GMT GLOBAL INC.

MOTOR · DRIVERS

GMT GLOBAL INC.

Intelligent automatic convenience dream

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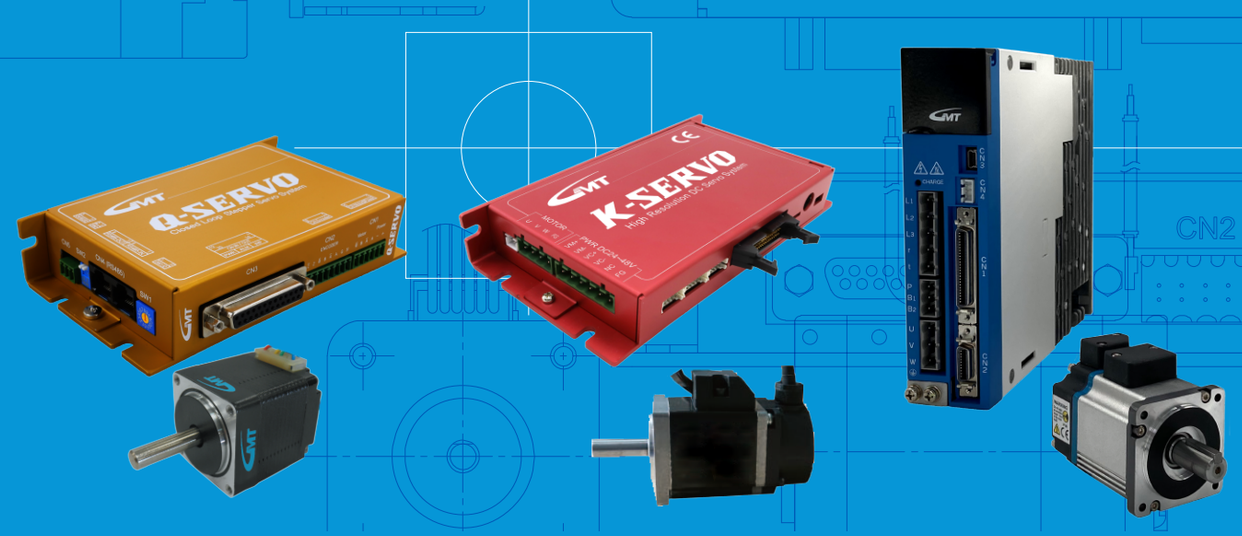


www.gmtglobalinc.com

2022.8

AC Design 04-27071159

Stepper Motor & Driver

Servo Motor & Driver

Commodity ensure

- Within one year after purchasing the machine, if a failure occurs due to non-error/improper operation, it is limited to send the machine back to our company by hand or mail, and then you can enjoy free maintenance service. Repairs usually take several working days, please understand.

- Malfunctions due to improper operation or mistakes, or any degree of failure after one year of purchase In the event of a breakdown, a repair fee will be charged. At this time, as mentioned above, this machine is limited to personal delivery or Send it back to our company for repair. Since repairs usually take several working days, if this The machine needs to be used in an extremely important operating system. For the sake of insurance, please consider purchasing spare products.

- When sending the machine to our company for maintenance, if the machine is damaged during the transportation, The company cannot be held responsible for such failures. Therefore, please confirm that the machine is packaged before sending fill in sufficient cushioning materials, and try to prevent the machine from being subjected to excessive external environment during transportation. The impact of vibration (below 0.5G).

- The following service items are not included in the selling price of this product, so please understand.
  (A) Review and judgment of system suitability (during design)
  (B) Trial run and adjustment (additional charge for proper adjustment with the motor)
  (C) Fault diagnosis and maintenance at the site where the machine is located

Precautions for use

- Please abide by the rated value and use the machine in the environment described here.

- The purpose of the design and manufacture of our products is not to allow the machine to be used in life-threatening situations or environment. Therefore, if you need to purchase this machine for special purposes, please inform the company's business personnel and Discuss and confirm.

- Our company is constantly striving to improve the quality and customer trust, but please be careful when using this product. It is necessary to pay attention to safety planning such as multiple backup design, fire spread countermeasure design, and malfunction prevention design. In order to avoid social damage such as personal accidents and fire accidents caused by system design failures.

- In order to continuously improve the characteristics, the specifications of this product may be changed in the future without prior notice.

Safety Precautions

In order to allow all users to use this series of products safely, the safety precautions are listed in this table as follows.
The precautions recorded here are closely related to the personal safety of users, so please be sure to follow them.

Danger	Indicates that if a mistake occurs, there will be a possibility of a dangerous situation resulting in death or serious injury.
Caution	1. To indicate that if a mistake occurs, there will be a possibility of a dangerous situation causing a moderate degree of personal disability or minor injury. 2. Material damage may also occur.
Prohibit	To indicate that it shall not be violated.
Mandatory	To indicate that it must be completed.

Danger	※Please do not touch the terminal part and its inside with your hands during power-on, otherwise there may be a risk of electric shock. ※Do not pull or twist the cable hard, or place heavy objects on the cable. Otherwise, there may be risk of electric shock or fire. ※Please do not touch the movable parts of the module with your hands. Otherwise, there is a risk of being drawn into the rotary shaft and causing injury. ※Please never touch the inside of the driver with your hands. Otherwise, there is a risk of electric shock. ※ Please confirm that the display LED on the panel after the power failure is completely off before moving, wiring, maintenance, inspection, etc. conduct. Otherwise, there is a risk of electric shock. ※Please do not touch the rotating part of the motor during operation. Otherwise, there is a risk of injury.
Caution	※Do not use in places where water, oil, and medicine droplets may be contaminated, or where there are corrosive gases and flammable gases. place to use this machine. ※Please use the specified power supply voltage. Otherwise, there is a risk of fire. ※The temperature of the driver, motor, and peripheral equipment itself will rise, so please do not touch them. Otherwise, there is a risk of burns and scalds. ※ Please connect the wiring correctly. ※The driver and motor should be used in combination according to the manufacturer's specified combination. Otherwise, there is a risk of fire. ※During power-on or shortly after power-off, the heat sink and motor of the driver may still be at high temperature, so please do not touch. Otherwise, there is a risk of burns and scalds. ※Do not apply excessive pressure to the edge of the case. Otherwise, there is a risk of injury.
Prohibit	※Do not use or store the device in places exposed to direct sunlight. ※Do not use or store the machine in places where the ambient temperature and humidity exceed the specified range. ※Do not use or store this machine in a place with a lot of dust, dust, etc. ※Do not use or store this machine in a place subject to direct vibration or impact. ※Do not repair or modify the internal and external structure of the machine by yourself.
Mandatory	●Please install an emergency stop circuit that can stop the action immediately on the outside.

圖標標示

Caution

Prohibit

Caution item

※After unpackage, check whether machine type is same with the package information immediately.

※Store servo motor in the dry, clean and noncorrosive air/liquid environment.

※If storage of servo motor is over 6 months, check axis perodically core and add anti-rust grease every 3 months.

※Connect wiring correctly. Confirm the correct connection of electrical line and signal line to provent faults and damage of motor.

※Electrical line and signal line shall be not connected to the same loop and separated for producing noise.

※For avoiding electrical shock, power off and wait for ten minutes before moving motor or wiring.

※Keep motor's temperature within the specified scope.

※Finding any abnormal smell,noise, smoke, heat or irregualr vibration, stop motor and power off.

Prohibited items

※ Output terminal of motor is not watertight, don't use it in the humid,corrosive and inflammable environment.

※ Donot apply over-maximum current to motor, or else it will damage internal parts of motor or magnetic parts.

※ Don't touch operating motor and driver, or else it shall leads to burns and electrical shock etc.

※ Extraciton or moving of motor, do not drag with handler or just hold axis core of motor.

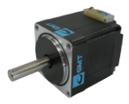
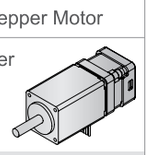
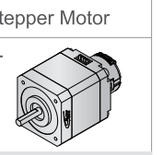
※ If not necessary, don't make dielectric strength test to motor.

※ Use specified motor and driver, commercial power is not allowed to connect directly to servo motor for avoiding motor damage.

※ Don't dismantle or replace parts of servo motor without authorization, or else it may leads to fire and electrical shock etc.

※ It is strictly forbidden to apply strong impact to the motor shaft to avoid failure

Stepper,Servo Motor

MS Series □20-frame 2-phase Stepper Motor □2MS-N20  P.010~P.011	MS Series □28-frame 2-phase Stepper Motor □2MS-N28  P.012~P.013	MS Series □35-frame 2-phase Stepper Motor □2MS-N35  P.014~P.015
MS Series □42-frame 2-phase Stepper Motor □2MS-N42  P.016~P.017	MS Series □57-frame 2-phase Stepper Motor □2MS-N57  P.018~P.019	SANYO □28-frame 2-phase Stepper Motor □28MM  P.020~P.021
SANYO □35-frame 2-phase Stepper Motor □35MM  P.022~P.023	SANYO □42-frame 2-phase Stepper Motor □42MM  P.024~P.025	SANYO □28-frame 5-phase Stepper Motor □28MM  P.026~P.027
SANYO □42-frame 5-Phase Stepper Motor □42MM  P.028~P.029	Closed-loop - Stepper Motor Magnetic Encoder □20MM □28MM □35MM □42MM  P.030~P.031	Closed-loop - Stepper Motor Optical Encoder □28MM □42MM  P.032~P.033
Stepper Motor Electromagnetic Brake 28 / 35 / 42 frame Micro-Stepping  P.034~P.035	PKP □20-frame 2-Phase Stepper motor Combination □20MM Standard  P.120~P.121	PKP □28-frame 2-Phase Stepper motor Combination □28MM Standard  P.122~P.123
PKP □35-frame 2-Phase Stepper Motor Combination □35MM Standard  P.124~P.125	PKP □42-frame 2-Phase Stepper Motor Combination □42MM Standard  P.126~P.127	PKP □60-frame 2-Phase Stepper Motor Combination □60MM Standard  P.128~P.129
PKP □28-frame 5-Phase Stepper Motor Combination □28MM Standard  P.130~P.131	PKP □42-frame 5-Phase Stepper Motor Combination □42MM Standard  P.132~P.133	PKP □60-frame 5-Phase Stepper Motor Combination □60MM Standard  P.134~P.135

PKP □42-frame 5-phase Stepper Motor combination □42MM High Resolution  P.136~P.137	PKP □60-frame 5-phase Stepper Motor combination □60MM High Resolution  P.138~P.139	DC Servo Motor GSVM-D□□  P.144
AC Servo Motor GSVM-A□□  P.153、P.171		

Stepper,Servo Driver

Stepper Driver 2-phase bipolar GTR22G-D Micro-Stepping  P.036~P.037	Stepper Driver 2-phase unipolar GTR24M3L Micro-Stepping  P.038~P.039	Stepper Driver Closed-loop 2-phase bipolar Q-SERVO  P.040~P.057
Stepper Driver Closed-loop 2-Phase Bipolar P-SERVO EC  P.058~P.065	Stepper Servo Driver Closed-loop Driver i-SERVO  P.066~P.087	Stepper Servo Driver(All in one) Closed-loop 2-Phase Bipolar GST-BTD  P.088~P.089
Stepper Motor Driver 5-Phase Stepper Driver GTR515B half/full step  P.116~P.117	日本-東方 Stepper Motor Driver 2-Phase Bipolar CVD228B-K  P.140~P.141	DC Servo Driver GSV-K□  P.148
AC Servo Driver GSV-KE  P.153	AC Servo Driver GSV-K2  P.171	AC Servo Driver(Linear Motor) GSV-KL  P.192

Summary Table of Driver Available to Go with Various Types of Motors

2-Phase Stepper Motor

Motor	GMT		SANYO		PKP		Minebea	
	Frame No.	Page	Frame No.	Page	Frame No.	Page	Frame No.	Page
	□20	【P.10】	□28	【P.20】	□20	【P.120】	□20M	【P.74】
	□28	【P.12】	□35	【P.22】	□28	【P.122】	□25M	
	□35	【P.14】	□42	【P.24】	□35	【P.124】	□28M	
	□42	【P.16】			□42	【P.126】	□35M	
	□57	【P.18】			□60	【P.128】	□42M	
							□42L	
							□56M	
							□56L	
Applicable driver	GTR22G-D	【P.36】	GTR22G-D	【P.36】	CVD205-K		Q-SERVO	【P.40】
	GTR24M3L	【P.38】	GTR24M3L	【P.38】	CVD215-K		P-SERVO EC	【P.58】
	Q-SERVO	【P.40】	GST-BTD	【P.88】	CVD223-K		i-SERVO	【P.66】
	P-SERVO EC	【P.58】			CVD228-K	【P.140】		
	GST-BTD	【P.88】						

5-Phase Stepper Motor

Motor	SANYO		PKP	
	Frame No.	Page	Frame No.	Page
	□28	【P.26】	□28	【P.130】
	□42	【P.28】	□42	【P.132】
			□60	【P.134】
			□42(High Resolution)	【P.136】
			□60(High Resolution)	【P.138】
Applicable driver	GTR515B	【P.116】	CVD512-K	
			CVD518-K	
			CVD524-K	

Servo Motor

Motor	DC Servo Motor		AC Servo Motor -KE		AC Servo Motor -K2		AC Servo Motor -KL	
	Model No.	Page	Model No.	Page	Model No.	Page	Model No.	Page
	GSVM-D GSVM-D□□MD□	【P.144】	GSVM-A GSVM-A□□LC4	【P.153】	GSVM-A GSVM-A□□LA4	【P.171】		
Applicable driver	K-SERVO	【P.148】	KE-SERVO GSV-KE	【P.153】	K2-SERVO GSV-K2	【P.171】	KL-SERVO GSL-KL	【P.192】

Summary Table of Motor Available to Go with Various Types of Drivers

2-Phase Servo Motor

Driver	GMT									
	Model No.				Model No.				Model No.	
	Q-SERVO【P.40】				P-SERVO EC【P.58】				i-SERVO【P.66】	
Applicable motor	GMT		Minebea		GMT		Minebea		Minebea	
	Frame No.	Page	Frame No.	Page	Frame No.	Page	Frame No.	Page	Frame No.	Page
	□20	【P.10】	□20M	【P.73】	□20	【P.10】	□20M	【P.73】	□20M	【P.73】
	□28	【P.12】	□25M		□28	【P.12】	□25M		□25M	
	□35	【P.14】	□28M		□35	【P.14】	□28M		□28M	
	□42	【P.16】	□35M		□42	【P.16】	□35M		□35M	
			□42M				□42M		□42M	
			□42L				□42L		□42L	
			□56M				□56M		□56M	
			□56L				□56L		□56L	

Driver	GMT						PKP	
	Model No.		Model No.		Model No.		Model No.	
	GTR22G-D【P.36】		GTR24M3L【P.38】		GST-BTD【P.88】		CVD228-K【P.140】	
Applicable motor	GMT	SANYO	GMT	SANYO	GMT	SANYO	PKP	
	Frame No. Page	Frame No. Page	Frame No. Page	Frame No. Page	Frame No. Page	Frame No. Page	Frame No.	Page
	□20 【P.10】	□28 【P.20】	□20 【P.10】	□28 【P.20】	□28 【P.12】	□28 【P.20】	□60	【P.128】
	□28 【P.12】	□35 【P.22】	□28 【P.12】	□35 【P.22】	□42 【P.16】	□42 【P.24】		
	□35 【P.14】	□42 【P.24】	□35 【P.14】	□42 【P.24】				
	□42 【P.16】		□42 【P.16】					

5-Phase Servo Motor

Driver	GMT
	Model No.
	GTR515B【P.116】
Applicable motor	SANYO
	Frame No. Page
	□28 【P.26】
	□42 【P.28】

Servo Motor

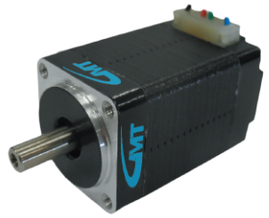
Driver	DC Servo Motor		AC Servo Motor-KE		AC Servo Motor-K2		AC Servo Motor-KL	
	Model No.		Model No.		Model No.		Model No.	
	K-SERVO【P.148】		KE-SERVO【P.153】 GSV-KE		K2-SERVO【P.171】 GSV-K2		KL-SERVO【P.192】 GSL-KL	
Applicable motor	Model No.	Page	Model No.	Page	Model No.	Page	Model No.	Page
	GSVM-D GSVM-D□□MD□	【P.148】	GSVM-A GSVM-A□□LC4	【P.153】	GSVM-A GSVM-A□□LA4	【P.171】		

□2MS-N20

Conductive wire, bipolar (2-Phase 4-Wire)

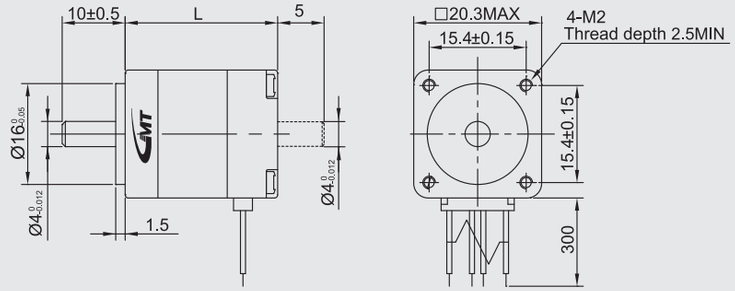
20 mm (0.79 inch sq)

Step angle : 1.8˚



Recommended with Driver：GTR22G-DC【P.36】

Dimension Chart

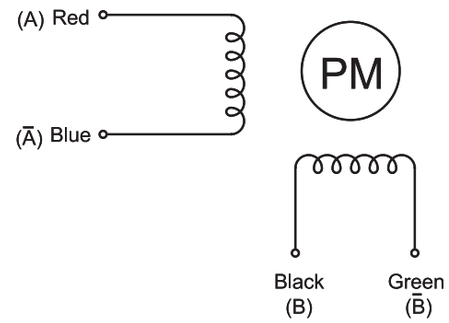


Model No.		Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
2MS-N20U28A	2MS-N20D28A	0.2	24	8	0.016(2.2)	1.9	0.05	28
2MS-N20U33A	2MS-N20D33A	0.6	6.5	2.2	0.02(2.8)	2.3	0.07	33
2MS-N20U38A	2MS-N20D38A	0.6	10	5.5	0.04(5.5)	2.6	0.08	38

- Step angle precision : ±5%
- Resistance precision : ±10%
- Inductance precision : ±20%
- Allowable temperature rise : 80°C Max. (rated current, 2phase on)
- Environmental temperature : -10°C / +50°C
- Insulated impedance : 100MΩ Min (at DC500V)
- Insulated pressure tolerance : AC 500V (1min)
- Shaft radial beating :0.06Max. (450 g-load)
- Shaft axial beating : 0.08Max. (450 g-load)

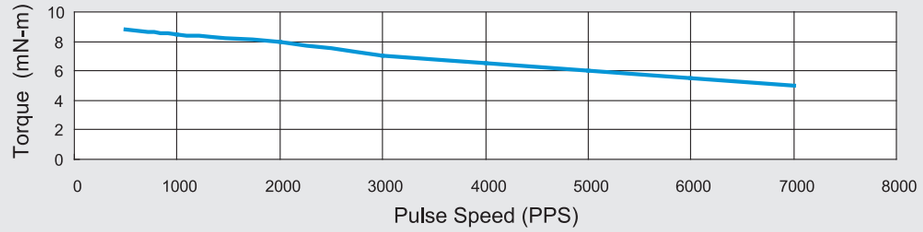
2-Phase Stepper Motor MS Series ▶ □20
□20MM
GMT GLOBAL INC.
2-Phase Stepper Motor
GMT
□20

Wiring Diagram

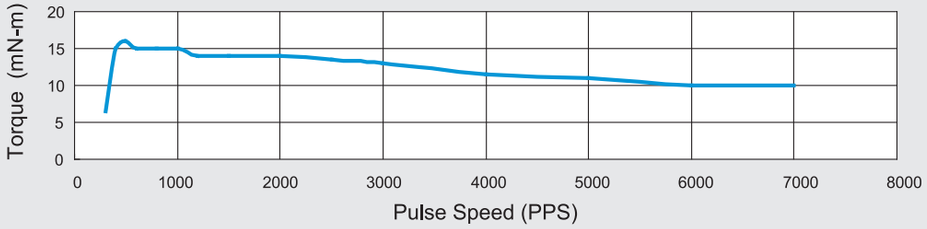


Speed - Torque Characteristic Curve

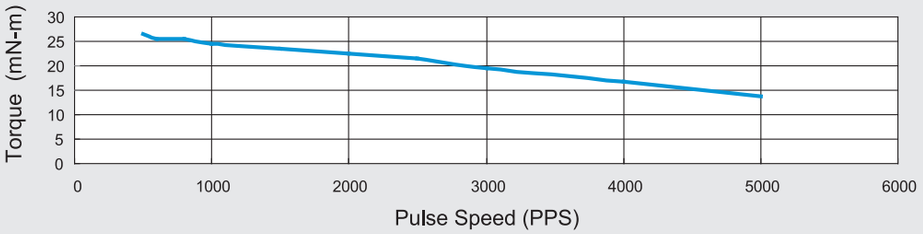
2MS-N20U28A, N20D28A



2MS-N20U33A, N20D33A



2MS-N20U38A, N20D38A

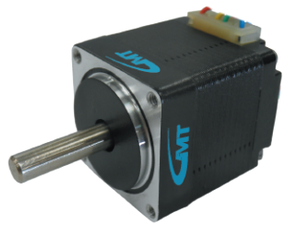


□2MS-N28

Conductive wire, bipolar (2-Phase 4-Wire)

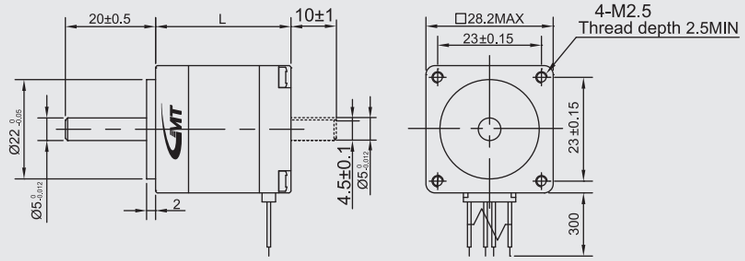
28 mm (1.10 inch sq)

Step angle : 1.8˚



Recommended with Driver：GTR22G-DC【P.36】

Dimension Chart

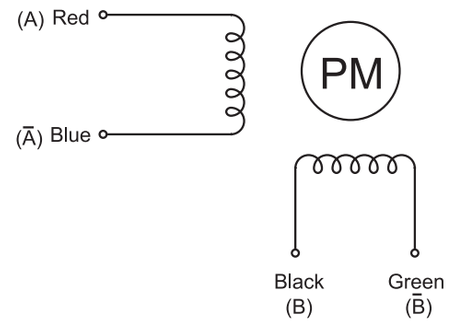


Model No.		Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
2MS-N28U32A	2MS-N28D32A	0.67	5.6	4.2	0.06(8.3)	9	0.11	31.3
2MS-N28U45A	2MS-N28D45A	0.67	6.8	4.9	0.09(13.2)	12	0.14	44.5
2MS-N28U51A	2MS-N28D51A	0.67	9.2	5.7	0.12(16.7)	18	0.2	50.5

- Step angle precision : ±5%
- Resistance precision : ±10%
- Inductance precision : ±20%
- Allowable temperature rise : 80°C Max. (rated current, 2phase on)
- Environmental temperature : -10°C / +50°C
- Insulated impedance : 100MΩ Min (at DC500V)
- Insulated pressure tolerance : AC 500V (1min)
- Shaft radial beating :0.06Max. (450 g-load)
- Shaft axial beating : 0.08Max. (450 g-load)

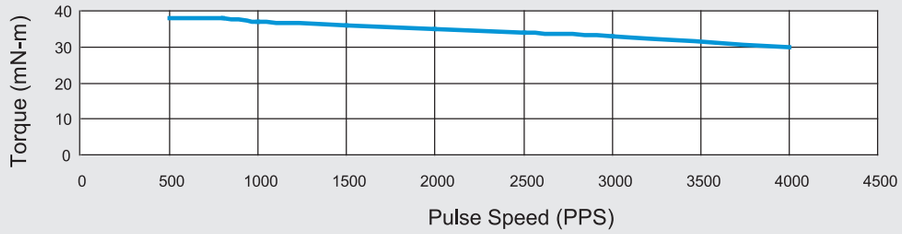
2-Phase Stepper Motor MS Series ▶ □28
□28MM
GMT GLOBAL INC.
2-Phase Stepper Motor
GMT
□28

Wiring Diagram

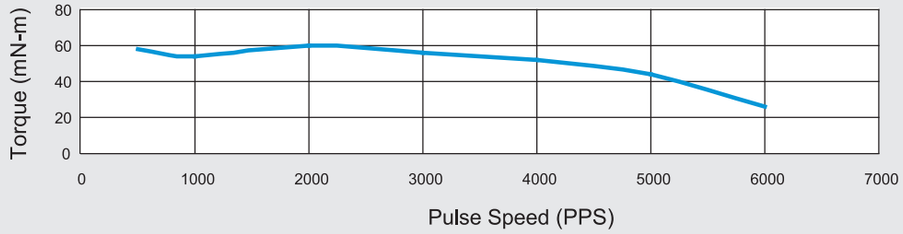


Speed - Torque Characteristic Curve

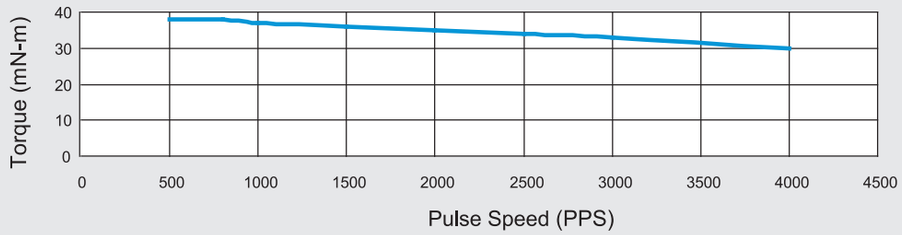
2MS-N28U32A, N28D32A



2MS-N28U45A, N28D45A

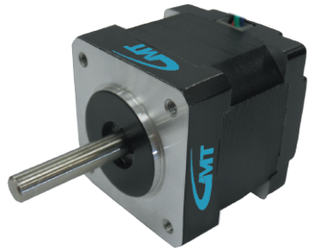


2MS-N28U51A, N28D51A



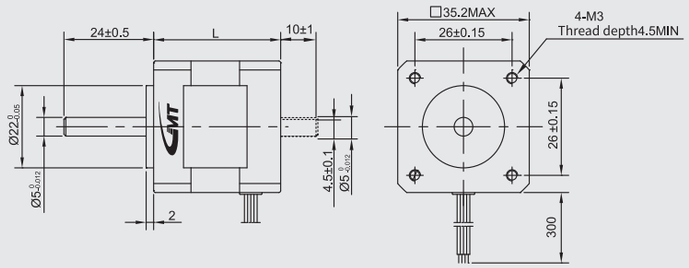
□2MS-N35

Conductive wire, bipolar (2-Phase 4-Wire)
35 mm (1.38 inch sq)
Step angle : 1.8˚



Recommended with Driver：GTR22G-DC【P.36】

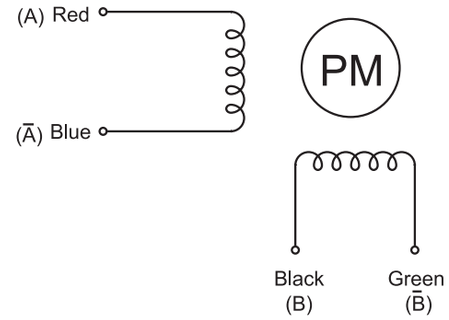
Dimension Chart



Model No.		Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
2MS-N35U20A	2MS-N35D20A	0.4	25	9	0.05(7)	8	0.1	20
2MS-N35U26A	2MS-N35D26A	0.8	4.8	4	0.08(11)	10	0.12	26
2MS-N35U28A	2MS-N35D28A	0.5	20	10	0.1(14)	10	0.14	28
2MS-N35U36A	2MS-N35D36A	1	2.7	2.6	0.13(19)	14	0.18	36

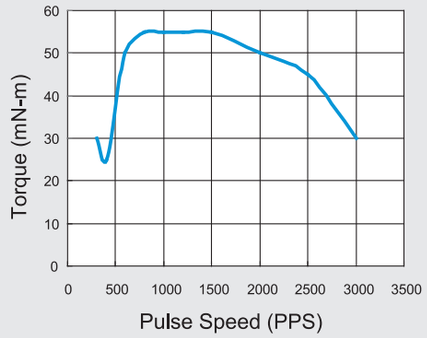
- Step angle precision : ±5%
- Resistance precision : ±10%
- Inductance precision : ±20%
- Allowable temperature rise : 80°C Max. (rated current, 2phase on)
- Environmental temperature : -10°C / +50°C
- Insulated impedance : 100MΩ Min (at DC500V)
- Insulated pressure tolerance : AC 500V (1min)
- Shaft radial beating :0.06Max. (450 g-load)
- Shaft axial beating : 0.08Max. (450 g-load)

Wiring Diagram

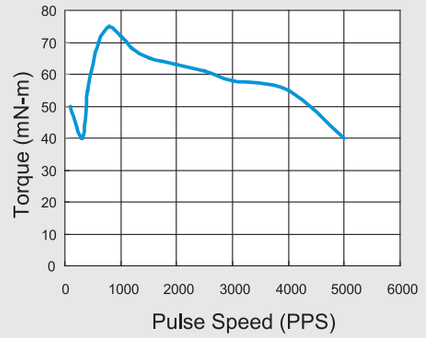


Speed - Torque Characteristic Curve

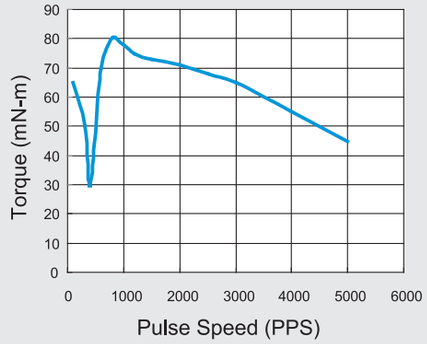
2MS-N35U20A, N35D20A



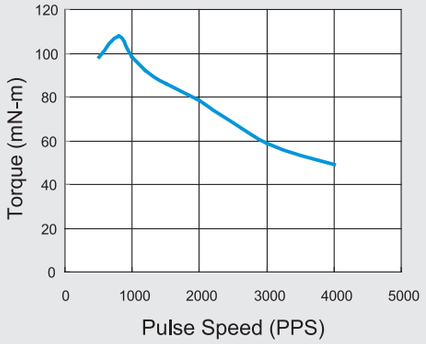
2MS-N35U26A, N35D26A



2MS-N35U28A, N35D28A

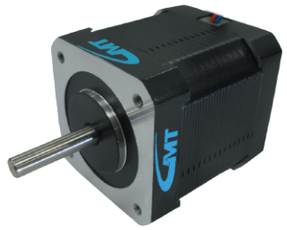


2MS-N35U36A, N35D36A



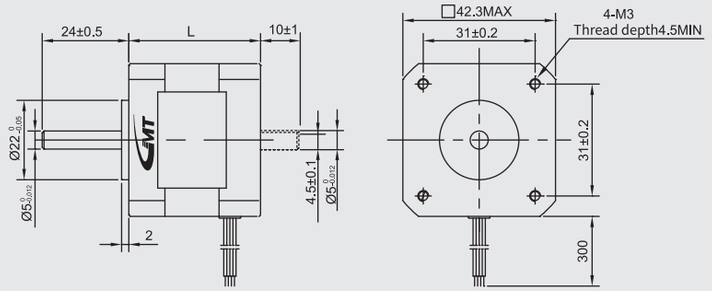
□2MS-N42

Conductive wire, bipolar (2-Phase 4-Wire)
42 mm (1.65 inch sq)
Step angle : 1.8˚



Recommended with Driver：GTR22G-DC【P.36】

Dimension Chart

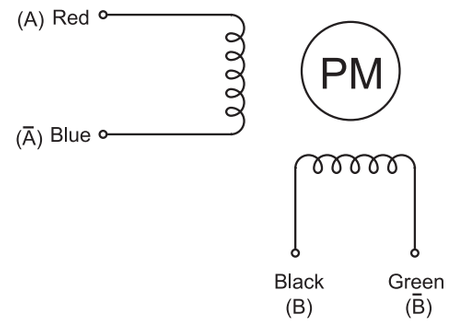


Model No.		Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
2MS-N42U33A	2MS-N42D33A	1.33	2.1	2.5	0.21(30)	35	0.22	33
2MS-N42U39A	2MS-N42D39A	1.68	1.65	3.2	0.35(50)	54	0.28	39
2MS-N42U47A	2MS-N42D47A	1.68	1.65	3.8	0.43(62)	68	0.35	47

- Step angle precision : ±5%
- Resistance precision : ±10%
- Inductance precision : ±20%
- Allowable temperature rise : 80°C Max. (rated current, 2phase on)
- Environmental temperature : -10°C / +50°C
- Insulated impedance : 100MΩ Min (at DC500V)
- Insulated pressure tolerance : AC 500V (1min)
- Shaft radial beating :0.06Max. (450 g-load)
- Shaft axial beating : 0.08Max. (450 g-load)

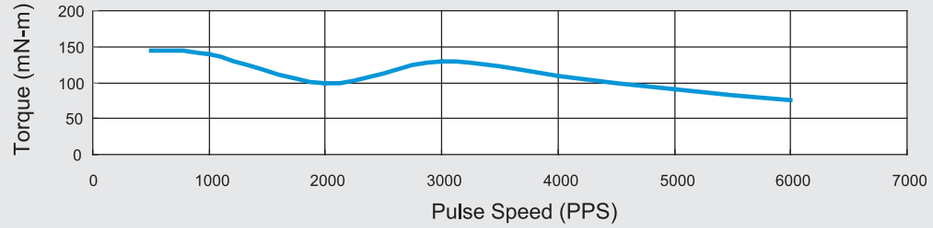
2-Phase Stepper Motor MS Series ▶ □42
□42MM

Wiring Diagram

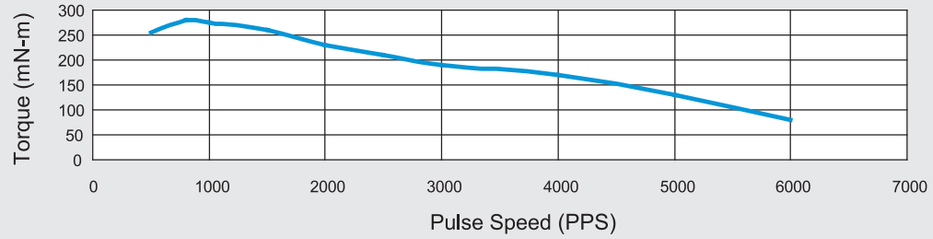


Speed - Torque Characteristic Curve

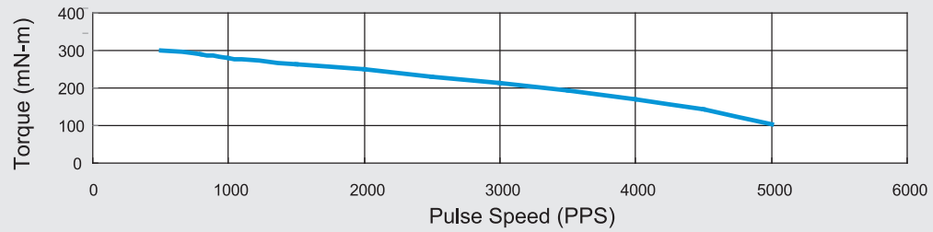
2MS-N42U33A, N42D33A



2MS-N42U39A, N42D39A

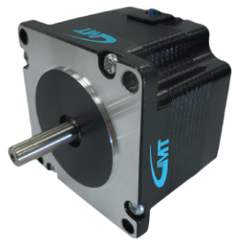


2MS-N42U47A, N42D47A



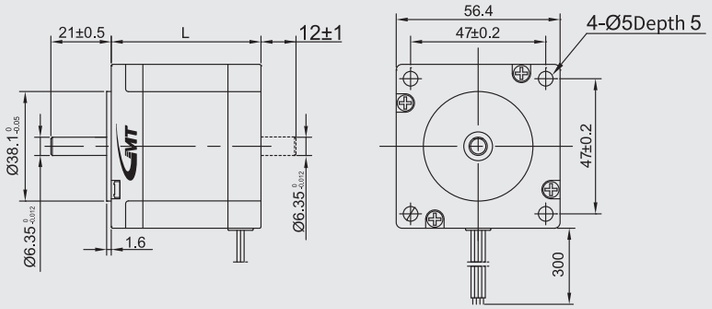
□2MS-N57

Conductive wire, bipolar (2-Phase 4-Wire)
57 mm (2.24 inch sq)
Step angle : 1.8˚



Recommended with Driver：GTR22G-DC【P.36】

Dimension Chart

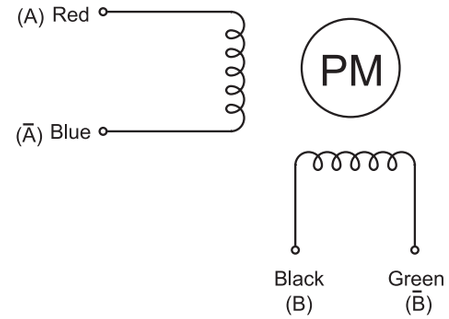


Model No.		Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
2MS-N57U41A	2MS-N57D41A	2.8	0.7	1.4	0.54(76)	120	0.47	41
2MS-N57U51A	2MS-N57D51A	2.8	0.83	2.2	1(140)	275	0.65	51
2MS-N57U56A	2MS-N57D56A	2.8	0.9	2.5	1.24(175)	300	0.7	56
2MS-N57U76A	2MS-N57D76A	2.8	1.13	3.6	1.86(263)	480	1	76

- Step angle precision : ±5%
- Resistance precision : ±10%
- Inductance precision : ±20%
- Allowable temperature rise : 80°C Max. (rated current, 2phase on)
- Environmental temperature : -10°C / +50°C
- Insulated impedance : 100MΩ Min (at DC500V)
- Insulated pressure tolerance : AC 500V (1min)
- Shaft radial beating :0.06Max. (450 g-load)
- Shaft axial beating : 0.08Max. (450 g-load)

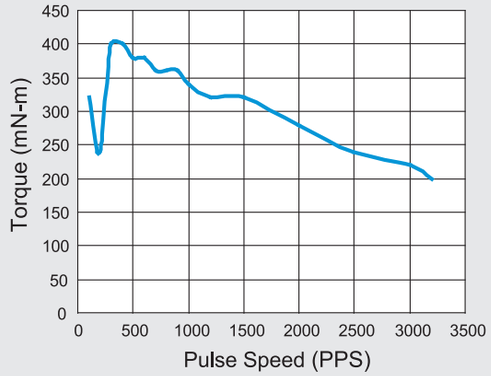
2-Phase Stepper Motor MS Series ▶ □57
□57MM

Wiring Diagram

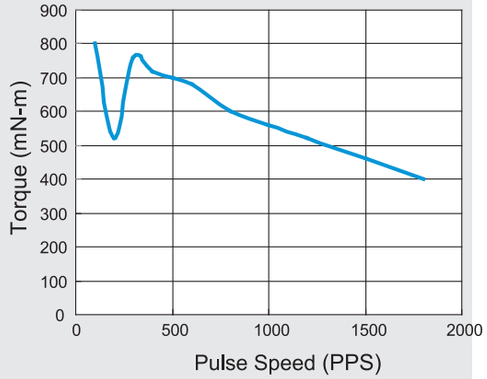


Speed - Torque Characteristic Curve

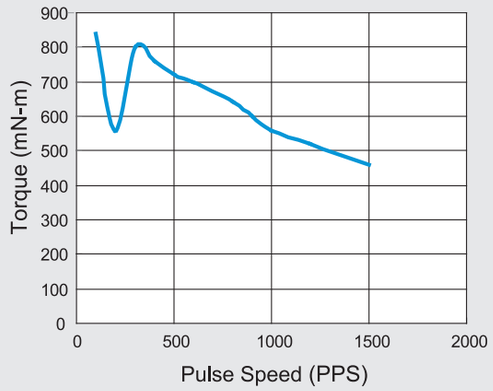
2MS-N57U41A, N57D41A



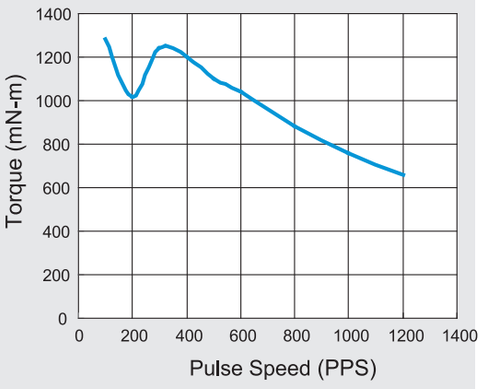
2MS-N57U51A, N57D51A



2MS-N57U56A, N57D56A

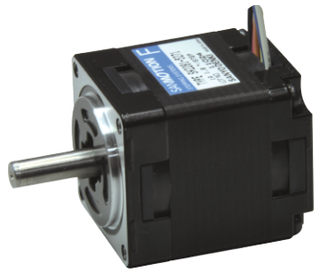


2MS-N57U76A, N57D76A



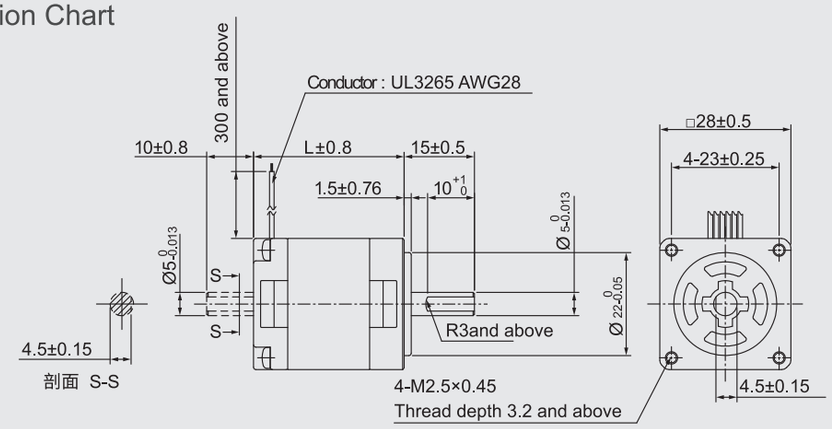
□ 28MM

Conductive wire, .Unipolar
(2-Phase 6-Wire)
(1.1 inch sq)
RoHS corresponding/Step angle : 1.8˚



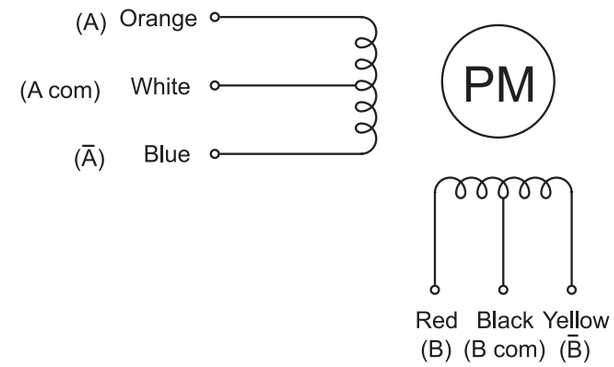
Recommended with Driver：GTR24M3L【P.38】

Dimension Chart



Model No.		Step angle	Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	Deg	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
SH2281-5271	SH2281-5231	1.8	1	2.85	1	0.055(7.79)	10	0.11	32
SH2285-5271	SH2285-5231	1.8	1	4.1	1.9	0.115(16.28)	22	0.2	51.5

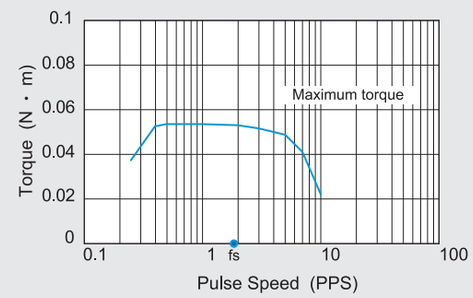
Wiring Diagram



Speed - Torque Characteristic Curve

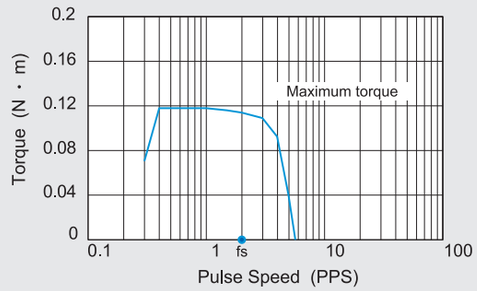
SH2281-5271, 5231

Driving type: Fixed current
Working voltage : DC24V
Working current : 1A / phase,
2-phase driver (full-step)
JL : [0.01×10⁻⁴kg · M²(1.80 oz · in²)]



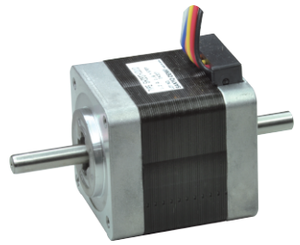
SH2285-5271, 5231

Driving type: Fixed current
Working voltage : DC24V
Working current : 1A / phase,
2-phase driver (full-step)
JL : [0.01×10⁻⁴kg · M²(1.80 oz · in²)]



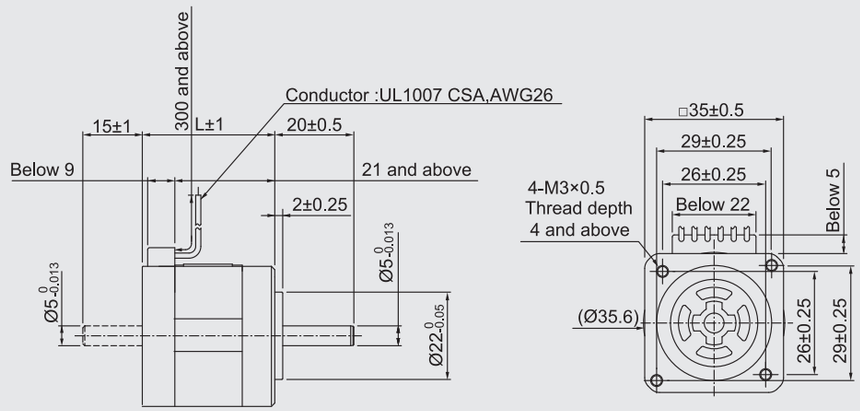
□ 35MM

Conductive wire,Unipolar
(2-Phase 6-Wire)
(1.38 inch sq)
RoHS corresponding/Step angle : 1.8˚



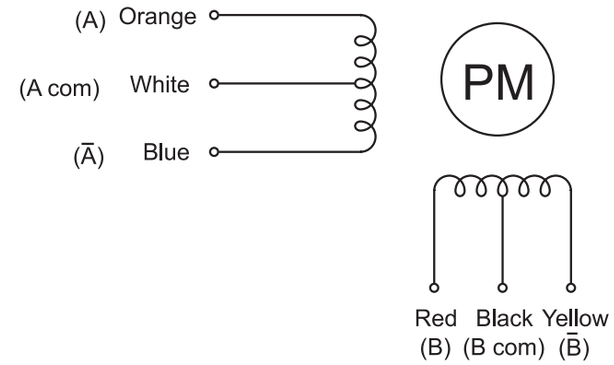
Recommended with Driver：GTR24M3L【P.38】

Dimension Chart



Model No.		Step angle	Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	Deg	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
SH3537-12U40	SH3537-12U10	1.8	1.2	2.7	2	0.15(21.24)	25	0.2	37
SH3552-12U40	SH3552-12U10	1.8	1.2	3.4	2.8	0.23(32.57)	43	0.3	52

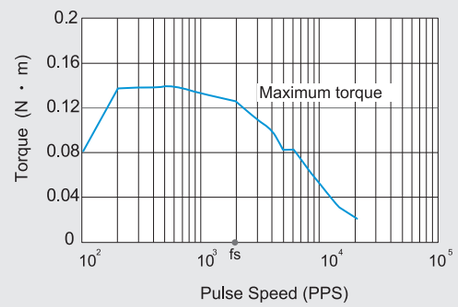
Wiring Diagram



Speed - Torque Characteristic Curve

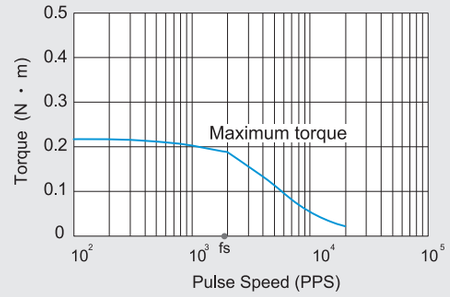
SH3537-12U40, 12U10

Driving type: Fixed current
Working voltage : DC24V
Working current : 1.2A / phase,
2-phase driver (full-step)
JL : [0.01×10⁻⁴kg · M²(1.80 oz · in²)]
pulley balancermethod



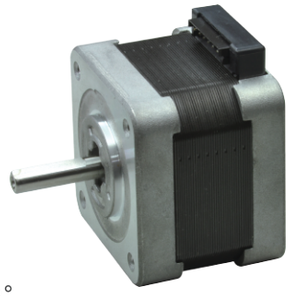
SH3552-12U40, 12U10

Driving type: Fixed current
Working voltage : DC24V
Working current : 1.2A / phase,
2-phase driver (full-step)
JL : [0.01×10⁻⁴kg · M²(1.80 oz · in²)]
pulley balancermethod



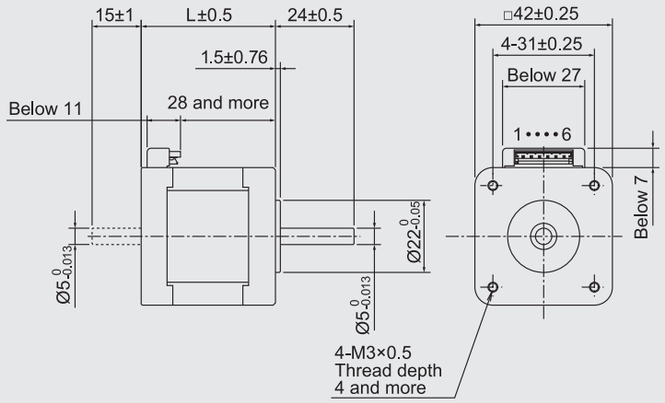
□ 42MM

Conductive wire,Unipolar
(2-Phase 6-Wire)
(1.65 inch sq)
RoHS corresponding/Step angle : 1.8˚



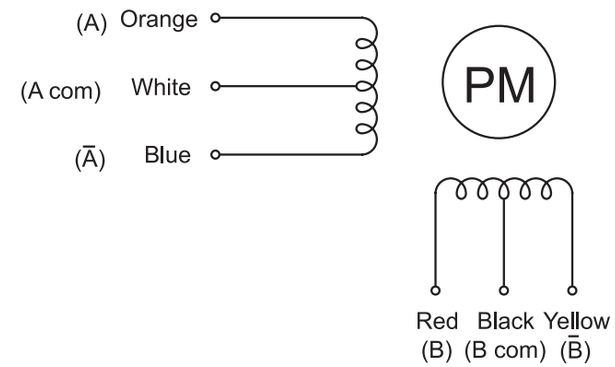
Recommended with Driver：GTR24M3L【P.38】

Dimension Chart



Model No.		Step angle	Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	Deg	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
103H5205-0469	103H5205-0411	1.8	1.2	2.4	2.3	0.2(28.32)	36	0.23	33
103H5210-0440	103H5210-0410	1.8	1.2	3.3	3.4	0.37(52.39)	74	0.37	48

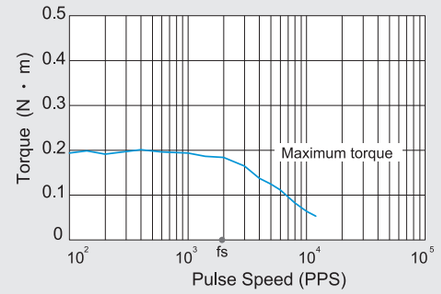
Wiring Diagram



Speed - Torque Characteristic Curve

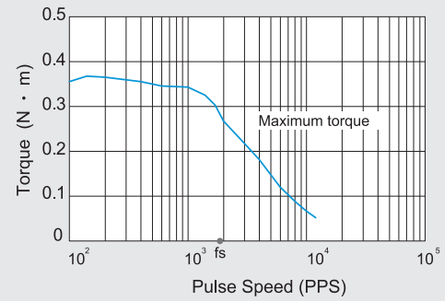
103H5205-0469, 0411

Driving type: Fixed current
Working voltage : DC24V
Working current : 1.2A / phase,
2-phase driver (full-step)
JL1 : [0.94×10⁻⁴kg · M²(5.14 oz · in²)]
JL2 : [0.8×10⁻⁴kg · M²(4.37 oz · in²)]



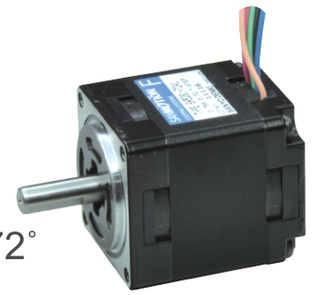
103H5210-0440, 0410

Driving type: Fixed current
Working voltage : DC24V
Working current : 1.2A / phase,
2-phase driver (full-step)
JL1 : [0.94×10⁻⁴kg · M²(5.14 oz · in²)]
JL2 : [0.8×10⁻⁴kg · M²(4.37 oz · in²)]



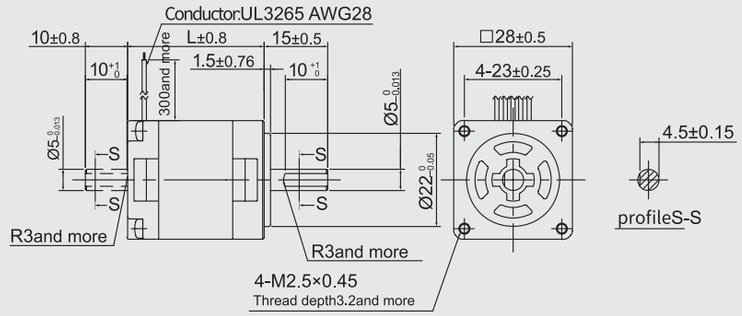
□ 28MM

Adapter, unipolar (5-Phase 5-Wire)
(1.1 inch sq)
RoHS corresponding/Step angle : 0.72˚



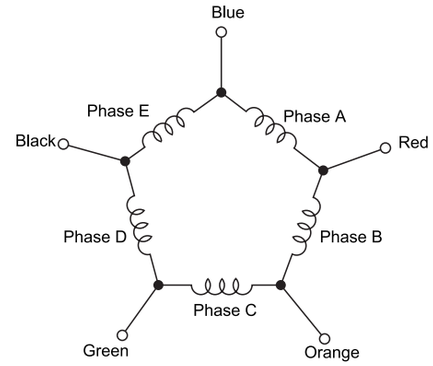
Recommended with Driver：GTR515B【P.116】

Dimension Chart



Model No.		Step angle	Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	Deg	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
SH5281-7241	SH5281-7211	0.72	0.75	1.05	0.44	0.041(5.81)	10	0.11	32
SH5285-7241	SH5285-7211	0.72	0.75	1.15	0.64	0.078(11.05)	22	0.2	51.5

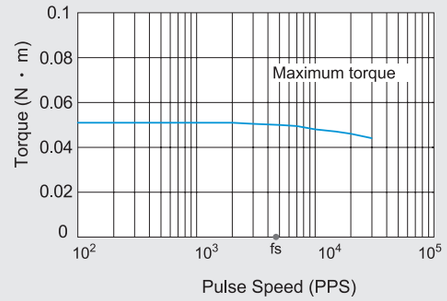
Wiring Diagram



Speed - Torque Characteristic Curve

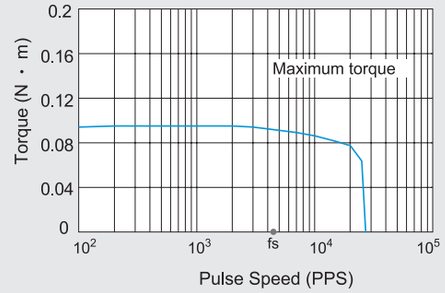
SH5281-7241, 7211

Driving type: Fixed current
Working voltage : DC24V
Working current : 0.75A / phase,
5-phase driver (full-step)
JL : [0.01×10⁻⁴kg · M²(0.05 oz · in²)]



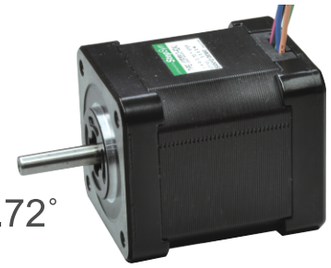
SH5285-7241, 7211

Driving type: Fixed current
Working voltage : DC24V
Working current : 0.75 / phase,
5-phase driver (full-step)
JL : [0.01×10⁻⁴kg · M²(0.05 oz · in²)]



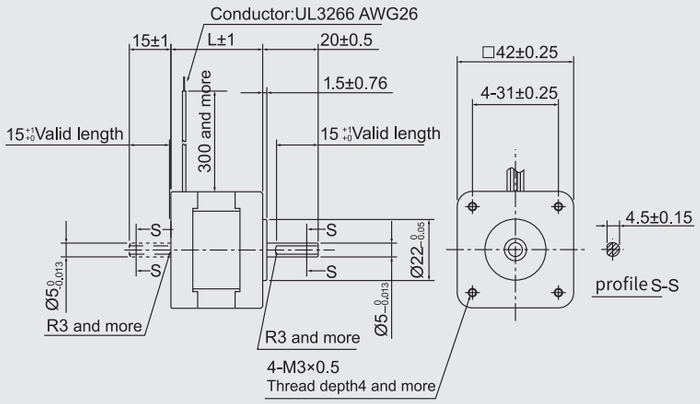
□ 42MM

Adapter, unipolar (5-Phase 5-Wire)
(1.54 inch sq)
RoHS corresponding/Step angle : 0.72˚



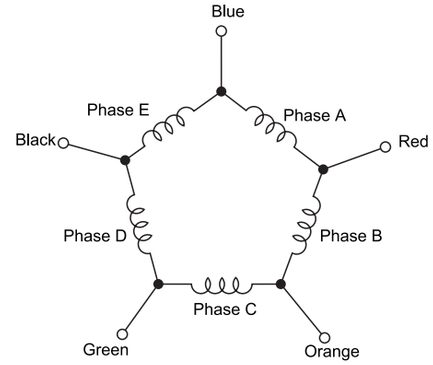
Recommended with Driver：GTR515B【P.116】

Dimension Chart



Model No.		Step angle	Current	Resistance	Inductance	Maximum static torque	Rotor inertia	Weight	Length(L)
Single axis	Double axes	Deg	(A)	(Ω)	(mH)	N · m(oz - in)	g · cm²	(kg)	(mm)
103F5505-8241	103F5505-8211	0.72	1.4	0.55	0.4	0.127(18.25)	30	0.23	34
103F5508-8241	103F5508-8211	0.72	1.4	0.63	0.57	0.176(25)	53	0.28	40
103F5510-8241	103F5510-8211	0.72	1.4	0.8	0.7	0.245(34.72)	65	0.37	49

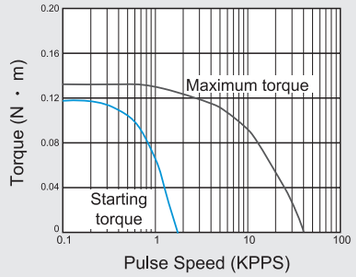
Wiring Diagram



Speed - Torque Characteristic Curve

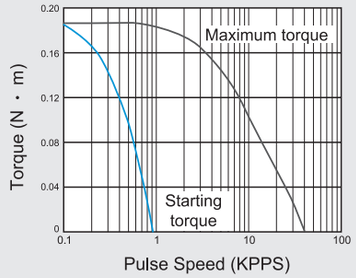
103F5505-8241, 8211

Driving type: Fixed current
Working voltage : DC24V
Working current : 1.4A / phase,
5-phase driver (full-step)
JL1 : [0.33×10⁻⁴kg · M²(1.8 oz · in²)]
JL2 : [0.18×10⁻⁴kg · M²(0.98 oz · in²)]



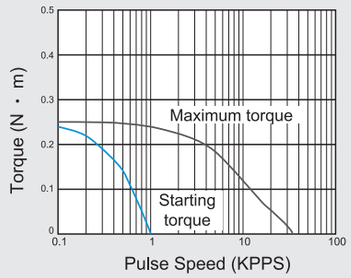
103F5508-8241, 8211

Driving type: Fixed current
Working voltage : DC24V
Working current : 1.4A / phase,
5-phase driver (full-step)
JL1 : [0.33×10⁻⁴kg · M²(1.8 oz · in²)]
JL2 : [0.18×10⁻⁴kg · M²(0.98 oz · in²)]



103F5510-8241, 8211

Driving type: Fixed current
Working voltage : DC24V
Working current : 1.4A / phase,
5-phase driver (full-step)
JL1 : [0.33×10⁻⁴kg · M²(1.8 oz · in²)]
JL2 : [0.18×10⁻⁴kg · M²(0.98 oz · in²)]



2MS - N □□ D C

2-Phase Stepper Motor

Frame No.

