BONENG

AN驱动器
AN Servo Drivers

快速调试手册
QUICK COMMISSIONING MANUAL

中文

EN

CONTACT US

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前言

欢迎使用博能驱动器！

在安装使用前请务必认真阅读本说明书，以便正确安全地使用驱动器。

更多详细资料，请访问博能传动官方网站：
博能传动（www.boneng.com）。

扫码了解产品详情

博能传动官方网站

扫码了解产品详情

AN驱动器产品详情

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1.伺服马达电气连接注意事项

a. 确保电源线，马达动力线，信号线，接地线和屏蔽线连接良好。

b. 确保制动器连接和功能正常。

c. 按照使用的方式、承载的电压和电流来选择正确的连接电缆。

d. 确保连接器的密封性和密封面，以确保符合防护等级。

注意

触电危险！

- 务必确保在驱动器及马达断电状态下拆装连接线缆。
- 请遵守电气设备工作规范，只允许由专业人员安装驱动器和连接器。
- 马达含有静电元器件，请采取防静电措施。

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2.伺服马达制动器参数

制动器型号	BN028	BN036	BN048	BN063	BN080	BN100
静摩擦力矩(N·m)	≥1.9	≥2.4	≥3.8	≥10	≥22	≥60
制动器功率(W)	8.76	6.74	13.4	14	19	25
转动惯量($kg·cm^2$)	0.09	0.11	0.39	0.78	2.55	14.7
工作电压(Vdc)	24±10%	24±10%	24±10%	24±10%	24±10%	24±10%
工作温度(℃)	-15~120	-15~120	-15~120	-15~120	-15~120	-15~120
制动吸合时间(ms)	≤20	≤20	≤30	≤25	≤30	≤50
制动释放时间(ms)	≤35	≤80	≤50	≤90	≤100	≤220
紧急制动次数(次)	2000	2000	2000	500	2000	500
每小时最大紧急制动次数(次/小时)	20	20	20	20	20	20
最大紧急制动转速(rpm)	6000	6000	6000	3000	3000	3000
适配马达机座号	028	036	048	063/080S	080M/100S	100M/100L

3.伺服马达常见故障排查与维修方法

常见故障	原因	维修方法
马达无法起动	过载堵转	降低负载
	驱动器故障报错	检查动力线和信号线连接/检查驱动器参数设置
马达加速缓慢	过载	降低负载
	驱动器参数设置不合理	检查驱动器参数设置
	动力线中某一相在接通后断开	检查驱动器和动力线连接以及航插连接/检查绕组电阻
	定子绕组中出线匝间短路或相间短路	确定绕组电阻和绝缘电阻，并联系厂家进行维修
起动时发出隆隆声	过载	降低负载
	动力线中某一相在接通后断开	检查驱动器和动力线连接以及航插连接/检查绕组电阻
	定子绕组中出线匝间短路或相间短路	确定绕组电阻和绝缘电阻，并联系厂家进行维修
空载运行时马达过热	冷却风的通风被异物阻挡	清除阻碍物，保证冷却风正常通风。
负载运行时马达过热	过载	降低负载
	动力线中某一相在接通后断开	检查驱动器和动力线连接以及航插连接/检查绕组电阻
	冷却风的通风被异物阻挡	清除阻碍物，保证冷却风正常通风。

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常见故障	原因	维修方法
运行不平稳	马达动力电缆和信号电缆屏蔽不充分	检查屏蔽和接地情况/检查周围附近是否存在干扰源
	线路中有虚接	重新锁紧动力及信号航插/检查驱动器和动力及信号电缆连接
	驱动器增益设置不合理	重新合理设置驱动器的增益
刺耳的摩擦声，运行噪音	旋转部件打滑	确定原因，修整部件
	马达内部有异物	联系厂商修理
	轴承损坏	联系厂商修理
径向振动	转子失衡	拆开转子，重新平衡转子
	转子不圆，轴弯曲	联系厂商修理
	校准不佳	校准设备，联查联轴器
	相连设备失衡	重新平衡相连设备
	齿轮箱运行不平稳	使齿轮箱正常运行
轴向振动	校准不佳	校准设备，联查联轴器
	相连设备失衡	重新平衡相连设备
	齿轮箱运行不平稳	使齿轮箱正常运行

4.驱动器技术参数

功能	技术数据	
总线接口	AN-*****-S-EC	· 支持EtherCAT通讯
		· 2个RJ45接口
输出电源	编码器电源	· 输出电压：DC 5V
		· 最大电流：200mA
	24V输出电源	· 输出电压：DC 20V～28V
		· 最大电流：100mA
数字量输入	5个(DI0～DI4)	· 共公共端子COM
		· 电气隔离
数字量输出	3个开集电极(DO0～DO2)	· 最大电压：DC 30V
		· 最大电流：DC 50mA
编码器信号输入	RS485 类型	· 接口端子：RJ45
		· 电缆长度：10m
显示和按键	数码管	· 位数：五位
		· 颜色：红色
	按键	· 个数：五个
调试接口	USB	· 端子：MINI USB

备注：更多详细说明参见官网详细使用手册。

5.驱动器配线

5.1 驱动器接口一览

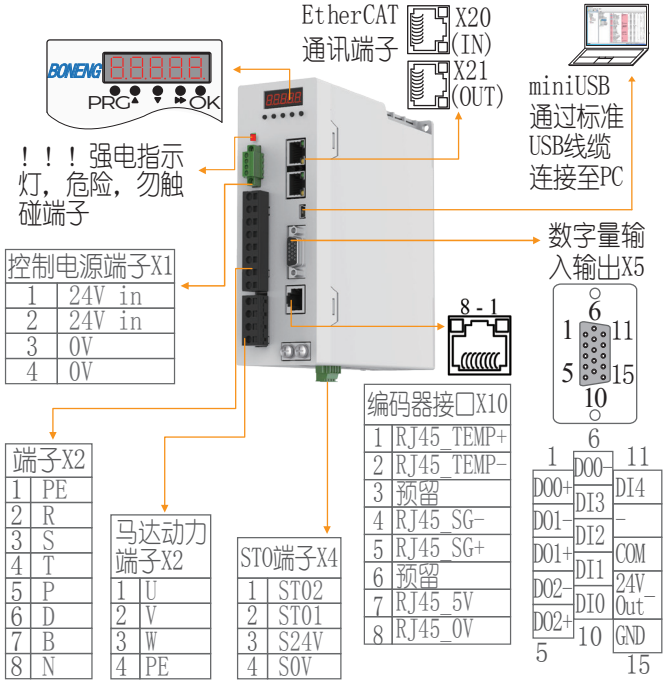
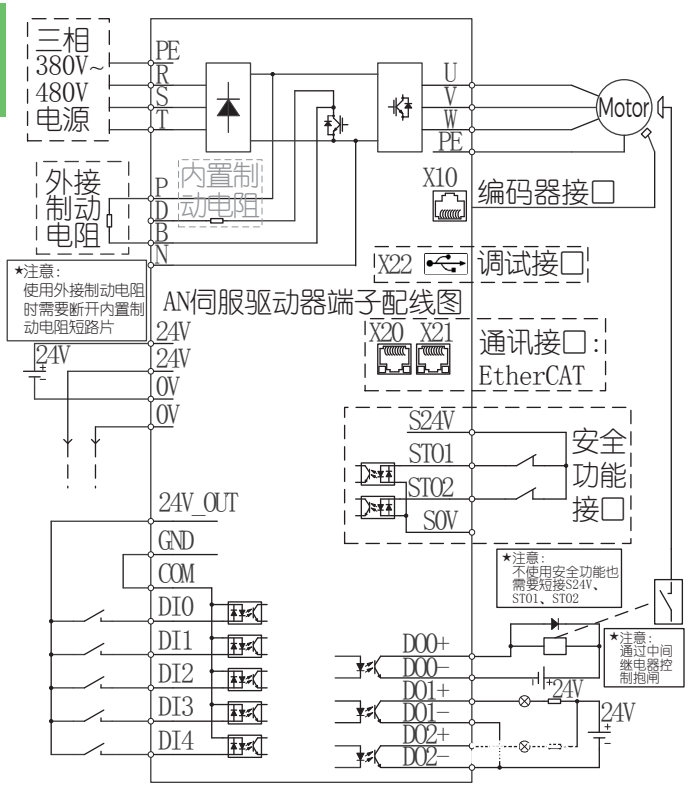


表1. 主电源端子名称与功能描述

端子编号	端子名称	说 明
三相电源输入端子	R, S, T	三相电源输入端子，与电网连接（380V～480V，47～63Hz）。
	PE	三相电源接地保护。
直流母线及制动电阻端子	P, N	直流母线端子（小功率机型共直流母线使用）。
	P, D, B	制动电阻接入端子（默认短接为使用内置制动电阻），需外接能量泄放电阻时，将电阻接于P和B之间。
马达连接端子	U, V, W	连接马达U, V, W相。
	PE	连接马达接地线。

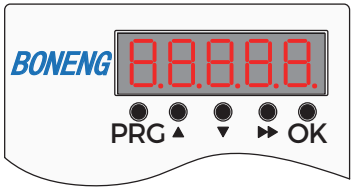
5.2 端子配线



6. 驱动器操作说明

6.1 操作面板说明

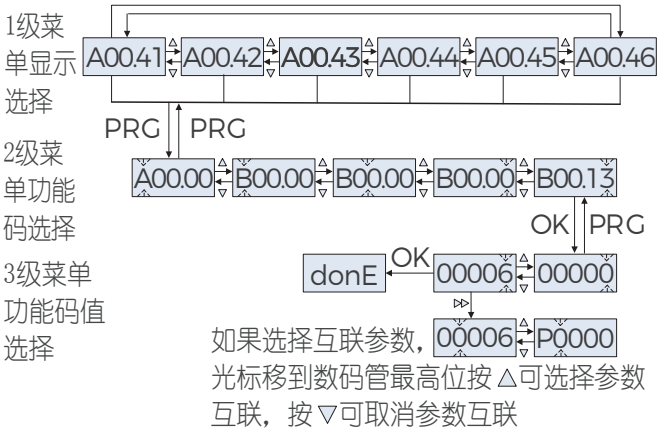
数码管与功能按键：



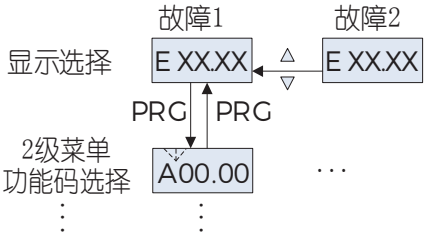
按键	按键名称	功 能
PRG	编程/返回	主监控界面时，按此键进入功能选择界面；其他界面，按此键返回上一级界面或状态
▲	递增键	数据或功能码的递增
▼	递减键	数据或功能码的递减
▶▶	右移位键	对 5 位数码管进行选择，在修改参数时，可以循环向右选择参数的修改位
OK	确认键	设定参数确认

数码管与功能按键：

1. 驱动器无故障时：

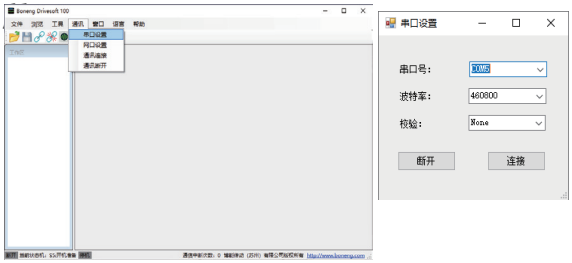


2. 驱动器有故障时：1 级菜单显示当前故障，2 级和 3 级菜单不变。



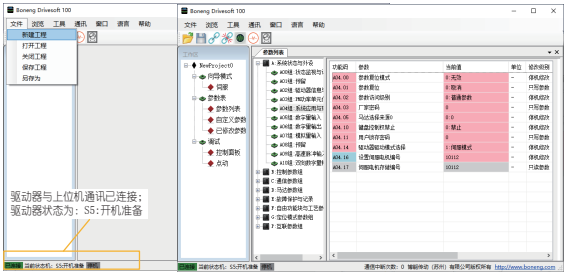
6.2 调试软件 Boneng Drivesoft 100 操作说明

1. 请使用标准 USB 线缆连接伺服驱动器与PC，确保PC端已安装好博能驱动器上位机软件Boneng Drivesoft 100。
2. 在 PC 端打开博能上位机软件Boneng Drivesoft 100，并完成其与驱动器的通讯连接：菜单->通讯->通讯设置->串口号，选择对应的串口号->连接 ，如下图



