





Professional Focus, Whole-hearted Service

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**CUSTOM VACUUM,
HIGH & LOW TEMPERATURE
MOTORS AT COMPETITIVE PRICES**

www.ctrl-motor.com



COMPANY PROFILE

Ctrl-Motor - a manufacturer specializing in vacuum, high & low temperature motors. Focusing on providing custom vacuum, high & low temperature motors at the price of standard motors.

Ctrl-Motor is the overseas business office established in Shenzhen by DDON (Chengdu), headquartered in Sichuan, China. The company has a team of nearly 100 senior engineers, specializing in the production of vacuum, high & low temperature motors ranging from deep low temperature of -196°C to ultra - high temperature of $+300^{\circ}\text{C}$ and extreme environments. The company has been certified under SGS, Moore Laboratory Reliability Certification, ISO9001:2015 and GJB9001C-2017 Quality Management System Certification. We can deliver non - standard prototypes within 14 days and implement them at the price of mass production motors. Over the past 11 years, Ctrl - Motor has helped more than 200 projects achieve applications in medical, aerospace, biopharmaceutical, harsh environment and other fields. The on - time delivery rate and yield rate have always remained above 99%, providing triple guarantees of production capacity, quality, and price.



HISTORY

2013-2023

2013

DDON Established

2017

National High-tech Enterprise Certificated

The mass production and R&D capabilities of special motors have been widely recognized in applications such as manned aerospace, biomedicine, scientific research institutes, universities, etc.

2018

Quality Management System Certificated

The core technology has been successfully used in extreme environments such as low-temperature and deep-low temperature special motors (-196°C~+85°C), vacuum high-temperature special motors (-20°C~+300°C), and radiation-proof motors (radiation resistance 10^{-7} Gy).

2020

Become Intellectual Property Advantage Unit

Obtained 5 invention certificates, 41 utility model certificates, 4 appearance certificates, 2 software copyrights, and 27 invention certificates are in the substantive review stage.

2022

Specialized and New Certificated

Recognized by the national unit to focus on market segments, innovation ability, high market share, grasp the key core technology, quality and efficiency of the vanguard enterprise.

2023

Established Shenzhen company

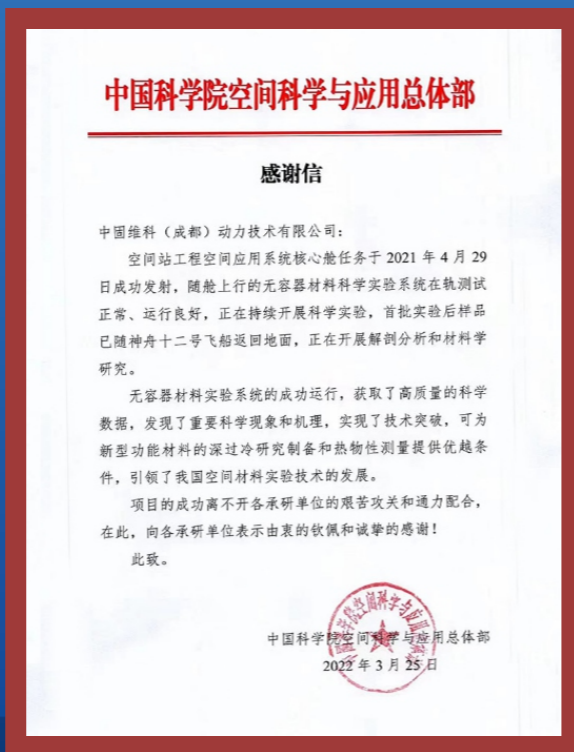
provide Custom OEM services for special motors around the world.



Honors and Certifications

Ctrl-Motor has been certificated under ISO9001:2015 and GJB9001C-2017 Quality Management System Certification. The products have been certified under SGS, Moore Laboratory Reliability Certification, CE Certification. So far, the company has obtained 5 invention certificates, 41 utility model certificates, 4 appearance certificates, 2 software copyrights, and 27 invention certificates are in the substantive review stage.

On April 29, 2021, the Micro Vacuum Module developed by the DDON technical team, the headquarter of Ctrl-Motor, successfully entered the space station aboard the Shenzhou 12 spacecraft and successfully completed the relevant scientific research tasks. The flight marked the seventh crewed Chinese spaceflight and the twelfth flight of the Shenzhou program.



COOPERATION



CORE ADVANTAGES

Custom vacuum, high & low temperature motors at competitive prices

Ctrl-Motor independently develops vacuum high and low temperature stepper motors, vacuum high and low temperature servo motors, vacuum rotary transformers, high and low temperature stepper drives, vacuum modules and other products. Special materials are selected and new production processes are used to complete the manufacturing of special motors and inspection. The deep low temperature can reach -196°C and ultra high temperature can reach $+300^{\circ}\text{C}$. The vacuum degree is better than 10^{-5}Pa . Ctrl-Motor can provide customers around the world with complete custom OEM solutions in any extreme conditions.



100% Independent R&D, providing production capacity guarantee.

Ctrl-Motor has its own scientific research office of over 2,000 square meters, and has also established a relatively complete laboratory with high and low temperature cycle test chambers, salt spray test chambers, dynamometers and other conventional equipment. At the same time, we also have core testing equipment with independent intellectual property rights, such as thermal vacuum motor characteristics experimental chamber, high temperature and deep low temperature motor torque frequency characteristic test chamber, etc.



1-on-1 Professional team support, fast feedback.

Ctrl-Motor has a R&D team of nearly 100 people and is an enterprise specializing in the development, manufacturing and application of motors in vacuum, high temperature, deep and low temperature and other special environments. In the past 11 years, we have successfully helped more than 200 projects realize the application vacuum, high & low temperature motors solutions in extreme environments, and have been highly recognized by customers for "fast feedback and high efficiency".



Efficient Delivery

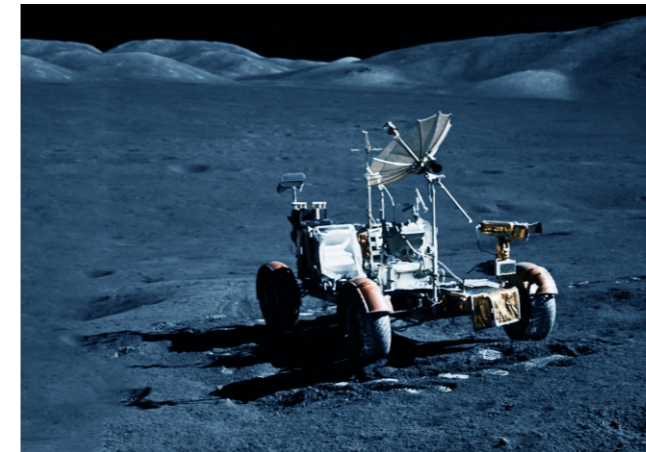
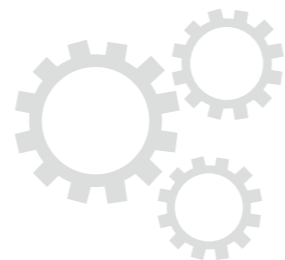
We helped more than 200 projects realize the application of vacuum, high & low temperature motors solutions in extreme environments, the fastest delivery can be achieved in 10 days from proofing to production.





APPLICATION

The main products of Ctrl-Motor such as HV series vacuum stepper motors, HSS series vacuum servo motors, HS series low temperature stepper motors, HSV series low temperature servo motors, high and low temperature motor drivers, vacuum reducers, vacuum modules and other products have been successfully used in aerospace, satellite communication, satellite detection, automated industry, biobank, laboratory testing and some other fields.



▶ Satellite Detection



▶ Radar Communication



▶ Automated Industry



▶ Laboratory Testing



▶ Biobank



▶ Aerospace

APPLICATION CASES



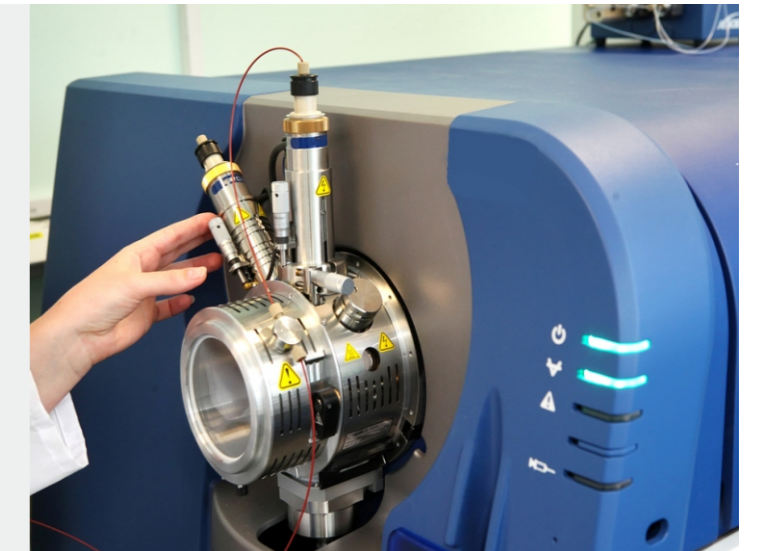
Aging Test

- ▶ Satisfy vacuum and high/low temperature environments
- ▶ Provide free consultation on solutions to ensure their implementation
- ▶ 11 years of direct sales from manufacturers of high and low temperature motors



Industrial Automation

- ▶ $-40\text{ }^{\circ}\text{C}\sim+300\text{ }^{\circ}\text{C}$
- ▶ 11 Year Source Manufacturer
- ▶ Satisfy vacuum degree of 10 to the power of -5 pa



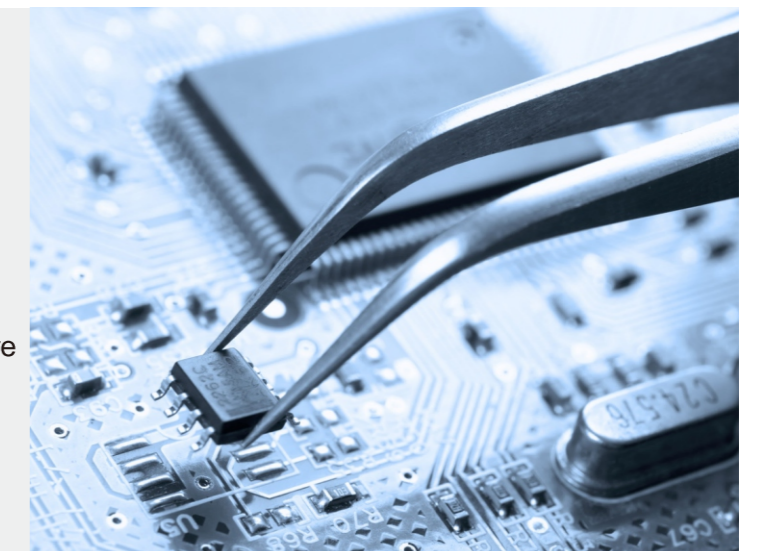
Biomedical

- ▶ Industrial grade prices
- ▶ 11 years of military grade quality assurance
- ▶ Stable performance of motors in deep low-temperature environments $-196\text{ }^{\circ}\text{C}$



Semiconductor Industry

- ▶ Military grade quality assurance
- ▶ Stable motion and precise positioning
- ▶ Satisfy vacuum and high/low temperature environments



APPLICATION CASES



Satellite Detection

- ▶ Successful cooperation case of Shenzhou 12
- ▶ 11 years of military grade motor source manufacturer
- ▶ Small volume, light weight, vacuum degree of 10^{-5} pa



Aerospace

- ▶ Special patent material provision plan guarantee
- ▶ The vacuum degree can reach 10^{-5} pa
- ▶ Under long-term operation, the body generates almost no heat and has excellent heat dissipation



Industrial Robot

- ▶ $-60^{\circ}\text{C} \sim +80^{\circ}\text{C}$
- ▶ Independent research and development, military grade quality assurance
- ▶ Meet domestic (such as Xinjiang) and foreign low-temperature environmental requirements



Vehicle Inspection

- ▶ $-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$
- ▶ Industrial grade prices
- ▶ Satisfy high and low temperature environments for 100000 times without stopping



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17 Stepper Motors

Wide Temperature Stepper

- HK2030A-NT
- HK2851A-NT
- HK4240A-NT
- HK4248A-NT
- HK4260A-NT
- HK5756A-NT
- HK5776A-NT
- HK6084A-NT
- HK8680W-NT
- HK60102W-NT
- HK86118W-NT

High Temperature Vacuum Stepper

- HS2030A-VT
- HS2851A-VT
- HS4248A-VT
- HV4249A-VT
- HV5786A-VT
- HV86128A-VT

Deep Low-temperature Stepper

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- HS5776A-NTL4/VTL3/SLT
- HS86118W-NTL4/VTL3/SLT

43 Planetary Reducer

- Planetary Reducer

33 Servo Motors

Wide Temperature Servo

- HSK0401A-2R00-NT
- HSK0401A-2R0B-NT
- HSK0401D-2R00-NT
- HSK0604A-2R00-NT
- HSK0604A-2R0B-NT
- HSK0604E-2R00-NT
- HSK0807A-2R00-NT
- HSK0807A-2R0B-NT
- HSK0807E-2R00-NT
- HSK0810A-2R00-NT
- HSK0810A-2R0B-NT
- HSK1118A-2R00-NT
- HSK1118A-2R0B-NT

High Temperature Vacuum Servo

- HSV0401A-2R00-VT
- HSS0810A-2R00-VT
- HSS0807A-2R00-VT
- HSS0604A-2R00-VT

Deep Low-temperature Servo

- HSV0401A-2R00-NTL4/VTL3/SLT
- HSS0810A-2R00-NTL4/VTL3/SLT
- HSS0807A-2R00-NTL4/VTL3/SLT
- HSS0604A-2R00-NTL4/VTL3/SLT

45 Driver & Decoder

- Stepper Driver
- Servo Driver
- Resolver
- Decoder

Stepper Motors



Low Temperature Stepper Motor

The low-temperature stepping motor adopts high-precision and low-clearance special bearings, which have longer life, higher stability and better lubrication effect. Professional thermodynamic design, operating temperature range $-60^{\circ}\text{C}\sim+100^{\circ}\text{C}$. The magnet is made of special materials with strong temperature resistance and weather resistance, which can meet the requirements of speed and torque while obtaining better and less noise and vibration. Compared with the traditional motor scheme, the structure of the low-temperature stepping motor is more simple and convenient, the stability is further improved.



