-0R1-2	1PH/3PH 220	0.9/0.4	0.1	1.3	A
SV-DA200-0R2-2	1PH/3PH 220	1.8/0.8	0.2	1.8	A
SV-DA200-0R4-2	1PH/3PH 220	3.6/1.5	0.4	3.3	A
SV-DA200-0R7-2	1PH/3PH 220	6.8/2.8	0.75	4.5	B
SV-DA200-1R0-2	1PH/3PH 220	9.1/3.7	1.0	5	B
SV-DA200-1R5-2	3PH 220	5.6	1.5	7.6	B
SV-DA200-2R0-2	3PH 220	7.5	2.0	10	D
SV-DA200-3R0-2	3PH 220	11.2	3.0	13	D
SV-DA200-4R4-2	3PH 220	16.5	4.4	16.5	D
SV-DA200-1R0-4	3PH 400	2.1	1.0	3.5	B
SV-DA200-1R5-4	3PH 400	3.1	1.5	4.5	B
SV-DA200-2R0-4	3PH 400	4.1	2.0	6.5	C
SV-DA200-3R0-4	3PH 400	6.2	3.0	8.5	C
SV-DA200-4R4-4	3PH 400	9.1	4.4	12	D
SV-DA200-5R5-4	3PH 400	11.3	5.5	16	D
SV-DA200-7R5-4	3PH 400	15.5	7.5	25	F
SV-DA200-011-4	3PH 400	22.7	11	33	F
SV-DA200-015-4	3PH 400	31	15	50	F2
SV-DA200-022-4	3PH 400	45.4	22	66	G
SV-DA200-037-4	3PH 400	76	37	90	G
SV-DA200-045-4	3PH 400	93	45	112	H
SV-DA200-055-4	3PH 400	113	55	134	H

Brake resistor specifications

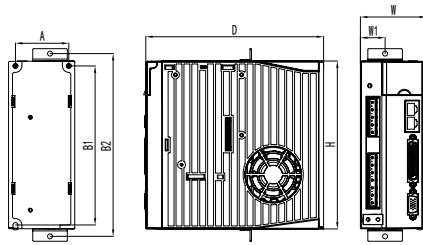
Drive model	Built-in brake resistor spec.	Min. allowed resistance of external brake resistor
SV-DA200-0R1-2	/	60 Ω
SV-DA200-0R2-2	/	60 Ω
SV-DA200-0R4-2	/	60 Ω
SV-DA200-0R7-2	30 Ω 60W	30 Ω
SV-DA200-1R0-2	30 Ω 60W	30 Ω
SV-DA200-1R5-2	30 Ω 60W	20 Ω
SV-DA200-2R0-2	15 Ω 120W	15 Ω
SV-DA200-3R0-2	15 Ω 120W	15 Ω
SV-DA200-4R4-2	15 Ω 120W	15 Ω
SV-DA200-1R0-4	60 Ω 60W	60 Ω
SV-DA200-1R5-4	60 Ω 60W	60 Ω
SV-DA200-2R0-4	60 Ω 60W	40 Ω
SV-DA200-3R0-4	60 Ω 60W	30 Ω
SV-DA200-4R4-4	30 Ω 120W	30 Ω
SV-DA200-5R5-4	30 Ω 120W	30 Ω
SV-DA200-7R5-4	/	30 Ω
SV-DA200-011-4	/	20 Ω
SV-DA200-015-4	/	15 Ω
SV-DA200-022-4	/	10 Ω
SV-DA200-037-4	/	10 Ω
SV-DA200-045-4	/	5 Ω
SV-DA200-055-4	/	5 Ω

EMI filter model selection

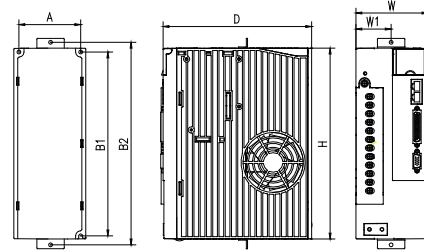
Drive model	EMI filter model
SV-DA200-0R1-2	FLT-P04006L-B
SV-DA200-0R2-2	
SV-DA200-0R4-2	
SV-DA200-0R7-2	
SV-DA200-1R0-4	
SV-DA200-1R5-4	
SV-DA200-1R0-2	FLT-P04016L-B
SV-DA200-1R5-2	
SV-DA200-2R0-4	
SV-DA200-3R0-4	
SV-DA200-2R0-2	FLT-P04032L-B
SV-DA200-3R0-2	
SV-DA200-4R4-4	
SV-DA200-4R4-2	
SV-DA200-5R5-4	FLT-P04045L-B
SV-DA200-7R5-4	
SV-DA200-011-4	FLT-P04065L-B
SV-DA200-015-4	FLT-P04100L-B
SV-DA200-022-4	FLT-P04100L-B
SV-DA200-037-4	FLT-P04150L-B
SV-DA200-045-4	FLT-P04150L-B
SV-DA200-055-4	FLT-P04150L-B

Remarks: The EMI filter models in the table are INVT EMI filter models, used at the power input end.

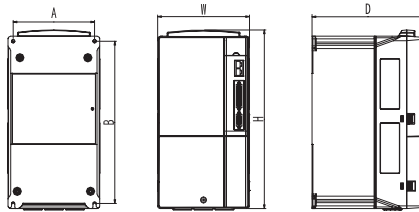
Drive dimensions



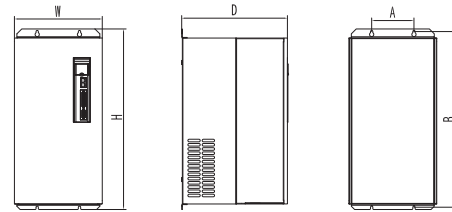
Dimensional drawing for frame sizes A, B, and C



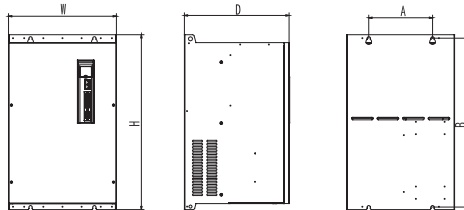
Dimensional drawing for frame size D



Dimensional drawing for frame sizes F and F2



Dimensional drawing for frame size G



Dimensional drawing for frame size H




Frame size	Model	Outline dimensions			Installation dimensions				Installation hole (mm)
		H(mm)	W(mm)	D(mm)	A(mm)	B1(mm)	B2(mm)	W1(mm)	
A	SV-DA200-0R1-2	170	45	170	33	162	185	22.5	M4(Φ5)
	SV-DA200-0R2-2								
	SV-DA200-0R4-2								
B	SV-DA200-0R7-2	170	67	180	54	162	185	25	M4(Φ5)
	SV-DA200-1R0-2								
	SV-DA200-1R5-2								
D	SV-DA200-2R0-2	245	92	190	79	237	260	45	M4(Φ5)
	SV-DA200-3R0-2								
	SV-DA200-4R4-2								
B	SV-DA200-1R0-4	170	67	180	54	162	185	25	M4(Φ5)
	SV-DA200-1R5-4								
C	SV-DA200-2R0-4	170	84	180	71	162	185	42	M4(Φ5)
	SV-DA200-3R0-4								
D	SV-DA200-4R4-4	245	92	190	79	237	260	45	M4(Φ5)
	SV-DA200-5R5-4								
F	SV-DA200-7R5-4	342	230	208	210	311	/	/	M5(Φ6)
	SV-DA200-011-4								
F2	SV-DA200-015-4	407	255	238	237	384	/	/	M6(Φ7)
G	SV-DA200-022-4	555	270	325	130	540	/	/	M6(Φ7)
	SV-DA200-037-4								
H	SV-DA200-045-4	554	338	328	200	535	/	/	M8(Φ10)
	SV-DA200-055-4								

Servo drive technical parameters

DA200 series servo drive (100W–55kW)				
Specification		Description		
Power	220V system input voltage	1P/3P AC 220V(-15%)~240V(+10%) 47Hz ~ 63 Hz		
	400V system input voltage	3P AC 380V(-15%)~440V(+10%) 47Hz ~ 63Hz		
Port	Control signal	Input	10 inputs for standard type, pulse type and CANopen bus type; 7 inputs for EtherCAT bus type; 7 inputs for PROFINET bus type(functions can be configured via relevant parameters)	
		Output	6 outputs for standard type, pulse type and CANopen bus type; 4 outputs for EtherCAT bus type; 4 outputs for PROFINET bus type(functions can be configured via relevant parameters)	
	Analog	Input	3 inputs for standard type (one 16bit, two 12bit analog inputs) 2 inputs for non-standard type (two 12bit analog inputs)	
		Output	2 outputs (analog monitoring output)	
	Pulse signal	Input	1 input (mode: differential input or open collector)	
		Output	1 output (mode: differential output (A+, A-; B+, B-; Z+, Z-) or open collector output (A; B; Z))	
	2 nd encoder	Input	Incremental encoder interface (2nd encoder or grating ruler)	
	Communication	USB	1:1 communication upper PC software (standard)	
		RS485	1:n communication (standard)	
		CANopen	1:n communication (optional)	
		PROFINET	1:n communication (optional)	
		PROFIdrive	1:n communication (optional)	
	Safety terminal	EtherCAT	1:n communication (optional)	
		STO	Safe Torque Off (comply with latest Euro safety standard) (optional)	
Control mode			1. Position control; 2. Speed control; 3. Torque control; 4. Position/speed mode switching; 5. Speed/torque mode switching; 6. Position/torque mode switching; 7. Fully-closed loop control; 8. CANopen mode; 9. EtherCAT mode	
Function	Position control	Control input	1. Residual pulse clearing; 2. Command pulse input disabled; 3. Electronic gear ratio switching; 4. Vibration control switching	
		Control output	Position complete output	
		Pulse input	Max. pulse input frequency	Photoelectric coupling: differential input 4MpPs, open collector input 200kpPs
			Pulse input mode	1. Pulse+direction; 2. CW+CCW; 3. Quadrature encoding
			Electronic gear	1/10000 - 1000
		Filter	1. Command smooth filter; 2. FIR filter	
		Analog input	Torque limit	Can perform clockwise/anticlockwise torque limit separately
		Vibration control	Can control 5 - 200Hz front-end vibration and machine vibration	
Pulse output	1. Can perform any frequency division setting which is below encoder resolution rate; 2. B phase reversing function			

DA200 series servo drive (100W–55kW)				
Specification		Description		
Function	Speed control	Control input	1. Internal command speed selection 1; 2. Internal command speed selection 2; 3. Internal command speed selection 3; 4. Zero speed clamp	
		Control output	Speed reaching, etc. Speed reaching, etc.	
		Analog input	Speed command input	Can set to speed command input based on analog voltage DC ± 10V
			Speed limit input	Can carry out torque limit clockwise/anticlockwise separately
		Internal speed command	Can switch between internal 8-step speed based on external input control	
		Speed command acc/dec adjustment	Can set acc/dec time separately or set acc/dec of S curve	
		Zero speed clamp	In speed mode, zero speed clamp function can set to work in speed mode or position mode	
		Speed command filter	First-order delay filter of analog input speed command	
	Speed command zero drift control	Can carry out zero drift control against peripheral disturbance, precision 0.3mV		
	Torque control	Control input	Zero speed clamp input, etc.	
		Control output	Speed reaching, etc.	
		Analog input	Torque command input	Analog torque command input, can set gain and polarity based on analog voltage, precision 4.88mV
			Speed limit input	Can carry out analog speed limit
		Speed limit	Speed limit can be set via parameters	
		Torque command filter	First-order delay filter of analog input torque command	
	Torque command zero drift control	Can carry out zero drift control against peripheral disturbance, precision is 4.88mV		
	Internal position planning	Plan points	Can carry out 128-point internal position plan setting, support communication control positioning	
		Route setting	1. Position; 2. Speed; 3. Acc time; 4. Dec time; 5. Stop timer; 6. Various state output; 7. Running mode	
		Homing	1. LS signal; 2. Z phase signal; 3. LS signal+Z phase signal; 4. Torque limit signal	
	Protection	Hardware protection		Overvoltage, undervoltage, overcurrent, overspeed, overload, overheat, brake resistor overload, encoder fault, etc.
		Software protection		Storage fault, initialization fault, I/O distribution error, position deviation is too large, etc.
Protection and fault record		1. Can record up to 10 faults 2. Can record the key parameter value when fault occurred		
Environment	Temperature	Working temp	0 ~ 45°C	
		Storage temp	-20 ~ 80°C (Non frozen)	
	Working/storage RH		90%RH(no condensation)	
	IP level		IP20	
	Elevation		Below 1000m	
Vibration		≤5.88m/s ² , 10 - 60Hz (Do not work on resonance point)		

Servo drive configuration table

1PH/3PH 220V									
Servo drive									
	SIZE A			SIZE B			SIZE D		
	SV-DA200-0R1-2	SV-DA200-0R2-2	SV-DA200-0R4-2	SV-DA200-0R7-2	SV-DA200-1R0-2	SV-DA200-1R5-2	SV-DA200-2R0-2	SV-DA200-3R0-2	SV-DA200-4R4-2
Servo motor	SV-ML04-0R1G-2	SV-ML06-0R2G-2	SV-ML06-0R4G-2	SV-ML08-0R7G-2	SV-MM13-1R0E-2	SV-MM11-1R5G-2	SV-MM13-2R0E-2	SV-MM13-3R0E-2	SV-MM18-4R4B-2
	–	SV-MH06-0R2G-2	SV-MH06-0R4G-2	SV-MH08-0R7G-2	SV-ML08-1R0F-2	SV-MM13-1R5E-2	–	SV-MM18-3R0B-2	–

