Professional Focus, Whole-hearted Service

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CTRL-MOTOR
-we do support any harsh ambience-
A IBON's COMPANY



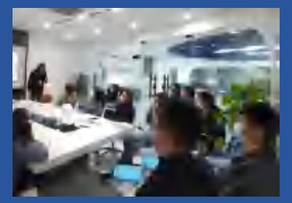
CUSTOM VACUUM, HIGH & LOW TEMPERATURE MOTORS AT COMPETITIVE PRICES

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℃ to ultra - high temperature of +300℃ 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 10 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.

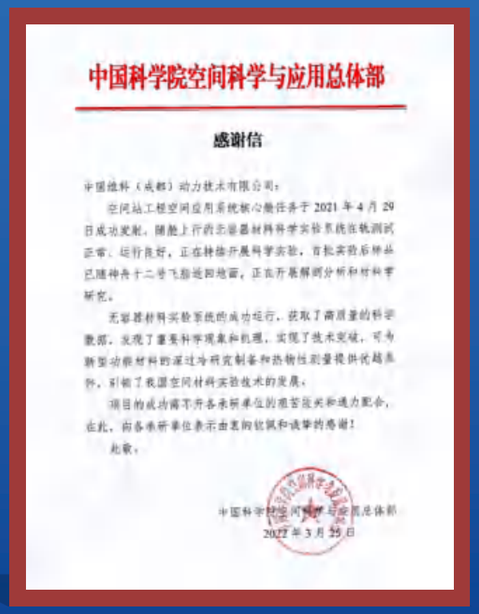
2023

Established Shenzhen company

provide Custom OEM services for special motors around the world.



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.



中国科学院空间科学与应用总体部

感谢信

中国维科（成都）动力技术有限公司：

空间站工程空间应用系统核心舱任务于 2021 年 4 月 29 日成功发射。随舱上行的无容器材料科学实验系统在轨测试正常、运行良好，正在转换开展科学实验，首批实验样品已随神舟十二号飞船返回地面，正在开展解剖分析和材料学研究。

无容器材料实验系统的成功运行，获取了高质量的科学数据，发现了重要科学现象和机理，实现了技术突破，可为新型功能材料的深过冷研究制备和热物性测量提供优越条件，引领了我国空间材料实验技术的发展。

项目的成功离不开各承研承制单位的艰苦攻关和通力配合，在此，向各承研承制单位表示由衷的钦佩和诚挚的感谢！

此致，

中国科学院空间科学与应用总体部

2022 年 3 月 25 日



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.

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°C. The vacuum degree is better than 10^{-7} 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 suport , 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 10 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

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- HV5786A
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- HS5776A
- HS86118W

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- HSV0401A-2R00
- HSV0604A 2RC0
- HSS0807A-2RC0
- HSV0810A-2RC0
- HSV1118A-2RC0

High Temperature Vacuum Servo Motor

- HSV0401A-2R00
- HSS0604A-2R00
- HSS0807A-2R00
- HSS0810A-2R00
- HSV1118A-1RM0

Cryogenic Servo Motor

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

30 Vacuum Gearbox

- Vacuum Gearbox

30 Driver & Decoder

- Stepper Driver
- Servo Driver
- Resolver
- Decoder



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℃~+100℃. 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℃, 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

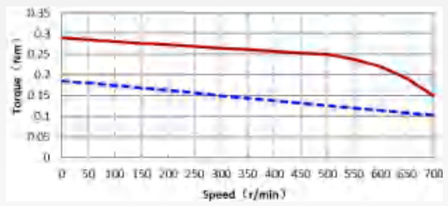
Low Temperature Stepper Motor Catalog														
Serial NO.	Frame number (mm)	Options		Step Angle (°)	Phase Current Peak Value (A)	Phase Current Effective Value (A)	Phase Resistance (Ω)	Phase Inductance (mH)	Holding Torque (Nm)	Rotor Inertia ($g.cm^2$)	Weight (kg)	Temperature Grade (℃)	Vacuum Degree (Pa)	Brake
		Stepper Motor	Type											
1	28	HS2851A -	NTL1 NTL2 NTL3 VTL1 VTL2 VTL3	1.8	0.85	0.6	8.8	9.5	0.12	/	0.25	NTL1 (-20~85) NTL2 (-40~85) NTL3 (-60~85) VTL1 (-20~100) VTL2 (-40~100) VTL3 (-60~100)	NTL1 (/) NTL2 (/) NTL3 (/) VTL1 (10^{-1}) VTL2 (10^{-1}) VTL3 (10^{-1})	Custom
2	42	HS4248A -			1.5	1.1	1.8	2.6	0.35	/	0.58			Optional
3	57	HS5776A -			3	2.1	1.0	2.7	1.4	/	1.15			Optional
4	86	HS86118W -			5	3.5	0.6	4.3	5.5	/	4.6			Custom