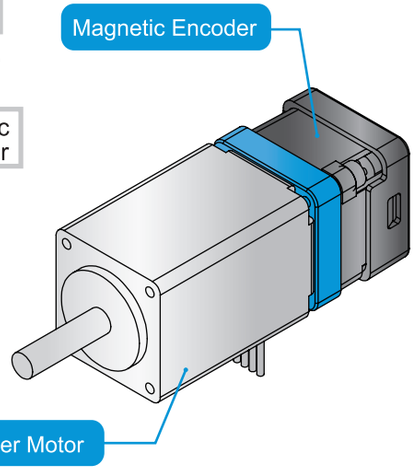
20	20mm
28	28mm
35	35mm
42	42mm
57	57mm

Shaft type

D	Double axes

Outlet mode, collocation

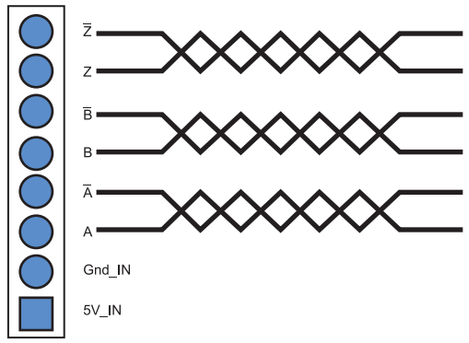
C	Magnetic Encoder



Specifications		unit	
Voltage		V	4.5~5.5
Current		mA	180(max)
Signal			A+、A-、B+、B-、Z+、Z-
Output Voltage	High	V	2.5 (min)
	Low	V	0.5(max)
Maximum output current		mA rpm	20 3000
Allowable maximum rotational speed		°C	-20~+80 RH85%max
Operating/Storage temperature			
Humidity			

Connection type

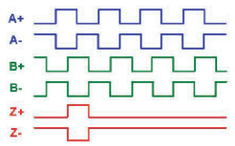
Power In：DC5V
Output signal: ABZ differential



GMT Mortor	Resolution(4X)	Recommended with Driver
□ 20 MS Series	4000	Q-SERVO *1. Three control modes : Position, speed + torque, position + speed + torque *2. Refer to the optional specifications on Page 40.
□ 28 MS Series	4000	
□ 35 MS Series	4000	
□ 42 MS Series	4000	

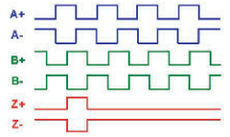
□20

Upon an axial twist (CCW), Phase A signal is ahead of Phase B signal by 90° ± 25%



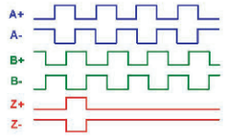
□28

Upon an axial twist (CCW), Phase A signal is ahead of Phase B signal by 90° ± 25%



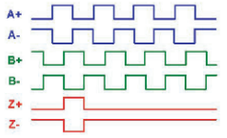
□35

Upon an axial twist (CCW), Phase A signal is ahead of Phase B signal by 90° ± 25%

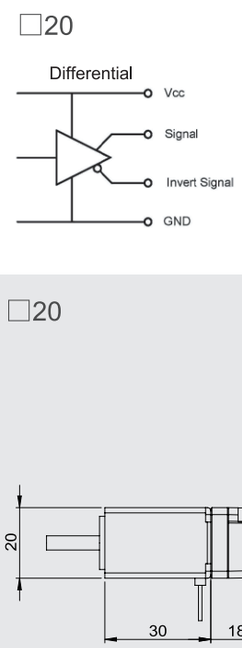


□42

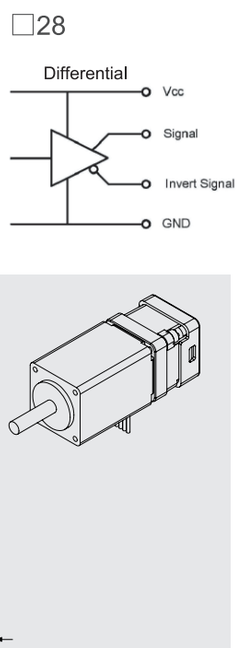
Upon an axial twist (CCW), Phase A signal is ahead of Phase B signal by 90° ± 25%



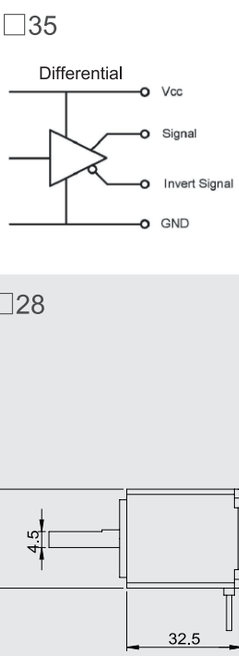
□20



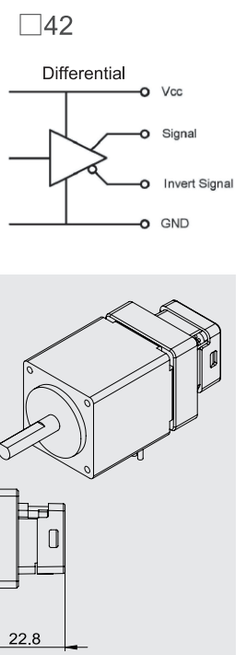
□28



□35



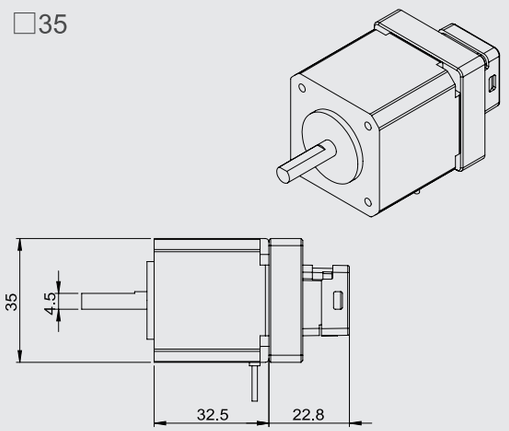
□42



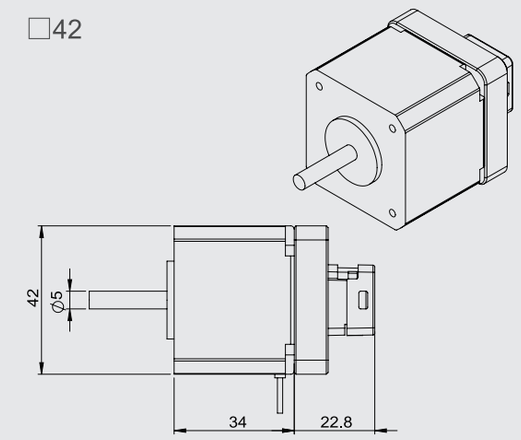
□20

□28

□35



□42



2MS - N □□ D D

2-Phase Stepper Motor

Frame No.

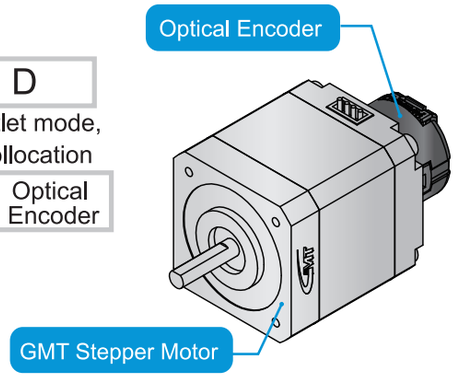
20	20mm
28	28mm
35	35mm
42	42mm
57	57mm

Shaft type

D	Double axes

Outlet mode, collocation

D	Optical Encoder



Description of Characteristics

1. High-precision feedback: Optical encoders are used as feedback, combined with fine subdivision technology, and the resolution can reach 10,000 counts per rotation.
2. Micro-stepping feedback
3. Single-axis high-load, point-positioning
4. Highly precise point-to-point control (Below 0.2mm)
5. Control over the depth of field of images

Specifications

Voltage		V	4.5~5.5
Current		mA	100(Max)
Signal			A+、A-、B+、B-、Z+、Z-
Frequency		Hz	300K
Output Voltage	High	V	2.4(min)
	Low	V	0.4(max)
Maximum output current		mA	20
Allowable maximum rotational speed		rpm	600
Operating/Storage temperature		°C	-20~+80
Humidity			RH85%max

Feed-out type

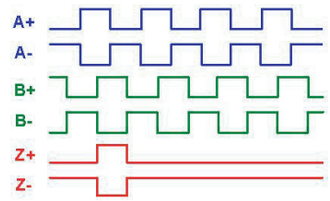
Signal	Vcc	GND
Thread Color	Red	Black
Signal	A+	A-
Thread Color	White	White/Black
Signal	B+	B-
Thread Color	Green	Green/Black
Signal	Z+	Z-
Thread Color	yellow	yellow/Gray

GMT馬達	Resolution(4X)	Recommended with Driver
□ 20 MS Series	200 ~ 8192 (13bits)	Q-SERVO *1. Three control modes : Position, speed + torque, position + speed + torque *2. Refer to the optional specifications on Page 40.
□ 28 MS Series	360 ~ 2500 (12 bits=4,096)	
□ 35 MS Series	360 ~ 2500 (12 bits=4,096)	
□ 42 MS Series	600 ~ 16000 (14 bits=16,384)	
□ 57 MS Series	600 ~ 16000 (14 bits=16,384)	

Type of output wave

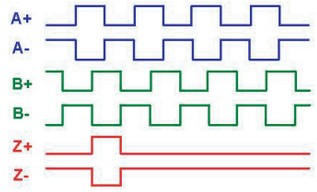
□28

Upon an axial twist (CCW), Phase A signal is ahead of Phase B signal by 90° ± 25%



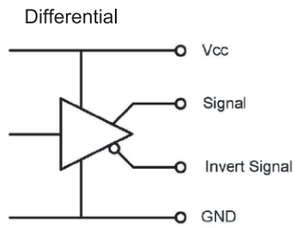
□42

Upon an axial twist (CCW), Phase A signal is ahead of Phase B signal by 90° ± 25%

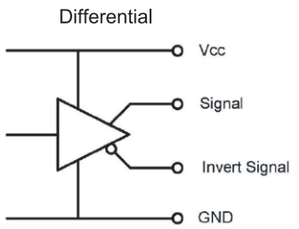


Output circuit diagram

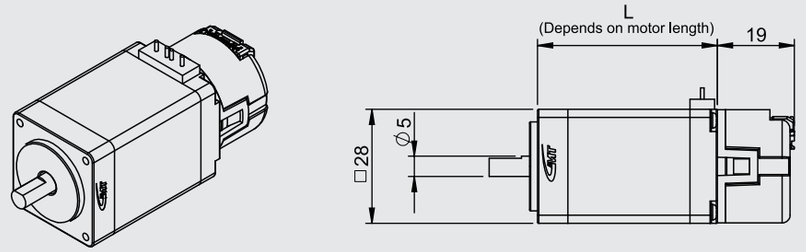
□28



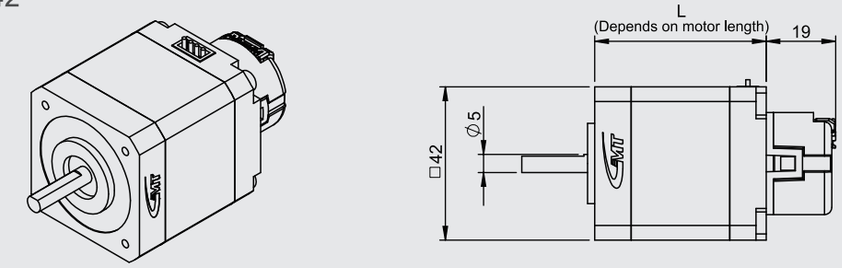
□42



□28



□42



Electromagnetic Brake Stepper Motor

28/35/42-frame

Specifications

Static friction torque〔Kgm〕(N · m)	0.012(0.12)
Input power	DC24V
Power (W) at20°c	3.84

Features

The power-off brake is mainly used to stop or hold the load when power is lost. It has several internal springs to supply braking force, and this structure can provide good reliability.
A typical application is to prevent the electric sliding table of the Z-axis from falling when there is a power outage.

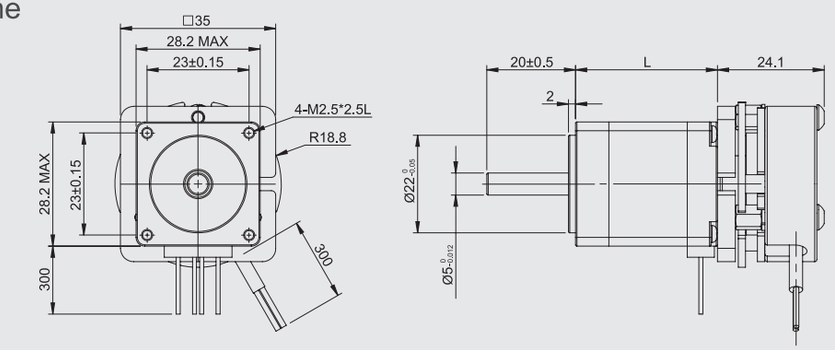
※ When using it, please note that the driver cannot generate torque immediately after power on. You need to wait for the motor to generate holding torque before releasing the brake.

Frame No.	label	Model	Length(L)
28	GMT	2MS-N28D32B	31.3
		2MS-N28D45B	44.5
	SANYO	SH2281-5231B	32
		SH2285-5231B	51.5

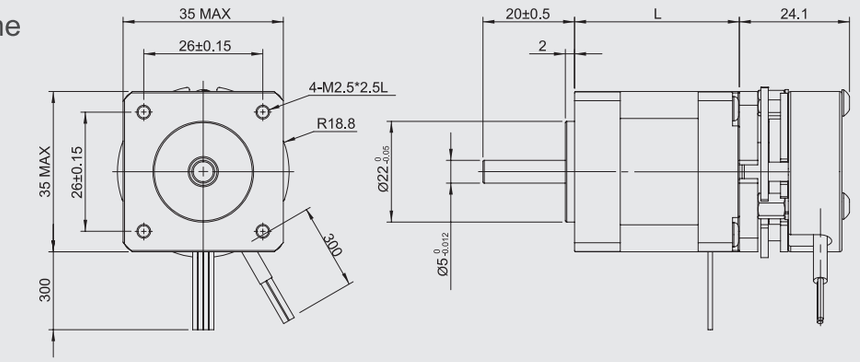
Frame No.	label	Model	Length(L)
35	GMT	2MS-N35D36B	36
	SANYO	SH3537-12U10B	37

Frame No.	label	Model	Length(L)
42	GMT	2MS-N42D47B	47
	SANYO	103H5205-0411B	33
		103H5210-0410B	46

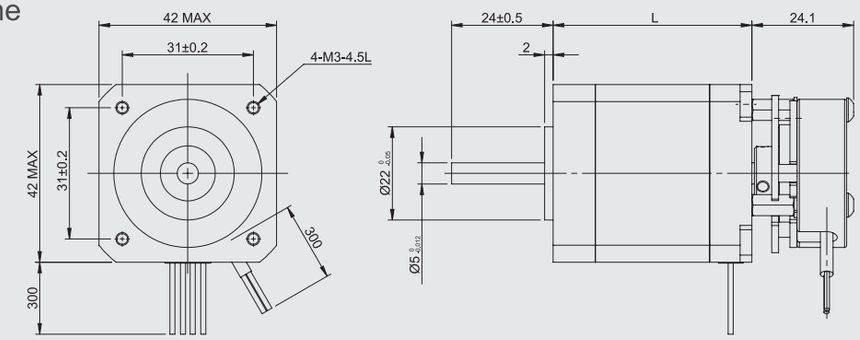
28-Frame



35-Frame

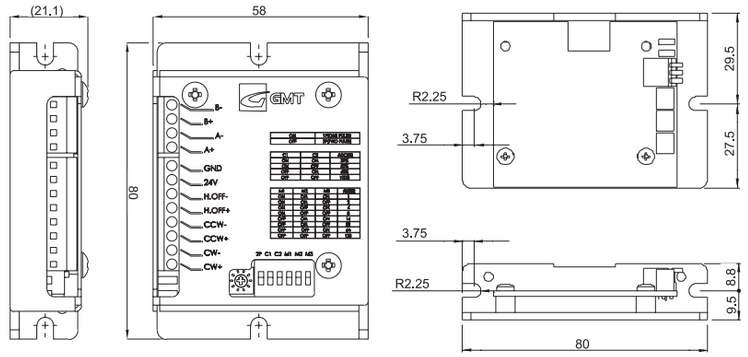


42-Frame

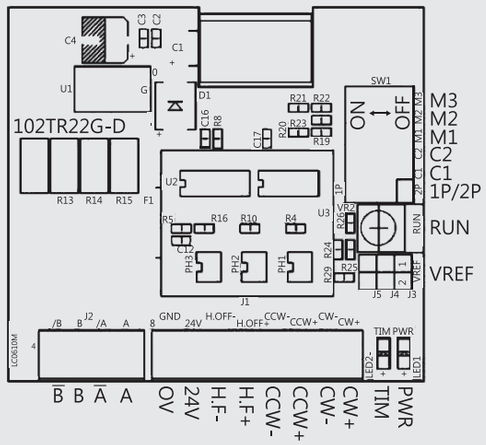


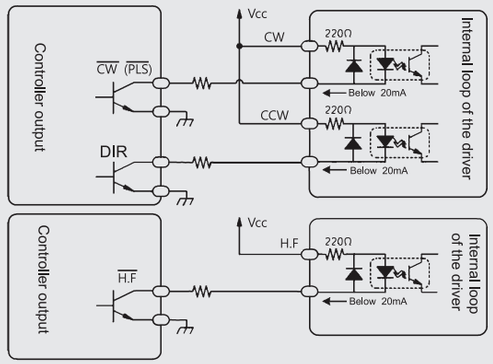
*Should you have different needs, please contact the sales department.

2-Phase Bipolar Micro-Stepping Driver
GTR22G-D



Wiring example





- Information on the pin of the motor cable
  A：Connect to Phase A of the motor
  A：Connect to Phase A of the motor
  B：Connect to Phase B of the motor
  B：Connect to Phase B of the motor

- Information on the pin of the input voltage
  24V : Connect to DC power 24V
  0V : Connect to DC power 0V

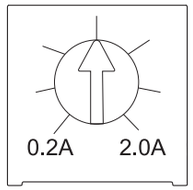
Features

- Small size, easy operations
- Fixed current control
- Power reverse connection protection
- Driving current 0.2A~2A
- Optional automatic current drop
- Ultra-low power consumption and ultra-high open-close efficiency
- Large-range signal input, no need for current-limiting resistance and no need to switch
- 8 micro-divisions available for selection (1、2、4、8、16、32、64、128)

Current adjustment

- Driving current 0.2A~2A to allow the measurement of the current obtained at the VREF joint with reference to the table below.

VREF	0.25V	0.5V	0.75V	1.00V	1.25V	1.50V	1.75V	2.00V	2.25V	2.5V
Current	0.2A	0.4A	0.6A	0.8A	1.0A	1.2A	1.4A	1.6A	1.8A	2A



1P / 2P Set

1P / 2P	Function
ON	1P(ONE PULSE)
OFF	2P(TWO PULSE)

ACD Set

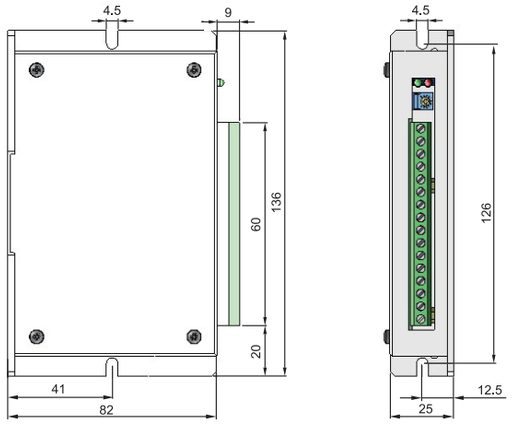
C1	C2	Automatic current drop rate
ON	ON	39%
ON	OFF	52%
OFF	ON	60%
OFF	OFF	100%

Number of divisions setting

M1	M2	M3	Number of divisions
ON	ON	ON	1
ON	ON	OFF	2
ON	OFF	ON	4
ON	OFF	OFF	8
OFF	ON	ON	16
OFF	ON	OFF	32
OFF	OFF	ON	64
OFF	OFF	OFF	128

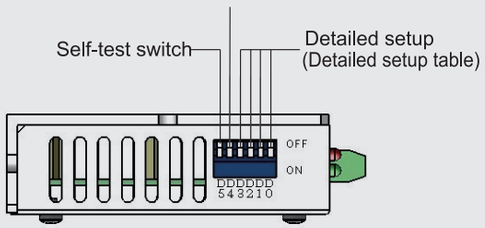
2-Phase Unipolar Micro-Stepping Driver GTR24M3

Recommended with Motor： SANYO【P.20~P.24】

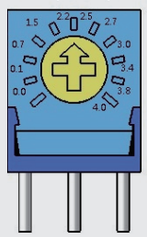


Function setup illustration

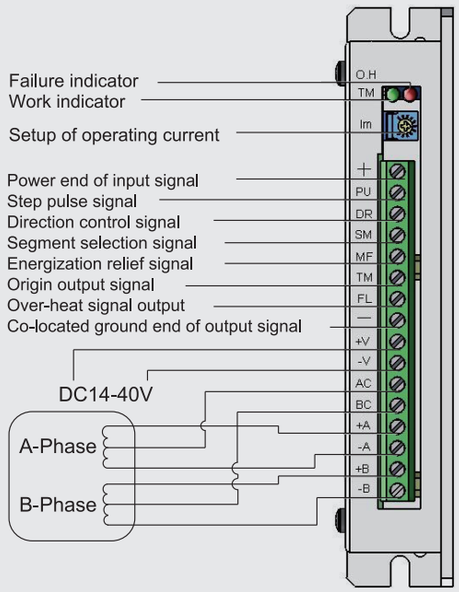
OFF : Pulse signal + direction signal control type
ON : Forward pulse + reverse pulse control type



Setup of operating current



Wiring



Features

- Small size, low price
- 12-Step micro-stepping angle of entrance setup
- Input voltage DC12V~40A
- High performance and high torque output
- Micro-division applying the advanced angle balance principle
- Driving current 0.5A~4A

Information on Input/Output Signals

PinNo	Marked	Name	Function Description
	O.H	Over-heat indicator	The red light turns on when it is overheated.
	RUN	Current setup knob during operation	Adjustment of output current of motor
1	+	Power end of input signal	Please provide a power source of 5V.
2	PU	CW/PLS	Single pulse: Pulse input Dual pulse: Clockwise (CW) pulse input.
3	DR	CCW/DIR	Single pulse: Input of the rotational direction. Dual pulse: Counterclockwise (CCW) pulse input
4	SM	Division selection signal	When it is “OFF,” choose the number of divisions according to the switch. When it is “ON,” it is half-step.
5	MF	Energization relief signal	When it is “OFF,” the motor current is provided normally. When it is “ON,” the motor current supply stops.
6	TM	Phase origin signal output	Once every 7.2 kWh.
7	FL	Over-heat signal output	The signal is exported when the temperature of the driver is above 70°C.
8	-	Co-located ground end of output signal	Co-located ground end of TM/FL
9	+V	Positive end of power	Driving power input of DC12~40V.
10	-V	Negative end of power	

11	AC	A.COM	TROY	Yellow	PKP	Yellow	SANYO DENKI	White
12	BC	B.COM		White		White		Black
13	+A	A+		Black		Black		Orange
14	-A	A-		Green		Green		Blue
15	+B	B+		Red		Red		Red
16	-B	B-		Blue		Blue		Yellow

Information on How to Set up the DIP Switch

Number of divisions	1	2	4	5	8	10	20	25	40	50	100	200	200	200	200	200
D0	ON	ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
D1	ON	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
D2	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
D3	ON	OFF	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
D4	ON	Dual pulse (2P)CW+CCW							OFF	Single pulse (1P)PULSW+DIR						
D5	Self-test switch (When it is “ON,” the driver will send out a pulse of 7.5 KPPS)															

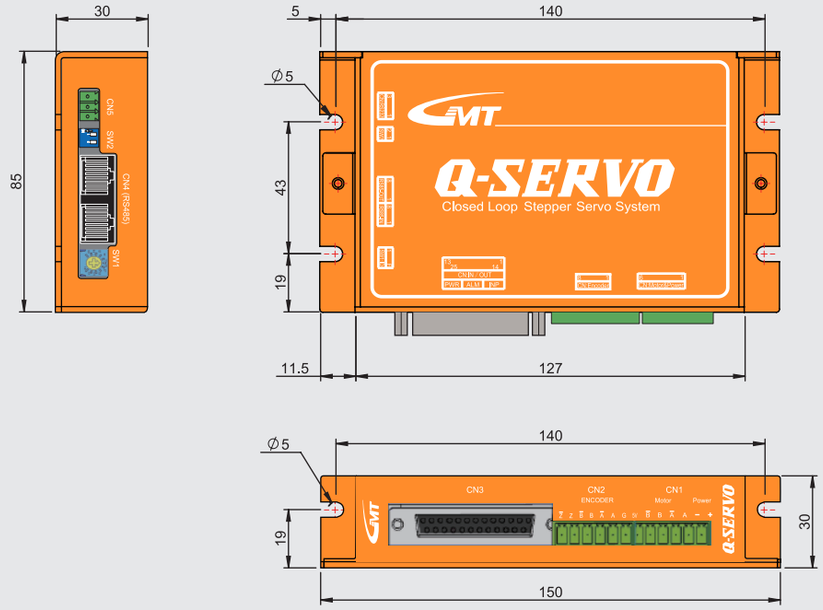
Description

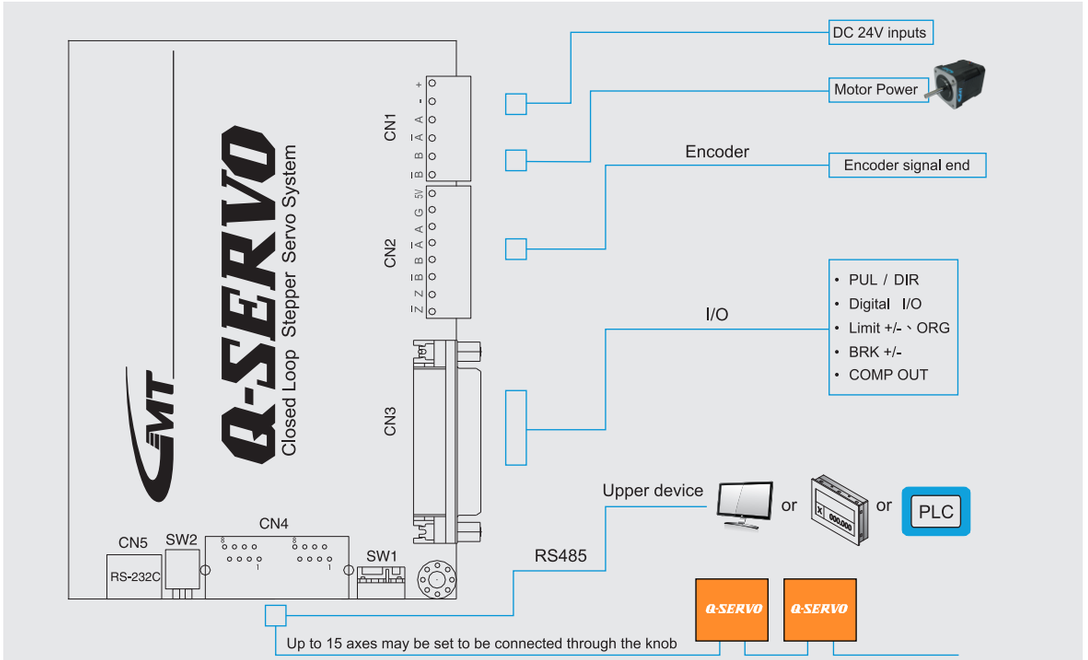
Q-SERVO Series

GST - QSD 20 MR - 24 C P

Driver series	Drive Type		Motor-Frame		Communication control method		Input voltage		Loop		Pulse input	
Stepper Motor	QSD	Q-SERVO(Slide table)	20	20mm	MR	RS232/RS485-Modbus RTU	24	DC24V	C	Closed-loop	P	Pulse input
	QSG	Q-SERVO(Gripper)	28	28mm								
	QSA	Q-SERVO(Driving and control in one)	35	35mm								
			42	42mm								

Recommended with Motor： GMT+Magnetic Encoder【P.10~P.16】
GMT+Optical Encoder 【P.20~P.24】
Minebea 【P.73】





Q-SERVO-QSD(Slide table) Driver Specification Table

Project	Description	Remark
Model No.	Q-SERVO	
Input power voltage	DC 24V±10%	
Max Output Power	2A	
Control object motor	2-phase step motor (encoder)	
Control quadrant	Four quadrants	
Driving type	PWM clipping-driven	
Encoder Resolution	1000 ~ 16000	
Input interface	Digital input*8	To be freely assigned, single-end signal SERVO_ON (System actuated) ALARM_RST (Re-set in case of error) HOME (Re-set start) EMG_STOP(Emergency stop) ERRCNT_CLR(Clearance of deflection) VELO_DIR(Reverse direction when controlled by speed torque) JOG+ (Fixed-speed forward rotation) JOG–(Fixed-speed reverse rotation) START(Startup program) P_STOP(Stop program) PRGSEL0~PRGSEL4(Program selection 0-31)
	Pulse commands input Pulse/Dir	Open collector input or differential input for the input loop. The maximum frequency of the pulse is 900 (kpps); the pulse wave has an amplitude of at least 5us; and the rising/lowering time is less than 2us.
	Encoder input(ĀA、B̄B、Z̄Z)	
Output interface	Digital output*5	To be freely assigned, single-end signal INPOSITION(Position fulfilled) ALARM(System abnormality) TRQ_LMT(Maximum torque) VELO_COIN(Speed fulfilled) READY(System ready) MOVE(Motor running) INRANGE(Program setup within range)
	CompOut Signal Output Feature	
	Brake output (for brake only)	
LED Display	Power,Alarm,The motor is rotating	Green light, red light, green light
Equipment ID	0-15	Up to 16 nodes that can be connected
Communication I/F	RS485、RS232	Bus high-level/low-level positions 9600bps~115200bps
Control type	1. Pulse control 2. Communication control	1. Pulse command (Single pulse) 2. Position control enforced through communication command

* Q-SERVO Operating Manual

Common parameters		
Running direction	Forward, reverse	
Automatic feed SVON	SERVO ON	With an ALARM, SERVO is OFF
Position control specifications		
Target Position	Parameter External pulse type	
Position mode	Full Time Close Loop Mode	
Target Precision	±1 pulse	
Electronic gear	A/B A = 1~10000 B = 1~10000	
Maximum range of abnormal count	±1~2147483647	
position / torque control specifications		
Speed command	Parameter (RPM)	The number of revolutions varies with the encoder resolution
Command revolving direction	Parameter	
Start/Stop	Digital input (JOG+ , JOG-) Parameter	
Type of joint		
Motor + Power	6 pole , European regulations, pitch 3.5mm	
Encoder	8 pole , European regulations , pitch 3.5mm	
DIO	DB25 Female	
RS485	RJ45	

Q-SERVO-QSD(Slide Table) Function

1. Q-SERVO-QSD can be controlled by two methods: communication (RS-485) and pulse.

(1) RS-485 communication control

① RS-485 serial communication interface is adopted, supporting Modbus RTU protocol, and can be connected to upper controllers such as HMI/PC/IPC/PLC

② Supports the maximum communication speed of 115200 bps.

(2) Pulse control method

① When the magnetic encoder is used, the resolution is 4000(4X)。

② When the Sensor optical encoder is used, the resolution is:

□ 20：8192 (4X)

□ 28 / □ 35：2500 (4X)

□ 42 / □ 57：16000 (4X)

③ When the Minebea optical encoder is used, the resolution is:

□ 20：6400 (4X)

□ 25 / □ 28：9600 (4X)

□ 35：12800 (4X)

□ 42：16000 (4X)

④Q-SERVO provides single pulse.

⑤ The electronic gear ratio can be set as A/B (A = 1~10000/B = 1~10000)

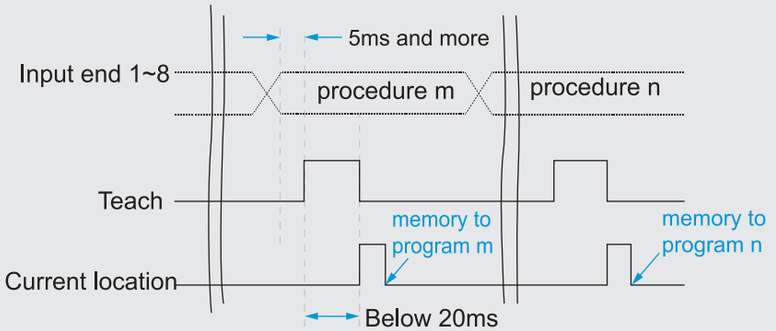
2. Q-SERVO has two modes of operation: position control and speed/torque control.

(1) Higher precision positioning is achieved with the use of an encoder that differs in resolution.

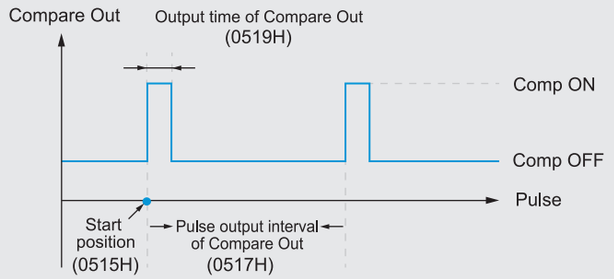
(2) The torque mode features position feedback.

Information on the Unique Torque Control of Q-SERVO-QSD (Slide Table)

1. The optimal best-matching□20, □28, □35, and□42 Closed-loop drivers are provided for the stepper motor.
2. It provides a dedicated and user-friendly operating interface with programming functions. In the programming mode, the 'Teach' button can be used to store the current position in the program table.
   The 'Teach' state can record the current position to the 'Current Position' in the program data register 9000H91FBH address, and specify to record to the designated program number through the 'Input Endpoint 18'.



3. Combined with GMT electric cylinder series and electric gripper series, the diverse functions provide automation production line operation requirements.
4. Q-SERVO can send out up to 990 signals within 1 second and can compare and contrast the position value and the output value at the maximum speed. The position at the maximum speed is selected for the comparison and contrast.



※Compare Out Feature address code

(1)0514H:Set Compare Out ON/OFF

(2)0515H:Start position of Compare Out

(3) 0517H:Compare Out's pulse output interval

(4) 0519H:Output time of Compare Out

(5)051AH:Compare Out's high/low voltage switching output

Up to 990 signals can be sent out within 1 second.

5. Through the built-in limit and home functions of Q-SERVO, external sensors are not required

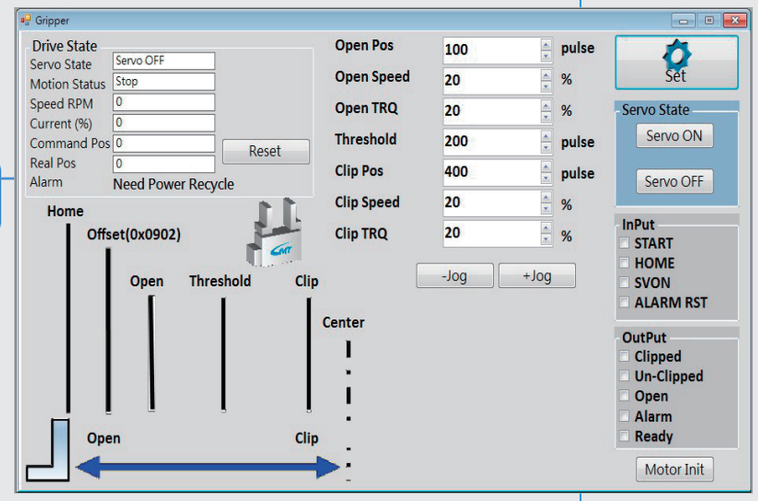
Q-SERVO-QSG(Gripper) Driver Specification Table

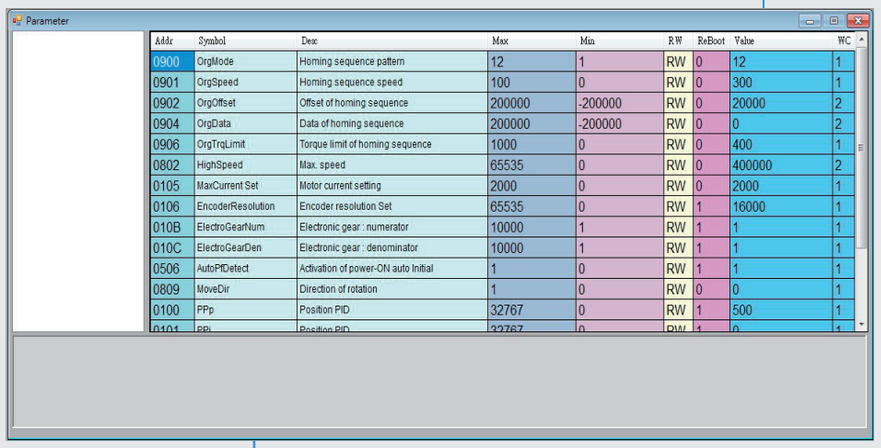
Project	Description	Remark
Model No.	Q-SERVO	
Input power voltage	DC 24V±10%	
Max Output Power	2A	
Control object motor	2-phase step motor (encoder)	
Control quadrant	Four quadrants	
Driving type	PWM clipping-driven	
Encoder Resolution	1000 ~ 16000	
Input interface	Digital input*4	IN0：Clamping IN1：Re-set IN2：Servo-actuation IN3：Re-set error
	Encoder input(AĀ、BB̄、ZZ̄)	
Output interface	Digital output*5	OUT1：Clamped OUT2：Not clamped OUT3：Open position OUT4：Alarm OUT5：Standby
LED Display	Power,Alarm,The motor is rotating	Green light, red light, green light
Equipment ID	0-15	Up to 16 nodes that can be connected
Communication I/F	RS485、RS232	Bus high-level/low-level positions 9600bps~115200bps
Control type	1. I/O control 2. Communication control	1. Give action command through I/O 2. Give action command through Communication Control I/O.

Type of joint		
Motor + Power	6 pole , European regulations, pitch 3.5mm	
Encoder	8 pole , European regulations, pitch 3.5mm	
DIO	DB25 Female	
RS485	RJ45	

Parameter setup

Gripper mode operation page





Parameter setup page

Q-SERVO-QSG(Gripper) Function

1. Q-SERVO-QSG: There are two control methods, namely, communication (RS-485) and I/O.

(1) RS-485 communication control

① RS-485 series communication interface is adopted to support Modbus RTU; it can connect upper level control such as HMI/PC/IPC/PLC.

② Supports the maximum communication speed of 115200 bps.

(2) External I/O control

① Perform simple gripper operation through I/O.

The gripper action parameters can be set through the UI (such as speed, clamping torque and claw-opening position) and the US can also be used to control the virtual I/O and trigger the action command to perform simple operation and set parameters.

Information on the Unique Torque Control of Q-SERVO-QSG(Gripper)

1. The optimal best-matching□20, □28, □35, and□42 Closed-loop drivers are provided for the stepper motor.
2. Features:

◎ High Speed, High Torque

By utilizing the newly developed algorithm, the motor's characteristics can be maximized to achieve high speed and high torque.

◎ High reliability system

It adopts encoder closed-loop control, ensuring a non-lost step stepper servo system.

◎ Low heat generation, Energy-saving

Due to the adjustment of the optimal current based on the load during control execution, it can achieve high-performance operation.

◎ Two driver modes / Three control modes

It has two driver modes, namely position control and speed/torque control. Switching between these modes can be done instantly.

For customer devices, there are three optimal control modes available: external pulse mode, RS-485 communication control mode, and external I/O mode.

Q-SERVO-QSA(Driving and control in one) Driver Specification Table

Project	Description	Remark
Model No.	Q-SERVO	
Input power voltage	DC 24V±10%	
Max Output Power	2A	
Controlled motor	2-phase step motor (encoder)	
Control quadrant	Four quadrants	
Driving type	PWM clipping-driven	
Encoder Resolution	1000 ~ 16000	
Input interface	Digital input*8	To be freely assigned, single-end signal SERVO_ON (System actuated) ALARM_RST (Re-set in case of error) HOME (Re-set start) EMG_STOP(Emergency stop) ERRCNT_CLR(Clearance of deflection) VELO_DIR(Reverse direction when controlled by speed torque) JOG+ (Fixed-speed forward rotation) JOG–(Fixed-speed reverse rotation) START(Startup program) P_STOP(Stop program) PRGSEL0~PRGSEL4(Program selection 0-31)
	Pulse commands input Pulse/Dir	Open collector input or differential input for the input loop. The maximum frequency of the pulse is 900 (kpps); the pulse wave has an amplitude of at least 5us; and the rising/lowering time is less than 2us.
	Encoder input(A$\bar{A}$、B$\bar{B}$、Z$\bar{Z}$)	
Output interface	Digital output*5	To be freely assigned, single-end signal INPOSITION(Position fulfilled) ALARM(System abnormality) TRQ_LMT(Maximum torque) VELO_COIN(Speed fulfilled) READY(System ready) MOVE(Motor running) INRANGE(Program setup within range)
	CompOut Signal Output Feature	
	Brake output (for brake only)	
LED Display	Power,Alarm,The motor is rotating	Green light, red light, green light
Equipment ID	0-15	Up to 16 nodes that can be connected
Communication I/F	RS485、RS232	Bus high-level/low-level positions 9600bps~115200bps
Control type	1. Pulse control 2. Communication control	1. Pulse command (single pulse) 2. Position control enforced through communication command

Common parameters		
Running direction	Forward, reverse	
Automatic feed SVON	SERVO ON	With an ALARM, SERVO is OFF
Position control specifications		
Target Position	Parameter External pulse type	
Position mode	Full Time Close Loop Mode	
Target Precision	±1 pulse	
Electronic gear	A/B A = 1~10000 B = 1~10000	
Maximum range of abnormal count	±1~2147483647	
position / torque control specifications		
Speed command	Parameter (RPM)	The number of revolutions varies with the encoder resolution
Command revolving direction	Parameter	
Start/Stop	Digital input (JOG+ , JOG-) Parameter	
Type of joint		
Motor + Power	6 pole , European regulations, pitch 3.5mm	
Encoder	8 pole , European regulations , pitch 3.5mm	
DIO	DB25 Female	
RS485	RJ45	

Q-SERVO-QSA(Driving and control in one) Function

1. Q-SERVO-QSD can be controlled by two methods: communication (RS-485) and pulse and I/O.

(1) RS-485 communication control

① RS-485 serial communication interface is adopted, supporting Modbus RTU protocol, and can be connected to upper controllers such as HMI/PC/IPC/PLC

② Supports the maximum communication speed of 115200 bps.

(2) Pulse control method

① When the magnetic encoder is used, the resolution is 4000(4X)。

② When the Sensor optical encoder is used, the resolution is:

□ 20：8192 (4X)

□ 28 / □ 35：2500 (4X)

□ 42 / □ 57：16000 (4X)

③ When the Minebea optical encoder is used, the resolution is:

□ 20：6400 (4X)

□ 25 / □ 28：9600 (4X)

□ 35：12800 (4X)

□ 42：16000 (4X)

④Q-SERVO provides single pulse.

⑤ The electronic gear ratio can be set as A/B (A = 1~10000/B = 1~10000)

(3) External I/O control

① It can memorize 32 sets of positions.

② Q-SERVO can designate to run the program in a line-skipping or loop mode; there is no need to compose the sequence.

2. There are two modes of Q-SERVO, namely, position control and speed/torque control.

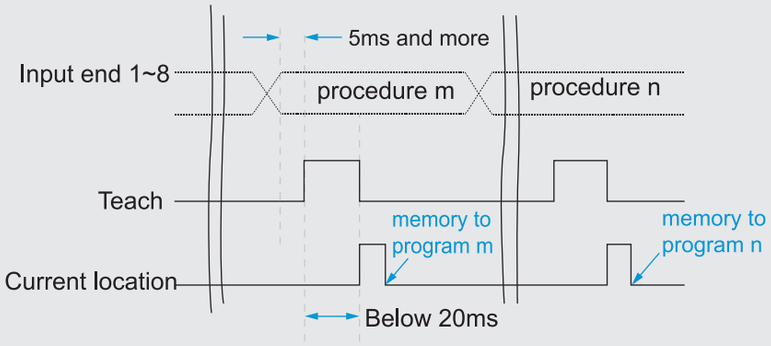
(1) Higher precision positioning is achieved with the use of an encoder that differs in resolution.

(2) The torque mode features position feedback.

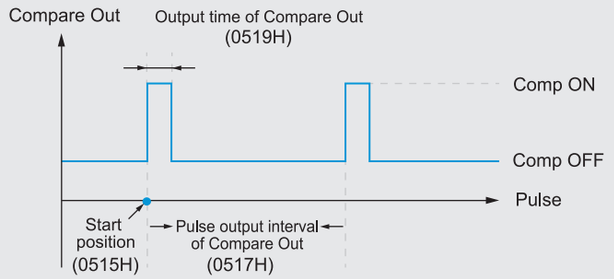
PS. The specifications of the gripper and the slide table can be applied here but the gripper cannot be controlled through the pulse.

Information on the Unique Torque Control of Q-SERVO-QSA(Driving and control in one)

1. The optimal best-matching□20, □28, □35, and□42 Closed-loop drivers are provided for the stepper motor.
2. It provides a dedicated and user-friendly operating interface with programming functions. In the programming mode, the 'Teach' button can be used to store the current position in the program table.
   The 'Teach' state can record the current position to the 'Current Position' in the program data register 9000H91FBH address, and specify to record to the designated program number through the 'Input Endpoint 18'.



3. Combined with GMT electric cylinder series and electric gripper series, the diverse functions provide automation production line operation requirements.
4. Q-SERVO can send out up to 990 signals within 1 second and can compare and contrast the position value and the output value at the maximum speed. The position at the maximum speed is selected for the comparison and contrast.



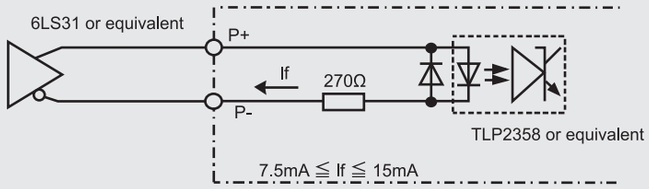
*Compare Out Feature address code
(1)0514H:Set Compare Out ON/OFF
(2)0515H:Start position of Compare Out
(3) 0517H:Compare Out's pulse output interval
(4) 0519H:Output time of Compare Out
(5)051AH:Compare Out's high/low voltage switching output

Up to 990 signals can be sent out within 1 second.

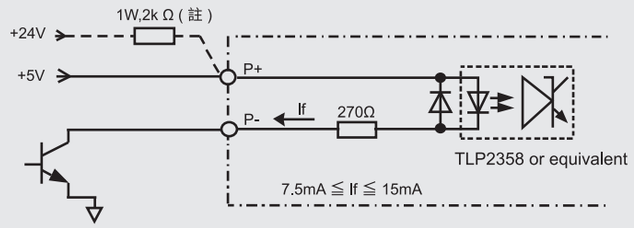
5. Through the built-in limit and home functions of Q-SERVO, external sensors are not required

Input loop

Command pulse input loop (Line Driver)

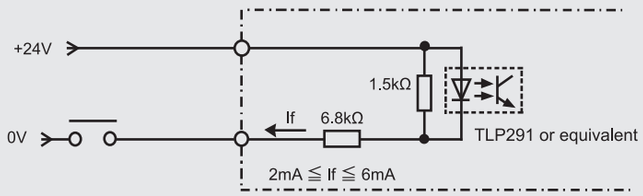


Command pulse input loop (Open collector)

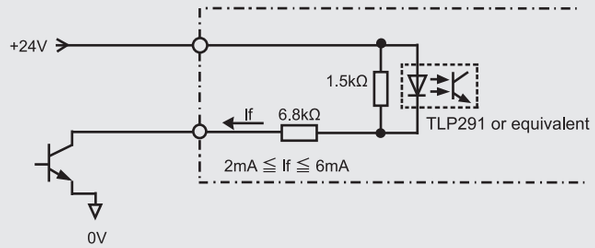


(Note) When driven with +24V, please connect in series to a resistance of 1W, 2kΩ (recommended value).

Sensor, digital input loop (joint)

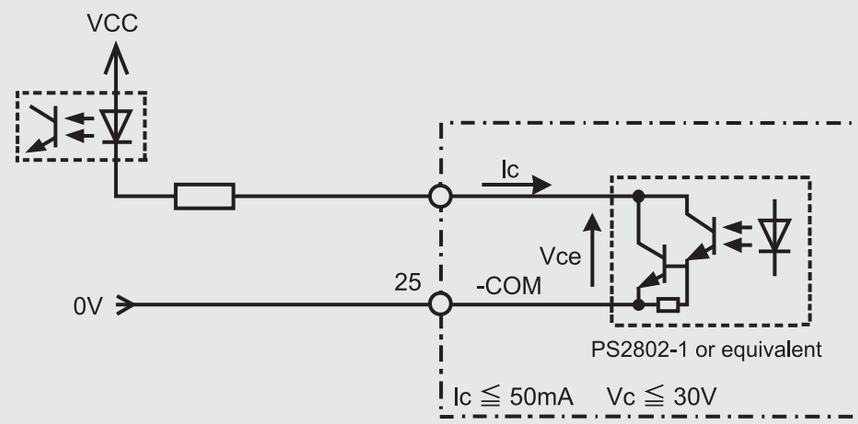


Sensor, digital input loop (Open collector output)

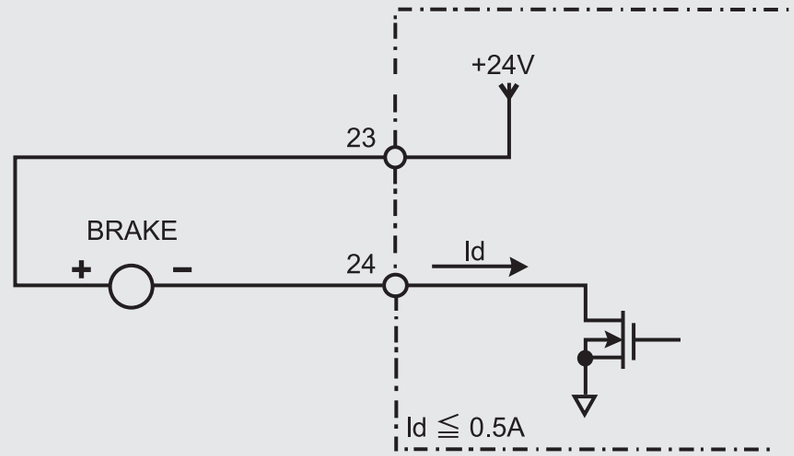


Output loop

Digital output (Optical coupling connection)



Brake output loop (brake)

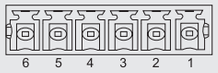


Joint and Pin Designation Table

Joint and Pin Designation Table	Position of respective pins of the socket from the perspective of the inserted surface

CN1 (Power & Motor)

Pin	Name of signal
6	B
5	B
4	A
3	A
2	GND
1	24V DC



* The pin position and its corresponding line color depends on the shipment wiring defined chart of reach product.