3PH 400V									
Servo drive									
	SIZE B			SIZE C			SIZE D		
	SV-DA200-1R0-4	SV-DA200-1R5-4	SV-DA200-2R0-4	SV-DA200-3R0-4	SV-DA200-4R4-4	SV-DA200-5R5-4			
Servo motor	SV-MM13-1R0E-4	SV-MM13-1R5E-4	SV-MM13-2R0E-4	SV-MM13-3R0E-4	SV-MM18-4R4B-4	SV-MM18-5R5B-4			
	SV-ML08-1R0F-4	–	–	SV-MM18-3R0B-4					
Servo drive									
	SIZE F			SIZE F2			SIZE G		
	SV-DA200-7R5-4	SV-DA200-011-4	SV-DA200-015-4	SV-DA200-022-4	SV-DA200-037-4				
Servo motor	SV-MM18-7R5B-4	SV-MH20-011B-4	SV-MH20-015B-4	SV-MH20-022B-4	SV-MH20-035C-4				
	SV-SM18-7R5B-4	–	–	–	–				
Servo drive									
	SIZE H								
	SV-DA200-045-4	SV-DA200-055-4							
Servo motor	SV-SH26-044E-4	SV-SH26-055C-4							

Servo motor models

Naming rules

SV-M M 13-3R0 E-4-1 A 0-XXXX

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①

Symbol	Product category
SV	Servo system

②

Symbol	Product category
M	M series
C	C series
S	S series

③

Symbol	Inertia level
L	Small inertia
M	Medium inertia
H	Large inertia

④

Symbol	Base no.
04	40 ⁽¹⁾
06	60
08	80
11	110
13	130
18	180
20	200
26	263

⑤

Symbol	Rated power
0R1	100W
0R2	200W
0R4	400W
0R7	750W
0R8	800W/850W
1R0	1.0kW
1R2	1.2kW
1R3	1.3kW
1R5	1.5kW
1R8	1.8kW
2R0	2.0kW
3R0	3.0kW
4R4	4.4kW
5R5	5.5kW
7R5	7.5kW
011	11kW
015	15kW
022	22kW
037	37kW
045	45kW
055	55kW
...	...

⑥

Symbol	Rated speed
A	1000rpm ⁽²⁾
B	1500rpm
E	2000rpm
F	2500rpm
G	3000rpm

⑦

Symbol	Voltage class
2	220VAC
4	380VAC

⑧

Symbol	Encoder type
1	2500-PPR standard incremental
4	17-bit multi-turn absolute ⁽³⁾
7	Resolver
9	23-bit multi-turn absolute

⑨

Symbol	Shaft end connection
A	Solid threaded with key (Standard)
B	Solid optical axis ⁽²⁾

⑩

Symbol	Optional parts
0	With oil seal but no brake
1	No oil seal or brake ⁽²⁾
2	With oil seal and permanent magnet brake
3	No oil seal but with permanent magnet brake ⁽²⁾
4	With oil seal and electromagnet brake ⁽⁴⁾
5	No oil seal but with brake ⁽²⁾

⑪

Symbol	Lot no.
xxxx	Manufacturer's product lot no. ⁽⁵⁾

Remarks:

- (1): A motor of base 40 supports only 2500-PPR and 17-bit absolute encoders.
- (2): For special models, the lead time will be longer than usual.
- (3): 17-bit multi-turn absolute encoders are applicable only to motors of base 40.
- (5): No need to fill in when selecting models for the first time.
- (4): When an electromagnetic brake motor is used, there is a clearance (of < 0.5°) in the rotating direction if the motor brake is closed. Pay attention to this in the vertical axis applications. There is no clearance when a permanent magnetic brake is used.
- (5): No need to fill in when selecting models for the first time.

Servo motor technical parameters

Motor specification (2500-PPR/multi-turn absolute/resolver)

Motor model (2500-PPR/multi-turn absolute/ resolver)	Rated power (kW)	Rated current (A)	Max. momentary current (A)	Rated torque (Nm)	Max. momentary torque (Nm)	Rated speed (rpm)	Max. speed (rpm)	Rotation inertia standard/with brake (kg. cm)	Voltage (V)	Weight standard/with brake (kg)	
ML series with small inertia											
SV-ML04-0R1G-2-□A□	0.1	0.6	1.2	0.32	0.64	3000	5000	0.051/0.055/#	220	0.47/0.67	
SV-ML06-0R2G-2-□A□	0.2	1.5	4.5	0.64	1.92			0.198/0.29/0.21		1.4/1.6	
SV-ML06-0R4G-2-□A□	0.4	2.8	8.4	1.3	3.9			0.33/0.42/0.34		1.8/2.0	
SV-ML08-0R7G-2-□A□	0.75	4.5	13.5	2.4	7.2			1.28/1.51/1.41		3.0/3.5	
SV-ML08-1R0F-2-□A□	1.0	4.3	11.4	4.0	11.4	2500	3500	2.08/2.31/2.21	380	4.8/5.3	
SV-ML08-1R0F-4-□A□	1.0	2.5	7.2	4.0	10.4			2.08/2.31/2.21		4.8/5.3	
MM/SM series with medium inertia											
SV-MM11-0R8E-2-□A□	0.8	3.5	10.5	4	12	2000	3000*	5.4/6.7/#	220	6/7.7	
SV-MM11-1R2E-2-□A□	1.2	4.5	13.5	6	18			7.6/8.9/#		7.9/9.6	
SV-MM11-1R2G-2-□A□	1.2	5	15	4	12			5.4/6.7/#		6/7.7	
SV-MM11-1R5G-2-□A□	1.5	6	18	5	15	3000	4000*	6.3/7.6/#	220	6.8/8.5	
SV-MM11-1R8G-2-□A□	1.8	6	18	6	18			7.6/8.9/#		7.9/9.6	
SV-MM13-1R0E-2-□A□	1	4.8	14.4	4.78	14.3	2000	3000	6.4/8.3/7.19	220	5.8/7.5	
SV-MM13-1R5E-2-□A□	1.5	7.6	22.8	7.16	21.4			9.3/11.2/10.09		7.1/8.8	
SV-MM13-2R0E-2-□A□	2	9.5	28.5	9.55	28.6			12.2/14.1/12.99		8.4/10.1	
SV-MM13-3R0E-2-□A□	3	13.6	40.8	14.3	42			18/19.9/18.79		10.8/12.5	
SV-MM13-2R3B-2-□A□	2.3	8.7	18.9	15	34.5	1500	1800	18/19.9/18.79	380	10.8/12.5	
SV-MM18-3R0B-2-□A□	3	12.4	31	19	47		2000	70.6/84.4/78.3		19.5/27.8	
SV-MM18-4R4B-2-□A□	4.4	16.4	41	28	68	2000	3000	97.7/111.5/104	380	24.2/32.5	
SV-MM13-1R0E-4-□A□	1	2.8	8.4	4.78	14.3			6.4/8.3/7.19		5.8/7.5	
SV-MM13-1R5E-4-□A□	1.5	4.5	13.5	7.16	21.4			9.3/11.2/10.09		7.1/8.8	
SV-MM13-2R0E-4-□A□	2	5.5	16.5	9.55	28.6			12.2/14.1/12.99		8.4/10.1	
SV-MM13-3R0E-4-□A□	3	7.8	23.4	14.3	42			18/19.9/18.79		10.8/12.5	
SV-MM18-3R0B-4-□A□	3	7.5	18.7	19	47			70.6/84.4/78.3		19.5/27.8	
SV-MM18-4R4B-4-□A□	4.4	10.3	25.7	28	68			97.7/111.5/104		24.2/32.5	
SV-MM18-5R5B-4-□A□	5.5	12.8	25.6	35	70			125/138.8/131.2		28.8/37.2	
SV-MM18-7R5B-4-□A□	7.5	20	40	48	96			173.3/187/179.5		40/46.5	
SV-SM18-7R5B-4-□A□	7.5	23.1	46.2	48	96			2500		183.3/197/190	46/52.5
MH/SH series with large inertia											
SV-MH06-0R2G-2-□A□	0.2	1.5	4.5	0.64	1.92	3000	5000	0.42/0.52/0.43	220	1.5/1.7	
SV-MH06-0R4G-2-□A□	0.4	2.8	8.4	1.3	3.9			0.67/0.76/0.68		2.0/2.2	
SV-MH08-0R7G-2-□A□	0.75	4.5	13.5	2.4	7.2			2.5/2.73/2.63		3.3/3.8	
SV-MH13-0R8B-2-□A□	0.85	4.8	13	5.41	14.3	1500	2400	13.9/#/14.7	220	6.6/8.3	
SV-MH13-1R3B-2-□A□	1.3	7.2	18.9	8.27	21.4		19.9/#/20.8	7.95/9.65			
SV-MH13-0R8B-4-□A□	0.85	3.1	7.5	5.41	14.3		2200	13.9/#/14.7		6.6/8.3	
SV-MH13-1R3B-4-□A□	1.3	4.5	11.5	8.27	21.4	1500	1800	19.9/无/20.8	380	7.95/9.65	
SV-MH20-011B-4-□A□	11	22.7	69	70	175		2300	98.3/106.3/#		49/67	
SV-MH20-015B-4-□A□	15	42.5	107	95.5	240		2100	119/127/#		66/86	
SV-SH26-022B-4-□A□	22	61	153	140	350		1800	390/#/412		103/133	
SV-SH26-031B-4-□A□	31	65.3	98	196	294		1800	380/#/402		115/145	
SV-SH26-035C-4-□A□	35	74.6	202	187	468		1800	2500		380/##	118
SV-SH26-044E-4-□A□	44	100	270	210	525		2000	2500*		447/##	121
SV-SH26-055C-4-□A□	55	104.6	285	290	725	1800	1900	728/##	159		
Insulation class	Class F(155°C)										
IP class	IP65(MH20/SH26: IP54)										
Ambient environment	Temperature: -20° C - +40° C (non-frozen); RH: Below 90% (No condensation)										

Remarks:

(*) Please confirm the corresponding max. speed with the manufacturer.

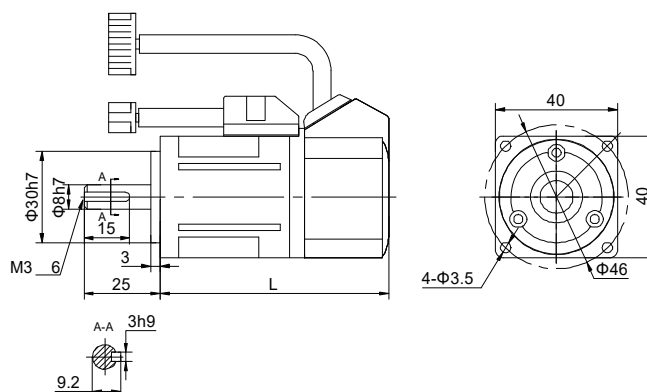
(#) To be developed

Servo motor installation dimensions

Note: Motor structure dimensions may vary with design modification. If you are sensitive to motor dimensions, contact sales staff before ordering.