High Temperature Vacuum Stepper Motor Catalog														
Serial NO.	Frame number (mm)	Options		Step Angle (°)	Phase Current Peak Value (A)	Phase Current Effective Value (A)	Phase Resistance (Ω)	Phase Inductance (mH)	Holding Torque (Nm)	Rotor Inertia ($g.cm^2$)	Weight (kg)	Temperature Grade (℃)	Vacuum Degree (Pa)	Brake
		Vacuun stepper motor	Type											
1	28	HS2851A -	HT SHT VMT1 VMT2 VHT1 VHT2	1.8	0.85	0.6	8.8	9.5	0.12	/	0.25	HT(-20~150) SHT(-20~200) VMT1(-20~200) VMT2(-20~150) VHT1(-20~200) VHT2(-20~ 150)	HT(/) SHT(/) VMT1(10^{-3}) VMT2(10^{-3}) VHT1(10^{-5}) VHT2(10^{-5})	Custom
2	42	HV4249A -			2	1.4	1.2	0.8	0.13	/	0.42			Custom
3	57	HV5786A -			3	2.1	1.3	2.7	1.8	/	1.3			Custom
4	86	HV86128A -			6	4.2	0.6	2.8	4.2	/	4.5			Custom

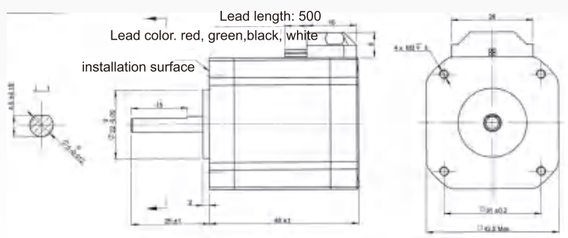
Cryogenic Stepper Motor Catalog														
Serial NO.	Frame number (mm)	Options		Step Angle (°)	Phase Current Peak Value (A)	Phase Current Effective Value (A)	Phase Resistance (Ω)	Phase Inductance (mH)	Holding Torque (Nm)	Rotor Inertia ($g.cm^2$)	Weight (kg)	Temperature Grade (℃)	Vacuum Degree (Pa)	Brake
		Cryogenic Stepper Motor	Type											
1	42	HS4248A-	LTA LT SLT	1.8	1.5	1.1	1.8	2.6	0.35	/	0.58	LTA (-86~40) LT (-100~40) SLT(-196~40)	LTA(/) LT(/) SLT(/)	Custom
2	57	HS5776A-			3	2.1	0.5	1.3	0.8	/	1.4			Custom
3	86	HS86118W-			5	3.5	0.6	4.3	5.5	/	4.6			Custom

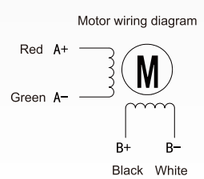
HS4248A

HS4248A Low temperature stepper motor torque frequency characteristic curve



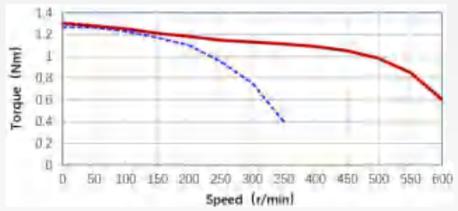
Test environment: normal temperature and pressure
Motor model:HS4248A-NT series
Driver type: Hd235
Micro-step: 1600 steps/turn
- - - 24V 10A Peak
—— 24V 15A Peak



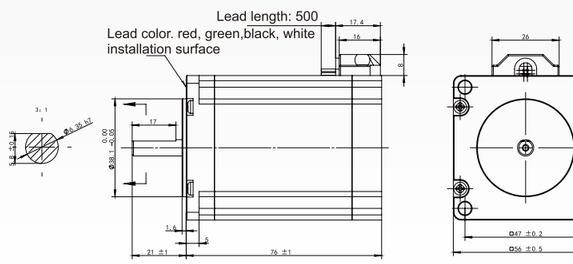


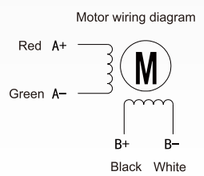
HS5776A

HS5776A Low temperature stepper motor torque frequency characteristic curve



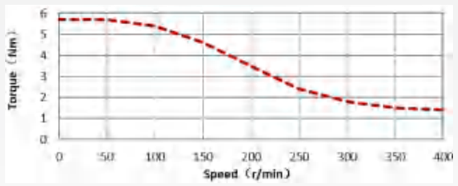
Test environment: normal temperature and pressure
Motor model:HS5776A-NT series
Driver type: Hd235
Micro-step: 1600 steps/turn
- - - 24V 3.0A Peak
—— 48V 3.0A Peak



