GD350-EP 系列变频器快速使用指南

本指南简要介绍了英威腾低压专用变频器 GD350-EP 的外围接线、端子、键盘、快速运行、常用功能参数设置、常见故障及对策、常用通讯卡及 PG 卡。

拨打服务热线 400-700-9997 或访问 www.invt.com.cn 获取更多信息及资源下载。保修条款详见完整版电子说明书。

扫描二维码，查阅对应系列产品完整电子说明书。

警告

- 本指南仅包含基本的安装调试信息。若不遵守相关文档中的安全说明和安装调试说明，可能导致设备损坏、人身伤害、甚至人员死亡等事故。
- 只有培训合格的专业人员才允许进行相关操作。

危险

- 禁止在电源接通的情况下进行接线、检查或更换器件等作业。进行这些作业前，须确认所有输入电源已断开，并等待不短于变频器上标注的时间或者确认直流母线电压低于 36V。

至少等待时间	变频器机型
5 分钟	3PH 380V 1.5~110kW, 660V 22~132kW
15 分钟	3PH 380V 132~315kW, 660V 160~355kW
20 分钟	3PH 380V 355kW 及以上, 660V 400kW 及以上

1 端子

图 1-1 变频器典型接线

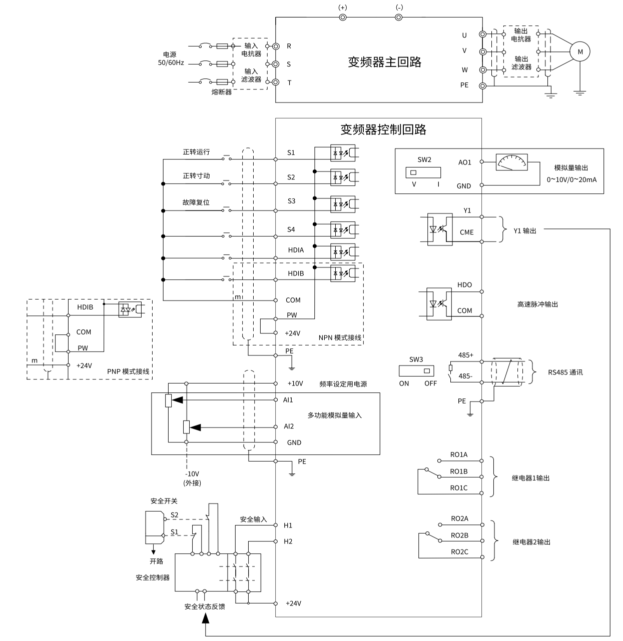


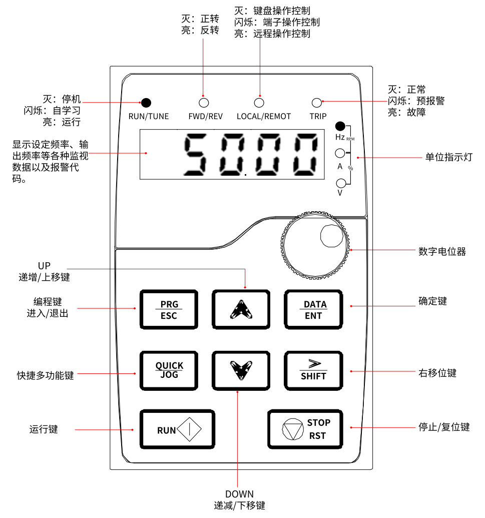
表 1-1 变频器端子说明

端子	说明
主回路端子	
R, S, T	三相交流输入端子，与电网连接
U, V, W	三相交流输出端子，一般接电机
P1	● P1、(+) 外接直流电抗器端子 ● (+)、(-) 外接制动单元端子/共直流母线端子 ● PB、(+) 外接制动电阻端子
(+)	
(-)	
PB	
⏚	PE 端子，每台机器 PE 端子必须可靠接地
控制回路端子	
+10V	本机提供+10.5V 电源
AI1	模拟量输入；范围：0~10V/0~20mA；电压或电流输入由功能码 P05.50 设置
AI2	模拟量输入；范围：-10V~+10V
GND	+10.5V 的参考地
AO1	模拟量输出；范围：0~10V/0~20mA；电压或电流输出由拨码开关 SW2 设定
RO1A	继电器输出；RO1A 常开，RO1B 常闭，RO1C 公共端 触点容量：3A/250VAC，1A/30VDC
RO1B	
RO1C	
RO2A	继电器输出；RO2A 常开，RO2B 常闭，RO2C 公共端 触点容量：3A/250VAC，1A/30VDC
RO2B	
RO2C	
HDO	开关容量：50mA/30V；输出频率范围：0~50kHz；占空比：50%
COM	+24V 的参考地
CME	开路集电极输出的公共端，出厂时与 COM 短接
Y1	开关容量：50mA/30V；输出频率范围：0~1kHz
485+	485 差分信号通讯端口，标准 485 通讯接口请使用屏蔽双绞线，485 通讯的 120Ω 终端匹配电阻通过拨码开关或跳线选择接入
485-	
PE	接地端子

端子	说明
PW	开关量的外部电源输入端子。NPN 模式下，将 PW 与+24V 短接；PNP 模式下，将 PW 与 COM 短接
+24V	变频器提供用户电源，最大输出电流 200mA
S1~S4	开关量输入 ● 内部阻抗：3.3kΩ ● 可接受 12~30V 电压输入 ● 双向输入端子，支持 NPN 和 PNP 接法 ● 最大输入频率：1kHz ● 可编程数字量输入端子，用户可通过功能码设定端子功能
HDIA	● 除具有开关量输入功能外，还可作为高频脉冲输入通道 ● 最大输入频率：50kHz ● 占空比：30%~70% ● 同时具备 HDIA 和 HDIB 支持正交编码器输入，具有测速功能
HDIB	
+24V—H1	安全转矩停止（STO）输入 ● STO 冗余输入，外接常闭触点，触点断开时 STO 动作，变频器停止输出 ● 安全输入信号线使用屏蔽线，接线长度控制在 25 米以内 ● 出厂时 H1、H2 均与+24V 短接，使用 STO 功能时需将端子上的短接片拆除
+24V—H2	

2 键盘

本产品标配 LED 键盘。



LED键盘显示区对应内容

显示	对应	显示	对应	显示	对应
0	0	1	1	2	2
3	3	4	4	5	5
6	6	7	7	8	8
9	9	A	A	b	b
C	C	d	d	E	E
F	F	H	H	I	I
L	L	N	N	n	n
o	O	P	P	r	r
S	S	t	t	U	U
v	v	.	.	-	-

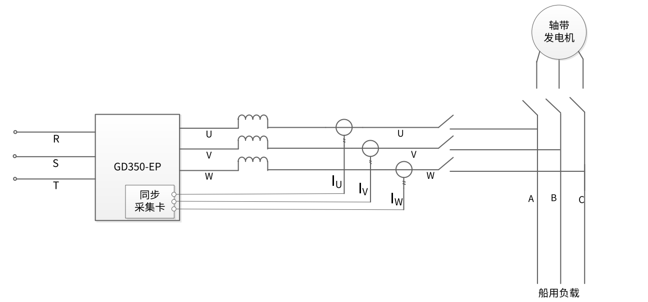
3 快速运行

3.1 上电前检查

- 请确认所有的端子已正确紧固连接。
- 请确认电机与变频器功率匹配。

3.2 电压开环接线图及相关参数

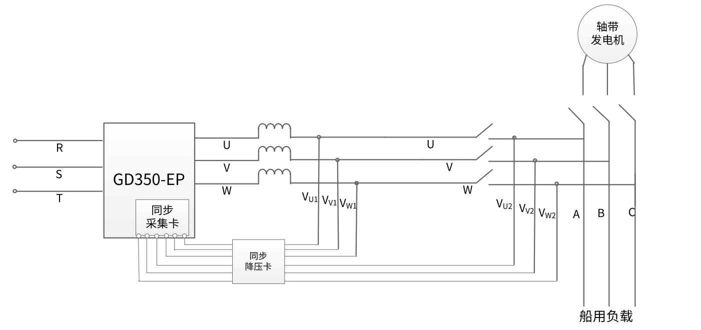
电流采样三路：变频器输出电抗器后端电流 I_U、I_V、I_W。



功能码	名称	参数详细说明	缺省值
P00.00	速度控制模式	0：无 PG 矢量控制模式 0 1：无 PG 矢量控制模式 1 2：V/F 控制 3：闭环矢量控制模式	2
P00.11	加速时间 1	0.0~3600.0s	5.0s
P00.12	减速时间 1	0.0~3600.0s	5.0s
P04.00	电机 1 V/F 曲线设定	0：直线 V/F 曲线 1：多点 V/F 曲线 2：1.3 次幂降转矩 V/F 曲线 3：1.7 次幂降转矩 V/F 曲线 4：2.0 次幂降转矩 V/F 曲线 5：自定义 V/F（V/F 分离）	5
P04.09	电机 1 V/F 转差补偿增益	0.0~200.0% **注意：**电源模式不需要。	0.0%
P04.10	电机 1 低频抑制振荡因子	0~100	10
P04.11	电机 1 高频抑制振荡因子	0~100	10
P04.28	键盘设定电压值	0.0~100.0% 根据需要设定	100.0%
P04.29	电压增加时间	0.0~3600.0s	5.0s
P04.30	电压减少时间	0.0~3600.0s	5.0s
P36.00	变频器工作模式选择	0：普通模式 1：EPS 模式 2：变频切工频（无扰切换） 3：变频切工频（有扰切换） 4：电压闭环模式 5：轴发模式	0
P36.05	反序/锁相失败检测保护	LED 个位：端子板 RST 输入反序（UIPE） 0：输入反序保护禁止 1：输入反序保护允许 LED 十位：端子板 UVW 输出反序（UOPE） 0：输出反序保护禁止 1：输出反序保护允许 LED 百位：端子板 RST 锁相失败（PLLE） 0：锁相失败（PLLE）检出一直无效 1：锁相失败（PLLE）检出停机有效 2：锁相失败（PLLE）检出一直有效	0x000

3.3 电压闭环接线图及相关参数

电压采集两路：变频器输出电抗器后端电压 V_{U1}、V_{V1}、V_{W1}，并网侧电压 V_{U2}、V_{V2}、V_{W2}。



功能码	名称	参数详细说明	缺省值
P00.00	速度控制模式	0：无 PG 矢量控制模式 0 1：无 PG 矢量控制模式 1 2：V/F 控制 3：闭环矢量控制模式	2
P00.11	加速时间 1	0.0~3600.0s	5.0s
P00.12	减速时间 1	0.0~3600.0s	5.0s
P04.00	电机 1V/F 曲线设定	0：直线 V/F 曲线 1：多点 V/F 曲线 2：1.3 次幂降转矩 V/F 曲线 3：1.7 次幂降转矩 V/F 曲线 4：2.0 次幂降转矩 V/F 曲线 5：自定义 V/F（V/F 分离）	5
P04.09	电机 1V/F 转差补偿增益	0.0~200.0% **注意：**电源模式不需要。	0.0%
P04.10	电机 1 低频抑制振荡因子	0~100 **注意：**电源模式不需要。	0
P04.11	电机 1 高频抑制振荡因子	0~100 **注意：**电源模式不需要。	0
P04.27	电压设定通道选择	0：键盘设定电压（设定由 P04.28 设定） 1：AI1 设定电压 2：AI2 设定电压 3：AI3 设定电压 4：HDIA 设定电压 5：多段设定电压（设定值由 P10 组参数的多段速确定） 6：PID 设定电压 7：Modbus/Modbus TCP 通讯设定电压 8：PROFIBUS/CANopen/DeviceNet 通讯设定电压 9：以太网通讯设定电压 10：HDIB 设定电压 11：EtherCAT/PROFINET/EtherNet IP 通讯设定 12：PLC 可编程卡设定	6
P04.29	电压增加时间	0.0~3600.0s	5.0s
P04.30	电压减少时间	0.0~3600.0s	5.0s

功能码	名称	参数详细说明	缺省值
P06.03	继电器 RO1 输出选择	1：运行中 2：正转运行中	1
P09.00	PID 给定源选择	0：P09.01 给定 1：模拟通道 AI1 给定 根据实际情况设定	0
P09.01	PID 数值给定	-100.0~100.0% **注意：**由于此处是基于电机电压，建议放大 P02.04 的值进行测试,建议 P02.04 设置 1000，P09.01 设置 38.0。	100.0%
P09.02	PID 反馈源选择	10：同步卡 UVW 电压反馈（有效值） **注意：**如果 P35.00(闭环电压反馈来源选择)选择硬件，则此处是基于硬件采样反馈，如果选择软件，则此处是基于软件计算电压值。	10
P35.01	输出电压显示校正系数(硬件)	0.0~200.0%	100.0%
P35.02	输出电压显示校正系数(软件)	0.0~200.0%	100.0%
P36.00	变频器工作模式选择	0：普通模式 1：EPS 模式 2：变频切工频（无扰切换） 3：变频切工频（有扰切换） 4：电压闭环模式 5：轴发模式	4
P36.05	反序/锁相失败检测保护	0x000~0x211 LED 个位：端子板 RST 输入反序（UIPE） 0：输入反序保护禁止 1：输入反序保护允许 LED 十位：端子板 UVW 输出反序（UOPE） 0：输出反序保护禁止 1：输出反序保护允许 LED 百位：端子板 RST 锁相失败（PLLE） 0：锁相失败（PLLE）检出一直无效 1：锁相失败（PLLE）检出停机有效 2：锁相失败（PLLE）检出一直有效	0x010
P36.16	端子板缺相保护	LED 个位： 0：端子板 RST 输入信号缺相保护（UIPL）禁止 1：端子板 RST 输入信号缺相保护（UIPL）允许 LED 十位： 0：端子板 UVW 输出信号缺相保护（UOPL）禁止 1：端子板 UVW 输出信号缺相保护（UOPL）允许	0x10

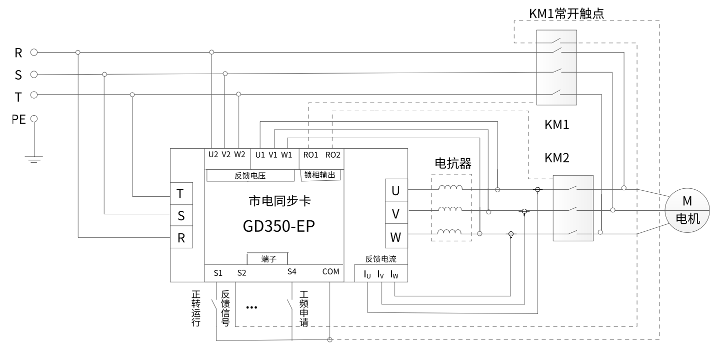
3.4 带电抗器变频无扰切工频接线图及相关参数

无扰切换要以端子控制为主，可以选择以下两种方式：

1、 变频器自动控制工变频接触器。

2、 变频器给切换使能信号，PLC 控制工变频接触器及变频器启停。

无扰切换完成后，变频器自由停机。



功能码	名称	参数详细说明	缺省值
P00.01	运行指令通道	0：键盘运行指令通道 （通过切换 P36.00 不同工作模式复位系统状态） 1：端子运行指令通道 （无正转命令后系统状态复位） 2：通讯运行指令通道	0
P00.03	最大输出频率	Max(P00.04,10.00)~599.00Hz **注意：**根据电网频率+2Hz。	52.00Hz
P00.04	运行频率上限	P00.05~P00.03Hz **注意：**根据电网频率+2Hz。	52.00Hz
P00.11	加速时间 1	0.0~3600.0s	5.0s
P00.12	减速时间 1	0.0~3600.0s	5.0s
P01.00	起动运行方式	0：直接起动 1：先直流制动再起动 2：转速追踪再起动（有激磁） 3：转速追踪再起动（无激磁） 4：转速追踪再起动（软件）	根据现场调试情况选择
P01.08	停机方式选择	0：减速停车 1：自由停车	1
P04.00	电机 1 V/F 曲线设定	0：直线 V/F 曲线 1：多点 V/F 曲线 2：1.3 次幂降转矩 V/F 曲线 3：1.7 次幂降转矩 V/F 曲线 4：2.0 次幂降转矩 V/F 曲线 5：自定义 V/F（V/F 分离）	0
P04.09	电机 1 V/F 转差补偿增益	0.0~200.0%	100.0%
P04.10	电机 1 低频抑制振荡因子	0~100	10

功能码	名称	参数详细说明	缺省值
P04.11	电机 1 高频抑制振荡因子	0~100	10
P06.04	继电器 RO2 输出选择	54：停机卷径到达 55：长度到达 56：火灾模式开启 57：锁相成功（表示锁相环锁住电网频率和相位），调试时可用于观察变频器锁相环工作状态 58：同步成功（表示变频器输出跟踪并与电网频率和相位完全同步），调试时可用于观察变频器工作状态 59：工频输出（正转）（工变频切换应用：同步已完成，用于控制工频接触器。电源应用：当检测到电网有电时，闭合工频接触器。） 60：变频输出（工变频切换应用：同步已完成，用于控制变频接触器；电源应用：当检测到电网掉电时，闭合变频接触器） 61：母线电压欠压预警输出 62：工频输出（间接控制）	60
P30.11	输出角度补偿值	-180.0~180.0°	根据需要调节
P36.00	变频器工作模式选择	0：普通模式 1：EPS 模式 2：变频切工频（无扰切换） 3：变频切工频（有扰切换） 4：电压闭环模式 5：轴发模式	2
P36.01	电网频率同步模式选择	0x000~0x111 LED 个位：频率控制选择 0：非电网频率非同步模式 1：电网频率同步模式（该模式下转差补偿和自动转矩提升无效） LED 十位：电网锁相动作选择 0：快速跟踪模式(相位不连续，相位调整) 1：相位连续模式（相位不调整） LED 百位：同步模式频率加速动作选择 0：经加速至电网频率 1：直接启动至电网频率（一般用于电阻性负载）	0x111
P36.05	反序/锁相失败检测保护	0x000~0x211 LED 个位：端子板 RST 输入反序（UIPE） 0：输入反序保护禁止 1：输入反序保护允许 LED 十位：端子板 UVW 输出反序（UOPE） 0：输出反序保护禁止 1：输出反序保护允许 LED 百位：端子板 RST 锁相失败（PLLE） 0：锁相失败（PLLE）检出一直无效 1：锁相失败（PLLE）检出停机有效 2：锁相失败（PLLE）检出一直有效	0x211
P36.07	工变频切换参数设置	0x0000-0x1111 LED 个位：接触器动作时间学习使能 0：不使能 1：使能 LED 十位：正序微调上限频率和相位角度补偿自动学习 0：不使能 1：使能 LED 百位：工频接触器电气自锁保持 0：不使能 1：使能 LED 千位：复位系统状态 0：不使能 1：使能 **注意：** ● 接触器动作时间学习需要学习三次并求取平均值，接触器反馈触点只能接 S2 用于吸合时间学习。 ● 在学习微调频率时必须先完成接触器学习。 ● 有扰切换工频接触器如果选择使能，则 0.5s 后工频继电器会断开，由用户进行电气自锁保持。	0x0000