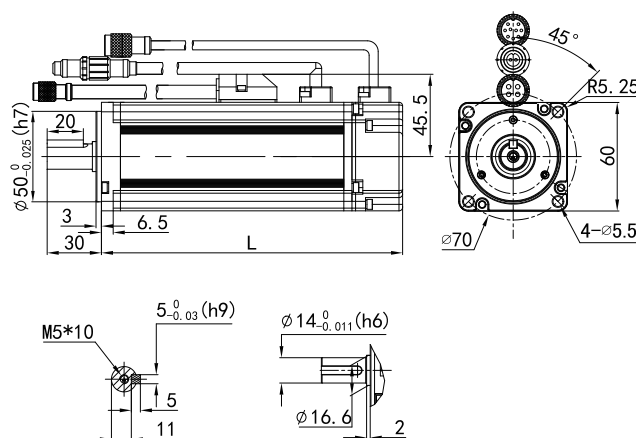
Base-40 motor outline dimensions (unit: mm)

Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)	
	Without brake	With PM brake
SV-ML04-0R1G-2-□A□	90	124



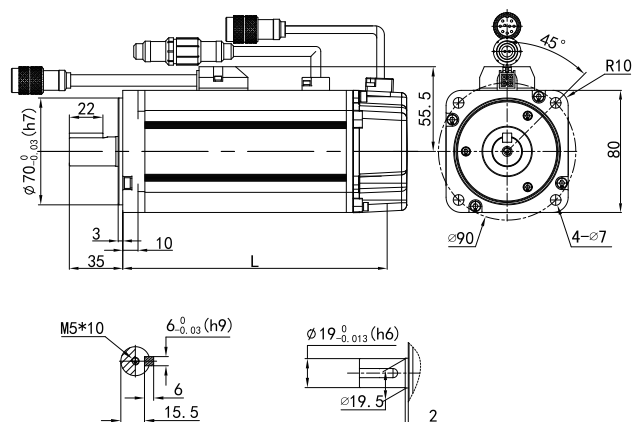
Base-60 motor outline dimensions (unit: mm)

Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)		
	Without brake	With PM brake	With EM brake
SV-ML06-0R2G-2-□A□	115	152	152
SV-ML06-0R4G-2-□A□	139	176	176
SV-MH06-0R4G-2-□A□	147	191.5	191.5
SV-MH06-0R2G-2-□A□	120.5	165.5	165.5



Base-80 motor outline dimensions (unit: mm)

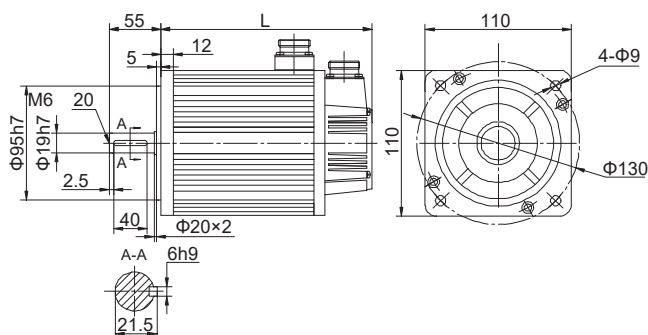
Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)		
	Without brake	With PM brake	With EM brake
SV-ML08-0R7G-2-□A□	140	186.5	186.5
SV-MH08-0R7G-2-□A□	151	204.5	204.5
SV-ML08-1R0F-□-□A□	172	218.5	218.5



Servo motor installation dimensions

Base-110 motor outline dimensions (unit: mm)

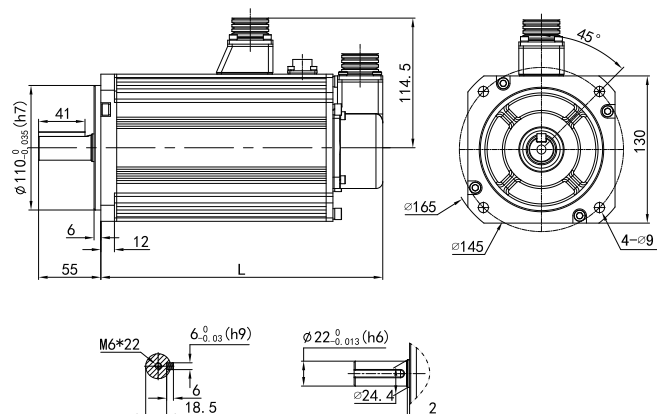
Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)		
	Without brake	With PM brake	With EM brake
SV-MM11-0R8E-2-□A□	189	245	263
SV-MM11-1R2G-2-□A□	204	260	278
SV-MM11-1R2E-2-□A□	219	275	293
SV-MM11-1R8G-2-□A□			



Note: Motor structure dimensions may vary with design modification. If you are sensitive to motor dimensions, contact sales staff before ordering.

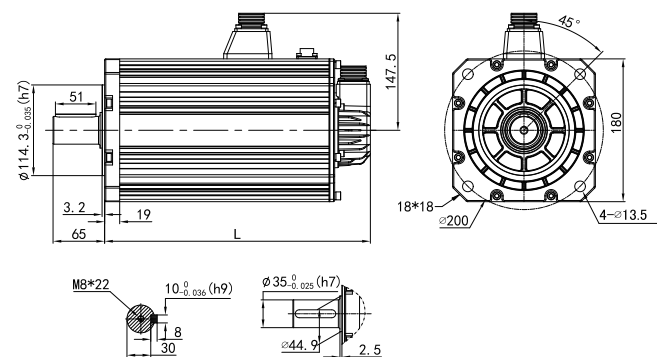
Base-130 motor outline dimensions (unit: mm)

Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)		
	Without brake	With PM brake	With EM brake
SV-MM13-1R0E-□-□A□	143	185	185
SV-MM13-1R5E-□-□A□	159	201	201
SV-MM13-2R0E-□-□A□	175	217	217
SV-MM13-3R0E-□-□A□	207	249	249
SV-MH13-0R8B-□-□A□	167	209	209
SV-MH13-1R3B-□-□A□	202	244	244



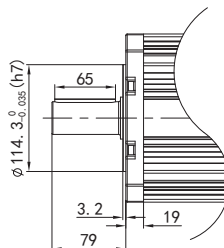
Base-180 motor outline dimensions (unit: mm)

Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)		
	Without brake	With PM brake	With EM brake
SV-MM18-3R0B-□-□A□	230	303	303
SV-MM18-4R4B-□-□A□	260	333	333
SV-MM18-5R5B-4-□A□	290	363	363
SV-MM18-7R5B-4-□A□	345	418	418



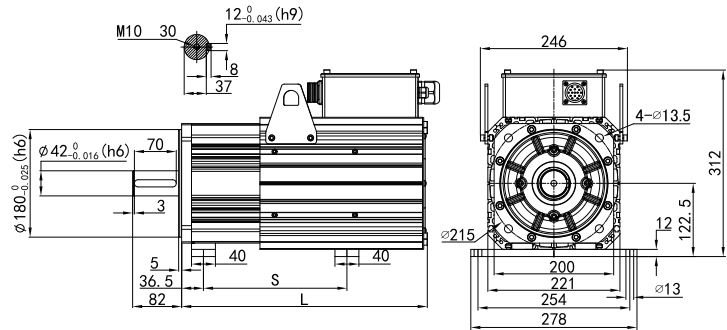
SV-SM18-7R5B shaft extension dimensions (unit: mm)

Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)		
	Without brake	With PM brake	With EM brake
SV-SM18-7R5B-4-□A□	375	448	448



Base-200 motor outline dimensions (unit: mm)

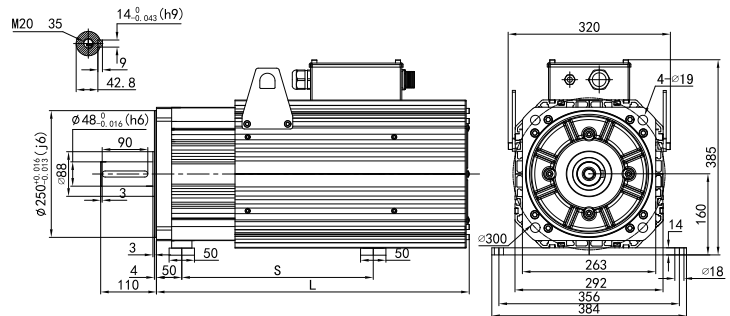
Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)	
	Without brake	With EM brake
SV-MH20-011B-4-□A□	411	547
SV-MH20-015B-4-□A□	446	582



Base-263 motor outline dimensions (unit: mm)

Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)	
	Without brake	With EM brake
SV-SH26-022B-4-□A□	537	644
SV-SH26-031B-4-□A□	537	644

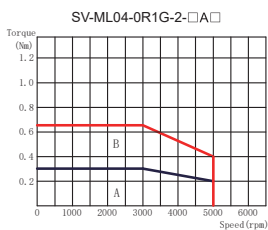
Motor model 2500-PPR/Multiturn absolute/ Resolver	L(mm)	
	Without brake	
SV-SH26-035C-4-□A□	537	
SV-SH26-044E-4-□A□	577	
SV-SH26-055C-4-□A□	620	



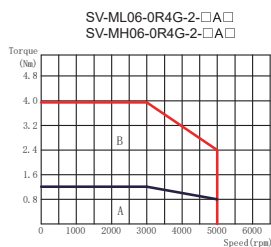
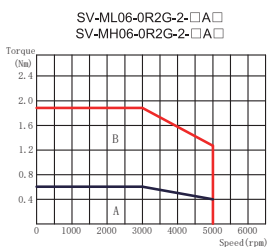
Servo motor torque-speed characteristic

Note: A is a continuous working area; B is a short-time working area.

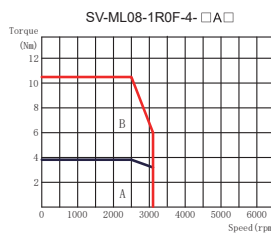
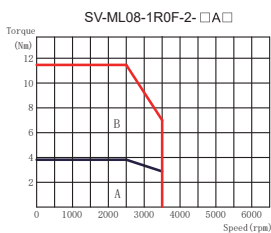
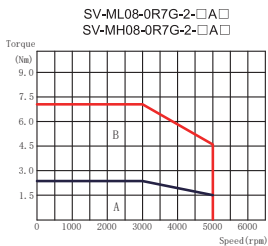
Base-40 motor



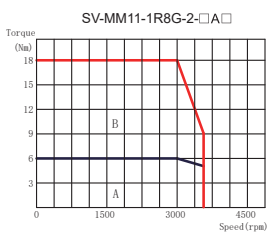
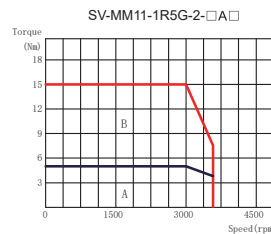
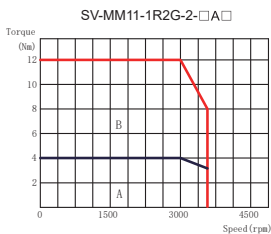
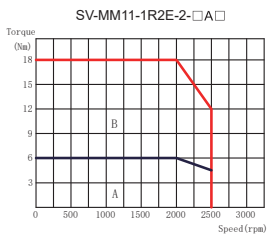
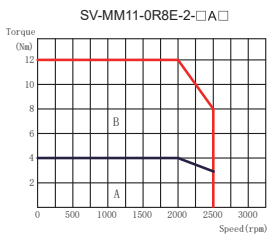
Base-60 motor



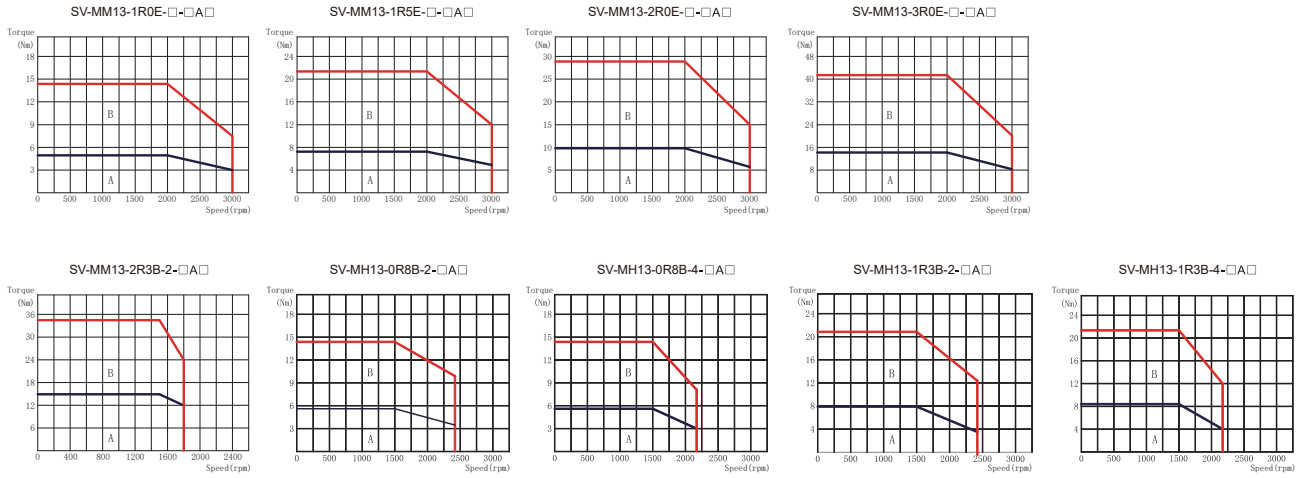
Base-80 motor



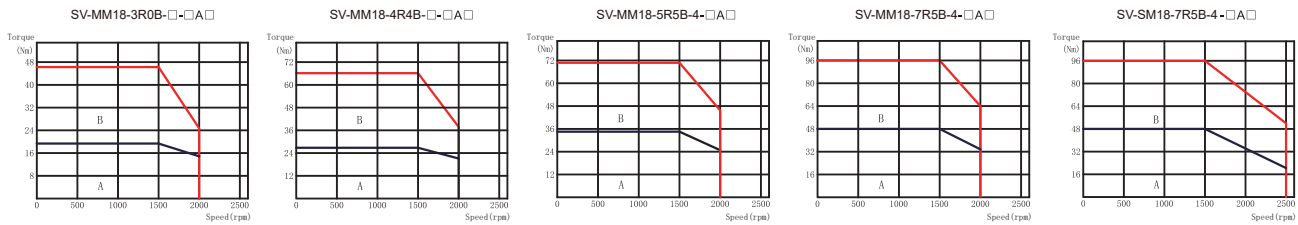
Base-110 motor



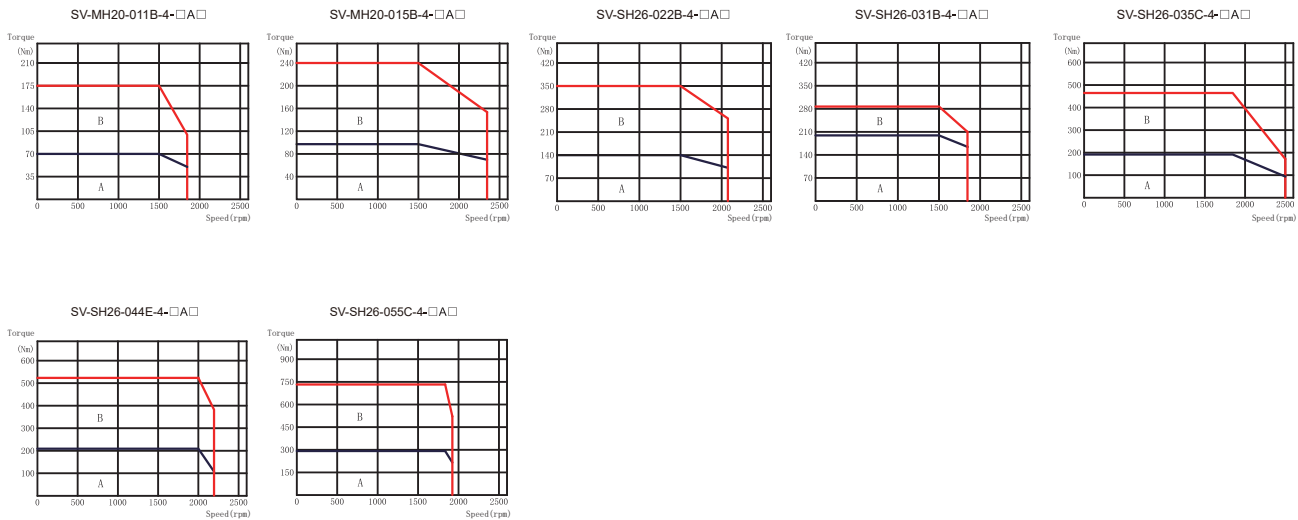
Base-130 motor



Base-180 motor



Base-200/263 motor



Servo motor power cable models

Power cable

DA ML-075-05-A B F-00

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Power cable accessories

DA ML-A B

① ② ⑤ ⑥

①

Symbol	Supporting series
DA	Manufacturer no.

