

SD860 Series General Multi-drive Servo System



VEICHI

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Official Website

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Stock code:688698

About us



VEICHI Electric (stock code: 688698) specializes in electric drive and industry control, establishing itself as a leading high-tech enterprise in the R&D, production, and sales of industrial automation products. With R&D and manufacturing facilities in Suzhou, Shenzhen, and Xi'an, along with a fully-owned subsidiary in India, VEICHI serves the global market by offering competitive, safe, and reliable products and services.

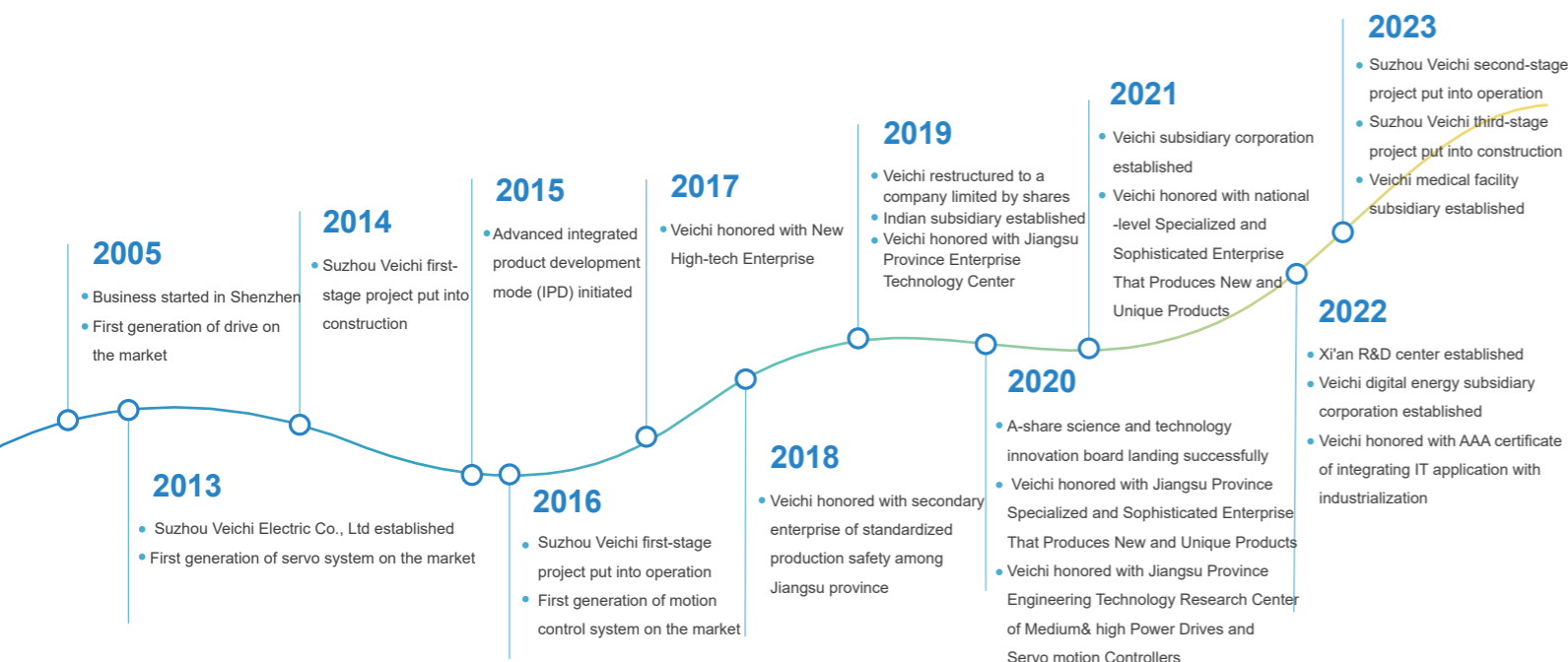
A wide range of VEICHI products and solutions tailored to various scenarios, including AC drives, servo systems, and control systems, have been acclaimed with plentiful proven applications across sectors from light to heavy industries, propelling intellectualization transformation in manufacturing. Keeping pace with development trends, VEICHI is branching into burgeoning sectors like robotics, new energy, and healthcare, introducing innovative products such as coreless motors, frameless motors, photovoltaic drives, and surgical power systems for further industrial advancement.

Abundant patented technologies with independent intellectual properties have testified VEICHI's years of dedication to independent R&D and innovation in core motor control technologies including vector control for PMSM, high-frequency pulse injection, speed tracking for start-up,

high-speed field-weakening, scalar V/F and vector control, as well as silicon carbide applications, auto tuning of motor parameters, and protection functions. As of March 31, 2024, VEICHI holds 204 patents, including 48 inventions.

Throughout its history, VEICHI has made significant progress patiently but surely, earning numerous prestigious awards and certifications from national and provincial authoritative entities and organizations. These accolades include titles such as "The Third Batch of Specialized and Sophisticated 'Small Giant' Enterprises with Distinctive New Products," "High-tech Enterprises," "Jiangsu Provincial Engineering Technology Research Center," "Jiangsu Provincial Enterprise Technology Center," and "Jiangsu Provincial Industrial Internet Development Demonstration Enterprise (Benchmarking Factory Category)."

Looking forward, VEICHI will, by the business philosophy of "guided by market demand and driven by technological innovation", make breakthroughs in key core technologies for more refreshing products and explore more reassuring applications based on their competitive performance and quality, energizing the electrical drive and industrial control sector one more step further.



SD860 Series General Multi-drive Servo System

VEICHI 's new generation of multi-drive servo products, SD860 series focuses on higher requirement of integration, bus, size, debugging and environmental resistance to provide special solutions for machine tools, 3C, lithium-ion, photovoltaic, robotics, automation equipment and such.

The features of excellent performance, easy operation, compact body, and reliable protections in this servo drive bring superior response, then bring clients with precise, efficient and smooth production control and help to speed up industrial upgrade.



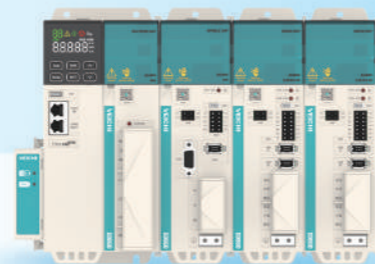
01 Higher power density, smaller installation space

Space reduced by under the same scenario

60%



Previous single-drive system



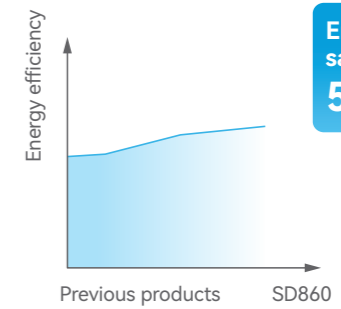
SD860 multi-drive system

02 Shared chip for two axes, higher integration

Shared chip for two axes reduces communication delay and optimizes interpolation and circle search.



03 Common DC bus, higher energy efficiency



Energy saved by 5%~30%

04 High-speed industrial bus, simpler wiring

100 Mbps



05 Comprehensive software functions, easier debugging

All SD860 servo drive parameters in one system can be uploaded/downloaded at one time via the EtherCAT network via the debugging software.



06 CE, STO, and UL



STO (Safe Torque Off) prevents unexpected injuries to operators nearby caused by accidental motor movement. The advantage of a drive with a built-in STO function is that it reduces peripheral devices, thus simplifies wiring, and saves more space.