3.5 变频有扰切工频接线图及相关参数

步骤1 准备工作

A、 设置最大输出频率，根据电网频率+5Hz 进行设置。

B、 P01.00 设置为 3[转速追踪再启动(无激磁)]。

C、 设置停机方式为自由停机。

D、 设置 P36.00 选择 3(有扰切换模式)。

步骤2 接触器吸合时间自学习(注意不能带任何负载)

A、 首先待机模式下设置 P36.07 学习接触器吸合时间，观察 P36.08 值是否自动更新。

B、 反馈触点接入 S2 端子（位置不可更改）。

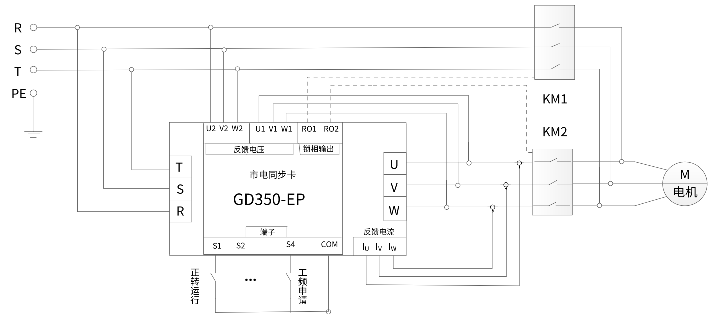
C、 控制端子选择输出继电器 RO1（59：工频输出）（根据工频输出继电器进行选择）。

D、 设置 P36.07 个位为 1，开始接触器吸合时间学习。

E、 学习完毕观察 P36.08 数值变化。

步骤3 设置 P36.07 十位，开始进行频率和相位补偿自动学习

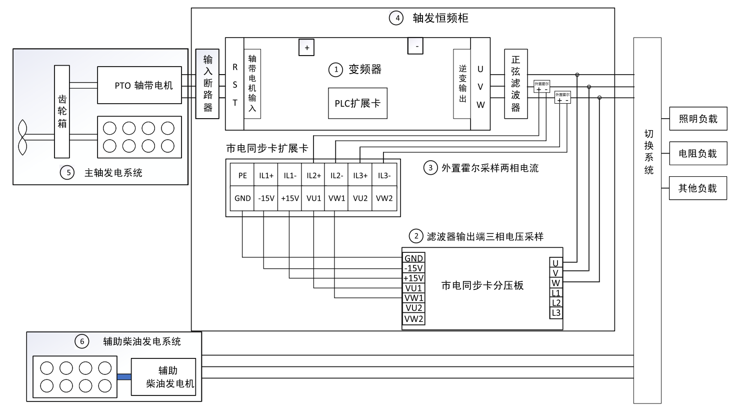
手动点击运行键，运行到设定频率后，机器会自由停机后转速追踪到设定频率，学习完成后观察 P36.10 和 P36.11 值是否自动更新。



功能码	名称	参数详细说明	缺省值
P00.01	运行指令通道	0：键盘运行指令通道 （通过切换 P36.00 不同工作模式复位系统状态） 1：端子运行指令通道 （无正转命令后系统状态复位） 2：通讯运行指令通道	0
P00.03	最大输出频率	Max(P00.04,10.00)~599.00Hz **注意：**根据电网频率+5Hz。	55.00Hz
P00.04	运行频率上限	P00.05~P00.03Hz **注意：**根据电网频率+5Hz。	55.00Hz
P01.00	起动运行方式	0：直接起动 1：先直流制动再起动 2：转速追踪再起动（有激磁） 3：转速追踪再起动（无激磁） 4：转速追踪再起动（软件）	3
P01.08	停机方式选择	0：减速停车 1：自由停车	1
P04.00	电机 1 V/F 曲线设定	0：直线 V/F 曲线 1：多点 V/F 曲线 2：1.3 次幂降转矩 V/F 曲线 3：1.7 次幂降转矩 V/F 曲线 4：2.0 次幂降转矩 V/F 曲线 5：自定义 V/F（V/F 分离）	0
P04.09	电机 1 V/F 转差补偿增益	0.0~200.0%	100.0%
P04.10	电机 1 低频抑制振荡因子	0~100	10
P04.11	电机 1 高频抑制振荡因子	0~100	10
P06.03	继电器 RO1 输出选择	54：停机卷径到达 55：长度到达 56：火灾模式开启 57：锁相成功（表示锁相环锁住电网频率和相位），调试时可用于观察变频器锁相环工作状态 58：同步成功（表示变频器输出跟踪并与电网频率和相位完全同步），调试时可用于观察变频器工作状态 59：工频输出（正转）（工变频切换应用：同步已完成，用于控制工频接触器。电源应用：当检测到电网有电时，闭合工频接触器。） 60：变频输出（工变频切换应用：同步已完成，用于控制变频接触器；电源应用：当检测到电网掉电时，闭合变频接触器） 61：母线电压欠压预警输出 62：工频输出（间接控制）	59
P06.04	继电器 RO2 输出选择		60
P36.00	变频器工作模式选择	0：普通模式 1：EPS 模式 2：变频切工频（无扰切换） 3：变频切工频（有扰切换） 4：电压闭环模式 5：轴发模式	3
P36.01	电网频率同步模式选择	0x000~0x111 LED 个位：频率控制选择 0：非电网频率非同步模式 1：电网频率同步模式（该模式下转差补偿和自动转矩提升无效） LED 十位：电网锁相动作选择 0：快速跟踪模式(相位不连续，相位调整) 1：相位连续模式（相位不调整） LED 百位：同步模式频率加速动作选择 0：经加速至电网频率 1：直接启动至电网频率（一般用于电阻性负载）	0x111
P36.05	反序/锁相失败检测保护	0x000~0x211 LED 个位：端子板 RST 输入反序（UIPE） 0：输入反序保护禁止 1：输入反序保护允许 LED 十位：端子板 UVW 输出反序（UOPE） 0：输出反序保护禁止 1：输出反序保护允许 LED 百位：端子板 RST 锁相失败（PLLE） 0：锁相失败（PLLE）检出一直无效 1：锁相失败（PLLE）检出停机有效 2：锁相失败（PLLE）检出一直有效	0x211
P36.07	工变频切换参数设置	0x0000-0x1111 LED 个位：接触器动作时间学习使能 0：不使能 1：使能 LED 十位：正序微调上限频率和相位角度补偿自动学习 0：不使能	0x0000

功能码	名称	参数详细说明	缺省值
		1：使能 LED 百位：工频接触器电气自锁保持 0：不使能 1：使能 LED 千位：复位系统状态 0：不使能 1：使能 **注意：** ● 接触器动作时间学习需要学习三次并求取平均值，接触器反馈触点只能接 S2 用于吸合时间学习，P05.02(S2 端子功能选择)设置必须为 0(无功能)。 ● 在学习微调频率时必须先完成接触器学习。 ● 有扰切换工频接触器如果选择使能，则 0.5s 后工频继电器会断开，由用户进行电气自锁保持。	
P36.16	端子板缺相保护	LED 个位： 0：端子板 RST 输入信号缺相保护（UIPL）禁止 1：端子板 RST 输入信号缺相保护（UIPL）允许 LED 十位： 0：端子板 UVW 输出信号缺相保护（UOPL）禁止 1：端子板 UVW 输出信号缺相保护（UOPL）允许	0x11

3.6 轴带发电接线图及相关参数



功能码	名称	参数详细说明	缺省值
P00.00	速度控制模式	0：无 PG 矢量控制模式 0 1：无 PG 矢量控制模式 1 2：V/F 控制 3：闭环矢量控制模式	2
P00.01	运行指令通道	0：键盘运行指令通道 1：端子运行指令通道 2：通讯运行指令通道	2
P00.02	通讯运行指令通道选择	0：Modbus/Modbus TCP 通讯通道 1：PROFIBUS 通讯通道/CANopen 通讯通道/DeviceNet 通讯通道 2：以太网通讯通道 3：EtherCAT 通讯通道/PROFINET 通讯通道/EtherNet IP 通讯通道 4：PLC 可编程卡通信通道 5：无线通信卡通信通道 6：USB 通信通道（保留）	4
P00.03	最大输出频率	Max(P00.04,10.00)~599.00Hz	55.00Hz
P00.04	运行频率上限	P00.05~P00.03Hz	55.00Hz
P00.06	A 频率指令选择	0：键盘数字设定 1：模拟量 AI1 设定 2：模拟量 AI2 设定 3：模拟量 AI3 设定 4：高速脉冲 HDIA 设定 5：简易 PLC 程序设定 6：多段速运行设定 7：PID 控制设定 8：Modbus/Modbus TCP 通讯设定 9：PROFIBUS/CANopen/DeviceNet 通讯设定 10：以太网通讯设定 11：高速脉冲 HDIB 设定 12：脉冲串 AB 设定 13：EtherCAT/PROFINET/EtherNet IP 通讯设定 14：PLC 可编程卡设定 15：预留	14
P00.11	加速时间 1	0.0~3600.0s	0.0s
P00.12	减速时间 1	0.0~3600.0s	0.0s
P00.14	载波频率设定	1.0~15.0kHz	4.0kHz
P02.04	异步电机 1 额定电压	0~1200V	1000V
P04.00	电机 1 V/F 曲线设定	0：直线 V/F 曲线 1：多点 V/F 曲线 2：1.3 次幂降转矩 V/F 曲线 3：1.7 次幂降转矩 V/F 曲线 4：2.0 次幂降转矩 V/F 曲线 5：自定义 V/F（V/F 分离）	5
P04.09	电机 1 V/F 转差补偿增益	0.0~200.0% **注意：**电源模式不需要。	0.0%
P04.10	电机 1 低频抑制振荡因子	0~100	10

功能码	名称	参数详细说明	缺省值
P04.11	电机 1 高频抑制振荡因子	0~100	10
P04.27	电压设定通道选择	0：键盘设定电压（设定由 P04.28 设定） 1：AI1 设定电压 2：AI2 设定电压 3：AI3 设定电压 4：HDIA 设定电压 5：多段设定电压（设定值由 P10 组参数的多段速确定） 6：PID 设定电压 7：Modbus/Modbus TCP 通讯设定电压 8：PROFIBUS/CANopen/DeviceNet 通讯设定电压 9：以太网通讯设定电压 10：HDIB 设定电压 11：EtherCAT/PROFINET/EtherNet IP 通讯设定 12：PLC 可编程卡设定 13：预留	12
P04.29	电压增加时间	0.0~3600.0s	5.0s
P04.30	电压减少时间	0.0~3600.0s	5.0s
P06.03	继电器 RO1 输出选择	1：运行中 54：停机卷径到达 55：长度到达 56：火灾模式开启 57：锁相成功（表示锁相环锁住电网频率和相位），调试时可用于观察变频器锁相环工作状态 58：同步成功（表示变频器输出跟踪并与电网频率和相位完全同步），调试时可用于观察变频器工作状态 59：工频输出（正转）（工变频切换应用：同步已完成，用于控制工频接触器。电源应用：检测电网有电，闭合工频接触器。） 60：变频输出（工变频切换应用：同步已完成，用于控制变频接触器；电源应用：检测电网掉电，闭合变频接触器） 61：母线电压欠压预警输出 62：工频输出（间接控制）	1
P35.00	闭环电压反馈来源选择	0~1 0：硬件采样 1：软件计算	1
P35.01	输出电压显示校正系数(硬件)	0.0~200.0%	74.0%
P35.02	输出电压显示校正系数(软件)	0.0~200.0%	100.0%
P35.04	霍尔电流采样变比	0~2000	根据需要设置
P36.00	变频器工作模式选择	0：普通模式 1：EPS 模式 2：变频切工频（无扰切换） 3：变频切工频（有扰切换） 4：电压闭环模式 5：轴发模式	5
P36.05	反序/锁相失败检测保护	0x000~0x211 LED 个位：端子板 RST 输入反序（UIPE） 0：输入反序保护禁止 1：输入反序保护允许 LED 十位：端子板 UVW 输出反序（UOPE） 0：输出反序保护禁止 1：输出反序保护允许 LED 百位：端子板 RST 锁相失败（PLLE） 0：锁相失败（PLLE）检出一直无效 1：锁相失败（PLLE）检出停机有效 2：锁相失败（PLLE）检出一直有效	0x010
P36.16	端子板缺相保护	0x00~0x11 LED 个位： 0：端子板 RST 输入信号缺相保护（UIPL）禁止 1：端子板 RST 输入信号缺相保护（UIPL）允许 LED 十位： 0：端子板 UVW 输出信号缺相（UOPL）保护禁止 1：端子板 UVW 输出信号缺相（UOPL）保护允许	0x10

4 常用功能参数设置

下述功能参数表仅列出部分常见功能参数，并进行了简要描述、列举典型取值。

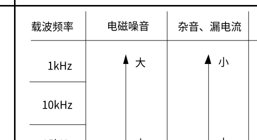
"○"：表示该参数的设定值在变频器处于停机、运行状态中，均可更改；

"◎"：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检测记录值，不能更改。

变频器已对各参数的修改属性作了自动检查约束，可帮助用户避免误修改。

功能码	名称	说明	缺省值	更改
P00.00	速度控制模式	0：无PG矢量控制模式0 1：无PG矢量控制模式1 2：空间电压矢量控制模式 3：闭环矢量控制模式	2	◎
P00.01	运行指令通道	0：键盘运行指令通道 1：端子运行指令通道 2：通讯运行指令通道	0	○
P00.02	通讯运行指令通道选择	0：Modbus/Modbus TCP通讯通道 1：PROFIBUS通讯通道/CANopen通讯通道/DeviceNet通讯通道 2：以太网通讯通道 3：EtherCAT通讯通道/PROFINET通讯通道/ EtherNet IP通讯通道	0	○

功能码	名称	说明	缺省值	更改
		4：PLC可编程卡通信通道 5：无线通信卡通信通道 6：保留 注意：0 (Modbus TCP时）及1、2、3、4、5 为扩展功能，需选配相应扩展卡才能使用。		
P00.03	最大输出频率	Max(P00.04,10.00)~599.00Hz	50.00Hz	◎
P00.04	运行频率上限	P00.05~P00.03（最大输出频率）	50.00Hz	◎
P00.05	运行频率下限	0.00Hz~P00.04（运行频率上限）	0.00Hz	◎
P00.06	A频率指令选择	0：键盘数字设定 1：模拟量AI1设定 2：模拟量AI2设定 3：模拟量AI3设定 4：高速脉冲HDIA设定 5：简易PLC程序设定 6：多段速运行设定 7：PID控制设定 8：Modbus/Modbus TCP通讯设定	0	○
P00.07	B频率指令选择		15	○
P00.10	键盘设定频率	0.00Hz~P00.03（最大输出频率）	50.00Hz	○
P00.11	加速时间1	0.0~3600.0s	机型确定	○
P00.12	减速时间1		机型确定	○
P00.13	运行方向选择	0：默认方向运行 1：相反方向运行 2：禁止反转运行	0	○
P00.14	载波频率设定	 载波频率 电磁噪音 杂音、漏电流 散热度 1kHz 10kHz 15kHz 大 小 小 大 小 大	机型确定	○
P00.15	电机参数自学习	个位：电机基本参数自学习 0：无操作 1：完整参数旋转自学习 2：完整参数静止自学习 3：部分参数静止自学习 十位：初始磁极角自学习 0：无操作 1：旋转自学习1 2：静止自学习 3：旋转自学习2 百位：系统惯量自学习 0：不使能 1：使能	0	◎
P00.18	功能参数恢复	0：无操作 1：恢复出厂值（不含电机参数） 2：清除故障记录 5：恢复出厂值（厂家测试模式） 6：恢复出厂值（含电机参数）	0	◎
P01.00	起动运行方式	0：直接起动 1：先直流制动再起动 2：转速追踪再起动（有激磁） 3：转速追踪再起动（无激磁） 4：转速追踪再起动（软件）	0	◎
P01.08	停机方式选择	0：减速停车 1：自由停车	0	○
P01.09	停机制动开始频率	0.00Hz~P00.03（最大输出频率）	0.00Hz	○
P01.11	停机直流制动电流	0.0~100.0%	0.0%	○
P01.12	停机直流制动时间	0.00~50.00s	0.00s	○
P01.18	上电端子运行保护选择	0：上电时端子运行命令无效 1：上电时端子运行命令有效	0	◎
P02.00	电机1类型	0：异步电机 1：同步电机	0	◎
P02.01	异步电机1额定功率	0.1~3000.0kW	机型确定	◎
P02.02	异步电机1额定频率	0.01Hz~P00.03（最大输出频率）	50.00Hz	◎
P02.03	异步电机1额定转速	1~60000rpm	机型确定	◎
P02.04	异步电机1额定电压	0~1200V	机型确定	◎
P02.05	异步电机1额定电流	0.8~6000.0A	机型确定	◎
P03.00	电机1速度环比例增益1	0.0~200.0	20.0	○
P03.01	电机1速度环积分时间1	0.000~10.000s	0.200s	○
P03.03	电机1速度环比例增益2	0.0~200.0	20.0	○
P03.04	电机1速度环积分时间2	0.000~10.000s	0.200s	○
P03.11	转矩设定方式选择	0：键盘设定转矩（P03.12） 1：键盘设定转矩（P03.12） 2：模拟量AI1设定转矩 3：模拟量AI2设定转矩 4：模拟量AI3设定转矩 5：脉冲频率HDI设定转矩 6：多段转矩设定 7：Modbus/Modbus TCP 通讯设定转矩	0	○
P03.54	电机1电流环带宽	0~2000	400	○
P04.01	电机1转矩提升	0.0%：(自动转矩提升)，0.1%~10.0%	0	○
P04.09	电机1 V/F转差补偿增益	0.0~200.0%	100.0%	○
P04.10	电机1低频抑制振荡因子	0~100	10	○
P04.11	电机1高频抑制振荡因子	0~100	10	○

