BONENG

中文

AM变频驱动器使用手册

Boneng AM Series Drive Use Manual

EN

04/2025

非常感谢您选择博能迷你型高性能矢量型驱动器。在安装使用前请务必认真阅读本手册，以便正确安全地使用变频器。

中文

目录

1 安全注意事项 ---------- 01
2 安装与接线 ---------- 01
3 调试 ---------- 05
3.1 操作面板 ---------- 05
3.2 马达控制方式 ---------- 07
3.3 启停控制 ---------- 08
3.4 速度给定值 ---------- 09
4 故障 ---------- 10
5 功能码 ---------- 13
6 Modbus-RTU 协议 ---------- 41
6.1 RTU数据帧 ---------- 41
6.2 Modbus的命令码 ---------- 42
6.3 通讯帧错误校验 ---------- 45
6.4 Modbus相关功能码 ---------- 46
6.5 Modbus控制命令表 ---------- 46
6.6 控制电机启停及速度设定示例 ---------- 47
7 售后服务 ---------- 49

中文

1 安全注意事项

注意安全事项

⚠警告

√只有合格的专业人员才能进行安装，操作，维护检查。

√接触带电部分可能会造成人员伤害。若要检查，首先关掉电源，等到数码管灯熄灭前，驱动器内部仍有高压，请勿触摸内部端子和内部电路。

√安装在合适的环境，否则可能通风空间不足等会导致过热，产生烟雾，引发火灾，从而造成人身伤害。

√各个端子上加的电压只能是说明书规定的电压，否则会造成故障或损坏。

√请正确接线，否则会造成驱动器损害或人身伤害。

2 安装与接线

产品型号

AM - B 3 B30 -N -MB

迷你型驱动器

电压等级
B= 400V AC

输入相数
3= 三相输入 3Φ

功率代号
B30: 3kW
A40: 0.4kW

内置滤波器代号
N=不带内置滤波器

通讯协议
MB=Modbus RTU

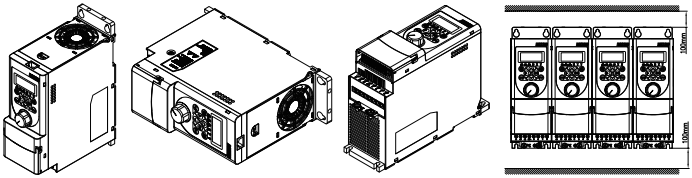
中文

安装环境

环境温度	-20℃～+50℃(未冻结)
环境湿度	95%以下(无凝露)
存放温度	-40℃～+70℃
周围环境	室内，无腐蚀性气体，无易燃气体，无易燃粉尘。
海拔	无降容：1000m以下
	有降容：1000m～4000m
防护等级	IP20
污染等级	适用于污染等级2的环境

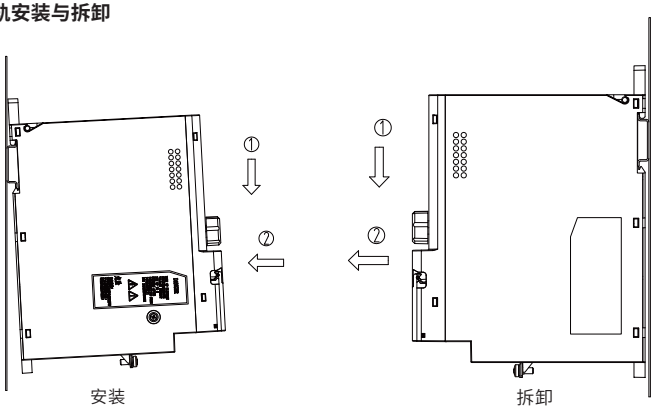
安装方式

驱动器应下图(a)垂直安装，马达端子和电源端子向下，风扇在上。(b)(c)安装方式不正确。(d)为并排安装，上下至少100mm。



(a) (b) (c) (d)

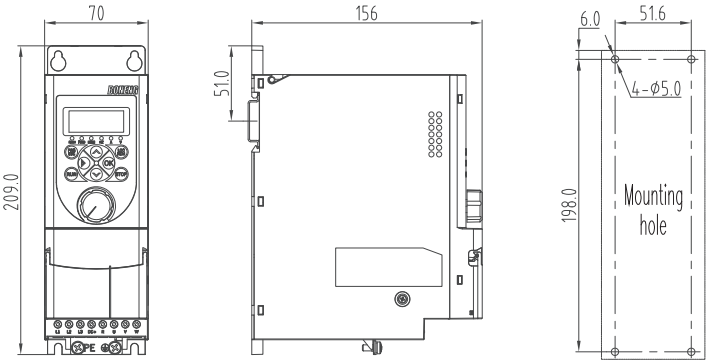
定轨安装与拆卸



安装 拆卸

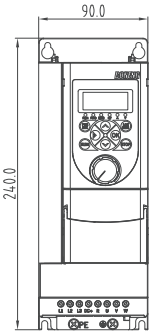
外形尺寸及安装尺寸

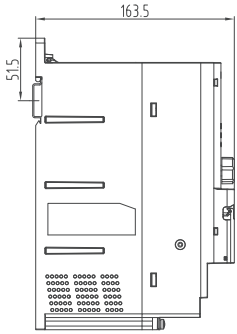
M1 (0.75kW-3kW)

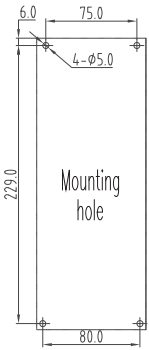


中文

M2 (5.5kW)

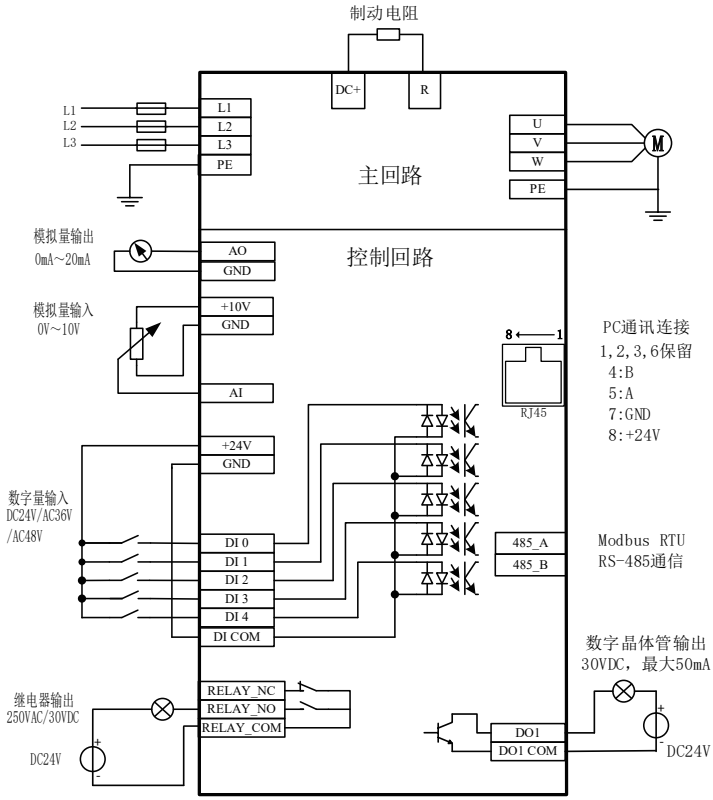




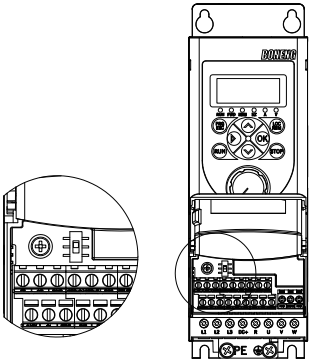


注：(1)尺寸单位为mm;
(2)固定需要4个M4组合螺钉,4个M4螺母,拧紧力矩:2.5Nm.

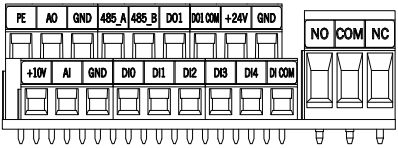
端子接线图



注:对于IT(不接地)系统或角接地TN系统,请拆除内部的EMC接地螺钉,改用我司提供的塑料螺钉替代,否则可能造成变频器损坏。(EMC接地螺钉的位置如下图)



控制端子排列



功能	端子名称	说明与功能描述	技术数据
通讯功能	485_A	RS-485	•支持Modbus RTU •光耦隔离
	485_B		
输出电源	+24V	数字输出端子电源24V	24VDC ±10%，最大200mA
	+10V	模拟输入端子电源10V	11.7VDC±5%Vdc，最大20mA
数字量输入	DI0	5个数字量输入DI	•兼容双极性输入 •小于5V为低，大于11V为高 •支持DC24V，AC36V，AC48V输入
	DI1		
	DI2		
	DI3		
	DI4		
	DI_COM		
模拟量输入	AI	1个模拟量输入(AI)	•单端输入 •支持电压型0～10V •误差±1%
数字量输出	NO	1个继电器输出 COM为公共端，NO为常开端，NC为常闭端	•最大开关电压250VAC/30VDC •最大开关电流2A/30VDC;2A/230VAC •最大连续电流2A
	COM		
	NC		
	DO1	1个数字晶体管输出	•30VDC，最大50mA
	DO1_COM		
模拟量输出	AO	1个模拟量输出(AO)	•单端输出 •电流型输出，输出范围0～20mA •误差±1%

注：控制端子外接设备时,必须注意端子的电压,电流规格,以免损坏变频器

注2:控制信号接线要求:

●模拟信号:必须使用屏蔽电缆,推荐使用双绞双屏蔽电缆。每个模拟信号占用一个绞线对,所有屏蔽层拧成一束并接到PE上。

●数字信号:推荐选择带屏蔽电缆,也可采用无屏蔽的双绞线;模拟信号和数字信号使用不同的电缆分开走线。

●继电器信号:电压不超过48V的继电器控制信号可以和数字信号一起走线。

●不能将24VDC信号和115/230VAC信号放到相同的电缆中。

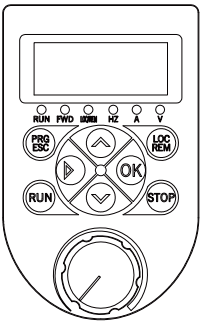
●多个控制柜的接线要求:为所有控制柜安装等电位连接,把屏蔽电缆连接到驱动器PE端子上。

3 调试

3.1 操作面板

● **操作面板介绍**

使用操作面板，可对驱动器进行功能参数修改、驱动器工作状态监控和驱动器运行控制（起动、停止）等操作，其外型及功能区如下图所示：



操作面板分为数码管显示区，LED灯区，按键区。

◆ **数码管显示区**

共有5位LED显示，可显示设定频率，输出频率，各种监视数据以及故障代码。

◆ **LED灯区**

RUN：绿灯亮表示驱动器处于运行状态，绿灯灭表示驱动器处于停机状态。

LOC/REM：绿灯亮控制权在操作面板，绿灯灭控制权远程(通信)和端子。

单位灯：单位的表示由三个LED组成。

◆ **电位器**

旋转电位器可以改变给定驱动器频率。

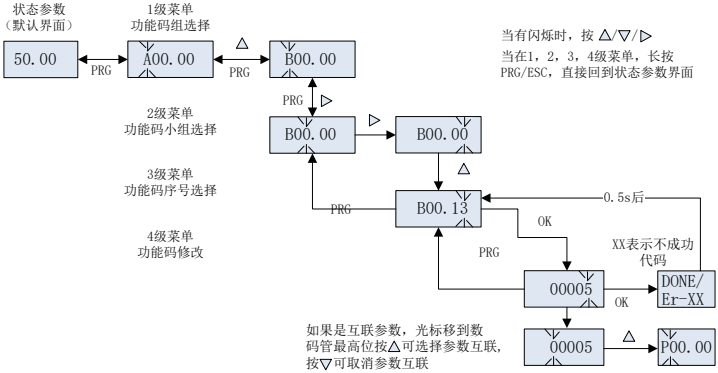
● **按键功能**

按键	名称	功能
PRG/ESC	编程键/返回键	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
LOC/REM	本地/远程键	获取或放弃面板控制权
STOP	停止键	运行状态时，按此键可用于停止运行操作； 停机状态时，按此键可复位故障状态
RUN	运行键	在键盘操作方式下，用于运行操作
▲	递增键	数据或功能码的递增
▼	递减键	数据或功能码的递减
▶	移位键	在停机显示界面和运行显示界面，可以右移循环显示参数，在修改参数时，可选择参数的修改位。
OK	确认键	逐级进入菜单画面、设定参数确认

● **功能码查看，修改方法说明**

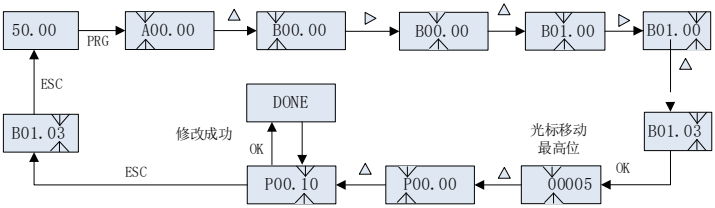
mini驱动器的操作面板采用四级菜单结构进行参数设置等操作。

四级菜单分别为：功能参数组(1级菜单)→功能码小组选择(2级菜单)→功能码选择(3级菜单)→功能码参数查看与设定(4级菜单)。操作流程如下：



说明：在4级菜单修改功能码的值，只有按下OK键，才将数据写入驱动器，如果成功，显示DONE，否则显示Er-XX，错误代码。0.5秒后，返回到四级菜单。按PRG/ESC可以返回到默认界面。

示例将B01.03互联到P00.10

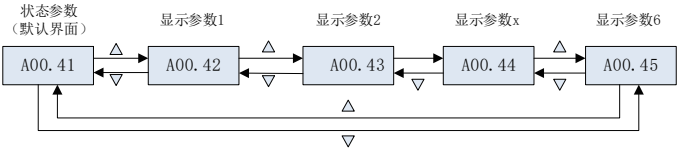


功能码修改界面结果

界面显示	结果说明
done	修改成功
Er -01	修改失败，不在修改范围内
Er -02	修改失败，此参数为只读参数
Er -03	修改失败，无修改权限
Er -04	修改失败，只能停机修改

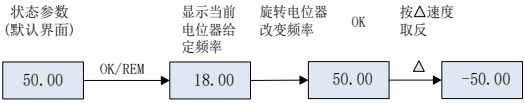
查看驱动器的监视参数

默认界面为显示监控参数，参数的内容由A00.41-A00.45决定，按下△▽，可以滚动显示监控参数。



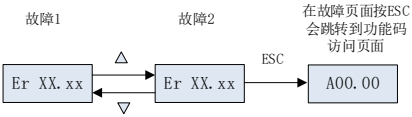
查看电位器给定频率与速度取反

在默认界面下，按下OK键，可以查看电位器给定频率。获取控制权后，界面也会跳转到该界面。按△▽键电位器的速度给定取反。



故障显示

驱动器有故障或警告时，驱动器数码管页面会跳转到故障警告页面，LED显示EXX.xx，其中XX表示故障码，xx表示故障子码。警告会闪烁，显示AL XX.xx。按STOP键，可能消除故障。消除故障后，LED返回显示默认界面。



3.2 马达控制方式

迷你机驱动器支持VF和SVC控制方式，可以通过功能码B05.00=0选择VF，B05.00=1选择SVC。

● **马达参数与参数辨识**

不论选择哪种马达控制方式，在运转马达前，都必须按马达铭牌准确设置马达基本参数。

功能码	参数名称	出厂值	设定范围	描述
D00.01	马达额定功率	机型决定	0.00～655.35kW	马达铭牌参数
D00.02	马达额定电压	机型决定	0～1500V	
D00.03	马达额定电流	机型决定	0.00～655.35A	
D00.04	马达额定频率	机型决定	0.0～600.00Hz	
D00.05	马达额定转速	机型决定	0～65535rpm	

选择马达控制方式为矢量控制时，需要准确的马达参数，为了获得更好的马达控制性能，需对被控马达进行参数辨识。

功能码	参数名称	出厂值	设定范围	描述
B00.21	辨识请求	0	0～3	0：无 1：异步马达简易静态辨识 2：异步马达静态完整辨识 3：异步马达动态完整辨识

中文

三种参数辨识模式的区别如下表所示，请根据实际应用场合选择：

模式	使用条件	辨识参数	描述
异步马达简易静态辨识	马达无法运转	定子电阻	
异步马达静态完整辨识	马达无法运转	定子电阻 转子电阻 漏感 互感 空载电流	辨识前请确保马达与负载机械分离，运行无危险；若马达连接负载，辨识结果可能会不够准确
异步马达动态完整辨识	马达可以运转		

矢量控制的性能易受马达参数的影响，获取准确的马达参数是实现高性能矢量控制的关键。

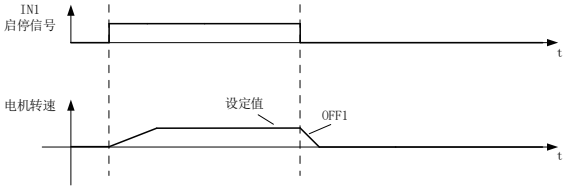
为了获得良好的驱动性能和运行效率，必须先对被控马达进行参数辨识，在知道准确马达参数的前提下可以手动输入。不准确的马达参数可能导致马达无法正常运行。

3.3 启停控制

有六种通过DI端子或互联参数输入控制马达的启动，停止和方向，分别对应B01.01控制方式的6个选项。

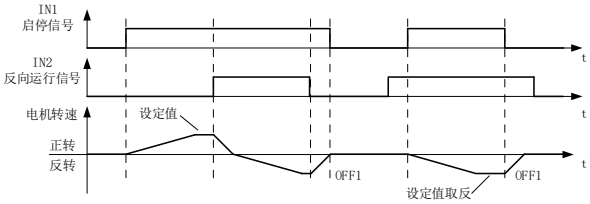
● **1.IN1启动**

IN1控制马达的启动和停止，马达的旋转方向由当前的驱动器输出端接线相序决定。



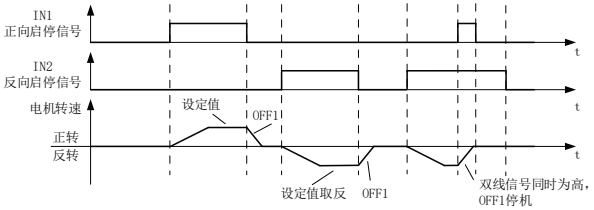
● **2.IN1启动，IN2方向**

IN1控制启动和停止，IN2接收高电平速度反向。



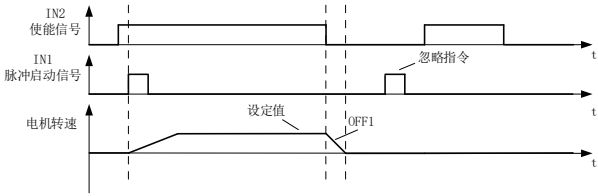
● **3.IN1正向启动，IN2反向启动**

IN1控制正向启动和停止，IN2控制反向启动和停止。



● **4.IN1P启动，IN2停止**

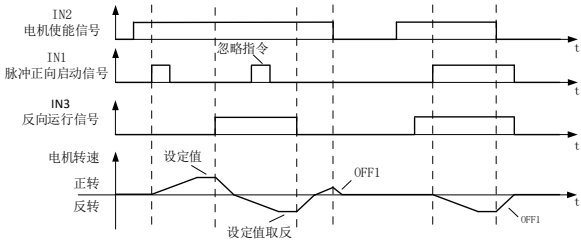
IN2接收到低电平马达启动被禁止；IN2接收高电平，IN1接收到脉冲信号后启动。



中文

● **5.IN1P启动，IN2停止，IN3方向**

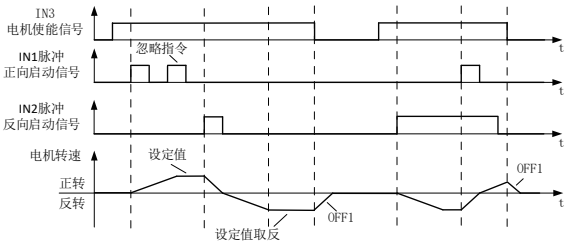
IN2接收到低电平马达启动被禁止；IN2接收高电平，IN1接收脉冲马达启动。IN3接收高电平速度反向。



● **6.IN1P正向启动，IN2P反向启动，IN3停止**

IN3接收到低电平马达启动被禁止。

IN3接收高电平，IN1接收脉冲正向启动，IN2接收脉冲反向启动。

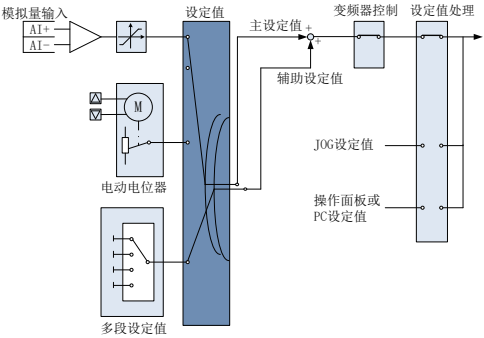


中文

3.4 速度给定值

AM驱动器通过B02.00选择速度设定来源。

主设定值大多是给定马达目标转速。



主设定值的来源可以是：

- 驱动器的模拟量输入
- 驱动器的现场总线接口
- 驱动器内电位器
- 驱动器多段值
- 互联到P组参数

上述来源也可以是辅助设定值或者附加设定值的来源。

4 故障

序号	故障名称	故障子码	子码含义	解决对策
1	过流	1	过流1	1. 排除动力线破损问题 2. 检查接线是否短路 3. 增加加减速时间 4. VF控制下减小VF转矩提升量 5. 请确认马达停止稳定后再启动 6. 减小或取消负载 7. 矢量控制下请确认是否进行过正确的参数辨识操作 8. 联系售后或厂家，寻求技术支持
		2	过流2	
		3	过流3	
2	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 2. 请增长加减速时间 3. 加装制动电阻或制动单元 4. 联系售后或厂家，寻求技术支持
3	欠压	1	母线欠压	1. 请检查输入电源是否在合理范围 2. 请确认电网是否瞬间断电 3. 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，或更换更大容量的驱动器 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，或者抱闸等锁死情况 5. 矢量控制时请确认是否进行正确的参数自学习操作 6. 联系售后或厂家，寻求技术支持
6	马达过载	1	马达过载	1. 请确认马达负载是否过大 2. 矢量控制时请确认是否进行过马达参数自学习 3. 请确认负载是否过重，或者抱闸等锁死情况 4. 请确认是否正确设定马达铭牌参数 5. 联系售后或厂家，寻求技术支持

序号	故障名称	故障子码	子码含义	解决对策
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.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.请确认马达是否运行平稳 3.联系售后或厂家，寻求技术支持
		2	V相输出缺相	
		3	W相输出缺相	
		5	三相输出严重不平衡	
		6	定子电阻辨识输出缺相	
		7	SVC输出缺相	
9	驱动器过热	1	驱动器过热	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.联系售后或厂家，寻求技术支持
11	电流零飘检测错误	1	U相零漂偏大	1.PM异常，联系售后或厂家，寻求技术支持
		2	V相零漂偏大	
		3	检测时过流	
		4	检测时过压	
		2	对地短路时V相过流	
		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	调谐失败	1	动态调谐异常	1.请确认马达铭牌参数设置是否正确 2.联系售后或厂家，寻求技术支持
		2	静态调谐失败	
15	矢量失速报警	1	速度在外力作用下被反向	1.请确认马达铭牌参数设置是否正确 2.请确认是否做过马达参数自学习操作 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	
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

中文

序号	故障名称	故障子码	子码含义	解决对策
21	机型设置错误	1	机型超过下限	1. 请确认驱动器机型是否和标签一致 2. 联系售后或厂家，寻求技术支持
		2	机型超过上限	
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. 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. 联系售后或厂家，寻求技术支持
35	通信异常	1	后台启动时异常断开	1. 检查驱动器的相关通信线缆是否连接异常 2. 检查通信超时参数是否设置合理 3. 联系售后或厂家，寻求技术支持
		2	操作面板启动时异常断开	
		3	Modbus通信故障	
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. 联系售后或厂家，寻求技术支持
38	马达速度偏差过大	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. 联系售后或厂家，寻求技术支持
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
43	预驱动失败	1	运行命令产生时没有检测到母线电压	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
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. 联系售后或厂家，寻求技术支持
		2	抱闸关闭异常	
51	Flash故障	1	Flash不能访问	1. 重新上电 2. 检查修改功能码的频率是否太高 3. 联系售后或厂家，寻求技术支持
		2	功能码值不在上下限范围	
		3	Flash写入后回读错误	
		4	功能码修改次数超限	