驱动器与上位机软件Boneng Drivesoft的通讯连接

3. 在上位机软件Boneng Drivesoft 100中建立工程： 文件 -> 新建工程 -> 确定 。



上位机软件中建立工程并查看参数

7. 快速启动（试运转）

⚠ 注意：	◆ 试运转前请务必知悉各个伺服单元操作的安全与注意事项。

7.1 调试前准备

使用上位机对博能AN伺服驱动器带伺服马达进行试运转前需要准备以下设备：

- ◆ 博能MN-AN伺服一套；
- ◆ 伺服驱动器电源线缆及开关若干；
- ◆ 一端为 miniUSB公口(B型插头)的USB数据线一条；
- ◆ PC及博能上位机软件Boneng Drivesoft 100。

请按照接线图连接好伺服驱动器、伺服马达以及编码器线缆，并连接好伺服驱动器与PC。

7.2 试运转前检查和注意事项

- ➢ 伺服马达与外部机械装置

  试运转前请检查伺服马达的安装，务必确保伺服马达安装固定稳定安全可靠。试运转前请务必将伺服马达的输出轴与后级负载分离。

- ➢ 安装与配线检查

  a. 请确保驱动器与伺服马达的功率匹配。例如马达功率和驱动器功率不可相差太多，否则不保证运行正常。

  b. 送电前请根据驱动器铭牌确认伺服驱动器的供电电源电压是否和伺服单元的额定工作电压匹配。

  c. 请确保伺服的动力线缆及信号线缆可靠连接，动力线缆的屏蔽层和 PE 信号都已正确接在驱动器上。

  d. 请确保伺服驱动器的接地保护线缆可靠接地，以防触电。

  e. 请确保 STO 端子接线正确可靠。

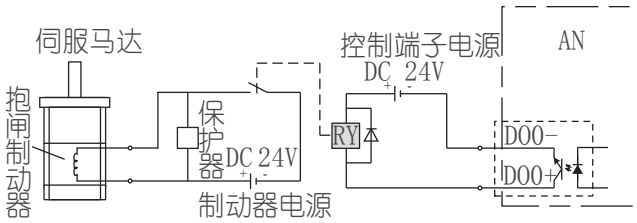
  f. 切勿将原厂线缆切断后再延长，否则容易产生干扰，甚至损坏。

➢ 马达制动器接线检查

a. 试运转前请检查伺服马达抱闸的配线是否正确，伺服马达端的抱闸输入信号有正负极性，请勿接反，接反后制动器将无法正常打开。

b. 请为马达抱闸提供单独的供电电源，请勿使用伺服驱动器的24V端子输出电源作为马达的抱闸电源，同样不可使用同一开关电源为驱动器端子与马达抱闸共同供电，否则可能引起干扰问题。

使用伺服驱动器的DO端子控制伺服马达抱闸，请按下图所示方法接线。



注意：* 继电器应按图示安装保护装置；

* MN马达抱闸线有正负之分，不可接反，否则抱闸无法打开。

伺服马达抱闸制动器接线示意图

7.3 使用 BonengDriveSoft 100 调试

以下是使用博能驱动器上位机软件Boneng Drivesoft 100进行马达试运转的步骤：

步骤1. 在上位机软件Boneng Drivesoft 100 中建立工程（参见章节 3.2），可实时显示当前参数。

步骤2. (可选项)参数恢复出厂设置：A04.00 =【3:全部参数恢复出厂】—>A04.01 =【1:确认】—>等待参数恢复完成（看调试软件左下角状态机）后驱动器重新上电。

步骤3. 设置驱动模式：A04.14 =【1: 伺服模式】（驱动器提示重新上电）。

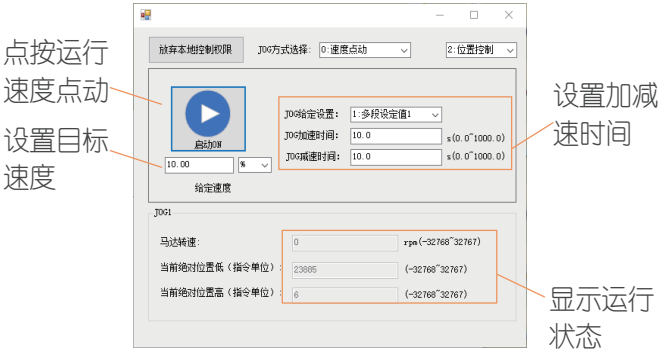
步骤4. 设置、检查马达参数：若驱动博能伺服马达，检查 A04.17 与马达铭牌上的马达ID是否一致①。

步骤5. 检查马达参数(D00～D02 组参数)是否与马达铭牌一致。

步骤6. 马达旋转检查：VF 模式下运行马达（设置参数 B05.00 =【0:VF】，通过上位机控制面板 启动 驱动器，并在 给定速度 框中给定运行速度，例如［10%］，确认），查看速度给定值(P13.11)与编码器速度反馈值(P13.17)的符号，其符号应当一致；若不一致，请检查驱动器动力输出相序与伺服马达 UVW 线相序是否匹配。

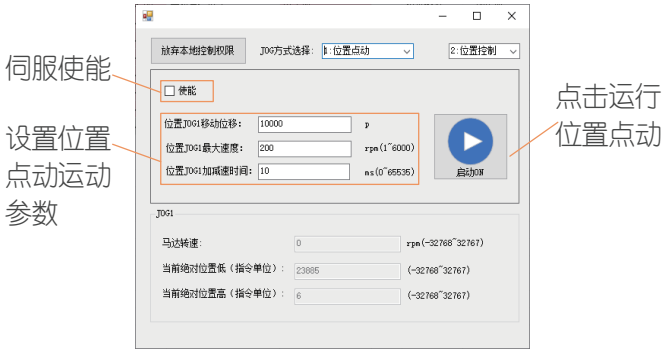
步骤7. 完成步骤 6 后，停机，修改参数B05.00 =【2:FVC】。

步骤8. 使用上位机点动面板进行速度点动控制：获取本地控制权限 —> 设置 JOG 方式为速度点动 —> 设置点动目标速度—>按 启动 按钮马达轴开始加速到目标速度，松开 启动 按钮，轴减速停止。



速度点动界面

①编码器线缆正常连接后方可读取马达 ID。



位置点动界面

若运行速度控制，到此试运转完成；若运行位置控制，继续执行步骤 9 及后续步骤。

步骤9. 设置电子齿轮比参数 G00.04 =【10000】(该参数为试运转测试用，实际使用时应根据电机轴后级传动比例计算后设置)。

步骤10. 修改控制模式为【2：位置控制】(或手动更改参数 B05.01 =【2:位置控制】②) 。

步骤11. 使用上位机点动面板进行位置点动控制：获取本地控制权限 —> 设置 JOG 方式为位置点动 —> 设置位置点动运动参数(若马达输出轴与减速机连接，应根据减速机速比设置位移量和最大速度) —>伺服使能 —>点按 启动 按钮触发位置点动，马达轴开始运转，直到位置指令完成，轴减速停止。可再次点按启动按钮，轴再次运动设定位置后停止 —> 去使能，停机。

②位置控制模式下支持速度点动和位置点动，速度控制模式下仅支持速度点动。

8. 常用参数

8.1 常用设置参数

功能序号	功能码名称	功能码说明
A04.00	参数复位模式	3：全部参数复位，需要通过 A04.01 确认后才可复位参数
A04.01	参数复位确认	0：取消 1：确认（需等参数复位完成之后方可重新设置驱动器参数）
D00.01	马达额定功率	应与电机铭牌参数一致。
D00.02	马达额定电压	
D00.03	马达额定电流	
D00.04	马达额定频率	
D00.05	马达额定转速	
B05.00	马达控制方式	0：VF 1：SVC 2：FVC
F04.00	抱闸功能选择	0：不使用抱闸功能，1：使用抱闸功能。通常用于提升设备时需要使用此抱闸功能，若通过 DO 端子控制抱闸，将 DO 功能设为P01.11 即可。
A06 组	数字量输出	可设置 DO 输出端子功能，详见使用手册。
A07 组	模拟量输入	模拟量输入设置，详见使用手册。

功能序号		功能码名称	功能码说明
B00.00		启停控制命令来源	若设置B00.00=【0：端子控制模块】，请在 B01 组设置端子相关参数；若设置 B00.00=【1：自定义控制模块】，请在 B00 组设置端子相关参数。使用Profinet通讯或EtherCAT通讯时，通讯建立时会自动设置相关参数。
B01.01		端子控制命令1方式	端子启停命令，详见操作手册。
B01.03		端子控制命令1输入IN1	
B01.04		端子控制命令1输入IN2	
B01.05		端子控制命令1输入IN3	
B00.23		OFF1停机方式	0：自由停机　1：减速停机
速度控制模式	B02.00	速度控制主设定选择	频率给定来源，详见操作手册。
	B03 组	多段速设置	多段速控制，详见使用手册。
	B04.02～B04.09	斜坡加减速时间	速度控制加减速时间设置与选择。同一时刻仅一组有效。
	B04.40	斜坡加速时间来源	选择速度控制模式下加减速时间来源，可设置为由B04.00～B04.09 参数设定的加减速时间，也可通过互联参数选择上位控制器下发的时间。
	B04.41	斜坡减速时间来源	
位置控制参数	D02.18	绝对值编码器类型	编码器线带电池盒时选【1:多圈绝对值编码器】；否则选【0:单圈绝对值编码器】。
	G00.04	马达旋转一圈的位置指令数	第一组电子齿轮比，G00.04≠0时，电子齿轮比为 编码器分辨率/G00.04。

功能序号		功能码名称	功能码说明
位置控制参数	G00.06	电子齿轮比1（分子）	第二组电子齿轮比，当G00.04=0 时，该组电子齿轮比生效，电子齿轮比为G00.06/G00.08。
	G00.08	电子齿轮比1（分母）	
	G00.22	马达旋转方向选择	设置给正指令时马达旋转方向。
	G00.53	原点开关来源选择	设置原点开关连接的DI端子。应根据原点开关物理连接情况选择；高电平有效。
	G00.55	正限位命令来源选择	设置限位开关连接的DI端子。应根据限位开关的物理连接情况设选择；高电平有效。
	G00.56	负限位命令来源选择	
	G01.13	负载转动惯量比	设置负载与电机转子惯量比值。应该设置为实际比值。
	G02.01	刚性等级选择	设置机械系统的刚性等级。该参数影响位置、速度环增益，会影响系统动态响应性能，应与物理系统相匹配。

8.2 常用监控参数

功能序号	功能码名称	功能码说明
A00.00	当前状态机	驱动器当前状态。
A00.05	给定速度	位置、速度控制模式下，实时速度给定值；[rpm]。
A00.06	马达转速	实时速度反馈，[rpm]。
A00.08	输出电流	实时输出电流。
A00.09	输出功率	实时输出功率。
P00 组	硬件状态	显示 DI，DO，DIO等硬件接口物理状态。
P12.13	Panel 给定值	速度控制模式下通过 OP 给定的目标速度值。单位为 0.1%.

