

# VEICHI

## SD780 Series General High-performance Servo System



CE   EtherCAT 

Stock Code: 688698

# About us

VEICHI Electric (Stock code: 688698), a high-tech enterprise engaged in the R&D, production and sales of industrial automation products, has always focused on the fields of electric drive and industrial control since its establishment. It has been listed as the "Jiangsu Provincial Enterprise Technology Center", "Jiangsu Private Technology Enterprise", "Jiangsu Provincial Specialized and New Giant Enterprise", "Jiangsu Provincial Engineering Technology Research Center", "Suzhou Gazelle Enterprise" and "Competitive Brand in Motion Control Field". After years of independent R&D and innovation, VEICHI has developed a series of independent intellectual property rights. By the end of June 30, 2022, a total of 140 patents have been granted, including 33 invention patents.

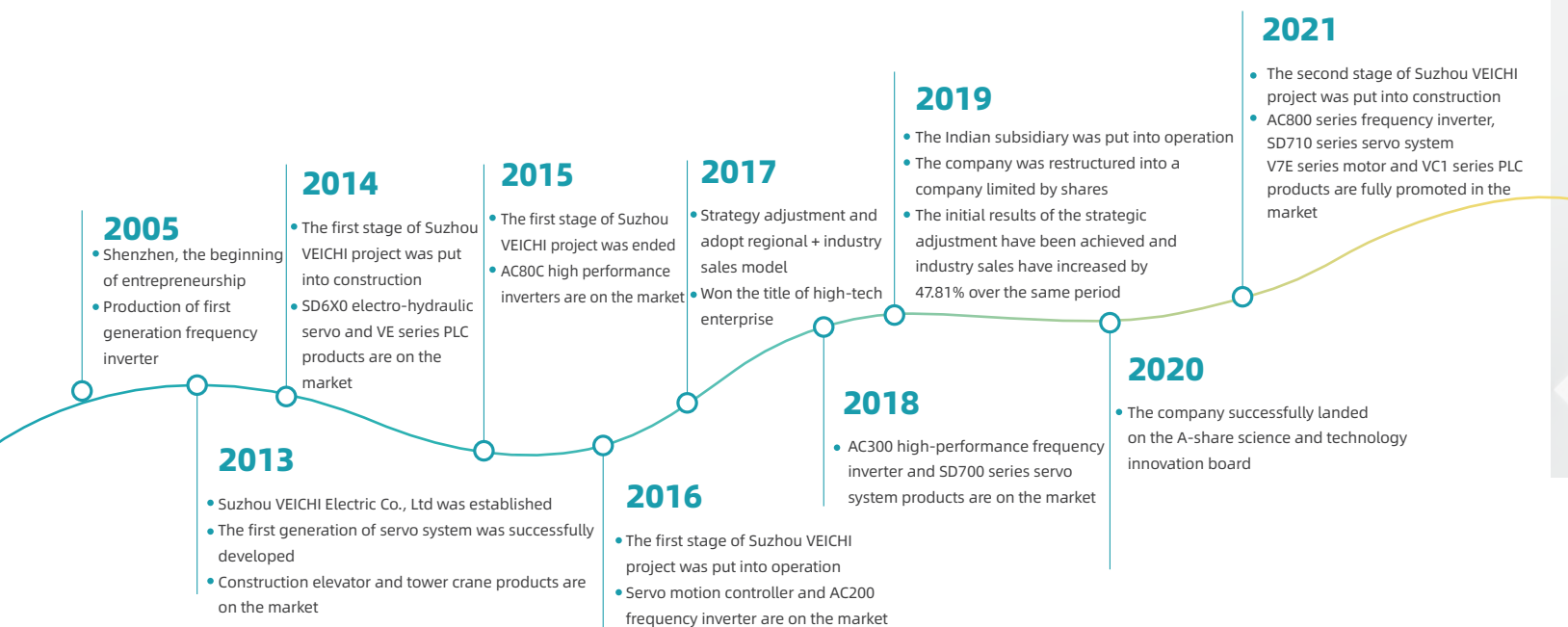
VEICHI has R&D and production bases in Suzhou and Shenzhen, and has established a wholly-owned subsidiary in India. At present, the company's business covers many countries and regions, providing global customers with competitive, safe and reliable products and services.

We supply a wide range of products, including inverters from 0.4kW to

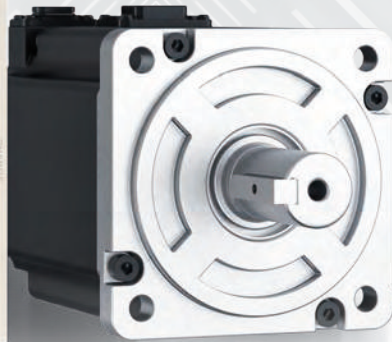
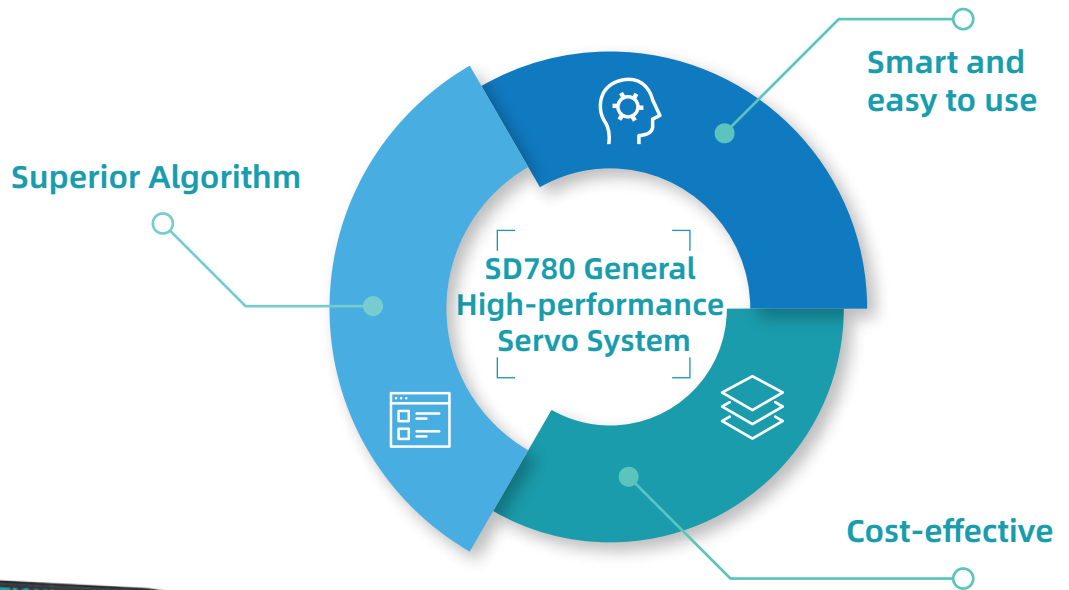
5,600kW, servo systems from 50W to 200kW, motion controllers, PLCs and HMIs, to diverse customers in lifting and mining equipment, rail transportation, machine tools, compressors, plastics, solar water pumping, building materials, robots or manipulators, printing and packaging, textile and chemical fiber, metallurgy, municipal, petroleum, chemical and other industries.