中文

5 功能码

功能码	名称	设定范围	出厂值	通讯地址
A00组:状态监视与设置				0x2000
A00.00	当前状态机	S0~S30	0	0x2000
A00.01	目标频率	-327.68~327.67Hz	0	0x2001
A00.02	给定频率	-327.68~327.67Hz	0	0x2002
A00.03	马达频率	-327.68~327.67Hz	0	0x2003
A00.04	目标速度	-32768~32767rpm	0	0x2004
A00.05	给定速度	-32768~32767rpm	0	0x2005
A00.06	马达转速	-32768~32767rpm	0	0x2006
A00.07	输出电压	0~1000V	0	0x2007
A00.08	输出电流	0~655.35A	0	0x2008
A00.09	输出功率	0~655.35kw	0	0x2009
A00.10	给定转矩	-300.0~300.0%	0	0x200A
A00.11	输出转矩	-300.0~300.0%	0	0x200B
A00.14	直流母线电压	0~1000.0V	0	0x200E
A00.15	散热器温度	-40~150°	0	0x200F
A00.16	DI状态	0~65535	0	0x2010
A00.17	DO状态	0~65535	0	0x2011
A00.41	开机显示选择1	0:当前状态机 1:目标频率 2:给定频率 3:输出频率 4:目标速度 5:给定速度 6:马达转速 7:输出电压 8:输出电流 9:输出功率 10:给定转矩 11:输出转矩 12:系统预约 13:系统预约 14:直流母线电压 15:散热器温度 16:DI状态 17:DO状态	1	0x2029
A00.42	开机显示选择2	同上	3	0x202A
A00.43	开机显示选择3	同上	8	0x202B
A00.44	开机显示选择4	同上	11	0x202C
A00.45	开机显示选择5	同上	14	0x202D
A00.46	开机显示选择6	同上	15	0x202E
A01组:故障和警告				0x2100
A01.00	当前故障码1	0~51	0	0x2100
A01.01	当前故障码1子码	0~65535	0	0x2101
A01.04	当前警告码1	0~51	0	0x2104
A01.05	当前警告码1子码	0~65535	0	0x2105

中文

功能码	名称	设定范围	出厂值	通讯地址
A02组:变频器信息与设置				0x2200
A02.00	功能软件版本号	0.00~655.35	0	0x2200
A02.02	性能软件版本号	0~65535	0	0x2202
A02.04	PM功率单元额定功率	0.00~655.35	0	0x2204
A02.05	PM功率单元额定电压	0~65535	0	0x2205
A02.06	PM功率单元额定电流	0.00~655.35	0	0x2206
A02.07	功能码版本号	0.00~655.35	0	0x2207
A02.08	版本发布时间	0x0~0xFFFF	0	0x2208
A03组:PM功率单元保护与设置				0x2300
A03.05	VU两相电流偏差矫正系数	85.0%~115.0%	100	0x2305
A03.08	载波频率设定	0.8~16.0kHz	4	0x2308
A03.09	负载模式选择	0:轻载 1:重载	0	0x2309
A03.13	DPWM切换频率	1.00Hz ~ 60.0Hz	8	0x230D
A03.16	死区补偿使能	0:禁止 1:死区补偿方法1 2:死区补偿方法2	1	0x2310
A03.19	输入缺相检测	0:禁止 1:允许	0	0x2313
A03.20	制动电阻动作点	600.0~800.OV	700	0x2314
A03.21	软件欠压点	60% ~ 150%	100	0x2315
A04组:系统应用与环境设定				0x2400
A04.00	参数复位模式	0:无效 1:机型参数，马达参数不复位 2:马达参数不复位 3:全部参数复位 4:清除故障记录	0	0x2400
A04.01	参数复位	0:取消 1:确认	0	0x2401
A04.02	参数访问级别	0:标准参数 1:扩展参数 2:专家参数 3:厂家参数	0	0x2402
A04.03	厂家密码	0~65535	0	0x2403
A04.05	马达选择来源0	0:00 1:01 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x2405

中文

功能码	名称	设定范围	出厂值	通讯地址
A05组:数字量输入				0x2500
A05.00	DI物理状态值	0x0~0xFFFF	0x0	0x2500
A05.02	DI处理后状态值	0x0~0xFFFF	0x0	0x2502
A05.04	DI强制选择	0x0~0xFFFF	0x0	0x2504
A05.06	DI强制数据	0x0~0xFFFF	0x0	0x2506
A05.08	DI0开通延时	0.0~6553.5S	0	0x2508
A05.09	DI0关断延时	0.0~6553.5S	0	0x2509
A05.10	DI1开通延时	0.0~6553.5S	0	0x250A
A05.11	DI1关断延时	0.0~6553.5S	0	0x250B
A05.12	DI2开通延时	0.0~6553.5S	0	0x250C
A05.13	DI2关断延时	0.0~6553.5S	0	0x250D
A05.14	DI3开通延时	0.0~6553.5S	0	0x250E
A05.15	DI3关断延时	0.0~6553.5S	0	0x250F
A05.16	DI4开通延时	0.0~6553.5S	0	0x2510
A05.17	DI4关断延时	0.0~6553.5S	0	0x2511
A06组:数字量输出				0x2600
A06.00	DO信号源状态值	0x0~0xFFFF	0x0	0x2600
A06.01	DO处理后状态值	0x0~0xFFFF	0x0	0x2601
A06.02	DO0(继电器)的输出功能选择	0:低电平 1:高电平 2:运行准备好 3:运行允许 4:运行中 5:比较值到达 6:速度反向 7:零速运行 8:过速度 9:警告 10:故障 其它:二进制互联参数	4	0x2602
A06.03	DO1(晶体管)的输出功能选择	同A06.02	10	0x2603
A06.09	DO0(继电器)开通延时	0.0~6553.5S	0	0x2609
A06.10	DO0(继电器)关断延时	0.0~6553.5S	0	0x260A
A06.11	DO1(晶体管)开通延时	0.0~6553.5S	0	0x260B
A06.12	DO1(晶体管)关断延时	0.0~6553.5S	0	0x260C

功能码	名称	设定范围	出厂值	通讯地址
A07组:模拟量输入				0x2700
A07.00	AI输入值	0.000 ~ 10.000	0	0x2700
A07.01	AI输入比例	-600.0% ~ 600.0%	0	0x2701
A07.02	电位器输入值	0.000 ~ 3.000	0	0x2702
A07.03	电位器输入比例	-600.0% ~ 600.0%	0	0x2703
A07.04	AI类型	0:预留 1:0~10V	1	0x2704
A07.06	AI曲线最小输入值	0.000 ~ 10.000	0	0x2706
A07.07	AI曲线最小输入比例	-600.0% ~ 600.0%	0	0x2707
A07.08	AI曲线最大输入值	0.000 ~ 10.000	10	0x2708
A07.09	AI曲线最大输入比例	-600.0% ~ 600.0%	100	0x2709
A07.10	电位器最小输入值	0.000 ~ 3.000	0.1	0x270A
A07.11	电位器最小输入比例	-600.0% ~ 600.0%	0	0x270B
A07.12	电位器最大输入值	0.000 ~ 3.000	2.9	0x270C
A07.13	电位器最大输入比例	-600.0% ~ 600.0%	100	0x270D
A07.14	AI低于最小输入设定选择	00~11	0	0x270E
A07.15	AI滤波时间	0~10000ms	10	0x270F
A07.16	电位器滤波时间	0~10000ms	10	0x2710
A08组:模拟量输出				0x2800
A08.00	AO输出值	0.00 ~ 20.00	0	0x2800
A08.01	AO输出比例	-600.0% ~ 600.0%	0	0x2801
A08.04	AO信号源	0:00 1:马达转速 2:同步频率 3:输出电流 4:输出转矩 5:直流母线电压 6:输出功率 7:RFG输入 8:RFG输出 9:速度给定值 10:预留 其它:模拟量互联参数	0	0x2804
A08.08	AO曲线最小输出比例	-600.0% ~ 600.0%	0	0x2808
A08.09	AO曲线最小输出值	0.00 ~ 20.00	4	0x2809
A08.10	AO曲线最大输出比例	-600.0% ~ 600.0%	100	0x280A
A08.11	AO曲线最大输出值	0.00 ~ 20.00	20	0x280B

中文

功能码	名称	设定范围	出厂值	通讯地址
B00组:系统控制命令设置				0x3000
B00.11	OFF3来源	0:有效 1:无效 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	1	0x300B
B00.13	故障复位来源	0:无效 1:有效 2~6:DI0~DI4 7~9:预留 10:Modbus故障复位 其它:二进制互联参数	0	0x300D
B00.21	辨识请求	0:无 1:异步机简易静态辨识 2:异步机静态完整辨识 3:异步机动态完整辨识	0	0x3015
B00.23	停机方式选择	0:自由停机 1:减速停机	1	0x3520
B00.24	OFF3停机时间	0.0s ~ 1000.0s	10	0x3521
B01组:启停控制模块				0x3100
B01.01	启停控制命令方式	0:无效 1:IN1启动 2:IN1启动，IN2方向 3:IN1正向启动,IN2反向启动 4:IN1P启动，IN2停止 5:IN1P启动，IN2停止，IN3方向 6:IN1P正向启动，IN2P反向启动，IN3停止	3	0x3101
B01.03	启停命令输入IN1	0:无效 1:预留 2~6:DI0~DI4 7~9:预留 10:Modbus启停命令 其它:二进制互联参数	2	0x3103
B01.04	启停命令输入IN2	0:无效 1:预留 2~6:DI0~DI4 7~9:预留 10:Modbus 其它:二进制互联参数	3	0x3104
B01.05	启停命令输入IN3	0:无效 1:预留 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	4	0x3105

中文

功能码	名称	设定范围	出厂值	通讯地址
B01组:启停控制模块				0x3100
B01.11	JOG1来源	0:无效 1:预留 2~6:DI0~DI4 7~9:预留 10:Modbus点动命令 其它:二进制互联参数	0	0x310B
B01.12	JOG2来源	0:无效 1:预留 2~6:DI0~DI4 7~9:预留 10:Modbus点动命令 其它:二进制互联参数	0	0x310C
B02组:命令源设置				0x3200
B02.00	速度控制主设定选择	0:00 1:多段设定值1 2:AI 3:内部电位器 4~5:预留 5:预留 6:多段值给定 7:电动电位器 8~9:预留 10:Modbus设定标么值1 其它:模拟量互联参数	1	0x3200
B02.01	速度控制辅设定选择	同上	0	0x3201
B02.02	附加速度给定	同上	0	0x3202
B03组:其他命令源设定方式				0x3300
B03.00	JOG1给定设置	0:00 1:多段设定值1 2:AI 3:内部电位器 4~5:预留 6:多段值给定 7:电动电位器 8~9:预留 10:Modbus设定标么值1 其它:模拟量互联参数	1	0x3300
B03.01	JOG2给定设置	同上	0	0x3301
B03.02	JOG加速时间	0.0~1000.0S	10	0x3302
B03.03	JOG减速时间	0.0~1000.0S	10	0x3303
B03.04	电动电位器功能	0:禁止 1:开启	1	0x3304
B03.05	电动电位器初始值	-600.0~600.0%	0	0x3305
B03.06	电动电位器斜坡时间	0.0~1000.0S	10	0x3306
B03.07	电动电位器最小值	-600.0~600.0%	0	0x3307

功能码	名称	设定范围	出厂值	通讯地址
B03组:其他命令源设定方式				0x3300
B03.08	电动电位器最大值	-600.0~600.0%	100	0x3308
B03.09	电动电位器增加来源选择	0:00 1:01 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x3309
B03.10	电动电位器下降来源选择	同上	0	0x330A
B03.11	多段给定值	-600.0~600.0%	0	0x330B
B03.12	多段给定值选择1	0:00 1:01 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x330C
B03.13	多段给定值选择2	同上	0	0x330D
B03.14	多段给定值选择3	同上	0	0x330E
B03.16	多段设定值1	-600.0~600.0%	10	0x3310
B03.17	多段设定值2	-600.0~600.0%	20	0x3311
B03.18	多段设定值3	-600.0~600.0%	30	0x3312
B03.19	多段设定值4	-600.0~600.0%	-10	0x3313
B03.20	多段设定值5	-600.0~600.0%	-20	0x3314
B03.21	多段设定值6	-600.0~600.0%	-30	0x3315
B03.22	多段设定值7	-600.0~600.0%	0	0x3316
B03.23	多段设定值8	-600.0~600.0%	0	0x3317
B04组:斜坡函数发生器				0x3400
B04.00	RFG斜坡时间选择1	0:无效 1:有效 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x3400
B04.01	RFG斜坡时间选择2	同上	0	0x3401
B04.02	斜坡1加速时间	0.0~1000.0S	5	0x3402
B04.03	斜坡1减速时间	0.0~1000.0S	5	0x3403
B04.04	斜坡2加速时间	0.0~1000.0S	5	0x3404
B04.05	斜坡2减速时间	0.0~1000.0S	5	0x3405
B04.06	斜坡3加速时间	0.0~1000.0S	5	0x3406
B04.07	斜坡3减速时间	0.0~1000.0S	5	0x3407
B04.08	斜坡4加速时间	0.0~1000.0S	5	0x3408
B04.09	斜坡4减速时间	0.0~1000.0S	5	0x3409
B04.10	S曲线1开始时间	0.00~20.00S	0	0x340A
B04.11	S曲线1结束时间	0.00~20.00S	0	0x340B
B04.12	S曲线2开始时间	0.00~20.00S	0	0x340C
B04.13	S曲线2结束时间	0.00~20.00S	0	0x340D
B04.14	S曲线3开始时间	0.00~20.00S	0	0x340E
B04.15	S曲线3结束时间	0.00~20.00S	0	0x340F
B04.16	S曲线4开始时间	0.00~20.00S	0	0x3410
B04.17	S曲线4结束时间	0.00~20.00S	0	0x3411

功能码	名称	设定范围	出厂值	通讯地址
B05组:马达控制选择				0x3500
B05.00	马达控制方式	0:VF 1:SVC	0	0x3500
B05.02	正速度允许	0:无效 1:有效 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	1	0x3502
B05.03	负速度允许	同上	1	0x3503
B05.04	马达启动方式	0:直接启动 1:预励磁启动 2:转速追踪启动 3:直流制动启动	0	0x3504
B05.06	预励磁时间设定	0.00~100.00S	0	0x3506
B05.08	预励磁电流数字设定	10.0% ~ 200.0% 100.0%相对马达额定电流	100	0x3508
B05.09	直流制动电流	0.0% ~ 100.0% 100.0%对应马达额定电流	50	0x3509
B05.10	启动时直流制动时间	0.00s~100.00s	0	0x350A
B05.11	停机时直流制动时间	0.00s~100.00s	0	0x350B
B05.12	停机直流制动起始速度	0 ~ 3000rpm	0	0x350C
B05.13	转速追踪模式	0:转速追踪关闭 1:从停机频率开始搜索 2:从额定频率开始搜索 3:从最大频率开始搜索	0	0x350D
B05.14	转速追踪速度搜索时间	0.0~120.0S	25	0x350E
B05.15	转速追踪电流百分比	0~100%	50	0x350F
B05.16	转速追踪最小频率限制	0.00~50.00Hz	2	0x3510
B05.17	转速追踪切换等待时间	0~60000ms	250	0x3511
B05.29	零速判断值	0 ~ 3000rpm	30	0x351D
B05.30	零速停机延迟时间	0.00~100.00S	0	0x351E
B05.32	停机方式选择	0:自由停机 1:减速停机	1	0x3520
B05.33	OFF3停机时间	0.0s ~ 1000.0s	10	0x3521

功能码	名称	设定范围	出厂值	通讯地址
B06组:马达控制限制及保护				0x3600
B06.00	跳跃频率1下限	0.0%~300.0% 100.0%相对于马达额定频率	0	0x3600
B06.01	跳跃频率1上限	0.0%~300.0% 100.0%相对于马达额定频率	0	0x3601
B06.02	跳跃频率2下限	0.0%~300.0% 100.0%相对于马达额定频率	0	0x3602
B06.03	跳跃频率2上限	0.0%~300.0% 100.0%相对于马达额定频率	0	0x3603
B06.04	正向极限速度	0.0%~300.0% 100.0%相对于马达额定频率	100	0x3604
B06.05	反向极限速度	-300.0%~0% 100.0%相对于马达额定频率	-100	0x3605
B06.12	矢量控制转矩限幅	0.0%~200.0%	180	0x360C
B06.13	抱闸打开前转矩限幅	0.0%~200.0%	180	0x360D
B06.25	马达过载软件保护选择	0:禁止 1:允许	0	0x3619
B06.26	马达过载软件保护增益	20~1000%	100	0x361A
B06.28	过速度检测值	0.0% ~ 50.0% 100.0%相对马达额定转速	20	0x361C
B06.29	过速度检测时间	0.0S:不检测 0.1S ~ 60.0S	5	0x361D
B06.32	比较值到达检测值	0.0% ~ 300.0% 100.0%相对马达额定转速	100	0x3620
B06.33	比较值到达检测滞后值	0.0% ~ B06.32 100.0%相对马达额定转速	3	0x3621
B06.34	比较值到达检测时间	0.0:不检测 0.1s ~ 300.0s	3	0x3622
B06.37	输出缺相检测	0:禁止 1:允许	1	0x3625
B06.59	失速检测时间1	0~5000ms	500	0x363B
B06.60	失速检测时间2	0~5000ms	500	0x363C
B06.61	矢量失速检测2系数	0~100%	20	0x363D
B06.62	SVC控制模式	0:控制模式1 1:控制模式2 2:控制模式3	0	0x363E
B06.64	矢量控制滑差补偿系数	50~200%	100	0x3640

中文

功能码	名称	设定范围	出厂值	通讯地址
B07组:VF控制				0x3700
B07.00	VF模式选择	0:VF曲线 1:VF分离	0	0x3700
B07.01	VF曲线选择	0:直线VF 1:多点VF 2:平方V/F 3:1.5次V/F	0	0x3701
B07.02	多点VF曲线频率点1	0.0 ~ B07.04	2	0x3702
B07.03	多点VF曲线电压点1	0.0 ~ B07.05	20	0x3703
B07.04	多点VF曲线频率点2	B07.02 ~ B07.06	20	0x3704
B07.05	多点VF曲线电压点2	B07.03 ~ B07.07	152	0x3705
B07.06	多点VF曲线频率点3	B07.04~D00.04	40	0x3706
B07.07	多点VF曲线电压点3	B07.05 ~ D00.02	304	0x3707
B07.10	Imax控制使能	0:无效 1:有效	1	0x370A
B07.11	Imax控制调频增益	0 ~ 100	30	0x370B
B07.12	Imax抑制点	0 ~ 200	150	0x370C
B07.13	VF转矩提升方式	0:不使能 1:手动 2:自动	1	0x370D
B07.15	VF手动加速转矩提升	0% ~ 250%	1	0x370F
B07.16	VF转矩提升截止频率	0.00~100.00Hz	50	0x3710
B07.17	VF转差补偿系数	0.0% ~ 300.0%	0	0x3711
B07.20	VF振荡抑制模式	0:无效 1:有效	1	0x3714
B07.21	VF振荡抑制增益	0 ~ 500%	10	0x3715
B07.24	VF过励磁增益	0 ~ 200.0	0	0x3718
B07.28	Vdc_max控制开关	0:禁止 1:使能	0	0x371C
B07.29	Vdc_max电压裕量	115%~150%	125	0x371D
B07.34	Vdc_min控制开关	0:禁止 1:使能	0	0x3722
B07.35	Vdc_min 调压增益系数	65~100	85	0x3723

中文

功能码	名称	设定范围	出厂值	通讯地址
B08组:速度调节器				0x3800
B08.02	速度环Kp低速	0.0~100.0	10	0x3802
B08.03	速度环Ti低速	0.00~10.00ms	1	0x3803
B08.04	速度环Kp高速	0.0~100.0	10	0x3804
B08.05	速度环Ti高速	0.00~10.00ms	2	0x3805
B08.11	速度环切换低频频率	0.00~40.00Hz	5	0x380B
B08.12	速度环切换高频频率	0.00~40.00Hz	10	0x380C
B08.13	速度环切换高频修正系数	0.0~400.0%	100	0x380D
B08.26	估计速度环滤波时间	0~10000ms	35	0x381A
B09组:电流调节器				0x3900
B09.04	电流环比例系数	1%~1000%	100	0x3904
B09.05	电流环积分系数	1%~1000%	100	0x3905
B11组:马达模型及其它				0x3B00
B11.51	监控通道1	0~65535	207	0x3B33
B11.52	监控通道2	0~65535	209	0x3B34
B11.53	监控通道3	0~65535	210	0x3B35
B11.54	监控通道4	0~65535	211	0x3B36
B11.56	电动频率上限	0~65535	1200	0x3B38
B11.57	发电频率上限	0~65535	800	0x3B39
B11.75	重载限速使能	0~65535	0	0x3B4B
B11.78	预留	0~65535	0	0x3B4E
B11.93	CM与PM交互数据监控选择0	0~511	0	0x3B5D
B11.94	CM与PM交互数据监控选择1	0~511	269	0x3B5E
B11.95	CM与PM交互数据监控选择2	0~511	270	0x3B5F
B11.96	CM与PM交互数据监控选择3	0~511	271	0x3B60

功能码	名称	设定范围	出厂值	通讯地址
C02组:Modbus通讯设置				0x4200
C02.00	Modbus波特率	0:1200bps 1:2400bps 2:4800bps 3:9600bps 4:19200bps 5:38400bps 6:57600bps 7:115200bps	7	0x4200
C02.01	Modbus数据格式	0:偶校验（8-E-1） 1:奇校验（8-O-1） 2:无校验（8-N-2） 3:无校验（8-N-1）	3	0x4201
C02.02	Modbus本机地址	1~247	1	0x4202
C02.04	Modbus通讯超时	0:无效，0.1s~60.0s	2	0x4204
C02.06	Modbus通信设定值单位选择	0:百分比 1:频率	0	0x4206
C02.07	Modbus写功能更新非易失性存储	0:更新 1:不更新	0	0x4207

中文

功能码	名称	设定范围	出厂值	通讯地址
D00组:马达0基本参数				0x5000
D00.00	马达类型选择	0:感应马达 1:永磁同步达(预约)	0	0x5000
D00.01	马达额定功率	0.00~655.35kW	0.55	0x5001
D00.02	马达额定电压	0~1500V	380	0x5002
D00.03	马达额定电流	0.00~655.35A	1.6	0x5003
D00.04	马达额定频率	0.0~600.00Hz	50	0x5004
D00.05	马达额定转速	0~65535rpm	1330	0x5005
D00.06	马达最大转速	0.0%~300.0%额定转速	100	0x5006
D00.07	马达最小转速	0.0%~300.0%额定转速	0	0x5007
D00.08	马达最大电流	0.0%~300.0%额定电流	100	0x5008
D00.09	马达极对数	0~64	2	0x5009
D01组:马达0辨识参数				0x5100
D01.00	异步马达定子电阻	0.000~65.535ohm	14.477	0x5100
D01.01	异步马达转子电阻	0.000~65.535ohm	8.469	0x5101
D01.02	异步马达漏感抗	0.000~65.535mH	5.13	0x5102
D01.03	异步马达互感抗	0.0~6553.5mH	5.453	0x5103
D01.04	异步马达空载电流	0.00~655.35A	1.28	0x5104
D03组:马达1基本参数				0x5300
D03.00	马达类型选择	0:感应马达 1:永磁同步达(预约)	0	0x5300
D03.01	马达额定功率	0.00~655.35kW	0.55	0x5301
D03.02	马达额定电压	0~1500V	380	0x5302
D03.03	马达额定电流	0.0~6553.5A	1.6	0x5303
D03.04	马达额定频率	0.0~600.00Hz	50	0x5304
D03.05	马达额定转速	0~65535rpm	1330	0x5305
D03.06	马达最大转速	0.0%~300.0%额定转速	100	0x5306
D03.07	马达最小转速	0.0%~300.0%额定转速	0	0x5307
D03.08	马达最大电流	0.0%~300.0%额定电流	100	0x5308
D03.09	马达极对数	0~64	2	0x5309
D04组:马达1辨识参数				0x5400
D04.00	异步马达定子电阻	0.000~6.5535ohm	14.477	0x5400
D04.01	异步马达转子电阻	0.000~6.553ohm	8.469	0x5401
D04.02	异步马达漏感抗	0.000~65.535mH	5.13	0x5402
D04.03	异步马达互感抗	0.0~6553.5mH	5.453	0x5403
D04.04	异步马达空载电流	0.00~655.35A	1.28	0x5404