功能序号	功能码名称	功能码说明
P12.14	PC 给定值	速度控制模式下通过 PC 上位机给定的目标速度值。单位由上位机控制面板选择。
P12.16	DI 状态	DI 实时状态。
P12.17	DO 状态	DO 实时状态。
P13.00	马达实际速度	马达实时速度反馈值；4096对应100%额定转速。
P13.01	马达最终设定速度	位置、速度控制模式下最终速度指令值；4096对应100%额定转速。
P13.02～P13.11	–	速度控制模式下速度给定监控数据。
P14.04, P14.06	绝对位置累计值（Pe1）	两个32位有符号数据，分别表示实时位置值，编码器单位。
P14.20	位置指令（指令单位）	实时位置指令，指令单位，32位有符号数。
P14.22	位置反馈（指令单位）	实时位置指令，指令单位，32位有符号数。
P14.66	位置目标设定值	目标位置，指令单位，32位有符号数。
E00～E07组	–	显示故障记录与相关信息。

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9. 故障说明

故障码	故障名称	子码	子码含义	解决措施
1	过流	1	U相过流	1. 确认D00组电机参数与电机铭牌一致。 2. 排除动力线破损问题； 3. 检查线缆是否短路； 4. 适当增加加减速时间； 5. VF控制下减小VF转矩提升量； 6. 请确认电机停止稳定后再启动； 7. 减小或取消负载排查问题； 8. 对于异步电机矢量控制下请确认是否进行过正确的参数辨识操作； 9. 子码 8 代表制动电阻异常，驱动器断电，确认制动电阻连接是否正确；测量 DC+和 R 之间的电阻，与手册推荐值对比确认； 10. 更换PM。 11. 恢复出厂值，重新设定参数。 12. 联系售后或厂家，寻求技术支持。
		2	V相过流	
		3	UV两相过流	
		4	W相硬件过流	
		5	UW两相过流	
		6	VW两相过流	
		7	UVW三相过流	
		8	制动管硬件过流	
		9	U相VCE短路	
		10	V相VCE短路	
		11	UV两相VCE短路	
		12	W相VCE短路	
		13	UW两相VCE短路	
		14	VW两相VCE短路	
		15	过流异常	
		16	过流异常	
2	直流过压	1	快速检测中母线电压过压	1. 请检查输入电源是否在合理范围，确认输入端接线可靠 2. 请增加加减速时间 3. 加装制动电阻或制动单元 4. 重新设置参数，参数辨识后运行

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故障码	故障名称	子码	子码含义	解决措施
				5. 确认驱动器功率与马达功率匹配 6. 检查编码器是否损坏 7. 联系售后或厂家，寻求技术支持
3	直流欠压	1	直流欠压	1. 请检查输入电源是否在合理范围，确认输入端接线可靠 2. 请确认电网是否瞬间断电 3. 正确设置A03.21软件欠压点 4. 更换 PM 5. 联系售后或厂家，寻求技术支持
4	速度搜索失败	1	速度搜索参数设置不当	1. 修改转速追踪模式（B05.13）为从最大频率开始搜索或增大搜索时间（B05.14） 2. 联系售后或厂家，寻求技术支持
5	驱动器过载	1	驱动器过载	1. 请确认驱动器选型是否合适，A03.00设置与铭牌一致 2. VF控制下减小VF转矩提升量 3. 矢量控制下减小转矩限幅值 4. 请确认负载是否过重或者抱闸锁死等情况 5. 矢量控制时请确认是否进行正确的参数自学习操作 6. 带编码器应用下，请

故障码	故障名称	子码	子码含义	解决措施
5	驱动器过载	1	驱动器过载	确认编码器方向及参数设定是否正确 7. 重新设置参数，参数辨识后运行 8. 降低载波频率，或更换更大功率驱动器 9. 等电机完全停止后再起动； 10. 联系售后或厂家，寻求技术支持
6	马达过载	1	马达过载	1. 请确认电机负载是否过大 2. 矢量控制时请确认是否进行过电机参数自学习 3. 带编码器应用下，请确认编码器方向及参数设定是否正确 4. 请确认负载是否过重或者抱闸锁死等情况 5. 请确认D00组参数是否与电机铭牌参数一致 6. 联系售后或厂家，寻求技术支持
7	输入缺相	1	输入缺相检测	1. 请检查动力输入电缆是否接触良好 2. 确保输入电源稳定 3. 联系售后或厂家，寻求技术支持
8	输出缺相	1	U 相输出缺相	1. 请检查对应的输出电缆是否接线正确及接触良好 2. 请确认电机是否运行平稳
		2	V 相输出缺相	
		3	W 相输出缺相	
		4	FVC 控制输出缺相	

故障码	故障名称	子码	子码含义	解决措施
		5	三相输出严重不平衡	3. D00组参数按马达铭牌参数设置，A03.00设置与铭牌一致 4. 更换PM 5. 联系售后或厂家，寻求技术支持
		6	定子电阻辨识输出缺相	
		7	UVW 三相输出缺相	
9	驱动器过温	1	检测到驱动器（37Kw及以下机型）IGBT温度超过阈值	1. 请确认环境温度是否过高 2. 请检查散热器风扇是否正常运转 3. 请检查散热器风道是否堵塞 4. 更换PM 5. 机型A03.00参数设置与铭牌一致 6. 联系售后或厂家，寻求技术支持
		2	检测到驱动器（37Kw以上机型）IGBT-U相温度超过阈值	
		3	检测到驱动器（37Kw以上机型）IGBT-V相温度超过阈值	
		4	检测到驱动器（37Kw以上机型）IGBT-W相温度超过阈值	
10	PWM 发波异常	1	U 相发波异常	1. 重新断电上电，如果持续存在，则联系售后或厂家，寻求技术支持
		2	V 相发波异常	
		4	W 相发波异常	
11	电流零漂错误	1	U 相零漂偏大	1. 检查机型(A03.00)设置是否与铭牌一致 2. PM 异常，更换 PM，或联系售后或厂家，寻求技术支持
		2	V 相零漂偏大	
		3	W 相零漂偏大	
12	对地短路故障	1	对地短路时 U 相过流	1. 请检查相应输出相是否对地短接

故障码	故障名称	子码	子码含义	解决措施
12	对地短路故障	2	对地短路时 V 相过流	2. 检查电机线缆是否破损 3. 更换电机或更换驱动器 4. 联系售后或厂家，寻求技术支持
		4	对地短路时 W 相过流	
		5	对地短路电流超过阈值	
		6	对地短路时过压	
13	马达调谐故障	1	异步马达动态调谐异常	1. 确认D00组电机参数是否与电机铭牌一致 2. 确认输出端接线可靠 3. 确认编码器接线及其参数正确 4. 更换 PM 5. 联系售后或厂家，寻求技术支持
		2	异步马达静态调谐异常	
		3	同步马达调谐异常	
		4	编码器调谐异常(测速异常)	
		5	编码器调谐异常（编码器信号干扰严重）	
		6	编码器调谐异常(编码器Z信号异常)	
14	编码器异常	1	闭环动态调谐时编码器未接	1. 规范走线，使用带屏蔽层的线缆，编码器屏蔽层接地 2. 请确认编码器接线是否可靠 3. 请检查编码器相关参数是否设置正确 4. 请检查编码器电源是否选择正确 5. 检查D00组电机参数是否与铭牌一致，确
		2	动态闭环调谐时编码器测速不吻合	
		3	闭环运行时编码器断线	
		4	编码器 Z信号异常	
		9	增量编码器 A 相断线	
		10	增量编码器 Z	

故障码	故障名称	子码	子码含义	解决措施
14	编码器异常		相断线	认电机级数 D00.09 6. 确认运行后电机是否转起来，排出堵转的情况 7. 联系售后或厂家，寻求技术支持
		11	增量编码器AB相断线	
		12	增量编码器 B相断线	
		13	增量编码器AZ相断线	
		14	增量编码器BZ相断线	
		15	增量编码器ABZ 相断线	
		16	通讯编码器通讯异常	
15	矢量失速报警	1	速度在外力作用下被反向	1. 请确认电机铭牌参数设置是否正确，进行参数辨识 2. 请确认是否做过电机参数自学习操作 3. 确认D02组编码器参数是否设置正确，编码器接线是否正确 3. 请检查和失速相关的参数设置是否合理 4. 联系售后或厂家，寻求技术支持
		2	速度偏差过大	
16	FPGA读写错误	1	初始化中FPGA读写错误	1. PM 异常，断电重启，如果继续存在则联系售后或厂家，寻求技术支持
17	驱动电源故障	1	驱动电源电压偏低	1. 联系售后或厂家，寻求技术支持 2. 更换 PM
		3	对地短路检测时驱动电源故障	

故障码	故障名称	子码	子码含义	解决措施
18	一级电源故障	1	24V 一级电源电压偏低	1. 联系售后或厂家，寻求技术支持 2. 更换 PM
19	CM 与 PM 通信异常	1	CM 无应答	1. 请确认CM的锁扣是否锁紧，确保CM与PM可靠连接。 2. 更换CM或PM，判断更换前后能否排除故障 3. 联系售后或厂家，寻求技术支持
		2	CM 无应答	
		3	通讯数据异常	
		4	初始化异常	
20	PM-EEPRO-M 故障	1	EEPROM写入数据溢出	1. 联系售后或厂家，寻求技术支持
		2	EEPROM读取数据溢出	
		3	EEPROM读取数据超时	
		4	EEPROM写入数据超时	
		5	EEPROM读取地址越界	
		6	EEPROM写入地址越界	
21	PM机型设置错误	1	PM机型当前设置值小于正常值	1. 重新烧录 PM 程序 2. 重新设置机型至正常值 3. 联系售后或厂家寻求技术支持
		3	PM机型当前设置值大于正常值	
22	逐波限流故障	1	U 相电流异常	1. 增长加速时间 2. 重新设置参数，参数辨识后运行 3. 更换电机，排出电机故障 4. 更换 PM。
		2	V 相电流异常	
		3	W 相电流异常	
		16	逐波限流中断异常	

故障码	故障名称	子码	子码含义	解决措施
				5. 联系售后或厂家，寻求技术支持
23	整流桥过热	1	整流桥温度超过90° （仅18.5Kw及以上机型检测）	1. 清理风扇中异物，关闭风扇调速功能（B06.48=0），风扇仍然不转，联系厂家更换风扇。 2. 查看机型值是否与铭牌对应 3. 可适当降低驱动器载波频率，打开配电柜门散热，增大配电柜进出风口风量 4. 联系售后或厂家，寻求技术支持
24	STO 故障	1	STO1为低电平	1. 请检查STO1 或 STO2开关是否触发 2. 请检查STO1 和 STO2接线是否可靠 3. 请检查STO1 和 STO2的电源是否正常 4. 联系售后或厂家，寻求技术支持
		2	STO2为低电平	
		3	STO1端子和STO2端子均为低电平	
25	制动管过热	1	制动管温度超过85℃ （仅45Kw及以上机型检测）	1. 请确认环境温度是否过高 2. 请检查散热器风扇是否正常运转 3. 请检查散热器风道是否堵塞 4. 安装合适的制动电阻 5. 联系售后或厂家，寻求技术支持
26	伺服初始位置错误	1	UVW编码器初始位置检测错误	

故障码	故障名称	子码	子码含义	解决措施
26	伺服初始位置错误	2	绝对值编码器通讯异常	1. 使用带屏蔽层的线缆，编码器屏蔽层接地；重新连接或更换编码器线缆 2. 确认编码器参数是否设置正确 3. 辨识零点，保证伺服零点位置正确；按照正确电机相序接线； 4. 联系售后或厂家，寻求技术支持
		3	绝度值编码器初始位置未校正	
		4	绝对值编码器初始位置检测超时	
		5	绝对值编码器零点矫正数据读写错误	
		6	绝对值编码器初始位置矫正失败	
		7	绝对值编码器数据读取错误	
		8	换相角偏差过大	
		9	换向角错误	
33	驱动器预过载	1	驱动器过载预警告	1. 请确认是否开启驱动器预过载功能 2. 处理方法参考"5：驱动器过载"故障。 3. 联系售后或厂家，寻求技术支持
34	马达预过载	1	马达过载预警告	1. 请确认是否开启驱动器预过载功能 2. 处理方法参考"6：马达过载"故障。 3. 联系售后或厂家，寻求技术支持
35	通信异常	1	上位机控制驱动器运行时CM模块与上位机	1. 重新连接或更换连接线 2. 联系售后或厂家，寻

故障码	故障名称	子码	子码含义	解决措施
35	通信异常		通信中断	求技术支持
		2	OP键盘获取本地控制权后CM模块与OP键盘通信中断	1. 检查操作面板与驱动器的通信线缆是否连接异常 2. 联系售后或厂家，寻求技术支持
		3	Modbus控制时在功能码C02.04设置的时间内没有进行交互	1. 检查Modbus线缆是否断开或者损坏 2. 检查相应 PLC等控制器程序是否正确，交互间隔是否在功能码C02.04设置的时间内 3. 联系售后或厂家，寻求技术支持
		5	Canopen 通信断线	1. 检查主站是否关闭 2. 通讯线是否损坏、是否过长；与干扰源过近。 3. 联系售后或厂家，寻求技术支持
		6	DriveLink 通讯故障	1. 接收数据超时 2. 节点设置冲突 3. 联系售后或厂家，寻求技术支持
		7	PROFINET通信断线	1. PLC 断电或连接线损坏。 2. 调节合适的通讯周期。 3. 在使用 IRT模式的情况下，需确保 IRT设备优先连接 PLC，RT设备连接至 IRT设备后端，并使用支持IRT模式的交换机。 4. 联系售后或厂家，寻

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故障码	故障名称	子码	子码含义	解决措施
				求技术支持
		10	EtherCAT通讯异常	1. 连上PLC后查看C06.06 查看提示信息；根据提示信息联系售后或厂家。 2. 联系售后或厂家，寻求技术支持
37	马达速度超限	1	马达转速超出最大转速限制	1. 请检查和马达超速相关的参数设置是否合理。 2. 检查是否有外部设备带着马达旋转的情况。 3. 联系售后或厂家，寻求技术支持
38	马达速度偏差大	1	马达转速与给定转速偏差过大	1. 请检查和马达速度偏差过大相关的参数设置是否合理。 2. 是否负载过重，抱闸是否及时打开。 3. 联系售后或厂家，寻求技术支持。
39	重新上电	1	驱动器部分参数修改需要重新上电	驱动器重新上电。
40	PID 反馈丢失	1	PID 反馈采样值丢失	1. 检查 PID反馈输入的信号 2. 联系售后或厂家，寻求技术支持
41	外部故障	1	产生外部故障1	1. 检查外部输入信号 2. 联系售后或厂家，寻求技术支持
		2	产生外部故障2	
42	外部警告	1	产生外部警告1	

