

# **BONENG**



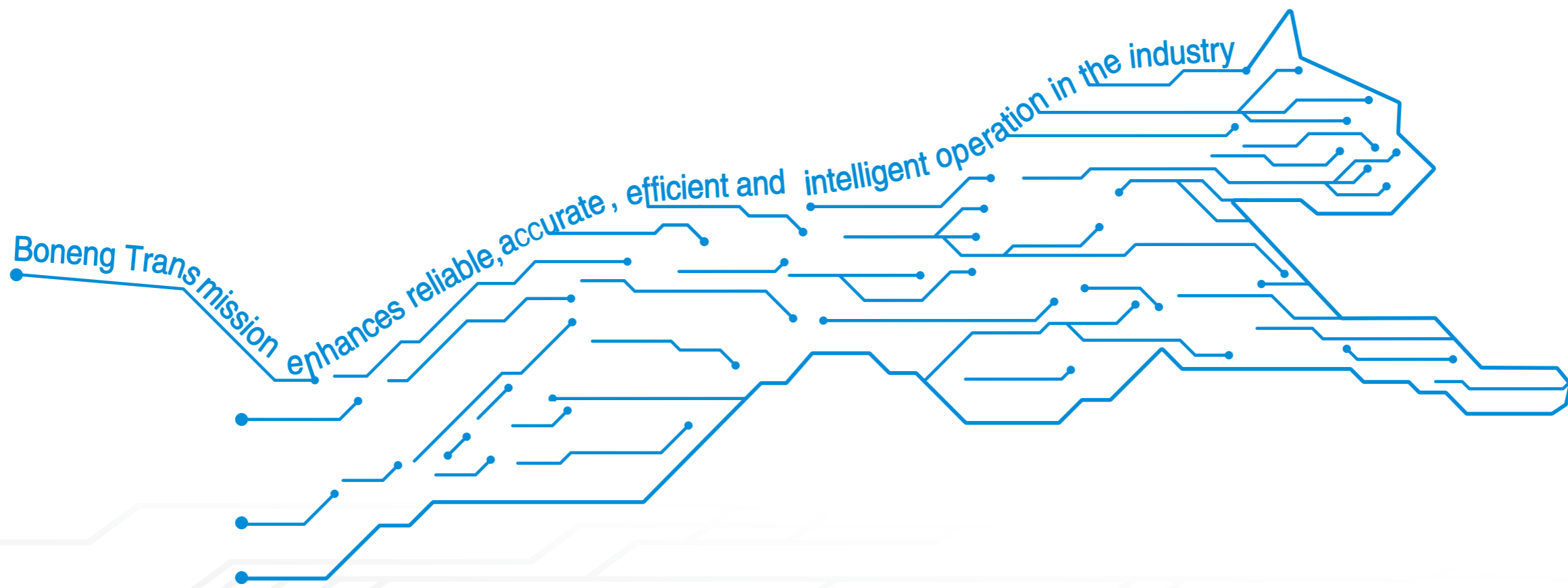
**MX三相交流  
永磁伺服马达&  
AX伺服驱动器**

**(0.28kW~10.06kW)**

**MX Three-Phase  
AC Permanent  
Magnet  
Servo Motor &  
AX Servo Drives**

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Selection Catalogue: C05.0041

## **Boneng Transmission**



控制器/驱动器/马达/  
齿轮马达/齿轮箱

Controller/ Drive/ Motor/  
Gearmotor/ Gearbox

## MX三相交流 永磁伺服马达& AX伺服驱动器

- ◆ 高防护等级(IP66)
- ◆ 高动态响应, 高过载承载能力
- ◆ 高端永磁制动器、航空插头
- ◆ 支持PROFINET及EtherCAT通讯
- ◆ PROFINET伺服支持IRT及RT应用
- ◆ 使用高精度23位绝对值编码器, 控制精度高
- ◆ 380VAC电压等级设计, 省去变压器等额外配置
- ◆ 快速免螺丝控制端子, 方便接线及调试维护
- ◆ 丰富的IO接口, 及可定义输入或输出属性的控制端子

## MX Three-Phase AC Permanent Magnet Servo Motor & AX Servo Drives

- ◆ High protection level (IP66)
- ◆ High dynamic response, high overload carrying capacity
- ◆ High end permanent magnet brakes, aviation plugs
- ◆ PROFINET and EtherCAT communication supported
- ◆ PROFINET servo supports RT and IRT applications
- ◆ High-precision 23-bit absolute value encoder used for high control precision
- ◆ 380VAC voltage level design, eliminating additional configurations such as transformers
- ◆ Fast screw-free control terminals, convenient for wiring, debugging and maintenance
- ◆ Abundant IO interfaces and optional Bi-direction control terminals



产品广泛应用于机床、机器人、印刷机械、包装机械、纺织机械、自动化设备等各个领域。

博能传动公司总部和各大区域的技术专家以及各区域办事处的应用工程师、售后服务技师竭诚为您提供全面的技术咨询和完善的服务。

Products are widely used in machine tool, robots, printing machines, packaging machines, textile machinery, automation equipment and other fields.

Boneng Transmission company headquarters and major regional technical experts and regional offices of the application engineers, after-sales service technicians dedicated to provide you with comprehensive technical advice and perfect service.



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## 伺服马达

### 1 伺服马达概述

MX系列伺服马达匹配博能AX系列伺服驱动器可组成精确定位的伺服系统。

MX伺服马达出厂常用的冷却方式为自然冷却，其他冷却方式，如强制风冷、水冷的伺服马达可特殊定制并实现更高的功率输出，具体参数另请咨询。

MX伺服马达标配防护等级为IP66，如需要IP67等级的伺服马达可定制。设计生产符合ISO、IEC、GB等相关标准要求。BONENG伺服马达适用于连续工作制(S1)，同时也满足大部分断续工作方式(S2-S10)。

### 2 马达优点

- ◆ 结构紧凑坚固
- ◆ 高防护等级
- ◆ 优良的径向跳动质量和细微的转矩波动
- ◆ 高动态响应
- ◆ 高过载承载能力
- ◆ 高效率
- ◆ 高精度、高分辨率编码器
- ◆ 快速闭锁的可旋转插头

### 3 马达应用

- ◆ 机床
- ◆ 机器人
- ◆ 印刷机械
- ◆ 包装机械
- ◆ 纺织机械
- ◆ 自动化设备

## Servo Motor

### 1 Motor overview

MX series servo motor and AX series servo drive can compose a precise positioning servo system. The commonly used cooling method of the MX series servo motor is natural cooling. Other cooling methods, such as forced air cooling and water cooling, can be specially customized to achieve higher power output. Please consult for specific parameters. The standard protection level of the MX series servo motor is IP66, Servo motor is with IP67 rating can be customized. Design and production comply with ISO, IEC, GB and other relevant standards. BONENG servo motor is suitable for continuous duty (S1) and most of the intermittent duty (S2-S10).

### 2 Motor advantages

- ◆ Compact and robust
- ◆ High protection level
- ◆ Excellent radial runout quality and subtle torque ripple
- ◆ High dynamic response
- ◆ High overload carrying capacity
- ◆ High efficiency
- ◆ High-precision, high-resolution encoder
- ◆ Quick locking rotatable plug

### 3 Motor application

- ◆ Machine tools
- ◆ Robots
- ◆ Printing machinery
- ◆ Packaging machinery
- ◆ Textile machinery
- ◆ Automation equipment

## 4 马达技术特征

## 4 Motor technical characteristics

马达型号	Motor model	三相交流 同步伺服马达	Three-phase AC synchronous servo motor
磁性材料	Magnetic material	稀土永磁材料	Rare earth permanent magnet material
轴高(mm)	Shaft height(mm)	28、36、48、 63、80、100	28、36、48、 63、80、100
额定功率(kW)	Rated power(kW)	0.28-10.06	0.28-10.06
额定转矩(N.m)	Rated torque(N.m)	0.8-58	0.8-58
额定转速(r/min)	Rated speed(r/min)	1500、2000、 3000、4500	1500、2000、 3000、4500
绝缘等级	Insulation class	F	F
防护等级	Protection class	IP66	IP66
冷却方式	Cooling method	自然冷却	Natural cooling
振动等级	Vibration level	A	A
噪声(dB)	Noise(dB)	55-70	55-70
径向圆跳精度、 同轴度和端面 圆跳精度等级	Runout Accuracy and Concentricity	N	N
安装形式	Installation form	IMB5	IMB5
驱动轴伸	Drive shaft extension	平键轴	Flat key shaft
编码器	Encoder	编码器分辨率 <sup>2</sup> <sup>23</sup>	Encoder resolution 2 <sup>23</sup>
连接器	Connector	动力和信号 航空插头	Power and signal aviation plugs
选件	Options	内置永磁 失电制动器	Built-in permanent magnet power-off brake



## 5 马达运行环境

- ◆ 所允许的相对湿度：
  - 20°C ≤ T ≤ 20°C: 100%
  - 20°C < T ≤ 30°C: 95%
  - 30°C < T ≤ 40°C: 55%
- ◆ 对于更高的环境温度、以及（或者）高于海拔1000m的地点，马达的额定功率换算系数为K<sub>ht</sub>所允许的功率值： $P_n' = P_n \cdot K_{ht}$

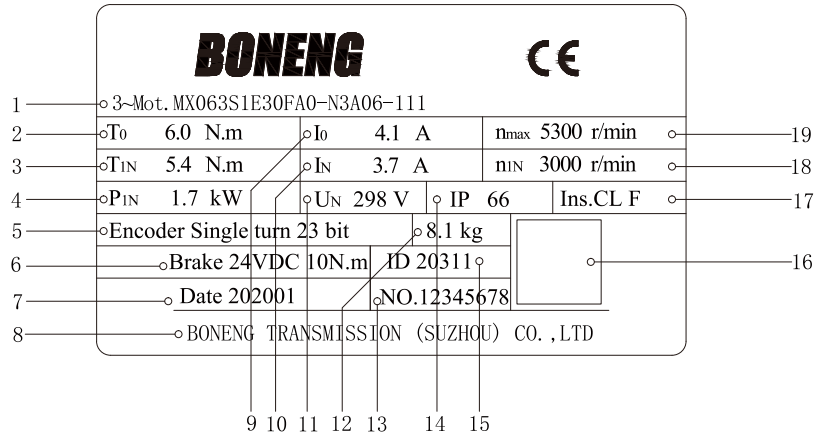
## 5 Motor operating environment

- ◆ Allowable relative humidity:
  - 20°C ≤ T ≤ 20°C: 100%
  - 20°C < T ≤ 30°C: 95%
  - 30°C < T ≤ 40°C: 55%
- ◆ For higher ambient temperatures, and above 1000m altitude, the motor's rated power conversion factor is the power value allowed by K<sub>ht</sub>:  $P_n' = P_n \cdot K_{ht}$

对于不同高度和（或）不同环境温度的功率折算系数K <sub>ht</sub>		Power conversion factor for different altitudes and different ambient temperatures K <sub>ht</sub>				
Altitude	对应海拔高度的环境温度					Ambient temperature corresponding to altitude
	< 30°C	30 ~ 40°C	45°C	50°C	55°C	60°C
1000 m	1.07	1	0.96	0.92	0.87	0.82
1500 m	1.04	0.97	0.93	0.89	0.84	0.79
2000 m	1	0.94	0.9	0.86	0.82	0.77
2500 m	0.96	0.9	0.86	0.83	0.78	0.74
3000 m	0.92	0.86	0.82	0.79	0.75	0.7
3500 m	0.88	0.82	0.79	0.75	0.71	0.67
4000 m	0.82	0.77	0.74	0.71	0.67	0.63

## 6 马达铭牌信息

## 6 Motor nameplate information



- |               |                 |                         |                      |
|---------------|-----------------|-------------------------|----------------------|
| 1. 马达型号       | 11. 额定转速下的感应线电压 | 1. Model of motor       | 11. Back EMF         |
| 2. 静止转矩(100K) | 12. 重量          | 2. Static torque(100K)  | 12. Weight           |
| 3. 额定转矩(100K) | 13. 出厂编号        | 3. Rated torque(100K)   | 13. Factory number   |
| 4. 额定功率       | 14. 防护等级        | 4. Rated power          | 14. Protection class |
| 5. 编码器参数      | 15. 马达ID        | 5. Parameter of encoder | 15. ID of the motor  |
| 6. 制动器参数      | 16. 二维码         | 6. Parameter of brake   | 16. QR code          |
| 7. 生产日期       | 17. 绝缘等级        | 7. Date in produced     | 17. Insulation class |
| 8. 公司名称       | 18. 额定转速        | 8. Company name         | 18. Rated speed      |
| 9. 静止电流       | 19. 最大转速        | 9. Static current       | 19. Maximum speed    |
| 10. 额定电流      |                 | 10. Rated current       |                      |

## 7 马达制动器参数

## 7 Motor brake parameters

制动器型号	Brake model	BN028	BN036	BN048	BN063	BN080	BN100
静摩擦力矩(N.m)	Static friction torque(N.m)	≥1.9	≥2.4	≥3.8	≥10	≥22	≥60
制动器功率(W)	Brake power(W)	8.76	6.74	13.4	14	19	25
转动惯量(kg·cm <sup>2</sup> )	Moment of inertia(kg·cm <sup>2</sup> )	0.09	0.11	0.39	0.78	2.55	14.7
额定间隙(mm)	Rated clearance(mm)	0.15	0.12	0.2	0.2	0.3	0.4
工作电压(VDC)	Operating voltage(VDC)	24±10%	24±10%	24±10%	24±10%	24±10%	24±10%
工作温度(°C)	Operating temperature(°C)	-15~120	-15~120	-15~120	-15~120	-15~120	-15~120
制动吸合时间(ms)	Brake pull-in time(ms)	≤20	≤20	≤30	≤25	≤30	≤50
制动释放时间(ms)	Brake release time(ms)	≤35	≤80	≤50	≤90	≤100	≤220
紧急制动次数(次)	Emergency braking times(times)	2000	2000	2000	500	2000	500
紧急制动次数(次/小时)	Emergency braking times(times/hour)	20	20	20	20	20	20
最大紧急制动转速(r/min)	Maximum emergency braking speed(r/min)	6000	6000	6000	3000	3000	3000
适配马达机座号	Compatible motor frame size	028	036	048	063/080S	080M/100S	100M/100L

## 8 马达和驱动器的 选型及订货号

## 8 Selection and order numbers of motor and drives

马达 机座 号	马达额定 功率 (kW)	马达额定 转速 (r/min)	马达 能效 等级	马达容 许最大 惯量比	马达ID		马达订货号	驱动器功率 模块订货号
					无制动器	带制动器		
					Motor ID			
Motor frame size	Motor rated power (kw)	Motor rated speed (r/min)	Motor energy efficiency class	Motor allowable maximum inertia ratio	Without brake	With brake	Motor order number	Drive power module order number
028S	0.28	3000	IE5	35	1□010	2□010	MX028S1E30FA0-N□□06-111	AX-PM26-B3A75-□
028M	0.42	3000	IE5	25	1□012	2□012	MX028M1E30FA0-N□□06-111	AX-PM26-B3A75-□
028S	0.38	4500	IE5	30	1□011	2□011	MX028S1E45FA0-N□□06-111	AX-PM26-B3A75-□
028M	0.54	4500	IE5	25	1□013	2□013	MX028M1E45FA0-N□□06-111	AX-PM26-B3B15-□
036S	0.47	3000	IE5	15	1□110	2□110	MX036S1E30FA0-N□□06-111	AX-PM26-B3A75-□
036M	0.75	3000	IE5	15	1□112	2□112	MX036M1E30FA0-N□□06-111	AX-PM26-B3B15-□
036S	0.66	4500	IE5	10	1□111	2□111	MX036S1E45FA0-N□□06-111	AX-PM26-B3B15-□
036M	0.8	4500	IE5	10	1□113	2□113	MX036M1E45FA0-N□□06-111	AX-PM26-B3B15-□
048S	1	3000	IE5	10	1□210	2□210	MX048S1E30FA0-N□□06-111	AX-PM26-B3B15-□
048M	1.5	3000	IE5	10	1□212	2□212	MX048M1E30FA0-N□□06-111	AX-PM26-B3B22-□
048S	1.32	4500	IE5	5	1□211	2□211	MX048S1E45FA0-N□□06-111	AX-PM26-B3B22-□
048M	1.55	4500	IE5	5	1□213	2□213	MX048M1E45FA0-N□□06-111	AX-PM26-B3B22-□
063S	1.2	2000	IE5	10	1□310	2□310	MX063S1E20FA0-N□□06-111	AX-PM26-B3B22-□
063M	2.05	2000	IE5	5	1□313	2□313	MX063M1E20FA0-N□□06-111	AX-PM26-B3B40-□
063S	1.7	3000	IE5	5	1□311	2□311	MX063S1E30FA0-N□□06-111	AX-PM26-B3B30-□
063M	2.76	3000	IE5	10	1□314	2□314	MX063M1E30FA0-N□□06-111	AX-PM26-B3B55-□
063S	2.07	4500	IE5	5	1□312	2□312	MX063S1E45FA0-N□□06-111	AX-PM26-B3B30-□
063M	2.97	4500	IE5	5	1□315	2□315	MX063M1E45FA0-N□□06-111	AX-PM26-B3B55-□
080S	2.39	2000	IE5	5	1□410	2□410	MX080S1E20FA0-N□□06-111	AX-PM26-B3B40-□
080M	3.98	2000	IE5	5	1□412	2□412	MX080M1E20FA0-N□□06-111	AX-PM26-B3B75-□
080S	3.24	3000	IE5	5	1□411	2□411	MX080S1E30FA0-N□□06-111	AX-PM26-B3B55-□
080M	5.03	3000	IE5	5	1□413	2□413	MX080M1E30FA0-N□□06-111	AX-PM26-B3B75-□
100S	4.08	1500	IE5	5	1□510	2□510	MX100S1E15FA0-N□□06-111	AX-PM26-B3B75-□
100M	6.6	1500	IE5	5	1□513	2□513	MX100M1E15FA0-N□□06-111	AX-PM26-B3C11-□
100L	9.11	1500	IE5	5	1□516	2□516	MX100L1E15FA0-N□□06-111	AX-PM26-B3C15-□
100S	5.03	2000	IE5	5	1□511	2□511	MX100S1E20FA0-N□□06-111	AX-PM26-B3B75-□
100M	7.96	2000	IE5	5	1□514	2□514	MX100M1E20FA0-N□□06-111	AX-PM26-B3C15-□
100L	10.06	2000	IE5	5	1□517	2□517	MX100L1E20FA0-N□□06-111	AX-PM26-B3C15-□
100S	6.28	3000	IE5	5	1□512	2□512	MX100S1E30FA0-N□□06-111	AX-PM26-B3C11-□
100M	8.8	3000	IE5	5	1□515	2□515	MX100M1E30FA0-N□□06-111	AX-PM26-B3C15-□