功能码	名称	设定范围	出厂值	通讯地址
E00组:故障处理				0x6000
E00.00	外部故障1来源	0:无效 1:预留 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x6000
E00.10	故障自动复位功能	0:无效 1:有效	0	0x600A
E00.11	故障复位次数重置时间	0.0~3600.0s	180	0x600B
E00.12	故障复位间隔时间	0.0~600.0s	30	0x600C
E00.13	故障复位次数	0~5	5	0x600D
E00.14	不可复位异常码1	0~51	0	0x600E
E00.15	不可复位异常码2	0~51	0	0x600F
E00.23	自动复位后重启功能	0:无效 1:有效	0	0x6017
E00.24	允许重启的异常来源	0:指定异常码允许重启 1:指定异常码不允许重启	0	0x6018
E00.25	指定的异常码1	0~51	0	0x6019
E00.26	指定的异常码2	0~51	0	0x601A
E00.36	异常级别修改异常码1	0~51	0	0x6024
E00.37	异常码1的异常级别	0:自由停机 1:预留 2:停机方式停机 3:警告 4:无异常处理	0	0x6025
E00.38	异常级别修改异常码2	0~51	0	0x6026
E00.39	异常码2的异常级别	同E00.37	0	0x6027
E01组:最新故障及故障数据记录				0x6100
E01.00	故障码1	0~51	0	0x6100
E01.01	故障码1子码	0~16	0	0x6101
E01.02	故障码2	0~51	0	0x6102
E01.03	故障码2子码	0~16	0	0x6103
E01.12	故障速度	-300.00~300.00Hz	0	0x610C
E01.13	故障电流	0.00~655.35A	0	0x610D
E01.14	故障母线电压	0.0~800.0V	0	0x610E
E01.15	故障输出转矩	-300.0%~300.0%	0	0x610F
E01.18	运行时间-时	0~65535	0	0x6112
E01.19	运行时间-秒	0~65535	0	0x6113
E01.20	上电累计运行时间-时	0~65535	0	0x6114
E01.21	上电累计运行时间-秒	0~65535	0	0x6115
E01.22	故障输出电压	0~6553.5V	0	0x6116
E01.23	故障PM状态字	0~65535	0x0	0x6117

功能码	名称	设定范围	出厂值	通讯地址
E02组:前一次故障及故障数据记录				0x6200
E02.00	故障码1	0~51	0	0x6200
E02.01	故障码1子码	0~16	0	0x6201
E02.02	故障码2	0~51	0	0x6202
E02.03	故障码2子码	0~16	0	0x6203
E02.12	故障速度	-300.00~300.00Hz	0	0x620C
E02.13	故障电流	0.0~6553.5A	0	0x620D
E02.14	故障母线电压	0.0~800.0V	0	0x620E
E02.15	故障输出转矩	-300.0%~300.0%	0	0x620F
E02.18	运行时间-时	0~65535	0	0x6212
E02.19	运行时间-秒	0~65535	0	0x6213
E02.20	上电累计运行时间-时	0~65535	0	0x6214
E02.21	上电累计运行时间-秒	0~65535	0	0x6215
E02.22	故障输出电压	0~6553.5V	0	0x6216
E02.23	故障PM状态字	0~65535	0x0	0x6217
E03组:前两次故障及故障数据记录				0x6300
E03.00	故障码1	0~51	0	0x6300
E03.01	故障码1子码	0~16	0	0x6301
E03.02	故障码2	0~51	0	0x6302
E03.03	故障码2子码	0~16	0	0x6303
E03.12	故障速度	-300.00~300.00Hz	0	0x630C
E03.13	故障电流	0.0~6553.5A	0	0x630D
E03.14	故障母线电压	0.0~800.0V	0	0x630E
E03.15	故障输出转矩	-300.0%~300.0%	0	0x630F
E03.18	运行时间-时	0~65535	0	0x6312
E03.19	运行时间-秒	0~65535	0	0x6313
E03.20	上电累计运行时间-时	0~65535	0	0x6314
E03.21	上电累计运行时间-秒	0~65535	0	0x6315
E03.22	故障输出电压	0~6553.5V	0	0x6316
E03.23	故障PM状态字	0~65535	0x0	0x6317
E04组:前三次故障及故障数据记录				0x6400
E04.00	故障码1	0~51	0	0x6400
E04.01	故障码1子码	0~16	0	0x6401
E04.02	故障码2	0~51	0	0x6402
E04.03	故障码2子码	0~16	0	0x6403
E04.12	故障速度	-300.00~300.00Hz	0	0x640C
E04.13	故障电流	0.0~6553.5A	0	0x640D
E04.14	故障母线电压	0.0~800.0V	0	0x640E
E04.15	故障输出转矩	-300.0%~300.0%	0	0x640F
E04.18	运行时间-时	0~65535	0	0x6412
E04.19	运行时间-秒	0~65535	0	0x6413
E04.20	上电累计运行时间-时	0~65535	0	0x6414
E04.21	上电累计运行时间-秒	0~65535	0	0x6415
E04.22	故障输出电压	0~6553.5V	0	0x6416
E04.23	故障PM状态字	0~65535	0x0	0x6417

功能码	名称	设定范围	出厂值	通讯地址
E05组:前四次故障及故障数据记录				0x6500
E05.00	故障码1	0~51	0	0x6500
E05.01	故障码1子码	0~16	0	0x6501
E05.02	故障码2	0~51	0	0x6502
E05.03	故障码2子码	0~16	0	0x6503
E05.12	故障速度	-300.00~300.00Hz	0	0x650C
E05.13	故障电流	0.0~6553.5A	0	0x650D
E05.14	故障母线电压	0.0~800.0V	0	0x650E
E05.15	故障输出转矩	-300.0%~300.0%	0	0x650F
E05.18	运行时间-时	0~65535	0	0x6512
E05.19	运行时间-秒	0~65535	0	0x6513
E05.20	上电累计运行时间-时	0~65535	0	0x6514
E05.21	上电累计运行时间-秒	0~65535	0	0x6515
E05.22	故障输出电压	0~6553.5V	0	0x6516
E05.23	故障PM状态字	0~65535	0x0	0x6517
E06组:前五次故障及故障数据记录				0x6600
E06.00	故障码1	0~51	0	0x6600
E06.01	故障码1子码	0~16	0	0x6601
E06.02	故障码2	0~51	0	0x6602
E06.03	故障码2子码	0~16	0	0x6603
E06.12	故障速度	-300.00~300.00Hz	0	0x660C
E06.13	故障电流	0.0~6553.5A	0	0x660D
E06.14	故障母线电压	0.0~800.0V	0	0x660E
E06.15	故障输出转矩	-300.0%~300.0%	0	0x660F
E06.18	运行时间-时	0~65535	0	0x6612
E06.19	运行时间-秒	0~65535	0	0x6613
E06.20	上电累计运行时间-时	0~65535	0	0x6614
E06.21	上电累计运行时间-秒	0~65535	0	0x6615
E06.22	故障输出电压	0~6553.5V	0	0x6616
E06.23	故障PM状态字	0~65535	0x0	0x6617

功能码	名称	设定范围	出厂值	通讯地址
F00组:逻辑运算模块				0x7000
F00.00	逻辑与模块A输入1	0:无效 其它:二进制互联参数	0	0x7000
F00.01	逻辑与模块A输入2	同上	0	0x7001
F00.02	逻辑与模块A输入3	同上	0	0x7002
F00.03	逻辑与模块A输入4	同上	0	0x7003
F00.05	逻辑与模块B输入1	同上	0	0x7005
F00.06	逻辑与模块B输入2	同上	0	0x7006
F00.07	逻辑与模块B输入3	同上	0	0x7007
F00.08	逻辑与模块B输入4	同上	0	0x7008
F00.20	逻辑非模块A输入	同上	0	0x7014
F00.22	逻辑非模块B输入	同上	0	0x7016
F00.24	逻辑非模块C输入	同上	0	0x7018
F00.26	逻辑非模块D输入	同上	0	0x701A
F00.36	逻辑或模块A输入1	同上	0	0x7024
F00.37	逻辑或模块A输入2	同上	0	0x7025
F00.38	逻辑或模块A输入3	同上	0	0x7026
F00.39	逻辑或模块A输入4	同上	0	0x7027
F00.41	逻辑或模块B输入1	同上	0	0x7029
F00.42	逻辑或模块B输入2	同上	0	0x702A
F00.43	逻辑或模块B输入3	同上	0	0x702B
F00.44	逻辑或模块B输入4	同上	0	0x702C
F00.76	逻辑延时模块A输入	同上	0	0x704C
F00.77	逻辑延时模块A功能选择	0:开通延时 1:关断延时 2:双向延时	0	0x704D
F00.78	逻辑延时模块A延迟时间	0~60000ms	0	0x704E
F00.79	逻辑延时模块B输入	0:无效 其它:二进制互联参数	0	0x704F
F00.80	逻辑延时模块B功能选择	0:开通延时 1:关断延时 2:双向延时	0	0x7050
F00.81	逻辑延时模块B延迟时间	0~60000ms	0	0x7051

功能码	名称	设定范围	出厂值	通讯地址
F01组:算术运算模块				0x7100
F01.00	加法模块A输入1	0:00 其它:模拟量互联参数	0	0x7100
F01.01	加法模块A输入2	同上	0	0x7101
F01.02	加法模块A输入3	同上	0	0x7102
F01.03	加法模块A输入4	同上	0	0x7103
F01.05	加法模块B输入1	同上	0	0x7105
F01.06	加法模块B输入2	同上	0	0x7106
F01.07	加法模块B输入3	同上	0	0x7107
F01.08	加法模块B输入4	同上	0	0x7108
F01.15	减法模块A输入1	同上	0	0x710F
F01.16	减法模块A输入2	同上	0	0x7110
F01.18	减法模块B输入1	同上	0	0x7112
F01.19	减法模块B输入2	同上	0	0x7113
F01.37	绝对值模块A输入	同上	0	0x7125
F01.39	绝对值模块B输入	同上	0	0x7127
F01.41	比较模块A输入1	同上	0	0x7129
F01.42	比较模块A输入2	同上	0	0x712A
F01.44	比较模块B输入1	同上	0	0x712C
F01.45	比较模块B输入2	同上	0	0x712D
F01.61	数据选择器A命令来源1	0:00 1:01 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x713D
F01.62	数据选择器A命令来源2	同上	0	0x713E
F01.63	数据选择器A数据来源1	0:00 1:多段设定值1 2:AI 3:电位器 4~5:预留 6:多段值给定 7:电动电位计 8~10:预留 其它:模拟量互联参数	0	0x713F
F01.64	数据选择器A数据来源2	同上	0	0x7140
F01.65	数据选择器A数据来源3	同上	0	0x7141
F01.66	数据选择器A数据来源4	同上	0	0x7142
F01.67	数据选择器B命令来源1	0:00 1:01 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x7143
F01.68	数据选择器B命令来源2	同上	0	0x7144

中文

功能码	名称	设定范围	出厂值	通讯地址
F01组:算术运算模块				0x7100
F01.69	数据选择器B数据来源1	0:00 1:多段设定值1 2:AI 3:电位器 4~5:预留 6:多段值给定 7:电动电位计 8~10:预留 其它:模拟量互联参数	0	0x7145
F01.70	数据选择器B数据来源2	同上	0	0x7146
F01.71	数据选择器B数据来源3	同上	0	0x7147
F01.72	数据选择器B数据来源4	同上	0	0x7148
F03组:过程PID模块				0x7300
F03.00	PID功能有效信号	0:无效 1:有效 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x7300
F03.01	PID运算使能信号	同上	0	0x7301
F03.02	PID作用方向	0:正方向 1:反方向	0	0x7302
F03.03	PID采样计算	1~20	2	0x7303
F03.04	PID给定源来源	0:F03.05 1:多段设定值1 2:AI 3:电位器 4~5:预留 6:多段值给定 7:电动电位计 8~10:预留 其它:模拟量互联参数	0	0x7304
F03.05	PID数值给定	-600.0~600.0%	0	0x7305
F03.06	PID给定冻结使能	0:无效 1:有效 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x7306
F03.07	PID给定滤波时间	0~60000ms	0	0x7307
F03.08	PID反馈源来源	0:00 1:多段设定值1 2:AI 3:电位器 4~5:预留 6:多段值给定 7:电动电位计 8~10:预留 其它:模拟量互联参数	0	0x7308

功能码	名称	设定范围	出厂值	通讯地址
F03组:过程PID模块				0x7300
F03.09	PID反馈滤波时间	0~60000ms	0	0x7309
F03.10	PID偏差附加给定	同F03.08	0	0x730A
F03.11	比例增益KP	0.00~125.00	1	0x730B
F03.12	比例增益系数	0:100.0% 1:多段设定值1 2:AI 3:电位器 4~5:预留 6:多段值给定 7:电动电位器 8~10:预留 其它:模拟量互联参数	0	0x730C
F03.13	积分时间Ti	0~60000ms	10	0x730D
F03.14	积分时间系数	同F03.12	0	0x730E
F03.15	微分时间Td1	0~60000ms	0	0x730F
F03.16	微分时间系数	同F03.12	0	0x7310
F03.17	PID输出积分初值	同F03.12	0	0x7311
F03.18	PID输出附加给定	同F03.12	0	0x7312
F03.19	PID积分分量强制使能	0:无效 1:有效 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x7313
F03.20	PID积分分量强制值	0:00 1:多段设定值1 2:AI 3:电位器 4~5:预留 6:多段值给定 7:电动电位器 8~10:预留 其它:模拟量互联参数	0	0x7314
F03.21	PID输出极限	0.0~600.0%	100	0x7315
F03.22	PID输出上限来源	0:100% 1:多段设定值1 2:AI 3:电位器 4~5:预留 6:多段值给定 7:电动电位器 8~10:预留 其它:模拟量互联参数	0	0x7316
F03.23	PID输出下限来源	同上	0	0x7317
F03.24	PID输出限幅上升/下降时间	0.00~100.00S	0	0x7318
F03.25	PID偏差死区使能	0:禁止 1:使能	0	0x7319
F03.26	PID偏差死区范围	0.0~100.0%	0	0x731A
F03.27	PID反馈丢失检测值	0.0~100.0%	0	0x731B
F03.28	PID反馈丢失检测时间	0.0~60.0S	0	0x731C

功能码	名称	设定范围	出厂值	通讯地址
F04组:抱闸控制				0x7400
F04.00	抱闸功能选择	0:无抱闸 1:有抱闸不带检测信息 2:有抱闸带检测信息	0	0x7400
F04.04	抱闸打开比较值来源	0:00 其它:模拟量互联参数	2311	0x7404
F04.05	抱闸打开比较阈值	0.0~200.0%	2	0x7405
F04.06	抱闸打开延迟时间	0.00~10.00s	0	0x7406
F04.07	抱闸闭合转速阈值	1.0~200.0%	1	0x7407
F04.08	抱闸闭合延迟时间	0.00~10.00s	0	0x7408
F04.10	抱闸反馈点来源	0:无效 1:有效 2~6:DI0~DI4 7~10:预留 其它:二进制互联参数	0	0x740A
F04.12	抱闸闭合比较值来源	0:00 其它:模拟量互联参数	2311	0x740C
F04.13	抱闸打开马达电流比较阈值	0.0~200.0%	50	0x740D
F04.16	抱闸打开机械动作时间	0.00~10.00S	0.5	0x7410
F04.17	抱闸闭合机械动作时间	0.00~10.00S	0.5	0x7411
F04.18	再启动抱闸控制	0:抱闸不动作 1:抱闸动作	1	0x7412
F04.19	再启动等待时间	0.00~10.00s	0.5	0x7413

功能码	名称	设定范围	出厂值	通讯地址
P00组:硬件状态（二进制互联）				0xE000
P00.00	逻辑0	0	0	0xE000
P00.01	逻辑1	1	1	0xE001
P00.02	多功能数字输入DI0	0~1	0	0xE002
P00.03	多功能数字输入DI1	0~1	0	0xE003
P00.04	多功能数字输入DI2	0~1	0	0xE004
P00.05	多功能数字输入DI3	0~1	0	0xE005
P00.06	多功能数字输入DI4	0~1	0	0xE006
P00.10	多功能数字输入DI0取反	0~1	0	0xE00A
P00.11	多功能数字输入DI1取反	0~1	0	0xE00B
P00.12	多功能数字输入DI2取反	0~1	0	0xE00C
P00.13	多功能数字输入DI3取反	0~1	0	0xE00D
P00.14	多功能数字输入DI4取反	0~1	0	0xE00E
P00.18	多功能数字输出DO0	0~1	0	0xE012
P00.19	多功能数字输出DO1	0~1	0	0xE013
P00.20	多功能数字输出DO0取反	0~1	0	0xE014
P00.21	多功能数字输出DO1取反	0~1	0	0xE015
P01组:系统控制字与状态字（二进制互联）				0xE100
P01.00	开机准备好	0~1	0	0xE100
P01.01	运行准备好	0~1	0	0xE101
P01.02	运行	0~1	0	0xE102
P01.03	故障激活	0~1	0	0xE103
P01.06	开机封锁	0~1	0	0xE106
P01.07	报警激活	0~1	0	0xE107
P01.09	比较值到达	0~1	0	0xE109
P01.11	抱闸打开中	0~1	0	0xE10B
P01.12	速度正向	0~1	0	0xE10C
P01.13	IGBT运行	0~1	0	0xE10D
P01.14	点动运行有效	0~1	0	0xE10E
P01.15	预励磁启动	0~1	0	0xE10F
P01.16	开启直流制动	0~1	0	0xE110
P01.20	开机未准备好	0~1	0	0xE114
P01.21	运行未准备好	0~1	0	0xE115
P01.22	未运行	0~1	0	0xE116

功能码	名称	设定范围	出厂值	通讯地址
P01组:系统控制字与状态字(二进制互联)				0xE000
P01.23	无故障	0~1	0	0xE117
P01.26	开机未封锁	0~1	0	0xE11A
P01.27	无报警	0~1	0	0xE11B
P01.29	比较值未到达	0~1	0	0xE11D
P01.31	抱闸闭合中	0~1	0	0xE11F
P01.32	速度负向	0~1	0	0xE120
P01.33	IGBT封锁	0~1	0	0xE121
P01.34	点动运行无效	0~1	0	0xE122
P01.35	预励磁完成	0~1	0	0xE123
P01.36	直流制动结束	0~1	0	0xE124
P01.44	RFG加速	0~1	0	0xE12C
P01.45	RFG减速	0~1	0	0xE12D
P01.46	RFG恒速	0~1	0	0xE12E
P01.58	抱闸已打开	0~1	0	0xE13A
P01.59	抱闸已闭合	0~1	0	0xE13B
P01.60	抱闸无法打开	0~1	0	0xE13C
P01.61	抱闸无法闭合	0~1	0	0xE13D
P01.62	马达预过载状态	0~1	0	0xE13E
P01.63	零速给定运行	0~1	0	0xE13F
P01.64	直流母线带电标志	0~1	0	0xE140
P01.65	马达速度为零	0~1	0	0xE141
P01.66	PID功能生效	0~1	0	0xE142
P01.67	PID运算使能	0~1	0	0xE143
P01.68	PID作用方向	0~1	0	0xE144
P01.69	PID给定冻结使能	0~1	0	0xE145
P01.70	PID积分分量强制使能	0~1	0	0xE146
P01.71	PID偏差死区使能	0~1	0	0xE147
P01.72	PID饱和状态	0~1	0	0xE148
P01.73	马达过温保护标志	0~1	0	0xE149
P01.74	马达过温警告标志	0~1	0	0xE14A
P01.75	马达选择bit0	0~1	0	0xE14B
P01.77	RFG选择bit0	0~1	0	0xE14D
P01.78	RFG选择bit1	0~1	0	0xE14E
P01.79	多段给定选择1	0~1	0	0xE14F
P01.80	多段给定选择2	0~1	0	0xE150
P01.81	多段给定选择3	0~1	0	0xE151
P01.84	抱闸控制反馈标志	0~1	0	0xE154
P01.85	RFG运行标志	0~1	0	0xE155

功能码	名称	设定范围	出厂值	通讯地址
P02组:FBA与故障标识（二进制互联）				0xE200
P02.32	Modbus通讯启停命令	0~1	0	0xE220
P02.33	Modbus通讯点动启停	0~1	0	0xE221
P02.35	Modbus通讯故障复位	0~1	0	0xE223
P02.36	Modbus通讯反向运行命令	0~1	0	0xE223
P03组:逻辑算术模块（二进制互联）				0xE300
P03.00	逻辑与模块A输出	0~1	0	0xE300
P03.01	逻辑与模块B输出	0~1	0	0xE301
P03.04	逻辑非模块A输出	0~1	0	0xE304
P03.05	逻辑非模块B输出	0~1	0	0xE305
P03.06	逻辑非模块C输出	0~1	0	0xE306
P03.07	逻辑非模块D输出	0~1	0	0xE307
P03.12	逻辑或模块A输出	0~1	0	0xE30C
P03.13	逻辑或模块B输出	0~1	0	0xE30D
P03.20	逻辑延时模块A输出	0~1	0	0xE314
P03.21	逻辑延时模块B输出	0~1	0	0xE315
P03.24	比较模块A大于标志	0~1	0	0xE318
P03.25	比较模块A等于标志	0~1	0	0xE319
P03.26	比较模块A小于标志	0~1	0	0xE31A
P03.27	比较模块B大于标志	0~1	0	0xE31B
P03.28	比较模块B等于标志	0~1	0	0xE31C
P03.29	比较模块B小于标志	0~1	0	0xE31D
P03.32	绝对值模块A输入量符号	0~1	0	0xE320
P03.33	绝对值模块B输入量符号	0~1	0	0xE321
P03.34	绝对值模块A溢出标志	0~1	0	0xE322
P03.35	绝对值模块B溢出标志	0~1	0	0xE323

功能码	名称	设定范围	出厂值	通讯地址
P02组:FBA与故障标识（二进制互联）				0xE200
P03.36	加法模块A溢出标志	0~1	0	0xE324
P03.37	加法模块B溢出标志	0~1	0	0xE325
P03.39	减法模块A溢出标志	0~1	0	0xE327
P03.40	减法模块B溢出标志	0~1	0	0xE328
P06组:运行状态与外设（模拟量互联）				0xE600
P06.00	当前状态机	0~65535	0	0xE600
P06.01	目标频率	0~65535	0	0xE601
P06.02	给定频率	0~65535	0	0xE602
P06.03	输出频率	0~65535	0	0xE603
P06.04	目标速度	0~65535	0	0xE604
P06.05	给定速度	0~65535	0	0xE605
P06.06	马达转速	0~65535	0	0xE606
P06.07	输出电压	0~65535	0	0xE607
P06.08	输出电流	0~65535	0	0xE608
P06.09	输出功率	0~65535	0	0xE609
P06.10	给定转矩	0~65535	0	0xE60A
P06.11	输出转矩	0~65535	0	0xE60B
P06.12	转矩电流	0~65535	0	0xE60C
P06.13	励磁电流	0~65535	0	0xE60D
P06.14	直流母线电压	0~65535	0	0xE60E
P06.15	散热器温度	0~65535	0	0xE60F
P06.30	模拟量输入AI转换结果	0~65535	0	0xE61E
P06.31	电位器输入	0~65535	0	0xE61F
P06.34	控制板AO输出值	0~65535	0	0xE622
P07组:通信（模拟量互联）				0xE700
P07.32	Modbus控制命令	0	0	0xE720
P07.33	Modbus通讯设定值1	0	0	0xE721
P07.34	Modbus通讯设定值2	0	0	0xE722
P07.35	Modbus通讯设定值1标幺值	0	0	0xE723
P07.36	Modbus通讯设定值2标幺值	0	0	0xE724

中文

功能码	名称	设定范围	出厂值	通讯地址
P08组:逻辑算术模块（模拟量互联）				0xE800
P08.00	加法模块A输出	0~65535	0	0xE800
P08.01	加法模块B输出	0~65535	0	0xE801
P08.04	减法模块A输出	0~65535	0	0xE804
P08.05	减法模块B输出	0~65535	0	0xE805
P08.24	绝对值模块A输出	0~65535	0	0xE818
P08.25	绝对值模块B输出	0~65535	0	0xE819
P08.41	数据选择器A输出	0~65535	0	0xE829
P08.42	数据选择器B输出	0~65535	0	0xE82A
P09组:工艺应用（模拟量互联）				0xE900
P09.00	过程PID输出量（限幅后）	0~65535	0	0xE900
P09.01	过程PID输出量（限幅前）	0~65535	0	0xE901
P09.02	过程PID比例输出	0~65535	0	0xE902
P09.03	过程PID积分输出	0~65535	0	0xE903
P09.04	过程PID微分输出	0~65535	0	0xE904
P09.05	过程PID给定量	0~65535	0	0xE905
P09.06	过程PID反馈量	0~65535	0	0xE906
P09.07	过程PID偏差值	0~65535	0	0xE907
P09.08	过程PID无附加值前偏差值	0~65535	0	0xE908