②

Symbol	Cable type
ML	Power cable

③

Symbol	Cable diameter
075	0.75 mm ²
100	1.0 mm ²
150	1.5 mm ²
250	2.5 mm ²
400	4.0 mm ²
600	6.0 mm ²
10R	10 mm ²
16R	16 mm ²
25R	25 mm ²

④

Symbol	Cable length
03	3m
05	5m
10	10m
20	20m

⑤

Symbol	Motor end plug
A	4PIN plastic plug
B	4PIN regular aviation plug YD28
C	4PIN metal plug
E	Regular aviation plug YD18
N	Regular aviation plug YD32
S	Copper tube terminal SC

⑥

Symbol	Drive end plug
B	Euro 7PIN 20A plug
W	No plug
S	Copper tube terminal SC

⑦

Symbol	Cable material
0	Regular cable
A	Shielded regular cable
B	Shielded flexible towline cable
F	Flexible towline cable

⑧

Symbol	Lot no.
00	Standard product
01	Serial no. for non standard product

抱闸电缆

BRKL-03-A

① ② ③

①

Symbol	Product series
BRKL	Motor brake cable

②

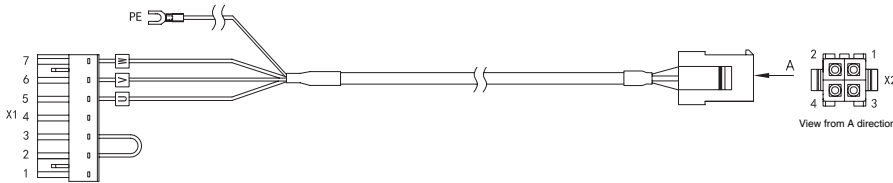
Symbol	Cable length
03	3m
05	5m
10	10m
30	30m

③

Symbol	Motor end plug
A	2PIN metal plug
B	3PIN regular aviation plug
C	3PIN metal plug

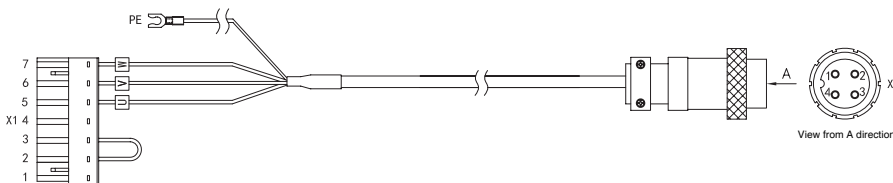
Servo motor power cable wiring

Power cable for base 40/60/80, 100W–750W motor using 2500-PPR encoder



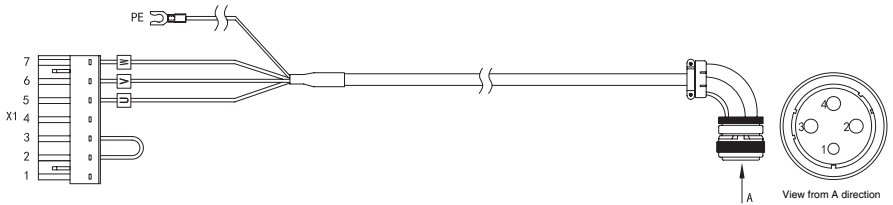
Wiring relation			
Signal	X1	X2	Color of core cable
W	X1.7	X2.3	Brown
V	X1.6	X2.1	Red
U	X1.5	X2.2	Blue
GND	GND terminal	X2.4	Yellow/green
/	X1.4	/	/
/	X1.3	Short connect to X1.2	
/	X1.2	Short connect to X1.3	
/	X1.1	/	/

Power cable for base 40/60/80, 100W–750W motor using 17- or 23 bit encoder



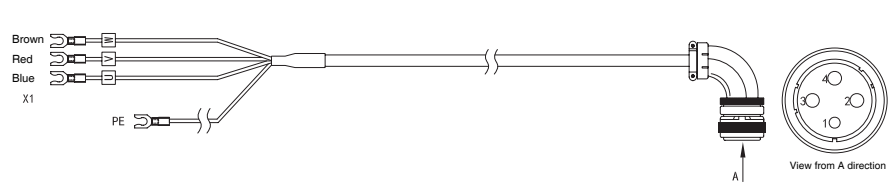
Wiring relation			
Signal	X1	X2	Color of core cable
W	X1.7	X2.1	Brown
V	X1.6	X2.3	Red
U	X1.5	X2.4	Blue
PE	GND terminal	X2.2	Yellow/green
/	X1.4	/	/
/	X1.3	Short connect to X1.2	
/	X1.2	Short connect to X1.3	
/	X1.1	/	/

Power cable for base 110/130, 800W–1.5kW (220V), 1kW–3kW (380V) motor⁽¹⁾



Wiring relation			
Signal	X1	X2	Color of core cable
W	X1.7	X2.4	Brown
V	X1.6	X2.3	Red
U	X1.5	X2.2	Blue
PE	GND terminal	X2.1	Yellow/green
/	X1.4	/	/
/	X1.3	Short connect to X1.2	
/	X1.2	Short connect to X1.3	
/	X1.1	/	/

Power cable for base 130/180, 2 kW–4.4kW(220V)/4.4kW–7.5kW (380V) motor⁽¹⁾



接线关系表		
Signal	X2	Color of core cable
W	X2.4	Brown
V	X2.3	Red
U	X2.2	Blue
PE	X2.1	Yellow/green

Power cable for base 200/263, 11kW–55kW (380V) motor



Servo motor encoder cable models

Encoder cable

DB EL-15-03-A F-01 00
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Encoder cable accessories

DB EL-A A
 ① ② ③ ⑤

①

Symbol	Symbol
DB	Manufacturer no.

②

Symbol	Cable type
EL	Encoder cable

③

Symbol	Number of cable cores
06	6
09	9
15	15

④

Symbol	Cable length
03	3m
05	5m
10	10m
20	20m

⑤

Symbol	Motor end plug
A	15PIN DB plug
B	15PIN regular aviation plug YD28
C	9PIN metal plug
D	6PIN plastic plug

⑥

Symbol	Cable material
0	Regular cable
D	Regular cable with battery holder
F	Flexible towline cable
H	Flexible towline cable with battery holder

⑦

Symbol	Encoder type
01	Incremental
04	Absolute
07	Resolver

⑧

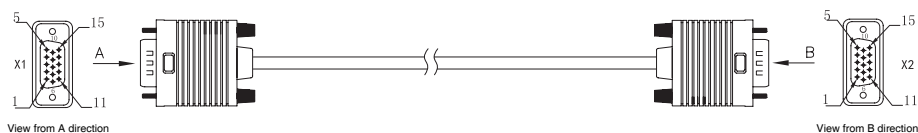
Symbol	Lot no.
00	Standard part

⑨

Symbol	Drive end plug
A	15PIN DB plug

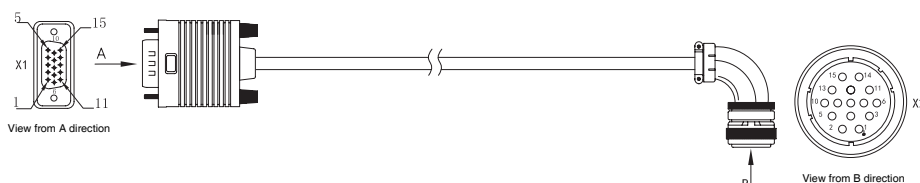
Servo motor encoder cable wiring

Cable for 2500-PPR encoder used by base 40/60/80 motor



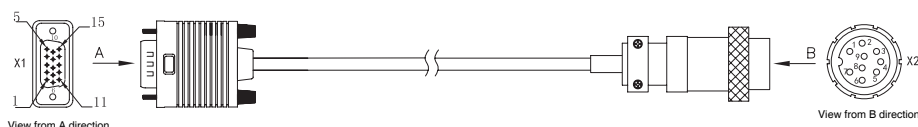
Wiring relation			
Signal	X1	X2	Core cable structure
V+	X1.1	X2.1	Twisted pair
V-	X1.7	X2.7	
W+	X1.2	X2.2	Twisted pair
W-	X1.8	X2.8	
A+	X1.3	X2.3	Twisted pair
A-	X1.4	X2.4	
U+	X1.6	X2.6	Twisted pair
U-	X1.11	X2.11	
B-	X1.9	X2.9	Twisted pair
B+	X1.10	X2.10	
Z-	X1.13	X2.13	Twisted pair
Z+	X1.14	X2.14	
5V	X1.5	X2.5	Twisted pair
GND	X1.12	X2.12	
PE	Metal shell	Metal shell	

Cable for 2500-PPR encoder used by base 110/130/180/200 motor



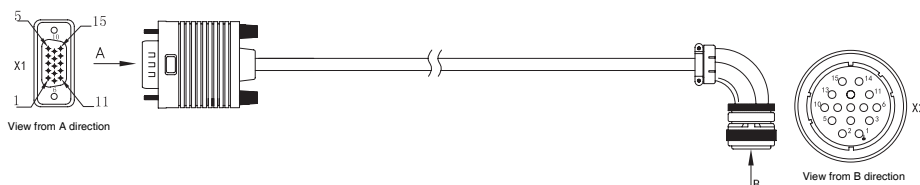
Wiring relation			
Signal	X1	X2	Core cable structure
V+	X1.1	X2.11	Twisted pair
V-	X1.7	X2.14	
W+	X1.2	X2.12	Twisted pair
W-	X1.8	X2.15	
A+	X1.3	X2.7	Twisted pair
A-	X1.4	X2.4	
U+	X1.6	X2.10	Twisted pair
U-	X1.11	X2.13	
B-	X1.9	X2.8	Twisted pair
B+	X1.10	X2.5	
Z-	X1.13	X2.9	Twisted pair
Z+	X1.14	X2.6	
5V	X1.5	X2.2	Twisted pair
GND	X1.12	X2.3	
PE	Metal shell	Metal shell	

Cable for 17- or 23-bit encoder used by base 40/60/80 motor



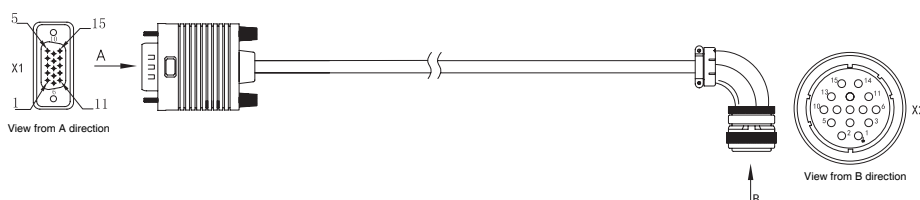
Wiring relation			
Signal	X1	X2	Core cable structure
SD+	X1.1	X2.1	Twisted pair
SD-	X1.7	X2.2	
5V	X1.5	X2.3	Twisted pair
GND	X1.12	X2.4	
VB-3.6V	/	X2.5	Twisted pair
VB-GND	/	X2.6	
PE	Metal shell	Metal shell	Weaving

Cable for 17- or 23-bit encoder used by base 110/130/180/200 motor



Wiring relation			
Signal	X1	X2	Core cable structure
SD+	X1.1	X2.2	Twisted pair
SD-	X1.7	X2.3	
5V	X1.5	X2.4	Twisted pair
GND	X1.12	X2.5	
VB-3.6V	/	X2.6	Twisted pair
VB-GND	/	X2.7	
PE	Metal shell	X2.1	Weaving