功能码	名称	说明	缺省值	更改
P05.01	S1端子功能选择	90：第二直流欠压点 91：变频切换工频申请 92：工频切换变频申请	1	◎
P05.02	S2端子功能选择		4	◎
P05.03	S3端子功能选择		7	◎
P05.04	S4端子功能选择		0	◎
P05.29	AI2下限值	-10.00V~P05.31	-10.00V	○
P05.35	AI2上限值	P05.33~10.00V	10.00V	○
P06.01	Y1输出选择	54：停机卷径到达 55：长度到达 56：火灾模式开启 57：锁相成功（表示锁相环锁住电网频率和相位），调试时可用于观察变频器锁相环工作状态 58：同步成功（表示变频器输出跟踪并与电网频率和相位完全同步），调试时可用于观察变频器工作状态 59：工频输出（正转）（工变频切换应用：同步已完成，用于控制工频接触器。电源应用：当检测到电网有电时，闭合工频接触器。） 60：变频输出（工变频切换应用：同步已完成，用于控制变频接触器；电源应用：当检测到电网掉电时，闭合变频接触器） 61：母线电压欠压预警输出 62：工频输出（间接控制）	0	○
P06.02	HDO输出选择			
P06.03	继电器RO1输出选择		1	○
P06.04	继电器RO2输出选择		5	○
P06.14	AO1模拟量输出选择	0：运行频率 1：设定频率 3：运行转速（相对于2倍电机同步转速） 4：输出电流（相对于2倍变频器额定电流） 5：输出电流（相对于2倍电机额定电流） 6：输出电压（相对于1.5倍变频器额定电压） 7：输出功率（相对于2倍电机额定功率） 33：设定张力输出	0	○
P06.16	HDO高速脉冲输出选择		0	○
P06.17~P06.21	AO1输出上下限设置	详见完整版电子说明书。	-	○
P07.00	用户密码	0~65535	0	○
P07.27~P07.32	最近故障类型~前5次故障类型	0~84 （0：无故障） 具体故障类型，请查阅完整版电子说明书。	0	○
P08.28	故障自动复位次数	0~10	0	○
P08.29	故障自动复位间隔时间设置	0.1~3600.0s	1.0s	○
P08.37	能耗制动使能	0x00~0x11 个位：能耗制动选择 0：能耗制动禁止 1：能耗制动使能 十位：制动短路保护选择 0：无制动短路保护 1：使能制动短路保护 注意：22kW（含）以下和45~75kW默认无制动短路保护。	0x01	○
P09.02	PID反馈源选择	用于选择PID反馈通道。 设定范围：0~11 0：模拟通道AI1反馈 1：模拟通道AI2反馈 2：模拟通道AI3反馈 3：高速脉冲HDIA反馈 4：Modbus/Modbus TCP通讯反馈 5：PROFIBUS/CANopen/DeviceNet通讯设定 6：以太网通讯设定 7：高速脉冲HDIB反馈 8：PROFINET/EtherNet IP通讯设定 9：可编程扩展卡设定 10：同步卡UVW电压反馈（有效值） 11：保留 注意：给定通道和反馈通道不能重合，否则，PID不能有效控制。	0	○
P14.00	本机通讯地址	1~247 注意：从机地址不可为0。	1	○
P14.01	通讯波特率设置	0：1200bps 1：2400bps 2：4800bps 3：9600bps 4：19200bps 5：38400bps 6：57600bps 7：115200bps	4	○
P14.02	数据位校验设置	0：无校验（N，8，1）for RTU 1：偶校验（E，8，1）for RTU 2：奇校验（O，8，1）for RTU 3：无校验（N，8，2）for RTU 4：偶校验（E，8，2）for RTU 5：奇校验（O，8，2）for RTU	1	○
P15.01	模块地址	0~127	2	○
P15.02~P15.12及P16.32~P16.42	PZD2接收~PZD12接收	0~31 1：设定频率（0~Fmax（单位：0.01Hz）） 2：PID给定，范围（-1000~1000，1000对应100.0%） 3：PID反馈，范围（-1000~1000，1000对应100.0%） 4：转矩设定值（-3000~3000，1000对应100.0%电机额定电流） 5：正转上限频率设定值（0~Fmax（单位：0.01Hz）） 6：反转上限频率设定值（0~Fmax（单位：0.01Hz））	0	○

功能码	名称	说明	缺省值	更改
		7：电动转矩上限转矩（0~3000，1000对应100.0%电机额定电流） 8：制动转矩上限转矩（0~3000，1000对应100.0%电机额定电流） 9：虚拟输入端子命令，范围：0x000~0x3FF 10：虚拟输出端子命令，范围：0x00~0x0F 11：电压设定值（V/F分离专用），（0~1000，1000对应100.0%电机额定电压） 12：AO1 输出设定值1（-1000~1000，1000对应100.0%） 13：AO2 输出设定值2（-1000~1000，1000对应100.0%） 14：位置给定高位（有符号数） 15：位置给定低位（无符号数） 16：位置反馈高位（有符号数） 17：位置反馈低位（无符号数） 18：位置反馈设定标志（先写1再写0，则位置反馈才可以设定） 19：功能码映射（PZD2~PZD12分别对应P14.49~P14.59） 20~31：保留		
P15.13~P15.23及P16.43~P16.53	PZD2发送~PZD12发送	0~31 1：运行频率（*100，Hz） 4：输出电压（*1，V） 5：输出电流（*10，A） 6：输出转矩实际值（*10，%） 7：输出功率实际值（*10，%） 8：运行转速（*1，RPM） 9：运行线速度（*1，m/s） 10：斜坡给定频率 11：故障代码 12：AI1值（*100，V） 13：AI2值（*100，V） 14：AI3值（*100，V） 15：HDIA频率值（*100，kHz） 16：端子输入状态 17：端子输出状态 18：PID给定（*100，%） 19：PID反馈（*100，%） 20：电机额定转矩 21：位置给定高位（有符号数） 22：位置给定低位（无符号数） 23：位置反馈高位（有符号数） 24：位置反馈低位（无符号数） 25：状态字 26：HDIB频率值（*100，kHz） 27：PG卡脉冲反馈计数高位 28：PG卡脉冲反馈计数低位 29：PG卡脉冲给定计数高位 30：PG卡脉冲给定计数低位 31：功能码映射（PZD2~PZD12分别对应P14.60~P14.70）	0	○
P35.00	闭环电压反馈来源选择	0~1 0：硬件采样 1：软件计算	0	◎
P35.01	输出电压显示校正系数(硬件)	0.0~200.0%	100.0%	○
P35.02	输出电压显示校正系数(软件)	0.0~200.0%	100.0%	○
P35.03	霍尔电流校正系数	0.0~200.0%	100.0%	○
P35.04	霍尔电流采样变比	0~2000	0	○
P35.05	欠压预警延时	0.0~20.0s 注意： ● 运行中：母线电压低于欠压点+40V 时，开始延迟报警；母线电压低于欠压点且延迟时间到，则报欠压故障。 ● 未运行状态：母线低于欠压点直接报PoFF。	0.0s	○
P35.06	软件欠压点1	0.0~2000.0V	420.0V	◎
P35.07	软件欠压恢复点1	0.0~2000.0V	480.0V	◎
P35.08	软件欠压点2	0.0~2000.0V	380.0V	◎
P35.09	软件欠压恢复点2	0.0~2000.0V	480.0V	◎
P35.10	电压补偿增益	0~200 注意：（电压 PID 闭环时无效）应用于开环控制，主要是在重载运行时，需要电压补偿量。	0	○
P35.11	输出角度补偿值	-180.0~180.0° 注意：（仅对同步模式有效）0.0°为自动相位补偿模式，非 0.0°为手动相位补偿。	0.0°	○
P35.12	下垂可调有功功率	0.1~3000.0kW	机型确定(0.4kW)	◎
P35.13	下垂可调无功功率	0.1~3000.0kVar	机型确定(0.4kVar)	◎
P35.14	下垂有功对应频率值	0.00~2.00Hz	1.00Hz	○
P35.15	下垂无功对应电压值	0.00~20.00V	10.00V	○
P36.00	变频器工作模式选择	0~5 0：普通模式 1：EPS 模式 2：变频切工频（无扰切换） 3：变频切工频（有扰切换） 4：电压闭环模式 5：轴发模式 注意：选项 2 和 3 对应频率大小是锁相电	0	◎

功能码	名称	说明	缺省值	更改
		网电压频率（P37.00），运行方向由频率正负决定。禁止调整 P00.13 设置方向，需要改变电机方向，调整 UVW 输出线。		
P36.01	电网频率同步模式选择	0x000~0x111 LED 个位：频率控制选择 0：非电网频率非同步模式 1：电网频率同步模式（该模式下转差补偿和自动转矩提升无效） LED 十位：电网锁相动作选择 0：快速跟踪模式(相位不连续，相位调整) 1：相位连续模式（相位不调整） LED 百位：同步模式频率加速动作选择 0：经加速至电网频率 1：直接启动至电网频率（一般用于电阻性负载）	0x000	◎
P36.02	锁相测试模式选择	0~1 0：测试模式无效 1：测试模式有效（可按照 P36.03~P36.04 的设定值来模拟电网电压输入，此时实际电网输入将被屏蔽）	0	◎
P36.03	模拟电网频率	-60.00~60.00Hz	50.00Hz	○
P36.04	模拟电网电压值	0~1500V	380V	○
P36.05	反序/锁相失败检测保护	0x000~0x211 LED 个位：端子板 RST 输入反序（UIPE） 0：输入反序保护禁止 1：输入反序保护允许 LED 十位：端子板 UVW 输出反序（UOPE） 0：输出反序保护禁止 1：输出反序保护允许 LED 百位：端子板 RST 锁相失败（PLLE） 0：锁相失败（PLLE）检出一直无效 1：锁相失败（PLLE）检出停机有效 2：锁相失败（PLLE）检出一直有效	0x211	○
P36.06	有扰变频切工频停机学习时间	0.500~10.000s	0.500s	◎
P36.07	工变频切换参数设置	0x0000-0x1111 LED 个位：接触器动作时间学习使能 0：不使能 1：使能 LED 十位：正序微调上限频率和相位角度补偿自动学习 0：不使能 1：使能 LED 百位：工频接触器电气自锁保持 0：不使能 1：使能 LED 千位：复位系统状态 0：不使能 1：使能 注意： ● 接触器动作时间学习需要学习三次并求取平均值，接触器反馈触点只能接 S2 用于吸合时间学习。 ● 在学习微调频率时必须先完成接触器学习。 ● 有扰切换工频接触器如果选择使能，则 0.5s 后工频继电器会断开，由用户进行电气自锁保持。	0x0000	◎
P36.08	有扰工频接触器动作时间	0.000~2.000s	0.000s	●
P36.09	工变频切换接触器动作时间偏置值	-2.000~2.000s	0.000s	○
P36.10	正序微调上限频率	0.00~10.00Hz	0.50Hz	○
P36.11	正序相位角度补偿值	-180.0~180.0°	10.0°	○
P36.12	负序微调上限频率	0.00~10.00Hz	0.50Hz	○
P36.13	负序相位角度补偿值	-180.0~180.0°	10.0°	○
P36.14	工频申请后软件延时	0.500~10.000s	0.000s	○
P36.15	同步输出滤波次数	0~65535	6	◎
P36.16	端子板缺相保护	0x00~0x11 LED 个位： 0：端子板 RST 输入信号缺相保护（UIPL）禁止 1：端子板 RST 输入信号缺相保护（UIPL）允许 LED 十位： 0：端子板 UVW 输出信号缺相（UOPL）保护禁止 1：端子板 UVW 输出信号缺相（UOPL）保护允许	0x00	○
P37.00	电网电压频率	-60.00~60.00Hz	0.00Hz	●
P37.01	电网电压有效值	0~2000V	0V	●
P37.02	输出电压频率	-60.00~60.00Hz	0.00Hz	●
P37.03	输出电压有效值	0~2000V	0V	●
P37.04	霍尔电流有效值	0.0~6000.0A	0.0A	●
P37.05	电网锁相输出状态	0x0000~0x1111 LED 个位：电网上电信号 0：电网掉电 1：电网有电 LED 十位：锁相环初始化标志 0：锁相环初始化未完成 1：锁相环初始化完成	0x0000	●

功能码	名称	说明	缺省值	更改
		LED 百位：50/60Hz 电网显示 0：50Hz 电网 1：60Hz 电网 LED 千位：锁相成功标志 0：锁相未成功 1：锁相成功		
P37.06	切换信号	0x0~0x1 LED 个位：切换信号 0：未输出切换信号 1：已输出切换信号	0x0	●
P37.07	市电采集卡软件版本号	1.00~655.35	版本确定	●
P37.08	轴发输出有功功率	0.0~3000.0kW	0.0kW	●
P37.09	轴发输出无功功率	0.0~3000.0kVar	0.0kVar	●
P37.10	轴发输出功率因数	-1.00~1.00	0.00	●
P37.11	轴发PLC电压调节指令	0~1000V	0V	●
P37.12	轴发PLC频率调节指令	0.00~60.00Hz	0.00Hz	●

5 常见故障及对策

注意：我司正在升级故障码方案，部分系列产品已使用新故障码方案。“故障码显示”分两列分别显示新旧故障码。

故障码显示		故障类型	可能的原因	纠正措施
OUt1	E1	逆变单元 U 相保护	加减速太快； 该相 IGBT 内部损坏； 干扰引起误动作； 驱动线连接不良； 是否对地短路； 机器使用环境差导致内部出现火花。	增大加减速时间； 更换逆变单元； 检查设备和系统是否可靠接地； 请检查驱动线是否松动； 检查电机线缆和电机对地是否有短路； 定期清理变频器内部粉尘或油污。
OUt2	E2	逆变单元 V 相保护		
OUt3	E3	逆变单元 W 相保护		
OC1	E4	加速过电流	加减速太快； 电网电压偏低； 变频器功率偏小； 负载突变或者异常； 三相输出电流是否平衡； 外部存在强干扰源（系统有接触器切换、系统接地不良）。	增大加减速时间； 调高电网输入电压； 选择功率更大的变频器； 检查电机是否堵转或短路，是否负载设备存在异常； 检查变频器三相输出电压是否正常和电机三相阻抗是否平衡； 检查是否存在强干扰现象（电机线远离接触器、系统可靠接地）。
OC2	E5	减速过电流		
OC3	E6	恒速过电流		
OV1	E7	加速过电压	加减速时间过短； 输入电压异常； 存在电机旋转中启动的现象； 负载存在较大能量回馈； 能耗制动功能未打开。	增大加减速时间； 检查输入电压； 采用转速跟踪启动； 需增加能耗制动组件或能量回馈单元； 设置能耗制动功能参数。
OV2	E8	减速过电压		
OV3	E9	恒速过电压		
UV	E10	母线欠压故障	电网电压偏低； 母线电压显示是否正常； 缓冲接触器吸合是否正常。	调高电网输入电压； 联系厂家； 联系厂家。
OL1	E11	电机过载	电网电压过低； 电机额定电流设置不正确； 电机堵转或负载突变过大。	调高电网输入电压； 重新设置电机参数组的电机额定电流； 检查负载，调节转矩提升量。
OL2	E12	变频器过载	加速太快； 对旋转中的电机实施再启动； 电网电压过低； 负载过大； 变频器功率选型偏小。	增大加速时间； 避免停机再启动或进行转速跟踪启动； 调高电网输入电压； 选择功率更大的变频器。
SPI	E13	输入侧缺相	输入 R、S、T 缺相或波动大； 输入侧螺丝是否锁紧。	检查输入电源是否正常和输入线缆是否有松动； 可选择设置参数屏蔽。
SPO	E14	输出侧缺相	输出线缆有破损或对地短路； 输出 U、V、W 缺相或负载三相严重不对称。	检查输出线缆是否有松动或破损； 检查负载是否波动大和电机三相阻抗是否平衡。
OH2	E16	逆变模块过热故障	风道堵塞或风扇损坏； 环境温度过高； 长时间过载运行。	疏通风道或更换风扇； 保持现场通风顺畅，降低环境温度； 选择功率更大的变频器。
CE	E18	485 通讯故障	波特率设置不当； 通讯线路故障； 通讯地址错误； 通讯受到强干扰。	设置合适的波特率； 检查通讯接口配线； 设置正确通讯地址； 更换或更改配线，提高抗扰性。
tE	E20	电机自学习故障	电机容量与变频器容量不匹配； 电机参数设置不当； 自学习出的参数与标准参数偏差过大； 自学习超时。	更换变频器型号； 正确设置电机类型和铭牌参数； 使电机空载，重新辩识； 检查电机接线，参数设置； 检查上限频率是否大于额定频率的 2/3。
dEu	E34	速度偏差故障	负载过重或者被堵转。	检查负载是否正常或过重，增加速度偏差检出时间或把加减速时间加长； 电机参数设置是否正确，重新做电机参数自学习； 检查速度环控制参数是否合适。
STo	E35	失调故障	负载异常； 同步电机参数设置不当； 电机自学习参数不准； 变频器未接电机； 是否为弱磁应用。	检查负载是否正常、过重、堵转； 检查电机参数设置是否正确，反电动势设置是否正确； 重新做电机参数自学习； 增加失调检出时间； 适当调整弱磁系数、电流环参数。

