

Goodrive600/Goodrive600A 系列高性能多传动变频器快速使用指南

本指南简要介绍了 Goodrive600 系列以及 Goodrive600A 系列变频器的外观结构、产品型号、端子、键盘、快速运行、常用功能参数设置、常见故障及对策。

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

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。

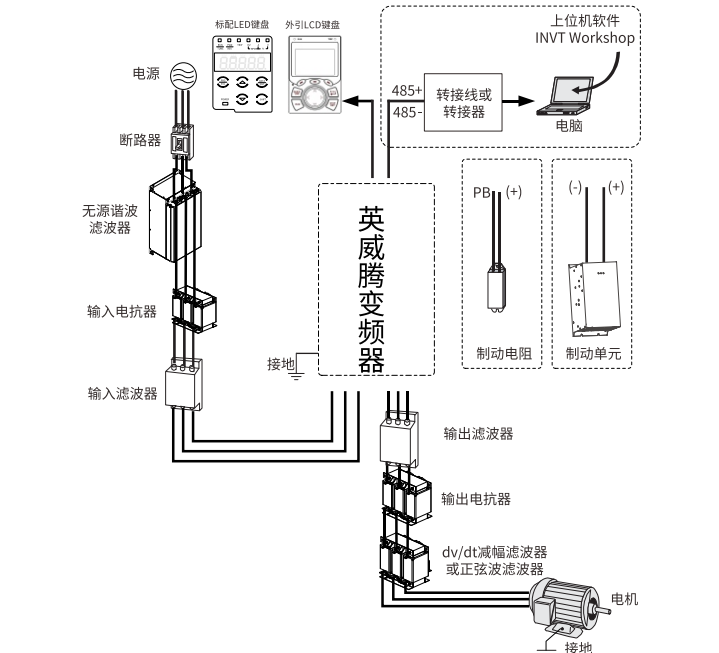
只有培训合格的专业人员才允许进行相关操作。

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。进行这些作业时，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。

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

1 外围接线



2 产品型号

字段	标识	标识说明	具体内容
产品系列缩写	①	产品系列缩写	GD600: Goodrive600 高性能多传动变频器 GD600A: Goodrive600A 高性能多传动变频器
单元类型	②	单元类型代号	51: 逆变单元 61: 不控整流单元 71: 半控整流单元
额定功率	③	功率代号	045: 45kW
电压等级	④	电压等级代号	4: AC 3PH 380V (-15%) ~440V (+10%) 额定电压: 380V
制动单元	⑤	制动单元	空: 无内置制动单元 B: 标配制动单元 S: 支持无桥功能
订货管理号	⑥	订货管理号	