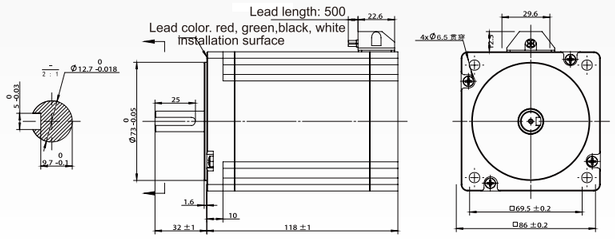


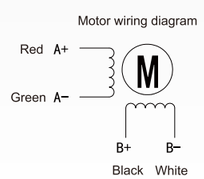
HS86118W

HS86118W Low temperature stepper motor torque frequency characteristic curve



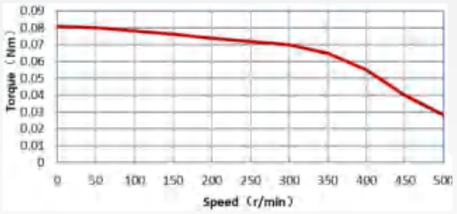
Test environment: normal temperature and pressure
Motor model:HS86118W-NT series
Driver type: HD265
Micro-step: 1600 steps/turn
- - - 48V 5.0A Peak



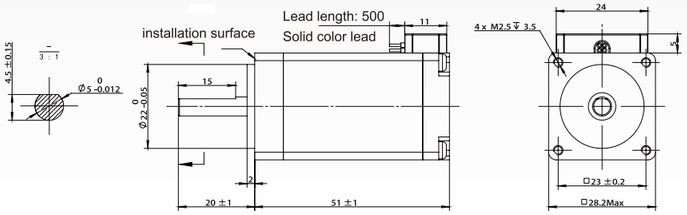


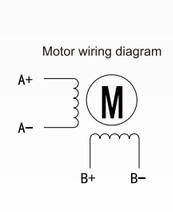
HS2851A

HS2851A vacuum stepper motor torque frequency characteristic curve



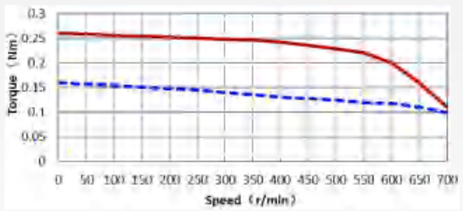
Test condition: Normal temperature and pressure
Motor model:HS2851A-VT series
Driver type: Hd235
Micro-step:1600 steps/turn
—— 24V 0.85A Peak



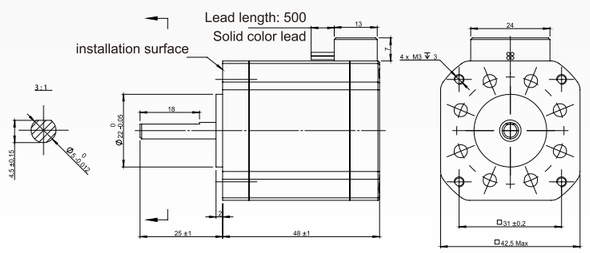


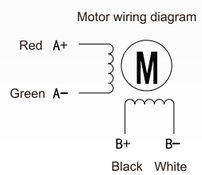
HS4248A

HS4248A vacuum stepper motor torque frequency characteristic curve



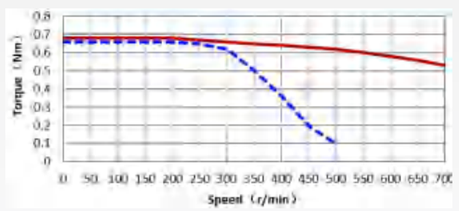
Test condition: Normal temperature and pressure
Motor model:HS4248A-VT series
Driver type: HD235
Micro-step:1600 steps/turn
24V 1.0A Peak
24V 1.5A Peak



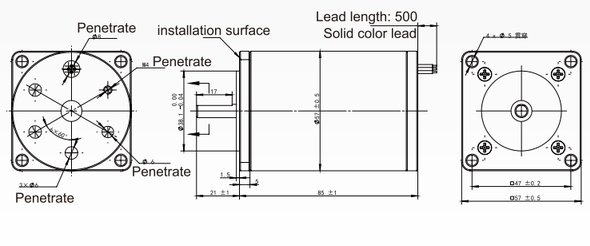


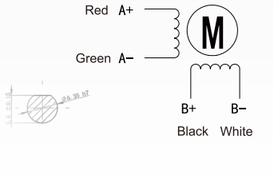
HV5786A

HV5786A vacuum stepper motor torque frequency characteristic curve



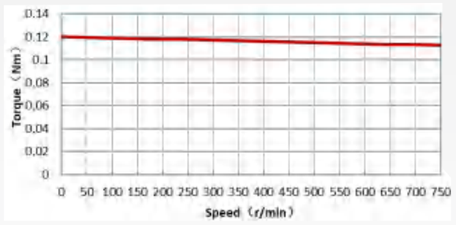
Test condition: Normal temperature and pressure
Motor model:HV5786A-VT series
Driver type: HD235
Micro-step:1600 steps/turn
24V 2.5A Peak
48V 2.5A Peak



