



YZNC<sub>2</sub> YZNC<sub>3</sub> 系列智能控制  
三相异步电动机

YZNC<sub>2</sub> YZNC<sub>3</sub> Smart Control  
Induction Motor

# 使用说明书

Operation Manual

安徽皖南电机股份有限公司  
Anhui Wannan Electric Machine Co.,Ltd

衷心感谢您选购、使用皖南电机。

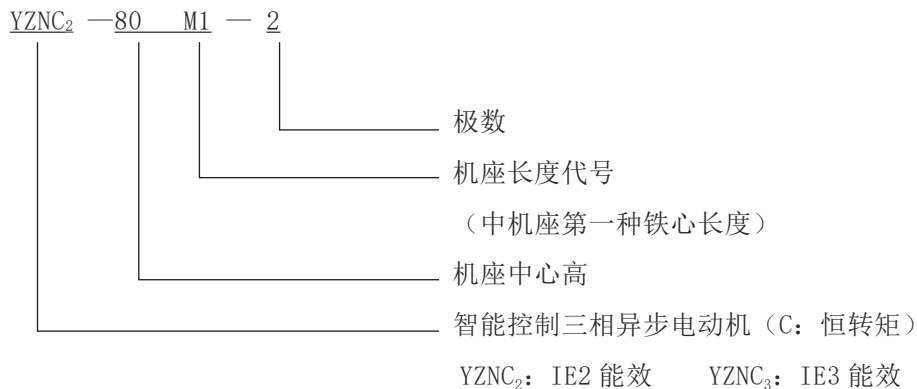
在使用电动机之前，请扫码仔细阅读本说明书，以便您正确的使用和维护。

## 一、产品概述

YZNC<sub>2</sub>/YZNC<sub>3</sub> 系列智能控制三相异步电动机，是我公司率先推出的控制器与电机高度集成的智能化一体机系列产品，该系列电机不仅沿袭了传统变频电机平滑无极调速的优势，更通过变频器与电机的高度集成，达到了简化结构、节约空间、优化控制的要求。 YZNC3 系列电机符合 GB18613-2020 中规定的 3 级能效（IE3），YZNC2 系列电机达到了 IE2 能效，采用外风扇强迫式风冷，调频范围广，运行稳定，可广泛应用于起重机、搅拌机、压缩机、运输机械、机床等，是符合如今智能化发展趋势的新型产品。

电压	380V
功率范围	0.18 ~ 7.5kw
防护等级	IP55
绝缘等级	F 级
冷却方式	IC416

### 电动机型号的意义：



## 二、运行使用条件

- 2.1 海拔不超过 1000m（超过一公里的地区使用控制器需降档使用）。
- 2.2 环境空气温度 -15℃ ~ 40℃，空气湿度在 20 ~ 90% 且无凝露。
- 2.3 电动机不得用于含有易燃性气体、化学腐蚀性气体或其它有害气体的环境中（特殊环境用电动机除外）。
- 2.4 电机运行环境中无灰尘、飘浮性纤维、棉絮及金属微粒。
- 2.5 远离放射性物质及可燃物，电磁干扰源（如电焊机、大动力机器）。
- 2.6 高原环境、高温、低温与特殊环境用电动机需特殊定制。

## 三、搬运与贮存

- 3.1 搬运电动机时，如果电机装有吊攀，一定要使用所提供的吊攀，在搬运前，确保吊攀安装正确且牢固。

3.2 电动机升降时应避免摇摆和振动，以防损坏轴承和其它元件。

3.3 建议电动机都存储在干燥无尘的环境中；如果电机安装或者存储于户外，需要增加相应的防护装置，以免电机性能因长期暴晒、雨水侵蚀、冰雪或者尘土而受到影响。

3.4 对于驱动端和非驱动端采用封闭轴承的电动机，应在其出厂存储 1 年后检查轴承；储存 2 年或超过 2 年，建议更换轴承；对于带有再润滑装置的电动机，若电机出厂后存储 2 年或超过 2 年，建议更换润滑油脂。

3.5 对于存储半年的电动机，建议每 2 个月将电机轴旋转 180 度；存储超过半年的，通电运转一段时间，使轴承润滑脂分布均匀。

## 四、面板示意图



### 按键说明

按键符号	名称	功能说明
	编程键	一级菜单进入或退出，快捷参数删除
	确认键	逐级进入菜单画面、设定参数确认
	UP 递增键	数据或功能码的递增
	DOWN 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下，可循环选择显示参数；在修改参数时，可以选择参数的修改位
	运行键	在键盘操作方式下，用于运行操作
	停止 / 复位键	运行状态时，按此键可用于停止运行操作；故障报警状态时，可以用该键来复位故障
	多功能键	该键功能由功能码 P7.01 确定 0: 无功能 1: 键盘命令与远程操作的切换。指命令源的切换，即当前的命令源与键盘控制（本地操作）的切换。若当前的命令源为键盘控制，则此键功能无效。 2: 正反转切换，该功能只在命令源为键盘操作命令通道时有效。 3: 正转点动 4: 反转点动

## 五、调试



**警示：**所有工作都必须由熟练工人进行操作。电机做任何操作之前，确保电机与主线及辅助电源断开，并且，确保电源不被意外开启。

### 5.1. 准备工作

**注意** 检查过程中，若有疑问，请向有关专业技术人员请教或与我们联系。

- 5.1.1 仔细检查电动机外观是否完好、核对电动机铭牌内容是否与实际需求相符，有无受潮现象。
- 5.1.2 检查电机在运输过程中有无变形和损坏，紧固件有无松动或脱落。
- 5.1.3 轻轻转动电动机转轴，转动应无异响。

### 5.2 安装

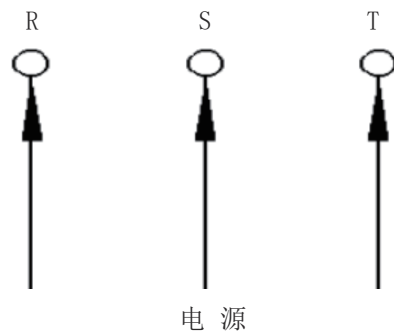
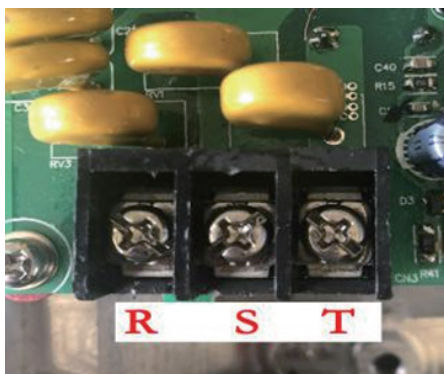
- 5.2.1 对带底脚的电动机，安装基础可以是金属平台，也可以是混凝土结构平台，无论是何种基础都应该平整、坚固，且有足够的强度和硬度支撑电机。
- 5.2.2 请将电机安装于通风良好，易于检查、保养的场所，远离发热体。
- 5.2.3 电动机安装完毕后必须将吊环拧紧。

### 5.3 电气连接

- 5.3.1 接线前，请先打开控制器外盖，找到电源接线端子，再按接线示意图正确布线。

**注意** 控制器内包含精密元件，安装或拆卸时，确保其不致遭受物理性的冲击和振动。

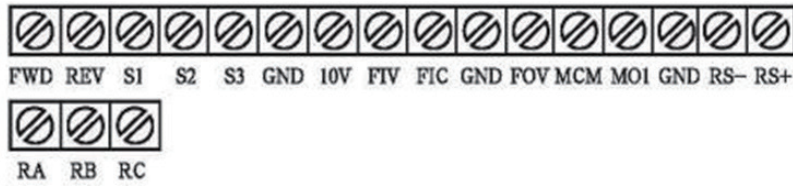
- 5.3.2 有三个端子需用户自行布线，将端子排上的 R、S、T 连接至电源上，接线示意图如下：



**警示：**即使电机控制器处于不工作状态，电源端子仍有带电危险。电源开关断开以后，必须等待 10 分钟以上，且变频器放电完毕，才允许进行相关操作。

5.3.3 接线时，将电机引入线的U型接线片直接插入接线端子中，线缆引入接线孔时应防止线芯损伤，引入电缆须用防水螺套锁紧固定，防止窜动。

5.3.4 控制器端子示意图如下：

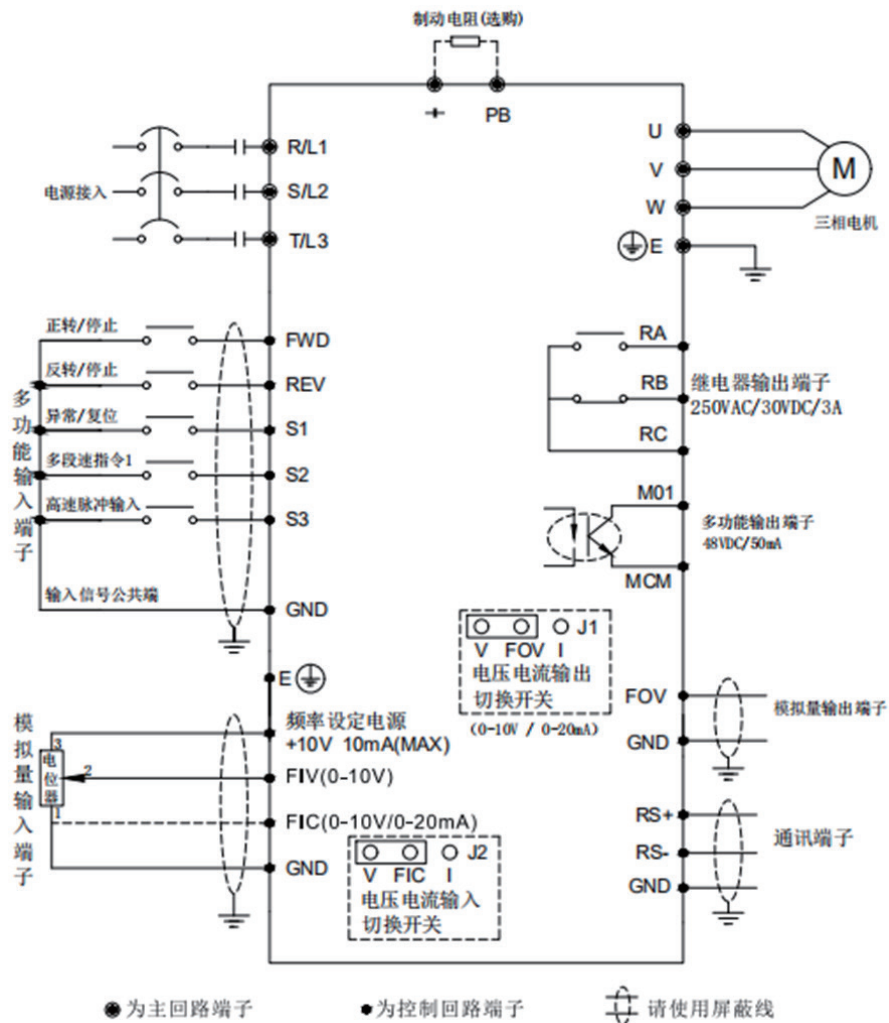


5.3.5 风机需要单独接电源运转。

5.3.6 YZNC 系列智能控制电动机调试数据：

极数	额定电压	额定频率	恒转矩转速范围	恒转矩频率范围	恒功率转速范围	恒功率频率范围
2	380V	100Hz	300 ~ 3000rpm	10 ~ 100Hz	3000 ~ 6000rpm	100 ~ 200Hz
4	380V	50Hz	150 ~ 1500rpm	5 ~ 50Hz	1500 ~ 3000rpm	50 ~ 100Hz

5.3.6 控制器基本配线图如下：



5.3.7 该系列电机控制器接线盒内有接地端子，确保其可靠接地。

5.3.8 电动机的相序 U、V、W 须与接入外电源相序 R、S、T 一一相对应，电动机转向从轴伸端视之为顺时针方向，用户如需反转，通过 **JOG** 键进行操作。

5.3.9 电源频率与额定频率偏差不超过 2%，电源电压与额定电压偏差不超过 5%。

5.3.10 安装时，应将防水螺套的密封膜彻底清除，以确保防水螺套和电缆间的密封性。

清除前



清除后



## 5.4 电机与负载的联接

5.4.1 电动机允许采用弹性联轴器、正齿轮及皮带轮与负载机械联接。

5.4.2 采用联轴器联接时，电动机轴中心线与负载机械的轴中心要重合，以免电机在运行中产生强烈振动。

5.4.3 电动机与设备安装连接后，电机若装有吊环，起吊过程中不能使用，否则会直接损坏电机。

## 六、启动

### 6.1 准备工作

6.1.1 检查三相电源电压是否正常，确认电压和频率都在允许范围内。

6.1.2 检查电动机的紧固螺栓是否拧紧，轴承是否有充足的润滑油脂。

6.1.3 检查联轴器螺钉和销钉是否紧固，皮带联轴是否良好，紧松是否合适，机组转动是否灵活，有无卡位、窜动或异响。

6.1.4 检查电动机的接线是否符合要求，电机是否可靠接地。

6.1.5 检查电动机的冷却风扇，确保其没有被卡住。

### 6.2 启动注意事项

6.2.1 该系列电动机的启动方式为变频启动。

6.2.2 电动机接好线，经检查确认无误后，方可接通电源进行空载试运转，空载试运行时间一般在 20 ~ 30 分钟，并观察电机有无异常现象，待空转正常后方投入负载运行。

**（注：电机连续空载启动不得超过 3 次）**

6.2.3 合闸后，启动控制器，如果电动机不转，应立即切断电源，以免烧毁电机。

6.2.4 风机应在主电机启动前（或同时）开机，停机时应先关主电机，再关风机。

### 6.3 运行时的注意事项

6.3.1 严禁缺相运行。

6.3.2 防止过载，过载会导致过电流过热，过热将缩短绝缘寿命，降低电动机的可靠性。

6.3.3 电源电压的波动不得超出额定电压的 95% ~ 105%。

6.3.4 通电前应取下轴伸上的轴套和平键，使身体、衣物远离电动机旋转部分。

6.3.5 电动机运行时若有异常应立即停机。

6.3.6 电动机在运行过程中，表面应保持清洁，进风口不得受尘土纤维阻碍。

6.3.7 通电后，应该先调整控制器，使其数据参数与电动机性能相匹配；如需停止，应该先关闭控制器，电机方可停止运行。

6.3.8 电机如果需要进行绝缘电阻或对地耐压测试，必须先确保控制器与电机主体已断开，否则会损坏控制器。

### 6.4 控制器运行功能参数表

PP.00 设为非 0 值，即设置了参数保护密码，在功能参数模式和用户更改参数模式下，参数菜单必须在正确输入密码后才能进入，取消密码，需将 PP.00 设为 0。

P 组、C 组是基本功能参数，D 组是监视功能参数。功能表中符号说明如下：

“☆”：表示该参数的设定值在变频器处于停机、运行状态中，均可更改；

“★”：表示该参数的设定值在变频器处于运行状态时，不可更改；

“●”：表示该参数的数值是实际记录值，不可更改；

“\*”：表示该参数是厂家参数，仅限于制造厂家设置，禁止用户进行操作。

功能码	名称	设定范围	出厂值	更改
<b>P0: 基本功能组</b>				
P0.00	G/P类型显示	1: G型（恒转矩负载机型） 2: P型（风机、水泵类负载机型）	机型确定	●
P0.01	控制模式选择	0: 无PG矢量控制 1: 有PG矢量控制 2: V/F控制	2	★
P0.02	命令源选择	0: 键盘指令通道（LED不亮） 1: 端子指令通道（LED亮） 2: 通讯指令通道（LED闪烁）	0	☆
P0.03	主频率源X选择	0: 数字设定（预置频率P0.08, UP/DOWN可修改, 掉电不记忆） 1: 数字设定（预置频率P0.08, UP/DOWN可修改, 掉电记忆） 2: FIV 3: FIC 4: 保留 5: PULSE脉冲设定（S3） 6: 多段指令 7: 简易PLC 8: PID 9: 通讯给定	0	★
P0.04	辅助频率源Y选择	同P0.03（主频率源X选择）	0	★