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故障码	故障名称	子码	子码含义	解决措施
		2	产生外部警告2	
43	预驱动失败	1	运行命令产生时没有母线电压	1. 检查外部供电电压是否异常 2. 联系售后或厂家，寻求技术支持
44	控制板异常	1	CM芯片类型识别异常	1. 控制模块硬件异常，更换控制模块 2. IO板与控制板不匹配或连接异常。 3. 联系售后或厂家，寻求技术支持
		2	配置时钟失败	
		3	控制模块IO板与主控板不匹配	
45	抱闸控制异常	1	抱闸打开异常	1. 检查外部继电器是否异常 2. 检查抱闸接线是否正常，抱闸相关参数是否设置正确。 3. 联系售后或厂家，寻求技术支持
		2	抱闸关闭异常	
46	控制板电压异常	1	PM24V 电源电压过大	1. 检查 PM的24V供电电压是否异常 2. 联系售后或厂家，寻求技术支持
		2	外部 24V电源电压过大	1. 检查外部 24V供电电压是否异常 2. 联系售后或厂家，寻求技术支持
		3	PM24V 或外部24V 电源电压过低	1. 检测 PM的24V或者外部 24V电源电压是否低于 17V 2. 联系售后或厂家，寻求技术支持
		4	3.3V电压过高	1. 联系售后或厂家寻求技术支持

故障码	故障名称	子码	子码含义	解决措施
		5	3.3V电压过低	1. 联系售后或厂家寻求技术支持
		6	抱闸继电器短路	1. 确认抱闸继电器的阻抗是否大于 450Ω？ 2. 确认抱闸继电器是否短路？ 3. 联系售后或厂家，寻求技术支持
47	马达温度异常	1	马达温度过温	1. 减轻马达负载，减少马达自身发热。 2. 检查环境温度 3. 检查温度传感器的布线和连接。 4. 联系售后或厂家，寻求技术支持
		2	马达温度过低	1. 马达所在环境温度低于-40℃ 2. 温度传感器短接 3. 联系售后或厂家，寻求技术支持
48	马达温度警告	1	马达温度过高警告	1. 马达温度是否正常。 2. 检查 B06.41 设置的马达温度过温警告值是否合理。 3. 联系售后或厂家，寻求技术支持
49	AI断线故障	1	AI1 4～20mA输入断线	1. 检查AI电路是否正确 2. 检查是否有外部电流输入 3. 检查 A07.20 设置值是否正确 4. 联系售后或厂家寻求技术支持
		2	AI2 4～20mA输入断线	

故障码	故障名称	子码	子码含义	解决措施
50	电容侧风扇故障	1	电容侧风扇断线	1. 检查电容侧风扇接线是否中断 2. 电容侧风扇损坏，联系厂家更换 3. 联系售后或厂家，寻求技术支持。
51	ROM 故障（CM-EEP-ROM 故障）	1	上电自检EEPR-OM 中所存参数值不在设定范围内	1. 参数恢复出厂值后再次上电 2. 联系售后或厂家，寻求技术支持
		2	ARM与EEPROM交互超时	1. 联系售后或厂家寻求技术支持
		3	升级后，EEPR-OM 写入默认值，回读校验出现错误。	1. 可重新上电，若还故障，则是 EEPROM 元件存在问题 2. 联系售后或厂家，寻求技术支持
		4	写EEPROM次数超过1000	1. 恢复故障即可 2. 联系售后或厂家，寻求技术支持
		5	字库版本不正确	1. 烧录正确的字库 2. 联系售后或厂家，寻求技术支持
52	位置偏差过大	1	马达给定指令与电机编码器反馈指令偏差过大	1. 减小目标速度、增大加减速时间，速度转矩限制是否过小 2. 检查马达所带负载是否过大。 3. 确认运行时电机抱闸是否已经打开 4. 进行电机参数辨识，获取更准确的电机参数

故障码	故障名称	子码	子码含义	解决措施
				5. 联系售后或厂家，寻求技术支持。
53	全闭环位置偏差过大	1	马达给定指令与负载编码器反馈指令偏差过大	1. 检查马达所带负载是否过大，两个编码器方向是否一致。 2. 负载端编码器安装是否牢固 3. 联系售后或厂家，寻求技术支持。
54	到达正向极限位置	1	正向限位开关已激活	1. 检查是否到达正向限位；若到达限位可向相反方向运行； 2. 检查驱动器 G00组相关参数设置是否正确； 3. 检查驱动器 DI 端子接线是否正常； 4. 联系售后或厂家，寻求技术支持
55	到达负向极限位置	2	负向限位开关已激活	
56	定位中使能丢失	1	马达运行位置指令时驱动器去使能	1. 确保马达执行位置指令过程中驱动器为使能状态。 2. 联系售后或厂家，寻求技术支持
57	电机参数错误	1	电机储存的电机编号不正确	1. 将功能码 A04.16 设置为正确的电机编后，进行零点校正。 2. 联系售后或厂家，寻求技术支持。
		2	马达储存的编号中左数第4、5 位错误	
		3	马达储存的编号中第 3位错误	
		4	马达储存的编号中左数第 2位错误	

故障码	故障名称	子码	子码含义	解决措施
58	固定挡块在监视窗口外	1	轴位置脱离监控窗口（G03.40）	1. 确定转矩限幅是否符合要求 2. 确定 G03.40 监控窗口设定值是否过小 3. 联系售后或厂家，寻求技术支持。
59	未到达固定停止点	1	给定位置指令已经运行完，但未找到固定停止点	1. 确定固定停止点在给定位置指令运行范围内。 2 联系售后或厂家，寻求技术支持。
60	原点回归错误	1	原点回归超时。原点回归时，在G00.49设置的最大回原时间内未找到原点信号。	1. 检查原点开关信号是否正常； 2. 增大原点回归搜索速度(G00.46，G00.47)。 3. 检查限定查找原点时间 G00.49 设置值是否合理 4. 联系售后或厂家，寻求技术支持
62	制动电阻过热	1	制动电阻过热	1. 联系售后或厂家，寻求技术支持
63	编码器电池电压低（警告）	1	编码器电池电压低于报警阈值(3.2V)	1. 检查确保电池盒中电池接线可靠。 2. 确保电池盒中电池电压有效 3. 联系售后或厂家，寻求技术支持
64	编码器电池失效	1	编码器电池电压低于故障阈值(3.0V)	1. 检查接线或更换电池。 2. BISS-C编码器执行故障复位操作 3. RS485编码器，将D02.21置 1 后，重新上电

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故障码	故障名称	子码	子码含义	解决措施
				4. 联系售后或厂家，寻求技术支持
65	编码器多圈数据溢出	1	编码器多圈数据溢出	1. 手动将多圈计数值清零(D02.21 置 1)，重新上电。 2. 联系售后或厂家，寻求技术支持
		2	多圈编码器主电源和备份电源均断电后，重新上电。	1. 执行故障复位操作，复位后多圈值恢复为初始值(0 或±1) 2. 联系售后或厂家，寻求技术支持
66	参考点未设置	1	在绝对模式下未设定原点	1. 在绝对模式下进行回原操作，确定原点 2. 联系售后或厂家，寻求技术支持

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售后服务

售后服务请按以下步骤提交售后流程。

→ 登录“www.boneng.com”

→ 点击“服务”和“售后服务”

→ 登录系统

其他地区
控制器/驱动器：0512-66182005
马达/齿轮马达/齿轮箱：0512-66189918

博能传动（沈阳）有限公司
控制器/驱动器：024-31271571
马达/齿轮马达/齿轮箱：024-31292571

博能传动（天津）有限公司
控制器/驱动器：022-86928559
马达/齿轮马达/齿轮箱：022-26929558

博能传动（开封）有限公司
控制器/驱动器：0371-23335230
马达/齿轮马达/齿轮箱：0371-23277771

博能传动（潍坊）有限公司
控制器/驱动器：0536-4699687
马达/齿轮马达/齿轮箱：0536-4699667

博能传动（长沙）有限公司
控制器/驱动器：0731-88386958
马达/齿轮马达/齿轮箱：0731-88380725

博能传动设备（成都）有限公司
控制器/驱动器：028-87740066
马达/齿轮马达/齿轮箱：028-87740066

博能传动（肇庆）有限公司
控制器/驱动器：0757-86719757
马达/齿轮马达/齿轮箱：0758-2699830

博能传动（苏州）有限公司
控制器/驱动器 苏南区: 0512-66182005
马达/齿轮马达/齿轮箱 苏南区: 0512-66189918
控制器/驱动器 浙沪区: 0512-66182005
马达/齿轮马达/齿轮箱 浙沪区: 0512-66189918
控制器/驱动器 苏皖区: 0512-66182005
马达/齿轮马达/齿轮箱 苏皖区: 025-52171612

博能传动（美国）有限公司
技术支持/调试/售后服务：
1250 E 222nd Euclid, OH 44117,United Staes
Email: America@boneng.com
Tel: 1-216-618-3099/1-216-618-0138

博能传动（印度）有限公司
技术支持/调试/售后服务：
Plot No. E-10/3,MIDC sinnar(Malegaon)Industrial Area,
Nashik, 422123, Maharashtra, India.
Email:india@boneng.com
Tel: +91-11-4507 6293/+91-22-2781 3385

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Introduction

Welcome to Boneng Drive!

Please read this manual carefully before installation and use so that the driver can be used correctly and safely.

For more details, please visit Boneng Transmission official website:
BONENG (www.boneng.com).

Scan code for product details

BONENG Transmiss -ion Official Website

Scan the code to learn about the product details

Details of AN driver products

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1. Servo motor electrical connection precautions

a. Ensure that power cables, motor power cables, sig -nal cables, ground cables, and shielded cables are properly connected.

b. Ensure that the brake is connected and functionin -g properly.

c. Select the correct connection cable according to t -he mode of use, the voltage and current carried.

d. Ensure the tightness and sealing surface of the co -nnector to ensure compliance with the protection level.

caution:

Electric shock hazard warning!

- Make sure to disassemble and disassemble the connection cables when the drive and motor are powered off。
- Please follow the working specifications for electrical equipment. Only professional driv -ers and connectors are allowed to Install.
- The motor contains electrostatic compone -nts. Take ESD measures.

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2. Servo motor brake parameters

Brake type	BN028	BN036	BN048	BN063	BN080	BN100
Static friction torque(N·m)	≥1.9	≥2.4	≥3.8	≥10	≥22	≥60
Brake power (W)	8.76	6.74	13.4	14	19	25
rotational ine -rtia(kg·cm2)	0.09	0.11	0.39	0.78	2.55	14.7
working volta -ge(Vdc)	24±10%	24±10%	24±10%	24±10%	24±10%	24±10%
Operating te -mperature(℃)	-15~120	-15~120	-15~120	-15~120	-15~120	-15~120

Brake type	BN028	BN036	BN048	BN063	BN080	BN100
Brake suction time(ms)	≤20	≤20	≤30	≤25	≤30	≤50
Brake release time(ms)	≤35	≤80	≤50	≤90	≤100	≤220
Emergency b -raking times (frequency)	2000	2000	2000	500	2000	500
Maximum nu -mber of eme -rgency stops per hour (Tim es/hour)	20	20	20	20	20	20
Maximum em -ergency brak -ing speed (rpm)	6000	6000	6000	3000	3000	3000
Adapts to mo -tor base num -ber	028	036	048	063/ 080S	080M /100S	100M /100L

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3. Common fault troubleshooting and m -aintenance methods of servo motor

Common fault	reason	Maintenance method
Motor cann -ot start	Overload lock-up	Reduce load
	The drive is faulty	Check power and signal cable connections/Check driver para -meter Settings
Slow motor acceleration	overload	Reduce load
	The drive paramet -ers are incorrectly set	Check the drive parameter Set -tings