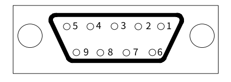
故障码显示		故障类型	可能的原因	纠正措施
G-TE	E77	市电采集卡采样检测故障	采集电路的零漂偏大。	更换市电采集卡。
PLLE	E78	锁相失败	若 250ms 后，锁相频率与电网频率偏差超出 2Hz，或者电网突然掉电而不能掉电运行，则报 PLLE 故障。	检查端子 RST 接线是否正常且是否上电。
UIPE	E79	同步卡输入反序	当锁相电网电压频率（P37.00）与发波频率相反时报输入反序。	检查端子 RST 三相输入接线是否正常，以及键盘显示正反方向（方向灯）和锁相电网电压频率（P37.00）是否一致。
UOPE	E80	同步卡输出反序	当输出频率（P37.03）和锁相电网电压频率（P37.00）相反，且输出电压有效值超过 0.25 倍额定电压时报输出反序故障。	请重新检查反馈电压 UVW 采样线接线相序是否正确。
UIPL	E81	同步卡输入缺相	在非故障状态下，同步卡的 RST 输入电压出现不平衡。	同步卡 RST 是否上电且接线是否正常。
UOPL	E82	同步卡输出缺相	P36.00 的模式 1 和模式 2 中，在非故障状态且同步成功后，同步卡 UVW 输出电压出现不平衡。	同步卡 UVW 是否上电且接线是否正常。

6 扩展卡

6.1 常用通讯卡

6.1.1 PROFIBUS-DP 通信卡（EC-TX503）

采用 9 针 D 型插头，连接器插针的分配如表所示。



连接器插针		说明
1、2、7、9	-	未使用
3	B-Line	数据正（双绞线 1）
4	RTS	发送请求
5	GND_BUS	隔离地
6	+5V BUS	隔离的 5V DC 供电
8	A-Line	数据负（双绞线 2）
Housing	SHLD	PROFIBUS 电缆屏蔽线

6.1.2 CAN 多协议通讯卡（EC-TX505C）

采用欧式螺接端子。

端子标识	名称	描述
PGND	隔离地	隔离地
PE	屏蔽线	CAN 总线屏蔽
CANH	CAN 正输入	CAN 总线高电平信号
CANL	CAN 负输入	CAN 总线低电平信号
CAN	CAN 终端电阻开关	OFF: CAN_H 和 CAN_L 无连接终端电阻
		ON: CAN_H 和 CAN_L 连接终端电阻

注意：对于此款扩展卡，请上电前根据实际使用协议，按以下关系设好拨码开关 SW2。

SW2 拨码开关		
1	2	协议类型
OFF	OFF	CANopen
ON	OFF	CAN 主从

6.1.3 PROFINET 通讯卡(EC-TX509C)、EtherNet/IP 通讯卡（EC-TX510)和 Modbus TCP 通讯卡（EC-TX515)

采用标准的 RJ45 接口，端子信号定义如下：

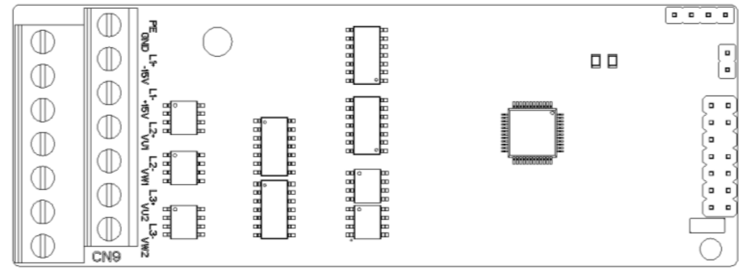
引脚	名称	描述
1	TX+	Transmit Data+ (发信号+)
2	TX-	Transmit Data- (发信号-)
3	RX+	Receive Data+ (收信号+)
4、5、7、8	n/c	Not connected (空脚)
6	RX-	Receive Data- (收信号-)

6.2 市电同步扩展卡

6.2.1 采集卡（EC-PD101-01）

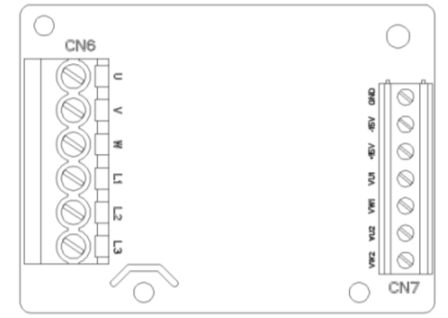
电压采集两路：变频器输出电抗器后端电压 V_{U1}、V_{V1}、V_{W1}，并网侧电压 V_{U2}、V_{V2}、V_{W2}。

电流采样三路：变频器输出电抗器后端电流 I_U、I_V、I_W。



6.2.2 降压卡（EC-PD101-02）

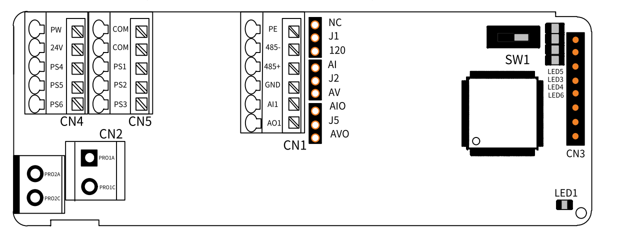
将高压电压信号（380V 和 660V）降至为 5Vmax 左右的小信号，送到采集卡。



6.3 可编程扩展卡（EC-PC502-00）

EC-PC502-00 采用国际主流的可编程扩展卡开发环境，支持 IL（指令语言）、LD（梯形图）、SFC（顺序功能图）3 种编程语言，可以替代部分微小型 PLC 应用。

此外，它还具有 16K 步用户程序存储空间，8K 字数据存储空间，支持掉电保存 1K 字的数据，继电器输出采用欧式螺接端子，其他均采用弹簧式接线端子，支持二次开发。



SW1 为可编程扩展卡的运行停止开关，标识"120"是 120Ω终端电阻。默认情况下，J1 接 NC，J2 接 AV，J5 接 AVO。

表 6-1 端子功能描述

类别	端子标识	端子名称	规格
电源	PW	外部电源	● 由外部向内部提供输入开关量工作电源 ● 电压范围：12~30V ● 需将 PW 和+24V 短接使用
	24V	内部电源	● 内部输出电源，100mA
数字量输入输出	PS1—COM	开关量输入 1	● 内部阻抗：4kΩ ● 可接受 12~30V 电压输入 ● 该端子为双向输入端子 ● 最大输入频率：1kHz ● 源型、漏型输入均可，但输入类型必须相同
	PS2—COM	开关量输入 2	
	PS3—COM	开关量输入 3	
	PS4—COM	开关量输入 4	
	PS5—COM	开关量输入 5	
	PS6—COM	开关量输入 6	
模拟量输入输出	AI1	模拟量输入 1	● 输入范围：AI1 电压电流可选 0~10V，0~20mA ● 输入阻抗：电压输入时 20kΩ，电流输入时 250Ω ● 电压或电流输入由"AI/AV"和 J2 跳线设定 ● 分辨率：在 10V 对应 50Hz 时，最小分辨率 5mV ● 误差±1%（25°C，满量程）
	AO1	模拟量输出 1	● 输出范围：0~10V 电压或 0~20mA 电流 ● 电压或电流输出由"AIO/AVO"和 J5 跳线设定 ● 误差±1%（25°C，满量程）
继电器输出	PRO1A	继电器 1 常开触点	● 触点容量：2A/250VAC，1A/30VDC ● 不可用作高频开关输出
	PRO1C	继电器 1 公共触点	
	PRO2A	继电器 2 常开触点	
	PRO2C	继电器 2 公共触点	

表 6-2 LED 功能描述

标识	名称	描述
LED1	电源灯	PWR 电源灯 ● 亮：扩展卡通电 ● 灭：扩展卡未通电
LED3	通信灯	COM 通信灯 ● 亮：扩展卡与控制板正在建立连接 ● 闪烁（亮 500ms，灭 500ms）：扩展卡与控制板连接正常 ● 灭：扩展卡与控制板断开连接
LED4	故障灯	ERR 故障灯 ● 闪烁（亮 500ms，灭 500ms）：扩展卡出现错误（通过上位机 Auto Station 可查询错误类型） ● 灭：无故障
LED5	电源灯	PWR 电源灯 ● 亮：扩展卡通电 ● 灭：扩展卡未通电
LED6	状态灯	RUN 运行状态灯 ● 亮：PLC 程序运行 ● 灭：PLC 程序停止

附录A 能效数据

表 A-1 能耗和 IE 等级

型号	相对损耗（%）								待机损耗(W)	IE等级
	(0;25)	(0;50)	(0;100)	(50;25)	(50;50)	(50;100)	(90;50)	(90;100)		
GD350-1R5G-4-EP	1.54	1.50	1.67	1.12	1.04	1.45	0.91	1.45	3	IE2
GD350-2R2G-4-EP	1.21	1.96	2.43	0.80	1.00	1.50	0.83	1.43	5	IE2
GD350-004G-4-EP	1.13	1.40	2.05	1.14	1.43	2.14	1.41	2.28	6	IE2
GD350-5R5G-4-EP	0.94	1.27	2.07	1.01	1.38	2.33	1.53	2.60	8	IE2
GD350-7R5G-4-EP	0.76	0.96	1.53	0.85	1.04	2.25	1.17	1.86	7	IE2

型号	相对损耗（%）								待机损耗(W)	IE等级
	(0;25)	(0;50)	(0;100)	(50;25)	(50;50)	(50;100)	(90;50)	(90;100)		
GD350-011G-4-EP	0.61	0.84	1.55	0.61	1.04	1.97	0.99	2.16	9	IE2
GD350-015G-4-EP	0.42	0.52	1.27	0.55	0.73	1.46	0.78	1.66	9	IE2
GD350-018G-4-EP	0.54	0.74	1.2	0.77	1.03	1.70	0.96	1.65	11	IE2
GD350-022G-4-EP	0.47	0.67	1.21	0.67	0.90	1.54	0.87	1.38	11	IE2
GD350-030G-4-EP	0.53	0.72	0.71	0.71	0.9	0.85	1.45	1.5	13	IE2
GD350-037G-4-EP	0.47	0.69	1.39	0.63	0.88	1.60	0.99	1.72	14	IE2
GD350-045G-4-EP	0.49	0.69	1.39	0.78	1.00	1.64	0.97	1.66	21	IE2
GD350-055G-4-EP	0.51	0.69	1.26	0.71	0.89	1.47	0.88	1.40	22	IE2
GD350-075G-4-EP	0.44	0.61	1.12	0.51	0.69	1.29	0.76	1.42	22	IE2
GD350-090G-4-EP	0.42	0.59	1.15	0.47	0.65	1.29	0.90	1.48	25	IE2
GD350-110G-4-EP	0.43	0.63	1.30	0.48	0.75	1.64	0.80	1.78	28	IE2
GD350-132G-4-EP	0.47	0.59	1.06	0.61	0.71	1.28	0.85	1.43	55	IE2
GD350-160G-4-EP	0.59	0.71	1.36	1.22	0.97	1.87	1.00	1.84	55	IE2
GD350-185G-4-EP	0.62	0.76	1.21	1.17	1.12	1.70	1.08	1.61	55	IE2
GD350-200G-4-EP	0.53	0.71	1.42	0.74	0.94	1.81	1.00	1.84	55	IE2
GD350-220G-4-EP	0.33	0.42	0.69	0.85	0.95	1.33	1.10	1.18	80	IE2
GD350-250G-4-EP	0.38	0.59	1.22	0.65	0.92	1.67	0.93	1.74	80	IE2
GD350-280G-4-EP	0.40	0.59	1.10	0.64	0.89	1.58	1.12	1.35	80	IE2
GD350-315G-4-EP	0.56	0.35	0.79	0..94	0.94	1.63	1.36	2.22	80	IE2
GD350-355G-4-EP	0.37	0.47	0.98	0.91	1.11	1.95	1.41	2.44	80	IE2
GD350-400G-4-EP	0.17	0.26	0.42	0.28	0.41	0.74	0.47	0.92	80	IE2
GD350-450G-4-EP	0.31	0.54	0.98	0.46	0.62	1.02	0.67	0.85	80	IE2
GD350-500G-4-EP	0.32	0.55	0.98	0.45	0.61	1.02	0.66	0.83	80	IE2
GD350-022G-6-EP	0.43	0.72	0.99	0.46	1.04	2.03	1.7	2.76	11	IE2
GD350-030G-6-EP	0.40	0.57	1.06	0.63	0.95	1.62	1.08	1.86	13	IE2
GD350-037G-6-EP	0.40	0.56	1.06	0.64	0.96	1.61	1.04	1.84	13	IE2
GD350-045G-6-EP	0.38	0.58	1.03	0.57	0.94	1.62	1.02	1.90	13	IE2
GD350-055G-6-EP	0.36	0.56	1.04	0.56	0.93	1.53	1.03	1.87	22	IE2
GD350-075G-6-EP	0.34	0.55	1.00	0.54	0.94	1.52	1.02	1.86	22	IE2
GD350-090G-6-EP	0.34	0.54	0.96	0.54	0.95	1.56	1.04	1.81	22	IE2
GD350-110G-6-EP	0.33	0.52	0.98	0.52	0.92	1.54	1.01	1.83	22	IE2
GD350-132G-6-EP	0.34	0.53	0.98	0.55	0.92	1.54	1.02	1.82	22	IE2
GD350-160G-6-EP	0.33	0.56	0.99	0.52	0.96	1.52	1.04	1.87	46	IE2
GD350-185G-6-EP	0.32	0.54	1.00	0.51	0.92	1.52	1.03	1.85	46	IE2
GD350-200G-6-EP	0.33	0.53	1.00	0.52	0.94	1.51	1.00	1.89	46	IE2
GD350-220G-6-EP	0.35	0.56	0.98	0.53	0.95	1.53	1.02	1.86	46	IE2
GD350-250G-6-EP	0.34	0.53	0.97	0.52	0.97	1.50	1.03	1.83	68	IE2
GD350-280G-6-EP	0.34	0.54	0.98	0.54	0.96	1.52	1.01	1.87	68	IE2
GD350-315G-6-EP	0.33	0.55	0.96	0.54	0.92	1.53	1.02	1.85	68	IE2
GD350-355G-6-EP	0.35	0.26	0.35	0.37	0.5	0.63	0.81	0.92	80	IE2
GD350-400G-6-EP	0.33	0.54	0.97	0.52	0.95	1.54	1.02	1.86	80	IE2
GD350-450G-6-EP	0.34	0.53	0.95	0.51	0.94	1.56	1.02	1.82	80	IE2
GD350-500G-6-EP	0.35	0.52	0.98	0.51	0.93	1.52	1.03	1.87	80	IE2
GD350-560G-6-EP	0.33	0.51	0.96	0.53	0.92	1.51	1.02	1.83	80	IE2
GD350-630G-6-EP	0.36	0.54	0.96	0.52	0.94	1.53	1.02	1.84	80	IE2

表 A-2 额定规格

型号	视在功率(kVA)	额定输出功率（kW)	额定输出电流(A)	最高工作温度(°C)	额定电源频率(Hz)	额定电源电压(V)
GD350-1R5G-4-EP	2.4	1.5	3.7	50°C 当温度超过40°C 时，按照每升高 1°C 降额 1%的比例降额。	50Hz/60Hz 允许范围: 47–63Hz	3PH 380V
GD350-2R2G-4-EP	3.3	2.2	5			
GD350-004G-4-EP	6.2	4	9.5			
GD350-5R5G-4-EP	9.2	5.5	14			
GD350-7R5G-4-EP	12.2	7.5	18.5			
GD350-011G-4-EP	16.4	11	25			
GD350-015G-4-EP	21.0	15	32			
GD350-018G-4-EP	25.0	18.5	38			
GD350-022G-4-EP	29.6	22	45			
GD350-030G-4-EP	39.4	30	60			
GD350-037G-4-EP	49.3	37	75			
GD350-045G-4-EP	60.5	45	92			
GD350-055G-4-EP	75.7	55	115			
GD350-075G-4-EP	98.7	75	150			
GD350-090G-4-EP	118.5	90	180			
GD350-110G-4-EP	141.5	110	215			
GD350-132G-4-EP	171.1	132	260			
GD350-160G-4-EP	200.7	160	305			
GD350-185G-4-EP	223.7	185	340			
GD350-200G-4-EP	250.1	200	380			
GD350-220G-4-EP	279.7	220	425			
GD350-250G-4-EP	315.9	250	480			
GD350-280G-4-EP	348.8	280	530			
GD350-315G-4-EP	394.9	315	600			
GD350-355G-4-EP	427.8	355	650			
GD350-400G-4-EP	473.8	400	720			
GD350-450G-4-EP	539.7	450	820			
GD350-500G-4-EP	566.0	500	860			
GD350-022G-6-EP	30	22	27			3PH 660V
GD350-355G-6-EP	434	355	380			

66001-01262

产品资料可能有所改动，恕不另行通知。版权所有，仿冒必究。

202401 (V1.0)

GD350-EP Series VFD Quick Start Guide

This guide briefly describes the external wiring, terminals, keypads, quick running, common function parameter settings, common faults and solutions, and widely used communication cards of GD350-EP series variable-frequency drive (VFD).

Visit www.invt.com for more information (including energy efficiency data) and source download. For details, see the full version of corresponding product e-manual.

Scan the QR code to view the full version of corresponding product e-manual.

⚠ Warning

- This guide only provides the basic installation and commissioning information. Failure to comply with the safety instructions and installation and commissioning instructions in the relevant documentation may result in accidents such as equipment damage, personal injury, or even death.
- Only trained and qualified professionals are allowed to carry out related operations.

⚠ Danger

- Do not perform any operations including wiring, inspection, or component replacement when power supply is applied. Before performing these operations, ensure all the input power supplies have been disconnected, and wait for at least the time designated on the VFD or until the DC bus voltage is less than 36V.