P0.05	叠加时辅助频率源Y范围选择	0: 相对于最大频率 1: 相对于频率源X	0	☆
P0.06	叠加时辅助频率源Y范围	0%~150%	100%	☆
P0.07	频率源叠加选择	个位: 频率源选择 0: 注频率源X 1: 主辅运算结果 (运算关系由十位确定) 2: 注频率源X与辅助频率源Y切换 3: 主频率源X与主辅运算结果切换 4: 辅助频率源Y与主辅运算结果切换 十位: 频率源主辅运算关系 0: 主+辅 1: 主-辅 2: 二者最大值 3: 二者最小值	00	☆
P0.08	预置频率	0.00Hz~最大频率(P0.10)	50.00Hz	☆
P0.09	运行方向	0: 方向一致 1: 方向相反	0	☆
P0.10	最大频率	50.00Hz~600.00Hz	50.00Hz	★
P0.11	上限频率源	0: P0.12设定 1: FIV 2: FIC 3: 保留 4: PULSE脉冲设定(S3) 5: 通讯给定	0	★
P0.12	上限频率	下限频率P0.14~最大频率P0.10	50.00Hz	☆
P0.13	上限频率偏置	0.00Hz~最大频率P0.10	0.00Hz	☆
P0.14	下限频率	0.00Hz~上限频率P0.12	0.00Hz	☆
P0.15	载波频率	0.5kHz~16.0kHz	机型确定	☆
P0.16	载波频率随温度调整	0: 否 1: 是	1	☆
P0.17	加速时间1	0.00s~65000s	机型确定	☆
P0.18	减速时间1	0.00s~65000s	机型确定	☆
P0.19	加减速时间单位	0: 1s 1: 0.1s 2: 0.01s	1	★
P0.21	叠加时辅助频率源偏置频率	0.00Hz~最大频率P0.10	0.00Hz	☆
P0.22	频率指令分辨率	0.01Hz	2	★
P0.23	数字设定频率停机记忆选择	0: 不记忆 1: 记忆	0	☆
P0.25	加减速时间基准频率	0: 最大频率(P0.10) 1: 设定频率 2: 100Hz	0	★
P0.26	运行时频率指令UP/DOWN基准	0: 运行频率 1: 设定频率	0	★



P0.27	命令源捆绑频率源	个位：操作面板命令绑定频率源选择 0：无绑定 1：数字设定频率 2：FIV 3：FIC 4：保留 5：Pulse脉冲设定（S3） 6：多段速 7：简易PLC 8：PID 9：通讯给定 十位：端子命令绑定频率源选择 百位：通讯命令绑定频率源选择	0000	☆
<b>P1组：电机参数组</b>				
P1.00	电机类型	0：普通异步电机 1：变频异步电机	0	★
P1.01	电机额定功率	0.1kW~1000.0kW	机型确定	★
P1.02	电机额定电压	1V~2000V	机型确定	★
P1.03	电机额定电流	0.01A~655.35A (变频器功率≤55kW) 0.1A~6553.5A (变频器功率>55kW)	机型确定	★
P1.04	电机额定频率	0.01Hz~最大频率	机型确定	★
P1.05	电机额定转速	1rpm~65535rpm	机型确定	★
P1.06	异步电机定子电阻	0.001Ω~65.535Ω (变频器功率≤55kW) 0.0001Ω~6.5535Ω (变频器功率>55kW)	学习参数	★
P1.07	异步电机转子电阻	0.001Ω~65.535Ω (变频器功率≤55kW) 0.0001Ω~6.5535Ω (变频器功率>55kW)	学习参数	★
P1.08	异步电机漏感抗	0.01mH~655.35mH (变频器功率≤55kW) 0.001mH~65.535mH (变频器功率>55kW)	学习参数	★
P1.09	异步电机互感抗	0.1mH~6553.5mH (变频器功率≤55kW) 0.01mH~655.35mH (变频器功率>55kW)	学习参数	★
P1.10	异步电机空载电流	0.01A~P1.03 (变频器功率≤55kW)	学习参数	★
P1.27	编码器线数	1~65535	1024	★
P1.28	编码器类型	0：ABZ增量编码器 2：旋转变压器	0	★
P1.30	ABZ增量编码器 AB相序	0：正向 1：反向	0	★
P1.31	编码器安装角	0.0~359.9°	0.0°	★
P1.34	旋转变压器极对数	1~65535	1	★
P1.36	速度反馈PG断线检测时间	0.0：不动作 0.1s~10.0s	0.0	★

P1.37	自学习选择	0: 无操作 1: 静止自学习 2: 动态自学习 3: 完全静态自学习	0	★
<b>P2组: 电机矢量控制参数组</b>				
P2.00	速度环比例增益1	1~100	30	☆
P2.01	速度环积分时间1	0.01s~10.00s	0.50s	☆
P2.02	切换频率1	0.00~P2.05	5.00Hz	☆
P2.03	速度环比例增益2	1~100	20	☆
P2.04	速度环积分时间2	0.01s~10.00s	1.00s	☆
P2.05	切换频率2	P2.02~最大频率	10.00Hz	☆
P2.06	矢量控制转差增益	50%~200%	100%	☆
P2.07	速度环滤波时间常数	0.000s~0.100s	0.015s	☆
P2.08	矢量控制过励磁增益	0~200	64	☆
P2.09	速度控制方式下转矩上限源选择	0: 功能码P2.10设定 1: FIV 2: FIC 3: 保留 4: Pulse脉冲设定 (S3) 5: 通讯给定 6: MIN (FIV, FIC) 7: MAX (FIV, FIC) 1~7选项的满量程对应P2.10	0	☆
P2.10	速度控制方式下转矩上限数字设定 (电动)	0.0%~200.0%	150.0%	☆
P2.11	速度控制方式下转矩上限指令选择 (发电)	0: 功能码P2.10设定 (不区分电动和发电) 1: FIV 2: FIC 3: 保留 4: Pulse脉冲设定 (S3) 5: 通讯给定 6: MIN (FIV, FIC) 7: MAX (FIV, FIC) 8: 功能码P2.12设定 1~7选项的满量程对应P2.12	0	☆
P2.12	速度控制方式下转矩上限数字设定 (发电)	0.0%~200.0%	150.0%	☆
P2.13	励磁调节比例增益	0~60000	2000	☆
P2.14	励磁调节积分增益	0~60000	1300	☆
P2.15	转矩调节比例增益	0~60000	2000	☆
P2.16	转矩调节积分增益	0~60000	1300	☆
P2.17	速度环积分属性	个位: 积分分离 0: 无效 1: 有效	0	☆
P2.21	弱磁区最大转矩系数	50%~200%	100%	☆
P2.22	发电功率限制使能	0: 无效 1: 全程生效 2: 恒速生效 3: 减速生效	0	☆
P2.23	发电功率上限	0.0%~200.0%	机型确定	☆

P3组：V/F控制参数组				
P3.00	V/F曲线设定	0: 直线V/F 1: 多点V/F 2: 平方V/F 3: 1.2次方V/F 4: 1.4次方V/F 6: 1.6次方V/F 8: 1.8次方V/F 9: 保留 10: V/F完全分离模式 11: V/F半分离模式	0	★
P3.01	转矩提升	0.0%: (自动转矩提升) 0.1%~30.0%	机型确定	☆
P3.02	转矩提升截止频率	0.00Hz~最大频率	50.00Hz	★
P3.03	多点VF频率点1	0.00Hz~P3.05	0.00Hz	★
P3.04	多点VF电压点1	0.0%~100.0%	0.0%	★
P3.05	多点VF频率点2	P3.03~P3.07	0.00Hz	★
P3.06	多点VF电压点2	0.0%~100.0%	0.0%	★
P3.07	多点VF频率点3	P3.05~电机额定频率 (P1.04)	0.00Hz	★
P3.08	多点VF电压点3	0.0%~100.0%	0.0%	★
P3.09	VF转差补偿增益	0.0%~200.0%	0.0%	☆
P3.10	VF过励磁增益	0~200	64	☆
P3.11	VF振荡抑制增益	0~100	机型确定	☆
P3.13	VF分离的电压源	0: 数字设定 (P3.14) 1: FIV 2: FIC 3: 保留 4: PULSE脉冲设定 (S3) 5: 多段指令 6: 简易PLC 7: PID 8: 通讯给定 注: 100.0%对应电机额定电压	0	☆
P3.14	VF分离的电压数字设定	0V~电机额定电压	0V	☆
P3.15	VF分离的电压加速时间	0.0s~1000.0s 注: 表示0V变化到电机额定电压的时间	0.0s	☆
P3.16	VF分离的电压减速时间	0.0s~1000.0s 注: 表示电机额定电压变化到0V的时间	0.0s	☆
P3.17	VF分离停机方式选择	0: 频率/电压独立减至0 1: 电压减为0后频率再减	0	☆
P3.18	过流失速动作电流	50%~200%	150%	★
P3.19	过流失速使能	0: 无效 1: 有效	1	★
P3.20	过流失速抑制增益	0~100	20	☆
P3.21	倍速过流失速动作电流补偿系数	50%~200%	50%	★
P3.22	过压失速动作电压	650.0V~800.0V	770.0V	★
P3.23	过压失速使能	0: 无效 1: 有效	1	★
P3.24	过压失速抑制频率增益	0~100	30	☆
P3.25	过压失速抑制电压增益	0~100	30	☆
P3.26	过压失速最大上升频率限制	0~50Hz	5Hz	★

P4组：输入端子组				
P4.00	FWD端子功能选择	0: 无功能 1: 正转运行 (FWD) 2: 反转运行 (REV) 3: 三线式运行控制	1	★
P4.01	REV端子功能选择	4: 正转点动 (JOGF) 5: 反转点动 (JOGR) 6: 端子UP 7: 端子DOWN	4	★
P4.02	S1端子功能选择	8: 自由停车 9: 故障复位 (RESET) 10: 运行暂停	9	★
P4.03	S2端子功能选择	11: 外部故障常开输入 12: 多段指令端子1 13: 多段指令端子2 14: 多段指令端子3 15: 多段指令端子4	12	★
P4.04	S3端子功能选择	16: 加减速时间选择端子1 17: 加减速时间选择端子2 18: 频率源切换 19: UP/DOWN设定清零 (端子、键盘) 20: 运行命令切换端子	13	★
P4.05	S4端子功能选择	21: 加减速禁止 22: PID暂停 23: PLC状态复位 24: 摆频暂停	0	★
P4.06	保留	25: 计数器输入 26: 计数器复位 27: 长度计数输入 28: 长度复位	0	★
P4.07	保留	29: 转矩控制禁止 30: Pulse脉冲频率输入 (仅对S3有效) 31: 保留 32: 立即直流制动 33: 外部故障常闭输入 34: 频率修改使能 35: PID作用反向取反 36: 外部停车端子1 37: 控制命令切换端子2 38: PID积分暂停 39: 频率源X与预置频率切换 40: 频率源Y与预置频率切换 41: 保留 42: 保留 43: PID参数切换 44: 保留 45: 保留 46: 速度控制/转矩控制切换 47: 紧急停车 48: 外部停车端子2 49: 减速直流制动 50: 本次运行时间清零 51-59: 保留	0	★
P4.10	开关量滤波时间	0.000s~1.000s	0.010s	☆

P4.11	端子命令方式	0: 两线式1 1: 两线式2 2: 三线式1 3: 三线式2	0	★
P4.12	端子UP/DOWN 变化率	0.001Hz/s~65.535Hz/s	1.00Hz/s	☆
P4.13	FI曲线1最小输入	0.00V~P4.15	0.00V	☆
P4.14	FI曲线1最小输入对应设定	-100.0%~+100.0%	0.0%	☆
P4.15	FI曲线1最大输入	P4.13~+10.00V	10.00V	☆
P4.16	FI曲线1最大输入对应设定	-100.0%~+100.0%	100.0%	☆
P4.17	FI曲线1滤波时间	0.00s~10.00s	0.10s	☆
P4.18	FI曲线2最小输入	0.00V~P4.20	0.00V	☆
P4.19	FI曲线2最小输入对应设定	-100.0%~+100.0%	0.0%	☆
P4.20	FI曲线2最大输入	P4.18~+10.00V	10.00V	☆
P4.21	FI曲线2最大输入对应设定	-100.0%~+100.0%	100.0%	☆
P4.22	FI曲线2滤波时间	0.00s~10.00s	0.10s	☆
P4.23	FI曲线3最小输入	-10.00V~P4.25	-10.00V	☆
P4.24	FI曲线3最小输入对应设定	-100.0%~+100.0%	-100.0%	☆
P4.25	FI曲线3最大输入	P4.23~+10.00V	10.00V	☆
P4.26	FI曲线3最大输入对应设定	-100.0%~+100.0%	100.0%	☆
P4.27	FI曲线3滤波时间	0.00s~10.00s	0.10s	☆
P4.28	PULSE最小输入	0.00kHz~P4.30	0.00kHz	☆
P4.29	PULSE最小输入对应设定	-100.0%~100.0%	0.0%	☆
P4.30	PULSE最大输入	P4.28~100.00kHz	50.00kHz	☆
P4.31	PULSE最大输入对应设定	-100.0%~100.0%	100.0%	☆
P4.32	PULSE滤波时间	0.00s~10.00s	0.10s	☆
P4.33	FI曲线选择	个位: FIV曲线选择 1: 曲线1 (2点, 见P4.13~P4.16) 2: 曲线2 (2点, 见P4.18~P4.21) 3: 曲线3 (2点, 见P4.23~P4.26) 4: 曲线4 (4点, 见C6.00~C6.07) 5: 曲线5 (4点, 见C6.08~C6.15) 十位: FIC曲线选择, 同上 百位: 保留	321	☆
P4.34	FI低于最小输入设定选择	个位: FIV低于最小输入设定选择 0: 对应最小输入设定 1: 0.0% 十位: FIC低于最小输入设定选择, 同上	000	☆
P4.35	FWD延迟时间	0.0s~3600.0s	0.0s	★
P4.36	REV延迟时间	0.0s~3600.0s	0.0s	★
P4.37	S1延迟时间	0.0s~3600.0s	0.0s	★
P4.38	S端子有效模式选择1	0: 高电平有效 1: 低电平有效 个位: FWD 十位: REV 百位: S1 千位: S2 万位: S3	00000	★