485 Encoder 0

Biss-C Encoder 1

Without filter N

With filter F

驱动器控制模块订货号	驱动器操作面板订货号	动力线订货号	信号线订货号	驱动器可选件制动电阻订货号
Driver control module order number	Drive operator panel order number	Power cable order number	Signal cable order number	Drive options: Braking resistor order number
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A06-K-D75
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A06-K-D75
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A06-K-D75
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A08-K-D39
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A06-K-D75
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A08-K-D39
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A08-K-D39
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A08-K-D39
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A08-K-D39
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A15-K-D18
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A15-K-D18
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A15-K-D18
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A15-K-D18
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A30-K-D10
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A15-K-D18
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A30-K-D10
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A15-K-D18
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A15-□□□	A1-H17-A□□-□□□	A1-H02-A30-K-D10
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A25-□□□	A1-H17-A□□-□□□	A1-H02-A30-K-D10
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A25-□□□	A1-H17-A□□-□□□	A1-H02-A40-K-C75
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A25-□□□	A1-H17-A□□-□□□	A1-H02-A30-K-D10
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A25-□□□	A1-H17-A□□-□□□	A1-H02-A40-K-C75
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A40-□□□	A1-H17-A□□-□□□	A1-H02-A40-K-C75
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A40-□□□	A1-H17-A□□-□□□	A1-H02-A80-K-C36
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A40-□□□	A1-H17-A□□-□□□	A1-H02-A80-K-C36
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A40-□□□	A1-H17-A□□-□□□	A1-H02-A40-K-C75
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A40-□□□	A1-H17-A□□-□□□	A1-H02-A80-K-C36
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A40-□□□	A1-H17-A□□-□□□	A1-H02-A80-K-C36
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A40-□□□	A1-H17-A□□-□□□	A1-H02-A80-K-C36
AX-CM□□-□□-PE	A1-OP25	A1-H□□-A40-□□□	A1-H17-A□□-□□□	A1-H02-A80-K-C36

55 EA  
PA  
51 PN

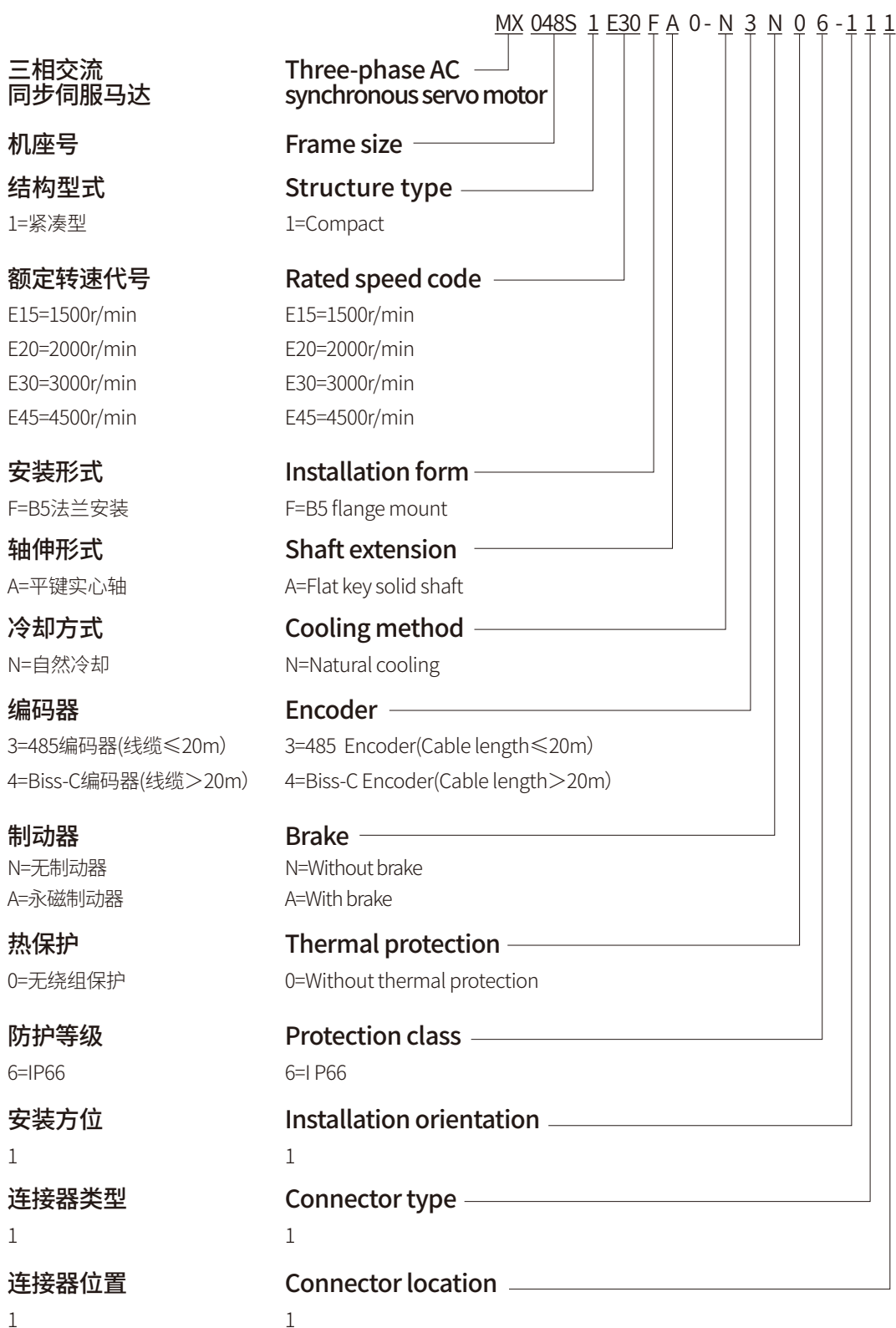
Without brake 18  
With brake 16

B30(3m)  
B50(5m)  
B70(7m)  
C10(10m)  
C15(15m)  
C20(20m)  
C30(30m)  
C40(40m)  
C50(50m)

Without battery 10 B30(3m)  
With battery 11 B50(5m)  
B70(7m)  
C10(10m)  
C15(15m)  
C20(20m)  
Without battery 12 C30(30m)  
With battery 13 C40(40m)  
C50(50m)

## 9 马达型号表示方法

## 9 Motor model indication method



整机标配颜色  RAL9006

The standard color of the whole machine  RAL9006

## 10 马达特性及外形尺寸

## 10 Motor characteristics and dimensions

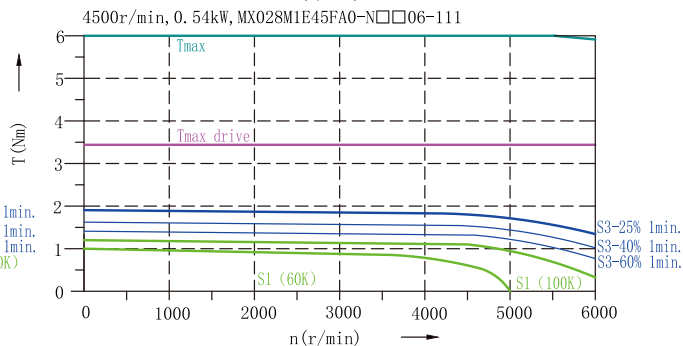
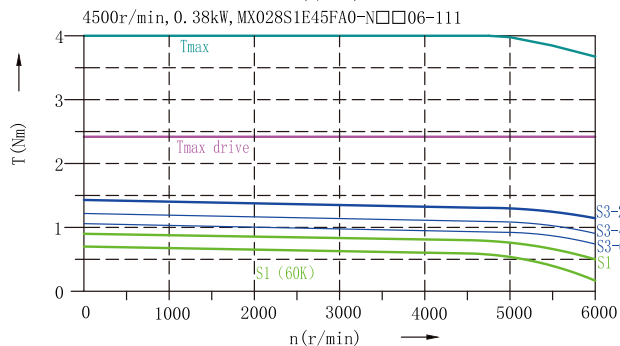
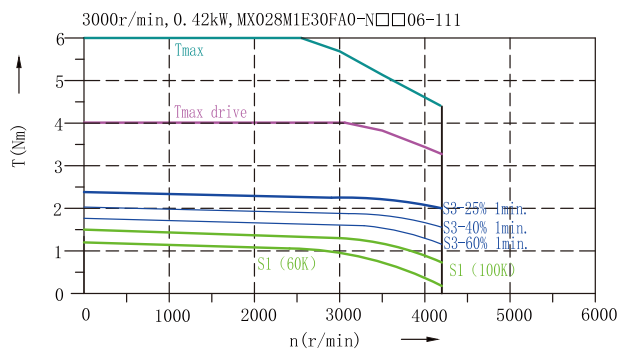
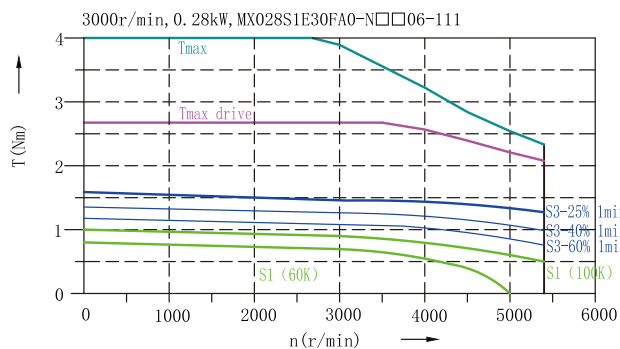
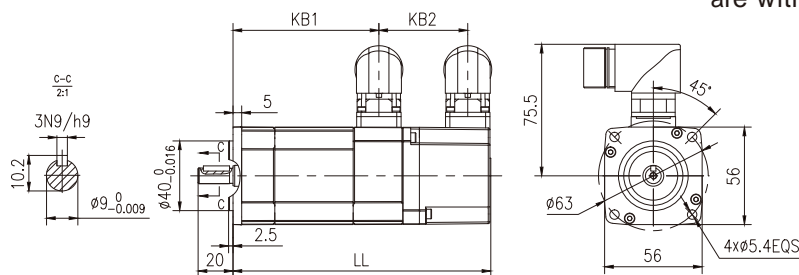
### 10.1. 机座号028伺服马达参数、外形尺寸以及特性曲线

### 10.1. Frame size 028 servo motor parameters, dimensions and characteristic curve

马达型号	Motor model	MX028S1E30FA0 -N□□06-111	MX028M1E30FA0 -N□□06-111	MX028S1E45FA0 -N□□06-111	MX028M1E45FA0 -N□□06-111
额定转速 $n_{1N}$ (r/min)	Rated speed $n_{1N}$ (r/min)	3000	3000	4500	4500
额定功率 $P_{1N}$ (kW)	Rated power $P_{1N}$ (kW)	0.28	0.42	0.38	0.54
额定电流 $I_{N(100K)}$ (A)	Rated current $I_{N(100K)}$ (A)	0.9	1	1.2	1.8
额定转矩 $T_{1N(100K)}$ (N.m)	Rated torque $T_{1N(100K)}$ (N.m)	0.9	1.3	0.8	1.1
静止电流 $I_0$ (A)	Static current $I_0$ (A)	1	1.2	1.3	2
静止转矩 $T_0$ (N.m)	Static torque $T_0$ (N.m)	1	1.5	0.9	1.2
最大转速 $n_{max\ drive}$ (r/min)	Maximum speed $n_{max\ drive}$ (r/min)	5400	4200	6000	6000
最大电流 $I_{max\ drive}$ (A)	Maximum current $I_{max\ drive}$ (A)	2.7	3	3.6	5.4
最大转矩 $T_{max\ drive}$ (N.m)	Maximum torque $T_{max\ drive}$ (N.m)	2.7	3.9	2.4	3.3
极限电流 $I_{max}$ (A)	Limit current $I_{max}$ (A)	4	4.8	5.8	10
极限转矩 $T_{max}$ (N.m)	Limit torque $T_{max}$ (N.m)	4	6	4	6
转动惯量 $J(10^{-4}\text{ kg}\cdot\text{m}^2)$	Moment of inertia $J(10^{-4}\text{ kg}\cdot\text{m}^2)$	0.15(0.17)	0.25(0.27)	0.15(0.17)	0.25(0.27)
重量 $m$ (kg)	Weight $m$ (kg)	1.8(2)	2.4(2.7)	1.8(2)	2.4(2.7)
止口到动力连接器长度KB1 (mm)	Socket to Power Connector Length KB1 (mm)	83.8	128.8	83.8	128.8
动力连接器到信号连接器长度KB2 (mm)	Power Connector to Signal Connector Length KB2 (mm)	51(75)	51(75)	51(75)	51(75)
整机长度 LL (mm)	Overall length LL (mm)	148(172)	193(217)	148(172)	193(217)

注：括号内为带制动器的数据

Note: The data in parentheses are with brake



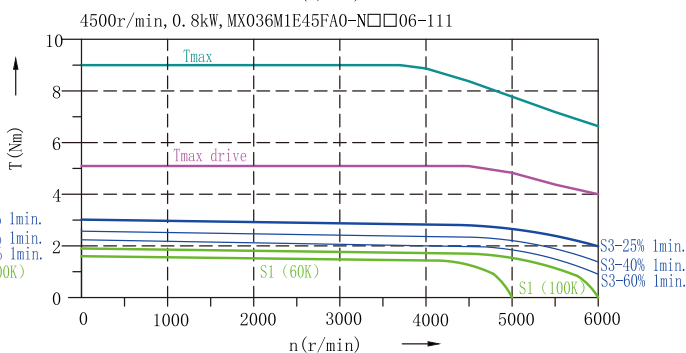
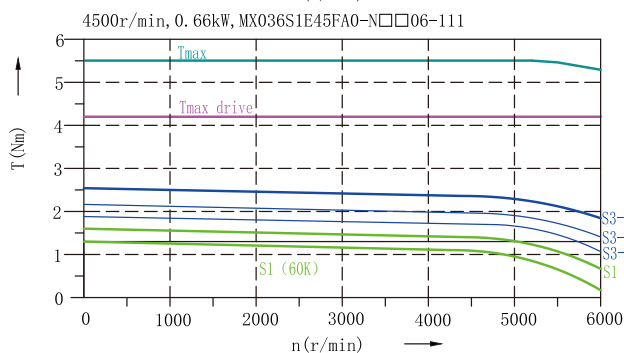
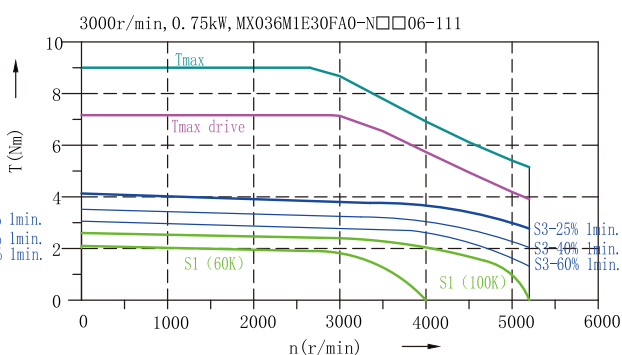
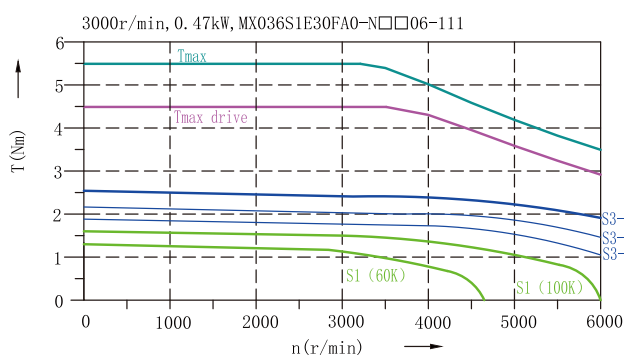
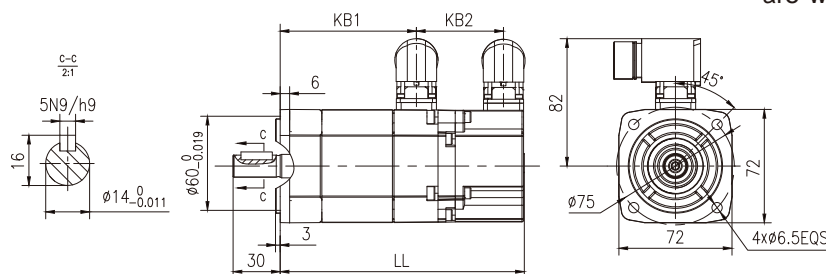
## 10.2.机座号036伺服马达参数、外形尺寸以及特性曲线