功能码	名称	设定范围	出厂值	通讯地址
P10组:性能内部变量（模拟量互联）				0xEA00
P10.00	M轴给定电流	0~65535	0	0xEA00
P10.01	M轴反馈电流	0~65535	0	0xEA01
P10.02	T轴给定电流	0~65535	0	0xEA02
P10.03	T轴反馈电流	0~65535	0	0xEA03
P10.04	给定频率	0~65535	0	0xEA04
P10.05	反馈频率	0~65535	0	0xEA05
P10.06	同步频率	0~65535	0	0xEA06
P10.07	编码器频率	0~65535	0	0xEA07
P10.08	PM监控变量8	0~65535	0	0xEA08
P10.09	PM监控变量9	0~65535	0	0xEA09
P10.10	M轴给定电压	0~65535	0	0xEA0A
P10.11	T轴给定电压	0~65535	0	0xEA0B
P10.12	PM监控变量12	0~65535	0	0xEA0C
P10.13	PM监控变量13	0~65535	0	0xEA0D
P10.14	PM监控变量14	0~65535	0	0xEA0E
P10.15	PM监控变量15	0~65535	0	0xEA0F
P10.16	PM监控变量16	0~65535	0	0xEA10
P10.17	PM监控变量17	0~65535	0	0xEA11
P10.18	PM监控变量18	0~65535	0	0xEA12
P10.19	CRC校验计数	0~65535	0	0xEA13
P10.20	PM监控变量20	0~65535	0	0xEA14
P10.21	PM监控变量21	0~65535	0	0xEA15
P10.22	PM监控变量22	0~65535	0	0xEA16
P10.23	PM监控变量23	0~65535	0	0xEA17
P10.24	PM监控变量24	0~65535	0	0xEA18
P10.25	PM监控变量25	0~65535	0	0xEA19
P10.26	监控通道1	0~65535	0	0xEA1A
P10.27	监控通道2	0~65535	0	0xEA1B
P10.28	监控通道3	0~65535	0	0xEA1C
P10.29	监控通道4	0~65535	0	0xEA1D
P10.30	PM监控变量30	0~65535	0	0xEA1E
P10.31	PM监控变量31	0~65535	0	0xEA1F
P10.32	状态机	0~65535	0	0xEA20
P10.33	U相电流	0~65535	0	0xEA21
P10.34	V相电流	0~65535	0	0xEA22
P11组:功能内部变量（模拟量互联）				0xEB00
P11.00	固定值0%	0~65535	0	0xEB00
P11.01	固定值100%	0~65535	0	0xEB01
P11.02	固定值200%	0~65535	0	0xEB02
P11.03	固定值400%	0~65535	0	0xEB03
P11.04	固定值600%	0~65535	0	0xEB04
P11.05	固定值-100%	0~65535	0	0xEB05
P11.06	固定值-200%	0~65535	0	0xEB06
P11.07	固定值-400%	0~65535	0	0xEB07
P11.08	固定值-600%	0~65535	0	0xEB08

功能码	名称	设定范围	出厂值	通讯地址
P13组:系统给定与反馈（模拟量互联）				0xED00
P13.00	马达实际速度	0~65535	0	0xED00
P13.01	马达最终设定速度	0~65535	0	0xED01
P13.02	主速度给定	0~65535	0	0xED02
P13.03	辅速度给定	0~65535	0	0xED03
P13.04	正反转限制前速度给定	0~65535	0	0xED04
P13.05	限幅前速度给定	0~65535	0	0xED05
P13.06	限幅后速度给定	0~65535	0	0xED06
P13.07	最小速度限制后速度给定	0~65535	0	0xED07
P13.08	RFG输入速度给定	0~65535	0	0xED08
P13.09	RFG输出速度给定	0~65535	0	0xED09
P13.10	附加速度给定	0~65535	0	0xED0A
P13.11	功能最终给定速度	0~65535	0	0xED0B
P13.12	RFG模块输入值	0~65535	0	0xED0C
P13.13	电机转动圈数低位	0~65535	0	0xED0D
P13.14	电机转动圈数高位	0~65535	0	0xED0E
P13.15	正向最大速度	0~65535	0	0xED0F
P13.16	负向最大速度	0~65535	0	0xED10
P13.22	电动电位器输出	0~65535	0	0xED16
P13.23	多段给定选择输出	0~65535	0	0xED17
P13.24	多段给定值1	0~65535	0	0xED18
P13.25	多段给定值2	0~65535	0	0xED19
P13.26	多段给定值3	0~65535	0	0xED1A
P13.27	多段给定值4	0~65535	0	0xED1B
P13.28	多段给定值5	0~65535	0	0xED1C
P13.29	多段给定值6	0~65535	0	0xED1D
P13.30	多段给定值7	0~65535	0	0xED1E
P13.31	多段给定值8	0~65535	0	0xED1F

6. Modbus－RTU协议

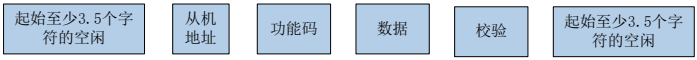
博能传动AM系列驱动器使用标准RS485通讯接口，采用Modbus通讯协议，支持驱动器与上位机或PLC进行串行通讯。AM系列驱动器的通讯协议包含三个层次：物理层、数据链路层和应用层。物理层和数据链路层采用了基于RS485的Modbus协议，应用层包含了控制AM系列驱动器运行、停止、参数读写等各种操作方法。

Modbus 协议为主从式协议。主机和从机之间的通讯有两类：主机请求，从机应答；主机广播，从机不应答。任何时候总线上只有一个设备在进行发送。主机对从机进行轮询，从机在未获得主机的命令情况下不能发送报文。主机在通讯不正确时可重复发命令，如果在给定的时间内没有收到回应，则认为所轮询的从机丢失。如果从机不能执行某一报文，则向主机发送一个异常信息。从机之间不能直接通讯，必须通过主机的软件，读出一个从机的数据，再发送到另一个从机。从机地址的范围：0至247，地址0的报文为广播报文。

6.1 RTU数据帧

在RTU模式中，RTU数据帧由多个字符帧组成。每个字符帧的数据格式和发送顺序为：1个起始位＋8 个数据位（低位先发送）＋1 个奇偶校验位或无校验位＋1 个或 2 个停止位。

在RTU模式中，新帧总是以至少 3.5 个字符帧的传输时间静默作为开始，即每两个RTU数据帧之间至少要间隔3.5个字符帧传输时间。



一个帧的信息必须以一个连续的数据流进行传输，如果整个帧传输结束前有超过1.5个字符帧以上的间隔时间，接收设备将清除这些不完整的信息，并错误认为随后一个字符帧是新一帧的地址域部分，同样的，如果一个新帧的开始与前一个帧的间隔时间小于3.5个字符帧时间。接收设备将认为它是前一帧的继续，由于帧的错乱，最终CRC校验值不正确，导致通讯故障。

中文

AM系列驱动器支持 RTU（远程终端单元）模式的 Modbus 协议。AM系列驱动器支持的 Modbus 功能码如下：

命令码及通讯数据描述：

功能码	含义	广播	最多个数	说明
03H	读多个寄存器	否	5	
06H	写单个寄存器	是	1	
10H	写多个寄存器	是	5	

6.2 Modbus的命令码

命令码:03H

功能码03H,读取N个字(Word,16bit数据),最多可以连续读取16个字。

例如:从机地址为0x01的驱动器,读取电机目标速度,给定速度,当前电机转速,Modbus逻辑起始地址为0x2004,读取连续3个字,则该帧的结构描述如下:

主机请求帧信息:

START	T1-T2-T3-T4
从机地址	0x01
Modbus 功能码	0x03
地址高位	0x20
地址低位	0x04
读取字数高位	0x00
读取字数低位	0x03
CRC 低位	0x4F
CRC 高位	0xCA

从机正常应答:

START	T1-T2-T3-T4
从机地址	0x01
Modbus 功能码	0x03
返回数据字节数	0x06
第一个数据高位	0x05
第一个数据低位	0xDC
第二个数据高位	0x00
第二个数据低位	0x00
…	
第 N 个数据高位	0x00
第 N 个数据低位	0x00
CRC低位	0xXX
CRC高位	0xXX

驱动器应答数据位:电机目标速度0x05DC(1500rpm),给定速度0x0000,当前电机转速0x0000

从机异常响应:

START	T1-T2-T3-T4
从机地址	0x01
Modbus 功能码	0x83
故障代码	0x02
CRC 低位	0x99
CRC 高位	0x2A

中文

命令码:06H

写一个字(Word)

例如:从机地址为0x01的驱动器,将驱动器的目标速度设置为100%,即Modbus逻辑地址0xE721写0x03E8,则该帧的结构描述如下:

RTU 主机请求帧信息:

START	T1-T2-T3-T4
从机地址	0x01
Modbus功能码	0x06
地址高位	0xE7
地址低位	0x21
数据高位	0x03
数据低位	0xE8
CRC低位	0xEF
CRC高位	0xCA

从机正常应答:

START	T1-T2-T3-T4
从机地址	0x01
Modbus功能码	0x06
地址高位	0xE7
地址低位	0x21
数据高位	0x03
数据低位	0xE8
CRC低位	0xEF
CRC高位	0xCA

中文

从机异常响应:

START	T1-T2-T3-T4
从机地址	0x01
Modbus功能码	0x86
故障代码	0x03
CRC低位	0x02
CRC高位	0x61

命令码:10H

写N个字(Word)

例如:从机地址为0x01的驱动器,将0x3500地址写3个数据。则该帧的结构描述如下:

RTU 主机请求帧信息:

START	T1-T2-T3-T4
从机地址	0x01
Modbus功能码	0x10
地址高位	0x35
地址低位	0x00
写的字数高位	0x00
写的字数低位	0x03
写字节总数	0x06
第一个数据高位	0x00
第一个数据低位	0x01
……	……
第 N 个数据高位	
第 N 个数据低位	
CRC低位	0xXX
CRC高位	0xXX

从机正常应答:

START	T1-T2-T3-T4
从机地址	0x01
Modbus功能码	0x10
地址高位	0x35
地址低位	0x00
数据高位	0x00
数据低位	0x03
CRC低位	0x8F
CRC高位	0xC4

从机异常响应:

START	T1-T2-T3-T4
从机地址	0x01
Modbus功能码	0x90
故障代码	0x03
CRC低位	0x0C
CRC高位	0x01

异常码

当Modbus-RTU帧请求的功能不正确时，驱动器将返回异常码。

代码	名称	含义
1	非法功能码	接收到不支持的功能码
2	非法地址	请求寄存器地址非法，或者寄存器地址和请求读数据个数组合是非法的
3	非法数据值	接收的数据域包含至少一个非法的数据值
4	非法请求数据个数	请求数据的个数大于最大个数
5	只读	只读
6	只能停机修改	只能停机修改

6.3.通讯帧错误校验

使用 RTU 帧格式，帧包括了基于 CRC 方法计算的帧错误检测域。CRC 域检测了整个帧的内容。CRC 域是两个字节，包含 1位的二进制值。它由传输设备计算后加入到帧中。接收设备重新计算收到帧的 CRC，前与接收到的 CRC域中的值比较，如果两个 CRC 值不相等，则说明传输有错误。CRC是先存入 0xFFFF，然后调用一个过程将帧中连续的6个以上字节与当前寄存器中的值进行处理。仅每个字符中的 8Bit 数据对 CRC 有效，起始位和停止位以及奇偶校验位均无效。CRC 产生过程中，每个 8 位字符都单独和寄存器内容相异或 (XOR)，结果向最低有效位方向移动，最高有效位以0填充。LSB 被提取出来检测，如果 LSB为1，寄存器单独和预置的值相异或，如果LSB为 0，则不进行。整个过程要重复 8 次。在最后一位（第 8 位）完成后，下一个 8位字节又单独和寄存器的当前值相异或。最终寄存器中的值，是帧中所有的字节都执行之后的 CRC 值。例如，需要传输“11001110”，数据中含 5 个“1”，如果用偶校验，其偶校验位为“1”，如果用奇校验，其奇校验位为“ 0 ”，传输数据时，奇偶校验位经过计算放在帧的校验位的位置，接收设备也要进行奇偶校验，如果发现接受的数据的奇偶性与预置的不一致，就认为通讯发生了错误。CRC 的这种计算方法，采用的是国际标准的 CRC 校验法则，用户在编辑CRC 算法时，可以参考相关标准的 CRC 算法，编写出真正符合要求的 CRC 计算程序。

中文

标准：CRC-16/MODBUS
多项式：x16+x15+x2+1(0x8501)
CRC初始值：0xFFFF
现在提供一个 CRC 计算的简单函数给用户参考（用 C 语言编程）：

```
unsigned int crc_cal_value(unsigned char *data_value,\
    unsigned char data_length)
{
    int i;
    unsigned int crc_value = 0xffff;
    while(data_length--)
    {
        crc_value ^= *data_value++;
        for(i=0; i<8; i++)
        {
            if(crc_value & 0x0001)
            {
                crc_value = (crc_value >> 1) ^ 0xa001;
            }
            else
            {
                crc_value = crc_value >> 1;
            }
        }
    }
    return crc_value;
}
```

6.4. Modbus相关功能码

在使用Modbus功能前，需先设置功能码C02组的Modbus配置参数，或者依照出厂值进行使用。

功能码	名称	设定范围	出厂值	通讯地址
C02组：Modbus 通讯设置				
C02.00	Modbus 波特率	0～7	7	0x4200
C02.01	Modbus 数据格式	0～3	2	0x4201
C02.02	Modbus 本机地址	1～247	1	0x4202
C02.04	Modbus 通讯超时	0.0无效，0.1s～60.0s	2	0x4204
P02组：二进制互联参数（系统控制字与状态）				
P02.32	Modbus 通讯启停命令	0～1	0	0xE220
P02.33	Modbus 通讯点动启停	0～1	0	0xE221
P02.35	Modbus 通讯故障复位	0～1	0	0xE223
P07组：模拟量互联参数（通信）				
P07.32	Modbus 控制命令	0	0	0xE720
P07.33	Modbus 通讯设定值1	0	0	0xE721
P07.34	Modbus 通讯设定值2	0	0	0xE722
P07.35	Modbus 通讯设定值1标幺值	0	0	0xE723
P07.36	Modbus 通讯设定值2标幺值	0	0	0xE724

6.5. Modbus控制命令表

Modbus控制命令P07.32为驱动器的Modbus专用控制命令，更改控制命令将同步更新P02组中的Modbus控制状态标志位。Modbus控制命令列表如下：

P07.32数值	标志位	功能描述	Modbus-RTU 帧
0x0001	P02.32=1	运行启动	01 06 E7 20 00 01 7F 74
0x0002	P02.33=1	点动运行	01 06 E7 20 00 02 3F 75
0x0004	P02.32=0, P02.33=0	减速停机	01 06 E7 20 00 04 BF 77
0x0005	P02.32=0, P02.33=0, P02.35=1	故障复位	01 06 E7 20 00 05 7E B7
其他	P02.32=0, P02.33=0, P02.35=0	重置参数	01 06 E7 20 00 06 3E B6

中文

6.6. 控制电机启停及速度设定示例

功能码设置

1. 通信相关参数设置

功能码编号	功能码名	设置值	说明
C02.00	Modbus 波特率	7:115200bps	
C02.01	Modbus 数据格式	3:8-N-1	
C02.02	Modbus 本机地址	1	
C02.04	Modbus 通讯超时	2	主机发送请求帧间隔不应超过两秒

2. 启停命令

功能码编号	功能码名	设置值	说明
B01.01	启停命令方式	2:IN1启动，IN2方向	
B01.03	启停命令输入IN1	10:Modbus启停命令或互联参数至P02.32	启动方式来源于Modbus的启停标志
B01.04	启停命令输入IN2	10.Modbus反向启停命令或互联参数至P02.36	方向控制来源于Modbus的方向标识

3. 点动来源

功能码编号	功能码名	设置值	说明
B01.11	端子控制模块JOG1来源	10:Modbus点动命令或互联参数至P02.33	选择点动1来源于Modbus的启停标志

中文

4. 故障复位来源

功能码编号	功能码名	设置值	说明
B00.13	故障复位来源	10:Modbus故障复位或互联参数至P02.35	选择故障复位来源于Modbus的控制故障复位标志

5. 速度来源

功能码编号	功能码名	设置值	说明
B02.00	速度控制主设定选择	10:Modbus速度设定值1或互联参数至P07.35	选择速度来源于Modbus的设定值

6. 速度反馈

功能码编号	功能码名		说明
A00.03	输出频率		读取以反馈电机当前输出频率

设置好功能码参数后,通过Modbus读写命令实现驱动器监测与控制。

Modbus-RTU帧设置

通过写功能码P07.32（0xE720）以及P07.33（0xE721）/P07.34（0xE722）可实现驱动器的基本控制。若设置了C02.04通讯超时值，需主机循环发送请求，循环间隔应低于C02.04中的值。

注意：不要使用Modbus写命令频繁的写入除P07.32~P07.34以外的功能码，否则可能会造成非易失存储器损害和系统报错。

1. 启停

主站发送请求：01 06 E7 20 00 01 7F 74启动（电机启动需要上升沿信号，可以先发复位命令01 06 E7 20 00 05 7E B7）

主站发送请求：01 06 E7 20 00 00 BE B4 停止

2. 点动

主站发送请求：01 06 E7 20 00 02 3F 75 点动启动

4. 正常停机

主站发送请求：01 06 E7 20 00 04 BF 77

5. 故障复位

主站发送请求：01 06 E7 20 00 05 7E B7

6. 设置速度

设置P07.33功能码的值，即可控制电机速度。对应的配置如下：

目标速度	P07.33	Modbus-RTU　　请求帧
100%	1000	01 06 E7 21 03 E8 EF CA
50%	500	01 06 E7 21 01 F4 EF 63
0%	0	01 06 E7 21 00 00 EF 74
-50%	-500	01 06 E7 21 FE 0C AF 11
-100%	-1000	01 06 E7 21 FC 18 AE 7E

7. 速度读取

主机发送请求：01 03 20 03 00 01 7F CA，从机响应01 03 02 XX XX YY YY，其中XX XX即为输出频率。

中文

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

中文

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

中文

Thank you very much for choosing Boneng Mini High Performance Vector Drive. Please read this manual carefully before installation and using, in order to use it correctly and safely.

EN

Contents

1 Safety precautions ---------- 51
2 Installation and connection ---------- 51
3 Commissioning ---------- 55
3.1 Operation panel ---------- 55
3.2 Motor control mode ---------- 57
3.3 Start-stop control ---------- 58
3.4 Speed set-point ---------- 59
4 Fault ---------- 60
5 Function code ---------- 63
6 Modbus-RTU protocol ---------- 97
6.1 RTU data frame ---------- 97
6.2 Modbus command code ---------- 98
6.3 Error checking of communication frame ---------- 101
6.4 Modbus related function codes ---------- 102
6.5 Modbus Control command table ---------- 102
6.6 Example of controlling motor start-stop and speed setting ---------- 103
7 After-sale service ---------- 105

EN

1 Safety precautions

Safety precautions

⚠WARNING!

√Only qualified professionals are allowed to install, operate and maintain the drive!

√Contact with live parts may cause physical injury. To check, first turn off the power, there is still high voltage inside the drive before the digital light goes out, DO NOT touch the internal terminals and circuits.

√Danger of fire if overheating due to insufficient ventilation space, so install it in a suitable environment.

√Each terminal can only be applied with the voltage specified in the manual, or it may cause failure or damage.

√Please connect correctly, otherwise it may cause damage to the drive or physical injury.

2 Installation and connection

Type designation key

AM - B 3 B30 -N -MB

Agile Mini drive

Voltage level
B= 400V AC

Input phase
3 = 3-phase input 3Φ

Power code
B30: 3kW
A40: 0.4kW

Internal filter code
N = Without internal filter

Communication protocol
MB=Modbus RTU

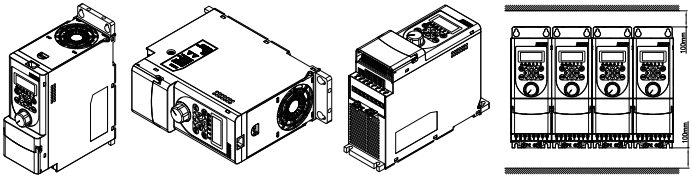
Installation environment

Ambient temperature	-20°C~+50°C(Unfrozen)
Ambient humidity	Blow 95% (No frost)
storage temperature	-40°C～+70°C
Surrounding environment	Indoor, No corrosive gas, No flammable gas, No combustible dust
Altitude	Without derating: blow 1000m
	With derating 1000~4000m
Degree of protection	IP20
Contamination level	Suitable for Class 2 environment

EN

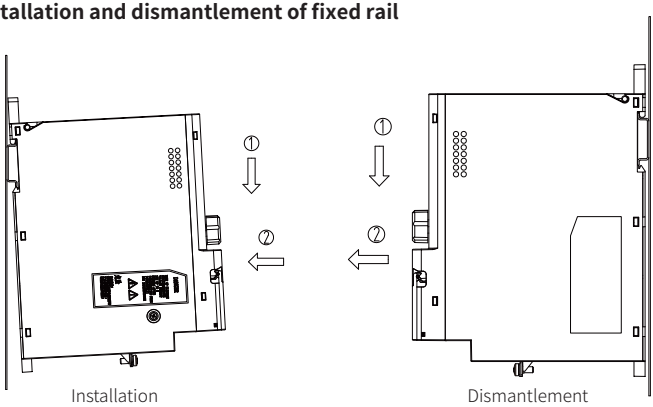
Installation

The drive should be installed vertically as shown in Figure (a), motor terminal and power terminal face down, and the fan faces up. Incorrect installation as Figure (b) and Figure (b). Figure (d) shows the side-by-side installation, leaving 100mm of space above and below.



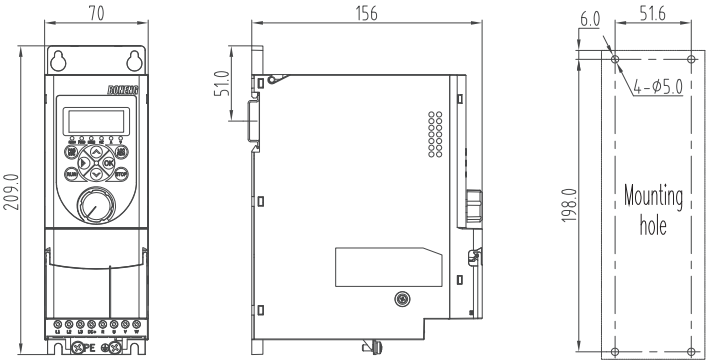
(a) (b) (c) (d)

Installation and dismantlement of fixed rail



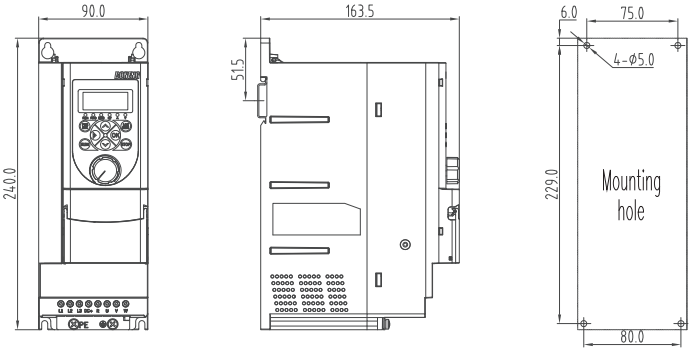
Overall and installation dimension

M1 (0.75kW-3kW)



EN

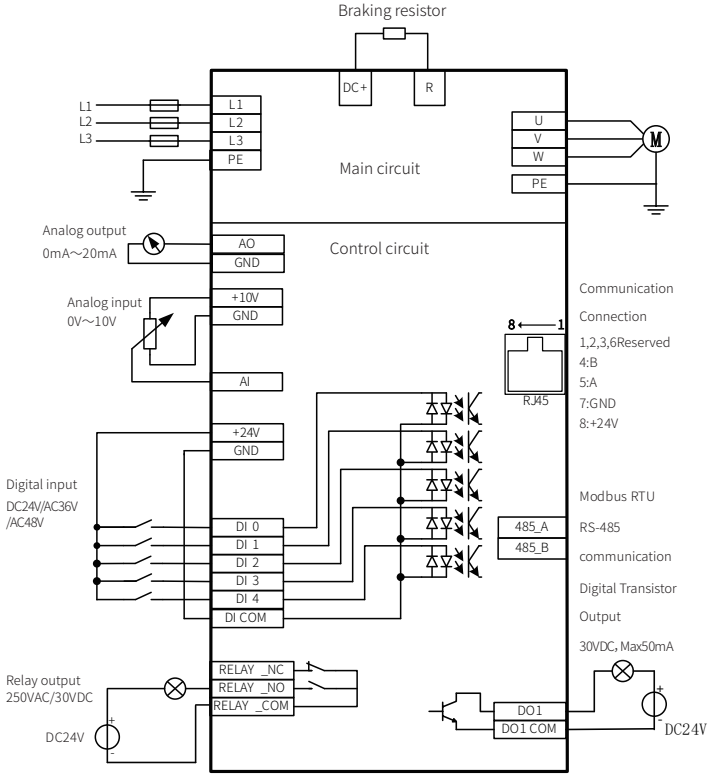
M2 (5.5kW)



Note: (1) The dimensions are given in millimeters;

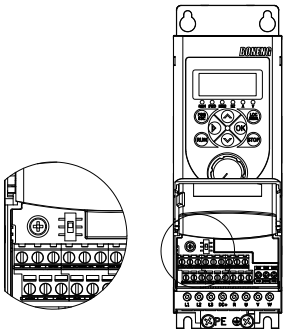
(2) Need 4 M4 combination screws and 4 M4 nuts to fix, Tightening torque: 2.5Nm.

