

滚珠丝杠线性执行器 Ball Screw Linear Actuators

- 步进电机与滚珠丝杠一体的紧凑型电动线性执行器。
- 根据不同的用途,推出了External、Captive、Non-Captive三种类型的产品。
- KSS是唯一以滚珠丝杠的形式推出这三种线性执行器的制造商。
- 配备的滚珠丝杠和电机选择丰富。

- This is a Ball Screw type Compact Electric Linear Actuators with Stepping Motor.
- 3 types of Linear Actuators, Captive, Non-captive, & External, are provided for customer's usage.
- KSS is only one manufacturer who has all 3-types of Linear Actuators.
- Wide variety of selection of Motor & Ball Screw are available.

●特点

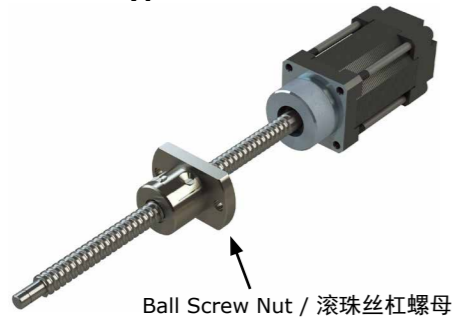
- 采用不需要联轴器的直接驱动,实现了紧凑、高精度。
- 可实现装置的小型化并减少直动结构的部件数量,减少组装工时。
- 与进给丝杠型相比,实现了高效率、长寿命、高精度。
- 电机尺寸、滚珠丝杠的种类、导程的选择多,可根据用途分别使用。

●Features

- High accuracy & compactness are achieved due to direct drive structure.
- Compact design, to reduce the number of components, to save the labor cost are possible.
- High efficiency, long life & high accuracy can be achieved compared to lead screw type.
- Pick one models that fits your application or specifications among variety of combination, Motor size, Ball screw type & screw lead.

●种类与构造 / Variation and Structure

External type

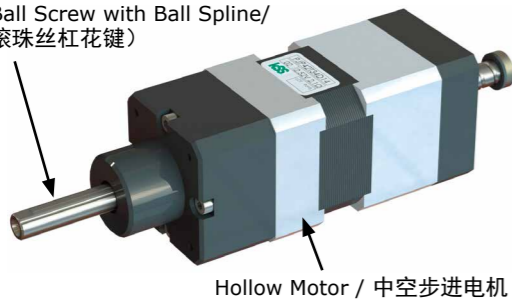


电机轴与滚珠丝杠轴通用,省去了联轴器。

Stepping Motor is directly mounted onto Ball Screw shaft, so that Coupling is not required in this type of Actuator.

Captive type

BSSP
(Ball Screw with Ball Spline/
滚珠丝杠花键)



将滚珠丝杠花键(BSSP)组装到中空电机中,花键起到止转和导向结构的作用。

Ball Screw with Ball Spline(BSSP) is built in the Hollow Motor. Ball Spline Nut plays a role of anti-rotating device and slide guide. No need to set up anti-rotating design outside the Actuators.

Non-Captive type



在中空步进电机中组装了滚珠丝杠的简易结构。外部需要止转结构。

This is the simple design Linear Actuator with Ball Screw built in Hollow Motor. Anti-rotating device should be set up outside Actuators when usage.

线性执行器 External type Linear Actuator External type



是步进电机与滚珠丝杠一体,不需要联轴器的紧凑型线性执行器。

It's a Compact Linear Actuator series, what we call MoBo.

The MoBo is the combined product that Stepping Motor Shaft is directly mounted onto Ball Screw Shaft, and eliminated Coupling accordingly.

KSS以小型化为微型滚珠丝杠制造商的使命,不懈地追求产品的轻量小型化。

其代表产品线性执行器(External型)是将电机轴与滚珠丝杠轴合二为一的组合产品,不需要联轴器,从而缩短了长边方向的尺寸。

KSS自2001年推出线性执行器(External型)以来,不断增加滚珠丝杠和电机的种类,备有丰富的产品可供客户选择。

In KSS, we always pursue the downsizing of our products that is the mission of the Miniature Ball Screw manufacturer. Linear Actuator External type is one of our representative product, which combines a Motor Shaft and a Ball Screw. External type can achieve shortening the longitudinal dimension by eliminating the Coupling. Since KSS launched the first version of External type in 2001, we continued to add various type of External type on our line-up and provides the variety of choices to our customer.

线性执行器(External型)是滚珠丝杠和步进电机(2相/5相)一体型产品,备有丰富的组合可供选择(表P-1、表P-2)。也可制作树脂导程丝杠(树脂螺母滑动丝杠)型,请垂询本公司。

Linear Actuator (External type) can offer variety of choices, based on its combination of Stepping Motor type (2-phase or 5-phase) and Ball Screw type (refer to TableP-1, TableP-2).

In addition, we can provide Resin (plastic Nut) Lead Screw type as customized product, please ask KSS representative if necessary.

表P-1:驱动丝杠和电机的组合 / Table P-1 : Combination of Ball Screw and Stepping Motor

Type 种类	Ball Screw type / 滚珠丝杠型		Stepping Motor / 步进电机		Additional Function 附属装置
	Precision type / 精密滚珠丝杠	Rolled type / 冷轧滚珠丝杠	2-phase / 2相	5-phase / 5相	
DMB		○ JIS Ct7 equivalent 相当于JIS Ct7	○		
2TMB		○ JIS Ct7 equivalent 相当于JIS Ct7	○		
TMB		○ JIS Ct7		○	
MB	○ JIS C3			○	
MMB		○ JIS Ct7 equivalent 相当于JIS Ct7	○		Encoder / Driver / Controller 编码器 / 驱动器 / 控制器
SIMB	○ JIS C3		○		Encoder / Memory chip 编码器 存储芯片

表P-2:驱动丝杠和电机的组合 / Table P-2 : Combination of Ball Screw and Stepping Motor

Unit(单位):mm

Shaft Nominal dia. / 轴径	Lead / 导程									
	0.5	1	2	4	5	6	10	12		
4	MB	DMB TMB MB SiMB	DMB							
5				DMB TMB						
6		DMB TMB MB	DMB TMB MB MMB			TMB	DMB			
8		DMB TMB 2TMB MB SiMB	DMB TMB 2TMB MB SiMB		DMB TMB 2TMB SiMB		DMB	TMB 2TMB		

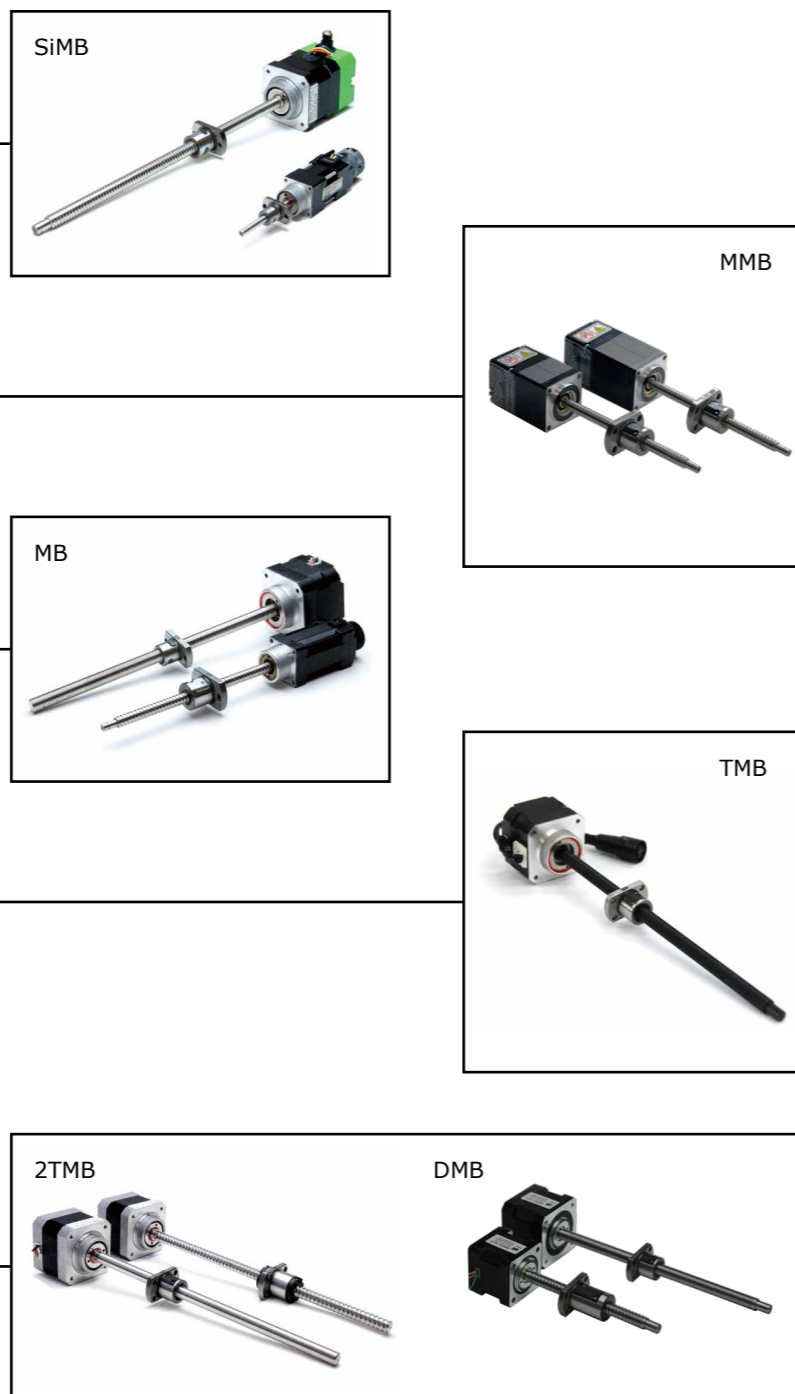
线性执行器(External型)根据客户的精度要求,从高精度到通用品,备有各种类型的产品。

Linear Actuator (External type) provides various types of combination for Ball Screw and Motor ranging from high precision to multi-purpose type depending on the customer requirement.

High / 高

Accuracy / 精度

Low / 低



【DMB系列 / DMB Series】



是将精度等级为Ct7的冷轧滚珠丝杠组装到2相步进电机中的通用型产品。电机尺寸、导程种类丰富。

Ct7 class Rolled Ball Screw is installed into 2-phase Stepping Motor for multi-purpose use. Variety of Motor size and Ball Screw lead are available.

【2TMB系列 / 2TMB Series】



是将精度等级为Ct7的冷轧滚珠丝杠组装到2相步进电机中的通用型产品。导程种类丰富。

Ct7 class Rolled Ball Screw is installed into 2-phase Stepping Motor for multi-purpose use. Variety of Ball Screw lead are available.

【TMB系列 / TMB Series】



采用冷轧滚珠丝杠+5相步进电机组合,可实现一般精度的定位运行。使用精度等级为Ct7的冷轧滚珠丝杠。

This series is all-round performance drive unit with Rolled Ball Screw and 5-Phase Stepping Motor. Ct7 class Rolled Ball Screw is built in this series.

【MB系列 / MB Series】



采用精密滚珠丝杠+5相步进电机,是可实现高性能和精密定位的驱动组件。精密滚珠丝杠的标准精度等级为C3。

This series is high performance, high accurate positioning drive unit with Precision Ball Screw and 5-Phase Stepping Motor. C3 class Precision Ball Screws are adopted for this series.

【MMB系列 / MMB Series】



采用冷轧滚珠丝杠+All in One电机(编码器、伺服驱动器、控制器),是可实现高性能、省配线化的驱动组件。可实现“低振动”、“无丢步”的产品。

Rolled Ball Screw with All-in-One Motor (Encoder, Servo driver and Controller) is to realize high performance and significant saving in wiring. Providing smooth drive and closed loop operation.

【SiMB系列 / SiMB Series】



采用精密滚珠丝杠+Si-servo,是可实现“完全等间距定位”、“无振动”、“无丢步”、“扭矩限制运行”的产品。精密滚珠丝杠的标准精度等级为C3。

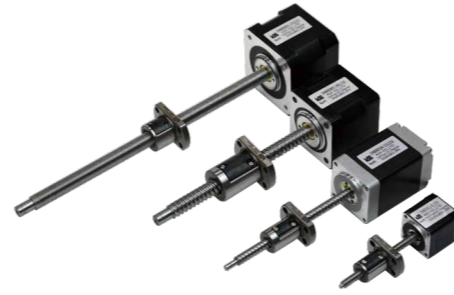
This series have high accurate positioning, ultra smooth drive, torque control drive and closed loop operation by using Precision Ball Screw with C3 accuracy and Si-Servo Motor.

DMB系列(冷轧滚珠丝杠 + 2相步进电机)

DMB Series (Rolled Ball Screw + 2 Phase Stepping Motor)

●特点

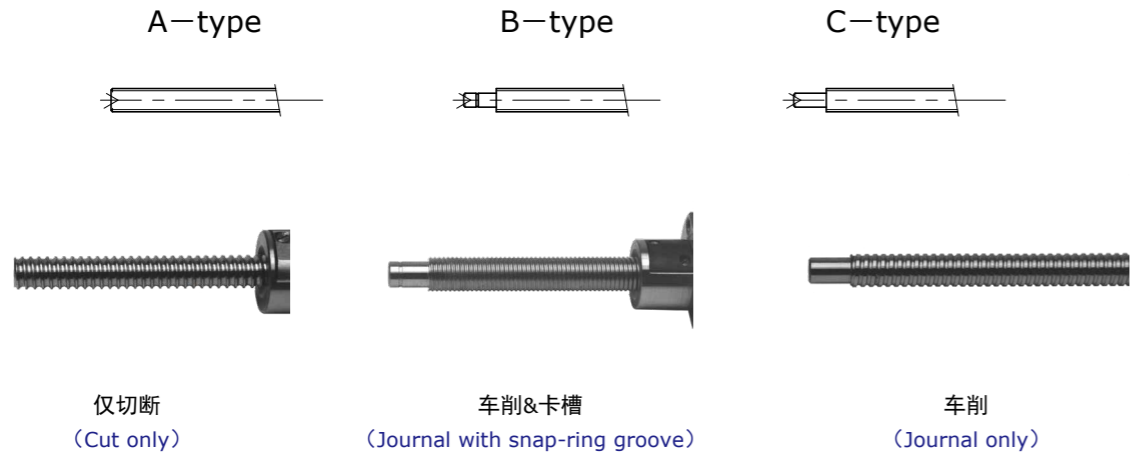
- 电机尺寸有□20、□28、□35、□42, 产品种类丰富。
- 将2相步进电机直接组装到滚珠丝杠的轴端, 实现了滚珠丝杠轴心即为电机旋转轴心的理想结构。
- 电机轴和滚珠丝杠轴一体化, 省去联轴器, 实现了长边方向的小型化。
- 以冷轧滚珠丝杠和2相步进电机的组合提供高性价比产品。
- 可定制轴端形状、行程(参照片)。



●Features

- Wide variety in Motor size, which are NEMA08(□20), NEMA11(□28), NEMA14(□35) and NEMA17(□42).
- 2-phase Stepping Motor is mounted directly onto the Shaft end of the Ball Screw, which is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving the total length can be achieved.
- High cost performance item is provided by combining Rolled Ball Screw and 2-phase Stepping Motor.
- End journal profiles and travel length can be customized(see photo below).

【轴端形状例 / End journal variation】

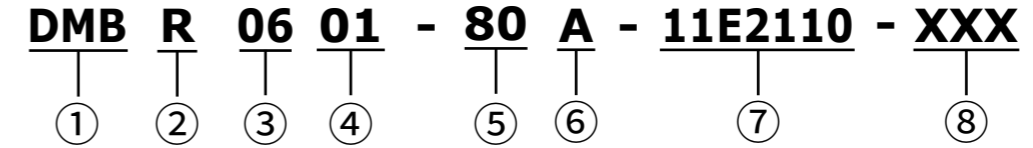


●公称型号 / Model number notation

定制品的公称型号如下所示。
产品目录标准形状品为产品目录记载(P111~P115页)的型号。

Model number notation for customized DMBR series is as follows.

In case of standard style, model number is described in catalogue from pageP111 to pageP115.



①系列符号

DMB : 电机直连型滚珠丝杠
(2相步进电机)

②滚珠丝杠种类

R : 冷轧滚珠丝杠

③丝杠轴公称外径

06表示6mm

④导程(mm)

01表示1mm

⑤丝杠轴长度(mm)

表示突出于电机的轴的长度(下图)

⑥轴端形状

A : 无加工

B : 车削&卡槽(标准形状)

C : 车削

⑦电机型号

参照下表

⑧附加号

①Series No.

DMB : Linear Actuator Ball Screw External type
(2-phase Stepping Motor)

②Ball Screw type

R : Rolled Ball Screw

③Screw Shaft nominal diameter(mm)

06 means 6mm

④Lead(mm)

01 means 1mm

⑤Screw thread length(mm)

Screw length which is exposed from Motor(see below)

⑥End journal profile

A : Cut only

B : Journal with snap ring groove(standard)

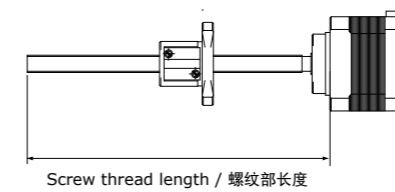
C : Journal only

⑦Motor Model

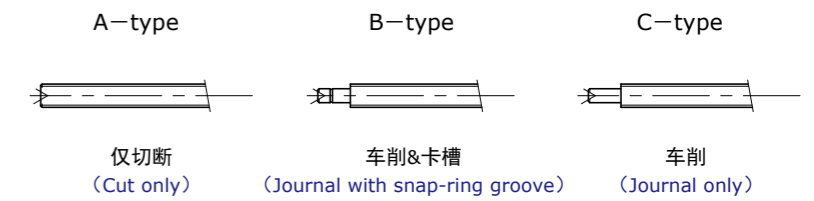
Refer to table below

⑧Extra notation

【⑤丝杠轴长度 / Screw thread length】



【⑥轴端形状 / End journal profile】



Motor Model 电机型号	Motor size 电机尺寸 (mm)	Motor length 电机总长 (mm)	Rated current 额定电流 (A/phase)	Holding Torque 保持 扭矩 (Nm)	Applicable Shaft dia. 适用轴径 (mm)	Lead 导程 (mm)
08E2004	NEMA08(□20)	(22)	0.4	0.003	f4	1,2
08E2105	NEMA08(□20)	(29)	0.5	0.0035	f4	1,2
11E2110	NEMA11(□28)	(35)	1.0	0.036	f5,f6	1,2,4,10
11E2216	NEMA11(□28)	(47)	1.6	0.052	f5,f6	1,2,4,10
14E2110	NEMA14(□35)	(36)	1.0	0.060	f8	1,2,5,10
14E2215	NEMA14(□35)	(48)	1.5	0.10	f8	1,2,5,10
17E2115	NEMA17(□42)	(36)	1.5	0.18	f8	1,2,5,10

●基本规格 / Specifications

Motor Size 电机尺寸	Model No. 型号	Motor length 电机总长 (mm)	Screw Shaft nominal dia. 丝杠轴外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pulse 1脉冲 移动量 (μ m)	Mass 质量 (g)
NEMA 08 (□20)	DMBR0401-08E2004	(22)	4	1	23	5	52
	DMBR0402-08E2004	(22)	4	2	21	10	52
	DMBR0401-08E2105	(29)	4	1	23	5	62
	DMBR0402-08E2105	(29)	4	2	21	10	62
NEMA 11 (□28)	DMBR0504-11E2110	(35)	5	4	39	20	140
	DMBR0504-11E2216	(47)	5	4	39	20	194
	DMBR0601-11E2110	(35)	6	1	43	5	140
	DMBR0602-11E2110	(35)	6	2	43	10	148
	DMBR0610-11E2110	(35)	6	10	40	50	146
	DMBR0601-11E2216	(47)	6	1	43	5	194
	DMBR0602-11E2216	(47)	6	2	43	10	202
	DMBR0610-11E2216	(47)	6	10	40	50	198
NEMA 14 (□35)	DMBR0801-14E2110	(36)	8	1	58	5	212
	DMBR0802-14E2110	(36)	8	2	50	10	240
	DMBR0805-14E2110	(36)	8	5	47	25	234
	DMBR0810-14E2110	(36)	8	10	54	50	226
	DMBR0801-14E2215	(48)	8	1	58	5	292
	DMBR0802-14E2215	(48)	8	2	50	10	320
	DMBR0805-14E2215	(48)	8	5	47	25	314
	DMBR0810-14E2215	(48)	8	10	54	50	304
NEMA 17 (□42)	DMBR0801-17E2115	(36)	8	1	118	5	298
	DMBR0802-17E2115	(36)	8	2	110	10	322
	DMBR0805-17E2115	(36)	8	5	107	25	318
	DMBR0810-17E2115	(36)	8	10	114	50	308

Repeatability (reference) 重复定位精度(参考值)	max. \pm 0.01mm (NEMA08/□20: max. \pm 0.02mm)
Lost Motion (reference) 空转(参考值)	max. 0.01mm (NEMA08/□20: max. 0.02mm)

※重复定位精度及空转值是安装在本公司标准滑台上时测得的值。实际值请咨询本公司。

※The reference value about Repeatability and Lost Motion represents when the DMB built into KSS original Stage. Please make a contact to KSS for actual value.

注1) 关于详细尺寸, 请参照P111页以后的规格图。

注2) 1脉冲的移动量为整步时的值。

注3) 请以50ms/kHz以上的加减速速率使用。

注4) 参考推力请参考P109、P110页的推力-速度线图。

Note1) Detail specifications & dimensions are shown in diagram from page P111.

Note2) Travel per pulse represents the value for full step.

Note3) Acceleration & Deceleration Rate should be 50ms/kHz or more.

Note4) For reference thrust, please refer to Force-speed diagram in page109 and page110.

●电机规格 / Motor Specification

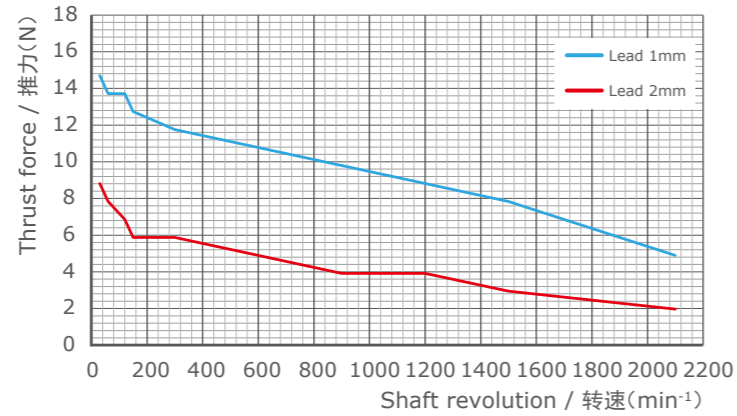
Motor size 电机尺寸	Motor model 电机型号	Rated Voltage 额定电压 (V)	Rated current 额定电流 (A/phase)	Winding resistance 绕组电阻 (Ω)	Holding Torque 保持扭矩 (Nm)	Rotor Inertia 转子惯量 (g·cm ²)	Motor length 电机总长 (mm)	Load limit in Vertical Position 许用轴向负载 (垂直) (N)
NEMA 08 (□20)	08E2004	DC3.5	0.4	8.8	0.003	2.4	(22)	43
	08E2105	DC2.6	0.5	5.1	0.0035	2.6	(29)	43
NEMA 11 (□28)	11E2110	DC2.1	1.0	2.1	0.036	f5mm : 6.7 f6mm : 7.2	(35)	150
	11E2216	DC2.4	1.6	1.5	0.052	f5mm : 11.5 f6mm : 12.0	(47)	150
NEMA 14 (□35)	14E2110	DC3.5	1.0	3.5	0.060	21	(36)	230
	14E2215	DC4.0	1.5	2.7	0.10	32	(48)	230
NEMA 17 (□42)	17E2115	DC2.8	1.5	1.85	0.18	36	(36)	230

注) 励磁方式为2相双极, 基本步进角为1.8°。

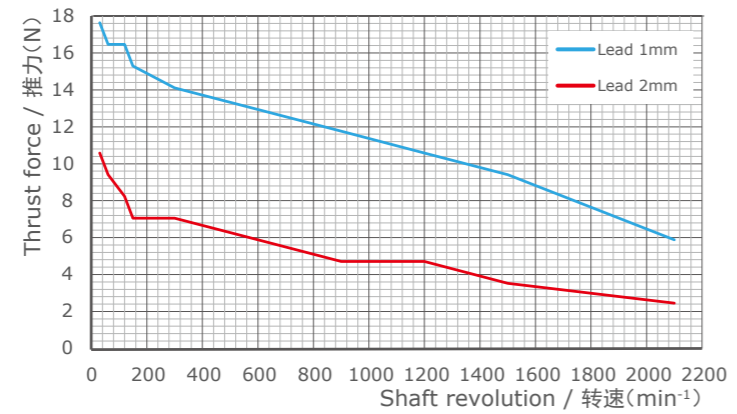
Note) Driving Method is 2-phase Bi-polar, Basic step angle is 1.8 degree.