P4.39	S端子有效模式选择2	0: 高电平有效 1: 低电平有效 个位: 保留 十位: 保留 百位: 保留 千位: 保留 万位: 保留	00000	★
<b>P5组: 输出端子组</b>				
P5.00	M01端子输出模式	1: 保留 2: 开关量输出 (YOR)	0	☆
P5.01	YOR输出功能选择	0: 无输出 1: 变频器运行中 2: 故障输出(故障停机) 3: 频率水平检测FDT1输出 4: 频率到达 5: 零速运行中(停机时不输出)	0	☆
P5.02	控制板继电器功能选择 (RA-RB-RC)	6: 电机过载预报警 7: 变频器过载预报警 8: 设定计数器到达 9: 指定计数器到达	2	☆
P5.03	保留	10: 长度到达 11: PLC循环完成 12: 累计运行时间到达 13: 频率限定中 14: 转矩限定中 15: 运行准备就绪 16: FIV>FIC 17: 上限频率到达 18: 下限频率到达(运行有关) 19: 欠压状态输出	0	☆
P5.04	保留	20: 通讯设定 21: 保留 22: 保留 23: 零速运行中2(停机时也输出) 24: 累计上电时间到达 25: 频率水平检测FDT2输出 26: 频率1到达输出 27: 频率2到达输出 28: 电流1到达输出 29: 电流2到达输出	1	☆
P5.06	保留	30: 定时到达输出 31: FIV输入超限 32: 掉载中 33: 反向运行中 34: 零电流状态 35: 模块温度到达 36: 输出电流超限 37: 下限频率到达(停机也输出) 38: 告警输出(继续运行) 39: 电机过温预报警 40: 本次运行时间到达 41: 故障	4	☆

P5.06	保留	0: 运行频率 1: 设定频率 2: 输出电流 3: 输出转矩 4: 输出功率 5: 输出电压 6: Pulse输入 (100.0%对应100.0kHz) 7: FIV 8: FIC 9: 保留 10: 长度 11: 计数值 12: 通讯设定 13: 电机转速 14: 输出电流 (100.0%对应1000.0A) 15: 输出电压 (100.0%对应1000.0V) 16: 电机输出转矩 (实际值, 相对电机的百分比)	0	☆
P5.07	FOV输出功能选择			
P5.08	保留		1	☆
P5.09	保留			
P5.10	FOV零偏系数	-100.0%~+100.0%	0.0%	☆
P5.11	FOV增益	-10.00~+10.00	1.00	☆
P5.12	保留			
P5.13	保留			
P5.17	YOR输出延迟时间	0.0s~3600.0s	0.0s	☆
P5.18	RA-RB-RC输出延迟时间	0.0s~3600.0s	0.0s	☆
P5.19	保留			
P5.20	保留			
P5.21	保留			
P5.22	输出端子有效状态选择	0: 正逻辑 1: 反逻辑 个位: YOR 十位: RA-RB-RC 百位: 保留 千位: FOV 万位: 保留	00000	☆
<b>P6组: 启停参数组</b>				
P6.00	启动方式	0: 直接启动 1: 速度跟踪再启动 2: 预励磁启动 (交流异步机) 3: SVC快速启动	0	☆
P6.01	转速跟踪方式	0: 从停机频率开始 1: 从零速开始 2: 从最大频率开始	0	★
P6.02	转速跟踪快慢	1~100	20	☆

P6.03	启动频率	0.00Hz~10.00HZ	0.00Hz	☆
P6.04	启动频率保持时间	0.0s~100.0s	0.0s	★
P6.05	启动直流制动电流/预励磁电流	0%~100%	50%	★
P6.06	启动直流制动时间/预励磁时间	0.0s~100.0s	0.0s	★
P6.07	加减速方式	0: 直线加减速 1: S曲线减速速A 2: 动态S曲线加减速	0	★
P6.08	S曲线开始段时间比例	0%~(100%-P6.09)	30.0%	★
P6.09	S曲线结束段时间比例	0%~(100%-P6.08)	30.0%	★
P6.10	停机方式	0: 减速停车 1: 自由停车	0	☆
P6.11	停机直流制动起始频率	0.00Hz~最大频率	0.00Hz	☆
P6.12	停机直流制动瞪大时间	0.0s~100.0s	0.0s	☆
P6.13	停机直流制动电流	0%~100%	0%	☆
P6.14	停机直流制动时间	0.0s~100.0s	0.0s	☆
P6.15	制动使用率	0%~100%	100%	☆
P6.18	转速跟踪电流大小	30%~200%	机型确定	★
P6.21	去磁时间 (SVC有效)	0.00~5.00s	机型确定	☆
P6.23	过励磁选择	0: 不生效 1: 仅减速生效 2: 全程生效	0	☆
P6.24	过励磁抑制电流值	0~150%	100%	☆
P6.25	过励磁增益	1.00~2.50	1.25	☆
<b>P7组：键盘与显示组</b>				
P7.01	JOG功能参数	0: 此键无功能 1: 键盘命令与远程操作切换。指命令源的切换，即当前的命令源与键盘控制（本地操作）的切换。若当前的命令源为键盘控制，则此键功能无效。 2: 正反转切换 通过JOG键切换频率指令的方向。该功能只在命令源为操作面板命令通道时有效。 3: 正转点动 通过键盘JOG键实现正转点动（JOG-FWD）。 4: 反转点动 通过键盘JOG键实现反转点动（JOG-REV）	0	★
P7.02	STOP/RESET键功能	0: 只在键盘操作方式下，STOP/RESET键停机功能有效 1: 在任何操作方式下，STOP/RESET键停机功能均有效	1	☆



P7.03	LED运行显示参数1	0000 - FFFF Bit00: 运行频率1 (Hz) Bit01: 设定频率 (Hz) Bit02: 母线电压 (V) Bit03: 输出电压 (V) Bit04: 输出电流 (A) Bit05: 输出功率 (kW) Bit06: 输出转矩 (%) Bit07: S输入状态 Bit08: M01输出状态 Bit09: FIV电压 (V) Bit10: FIC电压 (V) Bit11: 保留 Bit12: 计数值 Bit13: 长度值 Bit14: 负载速度显示 Bit15: PID设定	1F	☆
P7.04	LED运行显示参数2	0000 - FFFF Bit00: PID反馈 Bit01: PLC阶段 Bit02: Pulse输入脉冲频率 (kHz) Bit03: 运行频率2 (Hz) Bit04: 剩余运行时间 Bit05: FIV校正前电压 (V) Bit06: FIC校正前电压 (V) Bit07: 保留 Bit08: 电机转速 Bit09: 当前上电时间 (Hour) Bit10: 当前运行时间 (Min) Bit11: PULSE输入脉冲频率 (Hz) Bit12: 通讯设定值 Bit13: 编码器反馈速度 (Hz) Bit14: 主频率X显示 (Hz) Bit15: 辅频率Y显示 (Hz)	0	☆
P7.05	LED停机显示参数	0000 - FFFF Bit00: 设定频率 (Hz) Bit01: 母线电压 (V) Bit02: S输入状态 Bit03: M01输出状态 Bit04: FIV电压 (V) Bit05: FIC电压 (V) Bit06: 保留 Bit07: 计数值 Bit08: 长度值 Bit09: PLC阶段 Bit10: 负载速度 Bit11: PID设定 Bit12: PULSE输入脉冲频率 (kHz)	33	☆
P7.06	负载速度显示系数	0.0001~6.5000	1.0000	☆
P7.07	逆变器模块散热器温度	0.0℃~120.0℃	-	●

P8组：辅助功能组				
P8.00	点动运行频率	0.00Hz~最大频率	2.00Hz	☆
P8.01	点动加速时间	0.0s~6500.0s	20.0s	☆
P8.02	点动减速时间	0.0s~6500.0s	20.0s	☆
P8.03	加速时间2	0.0s~6500.0s	机型确定	☆
P8.04	减速时间2	0.0s~6500.0s	机型确定	☆
P8.05	加速时间3	0.0s~6500.0s	机型确定	☆
P8.06	减速时间3	0.0s~6500.0s	机型确定	☆
P8.07	加速时间4	0.0s~6500.0s	机型确定	☆
P8.08	减速时间4	0.0s~6500.0s	机型确定	☆
P8.09	跳跃频率1	0.00Hz~最大频率	0.00Hz	☆
P8.10	跳跃频率2	0.00Hz~最大频率	0.00Hz	☆
P8.11	跳跃频率幅度	0.00Hz~最大频率	0.00Hz	☆
P8.12	正反转死区时间	0.0s~3000.0s	0.0s	☆
P8.13	反转控制使能	0: 允许 1: 禁止	0	☆
P8.14	设定频率低于下限频率运行模式	0: 以下限频率运行 1: 停机 2: 零速运行	0	☆
P8.15	下垂控制	0.00Hz~10.00Hz	0.00Hz	☆
P8.16	设定累计上电时间到达	0h~65000h	0h	☆
P8.17	设定累计运行时间到达	0h~65000h	0h	☆
P8.18	启动保护选择	0: 不保护 1: 保护	0	☆
P8.19	频率检测值 (FDT1)	0.00Hz~最大频率	50.00Hz	☆
P8.20	频率检测滞后值 (FDT1)	0.0%~100.0% (FDT1电平)	5.0%	☆
P8.21	频率到达检出宽度	0.0%~100.0% (最大频率)	0.0%	☆
P8.22	加减速过程中跳跃频率是否有效	0: 无效 1: 有效	0	☆
P8.25	加速时间1与加速时间2切换频率点	0.00Hz~最大频率	0.00Hz	☆
P8.26	减速时间1与减速时间2切换频率点	0.00Hz~最大频率	0.00Hz	☆
P8.27	端子点动优先	0: 无效 1: 有效	0	☆
P8.28	频率检测值 (FDT2)	0.00Hz~最大频率	50.00Hz	☆

P8.29	频率检测滞后值(FDT2)	0.0%~100.0% (FDT2电平)	5.0%	☆
P8.30	任意到达频率检测值1	0.00Hz~最大频率	50.00Hz	☆
P8.31	任意到达频率检出宽度1	0.0%~100.0% (最大频率)	0.0%	☆
P8.32	任意到达频率检测值2	0.00Hz~最大频率	50.00Hz	☆
P8.33	任意到达频率检出宽度2	0.0%~100.0% (最大频率)	0.0%	☆
P8.34	零电流检测水平	0.0%~300.0% 100.0%对应电机额定电流	5.0%	☆
P8.35	零电流检测延迟时间	0.01s~600.00s	0.10s	☆
P8.36	输出电流超限值	0.0% (不检测) 0.1%~300.0% (电机额定电流)	200.0%	☆
P8.37	输出电流超限检测延迟时间	0.00s~600.00s	0.00s	☆
P8.38	任意到达电流1	0.0%~300.0% (电机额定电流)	100.0%	☆
P8.39	任意到达电流1宽度	0.0%~300.0% (电机额定电流)	0.0%	☆
P8.40	任意到达电流2	0.0%~300.0% (电机额定电流)	100.0%	☆
P8.41	任意到达电流2宽度	0.0%~300.0% (电机额定电流)	0.0%	☆
P8.42	定时功能选择	0: 无效 1: 有效	0	☆
P8.43	定时运行时间选择	0: P8.44设定 1: FIV 2: FIC 3: 保留 模拟输入量程对应P8.44	0	☆
P8.44	定时运行时间	0.0Min~6500.0Min	0.0Min	☆
P8.45	FIV输入电压保护值下限	0.00V~P8.46	3.10V	☆
P8.46	FIV输入电压保护值上限	P8.45~10.00V	6.80V	☆
P8.47	模块温度到达	0℃~100℃	75℃	☆
P8.48	散热风扇控制	0: 运行时风扇运转 1: 风扇一直运转	0	☆
P8.49	唤醒频率	休眠频率 (P8.51) ~最大频率 (P0.10)	0.00Hz	☆
P8.50	唤醒延迟时间	0.0s~6500.0s	0.0s	☆
P8.51	休眠频率	0.00Hz~休眠频率 (P8.49)	0.00Hz	☆
P8.52	休眠延迟时间	0.0s~6500.0s	0.0s	☆
P8.53	本次运行到达时间设定	0.0Min~6500.0Min	0.0Min	☆
P8.54	输出功率校正系数	0~200%	100%	☆
P8.55	急速减速时间	0~6553.5s	机型确定	☆

P9组：故障与保护				
P9.00	电机过载保护选择	0: 禁止 1: 允许	1	☆
P9.01	电机过载保护增益	0.20~10.00	1.00	☆
P9.02	电机过载保护预警系数	50%~100%	80%	☆
P9.03	过压失速增益	0~100	30	☆
P9.04	过压失速保护电压	120%~150%	130%	☆
P9.07	上电对地短路保护选择	0: 无效 1: 有效	1	☆
P9.09	故障自动复位次数	0~20	0	☆
P9.10	故障自动复位期间Y0动作选择	0: 不动作 1: 动作	0	☆
P9.11	故障自动复位间隔时间	0.1s~100.0s	1.0s	☆
P9.12	保留			
P9.13	输出缺相保护选择	0: 禁止 1: 允许 个位: 输出缺相保护选择 十位: 运行前输出缺相保护选择	1	☆
P9.14	第一次故障类型	0: 无故障 1: 保留 2: 加速过电流 3: 减速过电流 4: 恒速过电流 5: 加速过电压 6: 减速过电压 7: 恒速过电压 8: 控制电源故障 9: 欠压	—	●
P9.15	第二次故障类型	10: 变频器过载 11: 电机过载 12: 输入缺相 13: 输出缺相 14: 模块过热 15: 外部故障 16: 通讯异常 17: 接触器异常 18: 电流检测异常 19: 电机自学习异常 20: 编码器/PG卡异常 21: 参数读写异常 22: 变频器硬件异常 23: 电机对地短路 24: 保留 25: 保留	—	●

P9.16	第三次（最近一次）故障类型	26: 运行时间到达 27: 用户自定义故障1 28: 用户自定义故障2 29: 上电时间到达 30: 掉载 31: 运行时PID反馈丢失 40: 快速限流超时 41: 运行时切换电机 42: 速度偏差过大 43: 电机超速 45: 电机过温 51: 初始位置错误	—	●
<b>PA组: PID功能</b>				
PA.00	PID给定源	0: PA.01给定 1: FIV 2: FIC 3: 保留 4: PULSE脉冲设定 (S3) 5: 通讯给定 6: 多段指令给定	0	☆
PA.01	PID数值给定	0.0%~100.0%	50.00%	☆
PA.02	PID反馈源	0: FIV 1: FIC 2: 保留 3: FIV-FIC 4: PULSE脉冲设定 (S3) 5: 通讯给定 6: FIV+FIC 7: MAX ( FIV ,  FIC ) 8: MIN ( FIV ,  FIC )	0	☆
PA.03	PID作用方向	0: 正作用 1: 反作用	0	☆
PA.04	PID给定反馈量程	0~65535	1000	☆
PA.05	比例增益Kp1	0.0~100.0	20	☆
PA.06	积分时间Ti1	0.01s~10.00s	2.00s	☆
PA.07	微分时间Td1	0.000s~10.000s	0.000s	☆
PA.08	PID反转截止频率	0.00~最大频率	2.00Hz	☆
PA.09	PID偏差极限	0.0%~100.0%	0.00%	☆
PA.10	PID微分限幅	0.00%~100.00%	0.10%	☆
PA.11	PID给定变化时间	0.00~650.00s	0.00s	☆
PA.12	PID反馈滤波时间	0.00~60.00s	0.00s	☆
PA.13	PID输出滤波时间	0.00~60.00s	0.00s	☆
PA.14	保留			