CN2 (Encoder)

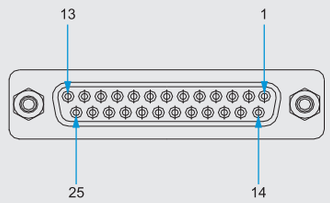
Pin	Name of signal
8	$\overline{Z}$
7	Z
6	$\overline{B}$
5	B
4	$\overline{A}$
3	A
2	GND
1	5V DC

* The pin position and its corresponding line color depends on the shipment wiring defined chart of reach product.

CN3 (Sensor & Interface)

Pin	Name of signal	Pin	Name of signal
1	+COM (+24V)	14	IN5
2	+LM	15	IN6
3	-LM	16	IN7
4	ORG	17	OUT1
5	Pulse+	18	OUT2
6	Pulse-	19	OUT3
7	Dir+	20	OUT4
8	Dir-	21	OUT5
9	IN0 & EMG	22	COMP OUT
10	IN1	23	BRK+
11	IN2	24	BRK-
12	IN3	25	-COM
13	IN4		

D-SUB 25Pin



※Pay attention to power polarity

2-phase Bipolar Closed-loop-driven ▶ Q-SERVO
Joint and Pin Designation Table

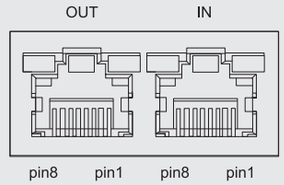
Joint and Pin Designation Table	Position of respective pins of the socket from the perspective of the inserted surface

CN4 (RS485)

Pin	Name of signal
1	(NC)
2	GND
3	A Input (RS485)
4	(NG)
5	GND
6	B Input (RS485)
7	(NC)
8	GND

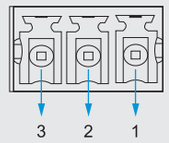
RJ45 type*2

RJ45*2



CN5 (RS232C)

Pin	Name of signal
1	RXD
2	TXD
3	GND



Description

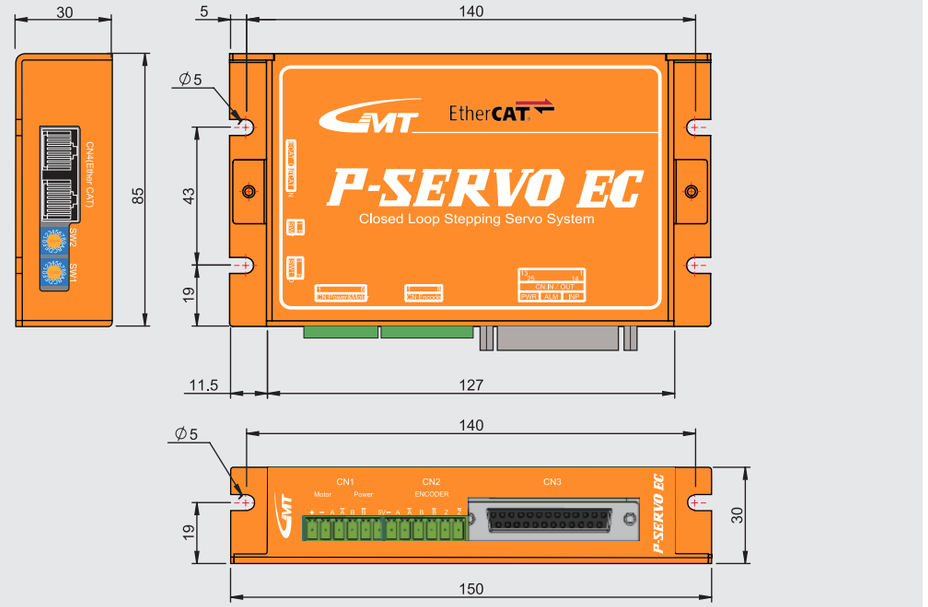
P-SERVO EC Series

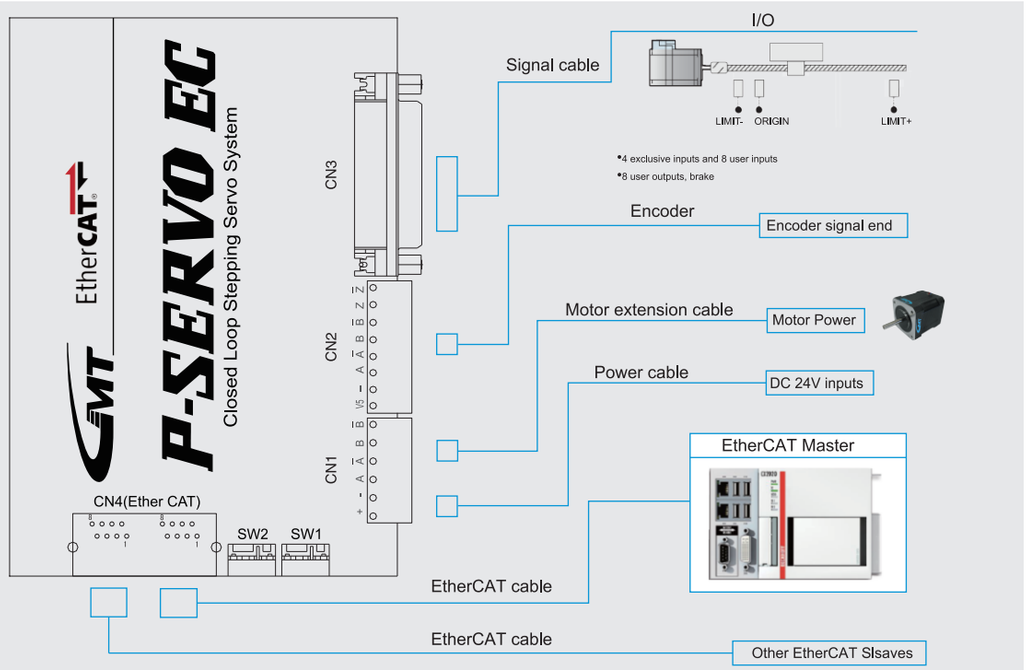
EtherCAT

GST - PSD 20 EC - 24 C P - G

Driver series	Drive Type		Motor-Frame		Communication control method		Input voltage		Loop		Pulse input		Motor Brand	
Stepper Motor	PSD	P-STEP EC Driver	20	20mm	EC	EtherCAT	24	DC24V	C	Closed-loop	P	Pulse input	G	GMT
			25	25mm									M	Minebea
			28	28mm										
			42	42mm										

Recommended with Motor：GMT+Magnetic Encoder【P.10~P.16】
GMT+Optical Encoder 【P.20~P.24】
Minebea 【P.73】





P-SERVO EC Driver Specification Table

Name of Product		P-SERVO EC	
Input voltage		24VDC±10%	
Dissipative current		500 mA at maximum (excluding motor current)	
System framework		Closed-loop control system	
Driving rated current		maximum 3.1 Arms	
Operating environment	Temperature	Use: 0~50°C	Storage: -20~70°C
	Humidity (non-condensing)	Use:35~85% 0.5g	Storage:10~90%
	Vibration	0~3,000rpm	
Function	resistance Rotation speed	200 ~ 51,200ppr (For detailed settings, refer to the corresponding object)	
	Positioning resolution[ppr]	Over-current, over-speed, maximum count error, over-heat, abnormal motor wiring, abnormal	
	Protection Feature	encoder wiring, positioning error, position value	
		overflow protection, memory error, internal	
		communication error	
	LED Display	Power, position, energization, alarm, current state	
Input/Output signal	Input signal	3 designated inputs (left limit, right limit and origin) 8 User-defined inputs	
	Output signal	1 designated output (brake) 8 User-defined outputs	

Communication specifications

Type of Communication	EtherCAT
Physical Layer	Ethernet - 100BASE-TX
	RJ45 (shielded)
Connector	ECAT IN : EtherCAT Input
	ECAT OUT : EtherCAT Output
ECAT Device ID	Set Configured Station Alias by ECAT ID Switch : 1 ~ 99
	Set Physical Address at Master: 1 ~ 65535
Topology	Line (Structured by Products only)
	Tree, Star (When use Junction products)
Support Protocol	CoE (CANopen application protocol over EtherCAT)
Control Profile	CiA 402 drive profile (IEC61800-7)
Supported Operation Mode	Profile Position Mode
	Profile Velocity Mode
	Cyclic Synchronous Position Mode
	Cyclic Synchronous Velocity Mode
	Homing Mode
Synchronization	Free Run, SM Event, DC SYNC Event (Minimum
	cycle time:500us)
Processing Data	Dynamic PDO Mapping

P-SERVO EC Driver Characteristics

• Closed-loop control system

The Closed-loop system enhances the movement positioning precision, automatic out-of-step compensation and abnormal positioning alarm.

• High positioning resolution

Enables the adjustment of the positioning resolution of related objects set and supports up to 51,200 pulses/lap.

• Low heat generation, energy-saving

The Start/Stop current setup allows adjustment of the current to effectively reduce the heat generated and save energy.

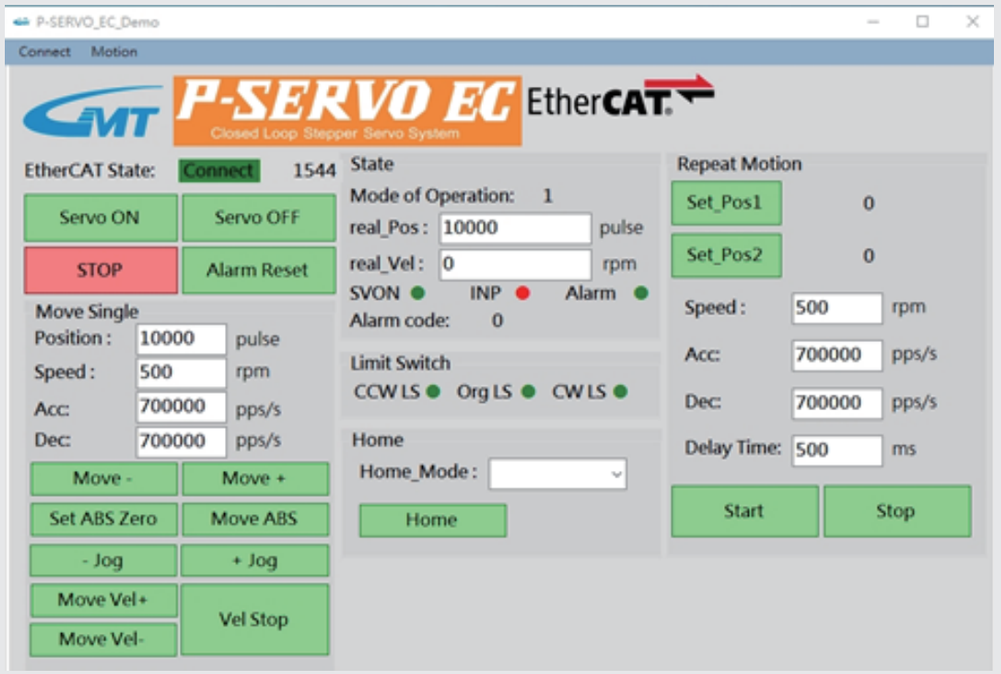
• High-speed synchronized minimum-delay communication interface

High-speed Ethernet 100BASE-TX 100Mbps interface
Complete dual-tasking, highly-reliable communication, high synchronization and low delay
Synchronization interval: 250 microseconds at minimum

• Standard Movement Protocol

It supports CoE (CANopen over EtherCAT) and meets the CiA402 standard by providing 5 movement control modes, namely, position control, speed control, position synchronization control, speed synchronization control and origin reset.

Operation screen

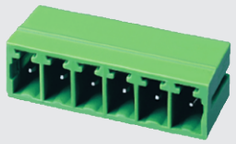


Joint and Pin Designation Table

Joint and Pin Designation Table	Position of respective pins of the socket from the perspective of the inserted surface

CN1 (Power & Motor)

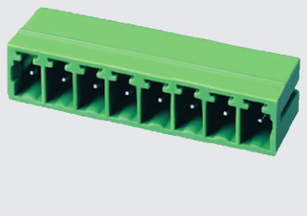
Pin	Name of signal
1	24VDC
2	GND
3	A
4	$\overline{A}$
5	B
6	$\overline{B}$

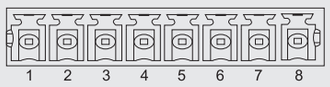


* The pin position and its corresponding line color depends on the shipment wiring defined chart of reach product.

CN2 (Encoder)

Pin	Name of signal	I/O
1	5VDC	Output
2	GND	Output
3	A	Input
4	$\overline{A}$	Input
5	B	Input
6	$\overline{B}$	Input
7	Z	Input
8	$\overline{Z}$	Input



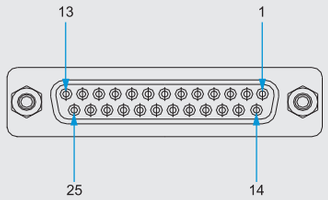


* The pin position and its corresponding line color depends on the shipment wiring defined chart of reach product.

CN3 (Sensor & Interface)

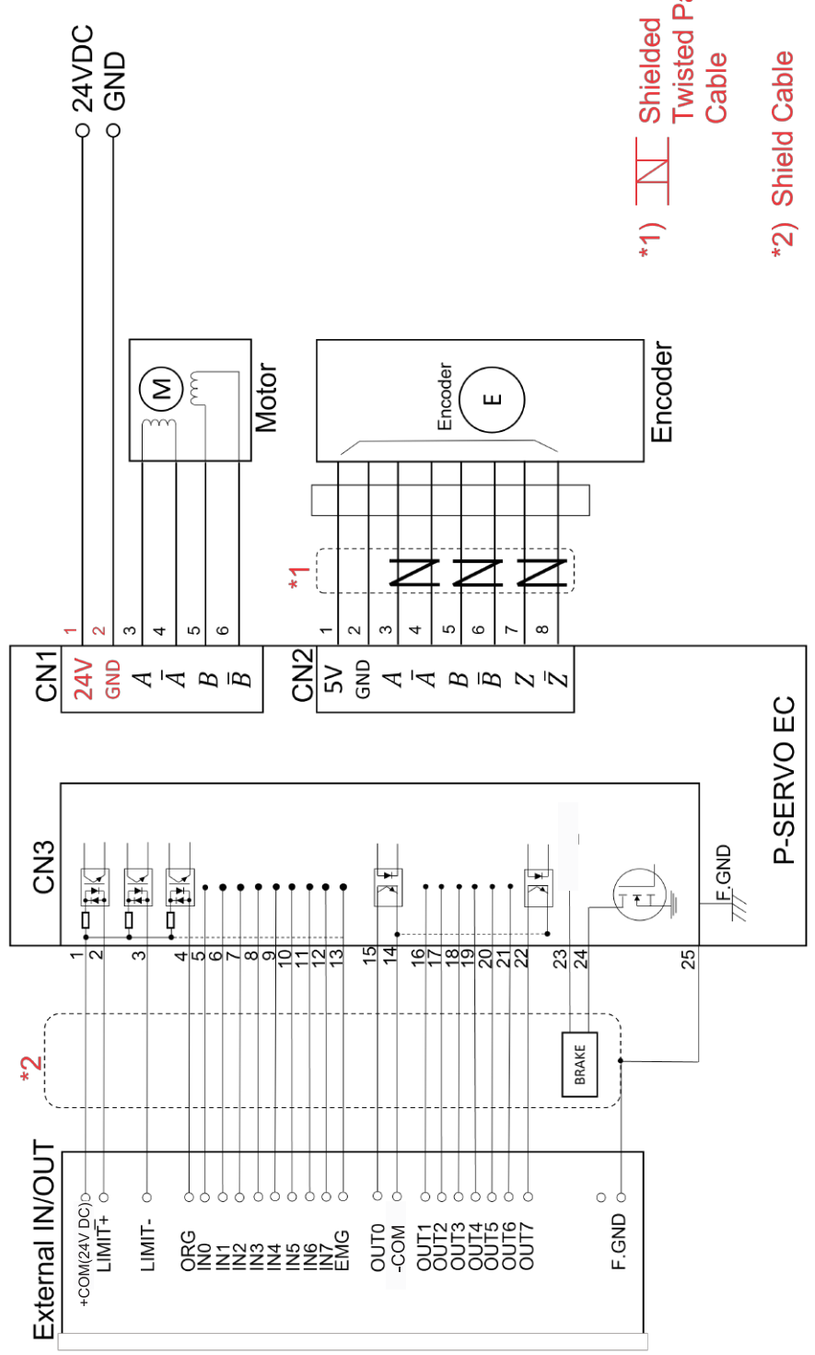
Pin	Name of signal	Pin	Name of signal
1	+COM(24V DC)	14	-COM
2	LIMIT+	15	OUT0
3	LIMIT-	16	OUT1
4	ORG	17	OUT2
5	IN0	18	OUT3
6	IN1	19	OUT4
7	IN2	20	OUT5
8	IN3	21	OUT6
9	IN4	22	OUT7
10	IN5	23	BRK+
11	IN6	24	BRK-
12	IN7	25	F.GND
13	EMG		

D-SUB 25Pin



※Pay attention to power polarity

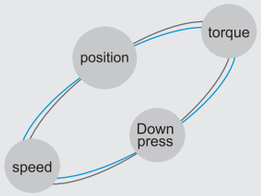
External wiring diagram



i-SERVO

◎Diversified torque control modes

- "Teach" mode ! Teaching Mode!
- Linear interpolation feature; the standard one can connect up to 16 axes! Customization is possible and a customized one can connect up to 256 axes!
- Motor sizes include 20, 25, 28 (which can replace a small servomotor of 30W and less), 35, 42, and 56 mm.
- It is applicable to various types of electric grippers! Customization is possible! Product design and manufacturing!
- Supports all kinds of Closed-loop compensation! Optical linear encoder (optional)! No jittering when stopped in the dual-mode driven model!
- High-speed position interception and compare out; up to 990 triggers within 1 second!
- No external detector needed! Capable of detecting positive and negative limits and the origin! Programmable and auto-detection travel range!



i-SERVO adopts a closed-loop stepper servo motor system, which allows for diversified torque control and high-precision positioning. Mode switching will not affect the operation.

i-SERVO Features

◎Four driving modes and three control types

There are four driving modes, namely, "position control," "speed control," "down press control" and "torque control;" immediate shift among the modes is possible.

The optimum control is realized with the customer's device.

External pulse type

- Electronic gear ratio (the servo-mode only)
- Dual-pulse/single pulse/Phase AB
- Optical encoder and standard resolution are used:

  20mm：6400ppr (4X)

  25 / 28mm：9600ppr (4X)

  35mm：10800ppr (4X)

  42 / 56 / 86mm：16000ppr (4X)

RS-485 Communication control

- Built-in RS485 series communication interface, supports Modbus ASC II and RTU connectible to man-machine/PC/HMI, etc.
- Communication speed: Supports 115200 bps at maximum.

External I/O

- External I/O may be used to trigger the internal 32 sets of positions that may be memorized.
- i-SERVO can program location jump and set up the loop.
- Integrated speed/position/torque/down press control; it takes only one to do all.

◎High rotational speed, high torque

The newly developed smart algorithm helps make the best of the motor features at maximum. Realizes high rotational speed and high torque.

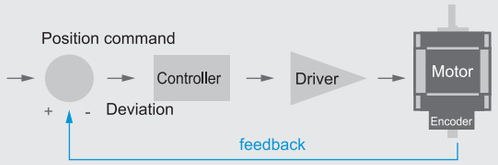
◎Highly precise positioning

The integrated optical encoder with a resolution of up to 6400/9600/10800/16000 ppr enables highly-precise positioning.

i-SERVO Features

◎Highly reliable system

It comes with the optical encoder and non-out-of-step servo system.



◎Highly responsive

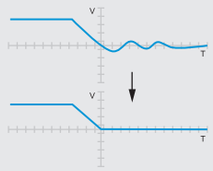
Instant torque output can reach 150% of its rated torque, making it suitable for sensitive operations that require quick responses.

◎Low heat generation, energy-saving

It achieves high-efficiency operation by adjusting the optimal current according to the load during control execution.

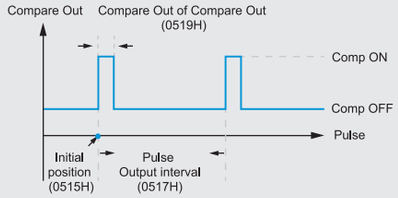
◎Reduced settling time in a stop

While running, it is possible to switch to the dual mode from closed-loop control to accordingly reduce the settling time and also the time needed for the production process flow.



Up to 990 signals can be sent out within 1 second.

◎High-speed Position Interception and Compare Out



Up to 990 signals can be sent out within 1 second.

※Compare Out Feature address code

(1)0514H:Set Compare Out ON/OFF
(2)0515H:Start position of Compare Out
(3) 0517H:Compare Out's pulse output interval
(4) 0519H:Output time of Compare Out
(5)051AH:Compare Out's high/low voltage switching output

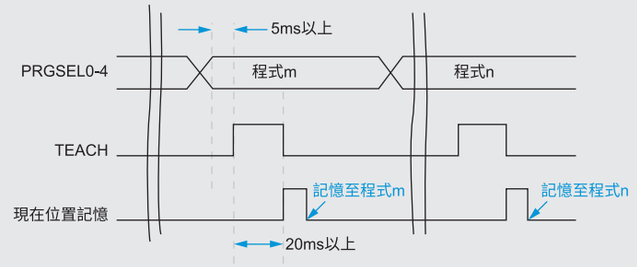
◎Position movement control mode

Mode	Control method	Features
Full Time Close Mode	The most suitable current is adjusted reflective of the load.	Low vibration/non-out-of-step/ low heat generation
Dual Mode	To shift to the Open/Close mode at a rotating speed close to a stop	Non-out-of-step hunting reduces the settling time for positioning and generates minimum heat.
Full Time Open Mod	That is normally referred to as micro-step control	Quick hunting response
Stepping Closed Loop Mode	Closed-loop compensation is done according to the position deviation when the motor comes to a stop.	There is no need to adjust the PID. An external optical linear encoder can be used to produce a closed loop and to facilitate higher precision for the mechanism.

※There are four position movementmodes, namely, Full Time Closed, Dual, Full Time Open and Stepping Closed Loop; one can choose the most suitable mode reflective of the purpose.

Teaching

Through the “TEACH” status, the current position is memorized in the program data parameters under “Current Position” (Address: 9000H ~ 91FBH). Use “PRGSEL0~4” to designate the number of the program to be memorized to.

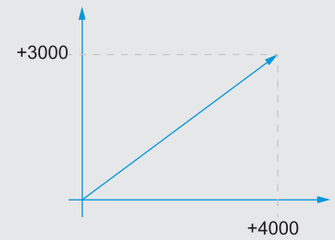


linear interpolation

When multiple units are used (up to 16 or 256 in case of customization), this driver can accomplish linear interpolation.
An example of linear interpolation control is shown below.

※Example 1: Perform the following linear interpolation.

- Axis 1 of linear interpolation: ：SW_ID=0
- Axis 2 of linear interpolation: ：SW_ID=1
- Axis 1 shift: 4000
- Axis 2 shift: 3000
- Linear interpolation action speed between Axis 1 and Axis 2
  Activation speed: 1000pps
  最高速度：10000pps
  Acceleration/deceleration time: 100ms
  S-shape acceleration/deceleration rate: 100%



※Setup procedure:

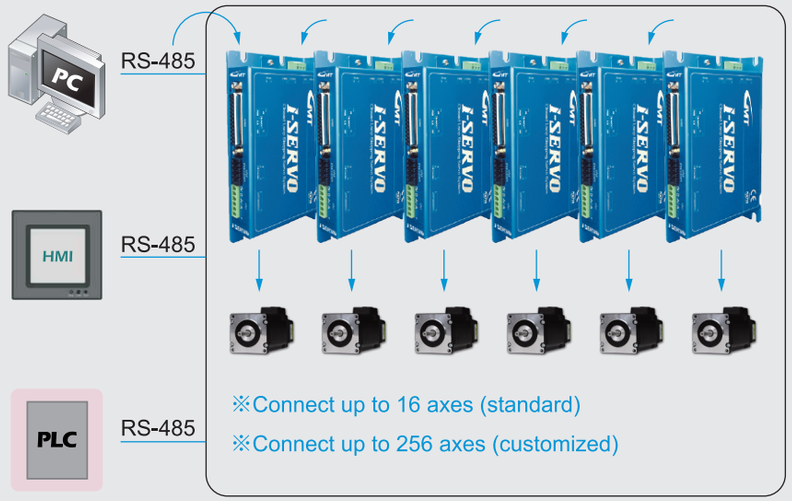
① Turn on broadcasting
② Set the starting/maximum/acceleration/deceleration
③ Set the synthetic shift

$$\text{Setting} = \sqrt{\text{Axis 1 shift}^2 + \text{Axis 2 shift}^2} = 5000$$

④ Set the shift of each axis
⑤ Send the interpolation command

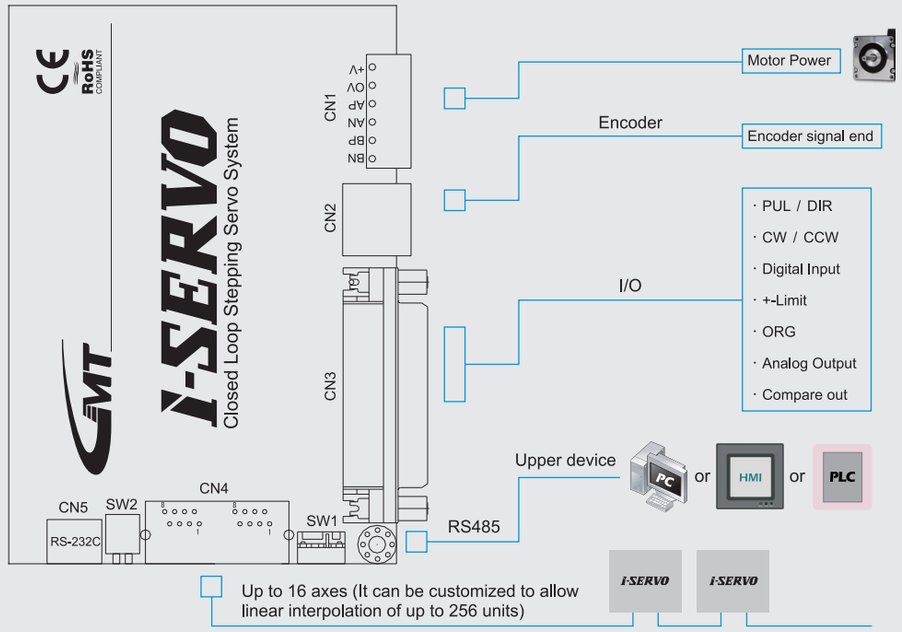
Linear interpolation feature shown through RS485

Connect up to 16 axes (standard)



I/O Control

- PUL / DIR
- CW / CCW
- Digital Input
- +-Limit
- ORG
- Analog Output
- Compare out



Description of Model

i-SERVO Series

i-SERVO - ST - 20 M - GM

驅動 Model

Type of network	
ST	Basic
P	Pulse (pulse command)

Motor Dimension	
20	20mm
25	25mm
28	28mm
35	35mm
42	42mm
56	56mm

Motor Length	
M	Medium
L	Large

Bran identity

*RS-485 Bus communication control, which can control up to 16 axes

Recommended with Motor： Minebea 【P.73】

Standard motor + driver

Product specifications	Motor model No.	Driver model No.
i-SERVO-ST-20M-GM	TM-20M-G	GMT5020-ST2-20M
i-SERVO-ST-25M-GM	TM-25M-G	GMT5020-ST2-25M
i-SERVO-ST-28M-GM	TM-28M-G	GMT5020-ST2-28M
i-SERVO-ST-35M-GM	TM-35M-G	GMT5020-ST2-35M
i-SERVO-ST-42M-GM	TM-42M-G	GMT5020-ST2-42M
i-SERVO-ST-42L-GM	TM-42L-G	GMT5020-ST2-42L
i-SERVO-ST-56M-GM	TM-56M-G	GMT5020-ST2-56M
i-SERVO-ST-56L-GM	TM-56L-G	GMT5020-ST2-56L

※The motor can be provided alone, including the encoder

Motor Specifications

Recommended with Driver：i-SERVO, P-SERVO

Model No.	Motor model No. (mm)	Encoder resolution (PPR)	Rated torque (mN・m)	Maximum torque (mN・m)	Moment of inertia ($g*cm^2$)	Starting torque (mN・m)	Quality (g)	Motor axis (Ø)
TM-20M-G	□20 x 56	6,400	TBD	36	2.9	2.0	70	4
TM-25M-G	□25 x 50.5	9,600	106mNm	140	4	5.0	120	5
TM-28M-G	□28 x 50.5	9,600	106mNm	140	4	5.0	120	5
TM-35M-G	□35 x 61	12,800	TBD	280	40	10.0	300	5
TM-42M-G	□42 x 58	16,000	300mNm	550	75	16.7	370	5
TM-42L-G	□42 x 70	16,000	TBD	690	162	30.0	560	5
TM-56M-G	□56 x 60	16,000	706mNm	900	180	29.0	620	5
TM-56L-G	□56 x 87	16,000	TBD	1530	490	60.0	1150	5

※Encoder is optional (Option)

Wiring is optional

※Standard length: 2 meters (Option: 2, 4, and 6 meters)

Motor extension cable

Number of frames/length	Motor line model No.	Length (m)
20M	i-S-M-20-	□□
25M	i-S-M-25-	□□
28M	i-S-M-28-	□□
35M	i-S-M-35-	□□
42M	i-S-M-42-	□□
42L	i-S-M-42-	□□
56M	i-S-M-56-	□□
56L	i-S-M-56-	□□

Example：

Such as how to select i-SERVO 20, with a line length of 2 meters

Motor line model No.：i-S-M-20-02

Driver extension cable

Number of frames/length	Motor line model No.	Length (m)
20M	i-S-E-20-	□□
25M	i-S-E-25-	□□
28M	i-S-E-28-	□□
35M	i-S-E-35-	□□
42M	i-S-E-42-	□□
42L	i-S-E-42-	□□
56M	i-S-E-56-	□□
56L	i-S-E-56-	□□

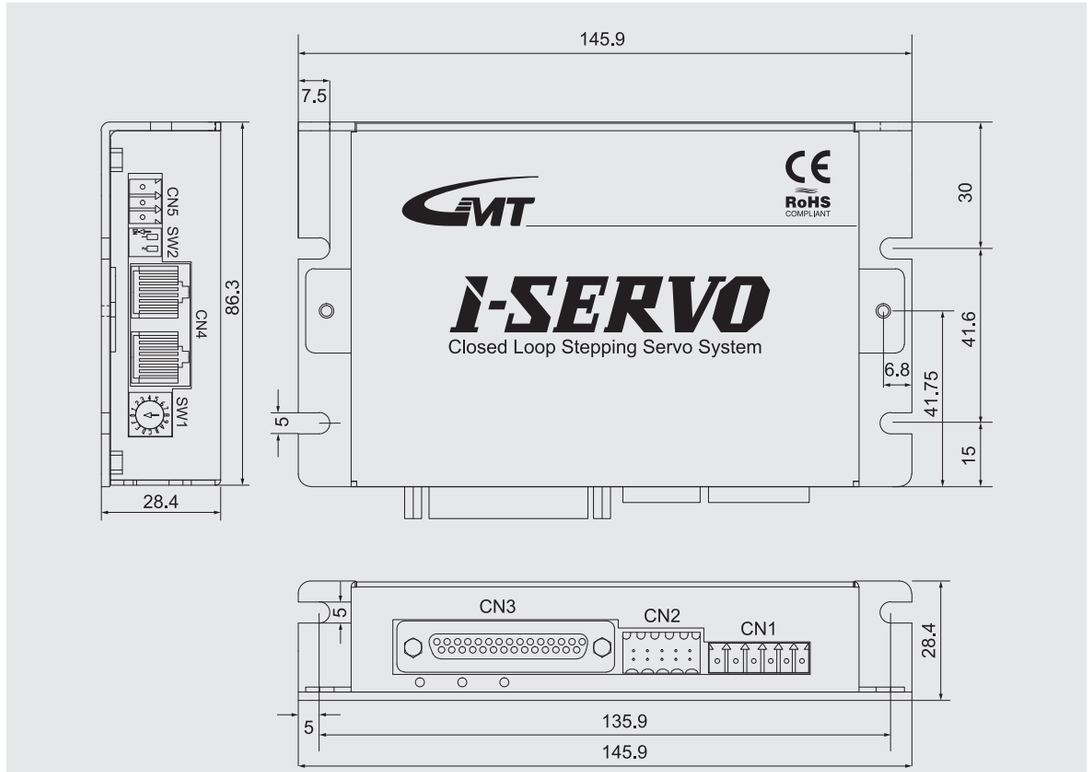
Example：

Such as how to select i-SERVO 20, with a line length of 2 meters

Motor line model No.：i-S-E-20-02

Specification

Project	Description		Remark
Model	i-SERVO (GMT5020-ST2)		
Input supply voltage	DC 24V±10%		GMT5020-ST2 rated 2A and maximum 4A
	DC 48V±10%		GMT5020-ST2 rated 1A and maximum 3A
Rated output current	GMT5020-ST2、2A (o-peak) GMT5040-ST2、4A (o-peak)		
Maximum output current	GMT5020-ST2、3A (o-peak) GMT5040-ST2、6A (o-peak)		
Control object motor	2-phase stepper motor(With encoder)		
Driving type	PWM clipping-driven		
Control quadrant	Four quadrants		
Interface	Input: Digital input *5, mechanical sensor input + LM, - LM, ORG Analog input (Optional) *1, encoder input (A, B, Z) Output: Digital output *4, Compare Out *1,Brake output (for brake only)		Freely designated digital output/input
Digital input content	/SERVO ON (Servo On) /START (Motor start-up/stop) /RESET (Alarm re-set) SELECT PROGRAM (4 bit) /CONT MODE (Shift of control mode)		
Digital output content	/IN POTISION、ALARM、/TORQUE LIMIT		
LED Display	Power, alarm and motor returning		3 types
Communication I / F	RS485，Up to 16 nodes RS232C		MODBUS protocol, baud rate 19200 bps (default) (9600bps~115200bps)
Control type	Position control mode Speed control mode Torque control mode Down press control mode		Position the pulse according to the command (RS485/external pulse command) Digital command (resolution ±1 / 350 and above) Digital command (resolution ±1 / 350 and above) Torque limit control as part of position control/speed control
Suitable load inertia	Less than 20 times the motor inertia		With position control, speed control
Outlook and dimensions of substrate	W80 × D116 × H20		
Movement temperature/humidity	0~50°C ，Below 85%RH		Prevention against condensation
Storage temperature	-20~85°C ，Below 85%		Prevention against condensation
Environmental gas	Prevention against corrosive gas		
Specifications with position control			
Position mode (Four modes)	1) Full Time Closed Mode 2) Dual Mode It is Open when below the set speed and Closed when above the set speed. 3) Full Time Open Mode 4) Stepping Closed Loop Mode		When open, it is micro-step driven. Therefore, the position precision of the encoder resolution will not be compensated.
Position precision	±1 Pulse of the encoder resolution		
Maximum frequency of command	900 (Kpps)	A / B	
Electronic gear	A=1~10000	B=1~10000	No setup is available under the Dual mode
Feedforward	0~100(%)		
Position completed range (Inposition)	0~±1000		
Maximum count exception range	±1~2147483647		
Speed control specifications			
Speed command	Digital value (PPS)		The number of revolutions varies with the encoder resolution
Speed control ratio	500：1以上		
Command revolving direction	Digital input (DIR)	Parameter	
Start / Stop	Digital input (START)	Parameter	
Acceleration /Deceleration	n x MAXrpm x 0.125ms	Parameter n：0~10	No acceleration or deceleration when n = 0
Torque control specifications			
Torque command	Digital value (PPS)		
Variable torque range	0~100.00%		100.0% is the motor's rated torqueSpeed control
Speed control	Digital value (RPM)		
Command rotation direction	Digital input (DIR)	Parameter	
Start-up/stop	Digital input (START)	Parameter	
Down press control specifications			
Control form	Press down in the position control mode；Press down in the speed control mode		
Down press torque command value	Digital value (x0.1%)		100.0% is the motor's rated torque
Variable torque range	0~100.0%		

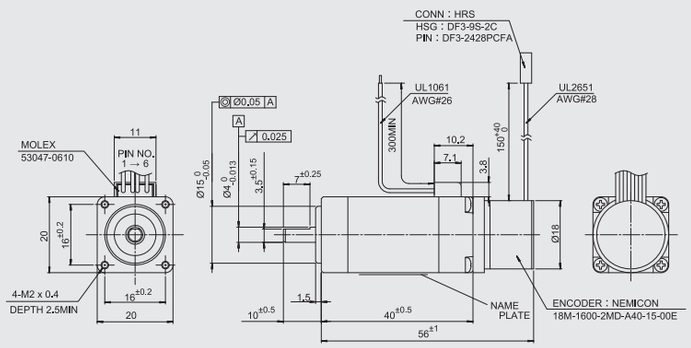


Part No.	Purpose
CN1	Power and motor joint
CN2	Encoder joint
CN3	Interface joint
CN4	RS485 joint
CN5	RS232C joint
SW1	Switch for setting the node ID
SW2	Switch for connecting the terminal resistance
LED1	Power display LED
LED2	Alarm display LED
LED3	Display LED while the motor is active

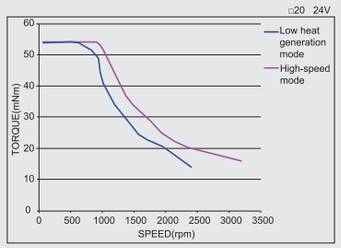
Motor dimensions and torque characteristics

20M

Motor outlook

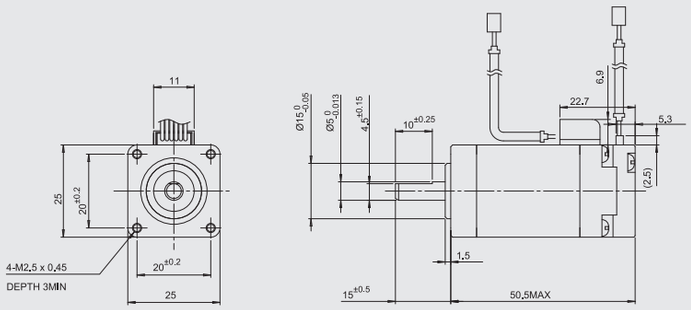


Torque curve

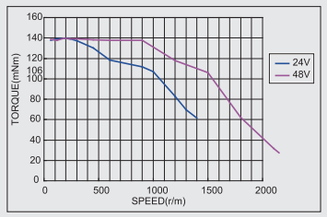


25M

Motor outlook

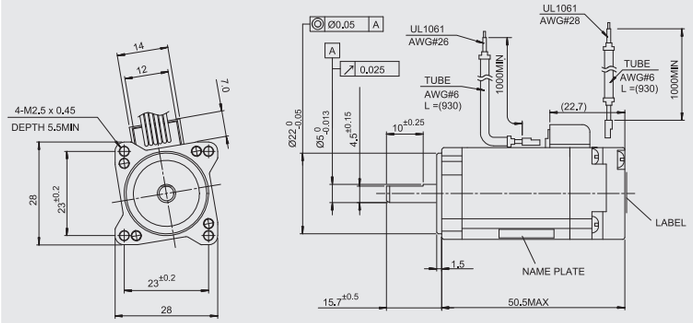


Torque curve

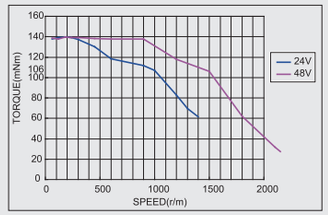


28M

Motor outlook

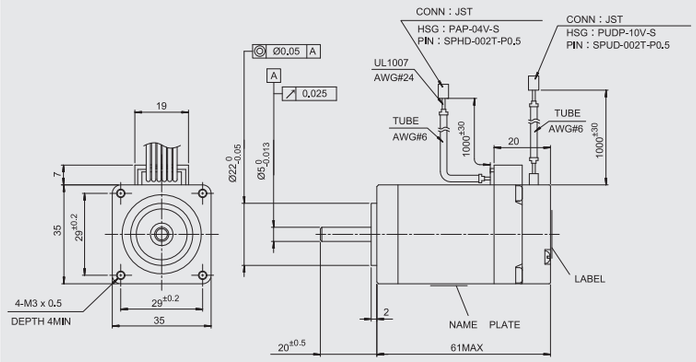


Torque curve

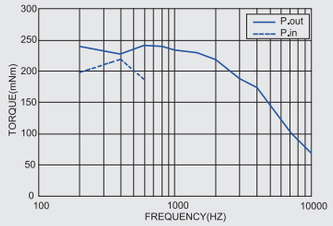


35M

Motor outlook



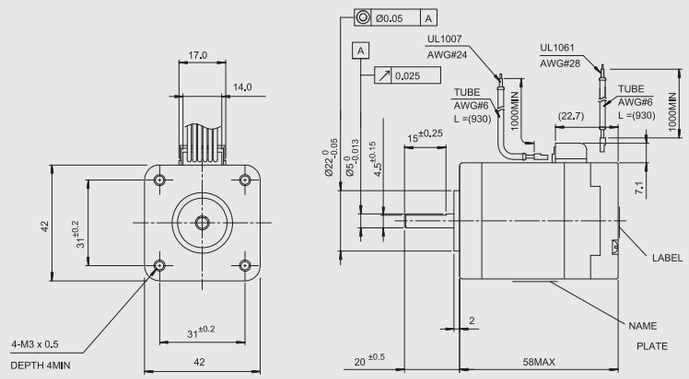
Torque curve



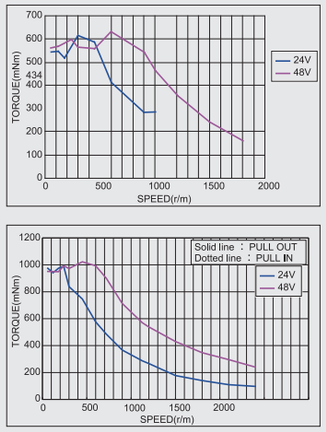
Motor dimensions and torque characteristics

42M

Motor outlook

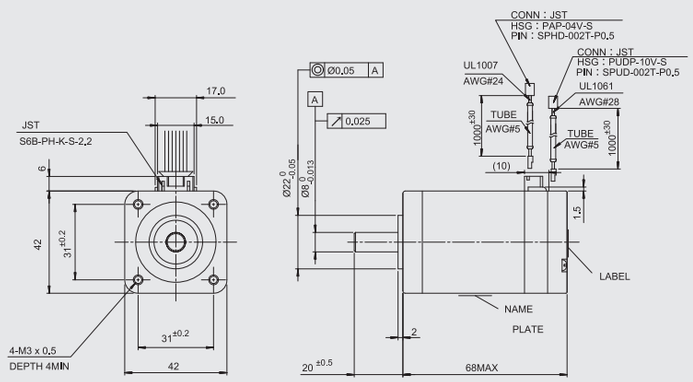


Torque curve

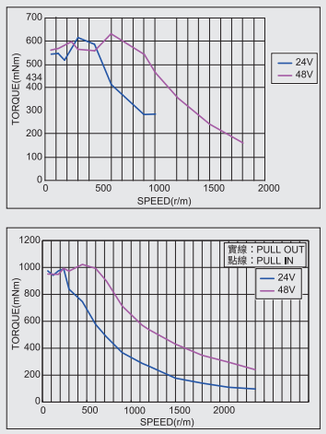


42L

Motor outlook

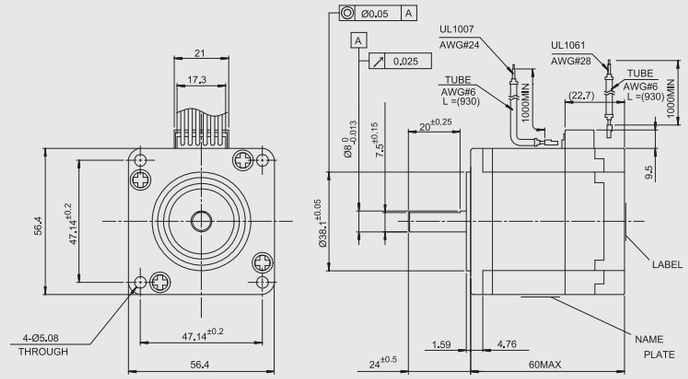


Torque curve

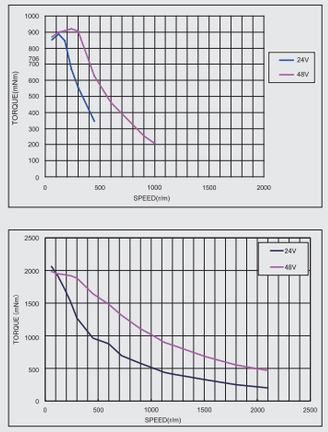


56M

Motor outlook

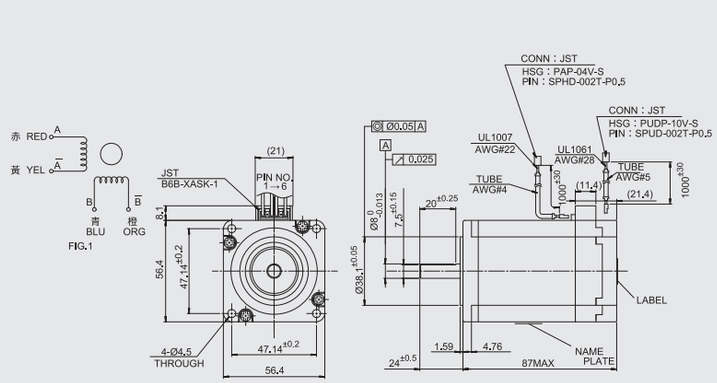


Torque curve

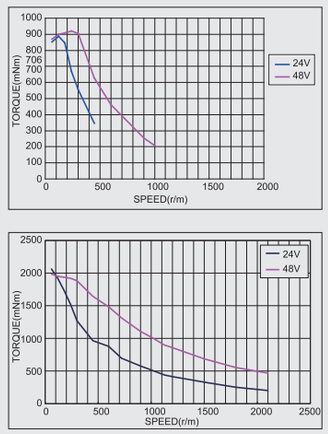


56L

Motor outlook

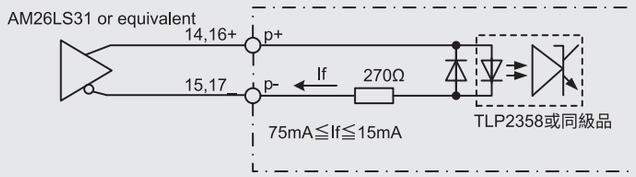


Torque curve

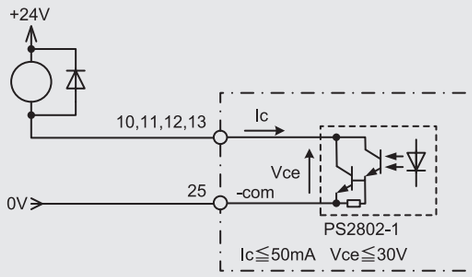


Input loop / Output loop

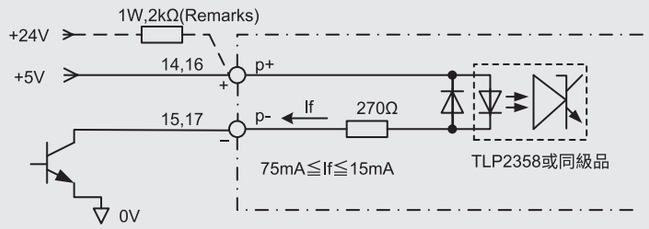
Command pulse input loop



Digital output loop, COMP OUT loop (relay connected)

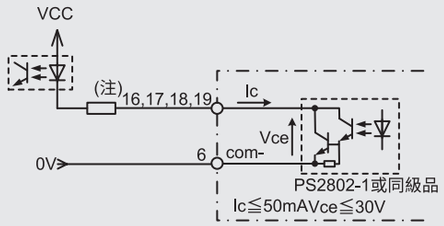


Use the 24V PLC command pulse input loop (open collector)



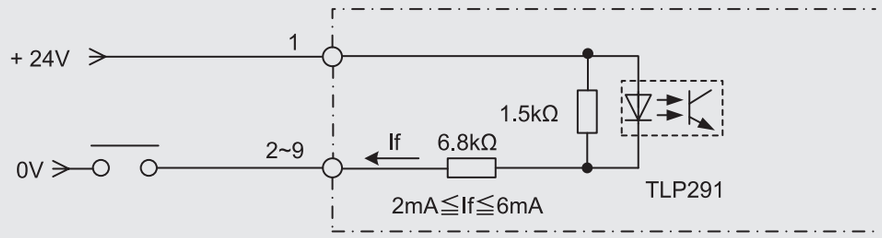
※When driven with + 24V, please connect in series to a resistance of 1W, 2kΩ (recommended value)

Digital output, COMP OUT loop (optical coupler connected)

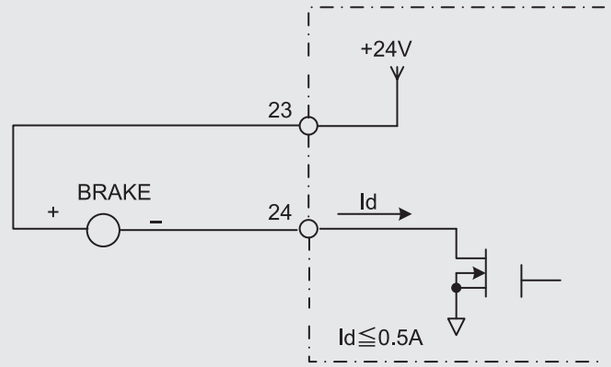


※When selecting the resistance value, please ensure that the current is sufficient to continuously drive the LED of the optocoupler

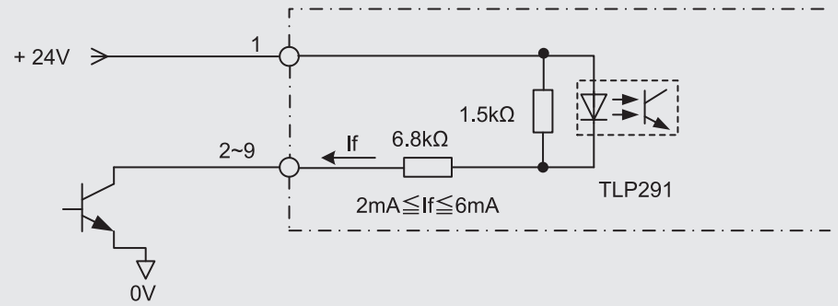
Sensor, digital input loop (joint)



Brake output loop (brake)



Sensor, digital input loop (open collector output)



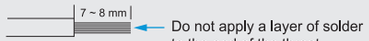
Joint and Pin Designation Table

Joint and Pin Designation Table	Position of respective pins of the socket from the perspective of the inserted surface

CN1 (Power & Motor)

Pin	Name of signal
6	Motor / B：Orange
5	Motor B：Blue
4	Motor / A：Yellow
3	Motor A：Red
2	power supply OV
1	power + (DC24V OR 48V)

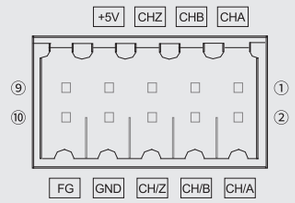
Suitable joint: GMT 45060 G10 0Z (ECE)
Dimensions of electrical wiring used: AWG28 ~ AWG18 (Stranded wire)
Stripping length: 7 ~ 8 mm



※Pay attention to power polarity

CN2 (Encoder)

Pin	Name of signal	Pin	Name of signal
1	CH A：White	6	CH / Z：Orange
2	CH / A：Green	7	+5V：Red
3	CH B：Brown	8	GND：Black
4	CH / B：Yellow	9	(NC)
5	CH Z：Blue	10	FG

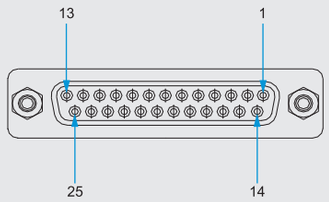


CN3 (Sensor & Interface)

Pin	Name of signal	Pin	Name of signal
1	+COM (+24V)	14	CW+
2	+LM	15	CW-
3	-LM	16	CCW+
4	ORIGIN	17	CCW-
5	IN1	18	Analog in (TBD)
6	IN2	19	AGND (TBD)
7	IN3	20	-
8	IN4	21	-
9	IN5	22	COMP OUT
10	OUT1	23	BRK+
11	OUT2	24	BRK-
12	OUT3	25	-COM
13	OUT4		

D-SUB 25P

※* Available (optional) accessories: regenerative resistor/ 25-pin terminal block



※Pay attention to power polarity

i-SERVO
Joint and Pin Designation Table
GMT GLOBAL INC.
Function Specifications

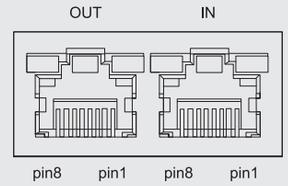
Joint and Pin Designation Table	Position of respective pins of the socket from the perspective of the inserted surface

CN4 (RS485)

Pin	Name of signal
1	(NC)
2	GND
3	A Input (RS485)
4	(NG)
5	GND
6	B Input (RS485)
7	(NC)
8	GND

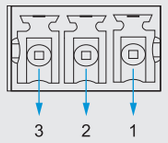
RJ45 type*2

RJ45*2



CN5 (RS232C)

Pin	Name of signal
1	RXD
2	TXD
3	GND



Introduction to Options

Power Supply

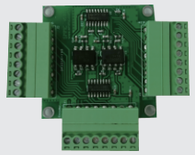
Function：

① Applicable to i-SERVO (UL508 certified)
② Self-protection: short circuit/overload/over-voltage/over-temp
③ Voltage input: 180~550VAC
④ Rated output voltage: +24V / +48V
⑤ Rated output power: 240W

Encoder adapter

Function：

① Encoder-exclusive adapter
② One encoder can be connected to two ports
③ Stable signal and uneasily interfered
④ Hardware and grounding protection
⑤ Suitable for the incremental encoder and Line Driver differential output



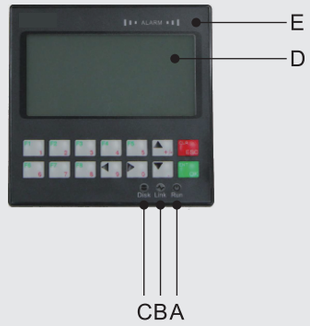
Touch-panel Man-Machine Interface

	Function Specifications	SVX301	SVX501	SVX760T
Product Specifications	CPU Type	32 Bits RISC	32 Bits RISC	32 Bits RISC
	Memory	1536K / 2048K	1536K / 2048K	7680K / 8192K
	Perpetual calendar	Option (Rechargeable lithium battery used)	Built-in (Rechargeable lithium battery used)	Built-in (Rechargeable lithium battery used)
	Port	COM1 RS232 COM2 RS422 / RS485	COM1(Automatic shift among RS232, RS422 and RS485) OM2(Automatic shift among RS232, RS422 and RS485)	COM1(Automatic shift among RS232, RS422 and RS485) OM2(Automatic shift among RS232, RS422 and RS485)
	Touch panel	4-Line resistance	4-Line resistance	4-Line resistance
	Voice output	Buzzer	Buzzer	Buzzer
Display	Device	FSTN LCD	FSTN LCD	TFT LCD
	Dimension	3.3 Inches	5.7 Inches	7 Inches
	色彩	Black-and-white 16 gray scaling	Black-and-white 16 gray scaling	Color 65K
	Screen pixels	160 x 160	320 x 320	800 x 480
	Back-light	LED	white LED	LED
	Brightness adjustment	Digital (0 / 100)	Digital (0-100)	Digital (0-100)
	Contrast adjustment	Digital (0 / 100)	Digital (0-100)	Digital (0-100)