Resolver-type encoder cable



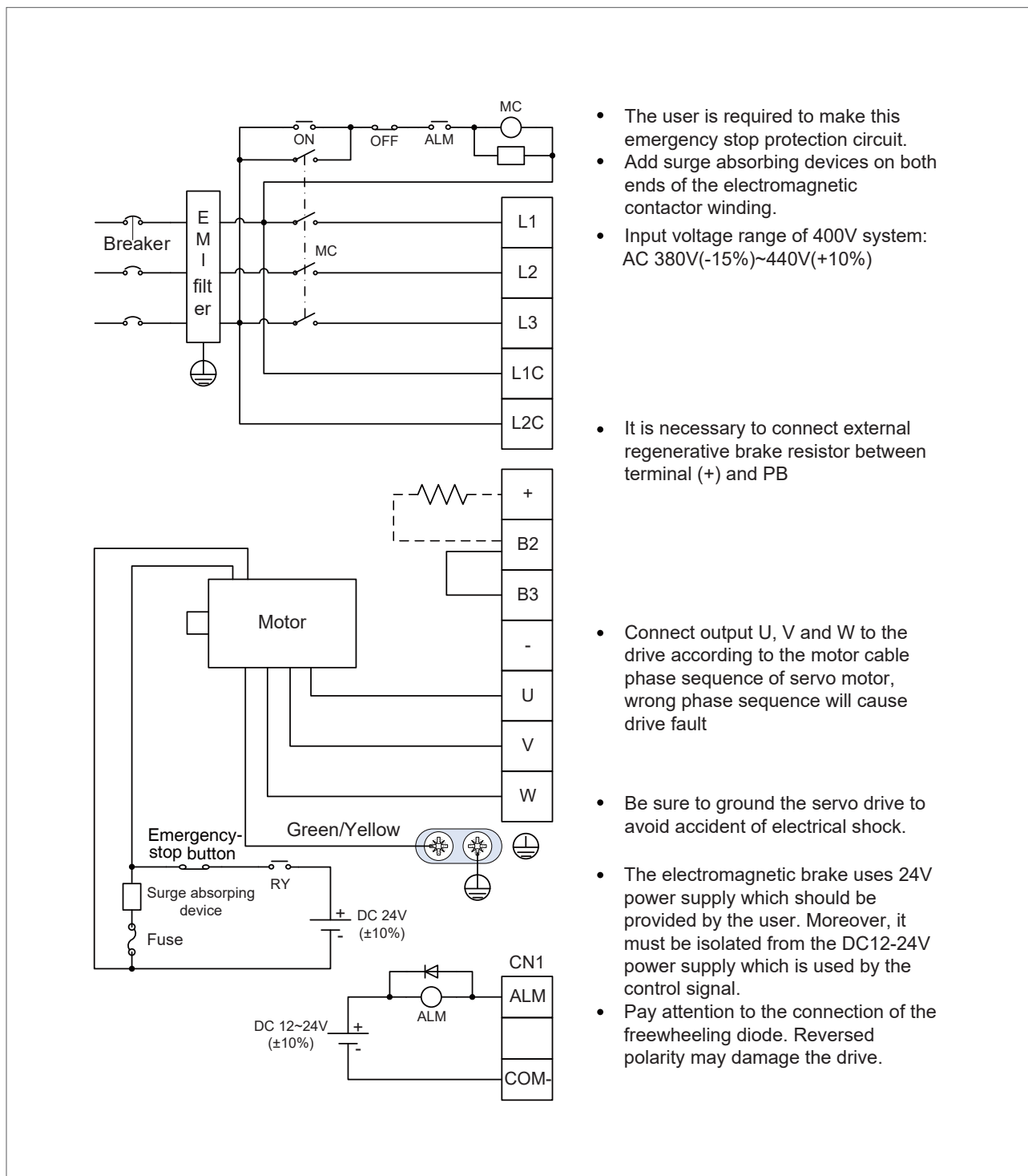
Wiring relation			
Signal	X1	X2	Core cable structure
SIN+	X1.1	X2.6	Twisted pair
SIN-	X1.7	X2.7	
COS+	X1.2	X2.5	Twisted pair
COS-	X1.8	X2.4	
R+	X1.5	X2.2	Twisted pair
R-	X1.12	X2.3	
PE	Metal shell	X2.1	Weaving

Connection ports

Note: Standard-type examples

Medium power range: 100W–5.5kW

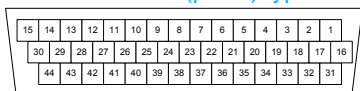
Wiring diagram of main circuit terminal



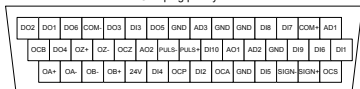
- The user is required to make this emergency stop protection circuit.
- Add surge absorbing devices on both ends of the electromagnetic contactor winding.
- Input voltage range of 400V system: AC 380V(-15%)~440V(+10%)
- It is necessary to connect external regenerative brake resistor between terminal (+) and PB
- Connect output U, V and W to the drive according to the motor cable phase sequence of servo motor, wrong phase sequence will cause drive fault
- Be sure to ground the servo drive to avoid accident of electrical shock.
- The electromagnetic brake uses 24V power supply which should be provided by the user. Moreover, it must be isolated from the DC12-24V power supply which is used by the control signal.
- Pay attention to the connection of the freewheeling diode. Reversed polarity may damage the drive.

CN1

Applicable to the standard (pulse) type

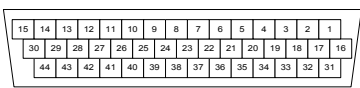


CN1 plug pin layout

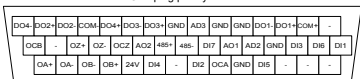


CN1 plug signal layout

Applicable to EtherCAT and PROFINET bus communication

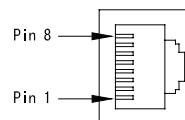


CN1 plug pin layout



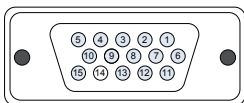
CN1 plug signal layout

CN3



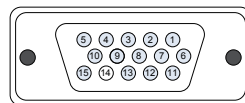
CN3 terminal function			
Pin	Name	Function	Remark
1	GND_CAN	CAN chip power GND	See the table on the left for definition if used as 485/CAN; 485 and CAN use the same interface and each signal has two pins for multiple networking.
2	GND_485	485 chip power GND	
3	/	/	
4	RS485+	RS485 data+	
5	RS485-	RS485 data-	
6	/	/	
7	CAN_L	CAN data-	
8	CAN_H	CAN data+	

CN2

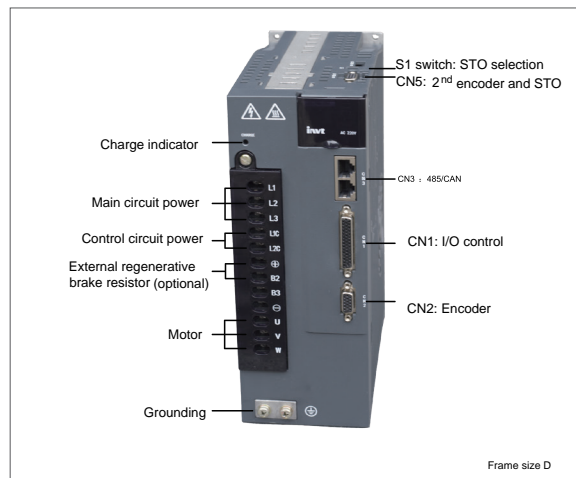
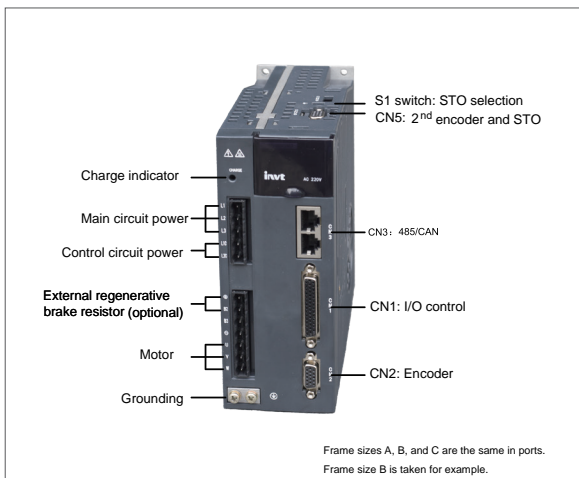


CN2 terminal function			
Pin	Name	Function	Remark
1	V+ /SD+	Parallel encoder V+/Serial encoder data+	Different encoders use different cables
2	W+	Signal of parallel encoder W+	
3	A+	Signal of parallel encoder A+	
4	A-	Signal of parallel encoder A-	
5	5V	Encoder power supply	
6	U+	Signal of parallel encoder U+	
7	V- /SD-	Parallel encoder V-/Serial encoder data-	
8	W-	Signal of parallel encoder W-	
9	B-	Signal of parallel encoder B-	
10	B+	Signal of parallel encoder B+	
11	U-	Signal of parallel encoder U-	
12	GND	Power ground	
13	Z-	Signal of parallel encoder Z-	
14	Z+	Signal of parallel encoder Z+	
15	/	/	

CN5



CN5 terminal function			
Pin	Name	Function	Remark
1	HWBB1+	Safety input 1+	Connect to grating ruler or 2 nd encoder
2	HWBB2+	Safety input 2+	
3	EXA+	Grating ruler (or 2 nd encoder) A+	
4	EXA-	Grating ruler (or 2 nd encoder) A-	
5	EX5V	Power+5V	
6	EDM+	Safety monitoring output+	
7	HWBB1-	Safety input 1-	
8	HWBB2-	Safety input 2-	
9	EXB-	Grating ruler (or 2 nd encoder) B-	
10	EXB+	Grating ruler (or 2 nd encoder) B+	
11	EDM-	Safety monitoring output-	
12	EX0V	Power GND, connect to internal GND	
13	EXZ-	Grating ruler (or 2 nd encoder) Z-	
14	EXZ+	Grating ruler (or 2 nd encoder) Z+	
15	/	/	