PA. 15	比例增益Kp1	0.0~100.0	20.0	☆
PA. 16	积分时间Ti2	0.01s~10.00s	2.00s	☆
PA. 17	微分时间Td2	0.000s~10.000s	0.000s	☆
PA. 18	PID参数切换条件	0: 不切换 1: 通过S端子切换 2: 根据偏差自动切换 3: 根据运行频率自动切换	0	☆
PA. 19	PID参数切换偏差1	0.0%~PA.20	20.0%	☆
PA. 20	PID参数切换偏差2	PA.19~100.0%	80.0%	☆
PA. 21	PID初值	0.0%~100.0%	0.0%	☆
PA. 22	PID初值保持时间	0.00~650.00s	0.00s	☆
PA. 25	PID积分属性	个位: 积分分离 0: 无效 1: 有效 十位: 输出到限值后是否停止积分 0: 继续积分 1: 停止积分	00	☆
PA. 26	PID反馈丢失检测值	0.0%: 不判断反馈丢失 0.1%~100.0%	0.0%	☆
PA. 27	PID反馈丢失检测时间	0.0s~20.0s	0.0s	☆
PA. 28	PID停机运算	0: 停机不运算 1: 停机时运算	0	☆
<b>PC组: 多段指令、简易PLC</b>				
PC. 00	多段速指令0	-100.0%~100.0%	0.0%	☆
PC. 01	多段速指令1	-100.0%~100.0%	0.0%	☆
PC. 02	多段速指令2	-100.0%~100.0%	0.0%	☆
PC. 03	多段速指令3	-100.0%~100.0%	0.0%	☆
PC. 04	多段速指令4	-100.0%~100.0%	0.0%	☆
PC. 05	多段速指令5	-100.0%~100.0%	0.0%	☆
PC. 06	多段速指令6	-100.0%~100.0%	0.0%	☆
PC. 07	多段速指令7	-100.0%~100.0%	0.0%	☆
PC. 08	多段速指令8	-100.0%~100.0%	0.0%	☆
PC. 09	多段速指令9	-100.0%~100.0%	0.0%	☆
PC. 10	多段速指令10	-100.0%~100.0%	0.0%	☆
PC. 11	多段速指令11	-100.0%~100.0%	0.0%	☆
PC. 12	多段速指令12	-100.0%~100.0%	0.0%	☆
PC. 13	多段速指令13	-100.0%~100.0%	0.0%	☆
PC. 14	多段速指令14	-100.0%~100.0%	0.0%	☆
PC. 15	多段速指令15	-100.0%~100.0%	0.0%	☆

PC. 16	简易PLC运行方式	0: 单次运行结束停机 1: 单次运行结束保持终值 2: 一直循环	0	☆
PC. 17	简易PLC掉电记忆选择	个位: 掉电记忆选择 0: 掉电不记忆 1: 掉电记忆 十位: 停机记忆选择 0: 停机不记忆 1: 停机记忆	00	☆
PC. 18	简易PLC第0段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 19	简易PLC第0段加减速时间选择	0~3	0	☆
PC. 20	简易PLC第1段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 21	简易PLC第1段加减速时间选择	0~3	0	☆
PC. 22	简易PLC第2段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 23	简易PLC第2段加减速时间选择	0~3	0	☆
PC. 24	简易PLC第3段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 25	简易PLC第3段加减速时间选择	0~3	0	☆
PC. 26	简易PLC第4段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 27	简易PLC第4段加减速时间选择	0~3	0	☆
PC. 28	简易PLC第5段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 29	简易PLC第5段加减速时间选择	0~3	0	☆
PC. 30	简易PLC第6段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 31	简易PLC第6段加减速时间选择	0~3	0	☆
PC. 32	简易PLC第7段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 33	简易PLC第7段加减速时间选择	0~3	0	☆
PC. 34	简易PLC第8段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 35	简易PLC第8段加减速时间选择	0~3	0	☆
PC. 36	简易PLC第9段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 37	简易PLC第9段加减速时间选择	0~3	0	☆
PC. 38	简易PLC第10段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 39	简易PLC第10段加减速时间选择	0~3	0	☆
PC. 40	简易PLC第11段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 41	简易PLC第11段加减速时间选择	0~3	0	☆
PC. 42	简易PLC第12段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 43	简易PLC第12段加减速时间选择	0~3	0	☆
PC. 44	简易PLC第13段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 45	简易PLC第13段加减速时间选择	0~3	0	☆
PC. 46	简易PLC第14段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆

PC. 47	简易PLC第14段加减速时间选择	0~3	0	☆
PC. 48	简易PLC第15段运行时间	0.0s (h) ~6500.0s (h)	0.0s (h)	☆
PC. 49	简易PLC第15段加减速时间选择	0~3	0	☆
PC. 50	简易PLC运行时间单位	0: s (秒) 1: h (小时)	0	☆
PC. 51	多段速0给定方式	0: 功能码PC.00给定 1: FIV 2: FIC 3: 保留 4: PULSE脉冲给定 5: PID 6: 预置频率 (P0.08) 给定, UP/ DOWN可修改	0	☆
<b>PD组: 通讯参数</b>				
PD. 00	波特率	个位: MODBUS 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS 十位: 保留 百位: 保留 万位: 保留	0005	☆
PD. 01	数据格式	0: 无校验<8-N-2> 1: 偶校验<8-E-1> 2: 奇校验<8-O-1> 3: <8-N-1>	3	☆
PD. 02	本机地址	1~247	1	☆
PD. 03	应答延迟	0ms~20ms	2	☆
PD. 04	通讯超时时间	0.0 (无效), 0.1s~60.0s	0.0	☆
PD. 05	数据传送格式选择	个位: MODUS 0: 非标准的MODUS协议 1: 标准的MODUS协议 十位: 保留	1	☆
PD. 06	通讯读取电流分辨率	0: 0.01A 1: 0.1A	0	☆
<b>PP组: 用户功能</b>				
PP. 00	用户密码	0~65535	0	☆
PP. 01	参数初始化	0: 无操作 01: 恢复出厂参数, 不包括电机参数	0	★



C0组：转矩控制参数				
C0.00	速度/转矩控制方式选择	0: 速度控制 1: 转矩控制	0	★
C0.01	转矩控制方式下转矩数字设定	0: 数字设定 (C0.03) 1: FIV 2: FIC 3: 保留 4: PULSE脉冲给定 5: 通讯给定 6: MIN (FIV, FIC) 7: MAX (FIV, FIC) (1-7选项的满量程, 对应C0.03数字设定)	0	★
C0.03	转矩控制方式下转矩数字设定	-200.0%~200.0%	150.0%	☆
C0.05	转矩控制正向最大频率	0.00Hz~最大频率	50.00Hz	☆
C0.06	转矩控制反向最大频率	0.00Hz~最大频率	50.00Hz	☆
C0.07	转矩控制加速时间	0.00s~6500.0s	0.00s	☆
C0.08	转矩控制减速时间	0.00s~6500.0s	0.00s	☆
C5组：控制优化参数				
C5.00	DPWM切换上限频率	0.00Hz~最大频率	8.00Hz	☆
C5.01	PWM调制方式	0: 异步调制 1: 同步调制	0	☆
C5.02	死区补偿模式选择	0: 不补偿 1: 补偿模式1	1	☆
C5.03	随机PWM深度	0: 随机PWM无效 1-10: PWM载频随机深度	0	☆
C5.04	快速限流使能	0: 不使能 1: 使能	1	☆
C5.05	电压过调制系数	100~110	105	☆
C5.06	欠压点设置	210~420	350	☆
C5.08	死区时间调整	100%~200%	150%	☆
C5.09	过压点设置	200.0V~2500.0V	机型确定	

## 七 电动机的维护

### 7.1 常规维护

7.1.1 电动机的进风口及风道需保持清洁畅通, 定期对电机进行检查和清扫, 外壳不得堆积灰尘, 不得用水喷射清扫电机。

7.1.2 定期用干燥空气清除控制器内粉尘、杂物。

7.1.3 检查控制器, 确保控制器无异常发热、无异常振动, 无油雾和粉尘、无凝水。

7.1.4 检查风扇, 确认风扇运转正常、无杂物卡住等情况。

### 7.2 轴承和润滑油脂的检查及更换

7.2.1 电动机运行时轴承允许温度不得超过 95℃ (温度计法)。

7.2.2 轴承每运行 2500 小时 (约半年) 需至少检查一次, 如发现轴承润滑脂变质必须及时更换 (封闭式轴承在使用寿命期限内不必更换润滑脂)。更换前, 须将轴承内外盖、贮油腔内的废油以及排油

装置的油管、油杯内的废油清理干净，并将轴承清洗干净。

7.2.3 润滑脂推荐采用 2 号中小型电机轴承润滑脂，油脂添加量以加到轴承容腔的 1/3 ~ 1/2 左右为宜。轴承牌号见附表。

7.3 拆卸时，应先拆下风罩、风扇和后端 V 型轴封环，拆去前端盖、后端盖的固定螺栓，然后将前端盖连同转子连体抽出。轴承的拆卸应借用专用工具进行操作。

7.4 电动机受潮后，进行干燥处理前，必须先拆除接线板，以免在干燥过程中损伤电路板，待干燥后方可进行运转。干燥处理可采用烘干或短路电流法，如采用烘干法，温度应逐渐升高，但不可超过 70℃；若采用短路电流法，电动机处于短路状态，其输入电流以 0.6 ~ 0.8 倍额定电流值为宜（注：严重受潮的电机不宜用此方法，以免对匝间、对地造成损坏）。

7.5 更换绕组时，须记下原绕组的形式、尺寸、线规、匝数。随意改变设计绕组参数会使电动机某项或几项性能恶化，以致不能使用。

7.6 零部件维修、更换，须由专业技术人员按有关技术标准进行维修、验收。

7.7 为保证电动机的正常运行，应根据实际使用情况对电动机进行定期检查，并需每年检修一次。

7.8 电动机存放过久，可能会导致油脂硬化，在刚启动时会有异响。需空载运行半小时以上，使润滑油脂均匀分布。

## 八、运行中的故障及其主要原因

在运行中必须经常检查电动机，以便能及时发现各种故障而消除之，不然这些故障可能引起事故。下面叙述的是最常见到的故障以及原因：

### 8.1 机械故障

8.1.1 轴承过热：①可能是由于油量不足，油不清洁，油的品质低，水滴侵入，油环卡住，转轴或轴衬表面的故障，转轴颈与轴衬间的间隙缩小，轴承歪斜，轴颈压力过度及产生轴电流等所引起；②滚珠及滚柱轴承过热，可能是由于润滑油不足或过多，转轴弯斜，转轴磨擦过大，润滑油内有杂质及外来物品以及钢珠损坏等所引起。

8.1.2 漏油及机内积油：可能是由于①轴承内油量过多，轴承所有油质不良或粘度不对等所引起；②轴承油槽内压力和轴承盖下压力不均匀所致。

8.1.3 电动机振动异常：可能是①机组的轴线没有对准，电动机在底板上的位置不正，底板不均匀的下沉，底板钢度不够，底板的振动周期与电动机（机组）的振动周期一样或接近；②转轴弯曲或轴颈振动，联轴器配合不良，转子皮带盘及联轴器平衡不良，轴颈与轴衬间的间隙过大，皮带轮粗糙或皮带轮装置不正，传动机构工作不良及有碰撞现象；③鼠笼转子断裂，转子铁心振动等。

8.1.4 转子偏心：可能是由于轴衬松掉、轴承位移，转子及定子铁心变形，转轴弯曲及转子平衡不良等所引起的。

### 8.2 电气故障：

8.2.1 启动异常：①可能由于接线错误、线路断路；②工作电压不对、负载力矩过高或静力矩过大和启动设备有故障等所引起。

8.2.2 电机过热：可能由于线路电压高于和低于额定值、过负荷、冷却空气量不足、电机环境温

度过高、匝间短路及电动机不清洁等所引起。

8.2.3 绝缘损坏：可能由于①工作电压过高；②酸性、碱性、氯气等有腐蚀性气体的损坏；③运动异常导致线圈发热；④使用环境温度过高或者机械碰伤、温度过高，在温度小于 0℃ 及以下保存和水分侵入等所引起。

8.2.4 绝缘电阻：可能由于不清洁、湿度太大，因温度变化过甚，以致表面凝集水滴，绝缘磨损和老化等所引起。

### 8.3 控制器故障代码表：

功能码	名称	功能码	名称
OC	逆变单元保护	EF	外部设备故障
OC1	加速过电流	CE	通讯故障
OC2	减速过电流	IE	电流检测故障
OC3	恒速过电流	TE	电机自学习故障
OU1	加速过电压	EEP	EEPROM 读写故障
OU2	减速过电压	OUOC	变频器硬件故障
OU3	恒速过电压	GND	电机对地短路故障
POF	控制电源故障	END1	累计运行时间到达故障
LU	欠压故障	END2	累计上电时间到达故障
OL2	变频器过载	LOAD	掉载故障
OL1	电机过载	PIDE	运行时 PID 反馈丢失故障
LO	输出缺相	CBC	快速限流故障
OH	模块过热	ESP	速度偏差过大故障
OSP	电机过速度故障		

附表 1：监视参数简表

功能码	名称	最小单位
D0.00	运行频率 (Hz)	0.01Hz
D0.01	设定频率 (Hz)	0.01Hz
D0.02	母线电压 (V)	0.1V
D0.03	输出电压 (V)	1V
D0.04	输出电流 (A)	0.01A
D0.05	输出功率 (kW)	0.1kW
D0.06	输出转矩 (%)	0.1%
D0.07	S 输入状态	1
D0.08	M01 输出状态	1
D0.09	FIV 电压 (V)	0.01V
D0.10	FIC 电压 (V)	0.01V
D0.11	保留	
D0.12	计数值	1
D0.13	长度值	1

功能码	名称	最小单位
D0.14	负载速度显示	1
D0.15	PID 设定	1
D0.16	PID 反馈	1
D0.17	PLC 阶段	1
D0.18	PULSE 输入脉冲频率 (kHz)	0.01kHz
D0.19	保留	
D0.20	剩余运行时间	0.1Min
D0.21	FIV 校正前电压	0.001V
D0.22	FIC 校正前电压	0.001V
D0.23	保留	
D0.24	线速度	1m/Min
D0.25	当前上电时间	1Min
D0.26	当前运行时间	0.1Min
D0.27	Pulse 输入脉冲频率	1Hz
D0.28	通讯设定值	0.01%
D0.29	保留	
D0.30	保留	
D0.31	辅频率 Y 显示	0.01Hz
D0.32	查看任意内存地址值	1
D0.33	保留	
D0.34	电机温度值	1℃
D0.35	目标转矩 (%)	0.1%
D0.36	保留	
D0.37	功率因数角度	0.1
D0.38	保留	
D0.39	VF 分离目标电压	1V
D0.40	VF 分离输出电压	1V
D0.41	保留	
D0.42	保留	
D0.43	保留	
D0.44	保留	
D0.45	故障信息	0
D0.58	Z 信号计数器	1
D0.59	设定频率 (%)	0.01%
D0.60	运行频率 (%)	0.01%
D0.61	变频器状态	1
D0.74	变频器输出转矩	0.1
D0.76	累计用电量低位	0.1 度
D0.77	累计用电量高位	1 度
D0.78	线速度	1m/min

We are truly grateful for your purchasing of Wannan Motors. Before using the motor, please scan the QR code to read the manual so as to use and maintain the motor in a right way.