● 推力-速度线图 / Force-speed diagram

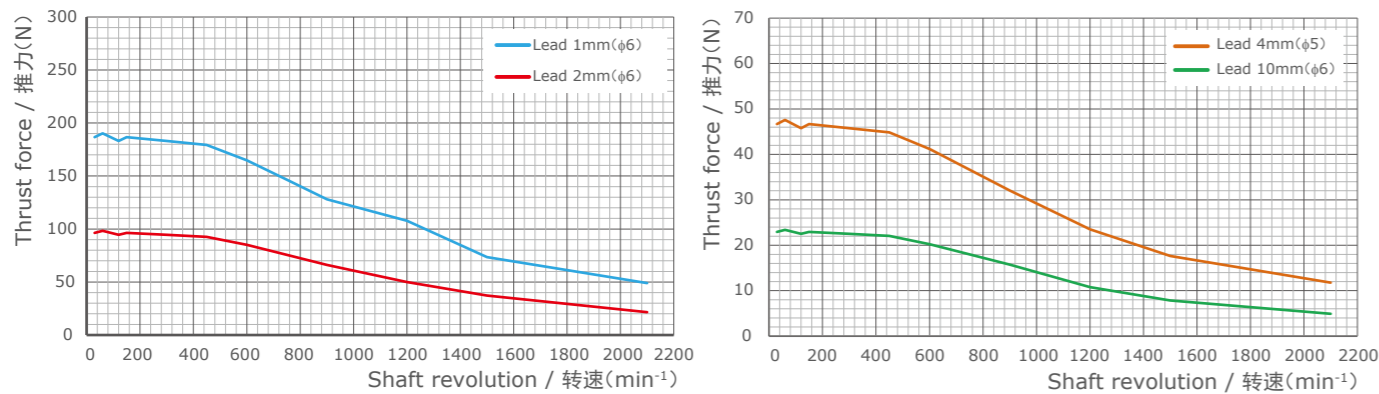
电机型号 / Motor model : 08E2004(□20)
 适用执行器 / Applicable Actuator : DMBR0401, DMBR0402



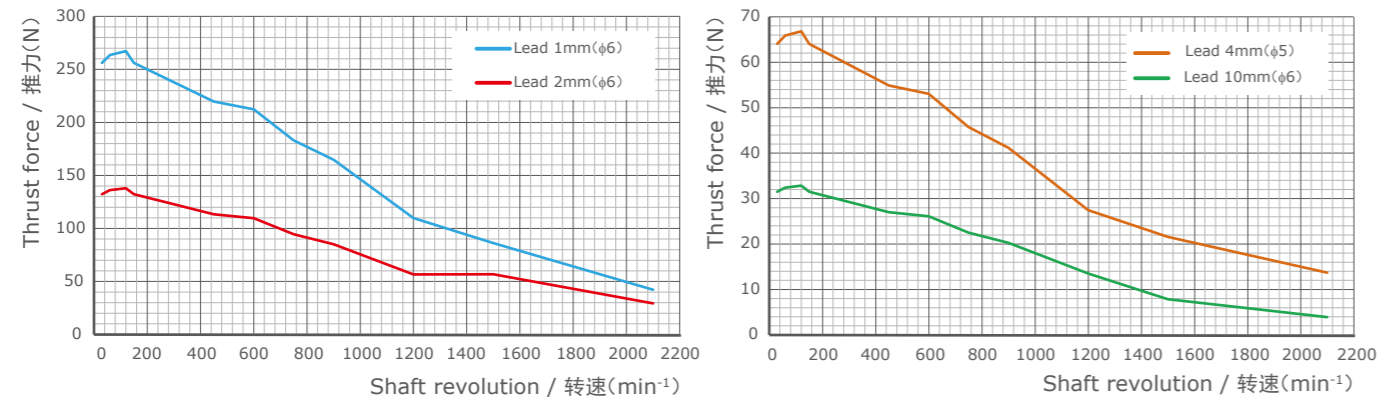
电机型号 / Motor model : 08E2105(□20)
 适用执行器 / Applicable Actuator : DMBR0401, DMBR0402



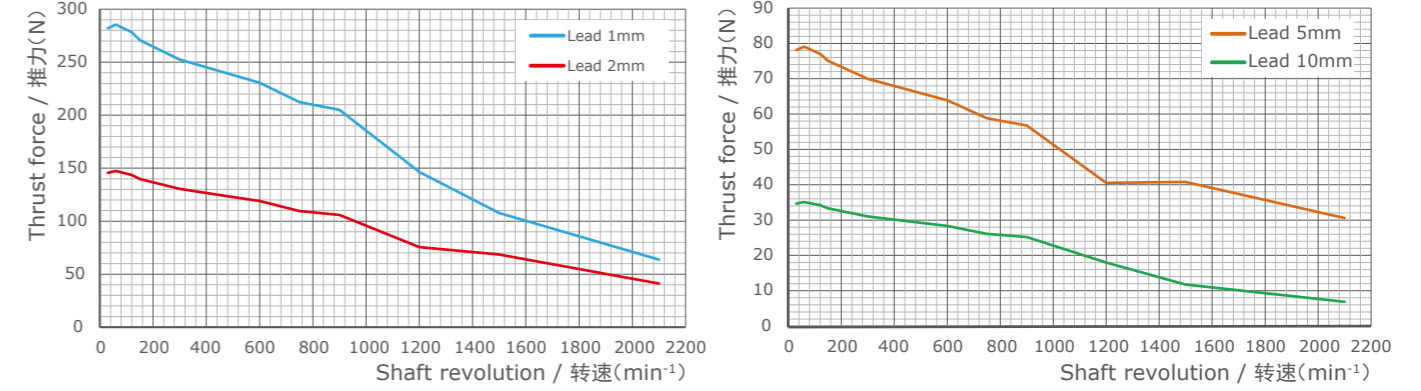
电机型号 / Motor model : 11E2110(□28)
 适用执行器 / Applicable Actuator : DMBR0504, DMBR0601, DMBR0602, DMBR0610



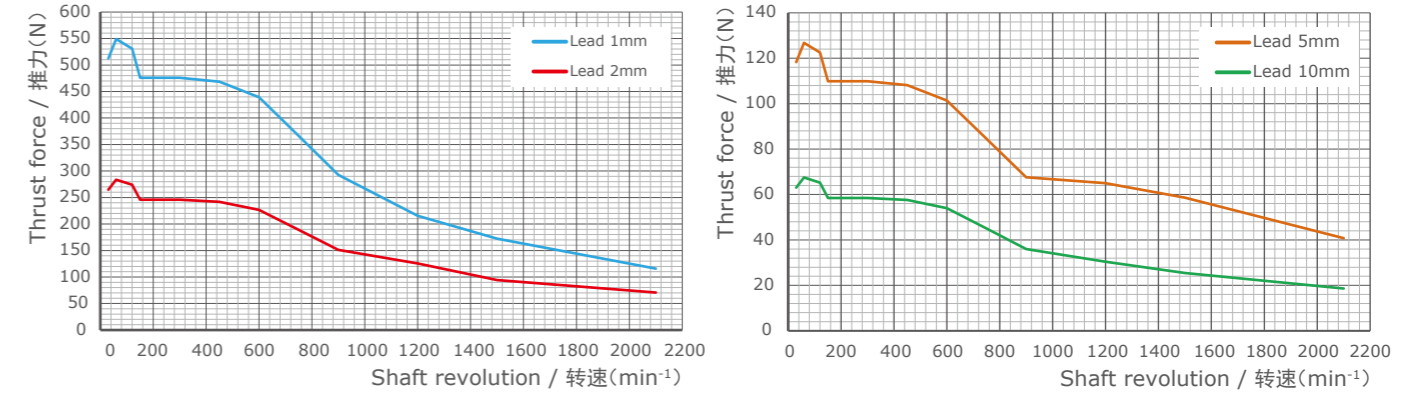
电机型号 / Motor model : 11E2216(□28)
 适用执行器 / Applicable Actuator : DMBR0504, DMBR0601, DMBR0602, DMBR0610



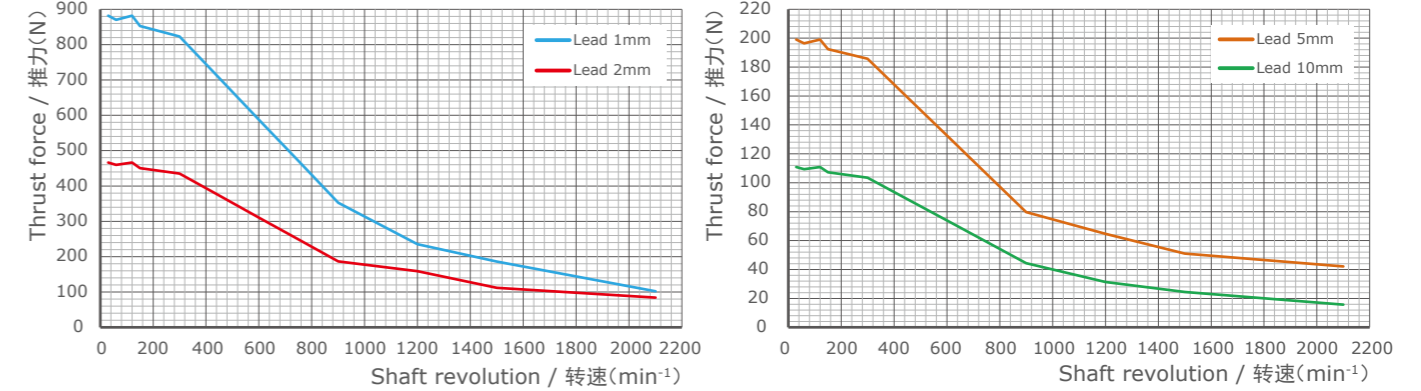
电机型号 / Motor model : 14E2110(□35)
 适用执行器 / Applicable Actuator : DMBR0801, DMBR0802, DMBR0805, DMBR0810



电机型号 / Motor model : 14E2215(□35)
 适用执行器 / Applicable Actuator : DMBR0801, DMBR0802, DMBR0805, DMBR0810



电机型号 / Motor model : 17E2115(□42)
 适用执行器 / Applicable Actuator : DMBR0801, DMBR0802, DMBR0805, DMBR0810



注) 推力-速度线图是试样的实测值。
 会因电机的个体差异而略有变化, 仅供参考。

Note) Force-speed diagrams above are measurement data of samples.
 It may vary depending on each motor's characteristic.
 Please consider these diagrams as reference data.

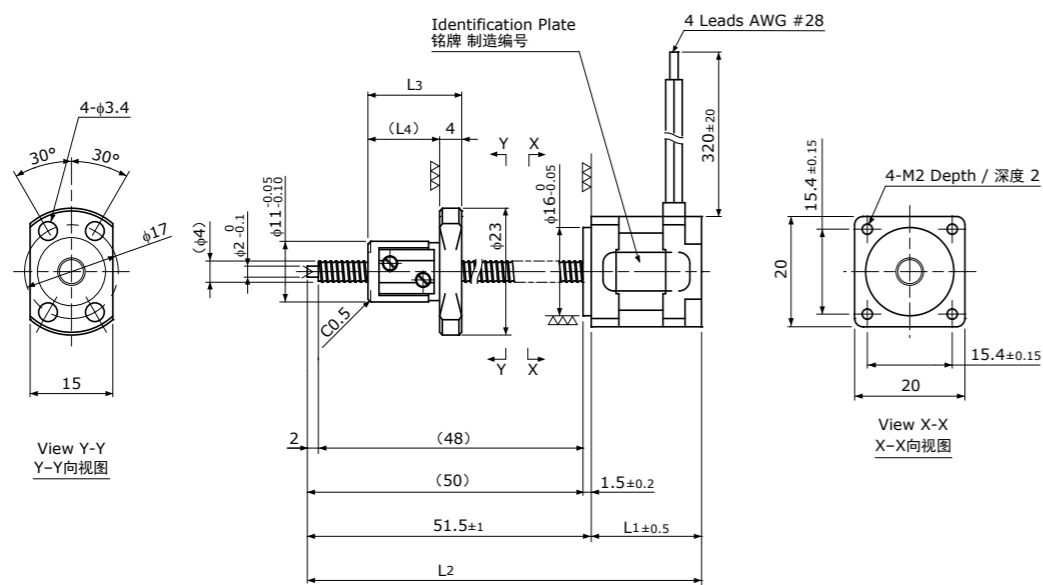
Standard style of DMB series
标准形状 DMB系列

Dimensions & Specifications
规格参数

冷轧滚珠丝杠+2相步进电机 / Rolled Ball Screw + 2-phase Stepping Motor

DMBR □20 / NEMA 08

Shaft dia.(轴径)f4



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	L1	L2	L3	L4	Mass 质量 (g)
DMBR0401-08E2004	1	23	20	71.5	17	13	52
DMBR0402-08E2004	2	21	20	71.5	19	15	52
DMBR0401-08E2105	1	23	27.2	78.7	17	13	62
DMBR0402-08E2105	2	21	27.2	78.7	19	15	62

Motor Wire / 电机线	
A	Red(红)
A	Red/White(红白)
B	Green(绿)
B	Green/White(绿白)

Recommended Drivers 推荐驱动器	SD4015B3
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Note) Refer to page P161 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P161页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	Max 0.03mm
Ball Screw material 滚珠丝杠材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC58
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Note) Please contact KSS if different journal profile or length from the above is required.
注) 若轴端形状、长度有所不同, 请垂询本公司。

Motor Specifications 电机参数		
Motor Model 电机种类	08E2004	08E2105
Basic step angle 基本步进角	1.8°	
Driving method 励磁方式	2-phase Bi-polar 2相双极方式	
Rated Voltage 额定电压	DC 3.5 V	DC 2.6 V
Rated current 额定电流	DC 0.4A/phase DC 0.4A/相	DC 0.5A/phase DC 0.5A/相
Winding resistance 绕组电阻	8.8Ω	5.1Ω
Holding Torque 保持扭矩	0.003Nm	0.0035Nm
Rotor inertia 转子惯量	2.4g·cm ²	2.6g·cm ²
Operating temperature 使用温度范围	-10°C~50°C	

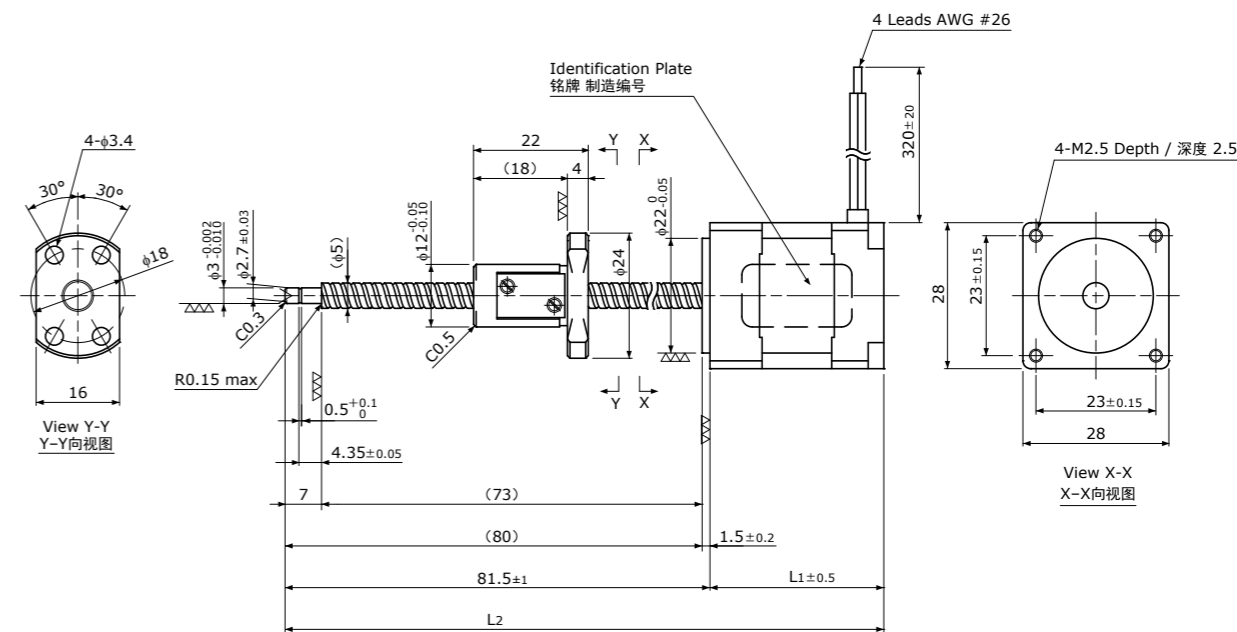
Standard style of DMB series
标准形状 DMB系列

Dimensions & Specifications
规格参数

冷轧滚珠丝杠+2相步进电机 / Rolled Ball Screw + 2-phase Stepping Motor

DMBR □28 / NEMA 11

Shaft dia.(轴径)f5



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	L1	L2	Mass 质量 (g)
DMBR0504-11E2110	4	39	33.35	114.85	140
DMBR0504-11E2216	4	39	45	126.5	194

Motor Wire / 电机线	
A	Red(红)
A	Red/White(红白)
B	Green(绿)
B	Green/White(绿白)

Recommended Drivers 推荐驱动器	SD4030B3
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Note) Refer to page P161 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P161页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	Max 0.03mm
Ball Screw material 滚珠丝杠材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC58
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Note) Please contact KSS if different journal profile or length from the above is required.
注) 若轴端形状、长度有所不同, 请垂询本公司。

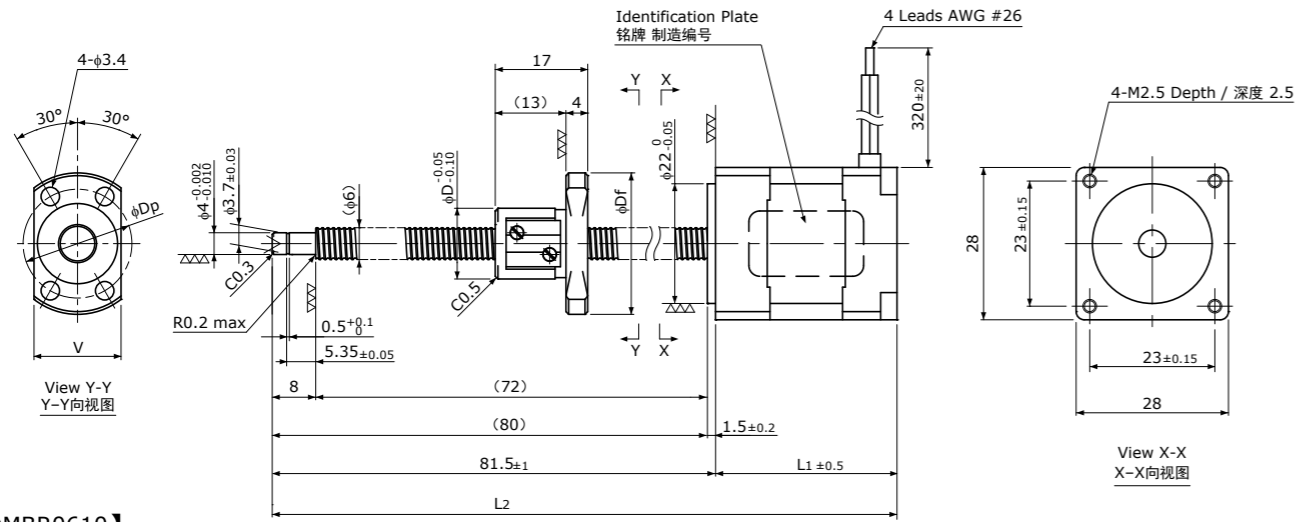
Motor Specifications 电机参数		
Motor Model 电机种类	11E2110	11E2216
Basic step angle 基本步进角	1.8°	
Driving method 励磁方式	2-phase Bi-polar 2相双极方式	
Rated Voltage 额定电压	DC 2.1 V	DC 2.4 V
Rated current 额定电流	DC 1.0A/phase DC 1.0A/相	DC 1.6A/phase DC 1.6A/相
Winding resistance 绕组电阻	2.1Ω	1.5Ω
Holding Torque 保持扭矩	0.036Nm	0.052Nm
Rotor inertia 转子惯量	6.7g·cm ²	11.5g·cm ²
Operating temperature 使用温度范围	-10°C~50°C	

冷轧滚珠丝杠+2相步进电机 / Rolled Ball Screw + 2-phase Stepping Motor

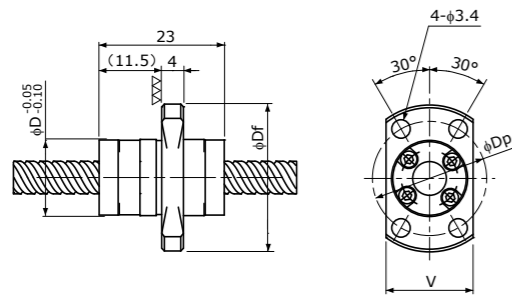
DMBR □28 / NEMA 11

Shaft dia.(轴径) $\phi 6$

【DMBR0601 / DMBR0602】



【DMBR0610】



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	L ₁	L ₂	D	D _f	V	D _p	Mass 质量 (g)
DMBR0601-11E2110	1	43	33.35	114.85	13	26	16	20	140
DMBR0602-11E2110	2	43	33.35	114.85	15	28	19	22	148
DMBR0610-11E2110	10	40	33.35	114.85	14	27	16	21	146
DMBR0601-11E2216	1	43	45	126.5	13	26	16	20	194
DMBR0602-11E2216	2	43	45	126.5	15	28	19	22	202
DMBR0610-11E2216	10	40	45	126.5	14	27	16	21	198

Motor Wire / 电机线	
A	Red(红)
A	Red/White(红白)
B	Green(绿)
B	Green/White(绿白)

Recommended Drivers
推荐驱动器

SD4030B3

Note) Refer to page P161 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P161页。

Ball Screw Specifications 滚珠丝杠主要技术参数

Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	Max 0.03mm
Ball Screw material 滚珠丝杠材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC58
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Note) Please contact KSS if different journal profile or length from the above is required.

注) 若轴端形状、长度有所不同, 请垂询本公司。

Motor Specifications 电机参数

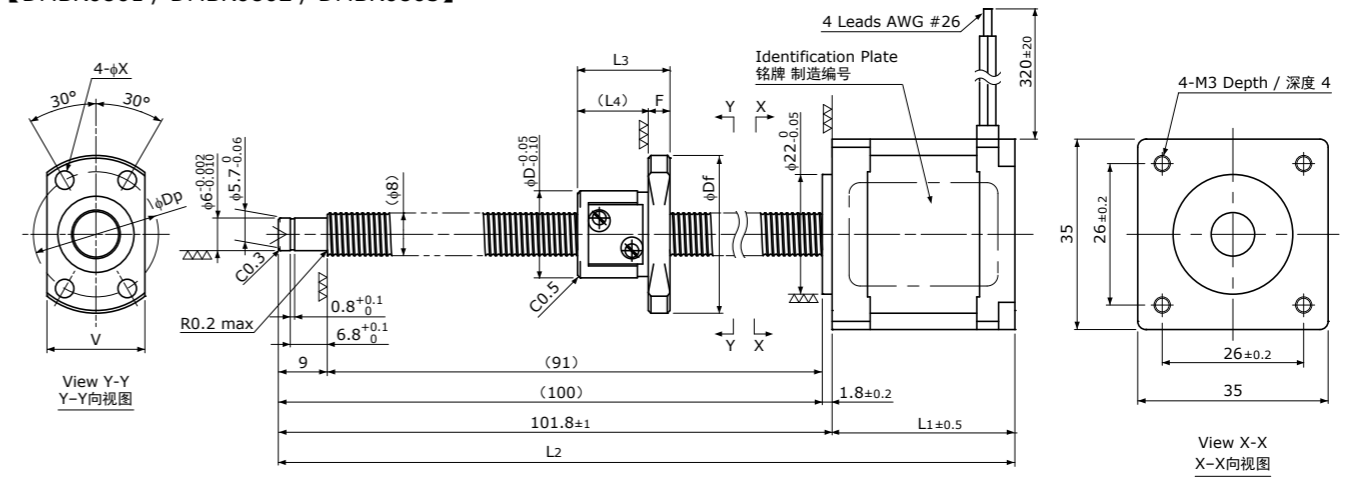
Motor Model 电机种类	11E2110	11E2216
Basic step angle 基本步角	1.8°	
Driving method 励磁方式	2-phase Bi-polar 2相双极方式	
Rated Voltage 额定电压	DC 2.1 V	DC 2.4 V
Rated current 额定电流	DC 1.0A/phase DC 1.0A/相	DC 1.6A/phase DC 1.6A/相
Winding resistance 绕组电阻	2.1Ω	1.5Ω
Holding Torque 保持扭矩	0.036Nm	0.052Nm
Rotor inertia 转子惯量	7.2g·cm ²	12.0g·cm ²
Operating temperature 使用温度范围	-10°C~50°C	

冷轧滚珠丝杠+2相步进电机 / Rolled Ball Screw + 2-phase Stepping Motor

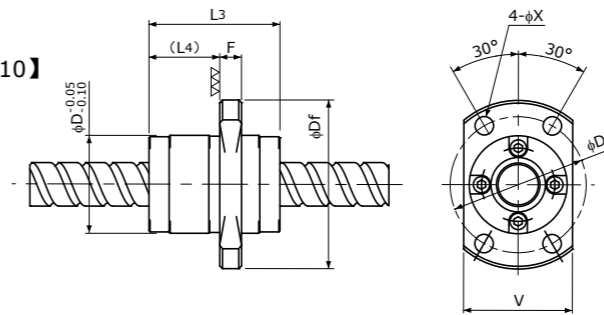
DMBR □35 / NEMA 14

Shaft dia.(轴径) $\phi 8$

【DMBR0801 / DMBR0802 / DMBR0805】



【DMBR0810】



Motor Wire / 电机线	
A	Red(红)
A	Red/White(红白)
B	Green(绿)
B	Green/White(绿白)

Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	L ₁	L ₂	L ₃	L ₄	D	D _f	F	V	D _p	X	Mass 质量 (g)
DMBR0801-14E2110	1	58	33.6	135.4	17	13	16	29	4	18	23	3.4	212
DMBR0802-14E2110	2	50	33.6	135.4	24	19	20	37	5	22	29	4.5	240
DMBR0805-14E2110	5	47	33.6	135.4	28	24	18	31	4	20	25	3.4	234
DMBR0810-14E2110	10	54	33.6	135.4	24	13	18	31	4	20	25	3.4	226
DMBR0801-14E2215	1	58	45.6	147.4	17	13	16	29	4	18	23	3.4	292
DMBR0802-14E2215	2	50	45.6	147.4	24	19	20	37	5	22	29	4.5	320
DMBR0805-14E2215	5	47	45.6	147.4	28	24	18	31	4	20	25	3.4	314
DMBR0810-14E2215	10	54	45.6	147.4	24	13	18	31	4	20	25	3.4	304

Recommended Drivers
推荐驱动器

SD4030B3

Note) Refer to page P161 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P161页。

Ball Screw Specifications 滚珠丝杠主要技术参数

Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	Max 0.03mm
Ball Screw material 滚珠丝杠材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC58
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Note) Please contact KSS if different journal profile or length from the above is required.

注) 若轴端形状、长度有所不同, 请垂询本公司。

Motor Specifications 电机参数

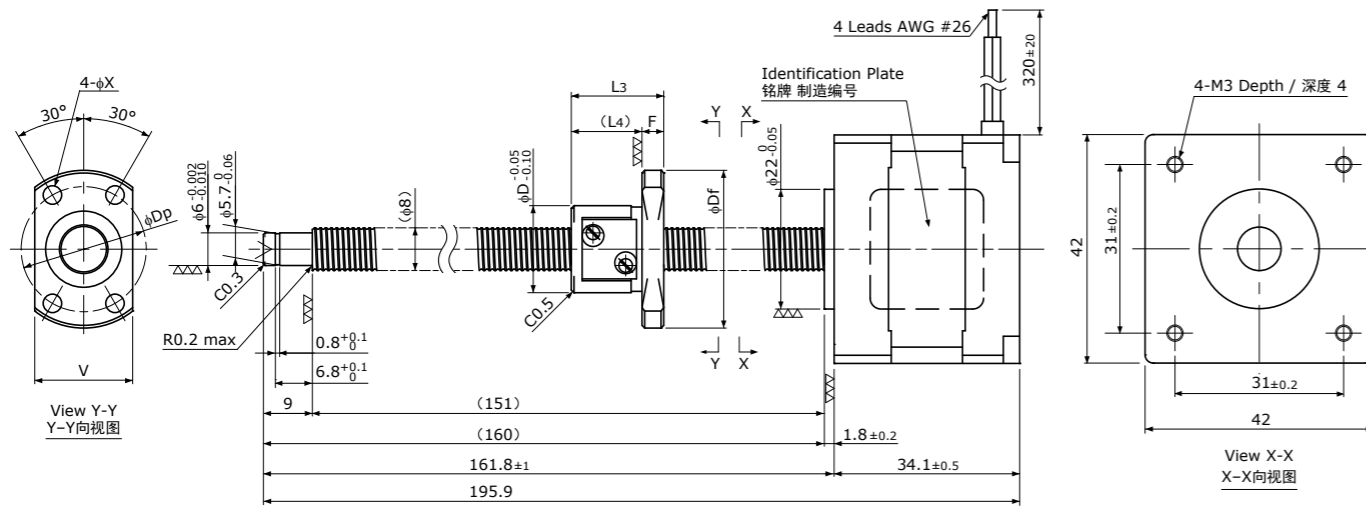
Motor Model 电机种类	14E2110	14E2215
Basic step angle 基本步角	1.8°	
Driving method 励磁方式	2-phase Bi-polar 2相双极方式	
Rated Voltage 额定电压	DC 3.5 V	DC 4.0 V
Rated current 额定电流	DC 1.0A/phase DC 1.0A/相	DC 1.5A/phase DC 1.5A/相
Winding resistance 绕组电阻	3.5Ω	2.7Ω
Holding Torque 保持扭矩	0.060Nm	0.10Nm
Rotor inertia 转子惯量	21.0g·cm ²	32.0g·cm ²
Operating temperature 使用温度范围	-10°C~50°C	

冷轧滚珠丝杠+2相步进电机 / Rolled Ball Screw + 2-phase Stepping Motor

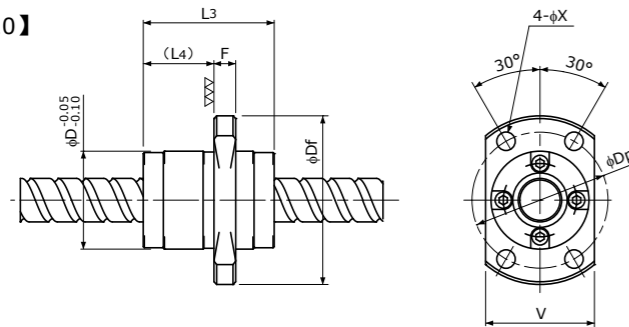
DMBR □42 / NEMA 17

Shaft dia.(轴径)f8

【DMBR0801 / DMBR0802 / DMBR0805】



【DMBR0810】



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	L ₃	L ₄	D	D _f	F	V	D _p	X	Mass 质量 (g)	Motor Wire / 电机线
DMBR0801-17E2115	1	118	17	13	16	29	4	18	23	3.4	298	A Red(红)
DMBR0802-17E2115	2	110	24	19	20	37	5	22	29	4.5	322	A Red/White(红白)
DMBR0805-17E2115	5	107	28	24	18	31	4	20	25	3.4	318	B Green(绿)
DMBR0810-17E2115	10	114	24	13	18	31	4	20	25	3.4	308	B Green/White(绿白)

Recommended Drivers
推荐驱动器

SD4030B3

Note) Refer to page P161 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P161页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	Max 0.03mm
Ball Screw material 滚珠丝杠材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺紋部表面硬度	Min. HRC58
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Note) Please contact KSS if different journal profile or length from the above is required.

注) 若轴端形状、长度有所不同, 请垂询本公司。

Motor Specifications 电机参数	
Motor Model 电机种类	17E2115
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.8 V
Rated current 额定电流	DC 1.5A/phase DC 1.5A/相
Winding resistance 绕组电阻	1.85Ω
Holding Torque 保持扭矩	0.18Nm
Rotor inertia 转子惯量	36.0g·cm ²
Operating temperature 使用温度范围	-10°C~50°C

2TMB系列(冷轧滚珠丝杠 + 2相步进电机) **MoBo**

2TMB Series (Rolled Ball Screw + 2 Phase Stepping Motor)

●特点

- 是将2相步进电机直接组装到精密等级为Ct7的冷轧滚珠丝杠轴端上的产品,外形紧凑、通用性强。
- 具有将滚珠丝杠轴心作为电机旋转轴心的理想结构。
- 直连结构省去了联轴器的使用,在缩短长边方向尺寸的同时,还能减少作业工时。
- 还备有推荐的2相步进电机用驱动器。
- 通过轴端的追加加工,可灵活应对多种行程。
- 采用专用支架组件,可实现支撑侧的稳定安装。



●Features

- A 2-phase Stepping Motor is mounted directly onto the shaft end of a Ct7 grade Rolled Ball Screw, which means compact and multipurpose type product.
- Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, and reducing labor cost can be achieved.
- Recommended Driver for 2-phase Stepping Motor is available.
- Flexible length can be provided by the end journal turning.
- Stable mounting is secured by the exclusive Support Unit.