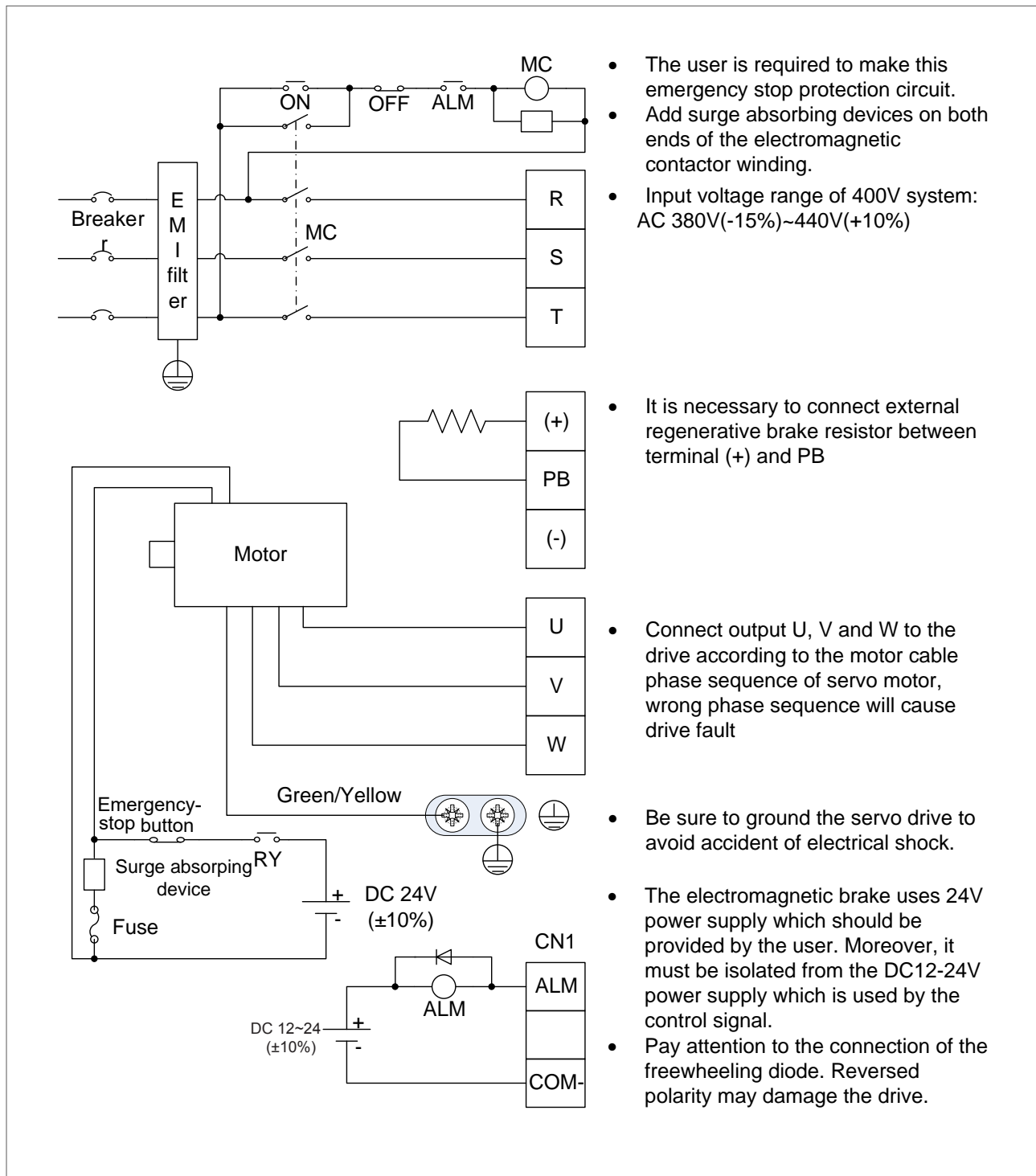


Connection ports

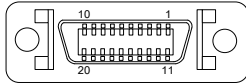
Note: Standard-type examples

Medium power range: 7.5kW–55kW

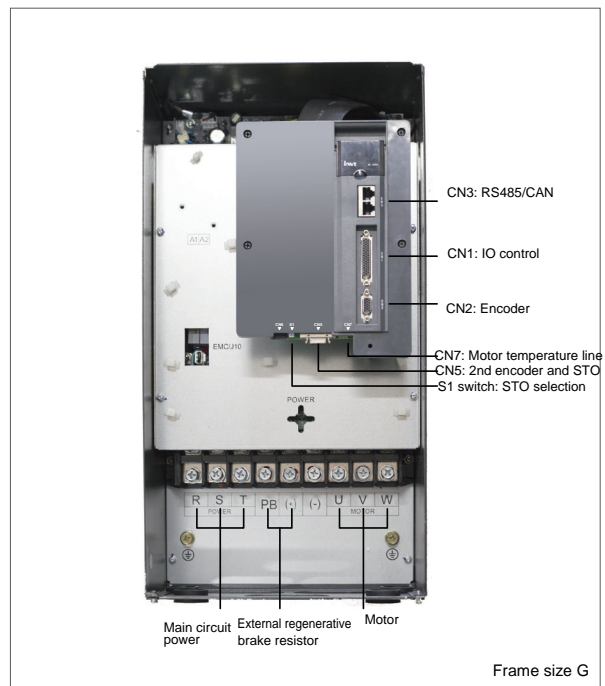
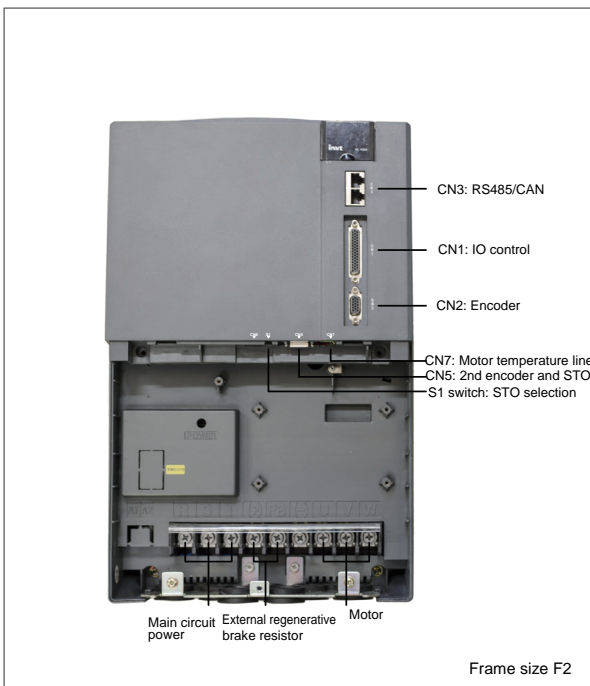
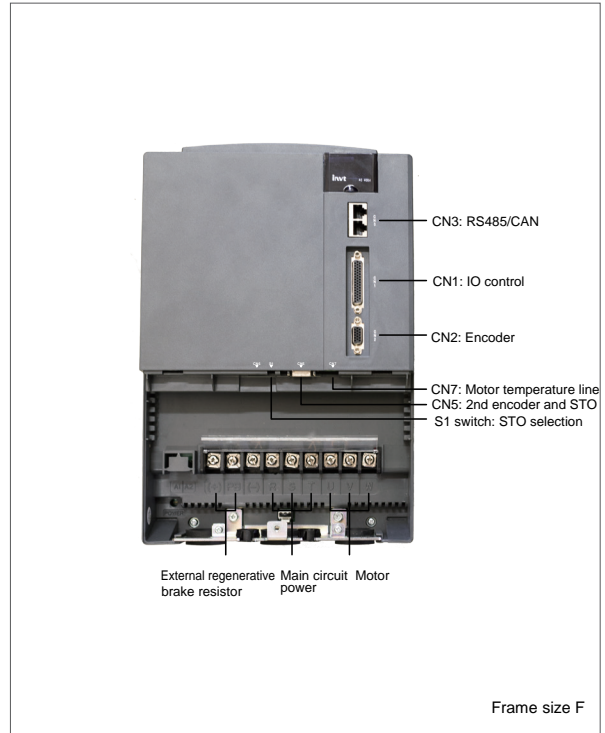
Wiring diagram of main circuit terminal



CN5



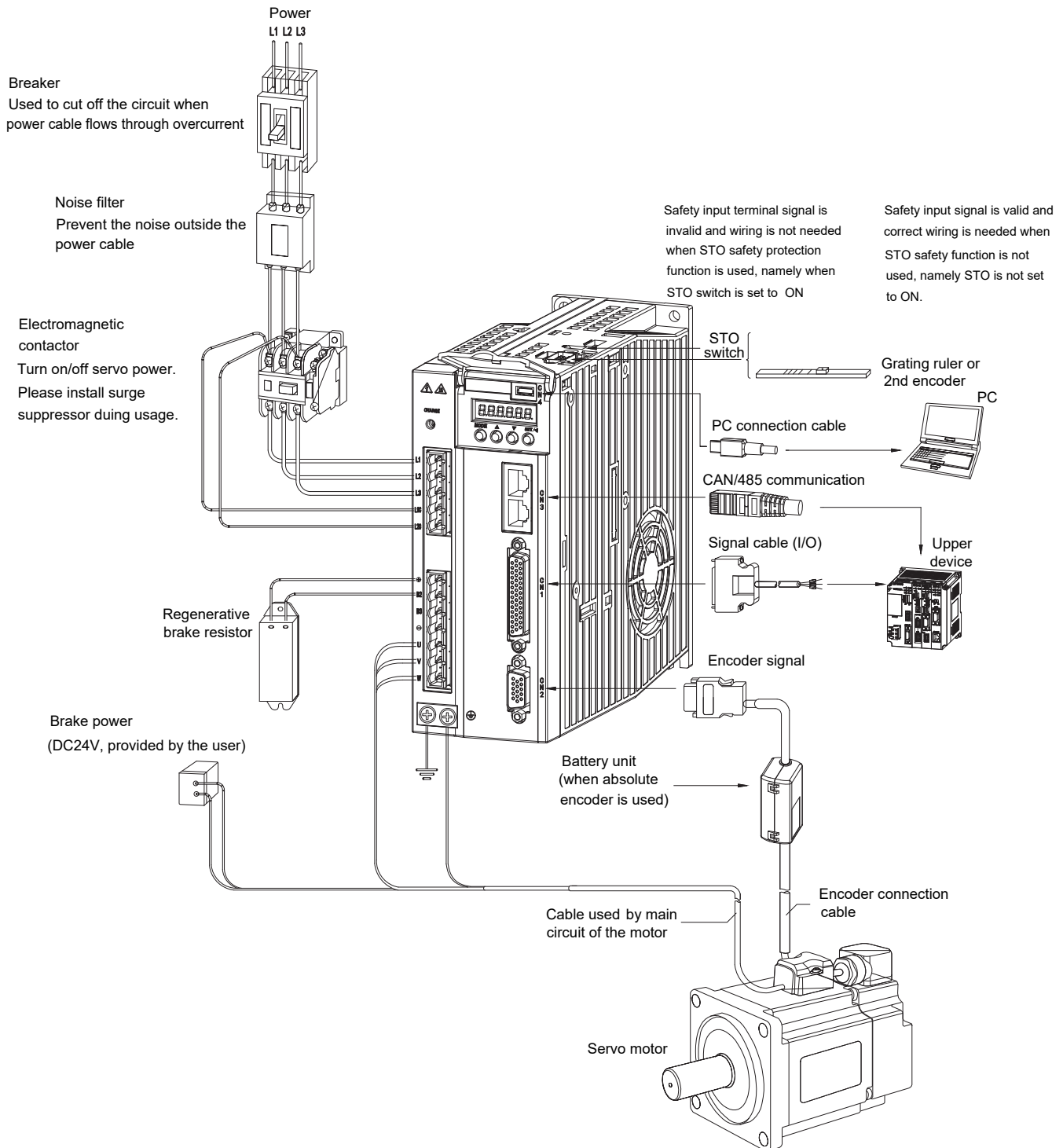
CN5 terminal function			
Pin	Name	Function	Remark
1	EXA+	Safety input 1+	Connect to grating ruler or 2nd encoder
2	EXA-	Safety input 2+	
3	EXB+	Grating ruler (or 2 nd encoder) A+	
4	EXB-	Grating ruler (or 2 nd encoder) A-	
5	EXZ+	Power+5V	
6	EXZ-	Grating ruler (or 2 nd encoder) Z-	
7, 9	EX5V	Power+5V	
8, 10	EX0V	Power GND, connect to internal GND	
11	HWBB1+	Safety input 1+	
12	HWBB1-	Safety input 1-	
13	EDM+	Safety monitoring output+	
14	EDM-	Safety monitoring output-	
15	HWBB2+	Safety input 2+	
16	HWBB2-	Safety input 2-	
17	OC_EXZ	Z phase open collector input	
18	OC_EXB	B phase open collector input	
19	OC_EXA	A phase open collector input	
20	-	Unused	



Remarks : The definitions of terminals CN1, CN2 and CN3 are the same for the small power models.

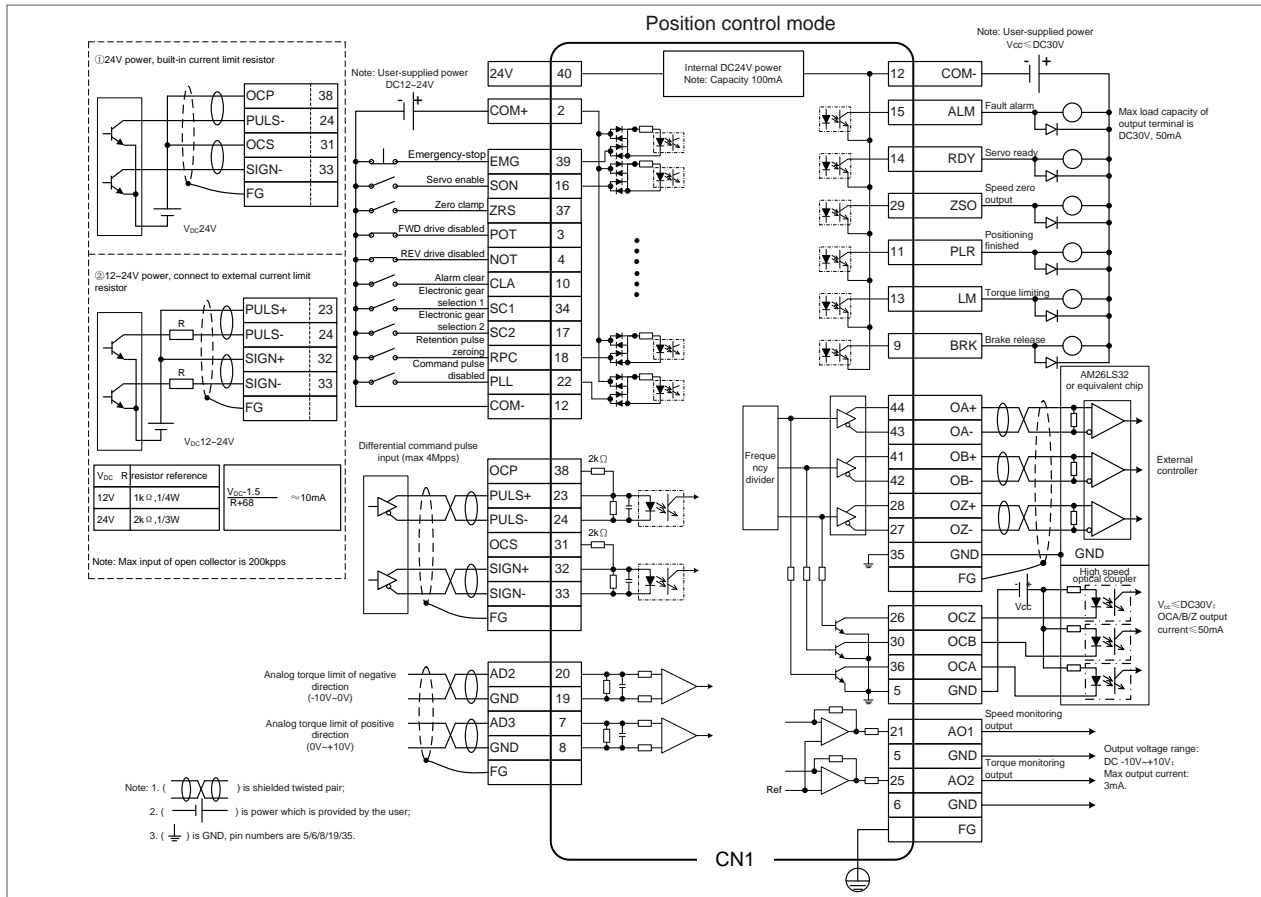
System wiring

Frame size B is taken for example.