Common fault	reason	Maintenance method
	A phase in the po -wer line is discon -nected after bein -g switched on	Check driver and power line c -onnections as well as jack con -nections/check winding resist -ance
	Short-circuit betw -een turns or inter -phase in stator w -inding	Determine winding resistance and insulation resistance, and contact the manufacturer for repair
Rumble wh -en starting	A phase of the po -wer line is discon -nected after bein -g switched on	Check driver and power line c -onnections as well as jack co -nnections/check winding res -istance
	hort-circuit betwe -en turns or interp -hase in stator win -ding	Determine winding resistance and insulation resistance, and contact the manufacturer for repair
Rumble wh -en running	overload	Reduce load
	A phase of the po -wer line is discon -nected after bein -g switched on	Check driver and power line c -onnections as well as jack co -nnections/check winding res -istance
	Short-circuit betw -een turns or inter -phase in stator w -inding	Determine winding resistance and insulation resistance, and contact the manufacturer for repair
The motor o -verheats du -ring no-loa -d operation	The ventilation of the cooling air is b -locked by foreign matter	Remove obstructions to ensur -e free flow of cooling air
The motor o -verheats du -ring load o -peration	overload	Reduce load
	A phase of the po -wer line is discon -nected after bein -g switched on	Check driver and power line c -onnections as well as jack co -nnections/check winding res -istance

Common fault	reason	Maintenance method
	The ventilation of the cooling air is b -locked by foreign matter	Remove obstructions to ensur -e free flow of cooling air
Run unsmo -othly	Insufficient shield -ing of motor pow -er cables and sig -nal cables	Check the shielding and groun -ding conditions/Check for nea -rby interference sources
	There is a virtual c -onnection in the line	Re-lock power and signal jack/ check driver and power and si -gnal cable connections
	The driver gain is i -mproperly set	Reset the gain of the driver pr -operly
Harsh frictio -n, running noise	The rotating parts are slipping	Determine the cause and fix t -he parts
	There's a foreign o -bject inside the m -otor	Contact manufacturer for repa -ir
	Bearing failure	Contact manufacturer for repa -ir
Radial vibra -tion	Rotor unbalance	Disassemble the rotor and reb -alance the rotor
	The rotor is not ro -und and the shaf -t is bent	Contact manufacturer for repa -ir
	Poor calibration	Calibrate equipment, check co -uplings
	Unbalance of conn -ected equipment	Rebalance the connected devi -ces
	The gear box is no -t running smooth -ly	Make the gearbox work prope -rly
Axial vibrati -on	Poor calibration	Calibrate equipment, check co -uplings

Common fault	reason	Maintenance method
Axial vibrati -on	Unbalance of conn -ected equipment	Rebalance the connected devi -ces
	The gear box is not running smoothly	Make the gearbox work proper -ly

4. Drive technical parameters

function	Technical data	
Bus interface	AN-*****-S-EC	· EtherCAT communication is sup -ported
		· 2 RJ45 ports
Output pow -er supply	Encoder power supply	· Output voltage: DC 5V
		· Maximum current: 200mA
	24V output pow -er supply	· Output voltage: DC 20V ~ 28V
		· Maximum current: 100mA
Digital input	5 (DI0 ~ DI4)	· Common terminalCOM
		· Electrical isolation
		· Source and Sink modes are sup -ported
		· Maximum voltage: DC 30V
		· "1" Signal voltage: >15V
		· "0" Signal voltage: <5V
		· 24VTypical current: 4mA
Digital outpu -t	3 open collecto -r (DO0 ~ DO2)	· Maximum voltage: DC 30V
		· Maximum current: DC 50mA
Encoder sign -al input	RS485 type	· Interface terminal: RJ45
		· Cable length: 10m
Display and k -ey	Nixie tube	· digit: five
		· Color: Red
	key	· number: five
Debugging in -terface	USB	· terminal: MINI USB

Note: For more details, see the detailed user manual on the official website.

5. Cable cables to the driver

5.1 Overview of Drive Ports

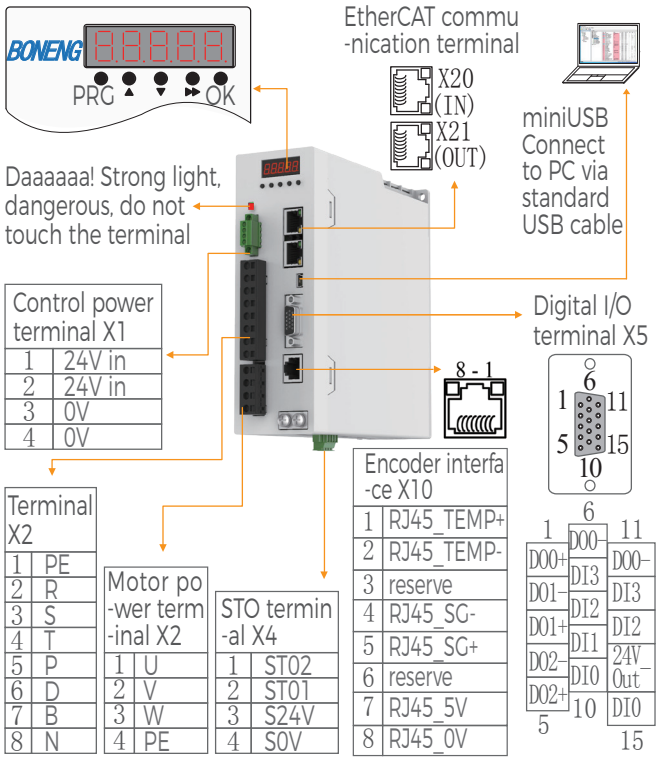
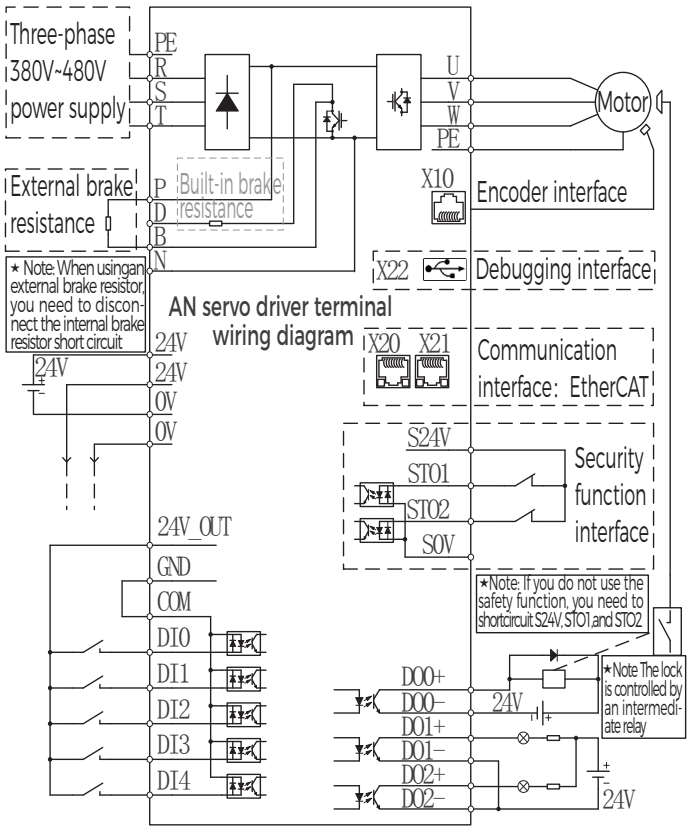


Table 1. Main power terminal name and function description

Terminal number	Terminal name	explain
Three-phas -e power in -put termin -al	R, S, T	The three-phase power input terminal is connected to the power grid (380V ~480V, 47~63Hz)
	PE	Three-phase power grounding protect -ion.

Terminal number	Terminal name	explain
Dc bus and brake resist -ance term -inals	P, N	Dc bus terminal (common DC bus for l -ow-power models).
	P, D, B	The brake resistor is connected to the terminal. If an external energy drain re -sistor is needed, connect the resistor b -etween P and B. (The default shorting is to use a built-in brake resistor) .
Motor conn -ection ter -minal	U, V, W	Connect motor U, V, W phases.
	PE	Connect the motor ground wire.

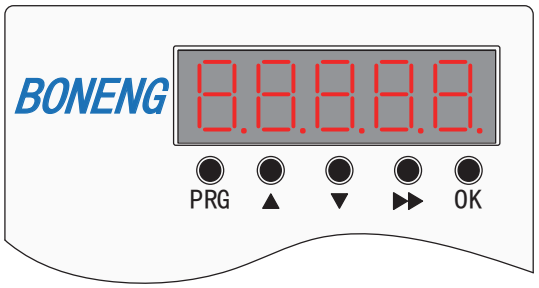
5.2 Wiring Terminals



6. Driver operation instructions

6.1 Operation panel description

Digital tube and function keys:



key	Key name	function
PRG	Programming /Return	On the main monitoring screen, press this key to enter the function selection screen. For other screens, press this key to return to the previous screen or status
▲	Increasing key	Increment of data or function code
▼	Decrement k -ey	Decrement of data or function code
▶▶	Right shift key	Select the 5-bit nixie tube, and when m -odifying the parameter, you can cycle t -o the right to select the modified bit of the parameter
OK	Confirm key	Set parameter validation

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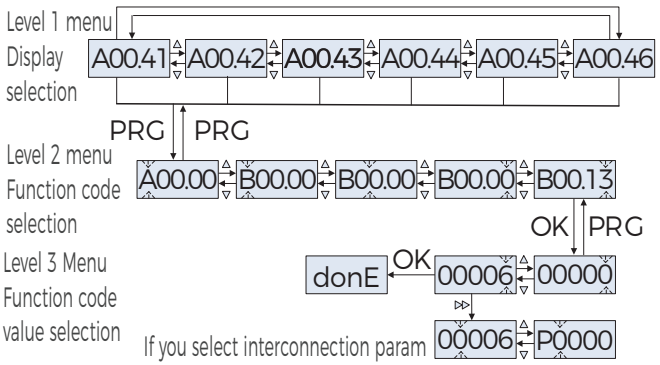
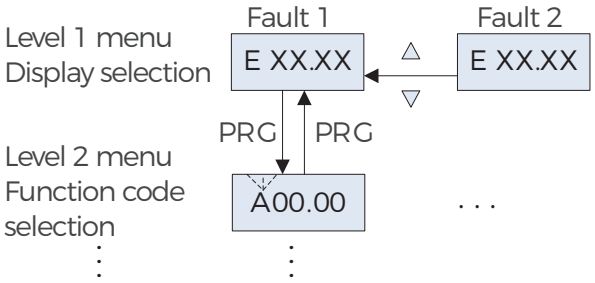
Panel key operation instructions:

1. When the drive is not faulty:



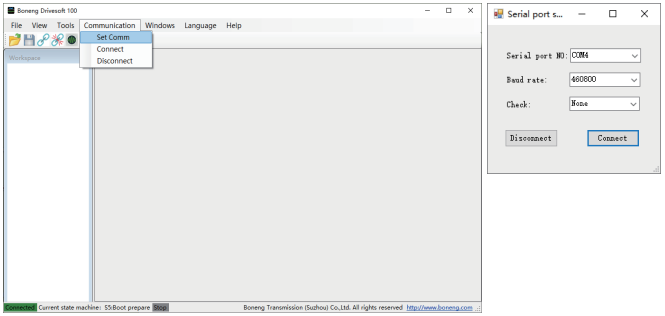
If you select interconnection param -eters, move the cursor to the highest digit of the nixie tube and press to △select interconnection parameters. Press to ▽cancel interconnection paramete

2. When the drive is faulty: the level 1 menu displays the current fault, and the level 2 and level 3 menu -s remain unchanged.



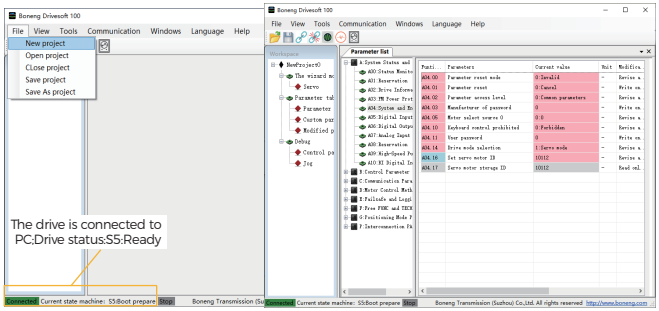
6.2 Commissioning Boneng Drivesoft 100 Operati -on Description

1. Connect the servo drive to the PC using a stan -dard USB cable, and ensure that the PC is ins -talled with Boneng Drivesoft 100.
2. Open the upper computer software Boneng Dr -ivesoft 100 on the PC, and complete the com -munication connection between it and the dr -ive: menu -> Communication -> Communication Settings -> Serial port number, select the corresponding serial port number -> Connection, as shown in the following figure.



The communication connection between the driver and the upper computer software Boneng Drivesoft

3. Create project in PC software BonengDrivesoft 100: File -> New Project -> OK.



Create the project and view the parameters in the upper computer software

7. Quick start (test run)

Attention:

- Please be aware of the safety and precautions of each servo unit before Commissioning.