VEICHI has established 20 service outlets in China, and developed 153 channel dealers, covering 31 provinces and Hong Kong, Macao and Taiwan regions across the country, forming a wide-ranging and efficient distribution and service network to provide customers with high-quality products and efficient service.

VEICHI will continue to adhere to the business philosophy of "Guided by market demand, Driven by technological innovation", to expand and strengthen the core businesses of inverters, servo systems and motion controllers, and intelligent IoT, and always insist on providing customers with best products and services. VEICHI will spare no effort to make contributions to promote the development of electric drive and industrial control.



# SD780 General High-performance Servo System

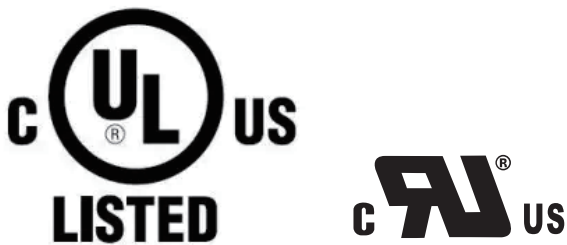


**VEICHI** SD780 Series  
General High-performance  
Servo System



### International standard UL certification

International standard UL certification, Applicable to all countries with UL certification requirements worldwide

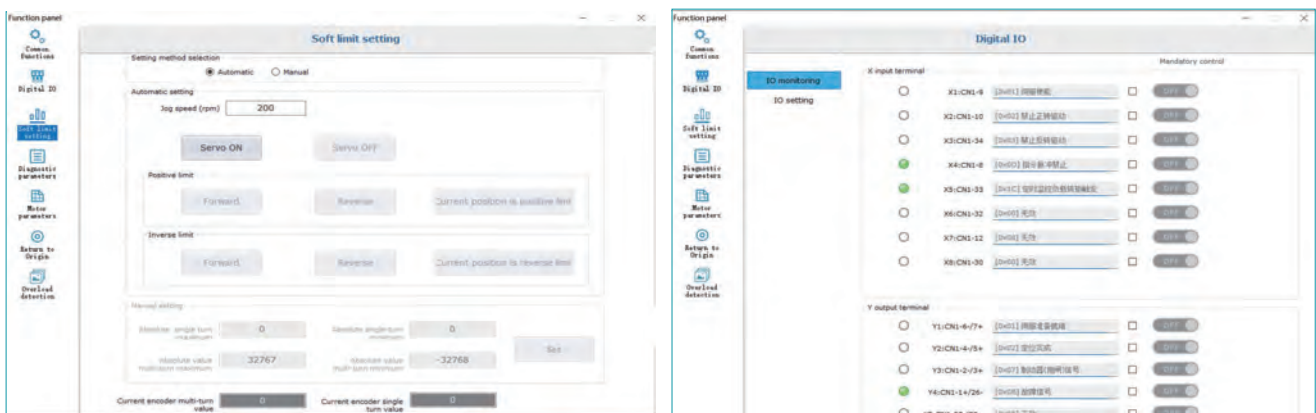


### Data copy & Transfer

The debugging software has the function of copying drive parameters, eliminating the tedious operation of parameter setting of the same model.

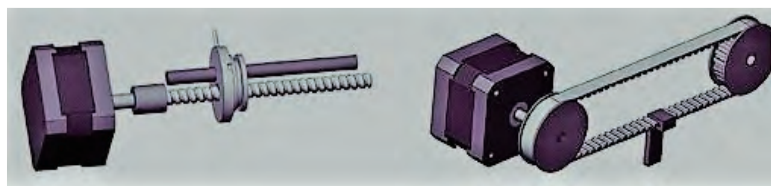


### Simplified debugging panel



### Self-adjusting for different applications

1. Treat differently according to different mechanical structures
2. Complete the intelligent setting of various complex loop parameters
3. Automatic setting according to mechanical conditions, no manual setting required
4. The fastest position setting time is up to 10ms

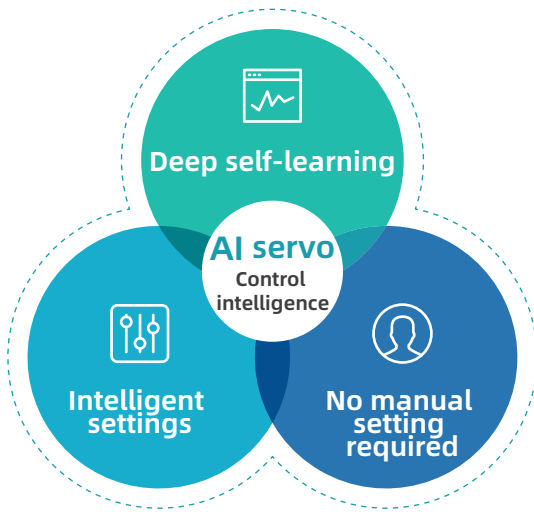


Mechanical structures such as lead screws, timing belts, and rigid bodies are treated differently

## STO function

Standard SIL3 safety torque off function, suitable for new energy, lithium battery, photovoltaic equipment and other industries. Provide greater security to device users.

## Intelligent settings

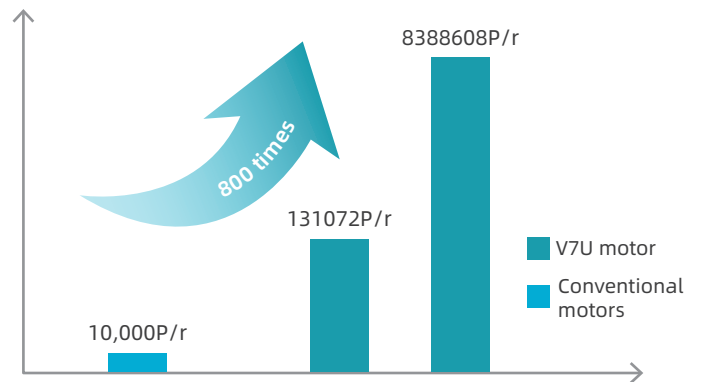


## Compatible with 17bit/23bit absolute encoders

With absolute encoder, the position is remembered when the power is turned off.

Battery life is more than 3 years.

Encoders with different resolutions to meet different application options.