07 Multipurpose drive for both variable frequency and servo application

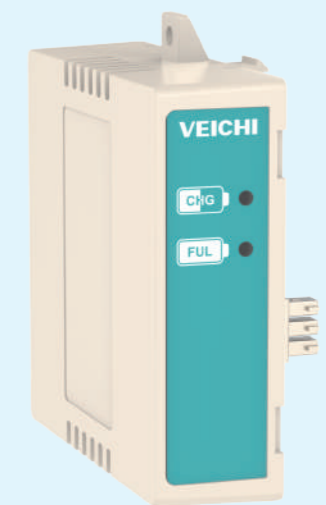


Machine Tool Industry's Best Choice

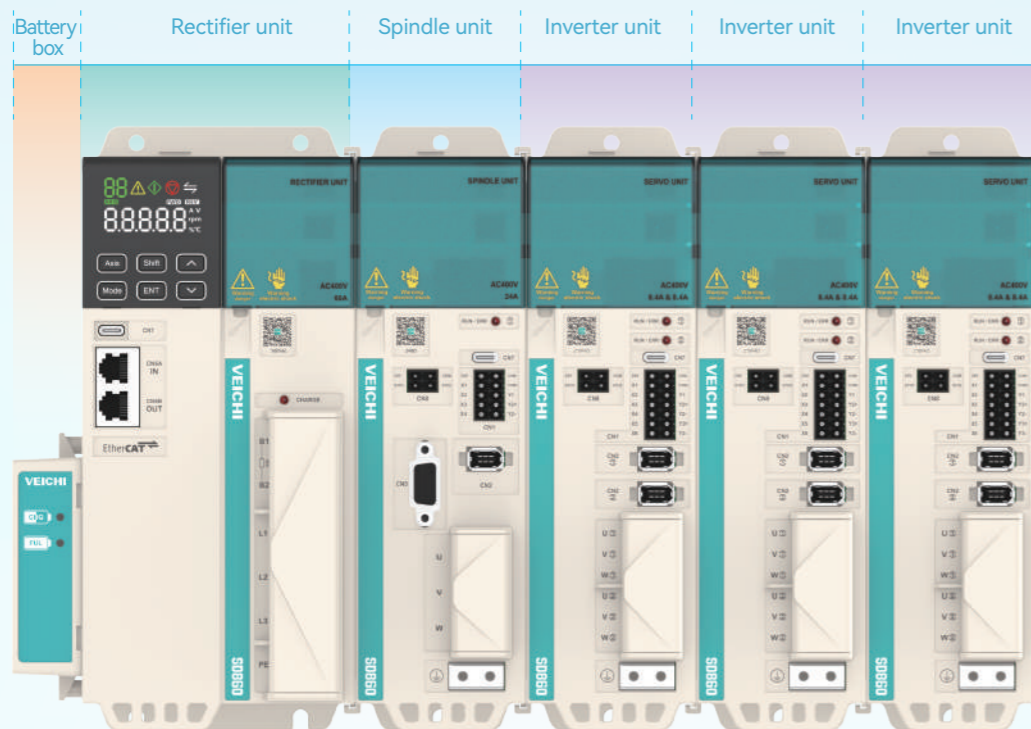
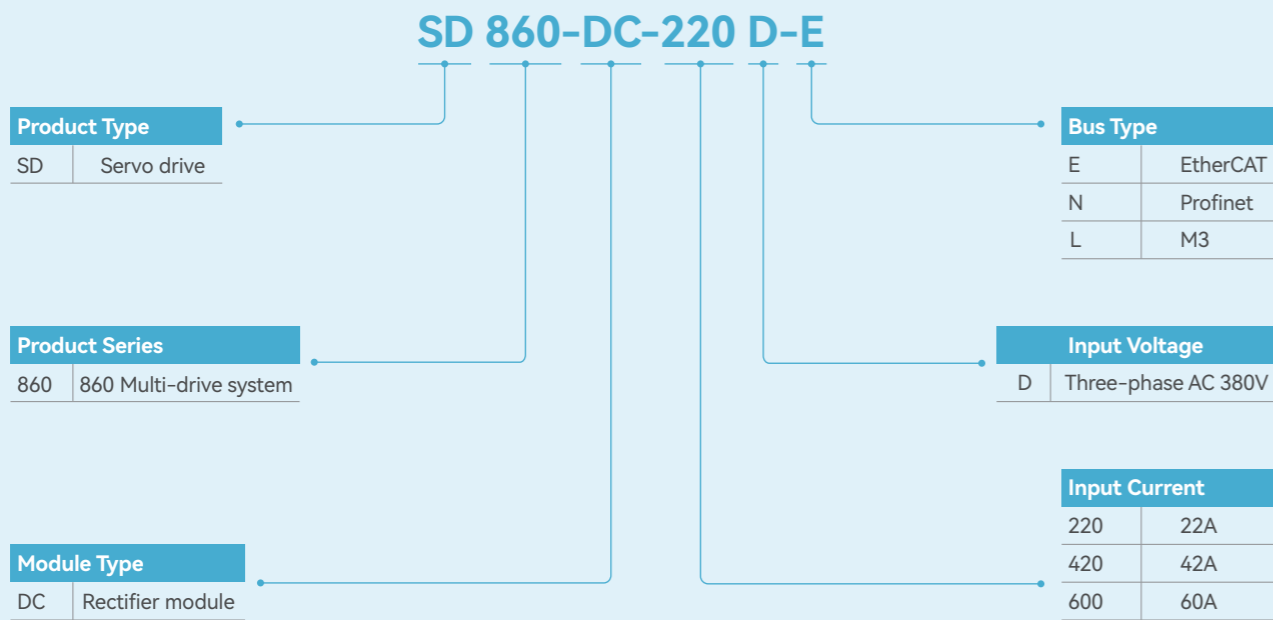
SD860 integrates spindle, feed axis, and axis module expansion as required, providing a variety of control system solutions to deliver rapid, precise and stable control of the processes such as unloading, gripping, feeding, and cutting, which helps the customers to expand production capacity with higher efficiency.

08 Rechargeable batteries, fewer part replacement

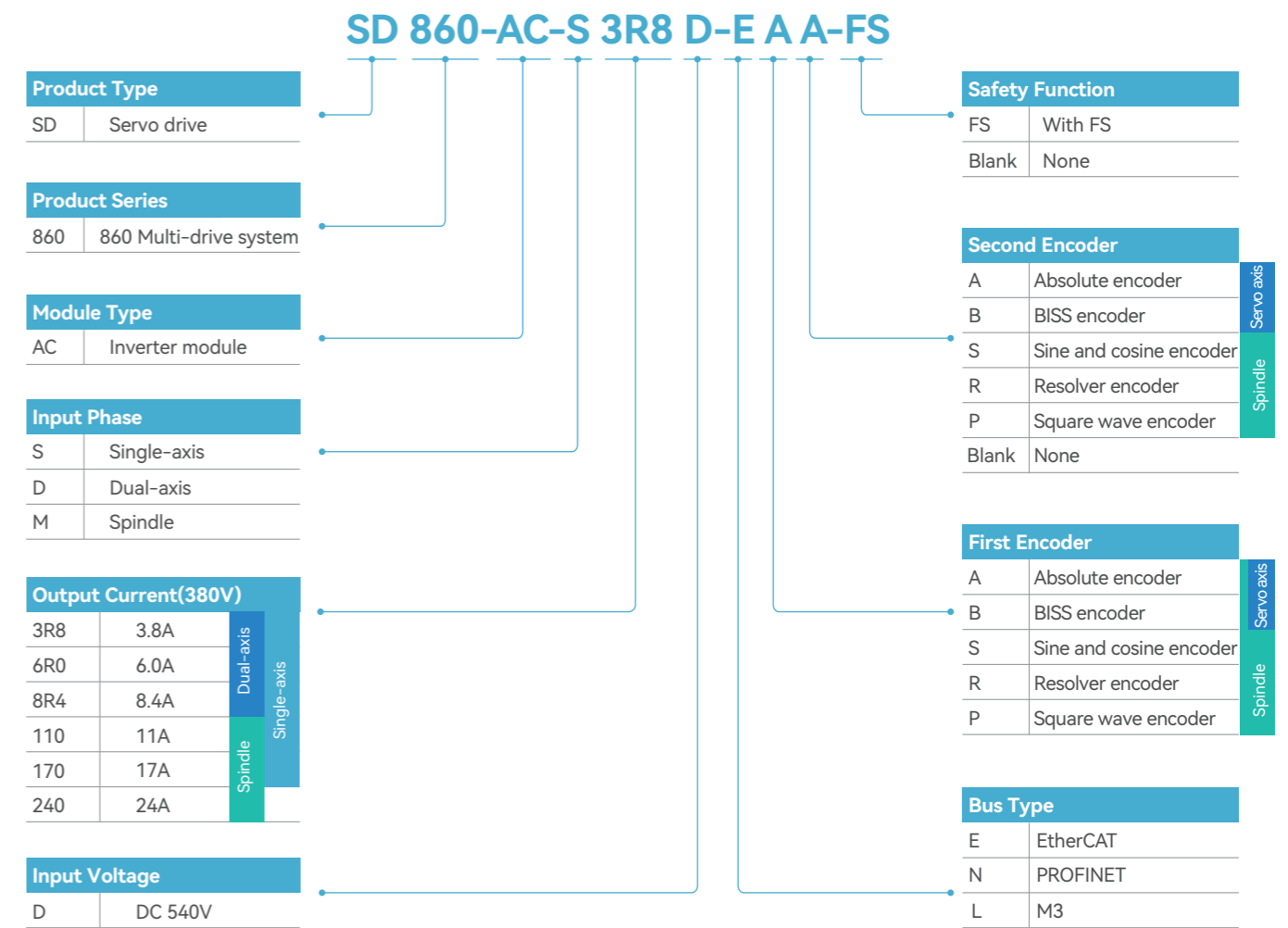
Multiple axes can share a single rechargeable battery module featuring convenience and durability, eliminating the need for frequent replacement.