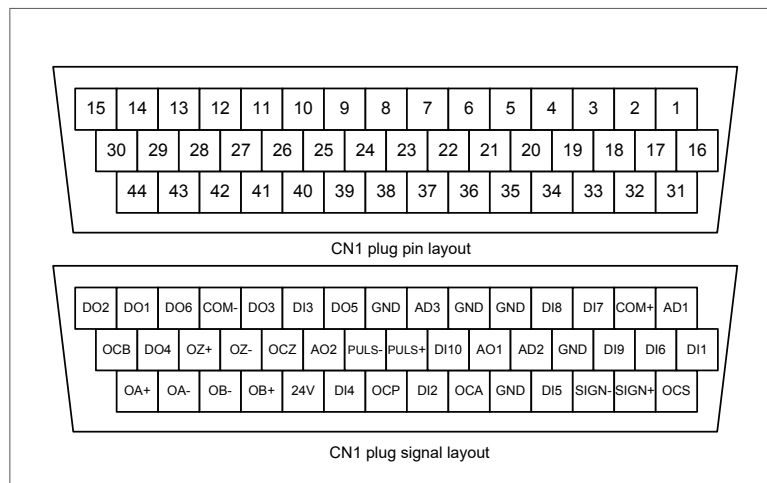


Standard wiring diagram

Wiring diagram of position mode (suitable for pulse input control)

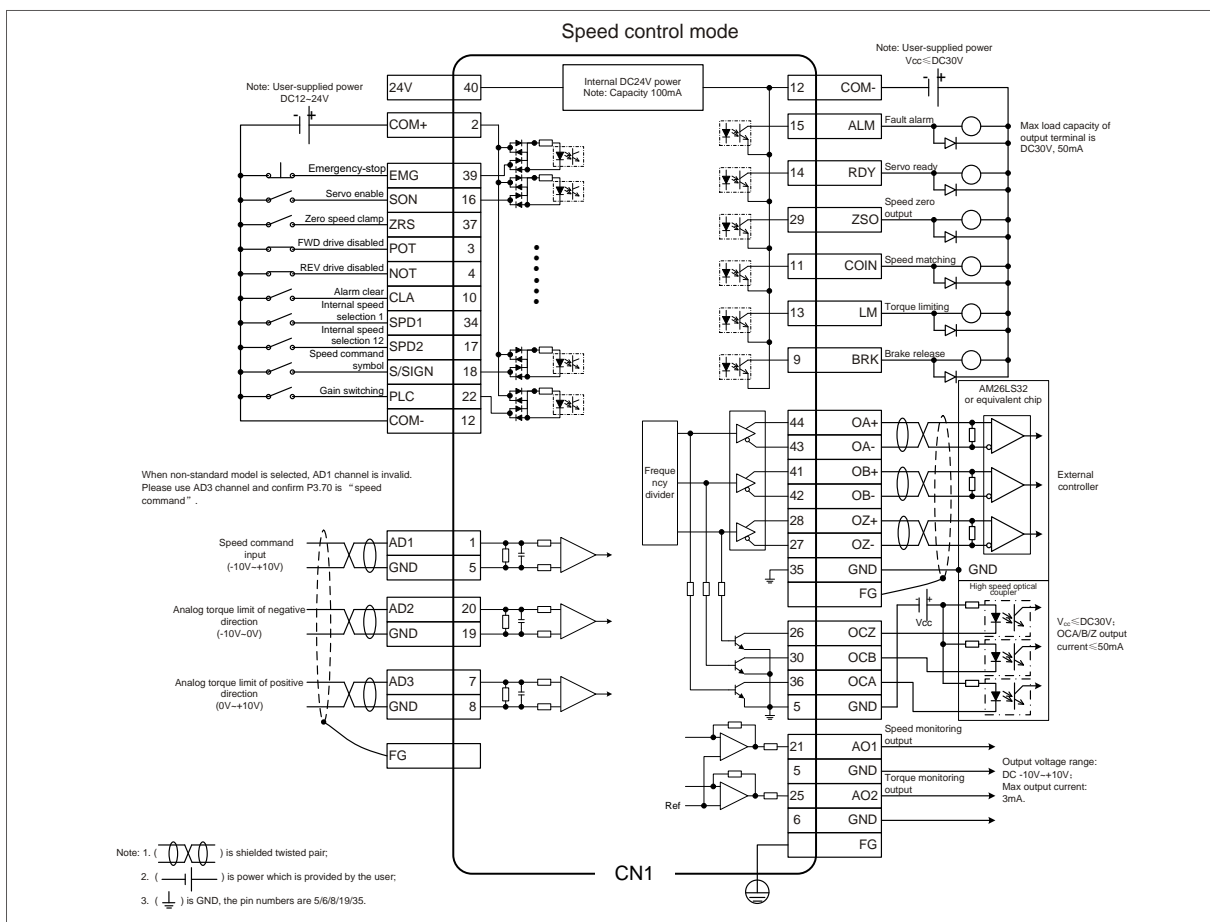


CN1

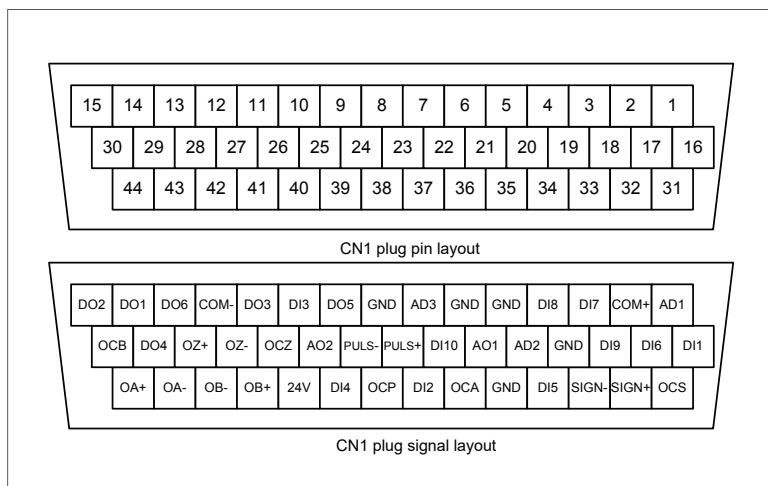


Standard wiring diagram

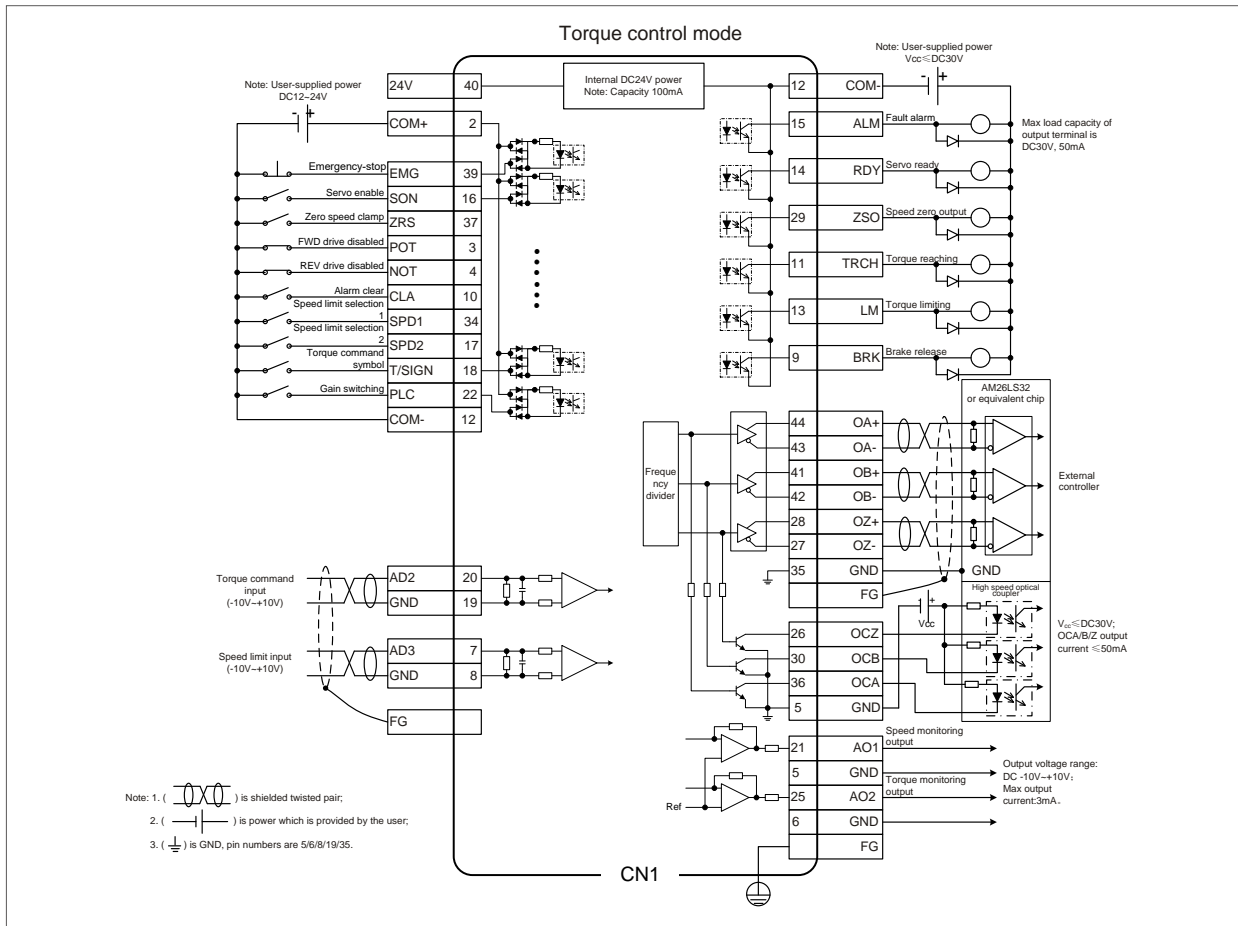
Wiring diagram of speed mode (suitable for analog input control)



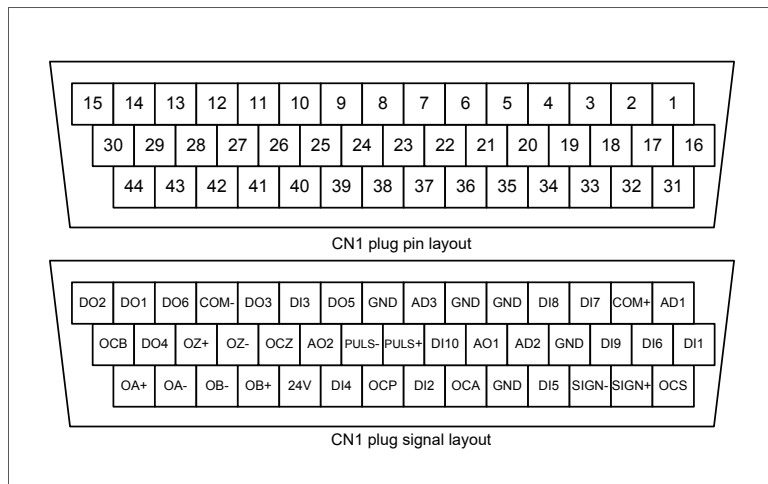
CN1



Wiring diagram of torque mode (suitable for analog input control)