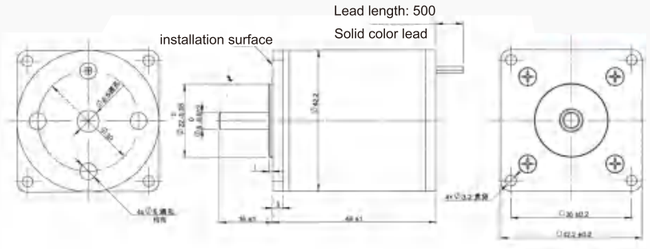


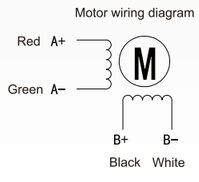
HV4249A

HV4249A vacuum stepper motor torque frequency characteristic curve



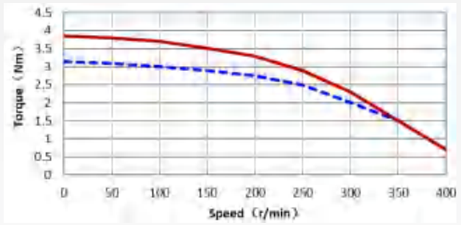
Test condition: Normal temperature and pressure
Motor model:HV4249A-VT series
Driver type: HD235
Micro-step:1600 steps/turn
24V 2.0A Peak



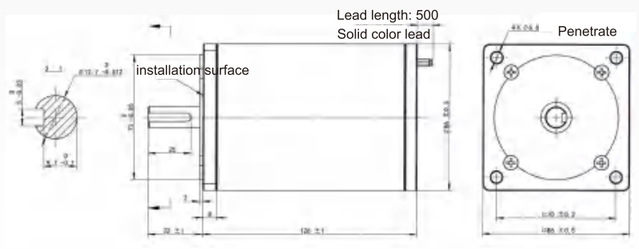


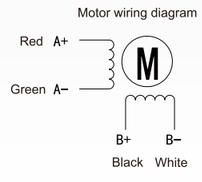
HV86128A

HV86128A vacuum stepper motor torque frequency characteristic curve



Test condition: Normal temperature and pressure
Motor model:HV86128A-VT series
Driver type: HD235
Micro-step:1600 steps/turn
24V 5.0A Peak
48V 6.0A Peak





Level Table

Scope of application



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

Scope of application

1. HS 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 Vlass list				
Temperature level	Symbol	Temperature Range/°C	Maximum Allowable Temperature of Motor Casing/°C	Vacuum Degree/Pa
High Vacuum	VHT1	-20 … +200	+200	10^{-5}
	VHT2	-20 … +160	+160	10^{-5}
Medium Vacuum	VMT1	-20 … +200	+200	10^{-3}
	VMT2	-20 … +150	+150	10^{-3}
low Vacuum	VTL1	-20 … +100	+130	10^{-1}
	VTL2	-40 … +100	+130	10^{-1}
	VTL3	-60 … +100	+130	10^{-1}
High Temperature	HT	-20 … +150	+150	/
	SHT	-20 … +200	+200	/
Low Temperature	NTL1	-20 … +85	+115	/
	NTL2	-40 … +85	+115	/
	NTL3	-60 … +85	+115	/
Cryogenic Temperature	LT	-100 … +40	+100	/
	SLT	-196 … +40	+100	/
Custom	L**H**	custom	+300	V1/V2…V7

Note: When selecting customized temperature and vacuum degree, the example model: L50H120-V1 is expressed as low temperature -50℃, high temperature 120℃, and vacuum degree 10^{-1}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℃~+85℃.Customers can choose to assemble brakes, temperature sensors and aviation plug according to their needs.