## 10.2.Frame size 036 servo motor parameters, dimensions and characteristic curve

马达型号	Motor model	MX036S1E30FA0 -N□□06-111	MX036M1E30FA0 -N□□06-111	MX036S1E45FA0 -N□□06-111	MX036M1E45FA0 -N□□06-111
额定转速 $n_{IN}$ (r/min)	Rated speed $n_{IN}$ (r/min)	3000	3000	4500	4500
额定功率 $P_{IN}$ (kW)	Rated power $P_{IN}$ (kW)	0.47	0.75	0.66	0.8
额定电流 $I_{N(100K)}$ (A)	Rated current $I_{N(100K)}$ (A)	1.15	1.6	1.9	1.7
额定转矩 $T_{IN(100K)}$ (N.m)	Rated torque $T_{IN(100K)}$ (N.m)	1.5	2.4	1.4	1.7
静止电流 $I_0$ (A)	Static current $I_0$ (A)	1.3	1.8	2.1	1.9
静止转矩 $T_0$ (N.m)	Static torque $T_0$ (N.m)	1.6	2.6	1.6	1.9
最大转速 $n_{max\ drive}$ (r/min)	Maximum speed $n_{max\ drive}$ (r/min)	6000	5200	6000	6000
最大电流 $I_{max\ drive}$ (A)	Maximum current $I_{max\ drive}$ (A)	3.45	4.8	5.7	5.1
最大转矩 $T_{max\ drive}$ (N.m)	Maximum torque $T_{max\ drive}$ (N.m)	4.5	7.2	4.2	5.1
极限电流 $I_{max}$ (A)	Limit current $I_{max}$ (A)	4.5	6.2	7.2	9
极限转矩 $T_{max}$ (N.m)	Limit torque $T_{max}$ (N.m)	5.5	9	5.5	9
转动惯量 $J(10^{-4} \text{kg} \cdot \text{m}^2)$	Moment of inertia $J(10^{-4} \text{kg} \cdot \text{m}^2)$	0.74 (0.77)	1.41 (1.44)	0.74 (0.77)	1.41 (1.44)
重量 $m$ (kg)	Weight $m$ (kg)	2.7 (3.1)	3.9 (4.3)	2.7 (3.1)	3.9 (4.3)
止口到动力连接器长度KB1 (mm)	Socket to Power Connector Length KB1 (mm)	86.7	131.7	86.7	131.7
动力连接器到信号连接器长度KB2 (mm)	Power Connector to Signal Connector Length KB2 (mm)	55.5 (83.8)	55.5 (83.8)	55.5 (83.8)	55.5 (83.8)
整机长度 LL (mm)	Overall length LL (mm)	155.5 (183.8)	200.5 (228.8)	155.5 (183.8)	200.5 (228.8)

注：括号内为带制动器的数据

Note: The data in parentheses are with brake



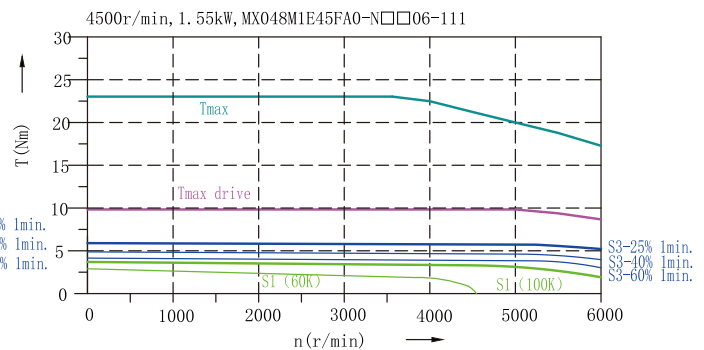
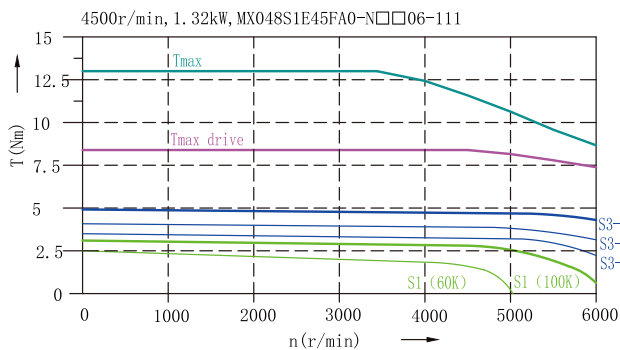
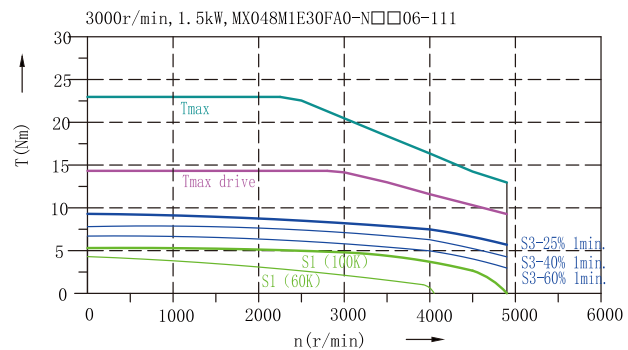
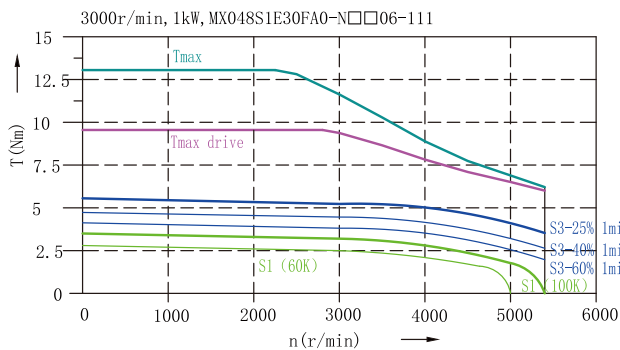
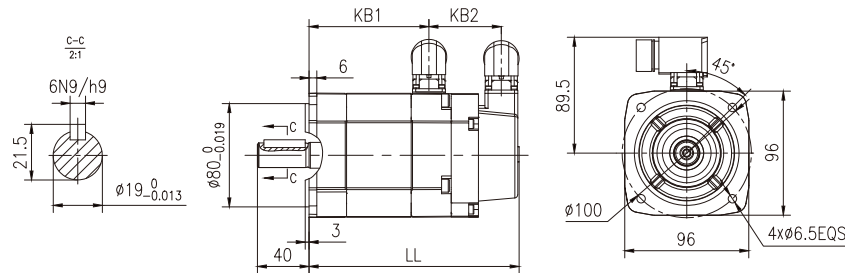
## 10.3. 机座号048伺服马达参数、 外形尺寸以及特性曲线

## 10.3. Frame size 048 servo motor parameters, dimensions and characteristic curve

马达型号	Motor model	MX048S1E30FA0 -N□□06-111	MX048M1E30FA0 -N□□06-111	MX048S1E45FA0 -N□□06-111	MX048M1E45FA0 -N□□06-111
额定转速 $n_{IN}$ (r/min)	Rated speed $n_{IN}$ (r/min)	3000	3000	4500	4500
额定功率 $P_{IN}$ (kW)	Rated power $P_{IN}$ (kW)	1	1.5	1.32	1.55
额定电流 $I_{N(100K)}$ (A)	Rated current $I_{N(100K)}$ (A)	2.2	3	2.8	3.3
额定转矩 $T_{IN(100K)}$ (N.m)	Rated torque $T_{IN(100K)}$ (N.m)	3.2	4.8	2.8	3.3
静止电流 $I_0$ (A)	Static current $I_0$ (A)	2.5	3.4	3.1	3.4
静止转矩 $T_0$ (N.m)	Static torque $T_0$ (N.m)	3.5	5.3	3.1	3.7
最大转速 $n_{max\ drive}$ (r/min)	Maximum speed $n_{max\ drive}$ (r/min)	5400	4900	6000	6000
最大电流 $I_{max\ drive}$ (A)	Maximum current $I_{max\ drive}$ (A)	6.6	9	8.4	9.9
最大转矩 $T_{max\ drive}$ (N.m)	Maximum torque $T_{max\ drive}$ (N.m)	9.6	14.4	8.4	9.9
极限电流 $I_{lim}$ (A)	Limit current $I_{lim}$ (A)	9.3	14.8	13	23
极限转矩 $T_{lim}$ (N.m)	Limit torque $T_{lim}$ (N.m)	13	23	13	23
转动惯量 $J(10^{-4} \text{kg} \cdot \text{m}^2)$	Moment of inertia $J(10^{-4} \text{kg} \cdot \text{m}^2)$	2.53(2.76)	4.85(5.08)	2.53(2.76)	4.85(5.08)
重量 $m$ (kg)	Weight $m$ (kg)	4.5(5.2)	7(7.7)	4.5(5.2)	7(7.7)
止口到动力连接器 长度KB1 (mm)	Socket to Power Connector Length KB1 (mm)	92.7	142.7	92.7	142.7
动力连接器到信号 连接器长度KB2 (mm)	Power Connector to Signal Connector Length KB2 (mm)	56(95.5)	56(95.5)	56(95.5)	56(95.5)
整机长度 LL (mm)	Overall length LL (mm)	162.5(202)	212.5(252)	162.5(202)	212.5(252)

注：括号内为带制动器的数据

Note: The data in parentheses are with brake





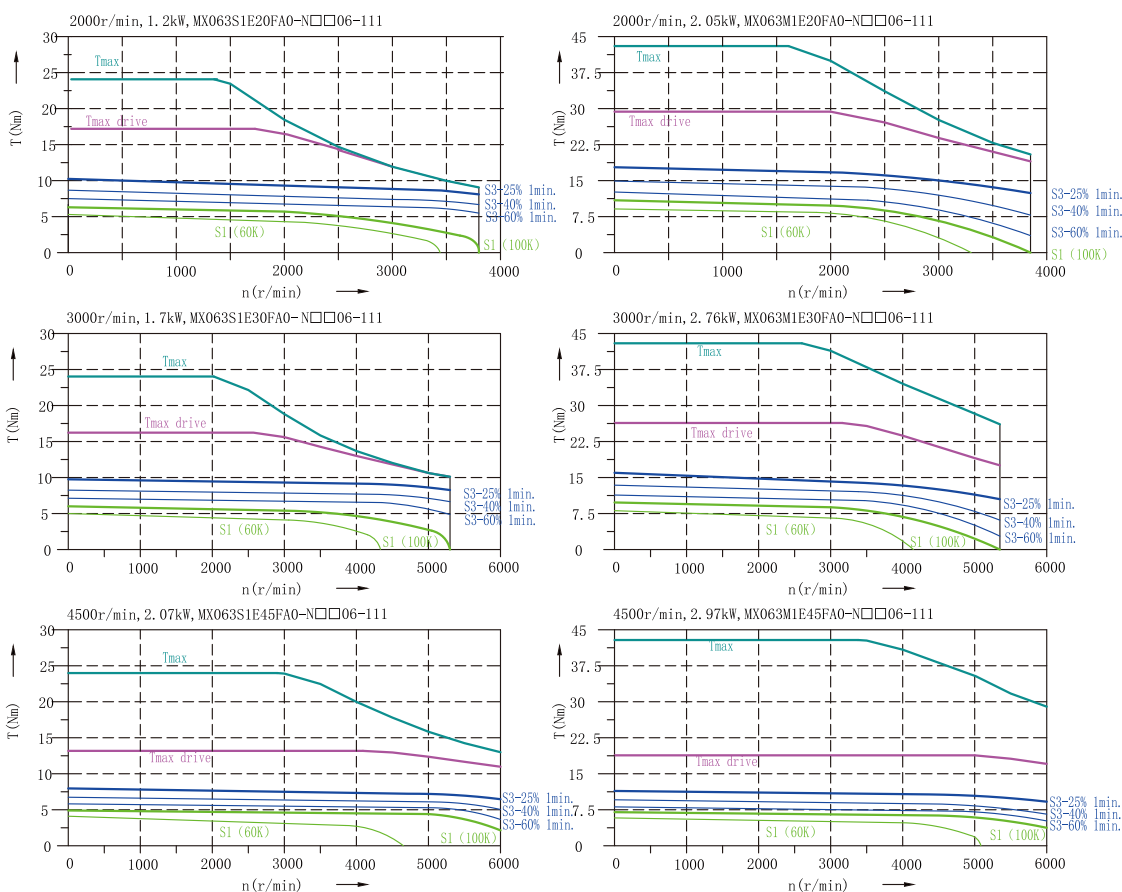
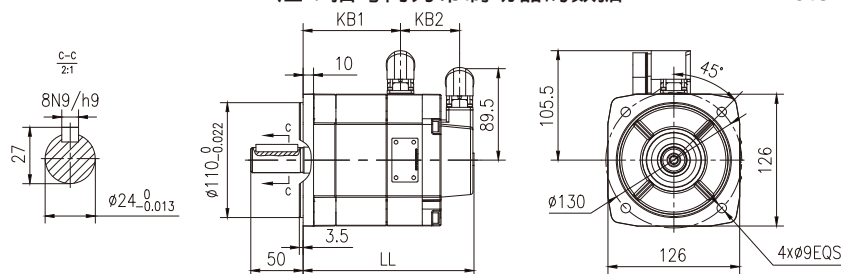
## 10.4. 机座号063伺服马达参数、 外形尺寸以及特性曲线

## 10.4. Frame size 063 servo motor parameters, dimensions and characteristic curve

马达型号	Motor model	MX063S1E20FA0 -N□□06-111	MX063M1E20FA0 -N□□06-111	MX063S1E30FA0 -N□□06-111	MX063M1E30FA0 -N□□06-111	MX063S1E45FA0 -N□□06-111	MX063M1E45FA0 -N□□06-111
额定转速 $n_{1N}$ (r/min)	Rated speed $n_{1N}$ (r/min)	2000	2000	3000	3000	4500	4500
额定功率 $P_{1N}$ (kW)	Rated power $P_{1N}$ (kW)	1.2	2.05	1.7	2.76	2.07	2.97
额定电流 $I_{1N(1000)}$ (A)	Rated current $I_{1N(1000)}$ (A)	2.8	4.6	3.6	6	4.3	6.4
额定转矩 $T_{1N(1000)}$ (N.m)	Rated torque $T_{1N(1000)}$ (N.m)	5.7	9.8	5.4	8.8	4.4	6.3
静止电流 $I_0$ (A)	Static current $I_0$ (A)	3.1	5.1	4	6.7	4.8	7.1
静止转矩 $T_0$ (N.m)	Static torque $T_0$ (N.m)	6.3	10.9	6	9.8	4.9	7
最大转速 $n_{max drive}$ (r/min)	Maximum speed $n_{max drive}$ (r/min)	3800	3850	5300	5350	6000	6000
最大电流 $I_{max drive}$ (A)	Maximum current $I_{max drive}$ (A)	8.4	13.8	10.8	18	12.9	19.2
最大转矩 $T_{max drive}$ (N.m)	Maximum torque $T_{max drive}$ (N.m)	17.1	29.4	16.2	26.4	13.2	18.9
极限电流 $I_{lim}$ (A)	Limit current $I_{lim}$ (A)	11.8	20.1	16	29.4	23.5	43.6
极限转矩 $T_{lim}$ (N.m)	Limit torque $T_{lim}$ (N.m)	24	43	24	43	24	43
转动惯量 $J$ ( $10^{-4}$ kg.m <sup>2</sup> )	Moment of inertia $J$ ( $10^{-4}$ kg.m <sup>2</sup> )	7.36(7.57)	14.09(14.31)	7.36(7.57)	14.09(14.31)	7.36(7.57)	14.09(14.31)
重量 $m$ (kg)	Weight $m$ (kg)	7.1(8)	10.9(11.8)	7.1(8)	10.9(11.8)	7.1(8)	10.9(11.8)
止口到动力连接器 长度KB1 (mm)	Socket to Power Connector Length KB1 (mm)	93.3	141.3	93.3	141.3	93.3	141.3
动力连接器到信号 连接器长度KB2 (mm)	Power Connector to Signal Connector Length KB2 (mm)	56.5(85)	56.5(85)	56.5(85)	56.5(85)	56.5(85)	56.5(85)
整机长度 LL (mm)	Overall length LL (mm)	163.5(192)	211.5(240)	163.5(192)	211.5(240)	163.5(192)	211.5(240)

注：括号内为带制动器的数据

Note: The data in parentheses are with brake



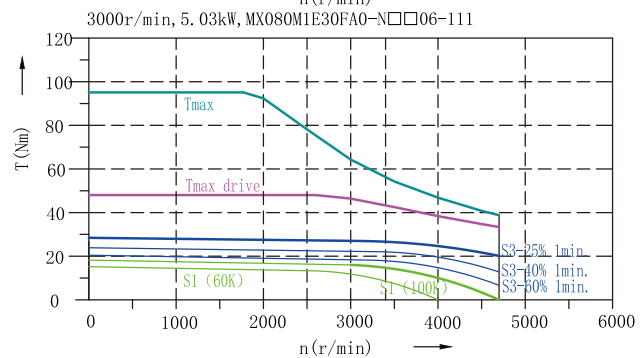
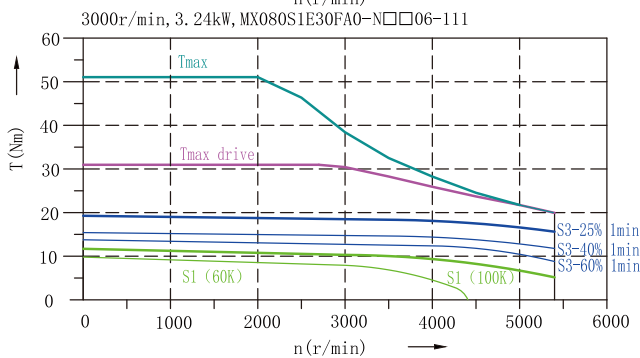
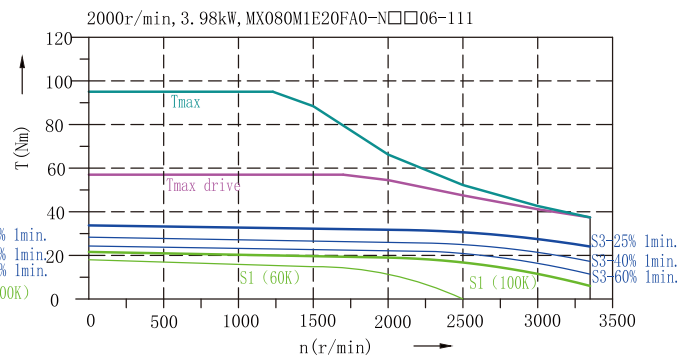
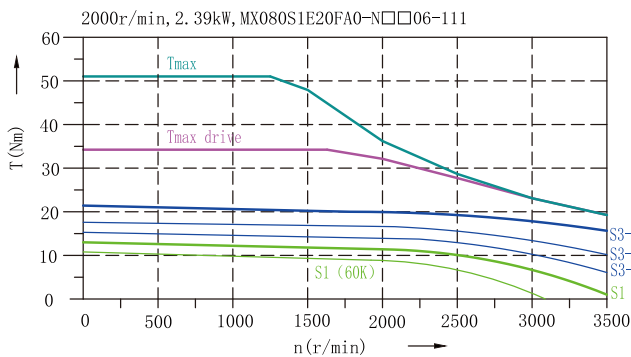
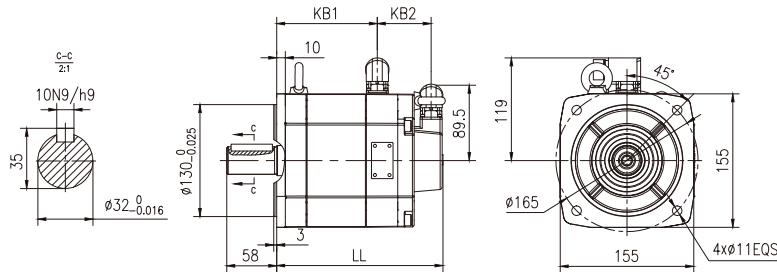
## 10.5.机座号080伺服马达参数、外形尺寸以及特性曲线