●基本规格 / Specifications

Model 型号	Shaft Nominal Dia. 丝杠轴公称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pulse 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 质量 (g)
2TMB0801	f8	1	150	5	75	350
2TMB0802	f8	2	150	10	100	400
2TMB0805	f8	5	150	25	50	400
2TMB0812	f8	12	150	60	25	400

Repeatability(reference) 重复定位精度(参考值)	max. $\pm 0.01\text{mm}$
Lost Motion(reference) 空转(参考值)	max. 0.01mm

※重复定位精度及空转值是安装在
本公司标准滑台上时测得的值。
实际值请洽询本公司。

※The reference value about Repeatability and Lost Motion
represents when the 2TMB built into KSS original Stage.
Please make a contact to KSS for actual value.

注1) 关于详细尺寸,请参照P120页以后的规格图。

注2) 1脉冲的移动量为整步时的值。

注3) 加减速速率的参考值为50ms/kHz以上。

注4) 参考推力根据不同条件会有很大变化,请垂询本公司。

Note1) Detail specifications & dimensions are shown in drawings from page P120.

Note2) Travel per pulse represents the value for full step.

Note3) Acceleration & Deceleration Rate should be 50ms/kHz or more.

Note4) Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

●电机规格 / Motor Specifications

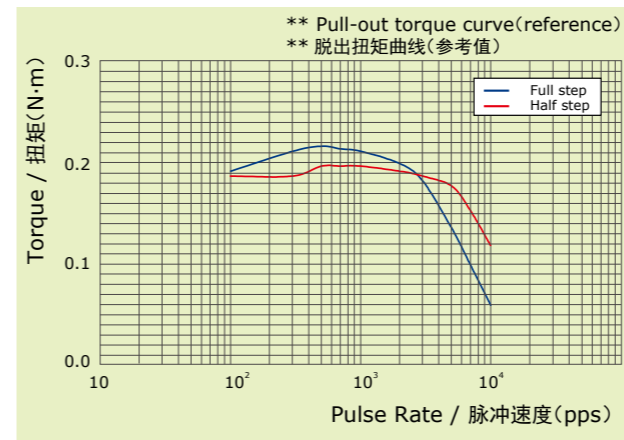
Model 型号	Motor size 电机尺寸	Rated voltage 额定电压 (V)	Rated current 额定电流 (A/phase) (A/相)	Winding resistance 绕组电阻 (Ω)	Holding torque 保持扭矩 (Nm)	Rotor Inertia 转子惯量 ($\text{g} \cdot \text{cm}^2$)	Load limit in Vertical Position 许用轴向负载 (垂直) (N)
2TMB0801	NEMA 17 (□42)	DC 2.2	2.0	1.1	0.24	42	300
2TMB0802	NEMA 17 (□42)	DC 2.2	2.0	1.1	0.24	42	300
2TMB0805	NEMA 17 (□42)	DC 2.2	2.0	1.1	0.24	42	300
2TMB0812	NEMA 17 (□42)	DC 2.2	2.0	1.1	0.24	42	300

Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Basic step angle 基本步进角	1.8°

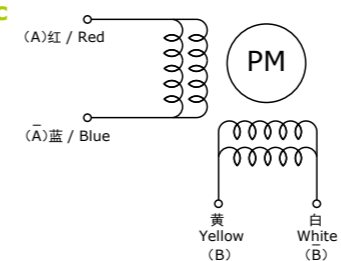
注) 转子惯量为包含滚珠丝杠轴的值。

Note) Rotor Inertia includes Ball Screw Shaft.

●电机特性 / Motor Characteristic



●接线图 / Schematic



■Test condition / 测试条件

Driver / 驱动器 : Maker Standard / 制造商标准机
Input Voltage / 电源电压 : DC24V
Phase Currnt / 设定电流 : 2.0A

注) 电机特性因驱动器、运行条件而异。

Note) Motor characteristic will vary depending on
Driver type, operating conditions.

按以下励磁顺序,从输出轴侧看到的CW旋转
Switching sequence for CW rotation viewed from shaft end.

STEP	红/Red (A)	黄/Yellow (B)	蓝/Blue (A)	白/White (B)
0	+	+	-	-
1	-	+	+	-
2	-	-	+	+
3	+	-	-	+
0	+	+	-	-

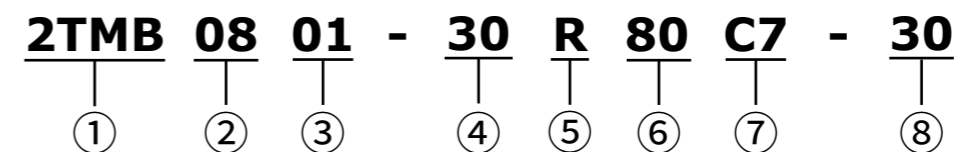
●公称型号 / Model number notation

定制品的公称型号如下所示。

产品目录标准形状品为产品目录记载(P120页)的型号。

Model number notation for customized 2TMB series is as follows.

In case of standard style, model number is described in catalogue in page P120.



①系列符号

2TMB : 冷轧滚珠丝杠+2相步进电机

②丝杠轴公称外径(mm)

③导程(mm)

01表示1mm

④螺纹部长度(mm)

L₁ : 参照下图

⑤螺纹旋向(R=右旋)

⑥丝杠轴总长(mm)

L₂ : 参照下图

⑦精度等级

⑧轴向间隙(μm)

①Series No.

2TMB : Rolled Ball Screw+2-phase Stepping Motor

②Screw Shaft nominal diameter(mm)

③Lead(mm)

01 means 1mm

④Screw thread length(mm)

L₁ : See below

⑤Thread direction(R=Right-hand)

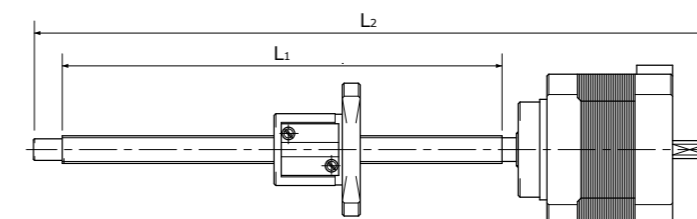
⑥Screw Shaft total length(mm)

L₂ : See below

⑦Accuracy grade

⑧Axial play(μm)

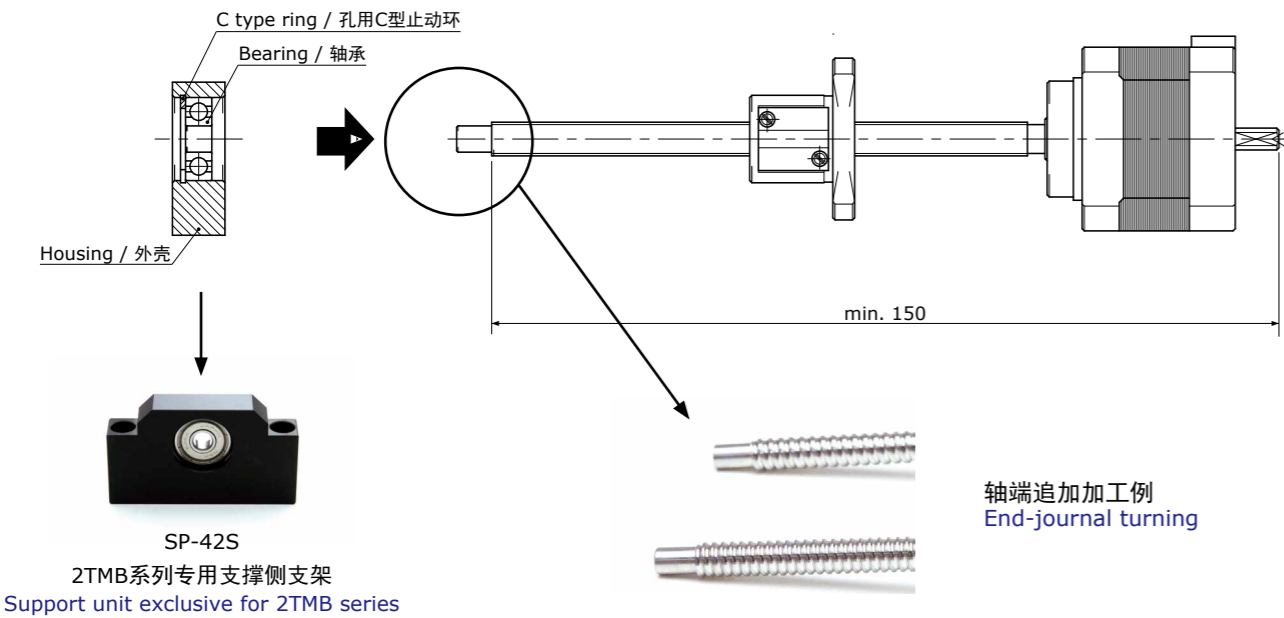
【④⑥丝杠长度定义 / Definition of Screw length】



●轴端的追加加工和专用支架组件 / End-journal turning & Exclusive Support Unit

KSS 2TMB系列备有标准库存品,但为了满足各种行程(总长)的需求,可对轴端进行追加加工。追加加工包括裁切及轴承支撑形状的加工(照片)。对轴承支撑形状进行追加加工时,不加工止动环槽。此时请通过孔用止动环进行轴承支撑。KSS备有使用了孔用止动环的专用支架组件,欢迎选购。

All of 2TMB series are in stock. In order to meet the request of flexible length, Shaft end journal turning is available. Please note that re-work is only for cutting and turning down(see photo below). KSS does not process Ring groove machining on the end of Shaft. Exclusive Support Unit with Brg. & Retaining ring for hole is provided by KSS.



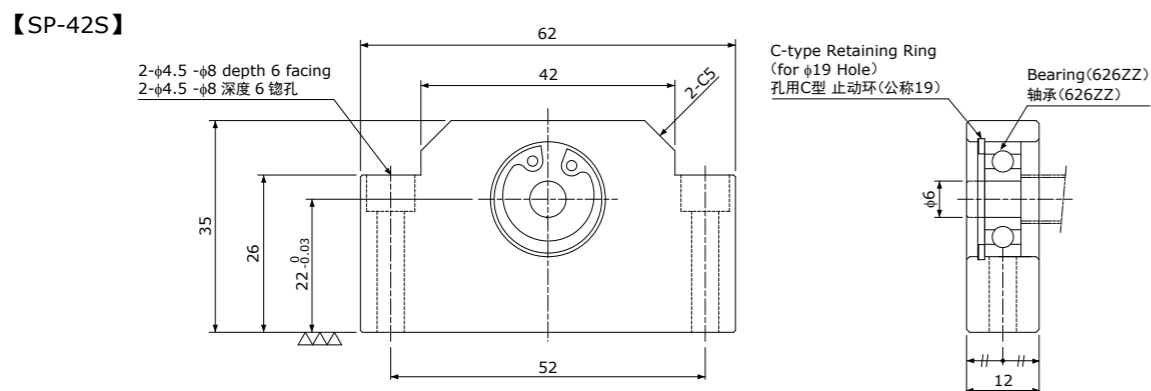
可进行追加加工的长度为自轴端起150mm(追加加工部除外)。长度短于150mm时,单侧可作为自由端使用。需要带止动环槽的支撑形状、以及短于150mm(追加加工部除外)的支撑侧形状时,本公司提供定制服务。

Please note that minimum re-work length is 150mm (except re-work portion) as shown in figure above. Total length shorter than 150mm (except re-work portion) should be used as cantilever.

If supported journal with ring groove or total length of less than 150mm is required, it will be available as a customized order.

关于专用支架组件(SP-42S)的形状及尺寸,请参照下图。如需特殊的专用支架组件,请垂询本公司。

Regarding the profile and dimension of KSS Exclusive Support Unit (SP-42S) for 2TMB series, please see below. Special profile of Support Unit is required, please ask KSS representative.



Standard products in stock 2TMB series 标准库存品 2TMB系列

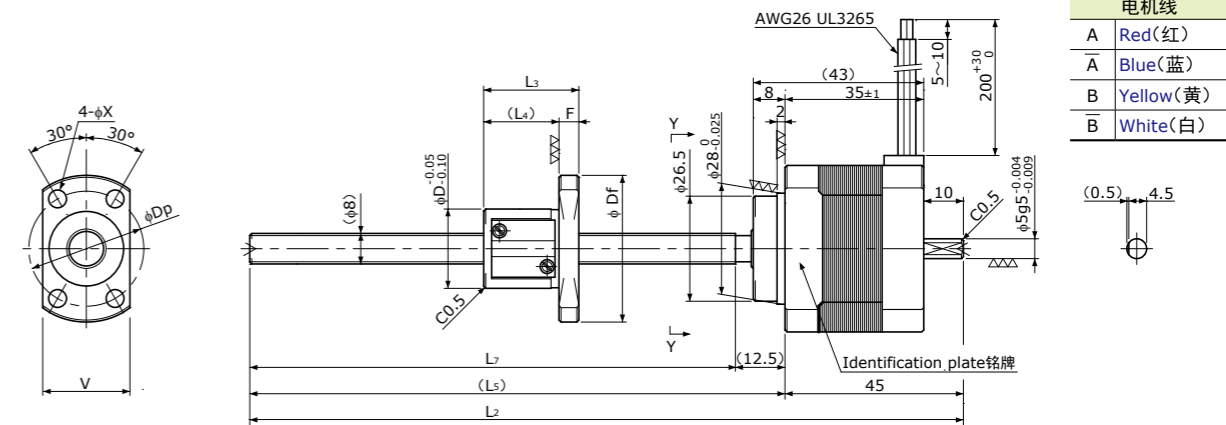
Dimensions & Specifications
规格参数

冷轧滚珠丝杠+2相步进电机 / Rolled Ball Screw + 2-Phase Stepping Motor

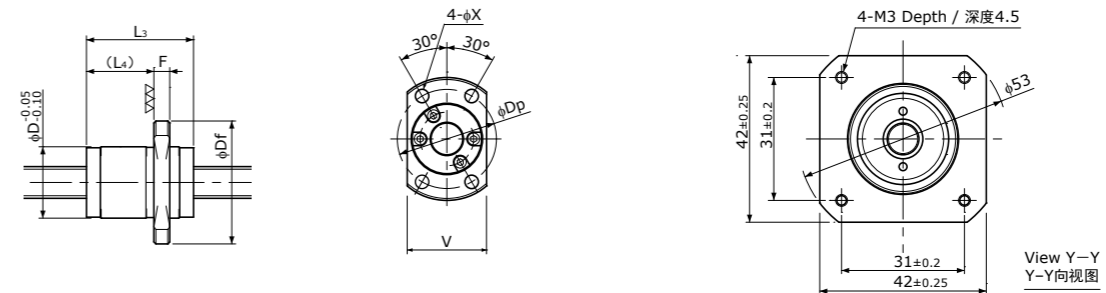
2TMB □42 / NEMA 17

Shaft dia.(轴径)φ8

【2TMB0801 / 2TMB0802 / 2TMB0805】



【2TMB0812】



Motor Wire / 电机线	
A	Red(红)
A	Blue(蓝)
B	Yellow(黄)
B	White(白)

(0.5)	4.5
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Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	L ₂	L ₅	L ₇	D	D _f	F	L ₃	L ₄	V	D _p	X	Mass 质量 (g)
2TMB0801	1	150	75	240	195	182.5	16	29	4	17	13	18	23	3.4	350
2TMB0802	2	150	100	250	205	192.5	20	37	5	24	19	22	29	4.5	400
2TMB0805	5	150	50	250	205	192.5	18	31	4	28	24	20	25	3.4	400
2TMB0812	12	150	25	250	205	192.5	18	31	4	27	17	20	25	3.4	400

Recommended Drivers
推荐驱动器

SD4030B3

Note) Refer to page P162 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线,请参照P162页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	Equivalent to JIS Ct7 相当于Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.03mm or less 0.03mm以下
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Note) Please refer to page P119 for about end-journal turning.
注) 关于追加加工,请参照P119页。

Motor Specifications 电机参数	
Basic step angle 基本步角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0 A/phase DC 2.0 A/相
Winding resistance 绕组电阻	1.1 Ω
Holding Torque 保持扭矩	0.24 Nm
Rotor inertia 转子惯量	42 g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

TMB系列(冷轧滚珠丝杠 + 5相步进电机)

TMB Series (Rolled Ball Screw + 5 Phase Stepping Motor)

MoBo

●特点

- 是将5相步进电机直接组装到精密等级为Ct7的冷轧滚珠丝杠轴端上的产品, 一般定位性能优异。
- 具有将滚珠丝杠轴心作为电机旋转轴心的理想结构。
- 直连结构省去了联轴器的使用, 在缩短长边方向尺寸的同时, 还能减少作业工时。
- 还备有推荐的5相步进电机用驱动器。



●Features

- A 5-phase Stepping Motor is mounted directly onto the shaft end of a Ct7 grade Rolled Ball Screw, which is all-round performance drive unit.
- Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, and reducing labor cost can be achieved.
- Recommended Driver for 5-phase Stepping Motor is available.

●基本规格 / Specifications

Model 型号	Shaft Nominal Dia. 丝杠轴公称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pules 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 质量 (g)
TMB0401	f4	1	30	2	50	100
TMB0504	f5	4	75	8	25	180
TMB0601	f6	1	75	2	100	180
TMB0602	f6	2	75	4	50	180
TMB0606	f6	6	75	12	15	180
TMB0801	f8	1	150	2	300	320
TMB0802	f8	2	150	4	150	320
TMB0805	f8	5	150	10	120	450
TMB0812	f8	12	150	24	50	450

Repeatability(reference) 重复定位精度(参考值)	max. $\pm 0.01\text{mm}$
Lost Motion(reference) 空转(参考值)	max. 0.01mm

※重复定位精度及空转值是安装在
本公司标准滑台上时测得的价值。
实际值请洽询本公司。

※The reference value about Repeatability and Lost Motion
represents when the TMB built into KSS original Stage.
Please make a contact to KSS for actual value.

注1) 关于详细尺寸, 请参照P124页以后的规格图。

注2) 1脉冲的移动量为整步时的值。

注3) 加减速速率的参考值为20ms/kHz以上。

注4) 参考推力根据不同条件会有很大变化, 请垂询本公司。

Note 1) Detail specifications & dimensions are shown in drawings from page P124.

Note 2) Travel per pulse represents the value for full step.

Note 3) Acceleration & Deceleration Rate should be 20ms/kHz or more.

Note 4) Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

●电机规格 / Motor Specifications

Model 型号	Motor size 电机尺寸 (mm)	Rated voltage 额定电压 (V)	Rated current 额定电流 (A/phase) (A/相)	Winding resistance 绕组电阻 (Ω)	Holding torque 保持扭矩 (Nm)	Rotor Inertia 转子惯量 ($\text{g}\cdot\text{cm}^2$)	Load limit in Vertical Position 许用轴向负载 (垂直) (N)
TMB0401	NEMA 10 ($\square 24$)	DC 0.83	0.75	1.1	0.018	4.2	230
TMB0504	NEMA 10 ($\square 24$)	DC 1.28	0.75	1.7	0.028	8.3	230
TMB0601	NEMA 10 ($\square 24$)	DC 1.28	0.75	1.7	0.028	8.8	230
TMB0602	NEMA 10 ($\square 24$)	DC 1.28	0.75	1.7	0.028	8.7	230
TMB0606	NEMA 10 ($\square 24$)	DC 1.28	0.75	1.7	0.028	8.8	230
TMB0801	NEMA 17 ($\square 42$)	DC 1.28	0.75	1.7	0.128	40	300
TMB0802	NEMA 17 ($\square 42$)	DC 1.28	0.75	1.7	0.128	40	300
TMB0805	NEMA 17 ($\square 42$)	DC 1.65	0.75	2.2	0.236	74	300
TMB0812	NEMA 17 ($\square 42$)	DC 1.65	0.75	2.2	0.236	74	300

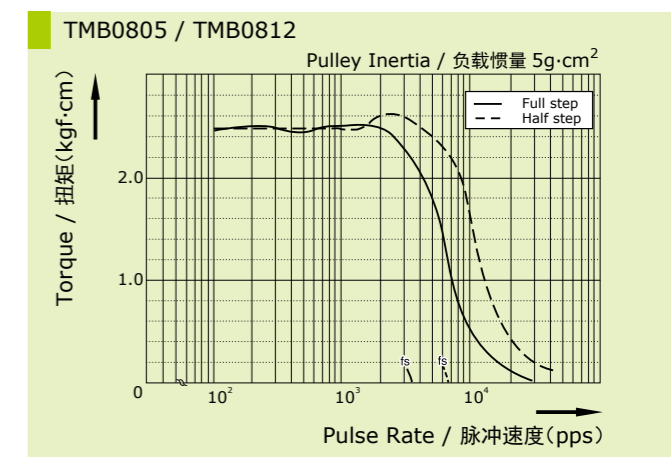
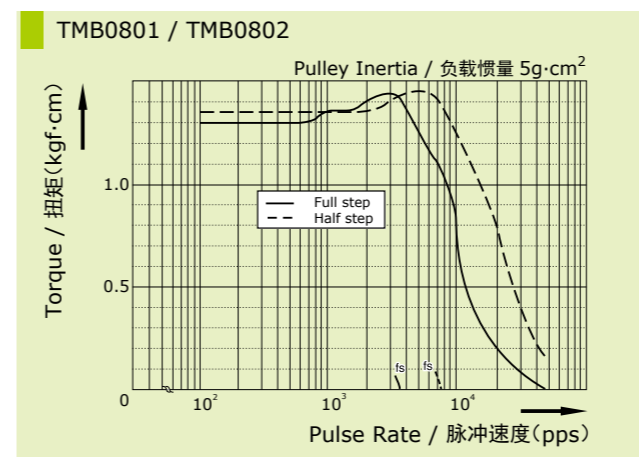
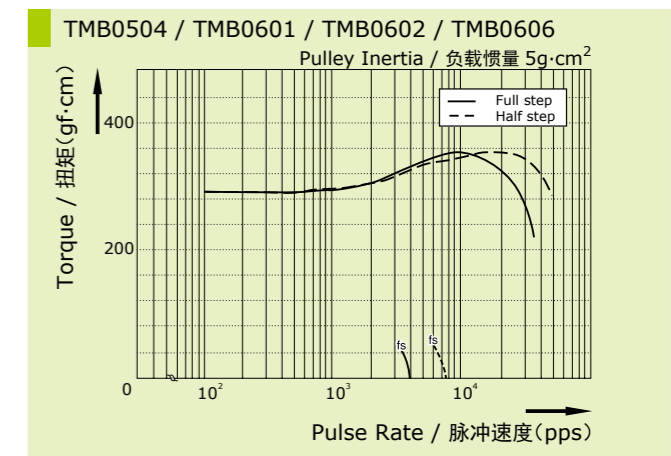
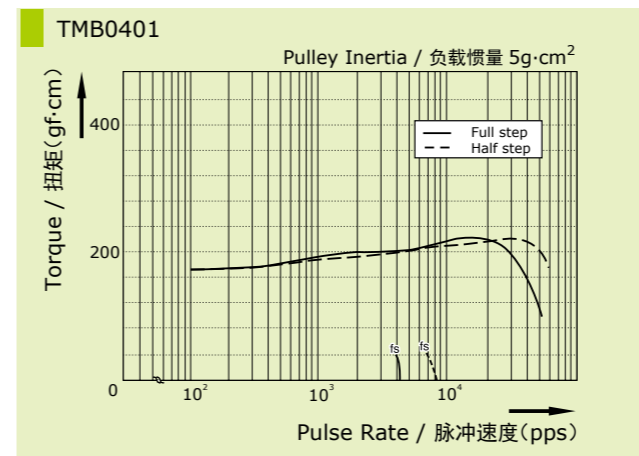
注1) 基本步进角为 0.72° 。

注2) 转子惯量为包含滚珠丝杠轴的值。

Note 1) Basic step angle is 0.72°

Note 2) Rotor Inertia includes Ball Screw Shaft.

●电机特性 / Motor Characteristic



■Test condition / 测试条件

Driver / 驱动器 : Maker Standard / 制造商标准机

Input Voltage / 电源电压 : DC24V

Phase Currnt / 设定电流 : 0.75A

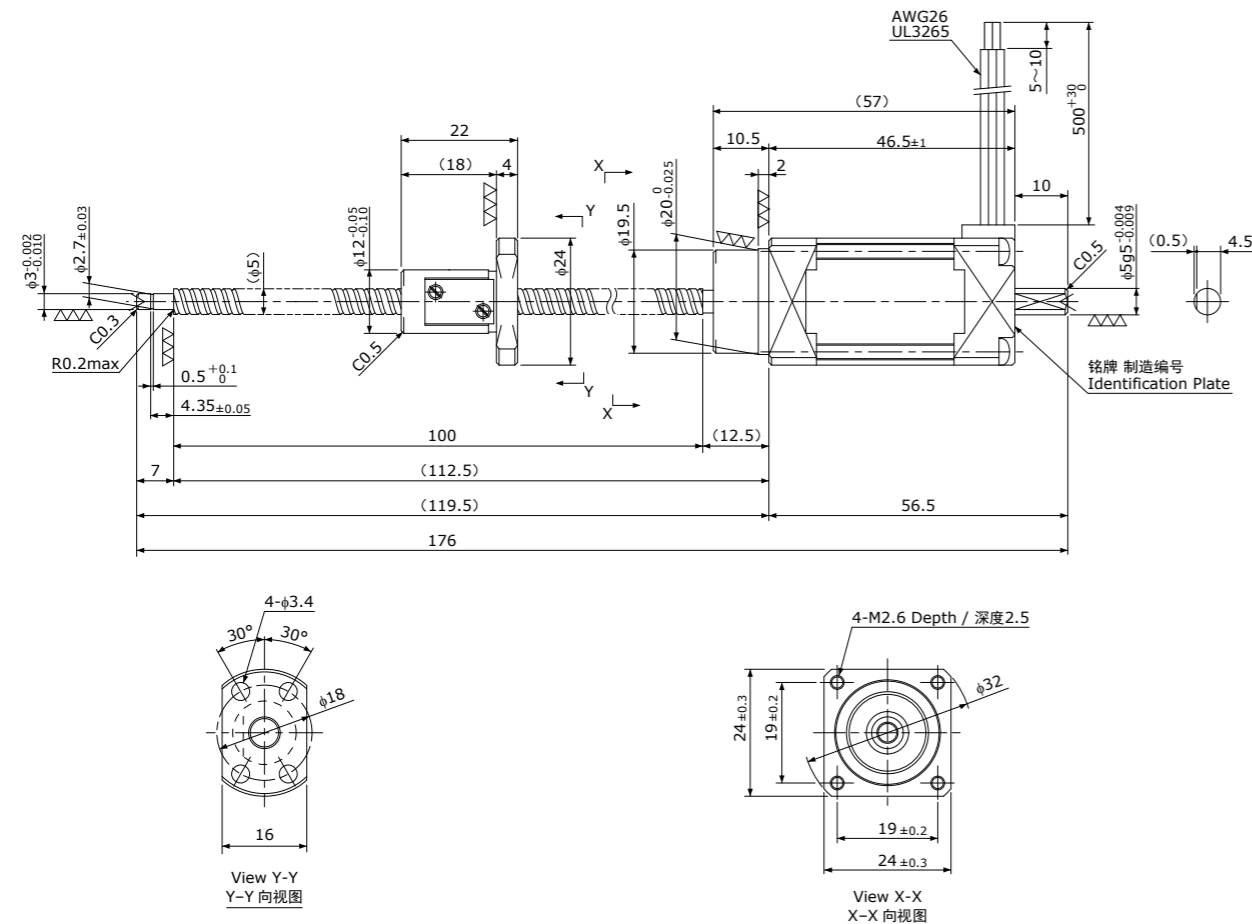
注) 电机特性因驱动器、运行条件而异。

Note) Motor characteristic will vary depending on
Driver type, operating conditions.