Introduction to Options

Text

A RUN：
A red light means STOP and pending download of application while a blinking green light means that it is working normally.
B Link：Connection signal light
C Disk：Memory access light
D Displayed area
E ALARM：Warning message/indicator



	功能規格	ST300
Product Function	CPU	32 Bits RISC
	Memory	512K
	Communication	COM1 (RS-232 / RS-422 / RS-485)
Display Device	Display Type	FSTN LCD
	Display Size	3 inches
	Display Color	Black & White
	Brightness	100 cd / m2
	Pixel	132 x 64
	Screen contrast	5:1
	Back-light	Blu-ray LED
	Language/text	All windows can show text
Push button interface	Type	6 system push buttons and 8 self-defined push buttons
Specifications electricity	Rated voltage	10~30VDC
	Dissipated power	3w below
	Anti-static	Contact discharge: -4KV~+4KV (IEC61000-4-2 Level 2) Non-contact discharge:-8KV~+8KV (ICE61000-4-2 Level 3)
Environmental specifications	Working temperature	0°C~45°C
	Storage temperature	-20°C~60°C
	Humidity	20~85%RH (Non-condensing)
	Panel water-proof level	IP65 / NEMA4
Mechanical dimension	Outlook and dimensions (mm)	96 x 96 x 33
	Hole-opening dimension (mm)	92 x 91
	Weight	152g

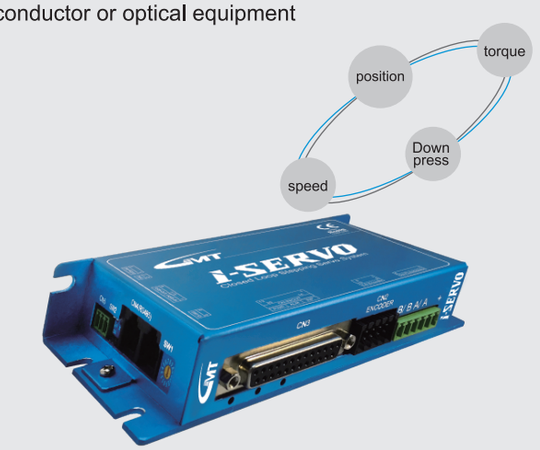
Software Settings

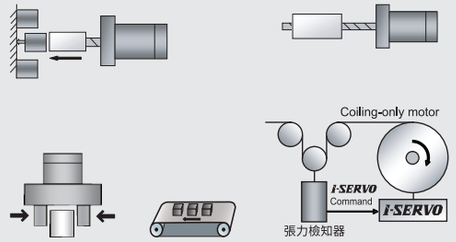
◆ Traditional Chinese / Simplified Chinese / English

Application example

◆ Suitable for various types of electronic, semi-conductor or optical equipment

- XXY (UVW Stage)
- SCARA
- Dividing disc
- Measurement machine
- Medical equipment
- Mask aligner
- Plait mill
- XY gantry-type positioning platform
- LINE SCAN
- Keyboard life span testing
- Screw module positioning
- Brake
- Cam mechanism
- Gripper application
- Glass end grinder
- Electric screw machine
- Conveyor belt
- Tension coiler



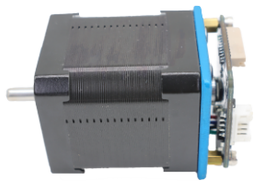


Description GST-BTD Series

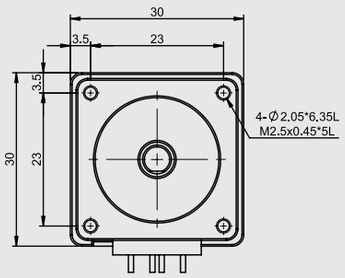
GST - BTD 28 MB - 24 C N

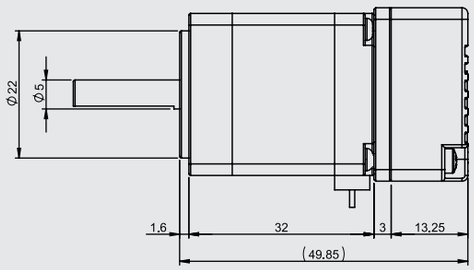
Driver series	Appearance type	Motor-Frame		Communication control method		Input voltage		Loop		Pulse input	
Stepper Motor,driver	All in one	28	28mm	MR	RS485-Modbus RTU	24	DC24V	C	Closed-loop	N	none
		42	42mm					O	Closed-loop		



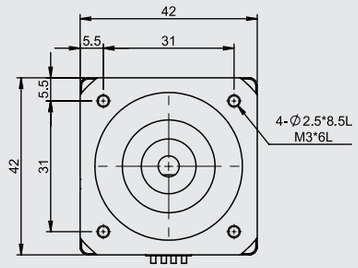


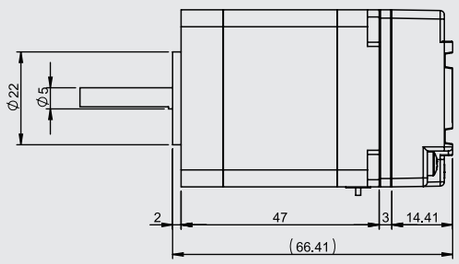
□28





□42

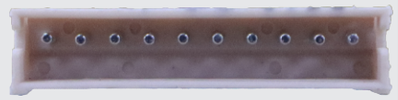




	GST-BTD28MB-24CN		GST-BTD42MB-24CN	
Project	Description	-	Description	-
Model	GST-BTD28MB-24CN	-	GST-BTD42MB-24CN	-
Assembly GMT Motor	□20MS~□28MS	-	□35MS~□42MS	-
Input supply voltage	DC 24V+10%	-	DC 24V+10%	-
Maximum output current	1A(The peak)	-	2A(The peak)	-
Control object motor	2-phase stepper motor	-	2-phase stepper motor	-
Control quadrant	Four quadrants	-	Four quadrants	-
Driving type	PWM clipping-driven	-	PWM clipping-driven	-
Encoder Resolution	14 Bits	Built-in magnetic encoder	14 Bits	-
Input interface	Limit +/- & Origin	-	Limit +/- & Origin	-
Output interface	ALM/RDY/INPOS		ALM/RDY/INPOS	
Equipment ID Communication	1~31	Only supports RS485 mode	1~31	-
Interface	RS485 ModbusRTU		RS485 ModbusRTU	
Control type	Position mode	open/close loop (Switchable)	Position mode	
	Speed mode		Speed mode	
Type of Joint				
Power+Port	5 pole pitch 2.0mm	-	5 pole pitch 2.0mm	-
DIO	10 pole pitch 1.5mm	-	10 pole pitch 1.5mm	-

	Pin No.	Function
CN1 (42/28)	1	GND
	2	24VDC
	3	A Input(RS485)
	4	B Input(RS485)
	5	GND

	Pin No.	Function
CN2-DIO(42/28)	1	-
	2	-
	3	LIMIT+
	4	LIMIT-
	5	ORG
	6	-
	7	ALM
	8	RDY
	9	INPOS
	10	GND



MS | 2P28 | Z | - | 06 | 05 | KS | -

Code definition	
MS	Step motor+ball screw

Type of motor	
2P28	2-phase 28-frame
2P42	2-phase 42-frame

Motor axial gap	
Z	(0mm)Pre-press
N	(Xmm)Non-pre-press

diameter
06
08

導程
01
02

Type of circulator	
D1	Internal circulation end plug = 1.7 laps × 1 row
D2	Internal circulation end plug = 1.7 laps × 2 row
D3	Internal circulation end plug = 2.7 laps × 1 row
KS	Internal circulation key groove = 1 laps × 3 row

Step motor direct-coupled ball screw
Information on models of the MS series
GMT GLOBAL INC.
Function Specifications

R | C7 | X | - | 900 | R | 1000 | - | M | - | ALL

Forming method	
G	Grinding
R	Rolling

Precision
C5
C7

Axial gap	
X	(0mm) Pre-press
Y	Below (0.005mm)
Z	Below (0.01mm)

Thread length

Screw thread orientation	
R	Rightward
L	Leftward
RL	Both ways

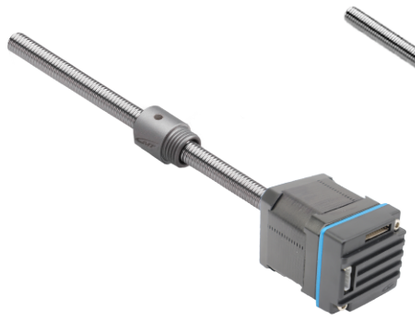
Full length

Type of nut	
M	Lock type
F	Flange
H	Square

Type of Motor	
BTD	M-Servo Driver BT-Type
ALL	ALL-Type Driving and control in one

◎Type introduction

Lock type

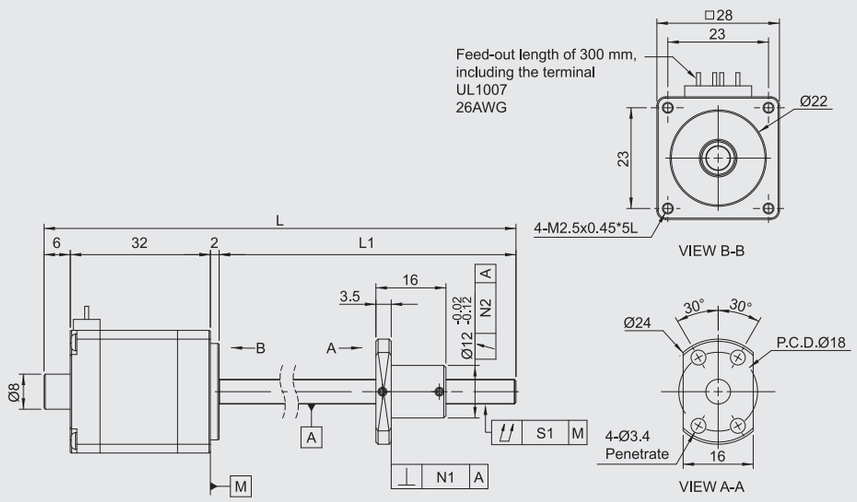


Flange

Square

MS2P28Z-0601-F

Rolling ball screw specifications				
Shaft diameter (mm)	6			
Ball diameter (mm)	0.8			
Pitch (mm)	1			
B.C.D(mm)	6.2			
Screw thread orientation	Rightward			
circulation laps	1 laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	550			
Static load Coa(N)	930			

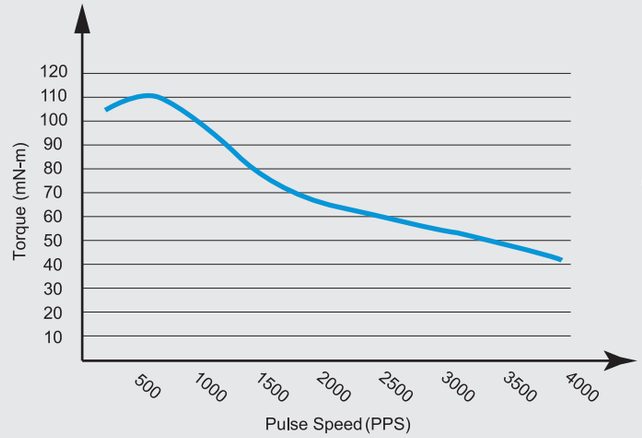


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Flange verticality	Nut Deflection tolerance	Precision of helical pitch	
		L1	L	S1	N1	N2	Representative shift	Variance
MS2P28Z-0601KS-RC5□-65R105-F	40	65	105	0.035	0.01	0.012	0.018	0.018
MS2P28Z-0601KS-RC7□-65R105-F				0.045	0.014	0.02	Moving distance	±0.05/300
MS2P28Z-0601KS-RC5□-95R135-F	70	95	135	0.035	0.01	0.012	0.018	0.018
MS2P28Z-0601KS-RC7□-95R135-F				0.045	0.014	0.02	Moving distance	±0.05/300
MS2P28Z-0601KS-RC5□-125R165-F	100	125	165	0.035	0.01	0.012	0.02	0.018
MS2P28Z-0601KS-RC7□-125R165-F				0.045	0.014	0.02	Moving distance	±0.05/300

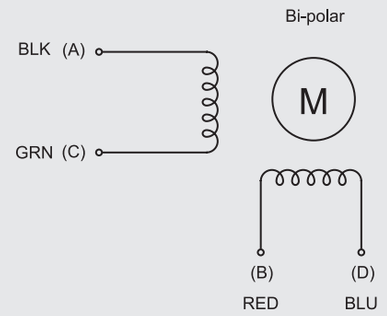
GMT GLOBAL INC.
Step motor direct-coupled ball screw
MS2P28Z Series
Function Specifications

Motor Specification Table	
Number of phases	2
Step angle	1.8°±5%(Synchronizing, idling)
Rated voltage(V)	3.8
Current/phase (A)	0.67
Resistance/phase (Ω)	5.6±10%
Inductance/phase (mH)	3.4±15%
Moment of inertia (kg·m^2)	9x10^{-7}
Holding torque (g·cm)	600

Speed - Torque Characteristic Curve

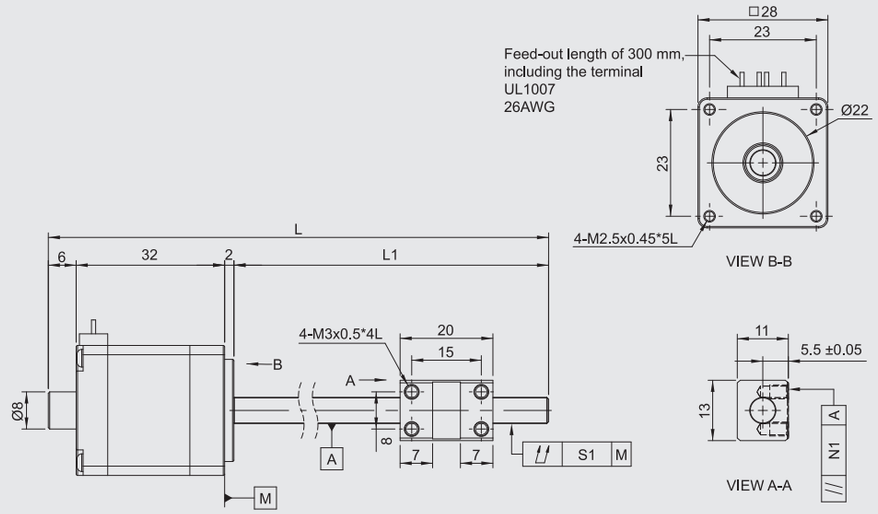


Wiring Diagram



MS2P28Z-0601-H

Rolling ball screw specifications				
Shaft diameter (mm)	6			
Ball diameter (mm)	0.8			
Pitch (mm)	1			
B.C.D(mm)	6.2			
Screw thread orientation	Rightward			
circulation laps	1 laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	550			
Static load Coa(N)	930			

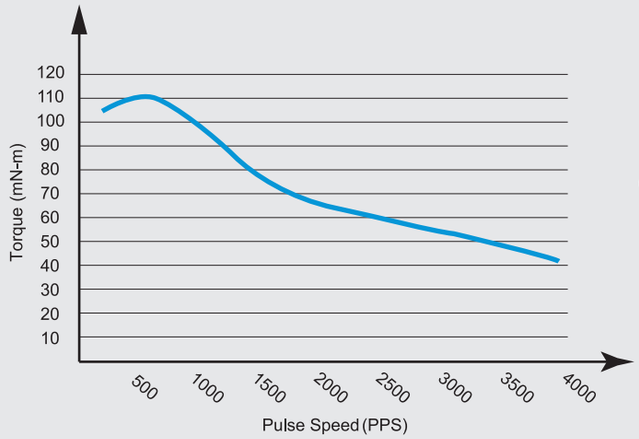


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Parallelism tolerance	Precision of helical pitch	
		L1	L	S1	N1	Representative shift	Variance
MS2P28Z-0601KS-RC5□-65R105-H	40	65	105	0.035	0.01	0.018	0.018
MS2P28Z-0601KS-RC7□-65R105-H				0.045	0.017	Moving distance :	±0.05/300
MS2P28Z-0601KS-RC5□-95R135-H	70	95	135	0.035	0.01	0.018	0.018
MS2P28Z-0601KS-RC7□-95R135-H				0.045	0.017	Moving distance :	±0.05/300
MS2P28Z-0601KS-RC5□-125R165-H	100	125	165	0.035	0.01	0.02	0.018
MS2P28Z-0601KS-RC7□-125R165-H				0.045	0.017	Moving distance :	±0.05/300

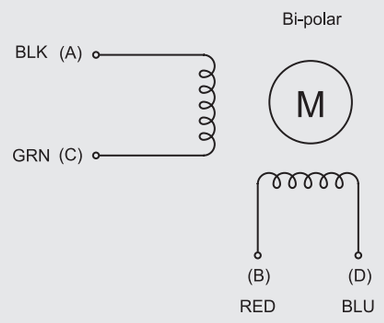
GMT GLOBAL INC.
Step motor direct-coupled ball screw
MS2P28Z Series
Function Specifications

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	3.8
Current/phase (A)	0.67
Resistance/phase (Ω)	5.6±10%
Inductance/phase (mH)	3.4±15%
Moment of inertia (kg·m^2)	9x10^{-7}
Holding torque (g·cm)	600

Speed - Torque Characteristic Curve

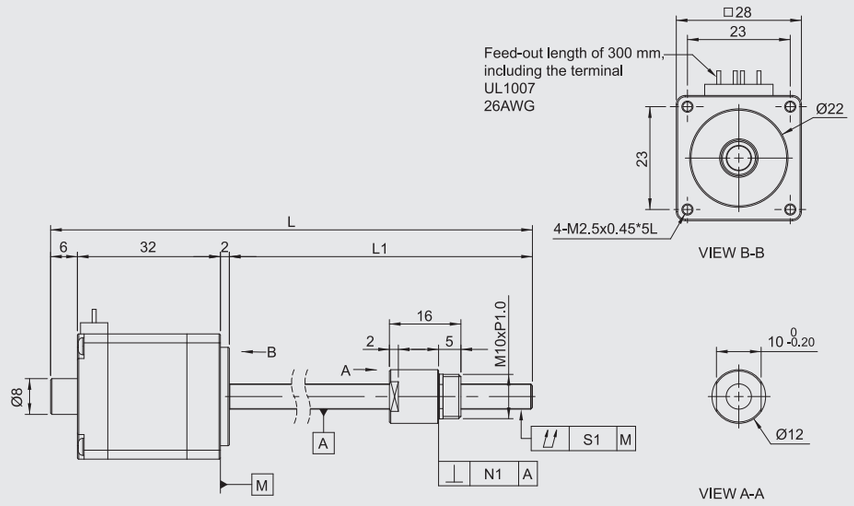


Wiring Diagram



MS2P28Z-0601-M

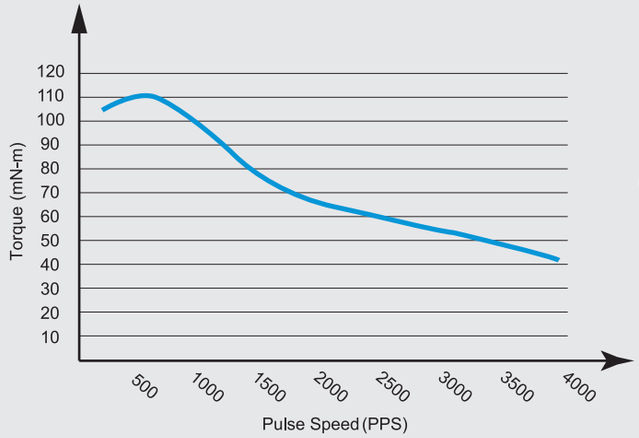
Rolling ball screw specifications				
Shaft diameter (mm)	6			
Ball diameter (mm)	0.8			
Pitch (mm)	1			
B.C.D(mm)	6.2			
Screw thread orientation	Rightward			
circulation laps	1 laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	550			
Static load Coa(N)	930			



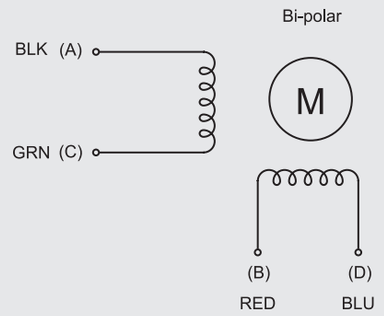
Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Verticality tolerance	Precision of helical pitch	
		L1	L	S1	N1	Representative shift	Variance
MS2P28Z-0601KS-RC5□-65R105-M	40	65	105	0.035	0.01	0.018	0.018
MS2P28Z-0601KS-RC7□-65R105-M				0.045	0.014	Moving distance	±0.05/300
MS2P28Z-0601KS-RC5□-95R135-M	70	95	135	0.035	0.01	0.018	0.018
MS2P28Z-0601KS-RC7□-95R135-M				0.045	0.014	Moving distance	±0.05/300
MS2P28Z-0601KS-RC5□-125R165-M	100	125	165	0.035	0.01	0.02	0.018
MS2P28Z-0601KS-RC7□-125R165-M				0.045	0.014	Moving distance	±0.05/300

Motor Specification Table	
Number of phases	2
Step angle	1.8°±5%(Synchronizing, idling)
Rated voltage(V)	3.8
Current/phase (A)	0.67
Resistance/phase (Ω)	5.6±10%
Inductance/phase (mH)	3.4±15%
Moment of inertia (kg·m^2)	9x10^{-7}
Holding torque (g·cm)	600

Speed - Torque Characteristic Curve

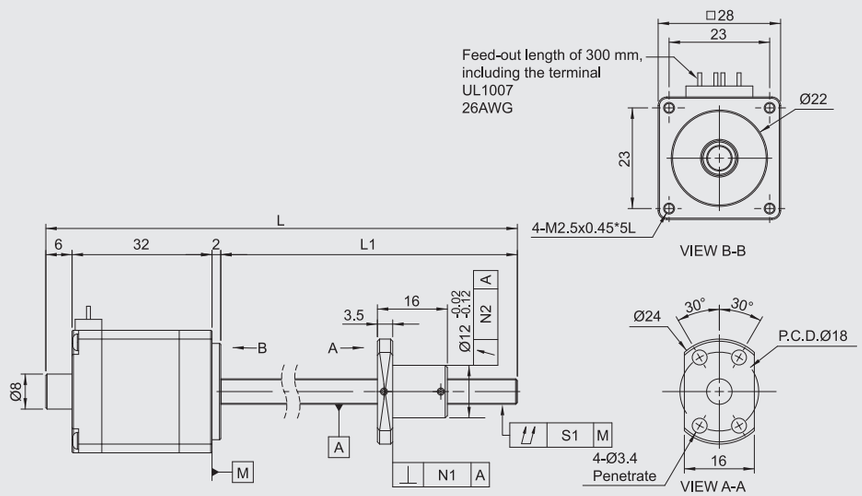


Wiring Diagram



MS2P28Z-0602-F

Rolling ball screw specifications				
Shaft diameter (mm)	6			
Ball diameter (mm)	0.8			
Pitch (mm)	2			
B.C.D(mm)	6.2			
Screw thread orientation	Rightward			
circulation laps	1 laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	550			
Static load Coa(N)	930			

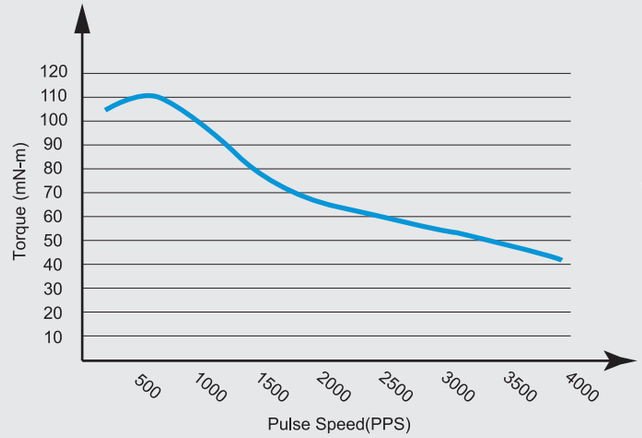


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Flange verticality	Nut Deflection tolerance	Precision of helical pitch	
		L1	L	S1	N1	N2	Representative shift	Variance
MS2P28Z-0602KS-RC5□-65R105-F	40	65	105	0.035	0.01	0.012	0.018	0.018
MS2P28Z-0602KS-RC7□-65R105-F				0.045	0.014	0.02	Moving distance	±0.05/300
MS2P28Z-0602KS-RC5□-95R135-F	70	95	135	0.035	0.01	0.012	0.018	0.018
MS2P28Z-0602KS-RC7□-95R135-F				0.045	0.014	0.02	Moving distance	±0.05/300
MS2P28Z-0602KS-RC5□-125R165-F	100	125	165	0.035	0.01	0.012	0.02	0.018
MS2P28Z-0602KS-RC7□-125R165-F				0.045	0.014	0.02	Moving distance	±0.05/300

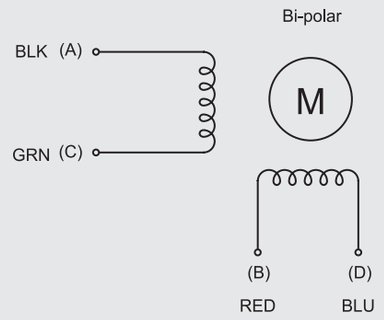
GMT GLOBAL INC.
Step motor direct-coupled ball screw
MS2P28Z Series
Function Specifications

Motor Specification Table	
Number of phases	2
Step angle	1.8°±5%(Synchronizing, idling)
Rated voltage(V)	3.8
Current/phase (A)	0.67
Resistance/phase (Ω)	5.6±10%
Inductance/phase (mH)	3.4±15%
Moment of inertia (kg·m^2)	9x10^{-7}
Holding torque (g·cm)	600

Speed - Torque Characteristic Curve

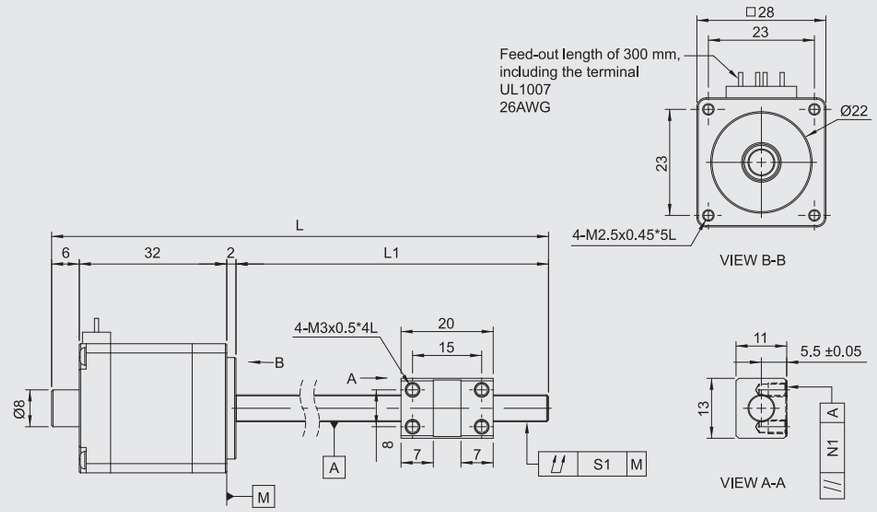


Wiring Diagram



MS2P28Z-0602-H

Rolling ball screw specifications				
Shaft diameter (mm)	6			
Ball diameter (mm)	0.8			
Pitch (mm)	2			
B.C.D(mm)	6.2			
Screw thread orientation	Rightward			
circulation laps	1 laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	550			
Static load Coa(N)	930			

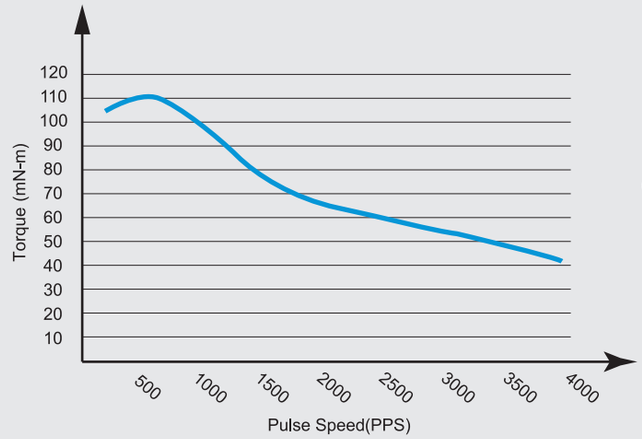


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Parallelism tolerance	Precision of helical pitch	
		L1	L	S1	N1	Representative shift	Variance
MS2P28Z-0602KS-RC5□-65R105-H	40	65	105	0.035	0.01	0.018	0.018
MS2P28Z-0602KS-RC7□-65R105-H				0.045	0.017	Moving distance :±0.05/300	
MS2P28Z-0602KS-RC5□-95R135-H	70	95	135	0.035	0.01	0.018	0.018
MS2P28Z-0602KS-RC7□-95R135-H				0.045	0.017	Moving distance :±0.05/300	
MS2P28Z-0602KS-RC5□-125R165-H	100	125	165	0.035	0.01	0.02	0.018
MS2P28Z-0602KS-RC7□-125R165-H				0.045	0.017	Moving distance :±0.05/300	

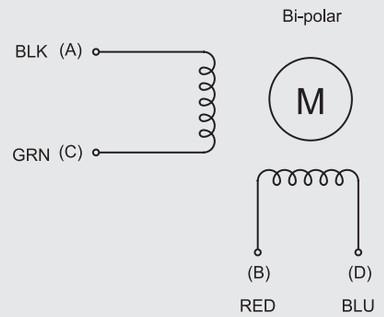
GMT GLOBAL INC.
Step motor direct-coupled ball screw
MS2P28Z Series
Function Specifications

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	3.8
Current/phase (A)	0.67
Resistance/phase (Ω)	5.6±10%
Inductance/phase (mH)	3.4±15%
Moment of inertia (kg·m^2)	9x10^{-7}
Holding torque (g·cm)	600

Speed - Torque Characteristic Curve

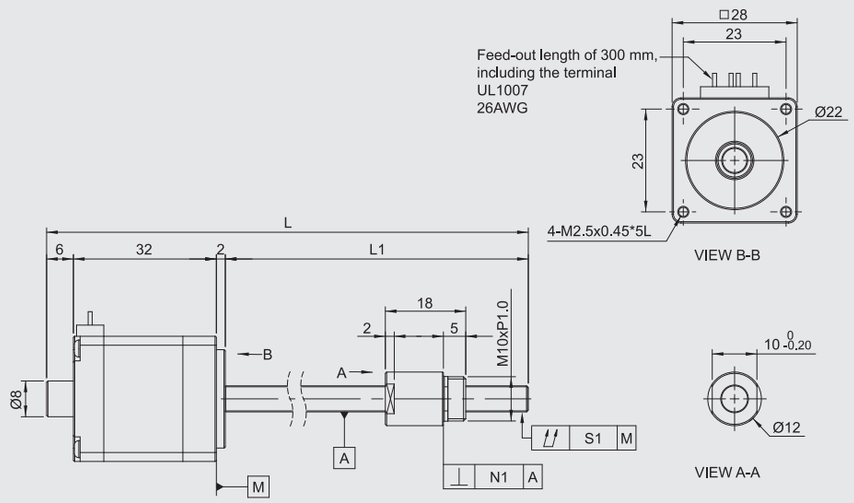


Wiring Diagram



MS2P28Z-0602-M

Rolling ball screw specifications				
Shaft diameter (mm)	6			
Ball diameter (mm)	0.8			
Pitch (mm)	2			
B.C.D(mm)	6.2			
Screw thread orientation	Rightward			
circulation laps	1 laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	550			
Static load Coa(N)	930			

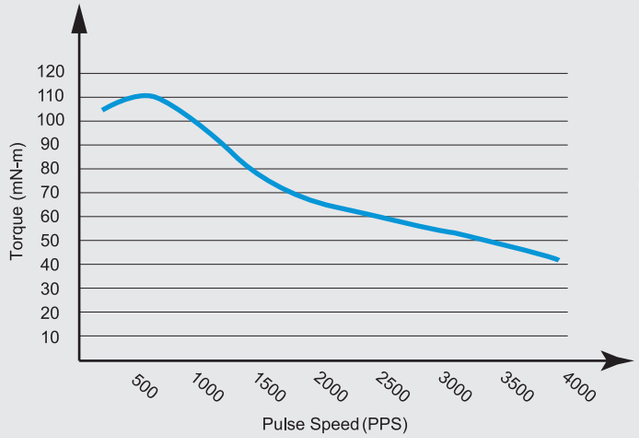


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Verticality tolerance	Precision of helical pitch	
		L1	L	S1	N1	Representative shift	Variance
MS2P28Z-0602KS-RC5□-65R105-M	40	65	105	0.035	0.01	0.018	0.018
MS2P28Z-0602KS-RC7□-65R105-M				0.045	0.014	Moving distance	±0.05/300
MS2P28Z-0602KS-RC5□-95R135-M	70	95	135	0.035	0.01	0.018	0.018
MS2P28Z-0602KS-RC7□-95R135-M				0.045	0.014	Moving distance	±0.05/300
MS2P28Z-0602KS-RC5□-125R165-M	100	125	165	0.035	0.01	0.02	0.018
MS2P28Z-0602KS-RC7□-125R165-M				0.045	0.014	Moving distance	±0.05/300

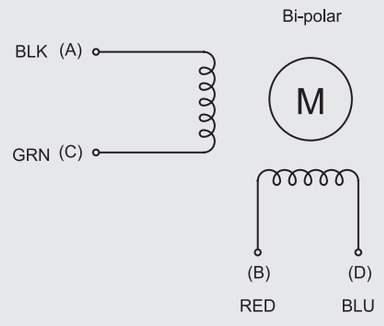
GMT GLOBAL INC.
Step motor direct-coupled ball screw
MS2P28Z Series
Function Specifications

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	3.8
Current/phase (A)	0.67
Resistance/phase (Ω)	5.6±10%
Inductance/phase (mH)	3.4±15%
Moment of inertia (kg·m^2)	9x10^{-7}
Holding torque (g·cm)	600

Speed - Torque Characteristic Curve

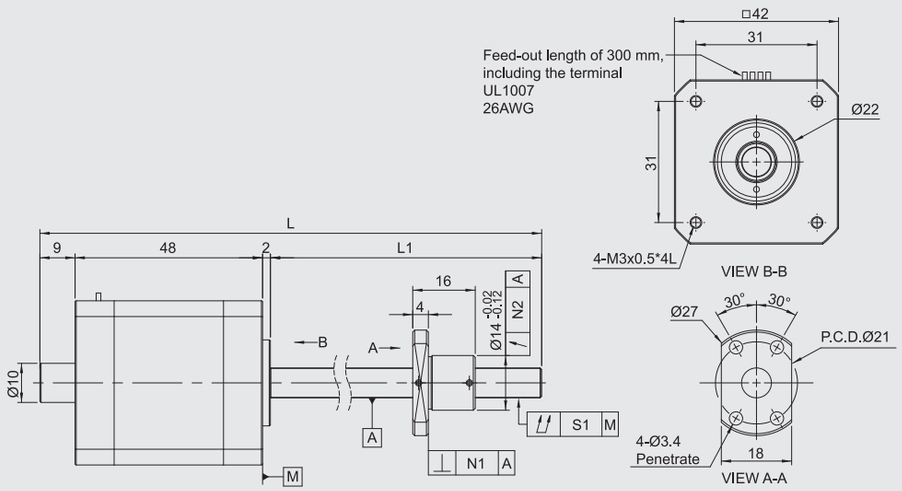


Wiring Diagram



MS2P42Z-0801-F

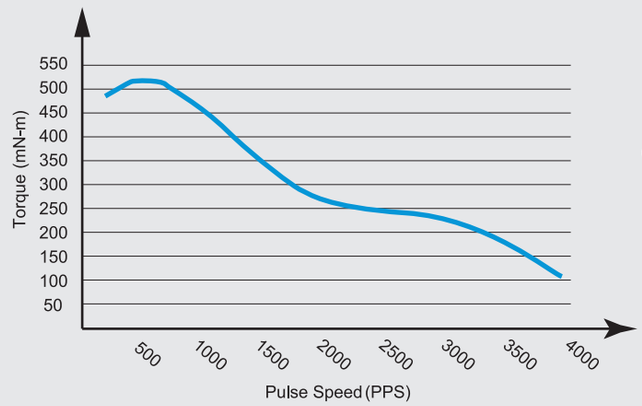
Rolling ball screw specifications				
Shaft diameter (mm)	8			
Ball diameter (mm)	0.8			
Pitch (mm)	1			
B.C.D(mm)	8.3			
Screw thread orientation	Rightward			
circulation laps	1laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	700			
Static load Coa(N)	1420			



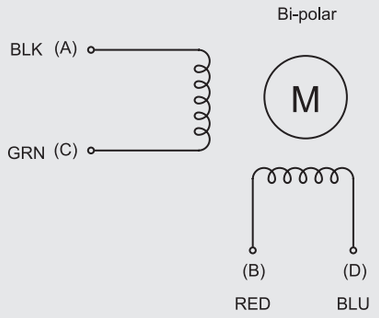
Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Flange verticality	Nut Deflection tolerance	Precision of helical pitch	
		L1	L	S1	N1	N2	Representative shift	Variance
MS2P42Z-0801KS-RC5□-65R124-F	40	65	124	0.035	0.01	0.012	0.018	0.018
MS2P42Z-0801KS-RC7□-65R124-F				0.045	0.014	0.02	Moving distance :	±0.05/300
MS2P42Z-0801KS-RC5□-95R154-F	70	95	154	0.035	0.01	0.012	0.018	0.018
MS2P42Z-0801KS-RC7□-95R154-F				0.045	0.014	0.02	Moving distance :	±0.05/300
MS2P42Z-0801KS-RC5□-125R184-F	100	125	184	0.035	0.01	0.012	0.02	0.018
MS2P42Z-0801KS-RC7□-125R184-F				0.045	0.014	0.02	Moving distance :	±0.05/300

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	4.4
Current/phase (A)	0.8
Resistance/phase (Ω)	5.5±10%
Inductance/phase (mH)	1.5±15%
Moment of inertia (g·cm^2)	50
Holding torque	450

Speed - Torque Characteristic Curve

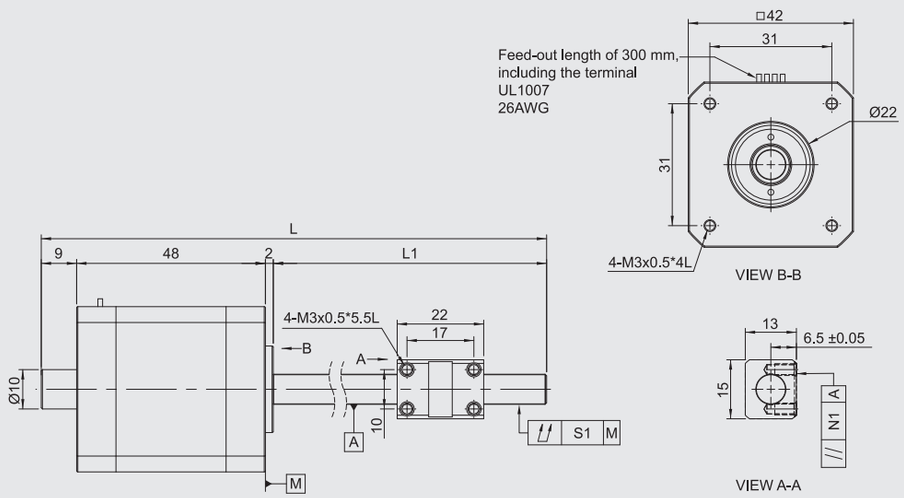


Wiring Diagram



MS2P42Z-0801-H

Rolling ball screw specifications				
Shaft diameter (mm)	8			
Ball diameter (mm)	0.8			
Pitch (mm)	1			
B.C.D(mm)	8.3			
Screw thread orientation	Rightward			
circulation laps	1laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	700			
Static load Coa(N)	1420			

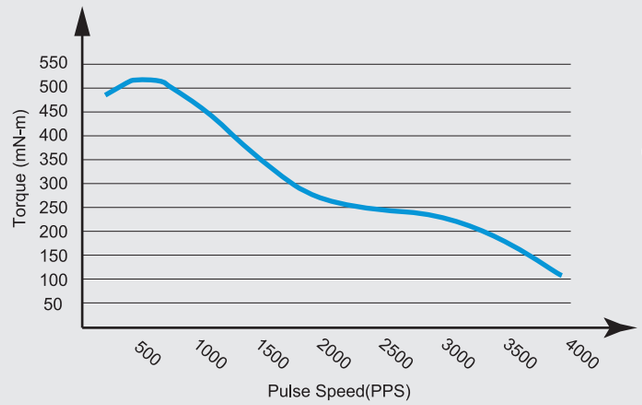


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Parallelism tolerance	Precision of helical pitch	
		L1	L	S1	N1	Representative shift	Variance
MS2P42Z-0801KS-RC5□-65R124-H	40	65	124	0.035	0.01	0.018	0.018
MS2P42Z-0801KS-RC7□-65R124-H				0.045	0.014	Moving distance	±0.05/300
MS2P42Z-0801KS-RC5□-95R154-H	70	95	154	0.035	0.01	0.018	0.018
MS2P42Z-0801KS-RC7□-95R154-H				0.045	0.014	Moving distance	±0.05/300
MS2P42Z-0801KS-RC5□-125R184-H	100	125	184	0.035	0.01	0.02	0.018
MS2P42Z-0801KS-RC7□-125R184-H				0.045	0.014	Moving distance	±0.05/300

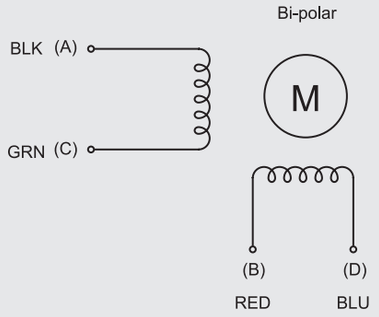
GMT GLOBAL INC.
Step motor direct-coupled ball screw
MS2P42Z Series
Function Specifications

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	4.4
Current/phase (A)	0.8
Resistance/phase (Ω)	5.5±10%
Inductance/phase (mH)	1.5±15%
Moment of inertia (g·cm^2)	50
Holding torque	450

Speed - Torque Characteristic Curve

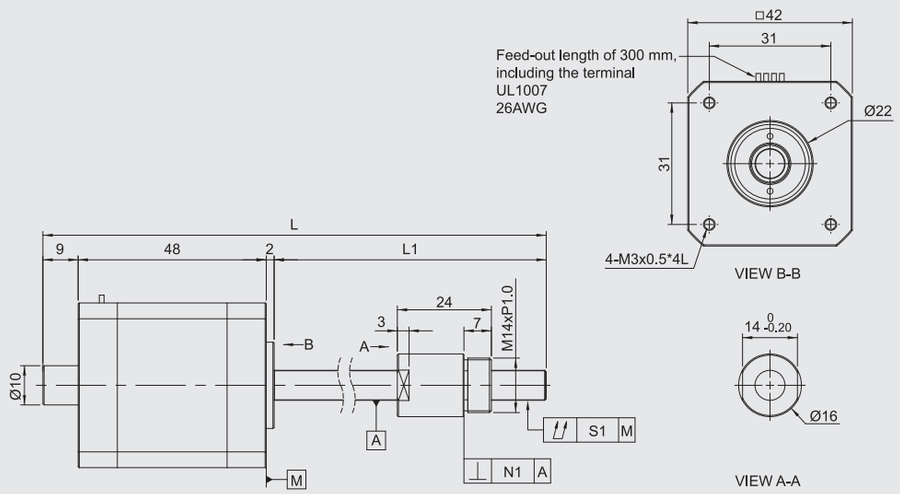


Wiring Diagram



MS2P42Z-0801-M

Rolling ball screw specifications				
Shaft diameter (mm)	8			
Ball diameter (mm)	0.8			
Pitch (mm)	1			
B.C.D(mm)	8.3			
Screw thread orientation	Rightward			
circulation laps	1laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	700			
Static load Coa(N)	1420			

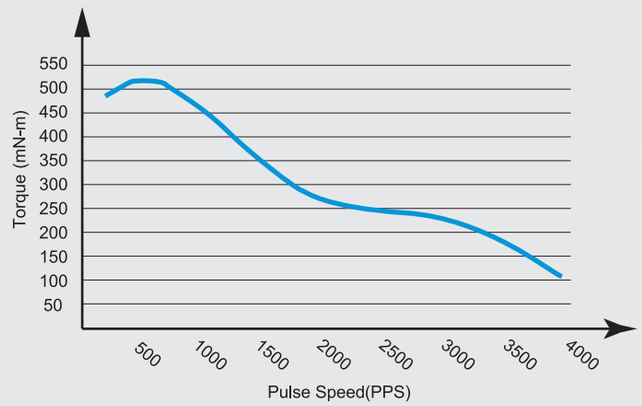


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Verticality tolerance	Precision of helical pitch	
		L1	L	S1	N1	Representative shift	Variance
MS2P42Z-0801KS-RC5□-65R124-M	40	65	124	0.035	0.01	0.018	0.018
MS2P42Z-0801KS-RC7□-65R124-M				0.045	0.014	Moving distance	±0.05/300
MS2P42Z-0801KS-RC5□-95R154-M	70	95	154	0.035	0.01	0.018	0.018
MS2P42Z-0801KS-RC7□-95R154-M				0.045	0.014	Moving distance	±0.05/300
MS2P42Z-0801KS-RC5□-125R184-M	100	125	184	0.035	0.01	0.02	0.018
MS2P42Z-0801KS-RC7□-125R184-M				0.045	0.014	Moving distance	±0.05/300

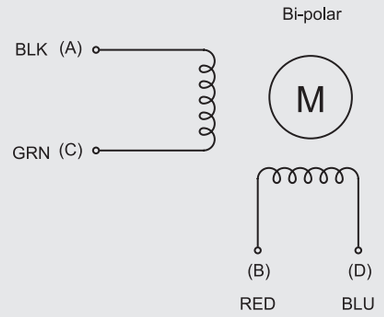
Step motor direct-coupled ball screw
MS2P42Z Series

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	4.4
Current/phase (A)	0.8
Resistance/phase (Ω)	5.5±10%
Inductance/phase (mH)	1.5±15%
Moment of inertia (g·cm^2)	50
Holding torque	450

Speed - Torque Characteristic Curve

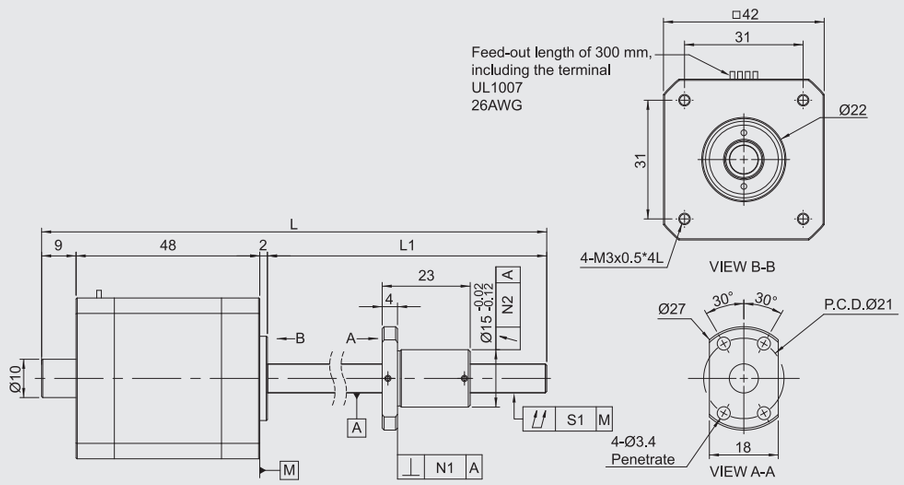


Wiring Diagram



MS2P42Z-0802-F

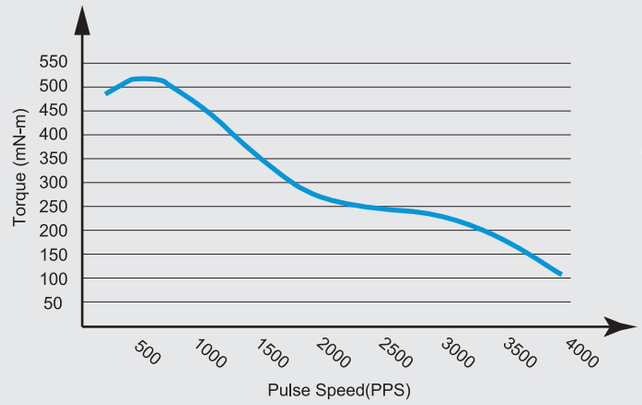
Rolling ball screw specifications				
Shaft diameter (mm)	8			
Ball diameter (mm)	1.2			
Pitch (mm)	2			
B.C.D(mm)	8.3			
Screw thread orientation	Rightward			
circulation laps	1laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	1700			
Static load Coa(N)	3200			



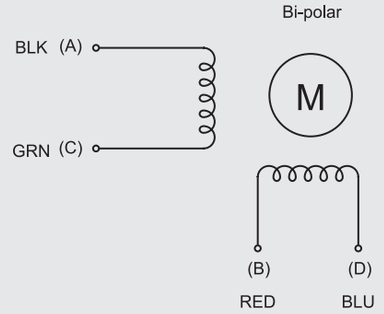
Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Flange verticality	Nut Deflection tolerance	Precision of helical pitch	
		L1	L	S1	N1	N2	Representative shift	Variance
MS2P42Z-0802KS-RC5□-65R124-F	40	65	124	0.035	0.01	0.012	0.018	0.018
MS2P42Z-0802KS-RC7□-65R124-F				0.045	0.014	0.02	Moving distance :±0.05/300	
MS2P42Z-0802KS-RC5□-95R154-F	70	95	154	0.035	0.01	0.012	0.018	0.018
MS2P42Z-0802KS-RC7□-95R154-F				0.045	0.014	0.02	Moving distance :±0.05/300	
MS2P42Z-0802KS-RC5□-125R184-F	100	125	184	0.035	0.01	0.012	0.02	0.018
MS2P42Z-0802KS-RC7□-125R184-F				0.045	0.014	0.02	Moving distance :±0.05/300	

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	4.4
Current/phase (A)	0.8
Resistance/phase (Ω)	5.5±10%
Inductance/phase (mH)	1.5±15%
Moment of inertia (g·cm^2)	50
Holding torque	450

Speed - Torque Characteristic Curve

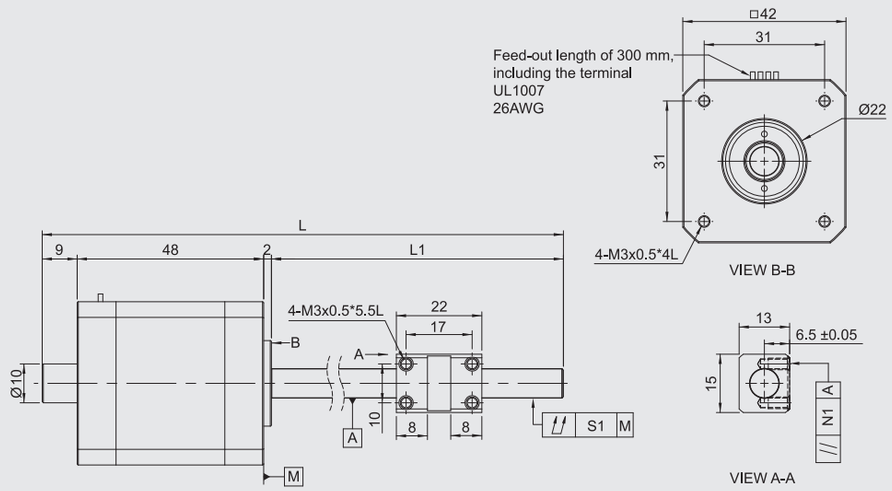


Wiring Diagram



MS2P42Z-0802-H

Rolling ball screw specifications				
Shaft diameter (mm)	8			
Ball diameter (mm)	1.2			
Pitch (mm)	2			
B.C.D(mm)	8.3			
Screw thread orientation	Rightward			
circulation laps	1laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	1700			
Static load Coa(N)	3200			

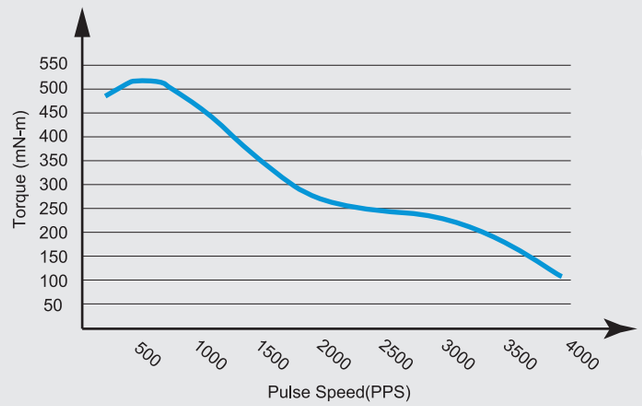


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Parallelism tolerance	Precision of helical pitch	
		L1	L	S1	N1	Representative shift	Variance
MS2P42Z-0802KS-RC5□-65R124-H	40	65	124	0.035	0.01	0.018	0.018
MS2P42Z-0802KS-RC7□-65R124-H				0.045	0.014	Moving distance	±0.05/300
MS2P42Z-0802KS-RC5□-95R154-H	70	95	154	0.035	0.01	0.018	0.018
MS2P42Z-0802KS-RC7□-95R154-H				0.045	0.014	Moving distance	±0.05/300
MS2P42Z-0802KS-RC5□-125R184-H	100	125	184	0.035	0.01	0.02	0.018
MS2P42Z-0802KS-RC7□-125R184-H				0.045	0.014	Moving distance	±0.05/300

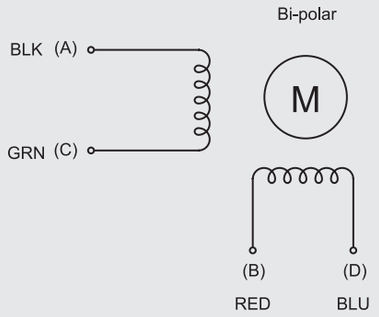
Step motor direct-coupled ball screw
MS2P42Z Series

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	4.4
Current/phase (A)	0.8
Resistance/phase (Ω)	5.5±10%
Inductance/phase (mH)	1.5±15%
Moment of inertia (g·cm^2)	50
Holding torque	450