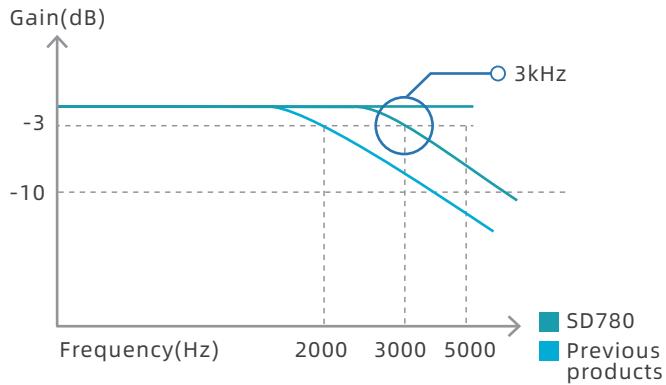


## Powerful bus communication function



<b>Micro USB</b>	Micro USB host computer dedicated interface (Standard accessory)
<b>RS485</b>	RS485 communication (Standard accessory)
<b>CANopen</b>	CANopen communication (Optional accessory)
<b>EtherCAT</b>	EtherCAT communication (Optional accessory)

High-performance as ever

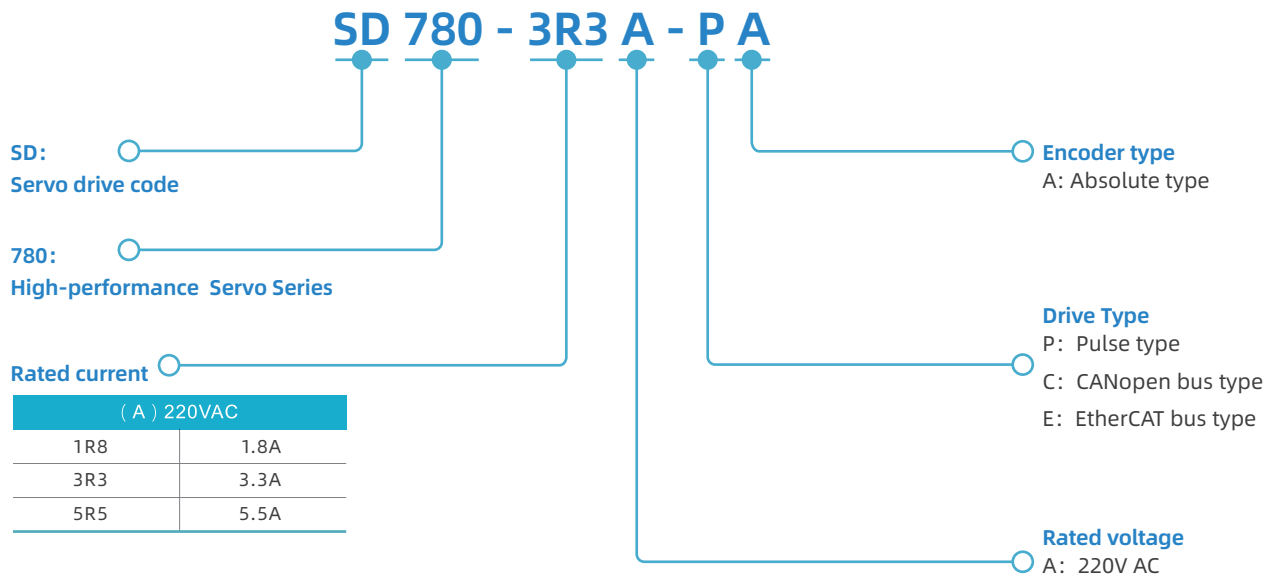


Upgraded hardware, Compacted structure

Hardware and structure upgrades, the size of the 5R5 model is reduced by 30%.



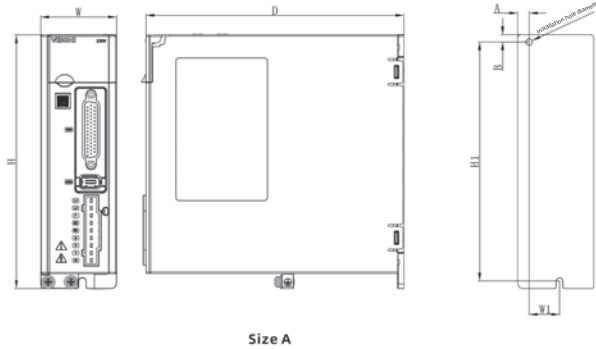
Drive Model Description



Drive power and chassis division

Model number	Input	Output		Chassis size
	Rated voltage (V)	Rated current (A)	Instantaneous current (A)	
SD780-1R8A	single-phase 220	1.8	6.3	A
SD780-3R3A	single-phase 220	3.3	11.6	
SD780-5R5A	single-phase /three-phase 220	5.5	16.5	

## Drive dimension



Model	External dimensions (mm)			Installation dimension (mm)				Installation hole diameter
	W	H	D	W1	H1	A	B	
SD780-1R8A-**	50	170	170	20	160	7.5	5	2-M4
SD780-3R3A-**								
SD780-5R5A-**								

## Technical Specifications

Items		Specification	
Control method		IGBT, PWM control, sine wave current drive mode	
Encoder feedback		Serial encoders: Absolute encoders	
Environmental conditions	Operating temperature	0°C~55°C(55°C~60°C, can be used after reducing the rated value)	
	Storage temperature	-20°C~65°C	
	Operating humidity	Below 95%RH (no freezing, condensation)	
	Storage humidity	Below 95%RH (no freezing, condensation)	
	Seismic resistance	4.9m/s	
	Impact resistance	19.6m/s <sup>2</sup>	
	Protection level	IP20	
	Altitude	Below 1000m(When 1000m~2000m, need to reduce the rated value after use)	
Other		No electrostatic interference, strong electric field, strong magnetic field, radiation, etc	
Speed Control	Speed control range		1: 5000
	Velocity fluctuation rate	Load fluctuation	Less than ±0.01% of rated speed
		Voltage fluctuation	0% of rated speed
Temperature fluctuation		Less than ±0.01% of rated speed	
Torque Control	Torque control accuracy		±1%
	Soft start time setting		0s~10s
Position control	Feed-forward compensation		0%~100%
	Command pulse	Command pulse pattern	It includes three command forms: "pulse+direction", "CW+CCW pulse sequence" and "A, B phase quadrature pulse"
		Input form	Linear drive, open collector
Maximum input frequency		Differential input: high speed max. 4Mpps; Open collector: maximum 200Kpps;	
Communication function	485		Standard configuration
	CAN		Optional
	USB		Computer host, standard, USB 2.0 compliant (12Mbps)
Display function		CHARGE、8-segment LED×5 digits	
Panel operator function		Push button switch×4pcs	
Regeneration treatment		Function can be built-in/external	
Protection function		Overcurrent, overvoltage, undervoltage, overload, regenerative fault, encoder disconnection, overtravel protection, etc.	
Auxiliary function		Gain adjustment, alarm recording, JOG operation, etc.	
Encoder pulse frequency division output		Phase A, Phase B, Phase C: Linear drive output, number of divided pulses: 35~32767	