Minimum waiting time	VFD model
5 minutes	3PH 380V 1.5–110kW, 660V 22–132kW
15 minutes	3PH 380V 132–315kW, 660V 160–355kW
20 minutes	3PH 380V 355kW and higher, 660V 400kW and higher

1 Terminal

Figure 1-1 Typical VFD wiring

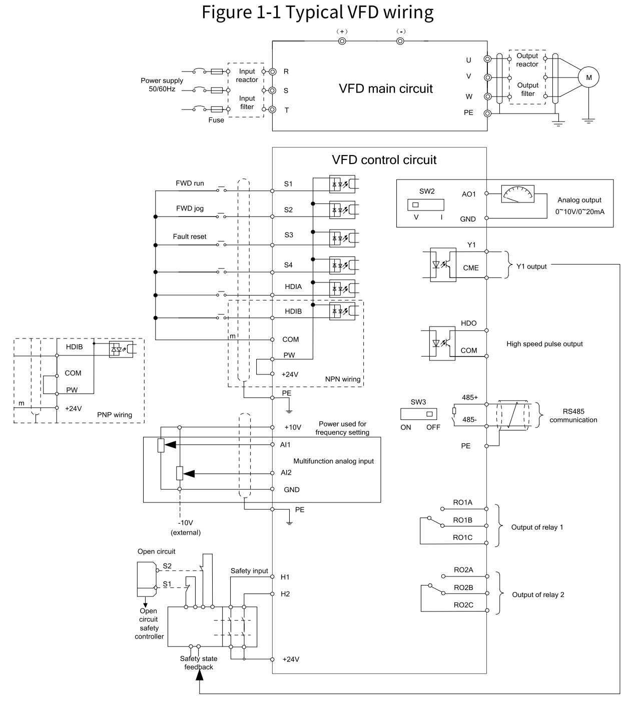
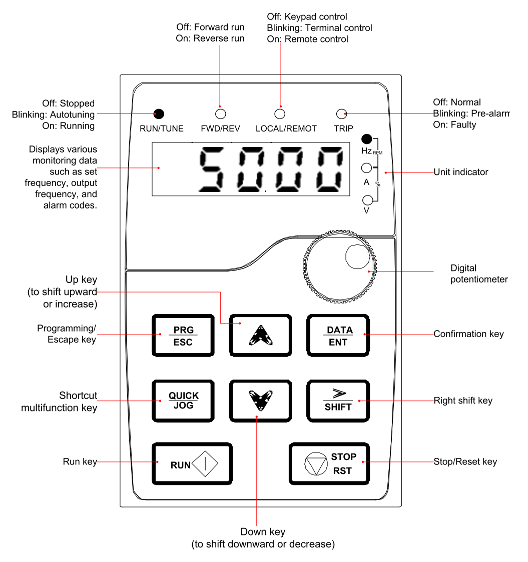


Table 1-1 VFD terminal description

Terminal	Description
Main circuit terminals	
R, S, T	3PH AC input terminals, connected to the grid
U, V, W	3PH AC output terminals, connected to the motor usually
P1 (+) (-) PB	• P1 and (+) connect to external DC reactors. • (+) and (-) connect to external braking unit terminals or shared DC bus terminals. • PB and (+) connect to external braking resistor terminals.
⏚	PE terminal. The PE terminal of each machine must be grounded reliably.
Control circuit terminals	
+10V	Locally provided +10.5V power supply
AI1	Analog input. Range: 0–10V/0–20mA. Function code P05.50 specifies whether voltage or current is used for input.
AI2	Analog input. Range: -10V–+10V
GND	+10.5V reference ground
AO1	Analog output. Range: 0–10V/0–20mA. Whether voltage or current is used for output is set through the SW2 switch.
RO1A RO1B RO1C	Relay output. RO1A: NO; RO1B: NC; RO1C: common Contact capacity: 3A/250VAC, 1A/30VDC
RO2A RO2B RO2C	Relay output. RO2A: NO; RO2B: NC; RO2C: common Contact capacity: 3A/250VAC, 1A/30VDC
HDO	Switch capacity: 50mA/30V. Output frequency range: 0–50kHz. Duty ratio: 50%
COM	+24V reference ground
CME	Common terminal of open collector output; short connected to COM by default
Y1	Switch capacity: 50mA/30V. Output frequency range: 0–1kHz
485+ 485-	RS485 differential signal communication port. Use shielded twisted pairs for standard RS485 communication interfaces. You can determine whether to connect the 120Ω terminal matching resistor of RS485 communication through the corresponding switch or jumper.
PE	Grounding terminal
PW	External power input terminal for digital input circuits. In NPN mode, short connect PW and +24V. In PNP mode, short connect PW and COM.
+24V	User power supply provided by the VFD. Max. output current: 200mA
S1–S4	Digital input • Internal impedance: 3.3kΩ • 12–30V voltage input is acceptable • Bidirectional input terminals, supporting both NPN and PNP connection methods • Max. input frequency: 1kHz • Programmable digital input terminals, the functions of which can be set through the related parameters
HDIA HDIB	• Can act as high frequency pulse input channels, in addition to digital input channels • Max. input frequency: 50kHz • Duty ratio: 30%–70% • Support for quadrature encoder input when both HDIA and HDIB are available, with the speed measurement function
+24V—H1 +24V—H2	Safe torque stop (STO) input • STO redundant input, connected to the external NC contact. When the contact opens, STO acts and the VFD stops output. • A shielded cable should be used for the safety input signal cable, whose length needs to be within 25m. • The H1 and H2 terminals are short connected to +24V by default. Remove the jumper from the terminals before using the STO function.

2 Keypad

The product is equipped with a LED keypad as standard configuration.



Digital display on LED keypad

Display	Means	Display	Means	Display	Means
0	0	1	1	2	2
3	3	4	4	5	5
6	6	7	7	8	8
9	9	A	A	b	b
C	C	d	d	E	E
F	F	H	H	I	I
L	L	N	N	n	n
o	O	P	P	r	r
S	S	t	t	U	U
v	v	.	.	-	-

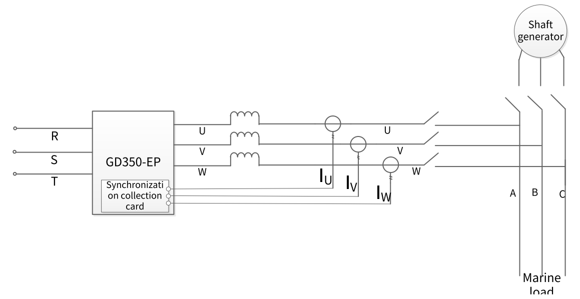
3 Quick running

3.1 Check before power-on

⚠	• Ensure that all terminals have been securely connected. • Ensure that the motor power matches the VFD power.

3.2 Open-loop voltage wiring and related parameters

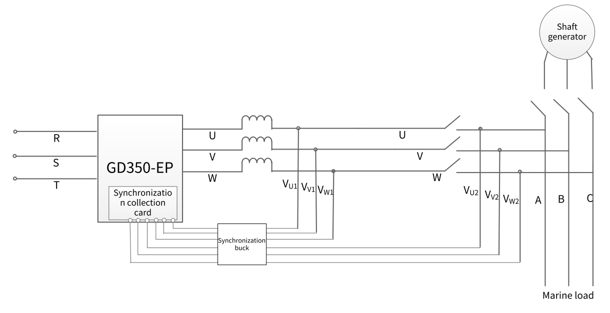
Three sampled currents: VFD output reactor backend currents I_U, I_V, and I_W



Function code	Name	Description	Default
P00.00	Speed control mode	0: SVC mode 0 1: SVC mode 1 2: V/F control 3: Closed-loop vector control mode	2
P00.11	ACC time 1	0.0–3600.0s	5.0s
P00.12	DEC time 1	0.0–3600.0s	5.0s
P04.00	V/F curve setting of motor 1	0: Straight-line V/F curve 1: Multi-point V/F curve 2: Torque-down V/F curve (power of 1.3) 3: Torque-down V/F curve (power of 1.7) 4: Torque-down V/F curve (power of 2.0) 5: Customized V/F curve (V/F separation)	5
P04.09	V/F slip compensation gain of motor 1	0.0–200.0% **Note:** Unnecessary for a power mode.	0.0%
P04.10	Low-frequency oscillation control factor of motor 1	0–100	10
P04.11	High-frequency oscillation control factor of motor 1	0–100	10
P04.28	Voltage set through keypad	0.0–100.0% Set it as required.	100.0%
P04.29	Voltage increase time	0.0–3600.0s	5.0s
P04.30	Voltage decrease time	0.0–3600.0s	5.0s
P36.00	VFD working mode	0: Common mode 1: EPS mode 2: Switch from variable frequency to power frequency (without disturbance) 3: Switch from variable frequency to power frequency (with disturbance) 4: Voltage closed-loop mode 5: Shaft generator mode	0
P36.05	Sequence reversal/phase lock failure protection	LED ones place: The RST inputs on the terminal board are reversal. (UIPE) 0: Disable input sequence reversal protection. 1: Enable input sequence reversal protection. LED tens place: The UVW outputs on the terminal board are reversal. (UOPE) 0: Disable output sequence reversal protection. 1: Enable output sequence reversal protection. LED hundreds place: The RST phase lock on the terminal board fails. (PLLE) 0: The PLLE detection is always invalid. 1: The PLLE detection is valid at stop. 2: The PLLE detection is always valid.	0x000

3.3 Closed-loop voltage wiring and related parameters

Two channels of sampled voltages: VFD output reactor backend voltages V_{U1}, V_{V1}, and V_{W1}; grid-connected side voltages V_{U2}, V_{V2}, and V_{W2}


Shaft generator
R
S
T
GD350-EP
Synchronization collection card
Synchronization buck
U
V
W
V_{U1} V_{V1} V_{W1}
U
V
W
V_{U2} V_{V2} V_{W2}
A
B
C
Marine load

Function code	Name	Description	Default
P00.00	Speed control mode	0: SVC mode 0 1: SVC mode 1 2: V/F control 3: Closed-loop vector control mode	2
P00.11	ACC time 1	0.0–3600.0s	5.0s
P00.12	DEC time 1	0.0–3600.0s	5.0s
P04.00	V/F curve setting of motor 1	0: Straight-line V/F curve 1: Multi-point V/F curve 2: Torque-down V/F curve (power of 1.3) 3: Torque-down V/F curve (power of 1.7) 4: Torque-down V/F curve (power of 2.0) 5: Customized V/F curve (V/F separation)	5
P04.09	V/F slip compensation gain of motor 1	0.0–200.0% **Note:** Unnecessary for a power mode.	0.0%
P04.10	Low-frequency oscillation control factor of motor 1	0–100 **Note:** Unnecessary for a power mode.	0
P04.11	High-frequency oscillation control factor of motor 1	0–100 **Note:** Unnecessary for a power mode.	0
P04.27	Voltage setting channel	0: Keypad (The output voltage is determined by P04.28.) 1: AI1 2: AI2 3: AI3 4: HDIA 5: Multi-step speed running (The setting is determined by related parameters in group P10.) 6: PID 7: Modbus/Modbus TCP communication 8: PROFIBUS/CANopen/DeviceNet communication 9: Ethernet communication 10: HDIB 11: EtherCAT/PROFINET/ EtherNet IP communication 12: PLC programmable card	6
P04.29	Voltage increase time	0.0–3600.0s	5.0s
P04.30	Voltage decrease time	0.0–3600.0s	5.0s
P06.03	RO1 output selection	1: Running 2: Running forward	1
P09.00	PID reference source selection	0: P09.01 1: AI1 Set the value according to onsite conditions.	0
P09.01	PID digital setting	-100.0–100.0% **Note:** As the value is based on motor voltage, you are recommended to increase the value of P02.04 for testing. You are recommended to set P02.04 to 1000 and P09.01 to 38.0.	100.0%
P09.02	PID feedback source selection	10: Synchronization card UVW voltage (effective value) Note: If P35.00 (Closed-loop voltage feedback source) is set to hardware, the value is based on hardware sampling feedback; if it is set to software, the value is based on software calculated voltage.	10
P35.01	Output voltage display calibration coefficient (hardware)	0.0–200.0%	100.0%
P35.02	Output voltage display calibration coefficient (software)	0.0–200.0%	100.0%
P36.00	VFD working mode	0: Common mode 1: EPS mode 2: Switch from variable frequency to power frequency (without disturbance) 3: Switch from variable frequency to power frequency (with disturbance) 4: Voltage closed-loop mode 5: Shaft generator mode	4
P36.05	Sequence reversal/phase lock failure protection	0x000–0x211 LED ones place: The RST inputs on the terminal board are reversal. (UIPE) 0: Disable input sequence reversal protection. 1: Enable input sequence reversal protection. LED tens place: The UVW outputs on the terminal board are reversal. (UOPE) 0: Disable output sequence reversal protection. 1: Enable output sequence reversal protection. LED hundreds place: The RST phase lock on the terminal board fails. (PLLE) 0: The PLLE detection is always invalid. 1: The PLLE detection is valid at stop. 2: The PLLE detection is always valid.	0x010
P36.16	Terminal board phase loss protection	LED ones place: 0: Disable terminal board RST input signal phase loss (UIPL) protection. 1: Enable terminal board RST input signal phase loss (UIPL) protection. LED tens place: 0: Disable terminal board UVW output signal phase loss (UOPL) protection. 1: Enable terminal board UVW output signal phase loss (UOPL) protection.	0x10

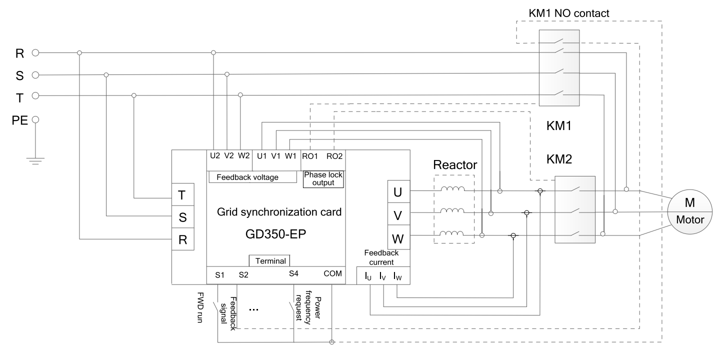
3.4 Reactor-included undisturbed VF-to-PF switchover wiring and related parameters

The undisturbed switchover should be mainly controlled by terminals, and the following two methods can be selected:

1、The VFD automatically switches between the variable frequency (VF) contactor and power frequency (PF) contactor.

2、After the VFD gives a switchover enabling signal, the PLC controls the VF contactor and PF contactor, and controls VFD start or stop.

After the undisturbed switchover is completed, the VFD coasts to stop.



Function code	Name	Description	Default
P00.01	Channel of running commands	0: Keypad (by setting P36.00 to different working modes to reset system status) 1: Terminal (system status is reset when there is no forward command) 2: Communication	0
P00.03	Max. output frequency	Max(P00.04,10.00)–599.00Hz **Note:** The value is the grid frequency plus 2Hz.	52.00Hz
P00.04	Upper limit of running frequency	P00.05–P00.03Hz **Note:** The value is the grid frequency plus 2Hz.	52.00Hz
P00.11	ACC time 1	0.0–3600.0s	5.0s
P00.12	DEC time 1	0.0–3600.0s	5.0s
P01.00	Running mode of start	0: Direct start 1: Start after DC braking 2: Start after speed tracking (with exciting) 3: Start after speed tracking (without exciting) 4: Start after speed tracking (software)	Set the value according to onsite commission-ing.
P01.08	Stop mode	0: Decelerate to stop 1: Coast to stop	1
P04.00	V/F curve setting of motor 1	0: Straight-line V/F curve 1: Multi-point V/F curve 2: Torque-down V/F curve (power of 1.3) 3: Torque-down V/F curve (power of 1.7) 4: Torque-down V/F curve (power of 2.0) 5: Customized V/F curve (V/F separation)	0
P04.09	V/F slip compensation gain of motor 1	0.0–200.0%	100.0%
P04.10	Low-frequency oscillation control factor of motor 1	0–100	10
P04.11	High-frequency oscillation control factor of motor 1	0–100	10
P06.04	RO2 output selection	54: Roll diameter of stop reached 55: Length reached 56: Fire mode enabled 57: Phase lock success (indicating the phase lock loop has locked the grid frequency and phase), which can be used to observe the VFD phase lock loop work status during commissioning 58: Synchronization success (indicating the VFD output is tracked and it is synchronous with the grid frequency and phase), which can be used to observe the VFD phase lock loop work status during commissioning 59: Power frequency output (forward) (Power/Variable frequency switchover application: Synchronization has been completed, used for power frequency contactor control. Power application: When the grid is on, the power frequency contactor is closed.) 60: Variable frequency output (Power/Variable frequency switchover application: Synchronization has been completed, used for power frequency contactor control. Power application: When the grid is off, the variable frequency contactor is closed.) 61: Bus undervoltage pre-alarm output 62: Power frequency output (indirect control)	60
P30.11	Output angle compensation	-180.0–180.0°	Set the value as required.
P36.00	VFD working mode	0: Common mode 1: EPS mode 2: Switch from variable frequency to power frequency (without disturbance) 3: Switch from variable frequency to power frequency (with disturbance) 4: Voltage closed-loop mode 5: Shaft generator mode	2
P36.01	Grid frequency synchronization mode	0x000–0x111 LED ones place: Frequency control enabling selection 0: Non-grid frequency non-synchronization mode 1: Grid frequency synchronization mode (in this mode, slip compensation and automatic torque boost are invalid) LED tens place: Grid phase lock action 0: Quick tracking mode (discontinuous phases, adjusted) 1: Continuous phases (not adjusted) LED hundreds place: Frequency increase action in synchronization mode 0: Increase to the grid frequency 1: Direct start to the grid frequency (usually used in resistance load)	0x111
P36.05	Sequence reversal/phase lock failure protection	0x000–0x211 LED ones place: The RST inputs on the terminal board are reversal. (UIPE) 0: Disable input sequence reversal protection. 1: Enable input sequence reversal protection. LED tens place: The UVW outputs on the terminal board are reversal. (UOPE) 0: Disable output sequence reversal protection. 1: Enable output sequence reversal protection. LED hundreds place: The RST phase lock on the terminal board fails. (PLLE) 0: The PLLE detection is always invalid. 1: The PLLE detection is valid at stop. 2: The PLLE detection is always valid.	0x211
P36.07	Variable/power frequency switchover parameter settings	0x0000-0x1111 LED ones place: Enable contactor action time autotuning. 0: Disable 1: Enable LED tens place: Positive sequence frequency upper limit fine-tuning and phase angle compensation automatic autotuning 0: Disable 1: Enable LED hundreds place: Power frequency contactor electrical self-locking retention 0: Disable 1: Enable LED thousands place: Reset system status. 0: Disable 1: Enable **Note:** • The contactor action time requires autotuning three times and an average value is taken. The contactor feedback contact can only be connected to S2 for closing time autotuning. • Before autotuning frequency fine-tuning, complete contactor autotuning. • If the disturbed power frequency contactor switchover is enabled, the power frequency relay will be disconnected 0.5 seconds later, and you need to perform electrical self-locking retention.	0x0000

3.5 Disturbed VF-to-PF switchover wiring and related parameters

步骤1 Get ready for the work.