## 10.5. Frame size 080 servo motor parameters, dimensions and characteristic curve

马达型号	Motor model	MX080S1E20FA0 -N□□06-111	MX080M1E20FA0 -N□□06-111	MX080S1E30FA0 -N□□06-111	MX080M1E30FA0 -N□□06-111
额定转速 $n_{118}$ (r/min)	Rated speed $n_{118}$ (r/min)	2000	2000	3000	3000
额定功率 $P_{118}$ (kW)	Rated power $P_{118}$ (kW)	2.39	3.98	3.24	5.03
额定电流 $I_{N(100K)}$ (A)	Rated current $I_{N(100K)}$ (A)	5	8.1	7.1	9.6
额定转矩 $T_{IN(100K)}$ (N.m)	Rated torque $T_{IN(100K)}$ (N.m)	11.4	19	10.3	16
静止电流 $I_0$ (A)	Static current $I_0$ (A)	5.7	9.2	8.1	10.9
静止转矩 $T_0$ (N.m)	Static torque $T_0$ (N.m)	13	21.6	11.7	18.2
最大转速 $n_{max\ drive}$ (r/min)	Maximum speed $n_{max\ drive}$ (r/min)	3500	3350	5400	4700
最大电流 $I_{max\ drive}$ (A)	Maximum current $I_{max\ drive}$ (A)	15	24.3	21.3	28.8
最大转矩 $T_{max\ drive}$ (N.m)	Maximum torque $T_{max\ drive}$ (N.m)	34.2	57	30.9	48
极限电流 $I_{max}$ (A)	Limit current $I_{max}$ (A)	22.4	40.5	35.3	56.9
极限转矩 $T_{max}$ (N.m)	Limit torque $T_{max}$ (N.m)	51	95	51	95
转动惯量 $J$ ( $10^{-4}$ kg.m <sup>2</sup> )	Moment of inertia $J$ ( $10^{-4}$ kg.m <sup>2</sup> )	25.49 (25.59)	48.89 (50.08)	25.49 (25.59)	48.89 (50.08)
重量 $m$ (kg)	Weight $m$ (kg)	13.6 (14.3)	21.9 (23.9)	13.6 (14.3)	21.9 (23.9)
止口到动力连接器长度KB1 (mm)	Socket to Power Connector Length KB1 (mm)	116.8	184.7	116.8	184.7
动力连接器到信号连接器长度KB2 (mm)	Power Connector to Signal Connector Length KB2 (mm)	62.5 (83)	62.5 (110.5)	62.5 (83)	62.5 (110.5)
整机长度 LL (mm)	Overall length LL (mm)	193 (213.5)	261 (309)	193 (213.5)	261 (309)

注：括号内为带制动器的数据

Note: The data in parentheses are with brake



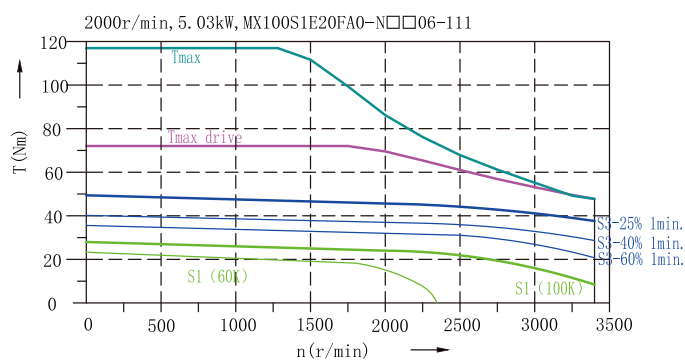
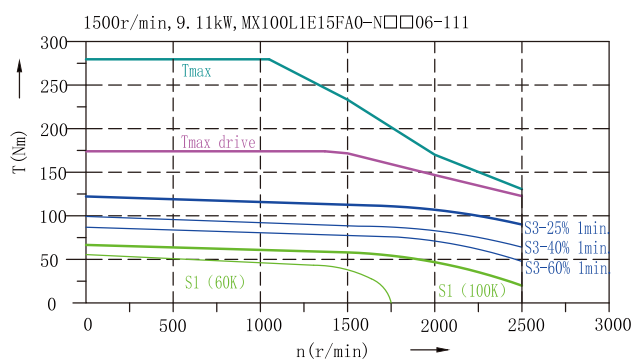
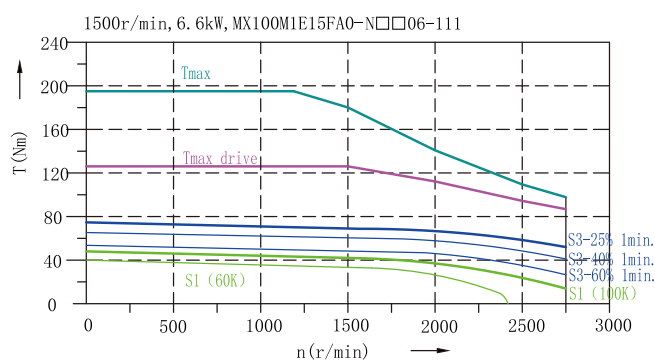
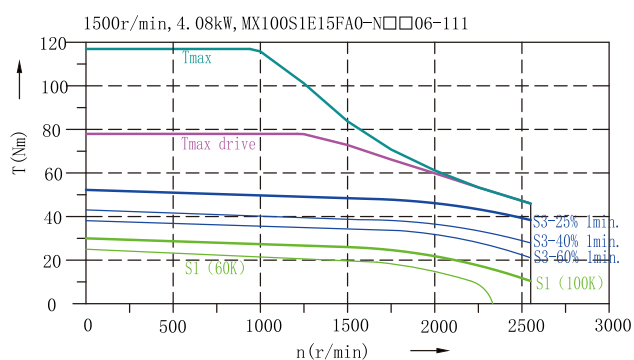
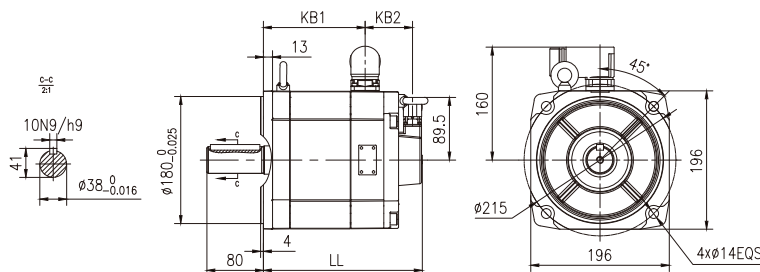
## 10.6.机座号100伺服马达参数、外形尺寸以及特性曲线

## 10.6.Frame size 100 servo motor parameters, dimensions and characteristic curve

马达型号	Motor model	MX100S1E15FA0 -N□□06-111	MX100M1E15FA0 -N□□06-111	MX100L1E15FA0 -N□□06-111	MX100S1E20FA0 -N□□06-111
额定转速 $n_{15}$ (r/min)	Rated speed $n_{15}$ (r/min)	1500	1500	1500	2000
额定功率 $P_{15}$ (kW)	Rated power $P_{15}$ (kW)	4.08	6.6	9.11	5.03
额定电流 $I_{N(100K)}$ (A)	Rated current $I_{N(100K)}$ (A)	8.1	14.5	18.4	10.1
额定转矩 $T_{N(100K)}$ (N.m)	Rated torque $T_{N(100K)}$ (N.m)	26	42	58	24
静止电流 $I_0$ (A)	Static current $I_0$ (A)	9.4	16.6	21.2	11.8
静止转矩 $T_0$ (N.m)	Static torque $T_0$ (N.m)	30	48	66.6	28
最大转速 $n_{max,drive}$ (r/min)	Maximum speed $n_{max,drive}$ (r/min)	2550	2750	2500	3400
最大电流 $I_{max,drive}$ (A)	Maximum current $I_{max,drive}$ (A)	24.3	43.5	55.2	30.3
最大转矩 $T_{max,drive}$ (N.m)	Maximum torque $T_{max,drive}$ (N.m)	78	126	174	72
极限电流 $I_{max}$ (A)	Limit current $I_{max}$ (A)	36.7	67.5	88.7	49.3
极限转矩 $T_{max}$ (N.m)	Limit torque $T_{max}$ (N.m)	117	195	280	117
转动惯量 $J(10^{-4} \text{kg} \cdot \text{m}^2)$	Moment of inertia $J(10^{-4} \text{kg} \cdot \text{m}^2)$	87.49 (87.79)	169.96 (172.56)	252.43 (257.33)	87.49 (87.79)
重量 $m$ (kg)	Weight $m$ (kg)	25.6 (27)	42.4 (47.2)	58.5 (63)	25.6 (27)
止口到动力连接器长度KB1 (mm)	Socket to Power Connector Length KB1 (mm)	144	229	314	144
动力连接器到信号连接器长度KB2 (mm)	Power Connector to Signal Connector Length KB2 (mm)	67.2 (86.8)	67.2 (126.7)	67.2 (126.7)	67.2 (86.8)
整机长度 LL (mm)	Overall length LL (mm)	225 (247)	310 (369.5)	395 (454.5)	225 (247)

注：括号内为带制动器的数据

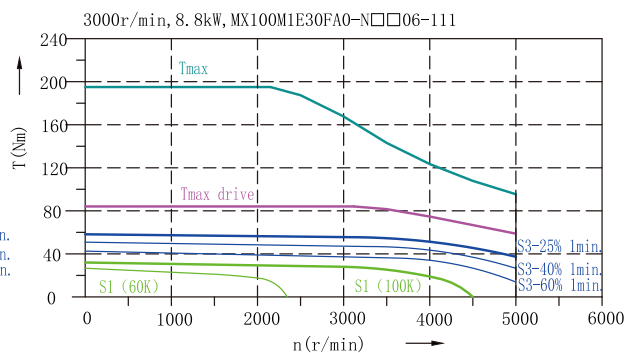
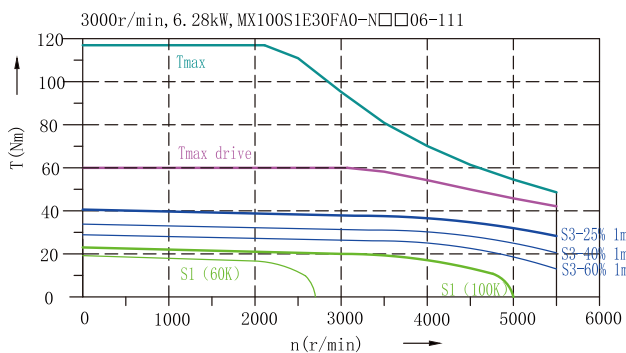
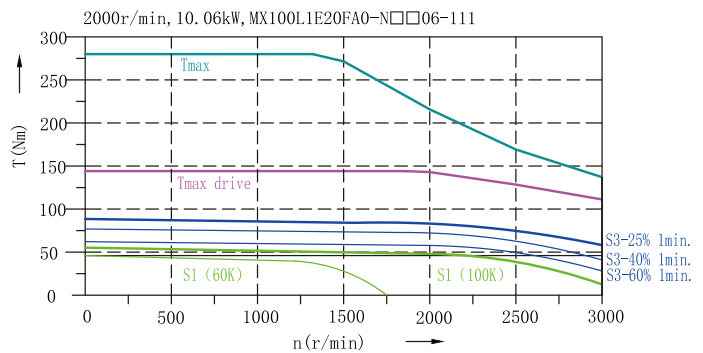
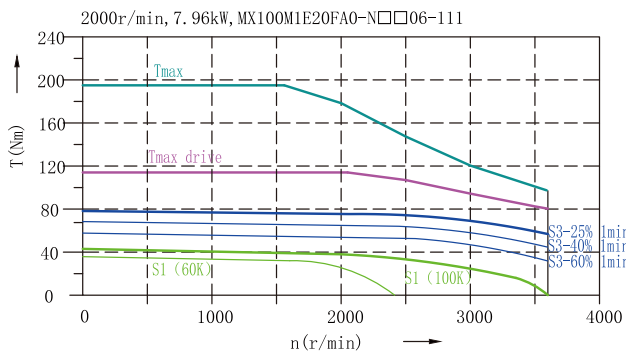
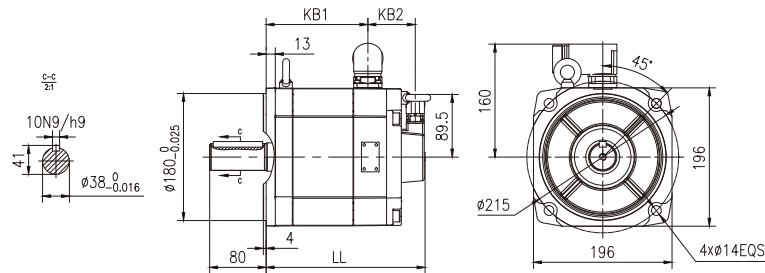
Note: The data in parentheses are with brake



马达型号	Motor model	MX100M1E20FA0 -N□□06-111	MX100L1E20FA0 -N□□06-111	MX100S1E30FA0 -N□□06-111	MX100M1E30FA0 -N□□06-111
额定转速 $n_{IN}$ (r/min)	Rated speed $n_{IN}$ (r/min)	2000	2000	3000	3000
额定功率 $P_{IN}$ (kW)	Rated power $P_{IN}$ (kW)	7.96	10.06	6.28	8.8
额定电流 $I_{N(100K)}$ (A)	Rated current $I_{N(100K)}$ (A)	17.3	19.6	13.8	17.9
额定转矩 $T_{IN(100K)}$ (N.m)	Rated torque $T_{IN(100K)}$ (N.m)	38	48	20	28
静止电流 $I_0$ (A)	Static current $I_0$ (A)	19.6	22.5	15.9	20.5
静止转矩 $T_0$ (N.m)	Static torque $T_0$ (N.m)	43	55.2	23	32
最大转速 $n_{max\ drive}$ (r/min)	Maximum speed $n_{max\ drive}$ (r/min)	3600	3000	5500	5000
最大电流 $I_{max\ drive}$ (A)	Maximum current $I_{max\ drive}$ (A)	51.9	58.8	41.4	53.7
最大转矩 $T_{max\ drive}$ (N.m)	Maximum torque $T_{max\ drive}$ (N.m)	114	144	60	84
极限电流 $I_{max}$ (A)	Limit current $I_{max}$ (A)	88.9	114.3	80.9	124.9
极限转矩 $T_{max}$ (N.m)	Limit torque $T_{max}$ (N.m)	195	280	117	195
转动惯量 $J(10^{-4} \text{kg} \cdot \text{m}^2)$	Moment of inertia $J(10^{-4} \text{kg} \cdot \text{m}^2)$	169.96 (172.56)	252.43 (257.33)	87.49 (87.79)	169.96 (172.56)
重量 $m$ (kg)	Weight $m$ (kg)	42.4 (47.2)	58.5 (63)	25.6 (27)	42.4 (47.2)
止口到动力连接器长度KB1 (mm)	Socket to Power Connector Length KB1 (mm)	229	314	144	229
动力连接器到信号连接器长度KB2 (mm)	Power Connector to Signal Connector Length KB2 (mm)	67.2 (126.7)	67.2 (126.7)	67.2 (86.8)	67.2 (126.7)
整机长度 LL (mm)	Overall length LL (mm)	310 (369.5)	395 (454.5)	225 (247)	310 (369.5)

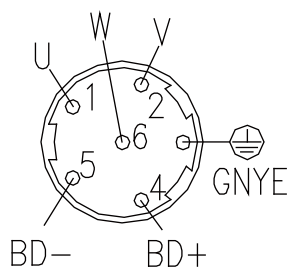
注：括号内为带制动器的数据

Note: The data in parentheses are with brake



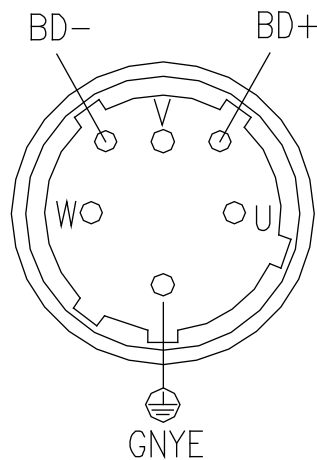
### 11 马达电气连接

### 11 Motor electrical connection



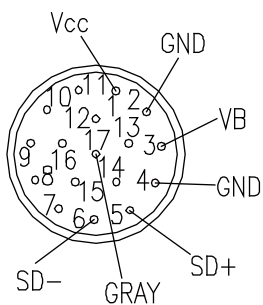
马达动力端  
插头  
(28~80机座)

Motor power  
end plug  
(28-80)



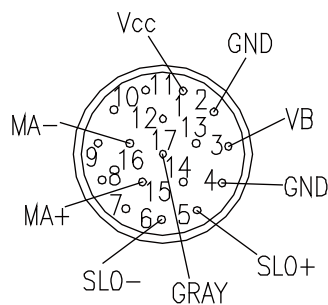
马达动力端  
插头(100机座)

Motor power  
end plug (100)



马达信号端  
插头  
(485编码器)

Motor signal  
end plug  
(485 encoder)



马达信号端  
插头  
(Biss - C编码器)

Motor signal  
end plug  
(Biss - C encoder)

### 11.1 旋转连接器

马达上的动力连接器和信号连接器可以在一定范围内旋转。可以使用配套的母插来旋转连接器。母插必须完全插入，以免损坏插针。

### 11.1 Rotary connector

The power connector and signal connector on the motor can be rotated within a certain range. The connector can be rotated using the mating female socket. The female plug must be fully inserted to avoid damage to the pins.