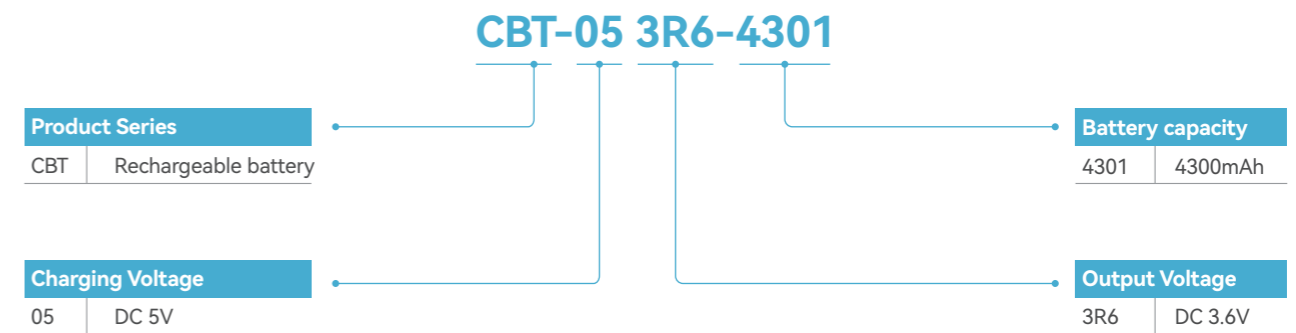
Rectifier Unit Naming Rules



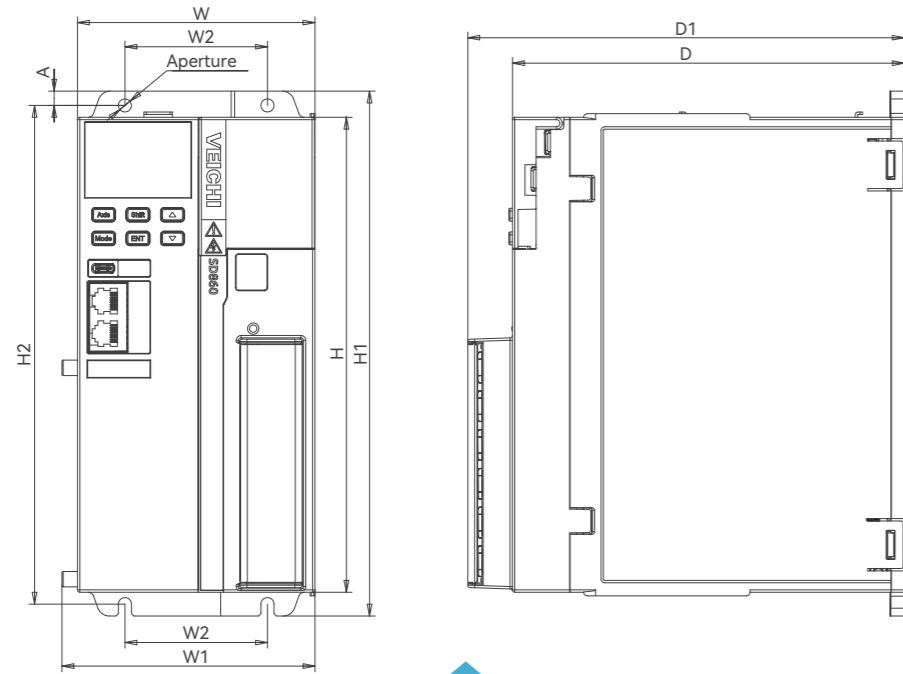
Inverter Unit Naming Rules



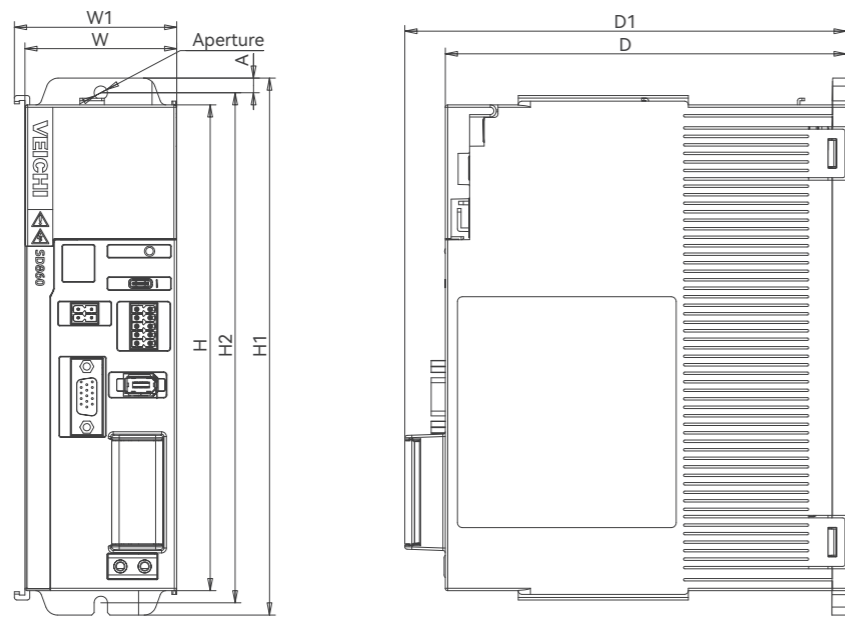
Battery Box Naming Rules



Appearance and Dimension



Rectifier Unit

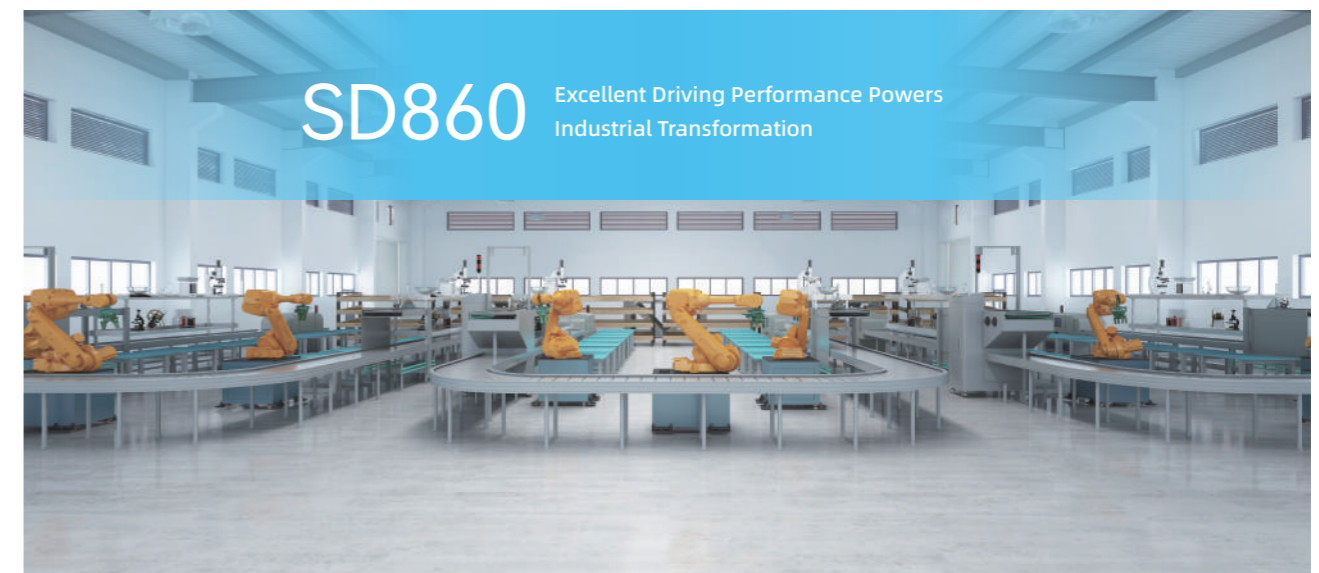


Inverter Unit

Structure	Outer Dimension(mm)			Installation Dimension(mm)				Aperture		
	W	W1	H	H1	D	D1	W2	H2	A	—
Rectifier	100	106.5	200	221	165	183.8	60	210	6	4-M4
Inverter	62.5	66.8	200	221	165	181.6	/	210	6	2-M4

Drive Power

Model	Input	Output	
	Rated Voltage(V)	Rated Current(A)	Instantaneous Current(A)
SD860-3R8D	Three-phase 380	3.8	11.4
SD860-6R0D	Three-phase 380	6.0	18.0
SD860-8R4D	Three-phase 380	8.4	25.2
SD860-110D	Three-phase 380	11.0	27.5
SD860-170D	Three-phase 380	17.0	42.5
SD860-240D	Three-phase 380	24.0	60.0



Drive Technical Specification

Rectifier Module

Item		Unit	Specification		
Model:SD860-DC-220D-E		-	220	420	600
Input	Rated current	A	13.5	25.8	36.9
	Grid type	-	TN、TT、IT		
	Rated voltage	-	Three-phase 380V-440V		
	Voltage range	V	-15%~+10% Actual allowable range: AC 323V-528V		
	Rated frequency	HZ	50Hz/60Hz		
Output	Output voltage	V	510V-720V DC		
	Output current	A	22	42	60
Braking		-	Standard		
Cooling Method		-	Forced air cooling		
Overvoltage class		-	III		
IP		-	IP20		
Communication/Bus		-	EtherCAT; Internal bus at 100MHz		
HID	Type-C	-	Type-C interface for upper computer debugging		
	Panel display	-	Standard with multifunctional LCD display with debugging buttons		
Protection		-	Against over-temperature, power phase loss, overvoltage, undervoltage, overcurrent, etc.		
Environment	Temperature	-	-10°C ~50°C, derate 1.5% for every 1°C rise when above 40°C, 50°C max. Storage temperature -20°C~+70°C Transportation temperature -20°C~+70°C		
	Relative humidity	-	Operating humidity range: 5%~95% Storage relative humidity: 5%~95% Transportation relative humidity: Below 95% when above 40°C		
	Altitude	-	1000m, derate 1% for every 100 rise when above 1000m, 3000m max.		

Dual-axis Inverter Module

Item		Unit	Specification		
Model:SD860-AC-D*R*D-EA-FS		-	3R8	6R0	8R4
Input	Rated current	A	12.4	19.42	27.2
	Rated voltage	V	510V-720V DC		
Output	Output voltage	V	0~ AC input voltage		
	Output frequency	Hz	0Hz-500Hz		
	Output current	A	#1 Axis: 3.8A #2 Axis: 3.8A	#1 Axis: 6.0A #2 Axis: 6.0A	#1 Axis: 8.4A #2 Axis: 8.4A
Carrier frequency		KHz	8k		
Overvoltage class		-	III		
IP		IP20	IP20		

Single-axis Inverter Module

Item		Unit	Specification					
Model: SD860-AC-S*R*D-EA-FS		-	3R8	6R0	8R4	110D	170D	240D
Input	Rated current	A	6.3	10	14.0	18.3	28.3	39.9
	Rated voltage	V	510V-720V DC					
Output	Output voltage	V	0~ AC input voltage					
	Output frequency	Hz	0Hz-500Hz					
	Output current	A	3.8A	6.0A	8.4A	11A	17A	24A
Carrier frequency		KHz	8k					
Overvoltage class		-	III					
IP		-	IP20					

Spindle Inverter Module

Item		Unit	Specification		
Model: SD860-AC-M**D-EA-FS		-	110D	170D	240D
Input	Rated current	A	18.3	28.3	39.9
	Rated voltage	V	510V-720V DC		
Output	Output voltage	V	0~ AC input voltage		
	Output frequency	Hz	0Hz-500Hz		
	Output current	A	11A	17A	24A
Carrier frequency		KHz	8k		
Overvoltage class		-	III		
IP		-	IP20		

Inverter Module Performance Index