A、Set the max. output frequency to the grid frequency plus 5Hz.

B、Set P01.00 to 3, which indicates start after speed tracking (without exciting).

C、Set the stop mode to coasting to stop.

D、Set P36.00 to 3, which indicates switch from variable frequency to power frequency (with disturbance).

步骤2 Perform contactor closing time autotuning (without any load).

A、In standby mode, set P36.07 to enable contactor closing time autotuning, and check whether the value of P36.08 is updated automatically.

B、Connect the feedback contact to S2 (the position cannot be changed).

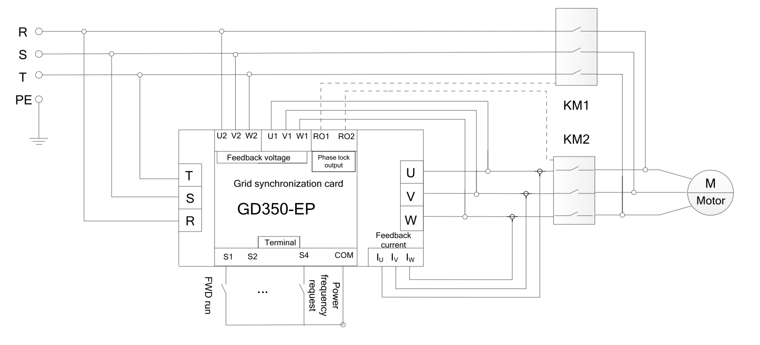
C、Set control terminal RO1 to 59 (Power frequency output). (Select according to power frequency output relays.)

D、Set P36.07 ones place to 1 to start contactor closing time autotuning.

E、Check the value change of P36.08 after the autotuning is completed.

步骤3 Set P36.07 tens place to start frequency and phase compensation automatic autotuning.

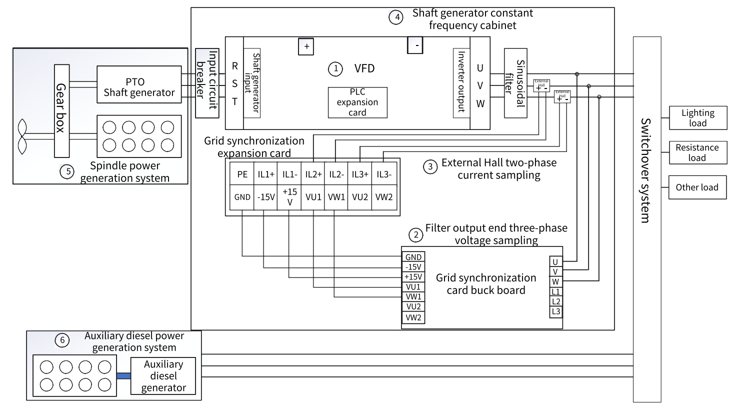
After you click Run and the machine reaches the set frequency, the machine coasts to stop. When it restarts, it will track the rotation speed of the last run and runs to the set frequency. After the autotuning is completed, check whether the values of P36.10 and P36.11 are updated automatically.



Function code	Name	Description	Default
P00.01	Channel of running commands	0: Keypad (by setting P36.00 to different working modes to reset system status) 1: Terminal (system status is reset when there is no forward command) 2: Communication	0
P00.03	Max. output frequency	Max(P00.04,10.00)–599.00Hz **Note:** The value is the grid frequency plus +5Hz.	55.00Hz
P00.04	Upper limit of running frequency	P00.05–P00.03Hz **Note:** The value is the grid frequency plus +5Hz.	55.00Hz
P01.00	Running mode of start	0: Direct start 1: Start after DC braking 2: Start after speed tracking (with exciting) 3: Start after speed tracking (without exciting) 4: Start after speed tracking (software)	3
P01.08	Stop mode	0: Decelerate to stop 1: Coast to stop	1
P04.00	V/F curve setting of motor 1	0: Straight-line V/F curve 1: Multi-point V/F curve 2: Torque-down V/F curve (power of 1.3) 3: Torque-down V/F curve (power of 1.7) 4: Torque-down V/F curve (power of 2.0) 5: Customized V/F curve (V/F separation)	0
P04.09	V/F slip compensation gain of motor 1	0.0–200.0%	100.0%
P04.10	Low-frequency oscillation control factor of motor 1	0–100	10
P04.11	High-frequency oscillation control factor of motor 1	0–100	10
P06.03	RO1 output selection	54: Roll diameter of stop reached 55: Length reached 56: Fire mode enabled 57: Phase lock success (indicating the phase lock loop has locked the grid frequency and phase), which can be used to observe the VFD phase lock loop work status during commissioning 58: Synchronization success (indicating the VFD output is tracked and it is synchronous with the grid frequency and phase), which can be used to observe the VFD phase lock loop work status during commissioning 59: Power frequency output (forward) (Power/Variable frequency switchover application: Synchronization has been completed, used for power frequency contactor control. Power application: When the grid is on, the power frequency contactor is closed.) 60: Variable frequency output (Power/Variable frequency switchover application: Synchronization has been completed, used for power frequency contactor control. Power application: When the grid is off, the variable frequency contactor is closed.) 61: Bus undervoltage pre-alarm output 62: Power frequency output (indirect control)	59
P06.04	RO2 output selection		60
P36.00	VFD working mode	0: Common mode 1: EPS mode 2: Switch from variable frequency to power frequency (without disturbance) 3: Switch from variable frequency to power frequency (with disturbance) 4: Voltage closed-loop mode 5: Shaft generator mode	3
P36.01	Grid frequency synchronization mode	0x000–0x111 LED ones place: Frequency control enabling selection 0: Non-grid frequency non-synchronization mode 1: Grid frequency synchronization mode (in this mode, slip compensation and automatic torque boost are invalid) LED tens place: Grid phase lock action 0: Quick tracking mode (discontinuous phases, adjusted) 1: Continuous phases (not adjusted) LED hundreds place: Frequency increase action in synchronization mode 0: Increase to the grid frequency 1: Direct start to the grid frequency (usually used in resistance load)	0x111
P36.05	Sequence reversal/phase lock failure protection	0x000–0x211 LED ones place: The RST inputs on the terminal board are reversal. (UIPE) 0: Disable input sequence reversal protection. 1: Enable input sequence reversal protection. LED tens place: The UVW outputs on the terminal board are reversal. (UOPE) 0: Disable output sequence reversal protection. 1: Enable output sequence reversal protection. LED hundreds place: The RST phase lock on the terminal board fails. (PLLE) 0: The PLLE detection is always invalid. 1: The PLLE detection is valid at stop. 2: The PLLE detection is always valid.	0x211
P36.07	Variable/power frequency switchover parameter settings	0x0000-0x1111 LED ones place: Enable contactor action time autotuning. 0: Disable 1: Enable LED tens place: Positive sequence frequency upper limit fine-tuning and phase angle compensation automatic autotuning 0: Disable 1: Enable LED hundreds place: Power frequency contactor electrical self-locking retention 0: Disable 1: Enable LED thousands place: Reset system status. 0: Disable 1: Enable **Note:** • The contactor action time requires autotuning three times and an average value is taken. The contactor feedback contact can only be connected to S2 for the closing time autotuning, and P05.02 (S2 function selection) must be set to 0 (no function). • Before autotuning frequency fine-tuning, complete contactor autotuning. • If the disturbed power frequency contactor switchover is enabled, the power frequency relay will be disconnected 0.5 seconds later, and you need to perform electrical self-locking retention.	0x0000
P36.16	Terminal board phase loss protection	LED ones place: 0: Disable terminal board RST input signal phase loss (UIPL) protection. 1: Enable terminal board RST input signal phase loss (UIPL) protection. LED tens place: 0: Disable terminal board UVW output signal	0x11

Function code	Name	Description	Default
		phase loss (UOPL) protection. 1: Enable terminal board UVW output signal phase loss (UOPL) protection.	

3.6 Shaft generator wiring and related parameters


④ Shaft generator constant frequency cabinet
Gear box
PTO Shaft generator
⑤ Spindle power generation system
Input circuit breaker
R S T
Shaft generator input
① VFD
PLC expansion card
Inverter output
U V W
Sinusoidal filter
External Hall
Grid synchronization expansion card
PE IL1+ IL1- IL2+ IL2- IL3+ IL3-
GND -15V +15V VU1 VW1 VU2 VW2
③ External Hall two-phase current sampling
② Filter output end three-phase voltage sampling
Grid synchronization card buck board
GND -15V +15V VU1 VW1 VU2 VW2
U V W L1 L2 L3
Switchover system
Lighting load
Resistance load
Other load
⑥ Auxiliary diesel power generation system
Auxiliary diesel generator

Function code	Name	Description	Default
P00.00	Speed control mode	0: SVC mode 0 1: SVC mode 1 2: V/F control 3: Closed-loop vector control mode	2
P00.01	Channel of running commands	0: Keypad 1: Terminal 2: Communication	2
P00.02	Communication mode of running commands	0: Modbus/Modbus TCP 1: PROFIBUS/CANopen/DeviceNet 2: Ethernet 3: EtherCAT/PROFINET/ EtherNet IP communication 4: Programmable card 5: Wireless communication card 6: USB (reserved)	4
P00.03	Max. output frequency	Max(P00.04,10.00)–599.00Hz	55.00Hz
P00.04	Upper limit of running frequency	P00.05–P00.03Hz	55.00Hz
P00.06	Setting channel of A frequency command	0: Keypad digital 1: AI1 2: AI2 3: AI3 4: High-speed pulse HDIA 5: Simple PLC program 6: Multi-step speed running 7: PID control 8: Modbus/Modbus TCP communication 9: PROFIBUS/CANopen/DeviceNet communication 10: Ethernet communication 11: High-speed pulse HDIB 12: Pulse train AB 13: EtherCAT/PROFINET/EtherNet IP communication 14: PLC programmable card 15: Reserved	14
P00.11	ACC time 1	0.0–3600.0s	0.0s
P00.12	DEC time 1	0.0–3600.0s	0.0s
P00.14	Carrier frequency setting	1.0–15.0kHz	4.0kHz
P02.04	Rated voltage of AM 1	0–1200V	1000V
P04.00	V/F curve setting of motor 1	0: Straight-line V/F curve 1: Multi-point V/F curve 2: Torque-down V/F curve (power of 1.3) 3: Torque-down V/F curve (power of 1.7) 4: Torque-down V/F curve (power of 2.0) 5: Customized V/F curve (V/F separation)	5
P04.09	V/F slip compensation gain of motor 1	0.0–200.0% **Note:** Unnecessary for a power mode.	0.0%
P04.10	Low-frequency oscillation control factor of motor 1	0–100	10
P04.11	High-frequency oscillation control factor of motor 1	0–100	10
P04.27	Voltage setting channel	0: Keypad (The output voltage is determined by P04.28.) 1: AI1 2: AI2 3: AI3	12

Function code	Name	Description	Default
		4: HDIA 5: Multi-step speed running (The setting is determined by related parameters in group P10.) 6: PID 7: Modbus/Modbus TCP communication 8: PROFIBUS/CANopen/DeviceNet communication 9: Ethernet communication 10: HDIB 11: EtherCAT/PROFINET/ EtherNet IP communication 12: PLC programmable card 13: Reserved	
P04.29	Voltage increase time	0.0–3600.0s	5.0s
P04.30	Voltage decrease time	0.0–3600.0s	5.0s
P06.03	RO1 output selection	1: Running 54: Roll diameter of stop reached 55: Length reached 56: Fire mode enabled 57: Phase lock success (indicating the phase lock loop has locked the grid frequency and phase), which can be used to observe the VFD phase lock loop work status during commissioning 58: Synchronization success (indicating the VFD output is tracked and it is synchronous with the grid frequency and phase), which can be used to observe the VFD phase lock loop work status during commissioning 59: Power frequency output (forward) (Power/Variable frequency switchover application: Synchronization has been completed, used for power frequency contactor control. Power application: When the grid is on, the power frequency contactor is closed.) 60: Variable frequency output (Power/Variable frequency switchover application: Synchronization has been completed, used for power frequency contactor control. Power application: When the grid is off, the variable frequency contactor is closed.) 61: Bus undervoltage pre-alarm output 62: Power frequency output (indirect control)	1
P35.00	Closed-loop voltage feedback source	0–1 0: Hardware sampling 1: Software calculation	1
P35.01	Output voltage display calibration coefficient (hardware)	0.0–200.0%	74.0%
P35.02	Output voltage display calibration coefficient (software)	0.0–200.0%	100.0%
P35.04	Hall current sampling ratio	0–2000	Set it as required.
P36.00	VFD working mode	0: Common mode 1: EPS mode 2: Switch from variable frequency to power frequency (without disturbance) 3: Switch from variable frequency to power frequency (with disturbance) 4: Voltage closed-loop mode 5: Shaft generator mode	5
P36.05	Sequence reversal/phase lock failure protection	0x000–0x211 LED ones place: The RST inputs on the terminal board are reversal. (UIPE) 0: Disable input sequence reversal protection. 1: Enable input sequence reversal protection. LED tens place: The UVW outputs on the terminal board are reversal. (UOPE) 0: Disable output sequence reversal protection. 1: Enable output sequence reversal protection. LED hundreds place: The RST phase lock on the terminal board fails. (PLLE) 0: The PLLE detection is always invalid. 1: The PLLE detection is valid at stop. 2: The PLLE detection is always valid.	0x010
P36.16	Terminal board phase loss protection	0x00–0x11 LED ones place: 0: Disable terminal board RST input signal phase loss (UIPL) protection. 1: Enable terminal board RST input signal phase loss (UIPL) protection. LED tens place:	0x10

Function code	Name	Description	Default
		0: Disable terminal board UVW output signal phase loss (UOPL) protection. 1: Enable terminal board UVW output signal phase loss (UOPL) protection.	

4 Common function parameter setup

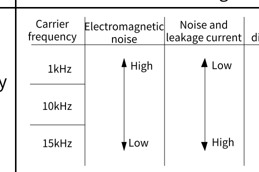
The following briefly describes only some common function parameters and typical values.

"○" indicates that the value of the parameter can be modified when the VFD is in stopped or running state.

"◎" indicates that the value of the parameter cannot be modified when the VFD is in running state.

"●" indicates that the value of the parameter is detected and recorded, and cannot be modified.

(The VFD automatically checks and constrains the modification of parameters, which helps prevent incorrect modifications.)

Function code	Name	Description	Default	Modify
P00.00	Speed control mode	0: SVC mode 0 1: SVC mode 1 2: Space voltage vector control mode 3: Closed-loop vector control mode	2	◎
P00.01	Channel of running commands	0: Keypad 1: Terminal 2: Communication	0	○
P00.02	Communication mode of running commands	0: Modbus/Modbus TCP 1: PROFIBUS/CANopen/DeviceNet 2: Ethernet 3: EtherCAT/PROFINET/Ethernet IP 4: Programmable card 5: Wireless communication card 6: Reserved **Note:** The options 0 (for Modbus TCP), 1, 2, 3, 4 and 5 are add-on functions, valid only when configured with related expansion cards.	0	○
P00.03	Max. output frequency	Max(P00.04,10.00)–599.00Hz	50.00Hz	◎
P00.04	Upper limit of running frequency	P00.05–P00.03 (Max. output frequency)	50.00Hz	◎
P00.05	Lower limit of running frequency	0.00Hz–P00.04 (Upper limit of running frequency)	0.00Hz	◎
P00.06	Setting channel of A frequency command	0: Keypad digital 1: AI1 2: AI2 3: AI3 4: High-speed pulse HDIA 5: Simple PLC program 6: Multi-step speed running 7: PID control 8: Modbus/Modbus TCP communication	0	○
P00.07	Setting channel of B frequency command		15	○
P00.10	Set frequency via keypad	0.00Hz–P00.03 (Max. output frequency)	50.00Hz	○
P00.11	ACC time 1	0.0–3600.0s	Model depended	○
P00.12	DEC time 1		Model depended	○
P00.13	Running direction	0: Run at the default direction. 1: Run at the opposite direction. 2: Disable reverse running.	0	○
P00.14	Carrier frequency setting		Model depended	○
P00.15	Motor parameter autotuning	Ones place: Motor basic parameter autotuning 0: No operation 1: Complete parameter rotary autotuning 2: Complete parameter static autotuning 3: Partial parameter static autotuning Tens place: Initial pole angle autotuning 0: No operation 1: Rotary autotuning 1 2: Static autotuning 1: Rotary autotuning 2 Hundreds place: Inertia autotuning 0: Disable 1: Enable	0	◎
P00.18	Function	0: No operation	0	◎

Function code	Name	Description	Default	Modify
	parameter restore	1: Restore default values (excluding motor parameters) 2: Clear fault records 5: Restore to default values (factory test mode) 6: Restore default values (including motor parameters)		
P01.00	Running mode of start	0: Direct start 1: Start after DC braking 2: Start after speed tracking (with exciting) 3: Start after speed tracking (without exciting) 4: Start after speed tracking (software)	0	◎
P01.08	Stop mode	0: Decelerate to stop 1: Coast to stop	0	○
P01.09	Starting frequency of DC braking for stop	0.00Hz–P00.03 (Max. output frequency)	0.00Hz	○
P01.11	DC braking current for stop	0.0–100.0%	0.0%	○
P01.12	DC braking time for stop	0.00–50.00s	0.00s	○
P01.18	Terminal-based running command protection at power-on	0: Invalid at power-on 1: Valid at power-on	0	◎
P02.00	Type of motor 1	0: Asynchronous motor (AM) 1: Synchronous motor (SM)	0	◎
P02.01	Rated power of AM 1	0.1–3000.0kW	Model depended	◎
P02.02	Rated frequency of AM 1	0.01Hz–P00.03 (Max. output frequency)	50.00Hz	◎
P02.03	Rated speed of AM 1	1–60000rpm	Model depended	◎
P02.04	Rated voltage of AM 1	0–1200V	Model depended	◎
P02.05	Rated current of AM 1	0.8–6000.0A	Model depended	◎
P03.00	Speed-loop proportional gain 1 of motor 1	0.0–200.0	20.0	○
P03.01	Speed-loop integral time 1 of motor 1	0.000–10.000s	0.200s	○
P03.03	Speed-loop proportional gain 2 of motor 1	0.0–200.0	20.0	○
P03.04	Speed-loop integral time 2 of motor 1	0.000–10.000s	0.200s	○
P03.11	Torque setting method selection	0: Keypad (P03.12) 1: Keypad (P03.12) 2: AI1 3: AI2 4: AI3 5: Pulse frequency HDI 6: Multi-step torque 7: Modbus/Modbus TCP communication	0	○
P03.54	Current-loop band width of motor 1	0–2000	400	○
P04.01	Torque boost of motor 1	0.0%: (Automatic torque boost), 0.1%–10.0%	0	○
P04.09	V/F slip compensation gain of motor 1	0.0–200.0%	100.0%	○
P04.10	Low-frequency oscillation control factor of motor 1	0–100	10	○
P04.11	High-frequency oscillation control factor of motor 1	0–100	10	○
P05.01	Function of S1	90: Second DC undervoltage point 91: Request to switch from variable frequency to power frequency 92: Request to switch from power frequency to variable frequency	1	◎
P05.02	Function of S2		4	◎
P05.03	Function of S3		7	◎
P05.04	Function of S4		0	◎
P05.29	AI2 lower limit	-10.00V–P05.31	-10.00V	○
P05.35	AI2 upper limit	P05.33–10.00V	10.00V	○
P06.01	Y1 output selection	54: Roll diameter of stop reached 55: Length reached 56: Fire mode enabled 57: Phase lock success (indicating the phase lock loop has locked the grid frequency and phase), which can be used to observe the VFD phase lock loop work status during commissioning 58: Synchronization success	0	○
P06.02	HDO output selection			
P06.03	RO1 output selection		1	○
P06.04	RO2 output selection		5	○