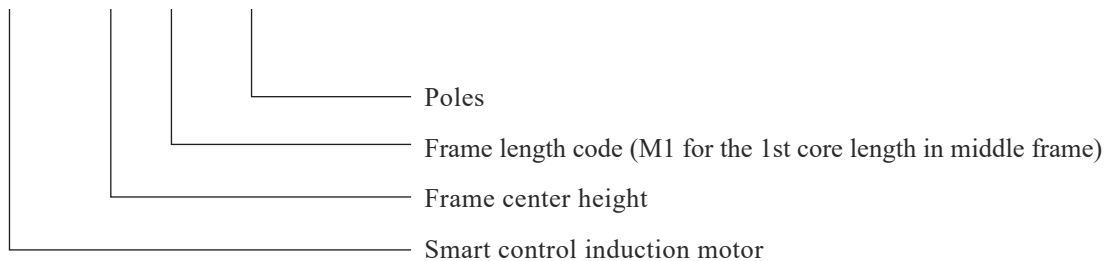
## 1. Product profile

YZNP<sub>2</sub>/YZNP<sub>3</sub> series smart control induction motor, is actually the highly integrated product of controller and motor which has the merit of general variable frequency motor, as well the simple structure, space-saving and optimized controlling. YZNC<sub>3</sub> reaches IE3 efficiency (Level 3 of GB18613-2020), YZNC<sub>2</sub> reaches the IE2 efficiency, and both can be widely used in blower, pump, machine etc. These newly released products meet the current clients' requirement on efficiency and intelligence.

Voltage	380V
Power	0.18 ~ 7.5kw
Protection Grade	IP55
Insulation Grade	F
Cooling Method	IC411

### Type designation:

YZNC<sub>2</sub> —80 M1 — 2



(P: Variable torque)

YZNC<sub>2</sub>: IE2 Efficiency YZNC<sub>3</sub>: IE3 Efficiency

## 2. Usage

2.1 The altitude exceeds not 1000m above sea level.

2.2 The ambient temperature -15°C~40°C, air humidity 20 ~ 90% and contains no condensation.

2.3 Motor can not be applied in the condition where contains explosive, chemical corrosive or some other harmful air(Except for special-purpose motors)

2.4 Motor can not be applied in the condition where contains dust, floating fiber, batting or metal particle.

2.5 Keep away from radioactive material, combustibile substance, and electromagnetic interference interference(EMI).

2.6 Motor applied in plateau, high or low temperature condition shall be specially designed.

### 3. Handling and storage

3.1 Lift motor with the eyebolt offered (ensure the eyebolt is tightened in advance).

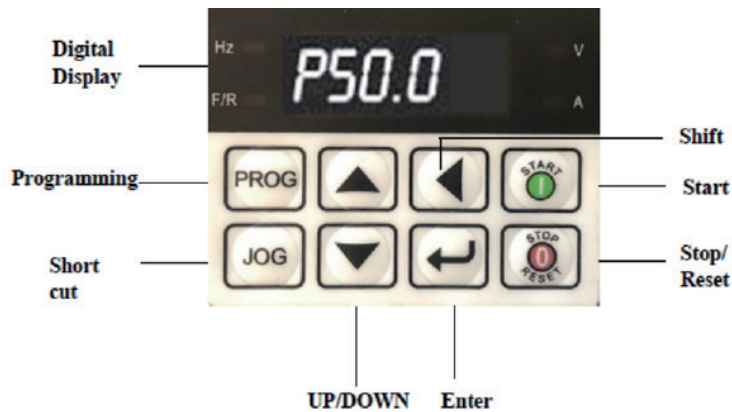
3.2 Care must be taken during lifting and lowering to avoid any falling, bumping, shock or vibration by which bearing and other elements will be damaged.

3.3 It is recommended that the motor be stored in dry and clean environment; a protective cover or shield is needed to protect it from the insolation, rain, snow and dust when the motor is installed or stored outdoors.

3.4 If the DE and NDE bearings are of sealed type, it is recommended to check bearing if the motor has been stored for 1 year, replace the bearing for 2 or more years; if the bearings are of re-grease type, replace its grease if the motor has been stored for 2 or more years.



3.5 For the motor which has been stored for half year, turn the shaft by 180° every 2 month,; and make the motor operate for some time to make the lubrication grease get equidistribution if the motor has been stored longer than half year.

### 4. Keyboard description



#### Key function

KEY	NAME	FUNCTION
	Programming	Enter or escape of first-level menu
	Enter	Progressively enter menu and confirm parameters
	Up	Progressively increase data or function codes
	Down	Progressively decrease data or function codes
	Shift	In parameter setting mode, press this button to select the bid to be modified. In stop and running display modes, cyclically displays parameters by shift key.
	Run	Start to run in keypad control mode

KEY	NAME	FUNCTION
	Stop/Reset	In running status, pressing this key for stop; in fault alarm status, pressing this key for reset.
	Shortcut	Determined by function code P7.01 0:No-function 1:Keyboard/Remote operation command switch, namely switchover between current command source and operation panel control (local operation). This key is invalid in operation panel control mode. 2:Forward/Reverse switch. Only accessible when command source is keyboard operation command channel. 3:Forward JOG 4:Reverse JOG

## 5. Test



**Warning:** Installation and debugging should be performed by technician. Cut off the electricity of the main and auxiliary power supply before any work and ensure that all power supply will not be connected.

### 5.1 Preparation work

5.1.1 Check and ensure the appearance of the motor is in good order. Check and ensure that the motor nameplate is consistent with actual requirement.

**Note** Any problems please consult the technician or contact us.

5.1.2 Ensure that the elements have been connected correctly, and the fasteners are tight.

5.1.3 Rotate the motor shaft gently to see whether its rotation is flexible and quick or not.

### 5.2 Installation

5.2.1 For the motor with feet, the installation foundation can be either metal base or concrete structure platform, whatever the foundation is made of ensure that it is strengthened and rigid enough for the motor.

5.2.2 Keep the motor in good ventilation, away from heating element.

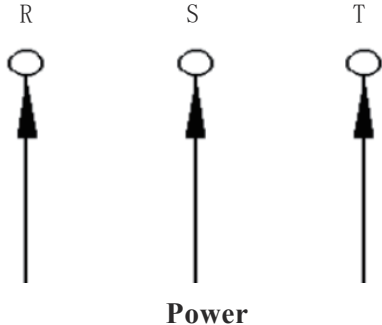
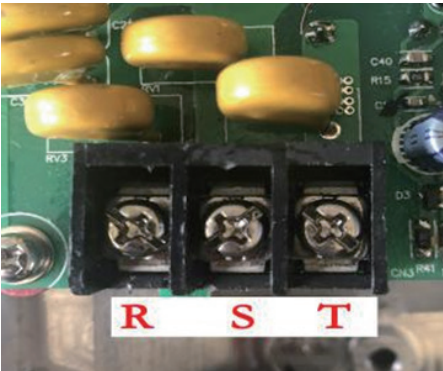
5.2.3 Screw the eyebolt when the installation has finished.


### 5.3 Electrical connection

5.3.1 Open controller cover and wire the power terminals.

**Note** Controller contains some precise elements, ensure these elements will not be damaged during dismantling or dismantling, especially avoid bumping and falling.

5.3.2 There are three terminals need to be wired, connect R, S, T to power supply as diagram below.:



 **Warning:** It's dangerous to touch the live power terminals even when the motor is not in operation since it may still be charged. Waite at least 10min after power off, don't operate this motor until it has been completely discharged.

5.3.3 Connect U-connection strap with terminals. Be careful when draw the cable through cable entry at the terminal box, and fix the cable with a gland and bow washer.

5.3.4 Terminal configuration is as below



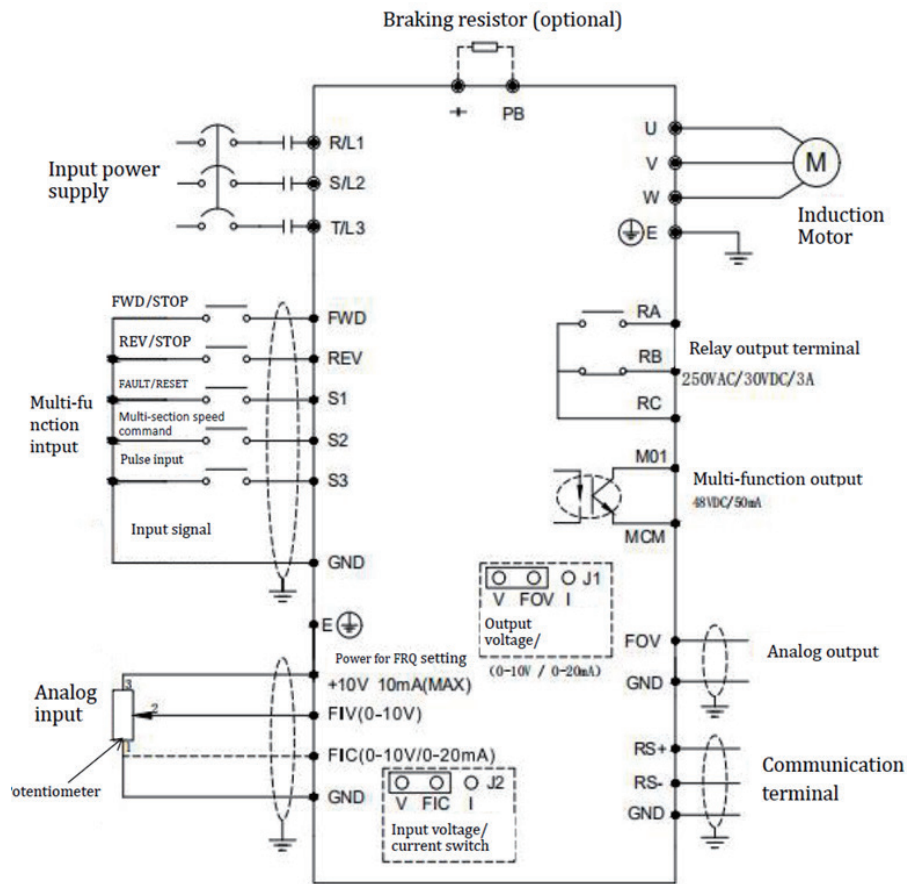
5.3.5 Motor adopt separately power-supplied blower.

5.3.6 YZNC series smart control induction test data:

Pole	Voltage	Frequency	Constant torque speed	Constant torque Hz	Constant output speed	Constant output Hz
2	380V	100Hz	300 ~ 3000rpm	10 ~ 100Hz	3000 ~ 6000rpm	100 ~ 200Hz
4	380V	50Hz	150 ~ 1500rpm	5 ~ 50Hz	1500 ~ 3000rpm	50 ~ 100Hz



### 5.3.6 Controller wiring diagram:



5.3.7 Ensure the earth terminal in the connection box being grounded.

5.3.8 Motor will rotate clockwise viewed from driving shaft end if the terminal U, V, W is connected respectively to power line R, S, T. Provided the reverse rotation is need, press **JOG** key for shift.

5.3.9 Frequency deviation between power supply and rated value is  $\pm 2\%$ , voltage deviation is  $\pm 5\%$ .

5.3.10 The membrane must be completely removed so as to guarantee the sealing between gland and electric cable. DETAILS SEE PICTURE BELOW:

BEFORE REMOVAL



AFTER REMOVAL



## **5.4 Coupling**

5.4.1 Coupling, gear and belt pulley are allowed to be used for transmission.

5.4.2 When adopting coupling, the motor's shaft center must stay consisting in the same level with driven equipment's shaft center, otherwise motor will severely vibrate during working.

5.4.3 Eyebolt is not available for lifting when the motor has been connected to driven equipment.

## **6. Start**

### **6.1 Preparation**

6.1.1 Check three phase power supply with regarding to the voltage and frequency.

6.1.2 Check the fasteners to see whether they are tight or not, and whether the lubrication grease adequate or not.

6.1.3 Ensure that all screw and plug of coupling are tightened; belt is elastic; pulley runs smoothly.

6.1.4 Ensure that all cables have been correctly connected, and the motor has been safely grounded.

6.1.5 Ensure that the cooling fan will not be locked during motor operation.

### **6.2 Start matters**

6.2.1 Start the motor with controller.

6.2.2 After checking all the connections, turn on power for no-load operation test for 20-30min, if it runs smoothly, then put into with-load operation. (Tips: Continuous with-load operation should be no more than 3 times).

6.2.3 Cut off electricity supply immediately if the motor cannot work when start the controller.

### **6.3 Operation matters**

6.3.1 Non-full phase operation is prohibited.

6.3.2 Avoid overload, since it may cause current overheat, and overheat will shorten the insulation lifetime as well as affect motor's performance.

6.3.3 Voltage fluctuation of the supplied power cannot exceed 95% ~ 105% of the rated voltage.

6.3.4 Remove the sleeve and key on shaft end before power on, keep people and clothes from rotating parts of motor.

6.3.5 Stop the motor immediately if any abnormal sound occurs.

6.3.6 Keep the motor clean and in good ventilation during operation.

6.3.7 When power on, it is the first step to adjust controller's data to meet the motor's requirement; and close the controller firstly if the motor need to be stopped.

6.3.8 Don't do insulation resistance test or earth withstand voltage test before the controller has disconnected with the motor body, otherwise the controller will get damaged.

### **6.4 Controller performance parameter**

If PP.00 is set to a non-zero value, parameter protection is enable and you need to enter correct

password to enter menu interface. To cancel the password protection function, enter with password and then set PP.00 to 0.

Group P, C are the basic parameters, Group D is to monitor the function parameter. The symbols in the function code table are described as follows:

“☆”: The parameter can be modified when the controller is in either stop or running state.

“★”: The parameter cannot be modified when the controller is in running state.

“●”: The parameter is measured value which can not be modified.

“\*”: The parameter is factory parameter and be set only by manufacture.