Speed - Torque Characteristic Curve

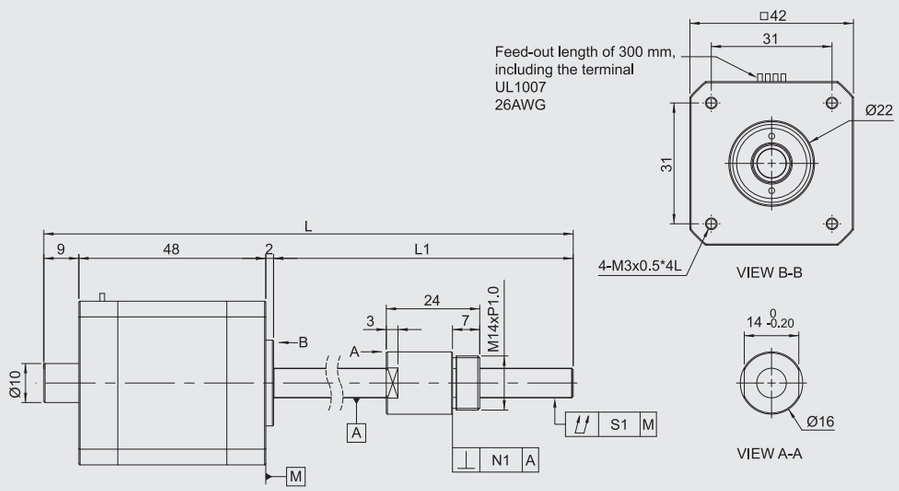


Wiring Diagram



MS2P42Z-0802-M

Rolling ball screw specifications				
Shaft diameter (mm)	8			
Ball diameter (mm)	1.2			
Pitch (mm)	2			
B.C.D(mm)	8.3			
Screw thread orientation	Rightward			
circulation laps	1laps × 3 row			
Precision	C5X	C5Y	C7Y	C7Z
axial gap	0	Below 0.005	Below 0.005	Below 0.01
Dynamic load Ca(N)	1700			
Static load Coa(N)	3200			

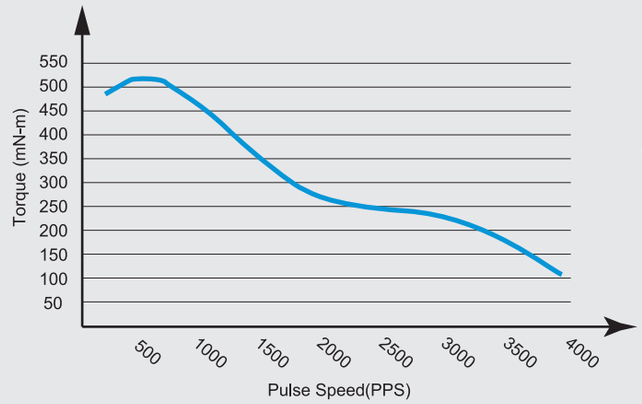


Specification	Stroke	Axis Length		Screw Total deflection tolerance	Nut Verticality tolerance	Precision of helical pitch	
		L1	L	S1	N1	Representative shift	Variance
MS2P42Z-0802KS-RC5□-65R124-M	40	65	124	0.035	0.01	0.018	0.018
MS2P42Z-0802KS-RC7□-65R124-M				0.045	0.014	Moving distance :	±0.05/300
MS2P42Z-0802KS-RC5□-95R154-M	70	95	154	0.035	0.01	0.018	0.018
MS2P42Z-0802KS-RC7□-95R154-M				0.045	0.014	Moving distance :	±0.05/300
MS2P42Z-0802KS-RC5□-125R184-M	100	125	184	0.035	0.01	0.02	0.018
MS2P42Z-0802KS-RC7□-125R184-M				0.045	0.014	Moving distance :	±0.05/300

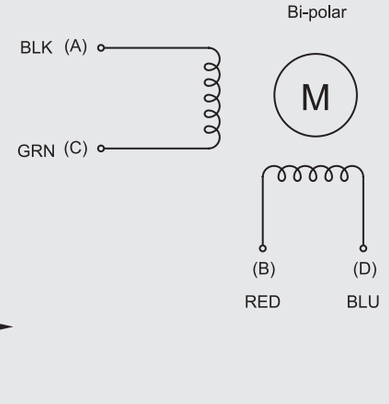
GMT GLOBAL INC.
Step motor direct-coupled ball screw
MS2P42Z Series
Function Specifications

Motor Specification Table	
Number of phases	2
Step angle	1.8˚±5%(Synchronizing, idling)
Rated voltage(V)	4.4
Current/phase (A)	0.8
Resistance/phase (Ω)	5.5±10%
Inductance/phase (mH)	1.5±15%
Moment of inertia (g·cm^2)	50
Holding torque	450

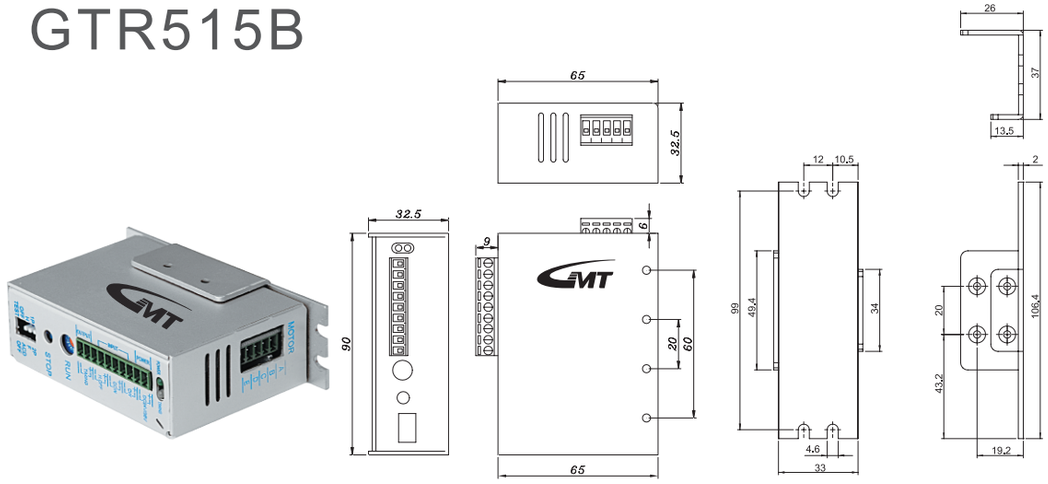
Speed - Torque Characteristic Curve



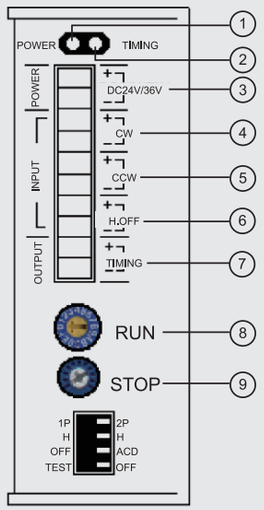
Wiring Diagram



5-phase half/full stepper driver
GTR515B

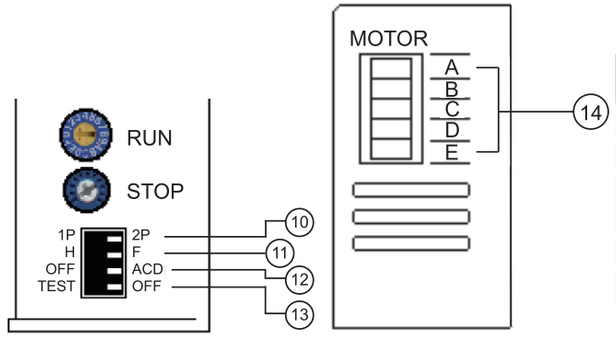


Function Description



Front panel

Number	Brief name of panel	Pattern	Name of Function
1	POWER	LED	Power indicator (NO)
2	TIMING	LED	Phase origin indicator
3	DC24V/36V	I	Power anode input (+ terminal)
			Power grounding input (- terminal)
4	CW	I	2pulse：CW Pulse signal input
			1pulse：Pulse input
5	CCW	I	2pulse：CCW Pulse signal input
			1pulse：Running direction control
6	H.OFF	I	Relief of retaining force
7	TIMING	O	Excitation phase origin output
8	RUN	VR	Operating current adjustment
9	STOP	VR	Stop current adjustment



Front panel　　Rear panel

Number	Brief name of panel	Pattern	Name of Function
10	1P / 2P	SW	Pulse input Way
11	H / F	SW	Step angle shift
12	OFF / ACD	SW	Automatic current drop
13	TEST / OFF	SW	Self-test switch
14	MOSTOR	O	Motor wiring

※Pattern indication: LED, LED indicator, switch, adjustable resistor, input power connection, output joint

Specification

Driver Model	GTR515B	
Driver Current	0.36~1.4A/Phase	
Applicable Motor Specifications	0.75/Phase	1.4A/Phase
Input power	DC24~36V ※ 1 MINE：1.5A and above	DC24~36V ※ 1 MINE：3.0A and above
Energization method	Full step (4-phase energization); half step (4 to 5-phase energization) (switchable)	
Signal Input/ Output method	Optical coupler(Photo Coupler) Input interface Open collector (Open Collector) Output interface	
Input signal: CW Pulse input	2-Pulse: Forward input ,1-Pulse: Pulse input	
Input signal: CCW Pulse input	2-Pulse: Reverse input, input in the operating direction	
Input signal: H.OFF Pulse input	Energization relief input (Holding off)	
Output signal: TIMING Output	Energization phase origin output Output of one out of every 10 pulses at full step Output of one out of every 20 pulses at full step	
Feature	◆ Automatic current drop(ACD) ◆ Step angle shift (H / F) ◆ Self test Function(TEST) ◆ Pulse input mode switching(1P / 2P)	
Protection Feature	◆ Power reverse connection protection: the current is cut off automatically when the input voltage polarity is wrong. ◆ Over-power protection: the current is cut off automatically when the input current exceeds the rated value. ◆ Over-heat protection: the current is cut off automatically when the driver exceeds 80. ※2	
Indicator display	Power,TIMING	
Shape and dimension	90(L)x65(W)x32(H)mm	
Weight	297g	
Use environment temperature range	0°~40°C	

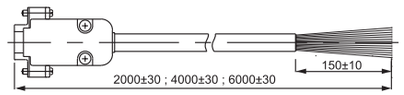
※ 1.【a】The instantaneous maximum voltage is 40V. For usual use, do not exceed 36V to avoid damaging the driver.
【b】Please follow the advice in the table and select power supply that is sufficient in the specifications.

※ 2.When the over-heat protection feature is on, the power indicator will blink and the motor will not be energized (please note that you should apply proper protection if the motor is used with a vertical load).
To resume energization, it is required to shut down power and eliminate the cause of over-heat before starting power again.

- For all GMT electric cylinders, GMT self-designed D-sub and HRS connectors are used.
- The standard connecting cables includes a connector on one side. 2m cable is in stock.
- D-sub and HRS connecting cables are both optional.
- When using the standard connecting cable, please insulate the flying lead based on your required functions.
- If the length is longer than 6m, it may cause abnormal function.
- The bendable radius of the connector is 5 times the wire diameter.

Connector

D-SUB connecting cable



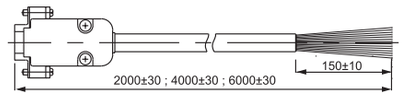
Model No.:AW1C2A2-2 ; AW1C2A2-4 ; AW1C2A2-6 Unit:mm

Female D-sub connector			Control side - 15 flying leads
Motor lead A	1	Green cable / Black dot	1
Motor lead B	2	Green cable / Red dot	2
Motor lead C	3	Pink cable / Black dot	3
Motor lead D	4	Pink cable / Red dot	4
Motor lead E	5	Blue cable / Black dot	5
CWLS output	6	Blue cable / Red dot	6
CCWLS output	7	White cable / Black dot	7
Motor rotary ORG2 output	8	White cable / Red dot	8
Power input (+)	9	Grey cable / Black dot	9
Travel stroke ORG1 output	10	Grey cable / Red dot	10
Power input (-)	11	Yellow cable / Black dot	11
Ground ⏚	12	Yellow cable / Red dot	12
Not used	13	Not used	13
Not used	14	Not used	14
Not used	15	Not used	15

Corresponding pins

Connector (Closed-loop magnetic encoder)

D-SUB standard connector



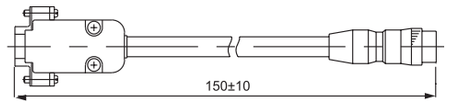
Model No.:AW1C2A2-2 ; AW1C2A2-4 ; AW1C2A2-6 Unit:mm

Female D-sub connector			Control side - 15 flying leads
Motor lead A+	1	Green cable / Black dot	1
Motor lead A-	2	Green cable / Red dot	2
Motor lead B+	3	Pink cable / Black dot	3
Motor lead B-	4	Pink cable / Red dot	4
Encoder +5V	5	Blue cable / Black dot	5
Encoder GND	6	Blue cable / Red dot	6
Micro-switch *	7	White cable / Black dot	7
Micro-switch *	8	White cable / Red dot	8
Encoder CHA	9	Grey cable / Black dot	9
Encoder CH/A	10	Grey cable / Red dot	10
Encoder CHB	11	Yellow cable / Black dot	11
Encoder CH/B	12	Yellow cable / Red dot	12
Motor lead Z+	13	Not used	13
Motor lead Z-	14	Not used	14
Not used	15	Not used	15

Corresponding pins

Conversion cable

D-SUB TO HRS Conversion cable

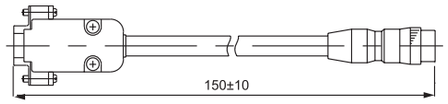


Model No.:AW2C2G0-0.15 Unit:mm

Female D-sub connector			Male HRS connector
Motor lead A	1	Green cable / Black dot	1 Motor lead A
Motor lead B	2	Green cable / Red dot	2 Motor lead B
Motor lead C	3	Pink cable / Black dot	3 Motor lead C
Motor lead D	4	Pink cable / Red dot	4 Motor lead D
Motor lead E	5	Blue cable / Black dot	5 Motor lead E
CWLS output	6	Blue cable / Red dot	6 CWLS output
CCWLS output	7	White cable / Black dot	7 CCWLS output
Motor rotation ORG2 output	8	White cable / Red dot	8 Motor rotation ORG2 output
Power input (+)	9	Grey cable / Black dot	9 Power input (+)
Travel stroke ORG1 output	10	Grey cable / Red dot	10 Travel stroke ORG1 output
Power input (-)	11	Yellow cable / Black dot	11 Power input (-)
Ground ⏚	12	Yellow cable / Red dot	12 Ground ⏚
Not used	13		
Not used	14		
Not used	15		

Conversion cable (Closed-loop magnetic encoder)

D-SUB TO HRS Conversion cable



Model No.:AW2C2G0-0.15 Unit:mm

Female D-sub connector			Male HRS connector
Motor lead A+	1	Green cable / Black dot	1 Motor lead A+
Motor lead A-	2	Green cable / Red dot	2 Motor lead A-
Motor lead B+	3	Pink cable / Black dot	3 Motor lead B+
Motor lead B-	4	Pink cable / Red dot	4 Motor lead B-
Encoder +5V	5	Blue cable / Black dot	5 Encoder +5V
Encoder GND	6	Blue cable / Red dot	6 Encoder GND
Micro-switch	7	White cable / Black dot	7 Micro-switch
Micro-switch	8	White cable / Red dot	8 Micro-switch
Encoder CHA	9	Grey cable / Black dot	9 Encoder CHA
Encoder CH/A	10	Grey cable / Red dot	10 Encoder CH/A
Encoder CHB	11	Yellow cable / Black dot	11 Encoder CHB
Encoder CH/B	12	Yellow cable / Red dot	12 Encoder CH/B
Motor lead Z+	13		
Motor lead Z-	14		
Not used	15		

* This is a tailored product and needs to include the jumper as needed for the customer and is produced upon receipt of an order.

□ 20MM

2-phase stepper motor combination

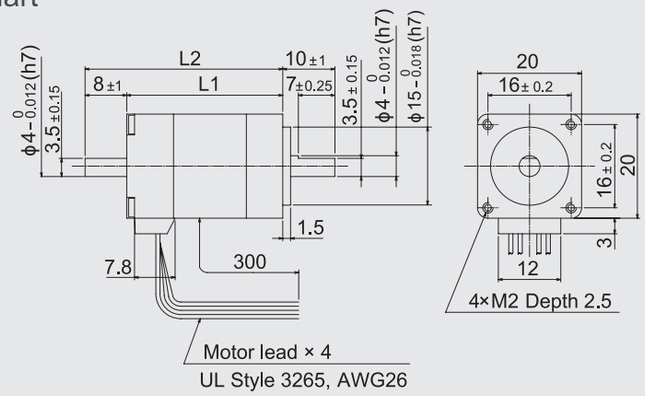
Standard (2-Phase 4-Wire)

20 mm

Step angle : 1.8°

Recommended with Driver：CVD205-K

Dimension Chart



- The reverse output shaft side of dual output shaft is always the milling element.

Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP213D05A	CVD205-K	Single axis	20	-	0.02	1.6×10^{-7}	0.5 / Phase	0.05	0.02	30	-
PKP213D05B		Double axes									38

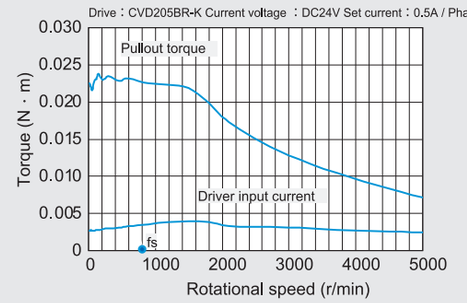
Maximum input pulse frequency
The upper controller is the line driver output: 1MHz (When duty is 50%) The upper controller is open collector driver output: 250kHz (When duty is 50%) Negative logic pulse input

- ◆ Torque is retained when PKP213D05A/PKP213D05B stops: 0.01N · m
- ◆ Energization method: Micro-step
- Pulse cycle is 50%; the response speed can reach 1 MHz.
- Depending on the different driving conditions, sometimes the motor will be obviously generating heat. Please use it when the temperature of the motor cover is below 100°C.

Speed - Torque Characteristic Curve

PKP213D05A , PKP213D05B

Driving type: Driver input current
Working voltage : DC24V
Working current : 1A / phase



□ 28MM

2-phase stepper motor combination

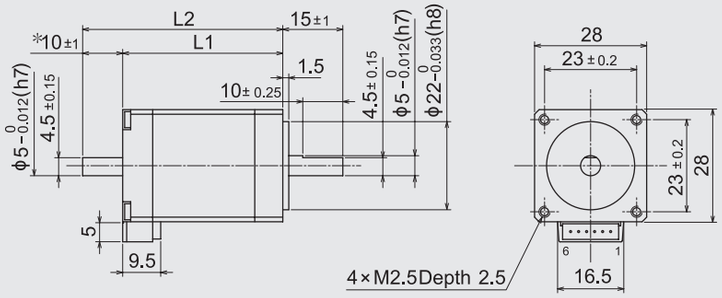
Standard(2-Phase 6-Wire)

28 mm

Step angle : 1.8°

Recommended with Driver：CVD215-K

Dimension Chart



*Length of the milling element of the dual output shaft is 10 ± 0.25.

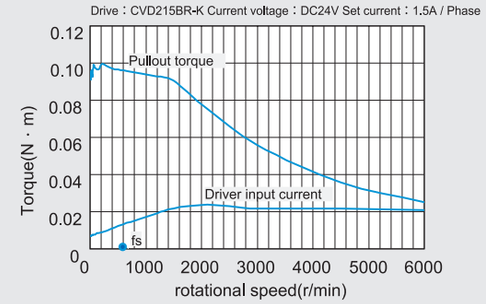
Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP223D15A2	CVD215-K	Single axis	28	Auxiliary (0.6m)	0.095	9×10^{-7}	1.5 / Phase	0.11	0.02	32	-
PKP223D15B2		Double axes									42
PKP225D15A2		Single axis			0.19	18×10^{-7}		0.2		51.5	-
PKP225D15B2		Double axes									61.5
Maximum input pulse frequency											
The upper controller is the line driver output: 1MHz (When duty is 50%) The upper controller is open collector driver output: 250kHz (When duty is 50%) Negative logic pulse input											

- Torque is retained when PKP223D15A2 / PKP223D15B2 stops: 0.047N · m
- Torque is retained when PKP225D15A2 / PKP225D15B2 stops: 0.095N · m
- Energization method: Micro-step
- Pulse cycle is 50%; the response speed can reach 1 MHz.
- Depending on the different driving conditions, sometimes the motor will be obviously generating heat. Please use it when the temperature of the motor cover is below 100°C.

Speed - Torque Characteristic Curve

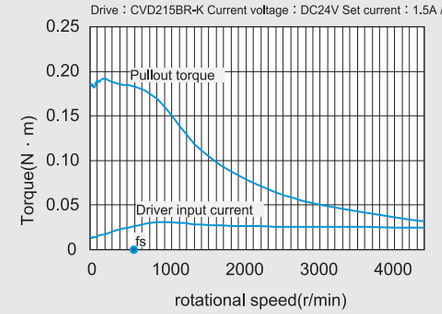
PKP223D15A2, PKP223D15B2

Driving type: Driver input current
Working voltage : DC24V
Working current : 1.5A / phase



PKP225D15A2, PKP225D15B2

Driving type: Driver input current
Working voltage : DC24V
Working current : 1.5A / phase



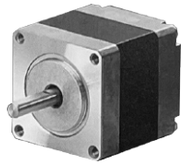
□ 35MM

2-phase stepper motor combination

Standard (2-Phase 6-Wire)

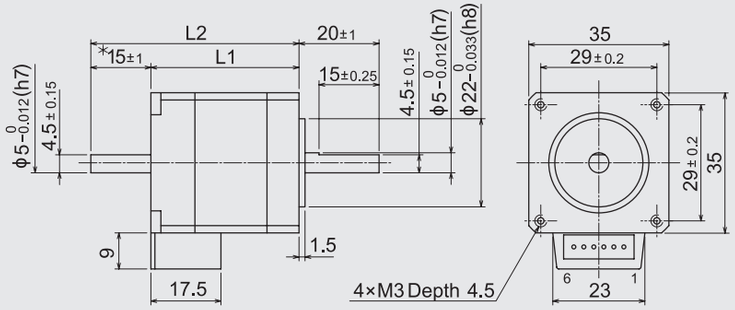
35 mm

Step angle : 1.8˚



Recommended with Driver : CVD223-K

Dimension Chart



*Length of the milling element of the dual output shaft is 15 ±0.25

Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP233D23A	CVD223-K	Single axis	35	Auxiliary (0.6m)	0.2	24×10^{-7}	2.3 / Phase	0.18	0.02	37	-
PKP233D23B		Double axes									52
PKP235D23A		Single axis			0.37	50×10^{-7}		0.285		52	-
PKP235D23B		Double axes									67
Maximum input pulse frequency											
The upper controller is the line driver output: 1MHz (When duty is 50%) The upper controller is open collector driver output: 250kHz (When duty is 50%) Negative logic pulse input											

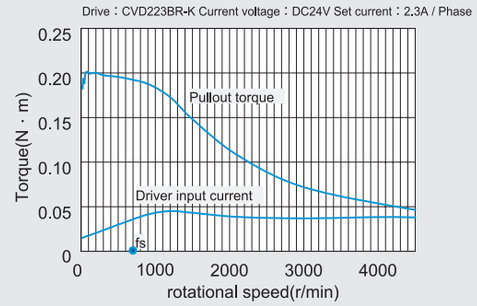
- Torque is retained when PKP233D23A / PKP233D23B stops: 0.1N · m
- Torque is retained when PKP235D23A / PKP235D23B stops: 0.19N · m
- Energization method: Micro-step
- Pulse cycle is 50%; the response speed can reach 1 MHz.
- Depending on the different driving conditions, sometimes the motor will be obviously generating heat. Please use it when the temperature of the motor cover is below 100°C.

Orient 2-phase step motor ▶35-frame
□35MM
GMT GLOBAL INC.
2-phase stepper motor
PKP
□35

Speed - Torque Characteristic Curve

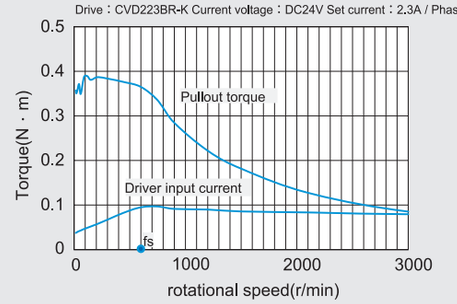
PKP233D23A, PKP233D23B

Driving type: Driver input current
Working voltage : DC24V
Working current : 2.3A / phase



PKP235D23A, PKP235D23B

Driving type: Driver input current
Working voltage : DC24V
Working current : 2.3A / phase



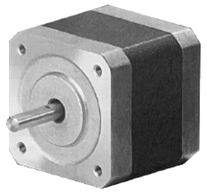
□ 42MM

2-phase stepper motor combination

Standard (2-Phase 4-Wire)

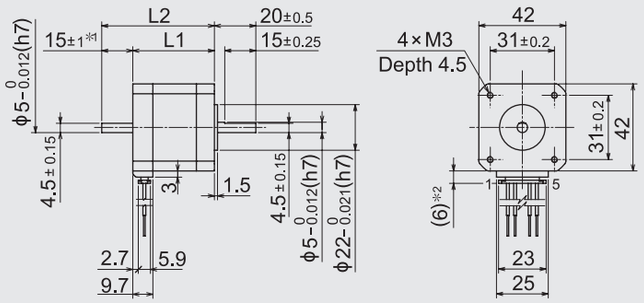
42 mm

Step angle : 1.8°



Recommended with Driver：CVD223-K

Dimension Chart



※1 Length of the milling element of the dual output shaft is 15±0.25
※2 When the connecting cable is installed

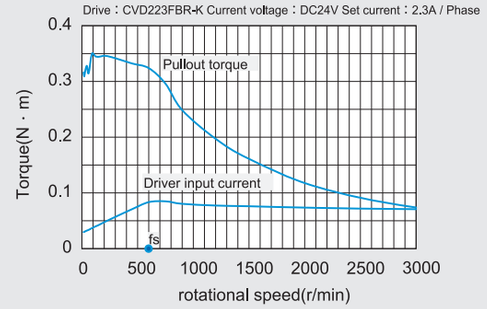
Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP243D23A	CVD223-K	Single axis	42	Auxiliary (0.6m)	0.35	36×10^{-7}	2.3 / Phase	0.25	0.02	33	-
PKP243D23B		Double axes									48
PKP244D23A		Single axis			0.48	57×10^{-7}		0.3		39	-
PKP244D23B		Double axes									54
PKP245D23A		Single axis			0.58	83×10^{-7}		0.39		47	-
PKP245D23B		Double axes									62
PKP246D23A		Single axis			0.93	114×10^{-7}		0.5		59	-
PKP246D23B		Double axes									74
Maximum input pulse frequency											
The upper controller is the line driver output: 1MHz (When duty is 50%) The upper controller is open collector driver output: 250kHz (When duty is 50%) Negative logic pulse input											

- Torque is retained when PKP243D23A / PKP243D23B stops: 0.18N · m
- Torque is retained when PKP244D23A / PKP244D23B stops: 0.24N · m
- Torque is retained when PKP245D23A / PKP245D23B stops: 0.29N · m
- Torque is retained when PKP246D23A / PKP246D23B stops: 0.47N · m
- Energization method: Micro-step
- Pulse cycle is 50%; the response speed can reach 1 MHz.
- Depending on the different driving conditions, sometimes the motor will be obviously generating heat. Please use it when the temperature of the motor cover is below 100°C.

Speed - Torque Characteristic Curve

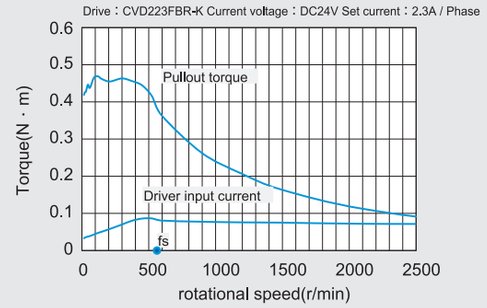
PKP243D23A, PKP243D23B

Driving type: Driver input current
Working voltage : DC24V
Working current : 2.3A / phase



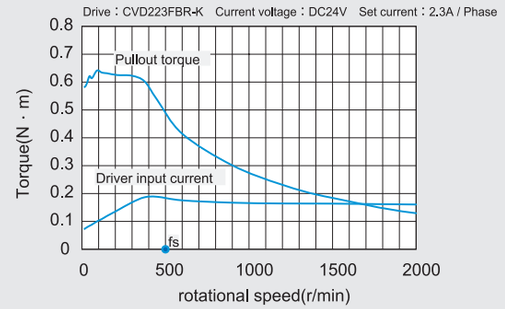
PKP244D23A, PKP244D23B

Driving type: Driver input current
Working voltage : DC24V
Working current : 2.3A / phase



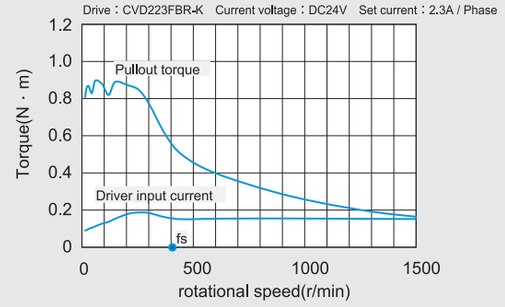
PKP245D23A, PKP245D23B

Driving type: Driver input current
Working voltage : DC24V
Working current : 2.3A / phase



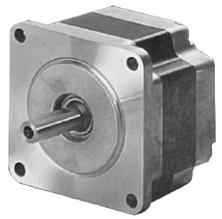
PKP246D23A, PKP246D23B

Driving type: Driver input current
Working voltage : DC24V
Working current : 2.3A / phase



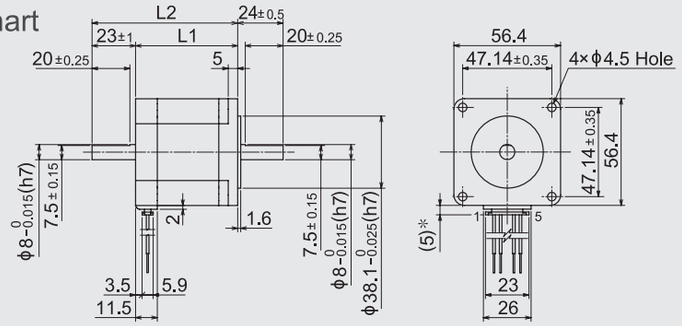
□ 60MM

2-phase stepper motor combination
Standard (2-Phase 4-Wire)
60 mm
Step angle : 1.8°



Recommended with Driver：CVD228B-K【P.140】

Dimension Chart



※ When the connecting cable is installed

Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP264D28A	CVD228-K	Single axis	56.4	Auxiliary (0.6m)	0.6	120×10^{-7}	2.8 / Phase	0.46	0.02	39	-
PKP264D28B		Double axes									62
PKP266D28A		Single axis			1.4	290×10^{-7}		0.73		54	-
PKP266D28B		Double axes									77
PKP268D28A		Single axis			2.3	490×10^{-7}		1.1		76	-
PKP268D28B		Double axes									99

Maximum input pulse frequency

The upper controller is the line driver output: 1MHz (When duty is 50%)
The upper controller is open collector driver output: 250kHz (When duty is 50%)
Negative logic pulse input

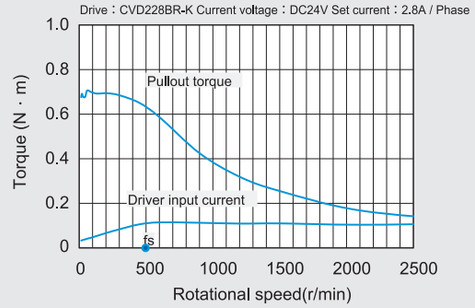
- Torque is retained when PKP264D28A / PKP264D28B stops: 0.3N · m
- Torque is retained when PKP266D28A / PKP266D28B stops: 0.7N · m
- Torque is retained when PKP268D28A / PKP268D28B stops: 1.15N · m
- Torque is retained when Energization method: Micro-step
- Pulse cycle is 50%; the response speed can reach 1 MHz.
- Depending on the different driving conditions, sometimes the motor will be obviously generating heat. Please use it when the temperature of the motor cover is below 100°C.

Orient 2-phase step motor ▶60-frame
□56.4MM
GMT GLOBAL INC.
2-phase stepper motor
PKP
□60

Speed - Torque Characteristic Curve

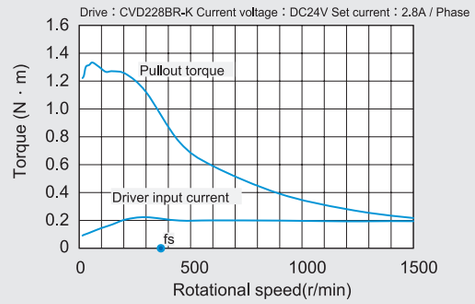
PKP264D28A, PKP264D28B

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.8A / phase



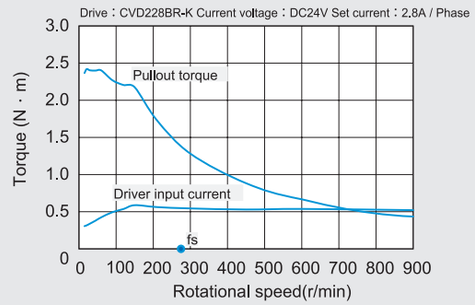
PKP266D28A, PKP266D28B

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.8A / phase



PKP268D28A, PKP268D28B

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.8A / phase



□ 28MM

5-phase stepper motor combination

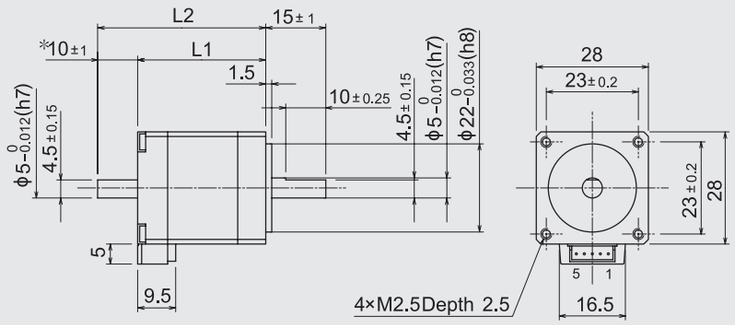
Standard (5-Phase 5-Wire)

28 mm

Step angle : 0.72°

Recommended with Driver：CVD512-K

Dimension Chart



* Length of the milling element of the dual output shaft is 10±0.25

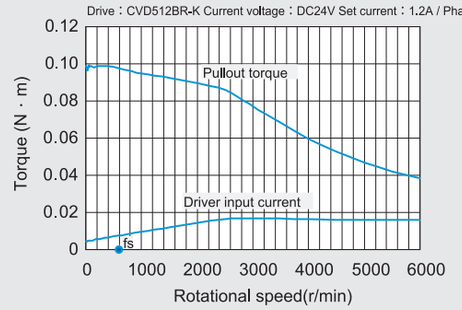
Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP523N12A	CVD512-K	Single axis	28	Auxiliary (0.6m)	0.052	9×10^{-7}	1.2 / Phase	0.11	0.02	32	-
PKP523N12B		Double axes									42
PKP525N12A		Single axis			0.091	18×10^{-7}		0.2		51.5	-
PKP525N12B		Double axes									61.5
Maximum input pulse frequency											
The upper controller is the line driver output: 1MHz (When duty is 50%) The upper controller is open collector driver output: 250kHz (When duty is 50%) Negative logic pulse input											

- Torque is retained when PKP523N12A / PKP523N12B stops: 0.026N · m
- Torque is retained when PKP525N12A / PKP525N12B stops: 0.045N · m
- Energization method: Micro-step
- Pulse cycle is 50%; the response speed can reach 1 MHz.
- Depending on the different driving conditions, sometimes the motor will be obviously generating heat. Please use it when the temperature of the motor cover is below 100°C.

Speed - Torque Characteristic Curve

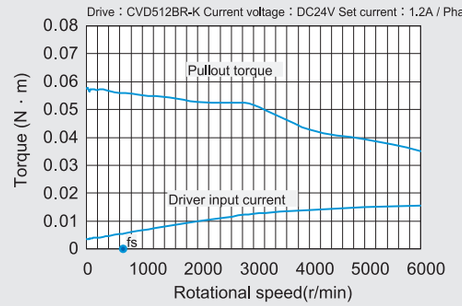
PKP523N12A, PKP523N12B

Driving type: Driver input current
Working voltage : DC24V
Working current: 1.2A / phase



PKP525N12A, PKP525N12B

Driving type: Driver input current
Working voltage : DC24V
Working current: 1.2A / phase

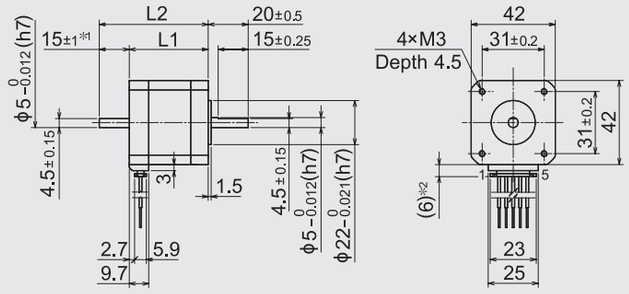


□ 42MM

5-phase stepper motor combination
Standard (5-Phase 5-Wire)
42 mm
Step angle : 0.72°

Recommended with Driver：CVD518-K

Dimension Chart



*1 Length of the milling element of the dual output shaft is 15±0.25
*2 When the connecting cable is installed

Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP544N18A	CVD518-K	Single axis	42	Auxiliary (0.6m)	0.26	57×10^{-7}	1.8 / Phase	0.3	0.02	39	-
PKP544N18B		Double axes									54
PKP544MN18A		Single axis			0.44	114×10^{-7}		0.5		59	-
PKP544MN18B		Double axes									74
Maximum input pulse frequency											
The upper controller is the line driver output: 1MHz (When duty is 50%) The upper controller is open collector driver output: 250kHz (When duty is 50%) Negative logic pulse input											

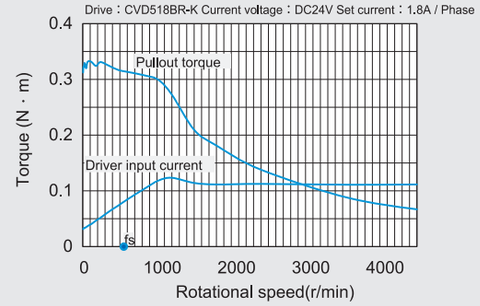
- Torque is retained when PKP544N18A / PKP544N18B stops: 0.13N · m
- Torque is retained when PKP544MN18A / PKP544MN18B stops: 0.22N · m
- Energization method: Micro-step
- Pulse cycle is 50%; the response speed can reach 1 MHz.
- Depending on the different driving conditions, sometimes the motor will be obviously generating heat. Please use it when the temperature of the motor cover is below 100°C.

Orient 5-phase step motor ▶42-frame
□42MM
GMT GLOBAL INC.
5-phase stepper motor
PKP
□42

Speed - Torque Characteristic Curve

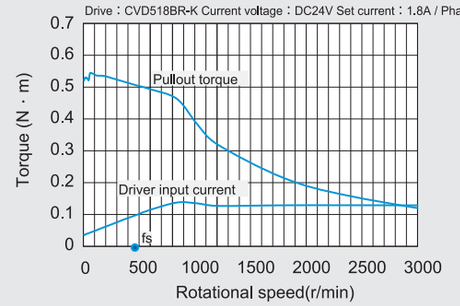
PKP544N18A, PKP544N18B

Driving type: Driver input current
Working voltage : DC24V
Working current: 1.8A / phase



PKP544MN18A, PKP544MN18B

Driving type: Driver input current
Working voltage : DC24V
Working current: 1.8A / phase

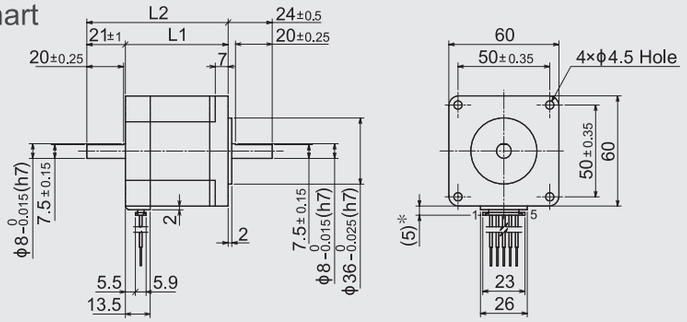


□ 60MM

5-phase stepper motor combination
Standard (5-Phase 5-Wire)
60 mm
Step angle : 0.72˚

Recommended with Driver：CVD524-K

Dimension Chart



* When the connecting cable is installed

Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP564FN24AW	CVD524-K	Single axis	60	Auxiliary (0.6m)	0.55	175×10^{-7}	2.4 / Phase	0.6	0.02	44	-
PKP564FN24BW		Double axes									65
PKP566FN24AW		Single axis			0.95	280×10^{-7}		0.8		56	-
PKP566FN24BW		Double axes									77
PKP569FN24AW		Single axis			1.7	560×10^{-7}		1.3		84.5	-
PKP569FN24BW		Double axes									105.5

Maximum input pulse frequency

The upper controller is the line driver output: 1MHz (When duty is 50%)
The upper controller is open collector driver output: 250kHz (When duty is 50%)
Negative logic pulse input

- Torque is retained when PKP564FN24AW / PKP564FN24BW stops: 0.28N · m
- Torque is retained when PKP566FN24AW / PKP566FN24BW stops: 0.48N · m
- Torque is retained when PKP569FN24AW / PKP569FN24BW stops: 0.85N · m
- Energization method: Micro-step
- Pulse cycle is 50%; the response speed can reach 1 MHz.
- Depending on the different driving conditions, sometimes the motor will be obviously generating heat. Please use it when the temperature of the motor cover is below 100°C.

Orient 5-phase step motor ▶60-frame
□60MM

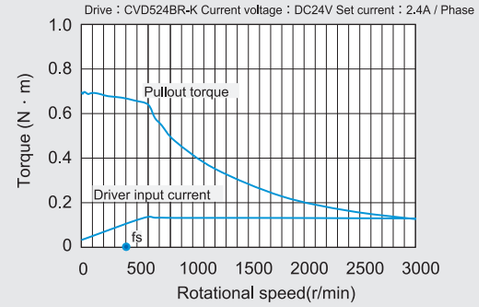
GMT GLOBAL INC.

5-phase stepper motor
PKP
□60

Speed - Torque Characteristic Curve

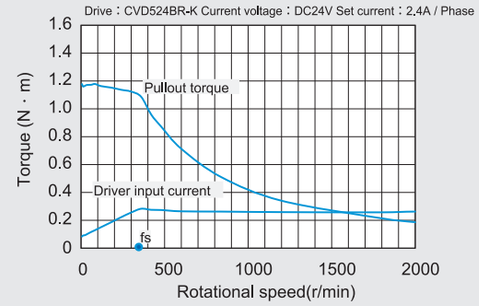
PKP564FN24AW, PKP564FN24BW

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.4A / phase



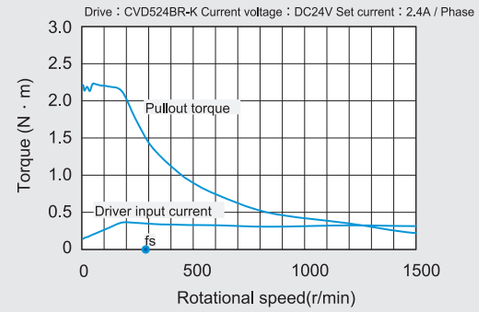
PKP566FN24AW, PKP566FN24BW

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.4A / phase



PKP569FN24AW, PKP569FN24BW

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.4A / phase



□ 42MM

5-phase stepper motor combination

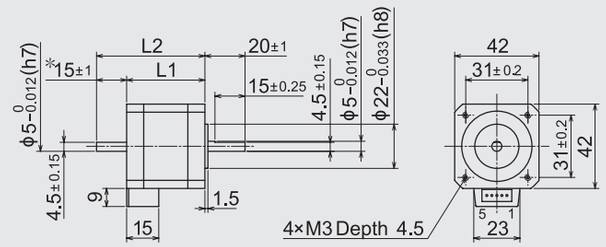
High Resolution (5-Phase 5-Wire)

42 mm

Step angle : 0.36°

Recommended with Driver：CVD518-K

Dimension Chart



* Length of the milling element of the dual output shaft is 15±0.25

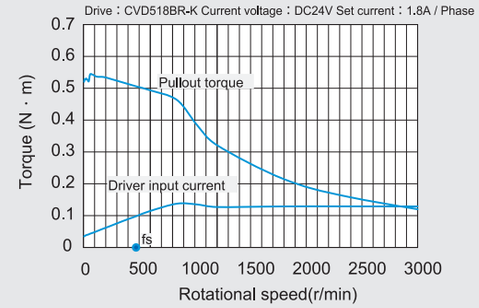
Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)	
PKP544MN18A	CVD518-K	Single axis	42	Auxiliary (0.6m)	0.26	60×10^{-7}	1.8 / Phase	0.3	0.02	39	-
PKP544MN18B		Double axes									54
PKP546MN18A		Single axis			0.44	121×10^{-7}		0.5		59	-
PKP546MN18B		Double axes									74
Maximum input pulse frequency											
The upper controller is the line driver output: 1MHz (When duty is 50%) The upper controller is open collector driver output: 250kHz (When duty is 50%) Negative logic pulse input											

- Torque is retained when PKP544MN18A / PKP544MN18B stops: 0.13N · m
- Torque is retained when PKP546MN18A / PKP546MN18B stops: 0.22N · m
- Energization method: Micro-step

Speed - Torque Characteristic Curve

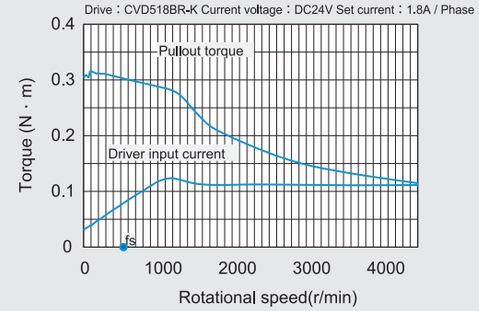
PKP544MN18A, PKP544MN18B

Driving type: Driver input current
Working voltage : DC24V
Working current: 1.8A / phase



PKP546MN18A, PKP546MN18B

Driving type: Driver input current
Working voltage : DC24V
Working current: 1.8A / phase



□ 60MM

5-phase stepper motor combination

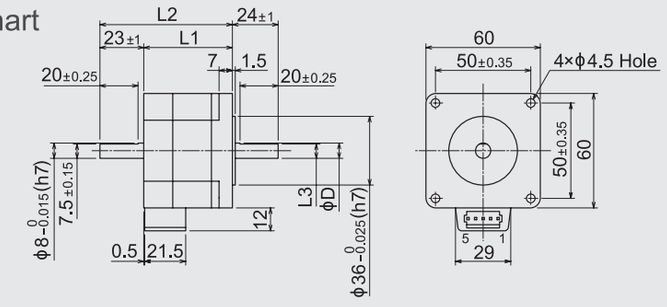
High Resolution (5-Phase 5-Wire)

60 mm

Step angle : 0.36˚

Recommended with Driver：CVD524-K

Dimension Chart



✻ When the connecting cable is installed

Assembly		Shaft type	Installation dimensions	Auxiliary cable	Maximum energization static torque	Rotor inertia Inertia J	Rated current	Motor weight	Loop weight	L1	L2	L3
Motor Model	Drive Model		(mm)		N · m	kg · m²	(A)	(kg)		(mm)		
PKP564FMN24A	CVD524-K	Single axis	60	Auxiliary (0.6m)	0.78	310×10^{-7}	2.4 / Phase	0.65	0.02	46.5	-	7.5±0.15
PKP564FMN24B		Double axes									69.5	
PKP566FMN24A		Single axis			1.25	490×10^{-7}		0.87		56	-	
PKP566FMN24B		Double axes									79	
PKP569FMN24A		Single axis			2.3	970×10^{-7}		1.5		87	-	9.5±0.15
PKP569FMN24B		Double axes									110	

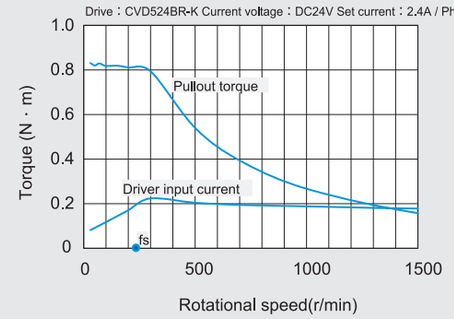
Maximum input pulse frequency
The upper controller is the line driver output: 1MHz (When duty is 50%) The upper controller is open collector driver output: 250kHz (When duty is 50%) Negative logic pulse input

- Torque is retained when PKP564FMN24A / PKP564FMN24B stops: 0.39N · m
- Torque is retained when PKP566FMN24A / PKP566FMN24B stops: 0.63N · m
- Torque is retained when PKP569FMN24A / PKP569FMN24B stops: 0.15N · m
- Energization method: Micro-step

Speed - Torque Characteristic Curve

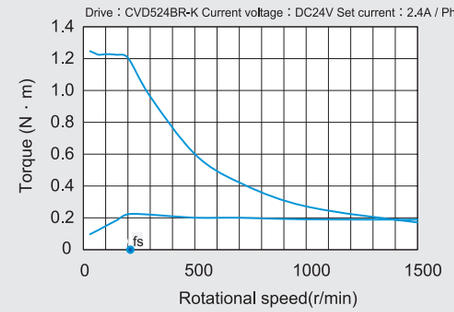
PKP564FMN24A, PKP564FN24B

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.4A / phase



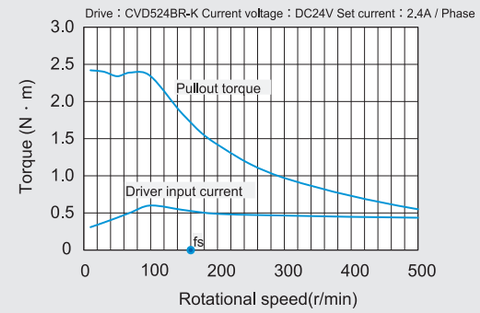
PKP566FMN24A, PKP566FMN24B

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.4A / phase



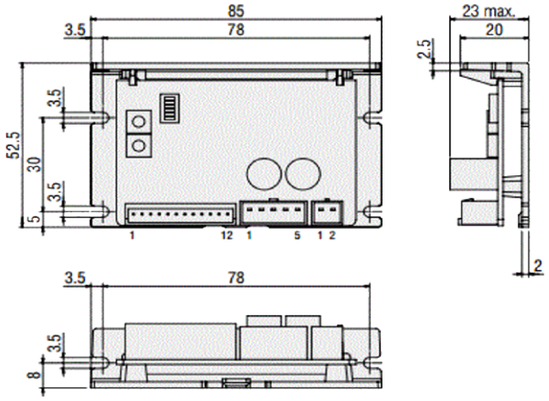
PKP569FMN24A, PKP569FMN24B

Driving type: Driver input current
Working voltage : DC24V
Working current: 2.4A / phase



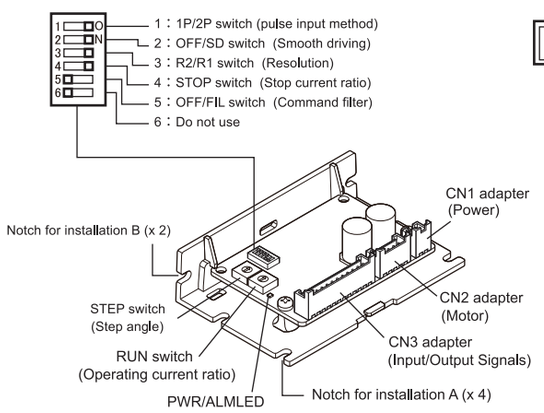
2-phase Bipolar Stepper Drive CVD228B-K

Name	Weight kg
CVD228B-K	0.07

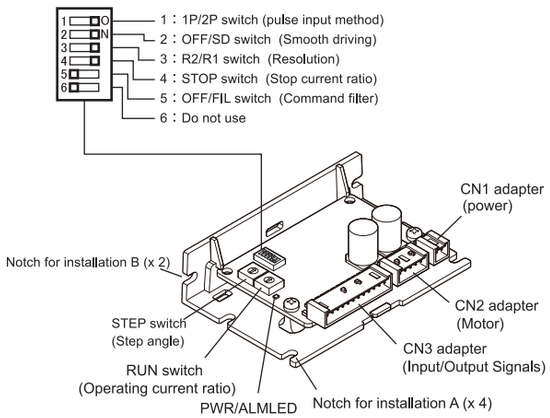


Recommended with Motor : PKP 60-frame【P.128】

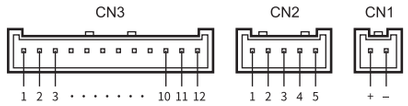
When it comes with the mounting plate



With the installation plate - for vertical feed-out



Adapter array



CN1 (Power)

Terminal No.	Direction	Signals	Description
+	Input	POWER	+DC24 V
–			GND

CN2 (Motor)

Terminal No.	Direction	Signals	Description
1	Output	MOTOR	Blue motor lead
2			Red motor lead
3			None
4			Green motor lead
5			Black motor lead

*The terminal array of the adapter differs with the motor

CN3 (Input/Output Signals)

Terminal No.	Direction	Signals		Description
1	Input	CW (PLS)	+	CW pulse (pulse) Input*
2			–	
3		CCW (DIR)	+	CCW pulse (Running direction) Input*
4			–	
5		AWO	+	Output current OFF input
6			–	
7		CS	+	Step angle shift input
8			–	
9	Output	ALM	+	ALARM output
10			–	
11		TIM	+	Sequence output
12			–	

* When it is set to be dual pulse input, it is the CW pulse input (CW) and CCW pulse input (CCW). When it is set to be single pulse input, it is the pulse input (PLS) and running direction input (DIR).