Vacuum High Temperature Stepper Motor

The surface of the vacuum and high-temperature stepper motor is made of special stainless steel material, novel design, exquisite workmanship. The high temperature can reach $+200^{\circ}\text{C}$, and the vacuum degree is better than 10^{-5}Pa . Standard designed 28mm, 42mm, 57mm, 86mm frame size two-phase four-wire hybrid stepper motors can be specially customized according to requirements in terms of radiation resistance, mold resistance, impact resistance and the shape of output axis. High cleanliness use environment is optional.

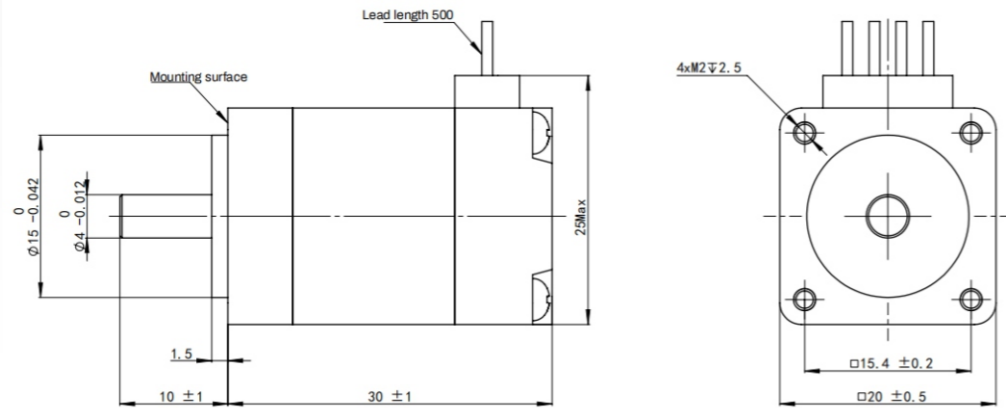
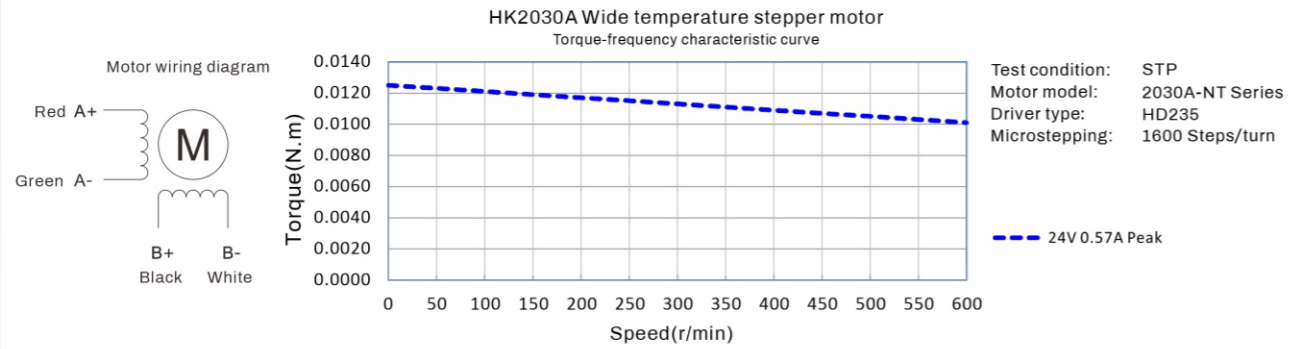
Stepper Motors

Wide temperature step												
Frame number (mm)	Options		Step Angle (°)	Maintain Torque (N.m)	Peak Value Phase Current (A)	Effective Value Phase Current (A)	Phase Resistance (Ω)	Phase Inductance (mH)	Weight (kg)	IP level	Stepper Driver	
	Stepper Motor	Type									Industrial Grade	Wide Temperature Range
20	HK2030A	NTL2 NTL3	1.8	0.013	0.57	0.4	11	2.6	0.08	IP40	DV422	HD235
28	HK2851A			0.09	0.85	0.6	8.2	7.3	0.21		DV422	HD235
42	HK4240A			0.25	1.5	1.1	1.5	2.1	0.4		IP65	DV422
	HK4248A			0.35	1.5	1.1	1.8	2.6	0.48	DV422		HD235
	HK4260A			0.6	1.5	1.1	2.75	4.5	0.6	DV422		HD235
57	HK5756A			0.8	3	2.1	0.65	1.6	0.78	DV556C		HD235
	HK5776A			1.3	3	2.1	1.0	2.7	1.3	DV556C		HD235
60	HK6084A			2.5	4.0	2.8	1.4	4.1	1.4	DV556C		HD265
	HK60102W			2.5	4.0	2.8	1.2	2.7	1.75	DV860C	HD265	
86	HK8680W			4.5	5	3.5	0.45	2.8	2.92	DV860C	HD265	
	HK86118W			5.5	5	3.5	0.6	4.3	4.2	DV860C	HD265	

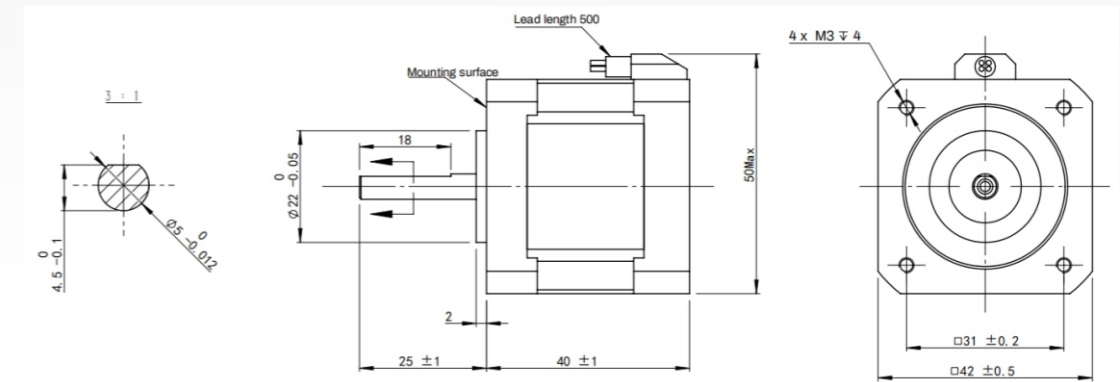
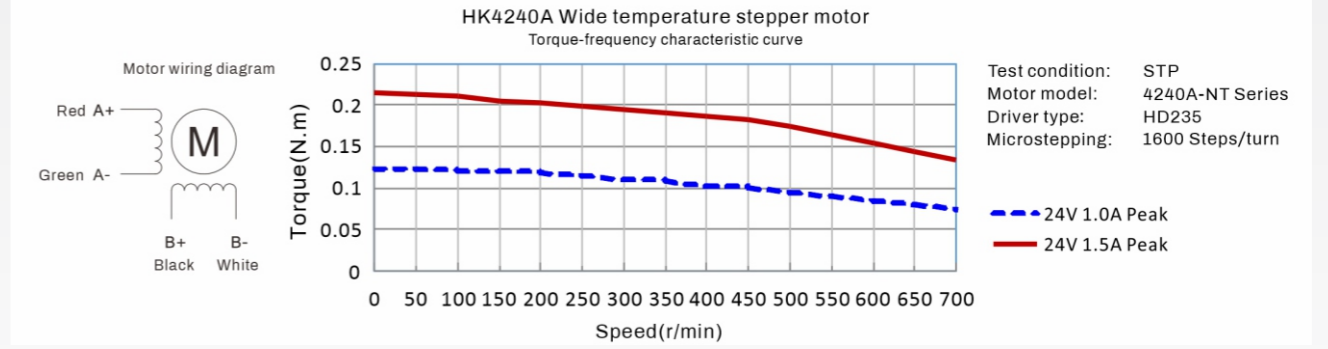
High temperature vacuum stepping												
Frame number (mm)	Options		Step Angle (°)	Maintain Torque (N.m)	Peak Value Phase Current (A)	Effective Value Phase Current (A)	Phase Resistance (Ω)	Phase Inductance (mH)	Weight (kg)	IP level	Stepper Driver	
	Stepper Motor	Type									Industrial Grade	Wide Temperature Range
20	HS2030A	VMT1 VMT2 VHT1 VHT2	1.8	0.01	0.4	0.57	11	2.6	0.08	IP20	DV422	HD235
28	HS2851A			0.09	0.85	0.6	8.2	7.3	0.25		DV422	HD235
42	HS4248A			0.35	1.5	1.1	1.8	2.6	0.58		DV422	HD235
	HV4249A			0.15	2	1.4	1.2	0.8	0.42		DV422	HD235
57	HV5786A			0.8	2.5	2.1	1.4	2.7	1.3		DV556C	HD235
86	HV86128A			4	6	4.2	0.55	2.4	4.5		DV860C	HD265

Deep low-temperature stepping												
Frame number (mm)	Options		Step Angle (°)	Maintain Torque (N.m)	Peak Value Phase Current (A)	Effective Value Phase Current (A)	Phase Resistance (Ω)	Phase Inductance (mH)	Weight (kg)	IP level	Stepper Driver	
	Stepper Motor	Type									Industrial Grade	Wide Temperature Range
42	HS4248A	VTL3 NTL4 SLT	1.8	0.35	1.5	1.1	1.8	2.6	0.58	IP40	DV422	HD235
57	HS5776A			1.3	3	2.1	1.0	2.7	1.5		DV556C	HD235
86	HS86118W			5.5	5	3.5	0.6	4.3	4.6	IP54	DV860C	HD265

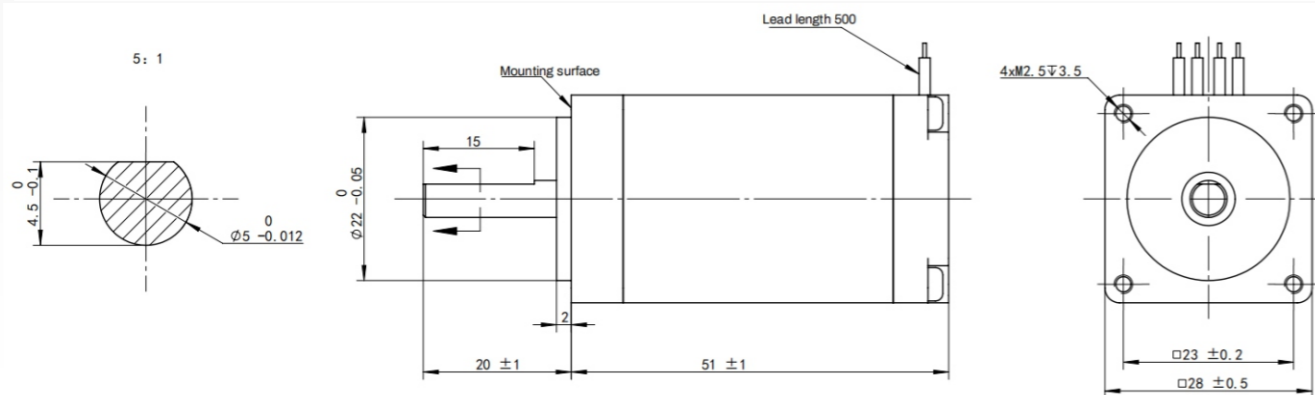
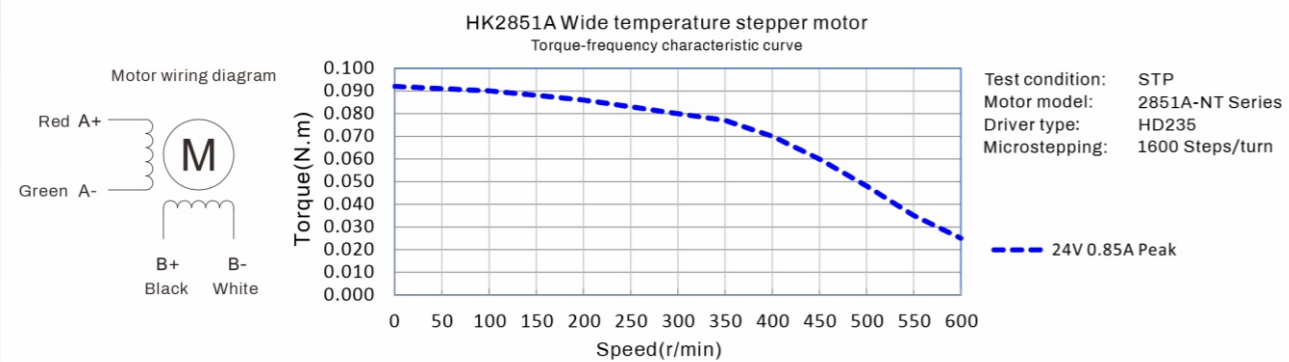
HK2030A-NT