Motor model description

V7U - L 06 A - R40 30 - D 1 □

Product Series  
V7U

Inertia level  
L: Low inertia  
M: Medium inertia  
H: High inertia

Installation flange  
04: 40mm  
06: 60mm  
08: 80mm

The rated voltage  
A: 220V AC

Rated power

Code	Power	Code	Power
R05	50W	R60	600W
R10	100W	R75	750W
R20	200W	1R0	1.0KW
R40	400W		

Internal management number

Code	Axis		Oil seal		Brake	
	Round shaft	Key Shaft	Yes	None	Yes	None
1		•	•			•
2		•	•		•	

Encoder type  
D: 23-bit multi-turn absolute optical encoder  
Q: 17-bit single-turn absolute magnetic encoder  
R: 17-bit multiturn absolute magnetic encoder

Rated speed (RPM)

15: 1500  
20: 2000  
25: 2500  
30: 3000

Motor brake power table (estimated values)

Installation flange	Brake power
40	7W
60	10W
80	15W



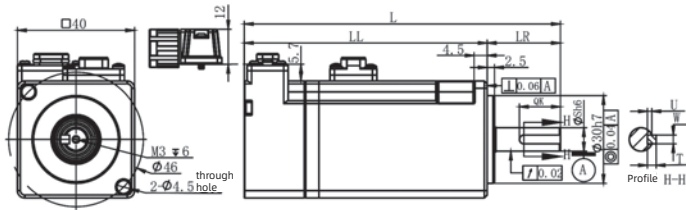


## Motor features

V7U Model	Voltage (V)	Power (W)	Rated torque (N·m)	Rated speed (RPM)	Max Speed (RPM)	Rated current (A)	Max current (A)	Moment of inertia
V7U-L04A-R0530-□1	220	50	0.16	3000	6000	1	3	0.027kg·cm <sup>2</sup>
V7U-R04A-R0530-□2	220	50	0.16	3000	6000	1	3	0.028kg·cm <sup>2</sup>
V7U-L04A-R1030-□1	220	100	0.32	3000	6000	1	3	0.051kg·cm <sup>2</sup>
V7U-L04A-R1030-□2	220	100	0.32	3000	6000	1	3	0.052kg·cm <sup>2</sup>
V7U-L06A-R2030-□1	220	200	0.64	3000	6000	1.7	5.1	0.18kg·cm <sup>2</sup>
V7U-L06A-R2030-□2	220	200	0.64	3000	6000	1.7	5.1	0.2kg·cm <sup>2</sup>
V7U-L06A-R4030-□1	220	400	1.27	3000	6000	2.6	7.8	0.34kg·cm <sup>2</sup>
V7U-L06A-R4030-□2	220	400	1.27	3000	6000	2.6	7.8	0.36kg·cm <sup>2</sup>
V7U-M06A-R4030-□1	220	400	1.27	3000	6000	2.6	7.8	0.67kg·cm <sup>2</sup>
V7U-M06A-R4030-□2	220	400	1.27	3000	6000	2.6	7.8	0.69kg·cm <sup>2</sup>
V7U-L08A-R7530-□1	220	750	2.38	3000	6000	4.6	13.8	1.02kg·cm <sup>2</sup>
V7U-L08A-R7530-□2	220	750	2.38	3000	6000	4.6	13.8	1.13kg·cm <sup>2</sup>
V7U-L08A-R7530-□1L	220	750	2.38	3000	4000	3.1	9.3	1.02kg·cm <sup>2</sup>
V7U-L08A-R7530-□2L	220	750	2.38	3000	4000	3.1	9.3	1.13kg·cm <sup>2</sup>
V7U-M08A-R7530-□1	220	750	2.38	3000	6000	4.6	13.8	2.3kg·cm <sup>2</sup>
V7U-M08A-R7530-□2	220	750	2.38	3000	6000	4.6	13.8	2.41kg·cm <sup>2</sup>
V7U-M08A-R7530-□1L	220	750	2.38	3000	4000	3.1	9.3	2.3kg·cm <sup>2</sup>
V7U-M08A-R7530-□2L	220	750	2.38	3000	4000	3.1	9.3	2.41kg·cm <sup>2</sup>
V7U-L08A-1R030-□1	220	1000	3.18	3000	5000	5	16.5	1.34kg·cm <sup>2</sup>
V7U-L08A-1R030-□2	220	1000	3.18	3000	5000	5	16.5	1.45kg·cm <sup>2</sup>
V7U-M08A-1R030-□1	220	1000	3.18	3000	5000	5	15	2.62kg·cm <sup>2</sup>
V7U-M08A-1R030-□2	220	1000	3.18	3000	5000	5	15	2.73kg·cm <sup>2</sup>

## Motor Dimension

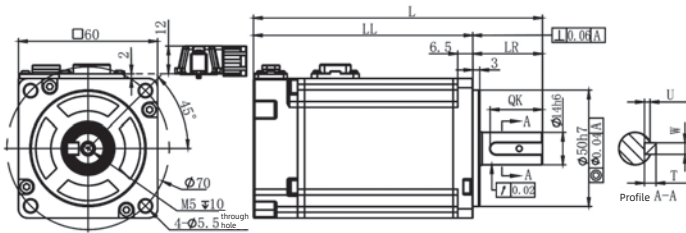
### 40 flange



Unit: mm

Motor model	L	LL	LR	S	QK	U	W	T
V7U-L04A-R0530-□1	94	69	25	8	14	1.5	3	3
V7U-L04A-R0530-□2	120	95	25	8	14	1.5	3	3
V7U-L04A-R1030-□1	108	83	25	8	14	1.5	3	3
V7U-L04A-R1030-□2	134	109	25	8	14	1.5	3	3

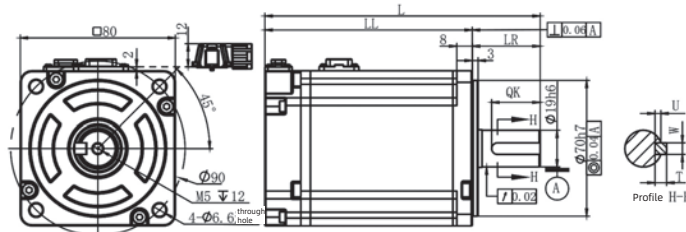
### 60 flange



Unit: mm

Motor model	L	LL	LR	S	QK	U	W	T
V7U-L06A-R2030-□1	105.5	75.5	30	14	22.5	2.5	5	5
V7U-L06A-R2030-□2	136.5	106.5	30	14	22.5	2.5	5	5
V7U-L06A-R4030-□1	124.5	94.5	30	14	22.5	2.5	5	5
V7U-L06A-R4030-□2	155.5	125.5	30	14	22.5	2.5	5	5
V7U-M06A-R4030-□1	134.5	104.5	30	14	22.5	2.5	5	5
V7U-M06A-R4030-□2	165.5	135.5	30	14	22.5	2.5	5	5