Terminal connection diagram

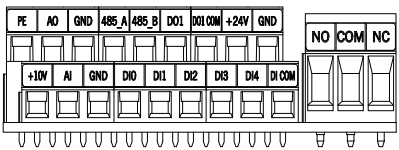


EN

Note: If the IT (ungrounded) system or corner grounded TN system are used, please remove the internal EMC grounding screw and replace it with the plastic screw provided by our company, otherwise, the inverter may be damaged. (The position of EMC grounding screw is shown in the figure below).



Control terminal strip



Function	Terminal name	Explanation and function description	Technical data
communication function	485_A	RS-485	•Support Modbus RTU •Optocoupler isolation
	485_B		
Output Power supply	+24V	Digital output terminal power supply 24V	24VDC ± 10%，200mA max.
	+10V	Analog input terminal power supply 10V	11.7VDC ± 5%Vdc，200mA max.
Digital input	DI0	5 digital inputs (DI)	•Compatible with bipolar output •Less than 5V is low, more than 11V is High •Support DC24V, AC36V, AC48V input
	DI1		
	DI2		
	DI3		
	DI4		
	DI_COM		
Analog input	AI	1 analog input(AI)	•Single-ended input •Support voltage type 0~10v •Error ±1%
Digital output	NO	1 relay input COM is common port, NO is normally open port, NC is normally closed port.	•Maximum switching voltage 30VDC/250VAC •Maximum continuous current 2A •Maximum switching curent 2A/30VDC;2A/230VAC
	COM		
	NC		
	DO1	1 digital transistor output	• 30VDC，50mA max
	DO1_COM		
Analog output	AO	1 Analog output (AO)	•Single-ended output •Current output, output range 0~20mA •Error: ±1%

Note: Noting the voltage and current specifications of the terminal to avoid damaging equipment When the control terminal is connected with external equipments

Note 2: Connection requirements of control signal:

●Analog signal: must use shielded cable, recommend to use twisted pair shielded cable. Each analog signal occupies a twisted pair, All shielding cables should be twisted into a bundle and connected to PE.

●Digital signal: recommend to use shielded cable, Unshielded twisted pair cable can also be used; the analog signal and digital signal should be routed separately using different cables.

●Relay signal: the relay signal with voltage less than 48Vcan be routed together with the digital signal.

●Cannot put 24V DC signal and 115/230V AC signal into a same cable.

●Wiring required for several control cabinets: install equipotential bonding for all control cabinets, connect shielded cables to the PE terminal.

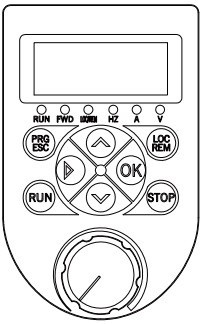
EN

3 Commissioning

3.1 Operation panel

● Integrated operation panel

Using the operation panel can modify the parameters of the drive, monitor the working state of the drive and control(start, stop) the drive etc., its shape and function area are shown in the figure below:



The operation panel is divided into nixie tube display area, LED area and key area

◆ Nixie tube display area

A total of 5 nixie tube displays, show set frequency, output frequency, various monitoring data and fault code

◆ LED area

Run: Green light on means the drive is running, green light off means the drive is in shutdown state.

LOC/REM: Green light on means operation panel get control of drive, green light off means the remote (or communication site) get control of drive.

Unit light: The indication of unit is composed by 3 LEDs.

◆ Potentiometer

Rotating the potentiometer can change the reference frequency of the drive.

● Functions of keys

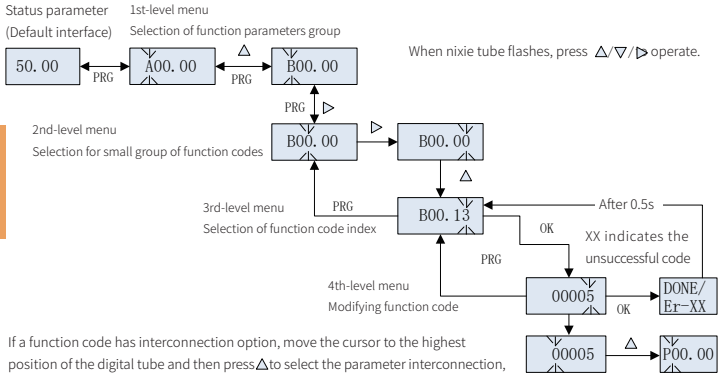
Key	Name	Function
PRG/ESC	Programming/ Return key	In the main monitoring interface, press this key to enter the function menun; in other interfaces, press this key to return to upper interface or status
LOC/REM	Local/Remote Key	Getting or giving up the control of operation panel.
STOP	Stop key	Press this key to stop the drive in running status; or reset the fault state in stop status.
RUN	Run key	Press it to start or stop drive in local mode.
▲	Increase key	Increase the data value or function code index.
▼	Decrease key	Decrease the data value or function code index.
▶	Shift key	Shift right to display the parameters circularly in stop and run interface, when modifying the parameter, the modification positon of the parameter can be selected.
OK	Confirm key	Press it to enter next menu or confirm set parameters

● Function code view, modify method description

The operation panel of Mini Drive adopts 4 level menus structure for parameter setting and other operations.

The 4 level menus are: Function parameters group (1st-level menu)→ selection of the function codes group (2nd-level menu)→ selection of function code (3rd-level menu)→ view and set the parameters of function code (4th-level menu).

Operation process is as follow:

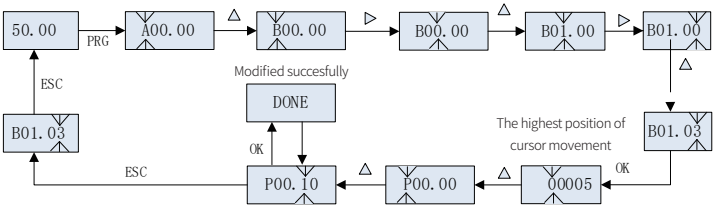


If a function code has interconnection option, move the cursor to the highest position of the digital tube and then press△to select the parameter interconnection, and press ▽ to cancel the parameter interconnection.

EN

Explanation: When modifying the value of the function code in 4th-level menu, the data can be written into the drive only by pressing OK key, if successful, DONE is displayed, otherwise displaying the error code Er-XX. Return to 4th-level menu after 0.5s. Press PRG/ESC to return to the default interface.

Example: Interconnect B01.03 to P00.10

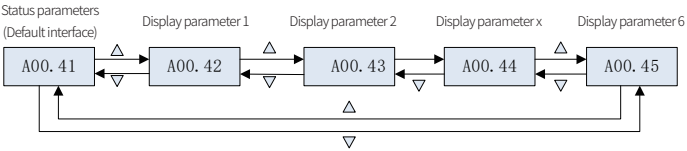


Result of the modification interface of function code

Interface display	Explanations of result
done	Modified successfully.
Er -01	Modification failed, not within the scope of modification.
Er -02	Modification failed, this parameter is read-only.
Er -03	Modification failed, no modification permission.
Er -04	Modification failed, modification can only be operated during shutdown.

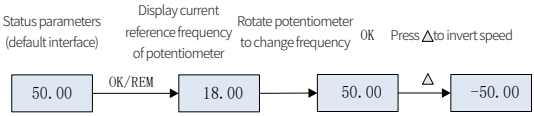
View monitoring parameters of drive

Default interface shows the monitoring parameters, the content of the parameter is determined by A00.41-A00.45, press △▽to scroll thr ough the monitoring parameters.



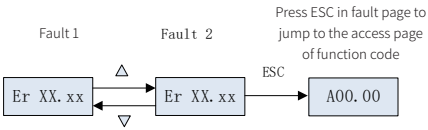
View the reference frequency of potentiometer and invert the speed

In default interface, press OK to view the frequency reference of potentiometer. After get the control, the interface will also jump to this interface. Press △▽to invert the speed of potentiometer.



Fault Display

When the drive has a fault or warning, the drive nixie tube interface jumps to the fault warning page, LED shows EXX.xx, where XX is the fault code, xx is the sub fault code. Warning flashes, shows AL XX.xx. Press STOP, the fault might be eliminated. After fault eliminated, LED returns to the default display interface.



EN

3.2 Control mode of motor

Mini drive supports VF and SVC control. We can set function code B05.00=0 to choose VF, and B05.00=1 to choose SVC

● **Motor parameters and their identification**

Mini drive supports VF and SVC control. We can set function code B05.00=0 to choose VF, and B05.00=1 to choose SVC

Function code	Name of parameters	Default value	Setting range	Description
D00.01	Rated motor power	Type dependent	0.00～655.35kW	Nameplate parameters of motor
D00.02	Rated motor voltage	Type dependent	0～1500V	
D00.03	Rated motor current	Type dependent	0.00～655.35A	
D00.04	Rated motor frequency	Type dependent	0.0～600.00Hz	
D00.05	Rated motor speed	Type dependent	0～65535rpm	

If vector control is selected to control the motor, accurate parameters of motor are needed, in order to get a better performance, it is necessary to identify the parameters of the controlled motor.

Function code	Name of parameter	Default value	Value scope	Description
B00.21	Identify requests	0	0～3	0：Null 1：Simple static ratio identification of asynchronous motor. 2：Complete static ratio identification of induction motor 3：Complete dynamic ratio identification of induction motor

The difference between the three parameter recognition modes is shown in the following table, please select according to the actual application:

Mode	Conditions of Use	Identification parameters	Description
Simple static ratio identification of asynchronous motor.	Motor cannot run	Stator resistance	
Complete static ratio identification of induction motor.	Motor cannot run	Stator resistance Rotor resistance Leakage inductance Mutual inductance No load current	Before identification, please ensure that motor is separated from the load machine and no danger in running. If the motor is connected to the load, the identification result may not be accurate enough.
Complete dynamic ratio identification of induction motor	Motor can run		

EN

The performance of vector control is easily affected by motor parameters, obtaining accurate motor parameters is the key to realize high performance vector control.

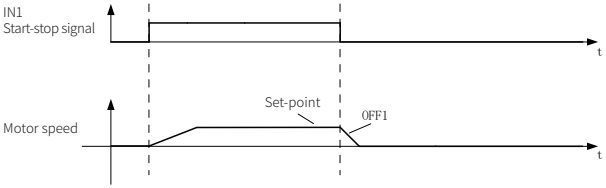
In order to obtain good driving performance and operating efficiency, it is necessary to identify the parameters of controlled motor, which can be manually input if accurate motor parameters are confirmed. Inaccurate motor parameters may cause the motor running abnormally.

3.3 Start-stop control

There are 6 ways to control the start, stop and direction of motor through DI terminal or interconnection parameter input, corresponding to the 6 options of control mode B01.01.

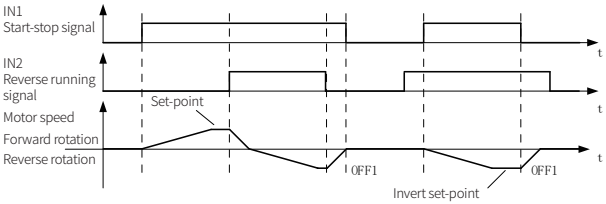
- **1.IN1 start**

IN1 controls the start and stop of the motor, the rotation direction of the motor is determined by the current connection phase of drive input.



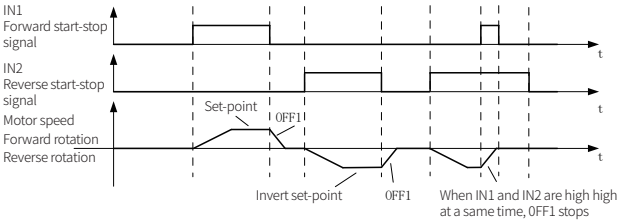
- **2.IN1 Start, IN2 direction**

IN1 controls start and stop, IN2 receives high level and then inverts speed



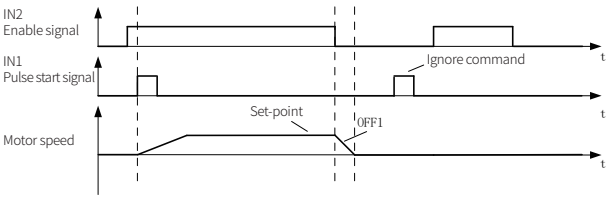
- **3.IN1 forward start, IN2 reverse start**

IN1 controls forward start and stop, IN2cntrols reverse start and stop.



- **4.IN1P start, IN2 stop**

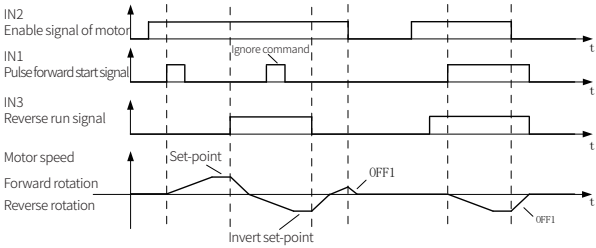
When IN2 is low, motor starting is disabled; when IN2 is high and IN1 receives pulse signal, the motor starts.



EN

● **IN1P start, IN2 stop, IN3 direction**

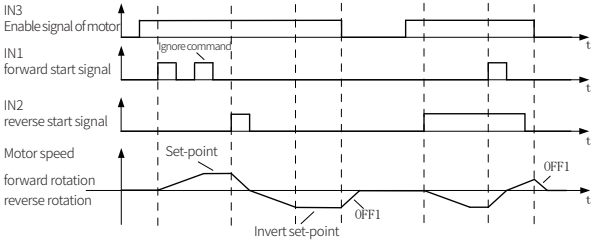
When IN2 receives low level, motor starting is prohibited; when IN2 receives high level, IN1 receives pulse signal, the motor starts. When IN3 receives high level, speed reverses.



● **6.IN1P forward start, IN2P reverse start, IN3 stop**

When IN3 receives low level, motor starting is diabled.

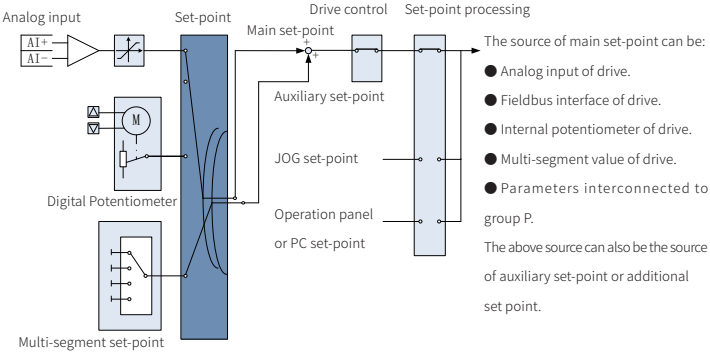
IN3 receives high level, IN1 receives pulse signal then the motor starts forwardly, IN2 receives pulse signal then the motor starts reversely.



3.4 Speed set-point

AM drive selects speed setting source through B02.00.

The main set-point is mostly the target speed set-point of motor.



EN

4 Fault

Index	Name of fault	Subcode of fault	Meaning of subcode	Countermeasures
1	Overcurrent	1	Overcurrent 1	1. Eliminate the problem of power line damage. 2. Check whether the wiring is short circuited. 3. Increase acceleration and deceleration time. 4. In VF control, reduce the boost of VF torque. 5. Make sure the motor stops stably before starting. 6. Reduce or cancel the lord. 7. In the vector control, please make sure whether the correct parameter recognition operation has been carried out. 8. Contact after-sales or manufacturer for technical support.
		2	Overcurrent 2	
		3	Overcurrent 3	
2	Overvoltage	1	Quick check the overvoltage of bus voltage	1. Check whether the input power is within a reasonable range. 2. Increase deceleration time. 3. Retrofit braking resistor re braking unit. 4. Contact after-sales or manufacturer for technical support.
3	Undervoltage	1	Bus undervoltage	1. Check whether the input power is within a reasonable range. 2. Make sure whether the power grid is powered off instantaneously. 3. Contact after-sales or manufacturer for technical support.
5	Drive overload	1	Drive overload	1. Verify that the drive is appropriate, or replace a large capacity drive. 2. In VF control, decrease the boost of VF torque. 3. In vector control, reduce torque limit. 4. Make sure whether the load is too high, or there is a locking situation such as holding brake. 5. In vector control, make sure whether the correct parameter self-learning operation is carried out. 6. Contact after-sales or manufacturer for technical support.
6	Motor overload	1	Motor overload	1. Make sure whether the motor load is too high. 2. 5. In vector control, make sure whether the motor parameter self-learning operation is carried out. 3. Make sure whether the load is too high, or there is a locking situation such as holding brake. 4. Make sure whether the motor nameplate parameters are set correctly 5. Contact after-sales or manufacturer for technical support.

EN

Index	Name of fault	Subcode of fault	Meaning of subcode	Countermeasures
7	Input phase loss	1	Check input phase loss	1. Check whether the power input cable is in good contact. 2. Contact after-sales or manufacturer for technical support.
8	Output phase loss	1	Input Imssing of phase U	1. Check whether the corresponding output cable is wired correctly and in a good contact. 2. Confirm whether the motor runs smoothly. 3. Contact after-sales or manufacturer for technical support.
		2	Input missing of phase V	
		3	Input missing of phase W	
		5	3-phase input seriously unbalanced	
		6	Stator resistor identifies the input phase loss	
		7	Input phase loss of SVC	
9	Drive overheating	1	Drive overheating	1. Make sure whether the ambient temperature is too high. 2. Check whether the cooling fan operates correctly. 3. Check whether the cooling air duct is blocked. 4. Contact after-sales or manufacturer for technical support.
11	Detecting errors of current zero drift	1	Zero drift of phase U too high	1.PM abnormality, Contact after-sales or manufacturer for technical support.
		2	Zero drift of phase V too high	
		3	Overcurrent in checking	
		4	Overvoltage in checking	
		2	Phase V overcurrent in case of short-circuit to ground	
		4	Phase W overcurrent in case of short-circuit to ground	
		5	Current of the short-circuit to ground exceeds the threshold	
		6	Overvoltage in short-circuit to ground	
13	Tuning failed	1	Dynamic tuning exception	1. Make sure whether the motor nameplate parameters are set correctly. 2. Contact after-sales or manufacturer for technical support.
		2	Static tuning failed	
15	Warning of vector stall	1	Speed reversed due the external force	1. Make sure whether the motor nameplate parameters are set correctly. 2. Make sure whether the motor parameter self-learning operation is carried out. 3. Check whether the parameter settings related to the stall are reasonable. 4. Contact after-sales or manufacturer for technical support.
		2	Excessive speed deviaton	
17	Drive power fault	1	Voltage of drive power is low	Contact after-sales or manufacturer for technical support.

EN

Index	Name of fault	Subcode of fault	Meaning of subcode	Countermeasures
21	Model setting error	1	Model exceeds upper limit	1. Confirm whether the drive model is consistent with the label. 2. Contact after-sales or manufacturer for technical support.
		2	Model exceeds lower limit	
33	Drive pre-overload of drive	1	Pre-warning of drive overload	1. Confirm the pre-overload function of the drive is on. 2. Contact after-sales or manufacturer for technical support.
34	Motor pre-overload	1	Pre-warning of motor overload	1. Confirm the pre-overload function of the drive is on. 2. Contact after-sales or manufacturer for technical support.
35	Communication exception	1	Exception disconnected when operation panel starts	1. Check whether the relevant communication cables of the drive are connected abnormally. 2. Check whether the communication timeout parameters are set reasonably, 3. Contact after-sales or manufacturer for technical support.
		2	Exception disconnected when operation panel starts.	
		3	Modbus communication failur	
37	Motor speed overrun	1	Motor speed exceeds the maximum speed limit.	1. Check whether the parameters related to motor overspeed are set reasonably. 2. Contact after-sales or manufacturer for technical support.
38	Deviation of motor speed is too high	1	The deviation between the motor speed and the given speed is too high.	1. Check whether the parameters related to the deviation of motor speed is set reasonably. 2. Contact after-sales or manufacturer for technical support.
40	PID feedback lost	1	PID sampling value lost	1. Check the input signal of PID feedback. 2. Contact after-sales or manufacturer for technical support.
41	External fault	1	Generating external fault 1	1. Check the external signal
43	Pre-drive failed	1	The bus voltage is not detected when the run command is generated	1. Check whether the external power supply voltage is abnormal. 2. Contact after-sales or manufacturer for technical support.
45	Hold-brake control abnormally	1	Hold-brake open abnormally	1. Check whether the external relay is abnormal 2. Contact after-sales or manufacturer for technical support.
		2	Hold-brake cllose abnormally	
51	Flash fault	1	Flash cannot be accessed	1. Power on again. 2. Check whether the frequency of modifying function code is too high. 3. Contact after-sales or manufacturer for technical support.
		2	Value of function code is not in the upper and lower limits	
		3	Readback error after Flash writing	
		4	Function modification times exceed limit	

EN

5 Function code

Function code	Name	Value scope	Default Value	Communication address
A00:Status Monitor and Set				0x2000
A00.00	Current state machine	S0~S30	0	0x2000
A00.01	Target Frequency	-327.68~327.67Hz	0	0x2001
A00.02	Given Frequency	-327.68~327.67Hz	0	0x2002
A00.03	Motor Frequency	-327.68~327.67Hz	0	0x2003
A00.04	Target speed	-32768~32767rpm	0	0x2004
A00.05	Given speed	-32768~32767rpm	0	0x2005
A00.06	Motor speed	-32768~32767rpm	0	0x2006
A00.07	Output voltage	0~1000V	0	0x2007
A00.08	Output current	0~655.35A	0	0x2008
A00.09	Output power	0~655.35kw	0	0x2009
A00.10	Given torque	-300.0~300.0%	0	0x200A
A00.11	Output torque	-300.0~300.0%	0	0x200B
A00.14	DC bus voltage	0~1000.0V	0	0x200E
A00.15	Radiator temperature	-40~150°	0	0x200F
A00.16	DI status	0~65535	0	0x2010
A00.17	DO status(System reservation)	0~65535	0	0x2011
A00.41	Power on display selection 1	0: Current state machine 1: Target frequency 2: Given frequency 3: Output frequency 4: Target speed 5: Given speed 6: Motor speed 7: Output voltage 8: Output current 9: Output power 10: Given torque 11: Output torque 12: System reservation 13: System reservation 14: DC bus voltage 15: Radiator temperature 16: DI status 17: D0 status	1	0x2029
A00.42	Power on display selection 2	Ditto	3	0x202A
A00.43	Power on display selection 3	Ditto	8	0x202B
A00.44	Power on display selection 4	Ditto	11	0x202C
A00.45	Power on display selection 5	Ditto	14	0x202D
A00.46	Power on display selection 6	Ditto	15	0x202E