CODE	NAME	SETTING RANGE	DEFAULT	PROPERTY
<b>P0: Standard Function Parameters</b>				
P0.00	G/P type display	1: G type (constant torque) 2: P type (variable torque load e.g.fan and pump)	Model dependent	●
P0.01	Control mode selection	0: No PG (speed sensor) vector control 1: PG (speed sensor) vector control 2: V/F control	2	★
P0.02	Command source selection	0: Operation panel control (LED off) 1: Terminal control (LED on) 2: Communicatin control (LED linking)	0	☆
P0.03	Main frequency source X selection	0: Digit setting (Frequency preset P0.08, modify with UP/DOWN, not memory when power fail) 1: Digit setting (Frequency preset P0.08, modify with UP/DOWN, memory when power fail) 2: FIV 3: FIC 4: Reserved 5: PULSE (S3) 6: Multistage instruction 7: Simple PLC 8: PID 9: Communicatin setting	0	★
P0.04	Auxiliary frequency source Y selection	See P0.03 (Main frequency source X selection)	0	★
P0.05	Auxiliary frequency source superposition Y range selection	0: Relative to the max frequency 1: Relative to the main frequency source X	0	☆
P0.06	Auxiliary frequency source superposition Y range selection	0% ~ 150%	100%	☆

P0.07	Frequency source superposition selection	Unit's digit: Frequency source 0: Main frequency source X 1: X and Y operation (operation relationship depends on ten's digit) 2: Switchover between X and Y 3: Switchover between X and "X and Y operation" 4: Switchover between Y and "X and Y operation" 0: X+Y 1: X-Y 2: Both the max 3: Both the min	00	☆
P0.08	Frequency preset	0.00Hz ~ Max frequency (P0.10)	50.00Hz	☆
P0.09	Rotation direction	0: Same direction 1: Reverse direction	0	☆
P0.10	Max frequency	50.00Hz ~ 600.00Hz	50.00Hz	★
P0.11	Upper limit frequency source	0: P0.12 setting 1: FIV 2: FIC 3: Reserved 4: PULSE setting (S3) 5: Communication setting	0	★
P0.12	Upper limit frequency	Lower limit frequency P0.14 ~ max frequency P0.10	50.00Hz	☆
P0.13	Upper limit frequency offset	0.00Hz ~ Max frequency P0.10	0.00Hz	☆
P0.14	Lower limit frequency	0.00Hz ~ Upper limit frequency P0.12	0.00Hz	☆
P0.15	Carrier frequency	0.5kHz ~ 16.0kHz	Model dependent	☆
P0.16	Carrier frequency adjustment with temperature	0: No 1: Yes	1	☆
P0.17	Acceleration time 1	0.00s ~ 65000s	Model dependent	☆
P0.18	Deceleration time 1	0.00s ~ 65000s	Model dependent	☆
P0.19	Acceleration/Deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	1	★
P0.21	Frequency offset of auxiliary frequency source for X and Y operation	0.00Hz ~ Max frequency P0.10	0.00Hz	☆
P0.22	Frequency instruction resolution	0.01Hz	2	★
P0.23	Retentive of digital setting frequency upon power	0: Not retentive 1: Retentive	0	☆
P0.25	Acceleration/Deceleration time base frequency	0: Max frequency (P0.10) 1: Set frequency 2: 100Hz	0	★

P0.26	Base frequency for UP/ DOWN modification during working	0: Running frequency 1: Set frequency	0	★
P0.27	Binding command source to frequency source	Unit's digit: Binding operation panel command to frequency source 0: No binding 1: Frequency source by digital setting 2: FIV 3: FIC 4: Reserved 5: Pulse (S3) 6: Multi-speed palse 7: Simple PLC 8: PID 9: Communication setting Ten's digit: Binding terminal command to frequency source Hundred's digit: Binding communication command to frequency source	0000	☆
<b>P1: Motor Parameter</b>				
P1.00	Motor type	0: General motor 1: Variable frequency asynchronous motor	0	★
P1.01	Motor rated power	0.1kW ~ 1000.0kW	Model dependent	★
P1.02	Motor rated voltage	1V ~ 2000V	Model dependent	★
P1.03	Motor rated current	0.01A ~ 655.35A (Inverter power $\leq$ 55kW) 0.1A ~ 6553.5A (Inverter power > 55kW)	Model dependent	★
P1.04	Motor rated frequency	0.01Hz ~ Max frequency	Model dependent	★
P1.05	Motor rated speed	1rpm ~ 65535rpm	Model dependent	★
P1.06	Stator resistance (Asynchronous motor)	0.001 $\Omega$ ~ 65.535 $\Omega$ (Inverter power $\leq$ 55kW) 0.0001 $\Omega$ ~ 6.5535 $\Omega$ (Inverter power > 55kW)	Tuned parameter	★
P1.07	Rotor resistance (Asynchronous motor)	0.001 $\Omega$ ~ 65.535 $\Omega$ (Inverter power $\leq$ 55kW) 0.0001 $\Omega$ ~ 6.5535 $\Omega$ (Inverter power > 55kW)	Tuned parameter	★
P1.08	Leakage inductive reactance (Asynchronous motor)	0.01mH ~ 655.35mH (Inverter power $\leq$ 55kW) 0.001mH ~ 65.535mH (Inverter power > 55kW)	Tuned parameter	★
P1.09	Mutual inductive reactance (Asynchronous motor)	0.1mH ~ 6553.5mH (Inverter power $\leq$ 55kW) 0.01mH ~ 655.35mH (Inverter power > 55kW)	Tuned parameter	★

P1.10	No-load current (Asynchronous motor)	0.01A ~ P1.03 (Inverter power $\cong$ 55kW)	Tuned Parameter	★
P1.27	Encoder pulse per revolution	1 ~ 65535	1024	★
P1.28	Encoder type	0: ABZ incremental encoder 2: Resolver	0	★
P1.30	ABZ incremental encoder AB phase sequence	0: Forward 1: Reverse	0	★
P1.31	Encoder install angle	0.0 ~ 359.9°	0.0°	★
P1.34	Rotation transformer logarithm	1 ~ 65535	1	★
P1.36	Speed feedback PG card break line detection time	0.0: No action 0.1s~10.0s	0.0	★
P1.37	Auto tuning selection	0: No operation 1: Static tuning 2: Dynamic tuning 3: Complete static tuning	0	★
<b>P2: Motor vector control parameter</b>				
P2.00	Speed loop proportional gain 1	1 ~ 100	30	☆
P2.01	Speed loop integral time 1	0.01s ~ 10.00s	0.50s	☆
P2.02	Switch frequency 1	0.00 ~ P2.05	5.00Hz	☆
P2.03	Speed loop proportional gain 2	1 ~ 100	20	☆
P2.04	Speed loop integral time 2	0.01s ~ 10.00s	1.00s	☆
P2.05	Switch frequency 2	P2.02 ~ Max frequency	10.00Hz	☆
P2.06	Vector control slip gain	50% ~ 200%	100%	☆
P2.07	Time constant of speed loop filter	0.000s ~ 0.100s	0.015s	☆
P2.08	Vector control over- excitation gain	0 ~ 200	64	☆
P2.09	Torque upper limit source in speed control mode	0: As function code P2.10 1: FIV 2: FIC 3: Reserved 4: Pulse (S3) 5: Communication set 6: MIN (FIV,FIC) 7: MAX (FIV,FIC) 1 ~ 7 full range correspond to P2.10	0	☆
P2.10	Torque upper limit setting in speed control mode (Electrical)	0.0% ~ 200.0%	150.0%	☆

P2.11	Torque upper limit instruction in speed control mode (Generation)	0: As Function code P2.10 1: FIV 2: FIC 3: Reserved 4: Pulse (S3) 5: Communication set 6: MIN (FIV,FIC) 7: MAX (FIV,FIC) 8: As function code P2.12 1 ~ 7 full range correspond to P2.10	0	☆
P2.12	Torque upper limit digitsetting in speed control mode (Generation)	0.0% ~ 200.0%	150.0%	☆
P2.13	Excitation adjustment proportional gain	0 ~ 60000	2000	☆
P2.14	Excitation adjustment integral gain	0 ~ 60000	1300	☆
P2.15	Torque adjustment proportional gain	0 ~ 60000	2000	☆
P2.16	Torque adjustment integral gain	0 ~ 60000	1300	☆
P2.17	Speed loop integral property	Unit's digit: integral separation 0: Disabled 1: Enabled	0	☆
P2.21	Maximum torque coefficient of field weakening	50% ~ 200%	100%	☆
P2.22	Generation power limit enabled	0: Disabled 1: Enabled always 2: Enabled when constant speed 3: Enabled when deceleration	0	☆
P2.23	Generation power upper limit	0.0% ~ 200.0%	Model dependent	☆
<b>P3: V/F control parameter</b>				
P3.00	V/Fcurve setting	0: Linear V/F 1: Multi-point V/F 2: Square V/F 3: 1.2-power V/F 4: 1.4-power V/F 6: 1.6-power V/F 8: 1.8-power V/F 9: Reserved 10: V/F complete separation 11: V/F full separation	0	★
P3.01	Torque boost	0.0%: (fixed torque boost) 0.1% ~ 30.0%	Model dependent	☆
P3.02	Cut-off frequency of torque boost	0.00Hz ~ Max frequency	50.00Hz	★
P3.03	Multi-point V/F frequency 1	0.00Hz ~ P3.05	0.00Hz	★

P3.04	Multi-point V/F voltage 1	0.0% ~ 100.0%	0.0%	★
P3.05	Multi-point V/F frequency2	P3.03 ~ P3.07	0.00Hz	★
P3.06	Multi-point V/F voltage 2	0.0% ~ 100.0%	0.0%	★
P3.07	Multi-point V/F frequency3	P3.05 ~ Motor rated frequency (P1.04)	0.00Hz	★
P3.08	Multi-point V/F voltage 3	0.0% ~ 100.0%	0.0%	★
P3.09	V/F slip compensation gain	0.0% ~ 200.0%	0.0%	☆
P3.10	V/F 过 over-excitation gain	0 ~ 200	64	☆
P3.11	V/F oscillation suppression gain	0 ~ 100	Model dependent	☆
P3.13	Voltage source for V/F separation	0: Digit setting (P3.14) 1: FIV 2: FIC 3: Reserved 4: PULSE (S3) 5: Multi-reference 6: Simple PLC 7: PID 8: Communication setting Note: 100.0% refers to motor rated voltage	0	☆
P3.14	Voltage digit setting for VF separation	0V ~ motor rated voltage	0V	☆
P3.15	Voltage deceleration time for V/F separation	0.0s ~ 1000.0s Note: it indicates the time of changing voltage from 0V to rated value	0.0s	☆
P3.16	Voltage deceleration time for V/F separation	0.0s ~ 1000.0s Note: it indicates the time of changing voltage from rated value to 0V	0.0s	☆
P3.17	Stop mode for VF separation	0: Frequency/voltage separately reduce to 0 1: reduce voltage to 0 and the reduce frequency	0	☆
P3.18	Action current of the over current lost speed	50% ~ 200%	150%	★
P3.19	Over-current lost-speed enabled	0: Disabled 1: Endabled	1	★
P3.20	Over-current lost-speed suppression gain	0 ~ 100	20	☆
P3.21	Triple-speed suppression of action- current compensation coefficient	50% ~ 200%	50%	★
P3.22	Action-voltage of the over-voltage lost-speed	650.0V ~ 800.0V	770.0V	★



P3.23	Over-voltage lost-speed enabled	0: Disabled 1: Enabled	1	★
P3.24	Suppression frequency gain of over-voltage	0 ~ 100	30	☆
P3.25	Suppression voltage gain of over-voltage lost-speed	0 ~ 100	30	☆
P3.26	Maximum rising frequency limit of over-voltage lost-speed	0 ~ 50Hz	5Hz	★
<b>P4: Input Terminal</b>				
P4.00	FWD Terminal function	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) 3: Triple-line control	1	★
P4.01	REV Terminal function	4: Forward JOG (JOGF) 5: Reverse JOG (JOGR) 6: Terminal UP 7: Terminal DOWN 8: Coast to stop 9: Fault reset (RESET)	4	★
P4.02	S1 Terminal function	10: Run pause 11: Normally open (NO) input of external fault 12: Multi-reference terminal 1	9	★
P4.03	S2 Terminal function	13: Multi-reference terminal 2 14: Multi-reference terminal 3 15: Multi-reference terminal 4 16: Terminal 1 for acceleration/ deceleration time	12	★
P4.04	S3 Terminal function	17: Terminal 2 for acceleration/ deceleration time 18: Frequency source switchover 19: UP/DOWN setting clear (terminal, operation panel) 20: Command source switchover terminal 21: Acceleration/ deceleration time 22: PID pause 23: PLC status reset 24: Swig pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: Pulse frequency input (Enabled only for S3) 31: Reserved 32: Immediate DC braking 33: Normally closed (NC) input of external fault 34: Frequency modification enabled 35: Reverse direction for PID action 36: External stop terminal 1 37: Command source switchover terminal 2	13	★

P4.05	S4Terminal function	38: PID integral pause 39: Switchover between main frequency source X and presetting frequency 40: Switchover between main frequency source Y and presetting frequency	0	★
P4.06	Reserved	41: Reserved 42: Reserved 43: PID parameter switchover 44: Reserved	0	★
P4.07	Reserved	45: Reserved 46: Speed control/Torque control switchover 47: Emergency stop 48: External stop terminal 2 49: Deceleration DC braking 50: Clear the current running time 51-59:Reserved	0	★
P4.10	X filter time	0.000s ~ 1.000s	0.010s	☆
P4.11	Terminal Command mode	0: Bi-line mode 1 1: Bi-line mode2 2: Tri-line mode 1 3: Tri-line mode 2	0	★
P4.12	Terminal UP/DOWN rate	0.001Hz/s ~ 65.535Hz/s	1.00Hz/s	☆
P4.13	FI curve1min input	0.00V ~ P4.15	0.00V	☆
P4.14	Corresponding setting of FI curve 1 min input	-100.0% ~ +100.0%	0.0%	☆
P4.15	FI curve1 max input	P4.13 ~ +10.00V	10.00V	☆
P4.16	Corresponding setting of FI curve 1 max input	-100.0% ~ +100.0%	100.0%	☆
P4.17	FI curve 1 filter time	0.00s ~ 10.00s	0.10s	☆
P4.18	FI curve 2 min inout	0.00V ~ P4.20	0.00V	☆
P4.19	Corresponding setting FI curve 2 min input	-100.0% ~ +100.0%	0.0%	☆
P4.20	FI curve 2 max input	P4.18 ~ +10.00V	10.00V	☆
P4.21	Corresponding setting of FI curve 2 max input	-100.0% ~ +100.0%	100.0%	☆
P4.22	FI curve 2 filter time	0.00s ~ 10.00s	0.10s	☆
P4.23	FI curve 3 min input	-10.00V ~ P4.25	-10.00V	☆
P4.24	Corresponding setting of FI curve 3 min input	-100.0% ~ +100.0%	-100.0%	☆
P4.25	FI curve 3 max input	P4.23 ~ +10.00V	10.00V	☆
P4.26	Corresponding setting FI curve 3 max input	-100.0% ~ +100.0%	100.0%	☆
P4.27	FI curve 3 filter time	0.00s ~ 10.00s	0.10s	☆
P4.28	PULSE min input	0.00kHz ~ P4.30	0.00kHz	☆

P4.29	Corresponding setting of PULSE min input	-100.0% ~ 100.0%	0.0%	☆
P4.30	PULSE max input	P4.28 ~ 100.00kHz	50.00kHz	☆
P4.31	Corresponding setting of PULSE max input	-100.0% ~ 100.0%	100.0%	☆
P4.32	PULSE filter time	0.00s ~ 10.00s	0.10s	☆
P4.33	FI curve	Unit's digit: FIV curve 1: Curve 1 (2 points, see P4.13 ~ P4.16) 2: Curve 2 (2 points, see P4.18 ~ P4.21) 3: Curve 3 (2 points, see P4.23 ~ P4.26) 4: Curve 4 (4 points, see C6.00 ~ C6.07) 5: Curve 5 (4 points, see C6.08 ~ C6.15) Ten's digit: FIC curve, same as FIV Hundred's digit: reserved	321	☆
P4.34	Setting selection for FI less than min input	Unit's digit: Setting selection for FI less than min input 0: Corresponds to the min input setting 1: 0.0% Ten's digit: Setting selection for FIC less than min input (same as FIV)	000	☆
P4.35	FWD delay time	0.0s ~ 3600.0s	0.0s	★
P4.36	REV delay time	0.0s ~ 3600.0s	0.0s	★
P4.37	S1 delay time	0.0s ~ 3600.0s	0.0s	★
P4.38	S terminal valid mode selection 1	0: High level valid 1: Low level valid Unit's digit: FWD Ten's digit: REV Hundred's digit: S1 Thousand's digit: S2 Ten thousand's digit: S3	00000	★
P4.39	S terminal valid mode selection 2	0: High level valid 1: Low level valid Unit's digit: reserved Ten's digit: reserved Hundred's digit: reserved Thousand's digit: reserved Ten thousand's digit: reserved	00000	★
<b>P5: Output terminals</b>				
P5.00	M01 terminal output mode selection	1: Reserved 2: Switch signal output (YOR)	0	☆