Standard products in stock TMB series
标准库存品 TMB系列Dimensions & Specifications
规格参数

冷轧滚珠丝杠+5相步进电机 / Rolled Ball Screw + 5-Phase Stepping Motor

TMB □24 / NEMA 10

Shaft dia.(轴径) $\phi 5$ 

Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	Mass 质量 (g)
TMB0504	4	75	25	180

Recommended Drivers 推荐驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100~220V)
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Note) Refer to page P162 or P163 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P162或P163页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	DC 0.75 A/phase DC 0.75 A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	8.3g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

Note) Only shaft end cutting is available.
Other than that, it would be customized order.
注) 只能裁切轴端。
其他轴端形状为定制产品。

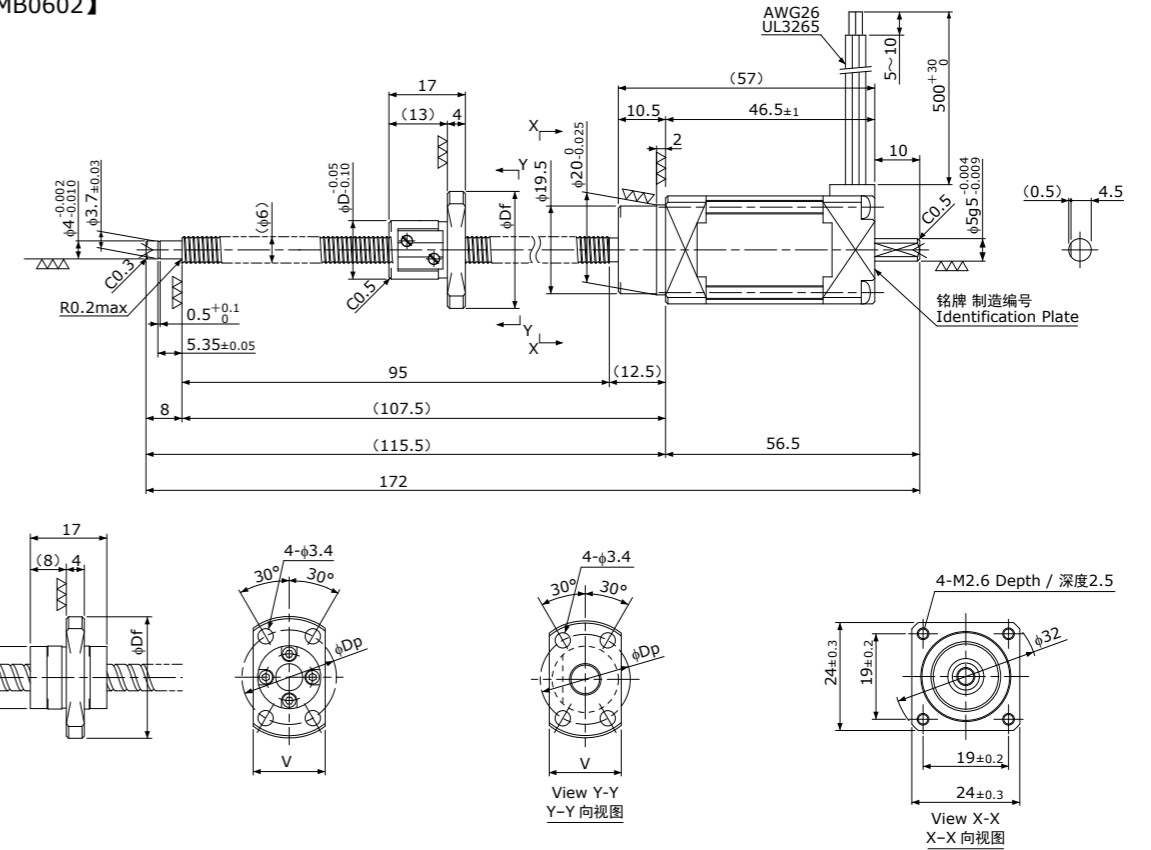
Standard products in stock TMB series
标准库存品 TMB系列Dimensions & Specifications
规格参数

冷轧滚珠丝杠+5相步进电机 / Rolled Ball Screw + 5-Phase Stepping Motor

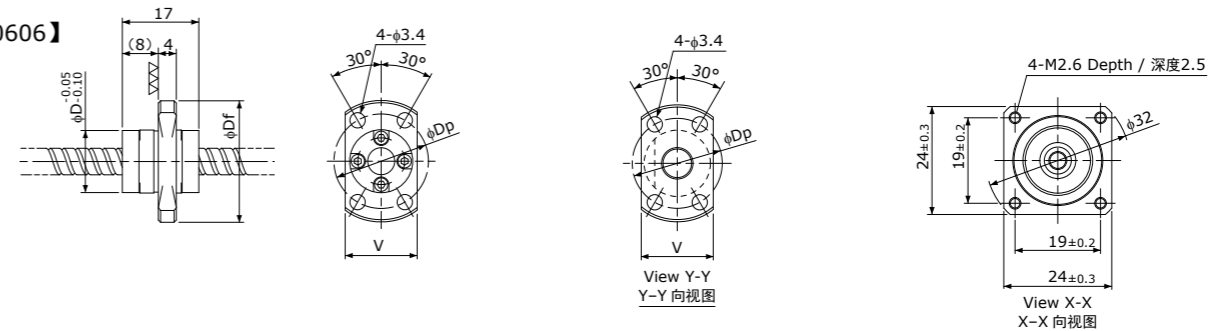
TMB □24 / NEMA 10

Shaft dia.(轴径) $\phi 6$

【TMB0601 / TMB0602】



【TMB0606】



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	D	Df	V	Dp	Mass 质量 (g)
TMB0601	1	75	100	13	26	16	20	180
TMB0602	2	75	50	15	28	19	22	180
TMB0606	6	75	15	14	27	16	21	180

Recommended Drivers 推荐驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100~220V)
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Note) Refer to page P162 or P163 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P162或P163页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	DC 0.75 A/phase DC 0.75 A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	TMB0601、TMB0606: 8.8g·cm ² TMB0602: 8.7g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

Note) Only shaft end cutting is available.
Other than that, it would be customized order.
注) 只能裁切轴端。
其他轴端形状为定制产品。

Standard products in stock TMB series
标准库存品 TMB系列

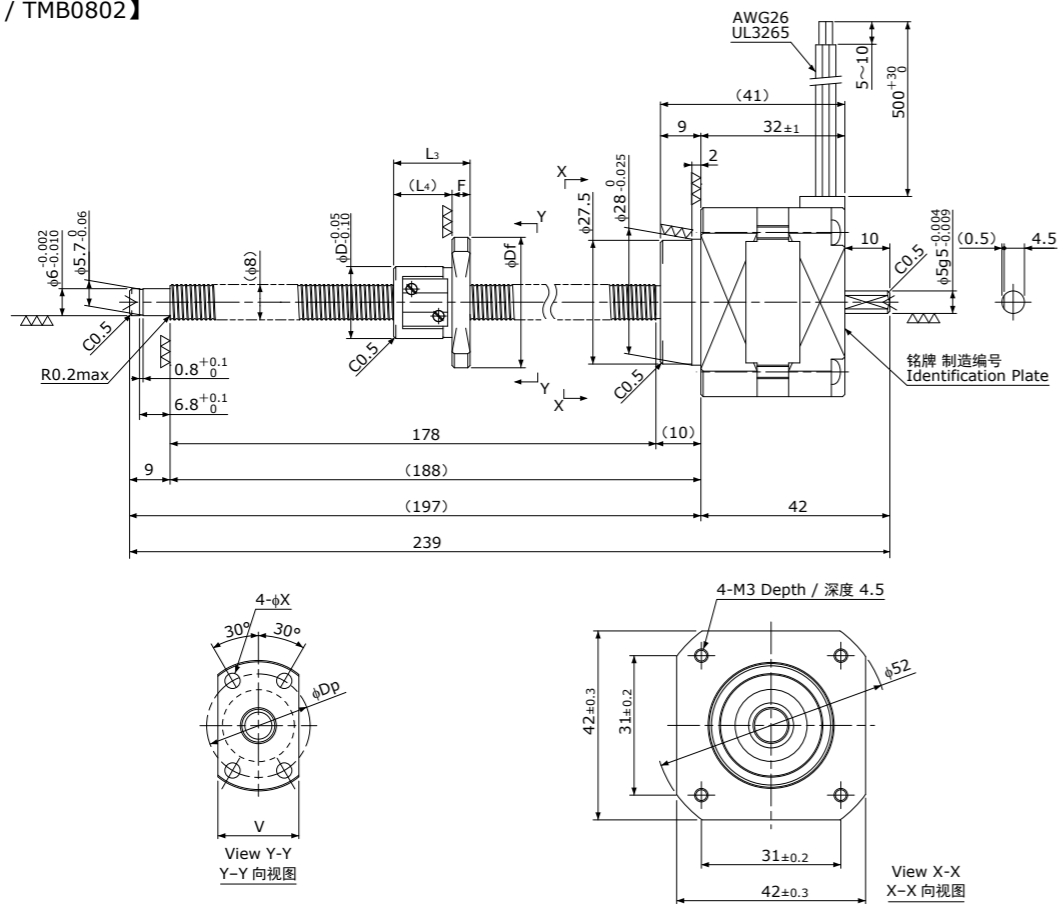
Dimensions & Specifications
规格参数

冷轧滚珠丝杠+5相步进电机 / Rolled Ball Screw + 5-Phase Stepping Motor

TMB □42 / NEMA 17

Shaft dia.(轴径)f8

【TMB0801 / TMB0802】



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	D	Df	F	L ₃	L ₄	V	Dp	X	Mass 质量 (g)
TMB0801	1	150	300	16	29	4	17	13	18	23	3.4	320
TMB0802	2	150	150	20	37	5	24	19	22	29	4.5	320

Recommended Drivers 推荐驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100~220V)
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Note) Refer to page P162 or P163 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P162或P163页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	DC 0.75 A/phase DC 0.75 A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.128Nm
Rotor inertia 转子惯量	40g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

Note) Only shaft end cutting is available.
Other than that, it would be customized order.
注) 只能裁切轴端。
其他轴端形状为定制产品。

Standard products in stock TMB series
标准库存品 TMB系列

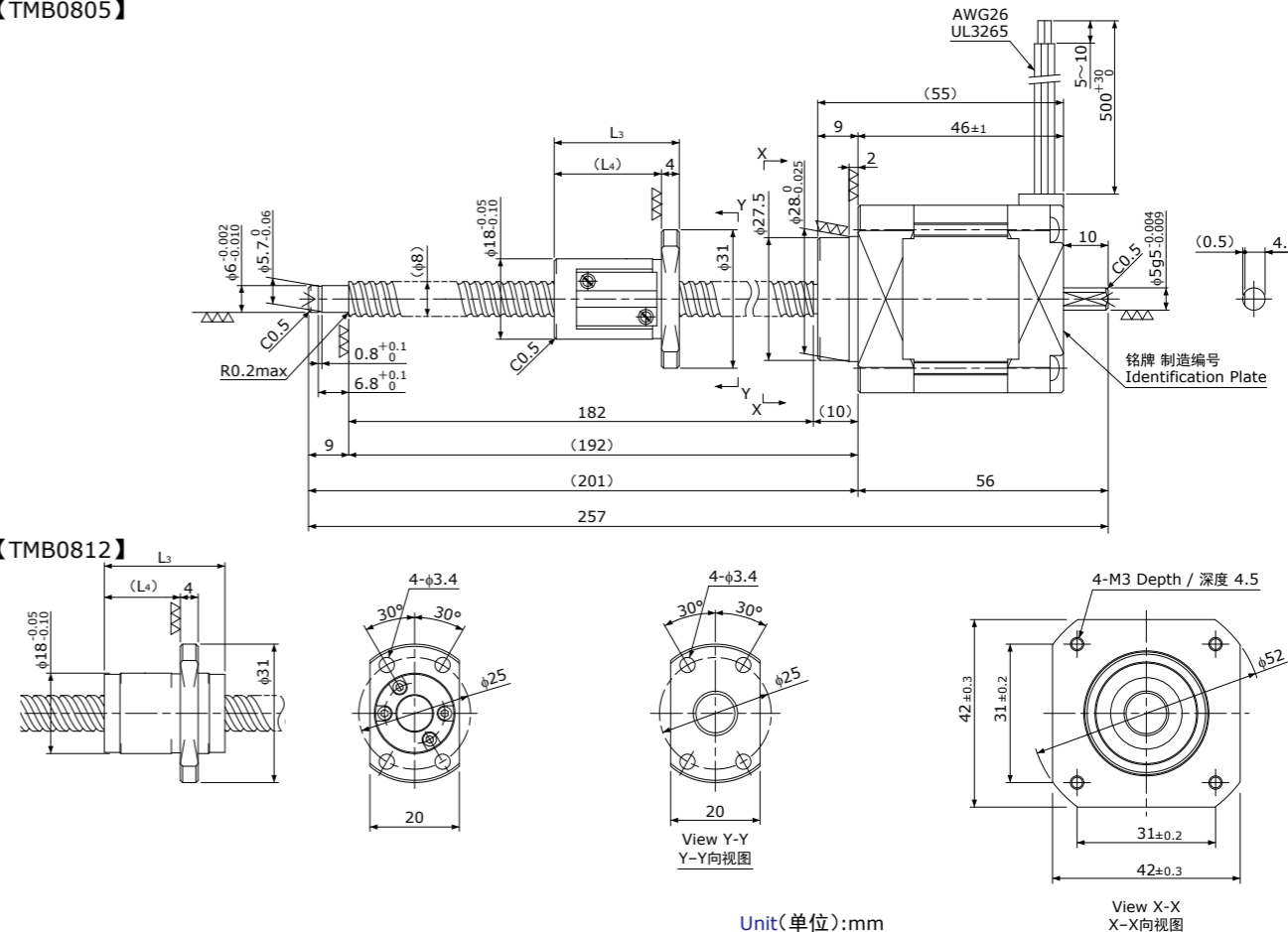
Dimensions & Specifications
规格参数

冷轧滚珠丝杠+5相步进电机 / Rolled Ball Screw + 5-Phase Stepping Motor

TMB □42 / NEMA 17

Shaft dia.(轴径)f8

【TMB0805】



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	L ₃	L ₄	Mass 质量 (g)
TMB0805	5	150	120	28	24	450
TMB0812	12	150	50	27	17	450

Recommended Drivers 推荐驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100~220V)
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Note) Refer to page P162 or P163 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P162或P163页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.65 V
Rated current 额定电流	DC 0.75 A/phase DC 0.75 A/相
Winding resistance 绕组电阻	2.0Ω
Holding Torque 保持扭矩	0.236Nm
Rotor inertia 转子惯量	74g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

Note) Only shaft end cutting is available.
Other than that, it would be customized order.
注) 只能裁切轴端。
其他轴端形状为定制产品。

MB系列(精密滚珠丝杠 + 5相步进电机)

MB Series (Precision Ball Screw + 5 Phase Stepping Motor)

MoBo

●特点

- 是将5相步进电机直接组装到精密滚珠丝杠(C3级)轴端上的产品, 最适合高精度定位。
- 具有将滚珠丝杠轴心作为电机旋转轴心的理想结构。
- 直连结构省去了联轴器的使用, 在缩短长边方向尺寸的同时, 还能减少空转。
- 还备有推荐的5相步进电机用驱动器。



●Features

- A 5-phase Stepping Motor is mounted directly onto the shaft end of a C3 grade precision Ball Screw, which is suitable for high accurate positioning system.
- Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, low lost-motion can be achieved.
- Recommended Driver for 5-phase Stepping Motor is available.

●基本规格 / Specifications

Model 型号	Shaft Nominal Dia. 丝杠轴公称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pules 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 质量 (g)
MB04005A	f4	0.5	20	1	10	84
MB0401A	f4	1	30	2	20	84
MB0401	f4	1	30	2	50	100
MB0601	f6	1	75	2	100	170
MB0602	f6	2	75	4	50	180
MB0801	f8	1	150	2	300	310
MB0802	f8	2	150	4	150	320

Repeatability(reference) 重复定位精度(参考值)	max. $\pm 0.005\text{mm}$
Lost Motion(reference) 空转(参考值)	max. 0.005mm

※重复定位精度及空转值是安装在
本公司标准滑台上时测得的值。
实际值请洽询本公司。

※The reference value about Repeatability and Lost Motion
represents when the MB built into KSS original Stage.
Please make a contact to KSS for actual value.

注1) 关于详细尺寸, 请参照P132页以后的规格图。

注2) 1脉冲的移动量为整步时的值。

注3) 加减速速率的参考值为20ms/kHz以上。

注4) 参考推力根据不同条件会有很大变化, 请垂询本公司。

Note 1) Detail specifications & dimensions are shown in drawings from page P132.

Note 2) Travel per pulse represents the value for full step.

Note 3) Acceleration & Deceleration Rate should be 20ms/kHz or more.

Note 4) Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

●电机规格 / Motor Specifications

Model 型号	Motor size 电机尺寸	Rated voltage 额定电压 (V)	Rated current 额定电流 (A/phase) (A/相)	Winding resistance 绕组电阻 (Ω)	Holding torque 保持扭矩 (Nm)	Rotor Inertia 转子惯量 ($\text{g}\cdot\text{cm}^2$)	Load limit in Vertical Position 许用轴向负载 (垂直) (N)
MB04005A	NEMA 08 ($\square 20$)	DC 1.05	0.75	1.4	0.010	3.9	230
MB0401A	NEMA 08 ($\square 20$)	DC 1.05	0.75	1.4	0.010	3.9	230
MB0401	NEMA 10 ($\square 24$)	DC 0.83	0.75	1.1	0.018	4.2	230
MB0601	NEMA 10 ($\square 24$)	DC 1.28	0.75	1.7	0.028	8.9	230
MB0602	NEMA 10 ($\square 24$)	DC 1.28	0.75	1.7	0.028	8.9	230
MB0801	NEMA 17 ($\square 42$)	DC 1.28	0.75	1.7	0.128	41	300
MB0802	NEMA 17 ($\square 42$)	DC 1.28	0.75	1.7	0.128	41	300

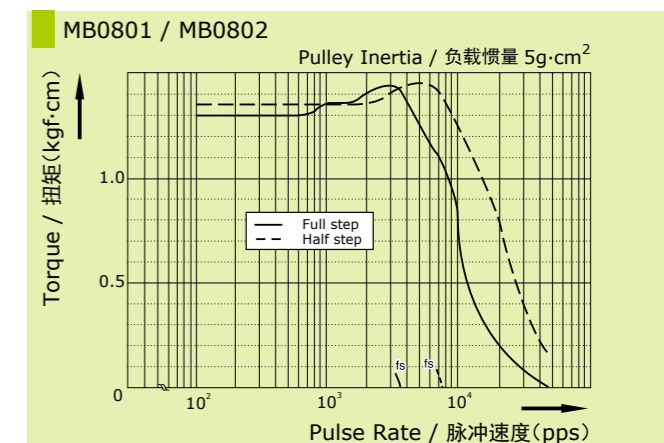
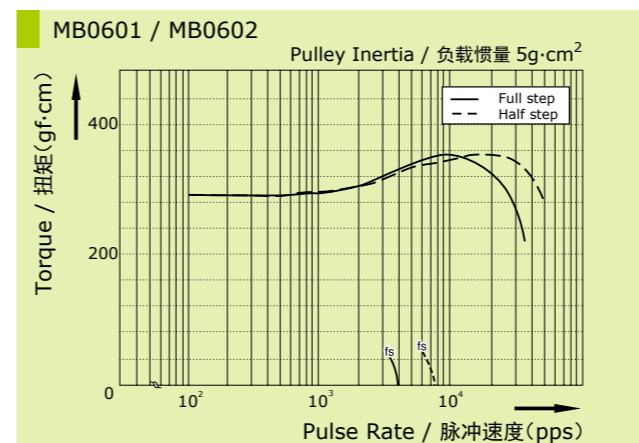
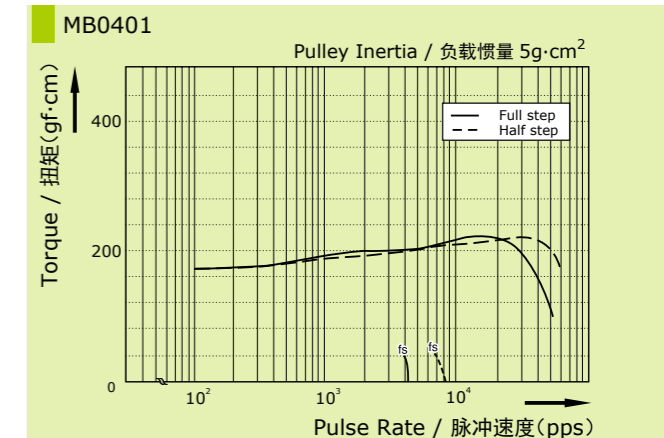
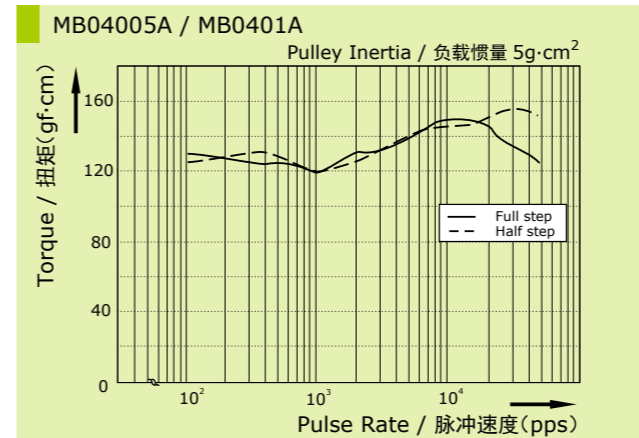
注1) 基本步角为 0.72° 。

注2) 转子惯量为包含滚珠丝杠轴的值。

Note 1) Basic step angle is 0.72°

Note 2) Rotor Inertia includes Ball Screw Shaft.

●电机特性 / Motor Characteristic



■Test Condition / 测试条件

Driver / 驱动器 : Maker Standard / 制造商标准机

Input Voltage / 电源电压 : DC24V

Phase Current / 设定电流 : 0.75A

注) 电机特性因驱动器、运行条件而异。

Note) Motor characteristic will vary depending on
Driver type, operating conditions.

公称型号 / Model number notation

定制产品的公称型号如下所示。

产品目录标准形状品为产品目录记载(P132~135页)的型号。

Model number notation for customized MB series is as follows.

In case of standard style, model number is described in catalogue from page P132 to page P135.

MB **04** **01** - **30** **R** **80** **C3** - **0**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①系列符号

MB : 精密滚珠丝杠+5相步进电机

②丝杠轴公称外径(mm)

③导程(mm)

01表示1mm

④螺纹部长度(mm)

L₁ : 参照下图

⑤螺纹旋向(R=右旋)

⑥丝杠轴总长(mm)

L₂ : 参照下图

⑦精度等级

⑧轴向间隙(μm)

①Series No.

MB : Precision Ball Screw+5-phase Stepping Motor

②Screw Shaft nominal diameter(mm)

③Lead(mm)

01 means 1mm

④Screw thread length(mm)

L₁ : See below

⑤Thread direction(R=Right-hand)

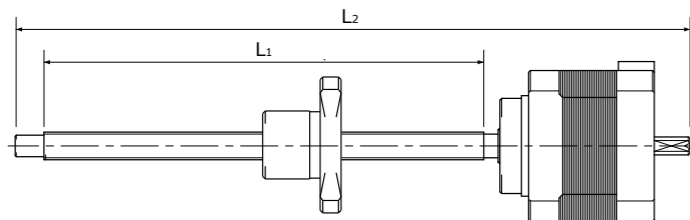
⑥Screw Shaft total length(mm)

L₂ : See below

⑦Accuracy grade

⑧Axial play(μm)

④⑥丝杠长度定义 / Definition of Screw length



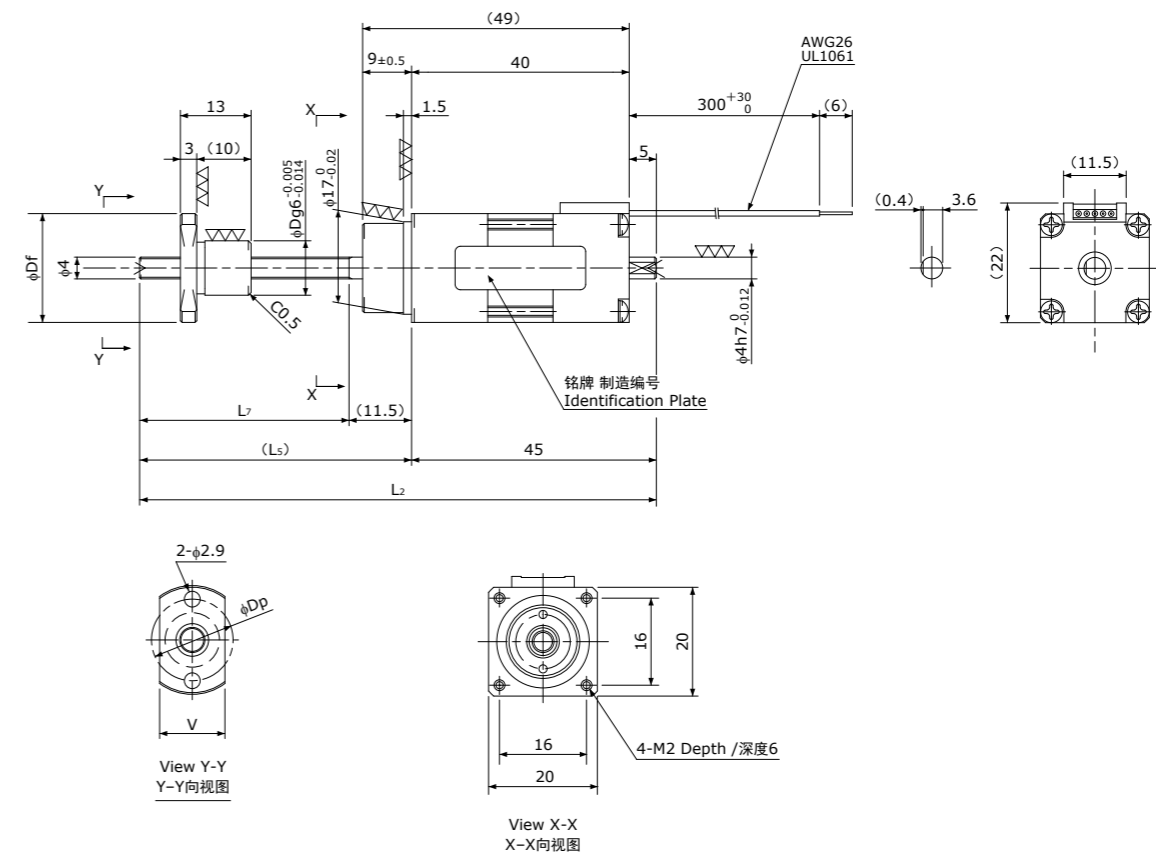
Standard products in stock MB series
标准库存品 MB系列

Dimensions & Specifications
规格参数

精密滚珠丝杠+5相步进电机 / Precision Ball Screw + 5-Phase Stepping Motor

MB □20 / NEMA 08

Shaft dia.(轴径)φ4



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	L ₂	L ₅	L ₇	D	Df	V	Dp	Mass 质量 (g)
MB04005A	0.5	20	10	95	50	38.5	10	20	12	15	84
MB0401A	1	30	20	105	60	48.5	9	19	11	14	84

Recommended Drivers 推荐驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100~220V)
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Note) Refer to page P162 or P163 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P162或P163页。

Ball Screw Specifications	滚珠丝杠主要技术参数
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right 右
Axial play 轴向间隙	MB04005A:0.005mm or less MB0401A:0mm
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