Control Mode		PWM Sine Wave Current with IGBT
Feedback	Rotatory servo motor	Options (spindle): resolver, sine-cosine encoder, square wave encoder; BISS encoder Standard: 17-bit, 23-bit, 24-bit multi-turn absolute encoders
	Liner servo motor	Incremental scale, parallel signals
Environment	Operating temp.	Operating temperature range: -10°C~ 50°C. Air temperature change < 0.5°C/min; Derate 1.5% for every 1°C rise when above 40°C, 50°C max.
	Storage temp.	-20°C ~ 70°C
	Operating humidity	< 95%RH (no freezing, condensation)
	Storage humidity	< 95%RH (no freezing, condensation)
	Cooling method	Forced air cooling
	Anti-oscillation	4.9m/s ²
	Anti-impact	19.6m/s ²
	Cleanness	No corrosive or flammable gases, no water, oil, chemicals splash, low dust, dirt, salt and metal powder
	Altitude	1000m, derate 1% for every 100 rise between 1000m~2000m
Others	No electrostatic interference, strong electric field, strong magnetic field, radiation, etc.	
Standards		IEC61800-2/-3/-5、IEC61000-2/-3/-4
Installation method		Base-mounted Common DC bus
Performance	Speed range	1:5000(The lower limit of the speed control range is the value at rated torque load without stopping.)
	Speed fluctuation	<±0.01% of rated speed (when load fluctuates between 0% ~100%)
		<±0.01% of rated speed (when voltage fluctuates ±10%)
	Torque accuracy(Repeatable)	±1%
Soft start time		0s~10s(ACC/DEC are set separately)
I/O signal	Sequence input	Common input
		Working voltage: DC 24V ±10%
		Input channel: Dual-axis(6-way); Single-axis(4-way) Input method: Common collector input, common emitter input
	Signal	• Positive-overtravel; Negative-overtravel
		• Alarm reset (/ALM-RST)
		• Manual PI-P control (/P-CON)
		• Torque limit control(/TLC)
		• Zero clamp(/ZCLAMP)
		• Command pulse inhibit (/INHIBIT)
		• Gain selection(/G-SEL)
• Torque command direction(/T-SIGN)		
• Command pulse multiplier(/PSEL)		
• Home (/Home)		

Control Mode		PWM Sine Wave Current with IGBT
I/O signal	Sequence output	Relay output
		Working voltage: DC 5V~30V
		Output channel: Dual-axis(2-way); Single-axis(1-way) Output method: Relay output (brake signal by default, modifiable)
	Common output	Working voltage: DC 5V~30V
		Output channel: 1-way Output method: Optocoupler output (isolated), modifiable
	Signal	• Servo ready (/S-RDY)
		• Positioning completed (/COIN)
		• Velocity completed(/V-CMP)
		• Torque limit check (/CLT)
		• Speed limit check (/VLT)
• Braking (/BK)		
• Warning (/WARN)		
• Positioning approaching(/NEAR)		
• Command pulse input multiplier(/PSELA)		
• Torque arrival output (/TAO)		
• Encoder overheat(/encovheat)		
• No-alarm positioning completed (/NoAlmCoin)		
Debugging	Internal	LVDS:100M
Debugging	USB(CN7))	Standard with TYPE-C for the upper computer in conformity with USB2.0 and 3.0
Display		NO
Panel operator		NO
Energy regeneration		NO(Rectifier module)
Anti-overtravel		When P-OT, N-OT is applied, the servo drive stops in the mode of dynamic brake (DB), deceleration stop, or free stop
Protection		Overcurrent, overvoltage, undervoltage, overload, regenerative fault, encoder break, communication error, safe torque off (STO), etc.
Auxiliary function		Gain adjustment, alarm log, JOG operation, home search, etc.