EN

Function code	Name	Value scope	Default Value	Communication address
A01:Faults and Warnings				0x2100
A01.00	Current fault code 1	0~51	0	0x2100
A01.01	Sub-code of the fault code 1	0~65535	0	0x2101
A01.04	Current warning code 1	0~51	0	0x2104
A01.05	Sub-code of the warning code 1	0~65535	0	0x2105
A02:Drive Information and Set				0x2200
A02.00	Function Software Version	0.00~655.35	0	0x2200
A02.02	Performance Version number	0~65535	0	0x2202
A02.04	Rated power of PM power unit	0.00~655.35	0	0x2204
A02.05	Rated voltage of PM power unit	0~65535	0	0x2205
A02.06	Rated current of PM power unit	0.00~655.35	0	0x2206
A02.07	Function code version number	0.00~655.35	0	0x2207
A02.08	Version release time	0x0~0xFFFF	0	0x2208
A03:PM power Protect and Set				0x2300
A03.05	VU CUR DEV correction COEF	85.0%~115.0%	100	0x2305
A03.08	Carrier frequency setting	0.8~16.0kHz	4	0x2308
A03.09	Load mode selection	0: Light load 1: Heavy load	0	0x2309
A03.13	DPWM switching frequency	1.00Hz ~ 60.0Hz	8	0x230D
A03.16	Dead time compensation enable	0: Disable 1: Dead time compensation method1 2: Dead time compensation method2	1	0x2310
A03.19	Input phase loss detection	0: Disable 1: Enable	0	0x2313
A03.20	Braking resistance action point	600.0~800.OV	700	0x2314
A03.21	Software under-voltage point	60% ~ 150%	100	0x2315

EN

Function code	Name	Value scope	Default Value	Communication address
A04:System and Environment Set				0x2400
A04.00	Parameter reset mode	0:Invalid 1:Model PARAM,motor PARAM are not reset 2:Motor PARAM is not reset 3:Reset All Parameters 4:Clear fault record	0	0x2400
A04.01	Parameter reset	0: Cancel 1: Confirm	0	0x2401
A04.02	Parameter access level	0: Standard parameter 1: Extended parameter 2: Expert parameter 3: Manufacturer parameter	0	0x2402
A04.03	Manufacturer password	0~65535	0	0x2403
A04.05	Motor select source 0	0:00 1:01 2~6:DI0~DI4 7~10:Reserved Others:Binary interconnection parameters	0	0x2405
A05:Digital Input				0x2500
A05.00	DI physical state value	0x0~0xFFFF	0x0	0x2500
A05.02	DI state value after treatment	0x0~0xFFFF	0x0	0x2502
A05.04	DI forced selection	0x0~0xFFFF	0x0	0x2504
A05.06	DI mandatory data	0x0~0xFFFF	0x0	0x2506
A05.08	DI0 opening delay	0.0~6553.5S	0	0x2508
A05.09	DI0 off delay	0.0~6553.5S	0	0x2509
A05.10	DI1 opening delay	0.0~6553.5S	0	0x250A
A05.11	DI1 off delay	0.0~6553.5S	0	0x250B
A05.12	DI2 opening delay	0.0~6553.5S	0	0x250C
A05.13	DI2 off delay	0.0~6553.5S	0	0x250D
A05.14	DI3 opening delay	0.0~6553.5S	0	0x250E
A05.15	DI3 off delay	0.0~6553.5S	0	0x250F
A05.16	DI4 opening delay	0.0~6553.5S	0	0x2510
A05.17	DI4 off delay	0.0~6553.5S	0	0x2511

Function code	Name	Value scope	Default Value	Communication address
A06:Digital Output				0x2600
A06.00	DO signal source status value	0x0~0xFFFF	0x0	0x2600
A06.01	Status value after DO process	0x0~0xFFFF	0x0	0x2601
A06.02	Output FUNC SEL of DO0 (relay)	0: Low level 1: High level 2: Running ready 3: Running allowed 4: Running 5: Comparison value reached 6: Reverse speed 7: Running at zero speed 8: Over speed 9: Warning 10: Fault Others:Binary interconnection parameters	4	0x2602
A06.03	Output FUNC SEL of DO1	Same as A06.02	10	0x2603
A06.09	Do0 (relay) on delay	0.0~6553.5S	0	0x2609
A06.10	DO0 (relay) turn-off delay	0.0~6553.5S	0	0x260A
A06.11	DO1 (transistor) turn-on delay	0.0~6553.5S	0	0x260B
A06.12	DO1 (transistor) turn-off delay	0.0~6553.5S	0	0x260C
A07:Analog Input				0x2700
A07.00	AI input values	0.000 ~ 10.000	0	0x2700
A07.01	AI input ratio	-600.0% ~ 600.0%	0	0x2701
A07.02	Potentiometer input value	0.000 ~ 3.000	0	0x2702
A07.03	Potentiometer input ratio	-600.0% ~ 600.0%	0	0x2703
A07.04	AI type	0: Reserved 1: 0~10V	1	0x2704
A07.06	AI curve minimum input value	0.000 ~ 10.000	0	0x2706
A07.07	AI curve minimum input ratio	-600.0% ~ 600.0%	0	0x2707
A07.08	AI curve maximum input value	0.000 ~ 10.000	10	0x2708
A07.09	AI curve maximum input ratio	-600.0% ~ 600.0%	100	0x2709
A07.10	Potentiometer Min input value	0.000 ~ 3.000	0.1	0x270A

EN

Function code	Name	Value scope	Default Value	Communication address
A07:Analog Input				0x2700
A07.11	Potentiometer Min input ratio	-600.0% ~ 600.0%	0	0x270B
A07.12	Potentiometer Max input value	0.000 ~ 3.000	2.9	0x270C
A07.13	Potentiometer Max input ratio	-600.0% ~ 600.0%	100	0x270D
A07.14	AI below Min input setting SEL	00~11	0	0x270E
A07.15	AI filtering time	0~10000ms	10	0x270F
A07.16	Potentiometer filter time	0~10000ms	10	0x2710
A08:Analog Output				0x2800
A08.00	AO output value	0.00 ~ 20.00	0	0x2800
A08.01	AO output ratio	-600.0% ~ 600.0%	0	0x2801
A08.04	AO signal source	0:00 1: Motor speed 2: Synchronous frequency 3: Output current 4: Output torque 5: DC bus voltage 6: Output power 7: RFG input 8: RFG output 9: Speed reference 10: Reserved Others:Analog interconnection parameters	0	0x2804
A08.08	AO curve minimum output ratio	-600.0% ~ 600.0%	0	0x2808
A08.09	AO curve minimum output value	0.00 ~ 20.00	4	0x2809
A08.10	AO curve maximum output ratio	-600.0% ~ 600.0%	100	0x280A
A08.11	AO curve maximum output value	0.00 ~ 20.00	20	0x280B

EN

Function code	Name	Value scope	Default Value	Communication address
B00:System Ctrl and Set				0x3000
B00.11	OFF3 source	0: Valid 1: Invalid 2~6:DI0~DI4 7~10:Reserved Others:Binary interconnection parameters	1	0x300B
B00.13	Fault reset source	0: Invalid 1: Valid 2~6:DI0~DI4 7~9:Reserved 10: Modbus fault reset Others:Binary interconnection parameters	0	0x300D
B00.21	Identification request	0: None 1: Simple static identification of asynchronous machine 2: Complete static identification of asynchronous machine 3: Dynamic complete identification of asynchronous machine	0	0x3015
B00.23	OFF1 shutdown mode	0: Coast to stop 1: Decelerate to stop	1	0x3017
B00.24	OFF3 downtime	0.0s ~ 1000.0s	10	0x3018
B01:Terminal control module				0x3100
B01.01	Start-stop Ctrl command mode	0: Invalid 1: IN1 start 2: IN1 start, IN2 direction 3: IN1 forward start, IN2 reverse start 4: IN1P start, IN2 stop 5: IN1P start, IN2 stop, IN3 direction 6: IN1P forward start, IN2P starts in reverse, IN3 stops	3	0x3101

EN

Function code	Name	Value scope	Default Value	Communication address
B01:Terminal controlmodule				0x3100
B01.03	Start-stop Ctrl commandinput 1	0: Invalid 1: Reserved 2~6:DI0~DI4 7~9:Reserved 10: Modbusstart/stop command Others:Binary interconnection parameters	2	0x3103
B01.04	Start-stop Ctrl commandinput 2	0: Invalid 1: Reserved 2~6:DI0~DI4 7~9:Reserved 10: Modbusreverse start/stopcommand Others:Binary interconnection parameters	3	0x3104
B01.05	Start-stop Ctrl commandinput 3	0: Invalid 1: Reserved 2~6:DI0~DI4 7~10:Reserved Others:Binary interconnection parameters	4	0x3105
B01.11	JOG1 source	0: Invalid 1: Reserved 2~6:DI0~DI4 7~9:Reserved 10: Modbusjog command Others:Binary interconnection parameters	0	0x310B
B01.12	JOG2 source	0: Invalid 1: Reserved 2~6:DI0~DI4 7~9:Reserved 10: Modbusjog command Others:Binary interconnection parameters	0	0x310C

EN

Function code	Name	Value scope	Default Value	Communication address
B02:Command Source Settings				0x3200
B02.00	Speed Ctrl main setting SEL	0:00 1: Multi-stage set value 1 2: AI 3: Internal potentiometer 4~5: Reserved 6: Multi-stage value given 7: Motorized potentiometer 8~9: Reserved 10: MB setting Scaling unit value 1 Others: Analog interconnection parameters	1	0x3200
B02.01	Speed Ctrl AUX setting SEL	Ditto	0	0x3201
B02.02	Additional speed setting	Ditto	0	0x3202
B03:Others of Command SRC Set				0x3300
B03.00	JOG1 given settings	0:00 1: Multi-stage set value 1 2: AI 3: Internal potentiometer 4~5: Reserved 6: Multi-stage value given 7: Motorized potentiometer 8~9: Reserved 10: MB setting Scaling unit value 1 Others: Analog interconnection parameters	1	0x3300
B03.01	JOG2 given settings	Ditto	0	0x3301
B03.02	JOG acceleration time	0.0~1000.0S	10	0x3302
B03.03	JOG deceleration time	0.0~1000.0S	10	0x3303
B03.04	Electric potentiometer	0: Disable 1: Enable	1	0x3304
B03.05	Electric POT initial value	-600.0~600.0%	0	0x3305
B03.06	Electric POT ramp time	0.0~1000.0S	10	0x3306
B03.07	Minimum value of electric POT	-600.0~600.0%	0	0x3307

EN

Function code	Name	Value scope	Default Value	Communication address
B03:Others of CommandSRC Set				0x3300
B03.08	Maximum value of electric POT	-600.0~600.0%	100	0x3308
B03.09	Electric POT adds sourceSEL	0:00 1:01 2~6:DI0~DI4 7~10:Reserved Others:Binary interconnection parameters	0	0x3309
B03.10	SEL of drop SRC of ELEC POT	Ditto	0	0x330A
B03.11	Multisegmentgiven value	-600.0~600.0%	0	0x330B
B03.12	Multisegmentgiven value SEL 1	0:00 1:01 2~6:DI0~DI4 7~10:Reserved Others:Binary interconnection parameters	0	0x330C
B03.13	Multisegmentgiven value SEL 2	Ditto	0	0x330D
B03.14	Multisegmentgiven value SEL 3	Ditto	0	0x330E
B03.16	Multisegmentset point1	-600.0~600.0%	10	0x3310
B03.17	Multisegmentset point2	-600.0~600.0%	20	0x3311
B03.18	Multisegmentset point3	-600.0~600.0%	30	0x3312
B03.19	Multisegmentset point4	-600.0~600.0%	-10	0x3313
B03.20	Multisegmentset point5	-600.0~600.0%	-20	0x3314
B03.21	Multisegmentset point6	-600.0~600.0%	-30	0x3315
B03.22	Multisegmentset point7	-600.0~600.0%	0	0x3316
B03.23	Multisegmentset point8	-600.0~600.0%	0	0x3317

EN

Function code	Name	Value scope	Default Value	Communication address
B04:Ramp Function Generator				0x3400
B04.00	RFG ramp time selection1	0: Invalid 1: Valid 2~6:DI0~DI4 7~10:Reserved Others:Binary interconnection parameters	0	0x3400
B04.01	RFG ramp time selection2	Ditto	0	0x3401
B04.02	Acceleration time of Slope 1	0.0~1000.0S	5	0x3402
B04.03	Deceleration time of Slope 1	0.0~1000.0S	5	0x3403
B04.04	Acceleration time of Slope 2	0.0~1000.0S	5	0x3404
B04.05	Deceleration time of Slope 2	0.0~1000.0S	5	0x3405
B04.06	Acceleration time of Slope 3	0.0~1000.0S	5	0x3406
B04.07	Deceleration time of Slope 3	0.0~1000.0S	5	0x3407
B04.08	Acceleration time of Slope 4	0.0~1000.0S	5	0x3408
B04.09	Deceleration time of Slope 4	0.0~1000.0S	5	0x3409
B04.10	Start time of S cerve 1	0.00~20.00S	0	0x340A
B04.11	End time of S cerve 1	0.00~20.00S	0	0x340B
B04.12	Start time of S cerve 2	0.00~20.00S	0	0x340C
B04.13	End time of S cerve 2	0.00~20.00S	0	0x340D
B04.14	Start time of S cerve 3	0.00~20.00S	0	0x340E
B04.15	End time of S cerve 3	0.00~20.00S	0	0x340F
B04.16	Start time of S cerve 4	0.00~20.00S	0	0x3410
B04.17	End time of S cerve 4	0.00~20.00S	0	0x3411

Function code	Name	Value scope	Default Value	Communication address
B05:Motor Control Selection				0x3500
B05.00	Motor control mode	0:VF 1:SVC	0	0x3500
B05.02	Positive speed allowed	0: Invalid 1: Valid 2~6:DI0~DI4 7~10:Reserved Others:Binary interconnection parameters	1	0x3502
B05.03	Negative speed allowed	Ditto	1	0x3503
B05.04	Motor starting mode	0: Direct start 1: Pre-excitation start 2: Speed tracking start 3: DC braking start	0	0x3504
B05.06	Pre excitation time setting	0.00~100.00S	0	0x3506
B05.08	Setting of pre-excitation CUR	10.0% ~ 200.0% 100.0%Relative motor rated current	100	0x3508
B05.09	DC braking current	0.0% ~ 100.0% 100.0%Relative motor rated current	50	0x3509
B05.10	DC braking time at start-up	0.00s~100.00s	0	0x350A
B05.11	DC braking time during shutdown	0.00s~100.00s	0	0x350B
B05.12	DC braking INIT speed at stop	0 ~ 3000rpm	0	0x350C
B05.13	Speed tracking mode	0: Turn off speed tracking 1: Search from stop frequency 2: Search from rated frequency 3: Search from maximum frequency	0	0x350D
B05.14	Speed tracking search time	0.0~120.0S	25	0x350E
B05.15	Speed tracking CUR percentage	0~100%	50	0x350F
B05.16	Speed tracking MIN-FRQ limit	0.00~50.00Hz	2	0x3510
B05.17	Speed tracking switching time	0~60000ms	250	0x3511
B05.29	Zero speed judgment value	0 ~ 3000rpm	30	0x351D
B05.30	Zero speed shutdown delay time	0.00~100.00S	0	0x351E
B05.32	OFF1 shutdown mode	0: Coast to stop 1: Decelerate to stop	1	0x3520
B05.33	OFF3 downtime	0.0s ~ 1000.0s	10	0x3521

EN

Function code	Name	Value scope	Default Value	Communication address
B06:Motor Limit and Protection				0x3600
B06.00	Lower limit of jump frequency1	0.0%~300.0% 100.0%Relative to motorratedfrequency	0	0x3600
B06.01	Upperlimit of jump frequency1	0.0%~300.0% 100.0%Relative to motorratedfrequency	0	0x3601
B06.02	Lower limit of jump frequency2	0.0%~300.0% 100.0%Relative to motorratedfrequency	0	0x3602
B06.03	Upperlimit of jump frequency2	0.0%~300.0% 100.0%Relative to motorratedfrequency	0	0x3603
B06.04	Forward limit speed	0.0%~300.0% 100.0%Relative to motorratedfrequency	100	0x3604
B06.05	Reverse limit speed	-300.0%~0% 100.0%Relative to motorratedfrequency	-100	0x3605
B06.12	Vector controltorque limit	0.0%~200.0%	180	0x360C
B06.13	Torquelimit before brakeopen	0.0%~200.0%	180	0x360D
B06.25	Motoroverload PROT FUNC	0: Prohibited 1: Allowed	0	0x3619
B06.26	Motoroverload PROT FUNC gain	20~1000%	100	0x361A
B06.28	Overspeeddetection value	0.0% ~ 50.0% 100.0%Relative motor ratedspeed	20	0x361C
B06.29	Overspeeddetection time	0.0S: No detection0.1S ~ 60.0S	5	0x361D
B06.32	CV reachesdetection value	0.0% ~ 300.0% 100.0%Relative motor ratedspeed	100	0x3620
B06.33	CV reachesdetection lagvalue	0.0% ~ B06.32 100.0%Relative motor ratedspeed	3	0x3621
B06.34	CVreachesethe detectiontime	0.0: No detection 0.1s ~ 300.0s	3	0x3622
B06.37	Outpuephaseloss detection	0: Prohibited 1: Allowed	1	0x3625
B06.59	Stall detectiontime1	0~5000ms	500	0x363B
B06.60	Stall detectiontime2	0~5000ms	500	0x363C
B06.61	Vector stall detection COEF 2	0~100%	20	0x363D
B06.62	SVC controlmode	0: ControlMode1 1: ControlMode2 2: ControlMode3	0	0x363E
B06.64	Vector Ctrl slip COMP COEF	50~200%	100	0x3640

EN

Function code	Name	Value scope	Default Value	Communication address
B07:VF Control				0x3700
B07.00	VF modeselection	0: VF curve 1: VF separation	0	0x3700
B07.01	VF curve selection	0: Straight line VF 1: Multi-point VF 2: SquareV/F 3: 1.5 times V/F	0	0x3701
B07.02	Multipoint VF curve:FRQ point1	0.0 ~ B07.04	2	0x3702
B07.03	Multipoint VF curve:Volt point1	0.0 ~ B07.05	20	0x3703
B07.04	Multipoint VF curve:FRQ point2	B07.02 ~ B07.06	20	0x3704
B07.05	Multipoint VF curve:Volt point2	B07.03 ~ B07.07	152	0x3705
B07.06	Multipoint VF curve:FRQ point3	B07.04~D00.04	40	0x3706
B07.07	Multipoint VF curve:Volt point3	B07.05 ~ D00.02	304	0x3707
B07.10	Imax control enablation	0: Invalid 1: Valid	1	0x370A
B07.11	Imax controllingFM gain	0 ~ 100	30	0x370B
B07.12	Imax inhibition point	0 ~ 200	150	0x370C
B07.13	VF torqueboosting mode	0: Disable 1: Manual 2: Automatic	1	0x370D
B07.15	VF manualtorque boost	0% ~ 250%	1	0x370F
B07.16	VF torquelifting cut-off FRQ	0.00~100.00Hz	50	0x3710
B07.17	VF slip compensationCOEF	0.0% ~ 300.0%	0	0x3711
B07.20	VF oscillation suppressionmode	0: Invalid 1: Valid	1	0x3714
B07.21	VF oscillation suppressiongain	0 ~ 500%	10	0x3715
B07.24	VF over-excitation gain	0 ~ 200.0	0	0x3718
B07.28	Vdc_max control switch	0: Disable 1: Enable	0	0x371C
B07.29	Vdc_ Max voltage margin	115%~150%	125	0x371D
B07.34	Vdc_min control switch	0: Disable 1: Enable	0	0x3722
B07.35	Vdc_min of Volt gain COEF	65~100	85	0x3723

EN

Function code	Name	Value scope	Default Value	Communication address
B08:Speed Regulator				0x3800
B08.02	Speedloop low speedKp	0.0~100.0	10	0x3802
B08.03	Speedloop low speedTi	0.00~10.00ms	1	0x3803
B08.04	Speedloop high speedKp	0.0~100.0	10	0x3804
B08.05	Speedloop high speedTi	0.00~10.00ms	2	0x3805
B08.11	Speedloop switch:low FRQ	0.00~40.00Hz	5	0x380B
B08.12	Speedloop switch:high FRQ	0.00~40.00Hz	10	0x380C
B08.13	High FRQ CORR COEF	0.0~400.0%	100	0x380D
B08.26	EST speedloop filter time	0~10000ms	35	0x381A
B09:Current Regulator				0x3900
B09.04	ProportionalCOEF of current	1%~1000%	100	0x3904
B09.05	IntergralCOEF of current	1%~1000%	100	0x3905
B11:Motor ModelandOthers				0x3B00
B11.51	Monitoringchannel1	0~65535	207	0x3B33
B11.52	Monitoringchannel2	0~65535	209	0x3B34
B11.53	Monitoringchannel3	0~65535	210	0x3B35
B11.54	Monitoringchannel4	0~65535	211	0x3B36
B11.56	Maximum electric frequency	0~65535	1200	0x3B38
B11.57	Maximum generation frequency	0~65535	800	0x3B39
B11.75	Heavy load speed limit enable	0~65535	0	0x3B4B
B11.78	Reserved	0~65535	0	0x3B4E
B11.93	Interactivedata monitorSEL 0	0~511	0	0x3B5D
B11.94	Interactivedata monitorSEL 1	0~511	269	0x3B5E
B11.95	Interactivedata monitorSEL 2	0~511	270	0x3B5F
B11.96	Interactivedata monitorSEL 3	0~511	271	0x3B60

EN

Function code	Name	Value scope	Default Value	Communication address
C02:ModbusCOMM SET				0x4200
C02.00	Modbusbaudrate	0:1200bps 1:2400bps 2:4800bps 3:9600bps 4:19200bps 5:38400bps 6:57600bps 7:115200bps	7	0x4200
C02.01	Modbusdataformat	0:Even parity（8-E-1） 1:Oddparity（8-O-1） 2:no verification（8-N-2） 3:no verification（8-N-1）	3	0x4201
C02.02	Modbuslocal address	1~247	1	0x4202
C02.04	Modbus communication timeout	0:Invalid，0.1s~60.0s	2	0x4204
C02.06	ModbusCOMM set point unit selection	0:Percentage 1:Frequency	0	0x4206
C02.07	Modbussaves written values	0:Updates 1:Not updates	0	0x4207
D00:Motor 0 Basic PARAMs				0x5000
D00.00	Motortypeseletion	0: Inductionmotor 1: Permanentmagnet synchronous motor(Reserved)	0	0x5000
D00.01	Motorratedpower	0.00~655.35kW	0.55	0x5001
D00.02	Motorratedvoltage	0~1500V	380	0x5002
D00.03	Motorratedcurrent	0.00~655.35A	1.6	0x5003
D00.04	Motorrated frequency	0.0~600.00Hz	50	0x5004
D00.05	Motorratedspeed	0~65535rpm	1330	0x5005
D00.06	Maximum motor speed	0.0%~300.0% Rated speed	100	0x5006
D00.07	Minimum motor speed	0.0%~300.0% Rated speed	0	0x5007
D00.08	Maximum motor current	0.0%~300.0% Rated current	100	0x5008
D00.09	Motorpolar logarithm	Read-only	2	0x5009
D01:Motor 0 Identified PARAMs				0x5100
D01.00	IM statorresistance	0.000~65.535ohm	14.477	0x5100
D01.01	IM rotorresistance	0.000~65.535ohm	8.469	0x5101
D01.02	IM leakage inductance	0.000~65.535mH	5.13	0x5102
D01.03	IM mutual inductance	0.0~6553.5mH	5.453	0x5103
D01.04	IM no-load CUR	0.00~655.35A	1.28	0x5104

EN

Function code	Name	Value scope	Default Value	Communication address
D03:Motor 1 Basic PARAMs				0x5300
D03.00	Motortypeseletion	0: Inductionmotor 1: Permanentmagnet synchronous motor(Reserved)	0	0x5300
D03.01	Motorratedpower	0.00~655.35kW	0.55	0x5301
D03.02	Motorratedvoltage	0~1500V	380	0x5302
D03.03	Motorratedcurrent	0.0~6553.5A	1.6	0x5303
D03.04	Motorrated frequency	0.0~600.00Hz	50	0x5304
D03.05	Motorratedspeed	0~65535rpm	1330	0x5305
D03.06	Maximum motor speed	0.0%~300.0% Rated speed	100	0x5306
D03.07	Minimum motor speed	0.0%~300.0% Rated speed	0	0x5307
D03.08	Maximum motor current	0.0%~300.0% Rated current	100	0x5308
D03.09	Motorpolar logarithm	Read-only	2	0x5309
D04:Motor 1 Identified PARAMs				0x5400
D04.00	IM statorresistance	0.000~6.5535ohm	14.477	0x5400
D04.01	IM rotorresistance	0.000~6.553ohm	8.469	0x5401
D04.02	IM leakage inductance	0.000~65.535mH	5.13	0x5402
D04.03	IM mutual inductance	0.0~6553.5mH	5.453	0x5403
D04.04	IM no-load CUR	0.00~655.35A	1.28	0x5404