P5.01	YOR output function selection	0: No output 1: Inverter working 2: Fault output (fault stop) 3: Frequency-level detect FDT1 output 4: Frequency reached	0	☆
P5.02	Relay function selection on control panel (RA-RB-RC)	5: Zero-speed working (no output while stop) 6: Motor overload pre-warning 7: Inverter overload pre-warning 8: Setting count value reached 9: Designated count value reached 10: Length reached 11: PLC cycle complete 12: Accumulative running time reached 13: Frequency limited	2	☆
P5.03	Reserved	14: Torque limited 15: Ready for run 16: FIV>FIC 17: Frequency upper limit reached 18: Frequency lower limit reached (depending on running) 19: Under-voltage output	0	☆
P5.04	Reserved	20: Communication setting 21: Reserved 22: Reserved 23: Zero-speed running 2 (Having output while stop) 24: Accumulative power-on time reached	1	☆
P5.06	Reserved	25: Frequency-level detect FDT2 output 26: Frequency 1 reached output 27: Frequency 2 reached output 28: Current 1 reached output 29: Current 2 reached output 30: Timing reached output 31: FIV input limit reached 32: Load becoming zero 33: Reverse running 34: Zero current state 35: Module temperature reached 36: Output current limit reached 37: Frequency lower limit reached (having output while stop) 38: Output alarm (Keep running) 39: Motor overheat pre-alarm 40: Running time reached 41: Fault	4	☆

P5.07	FOV output function	0: Running frequency 1: Setting frequency 2: Output current 3: Output torque 4: Output power 5: Output voltage 6: Pulse input (100.0% refers to 100.0kHz)	0	☆
P5.08	Reserved	7: FIV 8: FIC 9: Reserved 10: Length 11: Count value 12: Communication setting 13: Motor speed 14: Output current (100.0% refers to 1000.0A) 15: Output voltage (100.0%refers to 1000.0V) 16: Motor output torque (actual value, corresponding to motor's percentage)	1	☆
P5.09	Reserved			
P5.10	FOV bias coefficient	-100.0% ~ +100.0%	0.0%	☆
P5.11	FOVgain	-10.00 ~ +10.00	1.00	☆
P5.12	Reserved			
P5.13	Reserved			
P5.17	YOR output delay time	0.0s ~ 3600.0s	0.0s	☆
P5.18	RA-RB-RCoutput delay time	0.0s ~ 3600.0s	0.0s	☆
P5.19	Reserved			
P5.20	Reserved			
P5.21	Reserved			
P5.22	Output terminal valid mode selection	0: Positive logic 1: Negative logic Unit's digit: YOR Ten's digit: RA-RB-RC Hundred's digit: reserved Thousand's digit: FOV Ten thousand's digit: reserved	00000	☆
<b>P6: Start/Stop parameter</b>				
P6.00	Start mode	0: Direct start 1: Speed tracking restart 2: Pre-excited start (AC asynchronous motor) 3: SVC quick start	0	☆
P6.01	Speed tracking mode	0: Start from the stop frequency 1: Start from 0 2: Start from max frequency	0	★
P6.02	Rotational speed tracking	1 ~ 100	20	☆
P6.03	Start frequency	0.00Hz ~ 10.00HZ	0.00Hz	☆

P6.04	Start frequency holding time	0.0s ~ 100.0s	0.0s	★
P6.05	Start DC braking current/ pre-excited current	0% ~ 100%	50%	★
P6.06	Start DC braking time/pre- excited current	0.0s ~ 100.0s	0.0s	★
P6.07	Acceleration/Deceleration mode	0: Straight-line acceleration / deceleration 1: S curve acceleration /deceleration A 2: Dynamic S curveacceleration / deceleration A	0	★
P6.08	Proportion of beginning segment time in S curve	0% ~ (100%-P6.09)	30.0%	★
P6.09	Proportion of end segment time in S curve	0% ~ (100%-P6.08)	30.0%	★
P6.10	Stop mode	0: Deceleration till stop 1: Coast to stop	0	☆
P6.11	Stop DC braking initial frequency	0.00Hz ~ Max frequency	0.00Hz	☆
P6.12	Stop DC braking waiting time	0.0s ~ 100.0s	0.0s	☆
P6.13	Stop DC braking current	0% ~ 100%	0%	☆
P6.14	Stop DC braking time	0.0s ~ 100.0s	0.0s	☆
P6.15	Brake using rate	0% ~ 100%	100%	☆
P6.18	Rotation speed tracking current	30% ~ 200%	Model dependent	★
P6.21	Demagnetization (SVC valid)	0.00 ~ 5.00s	Model dependent	☆
P6.23	Over-excitation selection	0: Not effective 1: Effective only when deceleration 2: Effective always	0	☆
P6.24	Over-excitation suppression current value	0 ~ 150%	100%	☆
P6.25	Over-excitation gain	1.00 ~ 2.50	1.25	☆
<b>P7: Operation panel and display</b>				
P7.01	JOG function parameter	0: No function 1: Switchover between operation panel command and remote operation command. It refers to the switch from the current command source to operation panel (local operation). If the operation panel is used as command source now, this key is invalid. 2: Switchover between forward and reverse with JOG, it is valid only when operation panel is as command source. 3: Forward rotation with JOG (JOG-FWD)。 4: Reverse rotation with JOG (JOG- REV)	0	★

P7.02	STOP/RESET function	0: STOP/RESET key enabled only in operation panel control 1: STOP/RESET enabled in any operation mode	1	☆
P7.03	LED display running parameter 1	0000–FFFF Bit00: Running frequency 1(Hz) Bit01: Setting frequency (Hz) Bit02: Bus voltage(V) Bit03: Output voltage(V) Bit04: Output current(A) Bit05: Output power(kW) Bit06: Output torque(%) Bit07: S input status Bit08: M01output status Bit09: FIV voltage(V) Bit10: FIC voltage(V) Bit11: Reversed Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	1F	☆
P7.04	LED display running parameter 2	0000–FFFF Bit00: PID feedback Bit01: PLC stage Bit02: Pulse input frequency(kHz) Bit03: Running frequency 2(Hz) Bit04: Remaining running time Bit05: FIV voltage in operation panel before correction(V) Bit06: FIC voltage in operation panel before correction(V) Bit07: Reversed Bit08: Motor rotational speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: PULSE input frequency(Hz) Bit12: Communication setting Bit13: Speed feedback of encoder (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	0	☆
P7.05	LED display stop parameter	0000–FFFF Bit00: Set frequency(Hz) Bit01: Bus voltage(V) Bit02: S input status Bit03: M01output status Bit04: FIV voltage(V) Bit05: FIC voltage(V) Bit06: Reserved Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: PULSE input frequency (kHz)	33	☆
P7.06	Load speed display coefficient	0.0001 ~ 6.5000	1.0000	☆

P7.07	Heatsink temperature of inverter IGBT	0.0°C ~ 120.0°C	-	●
<b>P8: Auxiliary function</b>				
P8.00	JOG running frequency	0.00Hz ~ Max frequency	2.00Hz	☆
P8.01	JOG acceleration time	0.0s ~ 6500.0s	20.0s	☆
P8.02	JOG deceleration time	0.0s ~ 6500.0s	20.0s	☆
P8.03	Acceleration time 2	0.0s ~ 6500.0s	Model dependent	☆
P8.04	Deceleration time 2	0.0s ~ 6500.0s	Model dependent	☆
P8.05	Acceleration time 3	0.0s ~ 6500.0s	Model dependent	☆
P8.06	Deceleration time 3	0.0s ~ 6500.0s	Model dependent	☆
P8.07	Acceleration time 4	0.0s ~ 6500.0s	Model dependent	☆
P8.08	Deceleration time4	0.0s ~ 6500.0s	Model dependent	☆
P8.09	Jump frequency 1	0.00Hz ~ Max frequency	0.00Hz	☆
P8.10	Jump frequency 2	0.00Hz ~ Max frequency	0.00Hz	☆
P8.11	Frequency jump amplitude	0.00Hz ~ Max frequency	0.00Hz	☆
P8.12	Forward/Reverse rotation speed dead-zone time	0.0s ~ 3000.0s	0.0s	☆
P8.13	Reverse control	0: Enabled 1: Disabled	0	☆
P8.14	Running mode when setting frequency is lower than the limit	0: Run at lower limit frequency 1: Stop 2: Run at speed zero	0	☆
P8.15	Droop contrl	0.00Hz ~ 10.00Hz	0.00Hz	☆
P8.16	Accumulative power-on time threshold setting	0h ~ 65000h	0h	☆
P8.17	Accumulative running time threshold setting	0h ~ 65000h	0h	☆
P8.18	Start protection	0: No protection 1: Protection	0	☆
P8.19	Frequency detection value (FDT1)	0.00Hz ~ Max frequency	50.00Hz	☆
P8.20	Frequency detection hysteresis (FDT1)	0.0% ~ 100.0% (FDT1level1)	5.0%	☆
P8.21	Detection range of frequency reached	0.0% ~ 100.0% (max frequency)	0.0%	☆



P8.22	Jump frequency during the process of acceleration/ deceleration	0: Disabled 1: Enabled	0	☆
P8.25	Frequency switch point between acceleration time 1 and acceleration time 2	0.00Hz ~ Max frequency	0.00Hz	☆
P8.26	Frequency switch point between deceleration time 1 and deceleration time 2	0.00Hz ~ Max frequency	0.00Hz	☆
P8.27	Terminal JOG preferred	0: Disabled 1: Enabled	0	☆
P8.28	Frequency detection value (FDT2)	0.00Hz ~ Max frequency	50.00Hz	☆
P8.29	Frequency detection hysteresis (FDT2)	0.0% ~ 100.0% (FDT2 level)	5.0%	☆
P8.30	Any frequency reaching detection value 1	0.00Hz ~ Max frequency	50.00Hz	☆
P8.31	Any frequency reaching detection amplitude 1	0.0% ~ 100.0% (Max frequency)	0.0%	☆
P8.32	Any frequency reaching detection value 2	0.00Hz ~ Max frequency	50.00Hz	☆
P8.33	Any frequency reaching detection amplitude 2	0.0% ~ 100.0% (Max frequency)	0.0%	☆
P8.34	Zero current detection level	0.0% ~ 300.0% 100.0% corresponding to rated current	5.0%	☆
P8.35	Zero current detection delay time	0.01s ~ 600.00s	0.10s	☆
P8.36	Output over-current threshold	0.0% (no detection) 0.1% ~ 300.0% (rated motor current)	200.0%	☆
P8.37	Output over-current detection delay time	0.00s ~ 600.00s	0.00s	☆
P8.38	Any current reaching 1	0.0% ~ 300.0% (rated motor current)	100.0%	☆
P8.39	Any current reaching 1 amplitude	0.0% ~ 300.0% (rated motor current)	0.0%	☆
P8.40	Any current reaching 2	0.0% ~ 300.0% (rated motor current)	100.0%	☆
P8.41	Any current reaching 2 amplitude	0.0% ~ 300.0% (rated motor current)	0.0%	☆
P8.42	Timing function selection	0: Disabled 1: Enabled	0	☆
P8.43	Timing duration source	0: P8.44 setting 1: FIV 2: FIC 3: Reserved Analog input corresponds to P8.44	0	☆

P8.44	Timing duration	0.0Min ~ 6500.0Min	0.0Min	☆
P8.45	FIV input voltage lower limit protection value	0.00V ~ P8.46	3.10V	☆
P8.46	FIV input voltage upper limit protection value	P8.45 ~ 10.00V	6.80V	☆
P8.47	Module temperature threshold	0°C ~ 100°C	75°C	☆
P8.48	Cooling fan control	0: Fan working during running 1: Fan working continuously	0	☆
P8.49	Wake-up frequency	Dormant frequency (P8.51) ~ Max frequency (P0.10)	0.00Hz	☆
P8.50	Wake-up delay time	0.0s ~ 6500.0s	0.0s	☆
P8.51	Dormant frequency	0.00Hz ~ dormant frequency (P8.49)	0.00Hz	☆
P8.52	Dormant delay time	0.0s ~ 6500.0s	0.0s	☆
P8.53	Current running time reached	0.0Min ~ 6500.0Min	0.0Min	☆
P8.54	Output power correction coefficient	0 ~ 200%	100%	☆
P8.55	Emergency deceleration time	0 ~ 6553.5s	Model dependent	☆
<b>P9: Fault and protection</b>				
P9.00	Motor overload protection	0: Disabled 1: Enabled	1	☆
P9.01	Motor overload protection gain	0.20 ~ 10.00	1.00	☆
P9.02	Motor overload warning coefficient	50% ~ 100%	80%	☆
P9.03	Over voltage stall gain	0 ~ 100	30	☆
P9.04	Protection voltage of over-voltage stall	120% ~ 150%	130%	☆
P9.07	Short-circuit to ground upon power on	0: Disabled 1: Enabled	1	☆
P9.09	Fault auto reset times	0 ~ 20	0	☆
P9.10	YO action selection during fault auto reset	0: No act 1: Act	0	☆
P9.11	Time interval of fault auto reset	0.1s ~ 100.0s	1.0s	☆
P9.12	Reserved			
P9.13	Output phase loss protection	0: Disabled 1: Enabled Unit's digit: output phase loss protection before running Ten's digit: output phase loss protection	1	☆

P9.14	1 <sup>st</sup> fault type	0: No fault 1: Reserved 2: Over-current during acceleration 3: Over-current during deceleration 4: Over-current at constant speed 5: Over-voltage during acceleration 6: Over-voltage during deceleration 7: Over-voltage at constant speed 8: Control supply power fault 9: Under voltage 10: Inverter overload 11: Motor overload 12: Input phase loss	—	●
P9.15	2 <sup>nd</sup> fault type	13: Output phase loss 14: Module overheat 15: External equipment fault 16: Communication fault 17: Contactor fault 18: Current detection fault 19: Motor auto-tuning fault 20: Encoder/PG card fault 21: Parameters reading fault 22: Inverter hardware fault 23: Short circuit to ground 24: Reserved 25: Reserved	—	●
P9.16	3 <sup>rd</sup> (the last) fault type	26: Running time reached 27: User-defined fault 1 28: User-defined fault 2 29: Power-on time reached 30: Load becoming 0 31: PID feedback lost during running 40: Fast limit overtime 41: Motor switchover during running 42: Speed deviation too large 43: Motor over-speed 45: Motor over-heat 51: Initial position fault	—	●
<b>PA: PID Function</b>				
PA.00	PID setting source	0: PA.01 setting 1: FIV 2: FIC 3: Reserved 4: PULSE (S3) 5: Communication setting 6: Multi-phase reference	0	☆
PA.01	PID digit setting	0.0% ~ 100.0%	50.0%	☆
PA.02	PID feedback source	0: FIV 1: FIC 2: Reserved 3: FIV-FIC 4: PULSE(S3) 5: Communication setting 6: FIV+FIC 7: MAX ( FIV ,  FIC ) 8: MIN ( FIV ,  FIC )	0	☆