Characteristics of the CVD series

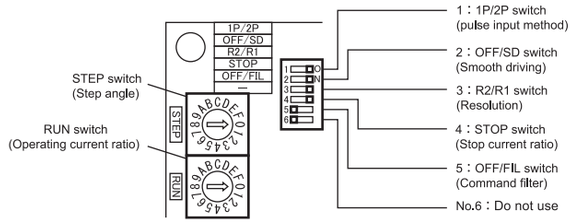
- The high-performing driver of the minimum grade in the industry
- The driver that may be purchased additionally to go with the configuration.
- Vibration is reduced through micro-stepping.
- High-efficiency design
- High torque
- Low vibration

Specification

Model	2-phase step motor driver_With the installation plate_Motor Current :1.2A/Phases
Drive Type	Bipolar Drive
Power Input Voltage	DC24V
Power Input Allowable voltage range	+ 10%
Power Input Current	3.0A
Loop weight	0.07kg

Motor-driven current (to be set at shipment): 2.8A/Phases
Maximum input pulse frequency : The upper controller is the line driver output: 1MHz (When duty is 50%)
The upper controller is open collector driver output: 250kHz (When duty is 50%)

set up



Step angle

When setting the step angle of the motor, use the R2/R1 switch and the STEP switch.
The step angle that may be set is shown in the table below.
Set the R2/R1 switch at shipment: :
5-Phases motor is on the ON side (R1)
2-Phase motor is on the OFF side (R2)
STEP switch: 0

When the R2/R1 switch is on the ON side (R1)

STEP switch	Resolution (P/R)	Step angle
0	500	0.72°
1	1000	0.36°
2	1250	0.288°
3	2000	0.18°
4	2500	0.144°
5	4000	0.09°
6	5000	0.072°
7	10000	0.036°
8	12500	0.0288°
9	20000	0.018°
A	25000	0.0144°
B	40000	0.009°
C	50000	0.0072°
D	62500	0.00576°
E	100000	0.0036°
F	125000	0.00288°

When the R2/R1 switch is on the OFF side (R2)

Resolution (P/R)	Step angle
200	1.8°
400	0.9°
800	0.45°
1000	0.36°
1600	0.225°
2000	0.18°
3200	0.1125°
5000	0.072°
6400	0.05625°
10000	0.036°
12800	0.028125°
20000	0.018°
25000	0.0144°
25600	0.0140625°
50000	0.0072°
51200	0.00703125°

Operating current

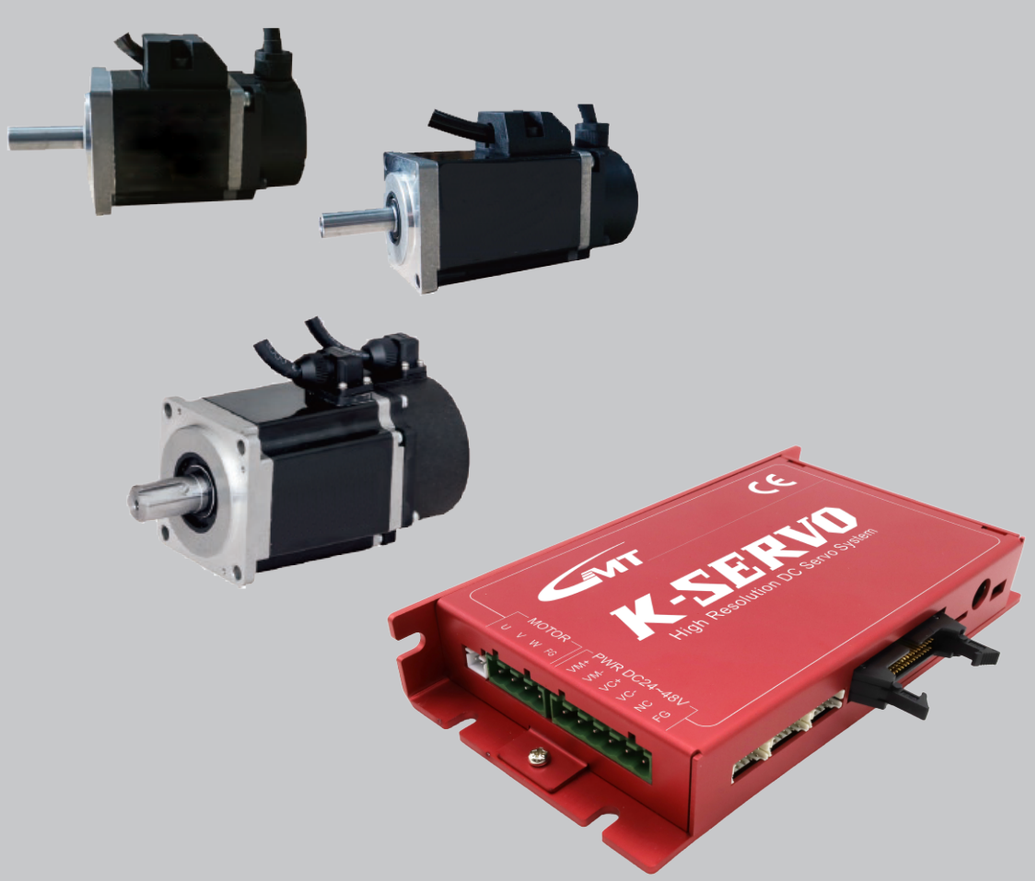
The RUN switch can be used to set the operating current ratio and the motor current (operating current) upon change of pulse input. When the load is light and there is sufficient torque, with the operating current ratio turned lower, it helps inhibit the rise in the temperature of the motor.
The actual operating current is the product of the driver rated current (100%) multiplied by the operating current ratio.
Operating current= Driver's rated current X Operating current ratio to be set at shipment F (Operating current ratio100%)

RUN switch	Operating current ratio
0	25%
1	30%
2	35%
3	40%
4	45%
5	50%
6	55%
7	60%

RUN switch	Operating current ratio
8	65%
9	70%
A	75%
B	80%
C	85%
D	90%
E	95%
F	100%

*Please set the operating current below the motor's rated current; otherwise, a fire or scalding can occur.

Servo Motor & Driver



Description of Model

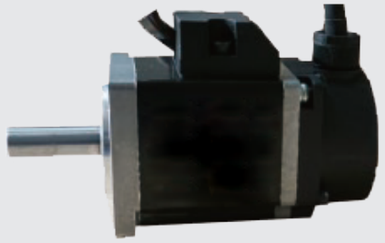
GSVM Series

GSVM - D 0B M D 4

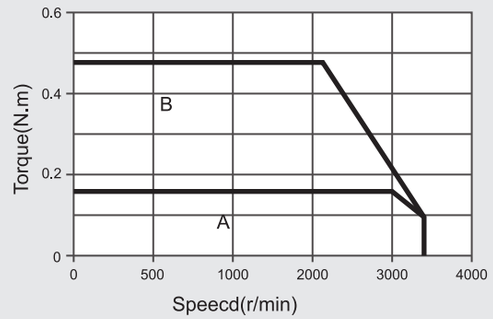
Type	Series	Wattage	Inertia	Encoder	Motor structure
GSVM=GMT Servo Motor Servo Motor	DC Series	0B 50W 01 100W 02 200W	M = Middle Intertia	D = 23 bit Absolute type (with battery)	Key groove / Oil seal 4 ◆ 6 ◆ ◆

* Should you have other specification requirements, please contact sales.

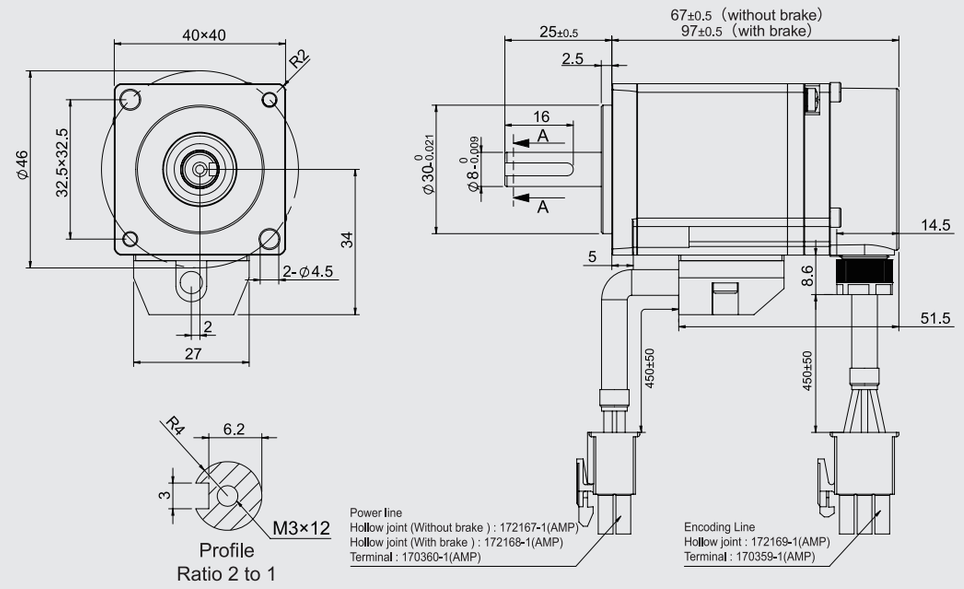
Motor Model		GSVM-D0BMD4 GSVM-D0BMD6	GSVM-D01MD4 GSVM-D01MD6	GSVM-D02MD4 GSVM-D02MD6
Rated power	(W)	50	100	200
Voltage class		DC 24V	DC 48V	DC 48V
Rated Current	(A rms)	3.0	3.0	5.2
Rated torque	(N·m)	0.159	0.318	0.64
Maximum torque	(N·m)	0.477	0.954	1.91
Rated revolution	(rpm)	3000	3000	3000
Maximum rotation speed	(rpm)	3300	3300	3300
Counter-electromotive force	(V/1000rpm)	1.6	6.4	6.8
Torque constant	(N·m/A)	0.05	0.11	0.12
Resistance	(Ω)	0.28	2.3	0.52
Electrical time-constant	(ms)	0.89	0.87	1.46
Rotor inertia (kg·m²)	Without brake	$0.022x10^{-4}$	$0.04x10^{-4}$	$0.25x10^{-4}$
	With brake	$0.022x10^{-4}$	$0.06x10^{-4}$	$0.31x10^{-4}$
Weight (kg)	Without brake	0.35	0.45	0.8
	With brake	0.38	0.48	0.83
Length (mm)	Without brake	67	82	78
	With brake	97	112	101
Class		10	10	10
Insulation		F(155°C)	F(155°C)	F(155°C)
Protection		IP65	IP65	IP65
working environment temperature		0 ~ +40°C	0 ~ +40°C	0 ~ +40°C
working environment humidity		< 90%RH	< 90%RH	< 90%RH
Encoder/Resolution		23 bit Absolute type (with battery)		

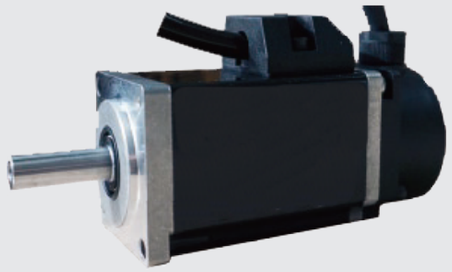


Torque Diagram

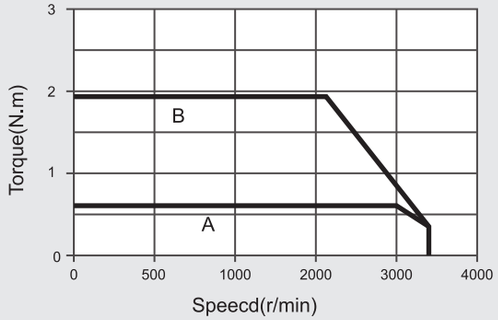


GSVM-D0BMD4 / GSVM-D0BMD6

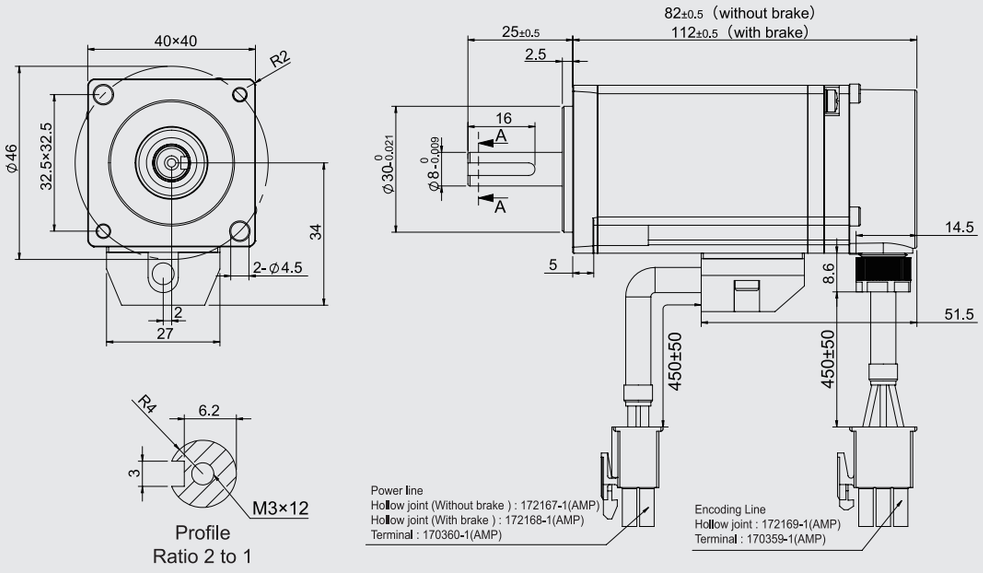




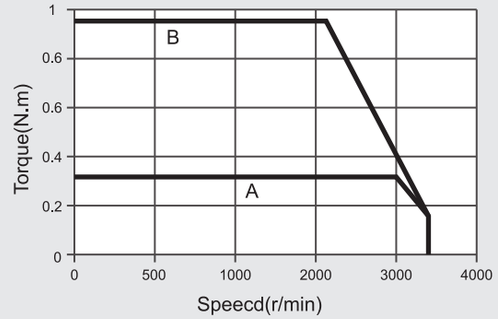
Torque Diagram



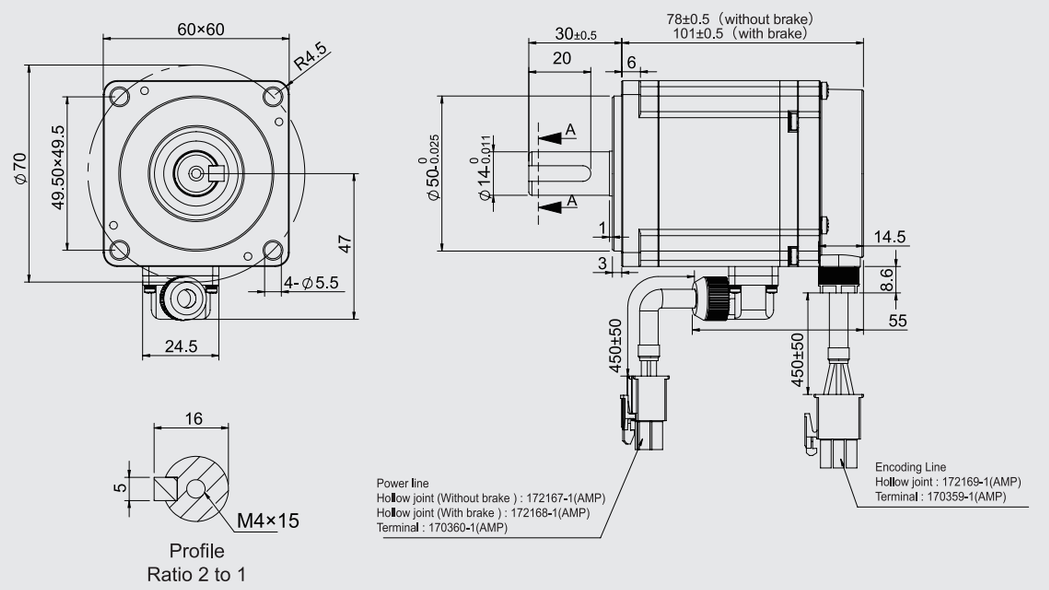
GSVM-D01MD4 / GSVM-D01MD6



Torque Diagram



GSVM-D02MD4 / GSVM-D02MD6



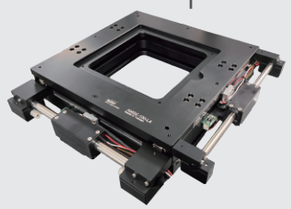
Description of Model K-SERVO Series

GSV - DKM 0B MB - 24 D P

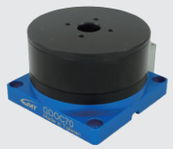
Type	Drive Series		Wattage		Communication control method		Input Voltage		Encoder		Control method	
Servo Drive	DKM	DC Servo Motor Series	0B	50W	MB	RS485-Modbus RTU	24	DC24V	D	23 bit Absolute type (with battery)	P	Pulse Input
	DKL	DCLinear Motor Series	01	100W			48	DC48V				PIO Procedural control
	DKD	DC Directly-Driven MotorSeries	02	200W								

Products that may go with the above three series, namely, KM, KL and KD:

DKM：With Servo Motor



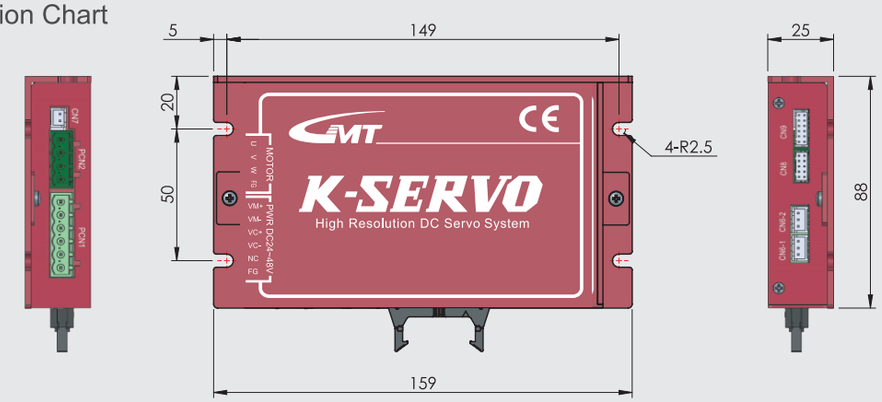
*DKL：With Linear Motor



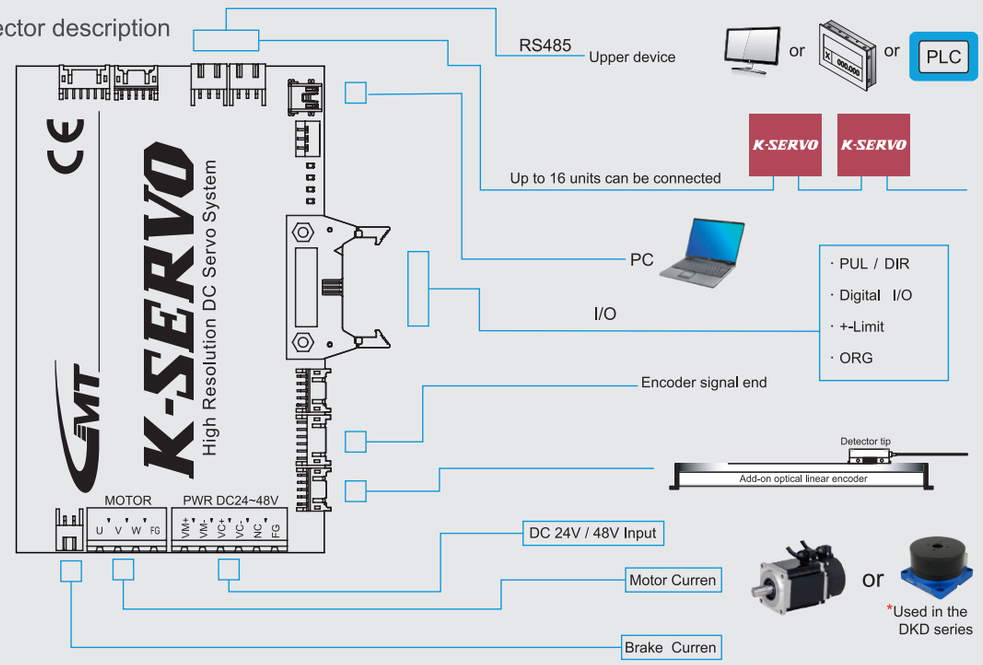
DKD：With Directly-Driven MotorSeries

* The picture shows the products that may be used in combination.

Dimension Chart



Connector description



DKM：Servo motor Driver
Equipped with a 23-bit absolute encoder AC servo motor for high resolution and high positioning accuracy.

DKL：Linear Motor Driver
Equipped with a linear motor and an external optical ruler (ABZ) to meet closed-loop control requirements.

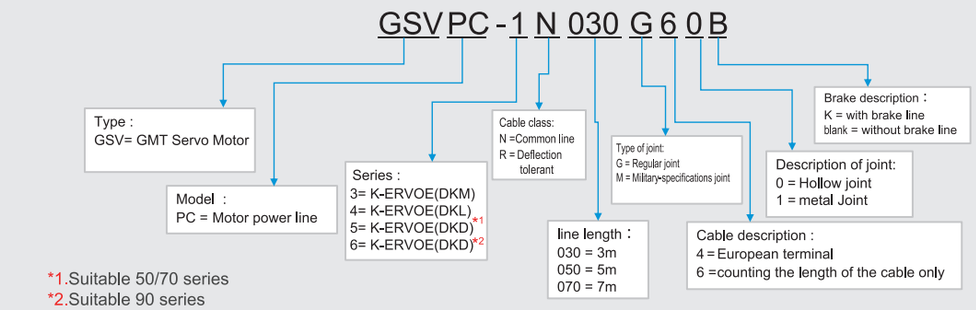
DKD：DD Motor Driver
Equipped with a direct drive motor with a 19-bit multi-turn absolute encoder that can control multi-turn operation and position control.

	Project		Description	Remark
Specifications	Supply	Main loop	24~48VDC ± 15%	Maximum voltage tolerance 60V
		Rated power	6Arms	
		Maximum current	20Ap	It can continue for around 3 seconds
		I/O Supply Voltage	24VDC ± 15%	
	Environment	Temperature	Operating：0~55°C, Storage：-20~+80°C	Non-frosting
		Humidity	Operating／Storage：Below 90%RH	Non-frosting
		highness	Below 1000m	
		Vibration	Below 5.88m/s², 10~60Hz	Cannot be used continuously on resonance frequency
	Control type		MOSFET PWM sine wave driven	
	Encoder feedback		RS485 half-duplex, supporting TAMAGAWA SEKI encoder 2.5 Mbps	Optional absolute system
	Optical linear encoder feedback		QEP incremental encoder	For fully closed loop, signal A, B, Z Phase differential signaling and pulse input share 2 points
	Control signal	Input	13 Inputs	pulse input share 2 points
		Output	13 Outputs	
		Special output	Brake relief output	Independent joint CN7
	Analog signal	Input	-	
	Pulse signal	Input	2-Point input, high-speed input through the optical coupler.	
		Output	Motor Phase Z open collector output	
	Communication Feature	USB/RS485	Use the mini USB interface towards the personal computer on the adjusting end at 1:1 Use of the RS485 interface for the upper layer through 1:16 communication	"RS485 is a half-duplex Modbus RTU 9600, 19200, 38400, 57600, 115200 five communication speeds "
	Regeneration		-	When applied at a heavy load/with the vertical shaft, there is the regeneration unit available as an option.
	Dynamic brake		-	
	Control mode		(1) Position control (Pulse) (2) PIO procedural control	Virtual PIO action can take place through RS485
	Status indicator		4 LED indicators (PWR, ALM, Ready, Move)	
	Protection		Over-current, over-voltage, over-load, excessive shift, over-speed, encoder error, EEPROM error	
	Safety Standard Certified		EN61800-3	
Operating Feature	position	Pulse Input	Line driver: 500kpps/4Mpps, open collector: 200 kpps	
		DIO	7-bit position input, 128-point internal positions	
		Internal procedure	128 programmable steps	
		Home mode	4 (boundary finding, post-boundary Phase Z finding, trigger and stop, post-hit-and-stop Phase Z finding)	Di-activated, with the starting point as 0 for the MAP A history of 16 alarm codes plus the time stamp
		special function	Error MAP Compensation 128 points	
	Auxiliary function		Servo tuning, Abnormality history , Joging, Origin search	

* The table above is suitable for all three K-SERVO series

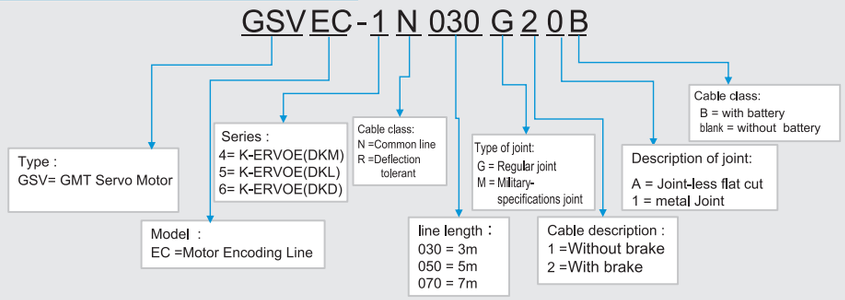
◎ Light driver
◎Power supply between 24~48V of low-voltage DC electricity input
◎Compact design: Reduced size of the driver to save room for switchboard wiring.
◎Diversified control modes:
-Pulse mode: The high-speed pulse and open collector interface takes care of compatibility with both new and old systems
-Communication mode: The ModBus RTU protocol enables precision positioning by connecting all 16 axes in series.
-PIO mode: The built-in 128-point procedural table allows sequential control for users who are unable to write a program.
◎Absolute Precision Calibration Error Map: The optical linear encoder input is calibrated through the laser interferometer to improve the absolute positioning precision of the slide table.
◎Two-freedom control: Enhances following response and interference resistance.
◎4 sets of low-frequency seismic and 4 sets of notch filters: Improve the high-frequency noise and vibration of the mechanism once set.

Motor power line -Description



*1.Suitable 50/70 series
*2.Suitable 90 series

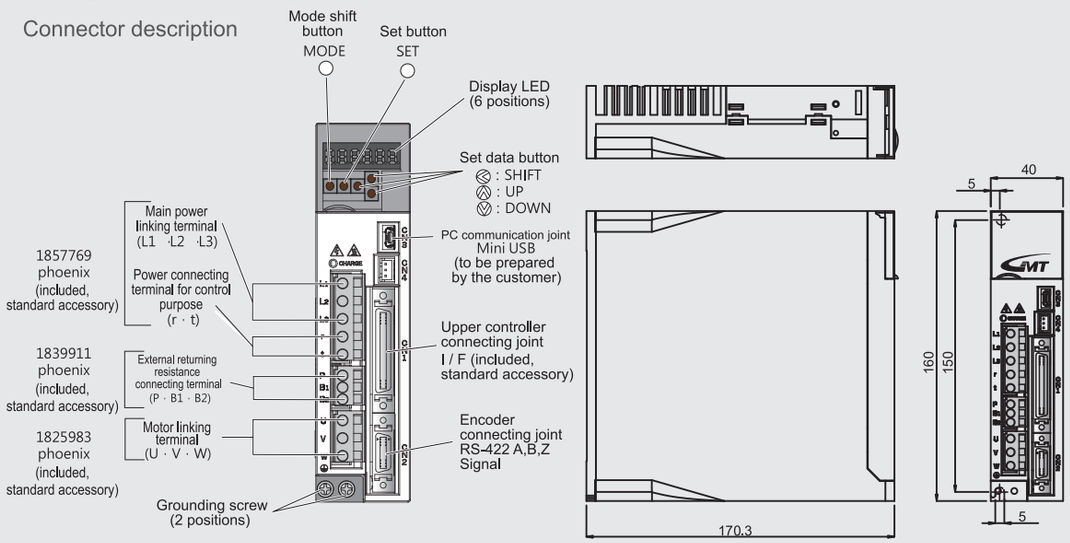
Motor Encoding Line - Description



KE-SERVO

100W&200W&400W&750W Driver

Connector description



Servo Motor KE-Description

GSVM-A 01 L C 4 *

- Type : GSVM = GMT Servo Motor
- Series : AC Series
- wattage : 01 = 100W, 02 = 200W, 04 = 400W, 08 = 750W
- Inertia : L = Low Intertia
- Encoder : C = 13-Bit incremental
- Special specification : S = miniaturization (for 100W only)

Motor structure	Key groove	Brake	Oil seal
0			
1			◆
2		◆	
3		◆	◆
4	◆		
5	◆		◆
6	◆	◆	
7	◆	◆	◆

Servo Driver KE-Description

GSV-KE 01 MB 21 C P

- Type : GSV = GMT Servo Motor Driver
- Model : KE : KE Series
- Corresponding number of wattage: 01 = 100W, 02 = 200W, 04 = 400W, 08 = 750W
- Communication control : MB : RS485 Modbus RTU
- Voltage Specifications : 21 = 220V Single phase
- Encoder C = 13-bit incremental
- Input Type : P = Pulse input

Motor power line -Description

GSV PC - 1 N 030 G 6 0

- Type : GSV= GMT Servo Motor
- Series : 1= KE Series
- Model : PC=Motor power line
- Cable class: N =Common line, R =Deflection tolerant
- line length : 030 = 3m, 050 = 5m
- Type of joint: G = Regular joint
- Description of joint: 0 =Hollow joint
- Cable description : 4 = European terminal, 6 =counting the length of the cable only

Motor Encoding Line - Description

GSV EC - 1 N 030 G 2 0

- Type : GSV= GMT Servo Motor
- Series : 1= KE Series For 13-bit
- Model : EC =Motor Encoding Line
- Cable class: N =Common line, R =Deflection tolerant
- line length : 030 = 3m, 050 = 5m
- Type of joint: G = Regular joint
- Description of joint: A = Joint-less flat cut
- Cable description: 1 =Cable length including connector, 2 =counting the length of the cable only

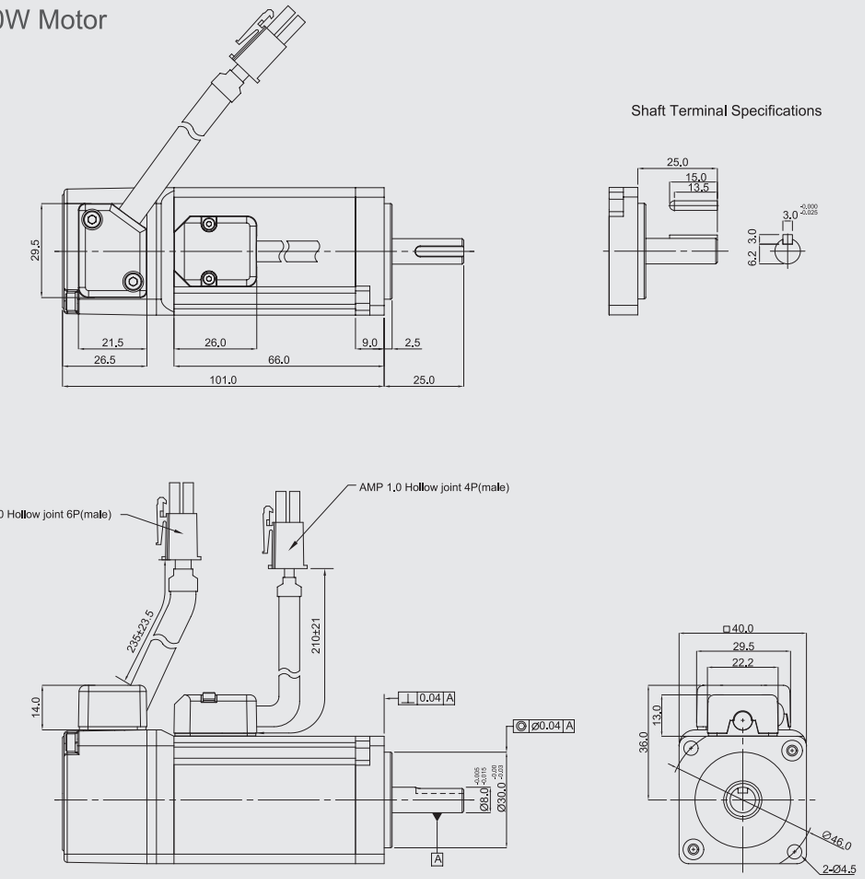
GSVM-A Motor Function

Motor Model GSVM		A01LC	A02LC	A04LC	A08LC
Rated power	KW	0.1	0.2	0.4	0.75
Rated torque	N.m	0.32	0.65	1.3	2.4
Instantaneous maximum torque	N.m	0.96	1.95	3.9	7.2
Rated rotation speed	rpm	3000	3000	3000	3000
Maximum rotation speed	rpm	6000	6000	6000	6000
Rated Current	A(rms)	1.3	1.72	2.82	5.4
Instantaneous maximum current	A(rms)	3.9	5.16	8.46	16.2
Maximum power increment per second	KW/s	32.82	24.56	56.33	72.00
Rotor inertia	Kg.m²	3.08E-06	1.41E-05	2.60E-05	7.11E-05
Mechanical constant	ms	3.90	4.34	3.41	4.61
Axle friction torque	N.m	0.016	0.04	0.04	0.5
Torque constant	N.m/A	0.25	0.38	0.46	0.44
Voltage constant	mV/rpm	22.23	36.37	39.26	38.11
Motor resistance	Ohm	6.92	4.22	2.38	1.1
Motor inductive reactance	mH	10.57	13.9	7.2	7.75
Electrical constant	ms	1.53	3.29	3.03	7.05
Encoder Resolution	P/R	(13-bit incremental) 10,000			
Insulation		Class F			
Insulated impedance		>100MΩ，DC 500V			
Insulated pressure tolerance		AC 1500V,60sec			
Use temperature	℃	0~40℃			
Storage temperature	℃	-20~80℃			
Use humidity		20~90%RH(Non-frosting)(No condensation)			
Storage temperature		20~90%RH(Non-frosting)(No condensation)			
Vibration-resistant		5G			
IP grade		IP65			

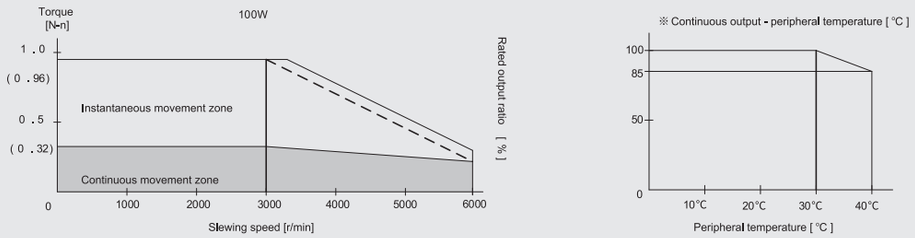
Driver Function

Specifications	Manual power	Main loop	Single-phase,190~240V50/60Hz
		Control loop	Single-phase,190~240V50/60Hz
	Control type		IGBT PWM Sine wave driven
	Encoder feedback		250P/r(10000 Resolution)Incremental encoder
	Control signal	Input	11 inputs
		Output	6 outputs
	Analog signal	Input	3 sets of input(12bitA/D)
	Pulse signal	Input	4-Point input; parameters can be used to decide whether line-driven input or high-speed input through the optical coupler.
		Output	4-Point outputs(Line Driver:3 sets of output. Open collector : 1 sets of output
	Communication Feature	USB / RS485	Use the mini USB interface towards the personal computer on the adjusting end at 1:1
			Use of the RS485 interface for the upper layer through 1:32 communication
	Regeneration		Built-in 10W regeneration resistance
	Control mode		(1)C control(2)Speed control(3)Torque control (4)Position/Speed control(5)Position/Torque control (6)Speed/Torque control
Function	Position	Pulse Input	Independent Interface for the Line Driver:2Mpps, Line Driver:500kpps, Open collector:200kpps
		Analog Input	It can be used for the single torque control of CW and CCW (3V/rated torque)
		DIO	4bit input，16-Point internal position
		Tool magazine/ Division	6bit input，6bitStatus output - up to 59 devices can be used.
	Speed	Analog input Speed	The voltage ratio is set through parameters, that is, the maximum input voltage 10V and 6V/rated rotation speed (default)
		Control Range	1：5000
		Internal speed command	the 8-step speed is set through parameters.
		The slow start-up/ slow-stop feature	acceleration and deceleration can be set separately from 0 to 10 seconds/ S-shaped acceleration/deceleration can be set.
		Zero-speed suppression	The internal speed can be switched to 0 through the zero-speed clamp input point.
	Torque control	Analog input	The voltage ratio is set through parameters, that is, the maximum input voltage 10V and 3V/100% torque

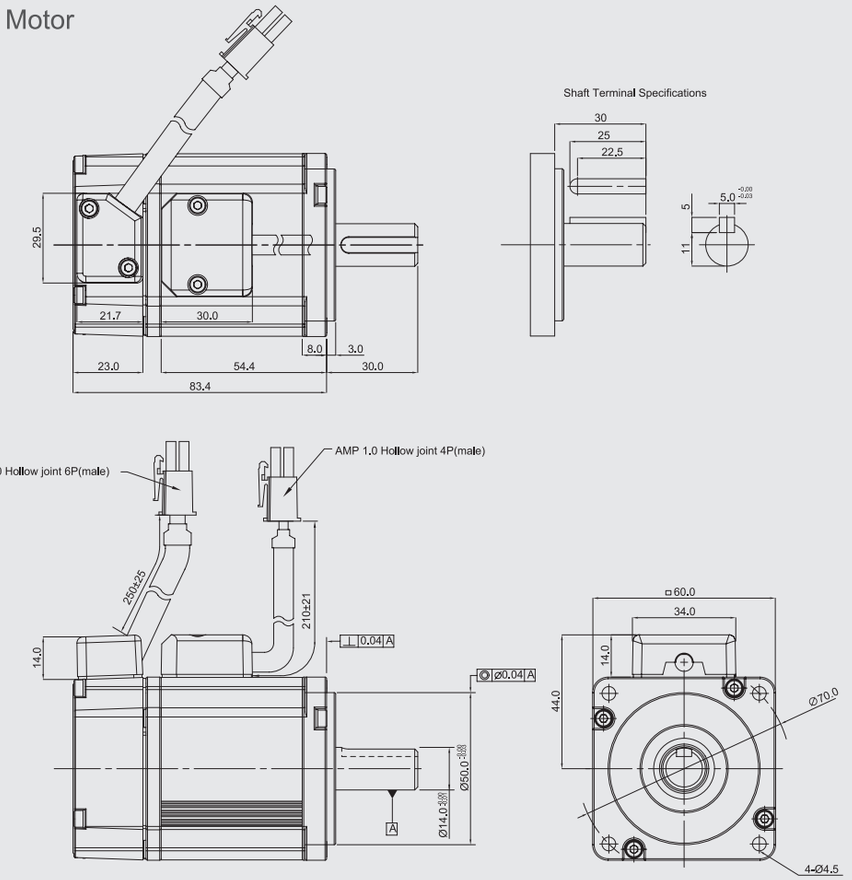
■ 100W Motor



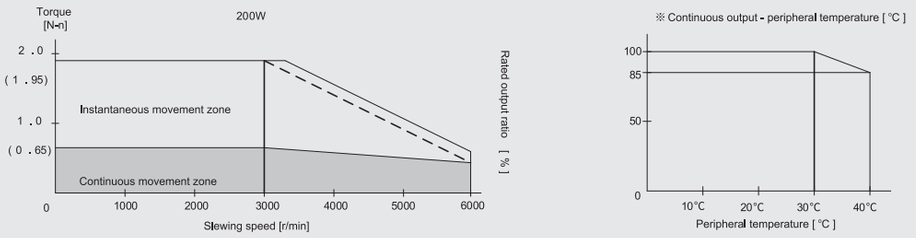
■ 100W Motor Characteristic Curve



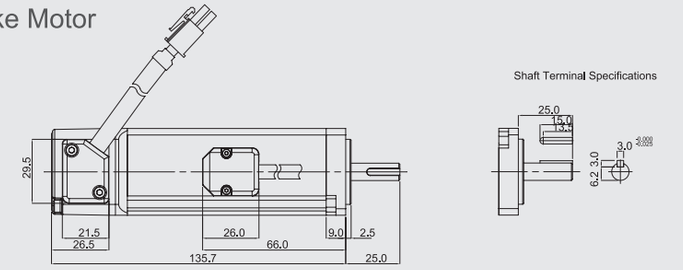
■ 200W Motor

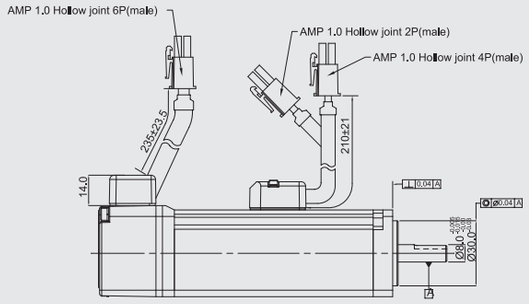


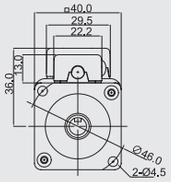
■ 200W Motor Characteristic Curve



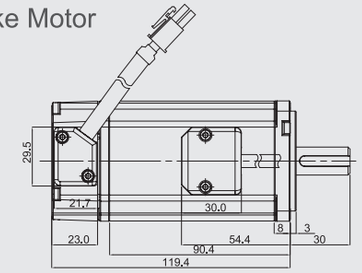
■ 100W Brake Motor

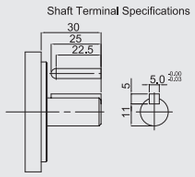


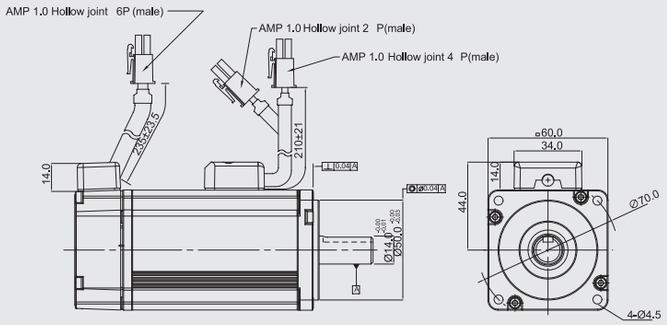




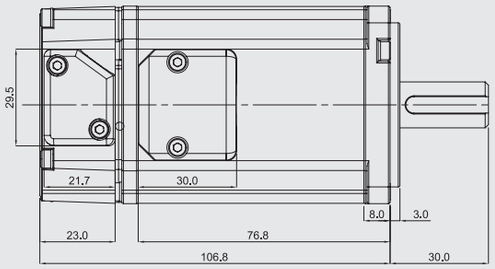
■ 200W Brake Motor

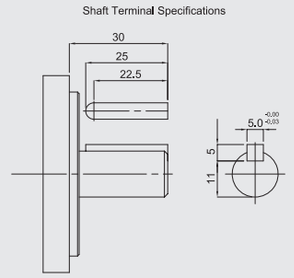


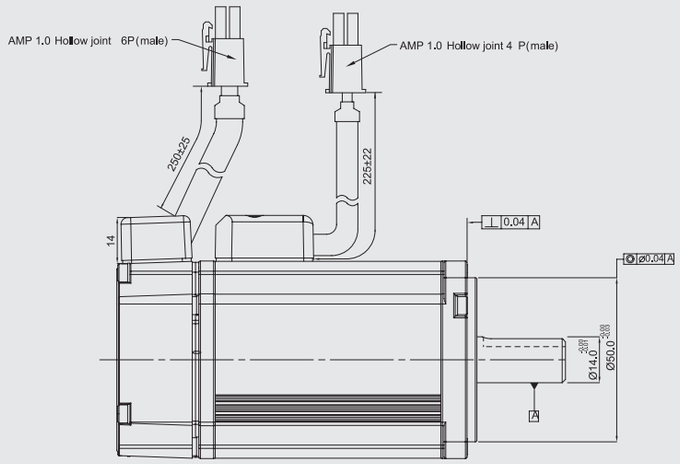


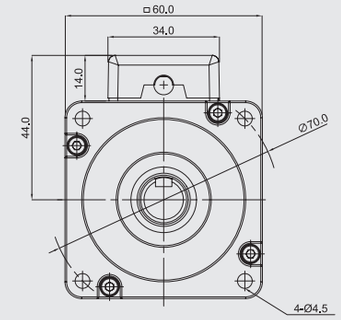


■ 400W Motor

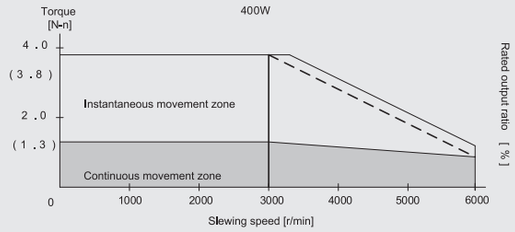


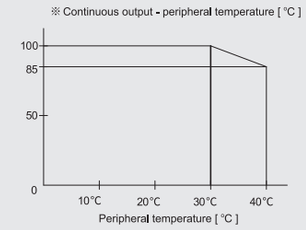




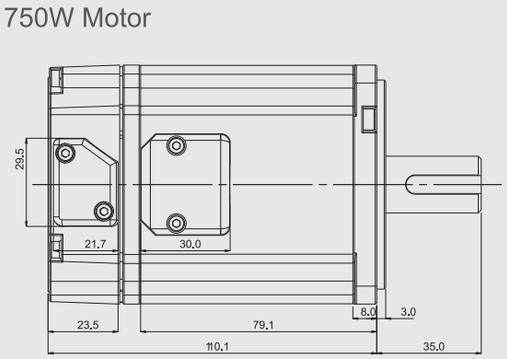


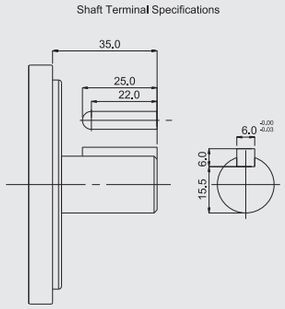
■ 400W Motor Characteristic Curve

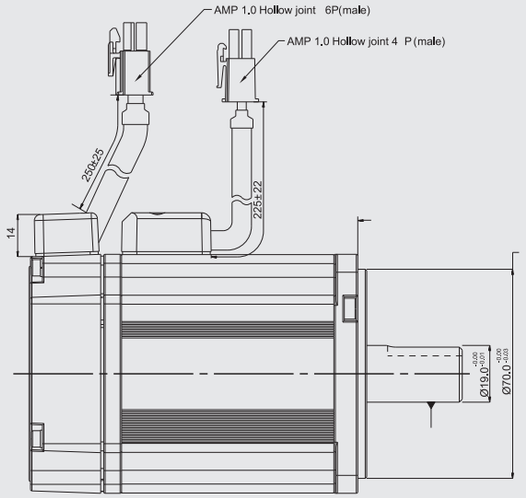


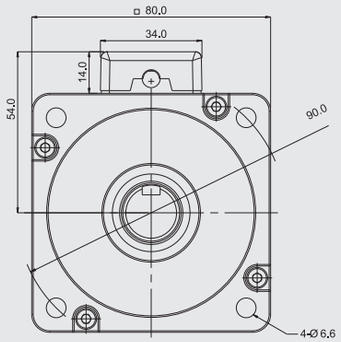


■ 750W Motor

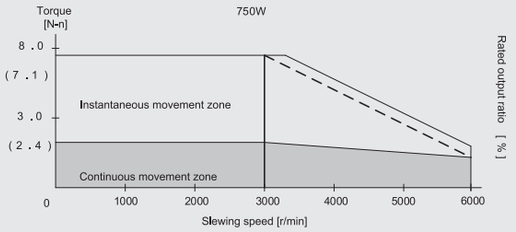


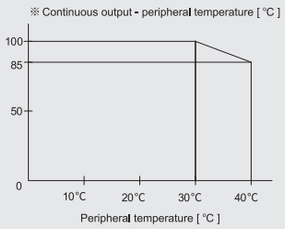




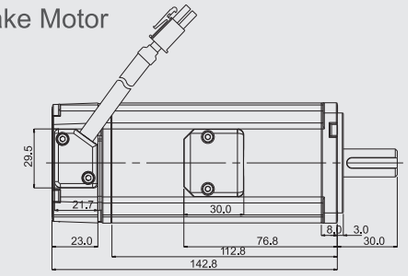


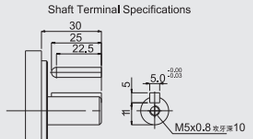
■ 750W Motor Characteristic Curve

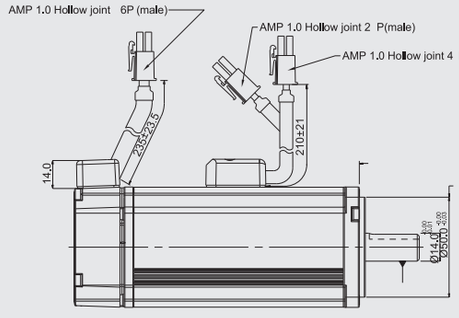


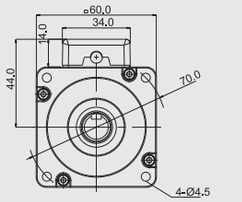


■ 400W Brake Motor

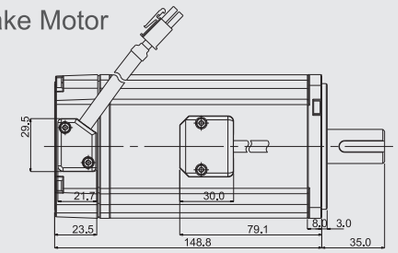


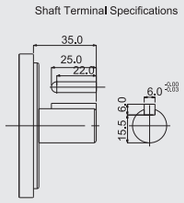


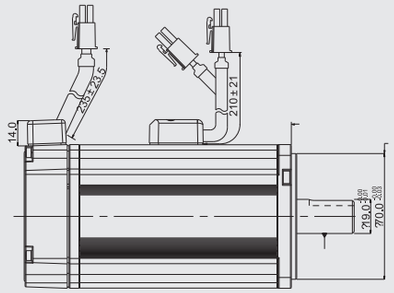


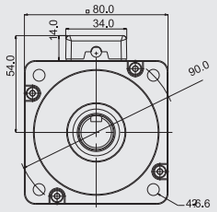


■ 750W Brake Motor

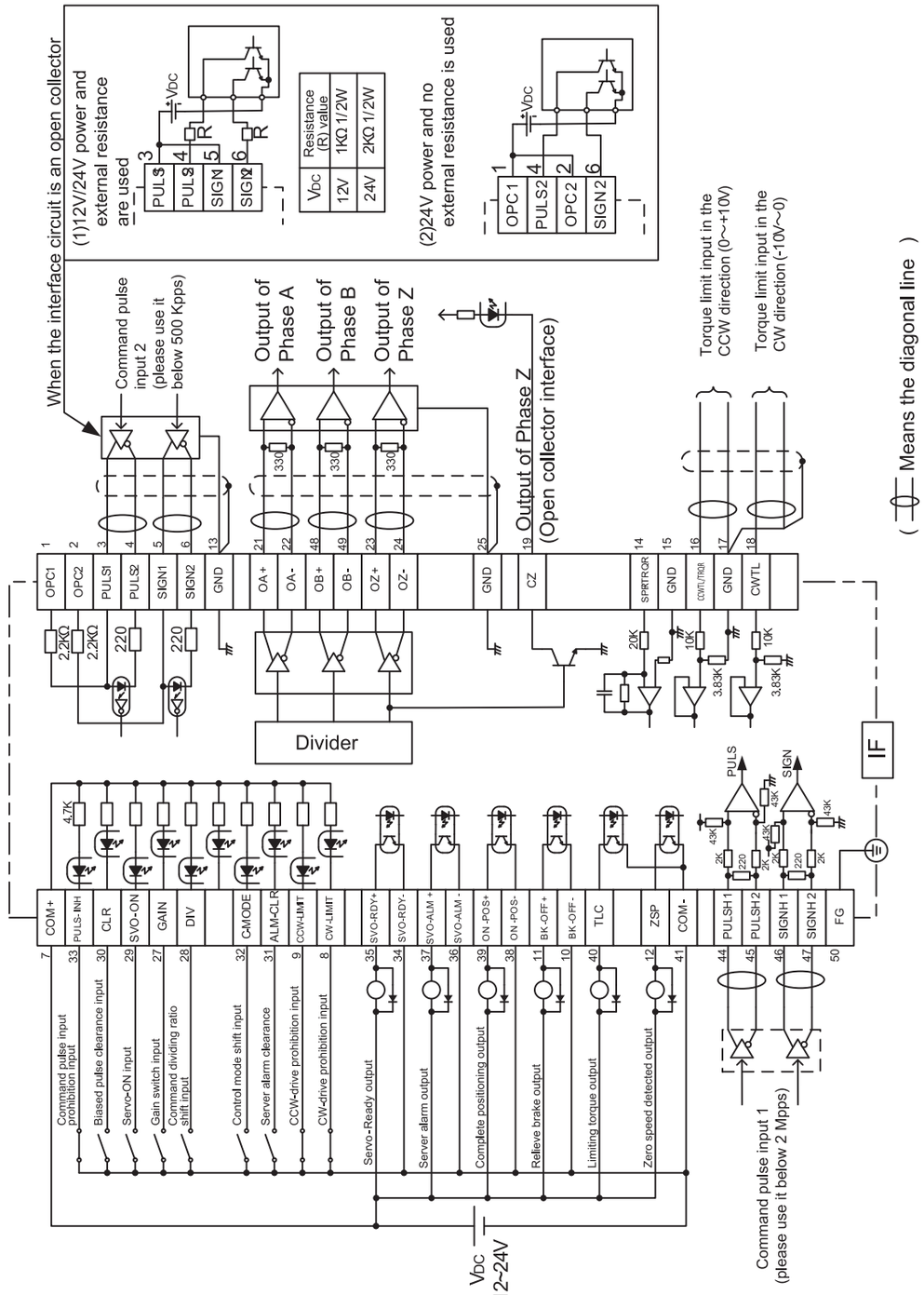




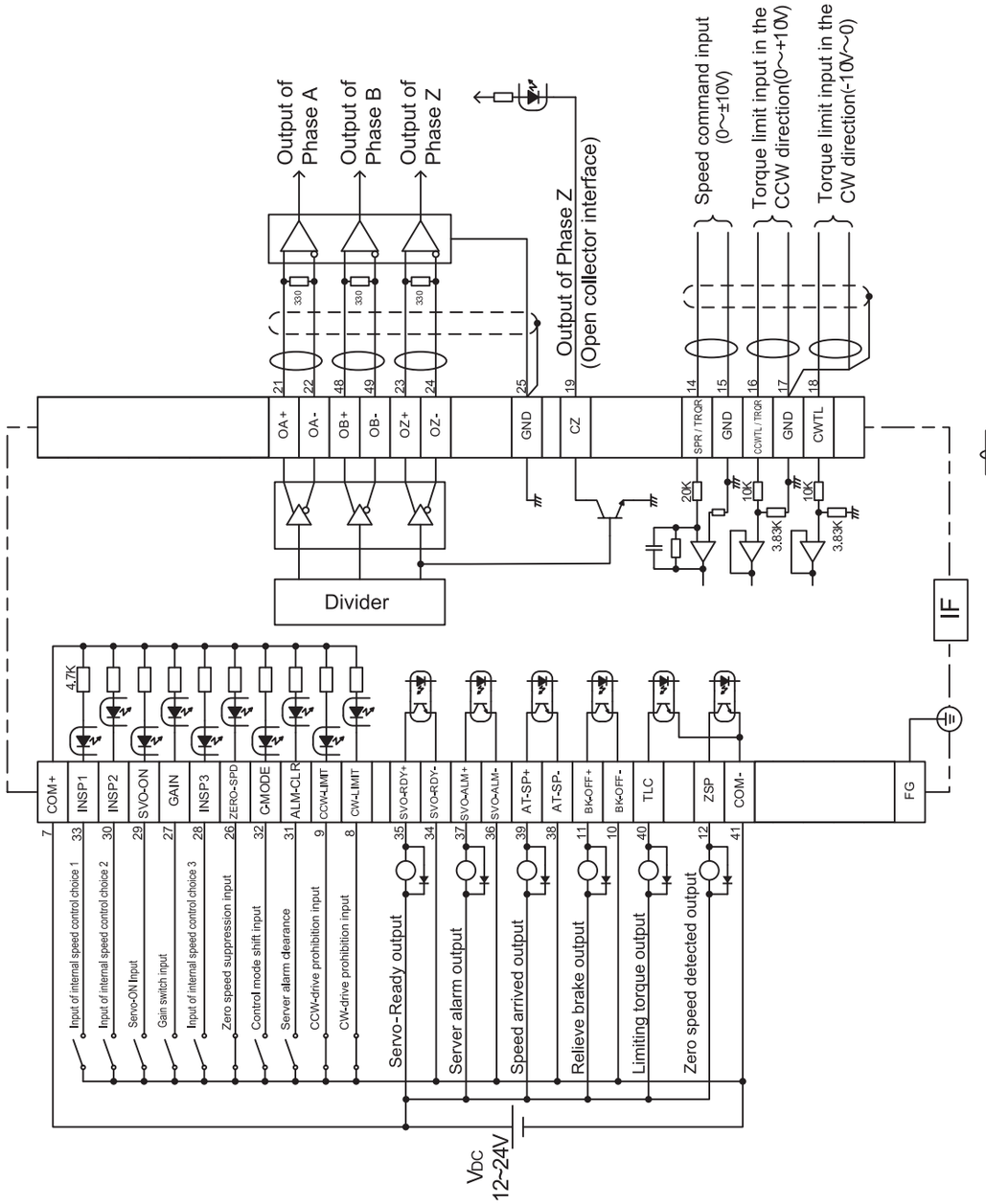




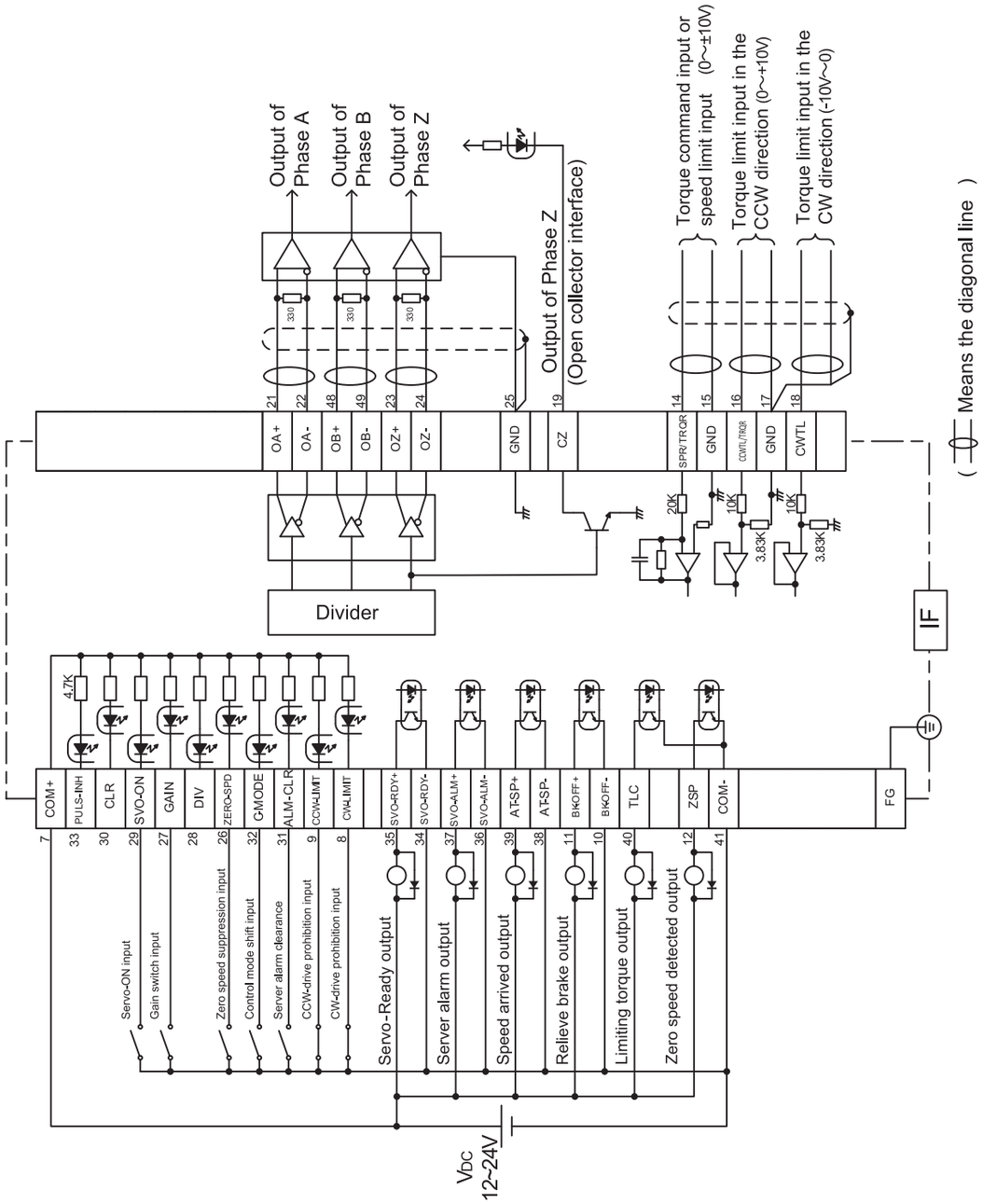
Position wiring diagram



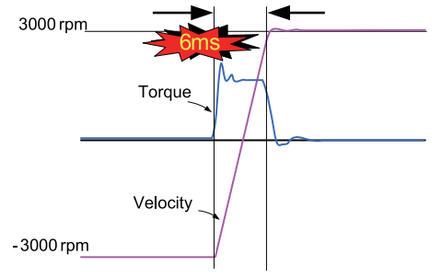
Speed wiring diagram



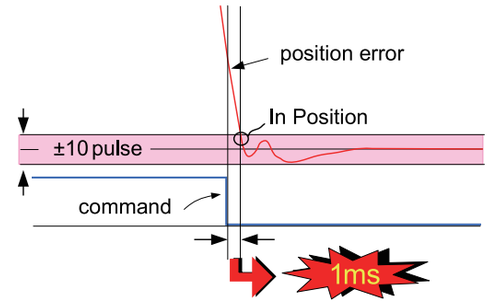
Torque wiring diagram



■ High-performance DSP for high-speed positioning



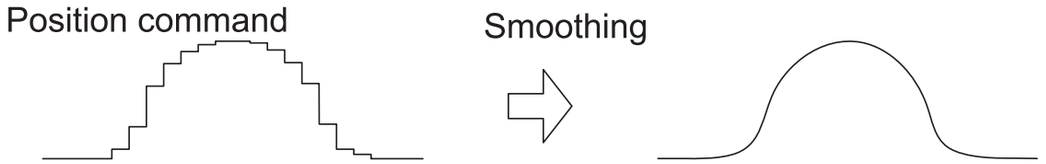
High-performance AC servo motor of the Kingservo G series; it takes only 6ms for accelerating from -3000rpm to +3000rpm of the rated rotation speed.
Saves the movement time and improves the production efficiency



The command settling time can be below 1ms for the high-performance AC servo motor of the GE series.
Quick settling time, fast reaction, quick response, precise positioning.