Servo Motor Naming Rules

V7E - M 13 D - 1R0 20 - D 1 □

Product Series
V7E

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

Flange Size
13: 130mm
18: 180mm

Rated Voltage
D: 380V AC

Rated Power

Mark	Power	Mark	Power
R85	850W	2R3	2.3KW
1R0	1.0KW	2R9	2.9KW
1R2	1.2KW	3R0	3.0KW
1R3	1.3KW	4R4	4.4KW
1R5	1.5KW	5R5	5.5KW
1R8	1.8KW	7R5	7.5KW
2R0	2.0KW		

Internal Management Code

Brake, Key, Oil Seal

No.	Key	Brake	Oil Seal
1	•	x	•
2	•	•	•

Encoder Type

D: 23-bit multi-turn absolute optical-electricity encoder
R: 17-bit multi-turn absolute magnetic encoder
Q: 17-bit single-turn absolute magnetic encoder

Rated Speed(RPM) Motor Braking Power(Estimated)

Rated Speed (RPM)	Flange	Braking Power
15: 1500	130	20W
20: 2000	180	30W
25: 2500		
30: 3000		



Servo Motor Technical Parameter(General Purpose)

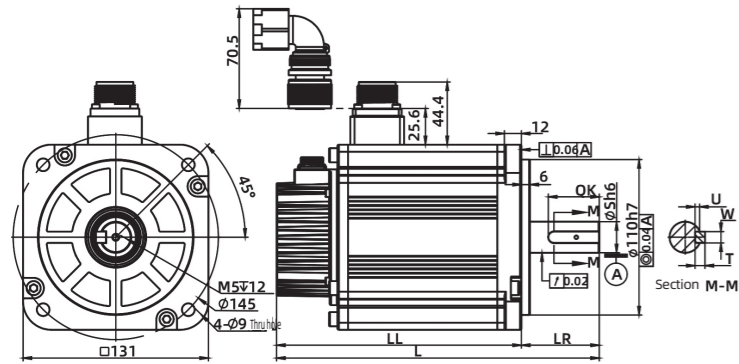
V7E	Voltage (V)	Power (W)	Rated Torque (N·m)	Rated Speed (RPM)	Max Speed (RPM)	Rated Current (A)	Max Current (A)	Rotary Inertia
V7E-M13D-1R020-□1	380	1000	4.78	2000	3000	3.2	9.6	10.51kg·cm ²
V7E-M13D-1R020-□2	380	1000	4.78	2000	3000	3.2	9.6	12.65kg·cm ²
V7E-M13D-1R520-□1	380	1500	7.16	2000	3000	4.4	13.2	14.85kg·cm ²
V7E-M13D-1R520-□2	380	1500	7.16	2000	3000	4.4	13.2	16.99kg·cm ²
V7E-M13D-2R020-□1	380	2000	9.55	2000	3000	5.5	16.5	20.63kg·cm ²
V7E-M13D-2R020-□2	380	2000	9.55	2000	3000	5.5	16.5	22.77kg·cm ²
V7E-M13D-3R020-□1	380	3000	14.33	2000	3000	8.3	24.9	36.38kg·cm ²
V7E-M13D-3R020-□2	380	3000	14.33	2000	3000	8.3	24.9	38.52kg·cm ²
V7E-M18D-2R915-□1	380	2900	18.46	1500	2000	7.1	17.8	49.56kg·cm ²
V7E-M18D-2R915-□2	380	2900	18.46	1500	2000	7.1	17.8	56.05kg·cm ²
V7E-M18D-4R415-□1	380	4400	28.01	1500	2000	10.9	27.3	68.9kg·cm ²
V7E-M18D-4R415-□2	380	4400	28.01	1500	2000	10.9	27.3	75.39kg·cm ²
V7E-M18D-5R515-□1	380	5500	35.02	1500	2000	13.4	33.5	110.11kg·cm ²
V7E-M18D-5R515-□2	380	5500	35.02	1500	2000	13.4	33.5	116.6kg·cm ²
V7E-M18D-7R515-□1	380	7500	47.75	1500	2000	17	42.5	156.61kg·cm ²
V7E-M18D-7R515-□2	380	7500	47.75	1500	2000	17	42.5	163.09kg·cm ²

Servo Motor Technical Parameter(Special Purpose)

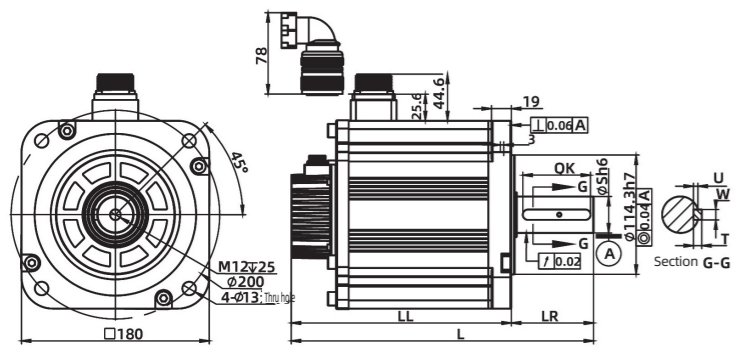
V7E	Voltage (V)	Power (W)	Rated Torque (N·m)	Rated Speed (RPM)	Max Speed (RPM)	Rated Current (A)	Max Current (A)	Rotary Inertia
V7E-M13D-R8515-□1B	380	850	5.41	1500	3000	3.3	9.9	10.51kg·cm ²
V7E-M13D-R8515-□2B	380	850	5.41	1500	3000	3.3	9.9	12.65kg·cm ²
V7E-M13D-R8515-□1	380	850	5.41	1500	3000	3.3	9.9	10.51kg·cm ²
V7E-M13D-R8515-□2	380	850	5.41	1500	3000	3.3	9.9	12.65kg·cm ²
V7E-M13D-1R315-□1	380	1300	8.28	1500	3000	4.8	14.4	14.85kg·cm ²
V7E-M13D-1R315-□2	380	1300	8.28	1500	3000	4.8	14.4	16.99kg·cm ²
V7E-M13D-1R815-□1B	380	1800	11.46	1500	3000	6.6	19.8	20.63kg·cm ²
V7E-M13D-1R815-□2B	380	1800	11.46	1500	3000	6.6	19.8	22.77kg·cm ²
V7E-M13D-1R815-□1	380	1800	11.46	1500	3000	6.6	19.8	20.63kg·cm ²
V7E-M13D-1R815-□2	380	1800	11.46	1500	3000	6.6	19.8	22.77kg·cm ²
V7E-M13D-2R315-□1L	380	2300	14.64	1500	2000	5.6	16.8	29.27kg·cm ²
V7E-M13D-2R315-□2L	380	2300	14.64	1500	2000	5.6	16.8	31.41kg·cm ²
V7E-M13D-2R315-□1	380	2300	14.64	1500	3000	8.4	25.2	29.27kg·cm ²
V7E-M13D-2R315-□2	380	2300	14.64	1500	3000	8.4	25.2	31.41kg·cm ²
V7E-M18D-2R915-□1H	380	2900	18.46	1500	3000	10.7	26.8	49.56kg·cm ²
V7E-M18D-2R915-□2H	380	2900	18.46	1500	3000	10.7	26.8	56.05kg·cm ²
V7E-M18D-4R415-□1H	380	4400	28.01	1500	3000	16.2	40.5	68.9kg·cm ²
V7E-M18D-4R415-□2H	380	4400	28.01	1500	3000	16.2	40.5	75.39kg·cm ²
V7E-M18D-5R515-□1H	380	5500	35.02	1500	3000	19	47.5	110.11kg·cm ²
V7E-M18D-5R515-□2H	380	5500	35.02	1500	3000	19	47.5	116.6kg·cm ²
V7E-M18D-5R515-□1BH	380	5500	35.02	1500	3000	19	47.5	110.11kg·cm ²
V7E-M18D-5R515-□2BH	380	5500	35.02	1500	3000	19	47.5	116.6kg·cm ²
V7E-M18D-7R515-□1H	380	7500	47.75	1500	3000	27.6	69	156.6kg·cm ²
V7E-M18D-7R515-□2H	380	7500	47.75	1500	3000	27.6	69	163.09kg·cm ²
V7E-M18D-7R515-□1BH	380	7500	47.75	1500	3000	27.6	69	156.6kg·cm ²
V7E-M18D-7R515-□2BH	380	7500	47.75	1500	3000	27.6	69	163.09kg·cm ²