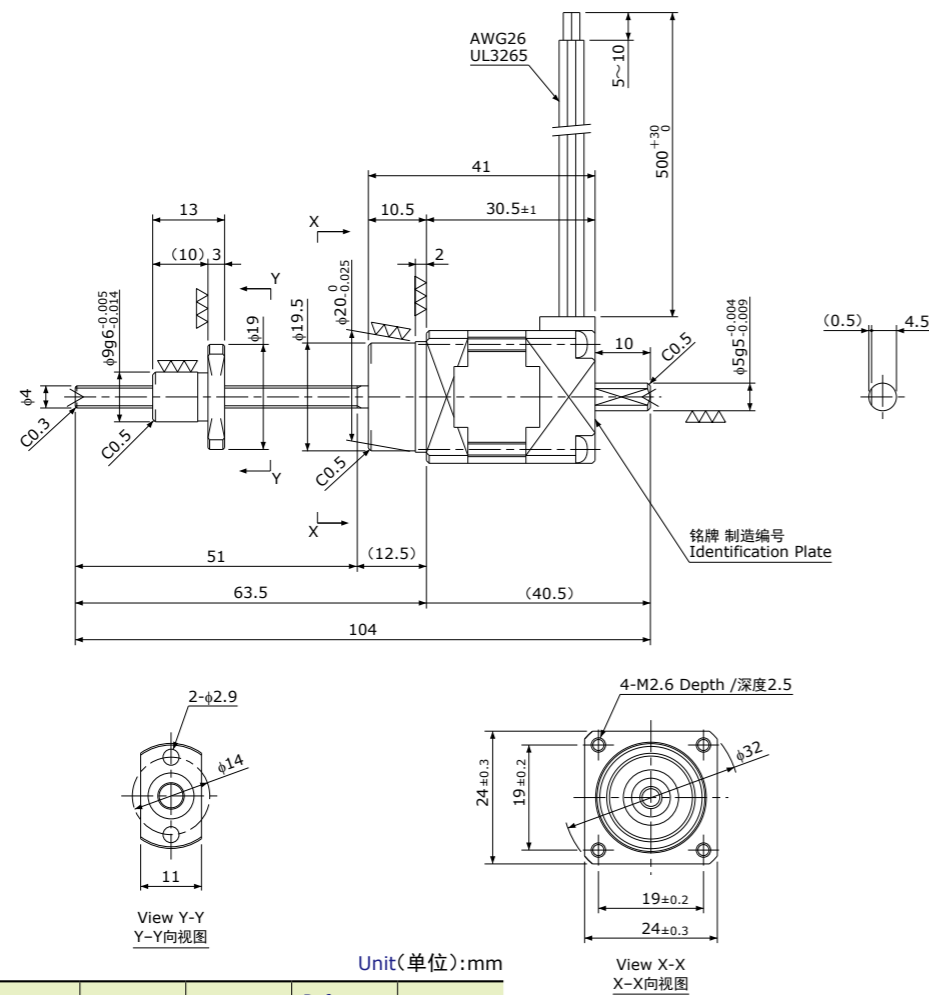
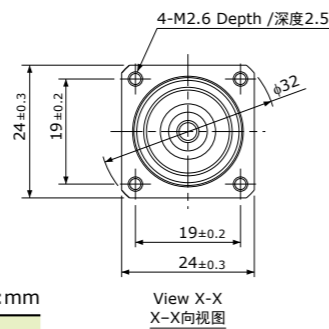
Motor Specifications	电机参数
Basic step angle 基本步角	0.72°
Rated Voltage 额定电压	DC 1.05 V
Rated current 额定电流	DC 0.75 A/phase DC 0.75 A/相
Winding resistance 绕组电阻	1.4 Ω
Holding Torque 保持扭矩	0.010Nm
Rotor inertia 转子惯量	3.9g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

Note) Only shaft end cutting is available.
Other than that, it would be customized order.
注) 只能裁切轴端。
其他轴端形状为定制产品。

精密滚珠丝杠+5相步进电机 / Precision Ball Screw + 5-Phase Stepping Motor

MB □24 / NEMA 10

Shaft dia.(轴径)f4

View Y-Y
Y-Y向视图View X-X
X-X向视图

Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	Mass 质量 (g)
MB0401	1	30	50	100

Recommended Drivers 推荐驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100~220V)
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Note) Refer to page P162 or P163 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P162或P163页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right 右
Axial play 轴向间隙	0mm
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

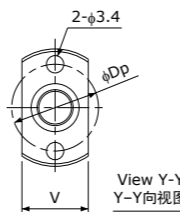
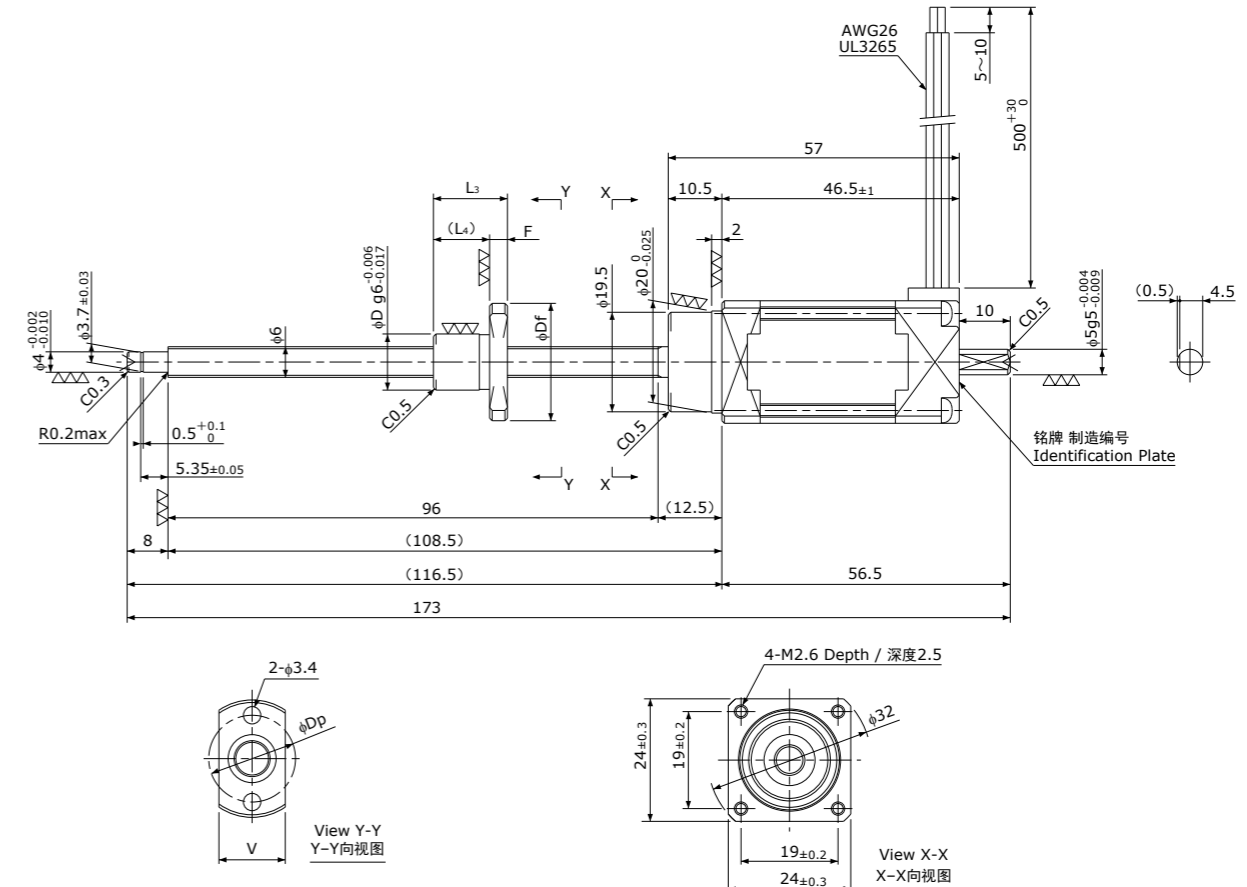
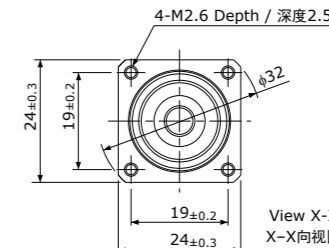
Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 0.83 V
Rated current 额定电流	DC 0.75 A/phase DC 0.75 A/相
Winding resistance 绕组电阻	1.1Ω
Holding Torque 保持扭矩	0.018Nm
Rotor inertia 转子惯量	4.2g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

Note) Only shaft end cutting is available.
Other than that, it would be customized order.
注) 只能裁切轴端。
其他轴端形状为定制产品。

精密滚珠丝杠+5相步进电机 / Precision Ball Screw + 5-Phase Stepping Motor

MB □24 / NEMA 10

Shaft dia.(轴径)f6

View Y-Y
Y-Y向视图View X-X
X-X向视图

Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	D	Df	F	L ₃	L ₄	V	Dp	Mass 质量 (g)
MB0601	1	75	100	11	23	3.5	14.5	11	13	17	170
MB0602	2	75	50	15	28	4	17	13	17	22	180

Recommended Drivers 推荐驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100~220V)
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Note) Refer to page P162 or P163 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P162或P163页。

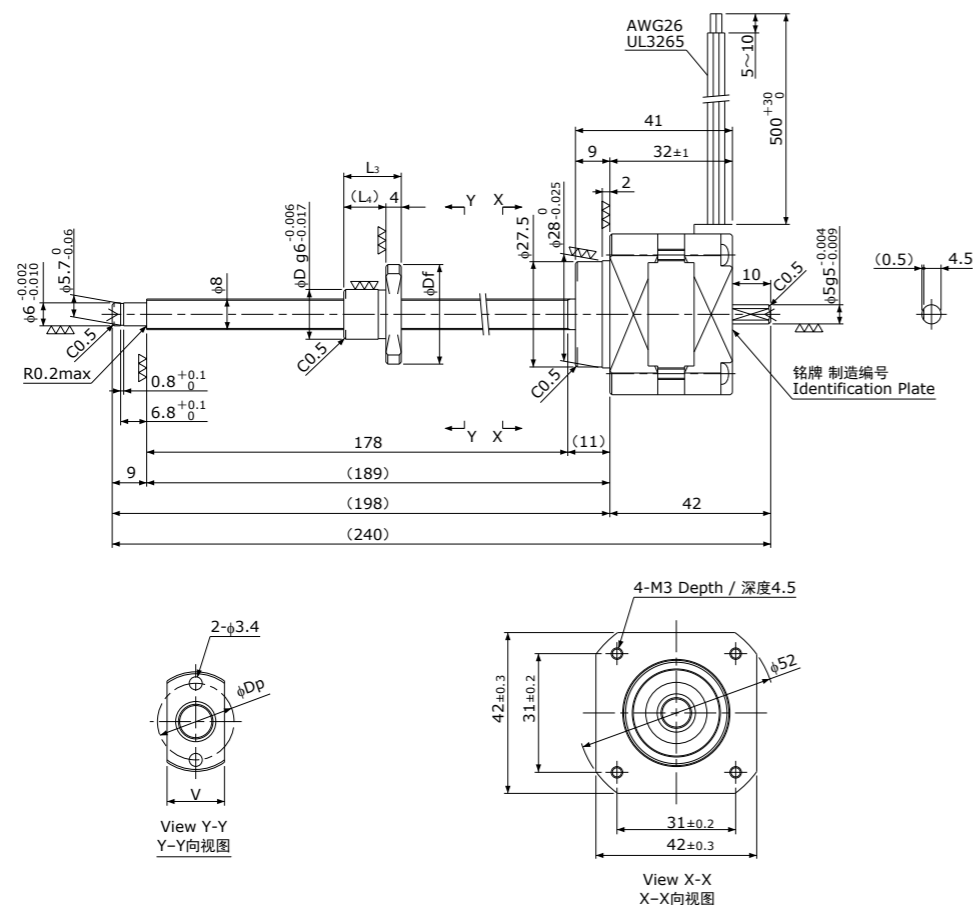
Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right 右
Axial play 轴向间隙	0mm
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	DC 0.75 A/phase DC 0.75 A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	8.9g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

Note) Only shaft end cutting is available.
Other than that, it would be customized order.
注) 只能裁切轴端。
其他轴端形状为定制产品。

MB □42 / NEMA 17

Shaft dia. (轴径) f8



Unit (单位): mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	D	Df	L ₃	L ₄	V	Dp	Mass 质量 (g)
MB0801	1	150	300	13	26	15	11	15	20	310
MB0802	2	150	150	15	28	18	14	17	22	320

Recommended Drivers 推荐驱动器	KR-A5CC
	KR-A55MC (Micro step)
	KR-A535M (Micro step / AC-100~220V)

Note) Refer to page P162 or P163 for connection diagram of recommended Drivers.

注) 有关与推荐驱动器的接线, 请参照P162或P163页。

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right 右
Axial play 轴向间隙	0mm
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	DC 0.75 A/phase DC 0.75 A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.128Nm
Rotor inertia 转子惯量	41g·cm ²
Operating temperature 使用温度范围	-20°C~50°C

Note) Only shaft end cutting is available. Other than that, it would be customized order.
注) 只能裁切轴端。其他轴端形状为定制产品。

MMB系列(冷轧滚珠丝杠+ All in One步进伺服电机)

MMB Series (Rolled Ball Screw + All in One Stepping Servo Motor)

●特点

- 是将步进伺服电机直接组装到精度等级为Ct7的冷轧滚珠丝杠上的产品, 最适合用于实现无丢步、高速运行、小型化。
- 使用数字信号处理器(DSP)高速处理伺服和控制器的运算, 实现外围电路的简化和小型化, 是旋转编码器、伺服驱动器、控制器均内置于执行器的产品。
- 可使用专用软件通过PC(RS-422/485通信)设定各种参数、进行伺服调整并创建控制程序。
- 繁琐的配线已基本在执行器内部完成, 可大幅节省配线。

●Features

- Stepping Servo Motor is mounted directly onto the shaft end of a Ct7 grade Rolled Ball Screw, which is the best for space saving & high-speed, non-step-out operation.
- Enables to bind Rotary Encoder, Servo Driver and Controller within the Actuator body by simplified circuits due to high-speed operation processing of Servo and Controller using Digital Signal Processor(DSP).
- Enables to set parameters, servo control or control program through PC(RS-422/485 communication) by using exclusive software.
- The wiring is completed inside the Actuator, enabling significant saving in wiring.

●公称型号 / Model number notation

定制品的公称型号如下所示。

产品目录标准形状品为产品目录记载(P138页)的型号。

Model number notation for customized MMB series is as follows.

In case of standard style, model number is described in catalogue in page P138.

MMB R 06 02 - 94 B 1 - XXX

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①系列符号

MMB : Moons型线性执行器

②滚珠丝杠种类

R : 冷轧滚珠丝杠

③丝杠轴公称外径

06表示6mm

④导程(mm)

02表示2mm

⑤丝杠轴长度(mm)

表示突出于电机的长度(下图)

⑥轴端形状(下图)

A : 无加工

B : 车削&卡槽(标准形状)

C : 车削

⑦电机长度编号

1 : 短型

2 : 长型

⑧附加号

①Series No.

MMB : Moons type Linear Actuator

②Ball Screw type

R : Rolled Ball Screw

③Screw Shaft nominal diameter (mm)

06 means 6mm

④Lead (mm)

02 means 2mm

⑤Screw Shaft length (mm)

Screw length which is exposed from Motor (see below)

⑥End journal profile (see below)

A : Cut only

B : Journal with snap ring groove (standard)

C : Journal only

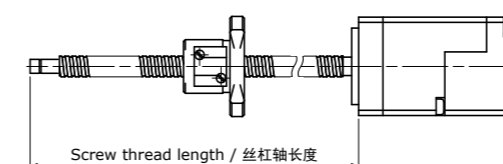
⑦Motor length symbol

1 : Short type

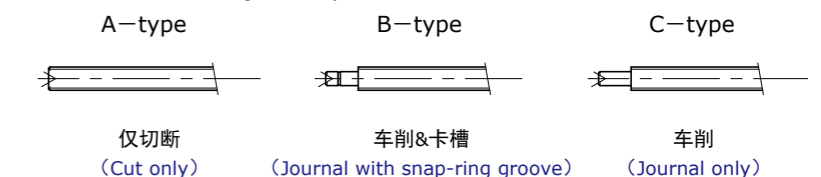
2 : Long type

⑧Extra notation

【⑤丝杠轴长度 / Screw thread length】



【⑥轴端形状 / End journal profile】



冷轧滚珠丝杠+步进伺服电机 / Rolled Ball Screw + Stepping Servo Motor

MMB □28 / NEMA 11

Shaft dia.(轴径)φ6

●基本规格 / Specifications

Model 型号	Shaft Nominal Dia. 丝杠轴称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pulse 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 质量 (g)
MMBR0602-94B1	φ6	2	62	0.1	65	162
MMBR0602-94B2	φ6	2	62	0.1	104	205

Repeatability(reference) 重复定位精度(参考值)	max. ±0.01mm
Lost Motion(reference) 空转(参考值)	max. 0.01mm

※重复定位精度及空转值是安装在
本公司标准滑台上时测得的值。
实际值请咨询本公司。

※The reference value about Repeatability and Lost Motion represents
when the actuator built into KSS original Stage.
Please make a contact to KSS for actual value.

注1) 关于详细尺寸, 请参照P138页以后的规格图。
注2) 1脉冲移动量为出厂时(20,000step/rev)的值。
注3) 参考推力根据不同条件会有很大变化, 请垂询本公司。

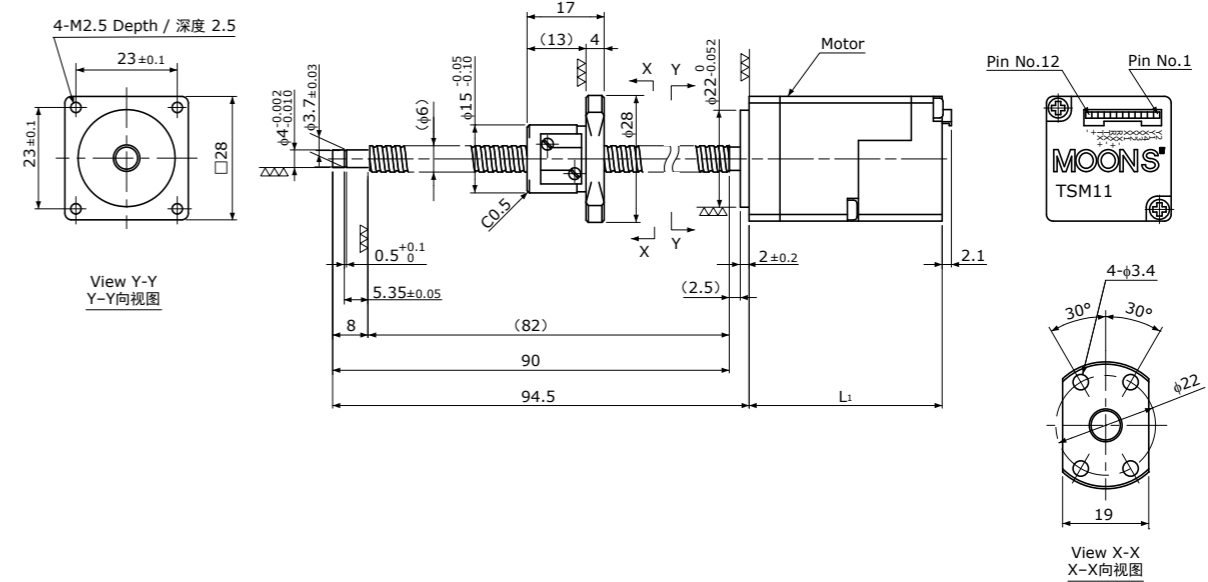
Note1) Detail specifications & dimensions are shown in drawing from page P138.

Note2) Travel per pulse represents the value of default setting.

Note3) Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

●电机规格 / Motor Specifications

Model 型号	Motor size 电机尺寸	Rated voltage 额定电压 (V)	Rated current 额定电流 (A/phase)	Winding resistance 绕组电阻 (Ω)	Holding torque 保持 扭矩 (Nm)	Rotor Inertia 转子惯量 (g·cm ²)	Load limit in Vertical Position 许用轴向负载 (垂直) (N)
MMBR0602-94B1	NEMA 11 (□28)	DC2.6	1.0	2.6	0.05	9	150
MMBR0602-94B2	NEMA 11 (□28)	DC1.7	1.0	1.7	0.08	12	150



Note1) Please contact KSS if different journal profile or length from the above is required.

Note2) Recommended journal profile is type B(journal with snap ring groove). Please use Bearing to support the shaft end.

注1) 若轴端形状、长度有所不同, 请垂询本公司。

注2) 轴端的推荐形状为带环槽(B型)。使用时请用轴承对其进行支撑。

Unit(单位):mm

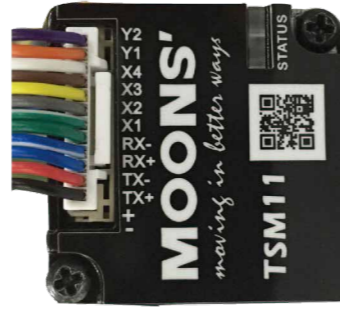
Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	L ₁	Mass 质量 (g)
MMBR0602-94B1 (Short type / 短型)	2	62	65	44	162
MMBR0602-94B2 (Long type / 长型)	2	62	104	53	205

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	Max 0.03mm
Ball Screw material 滚珠丝杠	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC58 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Motor Specifications 电机参数		
	Short type 短型	Long type 长型
Basic step angle 基本步进角	1.8°	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式	
Rated Voltage 额定电压	DC 2.6 V	DC 1.7 V
Rated current 额定电流	DC 1.0 A/phase DC 1.0A/相	
Winding resistance 绕组电阻	2.6Ω	1.7Ω
Holding Torque 保持扭矩	0.05Nm	0.08Nm
Rotor inertia 转子惯量	9g·cm ²	12g·cm ²
Operating temperature 使用温度范围	0°C~40°C	

●连接器引脚配置 / Connector Pin Diagram

Pin No.	Name	Description / 功能解说
1	Y2	Open drain outputs with freewheeling diode (30VDC 100 mA in max.) 飞轮二极管输出 (DC30V 最大100mA)
2	Y1	
3	X4	Digital inputs (input high voltage 5~24VDC, input low voltage below 1VDC, signal frequency 1MHz in max.) 数字输入(High:5~24V,Low:1V以下) 信号输入频率:最大1MHz
4	X3	
5	X2	Digital inputs (input high voltage 5~24 VDC, input low voltage below 2VDC, signal frequency 1MHz in max.) 数字输入(High:5~24V,Low:2V以下) 信号输入频率:最大1MHz
6	X1	
7	RX-	RS-422 / 485 interface differential signals RS-422 / 485接口差分信号
8	RX+	
9	TX-	
10	TX+	
11	+	V+ Power supply (typ. 24 VDC) V+ 电源 (公称值DC24V)
12	-	V- Power ground (GND) V- 电源 (GND)



●驱动器规格 / Driver Specification

Power Amplifier / 功率放大器	
Amplifier Type 放大方式	Dual H-Bridge, 4 Quadrant 双H桥、4象限
Current Control 电流控制	4 state PWM at 20 KHz PWM驱动@20KHz
Power Supply 电源电压	External 24VDC power supply required, Current capacity 6.5A 推荐DC24V(15V~30V)、电流容量6.5A
Input Voltage Range 输入电压范围	15-30 VDC min/max (nominal 24VDC) 公称值DC24V(15V~30V)
Protection 保护功能	Over-voltage, under-voltage, over-temperature, internal motor shorts (phase-to-phase, phase-to-ground) 过电压、欠电压、过热、电机内部短路(相间、相与GND间)
Ambient Temperature 使用温度范围	0°C~40°C(32~104°F) when mounted to a suitable heatsink 0°C~40°C(设有适宜的散热器)
Humidity 湿度	90% non-condensing 90%以下(无结露)

●控制器规格 / Controller Specification

Controller / 控制器	
Current Control 电流控制	Advanced digital current control provides excellent high speed torque 数字电流控制
Microstep Resolution 微步分辨率	Software selectable from 200 to 51200 steps/rev. in increments of 2 steps/rev. 软件选择200~51200steps/rev(能以2steps/rev为单位设定)
Speed Range 速度范围	Max.60rps
Distance Range 距离(移动量)设定范围	Over 10,000,000 revolutions (at 200 step/rev.) 10,000,000rev以上(200steps/rev时)
Noise Filtering 噪音滤波器	Programmable hardware digital noise filter. Software noise filter 可编程数字滤波器(硬件)、软件滤波器
Serial Commanding 串行指令	Support Serial Command Language (SCL) SCL(串行指令语言)
Encoder Feedback 编码器反馈	4096 counts/rev. encoder feedback 4096counts/rev
Non-Volatile Storage 非易失性存储器	Configurations are saved in FLASH memory on-board the DSP 闪存(内置DSP)
X1/Step	Input:5~24 vdc, single-ended signals, max. pulse frequency 1MHz Functions:Step, CW Step, A Quadrature, CW Limit, CW Jog, Run/Stop, general purpose input. * Adjustable bandwidth digital noise rejection filter * Connect with NPN type output ONLY 输入:DC5~24V单端、最大1MHz 功能:Step、CW Step、A相方波、CW限制、CW点动、Run/Stop、通用输入 * 附加数字噪音滤波器 * 仅支持NPN型输出
X2/Direction	Input:5~24 VDC, signal-ended signals, max. pulse frequency 1MHz Functions:Dir, CCW Step, B Quadrature, CCW Limit, CCW Jog, general purpose input. * Adjustable bandwidth digital noise rejection filter * Connect with NPN type output ONLY 输入:DC5~24V单端、最大1MHz 功能:Dir、CCW Step、B相方波、CCW限制、CCW点动、Run/Stop、通用输入 * 附加数字噪音滤波器 * 仅支持NPN型输出
X3/Enable	Inputs:5~24 VDC, single-ended signals, max. pulse frequency 1MHz Functions:Enable, general purpose input. * Connect with NPN type output ONLY 输入:DC5~24V单端、最大1MHz 功能:有效、通用输入 * 仅支持NPN型输出
X4/Alarm Reset	Inputs:5~24 VDC, single-ended signals, max. pulse frequency 1MHz Functions:Alarm reset, Change speed, general purpose input. * Connect with NPN type output ONLY 输入:DC5~24V单端、最大1MHz 功能:警报复位、速度变更、通用输入 * 仅支持NPN型输出
Y1/FAULT	Open drain output:maximum current 100mA with maximum voltage of 30 VDC Functions: Fault detection, general purpose 漏极开路输出:最大DC30V时最大100mA 功能:异常检测、通用输出
Y2/BRAKE	Open drain output:maximum current 100mA with maximum voltage of 30 VDC Functions: Brake, In Position, Tach Output, general purpose 漏极开路输出:最大DC30V时最大100mA 功能:制动、就位、转速输出、通用输出
Communication Interface 通信接口	RS-422/485 Modbus/RTU available to use for TSM 11Q RS-422/485 TSM11Q系列也可使用Modbus/RTU

SiMB系列(精密滚珠丝杠 + 步进伺服电机) **MoBo**

SiMB Series (Precision Ball Screw + Stepping Servo Motor)

●特点

- 是将步进伺服电机直接组装到精密滚珠丝杠的轴端上的产品, 分辨率高、定位精度优越。
- 在电机后部配备有编码器和存储元件, 实现了完全等间距定位、无振动、无失调、扭矩控制运行。
- 具有将滚珠丝杠轴心作为电机旋转轴心的理想结构。
- 直连结构省去了联轴器的使用, 在缩短长边方向尺寸的同时, 还能减少作业工时。
- 还备有专用控制器驱动器、专用电缆。



●Features

- A Stepping Servo Motor, what we call Si-servo Motor, is mounted directly onto the Shaft end of a Precision Ball Screw, which is high resolution and precise positioning unit.
- An Encoder and a Memory chip are installed at the end of Motor, high accurate positioning, ultra smooth drive, torque control drive, and closed loop function have been achieved.
- Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, and reducing labor cost can be achieved.
- Exclusive Driver, and Cable are provided for Si-servo Motor.

数据库补偿控制

Si伺服的控制方式并非单一的微型步进控制。电机后部配备有编码器和存储元件, 以每圈400脉冲分辨率的编码器位置信息和电流反馈为基准。另外, 出厂时已将电机固有数据保存在存储器中, 电机驱动时通过进行补偿、抑制的精密数据库补偿型控制方式, 实现了对目标位置的高速、高精度定位。

Database compensation control

Control mechanism of the Si servo is not simply the micro-step control. Both an Encoder and a Memory chip are installed, and the Encoder position for 400pulse resolution per revolution as well as electrical current feedback are standard. Furthermore, data inherent to the Motor is recorded in the Memory at time of shipping from the factory so that high speed and high precision positioning to designated positions can be realized using a precise database revision control method of compensation and control when the Motor starts.

对电机特性数据采样

因电机的加工、组装精度而引起的齿槽扭矩和扭矩脉动是影响低振动、高精度定位的重要原因。Si伺服可准确测量、掌握这些影响控制的电机固有数据和微型步进控制时的定位精度, 并将其作为最佳电流波形进行数据化。

Sampling motor characteristics

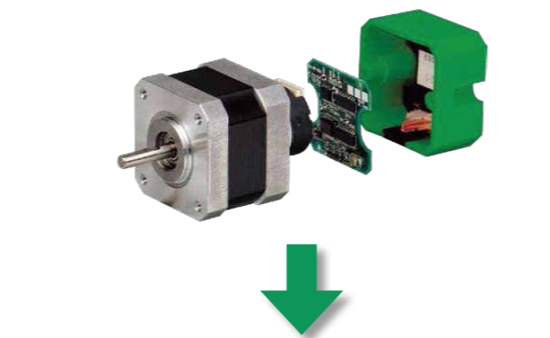
Cogging Torque and Torque ripples originate from Motor processing and assembly precision, big factors that can hinder a low vibration, high accuracy positioning. The Si servo, by accurately measuring and storing individual Motor characteristics data inherit to the Motor, we can create a database of the optimal electrical current wave forms for the highest possible rotary precision.

向存储器保存数据

采样数据被保存在电机内的存储器中, 接通电源时通过编码器电缆被传送到驱动器。由此可实现驱动器和电机的任意组合。

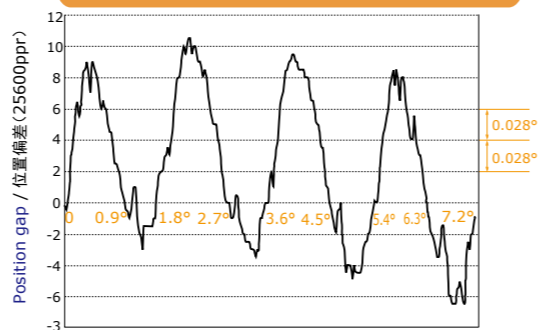
Storing data in memory

The data gained from sampling is stored in Memory within the Motor, which can be transferred to a Driver by using an Encoder cable at the time power is supplied. This makes it possible for the Driver and the Motor to work as an optimal combination.