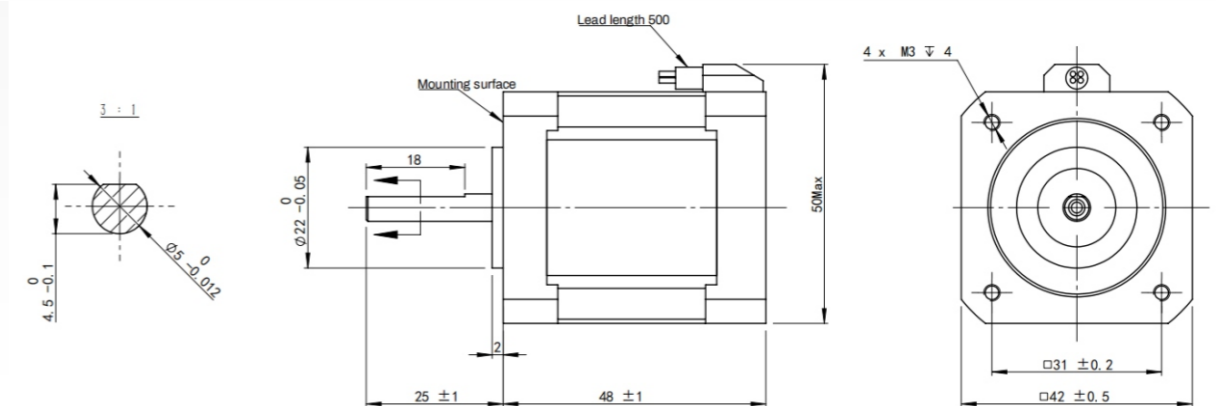
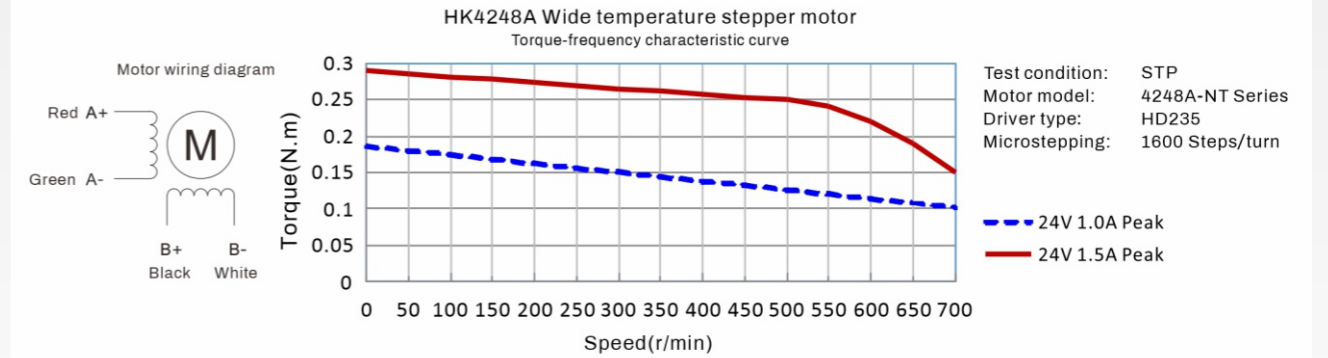
HK4240A-NT



HK2851A-NT

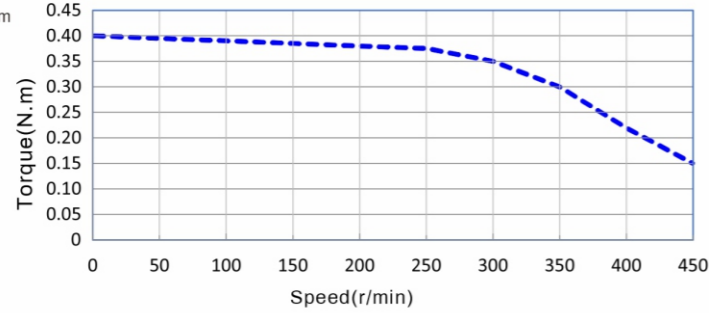
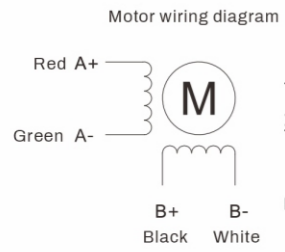


HK4248A-NT



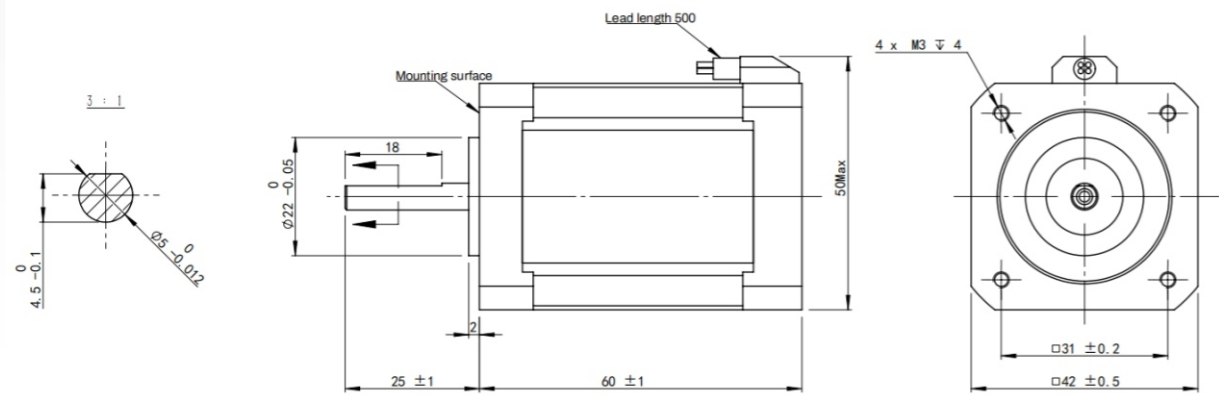
HK4260A-NT

HK4260A Wide temperature stepper motor
Torque-frequency characteristic curve



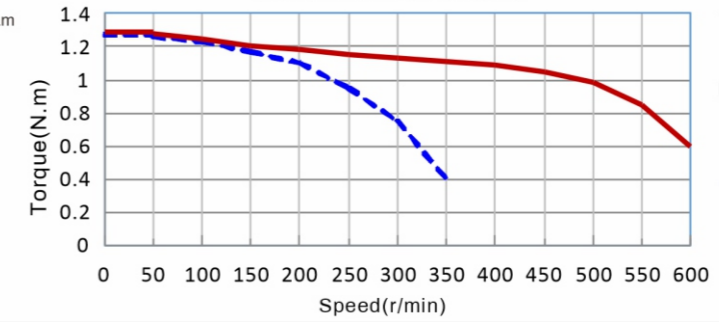
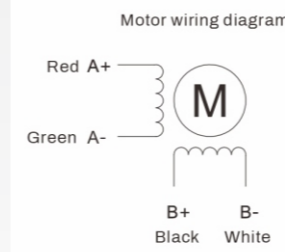
Test condition: STP
Motor model: 4260A-NT Series
Driver type: HD235
Microstepping: 1600 Steps/turn

--- 24V 1.5A Peak



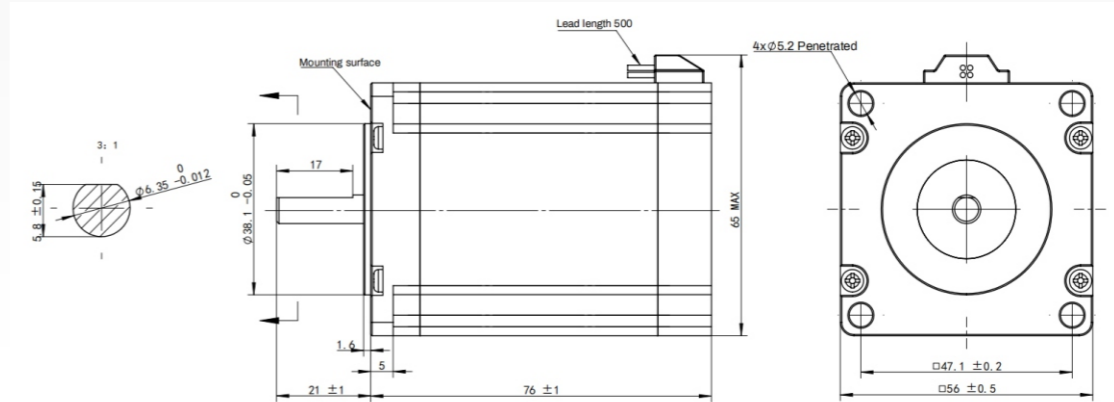
HK5776A-NT

HK5776A Wide temperature stepper motor
Torque-frequency characteristic curve



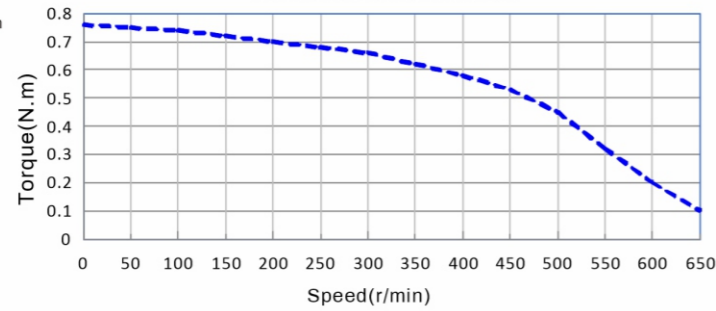
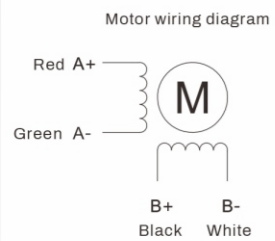
Test condition: STP
Motor model: 5776A-NT Series
Driver type: HD235
Microstepping: 1600 Steps/turn

--- 24V 3.0A Peak
— 48V 3.0A Peak



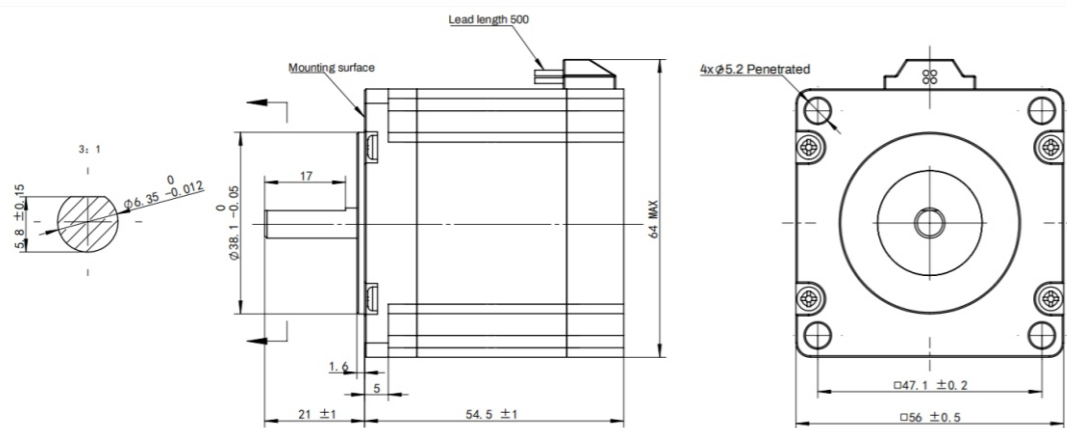
HK5756A-NT

HK5756A Wide temperature stepper motor
Torque-frequency characteristic curve



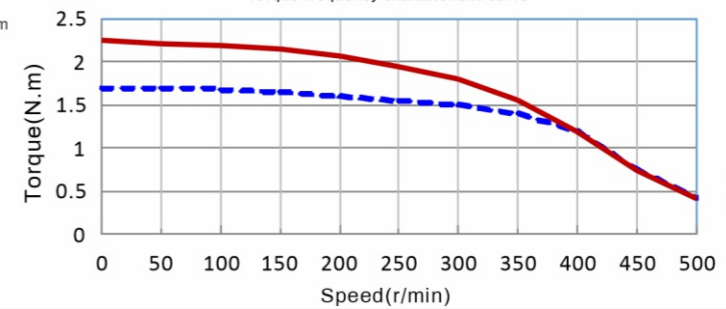
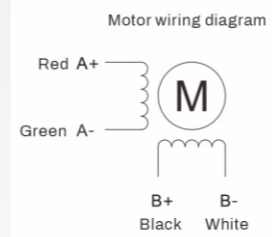
Test condition: STP
Motor model: 5756A-NT Series
Driver type: HD235
Microstepping: 1600 Steps/turn