EN

Function code	Name	Value scope	Default Value	Communication address
E00:Fault Handling				0x6000
E00.00	External fault 1 source	0:Invalid 1:Reserved 2~6:DI0~DI4 7~10:Reserved Others:Binary interconnection parameters	0	0x6000
E00.10	Automaticfault resetfunction	0:Invalid 1:Valid	0	0x600A
E00.11	Fault resettimes resettime	0.0~3600.0s	180	0x600B
E00.12	Fault resetinterval	0.0~600.0s	30	0x600C
E00.13	Fault resettimes	0~5	5	0x600D
E00.14	Non-resettableEXC code1	0~51	0	0x600E
E00.15	Non-resettableEXC code2	0~51	0	0x600F
E00.23	Restart FUNC after AUTO reset	0:Invalid 1:Valid	0	0x6017
E00.24	AbnormalSRC of restartallowed	0:Specified exception codeallows restart 1:Specified exception codedoesnot allow restart	0	0x6018
E00.25	Specified EXC code 1	0~51	0	0x6019
E00.26	Specified EXC code 2	0~51	0	0x601A
E00.36	EXC level MOD EXC code1	0~51	0	0x6024
E00.37	EXC level of EXC code1	0:Free stop 1:Reserved 2:Stop modeshutdown 3:warning 4:No exceptionhandling	0	0x6025
E00.38	EXC level MOD EXC code2	0~51	0	0x6026
E00.39	EXC level of EXC code2	0:Free stop 1:Reserved 2:Stop modeshutdown 3:warning 4:No exceptionhandling	0	0x6027

EN

Function code	Name	Value scope	Default Value	Communication address
E01:Latest Faults and Records				0x6100
E01.00	Fault code1	0~51	0	0x6100
E01.01	Fault code1 subcode	0~16	0	0x6101
E01.02	Fault code2	0~51	0	0x6102
E01.03	Fault code2 subcode	0~16	0	0x6103
E01.12	Fault speed	-300.00~300.00Hz	0	0x610C
E01.13	Fault current	0.00~655.35A	0	0x610D
E01.14	Fault bus voltage	0.0~800.0V	0	0x610E
E01.15	Fault output torque	-300.0%~300.0%	0	0x610F
E01.18	Running time - hour	0~65535	0	0x6112
E01.19	Running time - second	0~65535	0	0x6113
E01.20	Power-on CRT - hour	0~65535	0	0x6114
E01.21	Power-on CRT - second	0~65535	0	0x6115
E01.22	Fault output voltage	0~6553.5V	0	0x6116
E01.23	Fault PM stateword	0~65535	0x0	0x6117
E02:Previous Faults and Records				0x6200
E02.00	Fault code1	0~51	0	0x6200
E02.01	Fault code1 subcode	0~16	0	0x6201
E02.02	Fault code2	0~51	0	0x6202
E02.03	Fault code2 subcode	0~16	0	0x6203
E02.12	Fault speed	-300.00~300.00Hz	0	0x620C
E02.13	Fault current	0.0~6553.5A	0	0x620D
E02.14	Fault bus voltage	0.0~800.0V	0	0x620E
E02.15	Fault output torque	-300.0%~300.0%	0	0x620F
E02.18	Running time - hour	0~65535	0	0x6212
E02.19	Running time - second	0~65535	0	0x6213
E02.20	Power-on CRT - hour	0~65535	0	0x6214
E02.21	Power-on CRT - second	0~65535	0	0x6215
E02.22	Fault output voltage	0~6553.5V	0	0x6216
E02.23	Fault PM status word	0~65535	0x0	0x6217

EN

Function code	Name	Value scope	Default Value	Communication address
E03:Pre-2 Faults and Records				0x6300
E03.00	Fault code1	0~51	0	0x6300
E03.01	Fault code1 subcode	0~16	0	0x6301
E03.02	Fault code2	0~51	0	0x6302
E03.03	Fault code2 subcode	0~16	0	0x6303
E03.12	Fault speed	-300.00~300.00Hz	0	0x630C
E03.13	Fault current	0.0~6553.5A	0	0x630D
E03.14	Fault DC-link voltage	0.0~800.0V	0	0x630E
E03.15	Fault bus torque	-300.0%~300.0%	0	0x630F
E03.18	Running time - hour	0~65535	0	0x6312
E03.19	Running time - second	0~65535	0	0x6313
E03.20	Power-on CRT - hour	0~65535	0	0x6314
E03.21	Power-on CRT - second	0~65535	0	0x6315
E03.22	Fault output voltage	0~6553.5V	0	0x6316
E03.23	Fault PM stateword	0~65535	0x0	0x6317
E04:Pre-3 Faults and Records				0x6400
E04.00	Fault code1	0~51	0	0x6400
E04.01	Fault code1 subcode	0~16	0	0x6401
E04.02	Fault code2	0~51	0	0x6402
E04.03	Fault code2 subcode	0~16	0	0x6403
E04.12	Fault speed	-300.00~300.00Hz	0	0x640C
E04.13	Fault current	0.0~6553.5A	0	0x640D
E04.14	Fault DC-link voltage	0.0~800.0V	0	0x640E
E04.15	Fault bus torque	-300.0%~300.0%	0	0x640F
E04.18	Running time - hour	0~65535	0	0x6412
E04.19	Running time - second	0~65535	0	0x6413
E04.20	Power-on CRT - hour	0~65535	0	0x6414
E04.21	Power-on CRT - second	0~65535	0	0x6415
E04.22	Fault output voltage	0~6553.5V	0	0x6416
E04.23	Fault PM stateword	0~65535	0x0	0x6417

Function code	Name	Value scope	Default Value	Communication address
E05:Pre-4 Faults and Records				0x6500
E05.00	Fault code1	0~51	0	0x6500
E05.01	Fault code1 subcode	0~16	0	0x6501
E05.02	Fault code2	0~51	0	0x6502
E05.03	Fault code2 subcode	0~16	0	0x6503
E05.12	Fault speed	-300.00~300.00Hz	0	0x650C
E05.13	Fault current	0.0~6553.5A	0	0x650D
E05.14	Fault DC-link voltage	0.0~800.0V	0	0x650E
E05.15	Fault bus torque	-300.0%~300.0%	0	0x650F
E05.18	Running time - hour	0~65535	0	0x6512
E05.19	Running time - second	0~65535	0	0x6513
E05.20	Power-on CRT - hour	0~65535	0	0x6514
E05.21	Power-on CRT - second	0~65535	0	0x6515
E05.22	Fault output voltage	0~6553.5V	0	0x6516
E05.23	Fault PM stateword	0~65535	0x0	0x6517
E06:Pre-5 Faults and Records				0x6600
E06.00	Fault code1	0~51	0	0x6600
E06.01	Fault code1 subcode	0~16	0	0x6601
E06.02	Fault code2	0~51	0	0x6602
E06.03	Fault code2 subcode	0~16	0	0x6603
E06.12	Fault speed	-300.00~300.00Hz	0	0x660C
E06.13	Fault current	0.0~6553.5A	0	0x660D
E06.14	Fault DC-link voltage	0.0~800.0V	0	0x660E
E06.15	Fault bus torque	-300.0%~300.0%	0	0x660F
E06.18	Running time - hour	0~65535	0	0x6612
E06.19	Running time - second	0~65535	0	0x6613
E06.20	Power-on CRT - hour	0~65535	0	0x6614
E06.21	Power-on CRT - second	0~65535	0	0x6615
E06.22	Fault output voltage	0~6553.5V	0	0x6616
E06.23	Fault PM stateword	0~65535	0x0	0x6617

Function code	Name	Value scope	Default Value	Communication address
F00:Logic operationmodule				0x7000
F00.00	Logic "AND" moduleA Input 1	0:Invalid other:Binary interconnection parameters	0	0x7000
F00.01	Logic "AND" moduleA Input 2	Ditto	0	0x7001
F00.02	Logic "AND" moduleA Input 3	Ditto	0	0x7002
F00.03	Logic "AND" moduleA Input 4	Ditto	0	0x7003
F00.05	Logic "AND" moduleB Input 1	Ditto	0	0x7005
F00.06	Logic "AND" moduleB Input 2	Ditto	0	0x7006
F00.07	Logic "AND" moduleB Input 3	Ditto	0	0x7007
F00.08	Logic "AND" moduleB Input 4	Ditto	0	0x7008
F00.20	Logic "NOT" module A Input	Ditto	0	0x7014
F00.22	Logic "NOT" module B Input	Ditto	0	0x7016
F00.24	Logic "NOT" module C Input	Ditto	0	0x7018
F00.26	Logic "NOT" module D Input	Ditto	0	0x701A
F00.36	Logic "OR" module A Input 1	Ditto	0	0x7024
F00.37	Logic "OR" module A Input 2	Ditto	0	0x7025
F00.38	Logic "OR" module A Input 3	Ditto	0	0x7026
F00.39	Logic "OR" module A Input 4	Ditto	0	0x7027
F00.41	Logic "OR" module B Input 1	Ditto	0	0x7029
F00.42	Logic "OR" module B Input 2	Ditto	0	0x702A
F00.43	Logic "OR" module B Input 3	Ditto	0	0x702B
F00.44	Logic "OR" module B Input 4	Ditto	0	0x702C
F00.76	LDM A Input	Ditto	0	0x704C
F00.77	LDM A FUNC selection	0:ON delay 1:OFF delay 2:Double-side delay	0	0x704D
F00.78	LDM A delay time	0~60000ms	0	0x704E
F00.79	LDM B Input	0:Invalid other:Binary interconnection parameters	0	0x704F
F00.80	LDM B FUNC selection	0:ON delay 1:OFF delay 2:Double-side delay	0	0x7050
F00.81	LDM B delay time	0~60000ms	0	0x7051

EN

Function code	Name	Value scope	Default Value	Communication address
F01:Arthmetic OperationModule				0x7100
F01.00	ADD moduleA Input 1	0:00 Others:Analog interconnection parameters	0	0x7100
F01.01	ADD moduleA Input 2	Ditto	0	0x7101
F01.02	ADD moduleA Input 3	Ditto	0	0x7102
F01.03	ADD moduleA Input 4	Ditto	0	0x7103
F01.05	ADD moduleB Input 1	Ditto	0	0x7105
F01.06	ADD moduleB Input 2	Ditto	0	0x7106
F01.07	ADD moduleB Input 3	Ditto	0	0x7107
F01.08	ADD moduleB Input 4	Ditto	0	0x7108
F01.15	SUB moduleA input 1	Ditto	0	0x710F
F01.16	SUB moduleA input 2	Ditto	0	0x7110
F01.18	SUB moduleB input 1	Ditto	0	0x7112
F01.19	SUB moduleB input 2	Ditto	0	0x7113
F01.37	AVA moduleA Input	Ditto	0	0x7125
F01.39	AVA moduleB Input	Ditto	0	0x7127
F01.41	NCM moduleA Input 1	Ditto	0	0x7129
F01.42	NCM moduleA Input 2	Ditto	0	0x712A
F01.44	NCM moduleB Input 1	Ditto	0	0x712C
F01.45	NCM moduleB Input 2	Ditto	0	0x712D
F01.61	Data selectorA commandSRC 1	0:00 1:01 2~6:DI0~DI4 7~10:Reserved Other:Binary interconnection parameters	0	0x713D
F01.62	Data selectorA commandSRC 2	Ditto	0	0x713E

EN

Function code	Name	Value scope	Default Value	Communication address
F01:Arthmetic OperationModule				0x7100
F01.63	DataselectorA data source1	0:00 1:Multi-segmentsetting value 1 2:AI 3:Potentiometer 4~5:Reserved 6:Multi-segmentvalue given 7:Motorized Potentiometer 8~10:Reserved Others:Analog interconnection parameters	0	0x713F
F01.64	DataselectorA data source2	Ditto	0	0x7140
F01.65	DataselectorA data source3	Ditto	0	0x7141
F01.66	DataselectorA data source4	Ditto	0	0x7142
F01.67	DataselectorB commandSRC 1	0:00 1:01 2~6:DI0~DI4 7~10:Reserved Other:Binary interconnection parameters	0	0x7143
F01.68	DataselectorB commandSRC 2	Ditto	0	0x7144
F01.69	DataselectorB data source1	0:00 1:Multi-segmentsetting value 1 2:AI 3:Potentiometer 4~5:Reserved 6:Multi-segmentvalue given 7:Motorized Potentiometer 8~10:Reserved Others:Analog interconnection parameters	0	0x7145
F01.70	DataselectorB data source2	Ditto	0	0x7146
F01.71	DataselectorB data source3	Ditto	0	0x7147
F01.72	DataselectorB data source4	Ditto	0	0x7148

EN

Function code	Name	Value scope	Default Value	Communication address
F03:Process PID module				0x7300
F03.00	PID FUNC valid signal	0:Invalid 1:Reserved 2~6:DI0~DI4 7~10:Reserved Otherss:Binary interconnection parameters	0	0x7300
F03.01	PID operation enable signal	Ditto	0	0x7301
F03.02	PID action direction	0: Positive direction 1: Reverse direction	0	0x7302
F03.03	PID sampling calculation	1~20	2	0x7303
F03.04	PID given source	0:F03.05 1:Multi-segment setting value 1 2:AI 3:Potentiometer 4~5:Reserved 6:Multi-segment value given 7:Motorized potentiometer 8~10:Reserved Others:Analog interconnection parameters	0	0x7304
F03.05	PID value setting	-600.0~600.0%	0	0x7305
F03.06	PID given freeze enable	0:Invalid 1:Reserved 2~6:DI0~DI4 7~10:ReservedOtherss: Binary interconnection parameters	0	0x7306
F03.07	PID given filtering time	0~60000ms	0	0x7307
F03.08	PID feedback source	0:00 1:Multi-segment setting value 1 2:AI 3:Potentiometer 4~5:Reserved 6:Multi-segment given 7:Motorized potentiometer 8~10:Reserved Others:Analog interconnection parameters	0	0x7308

EN

Function code	Name	Value scope	Default Value	Communication address
F03:Process PID module				0x7300
F03.09	PID feedback filtering time	0~60000ms	0	0x7309
F03.10	PID DEV additional setting	Same as F03.08	0	0x730A
F03.11	Proportional gain KP	0.00~125.00	1	0x730B
F03.12	Proportional gain coefficient	0:100.0% 1:Multi-segment setting value 1 2:AI 3:Potentiometer 4~5:Reserved 6:Multi-segment value given 7:Motorized Potentiometer 8~10:Reserved Others:Analog interconnection parameters	0	0x730C
F03.13	Integration time Ti	0~60000ms	10	0x730D
F03.14	Integral time coefficient	Same as F03.12	0	0x730E
F03.15	Differential time Td1	0~60000ms	0	0x730F
F03.16	Differential time coefficient	Same as F03.12	0	0x7310
F03.17	PID output integral:INIT value	Same as F03.12	0	0x7311
F03.18	PID output additional setting	Same as F03.12	0	0x7312
F03.19	PID integral CMPT:forced enable	0:Invalid 1:Reserved 2~6:DI0~DI4 7~10:Reserved Otherss:Binary interconnection parameters	0	0x7313
F03.20	PID integral CMPT:forced value	0:100.0% 1:Multi-segment setting value 1 2:AI 3:Potentiometer 4~5:Reserved 6:Multi-segment value given 7:Motorized Potentiometer 8~10:Reserved Others:Analog interconnection parameters	0	0x7314

EN

Function code	Name	Value scope	Default Value	Communication address
F03:Process PID module				0x7300
F03.21	PID output limit	0.0~600.0%	100	0x7315
F03.22	PID output upper limit source	0:100.0% 1:Multi-segment setting value 1 2:AI 3:Potentiometer 4~5:Reserved 6:Multi-segment value given 7:Motorized Potentiometer 8~10:Reserved Others:Analog interconnection parameters	0	0x7316
F03.23	PID output lower limit source	Ditto	0	0x7317
F03.24	PID output limit rise/fall time	0.00~100.00S	0	0x7318
F03.25	PID deviation dead band enable	0:Forbidden 1:Enable	0	0x7319
F03.26	PID deviation dead band range	0.0~100.0%	0	0x731A
F03.27	PID FDBK missing test value	0.0~100.0%	0	0x731B
F03.28	PID FDBK loss test time	0.0~60.0S	0	0x731C
F04:Brake Control				0x7400
F04.00	Brake function selection	0: No brake 1: With brake without detection information 2: With brake detection information	0	0x7400
F04.04	Brake open command source	0:00 Others:Analog interconnection parameters	2311	0x7404
F04.05	Brake open comparison THR	0.0~200.0%	2	0x7405
F04.06	Holding brake open delay	0.00~10.00s	0	0x7406
F04.07	Brake closing speed THR	1.0~200.0%	1	0x7407
F04.08	Holding brake close delay	0.00~10.00s	0	0x7408
F04.10	Brake feedback point source	0:Invalid 1:Reserved 2~6:DI0~DI4 7~10:Reserved Otherss:Binary interconnection parameters	0	0x740A

EN

Function code	Name	Value scope	Default Value	Communication address
F04:Brake Control				0x7400
F04.12	Brake close comparison source	0:00 Others:Analog interconnection parameters	2311	0x740C
F04.13	Brake open CURR comparison THR	0.0~200.0%	50	0x740D
F04.16	Brake opening speed pause time	0.00~10.00S	0.5	0x7410
F04.17	Brake closing speed pause time	0.00~10.00S	0.5	0x7411
F04.18	Restart brake control	0:No brake action 1:Brake action	1	0x7412
F04.19	Restart waiting time	0.00~10.00s	0.5	0x7413
P00:Hardware Status				0xE000
P00.00	Logic 0	0	0	0xE000
P00.01	Logic 1	1	1	0xE001
P00.02	Multifunctional DI0	0~1	0	0xE002
P00.03	Multifunctional DI1	0~1	0	0xE003
P00.04	Multifunctional DI2	0~1	0	0xE004
P00.05	Multifunctional DI3	0~1	0	0xE005
P00.06	Multifunctional DI4	0~1	0	0xE006
P00.10	Digital input DI0 inversion	0~1	0	0xE00A
P00.11	Digital input DI1 inversion	0~1	0	0xE00B
P00.12	Digital input DI2 inversion	0~1	0	0xE00C
P00.13	Digital input DI3 inversion	0~1	0	0xE00D
P00.14	Digital input DI4 inversion	0~1	0	0xE00E
P00.18	Multi-FUNC digital output DO0	0~1	0	0xE012
P00.19	Multi-FUNC digital output DO1	0~1	0	0xE013
P00.20	Multi-FUNC output DO0 INV	0~1	0	0xE014
P00.21	Multi-FUNC output DO1 INV	0~1	0	0xE015
P01:System Ctrl Words and State				0xE100
P01.00	Ready for startup	0~1	0	0xE100
P01.01	Ready for run	0~1	0	0xE101
P01.02	Run	0~1	0	0xE102
P01.03	Fault activation	0~1	0	0xE103
P01.06	Boot block	0~1	0	0xE106
P01.07	Alarm activate	0~1	0	0xE107
P01.09	Comparison value reached	0~1	0	0xE109
P01.11	System reservation	0~1	0	0xE10B
P01.12	Positive speed	0~1	0	0xE10C
P01.13	IGBT operation	0~1	0	0xE10D
P01.14	Jog operation valid	0~1	0	0xE10E

Function code	Name	Value scope	Default Value	Communication address
P01:System Ctrl Words and State				0xE100
P01.15	Pre-excitation start	0~1	0	0xE10F
P01.16	Open DC brake	0~1	0	0xE110
P01.20	Boot is not ready	0~1	0	0xE114
P01.21	Running is not ready	0~1	0	0xE115
P01.22	Not run	0~1	0	0xE116
P01.23	No fault	0~1	0	0xE117
P01.26	Boot is not blocked	0~1	0	0xE11A
P01.27	No alarm/Light fault	0~1	0	0xE11B
P01.29	Comparison value not reach	0~1	0	0xE11D
P01.31	System reservation	0~1	0	0xE11F
P01.32	Negative speed	0~1	0	0xE120
P01.33	IGBT blockade	0~1	0	0xE121
P01.34	Inching not in effect	0~1	0	0xE122
P01.35	Preexcitation complete	0~1	0	0xE123
P01.36	DC brake end	0~1	0	0xE124
P01.44	RFG acceleration	0~1	0	0xE12C
P01.45	RFG deceleration	0~1	0	0xE12D
P01.46	RFG constant speed	0~1	0	0xE12E
P01.58	System reservation	0~1	0	0xE13A
P01.59	System reservation	0~1	0	0xE13B
P01.60	System reservation	0~1	0	0xE13C
P01.61	System reservation	0~1	0	0xE13D
P01.62	Motor pre-overload state	0~1	0	0xE13E
P01.63	Zero speed given operation	0~1	0	0xE13F
P01.64	DC bus live mark	0~1	0	0xE140
P01.65	Motor speed is zero	0~1	0	0xE141
P01.66	PID function effective	0~1	0	0xE142
P01.67	PID operation enable	0~1	0	0xE143
P01.68	PID action direction	0~1	0	0xE144
P01.69	PID given freeze enable	0~1	0	0xE145
P01.70	Forced enable of PID integral	0~1	0	0xE146
P01.71	PID deviation dead band enable	0~1	0	0xE147
P01.72	PID saturation state	0~1	0	0xE148
P01.73	Motor over TEMP protection mark	0~1	0	0xE149
P01.74	Motor over TEMP warning sign	0~1	0	0xE14A
P01.75	Motor selection bit0	0~1	0	0xE14B

Function code	Name	Value scope	Default Value	Communication address
P01:System Ctrl Words and State				0xE100
P01.77	RFG select bit0	0~1	0	0xE14D
P01.78	RFG select bit1	0~1	0	0xE14E
P01.79	Multi segment given value SEL 1	0~1	0	0xE14F
P01.80	Multi segment given value SEL 2	0~1	0	0xE150
P01.81	Multi segment given value SEL 3	0~1	0	0xE151
P01.84	System reservation	0~1	0	0xE154
P01.85	RFG operation flag	0~1	0	0xE155
P02:FBA and Fault Flag				0xE200
P02.32	Modbus COMM start-stop command	0~1	0	0xE220
P02.33	Modbus COMM inching start stop	0~1	0	0xE221
P02.35	Modbus COMM fault reset	0~1	0	0xE223
P02.36	Modbus COMM run in reverse	0~1	0	0xE223
P03:Free Function 1				0xE300
P03.00	Logic "AND" module A output	0~1	0	0xE300
P03.01	Logic "AND" module B output	0~1	0	0xE301
P03.04	Logic "NOT" module A output	0~1	0	0xE304
P03.05	Logic "NOT" module B output	0~1	0	0xE305
P03.06	Logic "NOT" module C output	0~1	0	0xE306
P03.07	Logic "NOT" module D output	0~1	0	0xE307
P03.12	Logic "OR" module A output	0~1	0	0xE30C
P03.13	Logic "OR" module B output	0~1	0	0xE30D
P03.20	Logic delay module A output	0~1	0	0xE314
P03.21	Logic delay module B output	0~1	0	0xE315
P03.24	Comparison module A larger flag	0~1	0	0xE318
P03.25	Comparison module A equals flag	0~1	0	0xE319
P03.26	Comparison module A less flag	0~1	0	0xE31A
P03.27	Comparison module B larger flag	0~1	0	0xE31B

Function code	Name	Value scope	Default Value	Communication address
P03:Free Function 1				0xE300
P03.28	Comparison module B equals flag	0~1	0	0xE31C
P03.29	Comparison module B less flag	0~1	0	0xE31D
P03.32	Symbol of ABS module A input	0~1	0	0xE320
P03.33	Symbol of ABS module B input	0~1	0	0xE321
P03.34	Overflow flag:absolute value A	0~1	0	0xE322
P03.35	Overflow flag:absolute value B	0~1	0	0xE323
P03.36	Overflow flag:addition A	0~1	0	0xE324
P03.37	Overflow flag:addition B	0~1	0	0xE325
P03.39	Overflow flag:substraction A	0~1	0	0xE327
P03.40	Overflow flag:substraction B	0~1	0	0xE328
P06:State and Peripheral				0xE600
P06.00	Current state machine	0~65535	0	0xE600
P06.01	Target frequency	0~65535	0	0xE601
P06.02	Given frequency	0~65535	0	0xE602
P06.03	Output frequency	0~65535	0	0xE603
P06.04	Target speed	0~65535	0	0xE604
P06.05	Given speed	0~65535	0	0xE605
P06.06	Motor speed	0~65535	0	0xE606
P06.07	Output voltage	0~65535	0	0xE607
P06.08	Output current	0~65535	0	0xE608
P06.09	Output power	0~65535	0	0xE609
P06.10	Given torque	0~65535	0	0xE60A
P06.11	Output torque	0~65535	0	0xE60B
P06.12	Torque current	0~65535	0	0xE60C
P06.13	Excitation current	0~65535	0	0xE60D
P06.14	Raduiator temperature	0~65535	0	0xE60E
P06.15	Encoder feedback frequency	0~65535	0	0xE60F
P06.30	Analog input AI:conversion	0~65535	0	0xE61E
P06.31	Potentiometer input	0~65535	0	0xE61F
P06.34	Control board AO output value	0~65535	0	0xE622