Sampling of Motor's Positioning Characteristic
电机位置特性数据的采样

Positioning data at time micro-stepping is halted during open looping
开环时的微步停止位置数据



Position of the Motor 1 rotation is divided into 25,600 and the stop position of a Motor is formed into database
将电机旋转1圈的量分为25600步, 以将电机的停止位置数据库化。

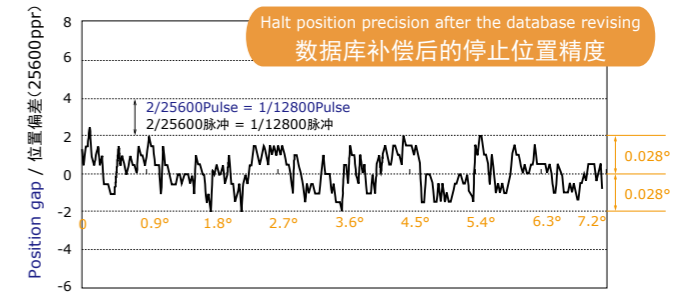


高精度定位

不仅像微型步进控制那样对指令分辨率进行了细化, 还将实际停止精度提高到了相当于10000脉冲编码器的水平。此外, 还可实现微型步进控制无法达到的脉冲单位的等间距定位。(*以电机输出扭矩足够高于负载阻力为必要条件。)

High precision positioning

This is not just a simple command analysis as with Micro-step controls. It raises the actual precision of halting to a proper 10000 pulse encoder. Furthermore uniform pitch positioning to the pulse, which can not be achieved by Micro-step, has been realized. (*As one condition, the output Torque of the Motor needs to sufficiently exceed load resistance.)

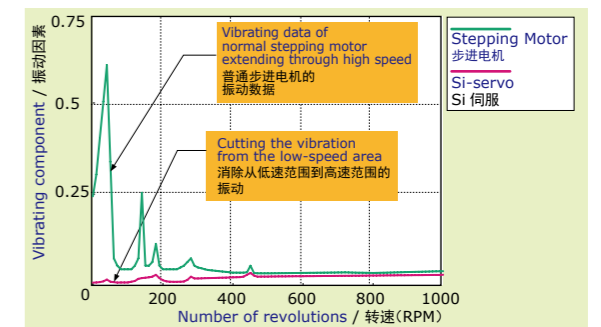


实现了低振动运行

电机动作时, 通过高速施加最佳补偿电流指令, 可大大消除电机的振动因素。与步进电机相同, 在电机停止时不会产生像伺服电机那样的微小振动。

Low vibrations

Vibrating elements in the Motor have been largely removed thanks to the optimal high-speed revision current commands while the Motor is in operation. Also unlike a standard Servo Motor, there is no searching between Encoder counts when the Motor stops.

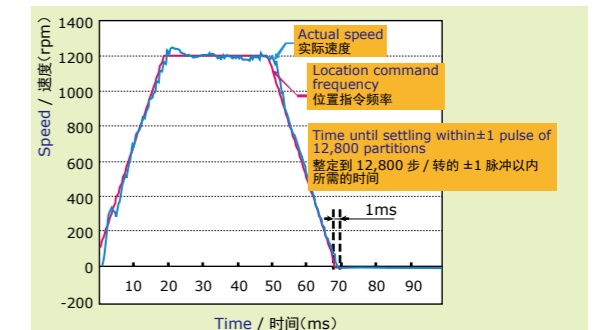


整定时间

Si伺服灵活运用步进电机的优点, 对指令脉冲具有极高的模拟性。整定到12800步/转的±1脉冲以内只需1ms。在要求高节奏运行的用途中能发挥卓越的性能。

Settling time

The Si Servo makes the most of the stepping motor's advantages including its ability to closely follow the command pulse train. The amount of time until setting within ±1 pulse of 12,800 partitions is only 1ms. Providing superior performance in high response systems.

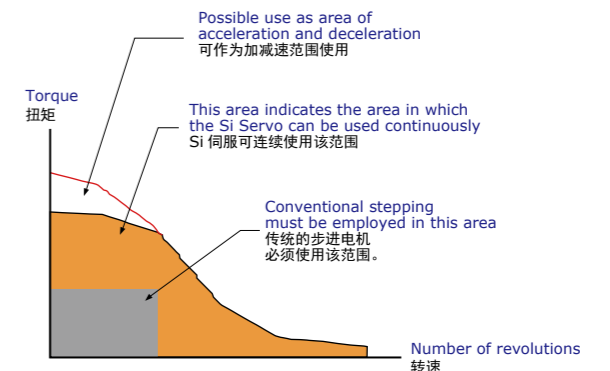


扭矩余量充足

无失调, 可以100%负载连续运行, 无需像步进电机那样考虑扭矩余量。

Surplus Torque

Because the Si Servo is never step out, it is possible to operate continuously at 100% capacity. There is no need to consider the Torque margin as with the Stepping Motor.

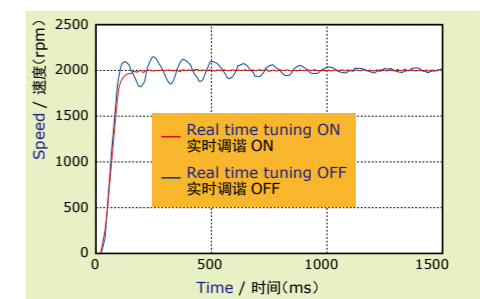


实时自动调谐

即使以传统的调谐方式无法平滑驱动的机械, 也可利用实时自动调谐功能自动模拟惯量和刚性的变动, 始终保持最佳响应性和稳定性。

Real-time auto-tuning

Even machinery that could not operate smoothly with conventional tuning methods will automatically imitate Inertia and Rigidity, always able to realize the optimal responsive and stable tuning.



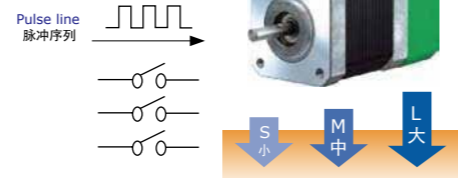
以步进方式控制扭矩

可在位置控制的同时进行5级扭矩控制。
Point Table运行时,可设定任意的扭矩值。可自由切换并使用位置控制和扭矩控制,因此可实现自由度很高的控制。即使在扭矩控制中也会在内部进行偏差管理,因此不会发生位置偏移。

Torque controls through stepping

Five steps of Torque control are performed during position control. Optional Torque value settings are possible during the point table operations. A high degree of freedom in control is possible thanks to being able to switch back and forth between position control and torque control. Even during Torque control, differential controls are still being performed internally, so positions will not deviate.

I/O Torque selection
以I/O选择扭矩



外部电子齿轮切换

可通过外部I/O信号或通信指令对2级电子齿轮设定进行切换。即使是只能输出低频指令脉冲的控制器,也能以高分辨率进行从低速运行到高速运行的大范围控制。

Electronic gear selection
以I/O选择电子齿轮



External electronic gear transfer

Using external I/O signals and/or communication commands, switching the electronic gear setting in two steps possible. Even controller that cannot output except on command pulses with low frequencies can be highly functional in a wide range from low speed to high speed operations.

*Switching can be performed while the motor is halted.

! 本产品不适于在某些条件下使用,建议就产品规格与本公司充分协商。
Depends on the condition, this product will not be suitable for your specifications.
Please always consult with KSS regarding your requirement.

基本规格 / Specifications

Model 型号	Shaft Nominal Dia. 丝杠轴公称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pulses 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 质量 (g)
SiMB0401	f4	1	30	1/25,600	30	114
SiMB0801	f8	1	100	1/25,600	300	130
SiMB0802	f8	2	160	2/25,600	150	165
SiMB0805	f8	5	150	5/25,600	80	200

Repeatability(reference) 重复定位精度(参考值)	max. $\pm 0.001\text{mm}$
Lost Motion(reference) 空转(参考值)	max. 0.001mm

※重复定位精度及空转值是安装在
本公司标准滑台上时测得的值。
实际值请洽询本公司。

※The reference value about Repeatability and Lost Motion
represents when the MoBo built into KSS original Stage.
Please make a contact to KSS for actual value.

注1) 关于详细尺寸,请参照P149页以后的规格图。
注2) 加减速速率的参考值为0.5ms/kHz(电机单体性能)以上。
注3) 参考推力根据不同条件会有很大变化,请垂询本公司。

Note1) Detail specifications & dimensions are shown in drawings from page P149.
Note2) Acceleration & Deceleration Rate should be recommended by 0.5ms/kHz or more(Abiliby as a Motor itself).
Note3) Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

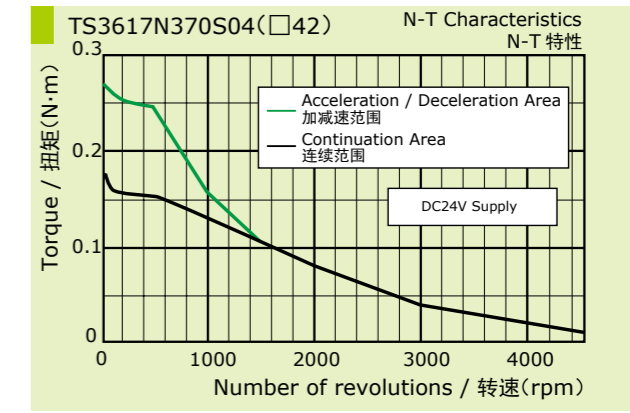
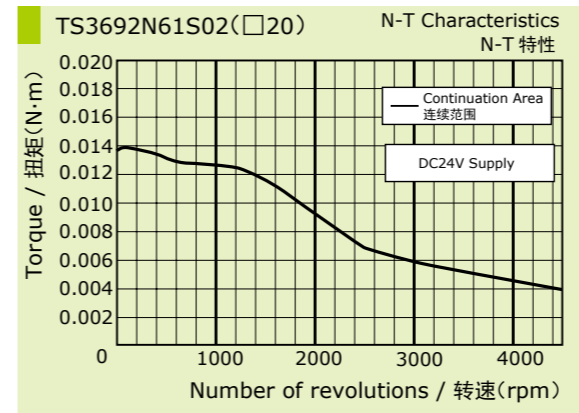
电机规格 / Motor Specifications

Model 型号		TS3692N61S02(SiMB0401)	TS3617N370S04(SiMB08xx)
Maximum output torque 最大输出扭矩	N·m	0.017	0.24
Maximum rotating speed 最大转速	rpm	4500	4500
Rated current 额定电流	A0-p	0.35	2.0
Rated voltage 额定电压	V	3.0	2.2
Coil resistance 绕组电阻	Ω	8.5 \pm 15%	1.1 \pm 15%
Rotor inductance 绕组电感	mH	3.4 \pm 20%	1.4 \pm 20%
Rotor inertia 转子惯量	10 ⁻⁷ kg·m ²	1.9	35
Shaft run out 轴跳动	mm T.I.R	0.05	0.05
Load limit in Vertical Position 许用轴向负载(垂直)	N	230	300
Thrust play 轴向游隙	mm max.	0.01	0.01
Coil Method 绕组方式	—	2-phase hybrid stepping motor Bipolar coil 2相混合步进电机 双极绕组	
Insulation class 绝缘等级	—	CLASS B	
Insulation resistance 绝缘电阻	M Ω min.	100(at DC500V)	
Dielectric strength 绝缘耐压	V	500(at AC 1MIN)	
Operating temperature range 使用温度范围	$^{\circ}\text{C}$	-20~+50	
Operating humidity range 使用相对湿度范围	%RH	5~95	
Storage temperature range 存放温度范围	$^{\circ}\text{C}$	-40~+70	

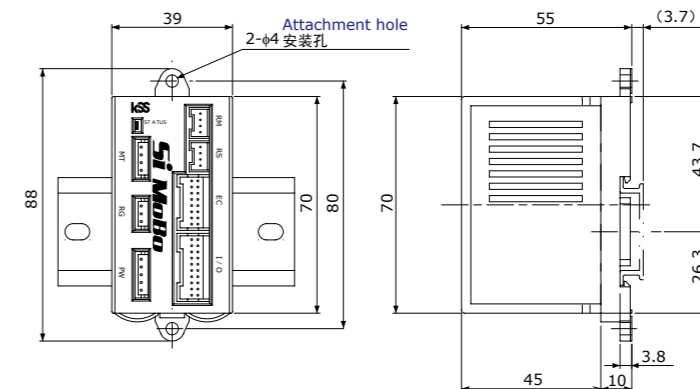
注) 转子惯量为包含滚珠丝杠轴的值。

Note) Rotor Inertia includes Ball Screw Shaft.

扭矩特性 / Torque Characteristics



驱动器外形尺寸 / Driver Outer Dimensions



●驱动器规格 / Driver Specifications

Model 型号		Si-02LDE(SiMB0401)	Si-02DE(SiMB08xx)
Applicable Motor Model 适用的电机型号		TS3692N61S02	TS3617N370S04
Rated Output Current(A0-p) 额定输出电流(A0-p)		0.35	2.0
Maximum Output Current(A0-p) 最大输出电流(A0-p)		1.0	4.5
Controlling Method 控制方式		Transistor PWM(Sine Wave Drive) 晶体管PWM(正弦波驱动)	
Feedback 反馈		Incremental Encoder 200 ppr 增量型编码器200ppr	Increnebtal Encoder 400ppr 增量型编码器400ppr
Power supply 电源	Voltage 电源电压 (V)	DC24V±10% or DC36V±10%	
	Control power supply 控制电源	DC24V±10%	
	Power Supply Current(A) 电源电流(A)	2	
Position Command Method 位置指令方式		Communication and Control Input through 3 Mode Pules Lines and RS485 通过3模式脉冲序列、RS485进行通信、控制输入、Point Table存储的方式	
Conditions for Use 使用条件	Temperature for Use 使用温度	0~+50℃	
	Storage Temperature 存放温度	-20~+85℃	
	Humidity for Use or Storage 使用、存放湿度	Under 90%RH(no condensation) 90%RH以下(无结露)	
	Resistance Vibrations 抗振性	0.5G	
	Impact Resistance 抗冲击强度	2G	
Standard Functions 内置功能	Dynamic Braking 动态制动器功能	None 无	
	Regenerative Function 再生功能	Able to connect to external regeneration processing circuit 可在外部连接再生处理回路	
	Over Travle Prevention 超程防止功能	Hard OT, Soft OT(Select ON or OFF parameters) 硬件OT、软件OT(通过参数选择有效/无效)	
	Internal Speed Setting 内部速度设定功能	Point Table Transfer Speed, Jog Speed, Reset Speed Point Table移动速度、点动速度、原点复位速度	
	Display 显示功能	1- LED(Alarm Display, Servo ON Conditions) LED指示灯1点(警报显示、伺服ON状态)	
Input / Output 输入/输出	Input 输入	Control Input 控制输入	5 points(Select function parameters) 5点(通过参数选择功能)
		Command Pulse Input 指令脉冲输入	CW / CCW、PULSE / SIGN、A / B Phase Input(Select parameters) Maximum response waves : 750kpps CW / CCW、PULSE / SIGN、A / B相输入(通过参数选择) 最大响应频率750kpps
	Output 输出	Control output 控制输出	3 points(Select parameters), Brake Release Signal 3点(通过参数选择功能)、制动解除信号
Protection Functions 保护功能		EEPROM abnormalities, Encoder abnormalities, System abnormalities, Over Currents, Driver overheating, Excessive location deviation, Motor current abnormalities, Control Current abnormalities EEPROM异常、编码器异常、系统异常、过电流、驱动器过热、 位置偏差过大、电机电源异常、控制电源异常	
Zero Return Mode 原点复位方法		Zero LS Signal input or using mechanical stopper(Set parameters of 7 methods) 输入原点LS信号或使用机械挡块(通过参数选择7种方式)	
Multi-axis 多轴连接功能		Multi-drops of up to 15 axis with RS485 通过RS485最多可连接15个轴	
Settigs 设定方式		Parameters are set through use of a computer(RS485 converter required) 使用电脑进行参数设定(需RS485转换器)	
Standard, Environmental, and Protection Grades 标准、环保、保护等级		UL conformance / CE(self-declaration) / Corresponds to RoHS / IP40 符合UL标准 / CE标准(自我宣言) / RoHS指令 / 保护等级为IP40	

●公称型号 / Model number notation

定制产品的公称型号如下所示。

产品目录标准形状品为产品目录记载(P149~P150页)的型号。

Model number notation for customized SiMB series is as follows.

In case of standard style, model number is described in catalogue from page P149 to page P150.

SiMB 08 01 - 50 R 100 C3 - 0

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①系列符号

SiMB : 精密滚珠丝杠+步进伺服电机

②丝杠轴公称外径(mm)

③导程(mm)

01表示1mm

④螺纹部长度(mm)

L₁ : 参照下图

⑤螺纹旋向(R=右旋)

⑥丝杠轴总长(mm)

L₂ : 参照下图

⑦精度等级

⑧轴向间隙(μm)

①Series No.

SiMB : Precision Ball Screw+Stepping Servo Motor

②Screw Shaft nominal diameter(mm)

③Lead(mm)

01 means 1mm

④Screw thread length(mm)

L₁ : See below

⑤Thread direction(R=Right-hand)

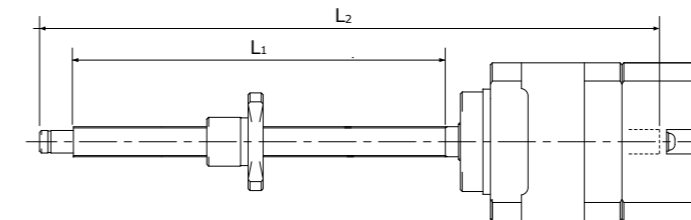
⑥Screw Shaft total length(mm)

L₂ : See below

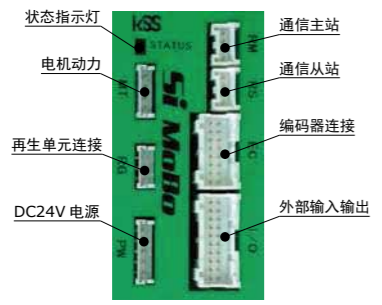
⑦Accuracy grade

⑧Axial play(μm)

【④⑥丝杠长度定义 / Definition of Screw length】



●连接



动力电源接通时间
动力电源(V1)和控制电源(V2)分别使用不同的电源时,请先接通控制电源.接通控制电源后,作为控制开始信号,OUT0信号被置为ON.请在确认该信号的输出后再接通动力电源.动力电源和控制电源使用相同的电源(将电源并联在V1、V2端子上)时,可同时接通.

接通电源时的初始化动作
请以接通动力电源、OUT0信号的时间发出伺服ON指令.当定位至电机励磁原点(机械角每7.2°)后,输出FIN/INP信号,完成初始化动作.该初始化动作前输入的脉冲序列指令及其他指令均被忽略.制动解除信号请务必使用计算了与电机励磁动作时间的本装置的无电压继电器触点输出BK1-BK2.

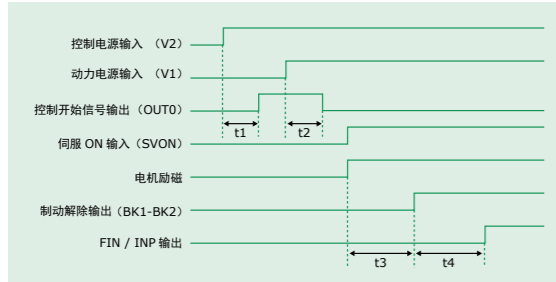


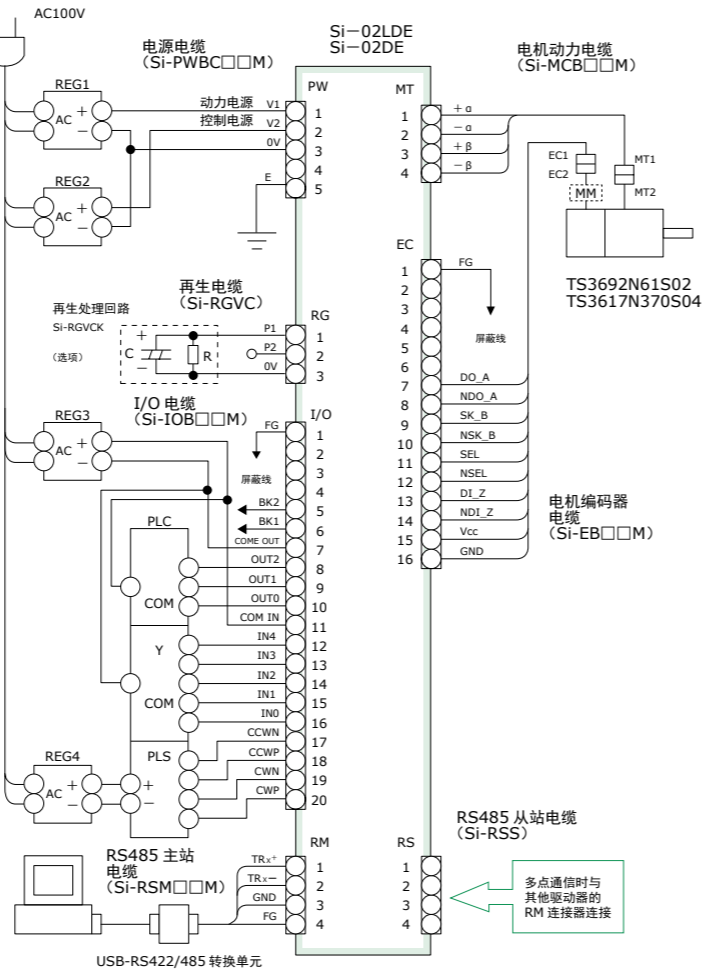
Table with 4 columns: Symbol, Meaning, Time, Unit. It defines timing parameters t1, t2, t3, and t4 for power supply and control signal transitions.

注1) 位于机械端、或者机械的摩擦阻力大时,在FIN/INP信号输出时若电机转子无法正确定位至励磁原点,则有可能发生振动或无法输出规定的扭矩.此时,请将参数53“启动时励磁保持时间”适当设定为的较大值,或者将参数56“机械端检测顺序”设定为1.
注2) 将参数58“机械端检测顺序”设定为1时, t4结束后即开始机械端检测动作,检测结束后输出FIN/INP信号.
注3) 自动伺服ON功能有效时,在控制开始信号(OUT0)输出OFF的同时电机开始励磁.

控制输入选择一览表

Table mapping selection functions (SVON, PJOG, NJOG, ARST, STR, ZSTR, DEC, HOLD, PO_IN, P1_IN, P2_IN, P3_IN, P4_IN, P5_IN, P6_IN, P7_IN, TDIN, POT, NOT) to codes and contents.

Parameter selection tables for parameters 60, 61, and 63, showing bit assignments for IN3, IN2, IN1, IN0, and IN4.



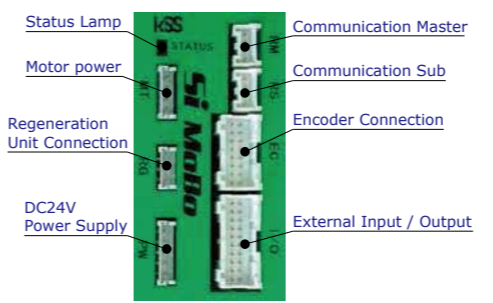
※REG1是主回路电源用稳压电源,使用DC24V或DC36V.使用DC24V时可与REG2通用.
※REG2是控制回路用稳压电源,使用DC24V.
※REG3是I/O用稳压电源,使用DC24V.
※REG4是指令脉冲串开路集电极输出时的稳压电源,使用DC5V(或以上).
※BK1、2为无电压继电器触点输出
※MM是电机存储组件,仅TS3692N61S02、TS3617N370S04安装在电缆内.

控制输出选择一览表

Table mapping selection functions (RDY, INP, ALM, PRG, FIN, VCMF, VZR, TFIN, FIN+TFIN, M0, M1, M2, TLMT, SLMT, POTOUT, NOTOUT, ZFIN, ZERO) to codes and contents.

向参数63指定上述代码.
参数63 OUT2 OUT1 OUT0
※参数No.60、61、63作为32位的HEX数据,以8位为间隔设定各输入输出功能.设定功能后,相应的端子将被分配所设的功能.
※多个输入端子上分配了同一功能时,任意一个有输入的端子将执行该功能.
※多个输出端子上分配了同一功能时,该功能对所设定的所有端子均输出.

●Connections



Timing the introduction of activation power supply
If using separate power supplies from activation(V1)and control (V2), introduce the control power supply first. When the control is supplied, the OUT0 signal is turned on as a signal that control has begun. Introduce the activation power supply only after confirming the output from this signal. If using the same power supply for activation and control(connecting the power supply to parallel V1 and V2 terminals), you can introduce them at the same time.

Initialization action when introducing power supply
Give the command to turn on the servo timed with the introduction of the activation power supply and the OUT0 signal. When the positioning of the motor excitation starting point (every 7.2° from the machine angle) is complete, the FIN/INP signal will be output and initialization actions are complete. All pulse line and other commands input before these initialization actions will be ignored. Furthermore, be sure to use non-voltage relay connection output BK1-BK2 on this device, where the brake cancellation signal measures timing with the motor excitation activation.

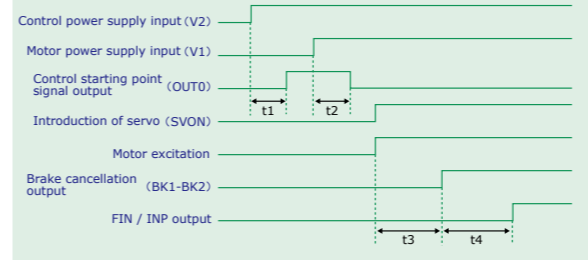


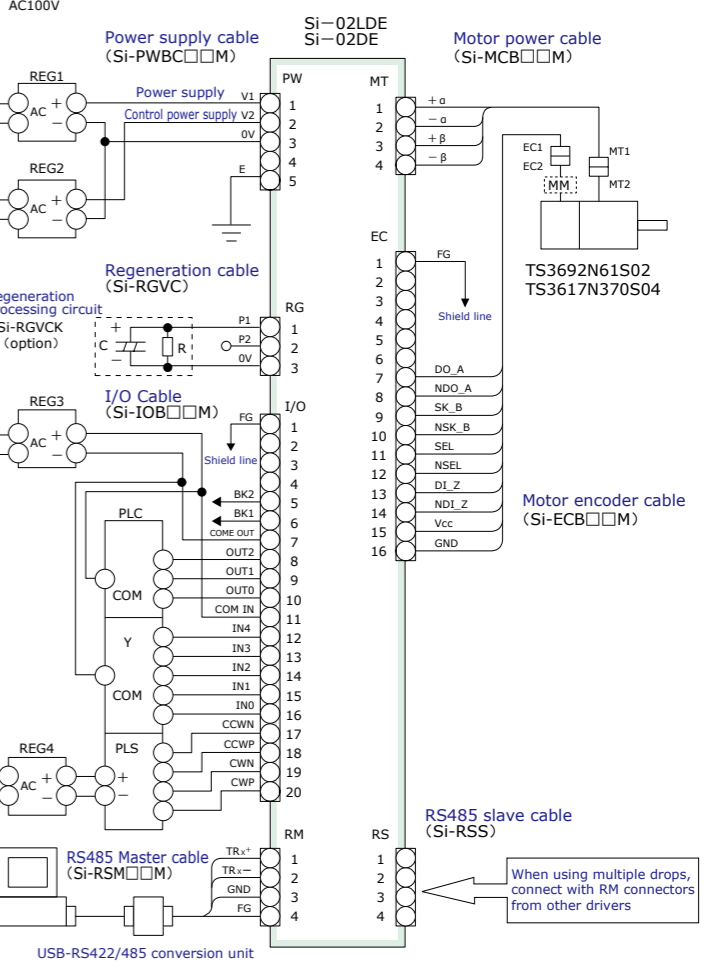
Table with 4 columns: Symbol, Meaning, Time, Unit. It defines timing parameters t1, t2, t3, and t4 for power supply and control signal transitions in English.

*1) If the motor rotor cannot accurately position the excitation starting point when the FIN/INP signal is output because it is on the edge of the machine or because the machine has a strong resistance to friction, this is a possibility that vibrations may occur or that the prescribed torque cannot be output. In this case, either set parameter 53, "Time to Hold Excitation at Start Time," to an appropriately large value, or set parameter 56, "Machine Edge Detection Sequence," to "1".
*2) If parameter 58, "Machine Edge Detection Sequence", is set to "1", after t4 is completed, machine edge detection activities will begin and the FIN/INP signal will be output upon completion.
*3) If the automatic servo on function is in effect, motor excitation will begin at the same time the control start signal(OUT0)output goes off.