Servo Motor Installation Dimensions

130 Flange



180 Flange



Unit:mm

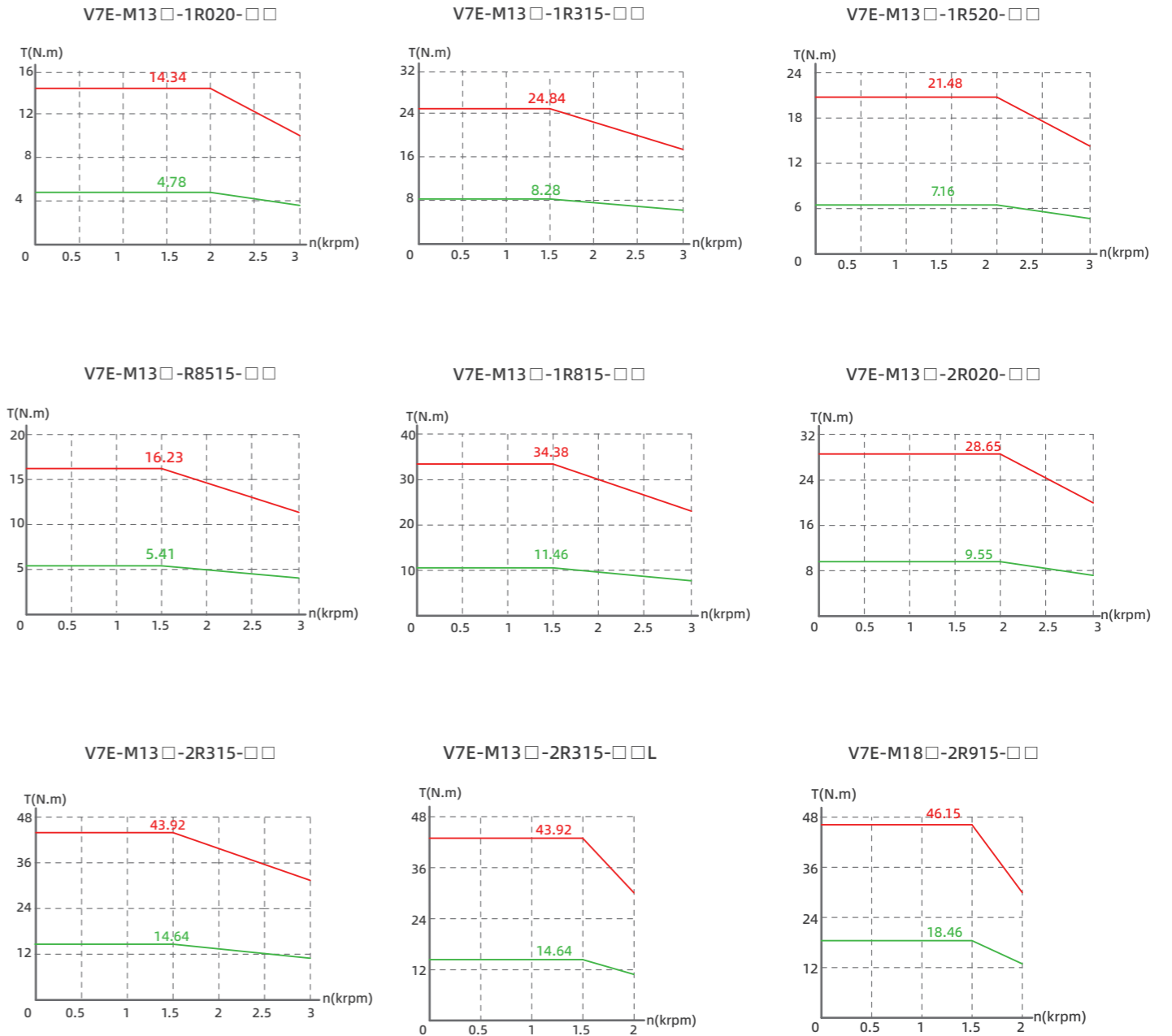
Model	L	LL	LR	S	QK	U	W	T
V7E-M13D-R8515-□1	186	131	55	22	36	3.2	8	7
V7E-M13D-R8515-□2	214.2	159.2	55	22	36	3.2	8	7
V7E-M13D-1R020-□1	186	131	55	22	36	3.2	8	7
V7E-M13D-1R020-□2	214.2	159.2	55	22	36	3.2	8	7
V7E-M13D-1R315-□1	198	143	55	22	36	3.2	8	7
V7E-M13D-1R315-□2	226.2	171.2	55	22	36	3.2	8	7
V7E-M13D-1R520-□1	198	143	55	22	36	3.2	8	7
V7E-M13D-1R520-□2	226.2	171.2	55	22	36	3.2	8	7
V7E-M13D-1R815-□1	214	159	55	22	36	3.2	8	7
V7E-M13D-1R815-□2	242.2	187.2	55	22	36	3.2	8	7
V7E-M13D-2R020-□1	214	159	55	22	36	3.2	8	7
V7E-M13D-2R020-□2	256.2	201.2	55	22	36	3.2	8	7
V7E-M13D-2R315-□1L	258	203	55	22	36	3.2	8	7
V7E-M13D-2R315-□2L	266.2	211.2	55	22	36	3.2	8	7
V7E-M13D-3R020-□1	258	203	55	22	36	3.2	8	7
V7E-M13D-3R020-□2	286.2	231.2	55	22	36	3.2	8	7
V7E-M13A-R8515-□1B	186	131	55	19	40	3.1	6	6
V7E-M13A-R8515-□2B	214.2	159.2	55	19	40	3.1	6	6
V7E-M13A-1R815-□1B	214	159	55	24	36	3.3	8	7
V7E-M13A-1R815-□2B	242.2	187.2	55	24	36	3.3	8	7
V7E-M13D-R8515-□1B	186	131	55	19	40	3.1	6	6
V7E-M13D-R8515-□2B	214.2	159.2	55	19	40	3.1	6	6
V7E-M13D-1R815-□1B	214	159	55	24	36	3.3	8	7
V7E-M13D-1R815-□2B	256.2	201.2	55	24	36	3.3	8	7