--- 24V 3.0A Peak



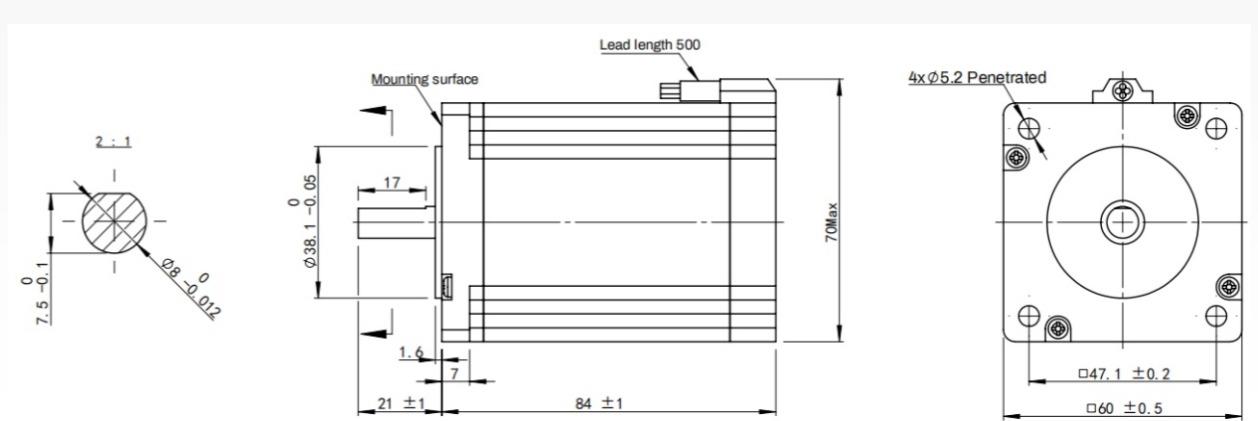
HK6084A-NT

HK6084A Wide temperature stepper motor
Torque-frequency characteristic curve

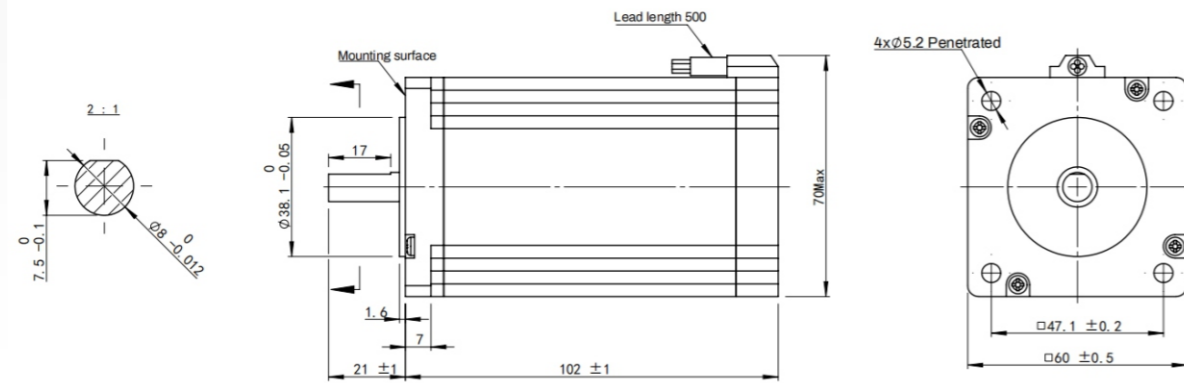
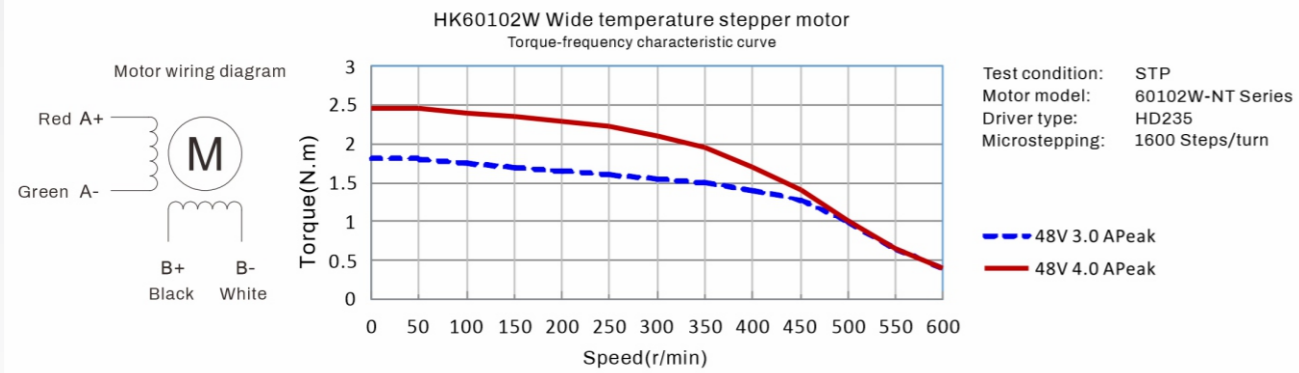


Test condition: STP
Motor model: 6084A-NT Series
Driver type: HD265
Microstepping: 1600 Steps/turn

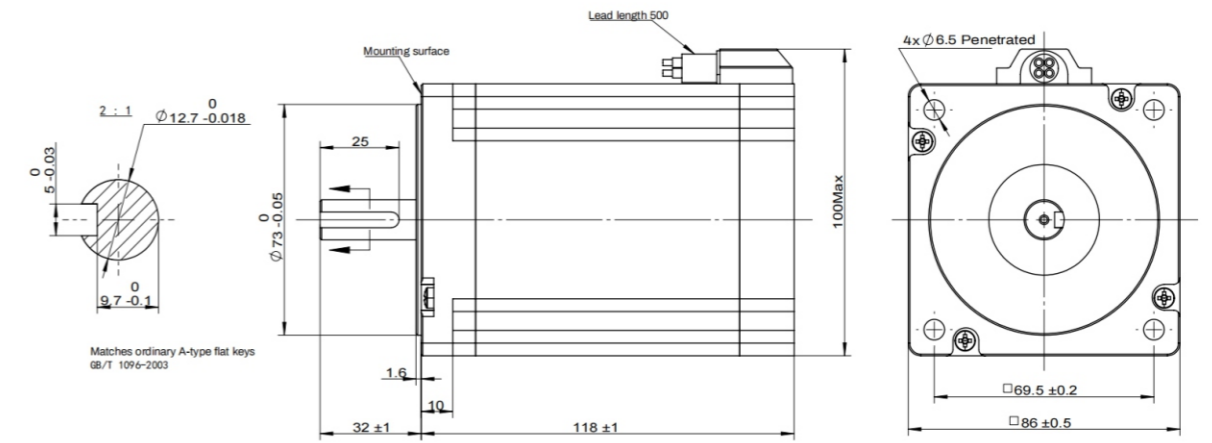
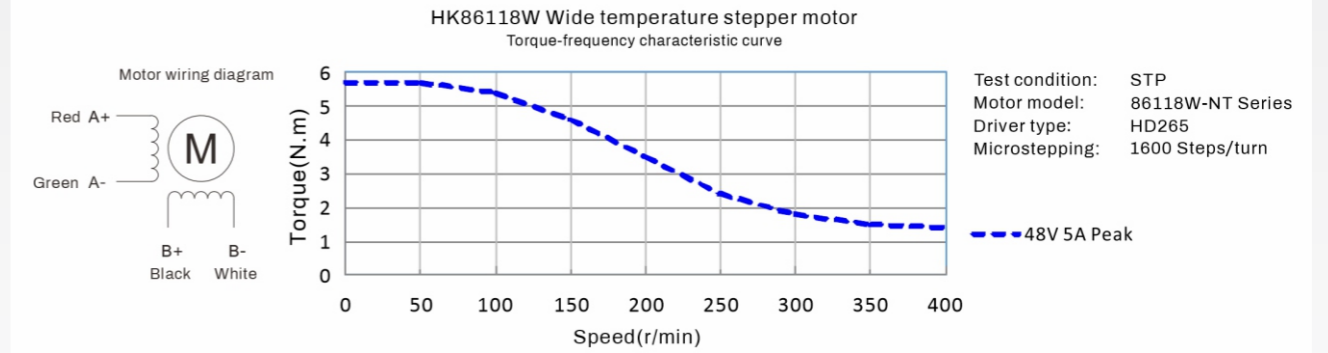
--- 48V 3.0 A Peak
— 48V 4.0 A Peak



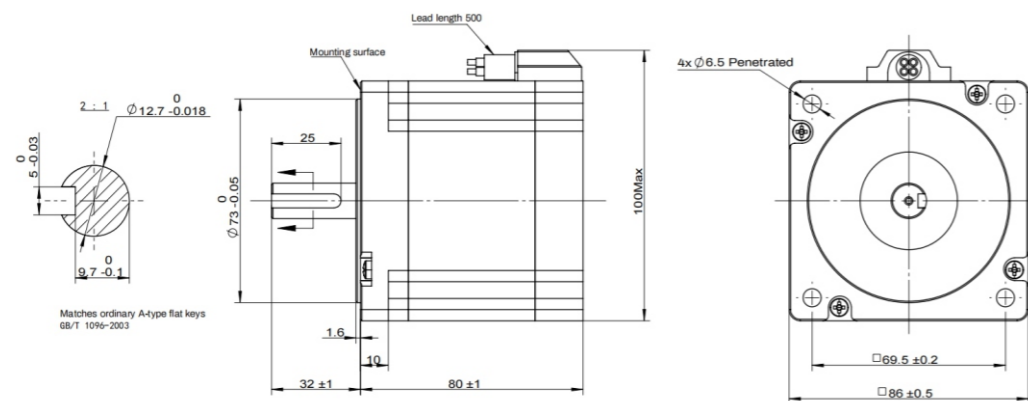
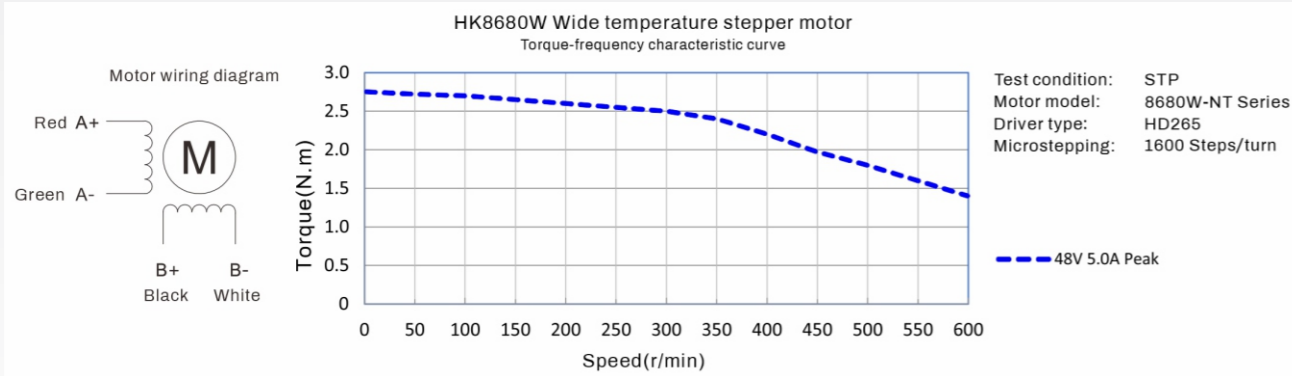
HK60102W-NT



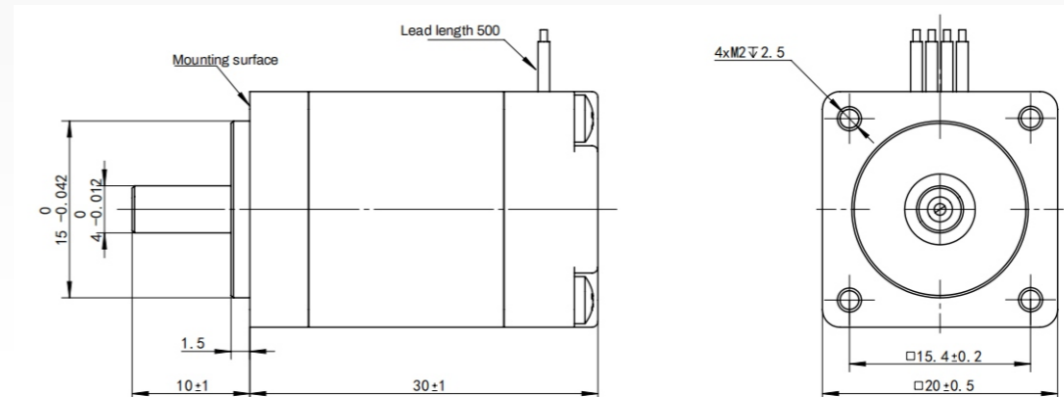
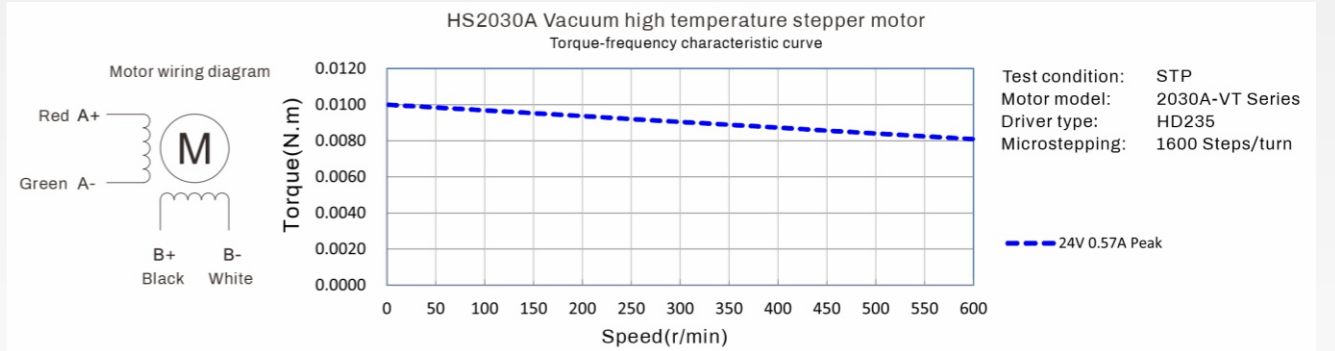
HK86118W-NT



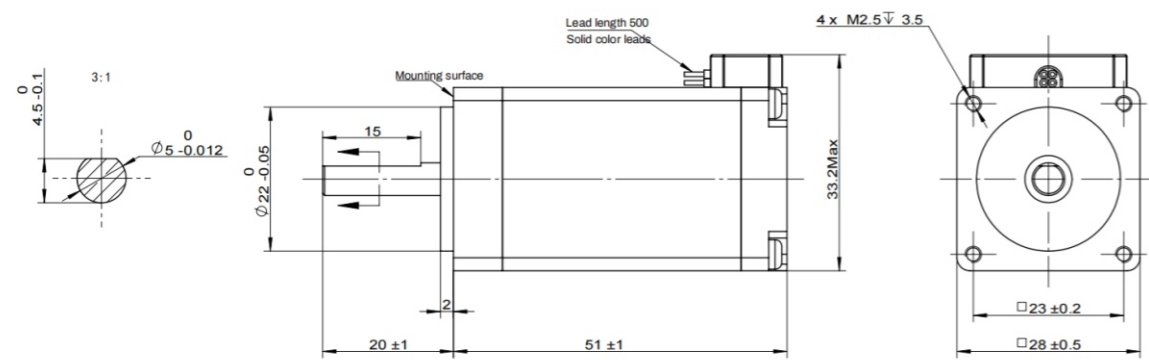
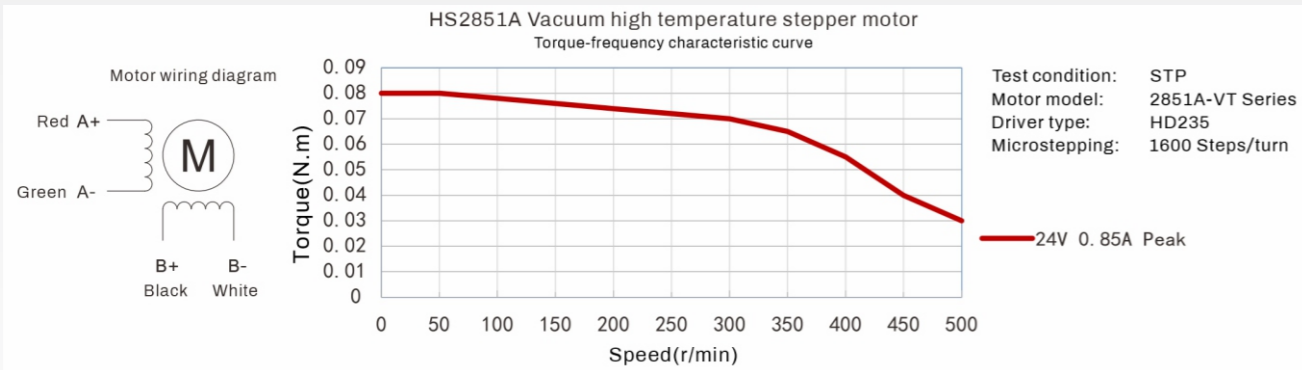
HK8680W-NT