### 80 flange

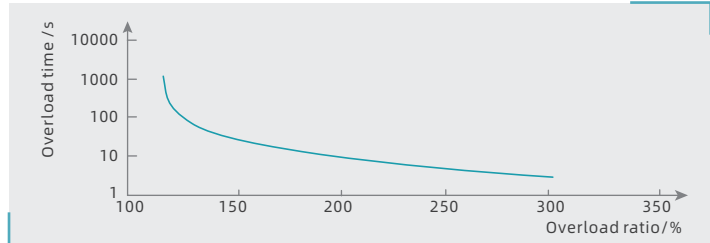


Unit: mm

Motor model	L	LL	LR	S	QK	U	W	T
V7U-L08A-R7530-□1L	142	107	35	19	25	3	6	6
V7U-L08A-R7530-□2L	174	139	35	19	25	3	6	6
V7U-L08A-R7530-□1	142	107	35	19	25	3	6	6
V7U-L08A-R7530-□2	174	139	35	19	25	3	6	6
V7U-M08A-R7530-□1	152	117	35	19	25	3	6	6
V7U-M08A-R7530-□2	184.5	149.5	35	19	25	3	6	6
V7U-M08A-R7530-□1L	152	117	35	19	25	3	6	6
V7U-M08A-R7530-□2L	162	149	35	19	25	3	6	6
V7U-L08A-1R030-□1	156	121	35	19	25	3	6	6
V7U-L08A-1R030-□2	188	153	35	19	25	3	6	6
V7U-M08A-1R030-□1	166	131	35	19	25	3	6	6
V7U-M08A-1R030-□2	198	163	35	19	25	3	6	6

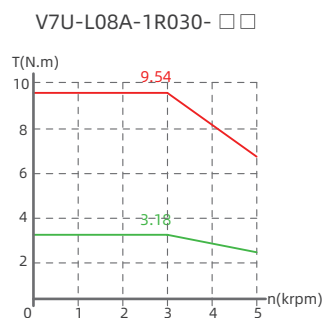
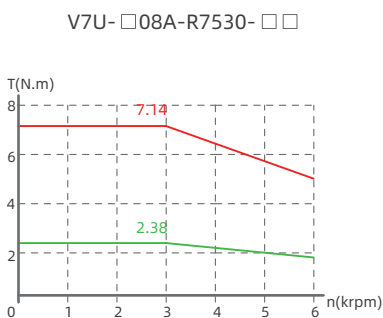
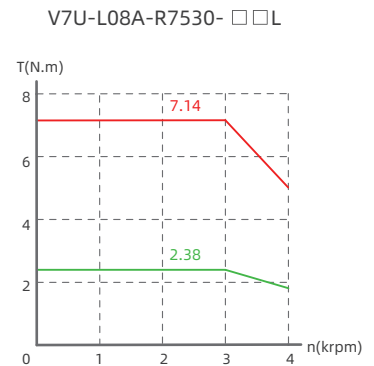
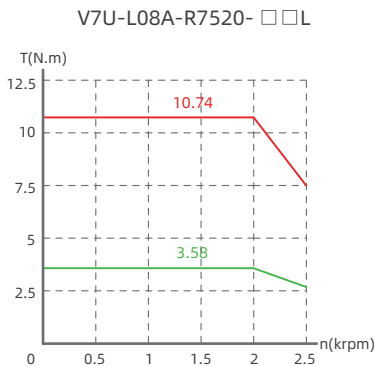
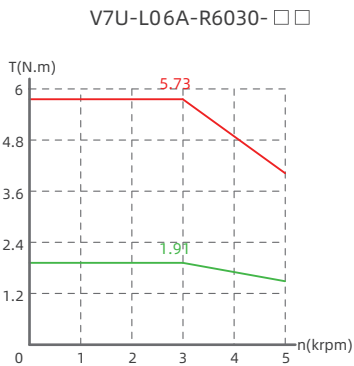
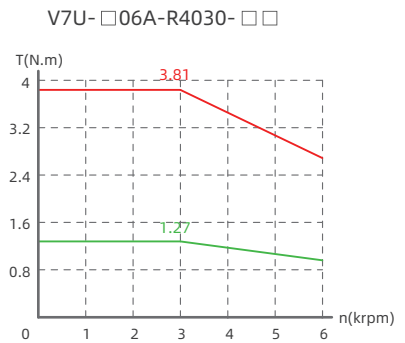
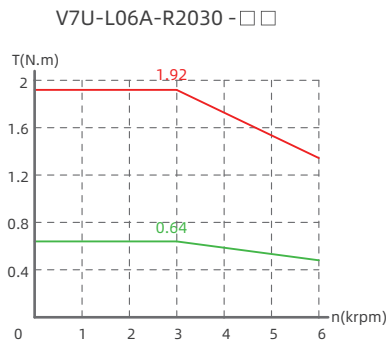
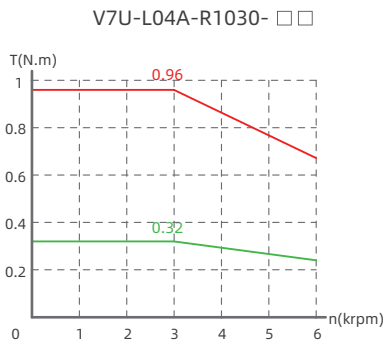
## Motor overload characteristic curve

Overload ratio	Overload time /s	Overload ratio	Overload time /s
1.2	228	2.0	10
1.3	73	2.1	8
1.4	42	2.2	7
1.5	29	2.3	6
1.6	22	2.4	5
1.7	17	2.5	4.5
1.8	14	3.0	3
1.9	12		