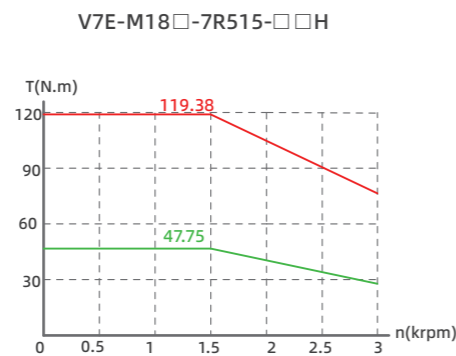
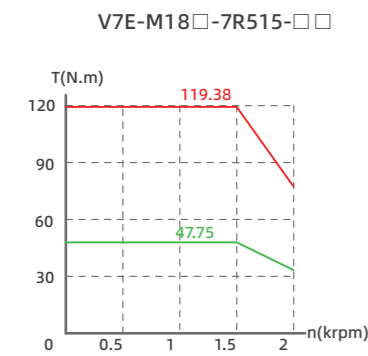
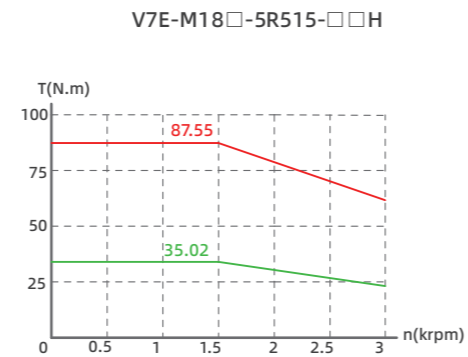
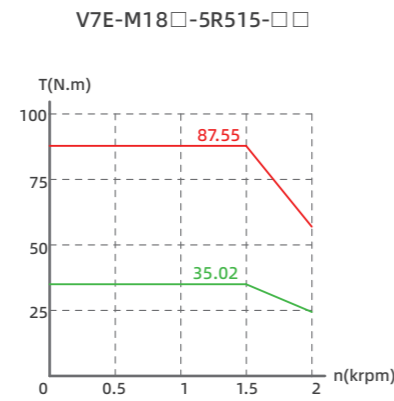
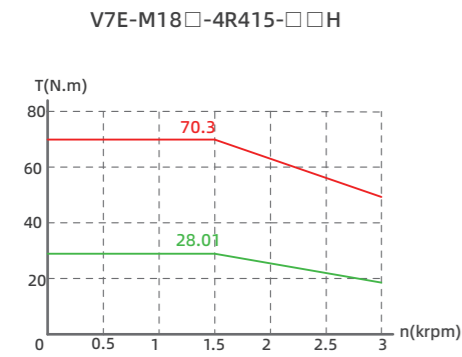
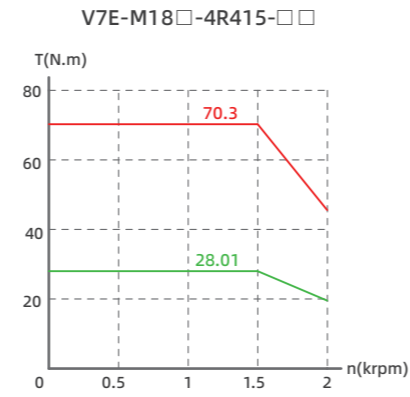
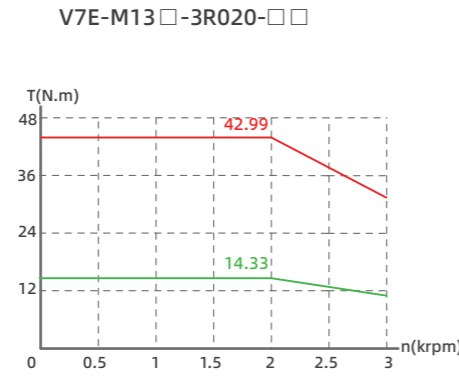
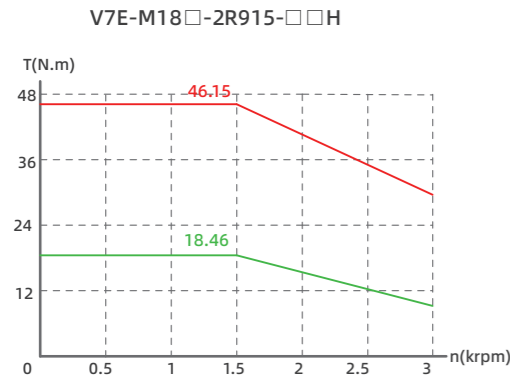
Unit:mm

Model	L	LL	LR	S	QK	U	W	T
V7E-M18D-2R915-□1	266	187	79	35	65	4.3	10	8
V7E-M18D-2R915-□2	307.5	228.5	79	35	65	4.3	10	8
V7E-M18D-2R915-□1H	266	187	79	35	65	4.3	10	8
V7E-M18D-2R915-□2H	307.5	228.5	79	35	65	4.3	10	8
V7E-M18D-4R415-□1	290	211	79	35	65	4.3	10	8
V7E-M18D-4R415-□2	331.5	252.5	79	35	65	4.3	10	8
V7E-M18D-4R415-□1H	290	211	79	35	65	4.3	10	8
V7E-M18D-4R415-□2H	331.5	252.5	79	35	65	4.3	10	8
V7E-M18D-5R515-□1	325.5	246.5	79	35	65	4.3	10	8
V7E-M18D-5R515-□2	367	288	79	35	65	4.3	10	8
V7E-M18D-5R515-□1H	325.5	246.5	79	35	65	4.3	10	8
V7E-M18D-5R515-□2H	367	288	79	35	65	4.3	10	8
V7E-M18D-7R515-□1	372.5	293.5	79	35	65	4.3	10	8
V7E-M18D-7R515-□2	414	335	79	35	65	4.3	10	8
V7E-M18D-7R515-□1H	372.5	293.5	79	35	65	4.3	10	8
V7E-M18D-7R515-□2H	414	335	79	35	65	4.3	10	8
V7E-M18D-5R515-□1BH	359.5	246.5	113	42	96	4.2	12	10
V7E-M18D-5R515-□2BH	401	288	113	42	96	4.2	12	10
V7E-M18D-7R515-□1BH	406.5	293.5	113	42	96	4.2	12	10
V7E-M18D-7R515-□2BH	448	335	113	42	96	4.2	12	10

Servo Motor Torque Characteristics

Note: — means rated torque and — means instantaneous max torque

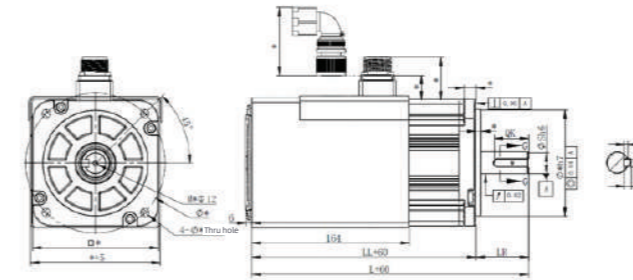




Fan Parameters

110/130/180 all models of motors can be optionally equipped with a fan, and "F" is added to the original name for motors with a fan.

Dimensions with fans



The length is 60mm longer with the optional fan on the motor, the rest of the dimensions remain unchanged.

Specification

Item	Value
Voltage	230V±15V AC
Rated current	0.135A
Cubic feet per minute	89
Rated speed	2650