Function code	Name	Description	Default	Modify
		(indicating the VFD output is tracked and it is synchronous with the grid frequency and phase), which can be used to observe the VFD phase lock loop work status during commissioning 59: Power frequency output (forward) (Power/Variable frequency switchover application: Synchronization has been completed, used for power frequency contactor control. Power application: When the grid is on, the power frequency contactor is closed.) 60: Variable frequency output (Power/Variable frequency switchover application: Synchronization has been completed, used for power frequency contactor control. Power application: When the grid is off, the variable frequency contactor is closed.) 61: Bus undervoltage pre-alarm output 62: Power frequency output (indirect control)		
P06.14	AO1 analog output	0: Running frequency 1: Set frequency 3: Rotation speed (Relative to twice the motor synchronous rotation speed) 4: Output current (Relative to twice the VFD rated current) 5: Output current (Relative to twice the motor rated current) 6: Output voltage (Relative to 1.5 times the VFD rated voltage) 7: Output power (Relative to twice the motor rated power) 33: Set tension output	0	○
P06.16	HDO high-speed pulse output		0	○
P06.17–P06.21	AO1 output upper limit settings	For details, see the full version of corresponding product e-manual.	-	○
P07.00	User password	0–65535	0	○
P07.27–P07.32	Present fault type – 5th-last fault type	0–84 (0: No fault) For details, see the full version of corresponding product e-manual.	0	○
P08.28	Auto fault reset count	0–10	0	○
P08.29	Auto fault reset interval	0.1–3600.0s	1.0s	○
P08.37	Enabling energy-consumption braking	0x00–0x11 Ones place: Energy-consumption braking selection 0: Disable 1: Enable Tens place: Braking short-circuit protection selection 0: Disable braking short-circuit protection 1: Enable braking short-circuit protection **Note:** Braking short-circuit protection is disabled for 22kW and lower VFDs and 45–75kW VFDs by default.	0x01	○
P09.02	PID feedback source selection	Specifies the PID feedback channel. Setting range: 0–11 0: AI1 1: AI2 2: AI3 3: High-speed pulse HDIA 4: Modbus/Modbus TCP communication 5: PROFIBUS/CANopen/DeviceNet communication 6: Ethernet communication 7: High-speed pulse HDIB 8: PROFINET/EtherNet IP communication 9: Programmable card 10: Synchronization card UVW voltage (effective value) 11: Reserved **Note:** The reference channel and feedback channel cannot be duplicate. Otherwise, effective PID control cannot be achieved.	0	○
P14.00	Local communication address	1–247 **Note:** The communication address of a slave cannot be to 0.	1	○
P14.01	Communication baud rate setting	0: 1200bps 1: 2400bps	4	○

Function code	Name	Description	Default	Modify
		2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps 6: 57600bps 7: 115200bps		
P14.02	Data bit check setting	0: No check (N, 8, 1) for RTU 1: Even check (E, 8, 1) for RTU 2: Odd check (O, 8, 1) for RTU 3: No check (N, 8, 2) for RTU 4: Even check (E, 8, 2) for RTU 5: Odd check (O, 8, 2) for RTU	1	○
P15.01	Module address	0–127	2	○
P15.02–P15.12 and P16.32–P16.42	Received PZD2–Received PZD12	0–31 1: Set frequency (0–Fmax, unit: 0.01Hz) 2: PID reference (-1000–1000, in which 1000 corresponds to 100.0%) 3: PID feedback (-1000–1000, in which 1000 corresponds to 100.0%) 4: Torque setting (-3000–+3000, in which 1000 corresponds to 100.0% of the motor rated current) 5: Setting of the upper limit of forward running frequency (0–Fmax, unit: 0.01 Hz) 6: Setting of the upper limit of reverse running frequency (0–Fmax, unit: 0.01 Hz) 7: Upper limit of the electromotive torque (0–3000, in which 1000 corresponds to 100.0% of the motor rated current) 8: Upper limit of braking torque (0–3000, in which 1000 corresponds to 100% of the motor rated current) 9: Virtual input terminal command. Range: 0x000–0x3FF 10: Virtual output terminal command. Range: 0x00–0x0F 11: Voltage setting (special for V/F separation) (0–1000, in which 1000 corresponds to 100% of the motor rated voltage) 12: AO1 output setting 1 (-1000–1000, in which 1000 corresponds to 100.0%) 13: AO2 output setting 2 (-1000–1000, in which 1000 corresponds to 100.0%) 14: High bit of position reference (signed) 15: Low bit of position reference (unsigned) 16: High bit of position feedback (signed) 17: Low bit of position feedback (unsigned) 18: Position feedback setting flag (position feedback can be set only after this flag is set to 1 and then to 0) 19: Function parameter mapping (PZD2–PZD12 correspond to P14.49–P14.59) 20–31: Reserved	0	○
P15.13–P15.23 and P16.43–P16.53	Sent PZD2–Sent PZD12	0–31 1: Running frequency (×100, Hz) 4: Output voltage (×1, V) 5: Output current (×10, A) 6: Actual output torque (×10, %) 7: Actual output power (×10, %) 8: Rotation speed of running (×1, RPM) 9: Linear speed of running (×1, m/s) 10: Ramp reference frequency 11: Fault code 12: AI1 input (×100, V) 13: AI2 input (×100, V) 14: AI3 input (x100, V) 15: HDIA frequency value (×100, kHz) 16: Terminal input status 17: Terminal output status 18: PID reference (×100, %) 19: PID feedback (×100, %) 20: Motor rated torque 21: High bit of position reference (signed) 22: Low bit of position reference (unsigned) 23: High bit of position feedback (signed) 24: Low bit of position feedback (unsigned) 25: Status word	0	○

Function code	Name	Description	Default	Modify
		26: HDIB frequency value (×100, kHz) 27: PG card pulse feedback count high bit 28: PG card pulse feedback count low bit 29: PG card pulse reference count high bit 30: PG card pulse reference count low bit 31: Function parameter mapping (PZD2–PZD12 correspond to P14.60–P14.70)		
P35.00	Closed-loop voltage feedback source	0–1 0: Hardware sampling 1: Software calculation	0	◎
P35.01	Output voltage display calibration coefficient (hardware)	0.0–200.0%	100.0%	○
P35.02	Output voltage display calibration coefficient (software)	0.0–200.0%	100.0%	○
P35.03	Hall current calibration coefficient	0.0–200.0%	100.0%	○
P35.04	Hall current sampling ratio	0–2000	0	○
P35.05	Undervoltage pre-alarm delay	0.0–20.0s **Note:** ● In running: When the bus voltage is lower than the undervoltage point + 40V, a delay alarm starts; when the bus voltage is lower than the undervoltage point and the delay time is reached, an undervoltage fault is reported. ● In other states: When the bus voltage is lower than the undervoltage point, PoFF is reported.	0.0s	○
P35.06	Software undervoltage point 1	0.0–2000.0V	420.0V	◎
P35.07	Software undervoltage recovery point 1	0.0–2000.0V	480.0V	◎
P35.08	Software undervoltage point 2	0.0–2000.0V	380.0V	◎
P35.09	Software undervoltage recovery point 2	0.0–2000.0V	480.0V	◎
P35.10	Voltage compensation gain	0–200 **Note:** (Invalid in voltage PID closed-loop) It is applied to open-loop control, mainly for heavy load operation, which requires voltage compensation.	0	○
P35.11	Output angle compensation	-180.0–180.0° **Note:** (Valid only for synchronization mode.) 0.0 ° indicates automatic phase compensation mode, while non 0.0 ° indicates manual phase compensation mode.	0.0°	○
P35.12	Droop adjustable active power	0.1–3000.0kW	Model depended (0.4kW)	◎
P35.13	Droop adjustable reactive power	0.1–3000.0kVar	Model depended (0.4kVar)	◎
P35.14	Corresponding frequency of droop active power	0.00–2.00Hz	1.00Hz	○
P35.15	Corresponding frequency of droop reactive power	0.00–20.00V	10.00V	○
P36.00	VFD working mode	0–5 0: Common mode 1: EPS mode 2: Switch from variable frequency to power frequency (without disturbance) 3: Switch from variable frequency to power frequency (with disturbance) 4: Voltage closed-loop mode 5: Shaft generator mode Note: The frequency corresponding to option 2 or 3 is the	0	◎

Function code	Name	Description	Default	Modify
		phase lock grid voltage frequency specified by P37.00, and the running direction depends on whether the frequency is positive or negative. Do not change the setting of P00.13 to change the direction. If you need to change the motor direction, adjust the UVW output wires.		
P36.01	Grid frequency synchronization mode	0x000–0x111 LED ones place: Frequency control enabling selection 0: Non-grid frequency non-synchronization mode 1: Grid frequency synchronization mode (in this mode, slip compensation and automatic torque boost are invalid) LED tens place: Grid phase lock action 0: Quick tracking mode (discontinuous phases, adjusted) 1: Continuous phases (not adjusted) LED hundreds place: Frequency increase action in synchronization mode 0: Increase to the grid frequency 1: Direct start to the grid frequency (usually used in resistance load)	0x000	◎
P36.02	Phase lock test mode selection	0–1 0: The test mode is invalid. 1: The test mode is valid. (You can simulate the grid voltage input according to the settings of P36.03–P36.04, and at this time the actual grid input is screened out.)	0	◎
P36.03	Simulated grid frequency	-60.00–60.00Hz	50.00Hz	○
P36.04	Simulated grid voltage	0–1500V	380V	○
P36.05	Sequence reversal/phase lock failure protection	0x000–0x211 LED ones place: The RST inputs on the terminal board are reversal. (UIPE) 0: Disable input sequence reversal protection. 1: Enable input sequence reversal protection. LED tens place: The UVW outputs on the terminal board are reversal. (UOPE) 0: Disable output sequence reversal protection. 1: Enable output sequence reversal protection. LED hundreds place: The RST phase lock on the terminal board fails. (PLLE) 0: The PLLE detection is always invalid. 1: The PLLE detection is valid at stop. 2: The PLLE detection is always valid.	0x211	○
P36.06	Disturbed variable/power frequency switchover stop autotuning time	0.500–10.000s	0.500s	◎
P36.07	Variable/power frequency switchover parameter settings	0x0000-0x1111 LED ones place: Enable contactor action time autotuning. 0: Disable 1: Enable LED tens place: Positive sequence frequency upper limit fine-tuning and phase angle compensation automatic autotuning 0: Disable 1: Enable LED hundreds place: Power frequency contactor electrical self-locking retention 0: Disable 1: Enable LED thousands place: Reset system status. 0: Disable 1: Enable **Note:** ● The contactor action time requires autotuning three times and an average value is taken. The contactor feedback contact can only be connected to S2 for closing time autotuning.	0x0000	◎

Function code	Name	Description	Default	Modify
		● Before autotuning frequency fine-tuning, complete contactor autotuning. ● If the disturbed power frequency contactor switchover is enabled, the power frequency relay will be disconnected 0.5 seconds later, and you need to perform electrical self-locking retention.		
P36.08	Disturbed power frequency contactor action time	0.000–2.000s	0.000s	●
P36.09	Variable/power frequency switching contactor action time offset value	-2.000–2.000s	0.000s	○
P36.10	Positive sequence fine-tuned frequency upper limit	0.00–10.00Hz	0.50Hz	○
P36.11	Positive sequence phase angle compensation value	-180.0–180.0°	10.0°	○
P36.12	Negative sequence fine-tuned frequency upper limit	0.00–10.00Hz	0.50Hz	○
P36.13	Negative sequence phase angle compensation value	-180.0–180.0°	10.0°	○
P36.14	Software delay after power frequency request	0.500–10.000s	0.000s	○
P36.15	Synchronization output filter count	0–65535	6	◎
P36.16	Terminal board phase loss protection	0x00–0x11 LED ones place: 0: Disable terminal board RST input signal phase loss (UIPL) protection. 1: Enable terminal board RST input signal phase loss (UIPL) protection. LED tens place: 0: Disable terminal board UVW output signal phase loss (UOPL) protection. 1: Enable terminal board UVW output signal phase loss (UOPL) protection.	0x00	○
P37.00	Grid voltage frequency	-60.00–60.00Hz	0.00Hz	●
P37.01	Grid voltage effective value	0–2000V	0V	●
P37.02	Output voltage frequency	-60.00–60.00Hz	0.00Hz	●
P37.03	Output voltage effective value	0–2000V	0V	●
P37.04	Hall current effective value	0.0–6000.0A	0.0A	●
P37.05	Grid phase lock output status	0x0000–0x1111 LED ones place: Grid power-on signal 0: The grid is powered off. 1: The grid is powered on. LED tens place: Phase lock loop initialization flag 0: Phase lock loop initialization has not been completed. 1: Phase lock loop initialization has been completed. LED hundreds place: 50 or 60Hz grid display 0: 50Hz grid 1: 60Hz grid LED thousands place: Phase lock success flag 0: Phase lock failed. 1: Phase lock is successful.	0x0000	●
P37.06	Switchover signal	0x0–0x1 LED ones place: Switchover signal 0: No switchover signal has been output. 1: Switchover signal has been output.	0x0	●
P37.07	Grid collection card software version	1.00–655.35	Version depended	●
P37.08	Shaft generator output active power	0.0–3000.0kW	0.0kW	●
P37.09	Shaft generator output reactive power	0.0–3000.0kVar	0.0kVar	●
P37.10	Shaft generator output power factor	-1.00–1.00	0.00	●
P37.11	Shaft generator PLC voltage regulation command	0–1000V	0V	●
P37.12	Shaft generator PLC frequency regulation command	0.00–60.00Hz	0.00Hz	●

5 Common faults and solutions

Note: Our fault code scheme is being upgraded. Some products use the old scheme and the others use the new one, which are listed in "Fault code display".

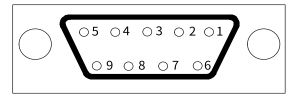
Fault code display		Fault type	Possible cause	Solution
OUt1	E1	Inverter unit U-phase protection	ACC/DEC is too fast. IGBT module damaged. Misoperation caused by interference. Drive wires are poorly connected. To-ground short circuit occurred. Sparks occurred inside due to poor use environment conditions.	Increase ACC/DEC time. Change the inverter unit. Check whether the devices and system are grounded reliably. Check for loose drive wires. Check for abnormal motor wiring and motor-to-ground short connection. Remove the dust or oil stain inside the VFD regularly.
OUt2	E2	Inverter unit V-phase protection		
OUt3	E3	Inverter unit W-phase protection		
OC1	E4	Overcurrent during ACC	ACC/DEC is too fast. Grid voltage is too low. VFD power too small. Load transient or exception occurred. 3PH output current imbalance. Strong external interference sources (contactor switchover or improper grounding).	Increase ACC/DEC time. Increase grid input voltage. Select a VFD with larger power. Check for motor stalling, short connection, and load device exceptions. Check for abnormal VFD 3PH output voltage and motor 3PH resistance imbalance. Check for strong interference (whether motor cable is far away from contactor and system is grounded reliably).
OC2	E5	Overcurrent during DEC		
OC3	E6	Overcurrent during constant speed running		
OV1	E7	Overvoltage during ACC	ACC/DEC time is too short. Abnormal input voltage. Motor started during rotating. Load energy regeneration too large. Dynamic braking disabled.	Increase ACC/DEC time. Check the input power. Use the speed tracking start function. Add dynamic braking devices or regenerative units. Set dynamic braking function parameters.
OV2	E8	Overvoltage during DEC		
OV3	E9	Overvoltage during constant speed running		
UV	E10	Bus undervoltage fault	Grid voltage is too low. Bus voltage display is abnormal. Check whether the buffer contactor closing is normal.	Increase grid input voltage. Contact the manufacturer. Contact the manufacturer.
OL1	E11	Motor overload	The grid voltage is too low. Motor rated current set incorrectly. Motor stalling or load sudden change too great.	Increase grid input voltage. Reset the motor rated current in the motor parameter group. Check the load and adjust the torque boost value.
OL2	E12	VFD overload	ACC too fast. Motor restarted during rotating. Grid voltage too low. Load too heavy. VFD power too small.	Increase ACC time. Avoid restart upon stop or enable speed tracking start. Increase grid input voltage. Select a VFD with larger power.
SPI	E13	Phase loss on input side	Phase loss or violent fluctuation occurred on inputs R, S, and T. Screws on the input side are loose.	Check whether the input power is normal and input cables are loose. Set parameters to screen out the fault.
SPO	E14	Phase loss on output side	Output cables broken or short connected to the ground. U/V/W output phase loss or seriously asymmetrical 3PH loads.	Check for loose or broken output cables. Check for sharp load fluctuation and motor 3PH resistance imbalance.
OH2	E16	Inverter module overheat	Air duct blocked or fan damaged. Ambient temperature too high. Long-time overload running.	Ventilate the air duct or replace the fan. Keep good ventilation to lower ambient temperature. Select a VFD with larger power.
CE	E18	RS485 communication fault	Improper baud rate. Communication line fault. Incorrect communication address. Communication suffers from strong interference.	Set a proper baud rate. Check the wiring of communication interfaces. Set the communication address correctly. Replace or change wiring to enhance anti-interference.
tE	E20	Motor autotuning fault	The motor capacity does not match the VFD capacity. Improper motor parameter setting. Autotuned parameter settings deviate sharply from the standard ones. Autotuning timeout.	Change the VFD model. Set the motor type and nameplate parameters correctly. Empty the motor load and re-perform autotuning. Check motor wiring and parameter settings. Check whether the upper limit frequency is greater than 2/3 of the rated frequency.
dEu	E34	Speed deviation fault	The load is too heavy or stalled.	Check for overload, increase speed deviation detection time, or prolong ACC/DEC time. Check motor parameter settings and re-perform motor parameter autotuning. Check speed loop control parameter settings.
STo	E35	Mal-adjustment fault	Load exception. Incorrect SM parameter settings. Autotuned motor parameters are inaccurate. The VFD is disconnected from the motor. Flux weakening application.	Check for overload or stalling. Check motor parameter and counter EMF settings. Re-perform motor parameter autotuning. Increase maladjustment detection time. Adjust flux weakening coefficient and current loop parameters.
G-TE	E77	Grid collection card sampling detection fault	Sampling circuit zero drifting too large.	Replace the grid collection card.
PLLE	E78	Phase lock failure	If the deviation between the locked frequency and the grid frequency exceeds 2Hz after 250ms, or if the grid suddenly loses power and the operation cannot go on for power down, the PLLE fault will be reported.	Ensure that the RST terminal wiring is normal and powered on.
UIPE	E79	Synchronization card input reversal	When the phase lock grid voltage frequency (P37.00) is reversal to the wave generation frequency, the system reports input reversal.	Ensure the three-phase RST input wiring is normal, and ensure the forward/reverse direction (indicator) on the keypad is consistent with the phase lock grid voltage frequency (P37.00).
UOPE	E80	Synchronization card output reversal	When the output frequency (P37.03) is reverse to the phase lock grid voltage frequency (P37.00) and the effective value of the output voltage exceeds 0.25 times the rated voltage, the system reports output reversal.	Check the feedback voltage UVW sampling wiring sequence.
UIPL	E81	Synchronization card input phase loss	In non fault state, the RST input voltages of the synchronization card are unbalanced.	Check whether the synchronization card RST terminals are powered on and wired properly.
UOPL	E82	Synchronization card output phase loss	In mode 1 or 2 of P36.00, the UVW output voltages of the synchronization card are unbalanced after successful synchronization in non fault state.	Check whether the synchronization card UVW terminals are powered on and wired properly.