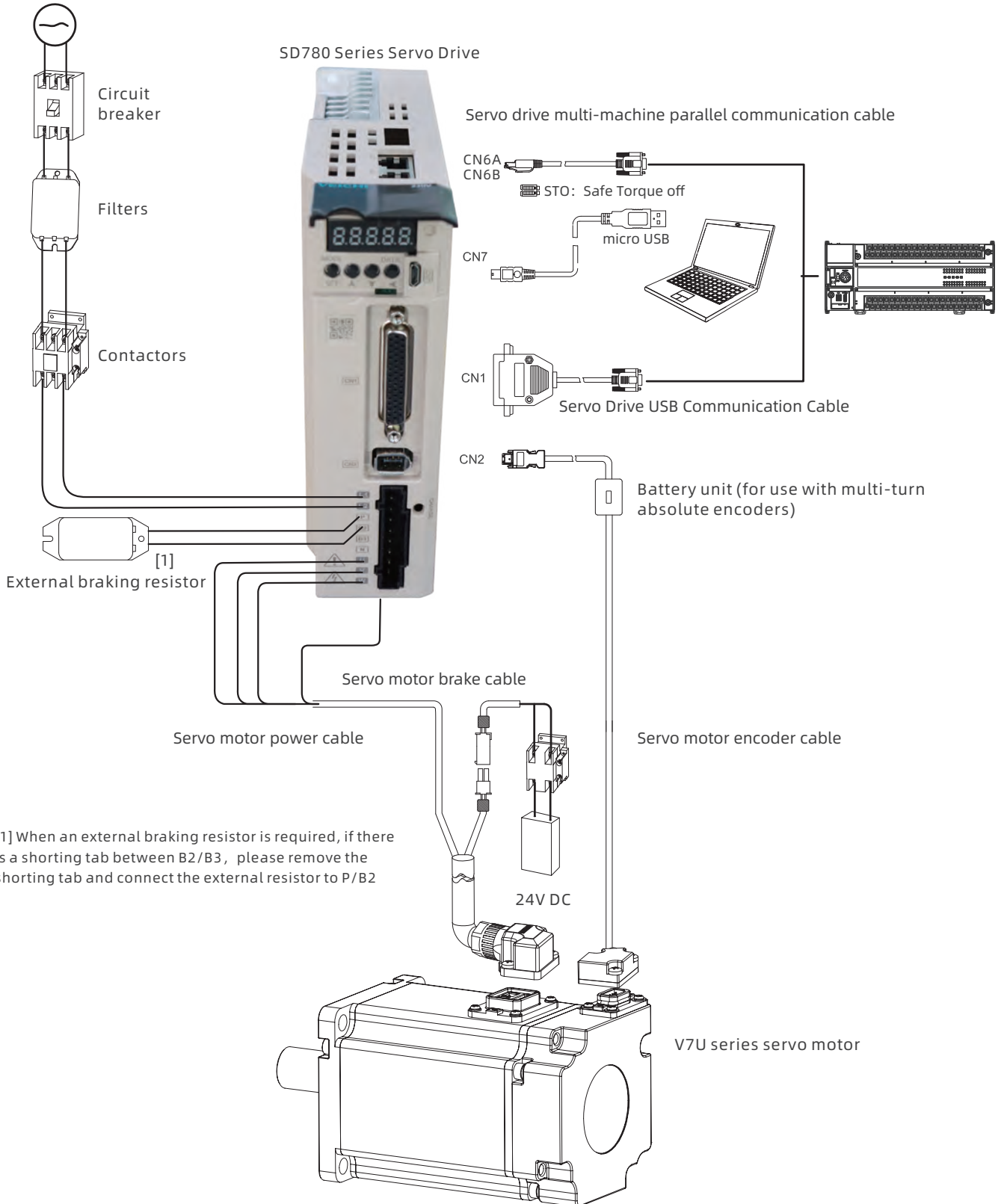
## Torque characteristics of servo motor

Note: " — " is the rated torque " — " is the instantaneous maximum torque



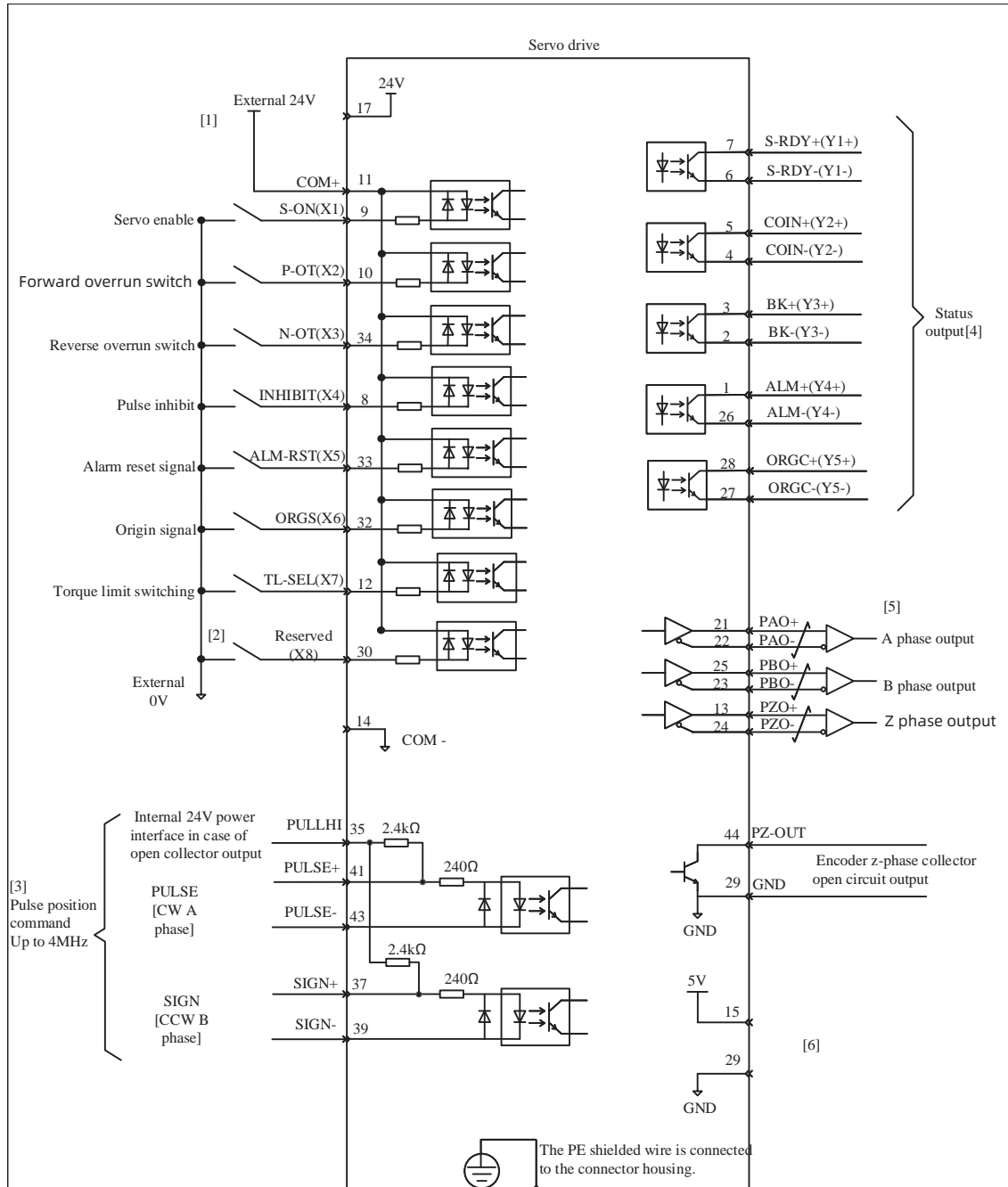
## System application wiring guide

AC220V/AC400V power supply



[1] When an external braking resistor is required, if there is a shorting tab between B2/B3, please remove the shorting tab and connect the external resistor to P/B2

## Position control wiring diagram



[1] Example is external power supply wiring; if using internal 24V power supply, please connect pin 17 (24V positive) to pin 11, and the connection of input terminal corresponds to pin and pin 14 (COM-).