Control Input Selection Table

Table mapping selection functions (SVON, PJOG, NJOG, ARST, STR, ZSTR, DEC, HOLD, PO_IN, P1_IN, P2_IN, P3_IN, P4_IN, P5_IN, P6_IN, P7_IN, TDIN, POT, NOT) to codes and contents in English.

Parameter selection tables for parameters 60 and 61 in English, showing bit assignments for IN3, IN2, IN1, and IN4.



*REG1 uses either DC24V or DC36V for stabilizing power supply to the main circuit power supply. When DC24V is used, REG2 may be shared.
*REG2 uses DC24V for stabilizing power supply to the control circuit.
*REG3 uses DC24V for stabilizing power supply to I/O.
*REG4 uses DC5V(or higher)for stabilizing power supply when the command pulse line outputs an open collector.
*BK1 and 2 have no voltage relay connection output.
*MM refers to motor memory unit, and is packaged only in cables TS3692N61S02 and TS3617N370S04.

Control Output Selection Table

Table mapping selection functions (RDY, INP, ALM, PRG, FIN, VCMF, VZR, TFIN, FIN+TFIN, M0, M1, M2, TLMT, SLMT, POTOUT, NOTOUT, ZFIN, ZERO) to codes and contents in English.

Parameters 63 refer to the above codes.
Parameter 63 OUT2 OUT1 OUT0
*Parameter number 60, 61, and 63 are 32-bit hexadecimal data, and are divided into 8 bits each, set through the input and output functions. When functions are set, the corresponding terminals are assigned to the set functions.
*When multiple input terminals are assigned to the same function,the one with input performs that function.
*When multiple output terminals are assigned to the same function,the output from that function will be performed at all assignend terminals.

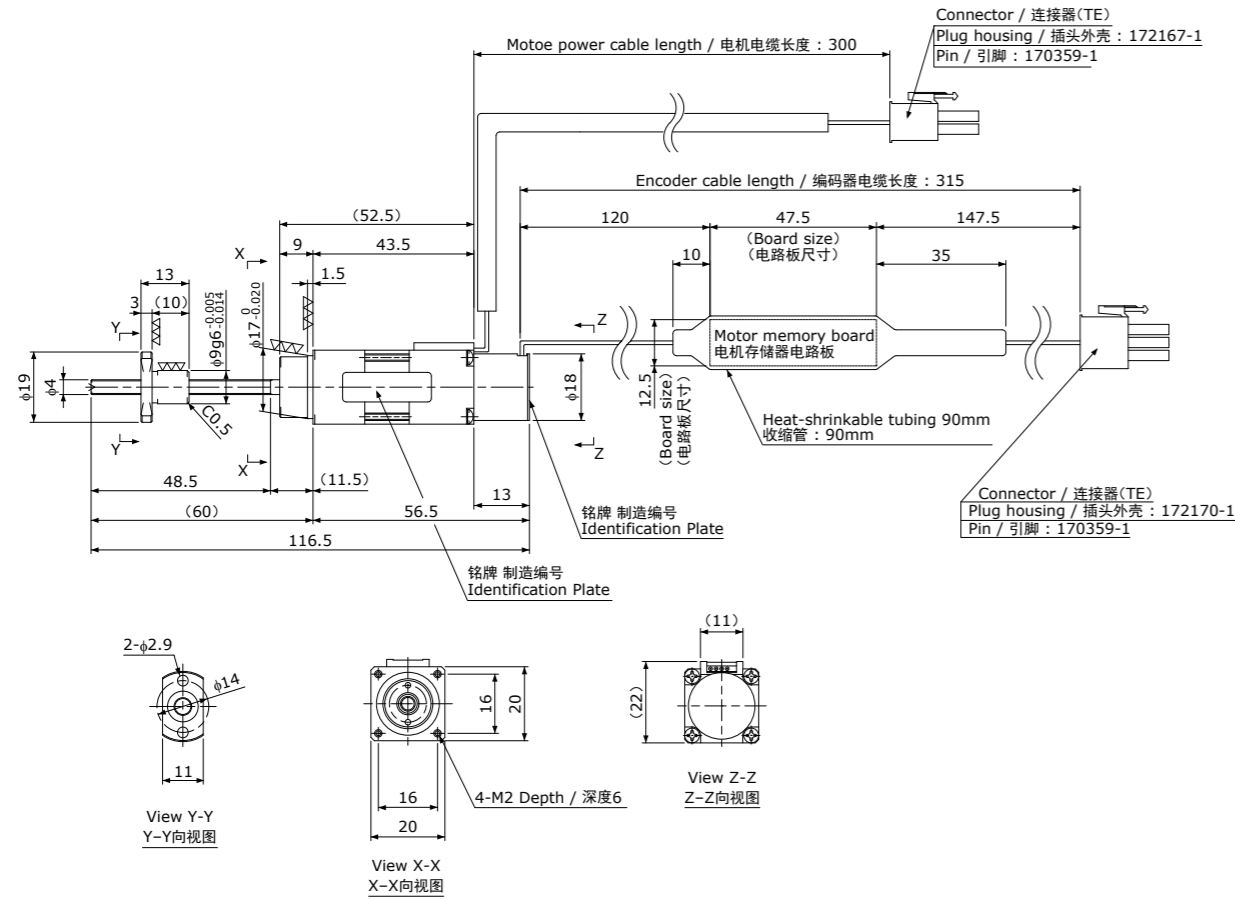
Standard products in stock SiMB series
标准库存品 SiMB系列

Dimensions & Specifications
规格参数

精密滚珠丝杠+步进伺服电机 / Precision Ball Screw + Stepping Servo Motor

SiMB □20 / NEMA 08

Shaft dia.(轴径)f4



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	Mass 质量 (g)
SiMB0401	1	30	30	114

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right 右
Axial play 轴向间隙	0
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Note1) Exclusive Driver(Si-02LDE)is required this type.
Note2) Only shaft end cutting is available. Other than that, it would be customized order.
注1) Si-MB需要专用驱动器(Si-02LDE)。
注2) 只能裁切轴端。其他轴端形状为定制产品。

Motor Specifications 电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 3.0 V
Rated current 额定电流	DC 0.35 A/phase DC 0.35 A/相
Winding resistance 绕组电阻	8.5Ω
Holding Torque 保持扭矩	0.017Nm
Rotor inertia 转子惯量	1.9g·cm²
Operating temperature 使用温度范围	-20°C~50°C
Encoder 编码器	Incremental 200ppr 增量型 200ppr

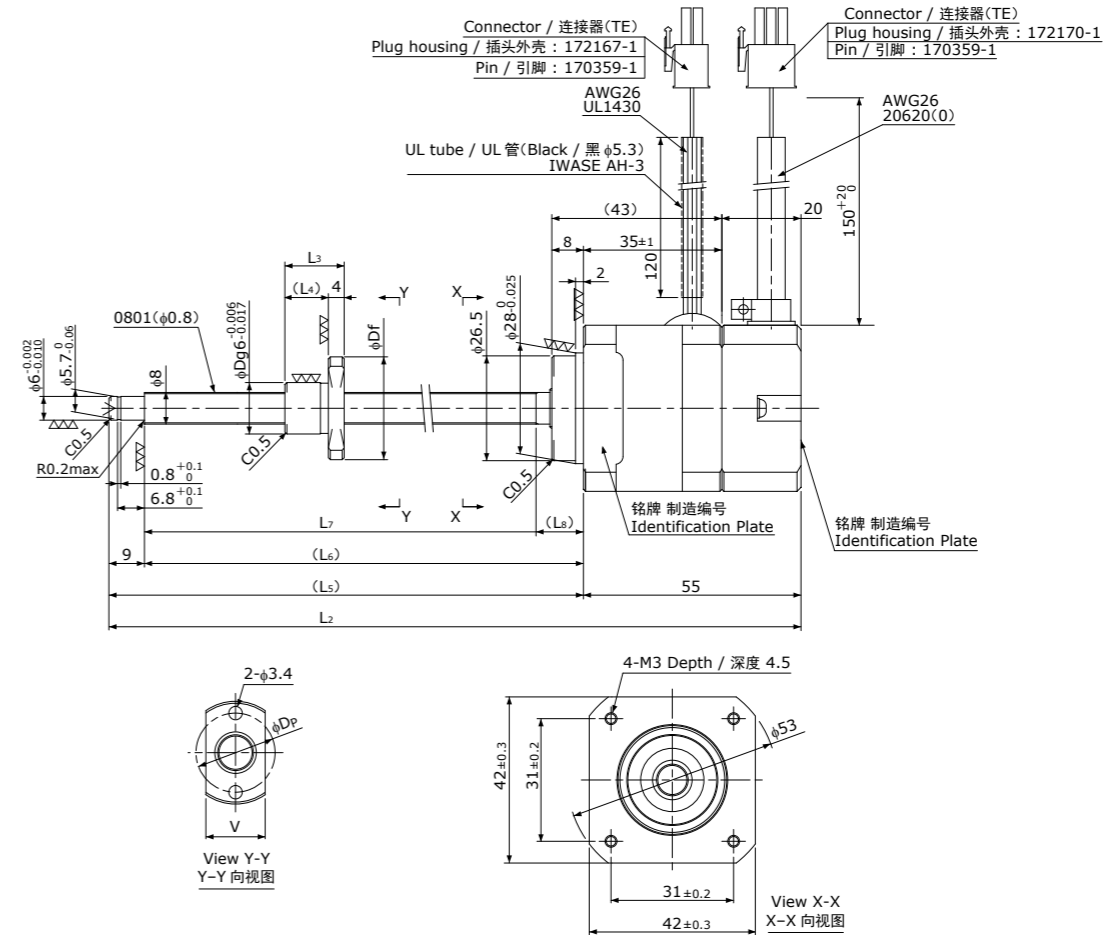
Standard products in stock SiMB series
标准库存品 SiMB系列

Dimensions & Specifications
规格参数

精密滚珠丝杠+步进伺服电机 / Precision Ball Screw + Stepping Servo Motor

SiMB □42 / NEMA 17

Shaft dia.(轴径)f8



Unit(单位):mm

Model 型号	Lead 导程	Travel 行程	Reference Thrust 参考推力 (N)	L ₂	L ₅	L ₆	L ₇	L ₈	D	Df	L ₃	L ₄	V	Dp	Mass 质量 (g)
SiMB0801	1	100	300	215	160	151	139	12	13	26	15	11	15	20	130
SiMB0802	2	160	150	265	210	201	189	12	15	28	18	14	17	22	165
SiMB0805	5	150	80	265	210	201	188	13	18	31	28	24	20	25	200

Ball Screw Specifications 滚珠丝杠主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right 右
Axial play 轴向间隙	0
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	Multemp PS-2 Multemp PS-2

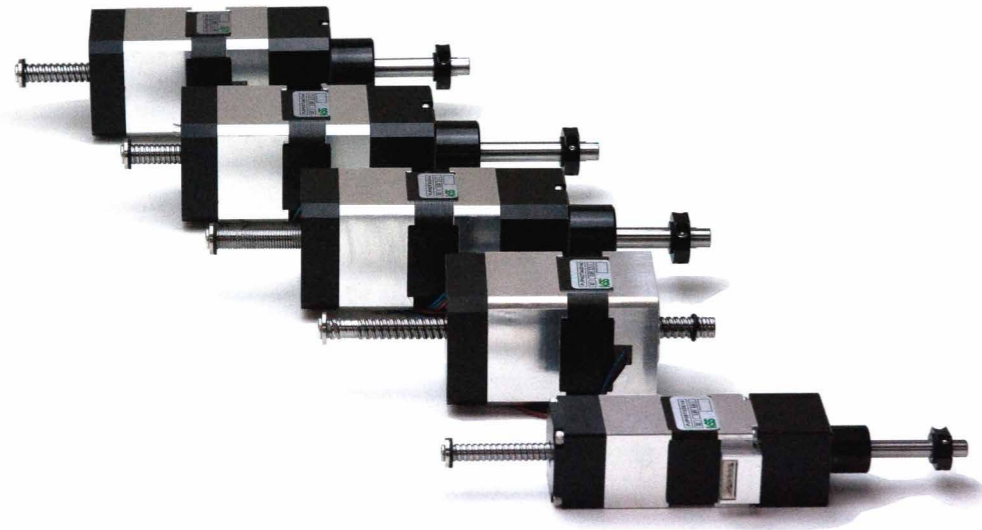
Note1) Exclusive Driver(Si-02DE)is required this type.
Note2) Only shaft end cutting is available. Other than that, it would be customized order.
注1) Si-MB需要专用驱动器(Si-02DE)。
注2) 只能裁切轴端。其他轴端形状为定制产品。

Motor Specifications 电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0 A/phase DC 2.0 A/相
Winding resistance 绕组电阻	1.1Ω
Holding Torque 保持扭矩	0.24Nm
Rotor inertia 转子惯量	35g·cm²
Operating temperature 使用温度范围	-20°C~50°C
Encoder 编码器	Incremental 400ppr 增量型 400ppr

线性执行器 Captive、Non-Captive型

Linear Actuator Captive, Non-Captive Type

2相中空步进电机和滚珠丝杠一体化的紧凑型电动缸。
Compact type Electric Cylinder with 2-phase Hollow Stepping Motor integrated with Ball Screw or Ball Screw with Ball Spline(BSSP).



- **特点**
 - 电机尺寸有□28、□42两种,且每种电机都有止转结构内
置型(Captive)和无止转结构型(Non-Captive)。
 - 按配备的驱动丝杠种类和导程,精度和推力选择丰富。

- **Features**
 - The new Cylinder type Actuator comes with 2 Motor sizes, NEMA 11 & NEMA 17. Captive type with anti-rotating device or Non-Captive type without anti-rotating device can be selected in each Motor size as standard.
 - Variety of Drive Screw, Shaft diameter & Lead combination allows wider selection of Accuracy and Thrust Force.

- **种类**
 - Captive型**
配备KSS微型滚珠丝杠花键(BSSP)用作止转结构。

- **Types**
 - Captive Type**
KSS miniature Ball Screw with Ball Spline(BSSP) is used for an anti-rotating device.

- Non-Captive型**
滚珠丝杠和中空电机相结合的简易结构,实现了轻量且紧凑外形。

- Non-Captive Type**
Simple combination of the Hollow Motor and the Ball Screw contributes to lightweight and compact body.

● 种类 / Variation

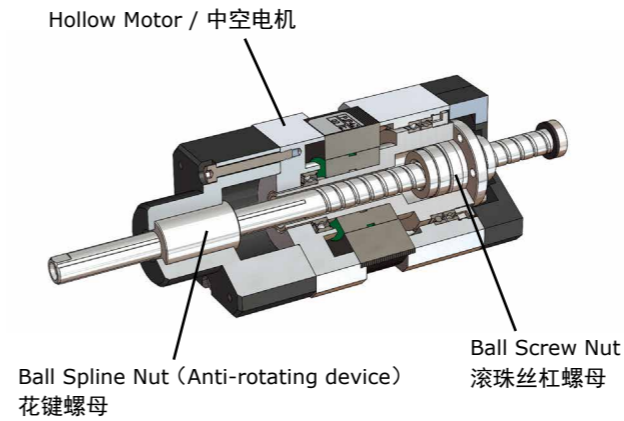
Unit(单位): mm

	Drive Screw 驱动丝杠	Notation 符号	NEMA 11 (□28)		NEMA 17 (□42)	
			Lead / 导程	Travel / 行程	Lead / 导程	Travel / 行程
Captive type Captive型	Precision Ball Screw 精密滚珠丝杠	G	1,2	40	2,5	50
Non-Captive type Non-Captive型	Precision Ball Screw 精密滚珠丝杠	G	1,2	40,80	2,5	50,100
	Rolled Ball Screw 冷轧滚珠丝杠	R	1,2	40,80	2,5	50,100

注) 如需上述以外的导程,请垂询本公司。
Note) If the Lead other than the above is required, please ask KSS representative.

● 构造 / Internal Structure

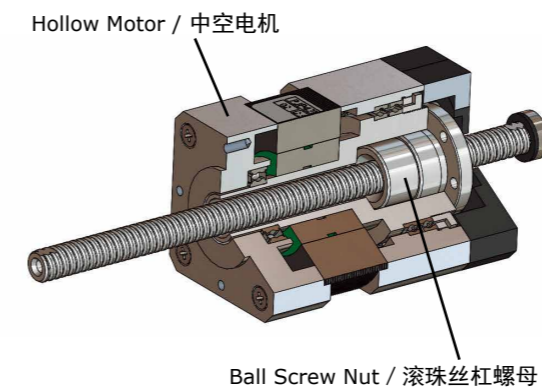
Captive型 / Captive type



配备BSSP,花键螺母用作止转结构。客户无需装配止转结构,实现更加紧凑的外形尺寸。

Ball Spline Nut in BSSP plays a role of anti-rotating device. No need to set up anti-rotating design outside the Actuator. Our unique BSSP enable a compact and slim body by using Ball Spline Nut as an anti-rotating device.

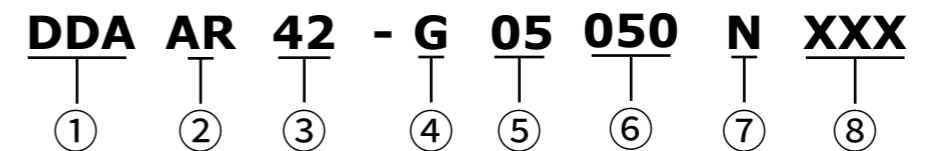
Non-Captive型 / Non-Captive type



中空电机内置驱动丝杠的简易结构。客户使用时,可利用轴端内螺纹装配止转结构。

Simple design of Screw Shaft in Hollow Motor. External anti-rotating device should be set up when usage.

● 公称型号 / Model number notation



- ①系列符号
DDA : 直接驱动执行器系列
- ②电动缸型
AR : Captive type
CL : Non-Captive type
- ③电机尺寸
42 : 42角步进电机
28 : 28角步进电机
- ④进给丝杠种类
G : 精密滚珠丝杠
R : 冷轧滚珠丝杠
- ⑤导程 / 节距(mm) : 05表示5mm
- ⑥行程(mm) : 050表示50mm
- ⑦连接器种类
N : 散线
E : EI连接器(TE Connectivity制造)
- ⑧附加号

- ①Series No.
DDA : Direct Drive Actuator Series
- ②Cylinder type
AR : Captive type
CL : Non-Captive type
- ③Motor size
42 : NEMA 17 Stepping Motor
28 : NEMA 11 Stepping Motor
- ④Lead Screw / Ball Screw type
G : Precision Ball Screw
R : Rolled Ball Screw
- ⑤Lead / Pitch(mm) : 05 means 5mm
- ⑥Travel(mm) : 050 means 50mm
- ⑦Connector type
N : No connector(Bare)
E : EI connector(TE Connectivity)
- ⑧Extra notation

●规格 / Specifications

【Captive型 / Captive type】

Model 型号	DDAAR28-G01 040	DDAAR28-G02 040	DDAAR42-G02 050	DDAAR42-G05 050
Motor size 电机尺寸	NEMA 11 □28		NEMA 17 □42	
Travel 行程	40mm		50mm	
Drive Screw 驱动丝杠	Precision Ball Screw with Ball Spline 精密滚珠丝杠花键			
Screw lead 丝杠导程	1mm	2mm	2mm	5mm
Resolution 分辨率	0.005mm	0.01mm	0.01mm	0.025mm
Repeatability 重复定位精度	±0.005mm			
Lost motion 空转	0.010mm			
Thrust force 推力	50N	25N	80N	30N
Permissible speed 许用速度	20mm/sec	40mm/sec	40mm/sec	100mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2 sec 0.2 sec以上			
Operating Temperature 使用环境温度	0~40°C (No Condensation) 0~40°C (无结露)			
Lubrication 润滑	KSS original Grease MSG No.2 KSS原装油脂 MSG No.2			
Mass 质量	270g		660g	

【Non-Captive型 / Non-Captive type】

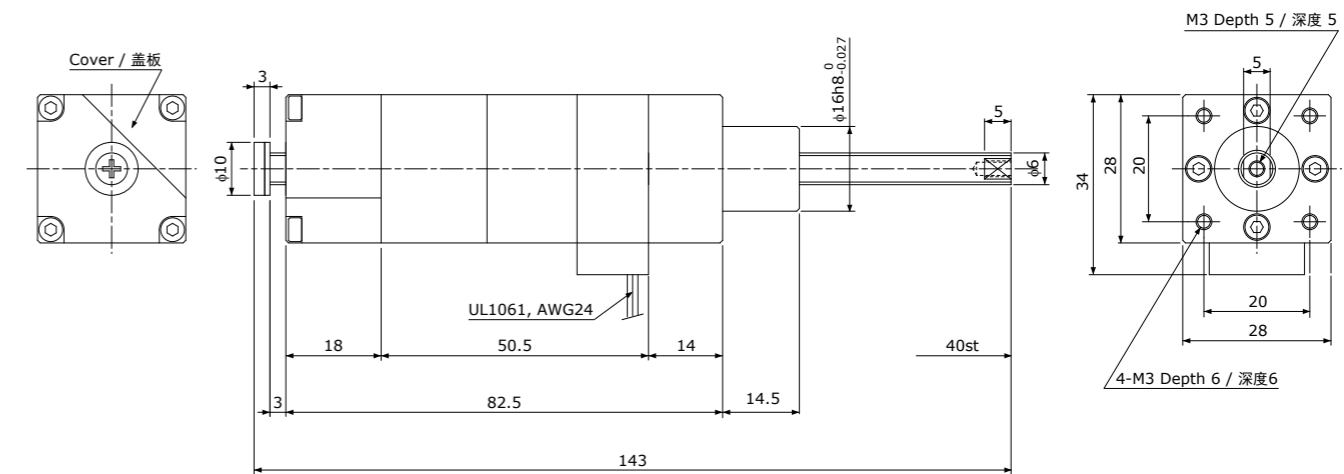
Model 型号	DDACL28-G01 040 / 080	DDACL28-G02 040 / 080	DDACL28-R01 040 / 080	DDACL28-R02 040 / 080	DDACL42-G02 050 / 100	DDACL42-G05 050 / 100	DDACL42-R02 050 / 100	DDACL42-R05 050 / 100
Motor size 电机尺寸	NEMA 11 □28				NEMA 17 □42			
Travel 行程	40mm / 80mm				50mm / 100mm			
Drive Screw 驱动丝杠	Precision Ball Screw 精密滚珠丝杠		Rolled Ball Screw 冷轧滚珠丝杠		Precision Ball Screw 精密滚珠丝杠		Rolled Ball Screw 冷轧滚珠丝杠	
Screw lead 丝杠导程	1mm	2mm	1mm	2mm	2mm	5mm	2mm	5mm
Resolution 分辨率	0.005mm	0.010mm	0.005mm	0.010mm	0.010mm	0.025mm	0.010mm	0.025mm
Repeatability 重复定位精度	±0.005mm		±0.010mm		±0.005mm		±0.010mm	
Lost motion 空转	0.010mm		0.020mm		0.010mm		0.020mm	
Thrust force 推力	50N	25N	50N	25N	80N	30N	80N	30N
Permissible speed 许用速度	20mm/sec	40mm/sec	20mm/sec	40mm/sec	40mm/sec	100mm/sec	40mm/sec	100mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2 sec 0.2 sec以上							
Operating Temperature 使用环境温度	0~40°C (No Condensation) 0~40°C (无结露)							
Lubrication 润滑	KSS original Grease MSG No.2 KSS原装油脂 MSG No.2							
Mass 质量	St 40:230g St 80:240g	St 40:230g St 80:240g	St 40:230g St 80:240g	St 40:230g St 80:240g	St 50:530g St 100:550g	St 50:530g St 100:550g	St 50:530g St 100:550g	St 50:530g St 100:550g

Standard style of Captive type
标准形状 Captive型Dimensions & Specifications
规格参数

止转功能内置型号 / Anti-rotating device built-in model

DDAAR □28 / NEMA 11

Shaft dia.(轴径)φ6



Motor lead wire / 电机线
A Black(黑)
A Green(绿)
B Red(红)
B Blue(蓝)

UL1061, AWG24(310mm)

Recommended Drivers 推荐驱动器
SD4030B3

Note) Refer to page P164 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P164页。

Specifications 主要技术参数		
	DDAAR28-G01 040	DDAAR28-G02 040
Drive Screw type 驱动丝杠	Precision Ball Screw 精密滚珠丝杠	
Screw lead 丝杠导程	1mm	2mm
Travel 行程	40mm	
Repeatability 重复定位精度	±0.005mm	
Lost Motion 空转	0.010mm	
Permissible Speed 许用速度	20mm/sec	40mm/sec
Acceleration & deceleration time 加减速时间	Min. 0.2sec 0.2 sec以上	
Thrust Force 推力	50N	25N
Mass 质量	270g	

Precautions

- Radial load can not be applied on Captive type.
For more detail, please see page S105.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design. Please ask KSS if necessary.

Motor Specifications 电机参数	
Basic step angle 基本步角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 3.8 V
Rated current 额定电流	0.67 A/phase 0.67 A/相
Winding resistance 绕组电阻	5.6Ω
Winding inductance 绕组电感	5.3mH
Insulation Class 绝缘等级	Class B (130°C) B级 (130°C)
Operating Temperature 使用环境温度	0~40°C (No Condensation) 0~40°C (无结露)

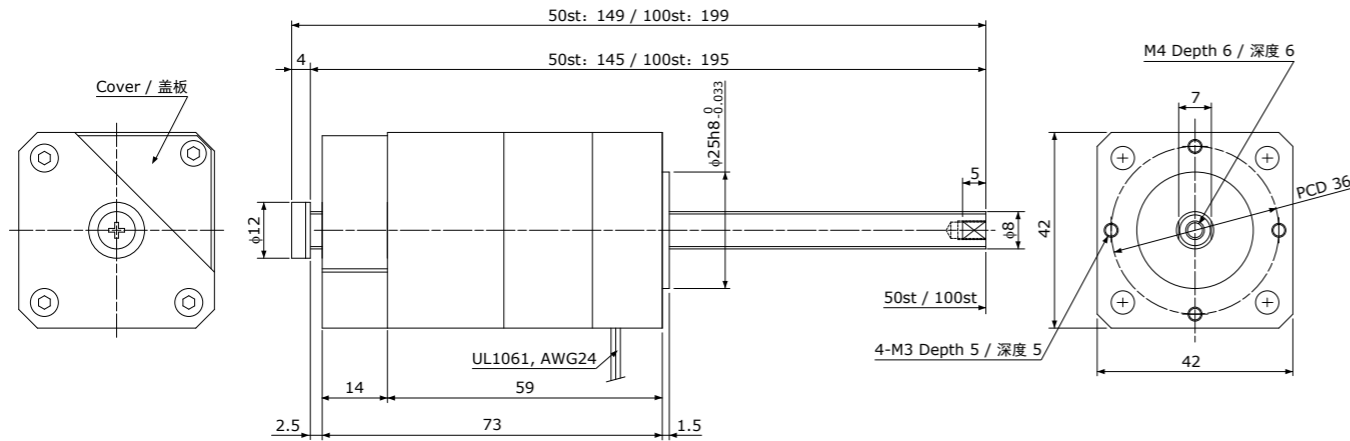
注意事项

- Captive型不能承受径向负载。
请参照技术解说S105页。
- 上述规格为垂直状态且运行初期的参考值。
- 标准规格没有装配传感器。
如有需要, 请垂询本公司。

Standard style of Non-Captive type
标准形状 Non-Captive型Dimensions & Specifications
规格参数

DDACL □42 / NEMA 17

Shaft dia. (轴径) f8



Motor lead wire / 电机线	
A	Black(黑)
A	Green(绿)
B	Red(红)
B	Blue(蓝)

UL1061, AWG24(310mm)

Recommended Drivers 推荐驱动器	SD4030B3
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Note) Refer to page P164 for connection diagram of recommended Drivers.
注) 有关与推荐驱动器的接线, 请参照P164页。

	Specifications 主要技术参数			
	DDACL42-G02 050/100	DDACL42-G05 050/100	DDACL42-R02 050/100	DDACL42-R05 050/100
Drive Screw type 驱动丝杠	Precision Ball Screw 精密滚珠丝杠		Rolled Ball Screw 冷轧滚珠丝杠	
Screw lead 丝杠导程	2mm	5mm	2mm	5mm
Travel 行程	50mm / 100mm		50mm / 100mm	
Repeatability 重复定位精度	±0.005mm		±0.010mm	
Lost Motion 空转	0.010mm		0.020mm	
Permissible Speed 许用速度	40mm/sec	100mm/sec	40mm/sec	100mm/sec
Acceleration & deceleration time 加速时间	Min. 0.2sec 0.2 sec以上		Min. 0.2sec 0.2 sec以上	
Thrust Force 推力	80N	30N	80N	30N
Mass 质量	Travel 50mm / 行程50mm:530g Travel 100mm / 行程100mm:550g		Travel 50mm / 行程50mm:530g Travel 100mm / 行程100mm:550g	

Motor Specifications 电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.5 V
Rated current 额定电流	1.2 A/phase 1.2 A/相
Winding resistance 绕组电阻	2.1Ω
Winding inductance 绕组电感	4.0mH
Insulation Class 绝缘等级	Class B (130°C) B级 (130°C)
Operating Temp. 使用环境温度	0~40°C (No Condensation) 0~40°C (无结露)

Precautions

- Non-Captive type does not have an anti-rotating device. External anti-rotating devices should be set up when usage. Radial load can not be applied on Captive type. For more detail, please see page S105.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design. Please ask KSS if necessary.