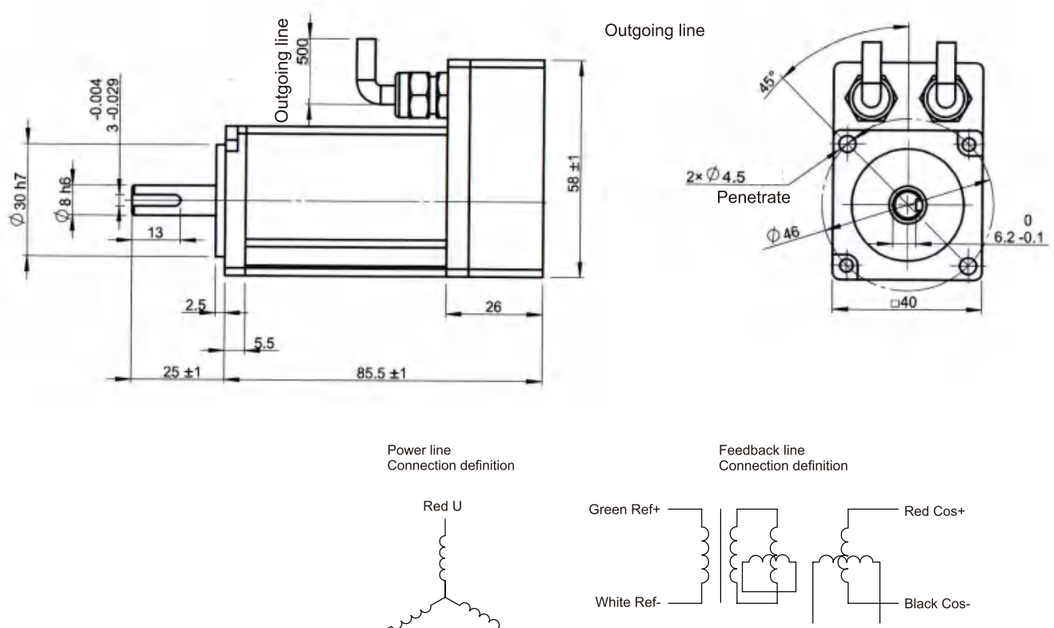
Servo Motors

Low Temperature Servo Motor Catalog														
Serial NO.	Frame number	Rated power (W)	Options		Rated voltage (V)	Rated speed (r/min)	Rated torque (Nm)	Phase current (Arms)	Phase resistance (Ω)	Moment of inertia ($kg.m^2$)	Weight (kg)	Encoder Type	Temperature Grade (℃)	Vacuum Degree (Pa)	Brake
			Servo Motor	Type											
1	40	100	HSV0401A -2R00-	NTL1 NTL2 NTL3 VTL1 VTL2 VTL3	220	3000	0.32	1.0	8.7	$0.68*10^{-4}$	0.42	Resolver	NTL1 (-20~85) NTL2 (-40~85) NTL3 (-60~85) VTL1 (-20~100) VTL2 (-40~100) VTL3 (-60~100)	NTL1(/) NTL2(/) NTL3(/) VTL1(10^{-1}) VTL2 (10^{-1}) VTL3 (10^{-1})	Optional
2	60	400	HSV0604A -2RC0-				1.27	2.8	4.6	$0.6*10^{-4}$	1.9				
3	80	750	HSS0807A -2RC0-				2.4	3.5	2.0	$3.2*10^{-4}$	2.8				
4		1000	HSV0810A -2RC0-				3.2	4.0	2.2	$5*10^{-4}$	3.2				
5	110	1800	HSV1118A -2RC0-				5.7	7.0	1.2	$0.76*10^{-4}$	8				

High Temperature Vacuum Servo Motor Catalog														
Serial NO.	Frame number	Rated power (W)	Options		Rated voltage (V)	Rated speed (r/min)	Rated torque (Nm)	Phase current (Arms)	Phase resistance (Ω)	Moment of inertia ($kg.m^2$)	Weight (kg)	Encoder Type	Temperature Grade (℃)	Vacuum Degree (Pa)	Brake
			Vacuum Servo Motor	Type											
1	40	100	HSV0401A-2R00-	HT SHT VMT1 VMT2 VHT1 VHT2	220	3000	0.32	1.0	8.7	$0.68*10^{-4}$	0.42	Resolver	HT(-20~150) SHT(-20~200) VMT1(-20~200) VMT2(-20~150) VHT1(-20~200) VHT2(-20~ 150)	HT(/) SHT(/) VMT1(10^{-3}) VMT2(10^{-3}) VHT1(10^{-5}) VHT2(10^{-5})	Custom
2	60	400	HSS0604A-2R00-				1.27	3.0	4.6	$0.6*10^{-4}$	2.1				
3	80	750	HSS0807A-2R00-				2.4	3.5	2.0	$3.2*10^{-4}$	2.8				
4		1000	HSS0810A-2R00-				3.2	4.0	2.2	$5*10^{-4}$	3.5				
5	110	1800	HSV1118A-1RM0-				5.7	7.0	1.2	$0.76*10^{-4}$	8				

Cryogenic Servo Motor Catalog														
Serial NO.	Frame number	Rated power (W)	Options		Rated voltage (V)	Rated speed (r/min)	Rated torque (Nm)	Phase current (Arms)	Phase resistance (Ω)	Moment of inertia ($kg.m^2$)	Weight (kg)	Encoder Type	Temperature Grade (℃)	Vacuum Degree (Pa)	Brake
			Cryogenic Servo Motor	Type											
1	40	100	HSV0401A-2R00-	LTA LT SLT	220	3000	0.32	1.0	8.7	$0.68*10^{-4}$	0.42	Resolver	LTA (-86~40) LT (-100~40) SLT(-196~40)	LTA(/) LT(/) SLT(/)	Custom
2	60	400	HSS0604A-2R00-				1.27	3.0	4.6	$0.6*10^{-4}$	2.1				
3	80	750	HSS0807A-2R00-				2.4	3.5	2.0	$3.2*10^{-4}$	2.8				
4		1000	HSS0810A-2R00-				3.2	4.0	2.2	$5*10^{-4}$	3.5				