EN

7.1 Preparing for Commissioning

Before using the upper computer to test Boneng AN servo drive with servo motor, the following eq -uipment should be prepared:

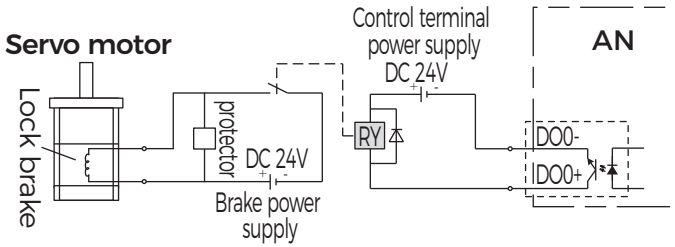
- A set of Boneng MN-AN servo;
- Several servo-drive power cables and switches;
- USB data cable with miniUSB public port (type B plug) at one end;
- PC and PC software Boneng Drivesoft 100.

Connect the servo driver, servo motor, and encoder cables according to the wiring diagram, and connect the servo driver to the PC.

7.2 Check and precautions before test run

- Servo motors and external mechanisms Please check the installation of the servo motor before the test run, and ensure that the servomotor is fixed, stable, safe and reliable. Before the test run, be sure to separate the output shaft of the servo motor from the load in the rear stage.
- Check installation and cable distribution
  a. Make sure that the power of the drive matches that of the servo motor. Motor power and driver power can not be too different, otherwise it d -oes not guarantee normal operation.
  b. Before powering on check whether the power supply voltage of the servo driver matches the rated operating voltage of the servo unit accor -ding to the driver nameplate.
  c. Ensure that the power cable and signal cable of the servo are reliably connected, and the sh -ielding layer and PE signal of the power cable are correctly connected to the driver.
  d. Ensure that the ground protection cable of the servo driver is grounded reliably to prevent ele -ctric shock.
  e. Ensure that the STO terminals are connected correctly and reliably.
  f. Do not cut off the original cable and then exte -nd it, otherwise it is easy to cause interference and even damage.
- Check the motor brake cable connection
  a. Before the test run, please check whether the wiring of the servo motor brake is correct. The input signal of the servo motor brake has positi -ve and negative polarity. Do not reverse conne -ct, because the brake will not open normally a -fter reverse connection.
  b. Please provide a separate power supply for the motor brake. Do not use the output power of the 24V terminal of the servo driver as the brake p -ower supply of the motor.

  Use the DO terminal of the servo driver to control the servo motor brake, please connect the conne -ction as shown in the following figure.



Attention: * The relay should be installed with protecti -on devices according to the diagram;
* MN motor brake line has positive and neg -ative points, can not be reversed, otherwise the brake can not be opened.

Servo motor lock brake wiring diagram

7.3 Debugging Using BonengDriveSoft 100

The following steps are used to test the motor using Boneng Drivesoft 100, the drive PC software:

Step 1.The project is created in the upper computer software Boneng Drivesoft 100 (see Section

3.2) to display the current parameters in real time.

Step 2. (Optional) Restore parameters to factory defa -ults. A04.00 = [3: All parameters are restored to factory defaults] - > A04.01 = [1: Confirm] - >Power on the drive after parameter recovery is complete (see State machine at the lower left corner of the debugging software).

Step 3. Set the drive mode. A04.14 = [1: servo mode] (The driver prompts you to power on it again).

Step 4. Set and check the motor parameters: If the Boneng servo motor is driven, check whether A04.17 is consistent with the motor ID on the motor nameplate.

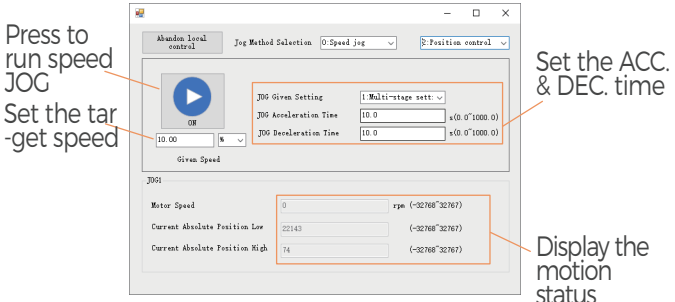
Step 5. Check whether the motor parameters (D00~ D02 group parameters) are consistent with the motor nameplate.①

Step 6. Motor rotation check: Run the motor in VF mode (set parameter B05.00 = [0:VF], start the drive through the control panel of the upper computer, and set the running speed in the given speed box, such as [10%], confir -m), check the symbols of the given speed value (P13.11) and the encoder speed feedb -ack value (P13.17). Their symbols shall be co -nsistent; If not, check whether the driver po -wer output phase sequence matches the UVW line phase sequence of the servo motor.

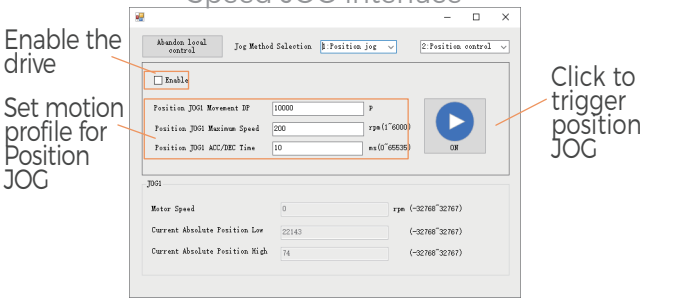
Step 7. After completing Step 6, stop the machine and modify parameter B05.00 = [2: FVC].

Step 8. Use the upper computer point panel for speed point control: obtain local control permissions - > Set JOG mode to speed point - > Set the target speed - > Press the start button the motor shaft starts to accelerate to the target speed, release the start button, and the shaft deceleration stops.

①The motor ID can be read only after the encoder cable is properly connected.



Speed JOG interface



Position JOG interface

If the running speed is controlled, the test run is completed. If the running position is controlled, perf -orm Step 9 and subsequent steps.

Step 9. Set the electronic gear ratio parameter G00.04 = [10000] (This parameter is for trial run test, and should be set according to the calculation of the transmission ratio of the motor shaft in the actual use)

Step 10. Change the control mode to [2: position co -ntrol] (or manually change parameter B05. 01 = [2: position control]).②

Step 11. Use the upper computer point panel for po -sition point control: Obtain local control rights - > Set JOG mode to position dosing - > Set position dosing motion parameters (if the motor output shaft is connected to the reducer, the displacement and maximum

②In position control mode, speed and position dotting are supported, while in speed control mode, only spe -ed dotting is supported.

speed should be set according to the speed ratio of the reducer) - > Servo Enable - > Click the start button to trigger the position dosi -ng, and the motor shaft starts to run until the position command is completed and the shaft deceleration stops. You can press the start button again and stop the shaft after it moves to the target position again -->Disable, stop.

8. Common parameters

8.1 Common Setting Parameters

Function code	Function code name	explain
A04.00	Parameter r -eset mode	3: All parameters are reset. You can reset the parameters only after confirming A04.01
A04.01	Parameter r -eset	0: cancel 1: confirm (the drive p -arameters can be set only after the parameter reset is complete)
D00.01	Motor rated power	
D00.02	Motor rated voltage	Should be consistent with the motor nameplate parameters。
D00.03	Motor rated current	
D00.04	Motor rated frequency	
D00.05	Motor rated speed	
B05.00	Motor contr -ol method	0：VF 1：SVC 2：FVC

Function code	Function code name	explain
F04.00	Holding bra -ke FUNC se -lect	0: The lock function is not used. 1: the lock function is used. Ge -nerally, the lock function is req -uired when lifting the device. If the lock function is controlled through the DO terminal, set the DO function to P01.11.
Group A06	Digital outp -ut	You can set the DO output ter -minal function. For details, see the user manual.
Group A07	Analog inp -ut	nalog input Settings, see the user manual.
B00.00	Start-stop C -trl comma -nd source	If B00.00= [0: Terminal control module], set terminal paramet -ers in group B01. If B00.00= [1: Custom control module] is set, set terminal parameters in grou -p B00. When using Profinet co -mmunication or EtherCAT co -mmunication, the relevant par -ameters are automatically set when the communication is established.
B01.01	Terminal co -ntrol comm -and 1 mode	For details about terminal start and stop commands, see Opera -tion manual.
B01.03	Terminal Ct -rl command 1 input 1	
B01.04	Terminal Ct -rl command 1 input 2	
B01.05	Terminal Ct -rl command 1 input 3	
B00.23	OFF1 stop m -ode	0: free stop 1: slow down stop

Function code		Function code name	explain
Speed control mode	B02.00	Speed control Main speed SEL	Frequency given source, see operation manual.
	Group B03	Multi-speed setting	Multi-stage speed control, see the user manual.
	B04.02 ~ B04.09	Ramp acceleration and deceleration time	Speed control acceleration and deceleration time setting and selection. Only one group is valid at a time.
	B04.40	Slope acceleration time source	Select the source of acceleration and deceleration time in speed control mode, which can be set as the acceleration and deceleration time set by parameter B04.00~B04.09, or select the time delivered by the upper controller through the interconnection parameters.
	B04.41	Slope deceleration time source	
Position control parameter	D02.18	Absolute encoder type	When the encoder line is with a battery box, select [1: multi-circle absolute encoder]; Otherwise select [0: single-turn absolute encoder].
	G00.04	Number of POS COMD for turn COMD	When the first set of electronic gear ratio is G00.04 ≠ 0, the electronic gear ratio is the encoder resolution /G00.04.
	G00.06	Electronic gear ratio 1 (MOL)	The second group of electronic gear ratio, whenG00.04=0, the group of electronic gear ratio takes effect, the electronic gear ratio is G00.06/G00.08.
	G00.08	Electronic gear ratio 1 (DEN)	

Function code		Function code name	explain
Position control parameter	G00.22	Motor rotation direction SEL	Set the direction of motor rotation when giving positive command.
	G00.53	Origin switch SRC SEL	Set the DI terminal connected to the origin switch. It should be selected according to the physical connection of the origin switch; High level active.
	G00.55	Positive limit COMD SRC SEL	Set the DI terminal connected to the limit switch. The limit switch should be selected according to the physical connection; High level active.
	G00.56	Negative limit COMD SRC SEL	
	G01.13	Load moment of inertia ratio	Set the ratio of load to motor rotor inertia. Should be set to the actual ratio.
	G02.01	Rigidity grade selection	Set the rigidity level of the mechanical system. This parameter affects the position, velocity loop gain, and the dynamic response performance of the system, and should be matched with the physical system.

8.2 Common Monitoring Parameters

Function code	Function code name	explain
A00.00	Current state machine	Current status of the drive.
A00.05	Given speed	In the position and speed control mo -de, the real-time speed is given. [rpm].
A00.06	Motor rotatin -g speed	Real-time speed feedback, [rpm].
A00.08	Output curre -nt	Real-time output current.
A00.09	Output power	Real-time output current.
Group P00	Hardware sta -te	Displays the physical status of hardwa -re interfaces such as DI, DO, and DIO.
P12.13	Panel given v -alue	Target speed value given by OP in sp -eed control mode. The unit is 0.1%.
P12.14	PC given val -ue	The target speed value given by the PC in speed control mode. The unit is selected by the upper computer cont -rol panel.
P12.16	DI state	DI Real-time status.
P12.17	DO state	DO Real-time status.
P13.00	Motor actual speed	Motor real-time speed feedback value; 4096 corresponds to 100% of the rated speed.
P13.01	Motor final se -t speed	Final speed command value in positi -on and speed control mode; 4096 co -rresponds to 100% of the rated speed.
P13.02~ P13.11	–	Speed set monitoring data in speed control mode.
P14.04, P14.06	Cumulative a -bsolute posi -tion (Pe1)	Two 32-bit signed data, respectively representing real-time position values, encoder units.
P14.20	Position setp -oint(Instruct -ionunit)	Real-time position instruction, instruc -tion unit, 32-bit signed number.
P14.22	Position feed -back(Instruc -tionunit)	Real-time position feedback, instructi -on unit, 32-bit signed number.
P14.66	Target positi -on	Target location, instruction unit, 32-bit signed number.
Group E00 to E07	–	Fault records and related information are displayed.