动力线连接器的旋转范围:

Rotation range of power cable connector:

马达 Motor	角度 $\alpha_1$ Angle $\alpha_1$	角度 $\beta_1$ Angle $\beta_1$	示意图 Schematic
MX028	135°	140°	
MX036	135°	140°	
MX048	135°	140°	
MX063	135°	140°	
MX080	135°	200°	
MX100	135°	200°	

信号线连接器的旋转范围:

Rotation range of signal cable connector:

马达 Motor	角度 $\alpha_1$ Angle $\alpha_1$	角度 $\beta_1$ Angle $\beta_1$	示意图 Schematic
MX028	140°	135°	
MX036	140°	135°	
MX048	143°	135°	
MX063	105°	110°	
MX080	100°	100°	
MX100	95°	95°	

## 伺服驱动器

### 12 驱动器概述

AX精准系列伺服驱动器是专为高性能伺服应用设计的模块化伺服驱动器，搭配CM55/CM51控制模块，和适配不同功率伺服马达的功率模块及一些可选附件组成，灵活的模块化为使用者的系统设计及应用提供更丰富的选择。

AX伺服驱动器配合MX永磁同步伺服马达，可以做到精准的位置、速度、扭矩控制，AX伺服驱动器也可以驱动博能异步马达，实现精确的异步伺服控制。

AX精准系列伺服驱动器由三部分组成：



**操作面板(OP25)或上位机调试软件BonengDrivesoft**：操作面板或上位机调试软件可以为用户提供方便快捷的参数设定方法，支持汉字显示，更简单易懂的信息反馈，及高级示波器检测诊断功能。

**控制模块(CM51/CM55)**：控制模块为用户提供丰富的控制接口，输入输出端子，模拟信号，及通讯等，且通过多种方式可对所接入的马达进行控制和监视。

**功率模块(PM26)**：书本型功率模块功率范围从0.75kW-132kW，支持多种控制模块，使马达调速变得简单且灵活，且包含了完备的驱动器保护功能。

## Servo Drive

### 12 Servo drive overview

AX precision series servo drive is modular designed for high-performance servo applications, consisting of a CM55/CM51 control module, a power module adapted to different power motors, and some optional accessories. AX series servo drive provides users with richer options for system design and application though its flexible modularization feature. AX servo drive can achieve accurate position, speed, and torque control when combined with the MX permanent magnet synchronous servo motor, as well as drive the Boneng asynchronous motor to achieve accurate asynchronous servo control.

The AX servo drive consist of three parts:

**Operation panel ( OP25 ) or desktop software BongDrivesoft**: operation panel and desktop software can provide users with convenient and efficient methods for parameters configuration. The OP25 and BonengDrivesoft can display in English and Chinese, and the BonengDrivesoft can also provide users with advanced functions such as oscilloscope, condition monitoring and diagnosis, and etc.

**Control module ( CM51/CM55 )**: The control module contains a wealth of control interfaces, input and output terminals, analog signals, and can support communication bus control, which control the motor connected through the Power module.

**Power module ( PM26 )**: The power module has a power range from 0.75kW to 132kW, supports a variety of modules, which makes spindle speed adjustment easy and flexible. In addition, complete driver and motor protection functions are available for the power module.



### 13 驱动器整机安装尺寸图

### 13 Drive full machine mounting size

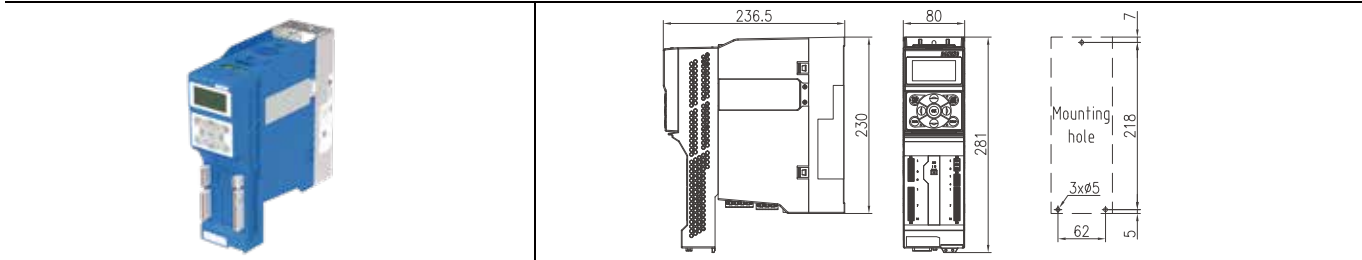
#### 13.1 OP25+CM55+PM26

#### 13.1 OP25+CM55+PM26

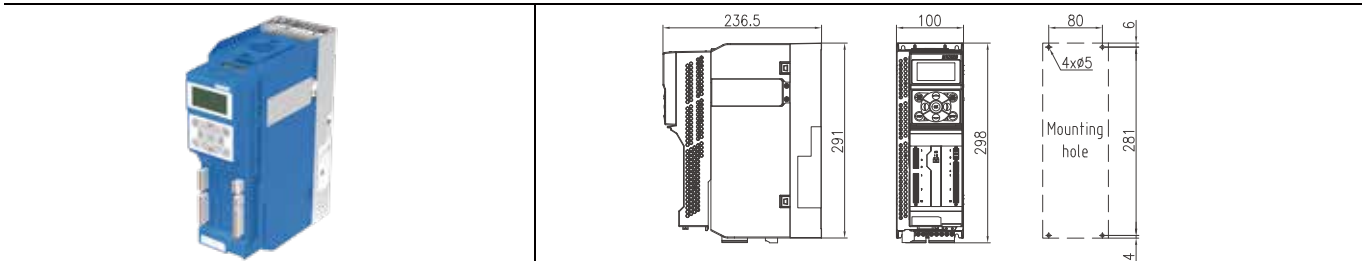
OP25+CM55+PM26组合的整机外形图及安装尺寸图，B1-B6功率范围，单位：mm

The overall appearance and installation dimension of OP25+CM55+PM26 combination, B1-B6 power range, with unit: mm.

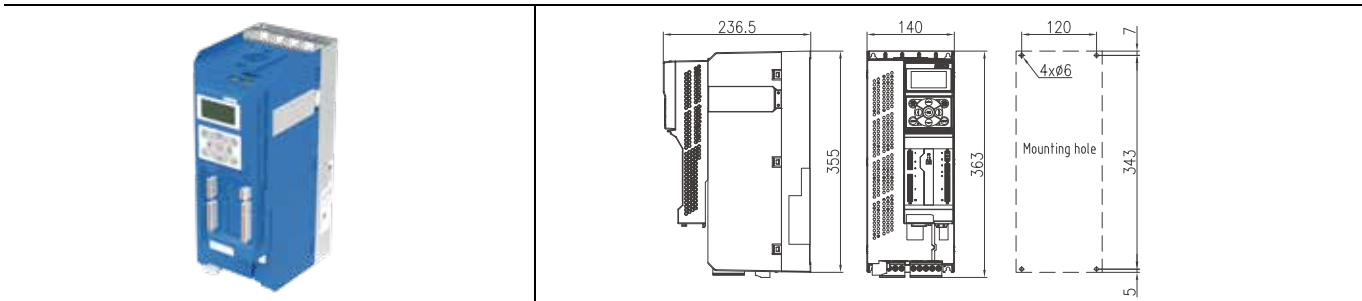
B1(0.75kW-3kW):



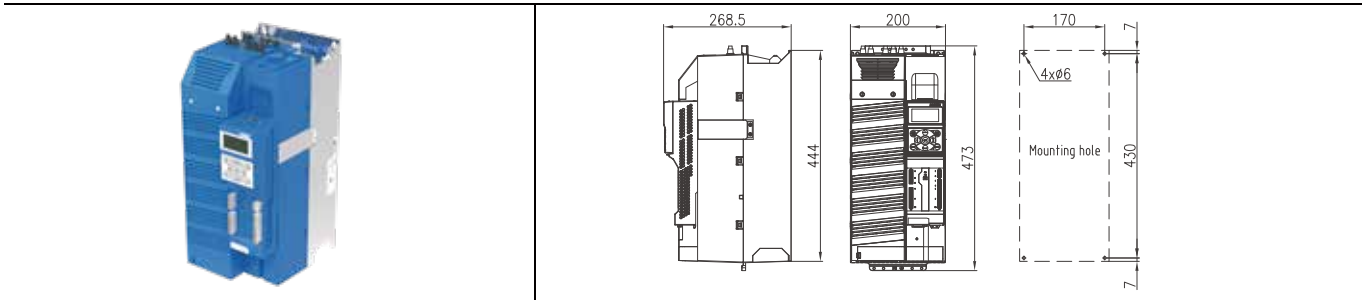
B2(4kW-7.5kW)



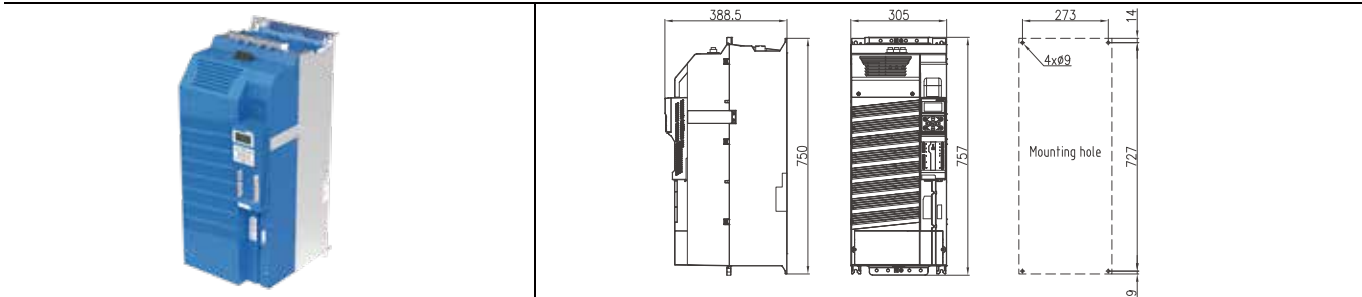
B3(11kW-15kW)



B4(18.5kW-37kW)



B6(45kW-132kW)





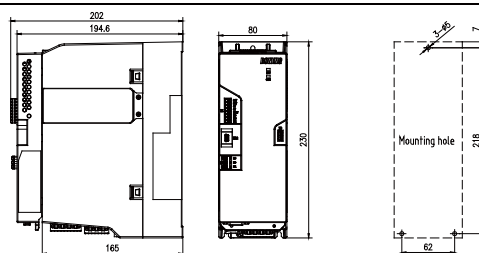
### 13.2 CM51+PM26

CM51+PM26组合的整机外形图及安装尺寸图，B1-B6功率范围，单位：mm

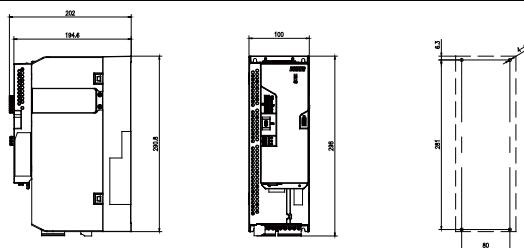
### 13.2 CM51+PM26

The overall appearance and installation dimension of CM51+PM26 combination, B1-B6 power range, with unit: mm

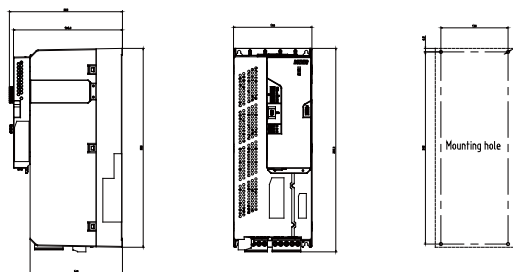
B1(0.75kW-3kW):



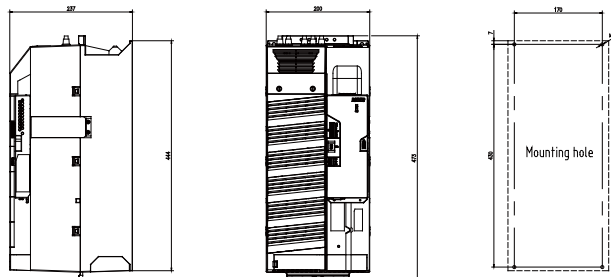
B2(4kW-7.5kW)



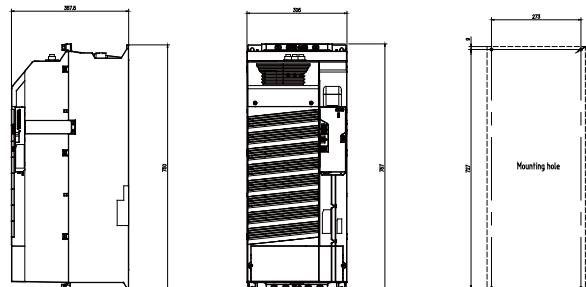
B3(11kW-15kW)



B4(18.5kW-37kW)



B6(45kW-132kW)



## 14 驱动器控制模块

### 14.1 控制模块CM55

#### 14.1.1 概述

CM55模块是专为总线型伺服系统应用而设计的控制模块，支持EtherCAT及PROFINET通讯，PROFINET通讯支持RT及IRT应用，除了标准的同步伺服电机为还支持异步伺服定位。



CM55控制模块

## 14 Control module

### 14.1 Control module CM55

#### 14.1.1 Information

The CM55 module is a control module designed specifically for bus type servo system applications, supporting EtherCAT and PROFINET communication. PROFINET communication supports RT and IRT applications, and in addition to standard synchronous servo motors, it also supports asynchronous servo positioning.

CM55 control module

#### 14.1.2 控制模块型号表示方法

博能精准系列伺服驱动器

控制模块

通讯协议

EA=EtherCAT及博能自定义通讯DriveLink  
PA=PROFINET及博能自定义通讯DriveLink

编码器接口

PE=增量式/绝对值编码器

控制模块订货号

#### 14.1.2 Designation rules and nameplate for control module

Boneng AX-series precision servo drive

Control module

Communication protocol

EA=EtherCAT and Boneng defined DriveLink.  
PA=PROFINET and Boneng defined DriveLink

Encoder Interface

PE=photoelectric incremental /absolute encoder

AX - CM55 - PA - PE

Control module order number

型号 Model	接口类型描述	Interface type description
AX-CM55-EA-PE	支持EtherCAT及博能自定义DriveLink通讯, 增量/绝对式光电编码器	Support EtherCAT and Boneng defined DriveLink, incremental /absoluteoptical encoder.
AX-CM55-PA-PE	支持PROFINET及博能自定义DriveLink通讯, 增量/绝对式光电编码器	Support PROFINET and Boneng defined DriveLink, incremental /absoluteoptical encoder.