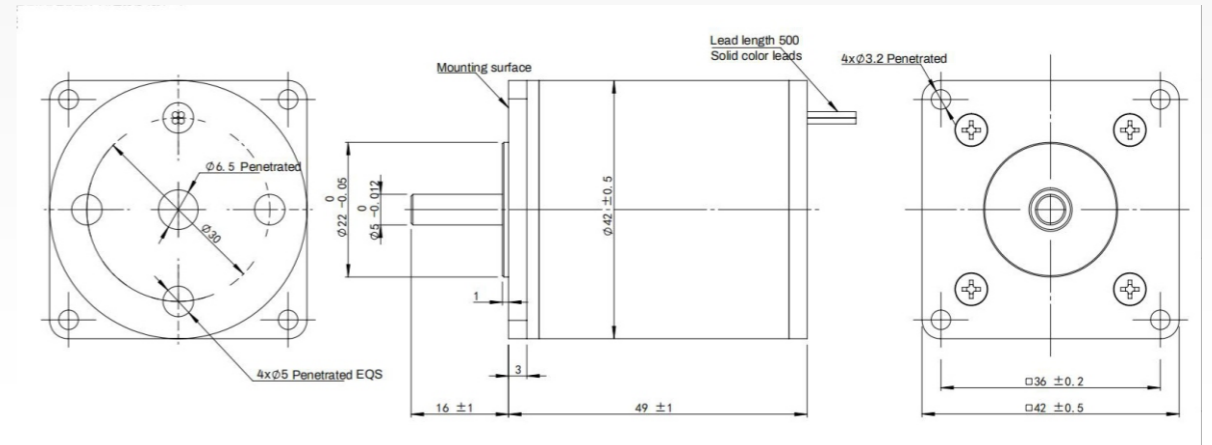
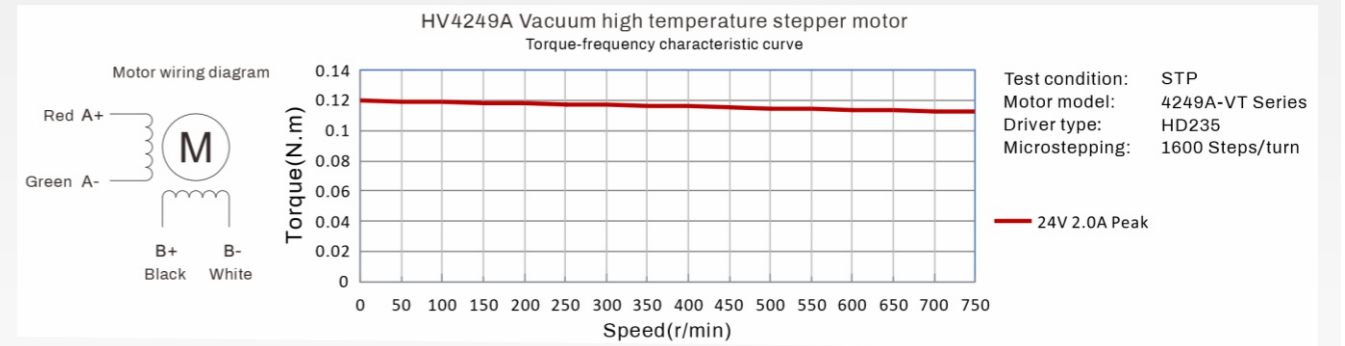
HS2030A-VT



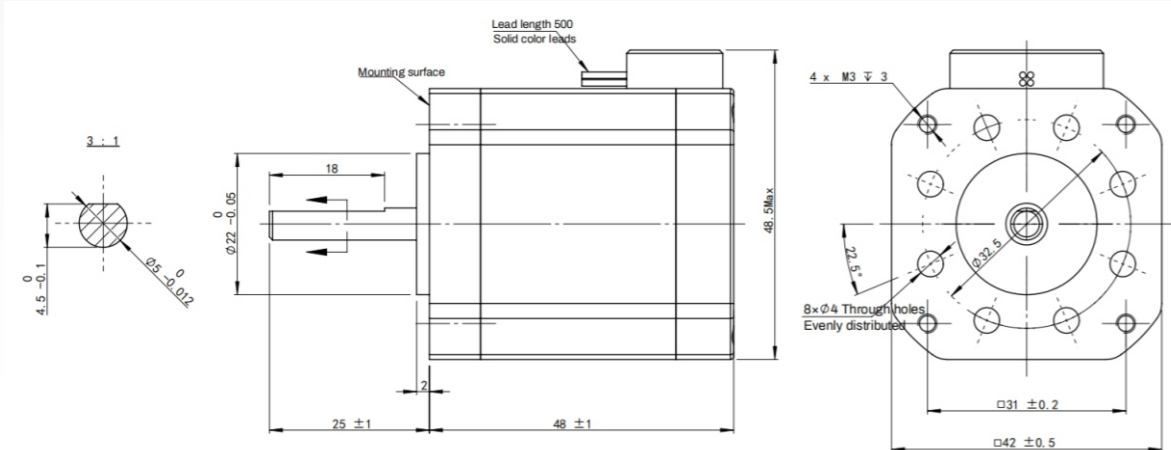
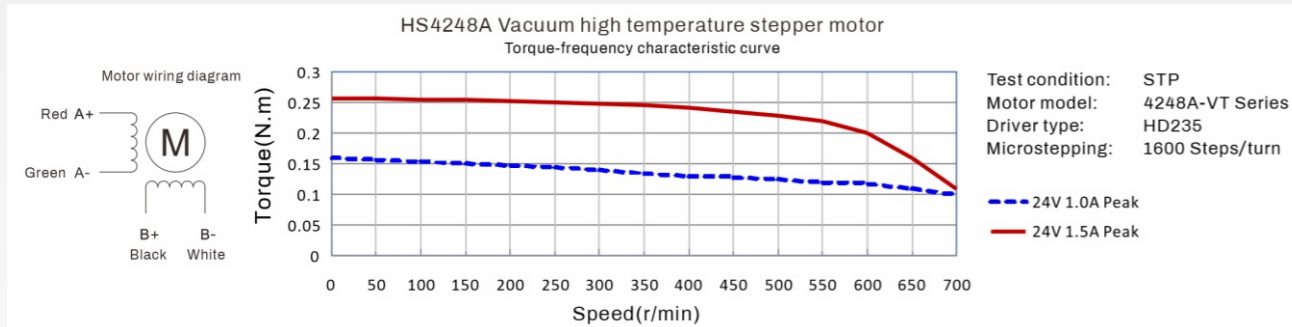
HS2851A-VT



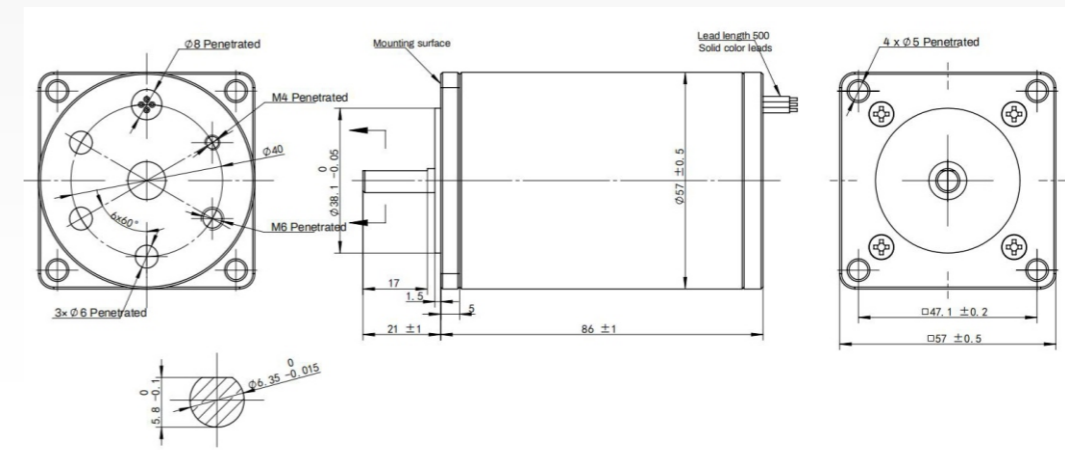
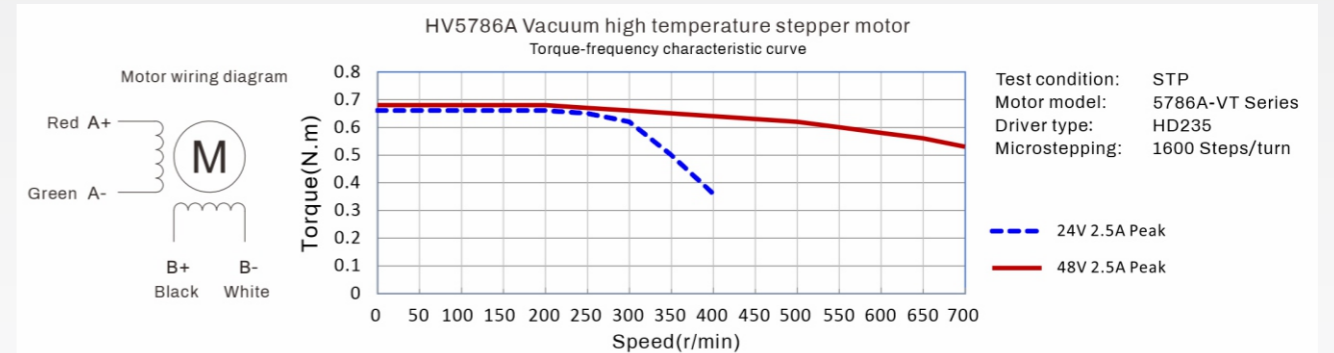
HV4249A-VT



HS4248A-VT



HV5786A-VT



Level Table

Scope of application

1. HSV / HSK series special servo motor;
2. HSS series all stainless steel special servo motor
3. Non-standard customized servo motor.



Scope of application

1. HS / HK series two-phase hybrid special stepper motor;
2. HV series two-phase hybrid all-stainless steel special stepper motor
3. Non-standard customized stepper motors.

Environmental Class List				
Temperature level	Symbol	Temperature Range/°C	Maximum Allowable Temperature of Motor Casing/°C	Vacuum Degree/Pa
Wide Temperature	NTL2	-40 ~+85	+115	/
	NTL3	-60 ~+85	+115	/
Vacuum High Temperature	VMT1	-20 ~+200	+200	10 ⁻³
	VMT2	-20 ~+150	+150	10 ⁻³
	VHT1	-20 ~+200	+200	10 ⁻⁵
	VHT2	-20 ~+160	+160	10 ⁻⁵
Cryogenic	VTL3	-60 ~+100	+130	10 ⁻¹
	NTL4	-80~ +85	+115	/
	SLT	-196~+40	+100	/

Note: When selecting customized temperature and vacuum degree, the example model: L50H120-V1 is expressed as low temperature -50°C, high temperature 120°C, and vacuum degree 10 Pa.



Servo Motors

Standard design and manufacture of 100W, 400W, 750W, 1000W power AC servo motors, using resolvers as feedback components, can work normally in conditions with vibration, external impact, and high and low temperature. The operating temperature range is -60°C~+85°C. Customers can choose to assemble brakes, temperature sensors and aviation plug according to their needs.