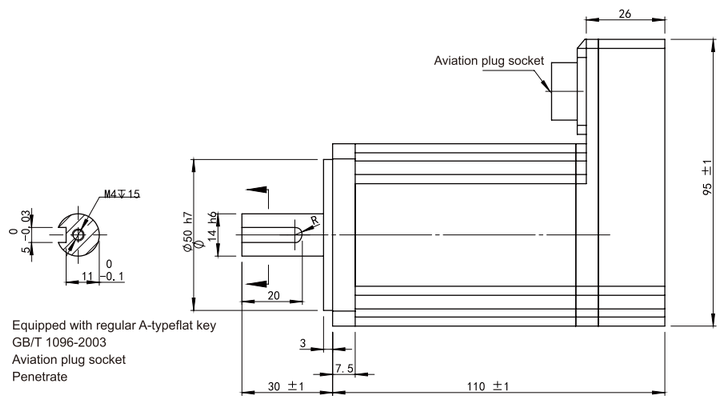
HSV0401A-2R00



Power line
Connection definition

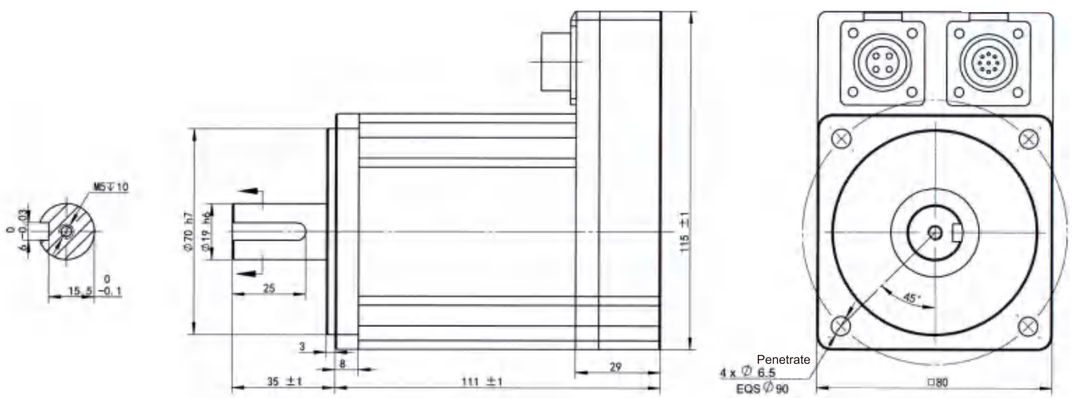
Feedback line
Connection definition

HSV0604A-2RC0

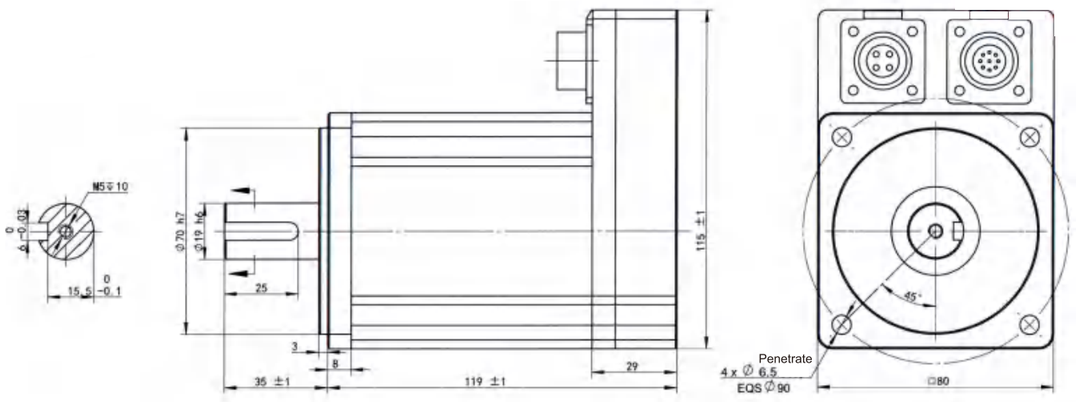


Equipped with regular A-typeflat key
GB/T 1096-2003
Aviation plug socket
Penetrate