6 Expansion card

6.1 Common communication cards

6.1.1 PROFIBUS-DP communication card (EC-TX503)

It uses a 9-pin D-type connector, as shown in the following figure:



Connector pin		Description
1, 2, 7, 9	-	Unused
3	B-Line	Data+ (twisted pair 1)
4	RTS	Request sending
5	GND_BUS	Isolation ground
6	+5V BUS	Isolated power supply of 5 V DC
8	A-Line	Data- (twisted pair 2)
Housing	SHLD	PROFIBUS cable shielding line

6.1.2 CAN multi-protocol communication card (EC-TX505C)

It uses European-style screw terminals.

Terminal symbol	Name	Description
PGND	Isolation ground	Isolation ground
PE	Shielded cable	CAN bus shielding
CANH	CAN positive input	CAN bus high level signal
CANL	CAN negative input	CAN bus low level signal
CAN	CAN terminal resistor switch	OFF: No terminal resistor is connected between CAN_H and CAN_L.
		ON: A terminal resistor is connected between CAN_H and CAN_L.

Note: For this card, before power-on, set the SW2 switch according to the mapping between protocols and positions.

SW2		
1	2	Protocol type
OFF	OFF	CANopen
ON	OFF	CAN master/slave

6.1.3 PROFINET communication card (EC-TX509C), Ethernet/IP communication card (EC-TX510), and Modbus TCP communication card (EC-TX515)

The communication cards use standard RJ45 interface, of which terminal signals are described as follows:

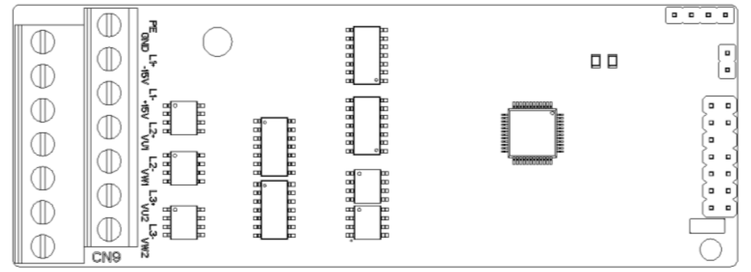
Pin	Name	Description
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4, 5, 7, 8	n/c	Not connected
6	RX-	Receive Data-

6.2 Grid synchronization card

6.2.1 Collection card (EC-PD101-01)

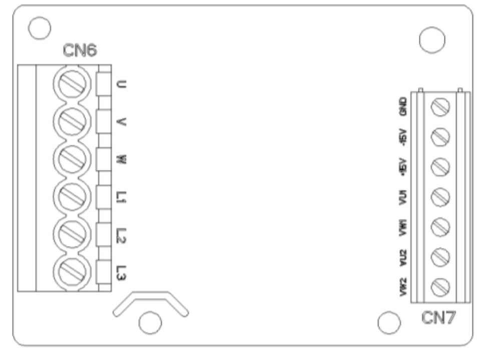
Two channels of sampled voltages: VFD output reactor backend voltages V_{U1}, V_{V1}, and V_{W1} ; grid-connected side voltages V_{U2}, V_{V2}, and V_{W2}

Three sampled currents: VFD output reactor backend currents I_U, I_V, and I_W



6.2.2 Buck card (EC-PD101-02)

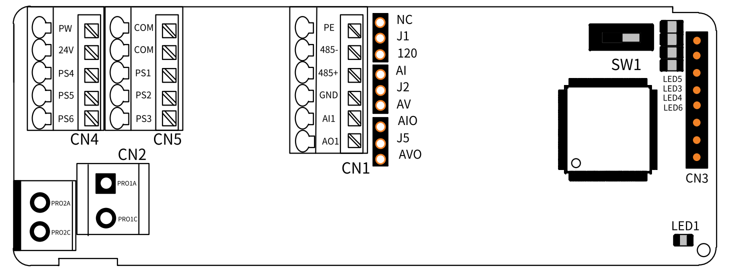
It reduces a high voltage signal (380V and 660V) to a small signal of about 5Vmax and sends it to the collection card.



6.3 Programmable expansion card (EC-PC502-00)

The EC-PC502-00 expansion card adopts the global mainstream programmable expansion card development environment and supports the instruction language (IL), ladder diagram (LD), and sequential function chart (SFC), which can replace some micro PLC applications.

It supplies a user program storage space of 16K steps and data storage space of 8K words, and supports saving data of 1K words at power off, facilitating secondary development. It uses European-type screw terminals for relay output and spring terminals for all others.



"SW1" indicates the start/stop switch of the programmable expansion card and "120" indicates 120Ω terminal resistor. By default, J1 connects to NC, J2 to AV, and J5 to AVO. The terminals are arranged as follows.

Table 6-1 Terminal description

Category	Terminal symbol	Terminal name	Specifications
Power supply	PW	External power	● Used to provide input digital working power from the external to the internal ● Voltage range: 12–30V ● PW and +24V should be short-connected.
	24V	Internal power	● Internal output power, 100mA
Digital input/output	PS1—COM	Digital input 1	● Internal impedance: 4kΩ ● 12–30V voltage input is acceptable ● Bi-direction input terminal ● Max. input frequency: 1kHz ● Source/sink inputs, and the input type should be consistent
	PS2—COM	Digital input 2	
	PS3—COM	Digital input 3	
	PS4—COM	Digital input 4	
	PS5—COM	Digital input 5	
	PS6—COM	Digital input 6	
Analog input/output	AI1	Analog input 1	● Input range: For AI1, 0–10V or 0–20mA ● Input impedance: 20kΩ for voltage input; 250Ω for current input ● Whether voltage or current is used for input is set through the jumper "AI/AV" and J2. ● Resolution: 5mV when 10V corresponds to 50Hz ● Deviation: ±1% (25°C, full measuring range)
	AO1	Analog output 1	● Output range: 0–10V or 0–20mA ● Whether voltage or current is used for output is set through the jumper "AIO/AVO" and J5. ● Deviation: ±1% (25°C, full measuring range)
Relay output	PRO1A	NO contact of relay 1	● Contact capacity: 2A/250VAC, 1A/30VDC ● Cannot be used as high frequency digital output.
	PRO1C	Common contact of relay 1	
	PRO2A	NO contact of relay 2	
	PRO2C	Common contact of relay 2	

Table 6-2 Indicator description

Symbol	Name	Description
LED1	Power indicator	PWR power indicator ● On: The expansion card is powered on. ● Off: The expansion card is not powered on.
LED3	Communication indicator	COM communication indicator ● On: The expansion card is connecting with the control board. ● Blinking (On: 500ms; Off: 500ms): The expansion card is connected with the control board. ● Off: The expansion card is disconnected from the control board.
LED4	Fault indicator	ERR fault indicator ● Blinking (On: 500ms; Off: 500ms): An error occurs to the expansion card. (The error type can be queried through the host controller software Auto Station.) ● Off: No fault
LED5	Power indicator	PWR power indicator ● On: The expansion card is powered on. ● Off: The expansion card is not powered on.
LED6	Status indicator	RUN status indicator ● On: The PLC program is running. ● Off: The PLC program stops.

Appendix A Energy efficiency data

Table A-1 Power loss and IE class

Model	Relative loss (%)								Stand by loss (W)	IE class
	(0;25)	(0;50)	(0; 100)	(50; 25)	(50; 50)	(50; 100)	(90; 50)	(90; 100)		
GD350-1R5G-4-EP	1.54	1.50	1.67	1.12	1.04	1.45	0.91	1.45	3	IE2
GD350-2R2G-4-EP	1.21	1.96	2.43	0.80	1.00	1.50	0.83	1.43	5	IE2
GD350-004G-4-EP	1.13	1.40	2.05	1.14	1.43	2.14	1.41	2.28	6	IE2
GD350-5R5G-4-EP	0.94	1.27	2.07	1.01	1.38	2.33	1.53	2.60	8	IE2
GD350-7R5G-4-EP	0.76	0.96	1.53	0.85	1.04	2.25	1.17	1.86	7	IE2
GD350-011G-4-EP	0.61	0.84	1.55	0.61	1.04	1.97	0.99	2.16	9	IE2
GD350-015G-4-EP	0.42	0.52	1.27	0.55	0.73	1.46	0.78	1.66	9	IE2
GD350-018G-4-EP	0.54	0.74	1.2	0.77	1.03	1.70	0.96	1.65	11	IE2
GD350-022G-4-EP	0.47	0.67	1.21	0.67	0.90	1.54	0.87	1.38	11	IE2
GD350-030G-4-EP	0.53	0.72	0.71	0.71	0.9	0.85	1.45	1.5	13	IE2
GD350-037G-4-EP	0.47	0.69	1.39	0.63	0.88	1.60	0.99	1.72	14	IE2
GD350-045G-4-EP	0.49	0.69	1.39	0.78	1.00	1.64	0.97	1.66	21	IE2
GD350-055G-4-EP	0.51	0.69	1.26	0.71	0.89	1.47	0.88	1.40	22	IE2
GD350-075G-4-EP	0.44	0.61	1.12	0.51	0.69	1.29	0.76	1.42	22	IE2
GD350-090G-4-EP	0.42	0.59	1.15	0.47	0.65	1.29	0.90	1.48	25	IE2
GD350-110G-4-EP	0.43	0.63	1.30	0.48	0.75	1.64	0.80	1.78	28	IE2
GD350-132G-4-EP	0.47	0.59	1.06	0.61	0.71	1.28	0.85	1.43	55	IE2
GD350-160G-4-EP	0.59	0.71	1.36	1.22	0.97	1.87	1.00	1.84	55	IE2
GD350-185G-4-EP	0.62	0.76	1.21	1.17	1.12	1.70	1.08	1.61	55	IE2
GD350-200G-4-EP	0.53	0.71	1.42	0.74	0.94	1.81	1.00	1.84	55	IE2
GD350-220G-4-EP	0.33	0.42	0.69	0.85	0.95	1.33	1.10	1.18	80	IE2
GD350-250G-4-EP	0.38	0.59	1.22	0.65	0.92	1.67	0.93	1.74	80	IE2
GD350-280G-4-EP	0.40	0.59	1.10	0.64	0.89	1.58	1.12	1.35	80	IE2
GD350-315G-4-EP	0.56	0.35	0.79	0..94	0.94	1.63	1.36	2.22	80	IE2
GD350-355G-4-EP	0.37	0.47	0.98	0.91	1.11	1.95	1.41	2.44	80	IE2
GD350-400G-4-EP	0.17	0.26	0.42	0.28	0.41	0.74	0.47	0.92	80	IE2
GD350-450G-4-EP	0.31	0.54	0.98	0.46	0.62	1.02	0.67	0.85	80	IE2
GD350-500G-4-EP	0.32	0.55	0.98	0.45	0.61	1.02	0.66	0.83	80	IE2
GD350-022G-6-EP	0.43	0.72	0.99	0.46	1.04	2.03	1.7	2.76	11	IE2
GD350-030G-6-EP	0.40	0.57	1.06	0.63	0.95	1.62	1.08	1.86	13	IE2
GD350-037G-6-EP	0.40	0.56	1.06	0.64	0.96	1.61	1.04	1.84	13	IE2
GD350-045G-6-EP	0.38	0.58	1.03	0.57	0.94	1.62	1.02	1.90	13	IE2
GD350-055G-6-EP	0.36	0.56	1.04	0.56	0.93	1.53	1.03	1.87	22	IE2
GD350-075G-6-EP	0.34	0.55	1.00	0.54	0.94	1.52	1.02	1.86	22	IE2
GD350-090G-6-EP	0.34	0.54	0.96	0.54	0.95	1.56	1.04	1.81	22	IE2
GD350-110G-6-EP	0.33	0.52	0.98	0.52	0.92	1.54	1.01	1.83	22	IE2
GD350-132G-6-EP	0.34	0.53	0.98	0.55	0.92	1.54	1.02	1.82	22	IE2
GD350-160G-6-EP	0.33	0.56	0.99	0.52	0.96	1.52	1.04	1.87	46	IE2
GD350-185G-6-EP	0.32	0.54	1.00	0.51	0.92	1.52	1.03	1.85	46	IE2
GD350-200G-6-EP	0.33	0.53	1.00	0.52	0.94	1.51	1.00	1.89	46	IE2
GD350-220G-6-EP	0.35	0.56	0.98	0.53	0.95	1.53	1.02	1.86	46	IE2
GD350-250G-6-EP	0.34	0.53	0.97	0.52	0.97	1.50	1.03	1.83	68	IE2
GD350-280G-6-EP	0.34	0.54	0.98	0.54	0.96	1.52	1.01	1.87	68	IE2
GD350-315G-6-EP	0.33	0.55	0.96	0.54	0.92	1.53	1.02	1.85	68	IE2
GD350-355G-6-EP	0.35	0.26	0.35	0.37	0.5	0.63	0.81	0.92	80	IE2
GD350-400G-6-EP	0.33	0.54	0.97	0.52	0.95	1.54	1.02	1.86	80	IE2
GD350-450G-6-EP	0.34	0.53	0.95	0.51	0.94	1.56	1.02	1.82	80	IE2
GD350-500G-6-EP	0.35	0.52	0.98	0.51	0.93	1.52	1.03	1.87	80	IE2
GD350-560G-6-EP	0.33	0.51	0.96	0.53	0.92	1.51	1.02	1.83	80	IE2
GD350-630G-6-EP	0.36	0.54	0.96	0.52	0.94	1.53	1.02	1.84	80	IE2

Table A-2 Rated specifications

Model	Apparent power (kVA)	Rated output power (kW)	Rated output current (A)	Max. working temperature (°C)	Rated power frequency (Hz)	Rated power voltage (V)
GD350-1R5G-4-EP	2.4	1.5	3.7	50°C Derate by 1% for every increase of 1°C when the temperature exceeds 40°C.	50Hz/60Hz Allowed range: 47–63Hz	3PH 380V
GD350-2R2G-4-EP	3.3	2.2	5			
GD350-004G-4-EP	6.2	4	9.5			
GD350-5R5G-4-EP	9.2	5.5	14			
GD350-7R5G-4-EP	12.2	7.5	18.5			
GD350-011G-4-EP	16.4	11	25			
GD350-015G-4-EP	21.0	15	32			
GD350-018G-4-EP	25.0	18.5	38			
GD350-022G-4-EP	29.6	22	45			
GD350-030G-4-EP	39.4	30	60			
GD350-037G-4-EP	49.3	37	75			
GD350-045G-4-EP	60.5	45	92			
GD350-055G-4-EP	75.7	55	115			
GD350-075G-4-EP	98.7	75	150			
GD350-090G-4-EP	118.5	90	180			
GD350-110G-4-EP	141.5	110	215			
GD350-132G-4-EP	171.1	132	260			
GD350-160G-4-EP	200.7	160	305			
GD350-185G-4-EP	223.7	185	340			
GD350-200G-4-EP	250.1	200	380			
GD350-220G-4-EP	279.7	220	425			
GD350-250G-4-EP	315.9	250	480			
GD350-280G-4-EP	348.8	280	530			
GD350-315G-4-EP	394.9	315	600			
GD350-355G-4-EP	427.8	355	650			
GD350-400G-4-EP	473.8	400	720			
GD350-450G-4-EP	539.7	450	820			
GD350-500G-4-EP	566.0	500	860			
GD350-022G-6-EP	30	22	27			3PH 660V
GD350-355G-6-EP	434	355	380			

66001- 01262

Copyright©INVT.

Manual information may be subject to change without prior notice.

202401 (V1.0)