注意事项

- Non-Captive型无止转结构。客户使用时需在外部构建止转结构。Captive型不能承受径向负载。请参照技术解说S105页。
- 上述规格为垂直状态且运行初期的参考值。
- 标准规格没有装配传感器。如有需要, 请垂询本公司。

●推荐驱动器 / Recommended Driver

为使客户更方便地使用执行器, 本公司准备了推荐驱动器可供选配。

KSS provides recommended Stepping Motor Driver as an option for Linear Actuator in order to make it easy to use.

KR-A5CC

DC24V 5相步进电机用驱动器。可以进行整步、半步切换。兼具自动电流下降功能。

This Driver is for 5-phase Stepping Motor operated by DC24V power supply. It has automatic current reduction circuits. You can choose full-step or half step function.



KR-A55MC

DC24V 5相步进电机用驱动器。可设定16种步进角, 最大分割数为250的微型步进驱动器。

Micro-Step Driver for 5-phase Stepping Motor with DC24V power supply. 16 step angle types can be set up to 250 divisions.



KR-A535M

可使用AC100~220V电源的5相步进电机用微型步进驱动器。

可设定16种步进角, 最大分割数为250分割。

Micro-Step Driver for 5-phase Stepping Motor, which can be used with AC100~220V power supply. 16 step angle types can be set up to 250 divisions.



SD4015B3

用于DMB系列、电机型号08E2004的推荐驱动器。具备自动电流下降功能, 可设定8种步进角。

This is recommended for Motor model 08E2004 of DMB series. It has automatic current down function and Micro-step function with 8-step angle.



SD4030B3

用于2相步进电机线性执行器的推荐驱动器(电机型号08E2004以外)。

具备自动电流下降功能, 可设定8种步进角。

This is recommended for 2 phase stepping Motor Linear Actuator. (Motor model: Other than 08E2004)

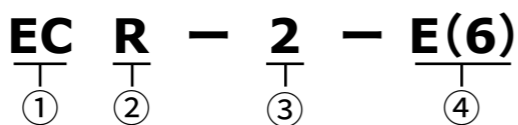
It has automatic current down function and Micro-step function with 8-step angle.



● **连接线 / Extension Cable**

线性执行器Captive型、Non-Captive型和推荐驱动器的专用电缆。
请按照下面的例子指定电缆长度、连接器形状。单侧为散线，
敬请注意。

Extension Cable between Linear Actuator Captive type or Non-Captive type, and KSS recommended Stepping Motor Driver.
Please designate Cable length and Connector type in accordance with the example below.
Please note that one side of Extension Cable is cut end only (no connector).



① 连接线符号

② 电缆种类

R : 耐弯曲电缆

③ 电缆长度(m)

④ 连接器形状

N : 散线

E(6) : EI 连接器 6芯

E(4) : EI 连接器 4芯

E(6+4) : EI 连接器 6+4芯

① Extension Cable

② Cable type

R : Robot cable type

③ Cable length (m)

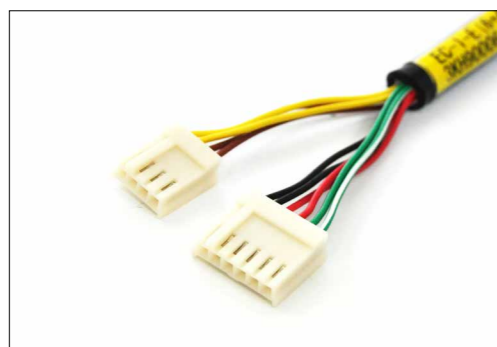
④ Connector type at both end

N : No connector (Cut only)

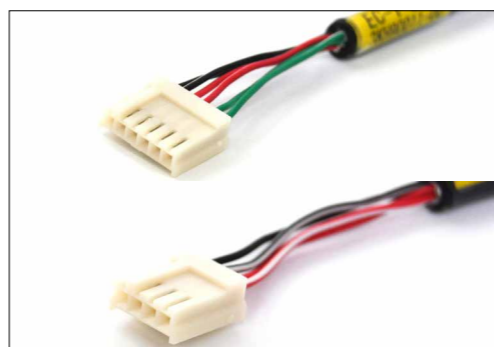
E(6) : EI connector 6-pins

E(4) : EI connector 4-pins

E(6+4) : EI connector 6+4-pins



E(6+4) : EI connector 6+4-pins / EI连接器(6+4芯)
(TE Connectivity)



E(6) : EI connector 6-pins / EI连接器6芯
E(4) : EI connector 4-pins / EI连接器4芯
(TE Connectivity)

● **驱动器接线图 / Linear Actuator Connection diagram**

KSS线性执行器和推荐驱动器的接线图如下所示。请先确认使用的线性执行器和驱动器的组合，然后按图进行配线。

Describe the connection diagram between the KSS Linear Actuator and the recommended driver.

Please check the combination of the Linear Actuator and the driver, then wire according to diagrams as shown below.

Type 类型	Series 系列	Recommended Driver 推荐驱动器	Output current 输出电流	Connection diagram 接线图
External	DMB (Motor Model:08E2004) (电机型号:08E2004)	SD4015B3	0.25~1.5A/phase	Fig. P-3 图 P-3
	DMB (Motor Model:Other than 08E2004) (电机型号:08E2004 以外)	SD4030B3	0.5~3A/phase	Fig. P-4 图 P-4
	2TMB	SD4030B3	0.5~3A/phase	Fig. P-5 图 P-5
	MB / TMB	KR-A5CC	0.1~0.9A/phase	Fig. P-6 图 P-6
		KR-A55MC	0.4~1.4A/phase	Fig. P-7 图 P-7
		KR-A535M	0.4~1.4A/phase	Fig. P-8 图 P-8
Captive Non-Captive	DDAAR / DDACL	SD4030B3	0.5~3A/phase	Fig. P-9 图 P-9

External type

■适用产品 / Applicable Product series

DMB系列 / DMB series (电机型号:08E2004 / Motor model:08E2004)

■推荐驱动器 / Recommended Driver

SD4015B3 : 2相微步驱动器 / 2-phase Microstep Driver

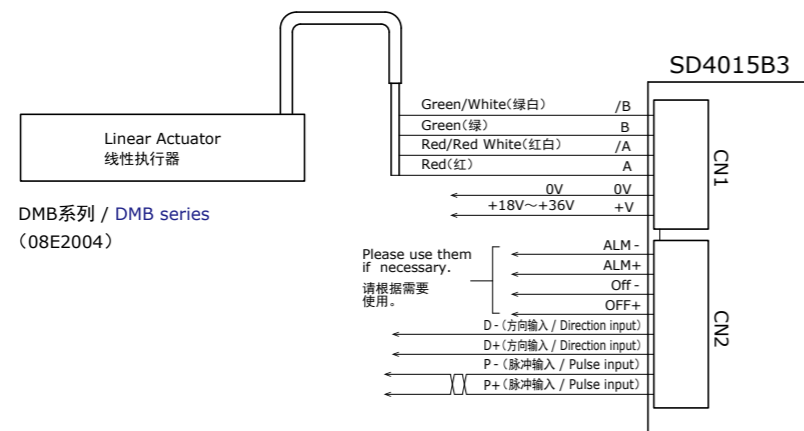
**输出电流 / Output current:0.25~1.5A/Phase

※注意事项

- SD4015B3的出厂设定为1A。
- 使用前请务必确认电机额定电流,再设定驱动器电流。
- 电流的设定方法请从KSS网站上下载。

※Caution

- The factory setting of SD4015B3 is 1A.
- Please be sure to perform a current set up of Driver based on Motor Rated current before use.
- For the details about current setup, please download the manual from KSS web site.



【图P-3 / Fig.P-3】

■适用产品 / Applicable Product series

DMB系列 / DMB series (电机型号:08E2004以外 / Motor model:Other than 08E2004)

■推荐驱动器 / Recommended Driver

SD4030B3 : 2相微步驱动器 / 2-phase Microstep Driver

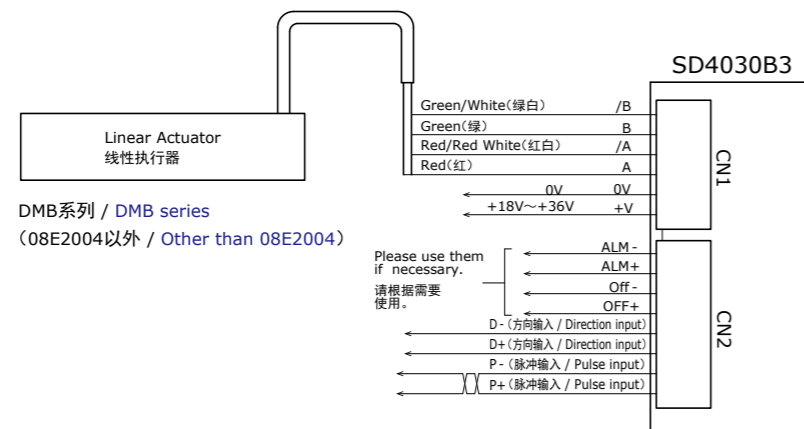
**输出电流 / Output current:0.5~3A/Phase

※注意事项

- SD4030B3的出厂设定为2A。
- 使用前请务必确认电机额定电流,再设定驱动器电流。
- 电流的设定方法请从KSS网站上下载。

※Caution

- The factory setting of SD4030B3 is 2A.
- Please be sure to perform a current set up of Driver based on Motor Rated current before use.
- For the details about current setup, please download the manual from KSS web site.



【图P-4 / Fig.P-4】

■适用产品 / Applicable Product series

2TMB系列 / 2TMB series

■推荐驱动器 / Recommended Driver

SD4030B3 : 2相微步驱动器 / 2-phase Microstep Driver

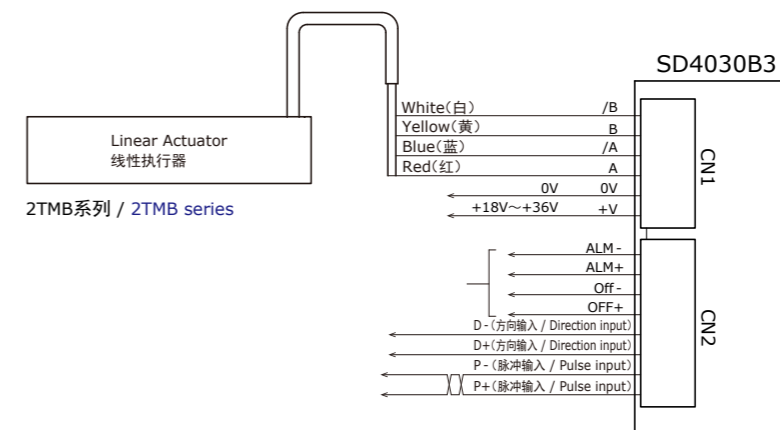
**输出电流 / Output current:0.5~3A/Phase

※注意事项

- SD4030B3的出厂设定为2A。
- 使用前请务必确认电机额定电流,再设定驱动器电流。
- 电流的设定方法请从KSS网站上下载。

※Caution

- The factory setting of SD4030B3 is 2A.
- Please be sure to perform a current set up of Driver based on Motor Rated current before use.
- For the details about current setup, please download the manual from KSS web site.



【图P-5 / Fig.P-5】

■适用产品 / Applicable Product series

MB系列 / MB series

TMB系列 / TMB series

■推荐驱动器 / Recommended Driver

KR-A5CC : 5相步进电机驱动器 / 5-phase Stepping Motor Driver

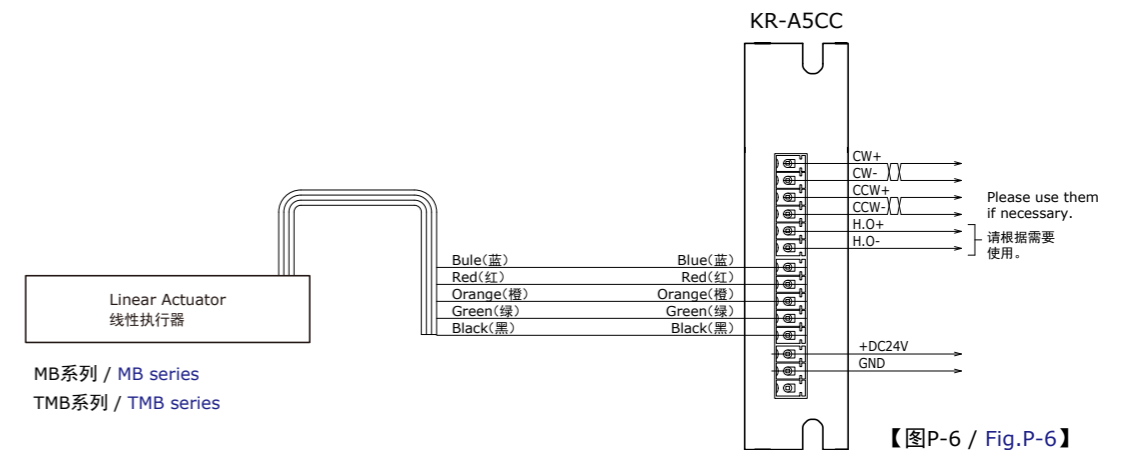
**输出电流 / Output current:0.1~0.9A/Phase

※注意事项

- KR-A5CC的出厂设定为0.35A。
- 使用前请务必确认电机额定电流,再设定驱动器电流。

※Caution

- The factory setting of KR-A5CC is 0.35A.
- Please be sure to perform a current set up of Driver based on Motor Rated current before use.



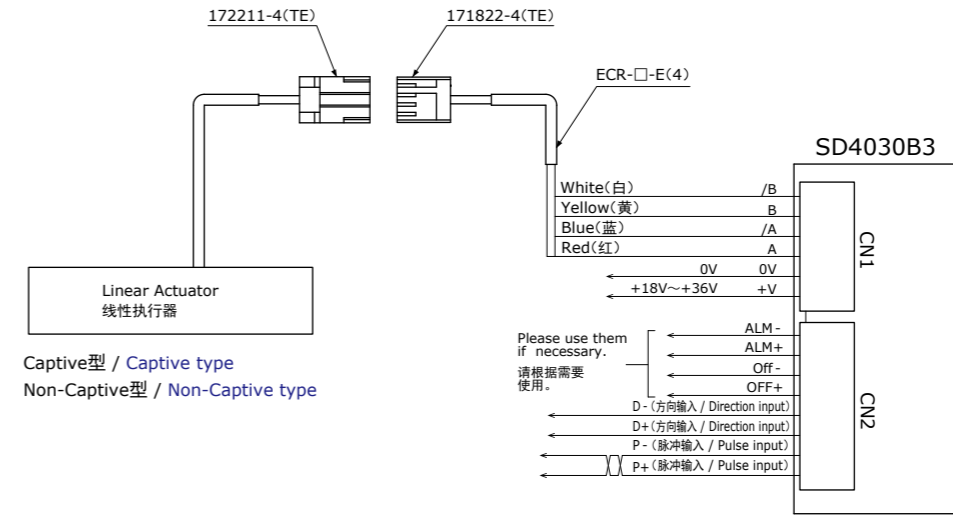
【图P-6 / Fig.P-6】

Captive, Non-Captive type

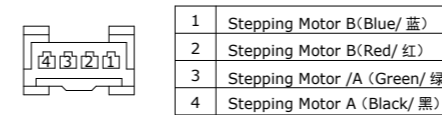
- 适用产品 / Applicable Product series
Captive型、Non-Captive型 / Captive type, Non-Captive type
- 推荐驱动器 / Recommended Driver
SD4030B3 : 2相微步驱动器 / 2-phase Microstep Driver
**输出电流 / Output current: 0.5~3A/Phase

- ※注意事项
- SD4030B3的出厂设定为2A。
 - 使用前请务必确认电机额定电流,再设定驱动器电流。
 - 电流的设定方法请从KSS网站上下载。

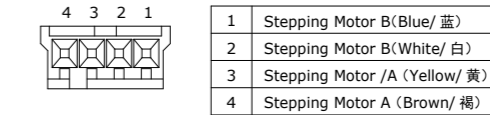
- ※Caution
- The factory setting of SD4030B3 is 2A.
 - Please be sure to perform a current set up of Driver based on Motor Rated current before use.
 - For the details about current setup, please download the manual from KSS web site.



电机电缆 172211-4 (插头)/Motor cable 172211-4 (male)



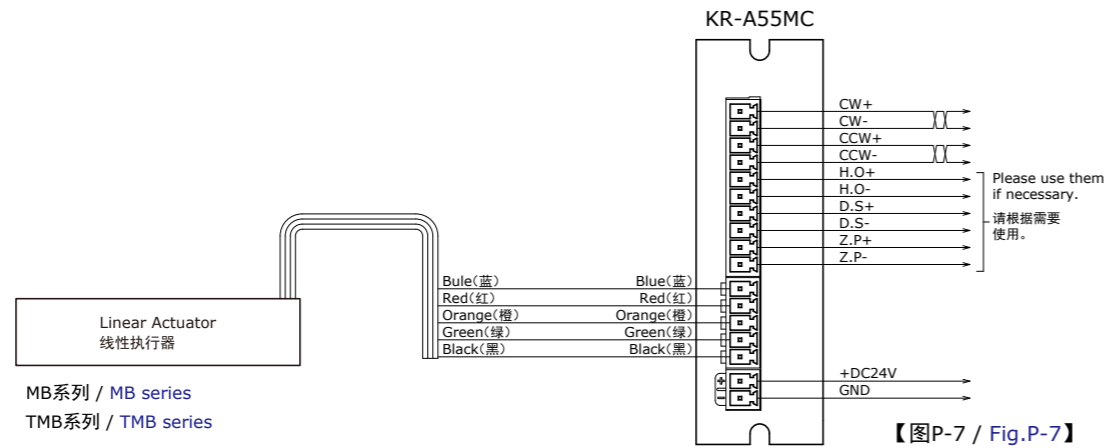
电机连接线 171822-4 (插口)/Motor Extension cable 171822-4 (female)



- 适用产品 / Applicable Product series
MB系列 / MB series
TMB系列 / TMB series
- 推荐驱动器 / Recommended Driver
KR-A55MC : 5相微步驱动器 / 5-phase Microstep Driver
**输出电流 / Output current: 0.4~1.4A/Phase

- ※注意事项
- KR-A55MC的出厂设定为0.75A。
 - 使用前请务必确认电机额定电流,再设定驱动器电流。

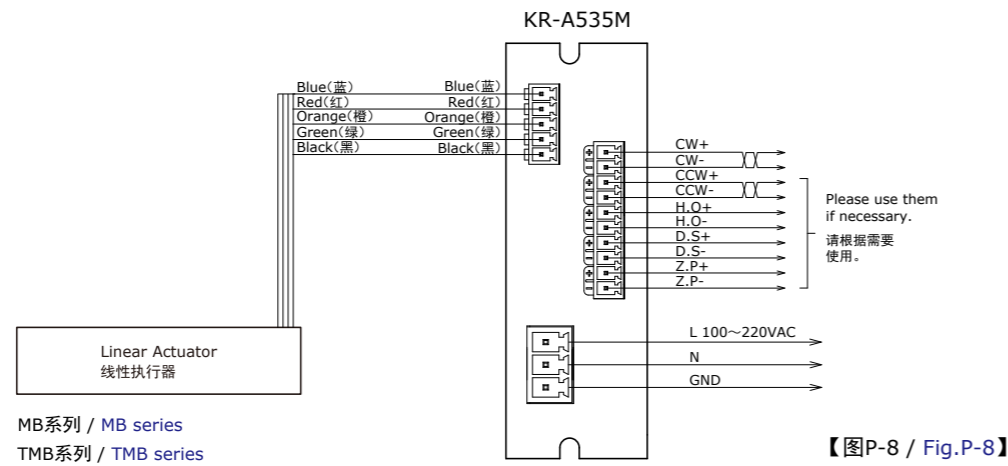
- ※Caution
- The factory setting of KR-A55MC is 0.75A
 - Please be sure to perform a current set up of Driver based on Motor Rated current before use.



- 适用产品 / Applicable Product series
MB系列 / MB series
TMB系列 / TMB series
- 推荐驱动器 / Recommended Driver
KR-A535M : 5相微步驱动器 / 5-phase Microstep Driver
**输出电流 / Output current: 0.4~1.4A/Phase

- ※注意事项
- KR-A535M的出厂设定为0.75A。
 - 使用前请务必确认电机额定电流,再设定驱动器电流。

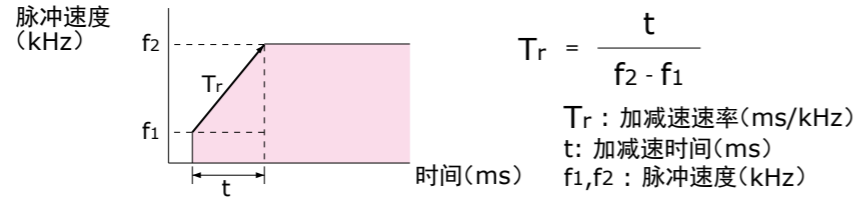
- ※Caution
- The factory setting of KR-A535M is 0.75A
 - Please be sure to perform a current set up of Driver based on Motor Rated current before use.



●操作、使用注意事项

★使用注意事项

1. 使用时请仔细阅读使用说明书,充分理解说明书内容,并务必严格遵守安全注意事项(使用说明书请从KSS网站下载)。
2. 敲击本产品、使产品下落或对其施加超过规定值的轴向负载、径向负载,可能会导致产品损坏,请谨慎操作。
3. 开封后请检查产品是否有异常,是否与所订购的产品一致。
4. 若分解各部位,可能会导致异物进入及各部位组装精度降低,因此请勿分解本产品。
5. 若异物进入,将会导致滚珠循环部件损坏、缩短产品寿命或导致功能失效等,因此请切实防止垃圾、切屑等异物进入。
6. 电机的结构不防水、不防锈。不能在直接接触水、油的场所以及有油雾的环境下使用。
7. 使用滚珠丝杠时,请务必涂抹润滑剂。
在常规用途下使用时,请每2~3个月检查一次油脂,并根据需要补充油脂。
使用过程中油脂变质时,请擦去旧的油脂后涂抹新的规定油脂。
8. 请勿在超过本公司规定的负载 / 推力、许用转速 / 最高速度规格值的状态下使用。
9. 设计时,请避免径向负载及力矩负载直接作用于滚珠丝杠上。
否则将显著缩短滚珠丝杠的寿命。此外,发生安装偏心时,将会产生偏负载作用,导致精度降低及寿命缩短。
10. 滚珠丝杠螺母发生超程时,可能会导致钢珠脱落、循环部件受损或钢珠槽产生压痕等,从而引起动作不良。
螺母发生超程时,本公司将提供有偿维修。
11. 加减速速率请参考各系列的推荐值。请勿以产品目录记载数值以下的加减速速率使用。



12. 请勿拉扯电机导线。另外,电机导线用于固定。请勿将其用于活动用途。
13. 请勿靠近磁性存储媒体。
14. 根据负载条件及使用驱动器的不同,电机扭矩速度特性会有异于规格值。
15. 在规格范围内,步进电机拥有共振点。请避开共振点使用。

★安全注意事项

1. 如果出现异味、噪音、烟雾、过热或振动,请立即停止操作并关闭电源。
2. 禁止使用超过额定电流的电源。
3. 驱动电机前请确认电源的极性。
4. 电机可能因负载条件及使用的驱动器而异常发热。
使用时,请将电机表面温度控制在80°C以下。
5. 请确认接线方式、驱动方式以及相序。错误接线将会导致电机异常动作。
6. 请务必进行接地。
7. 请勿强行弯曲、拉扯、夹住电机导线。
8. 动作中请勿触摸活动部位。
9. 进行电机耐压试验及绝缘电阻测试时,请断开与控制机的连接。
10. 维护、检查前,请切断驱动器的输入电源。

★使用环境

1. 请勿在环境温度超过0~40°C、环境湿度超过20~80%RH、有结露、腐蚀性气体、易燃气体的场所使用。
2. 请勿在产生强电场、强磁场的场所使用。
3. 禁止在金属屑、粉尘、油雾、切削液、水分、盐、有机溶剂出现或飞散的场所使用。
4. 请勿在经常发生振动的场所以及冲击、真空等特殊环境下使用。

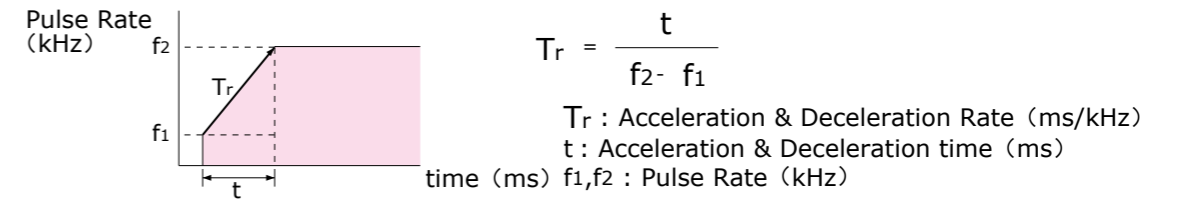
★External type 使用注意事项

※External type是电机轴与丝杠轴一体型结构,因此无论是丝杠轴还是电机轴任意一方损坏,都不能维修。敬请谅解。

●Precaution of handling and operating

★Precaution for operating

1. Before use, please read instruction manuals and follow the precautions below.
The instruction manuals are available on KSS web site.
2. Do not hit or drop the Shaft, do not apply Axial load exceeding specifications or Radial load, it may cause malfunction.
3. Before use, please check that the product has no defect, and product is the same as your order.
4. Do not disassemble each component, dust may get inside the product. It may deteriorate accuracy.
5. Please prevent contamination from dust or swarf. Dust or swarf may cause damage to Ball Screw, which lead to deteriorating the function.
6. Motor is not designed to resist water oil. Item cannot be used in direct exposure of water or oil, or environment such as oil bath.
7. Lubrication is required under the Ball Screw operation. Lubricant condition should be checked every 2 to 3 months. If Grease is contaminated, remove old Grease and replace with new one.
8. Do not use the Actuator exceeding our specifications in Load or Speed.
9. Care must be taken not to apply Radial load or Moment load directly on Ball Screw.
This will lead to shorten the Ball Screw life remarkably. In addition, misalignment between Ball Screw and other components will lead to deterioration of function, such as accuracy, life and so on.
10. Allowing Ball Screw Nut to over-run may result in malfunctioning due to Balls escaping, damage to recirculation parts, and indentation on the raceways. Continued use in this state will lead to rapid wear and damage to recirculation parts. Therefore Ball Screw Nut must never be allowed to over-run.
If over-running occurs, contact KSS for an inspection with charge.
11. Acceleration & Deceleration rate should be followed by recommended number described in each series. Do not use Linear Actuator under our recommended Acceleration & Deceleration Rate.



12. Do not hold the Motor lead wire. Motor lead wire is for fixation, do not use the Motor lead wire as movabilities.
13. Keep away from Magnetic memory device.
14. The Motor torque and speed characteristics may vary from the specifications, depending on the load conditions or Driver used.
15. The Motor has a resonant point within the specifications. Please avoid the resonant point when in use.

★Precaution for safety

1. If abnormal odor, noise, smoke, overheating, or vibration occurs, stop operation immediately and turn the power off.
2. Do not use the Actuator exceeding rated current.
3. Check and confirm the polarity of the power supply in prior to activate the Motor.
4. The Motor may overheat depending on the load condition or Driver used.
Make sure that the Motor surface temperature does not exceed 80°C when in use.
5. Check the wire connection type, Drive system, and phase sequence.
Inappropriate connection leads to malfunction.
6. A ground connection must be used.
7. Do not bend, pull or pinch the Motor lead wire.
8. Do not touch moving parts during operation.
9. Disconnect from the Controller before performing dielectric withstanding voltage test of the Motor or megger test.
10. Please switch off the Driver, when inspection or maintenance.

★Operating environment

1. Operating environment should be 0~40°C in temperature and 20~80%RH in humidity.
Do not use the Actuator under dew condensation, corrosive gas or inflammable gas environment.
2. Do not use the Actuator under strong electric field, strong magnetic field.
3. Please prevent from swarf, oil mist, cutting fluid, water/moisture, salt spray, organic solvent and other contamination.
4. The Actuator cannot be used under the vibration, impact, vacuum, and other special environment.

★Precaution for External type

※Since External type is the product which integrated the Motor Shaft and the Screw Shaft, repair is not possible, if either Motor or Ball Screw is damaged.