Function code	Name	Value scope	Default Value	Communication address
P07:Communication				0xE700
P07.32	Modbus control command	0	0	0xE720
P07.33	Modbus COMM setting value 1	0	0	0xE721
P07.34	Modbus COMM setting value 1	0	0	0xE722
P07.35	Modbus COMM setting value 1 P.U	0	0	0xE723
P07.36	Modbus COMM setting value 1 P.U	0	0	0xE724
P08:Free Function Module				0xE800
P08.00	ADD module A output	0~65535	0	0xE800
P08.01	ADD module B output	0~65535	0	0xE801
P08.04	SUB module A output	0~65535	0	0xE804
P08.05	SUB module B output	0~65535	0	0xE805
P08.24	AVA module A output	0~65535	0	0xE818
P08.25	AVA module B output	0~65535	0	0xE819
P08.41	Data selector A output	0~65535	0	0xE829
P08.42	Data selector B output	0~65535	0	0xE82A
P09:Technoology Utilization				0xE900
P09.00	PROC PID output(after clipping)	0~65535	0	0xE900
P09.01	PROC PID output(pre-clipping)	0~65535	0	0xE901
P09.02	Process PID proportional output	0~65535	0	0xE902
P09.03	Process PID integral output	0~65535	0	0xE903
P09.04	Process PID differential output	0~65535	0	0xE904
P09.05	Process PID given value	0~65535	0	0xE905
P09.06	Process PID feedback value	0~65535	0	0xE906
P09.07	Process PID deviation value	0~65535	0	0xE907
P09.08	Process PID DEV before added	0~65535	0	0xE908

Function code	Name	Value scope	Default Value	Communication address
P10:PM Internal Variables				0xEA00
P10.00	Given current of Axis M	0~65535	0	0xEA00
P10.01	Feedback current of Axis M	0~65535	0	0xEA01
P10.02	Given current of Axis T	0~65535	0	0xEA02
P10.03	Feedback current of Axis T	0~65535	0	0xEA03
P10.04	Given frequency	0~65535	0	0xEA04
P10.05	Feedback frequency	0~65535	0	0xEA05
P10.06	Synchronous frequency	0~65535	0	0xEA06
P10.07	Encoder frequency	0~65535	0	0xEA07
P10.08	PM monitoring variable 8	0~65535	0	0xEA08
P10.09	PM monitoring variable 9	0~65535	0	0xEA09
P10.10	Given voltage of Axis M	0~65535	0	0xEA0A
P10.11	Given voltage of Axis T	0~65535	0	0xEA0B
P10.12	PM monitoring variable 12	0~65535	0	0xEA0C
P10.13	PM monitoring variable 13	0~65535	0	0xEA0D
P10.14	PM monitoring variable 14	0~65535	0	0xEA0E
P10.15	PM monitoring variable 15	0~65535	0	0xEA0F
P10.16	PM monitoring variable 16	0~65535	0	0xEA10
P10.17	PM monitoring variable 17	0~65535	0	0xEA11
P10.18	PM monitoring variable 18	0~65535	0	0xEA12
P10.19	CRC check count	0~65535	0	0xEA13
P10.20	PM monitoring variable 20	0~65535	0	0xEA14
P10.21	PM monitoring variable 21	0~65535	0	0xEA15
P10.22	PM monitoring variable 22	0~65535	0	0xEA16

Function code	Name	Value scope	Default Value	Communication address
P10:PM Internal Variables				0xEA00
P10.23	PM monitoring variable 23	0~65535	0	0xEA17
P10.24	PM monitoring variable 24	0~65535	0	0xEA18
P10.25	PM monitoring variable 25	0~65535	0	0xEA19
P10.26	Monitoring channel 1	0~65535	0	0xEA1A
P10.27	Monitoring channel 2	0~65535	0	0xEA1B
P10.28	Monitoring channel 3	0~65535	0	0xEA1C
P10.29	Monitoring channel 4	0~65535	0	0xEA1D
P10.30	PM monitoring variable 30	0~65535	0	0xEA1E
P10.31	PM monitoring variable 31	0~65535	0	0xEA1F
P10.32	State machine	0~65535	0	0xEA20
P10.33	U phase current	0~65535	0	0xEA21
P10.34	V phase current	0~65535	0	0xEA22
P11:CM Content Variables				0xEB00
P11.00	Fixed value 0%	0~65535	0	0xEB00
P11.01	Fixed value 100%	0~65535	0	0xEB01
P11.02	Fixed value 200%	0~65535	0	0xEB02
P11.03	Fixed value 400%	0~65535	0	0xEB03
P11.04	Fixed value 600%	0~65535	0	0xEB04
P11.05	Fixed value -100%	0~65535	0	0xEB05
P11.06	Fixed value -200%	0~65535	0	0xEB06
P11.07	Fixed value -400%	0~65535	0	0xEB07
P11.08	Fixed value -600%	0~65535	0	0xEB08

Function code	Name	Value scope	Default Value	Communication address
P13:System Setting and				0xED00
P13.00	Motor actual speed	0~65535	0	0xED00
P13.01	Motor final set speed	0~65535	0	0xED01
P13.02	Main speed given	0~65535	0	0xED02
P13.03	Auxiliary speed given	0~65535	0	0xED03
P13.04	A given value of velocity	0~65535	0	0xED04
P13.05	Speed given before limiting	0~65535	0	0xED05
P13.06	Speed given after limiting	0~65535	0	0xED06
P13.07	Speed given after minimum limit	0~65535	0	0xED07
P13.08	RFG input speed given	0~65535	0	0xED08
P13.09	RFG output speed given	0~65535	0	0xED09
P13.10	Additional speed given	0~65535	0	0xED0A
P13.11	CM given speed	0~65535	0	0xED0B
P13.12	RFG module input value	0~65535	0	0xED0C
P13.13	Low number of motor turns	0~65535	0	0xED0D
P13.14	High number of motor turns	0~65535	0	0xED0E
P13.15	Positive maximum speed	0~65535	0	0xED0F
P13.16	Reverse maximum speed	0~65535	0	0xED10
P13.22	Motorized potentiometer output	0~65535	0	0xED16
P13.23	Multi segment given SEL output	0~65535	0	0xED17
P13.24	Multi segment setting value 1	0~65535	0	0xED18
P13.25	Multi segment setting value 2	0~65535	0	0xED19
P13.26	Multi segment setting value 3	0~65535	0	0xED1A
P13.27	Multi segment setting value 4	0~65535	0	0xED1B
P13.28	Multi segment setting value 5	0~65535	0	0xED1C
P13.29	Multi segment setting value 6	0~65535	0	0xED1D
P13.30	Multi segment setting value 7	0~65535	0	0xED1E
P13.31	Multi segment setting value 8	0~65535	0	0xED1F

6. Modbus-RTU protocol

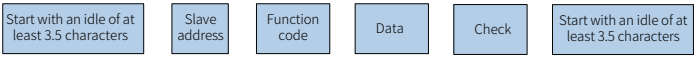
Boneng AM series drives use standard RS485 communication interface and Modbus communication protocol, which supports serial communication between the drive and host computer or PLC. The communication protocol of AM series drives contains three levels: physical layer, data link layer and application layer. The physical layer and the data link layer adopt the RS485-based Modbus protocol, and the application layer includes various operation methods such as controlling the operation, stopping, parameter reading and writing of the AM series drive.

The Modbus protocol is a slave-master protocol. There are two types of communication between the master and the slave: the master requests and the slave responds; the master broadcasts and the slave does not respond. Only one device on the bus is sending at any time. The master polls the slave, and the slave cannot send a message without obtaining the command from the master. The host can repeat the command when the communication is incorrect. If it does not receive a response within a given time, it is considered that the polled slave is lost. If the slave cannot execute a message, it sends an exception message to the master. There is no direct communication between slaves, and the data of one slave must be read out through the software of the master, and then sent to another slave. The range of the slave address is 0 to 247, and the message with address 0 is a broadcast message.

6.1 RTU data frame

In RTU mode, RTU data frame is composed by multiple character frames. The data format and transmission order of each character frame are: 1 start bit + 8 data bits (low bits are transmitted first) + 1 parity bit or no parity bit + 1 or 2 stop bits.

In RTU mode, a new frame always starts with a silent transmission time of at least 3.5 character frames, that is, there must be at least 3.5 character frame transmission time between every two RTU data frames.



The information of a frame must be transmitted in a continuous data stream. If there is an interval of more than 1.5 character frames before the end of the entire frame transmission, the receiving device will clear these incomplete information and mistakenly believe that the next character frame is new The address field part of a frame, similarly, if the interval between the start of a new frame and the previous frame is less than 3.5 character frame time. The receiving device will consider it to be the continuation of the previous frame. Due to the frame's disorder, the final CRC check value is incorrect, leading to communication failures.

AM series drives support Modbus protocol in RTU (Remote Terminal Unit) mode. The Modbus function codes supported by AM series drives are as follows:

Description of command code and communication data

Function code	Meaning	Broadcat	Maximum number	Explanation
03H	Read multiple registers	NO	5	
06H	Write single register	Yes	1	
10H	Write multiple registers	Yes	5	

EN

6.2 Modbus command code

Command code: 03H

Function code 03H, read N words (Word, 16bit data), up to 16 words can be read continuously.

For example: The drive with the slave address of 0x01, read the target speed of the motor, the given speed, the current motor speed, the Modbus logic starting address is Ox2004, and read 3 consecutive words, then the structure of the frame is described as follows:

Host request frame information

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x03
address high-bit	0x20
address low-bit	0x04
Read number high-bit	0x00
Read number low-bit	0x03
CRC low-bit	0x4F
CRC high-bit	0xCA

Slave response normally

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x03
Pitch number of return data	0x06
First data high-bit	0x05
First data low-bit	0xDC
Second data high-bit	0x00
Second data low-bit	0x00
…	
Nth data high-bit	0x00
Nth data low-bit	0x00
CRC low-bit	0xXX
CRC high-bit	0xXX

Drive reply data bit: motor target speed 0X05DC(1500rpm), set speed 0x0000, current motor speed 0x0000

Slave response abnormally

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x83
Error code	0x02
CRC low-bit	0x99
CRC high-bit	0x2A

EN

Command code: 06H

Write a word (Word)

For example: The drive with the slave address of 0x01, set the target speed of the drive to 100%, that is, write Ox03E8 to the Modbus logical address 0xE721, then the structure of the frame is described as follows:

RTU host request frame information:

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x06
Address high-bit	0xE7
Address low-bit	0x21
Data high-bit	0x03
Data low-bit	0xE8
CRC low-bit	0xEF
CRC high-bit	0xCA

Slave response normally

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x06
Address high-bit	0xE7
Address low-bit	0x21
Data high-bit	0x03
Data low-bit	0xE8
CRC low-bit	0xEF
CRC high-bit	0xCA

Slave response abnormally

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x86
Error code	0x03
CRC low-bit	0x02
CRC high-bit	0x61

EN

Command code: 10H

Write N words (Word)

For example: The drive with the slave address of 0x01, write 3 data to the address 0x3500. Then the structure of the frame is described as follows:

RTU host request frame information:

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x10
Address high-bit	0x35
Address low-bit	0x00
Writing number high-bit	0x00
Writing number low-bit	0x03
Total number of write bytes	0x06
First data high-bit	0x00
First data low-bit	0x01
……	……
Nth data high-bit	
Nth data low-bit	
CRC low-bit	0xXX
CRC high-bit	0xXX

Slave response normally

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x10
Address high-bit	0x35
Address low-bit	0x00
Data high-bit	0x00
Data low-bit	0x03
CRC low-bit	0x8F
CRC high-bit	0xC4

Slave response abnormally

START	T1-T2-T3-T4
Slave address	0x01
Modbus function code	0x90
Error code	0x03
CRC low-bit	0x0C
CRC high-bit	0x01

EN

Exception code

When the function requested by the Modbus-RTU frame is incorrect, the driver will return an exception code.

Code	Name	Meaning
1	Illegal function code	Unsupported function code received
2	Illegal address	The requested register address is illegal, or the combination of the register address and the number of requested read data is illegal
3	Illegal data value	The received data field contains at least one illegal data value
4	Number of illegally requested data	The number of requested data is greater than the maximum number
5	Read only	Read only
6	Modify only during shutdown	Modify only during shutdown

6.3 Error checking of communication frame

Using the RTU frame format, the frame includes a frame error detection field calculated based on the CRC method. The CRC field detects the content of the entire frame. The CRC field is two bytes and contains a 1-bit binary value. It is added to the frame after being calculated by the transmission equipment. The receiving device recalculates the CRC of the received frame, and compares it with the value in the received CRC field. If the two CRC values are not equal, it means that there is an error in the transmission. CRC is first stored in OxFFFF, and then a process is called to process more than 6 consecutive bytes in the frame with the value in the current register. Only the 8Bit data in each character is valid for CRC, and the start bit, stop bit and parity bit are invalid. In the process of CRC generation, each 8-bit character is individually exclusive OR (XOR) with the contents of the register, and the result moves to the direction of the least significant bit, and the most significant bit is filled with 0. The LSB is extracted for detection. If the LSB is 1, the register alone is XORed with the preset value. If the LSB is 0, it is not performed. The whole process should be repeated 8 times. After the last bit (the 8th bit) is completed, the next 8-bit byte is XORed separately with the current value of the register. The value in the final register is the CRC value after all bytes in the frame are executed. For example, it is necessary to transmit "11001110", the data contains 5 "1"s, if we use the even parity, the result of even parity bit we will get is '1'. If not, the result of odd parity we will get is '0'. When transmitting the data , the parity bit should be calculated and placed in the frame's parity bit position, and the receiving device must also perform parity check. If the parity of the received data is found to be inconsistent with the preset, it is considered that a communication error has occurred. This CRC calculation method uses the international standard CRC check rule. When editing the CRC algorithm, the user can refer to the CRC algorithm of the relevant standard and write a CRC calculation program that truly meets the requirements.

Standard：CRC-16/MODBUS
Polynomial：x16+x15+x2+1(0x8501)
CRC initial value: 0xFFFF
Now provide a simple function of CRC calculation for user reference (program in C language):

```
unsigned int crc_cal_value(unsigned char *data_value,\
    unsigned char data_length)
{
    int i;
    unsigned int crc_value = 0xffff;
    while(data_length--)
    {
        crc_value ^= *data_value++;
        for(i=0; i<8; i++)
        {
            if(crc_value & 0x0001)
            {
                crc_value = (crc_value >> 1) ^ 0xa001;
            }
            else
            {
                crc_value = crc_value >> 1;
            }
        }
    }
    return crc_value;
}
```

EN

6.4 Modbus related function codes

Before using the Modbus function, you need to set the Modbus configuration parameters of the function code C02 group first, or use it according to the factory value.

Function code	Name	Value scope	Value default	Communication adress
Group C02: communication settings				
C02.00	Modbus Baud rate	0～7	7	0x4200
C02.01	Modbus Data Format	0～3	2	0x4201
C02.02	Modbus Local address	1～247	1	0x4202
C02.04	Modbus Communication timeout	0.0:Null and void，0.1s～60.0s	2	0x4204
Group P02: Binary interconnection parameters (system control word and status)				
P02.32	Modbus Communication stop command	0～1	0	0xE220
P02.33	Modbus Communication jog stop	0～1	0	0xE221
P02.35	Modbus Communication fault reset	0～1	0	0xE223
Group P07: Analog interconnection parameters (communication)				
P07.32	Control command	0	0	0xE720
P07.33	Communication settings 1	0	0	0xE721
P07.34	Communication settings 2	0	0	0xE722
P07.35	per unit of Communication settings 1	0	0	0xE723
P07.36	per unit of Communication settings 1	0	0	0xE724

6.5 Modbus Control command table

Modbus control command p07.32 is the special control command of Modbus of the driver, and changing the control command will synchronously update the Modbus control status flag bit in the P02 group. The Modbus control commands list is as follows:

P07.32 Numerical value	Flag bit	Function description	Modbus-RTU frame
0x0001	P02.32=1	Run start	01 06 E7 20 00 01 7F 74
0x0002	P02.33=1	Jog run	01 06 E7 20 00 02 3F 75
0x0004	P02.32=0, P02.33=0	Deceleration shutdown	0 06 E7 20 00 04 BF 77
0x0005	P02.32=0, P02.33=0, P02.35=1	Fault reset	01 06 E7 20 00 05 7E B7
other	P02.32=0, P02.33=0, P02.35=0	Reset parameters	01 06 E7 20 00 06 3E B6

EN

6.6. Example of controlling motor start-stop and speed setting

Function code settings

1.Communication related parameter settings

Function code number	Function code name	Setting value	Description
C02.00	Modbus Baud rate	7:115200bps	
C02.01	Modbus Data format	3:8-N-1	
C02.02	Modbus Local address	1	
C02.04	Modbus Communication timeout	2	The interval between host sending request frames shall not exceed two seconds

2. Start-stop command

Function code number	Function code name	Setting value	Description
B01.01	Start-stop command mode	2:IN1 Start，INT2 Direction	
B01.03	Start-stop command input IN1	10: Modbus start-stop command or interconnect parameters to P02.32	The start method is derived from Modbus's start-stop signs
B01.04	Start and stop command enter IN2	10.Modbus reverse start and stop command or interconnect parameters to P02.36	The direction control is derived from the direction identifier of Modbus

3. JOG source

Function code number	Function code name	Setting value	Description
B01.11	Source of terminal control modee JOG1	10: Modbus jogging command or interconnect parameters to P02.33	Select Jog 1 from the start-stop signs of Modbus

4. Source of error reset

Function code number	Function code name	Setting value	Description
B00.13	Source of error reset	10: Modbus error reset or interconnect parameters to P02.35	Select the fault reset to come from the control fault reset flag of Modbus

5. Speed source

Function code number	Function code name	Setting value	Description
B02.00	Selection of Speed control main setting	10: Modbus speed set value 1 or interconnect parameters to P07.35	The selected speed is derived from the set value of Modbus

6. Speed feedback

Function code number	Function code name	Description
A00.03	Output frequency	Read to feedback current output frequency of motor

EN

After setting the function code parameters, monitoring and controlling of the drive are realized through Modbus read and write commands.

Modbus-RTU frame setting

Basic control of the drive can be realized by writing function codes P07.32 (OxE720) and P07.33 (OxE721)/P07.34 (0xE722). If the C02.04 communication timeout value is set, the host needs to send the request cyclically, and the cycle interval should be lower than the value in C02.04.

Note: Do not use the writing commands of Modbus to write function codes frequently other than P07.32~P07.34, otherwise it may cause non-volatile memory damage and system error.

1. start-stop

The master station sends a request: 01 06 E7 20 00 01 7F 74 start (motor start requires a rising edge signal, you can send the reset command 01 06 E7 20 00 05 7E B7)

The master station sends a request: 01 06 E7 20 00 01 7F 74 stop.

2.JOG

The master sends a request: 01 06 E7 20 00 02 3F 75 Jog starts

4.Normal shutdown

The master sends a request:

5. Error reset

The master sends a request:

6. Set speed

Set the value of P07.33 function code to control the motor speed. The corresponding configuration is as follows:

Target speeed	P07.33	Modbus-RTU Request frame
100%	1000	01 06 E7 21 03 E8 EF CA
50%	500	01 06 E7 21 01 F4 EF 63
0%	0	01 06 E7 21 00 00 EF 74
-50%	-500	01 06 E7 21 FE 0C AF 11
-100%	-1000	01 06 E7 21 FC 18 AE 7E

7. Speed read

The host sends a request: 01 03 20 03 00 01 7F CA, and the slave responds with 01 03 02 XX XX YY YY, where XX XX is the output frequency.

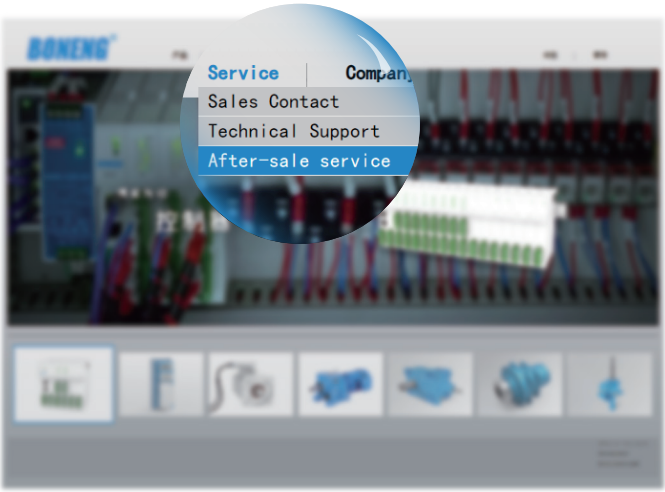
EN

After-sale service

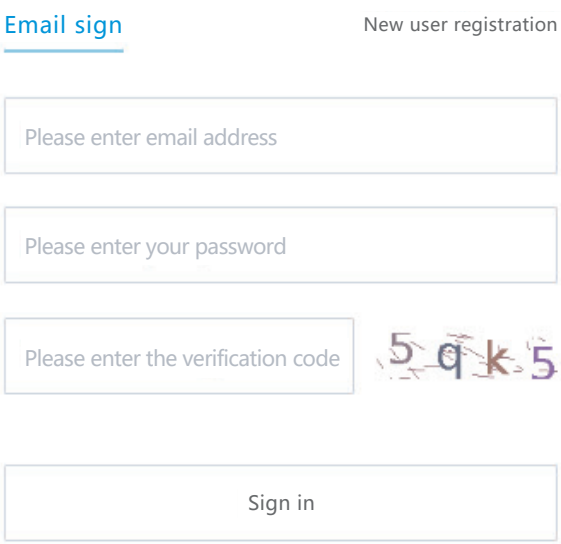
After-sales Service Please follow the steps below to submit the after-sales process.

→ Login “www.boneng.com”

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



→ Login system



EN

Other District

Controller/Drive : 0512-66182005

Motor/Gear motor/Gearbox : 0512-66189918

BONENG TRANSMISSION(SHEN YANG)CO.,LTD
Controller/Drive : 024-31271571
Motor/Gear motor/Gearbox : 024-31292571

BONENG TRANSMISSION(TIAN JIN)CO.,LTD
Controller/Drive : 022-86928559
Motor/Gear motor/Gearbox : 022-26929558

BONENG TRANSMISSION(KAIFENG)CO.,LTD
Controller/Drive : 0371-23335230
Motor/Gear motor/Gearbox : 0371-23277771

BONENG TRANSMISSION(WEIFANG)CO.,LTD
Controller/Drive : 0536-4699687
Motor/Gear motor/Gearbox : 0536-4699667

BONENG TRANSMISSION(CHANGSHA)CO.,LTD
Controller/Drive : 0731-88386958
Motor/Gear motor/Gearbox : 0731-88380725

BONENG TRANSMISSION EQUIPMENT (CHENGDU)CO.,LTD
Controller/Drive : 028-87740066
Motor/Gear motor/Gearbox : 028-87740066

BONENG TRANSMISSION(ZHAOQING)CO.,LTD
Controller/Drive : 0757-86719757
Motor/Gear motor/Gearbox : 0758-2699830

BONENG TRANSMISSION(SUZHOU)CO.,LTD
Controller/Drive Southern Jiangsu : 0512-66182005
Motor/Gear motor/Gearbox Southern Jiangsu : 0512-66189918
Controller/Drive Zhejiang-Shanghai : 0512-66182005
Motor/Gear motor/Gearbox Zhejiang-Shanghai : 0512-66189918
Controller/Drive Jiangsu-Anhui District : 0512-66182005
Motor/Gear motor/Gearbox Jiangsu-Anhui : 025-52171612

BONENG TRANSMISSION(USA/Canada)CO.,LTD
Technical Support/Debugging/After-Sales Service：
1250 E 222nd Euclid, OH 44117,United Staes
Email: America@boneng.com
Office Tel: 1-216-618-3099 / 1-216-618-0138

BONENG TRANSMISSION(India)CO.,LTD
Technical Support/Debugging/After-Sales Service：
Plot No. E-10/3, MIDC sinnar (Malegaon) Industrial Area, Nashik, 422123, Maharashtra, India.
Email:india@boneng.com
Tel: +91-22-2781 3385 / +91-11- 4507 6293

BONENG