### 14.1.3 控制模块技术参数

### 14.1.3 Technical date

功能	Functions		
总线接口	Bus interface	AX-CM55-PA-PE	AX-CM55-PA-PE
		AX-CM55-EA-PE	AX-CM55-EA-PE
工作电源	Power supply	功率模块供电	By power module
		外部端子供电	By external terminals
输出电源	Power output	+24V输出	+24V output
		+10V输出	+10V output
		DB15接口编码器电源	DB15 encoder power supply
		RJ45接口编码器电源	RJ45 encoder power supply
数字量输入	Digital input	11个 (DI0_DI10)	11 (DI0_DI10)
数字量输出	Digital output	1个继电器 (DO0)	1 relay (DO0)
数字量输入/输出	Bidirectional digital input and output	8个 (DIO20_DIO27)	8 (DIO20_DIO27)
模拟量输入	Analog input	1个 (AI0)	1 (AI0)
温度传感器	Temperature sensor	2个	2
编码器信号输入	Encoder interface	ABZ	ABZ
		BISS-C	BISS-C
		RS485	RS485
USB接口	USB interface	1个	1
指示灯	Status LEDs	2个双色指示灯	2two-color LEDs
		3个单色指示灯	3single-color LEDs
键盘接口	Keyboard interface	支持OP25	OP25 supported
工作温度	Use ambient temperature	-20°C … +50°C	-20°C … +50°C
存储温度	Storage temperature	-40°C … +70°C	-40°C … +70°C
相对空气湿度	Environment humidity	<95%	<95%
污染	Pollution	符合IEC 61800-5-1	IEC 61800-5-1
电磁兼容性	Electromagnetic compatibility	符合IEC 61800-3	IEC 61800-3

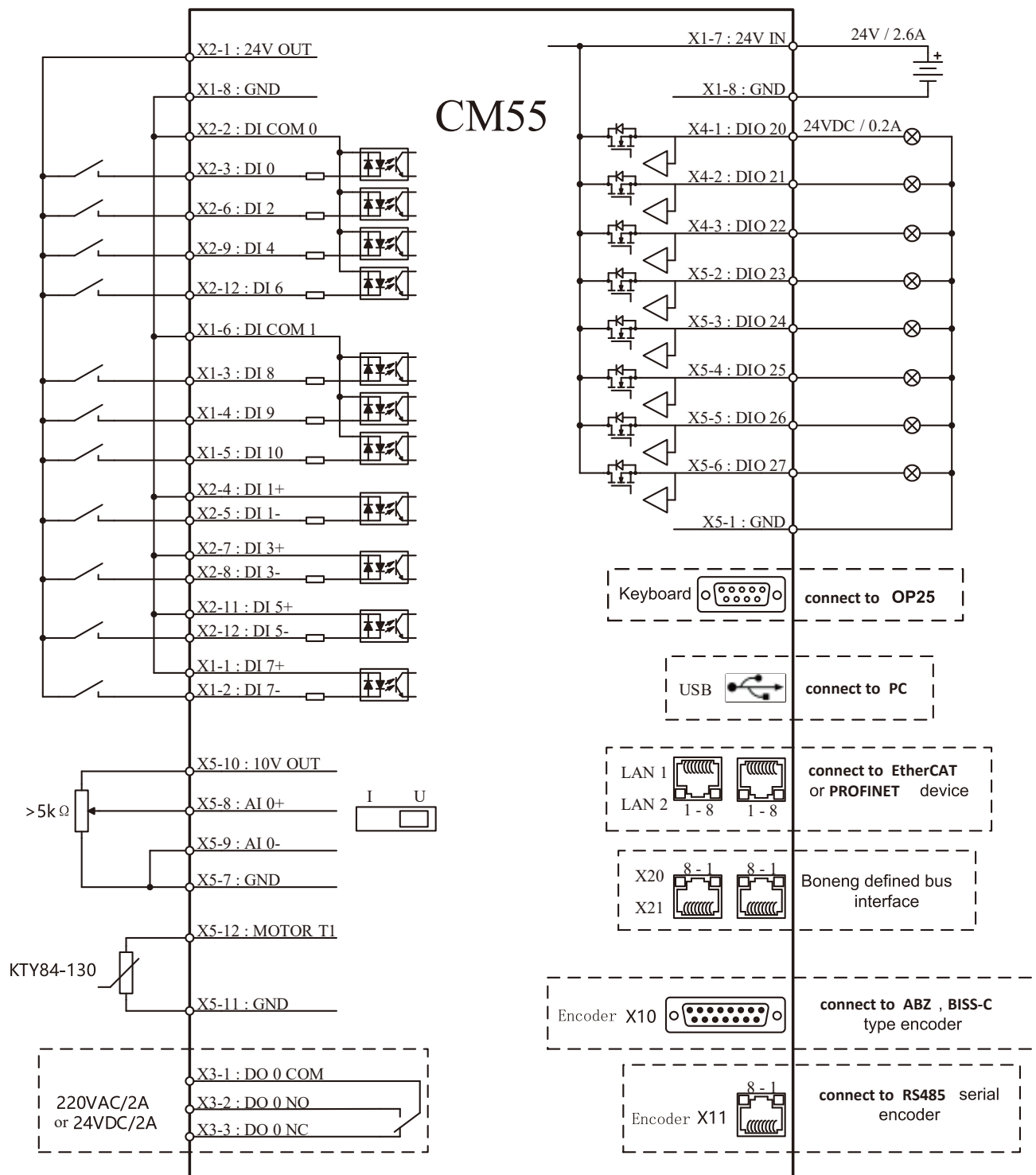
技术数据	Technical data
<ul style="list-style-type: none"> <li>支持PROFINET、DriveLink</li> <li>RJ45接口</li> </ul>	<ul style="list-style-type: none"> <li>PROFINET, DriveLink bus</li> <li>RJ45 interface</li> </ul>
<ul style="list-style-type: none"> <li>支持EtherCAT、DriveLink</li> <li>RJ45接口</li> </ul>	<ul style="list-style-type: none"> <li>EtherCAT, DriveLink bus</li> <li>RJ45 interface</li> </ul>
<ul style="list-style-type: none"> <li>数字量输入/输出端子作为输出使用时需外接24V电源</li> </ul>	<ul style="list-style-type: none"> <li>DI/DO terminal as an output, an external 24v power supply is required</li> </ul>
<ul style="list-style-type: none"> <li>电压范围: DC 20.8 ... 28.8V</li> <li>最大电流: 2.6A</li> </ul>	<ul style="list-style-type: none"> <li>Voltage range: DC 20.8~28.8V</li> <li>Maximum current: 2.6A</li> </ul>
<ul style="list-style-type: none"> <li>电压范围: DC 18V ... 26.8V</li> <li>最大电流: 200mA</li> </ul>	<ul style="list-style-type: none"> <li>Voltage range: DC 18V~26.8V</li> <li>Maximum current: 200mA</li> </ul>
<ul style="list-style-type: none"> <li>电压范围: DC 9.5V ... 10.5V</li> <li>最大电流: 40mA</li> </ul>	<ul style="list-style-type: none"> <li>Voltage range: DC 9.5V~10.5V</li> <li>Maximum current: 40mA</li> </ul>
<ul style="list-style-type: none"> <li>电压: DC 5V或DC 24V</li> <li>最大电流: 350mA</li> </ul>	<ul style="list-style-type: none"> <li>Voltage: DC 5V or DC 24V</li> <li>Maximum current: 350mA</li> </ul>
<ul style="list-style-type: none"> <li>电压: DC 5V</li> <li>最大电流: 200mA</li> </ul>	<ul style="list-style-type: none"> <li>Voltage: DC 5V</li> <li>Maximum current: 200mA</li> </ul>
<ul style="list-style-type: none"> <li>DI1、DI3、DI5、DI7为非公共端子类型</li> <li>DI0、DI2、DI4、DI6公共端子DICO M0</li> <li>DI8、DI9、DI10公共端子DICO M1</li> <li>电气隔离</li> <li>支持Source和Sink模式</li> <li>电压: DC 24V、AC 36V</li> <li>"1"信号电压: &gt;11V</li> <li>"0"信号电压: &lt;5V</li> <li>24V典型电流: 4mA</li> <li>响应时间: 6ms (含软件滤波)</li> </ul>	<ul style="list-style-type: none"> <li>Differential inputs: DI1、DI3、DI5、DI7</li> <li>Single inputs: DI0、DI2、DI4、DI6 share DICO M0</li> <li>Single inputs: DI8、DI9、DI10 share DICO M1</li> <li>Electrical isolation</li> <li>Support Source and Sink mode</li> <li>Voltage: DC 24V, AC 36V</li> <li>Level"1"voltage: &gt; 11V</li> <li>Level"0"voltage: &lt;5V</li> <li>24V typical current: 4mA</li> <li>Response time: 6ms(Including software filter)</li> </ul>
<ul style="list-style-type: none"> <li>电压: DC 24V、AC 220V</li> <li>连续电流: 2A</li> <li>切换电流: 2A</li> <li>触点类型: 1常开1常闭</li> </ul>	<ul style="list-style-type: none"> <li>Voltage: DC 24V、AC 220V</li> <li>Continuous current: 2A</li> <li>Switching current: 2A</li> <li>Contact type: 1 normally open and 1 close</li> </ul>
<ul style="list-style-type: none"> <li>电压: 最大DC 30V</li> <li>电流: 输出最大200mA, 24V输入典型4mA</li> <li>频率: 最大100Hz</li> <li>输入"1"信号电压: &gt;15V</li> <li>输入"0"信号电压: &lt;5V</li> <li>非电气隔离</li> <li>外部供电端子需接24V</li> </ul>	<ul style="list-style-type: none"> <li>Voltage: DC 30V maximum</li> <li>Current: output 200mA maximum, 24V input typical 4mA</li> <li>Frequency: 100Hz maximum</li> <li>Input level"1" voltage: &gt;15V</li> <li>Input level"0"voltage: &lt;5V</li> <li>Non-electrically isolated</li> <li>24V power supply is needed for DIO</li> </ul>
<ul style="list-style-type: none"> <li>差分输入</li> <li>拨码开关切换电压和电流模式</li> <li>电压型支持-10V ... +10V、0V ... 10V</li> <li>电流型支持0mA ... 20mA、4mA ... 20mA</li> <li>电流型内阻250Ω</li> <li>响应时间: 2ms (含软件滤波)</li> <li>精度: ±1%</li> </ul>	<ul style="list-style-type: none"> <li>Differential input</li> <li>Dip switch to choose voltage and current mode</li> <li>Voltage range(voltage mode): -10V~+10V、0V~10V</li> <li>Current range(current mode): 0mA~20mA、4mA~20mA</li> <li>Internal resistance in current mode: 250Ω</li> <li>Response time: 2ms(including software filter)</li> <li>Precision: ±1%</li> </ul>
<ul style="list-style-type: none"> <li>分别位于端子X5和X11</li> <li>支持KTY84-130、PTC</li> <li>支持24V的单端信号、5V和24V的差分信号</li> </ul>	<ul style="list-style-type: none"> <li>Respectively at the X5 and X11</li> <li>Support KTY84-130、PTC</li> <li>24V single-ended signal. 5V and 24V differential signal</li> </ul>
<ul style="list-style-type: none"> <li>输入频率: 最大250kHz</li> <li>断线检测: 仅支持差分类型</li> </ul>	<ul style="list-style-type: none"> <li>Input frequency: 250kHz maximum</li> <li>Disconnection detection: only support differential mode</li> </ul>
<ul style="list-style-type: none"> <li>最大长度: 5V差分类型100m</li> <li>24V开集极类型50m</li> <li>24V推挽类型100m</li> <li>24V差分类型300m</li> </ul>	<ul style="list-style-type: none"> <li>Maximum wire length: 5V differential mode: 100m</li> <li>24V open-collector type: 50m</li> <li>24V push-pull: 100m</li> <li>24V differential mode: 300m</li> </ul>
<ul style="list-style-type: none"> <li>波特率: 最大4Mbps</li> <li>最大长度: 500kbps时100m</li> </ul>	<ul style="list-style-type: none"> <li>Baud rate: 4 Mbps maximum</li> <li>Maximum wire length: 100m at 500 kbps</li> </ul>
<ul style="list-style-type: none"> <li>波特率: 最大2.5Mbps</li> <li>最大长度: 500kbps时100m</li> </ul>	<ul style="list-style-type: none"> <li>Baud rate: 2.5 Mbps maximum</li> <li>Maximum wire length: 100m at 500kbps</li> </ul>
<ul style="list-style-type: none"> <li>USB 2.0</li> <li>Mini-B</li> </ul>	<ul style="list-style-type: none"> <li>USB 2.0</li> <li>Mini-B</li> </ul>
<ul style="list-style-type: none"> <li>RDY指示灯: 红绿双色</li> <li>BF指示灯: 红绿双色</li> </ul>	<ul style="list-style-type: none"> <li>RDY LED: red and green</li> <li>BF LED: red and green</li> </ul>
<ul style="list-style-type: none"> <li>SAFE指示灯: 黄色</li> <li>LNK1指示灯: 绿色</li> <li>LNK2指示灯: 绿色</li> </ul>	<ul style="list-style-type: none"> <li>SAFE LED: yellow</li> <li>LNK1 LED: green</li> <li>LNK2 LED: green</li> </ul>
<ul style="list-style-type: none"> <li>可直接安装或外引安装</li> </ul>	<ul style="list-style-type: none"> <li>Install directly or external with extension cable</li> </ul>
<p>不允许有凝露</p>	<p>Condensation prohibited</p>
<p>适用于污染等级2的环境</p>	<p>Pollution degree: level 2</p>

## 14.1.4 控制模块电气连接

## 14.1.4 Control module wiring

### 14.1.4.1 控制模块接线示意图

### 14.1.4.1 Control module wiring example



### 14.1.4.2 编码器接口信号定义

### 14.1.4.2 Encoder interface

#### a) 编码器接口(X10)信号定义

#### a) Encoder interface(X10) signals

Pin.	信号说明	Signal description
1	BISS-C的数据+	BISS-C data+
2	BISS-C的时钟+	BISS-C clock+
3	BISS-C的时钟-	BISS-C clock-
4	编码器电源(5V或24V)	Encoder power supply(5V or 24V)
5	编码器电源(5V或24V)	Encoder power supply(5V or 24V)
6	编码器电源侦测输入	Encoder power detection input
7	电源地	Power ground
8	BISS-C的数据-	BISS-C data-
9	编码器电源侦测输入接地	Encoder power detection ground
10	增量式信号Z+	Incremental type Z+
11	增量式信号Z-	Incremental type Z-
12	增量式信号B-	Incremental type B-
13	增量式信号B+	Incremental type B+
14	增量式信号A-	Incremental type A-
15	增量式信号A+	Incremental type A+

#### b) 编码器接口(X11)信号定义

#### b) Encoder interface(X11) signals

Pin.	信号说明	Signal description
1	KTY84-130或PTC输入	KTY84-130/PTC input
2	KTY84-130或PTC的接地	KTY84-130/PTC ground
3	—	—
4	RS485信号B	RS485 signal B
5	RS485信号A	RS485 signal A
6	—	—
7	编码器电源(5V)	Encoder power supply(5V)
8	编码器电源地	Power ground

## 14.2 控制模块CM51

## 14.2 Control module CM51

### 14.2.1 概述

### 14.2.1 General information

CM51模块是精简输入输出接口后，专为总线型伺服系统应用而设计的控制模块，支持PROFINET总线及RT, IRT应用，且支持同步伺服及异步伺服控制。

The CM51 module is a control module designed specifically for bus type servo system applications after simplifying the input and output interfaces. It supports PROFINET bus and RT, IRT applications, as well as synchronous and asynchronous servo control.



CM51 模块

CM51 module

### 14.2.3 CM51控制模块技术参数

### 14.2.3 CM51 Technical date

功能	Functions		
总线接口	Bus interface	AX-CM51-PN-PE	AX-CM51-PN-PE
工作电源	Power supply	功率模块供电	By power module
		外部端子供电	By external terminals
输出电源	Power output	+24V输出	+24V output
		DB9接口编码器电源	DB9 encoder power supply
		RJ45接口编码器电源	RJ45 encoder power supply
数字量输入	Digital input	2个	2
数字量输出	Digital output	1个继电器 (DO0)	1 relay (DO0)
温度传感器	Temperature sensor	1个	1
编码器信号输入	Encoder interface	ABZ	ABZ
		RS485	RS485
USB接口	USB interface	1个	1
指示灯	Status LEDs	2个双色指示灯	2two-color LEDs
键盘接口	Keyboard interface	支持OP25	OP25 supported
工作温度	Use ambient temperature	-20°C ... +50°C	-20°C ... +50°C
存储温度	Storage temperature	-40°C ... +70°C	-40°C ... +70°C
相对空气湿度	Environment humidity	<95%	<95%
污染	Pollution	符合IEC 61800-5-1	IEC 61800-5-1
电磁兼容性	Electromagnetic compatibility	符合IEC 61800-3	IEC 61800-3

### 14.2.2 控制模块型号表示方法

### 14.2.2 Designation rules and nameplate for control module

博能精准系列伺服驱动器

Boneng AX-series precision servo drive

控制模块

Control module

通讯协议

Communication protocol

PN = PROFINET

PN = PROFINET

编码器接口

Encoder Interface

PE=增量式/绝对值编码器

PE=photoelectric incremental /absolute encoder

AX-CM51-PN-PE

### 订货号

### Order number

型号 Model	接口类型描述	Interface type description
AX-CM51-PN-PE	支持PROFINET通讯, 增量/绝对式光电编码器	Support PROFINET, incremental / absoluteoptical encoder

### 技术数据

### Technical data

<ul style="list-style-type: none"> <li>支持PROFINET</li> <li>RJ45接口</li> </ul>	<ul style="list-style-type: none"> <li>PROFINET</li> <li>RJ45 interface</li> </ul>
<ul style="list-style-type: none"> <li>DC 24V/0.6A</li> </ul>	<ul style="list-style-type: none"> <li>DC 24V/0.6A</li> </ul>
<ul style="list-style-type: none"> <li>电压范围: DC 20.8 ~ 28.8V</li> <li>最大电流: 0.6A</li> </ul>	<ul style="list-style-type: none"> <li>Voltage range: DC 20.8~28.8V</li> <li>Maximum current: 0.6A</li> </ul>
<ul style="list-style-type: none"> <li>电压范围: DC 18V ~ 26.8V</li> <li>最大电流: 100mA</li> </ul>	<ul style="list-style-type: none"> <li>Voltage range:DC 18V~26.8V</li> <li>Maximum current: 100mA</li> </ul>
<ul style="list-style-type: none"> <li>电压: DC 24V</li> <li>最大电流: 200mA</li> </ul>	<ul style="list-style-type: none"> <li>Voltage: DC 24V</li> <li>Maximum current: 200mA</li> </ul>
<ul style="list-style-type: none"> <li>电压: DC 5V</li> <li>最大电流: 200mA</li> </ul>	<ul style="list-style-type: none"> <li>Voltage: DC 5V</li> <li>Maximum current: 200mA</li> </ul>
<ul style="list-style-type: none"> <li>DI0、DI1公共端子M0</li> <li>电气隔离</li> <li>支持Source和Sink模式</li> <li>电压: DC 24V</li> <li>"1"信号电压: &gt;11V</li> <li>"0"信号电压: &lt;5V</li> <li>24V典型电流: 4mA</li> <li>响应时间: 6ms (含软件滤波)</li> </ul>	<ul style="list-style-type: none"> <li>Single inputs: DI0、DI1 share M0</li> <li>Electrical isolation</li> <li>Support Source and Sink mode</li> <li>Voltage: DC 24V</li> <li>Level"1"voltage: &gt;11V</li> <li>Level"0"voltage: &lt;5V</li> <li>24V typical current: 4mA</li> <li>Response time: 6ms (Including software filter)</li> </ul>
<ul style="list-style-type: none"> <li>电压: DC 24V、AC 220V</li> <li>连续电流: 2A</li> <li>切换电流: 2A</li> <li>触点类型: 1常开1常闭</li> </ul>	<ul style="list-style-type: none"> <li>Voltage: DC 24V、AC 220V</li> <li>Continuous current: 2A</li> <li>Switching current: 2A</li> <li>Contact type: 1 normally open and 1 close</li> </ul>
<ul style="list-style-type: none"> <li>位于RS485类型编码器端子X11</li> <li>支持KTY84-130、PTC</li> </ul>	<ul style="list-style-type: none"> <li>Respectively at the X11</li> <li>Support KTY84-130、PTC</li> </ul>
<ul style="list-style-type: none"> <li>支持24V的差分信号</li> <li>输入频率: 最大250kHz</li> <li>最大长度: 300m</li> </ul>	<ul style="list-style-type: none"> <li>24V differential signal</li> <li>Input frequency: 250kHz maximum</li> <li>Maximum wire length: 300m</li> </ul>
<ul style="list-style-type: none"> <li>波特率: 最大2.5Mbps</li> <li>最大长度: 500kbps时100m</li> </ul>	<ul style="list-style-type: none"> <li>Baud rate: 2.5 Mbps maximum</li> <li>Maximum wire length: 100m at 500kbps</li> </ul>
<ul style="list-style-type: none"> <li>USB 2.0</li> <li>Mini-B</li> </ul>	<ul style="list-style-type: none"> <li>USB 2.0</li> <li>Mini-B</li> </ul>
<ul style="list-style-type: none"> <li>RDY指示灯: 红绿双色</li> <li>COM指示灯: 红绿双色</li> </ul>	<ul style="list-style-type: none"> <li>RDY LED: red and green</li> <li>COM LED: red and green</li> </ul>
<ul style="list-style-type: none"> <li>仅支持外引安装</li> </ul>	<ul style="list-style-type: none"> <li>Only external with extension cable</li> </ul>
不允许有凝露	Condensation prohibited
适用于污染等级2的环境	Pollution degree: level 2