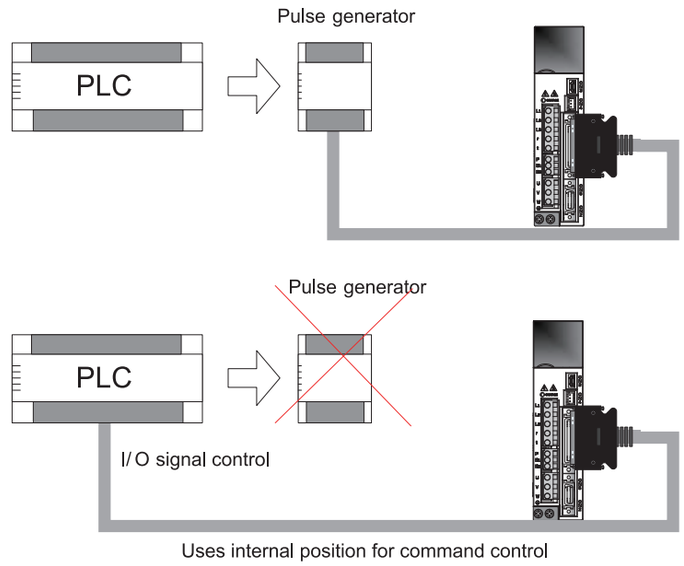
■ Smoother function

The built-in position command smoothing parameters are under the Position mode. When the pulse command frequency is too low, the motor jitters while running. This feature helps effectively smoothen the operations of the motor to enhance the mechanical life span.



■ DDI/DO single-shaft positioning

Saving PLC single-axis pulse generator; 16 sets of positions, independent speed setting, absolute position or relative position selectable.
Origin finding, left/right limit, division, tool magazine

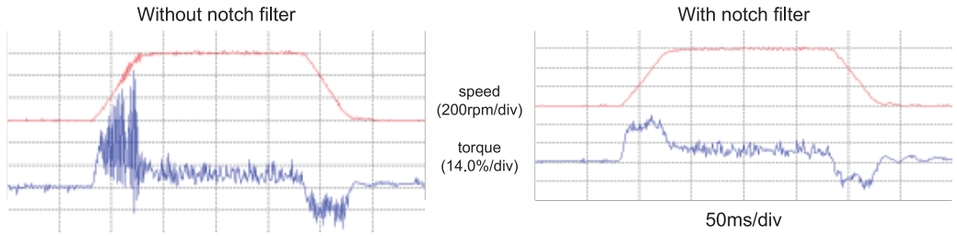


Uses internal position for command control

■ Inhibits mechanical resonance

2 sets of notch filters for setting the filtering frequency and width separately and effectively inhibiting mechanical resonance.

Effect of notch filter

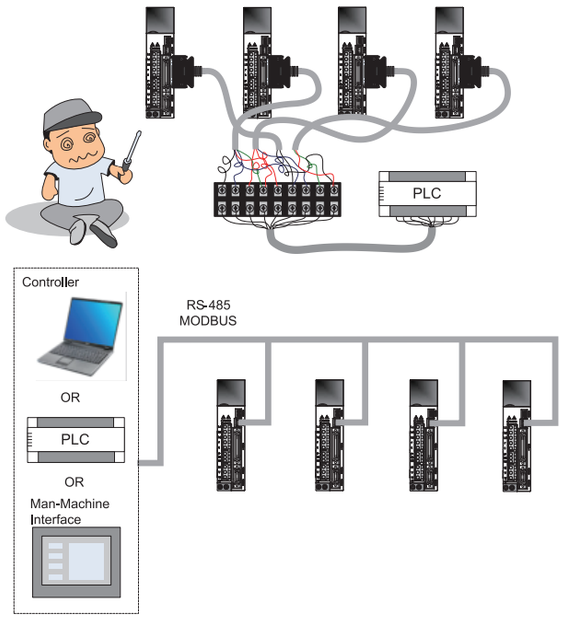


■ Controller with Multiple Features

Speed/torque/internal position/division (tool magazine)/mixed shift control/torque limit

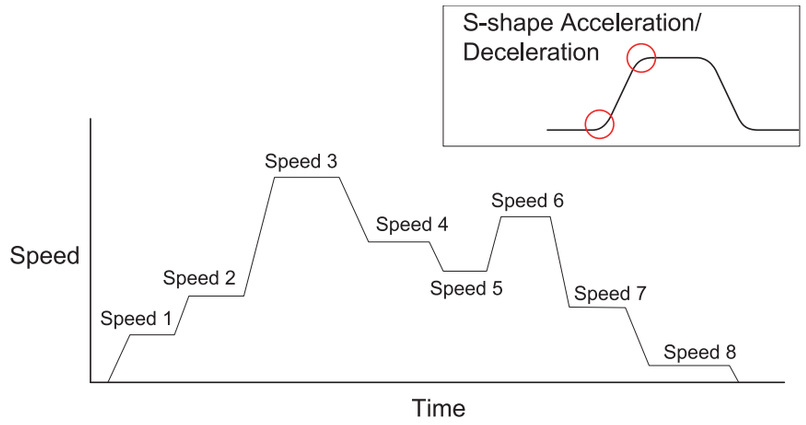
■ ModBus communication positioning

Multi-axis control is possible; ModBus communication positioning RS-485 communication positioning.



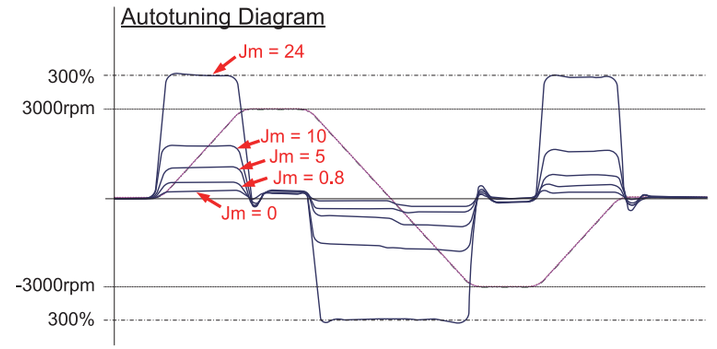
■ Internal Speed Control

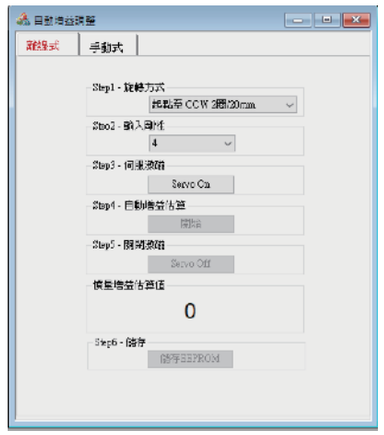
The external DI/DO controls the motor rotational speed. There are 8 built-in speeds. It replaces the inverter. Each speed shift is built in with an S curve.



■ Automatic gain

Automatic gain adjustment is done easily; there is no need to worry about adjusting parameters!



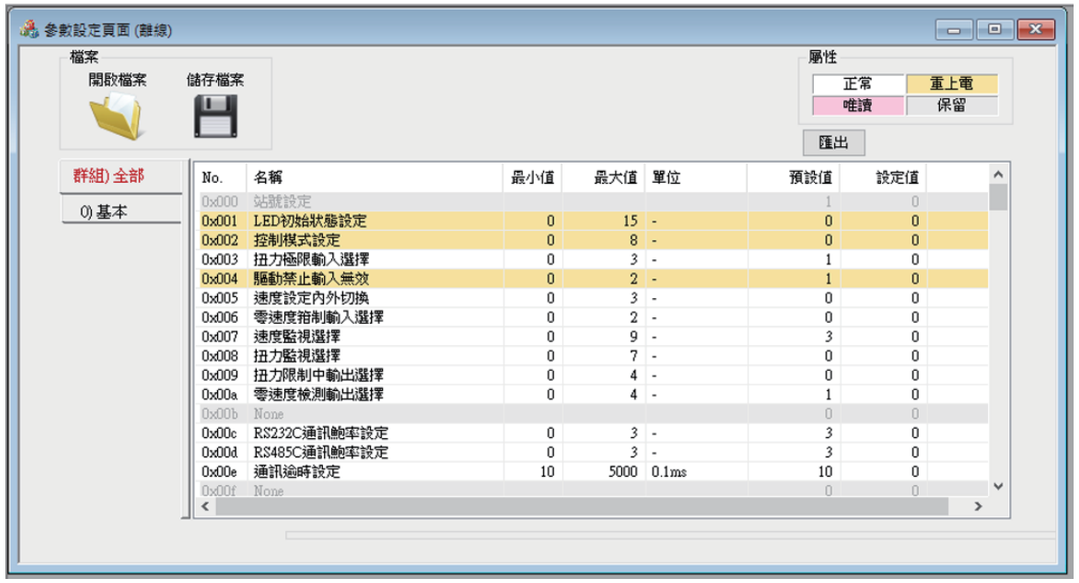


■ GMT Servo Oscilloscope-like Operation Interface

*The screen is for illustration only; for the actual usage, refer to the Instructions for Operators.

Parameter List

The tidy classification makes hands-on easy. The instructions are self-explanatory. The efficacy is seen as soon as it is set.

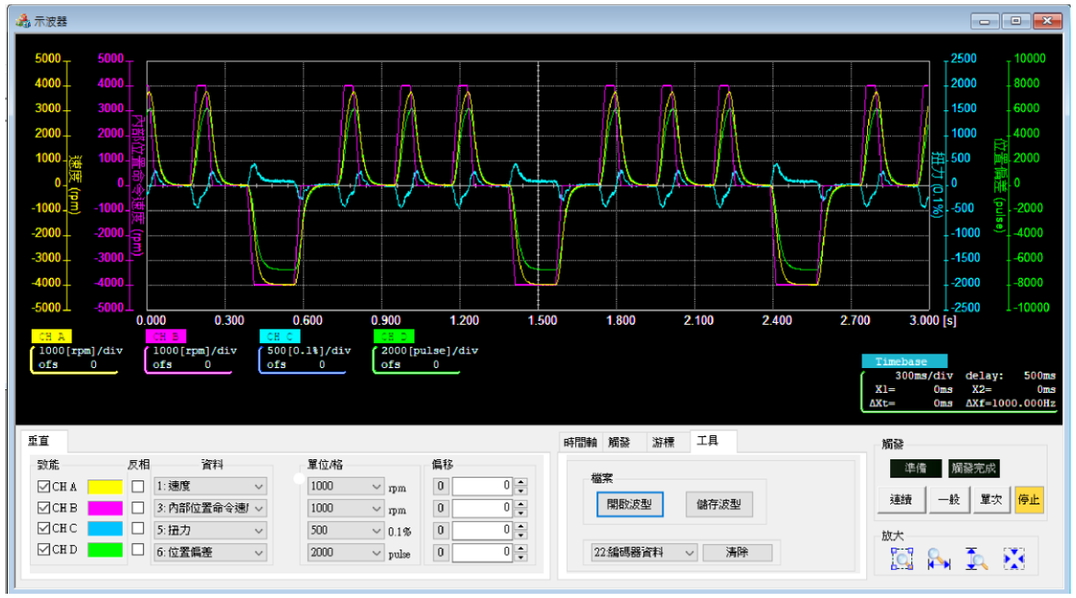


Oscilloscope function

4-Channel display, reflective of demand, the curves of the motor and the machine are displayed in real time.

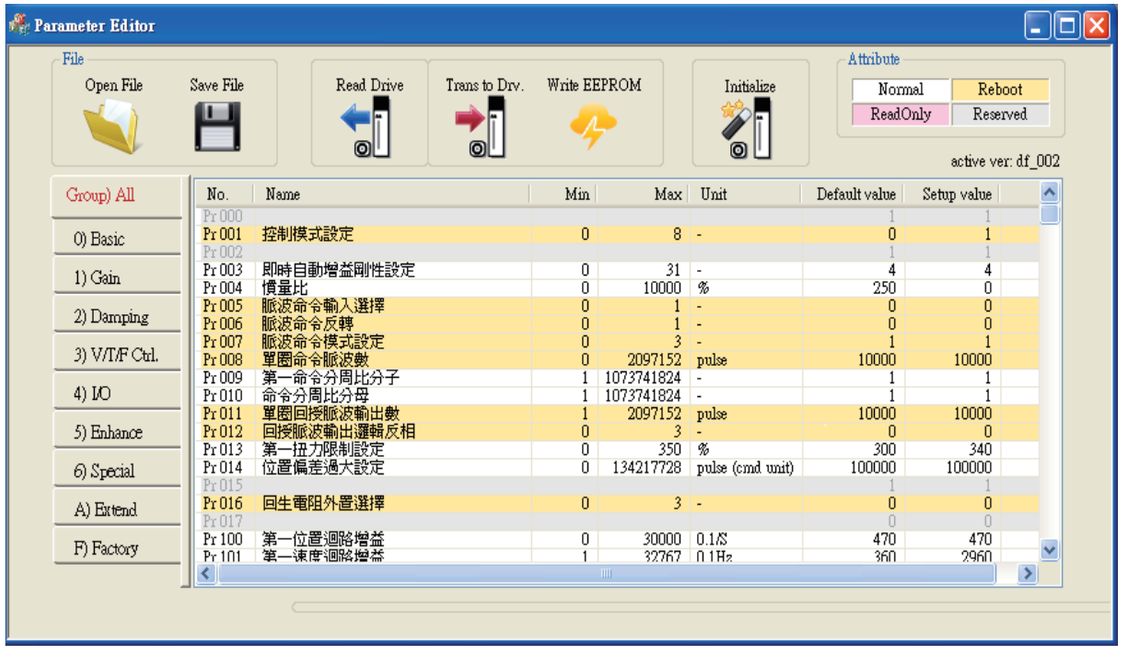
Bit-precise trigger to not lose the status.

Capable of measuring all kinds of data.



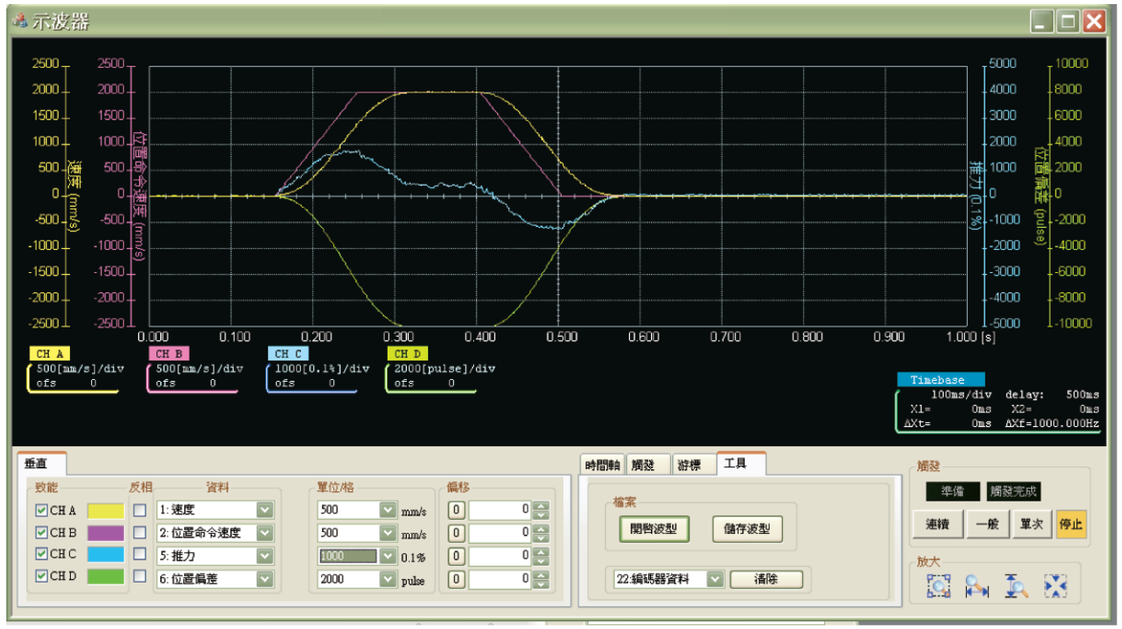
■ KE Series：GMT tool adjusting software

GMT tool adjusting software ,The simple and easy-to-understand interface requires only simple steps to complete the setup of parameters so that users know clearly the servo-application.



■ KE Series：GMT tool adjusting software

With the adjusting oscilloscope software, one can understand clearly which equipment the motor goes with!

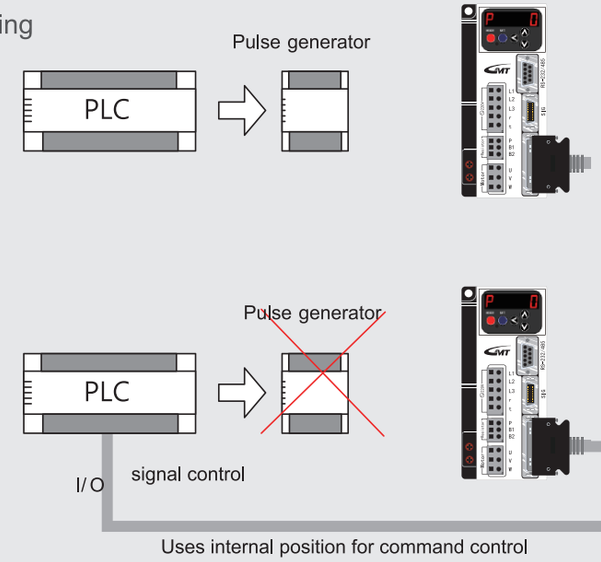


■ Controller with Multiple Features

Position mode / speed control / torque control / mixed shift control / speed/torque control

■ DI / DO single-shaft positioning

Saving PLC single-axis pulse generator; 16 sets of positions, independent speed setting, absolute position or relative position selectable, origin finding, left/right limit, division



Servo Motor K2-Description

GSVM-A 01 L A 4 *

- Type : GSVM = GMT Servo Motor
- Series : ASeries
- wattage : 01 = 100W, 02 = 200W, 04 = 400W, 08 = 750W, 10 = 1KW, 15 = 1.5KW, 20 = 2KW
- Inertia : L = Low Intertia, M = Middle Intertia
- Encoder : A = 21-Bit incremental
- Special specification : S = miniaturization (for 100W only)

Motor structure			
	Key groove	Brake	Oil seal
0			
1			◆
2		◆	
3		◆	◆
4	◆		
5	◆		◆
6	◆	◆	
7	◆	◆	◆

Servo Driver K2-Description

GSV-KE 01 MB 21 A P

- Type : GSV = GMT Servo Motor Driver
- Model : K2 : K2 Series
- Corresponding number of wattage: 01 = 100W, 02 = 200W, 04 = 400W, 08 = 750W, 10 = 1KW, 15 = 1.5KW, 20 = 2KW
- Communication control : MB : RS485 Modbus RTU
- Voltage Specifications : 21 = 220V Single phase
- Encoder A = 21-bit incremental
- Input Type : P = Pulse input

Motor Encoding Line - Description (100W~750W)

GSV PC-1 N 030 G 6 0

- Type : GSV= GMT Servo Motor
- Model : PC=Motor power line
- Series : 1= KE Series
- Cable class: N =Common line, R =Deflection tolerant
- line length : 030 = 3m, 050 = 5m
- Type of joint: G = Regular joint
- Description of joint: 0 =Hollow joint
- Cable description : 4 = European terminal, 6 =counting the length of the cable only

Motor Encoding Line - Description (100W~750W)

GSV EC -2 N 030 G 2 0

- Type : GSV= GMT Servo Motor
- Model : EC =Motor Encoding Line
- Series : 2= K2 Series For 21-bit
- Cable class: N =Common line R =Deflection tolerant
- line length : 030 = 3m 050 = 5m
- Type of joint: G=Regular joint
- Description of joint: 0 = Hollow joint A = Joint-less flat cut
- Cable description: 1 =Cable length including connector 2 =counting the length of the cable only

Motor power line -Description (1KW~2KW)

GSV PC -2 N 030 M 1 2

- Type : GSV= GMT Servo Motor
- Model : PC=Motor power line
- Series : 2= K2 Series
- Cable class: N =Common line R =Deflection tolerant
- line length : 030 = 3m 050 = 5m
- Type of joint: M=Military-specifications joint
- Description of joint: 2 = Waterproof straight 4 = Waterproof elbow
- Cable description : 1 = Without brake 2 = With brake

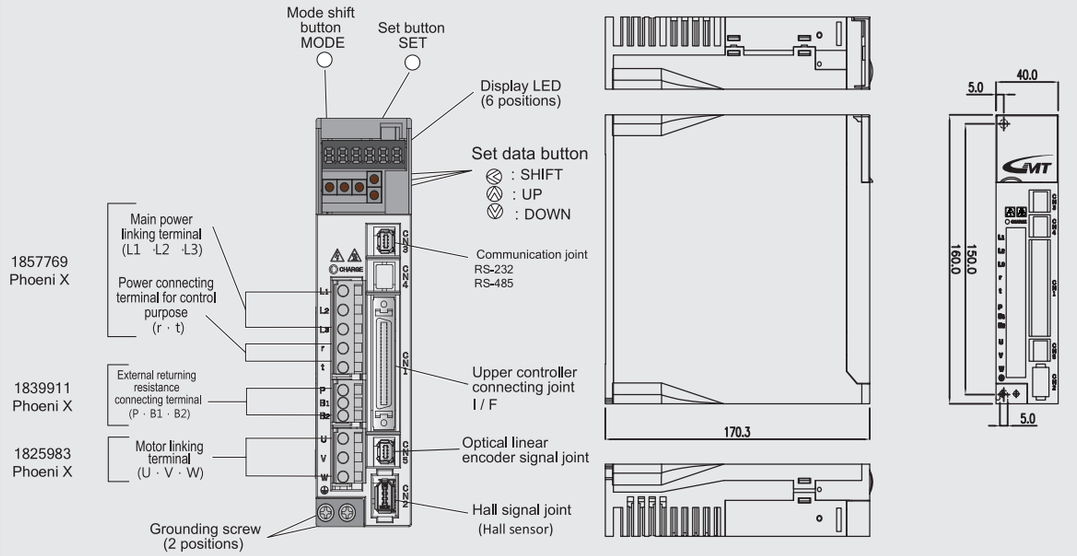
Motor Encoding Line - Description (1KW~2KW)

GSV EC -2 N 030 M 2 2

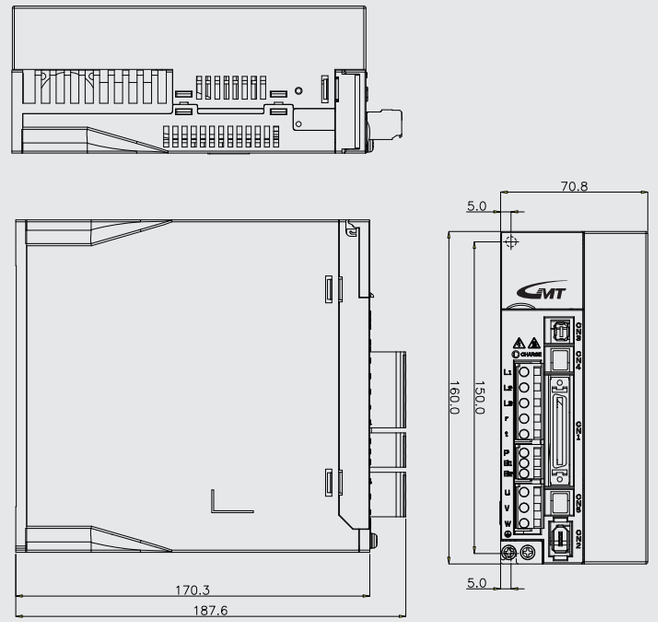
- Type : GSV= GMT Servo Motor
- Model : EC =Motor Encoding Line
- Series : 2= KE Series For 21-bit
- Cable class: N =Common line R =Deflection tolerant
- line length : 030 = 3m 050 = 5m
- Type of joint: M=Military-specifications joint
- Description of joint: 2 = Waterproof straight 4 = Waterproof elbow
- Cable description: 1 =Cable length including connector 2 =counting the length of the cable only

K2-SERVO

■ 100W/200W/400W/750W/1KW Driver



■ 1.5KW / 2KW Driver



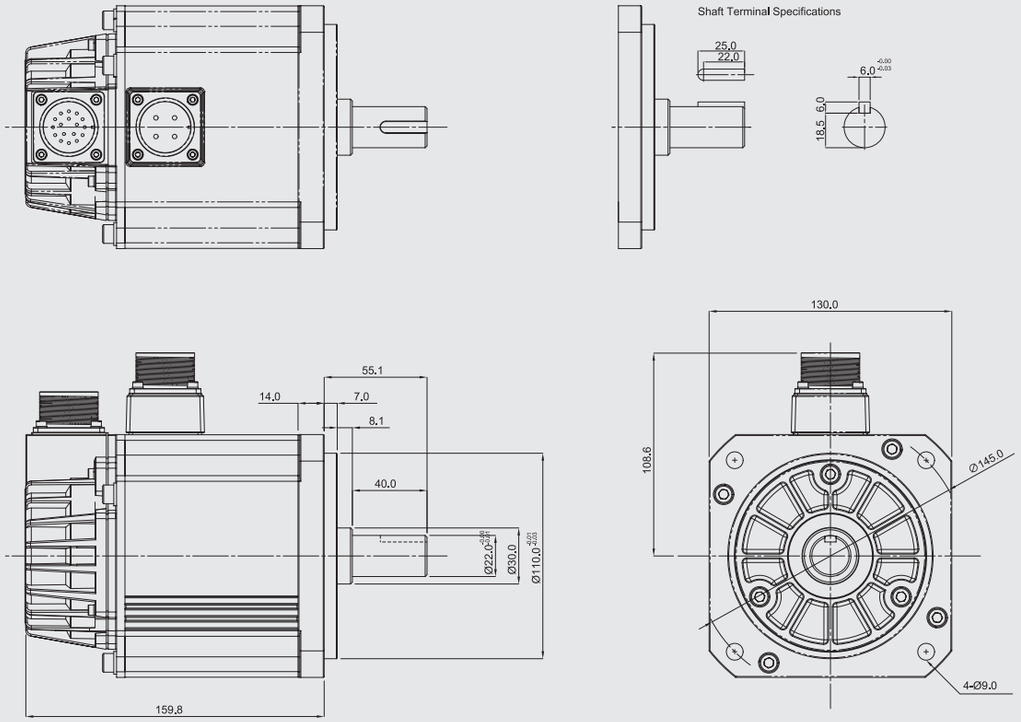
■ Motor Specifications

Motor Model GSVM		A01LA	A02LA	A04LA	A08LA	A10LA	A15LA	A20LA
Rated power	KW	0.1	0.2	0.4	0.75	1	1.5	2
Rated torque	N.m	0.32	0.65	1.3	2.4	4.80	7.20	9.6
Instantaneous maximum torque	N.m	1.12	2.275	4.55	7.92	14.4	21.6	28.8
Rated rotation speed	rpm	3000	3000	3000	3000	2000	2000	2000
Maximum rotation speed	rpm	6000	6000	6000	6000	3000	3000	3000
Rated Current	A(rms)	1.3	1.72	2.82	5.42	5.42	8	10
Instantaneous maximum current	A(rms)	4.55	6.02	9.87	17.9	16.26	24	30
Maximum power increment per second	KW/s	32.8	24.6	56.3	72.0	19.7	29.5	40.42
Rotor inertia	$Kg.m^2$	3.12E-06	1.72E-05	3.0E-05	8.0E-05	1.17E-03	1.76E-03	2.28E-03
Mechanical constant	ms	3.95	5.28	3.95	5.20	16.64	14.96	15.22
Axle friction torque	N.m	0.02	0.04	0.04	0.50	0.19	0.17	0.17
Torque constant	N.m/A	0.25	0.38	0.46	0.44	0.89	0.90	0.96
Voltage constant	mV/rpm	22.23	36.37	39.26	38.11	75.93	75.78	84.26
Motor resistance	Ohm	6.92	4.22	2.38	1.1	0.96	0.58	0.54
Motor inductive reactance	mH	10.57	13.9	7.2	7.75	4.85	3.15	3
Electrical constant	ms	1.53	3.29	3.03	7.05	5.05	5.43	5.56
Encoder Resolution	P/R	(21-bit incremental) 2,097,152						
Insulation		Class F						
Insulated impedance		>100MΩ，DC 500V						
Insulated pressure tolerance		AC 1500V,60 sec						
Use temperature	℃	0~40℃						
Storage temperature	℃	-20~80℃						
Use humidity		20~90%RH(Non-frosting)(No condensation)						
Storage temperature		20~90%RH(Non-frosting)(No condensation)						
Vibration-resistant		5G						
IP grade		IP65						

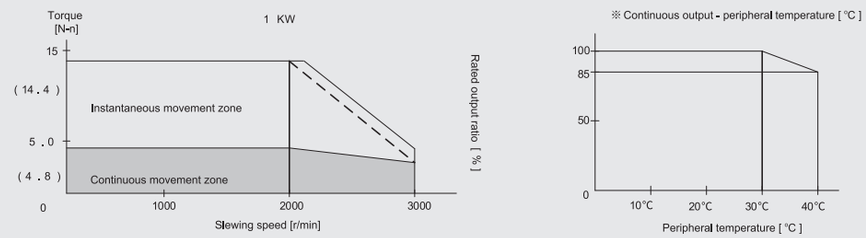
■ Driver Specifications

Specifications			
	Inputs Voltage	Main circuit	Single-phase/three phase,190~255V 50/60Hz
		Control circuit	Single-phase,190~255V 50/60Hz
	Environment	Temperature	Operating:0~55°C,Storage:-20~+80°C (Non-frosting)
		Humidity	Operating/Storage : Below 190% (Non-frosting)
		High	Below 1000m
		Vibration	Below 5.88m/s2 , 10~60Hz (Cannot be used continuously at the resonant frequency)
	Control method		IGBT PWM Sine wave drive
	Encoder feedback	K2 Series	21-but (2,097,152 Resolution) Incremental encoder,5-Line
	Optical feedback	K2 Series	Supports Phase A/B differential signal
	Control signal	Input	11 Inputs (1)Servo-ON(2) Control mode switch (3) Gain switch/torque limit switch (4) Alarm clearance; other inputs vary with the control mode and the features differ.
		Output	6 Output (1)Servo alarm (2) Servo ready (3) Brake relief signal (4) Zero speed detection (5) Limiting torque.
	Analog signal	Input	3 Inputs (A/D)
		Output	2 Output (For monitoring purpose) (1) Speed surveillance (it helps monitor the actual speed or command speed of the motor. What is being monitored and the gradient ratio are selected through parameter settings) (2) Torque surveillance (it helps monitor the torque command (about 3V/ rated torque), deviation counter, or totally Closed-loop deviation.
	Pulse signal	Input	2 Inputs,Pulse can be entered through the line-drive interface or the optical coupler interface by selecting the parameter.
		Output	4 Output,There are the line-driver interface output encoder pulses (Phase A, B, or Z) and the separate open collector interface output for Phase Z.
	Communication function	RS232	1:1 communication can be done with the main controller that comes with the RS232C interface
		RS485	1:1 communication can be done with the main controller that comes with the RS485C interface (Up to 31 axes)
	Front panel		(1) 5 keys (MODE,SET,←,↑,↓), (2) LED (6-digit)
	Regeneration		Built-in regeneration resistance
	Dynamic brake		Power OFF, Servo OFF, protection activation and dynamic brake activation procedure to stop activation of drive input can be set.
	Control mode		There are 6 modes in total, which can be switched through parameter setting (1)position control (2)speed control (3)torque control (4)speed/torque control (5)position/torque control (6)speed/torque contro

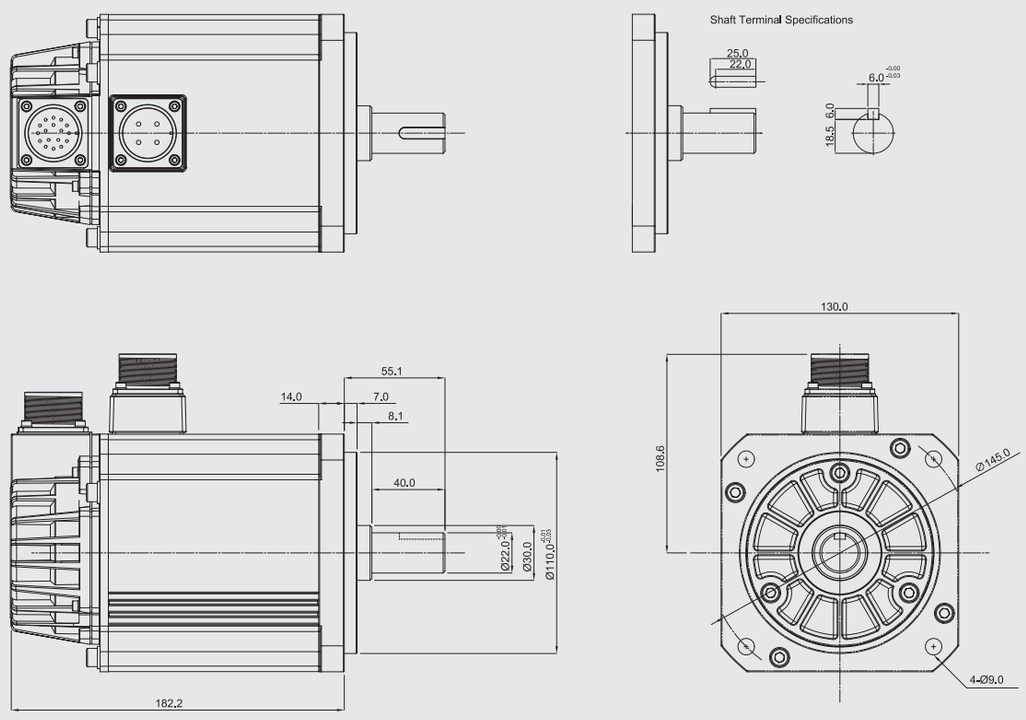
■ 1KW Motor



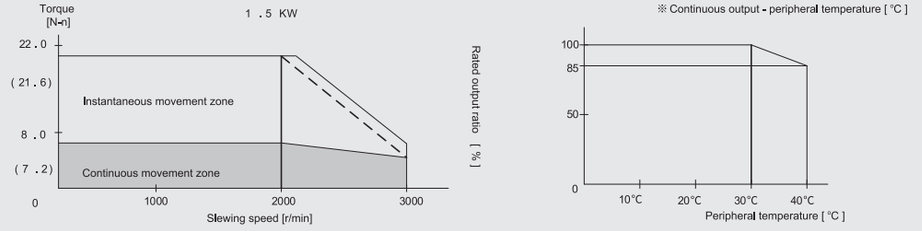
■ 1KW Motor Characteristic Curve



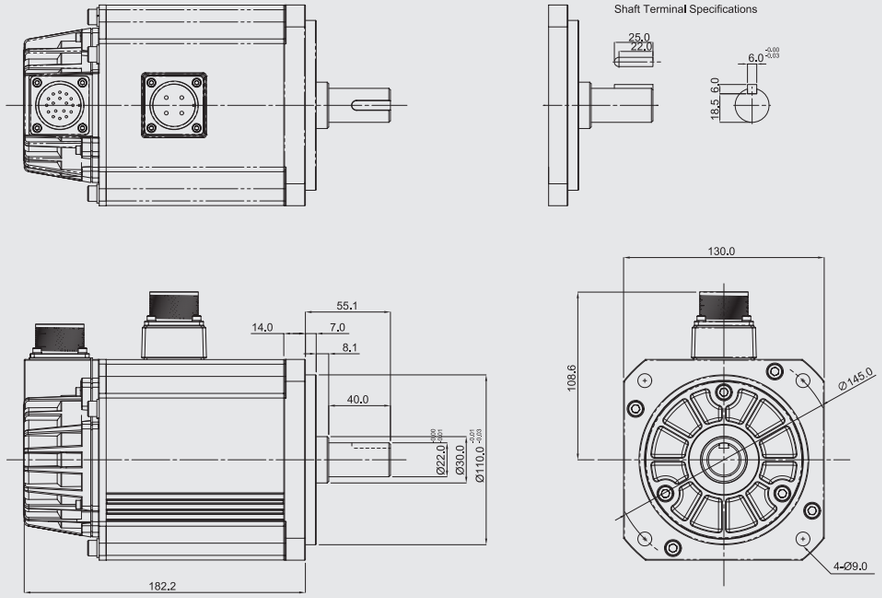
■ 1.5KW Motor



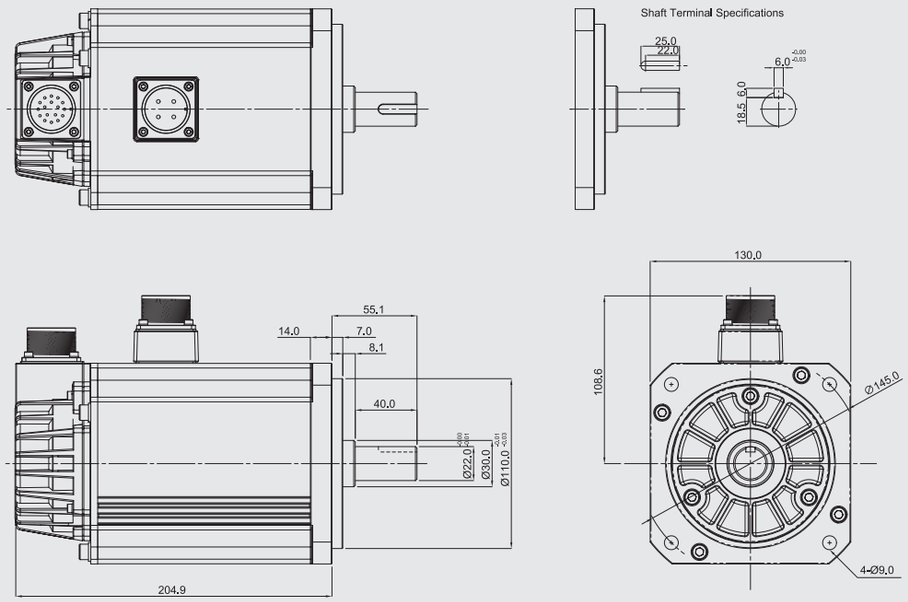
■ 1.5KW Motor Characteristic Curve



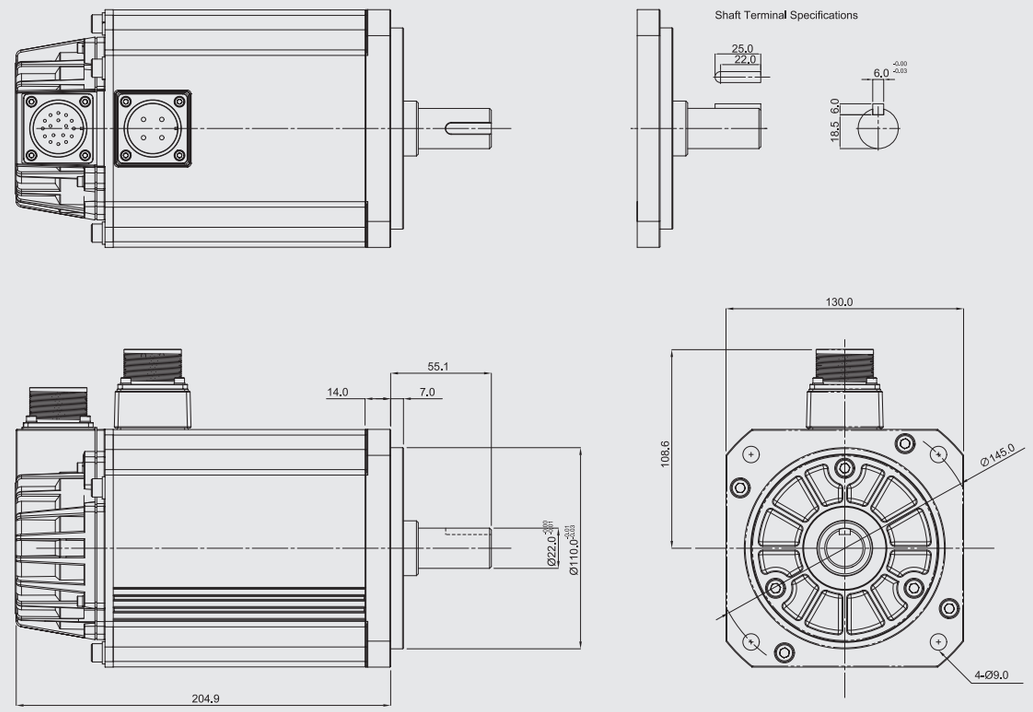
■ 1KW Brake Motor



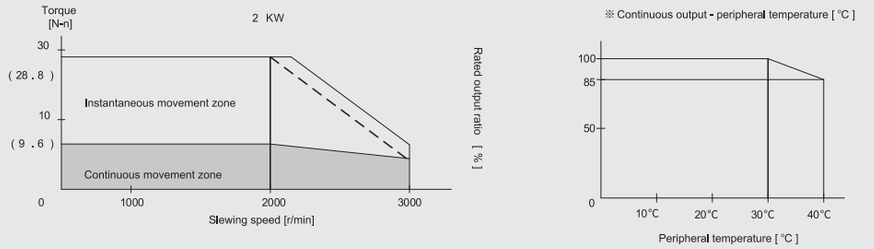
■ 1.5KW Brake Motor



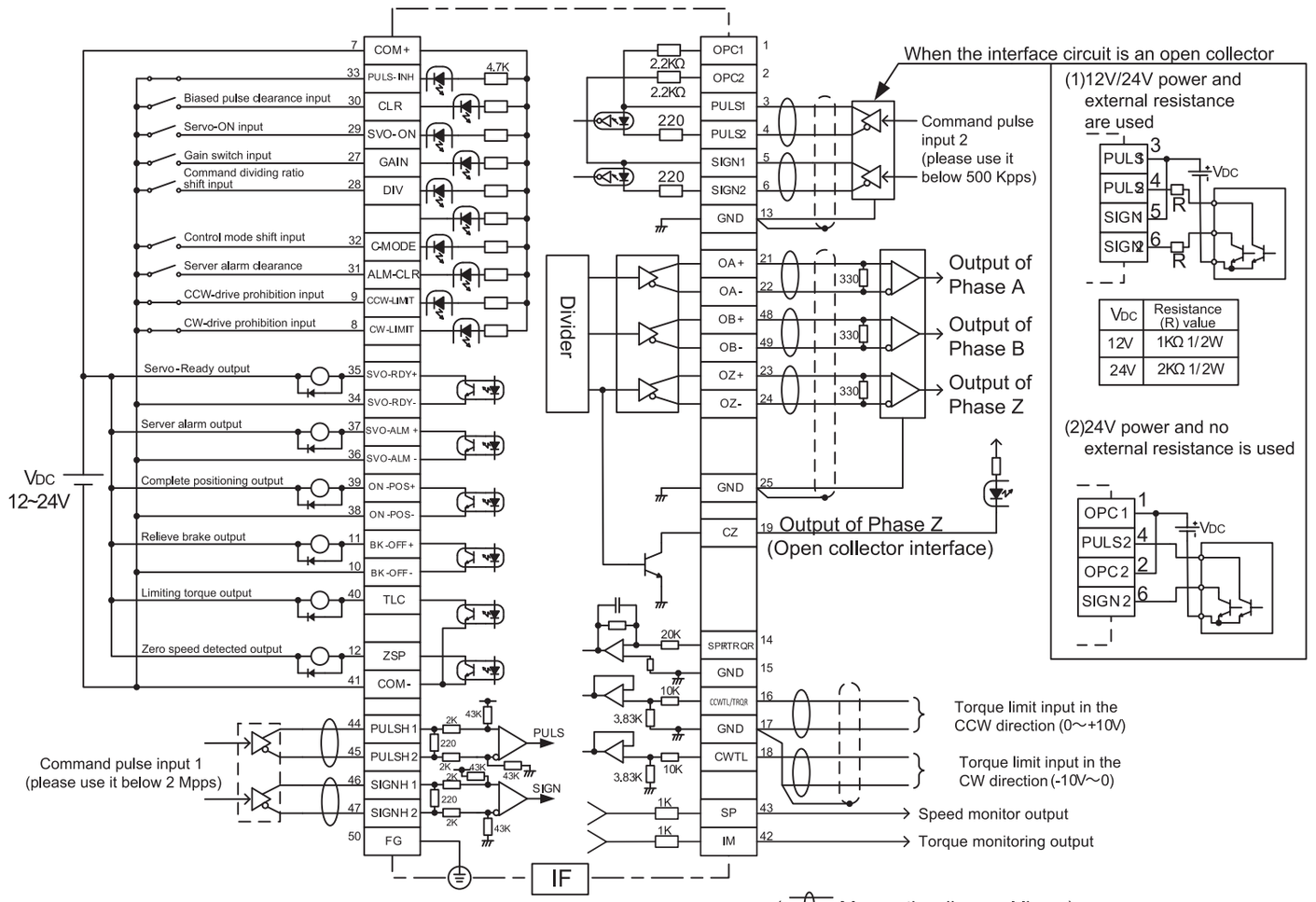
■ 2KW Motor



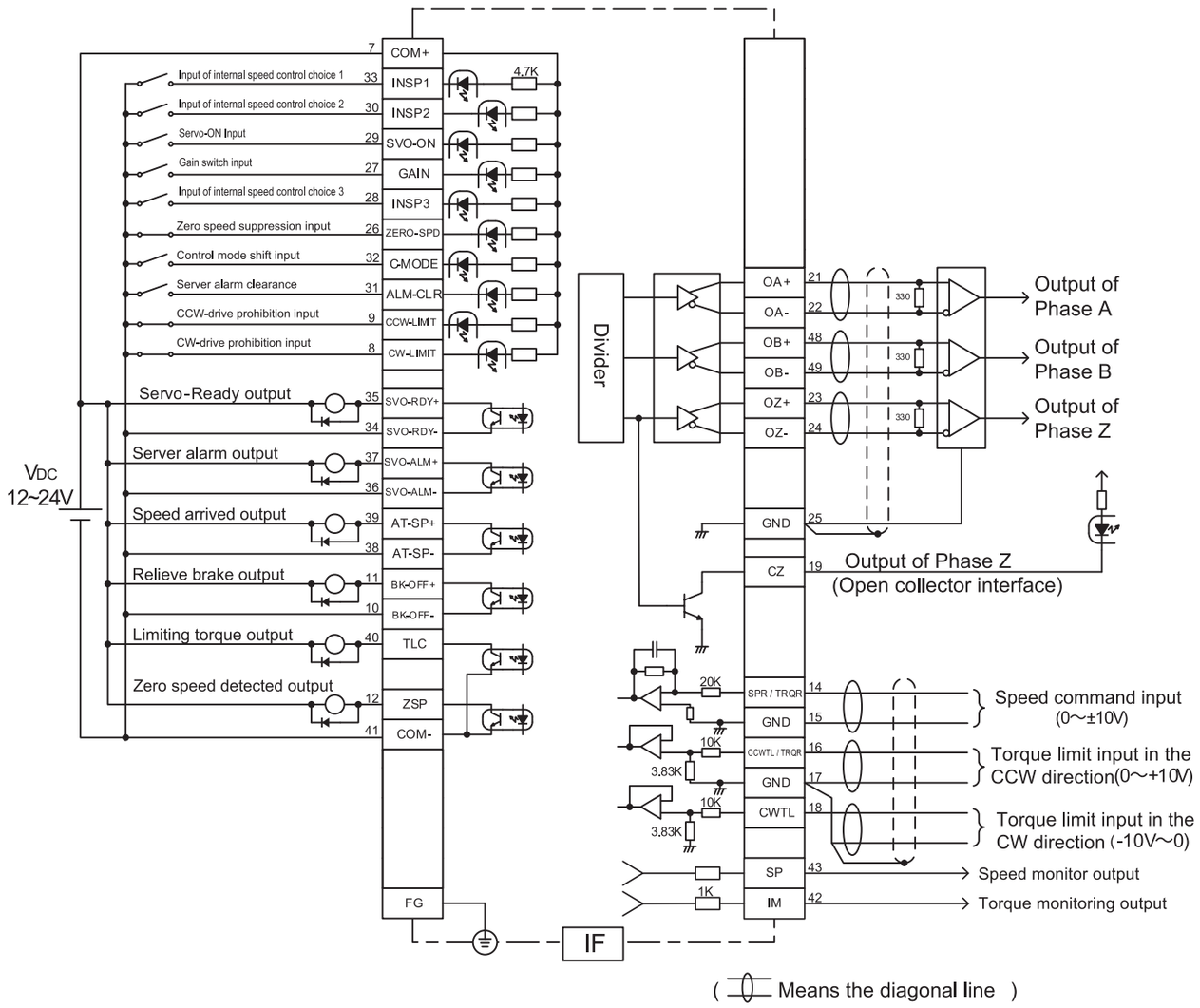
■ 2KW Motor Characteristic Curve



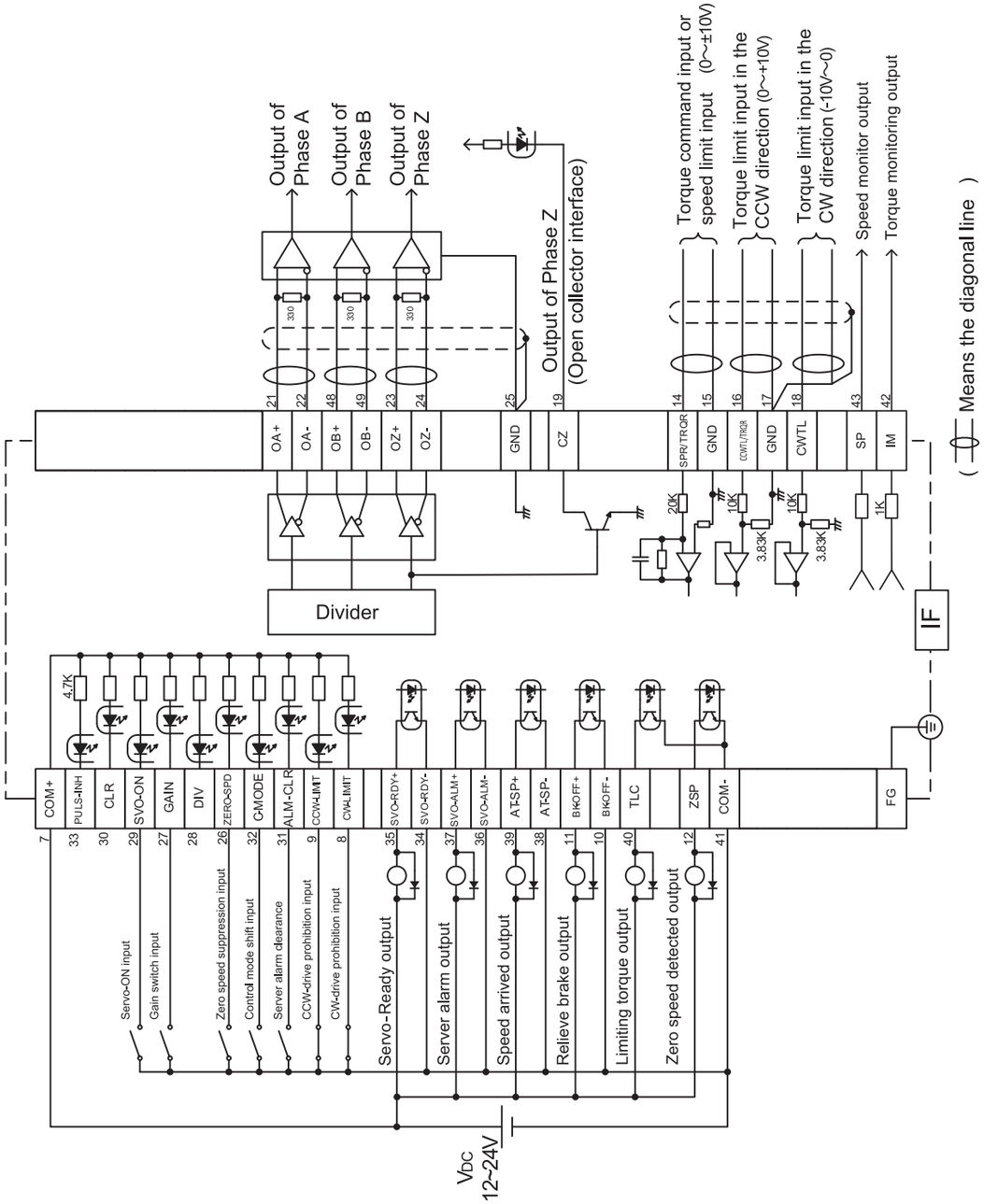
Position wiring diagram

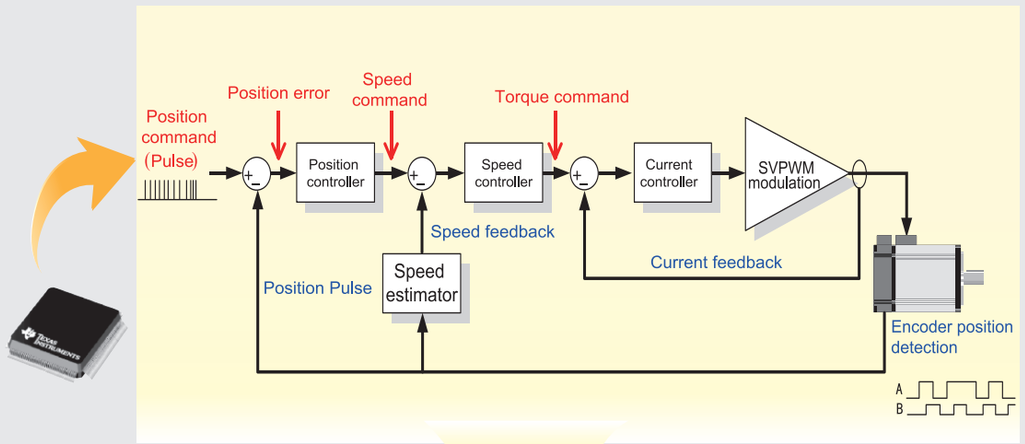


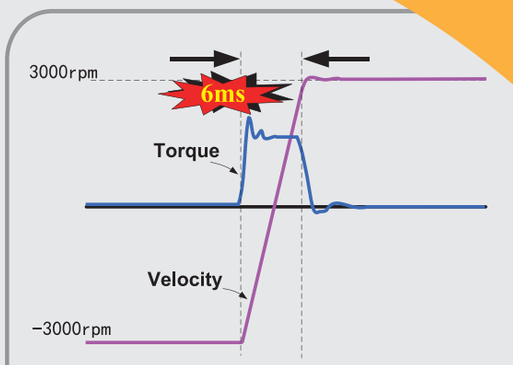
Speed wiring diagram



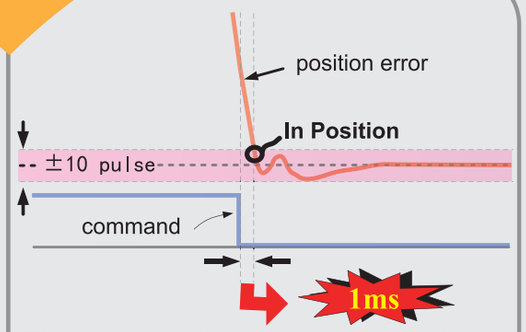
Torque wiring diagram







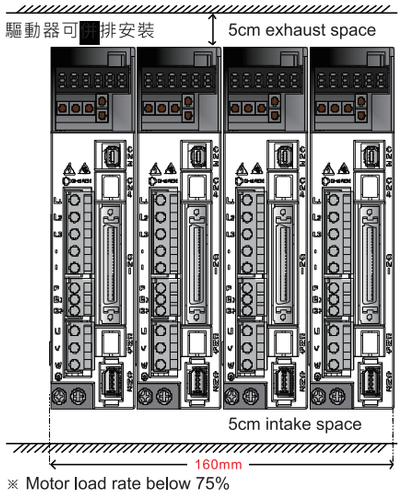
High-performance AC servomotor of the GMTservo K2 series; it takes only 6ms for accelerating from -3000rpm to + 3000rpm of the rated rotation speed. Saves the movement time and improves the production efficacy.