Brake Parameters

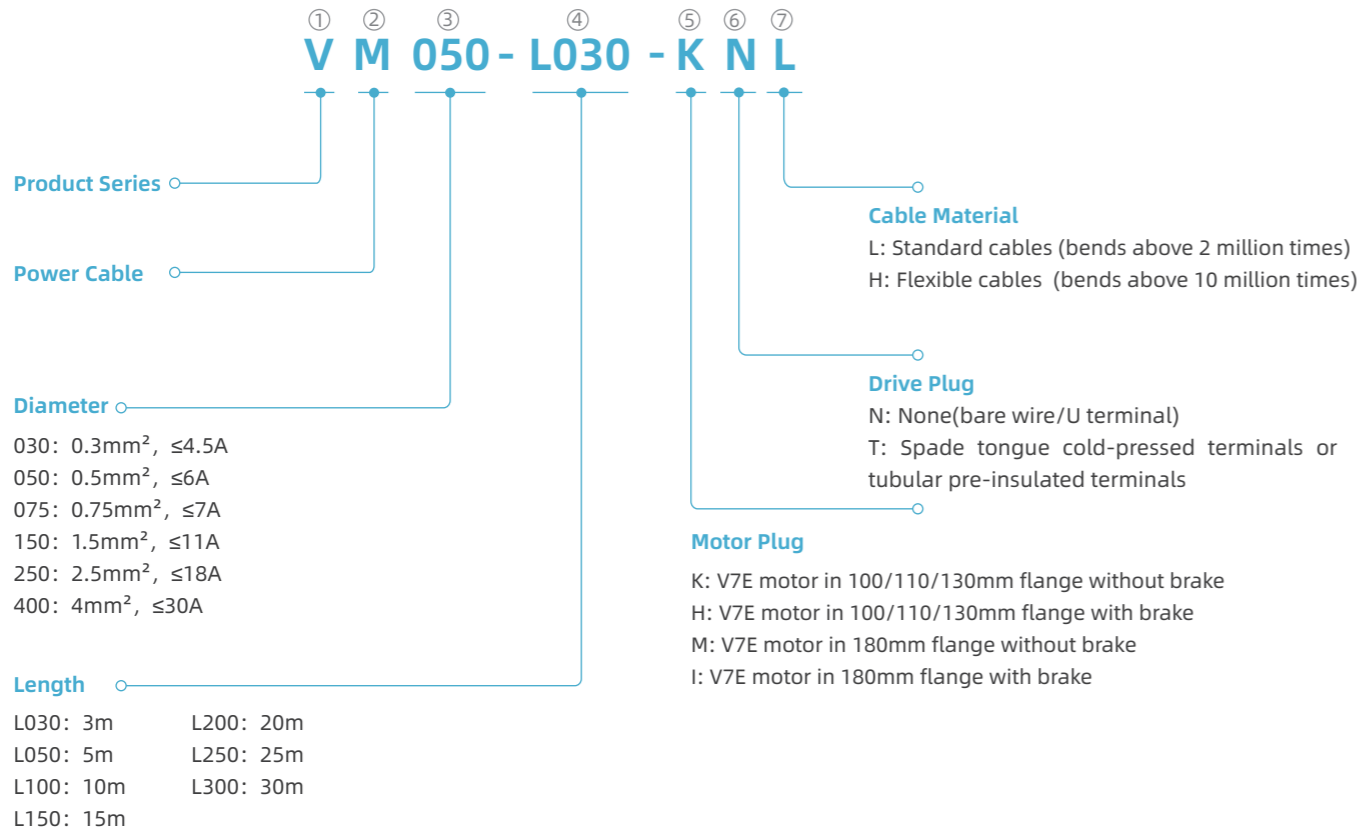
Flange	Static Torque(N.m)	Rated Voltage(V)	Rated Current(A)
40	0.38	24±10%	0.25
60	1.5	24±10%	0.32
80	3.8	24±10%	0.35
110	10	24±10%	0.81
130	16	24±10%	1
180	50	24±10%	2

Braking Resistor

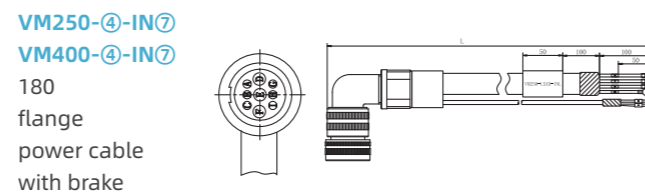
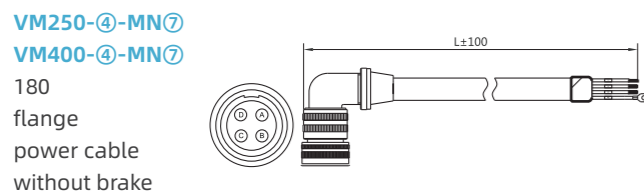
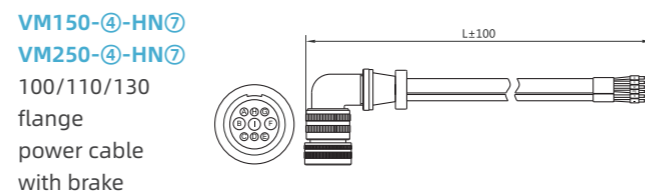
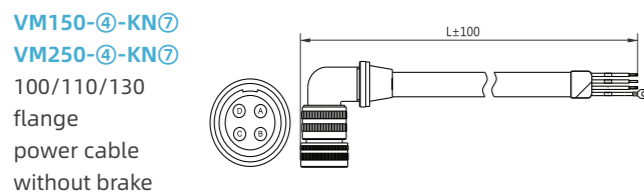
Model	Braking Voltage	Min External Resistance	Max External Resistance
SD860-DC-S220D	720V	25 Ω	50 Ω
SD860-DC-S420D	720V	25 Ω	50 Ω
SD860-DC-S600D	720V	25 Ω	50 Ω

SD860 Servo Drive Cable

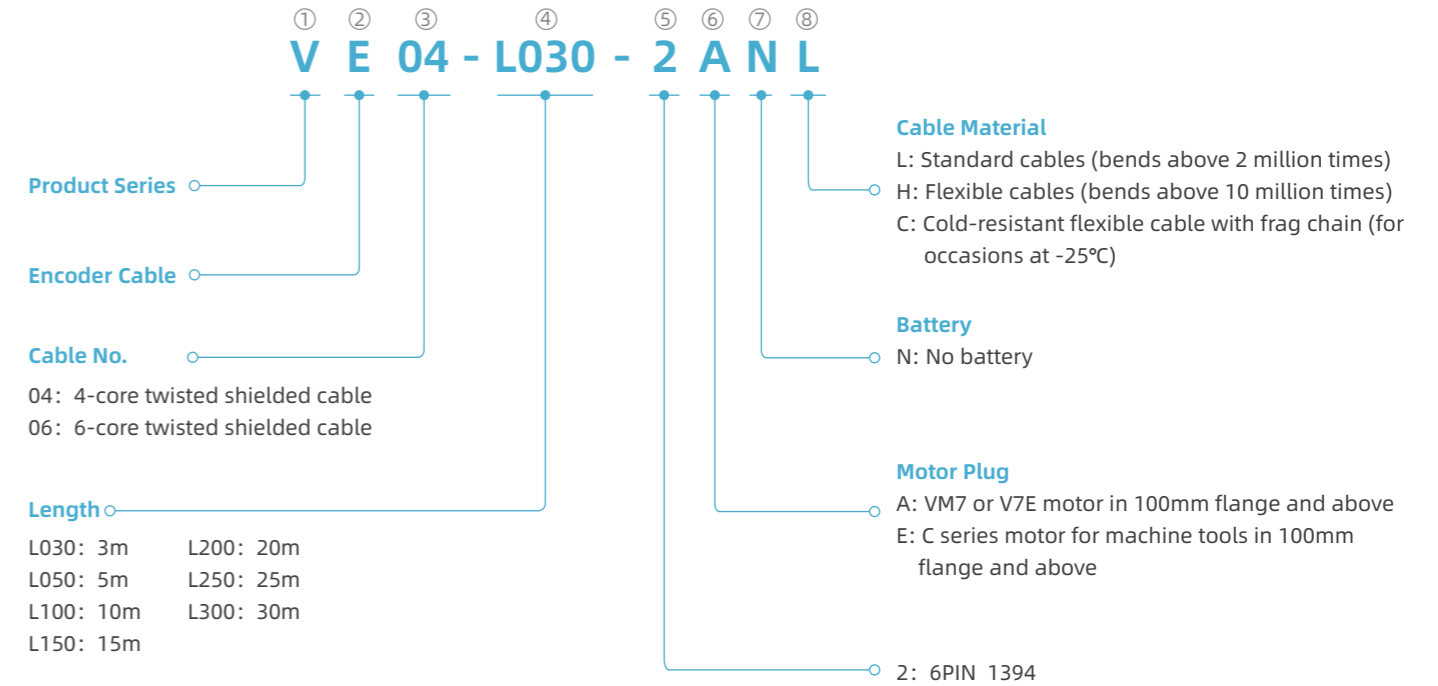
Power Cable Naming Rules



Motor Power Cable



Encoder Cable Naming Rules



Encoder Cable