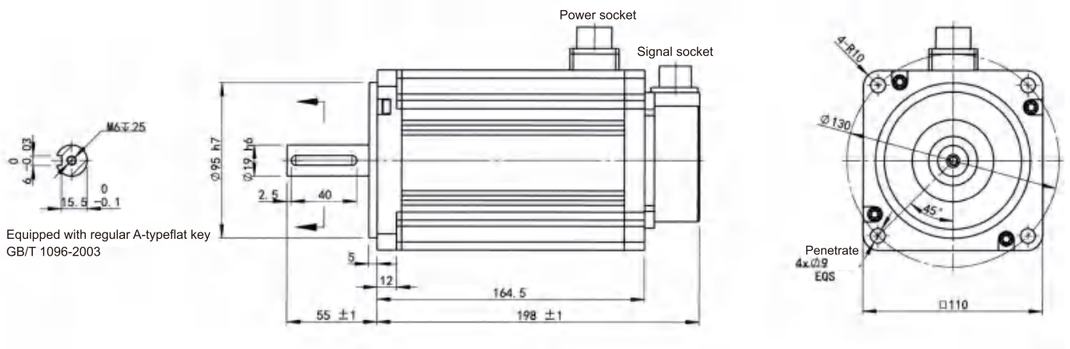
HSV0807A-2RC0



HSV0810A-2RC0



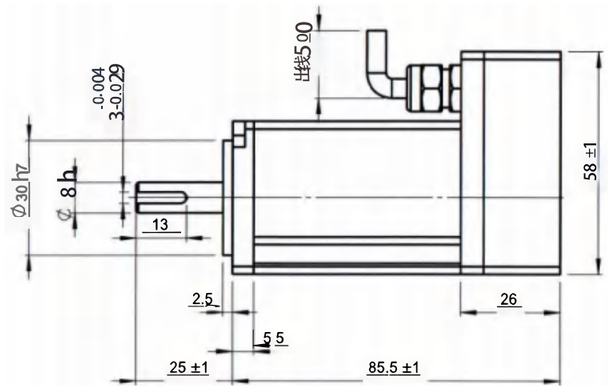
HSV1118A-1RC0

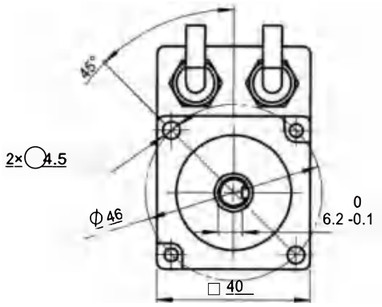


Vacuum Servo Motors

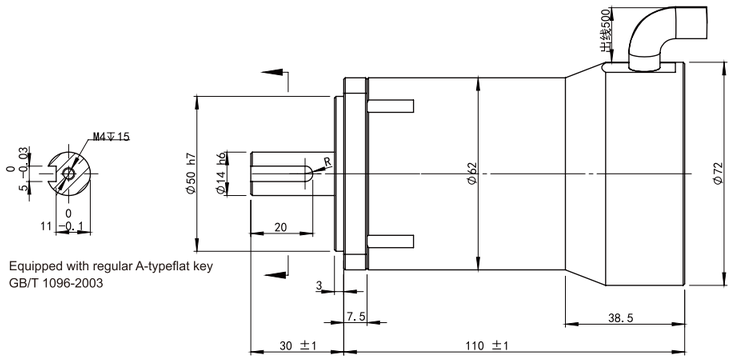
Parameter	Units	HSV0401A-2R00	HSS0604A-2R00	HSS0807A-2R00	HSV1118A-1RMO
Rated power	W	100	400	750	1800
Rated voltage	VAC	220	220	220	220
Rated torque	N.m	0.25	1.27	2.4	5.7
Rated current	Arms	1	3	3.5	7.5
Rated speed	r/min	3000	3000	3000	3000
Number of pole-pairs	/	5	5	5	4
Line voltage constant	Vrms/Krpm	17.36	30	48	60
Rotor inertia	Kg•㎡	$0.068x10^{-4}$	$0.6x10^{-4}$	$3.2x10^{-4}$	$0.76x10^{-4}$
Line resistance	Ω	8.7±10%	4.6±10%	2±10%	1.2±10%
weight	Kg	≤0.42	≤2.2	≤4.5	≤8.0
Insulation grade	/	B	C	C	B
Level of protection	/	IP40	IP40	IP40	IP40