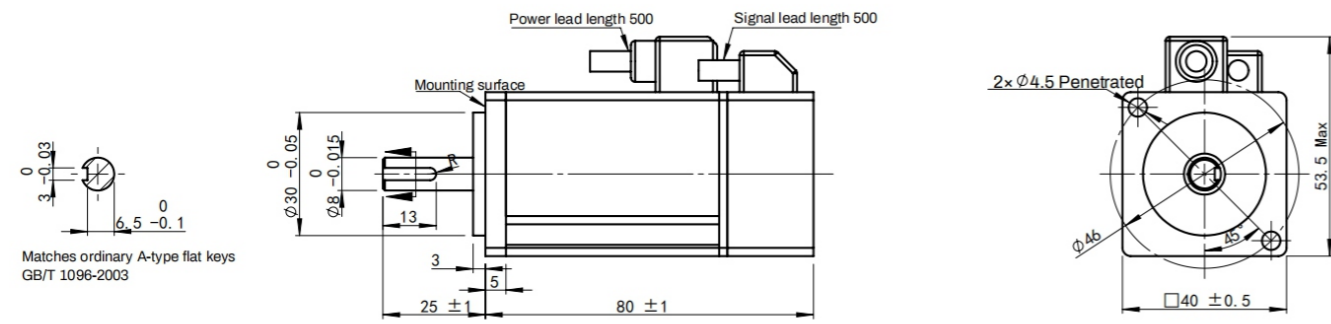
Servo Motors

Wide temperature servo															
Frame number (mm)	Options		Power (W)	Rated Voltage (V)	Rated Torque (N.m)	Rated Speed (r/min)	Phase Current (Arms)	Line Resistance (Ω)	Moment Inertia (kg.m ²)	Weight (kg)	Polar logarithm	IP level	Stepper Driver		
	Stepper Motor	Type													
40	HSK0401A-2R00	NTL2	100	220VAC	0.32	3000	1.0	16	0.04*10 ⁻⁴	0.5	5	IP65	GSHD-003-2A-**-**	SV6-PA3R0S	
	HSK0401A-2R0B				0.32		1.0						0.04*10 ⁻⁴	0.7	GSHD-003-2A-**-**
	HSK0401D-2R00			0.32	5.5		0.65	0.04*10 ⁻⁴	0.5	GSFD-010-1D-**-**			/		
60	HSK0604A-2R00		400	220VAC	1.27		2.8	4.6	0.56*10 ⁻⁴	1.2			GSHD-006-2A-**-**	SV6-PA7R0S	
	HSK0604A-2R0B				1.27		2.8	4.6	0.56*10 ⁻⁴	1.6			GSHD-006-2A-**-**	SV6-PA7R0S	
	HSK0604E-2R00				1.27		13.0	0.3	0.56*10 ⁻⁴	1.2			GSFD-020-1D-**-**	/	
80	HSK0807A-2R00		750	220VAC	2.4		3.8	1.8	1.56*10 ⁻⁴	2.2			GSHD-008-2A-**-**	SV6-PA7R0S	
	HSK0807A-2R0B				2.4		3.8	1.8	1.56*10 ⁻⁴	3.0			GSHD-008-2A-**-**	SV6-PA7R0S	
	HSK0807E-2R00				2.4		15.0	0.23	1.56*10 ⁻⁴	2.2			GSFD-020-1D-**-**	/	
	HSK0810A-2R00			1000	220VAC		3.2	5.5	0.95	2.03*10 ⁻⁴			2.6	GSHD-008-2A-**-**	SV6-PA7R0S
							3.2	3.8	1.8	1.56*10 ⁻⁴			3.2	GSHD-008-2A-**-**	SV6-PA7R0S
110	HSK1118A-2R00		1800	220VAC	5.7		7.0	1.2	7.6*10 ⁻⁴	5.5			GSHD-020-2A-**-**	/	
	HSK1118A-2R0B	5.7			7.0	1.2	7.6*10 ⁻⁴	7.5	GSHD-020-2A-**-**	/					

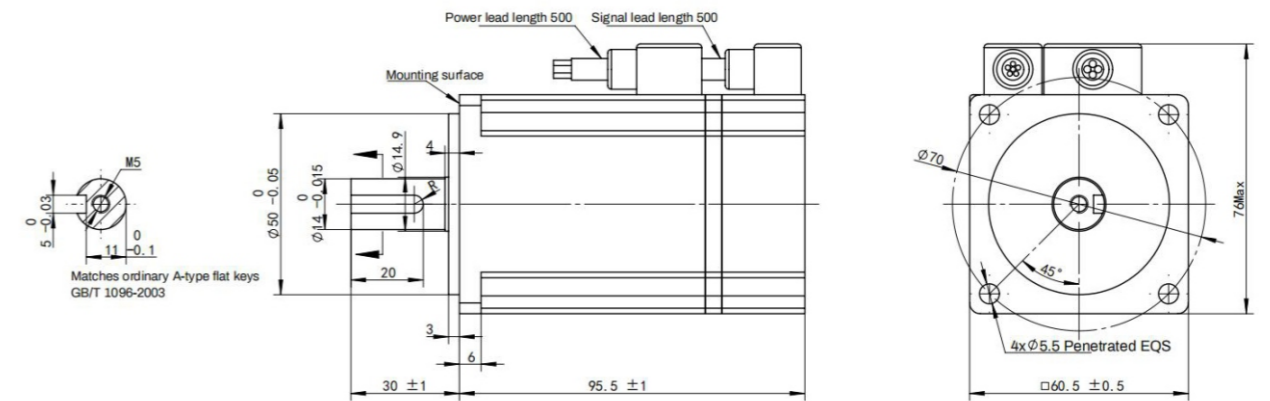
High temperature vacuum servo														
Frame number (mm)	Options		Power (W)	Rated Voltage (V)	Rated Torque (N.m)	Rated Speed (r/min)	Phase Current (Arms)	Line Resistance (Ω)	Moment Inertia (kg.m ²)	Weight (kg)	Polar logarithm	IP level	Stepper Driver	
	Stepper Motor	Type												
40	HSV0401A-2R00	VMT1	80	220VAC	0.25	3000	1.0	9.0	0.06*10 ⁻⁴	0.8	5	IP54	GSHD-003-2A-**-**	SV6-PA3R0S
60	HSS0604A-2R00	VMT2	400		1.27		3.3	4.6	0.7*10 ⁻⁴	2.1			GSHD-006-2A-**-**	SV6-PA7R0S
80	HSS0807A-2R00	VHT1	750		2.4		4.0	1.9	1.8*10 ⁻⁴	3.5			GSHD-008-2A-**-**	SV6-PA7R0S
	HSS0810A-2R00	VHT2	1000		3.2		4.5	2.2	2.1*10 ⁻⁴	3.8			GSHD-008-2A-**-**	SV6-PA7R0S

Deep low-temperature servo														
Frame number (mm)	Options		Power (W)	Rated Voltage (V)	Rated Torque (N.m)	Rated Speed (r/min)	Phase Current (Arms)	Line Resistance (Ω)	Moment Inertia (kg.m ²)	Weight (kg)	Polar logarithm	IP level	Stepper Driver	
	Stepper Motor	Type												
40	HSV0401A-2R00	VTL3 NTL4 SLT	100	220VAC	0.32	3000	1.0	9.0	0.06*10 ⁻⁴	0.8	5	IP54	GSHD-003-2A-**-**	SV6-PA3R0S
60	HSS0604A-2R00		400		1.27		2.8	4.6	0.7*10 ⁻⁴	2.1			GSHD-006-2A-**-**	SV6-PA7R0S
80	HSS0807A-2R00		750		2.4		3.5	1.9	1.8*10 ⁻⁴	3.5			GSHD-008-2A-**-**	SV6-PA7R0S
	HSS0810A-2R00		1000		3.2		4.0	2.2	2.1*10 ⁻⁴	3.8			GSHD-008-2A-**-**	SV6-PA7R0S