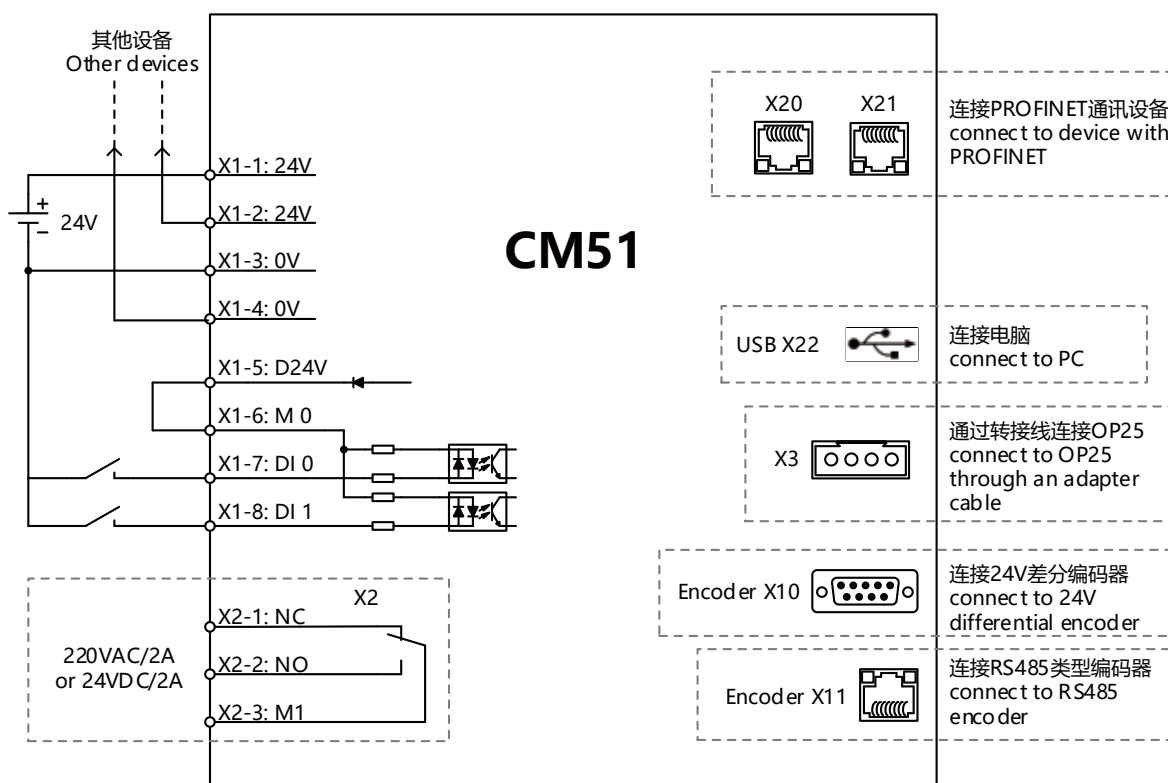


## 14.2.4 控制模块电气连接

## 14.2.4 Control module wiring

### 14.2.4.1 控制模块接线示意图

### 14.2.4.1 Control module wiring example



### 14.2.4.2 编码器接口信号定义

### 14.2.4.2 Encoder interface

#### a) 编码器接口(X10)信号定义

#### a) Encoder interface(X10) signals

	Pin.	信号说明	Signal description
	1	编码器信号Z+	Incremental type Z+
	2	编码器信号Z-	Incremental type Z-
	3	编码器信号B+	Incremental type B+
	4	编码器信号A+	Incremental type A+
	5	编码器电源地	Power ground
	6	-	-
	7	编码器信号B-	Incremental type B-
	8	编码器信号A-	Incremental type A-
	9	编码器电源 (24V)	Encoder power supply (24V)

#### b) 编码器接口(X11)信号定义

#### b) Encoder interface(X11) signals

	Pin.	信号说明	Signal description
	1	KTY84-130或PTC输入	KTY84-130/PTC input
	2	KTY84-130或PTC的接地	KTY84-130/PTC ground
	3	—	—
	4	RS485信号B	RS485 signal B
	5	RS485信号A	RS485 signal A
	6	—	—
	7	编码器电源(5V)	Encoder power supply(5V)
8	编码器电源地	Power ground	

## 15 驱动器功率模块

## 15 Power module

### 15.1 功率模块概述

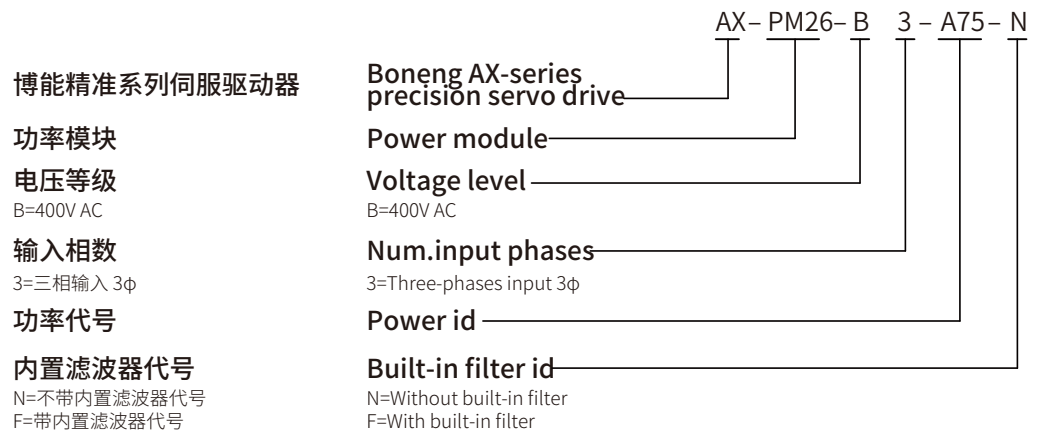
### 15.1 General information

伺服驱动器功率模块AX-PM26的功率范围为0.75kW-132kW,可适配博能MX系列伺服马达,用户无需担心MX伺服马达和AX-PM26的选型匹配问题,只需要按样本前面章节中厂家推荐的默认选型匹配表进行匹配即可。AX-PM26伺服功率模块匹配AX-CM55伺服控制模块,构成了博能精准定位的伺服驱动器。

The power module AX-PM26 has a power range from 0.75 kW to 132 kW, can be adapted to the MX-series motor, which makes it easily for users to choose motor and AX-PM26( just select as what recommended in the default model matching table) without worrying about matching problems. The AX-PM26 can be matched to AX-CM55 to form a precisely positioned servo drive.

### 15.2 功率模块型号表示方法

### 15.2 Designation rules and nameplate for power module



## 功率模块订货数据

## Power module order number

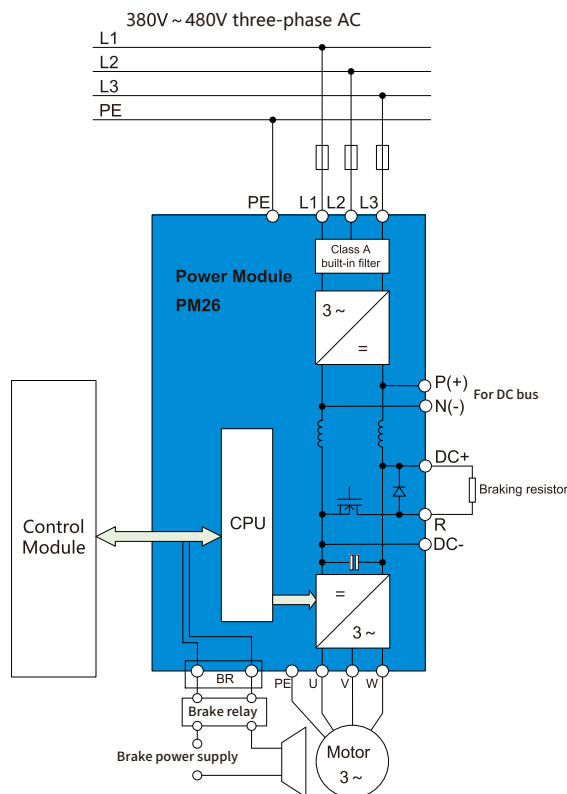
380~480V 3AC输入					380~480V 3AC input		
额定数据			Rated data		外形尺寸 Dimension type	型号 Model	
额定功率(kW)	Rated Power(kW)	额定电流(A)	额定电流(A)	Rated Current(A)		无内置滤波器	No built-in filter
0.75			1.25		B1	AX-PM26-B3A75-N	
1.5			2.42			AX-PM26-B3B15-N	
2.2			3.43			AX-PM26-B3B22-N	
3			4.51			AX-PM26-B3B30-N	
4			5.93		B2	AX-PM26-B3B40-N	
5.5			7.69			AX-PM26-B3B55-N	
7.5			10.53			AX-PM26-B3B75-N	
11			15.2		B3	AX-PM26-B3C11-N	
15			18.71			AX-PM26-B3C15-N	
18.5			22.22		B4	AX-PM26-B3C18-N	
22			26.32			AX-PM26-B3C22-N	
30			35.09			AX-PM26-B3C30-N	
37			43.86			AX-PM26-B3C37-N	
45			52.63		B6	AX-PM26-B3C45-N	
55			64.33			AX-PM26-B3C55-N	
75			84.79			AX-PM26-B3C75-N	
90			104.09			AX-PM26-B3C90-N	
110			119.88			AX-PM26-B3D11-N	
132			146.2			AX-PM26-B3D13-N	

注:带内置滤波器的功率模块PM26无现货库存,如需要,请咨询厂家。

Note: PM26 with built-in filter is out of stock, contact us if need.

### 15.3 功率模块电气连接

### 15.3 Power module wiring



注: PM26的BR接口仅在配合控制模块CM55时可用,配合控制模块CM51时不可用,可以接端子上的继电器来控制抱闸。

Note: The BR interface of PM26 is only available when working with control module CM55, but not when working with control module CM51. It can be connected to a relay on the terminal to control the holding brake.

### 15.4 功率模块通用技术参数

### 15.4 General technical data for power module

		PM26功率模块 (通用参数)	PM26 power module(general parameters)
输入电压	Voltage input	380...480V 3AC ±10%	380...480V 3AC ±10%
输入频率	Input frequency	47...63Hz	47...63Hz
默认载波频率	Default carrier frequency	变频模式: 90kW及以下4kHz,110kW及以上2kHz	Frequency conversion mode: 4 kHz for 90 kW and below; 2 kHz for 110 kW and above.
		伺服模式: 90kW及以下8kHz,110kW及以上4kHz	Servo mode: 8 kHz for 90 kW and below; 4 kHz for 110kW and above.
功率因数	Power factor	0.95	0.95
驱动器效率	Drive efficiency	95...97%	95...97%
过载能力	Overload capacity	在30s周期性冲击负载下, 可实现3倍3s的过载能力	Under 30s periodic impact load, can withstand 3 times the overload for 3s.
电磁兼容	Electromagnetic compatibility	可选符合EN 55011标准的A级滤波器和B级滤波器	Optional A-level and B-level filters complying with EN 55011.
可选制动方式	Optional braking method	●DC制动	直流电流制动, 制动力有限
		●外挂制动单元	直流母线上外接制动单元, 或外挂回馈单元制动
		●内置制动斩波器, 需外接制动电阻	DC current braking, with limited braking force. External braking unit on DC bus /external feedback unit braking. Built-in braking chopper, external resistor is required.
防护等级	Protection level	IP20	IP20
工作温度	Use ambient temperature	-20...+40°C 无需降额; +40°C...+50°C 每升高1°C降额1.5%; +50°C...+60°C 每升高1°C降额5%	-20~+40C: no derating; +40C~+50C: decrease by 1.5% for every 1C increase; +50C~+60C: decrease by 5% for every 1C increase.
存储温度	Storage temperature	-40...+70°C	-40...+70°C
相对湿度	Relative humidity	< 95% RH, 无结露	<95% RH, no condensation
冷却方式	Cooling method	内部风冷	功率部分采用内置风扇强制风冷
安装海拔高度	Installation altitude	海拔1000m以下无需降额; 1000m...4000m 每升高100m降额1%	No derating within 1000m: 1000m_4000m: decrease by 1% for every 100m rise in altitude
标准SCCR	Standard SCCR	小于100kA	Less than 100kA
保护功能	Protective function	●欠电压	●Under voltage
		●过电压	●Over voltage
		●过载	●Overload
		●接地故障	●Ground fault
		●短路	●Short-circuit
		●马达抱闸保护	●Motor braking protection
		●马达过温	●Motor over temperature
		●输出缺相	●Output phase loss
		●变频器过温	●Inverter over temperature

### 15.5 功率模块详细技术参数

### 15.5 Detailed technical parameters

		进线电压380~480V 3AC			Incoming line voltage 380~480V 3AC					
技术参数		Technical data		AX-PM26-B3A75	AX-PM26-B3B15	AX-PM26-B3B22	AX-PM26-B3B30	AX-PM26-B3B40	AX-PM26-B3B55	AX-PM26-B3B75
额定输出功率 kW		Rated output power kW		0.75	1.5	2.2	3	4	5.5	7.5
额定输入电流	Rated output current	带进线电抗器A	With incoming line reactorA	2.3	4.3	6.1	8	10.4	15.3	18.7
		不带进线电抗器A	Without incoming line reactorA	2.6	4.9	7.6	10.2	13.4	17.2	21.9
额定输出电流 A		Rated output current A		1.25	2.42	3.43	4.51	5.93	7.69	10.53
效率η		Efficiencyη		> 0.95						
功率损失kW		Power loss kW		0.1	0.11	0.14	0.16	0.18	0.24	0.3
冷却风量要求 m <sup>3</sup> /s		Cooling air requirement m <sup>3</sup> /s		0.005			0.024		0.055	
噪声水平 dB(A)		Noise level dB(A)		< 40				< 50		
控制单元接口		Interface with control unit		1						
制动电阻连接电缆的最大长度m		Maxi mumcable length ofbrakingresistor m		15						
进线电源连接	Power supply wiring	L1、L2、L3		螺钉端子						
		电缆截面积mm <sup>2</sup>	Cable sectional Aera mm <sup>2</sup>	1~2.5				2.5~6		
马达连接	Motor wiring	U、V、W		螺钉端子						
		电缆截面积mm <sup>2</sup>	Cable sectional Aera mm <sup>2</sup>	1~2.5				2.5~6		
直流母线连接 (制动电阻的连接)	DC bus connection (connection of braking resistor)	DC+、DC-、R		螺钉端子						
		电缆截面积mm <sup>2</sup>	Cable sectional Aera mm <sup>2</sup>	1~2.5				2.5~6		
PE连接		PE connection		外壳上的M4螺钉						
最大马达电缆长度	Maximum motor cable length	屏蔽电缆 m	Shielded cable m	50						
		非屏蔽电缆 m	Unshielded cable m	100						
防护等级		Protection level		IP20						
外形尺寸		Dimensions		B1				B2		
大约重量 kg		Weight kg		1.7				2.8		

AX-PM26-B3C11	AX-PM26-B3C15	AX-PM26-B3C18	AX-PM26-B3C22	AX-PM26-B3C30	AX-PM26-B3C37	AX-PM26-B3C45	AX-PM26-B3C55	AX-PM26-B3C75	AX-PM26-B3C90	AX-PM26-B3D11	AX-PM26-B3D13		
11	15	18.5	22	30	37	45	55	75	90	110	132		
26	33	39	46	63	78	86	104	140	172	198	242		
32	39	46	53	73	88	78	94	117	154	189	218		
15.2	18.71	22.22	26.32	35.09	43.86	52.63	64.33	84.79	104.09	119.88	146.2		
> 0.95													
0.4	0.5	0.7	1	1.3	1.67	1.93	2.48	2.3	3.02				
0.055				2x0.055		0.083		0.153					
< 40				< 50		< 75							
1													
15													
螺钉端子						Screw terminal			电缆终端			Cable termination	
4...10			6...25						35...2x120				
螺钉端子						Screw terminal			电缆终端			Cable termination	
4...10			6...25						35...2x120				
螺钉端子													
4...10			6...25						25...70				
外壳上的M4螺钉		M4 screws on the housing		外壳上的M5螺钉		M5 screws on the housing		电缆终端			Cable termination		
50													
100													
IP20													
B3			B4						B6				
7			16						65				

## 16 驱动器操作面板

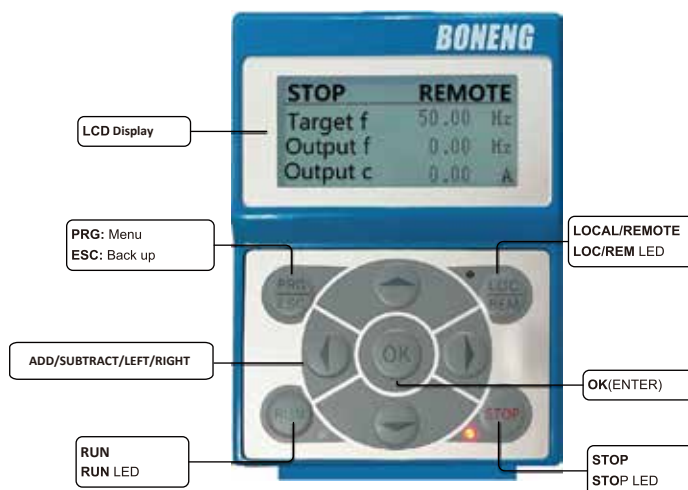
### 16.1 操作面板概述

操作面板OP25为驱动器调试提供更加灵活的调试诊断方式，AX系列伺服驱动器可以通过PC及上位机进行调试，也可以使用OP25进行快捷调试。

## 16 Operation panel

### 16.1 General information

The AX-series drive can be debugged with either PC-Software (BonengDrivesoft) or Operation Panel(OP25). The operation Panel(OP25) can make drive debugging and diagnosis easier and more flexible.