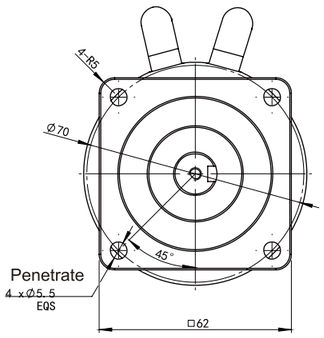
HSV0401A-2R00

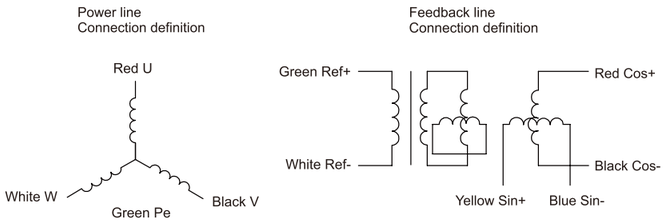




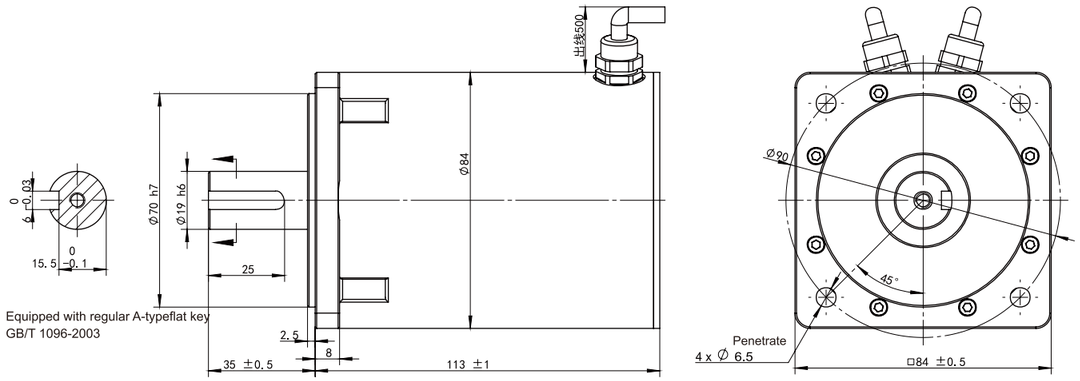
HSS0604A-2R00

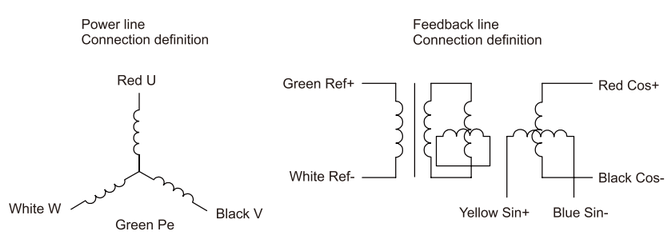




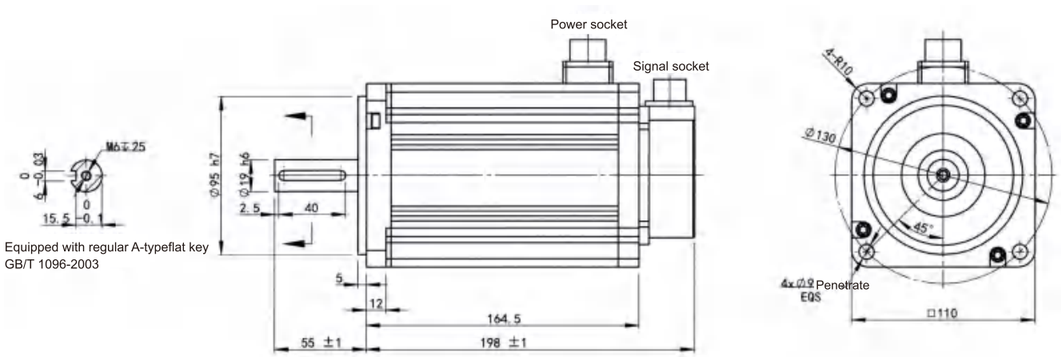


HSS0807A-2R00





HSV1118A-1RM0



Vacuum Gearbox

Standard design and manufacture of 42mm, 60mm, and 90mm frame size planetary reducers, with low operating temperature of -60℃ and high operating temperature of 200℃, vacuum degree of 10^{-5} Pa. The model is defined as follows:

Gearbox	Frame No.	Transmission serics	Reduction ratio	Motor interfacc	Flange type	Environmental grade
GP(coaxial) GZ(corner) GH(Coaxial helical gear) GS(Swivel helical gear)	42 60 90	L1 L2 L3	i3 i5 i8 i10 .. i40 ... i200	Stepper B Servo C	F(SquareFlange) Y(Round Flange)	NT series VT series

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℃~85℃. The driver parameters are shown below.



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

Servo Driver

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 xR:xRect xcm Long sided rectangle	MAX 60VDC power supply	MAX output current 64A	N:nucleu 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					
	D:Dual power supply		3N	Three phase					
			5N	Five phases					

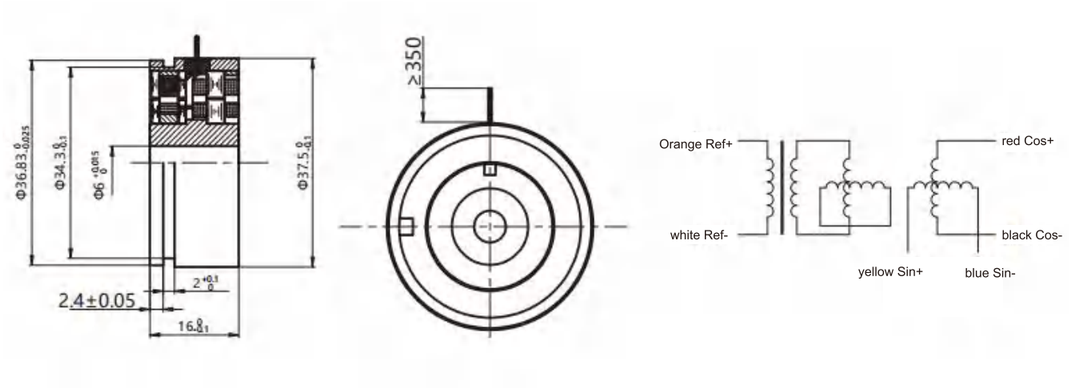


Resolver



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.

PairofPoles	Excitation voltage	Excitation frequency	Impedance	transformer ratio	accuracy	phase shift	excess pressure	temperature range
I antipode	5V ~ 7V	10KHZ	(185 ± 30) Ω	0.5±10%	⩽±10'	⩽15°	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			