9. Fault description

Serial number	Fault name	sub code	Subcode meaning	solution
1	Overcurr -ent	1	U-phase over curr -ent	1. Confirm that D00 motor parameters are consisten -t with motor nameplate. 2. Eliminate the problem of power line damage; 3. Check whether the cable is short-circuited. 4. Increase the acceleration and deceleration time ap -propriately;
		2	V-phase over curr -ent	
		3	U & V-phase over current	
		4	W phase hardwar -e over current	
		5	U & W-phase over current	

Serial number	Fault name	sub code	Subcode meaning	solution
1	Overcu -rrent	6	V & W-phase over current	5. Reduce VF torque increa -se under VF control; 6. Please confirm that the m -otor stops and stabilizes before starting; 7. Reduce or cancel the load to troubleshoot problems; 8. For induction motor vect -or control, please confirm whether the correct para -meter identification ope -ration has been carried out; 9. Subcode 8 indicates that the brake resistance is ab -normal and the driver is powered off. Confirm wh -ether the brake resistance is connected correctly. M -easure the resistance be -tween DC+ and R and c -ompare with the recom -mended value in the m -anual. 10. Replace the PM. 11. Restore factory defaults and reset parameters. 12. Contact the manufactu -rer for technical support.
		7	UVW three-phase over current	
		8	Brake hose hardw -are over current	
		9	U-phase VCE shor -t-circuit	
		10	V-phase VCE shor -t-circuit	
		11	U & V-phase VCE short circuit	
		12	W phase VCE sho -rt circuit	
		13	U & W-phase VCE short circuit	
		14	V & W-phase VCE short circuit	
		15	Over current ano -maly	
		16	Over current ano -maly	
2	DC bus over vol -tage	1	Rapid detection o -f medium bus vo -ltage overvoltage	1. Check whether the inpu -t power supply is within a reasonable range and that the input cable is r -eliably connected 2. Please increase the acc -eleration and decelera -tion time

EN

Serial number	Fault name	sub code	Subcode meaning	solution
				3. Install brake resistance or brake unit 4. Reset parameters and r -un after parameter ide -ntification 5. Check that the driver po -wer matches the motor power 6. Check whether the enc -oder is damaged 7. Contact the manufactur -er for technical support
3	DC bus underv -oltage	1	DC bus under-vol -tage	1. Check whether the inp -ut power supply is with -in a reasonable range and that the input cable is reliably connected 2. Check whether the pow -er grid is powered off immediately 3. Set the A03.21 software under-voltage value corr -ectly 4. Replace the PM 5. Contact the manufactur -er for technical support
4	Speed match fail	1	Speed search par -ameters are imp -roperly set	1. Modify speed tracking mode (B05.13) to search from maximum frequen -cy or increase search ti -me (B05.14) 2. Contact the manufactur -er for technical support

EN

Serial number	Fault name	sub code	Subcode meaning	solution
5	Driver o -verload	1	Driver overload	1. Ensure that the driver ty -pe is appropriate and the A03.00 is consistent with the nameplate. 2. Reduce VF torque lift un -der VF control. 3. Reduce the torque limit -ing value under vector control. 4. Please confirm whether the load is too heavy, or lock the brake. 5. Check whether the corr -ect parameter self-learn -ing operation is perform -ed during vector control. 6. With the encoder applic -ation, please confirm th -at the encoder direction and parameter Settings are correct. 7. Reset parameters and run after parameter iden -tification. 8. Reduce the carrier frequ -ency, or replace more powerful drivers. 9. Wait for the motor to st -op completely before s -tarting. 10. Contact the manufact -urer for technical sup -port.
6	Motor o -verload	1	Motor overload	1. Please confirm whether the motor load is too large 2. When vector control, pl -ease confirm whether

Serial number	Fault name	sub code	Subcode meaning	solution
6	Motor o -verload	1	Motor overload	the motor parameter self -learning has been carri -ed out 3. With the encoder applic -ation, please confirm th -at the encoder direction and parameter Settings are correct 4. Please confirm whether the load is too heavy, or lock the brake 5. Please confirm whether the motor nameplate p -arameters are set corre -ctly 6. Contact the manufacture -r for technical support.
7	Input p -hase lo -ss	1	Input phase miss -ing detection	1. Check whether the pow -er input cable is in good contact 2. Ensure that the input p -ower supply is stable 3. Contact the manufactur -er for technical support
8	Output phase l -oss	1	U phase output m -issing phase	1. Check whether the corr -esponding output cable is connected correctly and in good contact. 2. Please confirm whether the motor is running sm -oothly. 3. Set D00 parameters acc -ording to the motor na -meplate parameters, A03.00 set the same as the nameplate.
		2	V phase output m -issing phase	
		3	W phase output m -issing phase	
		4	FVC control outp -ut out of phase	
		5	The three-phase output is seriously unbalanced	

Serial number	Fault name	sub code	Subcode meaning	solution
		6	Stator resistance i -dentification out -put phase defici -ency	4. Replace the PM. 5. Contact the manufacturer for technical support.
		7	UVW three-phase output phase mis -sing	
9	Driver o -verheat	1	The IGBT tempera -ture of the driver (37Kw and below) exceeds the thres -hold	1. Check whether the am -bient temperature is too high. 2. Check whether the radi -ator fan works properly. 3. Check whether the radi -ator air duct is blocked. 4. Replace the PM. 5. Model A03.00 Parameter Settings are consistent with the nameplate. 6. Contact the manufactur -er for technical support.
		2	The IGBT-U phase temperature of th -e driver (37Kw or higher) exceeds t -he threshold.	
		3	The IGBT-V phase temperature of th -e driver (37Kw or higher) exceeds t -he threshold.	
		4	The IGBT-W phase temperature of th -e driver (37Kw or higher) exceeds t -he threshold.	
10	PWM w -ave wa -rn	1	U-phase wave is abnormal	1. Power off and power on the device again. If the fault persists, contact the manufacturer for technic -al support.
		2	W-phase wave is abnormal	
		4	V-phase wave is abnormal	

Serial number	Fault name	sub code	Subcode meaning	solution
11	Zero-Cr -ossing Err	1	U phase zero drift is large	1. Check whether the mod -el (A03.00) Settings are consistent with the nam -eplate. 2. If the PM is abnormal, replace the PM, or conta -ct the manufacturer for technical support.
		2	V phase zero drift is large	
		3	W phase zero drift is large	
12	Ground short	1	U phase overcurre -nt in short circuit to ground	1. Check whether the corre -sponding output phase is short-circuited to ground. 2. Check whether the motor cable is damaged. 3. Replace the motor or the driver. 4. Contact the manufacturer for technical support.
		2	V phase overcurre -nt in short circuit to ground	
		4	W phase overcurre -nt in short circuit to ground	
		5	The short-circuit current to the gro -und exceeds the threshold. Proced -ure	
		6	Overvoltage durin -g short circuit to ground	
13	Motor t -une fau -lt	1	The asynchronous motor dynamic tu -ning is abnormal	1. Confirm whether the pa -rameters of the D00 mo -tor are consistent with the motor nameplate 2. Ensure that cables to the output terminal are relia -ble
		2	The asynchronous motor static tuning is abnormal	
		3	Synchronous mot -or tuning is abno -rmal	

Serial number	Fault name	sub code	Subcode meaning	solution
		4	Encoder tuning an -omaly (Detecting velocity anomaly)	3. Ensure that the encoder cables and parameters are correct 4. Replace the PM 5. Contact the manufactur -er for technical support.
		5	Abnormal encoder tuning (serious en -coder signal inter -ference)	
		6	Abnormal encoder tuning (abnormal encoder Z signal)	
14	Enc fau -lt	1	The encoder is not connected during closedloop dynam -ic tuning	1. Use cables with a shield -ed layer and ground the shielded layer of the enc -oder. 2. Check whether the cable connection to the encoder is reliable. 3. Check whether encoder parameters are set corre -ctly. 4. Check whether the enc -oder power supply is co -rrect. 5. Check whether the para -meters of the D00 motor are consistent with the nameplate, and confirm the motor series D00.09. 6. Confirm whether the motor turns up after ope -ration and discharge the blocked rotation. 7. Contact the manufacturer for technical support.
		2	The speed measu -rement of the en -coder does not m -atch during dyna -mic closed-loop tuning	
		3	The encoder is dis -connected during closed loop opera -tion	
		4	The encoder Z sig -nal is abnormal	
		9	Incremental encod -er A phase break	
		10	Incremental encod -er B phase break	
		11	Incremental enco -der ABZ phase b -reak	
		12	Incremental enco -der Z phase break	
		13	Incremental encod -er AZ phase break	
		14	Incremental encod -er BZ phase break	
		15	Incremental encod -er ABZ phase break	
		16	The communicati -on encoder is ab -normal	
15	Vector s -tall ala -rm	1	The velocity is rev -ersed by an exter -nal force	1. Please confirm that the motor nameplate param -eter Settings are correct 2. Please confirm whether the motor parameter self -learning operation has been done 3. Check whether the stall parameters are properly set 4. Contact the manufactur -er for technical support
		2	Excessive velocity deviation	
16	FPGA r -ead/w -rite Err	1	An FPGA read/wri -te error occurred during initializati -on.	1. If the PM is abnormal, p -ower off and restart. If the PM persists, contact the manufacturer for tec -hnical support
17	Driver p -ower fa -ult	1	The drive voltage is low	1. Contact the manufactur -er for technical support 2. Replace the PM
18	Primary power f -ault	1	24V primary supp -ly voltage is low	1. Contact the manufactur -er for technical support 2. Replace the PM

Serial number	Fault name	sub code	Subcode meaning	solution
19	CM-PM Comm fault	1	CM no response	1. Check whether the CM latch is tightly locked 2. Replace the CM or PM to locate the problem; 3. Contact the manufactur -er for technical support.
		2	CM no response	
		3	Communication d -ata exception	
		4	Initialization exce -ption	
20	PM-EEP -ROM f -aul	1	EEPROM write da -ta overflow	1. Contact the manufactur -er for technical support
		2	EEPROM read da -ta overflow	
		3	Data read from th -e EEPROM timed out	
		4	Data written to th -e EEPROM timed out	
		5	The EEPROM read address is out of bounds	
		6	The EEPROM write address is out of b -ounds	
21	PM mo -del set -ting Err	1	The current setting value of the PM m -odel is less than the minimum value	1. Re-burn the PM program 2. Reset the model to the normal value 3. Contact the manufactur -er for technical support
		2	The current setting value of the PM mo -del is greater than t -he maximum value	
22	CBC cu -rrent li -miting fault	1	The U phase curre -nt is abnormal	1. Increase the value of ac -celeration time;
		2	The V phase curre -nt is abnormal	

Serial number	Fault name	sub code	Subcode meaning	solution
22		3	The W phase curre -nt is abnormal	2. Reset parameters and run after parameters are identified 3. Replace the motor and discharge the motor fault
		16	CBC current limiti -ng Interrupt exce -ption	
23	PM-EEP -ROM f -aul	1	Reduce output p -ower	1. Clean foreign bodies in the fan and disable the fan speed control functi -on (B06.48=0). If the fan still does not rotate, con -tact the manufacturer to replace the fan. 2. Check whether the mo -del value corresponds to the nameplate 3. The carrier frequency of the driver can be properly reduced, the heat dissip -ation of the PDC door can be opened, and the air volume of the inlet and outlet of the PDC can be increased 4. Contact the manufactur -er for technical support
24	STO fau- lt	1	STO1 is low	1. Check whether the STO1 or STO2 switch is triggered 2. Check whether cables to STO1 and STO2 are reliable 3. Check whether the po -wer supply of STO1 and STO2 is normal 4. Contact the manufactur -er for technical support
		2	STO2 is low	
25	Brake c -oil ove -rheat	1	The driver brake t -ube temperature is too high	1. Check whether the amb -ient temperature is too high

Serial number	Fault name	sub code	Subcode meaning	solution
				2. Check whether the radi -ator fan works properly 3. Check whether the radi -ator air duct is blocked 4. Install a suitable brake resistance 5. Contact the manufactur -er for technical support
26	Servo i -nitial p -os Err	1	UVW encoder init -ial position detec -tion error	1. Use a cable with a shiel -ded layer and ground the shielded layer of the encoder. Reconnect or re -place the encoder cable 2. Check whether the enc -oder parameter Settings are correct 3. Identify the zero point to ensure the correct servo zero position; Wiring acc -ording to correct motor phase sequence; 4. Contact the manufactur -er for technical support
		2	Absolute value en -coder communic -ation is abnormal	
		3	Absolute pair valu -e encoder initial -position is not co -rrected	
		4	Absolute value en -coder initial posit -ion detection tim -eout	
		5	Absolute encoder zero corrects data read/write errors	
		6	Absolute encoder initial position cor -rection failed	
		7	Absolute value en -coder data read error	
		8	The commutation Angle deviation is too large	