操作面板订货型号为：  
A1-OP25

注：A1-OP25和AX-CM51-PN-PE匹配时，需要通过专用转接线来连接，请直接订购AD-OP25即可，既包含了操作键盘也包含了转接线。

The Operation Panel order number is: A1-OP25

Note: When A1-OP25 and AX-CM51-PN-PE are matched, they need to be connected through a dedicated adapter cable. Please order AD-OP25 directly, which includes both the operation keyboard and the adapter cable.

## 17 驱动器可选件

### 17.1 制动电阻

制动电阻用于使大转动惯量的负载迅速制动。在马达和负载制动时，动能转换成的再生电能会返回到驱动器中，直流母线电压因此抬高，驱动器将这些再生的能量几乎全部消耗在制动电阻上；400V 50/60Hz AX精准系列伺服驱动器可选的制动电阻推荐规格如下：

## 17 Options

### 17.1 Braking Resistor

The braking resistor is used to quickly brake the load with large moment of inertia. When the load and motor brake, the regenerative energy converted from kinetic energy will be returned to the driver, and then the DC bus voltage will be raised. The braking resistor is installed to consume almost all of this part of energy to keep the DC bus voltage level. The recommended model of optional Braking Resistor for 400V-50/60 Hz AX-series servo drives are as follows:

驱动器			允许的最小 制动电阻	推荐值		博能型号	
框架	无内置滤波器型号	有内置滤波器型号		功率(W)	阻值(Ω)	订货号	等效制动电阻
Power module			Minimum allowable resistance value for the brake resistor	Recommend value		BONENG Type	
Frame size	Article number without filter	Article number with filter		Power (W)	Resistance (Ω)	Article number	Equivalent brake resistor
B1	AX-PM26-B3A75-N	AX-PM26-B3A75-F	374Ω	60	750	A1-H02-A06-K-D75	60W 750Ω
	AX-PM26-B3B15-N	AX-PM26-B3B15-F	374Ω	80	390	A1-H02-A08-K-D39	80W 390Ω
	AX-PM26-B3B22-N	AX-PM26-B3B22-F	140Ω	150	180	A1-H02-A15-K-D18	150W 180Ω
	AX-PM26-B3B30-N	AX-PM26-B3B30-F	140Ω	150	180	A1-H02-A15-K-D18	150W 180Ω
B2	AX-PM26-B3B40-N	AX-PM26-B3B40-F	75Ω	300	100	A1-H02-A30-K-D10	300W 100Ω
	AX-PM26-B3B55-N	AX-PM26-B3B55-F	75Ω	300	100	A1-H02-A30-K-D10	300W 100Ω
	AX-PM26-B3B75-N	AX-PM26-B3B75-F	75Ω	400	75	A1-H02-A40-K-C75	400W 75Ω
B3	AX-PM26-B3C11-N	AX-PM26-B3C11-F	30Ω	800	36	A1-H02-A80-K-C36	800W 36Ω
	AX-PM26-B3C15-N	AX-PM26-B3C15-F	30Ω	800	36	A1-H02-A80-K-C36	800W 36Ω
B4	AX-PM26-B3C18-N	AX-PM26-B3C18-F	27Ω	1000	27	A1-H02-B10-K-C27	1000W 27Ω
	AX-PM26-B3C22-N	AX-PM26-B3C22-F	27Ω	1000	27	A1-H02-B10-K-C27	1000W 27Ω
	AX-PM26-B3C30-N	AX-PM26-B3C30-F	15Ω	2000	15	A1-H02-B20-K-C15	2000W 15Ω
	AX-PM26-B3C37-N	AX-PM26-B3C37-F	15Ω	2000	15	A1-H02-B20-K-C15	2000W 15Ω
B6	AX-PM26-B3C45-N	AX-PM26-B3C45-F	10Ω	3000	10	A1-H02-B30-K-C10	3000W 10Ω
	AX-PM26-B3C55-N	AX-PM26-B3C55-F	10Ω	3000	10	A1-H02-B30-K-C10	3000W 10Ω
	AX-PM26-B3C75-N	AX-PM26-B3C75-F	7.1Ω	4000	7.5	A1-H02-B40-K-B75	4000W 7.5Ω
	AX-PM26-B3C90-N	AX-PM26-B3C90-F	7.1Ω	4000	7.5	A1-H02-B40-K-B75	4000W 7.5Ω
	AX-PM26-B3D11-N	AX-PM26-B3D11-F	5Ω	6000	5	A1-H02-B60-K-B50	6000W 5Ω
	AX-PM26-B3D13-N	AX-PM26-B3D13-F	5Ω	6000	5	A1-H02-B60-K-B50	6000W 5Ω



## 17.2 进线电抗器

当系统的故障率高时，需要加装进线电抗器以保护驱动器不受过大的谐波电流的干扰，改善驱动器的输入侧功率因数；防止过载，并将进线谐波限制在允许的值内，以确保驱动器达到期望的使用寿命。400V 50/60Hz AX精准系列伺服驱动器可选的进线电抗器推荐型号如下表：

## 17.2 Incoming line reactors

A incoming line reactor is required and needful to prevent the drive from being disturbed by excessive harmonic currents, and improve the input side power factor, when the system has a high failure rate. In addition, the incoming line reactor can limit the line harmonics to allowable values to ensure the drive's expected service life, when the overload occurs. The recommended model of optional incoming line reactors for 400V-50/60 Hz AX-series servo drives are listed below:

驱动器		Drives		进线电抗器 推荐参数		Recommended parameters of reactors		订货 号	Order number
框架 Dimension types	无内置 滤波器 型号	Without built-in filter	额定 电流 (A)	Rated current (A)	电感 (mH)	Rated inductance (A)			
B1	AX-PM26-B3A75-N		2.6		5.9		A1-H12-TB280		
	AX-PM26-B3B15-N		4.9		3.1		A1-H12-TB280		
	AX-PM26-B3B22-N		7.1		2.2		A1-H12-TB200		
	AX-PM26-B3B30-N		9.2		1.7		A1-H12-TB140		
B2	AX-PM26-B3B40-N		12.2		1.3		A1-H12-TA930		
	AX-PM26-B3B55-N		15.8		1		A1-H12-TA700		
	AX-PM26-B3B75-N		21.6		0.8		A1-H12-TA700		
B3	AX-PM26-B3C11-N		31.2		0.5		A1-H12-TA470		
	AX-PM26-B3C15-N		38.4		0.4		A1-H12-TA350		
B4	AX-PM26-B3C18-N		45.6		0.5		A1-H12-TA280		
	AX-PM26-B3C22-N		54		0.4		A1-H12-TA240		
	AX-PM26-B3C30-N		72		0.3		A1-H12-TA160		
	AX-PM26-B3C37-N		90		0.2		A1-H12-TA160		
B6	AX-PM26-B3C45-N		120		0.117		A1-H12-TB120		
	AX-PM26-B3C55-N		150		0.094		A1-H12-TA095		
	AX-PM26-B3C75-N		200		0.07		A1-H12-TA070		
	AX-PM26-B3C90-N		250		0.056		A1-H12-TA056		
	AX-PM26-B3D11-N		250		0.056		A1-H12-TA056		
	AX-PM26-B3D13-N		290		0.048		A1-H12-TA048		

### 17.3 进线滤波器

进线滤波器的作用是抑制驱动器通过输入电源线所传输到公共电网中的电磁干扰,同时也衰减从电源线进入驱动器的干扰;在安装时请尽量靠近驱动器的输入端子侧进行安装,请使用驱动器专用的进线滤波器。400V 50/60Hz AX精准系列伺服驱动器可选的进线滤波器推荐型号如下表:

### 17.3 Incoming filter

The function of the incoming line filter is to suppress the electromagnetic interference transmitted from/to the drive to/from the public power supply network through the power supply line. When use it, please choose recommended drive specific line filter, and install it as close to the input end of the drive as possible. The recommended types of incoming line filter for 400V-50/60 Hz AX-series servo drives are as follows:

框架 Dimension types	驱动器 Drives		EMC 滤波器	EMC filter	订货号 Order number
	无内置 滤波器 型号	Without built-in filter	额定 电流 (A)	Rated current (A)	
B1	AX-PM26-B3A75-N		2.9		A1-H11-A-C10
	AX-PM26-B3B15-N		5.5		A1-H11-A-C10
	AX-PM26-B3B22-N		7.7		A1-H11-A-C10
	AX-PM26-B3B30-N		10.1		A1-H11-A-C10
B2	AX-PM26-B3B40-N		13.3		A1-H11-A-C20
	AX-PM26-B3B55-N		17.2		A1-H11-A-C20
	AX-PM26-B3B75-N		22.2		A1-H11-A-C30
B3	AX-PM26-B3C11-N		32.6		A1-H11-A-C36
	AX-PM26-B3C15-N		39.9		A1-H11-A-C50
B4	AX-PM26-B3C18-N		36		A1-H11-A-C50
	AX-PM26-B3C22-N		42		A1-H11-A-C50
	AX-PM26-B3C30-N		57		A1-H11-A-C65
	AX-PM26-B3C37-N		70		A1-H11-A-C80
B6	AX-PM26-B3C45-N		100		A1-H11-A-D10
	AX-PM26-B3C55-N		130		A1-H11-A-D13
	AX-PM26-B3C75-N		150		A1-H11-A-D15
	AX-PM26-B3C90-N		180		A1-H11-A-D18
	AX-PM26-B3D11-N		200		A1-H11-A-D20
	AX-PM26-B3D13-N		250		A1-H11-A-D25

### 17.4 出线电抗器

当驱动器和马达之间的距离超过50米时，由于长电缆对地的寄生电容效应导致漏电流过大，驱动器容易频繁发生过流保护，同时为了避免马达绝缘损坏，须加输出电抗器补偿，输出电抗器可以减小马达绕组上的电压负载，以及采用长的马达电缆时，容性充放电电流加在功率部分的附加负载。400V 50/60Hz AX 精准系列伺服驱动器可选的输出电抗器推荐型号如下表：

### 17.4 Outlet reactor

When the motor is more than 50m away from the drive, due to the parasitic capacitance effect of the long cable to the ground, the leakage current will become too large to trigger the over-current fault to protect the drive. To avoid this case and prevent motors from being damaged, a outlet reactor can be used. Because the outlet reactor can reduce the voltage applied to the motor windings and the additional load that capacitive charge/discharge current added to the power module when long cable used. The recommended model of optional Outlet Reactor for 400V-50/60 Hz AX-series servo drives are as follows:

驱动器		Drives		进线电抗器 推荐参数		Recommended parameters of reactors		订货 号	Order number
框架 Dimension types	无内置 滤波器 型号	Without built-in filter	额定 电流 (A)	Rated current (A)	电感 (mH)	Rated inductance (A)			
B1	AX-PM26-B3A75-N		2.6		3.2		A1-H13-TB140		
	AX-PM26-B3B15-N		4.9		1.7		A1-H13-TB140		
	AX-PM26-B3B22-N		7.1		1.2		A1-H13-TB100		
	AX-PM26-B3B30-N		9.2		0.9		A1-H13-TA700		
B2	AX-PM26-B3B40-N		12.2		0.7		A1-H13-TA470		
	AX-PM26-B3B55-N		15.8		0.5		A1-H13-TA350		
	AX-PM26-B3B75-N		21.6		0.4		A1-H13-TA230		
B3	AX-PM26-B3C11-N		31.2		0.3		A1-H13-TA180		
	AX-PM26-B3C15-N		38.4		0.2		A1-H13-TA180		
B4	AX-PM26-B3C18-N		45.6		0.2		A1-H13-TA140		
	AX-PM26-B3C22-N		54		0.2		A1-H13-TA120		
	AX-PM26-B3C30-N		72		0.1		A1-H13-TA087		
	AX-PM26-B3C37-N		90		0.1		A1-H13-TA078		
B6	AX-PM26-B3C45-N		120		0.058		A1-H13-TA058		
	AX-PM26-B3C55-N		150		0.047		A1-H13-TA047		
	AX-PM26-B3C75-N		200		0.035		A1-H13-TA035		
	AX-PM26-B3C90-N		250		0.028		A1-H13-TA028		
	AX-PM26-B3D11-N		250		0.028		A1-H13-TA028		
	AX-PM26-B3D13-N		290		0.024		A1-H13-TA024		

随着技术迭代进步，博能产品样本将会同步更新，请见谅。  
Along with the technology advancedet.,the product of  
the manual of Boneng will be changed,please forgive.

# 博能产品集成图

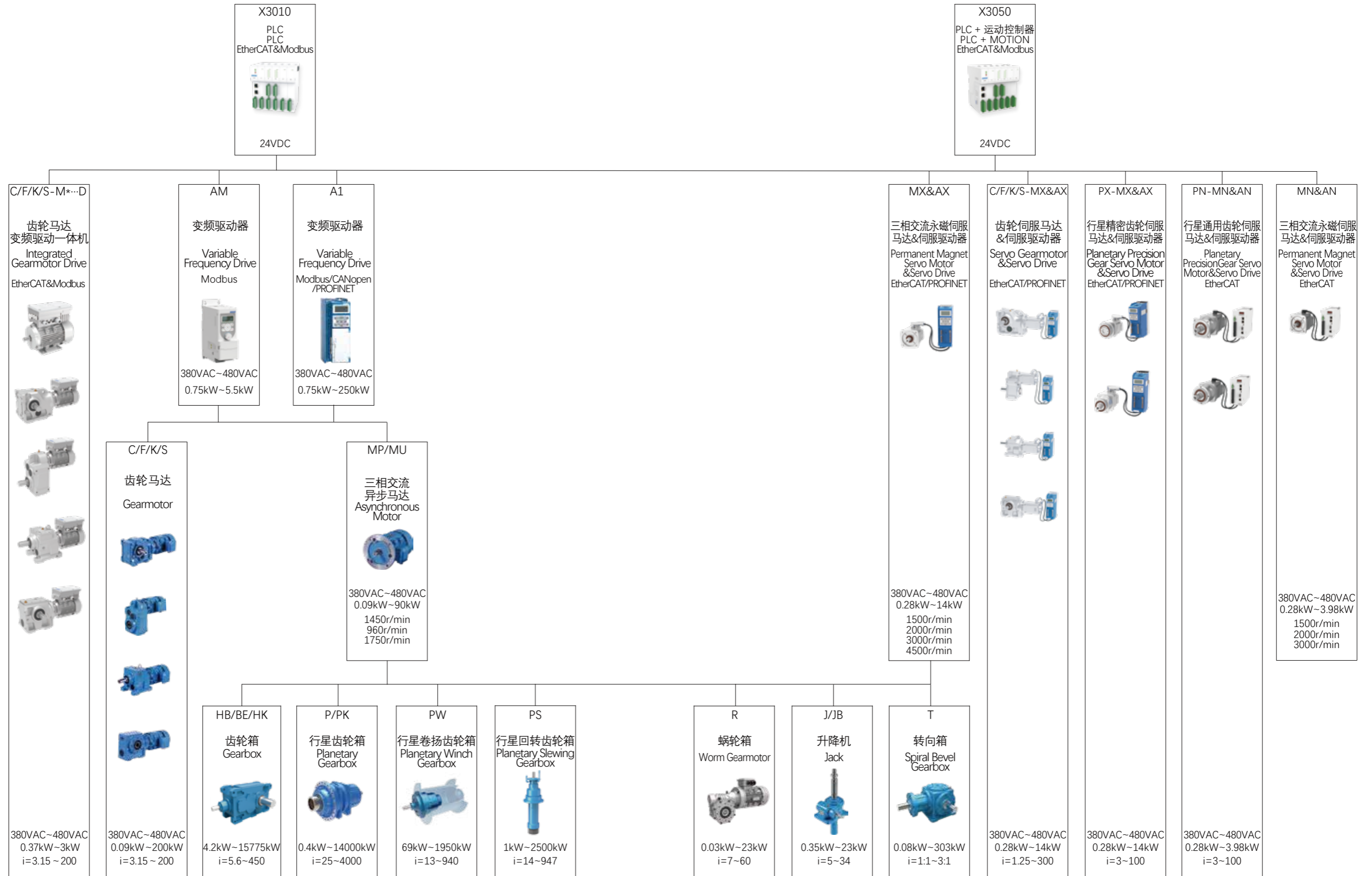
# Boneng Product Integration Diagram

CONTROL  
控制层

DRIVE  
驱动层

MOTOR  
马达层

GEAR  
齿轮层



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<b>博能传动(印度)有限公司</b>	<b>BONENG TRANSMISSION(INDIA)PVT.LTD</b>
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