[2] X7 and X8 are high-speed DI terminals, please choose to use them according to the function.

[3] Pulse port wiring please use twisted shielded wire, the shield must be connected to PE at both ends, GND and the upper computer signal ground reliable connection.

[4] Y output power supply is user-provided, the power supply range is 5~24V. Y port maximum allowable voltage DC30V, maximum allowable current 50mA.

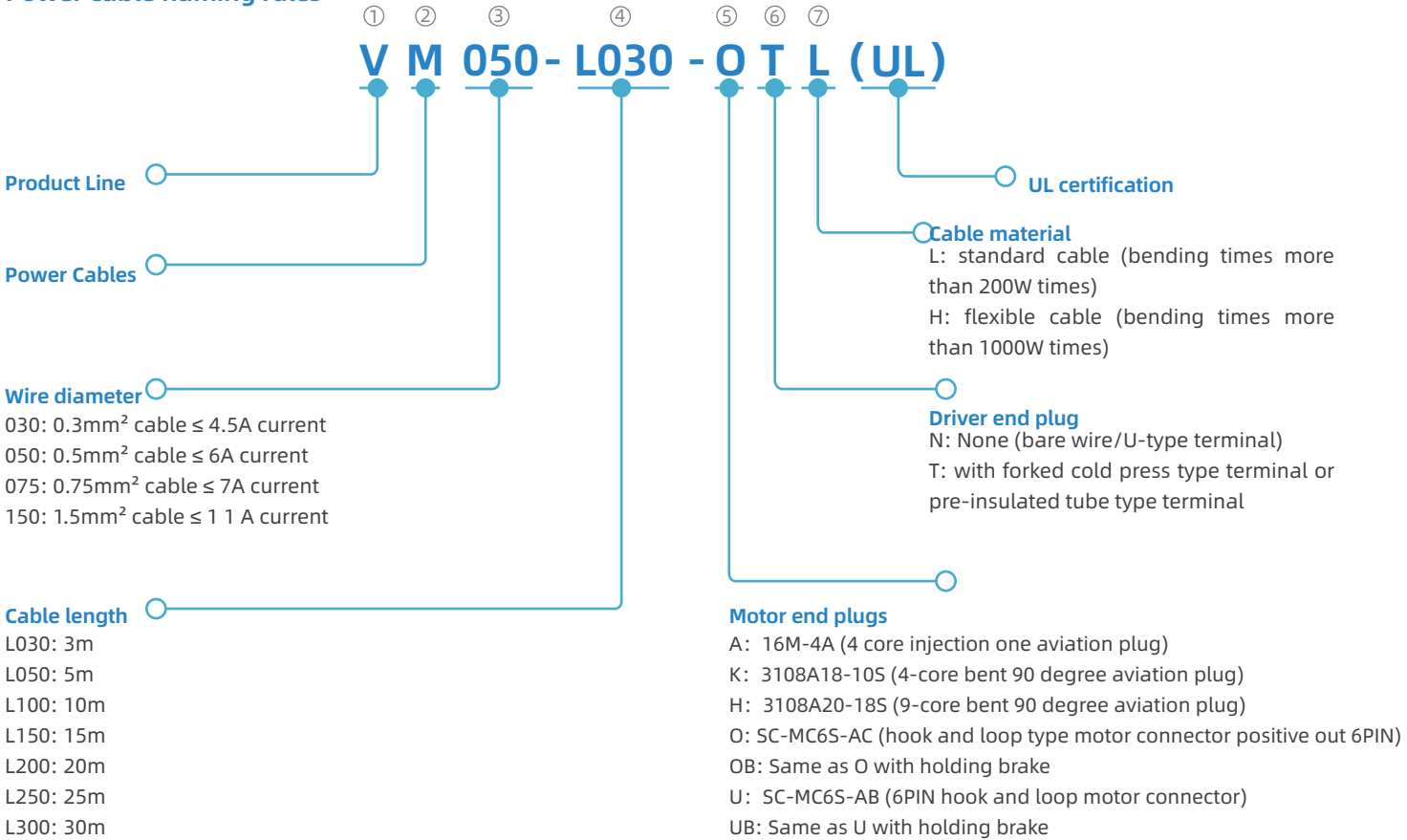
[5] Please use twisted shielded cable for the encoder frequency divider output cable, the shield layer must be connected to PE at both ends, and GND must be connected to the signal ground of the upper computer reliably.

[6] Internal +5V power supply, maximum running current 200mA.



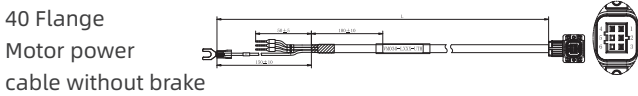
## SD780 drive wire introduction

### Power cable naming rules

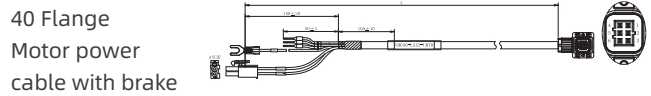


### Motor power cord

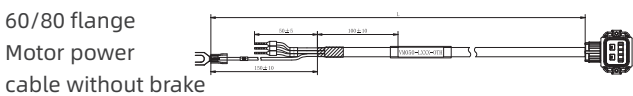
#### VM030-④-UT⑦ (UL)



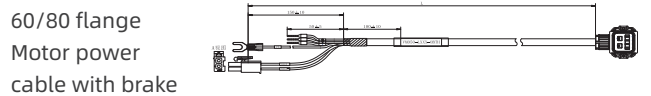
#### VM030-④-UBT⑦ (UL)



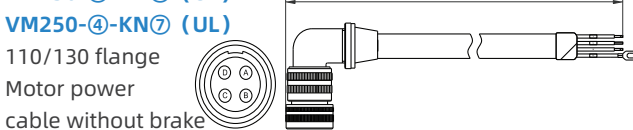
#### VM050-④-OT⑦ (UL)



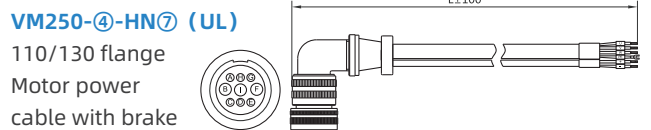
#### VM050-④-OBT⑦ (UL)