Serial number	Fault name	sub code	Subcode meaning	solution
		9	Wrong commutat -ion Angle	
33	Drive p -re-ove -rload	1	Drive overload wa -rning	1. Check whether the drive pre-overload function is enabled 2. Troubleshoot the fault by referring to "5: Drive Overload ". 3. Contact the manufactur -er for technical support
34	Motor p -re-over -load	1	Motor overload w -arning	1. Check whether the drive pre-overload function is enabled 2. Handling method refer to"6: motor overload"fault. 3. Contact the manufactur -er for technical support
35	Comm -unicat -ion Fa -ult	1	Communication b -etween CM modu -le and host comp -uter is interrupted when host compu -ter control driver is running	1. Reconnect or replace the cable 2. Contact the manufacturer for technical support
		2	After the OP keybo -ard obtains the loc -al control, the com -munication betwe -en the CM module and the OP keyboar -d is interrupted	1. Check whether the com -munication cable betwe -en the operation panel and the driver is properly connected 2. Contact the manufactur -er for technical support

Serial number	Fault name	sub code	Subcode meaning	solution
35	Comm -unicat -ion Fa -ult	3	No interaction is performed during Modbus control within the time set by function code C02.04	1. Check whether the Mod -bus cable is disconnected or damaged 2. Check whether the corr -esponding PLC and oth -er controller programs are correct and whether the interaction interval is within the time set by function code C02.04 3. Contact the manufacturer for technical support
		5	CanOpen comm -unication failed	1. Check whether the prim -ary station is closed 2. Whether the communic -ation line is damaged or too long; Too close to an interference source. 3. Contact the manufactur -er for technical support
		6	DriveLink commu -nication failed	1. Receiving data times out 2. Node Settings conflict 3. Contact the manufactur -er for technical support
		7	The PROFINET co -mmunication is disconnected	1. The PLC is powered off or the connection cable is damaged. 2. Adjust the appropriate communication cycle. 3. When the IRT mode is used, ensure that the IRT device is preferentially connected to the PLC, the RT device is connected to the back end of the IRT device, and the switch that

Serial number	Fault name	sub code	Subcode meaning	solution
				supports the IRT mode is used. 4. Contact the manufactur -er for technical support
		10	The EtherCAT co -mmunication is abnormal	1. Connect to the PLC and view the C06.06 to view the prompt. Contact the customer or manufacturer as prompted. 2. Contact the manufacturer for technical support
37	Mot spe -ed over -limit	1	Motor speed exce -eds maximum sp -eed limit	1. Check whether the para -meters related to motor overspeed are set properly. 2. Check whether an exter -nal device rotates with a motor. 3. Contact the manufactur -er for technical support
38	Mot spe -ed Dev large	1	The motor speed deviates too much from the set speed	1. Check whether the para -meter Settings related to the motor speed deviation are reasonable. 2. Whether the load is too heavy, and whether the brake is opened in time. 3. Contact the manufactur -er for technical support.
39	Power reset	1	The drive needs to be powered off and restarted.	1. Power off the drive and then power it on
40	PID fee -dback loss	1	The PID feedback sampling value is lost	1. Check the PID feedback signal 2. Contact the manufactur -er for technical support

Serial number	Fault name	sub code	Subcode meaning	solution
41	Extern Fault	1	External fault 1 oc -curs	1. Check the external input signal
		2	External fault 2 oc -curs	
42	Extern Warning	1	Generate external warning 1	
		2	Generate external warning 2	
43	Pre-driv -e failure	1	Check failure befo -re running.	1. Check whether the exte -rnal power supply voltage is abnormal 2.Contact the manufacturer for technical support
44	Control board a -nomaly	1	The CM-MPU is abn -ormally identified.	1. If the controller module is faulty, replace the con -troller module 2. The I/O board does not match the controller bo -ard or the connection is abnormal. 3. Contact the manufactur -er for technical support
		2	Clock configuration failure	
		3	The I/O board of the controller module is incompatible w -ith the main cont -rol board	
45	Brake c -ontrol fault	1	The brake is open abnormally	1. Check whether the exte -rnal relay is abnormal 2. Check whether the cable to the brake is normal 3. Contact the manufactur -er for technical support
		2	The brake is clos- ed abnormally	
46	Control board V -olt warn	1	The PM24V power supply voltage is too high	1. Check whether the exte -rnal power supply volta -ge is abnormal 2. Contact the manufactur -er for technical support

Serial number	Fault name	sub code	Subcode meaning	solution
		2	The external 24V power supply vol -tage is too high	
		3	The PM24v or ext -ernal 24V supply voltage is too low	
		4	3.3V overvoltage	
		5	3.3V undervoltage	
		6	Brake relay short circuit	1. Check whether the imp -edance of the brake rela -y is greater than 450Ω? 2. Check whether the brak -e relay is short-circuited? 3. Contact the manufactur -er for technical support
47	Mot TE -MP fau -lt	1	The motor tempe -rature is too hot.	1. Reduce the motor load and reduce the motor's own heat. 2. Check the ambient tem -perature 3. Check the cabling and connections of the temp -erature sensor. 4. Contact the manufactur -er for technical support
		2	The motor tempe -rature is too hot.	1. The ambient temperatu -re of the motor is lower than -40 ° C 2. Short-circuit the temper -ature sensor 3. Contact the manufactur -er for technical support
48	Mot TE -MP wa -rn	1	Motor temperatu -re is too high wa -rning	1. Check whether the motor temperature is normal. 2. Check whether the motor temperature overtemper

Serial number	Fault name	sub code	Subcode meaning	solution
				-ature warning value set on B06.41 is reasonable. 3. Contact the manufactur -er for technical support
49	Analog Input d -isconn -ect	1	The 4 to 20mA in -put is disconnec -ted in the AI1 ter -minal.	1. Check whether the AI circuit is correct 2. Check whether an external current is input 3. Check whether the value of A07.20 is correct 4. Contact the manufacturer for technical support
		2	The 4 to 20mA in -put is disconnect -ed in the AI2 ter -minal.	
50	Cap fan fault	1	The fan on the ca -pacitor side is di -sconnected	1. Check whether cables to the capacitor fan are dis -connected 2. Contact the manufactu -rer to replace the capa -citor fan 3. Contact the manufactur -er for technical support
51	CM-EE -PROM fault	1	The parameter val -ues stored in the EEPROM are out of the set range	1. After the parameters are restored to factory defau -lts, power on the device again 2. Contact the manufactur -er for technical support
		2	The interaction be -tween ARM and EEPROM times out	1.Contact the manufacturer for technical support
		3	After the upgrade, the default value of the EEPROM is written into the E -EPROM.	1. It can be powered on again. If the fault persists, there is a problem with the EEPROM component 2. Contact the manufactur -er for technical support

Serial number	Fault name	sub code	Subcode meaning	solution
		4	Write EEPROM for more than 1000 times	1. Rectify the fault 2. Contact the manufactur -er for technical support
		5	The font version is incorrect	1. Burn the correct font lib -rary 2. Contact the manufactur -er for technical support
52	POS D -ev too large	1	The motor given instruction deviates too much from the load encoder feed -back instruction	1. Reduce the target speed, increase the acceleration and deceleration time, and whether the speed torque limit is too small 2. Check whether the load carried by the motor is too large. 3. Confirm whether the mo -tor brake has been opene -d during operation 4. Identify motor parameters to obtain more accurate motor parameters 5. Contact the manufactur -er for technical support.
53	Full clo -sed-lo -op POS Dev too large	1	The motor given instruction deviates too much from the load encoder feed -back instruction	1. Check whether the load carried by the motor is too large and whether the di -rection of the two enco -ders is consistent. 2. Whether the encoder at the load end is securely installed 3. Contact the manufactur -er for technical support
54	Reached POS limit POS	1	The forward limit switch is activated	1. Check whether the positi -ve limit has been reached. If the limit is reached, it

Serial number	Fault name	sub code	Subcode meaning	solution
55	Reach -ed ne -gative limit POS	1	Negative limit sw -itch activated	can run in the opposite direction; 2. Check whether the para -meters of the drive G00 group are correctly set. 3. Check whether the DI ter -minal of the driver is con -nected properly.
56	Enable -d loss during positio -ning	1	Motor run position command when the drive is enabled	1. Ensure that the drive is enabled when the motor executes the position com -mand. 2. Contact the manufacturer for technical support
57	Motor coding Error	1	Motor The motor number stored is incorrect	1. Set function code A04.16 to the motor and perform zero correction. 2. Contact the manufacturer for technical support
		2	The fourth and fifth digits from the left of the motor storage number are incorrect	
		3	The third digit of the motor's stored number is incorrect	
		4	The second digit from the left of the motor storage nu -mber is incorrect	
		5	The first digit from the left of the motor storage number is incorrect	

Serial number	Fault name	sub code	Subcode meaning	solution
58	Fixed s -top ou -tside o -f moni -tor win -dow	1	Axis position out of monitoring wi -ndow (G03.40)	1. Determine whether the torque limiting meets the requirements 2. Check whether the G03.40 monitoring window setting is too small 3. Contact the manufacturer for technical support
59	Fixed s -top not reach	1	The given position instruction has fin -ished running, but no fixed stop point has been found	1. Make sure that the fixed stop point is within the operating range of the given position instruction 2. Contact the manufactur -er for technical support
60	Homing error	1	Origin regression timeout. During the origin regress -ion, the origin sig -nal is not found within the maxim -um return time set in G00.49.	1. Check whether the origin switch signal is normal; 2. Increase the origin regre -ssion search speed (G00. 46, G00.47). 3. Check whether the sear -ch origin time G00.49 is set properly 4. Contact the manufactur -er for technical support
62	Brake r -esistor overhe- ated	1	Brake resistance overheating	1. Contact the manufactur -er for technical support
63	Low Enc battery V	1	Encoder battery vo -ltage below alarm threshold (3.2V)	1. Check that cables to bat -teries in the battery box are reliable. 2. Ensure that the battery voltage in the battery box is valid

Serial number	Fault name	sub code	Subcode meaning	solution
				3. Contact the manufactur -er for technical support
64	Enc ba -ttery fault	1	Encoder battery voltage below fault threshold (3.0V)	1. Check the cable connec -tion or replace the batt -ery. 2. The BISS-C encoder per -forms a fault reset 3. For the RS485 encoder, set D02.21 to 1 and power it on again 4. Contact the manufactur -er for technical support
65	Enc multi -turn Overfl -ow	1	Encoder multi-tu -rn data overflow	1. Manually clear the multi -turn meter (D02.21 set to 1) and power on the device again. 2. Contact the manufactur -er for technical support
		2	After the main po -wer supply and backup power su -pply are powered off, power on the multi-turn encoder again.	1. Perform the fault reset operation, and the value of multiple turns is resto -red to the initial value (0 or ±1) after the reset. 2. Contact the manufactur -er for technical support
66	Refere -nce p -oint n -ot set	1	No origin is set in absolute mode	1. In absolute mode, go b -ack to the original oper -ation to determine the origin 2. Contact the manufactur -er for technical support

After-Sale Service

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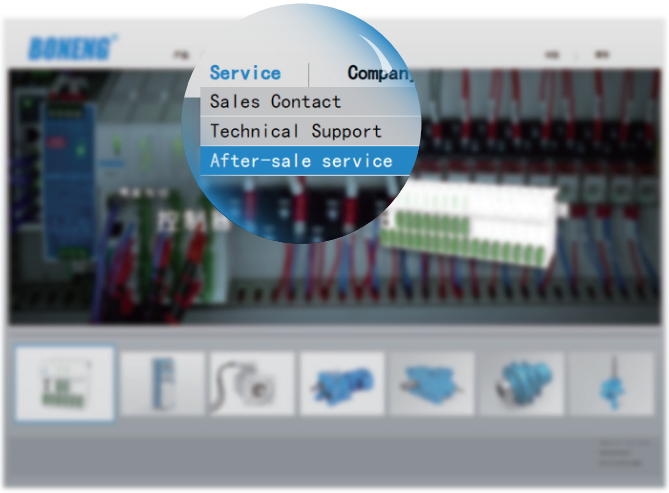
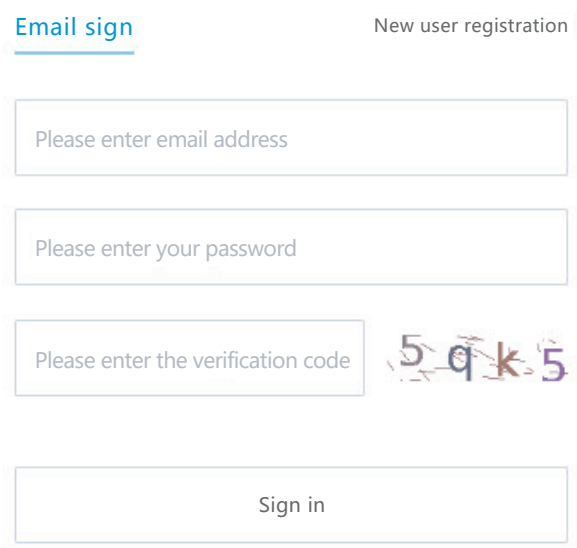
→ Click“Service”and“After-sale Service”



→ Login system



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