The command settling time can be below 1ms for the high-performance AC servomotor of the K2 series. Quick settling time, fast reaction, quick response, precise positioning.

■ Side-by-side installation

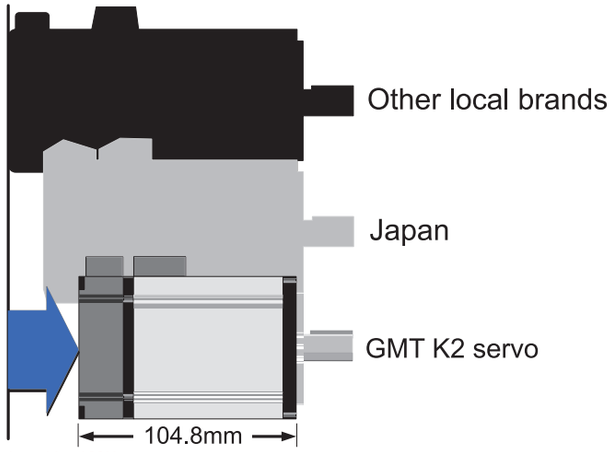
Thinnest servo driver in Taiwan
With a width of only 40mm!
Can be installed side by side
Saving space in distribution panel



※ Motor load rate below 75%

■ Light and compact volume

Most compact size of all local servo motors



Optimum

GMT K2 servo

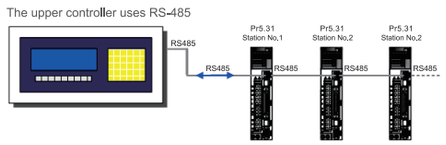
In the case of 400W

The GMT K2servo series high-performance AC servo motor has a special patent, making the motor smaller, lighter, and taking up less space, with performance comparable to Japanese servo products.

Reduced by 19%!

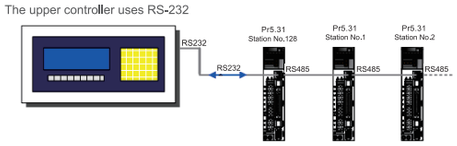
■ RS-485 is used for communica tion connection

When the RS-485 interface is used for the upper-layer controller to connect the driver, please set the station signal of each driver separately, starting with No. 1.

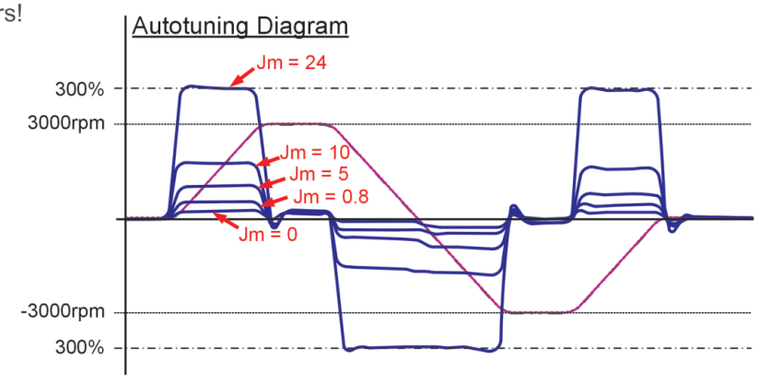


■ Relay RS-485 of RS-232 is used for communication connection

Please set the station number of the relay driver as 128 and for the others, use the driver station number to connect to the RS-485 interface



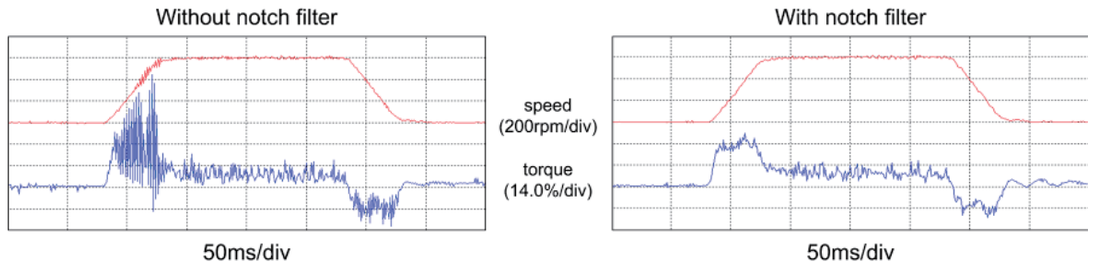
Automatic gain adjustment is done easily; there is no need to worry about adjusting parameters!



■ Notch filter

Setting a notch filter at the resonance point of a machine can suppress resonance and increase gain, achieving the requirement of low vibration and high responsiveness.
There are 2 notch filters for the K series and 2 more for the K2 series, that is 4 in total.
The height and breadth are both adjustable for each filter to maximize the scope of utilization.

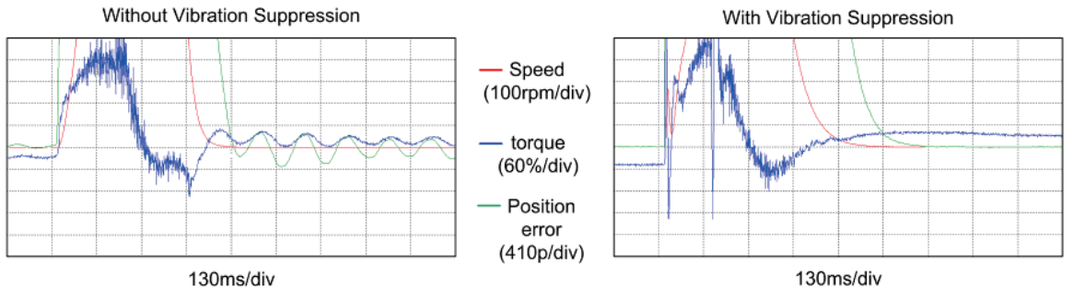
Effect of notch filter



■ Seismic Control

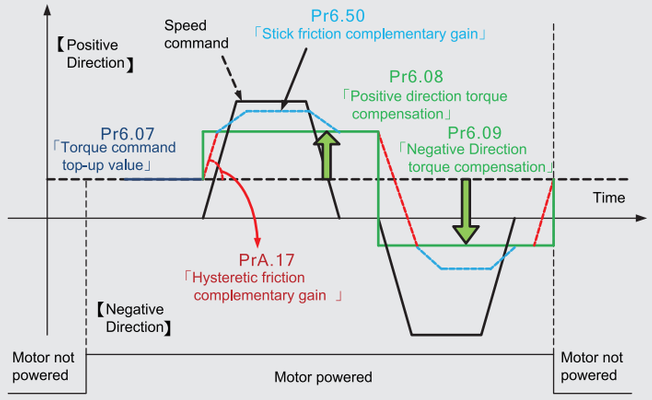
The K2 series comes with two sets of low-frequency seismic control, which, when a physical shaking mechanism is present in the controlled range, can inhibit low-frequency physical shaking to further shorten the settling time!
With automatic detection of vibration frequency, it makes it more convenient and easy for you to use.

Vibration Suppression



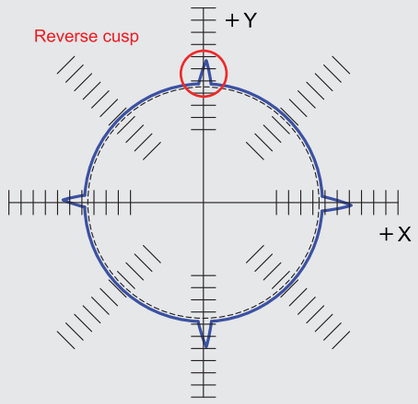
■ Friction Compensation

The K2 series has increased compensation for friction; it is adjustable for the CNC precision industry. The circular precision when used in the CNC industry can be up to a roundness of 3.3μm!

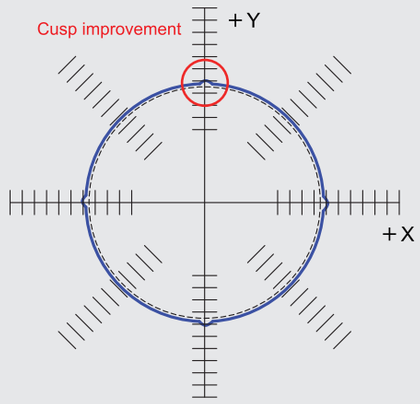


■ Application Example

Impact of machine friction on circular backward cusp

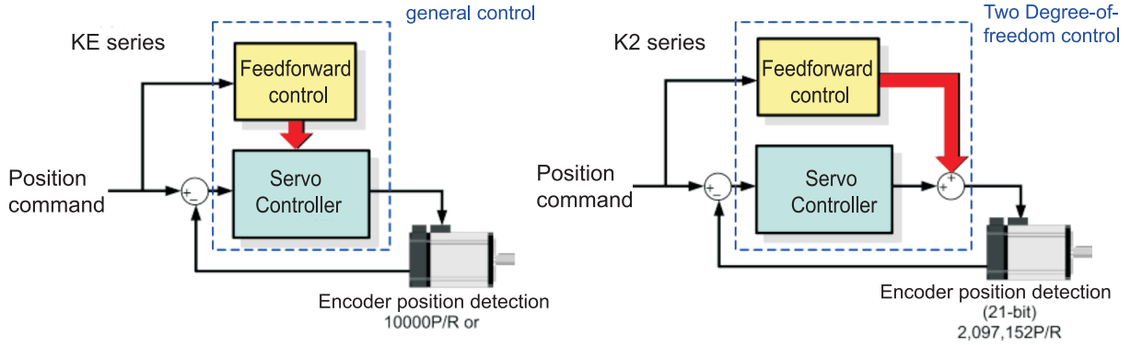


Post-machine friction compensation effect



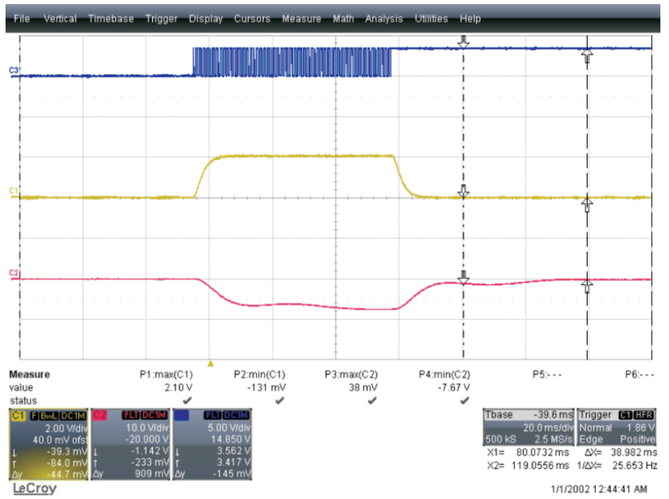
■ Two Degree-of-freedom control

The 2 DOF control unique of the K2 series features two-step feed forward processing to achieve nearly 0 following



■ Two Degree-of-freedom control

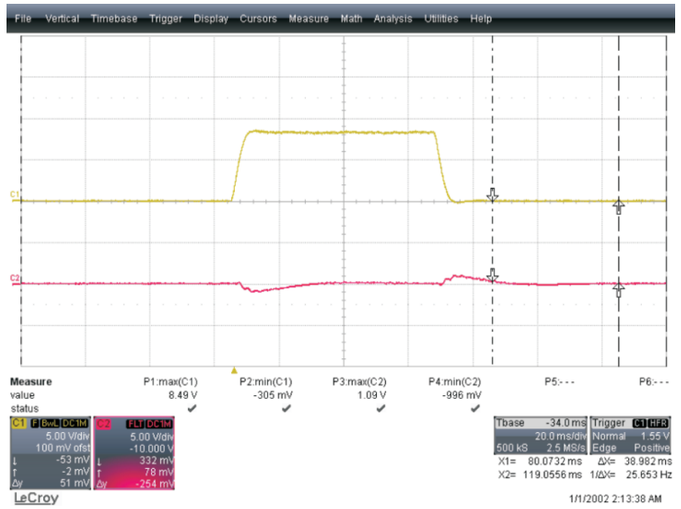
2 DOF not started



■ Two Degree-of-freedom control

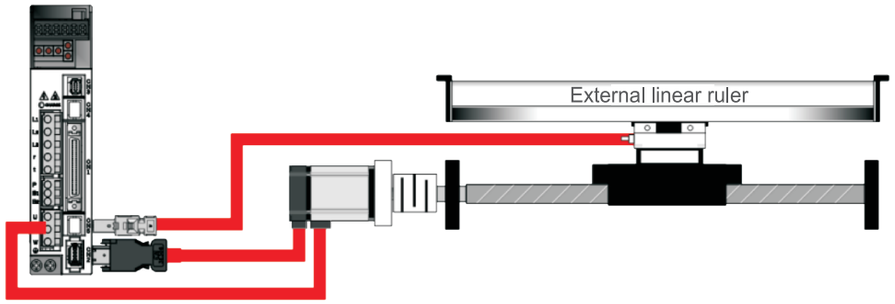
2 DOF started

Yellow
Speed command
Red
Position deviation



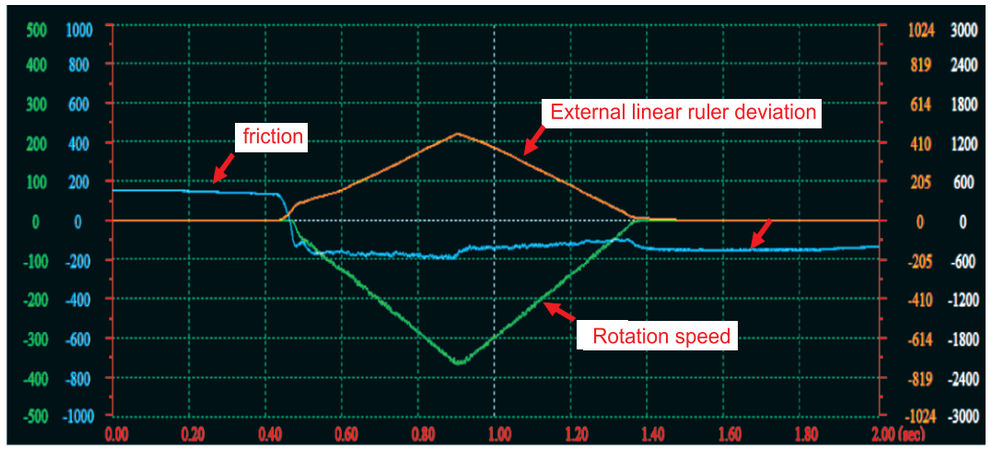
■ Optical linear encoder closed loop

Supports Phase A/B differential signal
Feedback example of the ball screw-driven linear ruler



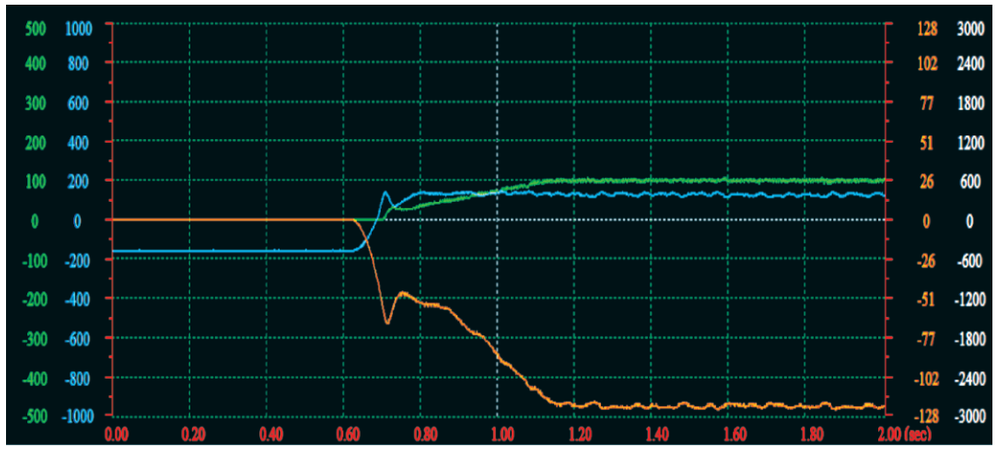
■ Application Example

Impact of friction on the following deviation



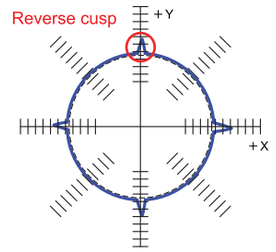
■ Application Example

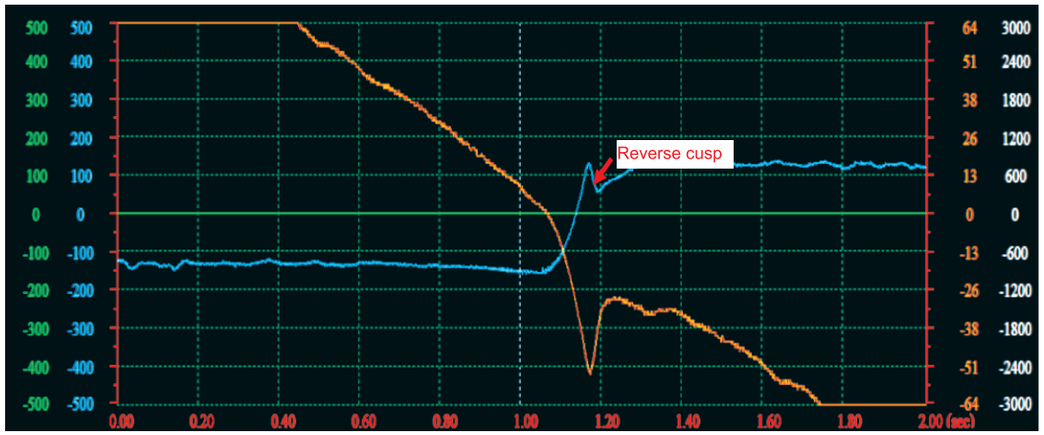
Impact of friction on the following deviation



■ Application Example

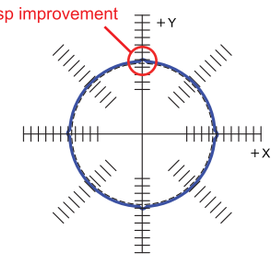
Impact of machine friction on circular backward cusp

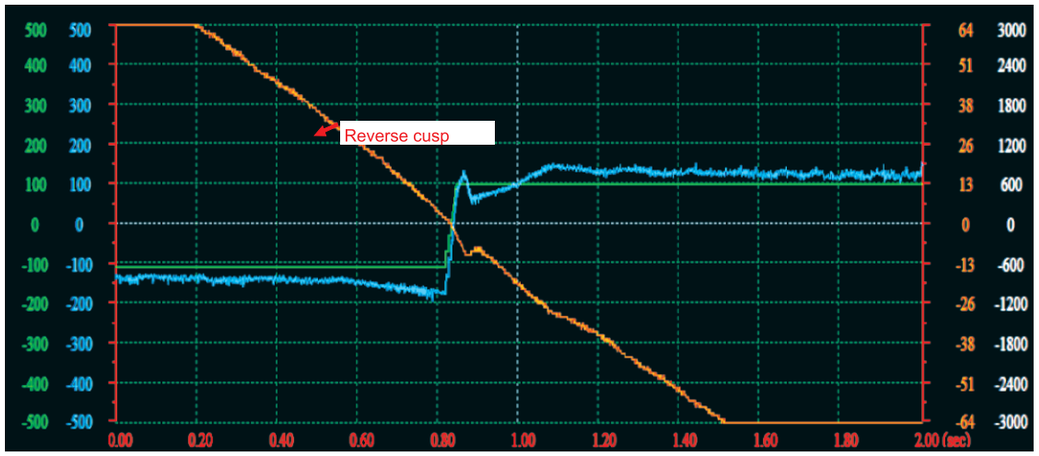




■ Application Example

Impact of machine friction on circular backward cusp

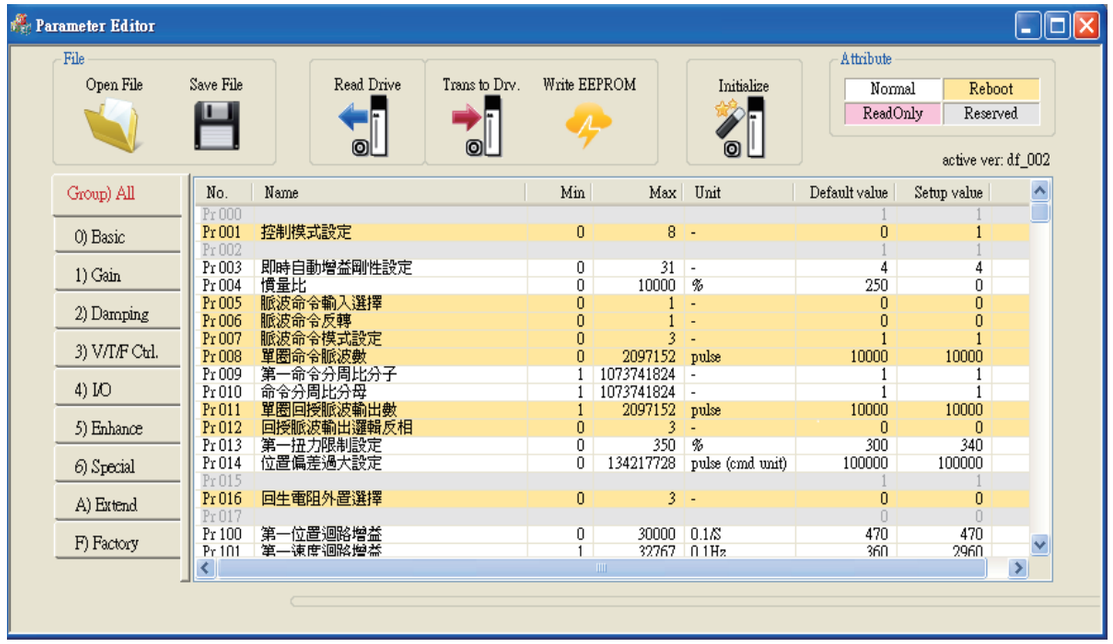




■ K2 servo：GMT tool adjusting software

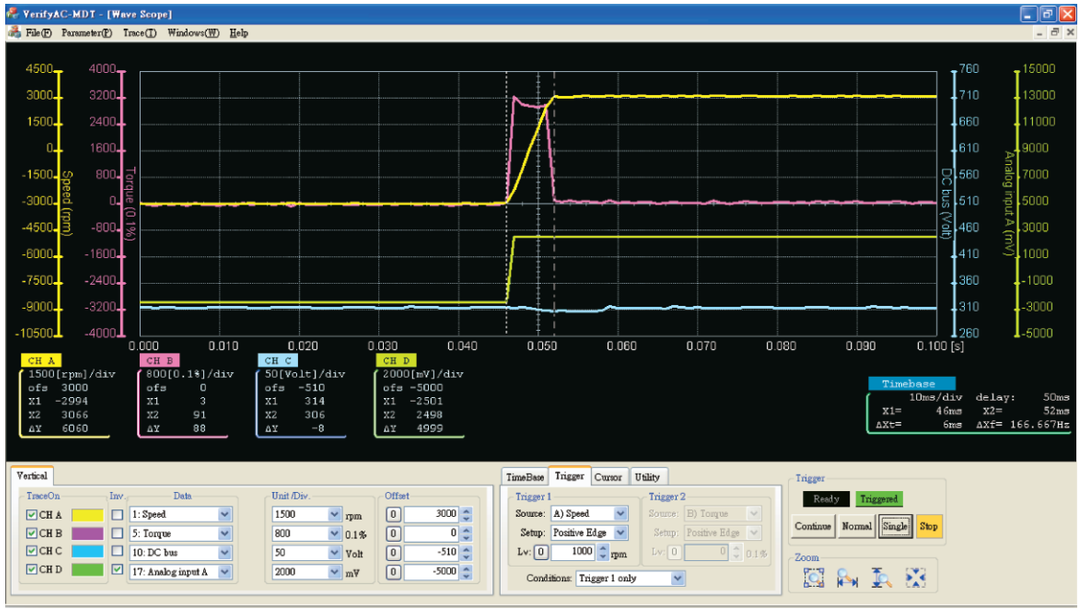
*The screen is for illustration only; for the actual usage, refer to the Instructions for Operators.

GMT K2 servo adjusting software, The simple and easy-to-understand interface requires only simple steps to complete the setup of parameters so that users know clearly the servo-application.

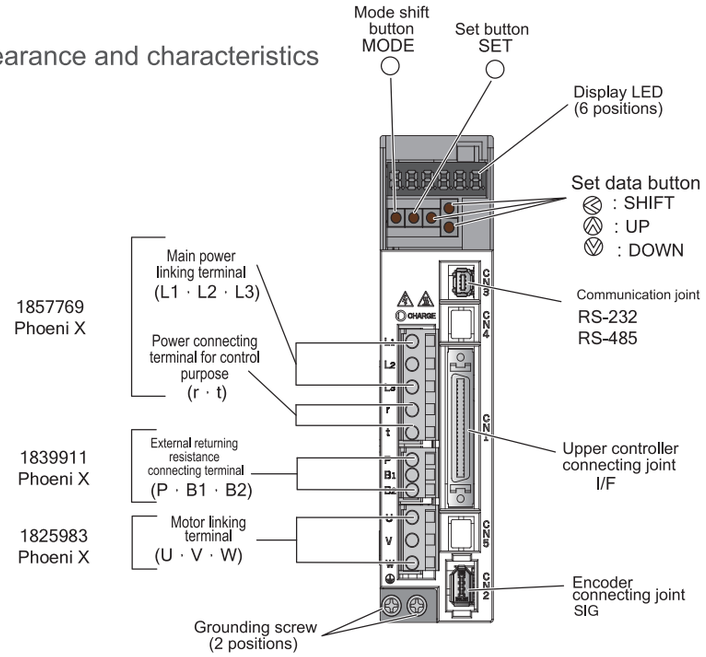


■ K2 servo：GMT tool adjusting software

With the adjusting oscilloscope software, one can understand clearly which equipment the motor goes with!

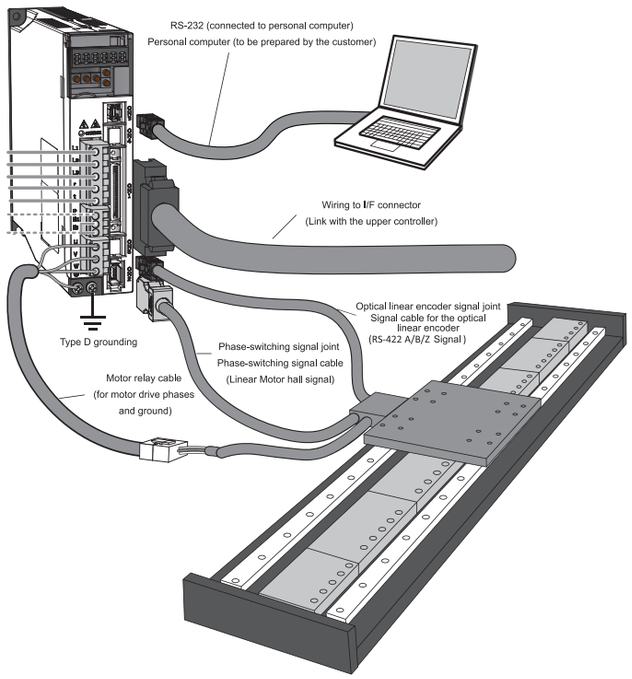


■ KL appearance and characteristics



- ◆ Control performance is of the same grade as that of products of the K2 series (high response, vibration control, etc.)
- ◆ Corresponding 3-phase iron core/no iron core/cylindrical linear motor
- ◆ Supports A/B/Z optical linear encoder 10 Mpps (4-times after-delivery)
- ◆ With/Without hall signal (automatic magnetic pole search)
- ◆ Automatic setup of magnetic pole phase angle, linear ruler direction

■ KL framework



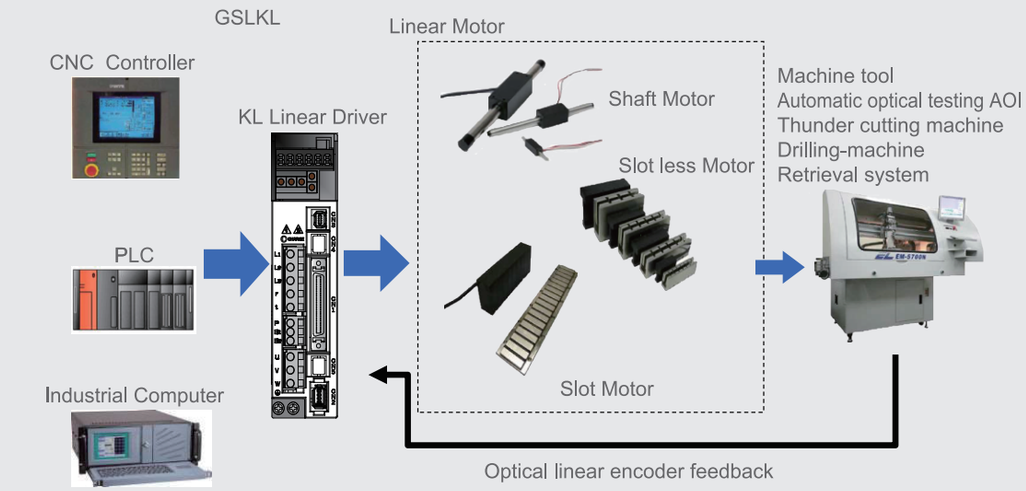
■ KL Description

Linear Motor Driver - Description

GSL-KL 01 MB 21 E P

- Type : GSL= GMT Linear Motor Driver
- Model : KL: KL Series
- Corresponding current : 01 = 1.4Arms/7.1Ap; 04 = 2.8Arms/14.2Ap; 08 = 5.6Arms/25Ap
- Communication control : MB : RS485 ModBus RTU
- Voltage Function : 21 = 220V Single phase
- Optical : E = 0.5 μm incremental; F = 1 μm incremental
- Input Type : P = Pulse input

■ KL產品應用



Optical ruler signal joint-Description (CN5)

GSL SC-2 N 015 G 0 1

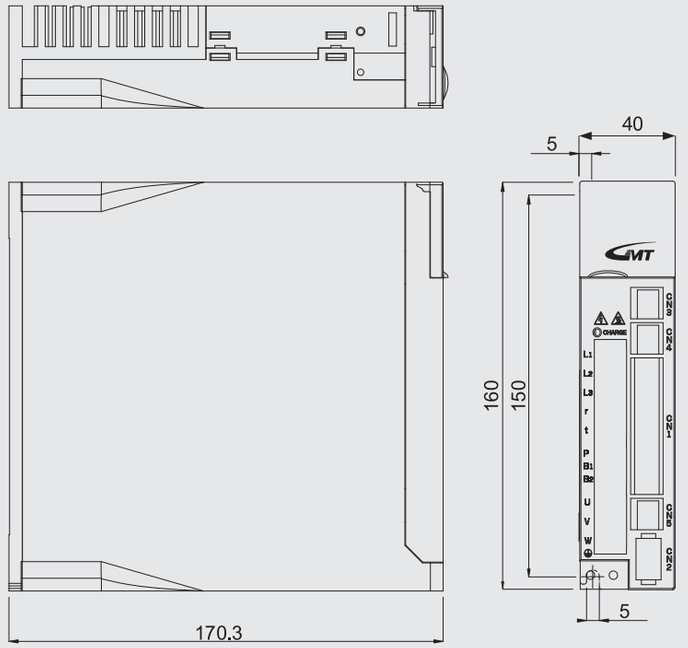
- Type : GSL = GMT Linear Motor
- Model : SC = Optical linear encoder encoding
- Series : 2 = KL Series
- Cable class: N = Common line; R = Deflection tolerant
- line length : 015= 0.15 m
- Type of joint: G = Regular joint
- Description of Resolution: 0 = Incremental
- Description of joint: 1 = Mini-industrial IO

Hall signal joint for the linear motor -Description (CN2)

GSL HA-2 N 015 G 0 3

- Type : GSL= GMT Linear Motor
- Model : HA = Hall Connector Line
- Series : 2 = KL Series
- Cable class: N = Common line; R = Deflection tolerant
- line length : 015= 0.15 m
- Type of joint: G= Regular joint
- Description of Resolution: 0 = Incremental
- Description of joint: 3 = 1394

■ KL Driver sizes and configuration(100W 400W 750W)



Information on the adjusting adapter - encoding

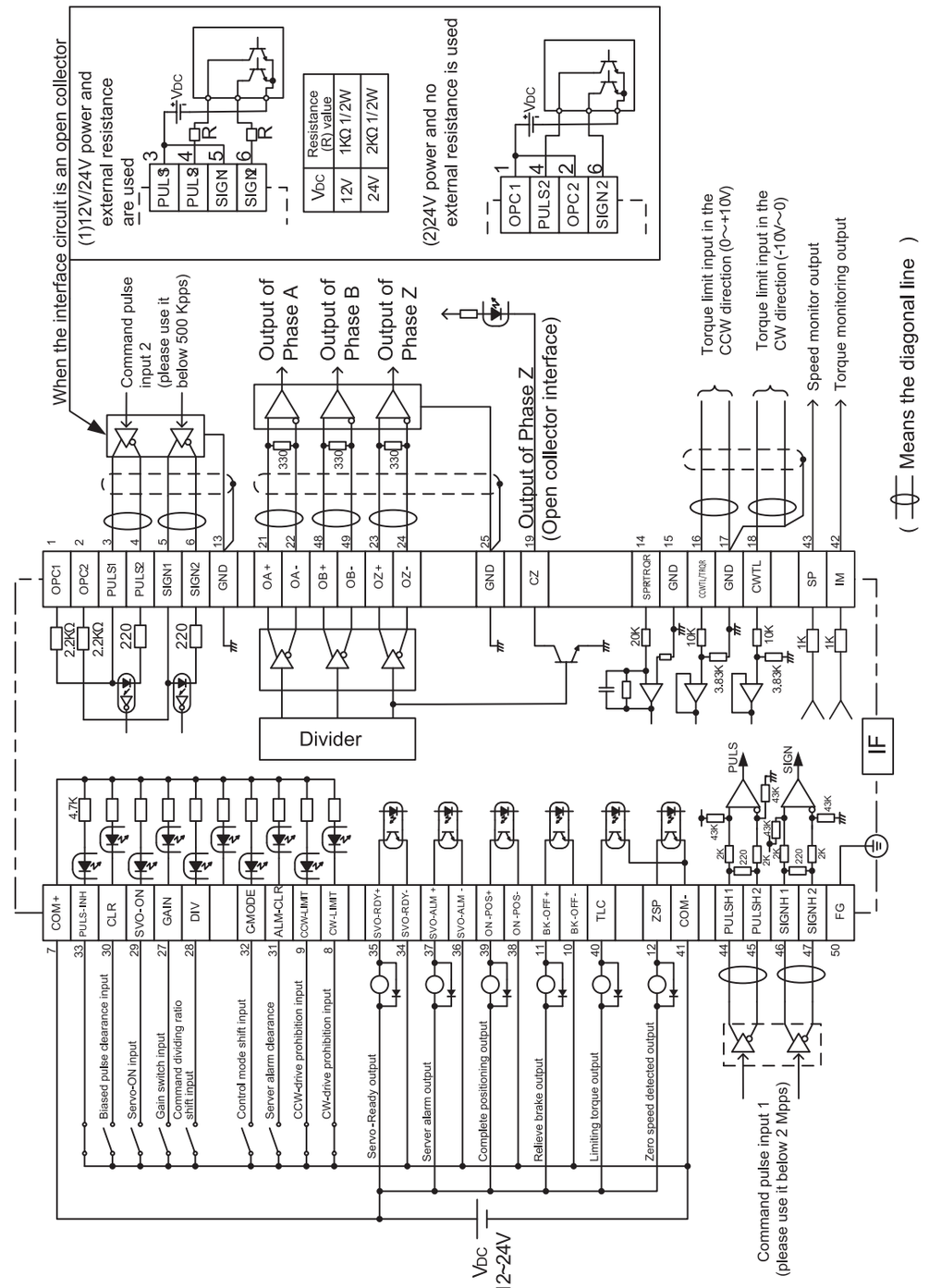
G2L DH-D N 009 G 0 0

- Type : G2L = GMT Servor Motor Linear Motor
- Model : DH = adjusting adapter
- Series : D= K2、KL
- Cable class: N = Common line; R = Deflection tolerant
- line length : 009= 0.09 m
- Type of joint: G = Regular joint
- Change-setting field: 0 = Regular
- Serial No.: From 0

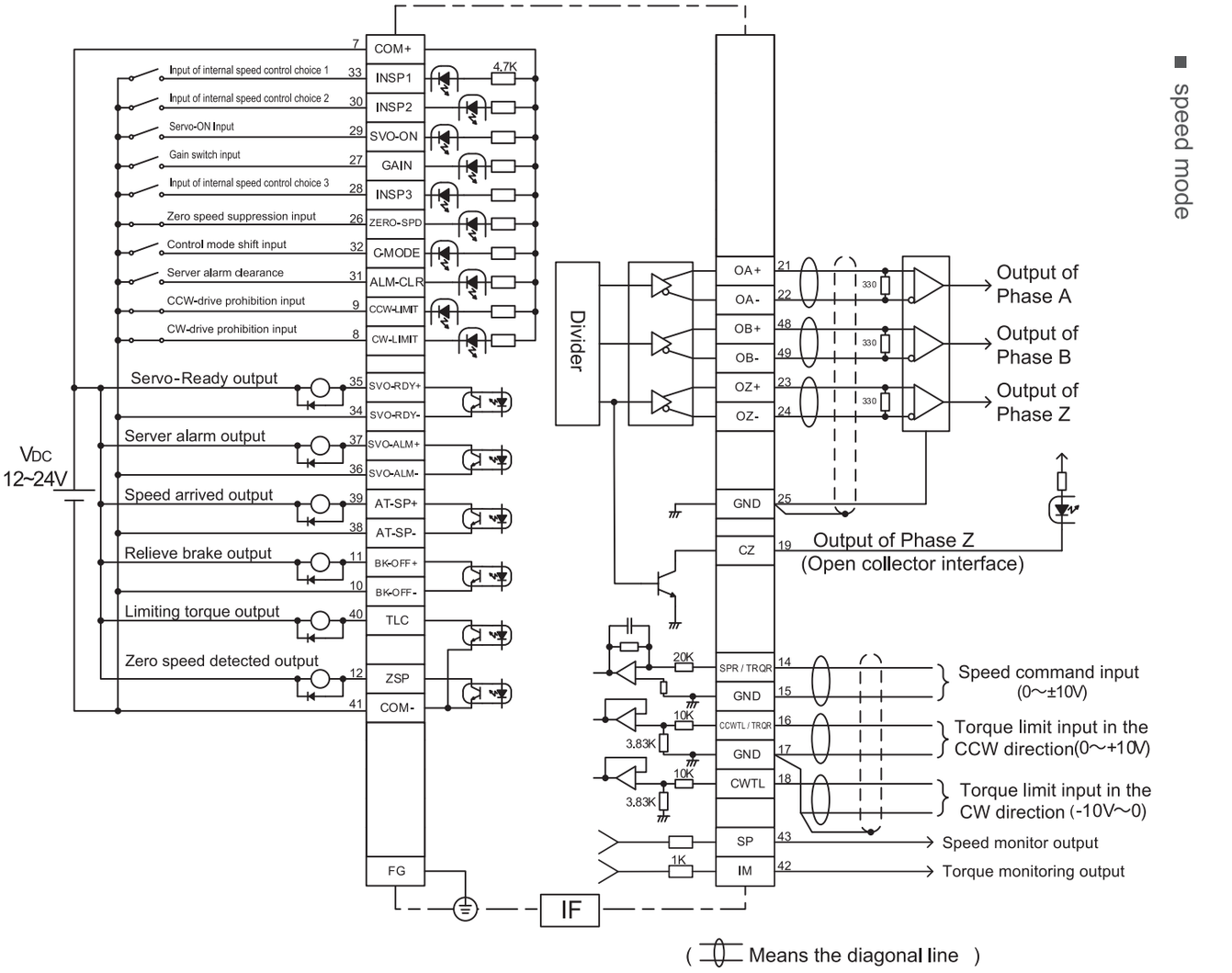
■ KL Linear Motor Drive Specification Table

Specifications			
	Inputs Voltage	Main circuit	Single-phase/three phase,190~230V 50/60Hz
		Control circuit	Single-phase,190~230V 50/60Hz,190~230V 50/60Hz
	Environment	Temperature	Operating:0~55°C,Storage:-20~+80°C
		Humidity	Operating/Storage : Below 90% (Non-frosting)
		High	Below 1000m
		Vibration	Below 5.88m/s^2 , 10~60Hz (Cannot be used continuously at the resonant frequency)
	Control method		IGBT PWM Sine wave drive
	Motor		Corresponding 3-phase iron core/no iron core/cylindrical linear motor
	Linear ruler		Supports A/B/Z optical linear encoder 10 Mpps (4-times after-delivery)
	Magnetic pole detection		With/Without hall signal (automatic magnetic pole search)
	Set		Select the motor form Automatic setup of magnetic pole phase angle, linear ruler direction
	Control signal	Input	11 Inputs (1)Servo-ON(2) Control mode switch (3) Gain switch/torque limit switch (4) Alarm clearance; other inputs vary with the control mode and the features differ.
		Output	6 Output (1)Servo alarm (2) Servo ready (3) Brake relief signal (4) Zero speed detection (5) Limiting torque.
	Analog signal	Input	3 Inputs (A/D)
		Output	2 Output (For monitoring purpose) (1) Speed surveillance (it helps monitor the actual speed or command speed of the motor. What is being monitored and the gradient ratio are selected through parameter settings) (2) Torque surveillance (it helps monitor the torque command (about 3V/ rated torque), deviation counter, or totally Closed-loop deviation.
	Pulse signal	Input	2 Inputs,Pulse can be entered through the line-drive interface or the optical coupler interface by selecting the parameter.
		Output	4 Output,There are the line-driver interface output encoder pulses (Phase A, B, or Z) and the separate open collector interface output for Phase Z.
	Communication function	RS232	1:1 communication can be done with the main controller that comes with the RS232C interface
		RS485	1:1 communication can be done with the main controller that comes with the RS485C interface (Up to 31 axes)
	Front panel		(1) 5 keys (MODE,SET,←,↑,↓), (2) LED (6-digit)
	Regeneration		Built-in regeneration resistance
	Dynamic brake		Power OFF, Servo OFF, protection activation and dynamic brake activation procedure to stop activation of drive input can be set.
	Control mode		There are 6 modes in total, which can be switched through parameter setting (1)position control (2)speed control (3)torque control (4)speed/torque control (5)position/torque control (6)speed/torque control

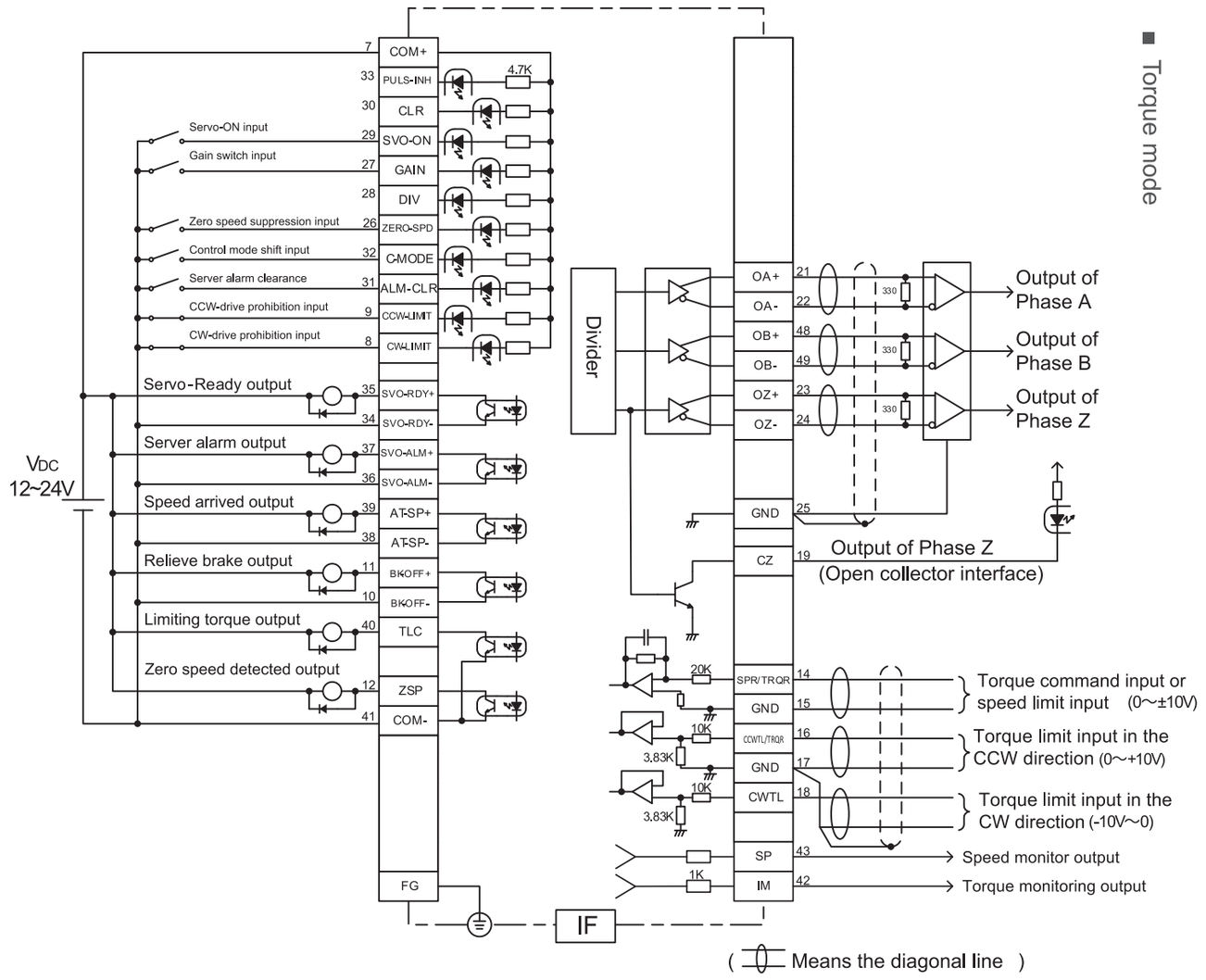
■ Position mode

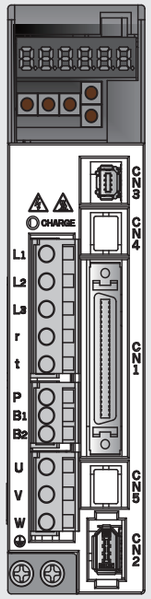


■ speed mode



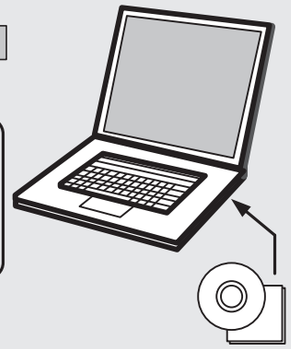
■ Torque mode





Mini-industrial IO joint

Connector for RS232

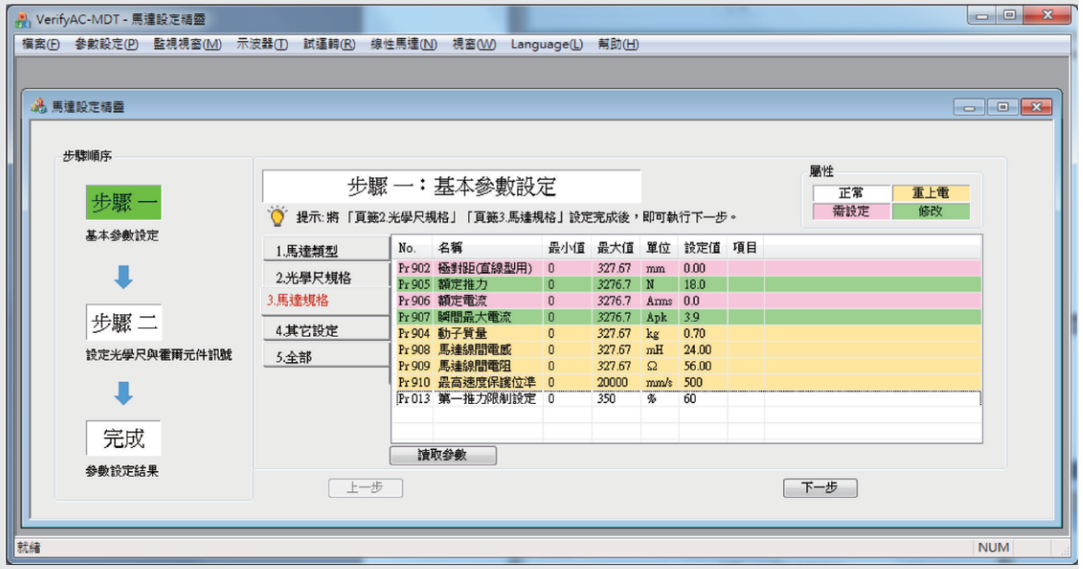


Exclusive communication cable
Refer to Page 149
"Adjusting adapter"

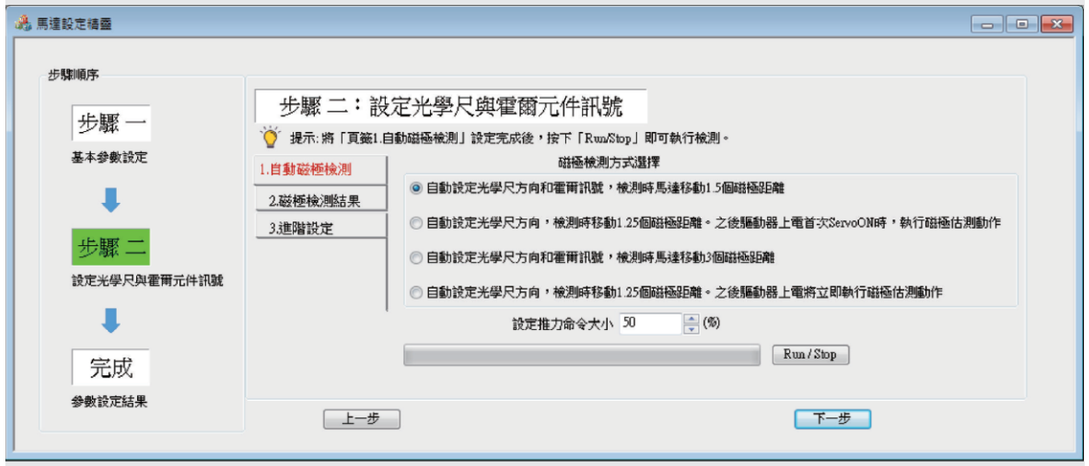
communication software 「GMT Tool」

■ KL linear motor setup wizard

◆ Basic motor parameter setup



◆ Automatic setup of optical linear encoder direction and hall signal



◆ Programmable jog and motor dynamic wave surveillance

■ Linear motor feedback wiring diagram