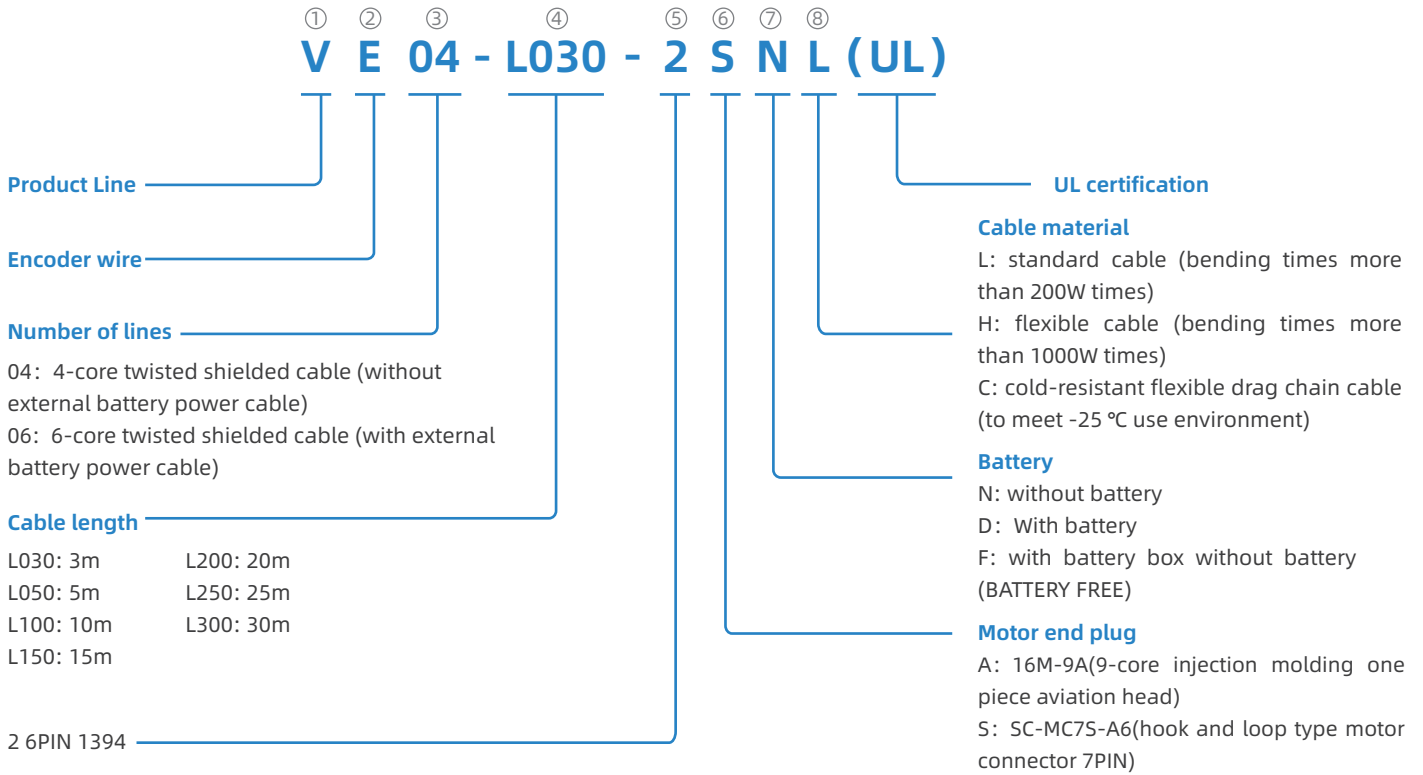
#### VM150-④-KN⑦ (UL)



#### VM150-④-HN⑦ (UL)



### Encoder cable naming rules



Note: The length of the encoder wire ⑤ ⑥ defined as " 2S " is more than 15 meters, you need to use the encoder wire ⑤ ⑥ defined as " 2A " plus adapter wire solution.

### Encoder wire

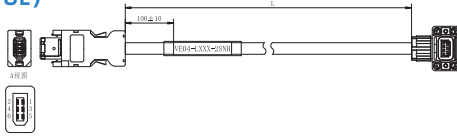
#### VE04-④-2SN® (UL)

40/60/80

Flange motor

encoder cable

Without battery



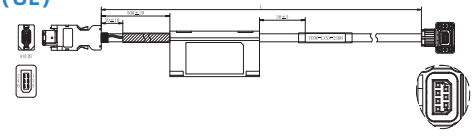
#### VE06-④-2SD® (UL)

40/60/80

Flange motor

encoder cable

With battery

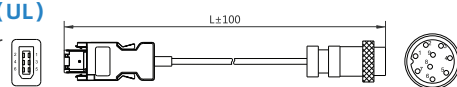


#### VE04-④-2AN® (UL)

110 Flange motor

encoder cable

Without battery

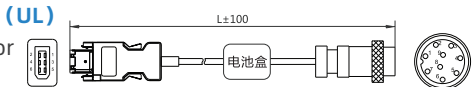


#### VE06-④-2AD® (UL)

110 Flange motor

encoder cable

With battery



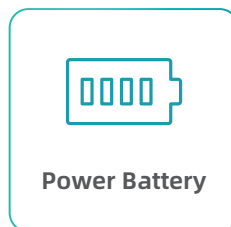
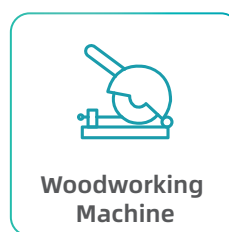
## Braking resistor selection

Model	Braking voltage	Built-in resistors	External resistor minimum	External resistor max
SD780-1R8A	380V	None	40Ω	200Ω
SD780-3R3A	380V	None	40Ω	100Ω
SD780-5R5A	380V	40Ω 60W	25Ω	70Ω

## Motor brake column

	Model	Static torque N.m	Rated voltage V	Rated current A
40	Z092-S040B(24V)0.38G8.5-001	0.38	24±10%	0.25
60	Z029-S060B(24V)1.5G12	1.5	24±10%	0.32
80	Z122-S080B(24V)3.8G16-002	3.8	24±10%	0.35

## Applications



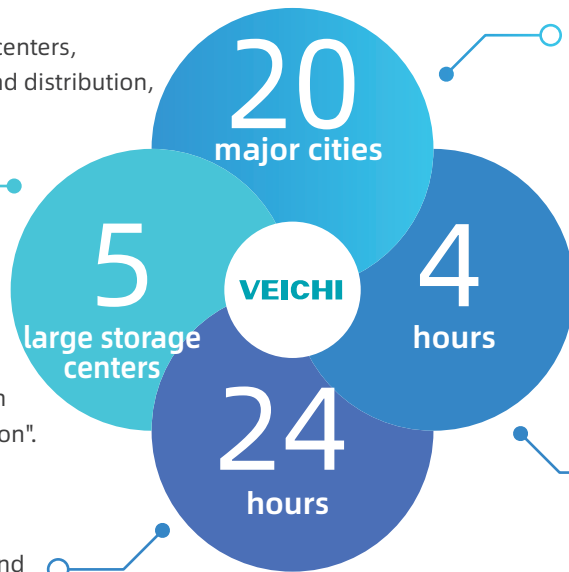
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