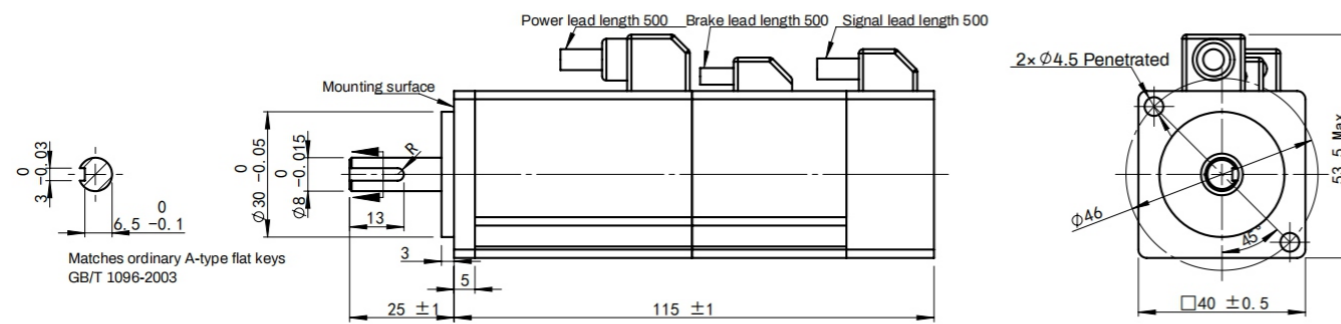
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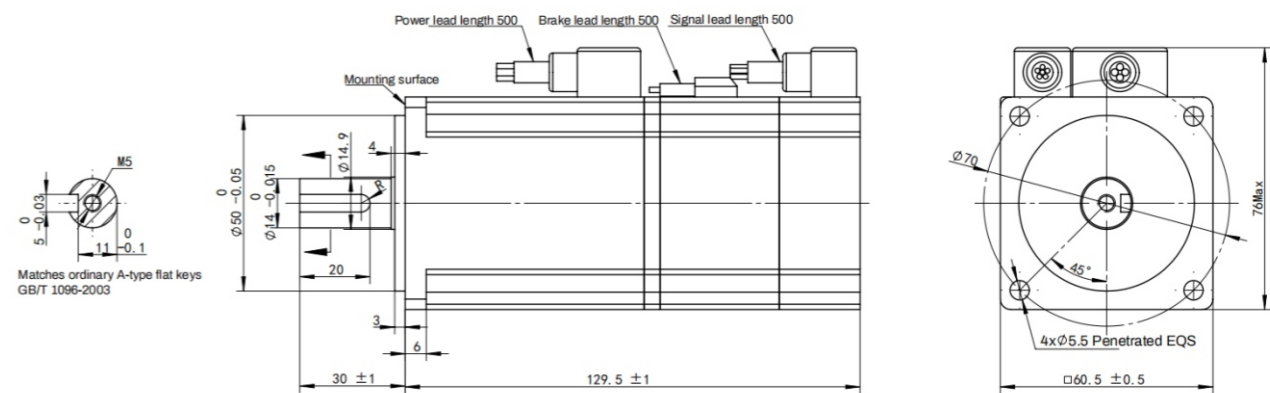
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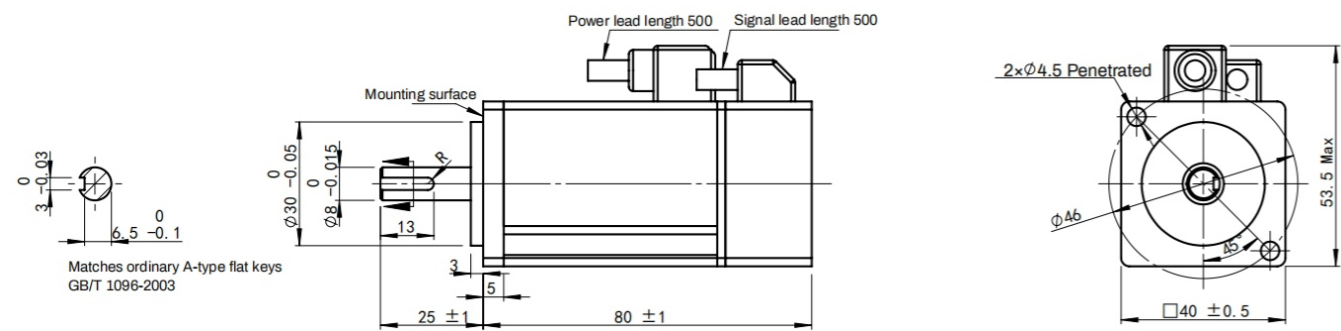
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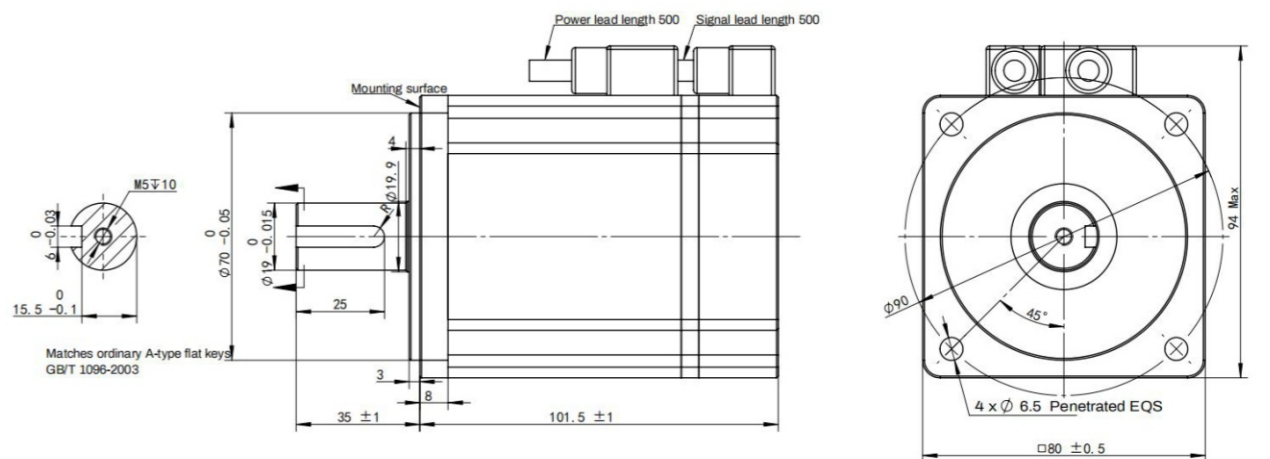
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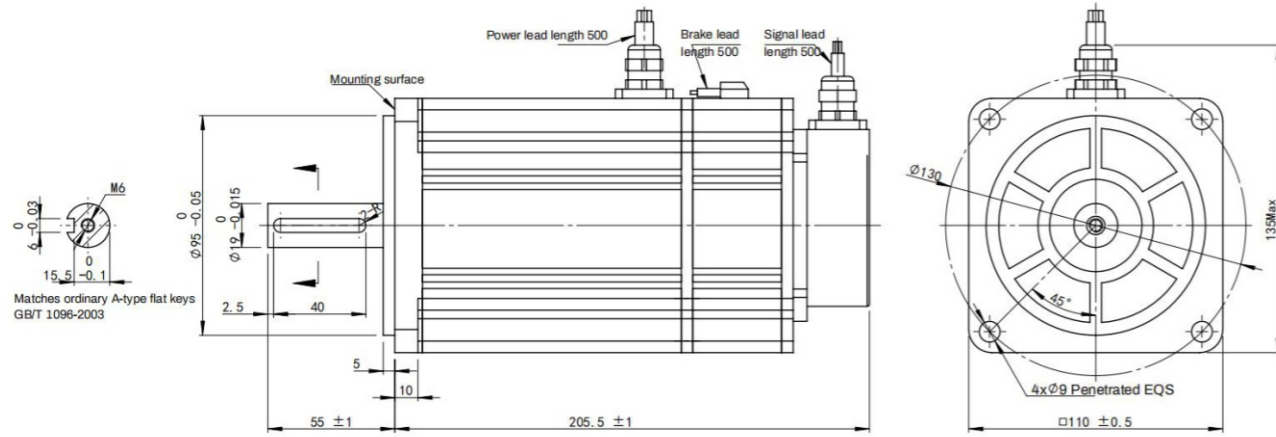
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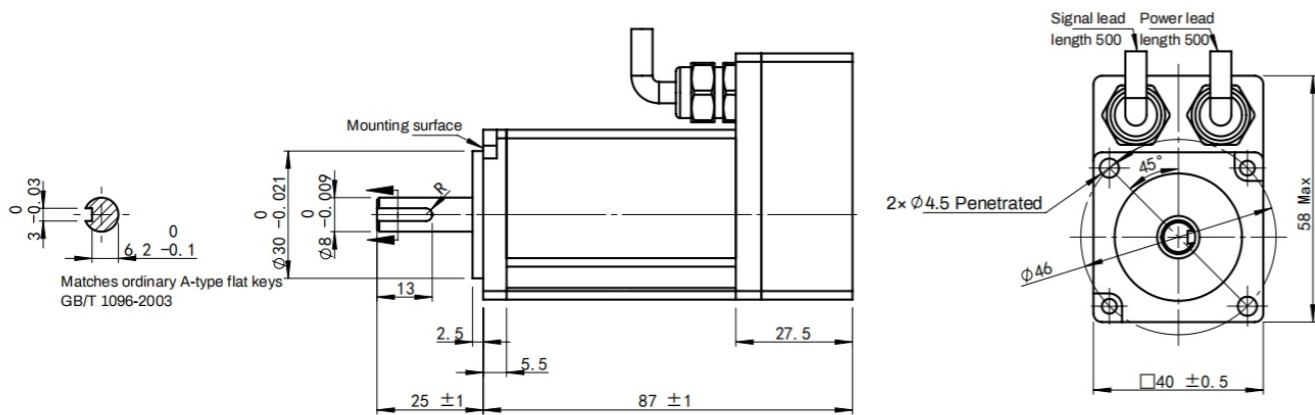
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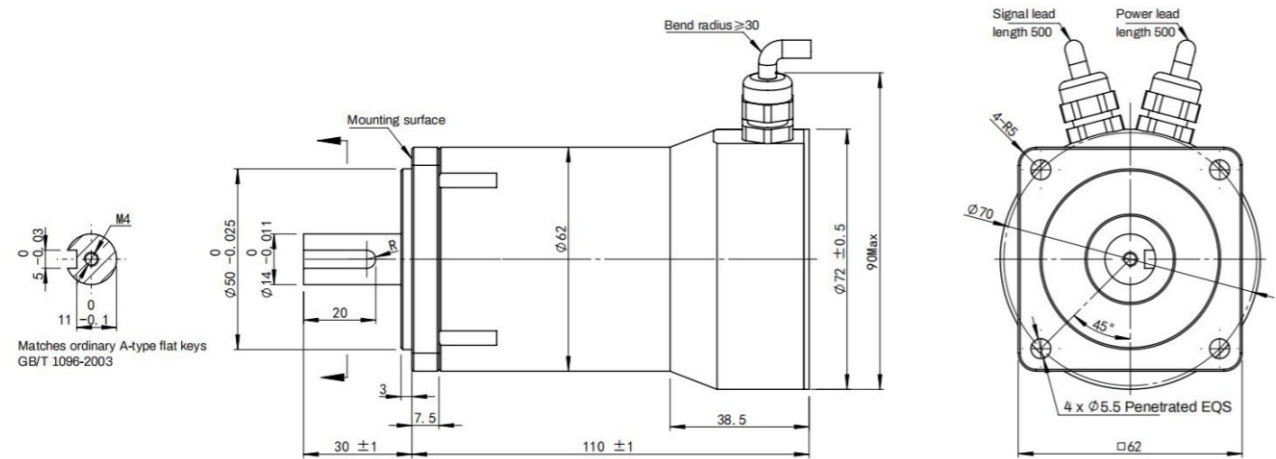
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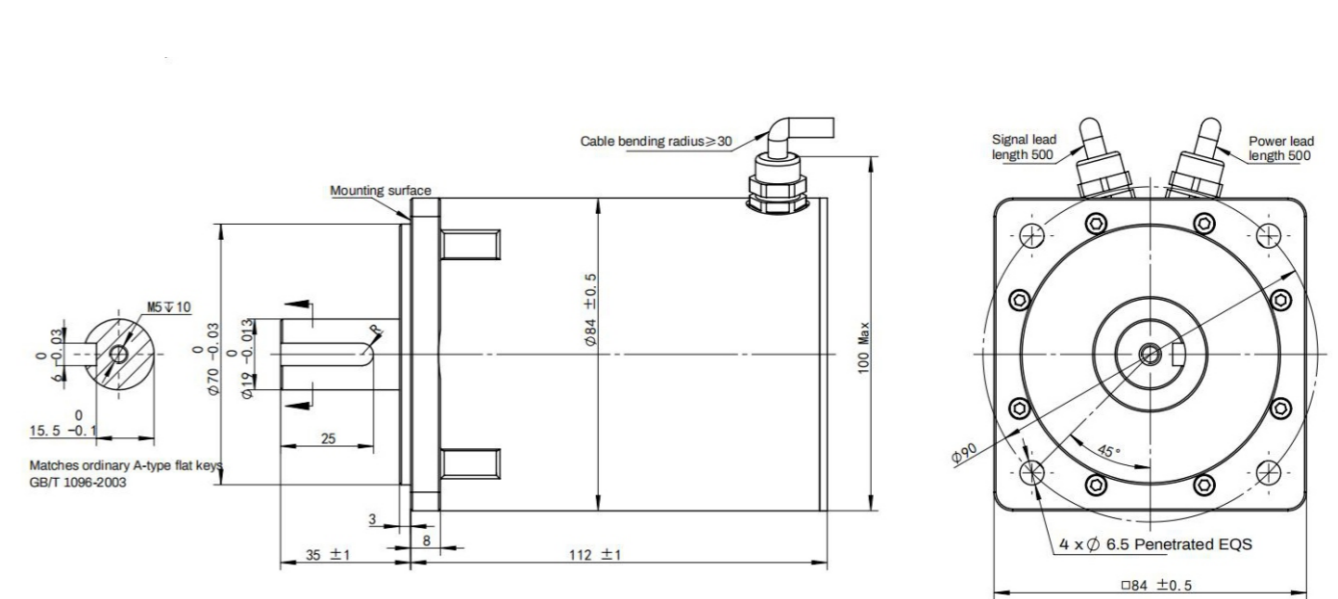
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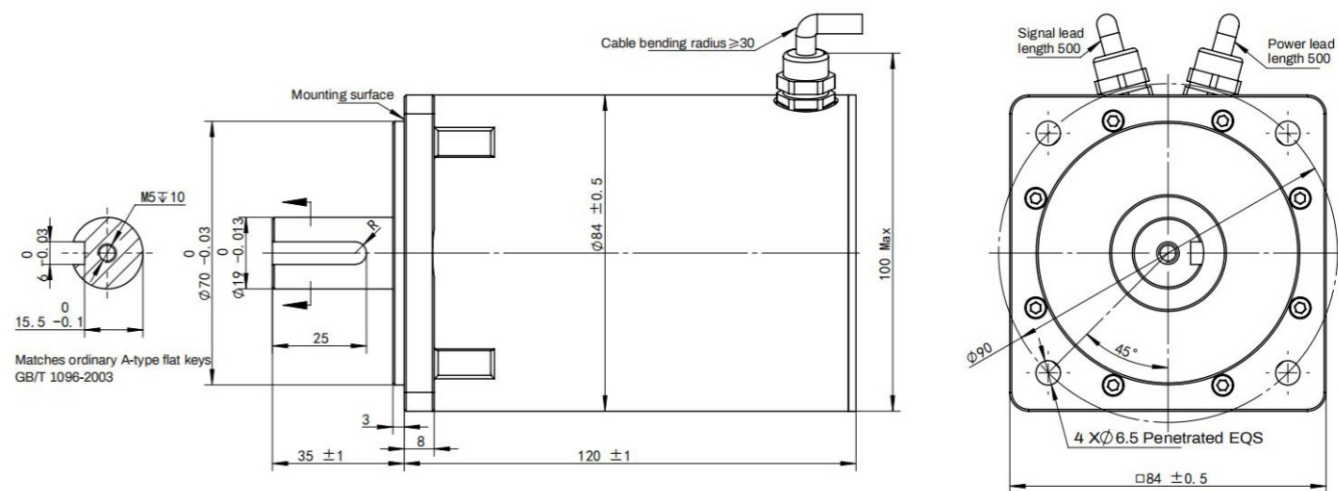
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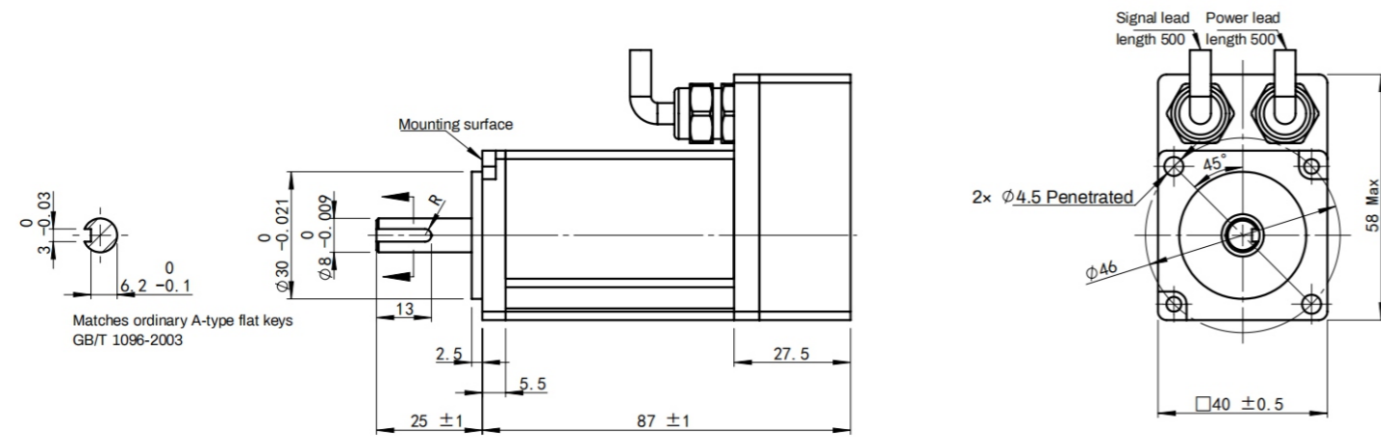
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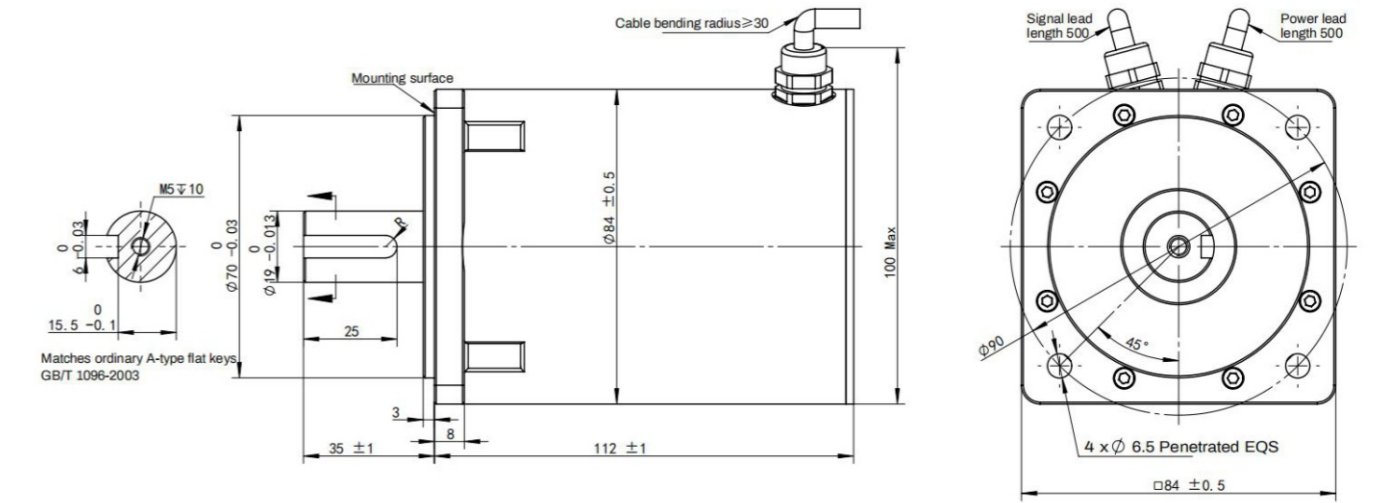
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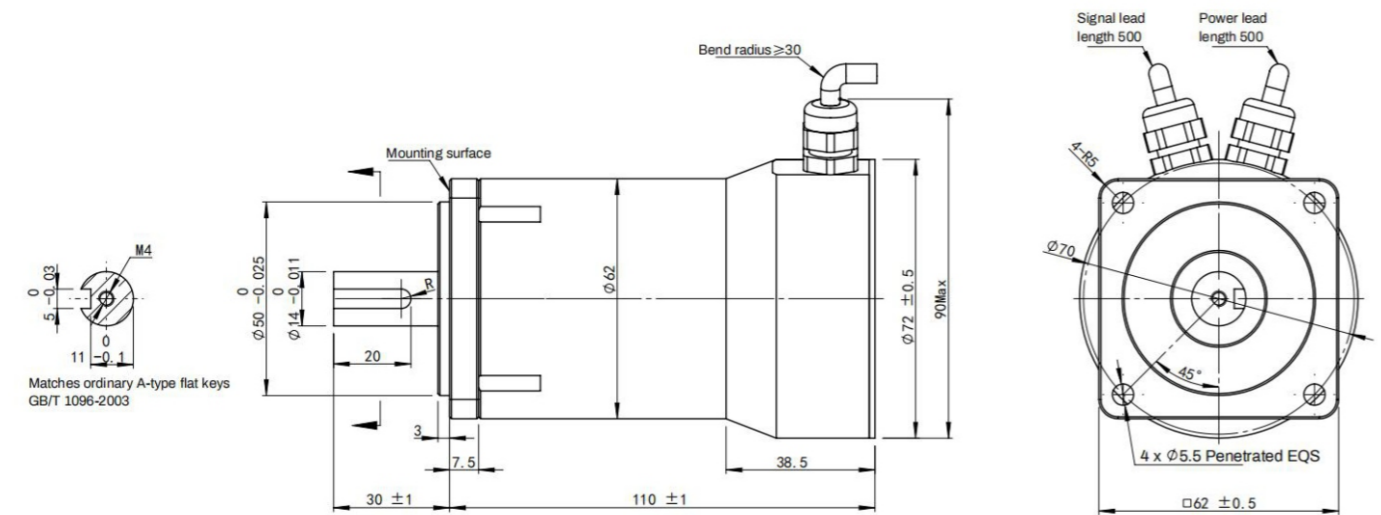
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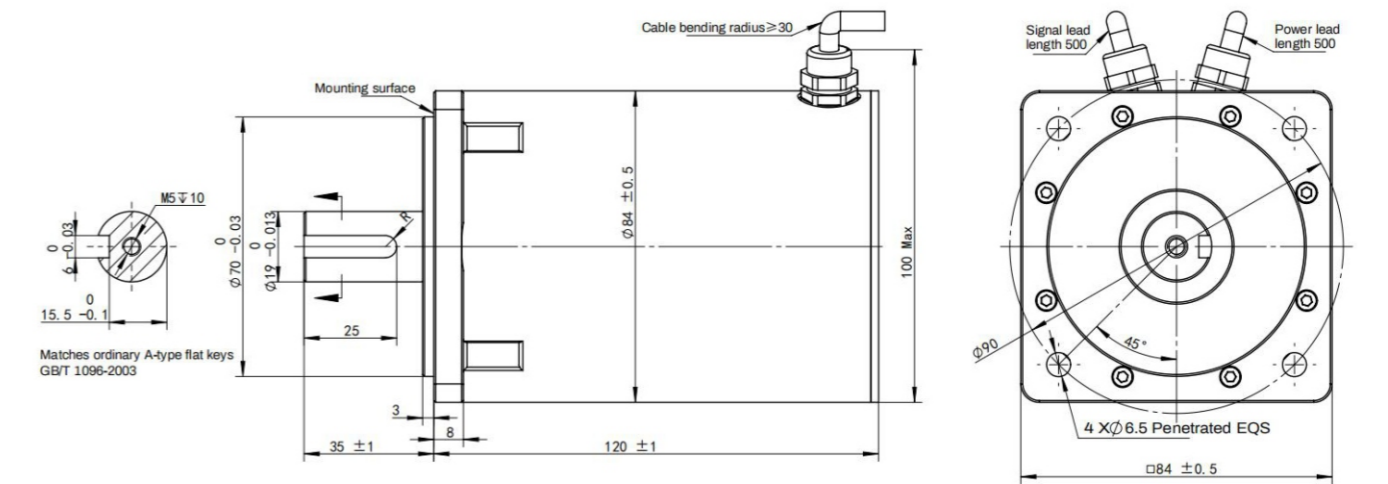
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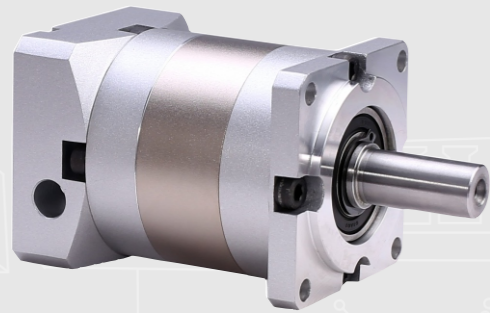
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HSS0810A-2R00-NTL4/VTL3/SLT //