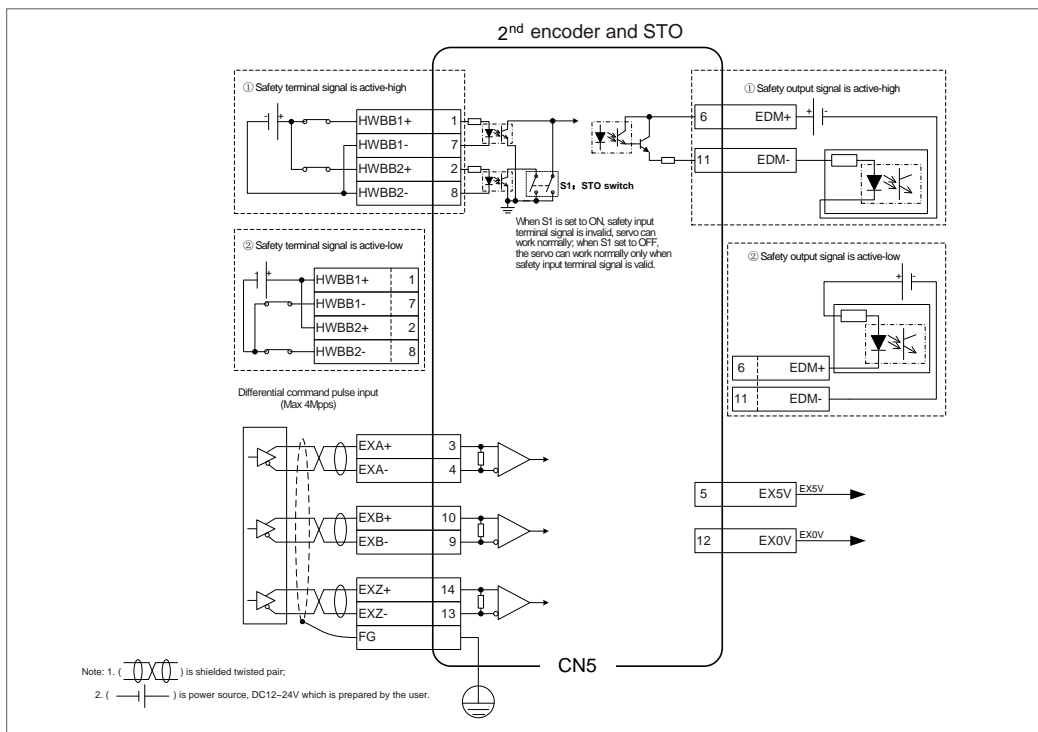
CN1



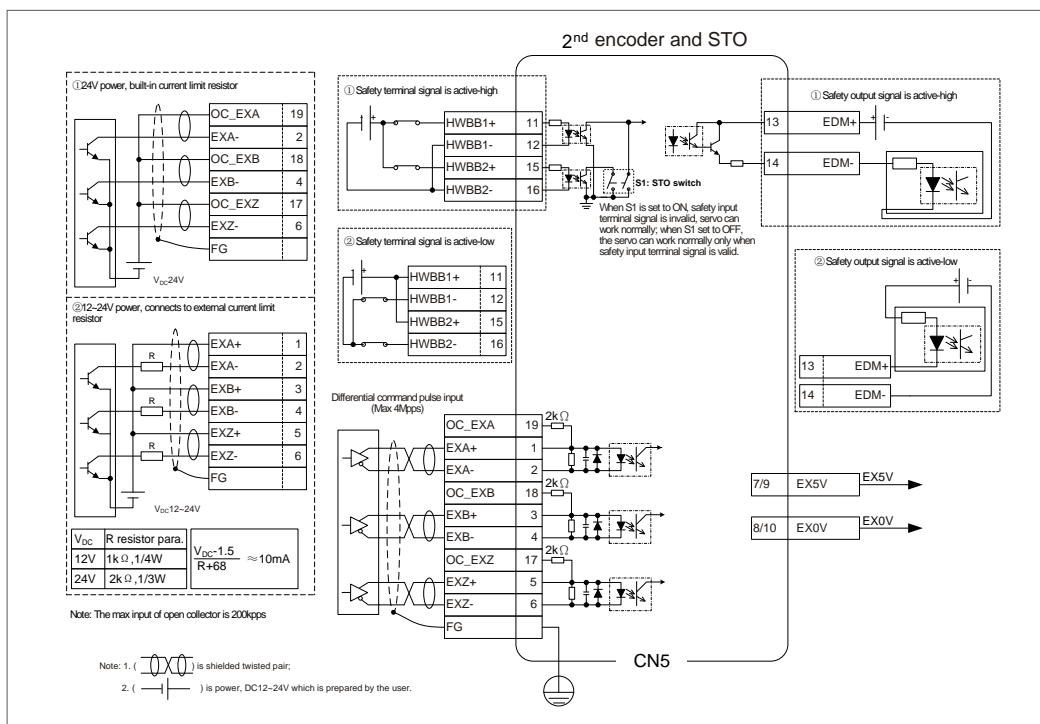
Standard wiring diagram

2nd encoder and STO wiring diagram

Small power range: 100W–5.5kW



Medium power range: 7.5kW–55kW



Ordering guide for servo system

Power supply (V)	Servo motor			Servo drive			Optional parts									
	Power (kW)	Model	Rated current (A)	Model	Power (kW)	Rated current (A)	Encoder cable			Power cable						
							2500PPR	17-bit/23-bit	Resolver	2500PPR	17-bit/23-bit/Resolver					
220	0.1	SV-ML04-0R1G-2-XXX-XXXX	0.6	SV-DA200-0R1-2-XX-XXXX	0.1	1.3	DBEL-15-XX-A0-0100	DBEL-06-XX-C0-0400	DBEL-06-XX-C0-0700	DAML-075-XX-AB0-00	DAML-075-XX-CB0-00					
	0.2	SV-ML06-0R2G-2-XXX-XXXX	1.2	SV-DA200-0R2-2-XX-XXXX	0.2	1.8										
	0.4	SV-ML06-0R4G-2-XXX-XXXX	2.8	SV-DA200-0R4-2-XX-XXXX	0.4	3.3										
	0.75	SV-ML08-0R7G-2-XXX-XXXX	4.5	SV-DA200-0R7-2-XX-XXXX	0.75	4.5										
	1	SV-MM13-1R0E-2-XXX-XXXX	4.8	SV-DA200-1R0-2-XX-XXXX	1	5	DBEL-15-XX-B0-0100	DBEL-06-XX-B0-0400	DBEL-06-XX-B0-0700	DAML-150-XX-BB0-00	DBML-250-XX-BW0-00					
	1.5	SV-MM13-1R5E-2-XXX-XXXX	7.6	SV-DA200-1R5-2-XX-XXXX	1.5	7.6										
	2	SV-MM13-2R0E-2-XXX-XXXX	9.5	SV-DA200-2R0-2-XX-XXXX	2	10										
	3	SV-MM13-3R0E-2-XXX-XXXX	13.6	SV-DA200-3R0-2-XX-XXXX	3	13										
	4.4	SV-MM18-4R4B-2-XXX-XXXX	16	SV-DA200-4R4-2-XX-XXXX	4.4	16.5										
400	1	SV-MM13-1R0E-4-XXX-XXXX	2.8	SV-DA200-1R0-4-XX-XXXX	1	3.5						DBEL-15-XX-B0-0100	DBEL-06-XX-B0-0400	DBEL-06-XX-B0-0700	DAML-150-XX-BB0-00	DBML-250-XX-NW0-00
	1.5	SV-MM13-1R5E-4-XXX-XXXX	4.5	SV-DA200-1R5-4-XX-XXXX	1.5	4.5										
	2	SV-MM13-2R0E-4-XXX-XXXX	5.5	SV-DA200-2R0-4-XX-XXXX	2	6.5										
	3	SV-MM13-3R0E-4-XXX-XXXX	7.8	SV-DA200-3R0-4-XX-XXXX	3	8.5										
	4.4	SV-MM18-4R4B-4-XXX-XXXX	10	SV-DA200-4R4-4-XX-XXXX	4.4	12										
	5.5	SV-MM18-5R5B-4-XXX-XXXX	12	SV-DA200-5R5-4-XX-XXXX	5.5	16										
	7.5	SV-MM18-7R5B-4-XXX-XXXX	20	SV-DA200-7R5-4-XX-XXXX	7.5	25										
	11	SV-MH20-011B-4-XXX-XXXX	22.7	SV-DA200-011-4-XX-XXXX	11	33										
	15	SV-MH20-015B-4-XXX-XXXX	42.5	SV-DA200-015-4-XX-XXXX	15	50										
	22	SV-SH26-022B-4-XXX-XXXX	61	SV-DA200-022-4-XX-XXXX	22	66										
	37	SV-SH26-037B-4-7XX-XXXX	74.6	SV-DA200-037-4-S7-XXXX	37	90										
	45	SV-SH26-045E-4-7XX-XXXX	100	SV-DA200-045-4-S7-XXXX	45	112										
	55	SV-SH26-055B-4-7XX-XXXX	114	SV-DA200-055-4-S7-XXXX	55	134										
											DHML-25R-XX-SSA-00					
											DHML-25R-XX-SSA-00					
											DHML-35R-XX-SSA-00					

Other INVT industrial control products



■ PLC

- Complete categories for wide applications
- Abundant extension modules for easy function extension
- Support for various communication protocols, flexible networking
- Compact size for easy maintenance



■ Linear motor drive

- Support for magnetic pole alignment of linear motors without auxiliary signal
- Support for various grating and magnetic rulers
- Stronger torque output and quicker dynamic response, without intermediate drive
- Closed-loop feedback control on linear position detection, with high accuracy positioning in short time and high dynamic rigidity
- Parameter unit consistency in commissioning interface, without conversion
- Short ACC/DEC and high efficiency of drive, without travel limit



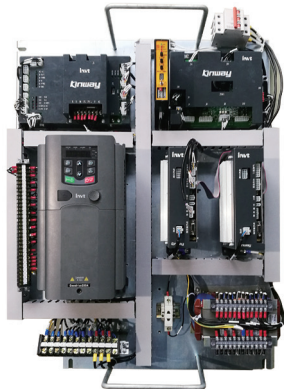
■ Motion controller

- Various motion controller cards
- All series motion controller
- Robot control system
- Customized digital control system



■ Inverter

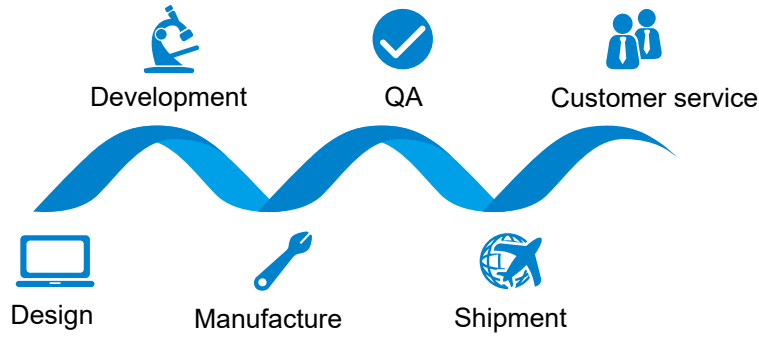
- The most comprehensive inverter lines in the industry, covering from low, medium to high voltage inverters
- Customized products based on customer needs are available



■ WS900 water-jet loom power control system

- Cost effective solution integrated with the loom controller, weft accumulator, ELO and ETU and spindle drive
- One touchscreen integrated with functions available in traditional three operation screens for loom power control, weft accumulator, and ELO and ETU, facilitating installation, commissioning, and monitoring
- Weft density can be changed when the machine speed changes, improving both weaving efficiency and quality. The system can be widely used to meet weaving requirements on various yarns and designs.

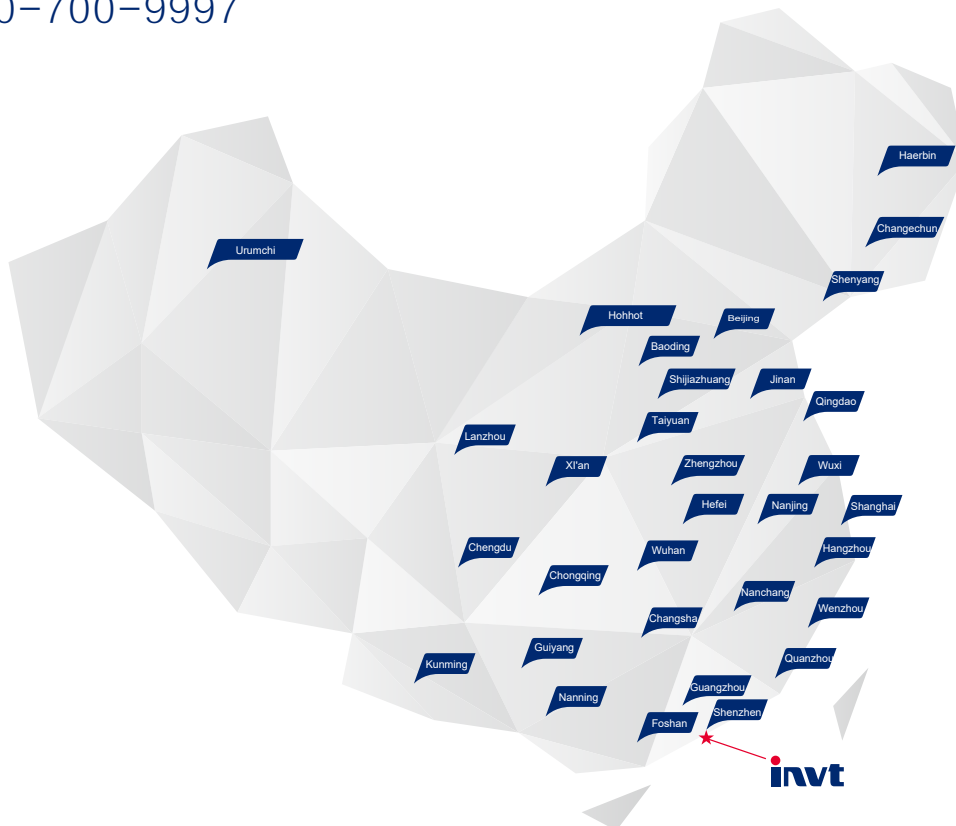
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/"Domestic service network

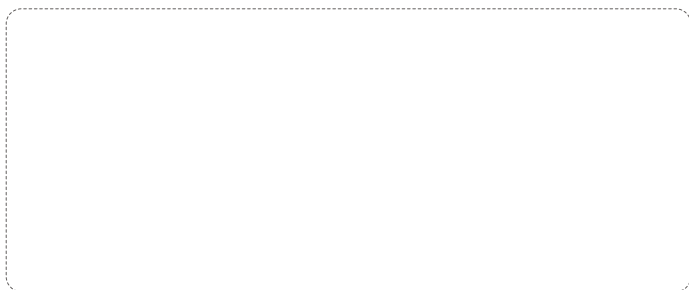
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- Electric Power** ■ SVG ■ Solar Inverter ■ UPS ■ Online Energy Management System ■ New energy vehicle electro-control system