PA.03	PID action direction	0: Forward 1: Reverse	0	☆
PA.04	PID setting feedback range	0 ~ 65535	1000	☆
PA.05	Proportional gain Kp1	0.0 ~ 100.0	20.0	☆
PA.06	Integral time Ti1	0.01s ~ 10.00s	2.00s	☆
PA.07	Differential time Td1	0.000s ~ 10.000s	0.000s	☆
PA.08	Cut-off frequency of PID reverse rotation	0.00 ~ Max frequency	2.00Hz	☆
PA.09	PID deviation limit	0.0% ~ 100.0%	0.0%	☆
PA.10	PID differential limit	0.00% ~ 100.00%	0.10%	☆
PA.11	PID setting change time	0.00 ~ 650.00s	0.00s	☆
PA.12	PID feedback filter time	0.00 ~ 60.00s	0.00s	☆
PA.13	PID output filter time	0.00 ~ 60.00s	0.00s	☆
PA.14	Reserved			
PA.15	Proportional gain Kp1	0.0 ~ 100.0	20.0	☆
PA.16	Integral time Ti2	0.01s ~ 10.00s	2.00s	☆
PA.17	Differential time Td2	0.000s ~ 10.000s	0.000s	☆
PA.18	PID parameter switchover condition	0: No switchover 1: Switchover via S terminal 2: Automatic switchover based on deviation 3: Automatic switchover based on running frequency	0	☆
PA.19	PID parameter switchover deviation 1	0.0% ~ PA.20	20.0%	☆
PA.20	PID parameter switchover deviation 2	PA.19 ~ 100.0%	80.0%	☆
PA.21	PID initial value	0.0% ~ 100.0%	0.0%	☆
PA.22	PID initial value keeping time	0.00 ~ 650.00s	0.00s	☆
PA.25	PID integral property	Unit's digit: Integral separated 0: Invalid 1: Valid Ten's digit: Whether to stop integral operation when the output reaches 0: Continue 1: Stop	00	☆
PA.26	PID feedback loss detection value	0.0%: Not judging feedback loss 0.1% ~ 100.0%	0.0%	☆
PA.27	PID feedback loss detection time	0.0s ~ 20.0s	0.0s	☆
PA.28	PID operation at stop	0: No operation at stop 1: Operation at stop	0	☆

PC: Multi-reference, simple PLC				
PC.00	Multi-reference 0	-100.0% ~ 100.0%	0.0%	☆
PC.01	Multi-reference 1	-100.0% ~ 100.0%	0.0%	☆
PC.02	Multi-reference 2	-100.0% ~ 100.0%	0.0%	☆
PC.03	Multi-reference 3	-100.0% ~ 100.0%	0.0%	☆
PC.04	Multi-reference 4	-100.0% ~ 100.0%	0.0%	☆
PC.05	Multi-reference 5	-100.0% ~ 100.0%	0.0%	☆
PC.06	Multi-reference 6	-100.0% ~ 100.0%	0.0%	☆
PC.07	Multi-reference 7	-100.0% ~ 100.0%	0.0%	☆
PC.08	Multi-reference 8	-100.0% ~ 100.0%	0.0%	☆
PC.09	Multi-reference 9	-100.0% ~ 100.0%	0.0%	☆
PC.10	Multi-reference 10	-100.0% ~ 100.0%	0.0%	☆
PC.11	Multi-reference 11	-100.0% ~ 100.0%	0.0%	☆
PC.12	Multi-reference 12	-100.0% ~ 100.0%	0.0%	☆
PC.13	Multi-reference 13	-100.0% ~ 100.0%	0.0%	☆
PC.14	Multi-reference 14	-100.0% ~ 100.0%	0.0%	☆
PC.15	Multi-reference 15	-100.0% ~ 100.0%	0.0%	☆
PC.16	Simple PLC running mode	0: Stop after inverter runs one cycle 1: Keep final values after inverter runs one cycle 2: Repeat	0	☆
PC.17	Simple PLC retentive selection	Unit's digit: Retentive upon power failure 0: No 1: Yes Ten's digit: Retentive upon stop 0: No 1: Yes	00	☆
PC.18	Running time of simple PLC reference 0	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.19	Acceleration/deceleration time of simple PLC reference 0	0 ~ 3	0	☆
PC.20	Running time of simple PLC reference 1	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.21	Acceleration/deceleration time of simple PLC reference 1	0 ~ 3	0	☆
PC.22	Running time of simple PLC reference 2	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.23	Acceleration/deceleration time of simple PLC reference 2	0 ~ 3	0	☆
PC.24	Running time of simple PLC reference 3	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆

PC.25	Acceleration/deceleration time of simple PLC reference 3	0 ~ 3	0	☆
PC.26	Running time of simple PLC reference 4	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.27	Acceleration/deceleration time of simple PLC reference 4	0 ~ 3	0	☆
PC.28	Running time of simple PLC reference 5	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.29	Acceleration/deceleration time of simple PLC reference 5	0 ~ 3	0	☆
PC.30	Running time of simple PLC reference 6	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.31	Acceleration/deceleration time of simple PLC reference 6	0 ~ 3	0	☆
PC.32	Running time of simple PLC reference 7	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.33	Acceleration/deceleration time of simple PLC reference 7	0 ~ 3	0	☆
PC.34	Running time of simple PLC reference 8	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.35	Acceleration/deceleration time of simple PLC reference 8	0 ~ 3	0	☆
PC.36	Running time of simple PLC reference 9	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.37	Acceleration/deceleration time of simple PLC reference 9	0 ~ 3	0	☆
PC.38	Running time of simple PLC reference 10	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.39	Acceleration/deceleration time of simple PLC reference 10	0 ~ 3	0	☆
PC.40	Running time of simple PLC reference 11	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.41	Acceleration/deceleration time of simple PLC reference 11	0 ~ 3	0	☆
PC.42	Running time of simple PLC reference 12	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.43	Acceleration/deceleration time of simple PLC reference 12	0 ~ 3	0	☆

PC.44	Running time of simple PLC reference 13	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.45	Acceleration/deceleration time of simple PLC reference 13	0 ~ 3	0	☆
PC.46	Running time of simple PLC reference 14	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.47	Acceleration/deceleration time of simple PLC reference 14	0 ~ 3	0	☆
PC.48	Running time of simple PLC reference 15	0.0s (h) ~ 6500.0s (h)	0.0s (h)	☆
PC.49	Acceleration/deceleration time of simple PLC reference 16	0 ~ 3	0	☆
PC.50	Time unit of simple PLC running	0: s (second) 1: h (hour)	0	☆
PC.51	Reference 0 source	0: set by PC.00 1: FIV 2: FIC 3: Reserved 4: PULSE 5: PID 6: Set by preset frequency (P0.08), UP/DOWN can be modified	0	☆
<b>PD: Communication parameter</b>				
PD.00	Baud rate	Unit's digit: MODBUS 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS Ten'd digit: Reserved Hundred's digit: Reserved Thousand's digit: Reserved	0005	☆
PD.01	Data format	0: No check <8-N-2> 1: Even parity check <8-E-1> 2: Odd parity check <8-O-1> 3: <8-N-1>	3	☆
PD.02	Local address	1 ~ 247	1	☆
PD.03	Response delay	0ms ~ 20ms	2	☆
PD.04	Communication timeout	0.0 (Invalid) , 0.1s ~ 60.0s	0.0	☆
PD.05	Data transfer format selection	Unit's digit: MODUS 0: Non-standard MODUS protocol 1: Standard MODUS protocol Ten's digit: Reserved	1	☆

PD.06	Communication reading current resolution	0: 0.01A 1: 0.1A	0	☆
<b>PP: User-defined function codes</b>				
PP.00	User password	0 ~ 65535	0	☆
PP.01	Parameter initialization	0: No operation 01: Restore factory settings except for motor parameter	0	★
<b>C0: Torque control parameter</b>				
C0.00	Speed/Torque control mode selection	0: Speed control 1: Torque control	0	★
C0.01	Torque setting source selection in torque control mode	0: Digital setting (C0.03) 1: FIV 2: FIC 3: Reserved 4: PULSE 5: Communication setting 6: MIN (FIV,FIC) 7: MAX (FIV,FIC) (Full range of 1-7, corresponding to digit setting of C0.03)	0	★
C0.03	Torque digit setting in torque control	-200.0% ~ 200.0%	150.0%	☆
C0.05	Forward maximum frequency in torque control	0.00Hz ~ Max frequency	50.00Hz	☆
C0.06	Reverse maximum frequency in torque control	0.00Hz ~ Max frequency	50.00Hz	☆
C0.07	Acceleration time in torque control	0.00s ~ 6500.0s	0.00s	☆
C0.08	Deceleration time in torque control	0.00s ~ 6500.0s	0.00s	☆
<b>C5: Control optimization parameter</b>				
C5.00	DPWM switch-over frequency upper limit	0.00Hz ~ Max frequency	8.00Hz	☆
C5.01	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation	0	☆
C5.02	Dead zone compensation mode selection	0: No compensation 1: Compensation mode 1	1	☆
C5.03	Random PWM depth	0: Random PWM invalid 1-10: PWM carrier frequency random depth	0	☆
C5.04	Rapid current limit	0: Disabled 1: Enabled	1	☆
C5.05	Voltage over modulation coefficient	100 ~ 110	105	☆
C5.06	Under voltage threshold setting	210 ~ 420	350	☆
C5.08	Dead zone time adjustment	100% ~ 200%	150%	☆
C5.09	Over voltage threshold setting	200.0V ~ 2500.0V	Model dependent	



## **7. Maintenance**

### 7.1 General maintenance

7.1.1 Check and clean the motor periodically, ensure that no dust cover on the motor. Do not clean the motor with water spray.

7.1.2 Clean the controller with dry air periodically

7.1.3 Check the controller and guarantee no abnormal heat or vibration, no oil mist, no dust or condensation.

7.1.4 Check the fan and its rotation

### 7.2 Bearing and grease

7.2.1 Bearing temperature should not exceed 95°C (Thermometer method) during operation.

7.2.2 The bearing should be inspected every 2500h (about half a year) operation. The bearing grease should be replaced immediately if the grease is found to be spoiled (Sealed bearing need not replace its lubrication grease in its lifetime). But the waste grease in bearing internal/external cover, oil chamber, oil tube, oil nipple must be cleaned out..

7.2.3 No.2 lubricating grease for small medium size motor is recommended. It's proper to fill 1/3~1/2 capacity of the bearing chamber with lubrication grease. Bearing size see attachment.

7.3 Disassemble the motor as the following order: firstly remove fan cover, cooling fan, and V-seal ring of rear end, secondly remove the bolts on front and rear end cover, and lastly take out the rotor together with the front end. Disassemble the bearing using special tool.

7.4 Motor must be dried before use if it has been affected with damp by means of drying in the oven or short-circuit current. Disconnect the controller's circuit board so as to not damage the board in drying. The temperature should be increased gradually but not exceed 70°C when dried in the oven. And when the motor dried by short-circuit method, it should be connected as short circuit whose input current is 0.6-0.8 time rated current. However the short-circuit method is not suitable for the motor which is heavily get damped, since it may damage winding's performance.

7.5 If the winding needs to be replaced, the original winding's type, dimensions, diameter and turns of coil should be recorded. Arbitrarily changing of winding will decrease the performance of the motor, and even to damage the motor.

7.6 Maintenance or replacement of its components must be done by technician.

7.7 The motor need to be periodically inspected according to its actual operation, overhaul at least once a year.

7.8 Grease may harden in long-time idling. When abnormal sounds occur at the beginning of operation, the motor need to be operated without load for half an hour so as to soften grease and restore its function.

## **8. Failures & causes**

Check motors frequently in order to remove the possible failure in advance. The common failures are as follows:

## 8.1 Mechanical fault

8.1.1 Bearing overheat: Bearing overheat: lack of grease, dirty grease, low quality grease, water intrusion, oil ring stuck, surface fault of bushing, narrow distance between shaft and bushings, excessive pressure on shaft neck and axis current and so on.

8.1.2 Leakage of grease: too much grease in bearing, grease of bad quality or incorrect viscosity, any unbalanced pressure between bearing oil container and the bearing cover.

8.1.3 Strong vibration: inconsistent center line of the shaft between motor and the driven machine, incorrect mounting position on base plate, shaft bending, bad cooperation of coupling, unbalance of pulley or coupling, large space between shaft journal and bushing, broken rotor bar, vibration of stator core, uneven surface of base plate, inadequate rigidity of base plate, similar or same vibration cycle of the motor and the base plate, rough belt coupling, incorrect position of the belt coupling, poor operation of the transmission or the collision of the motor, etc.

8.1.4 Eccentric of rotor: loose bushing, bearing displacement, the deformation of rotor and stator, bend of the shaft and poor balance of the rotor.

## 8.2 Electrical Fault:

8.2.1 Abnormal starting: incorrect connection, open circuit, incorrect voltage, too high load torque and too high static torque, starting device failure and so on.

8.2.2 Motor overheating: too high or too low voltage, overload, lack of cooling air, too high ambient temperature, short circuit or dirty of the motor, etc.

8.2.3 Insulation damage: acidic, alkaline, chlorine, and other corrosive gases, winding overheat, mechanical damage, too high environment temperature, storage below 0°C or motor being dampened, etc.

8.2.4 Low insulation resistance: uncleanness, high humidity, sharp temperature change, condensation on the surface, damage or aging of insulation material, etc

## 8.3 Controller fault code:

Function code	Title
OC	Inverter unit protection
OC1	Over-current during acceleration
OC2	Over-current during deceleration
OC3	Over-current during constant speed
OU1	Over-voltage during acceleration
OU2	Over-voltage during deceleration
OU3	Over-voltage during constant speed
POF	Control power fault
LU	Under voltage fault
OL2	Inverter overload
OL1	Motor overload
LO	Output phase loss
OH	Module over heat
OSP	Motor over speed fault

EF	External equipment fault
CE	Communication fault
IE	Current detection fault
TE	Motor auto-tuning fault
EEP	EEPROM read-write fault
OUOC	Inverter hardware fault
GND	Short circuit to ground fault
END1	Accumulative running time reached fault
END2	Accumulative power on time reached fault
LOAD	Load becoming 0 fault
PIDE	feedback lost during running fault
CBC	Rapid current limit fault
ESP	Speed deviation too large fault

#### Appendix 1: Monitoring parameter

Function code	Parameter	Unit
D0.00	Running frequency (Hz)	0.01Hz
D0.01	Set frequency (Hz)	0.01Hz
D0.02	Bus voltage (V)	0.1V
D0.03	Output voltage (V)	1V
D0.04	Output current (A)	0.01A
D0.05	Output power (kW)	0.1kW
D0.06	Output torque (%)	0.1%
D0.07	S input status	1
D0.08	MO1 output status	1
D0.09	FIV voltage (V)	0.01V
D0.10	FIC voltage (V)	0.01V
D0.11	Reserved	
D0.12	Count value	1
D0.13	Length value	1
D0.14	Load speed display	1
D0.15	PID setting	1
D0.16	PID feedback	1
D0.17	PLC stage	1
D0.18	PULSE input pulse frequency (kHz)	0.01kHz
D0.19	Reserved	
D0.20	Remaining running time	0.1Min
D0.21	FIV voltage before correction	0.001V
D0.22	FIC voltage before correction	0.001V
D0.23	Reserved	
D0.24	Linear speed	1m/Min
D0.25	On the current power-on time	1Min
D0.26	The current running time	0.1Min

D0.27	Pulse input pulse frequency	1Hz
D0.28	Communication setting value	0.01%
D0.29	Reserved	
D0.30	Reserved	
D0.31	Auxiliary frequency Ydisplay	0.01Hz
D0.32	View any memory address values	1
D0.33	Reserved	
D0.34	Motor temperature value	1°C
D0.35	Target torque (%)	0.1%
D0.36	Reserved	
D0.37	Power factor angle	0.1
D0.38	Reserved	
D0.39	Target voltage upon VF separation	1V
D0.40	Output voltage upon VF separation	1V
D0.41	Reserved	
D0.42	Reserved	
D0.43	Reserved	
D0.44	Reserved	
D0.45	Fault info	0
D0.58	Z signal counter	1
D0.59	Set frequency (%)	0.01%
D0.60	Running frequency (%)	0.01%
D0.61	Inverter status	1
D0.74	Inverter output torque	0.1
D0.76	Accumulative power consumption low level	0.1°C
D0.77	Accumulative power consumption low level	1°C
D0.78	Linear speed	1m/min

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