Planetary Reducer



Standard design and manufacture of 42mm, 60mm, 90mm and 120mm frame size planetary reducers, with low operating temperature of -196°C and high operating temperature of 200°C, vacuum degree of 10⁻⁵ Pa. The model is defined as follows:

Number	Order model						Rated Input Speed (r/min)	Maximum Input Speed (r/min)	Maximum Radial Force (N)	Maximum Axial Force (N)	Full Load Efficiency (%)	Temperature Level (°C)	Vacuum Degree (Pa)	
	Model	Box Number	Number Segments	Reduction Ratio	Interface	Flange Type								Level Code
1	GP (Coaxial)	42	L1	4, 5, 8	B (Step by step) C (Servo)	F (Square flange) Y (Round flange)	NTL2 NTL3 VMT1 VMT2 VHT1 VHT2 VTL3 NTL4	3000	4500	185	150	NTL2 (-40~85) NTL3 (-60~85) VMT1(-20~200) VMT2(-20~150) VHT1(-20~200) VHT2(-20~160) VTL3 (-60~100) NTL4(-80~85)	NTL2 (/) NTL3 (/) VMT1(10 ⁻³) VMT2(10 ⁻³) VHT1(10 ⁻⁵) VHT2(10 ⁻⁵) VTL3 (10 ⁻¹) NTL4(/)	
2			L2	16, 20, 25, 32, 40										≥92
3			L3	64, 80, 100, 125, 160, 200										≥90
4		60	L1	4, 5, 7, 10				≥94						
5			L2	16, 20, 25, 35, 40, 50, 70				≥92						
6			L3	64, 80, 100, 125, 140, 175, 200				≥90						
7		90	L1	4, 5, 7, 10				≥94						
8			L2	16, 20, 25, 35, 40, 50, 70				≥92						
9			L3	64, 80, 100, 125, 140, 175, 200				≥90						
10		120	L1	4, 5, 7, 10				≥94						
11			L2	16, 20, 25, 35, 40, 50, 70				≥92						
12			L3	64, 80, 100, 125, 140, 175, 200				≥90						
13	GZ (Corner)	42	L1	4, 5, 7, 8, 10	B (Step by step) C (Servo)	F (Square flange) Y (Round flange)	NTL2 NTL3 VMT1 VMT2 VHT1 VHT2 VTL3 NTL4	3000	/	185	150	NTL2 (-40~85) NTL3 (-60~85) VMT1(-20~200) VMT2(-20~150) VHT1(-20~200) VHT2(-20~160) VTL3 (-60~100) NTL4(-80~85)	NTL2 (/) NTL3 (/) VMT1(10 ⁻³) VMT2(10 ⁻³) VHT1(10 ⁻⁵) VHT2(10 ⁻⁵) VTL3 (10 ⁻¹) NTL4(/)	
14			L2	12, 16, 20, 25, 32, 40, 64										≥92
15			L3	60, 80, 100, 120, 160, 200										≥90
16		60	L1	4, 5, 7, 10				≥94						
17			L2	16, 20, 25, 35, 40, 50, 70				≥92						
18			L3	64, 80, 100, 125, 140, 175, 200				≥90						
19		90	L1	4, 5, 7, 10				≥95						
20			L2	12, 15, 16, 20, 25, 28, 35, 40, 50, 70				≥92						

42 Box Number	Reduction Ratio (i)	4	5	8	16	20	25	40 (二段)	64 (三段)	80	100	160	...
	Gp Rated Output Torque (nm)	9	9	7	12	12	10.5	10.5	15.5	15.5	15.5	15.5	...
	Rated Output Torque Of Gz (nm)	18	16	9	18	18	16	16	18	25	25	25	...

60 Box Number	Reduction Ratio (i)	4	5	7	10	16	20	50	64	80	125	200	...
	Gp Rated Output Torque (nm)	27	27	19.5	8.5	30	30	33	37.5	37.5	41	37.5	...
	Rated Output Torque Of Gz (nm)	27	27	19.5	8.5	30	30	33	37.5	37.5	41	37.5	...

90 Box Number	Reduction Ratio (i)	4	5	7	10	20	25	35	40	50	64	80	...
	Gp Rated Output Torque (nm)	86	94.5	64	39.5	96	105.5	105.5	96	105.5	120	120	...
	Rated Output Torque Of Gz (nm)	86	94.5	64	39.5	96	105.5	105.5	96	105.5

120 Box Number	Reduction Ratio (i)	4	5	7	10	16	25	40	50	64	70	125	...
	Gp Rated Output Torque (nm)	222	235	158	93	250	264	250	265	310	177	329	...

Driver & Decoder

Stepper Driver

Standard design and manufacturing of two-phase stepper drivers, suitable for 28mm, 42mm, 57mm, 60mm, and 86mm frame size stepper motors. The operating temperature is -40°C~85°C. The driver parameters are shown below.



Model	Control mode	working voltage	Peak driving current (A)	Max subdivision	Frame number	Operating temperature (°C)
HD235	pulse inputs	12V~48V	3.0	256	28、42、57	-40~85
HD265			6.0	256	57、60、86	-40~85
HD235R	485 bus MODBUS-RTU		3.0	256	28、42、57	-40~85
HD265R			6.0	256	57、60、86	-40~85

Independent Production, Full Process Controllable

- ➔ From the chip to the casing, 100% domestically produced, the components and parts are completely independent and controllable.
- ➔ From design to production, 100% domestically produced, the intellectual property rights are completely independent and controllable.

Reliable Product Quality

- ➔ Specifically designed for harsh, extreme conditions.
- ➔ Fully compliant with GJB related standards.
- ➔ Provides a variety of integrated packaging specifications to meet different environments and applications.

Excellent Performance

- ➔ The power density of the servo drive is close to the physical limit, it can drive a high-power motor with a small size and weight, making the electronic control system smaller and lighter.
- ➔ Highly open and visual debugging tools can simply obtain the best motion control effect.
- ➔ Highly rigid, high response.
- ➔ Extremely high torque control accuracy.
- ➔ Supports almost all types of sensors on the market, including resolver, incremental encoders, Hall sensors, SSI protocol absolute encoders, and compatible with SCI protocol absolute encoders.
- ➔ Double feedback full-closed loop, supports any two feedback combinations to form a fully closed loop, or even only one type can be used for control, the other one is output to the host computer through the bus or encoder output interface.
- ➔ Up to dozens of arbitrarily configured IO ports, analog input, digital input, digital output, can be configured as limit, control, feedback and other functions.
- ➔ Rich communication interfaces, RS232, RS422, Canopen.
- ➔ Up to 95% power efficiency.

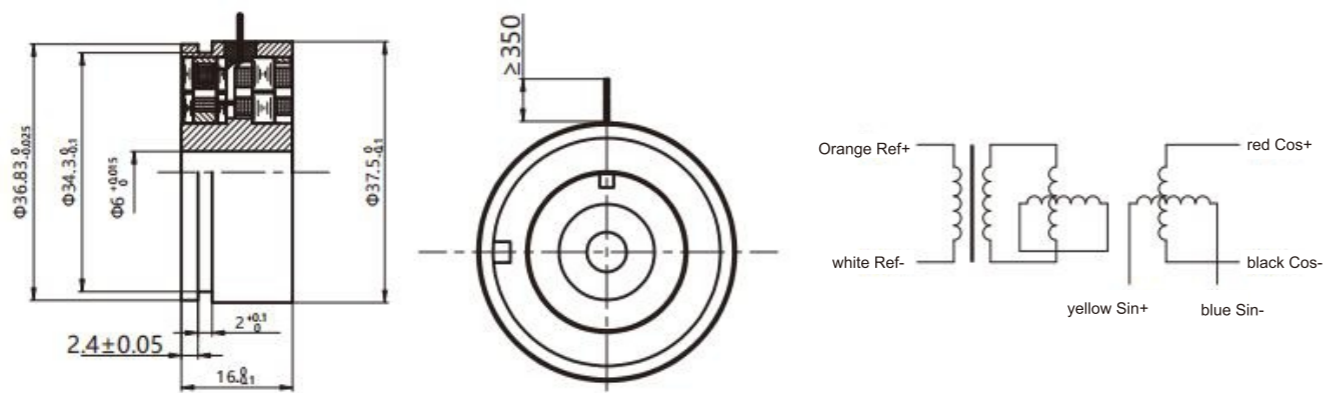
M	S	L	3N		5R	60V	64A	N	A
Aerospace: StarG Aviation : WindB Medical : HearR Industrial GearA	S:Single power supply	L Series DC driver	1N	single phase	xS:xSqure xcm Square	MAX 60VDC power supply	MAX output current 64A	N:nucle ses -type T:tower - type P:Plate type A:Aerial insertion-type C:customized	A:Multiple sensors R:Resolver I:Photoelectric encoder H:Hall Sensor S:Absolute value encoder
			2N	two-phase					
	3N		Three phase	xR:xRect xcm Long sided rectangle					
	5N		Five phases						

Resolver



It is an electromagnetic sensor, also known as a synchronous resolver, used to measure the angular displacement and angular velocity of a rotating object. It consists of a stator and a rotor. The stator winding serves as the primary side of the transformer and receives the excitation voltage. The excitation frequency is usually 2K~20K. The rotor winding serves as the secondary side of the transformer, and the induced voltage is obtained through electronic coupling. The voltage amplitude of the resolver output winding has a sine and cosine function relationship with the rotor angle.

Pair of Poles	Excitation voltage	Excitation frequency	Impedance	transformer ratio	accuracy	phase shift	excess pressure	temperature range
1antipode	5V ~ 7V	10KHZ	$(185 \pm 30) \Omega$	$0.5 \pm 10\%$	$\leq \pm 10'$	$\leq 15^\circ$	20mV	NT series VT series



Decoder



Parameter Table		
Excitation motor	5V~7V	typical 6V
Excitation frequency	2K~20K	typical 10K
Excitation current	200mA	
Applicable transformer ratio	0.2~2.0	default 0.5
Resolution ratio	10、12、14、16 位	
Output signal	ABZ Single ended/differential	RS485/RS232
Supply Voltage	12、24V	

Ordering model				
Product series	Resolution ratio	Encoder output mode	Communicate	Ambient temperature
HFT Resolver decoder	10 digits	S:single - ended	485 232	NT series VT series
	12 digits			
	14 digits	D:difference		
	16 digits			