3 端子

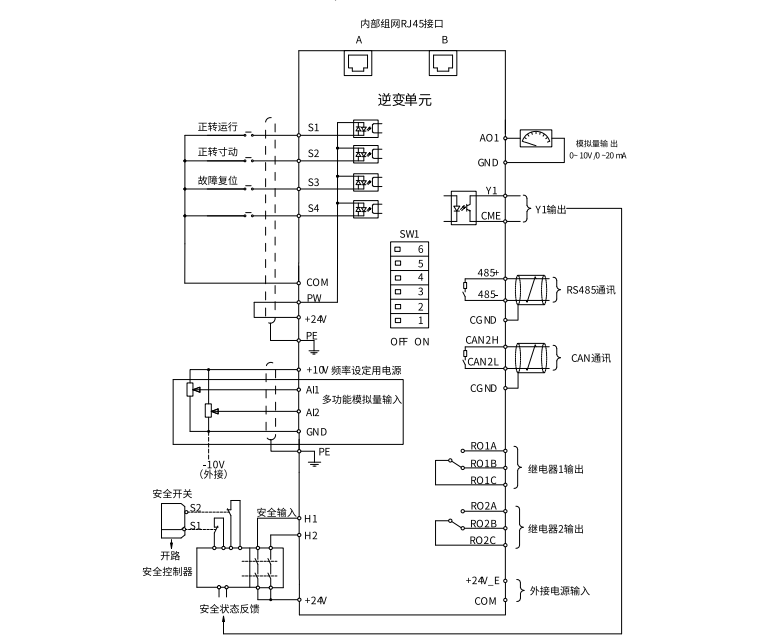
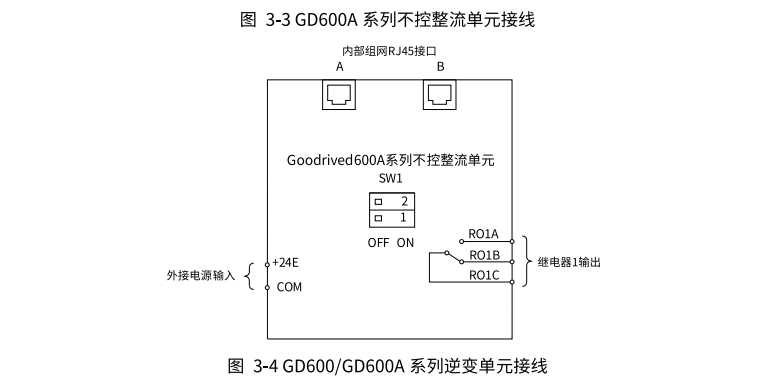
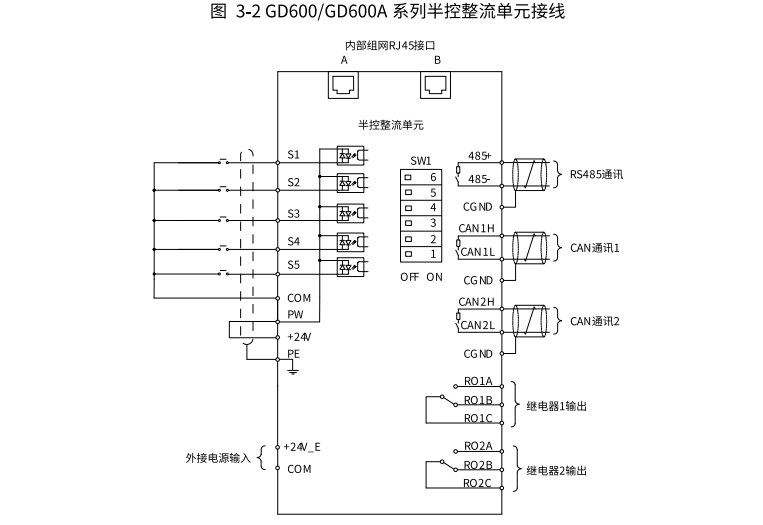
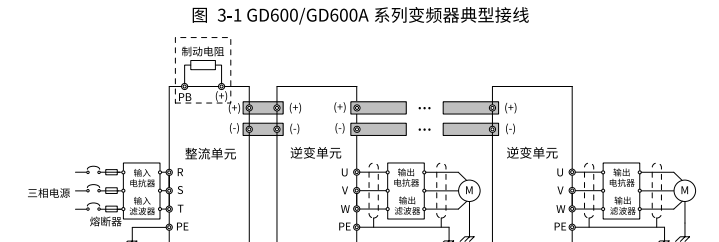


表 3-1 变频器端子说明

端子类型	端子名称	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
	(+)	(+)、(-) 端子接制动单元
	(-)	(+)、PB 端子接制动电阻
	PB	安全保护接地端子，每个单元标配一个 PE 端子，必须可靠接地
GD600/GD600A 半控整流单元控制端子	PW	由外部向内部提供输入开关量工作电源 电压范围: 12~24V
	COM	变频器提供用户电源，最大输出电流 200mA
	S1	开关量输入端子 内部阻抗: 3.3kΩ
	S2	可接受 12~30V 电压输入
	S3	全部端子为双向输入端子，支持 NPN 和 PNP 接法
	S4	最大输入频率: 1kHz
	S5	全部为可编程数字量输入端子，用户可通过功能码设定端子功能
GD600/GD600A 不控整流单元控制端子	RO1A	RO1 继电器输出; RO1A 常开, RO1B 常闭, RO1C 公共端 触点容量: 3A/AC 250V, 1A/DC 30V
	RO2A	RO2 继电器输出; RO2A 常开, RO2B 常闭, RO2C 公共端 触点容量: 3A/AC 250V, 1A/DC 30V
	RO2C	公共端
	RS485+	RS485 通讯端口，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 4、5 位接入
	RS485-	RS485 通讯端口，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 4、5 位接入
	CAN1H	CAN 通讯端口 1，支持网桥 CANopen 主站 (1M 速率，最多支持 20 个从站节点，最长距离 20m)，同时可以选择为 CANopen 从站协议; 请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 2、3 位接入
	CAN1L	CAN 通讯端口 2，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 6 位接入，支持 CAN 主从控制
	CAN2H	CAN 通讯端口 2，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 6 位接入，支持 CAN 主从控制
	CAN2L	通讯线屏层连接端子
	CGND	通讯线屏层连接端子
	+24V E	外接电源输入，输入电压范围 24V±15%，电源电流至少 1A 注意: 该电源可以不接，不影响单元的正常工作的。
	COM	变频器提供用户电源，最大输出电流 200mA
	S1	开关量输入端子 内部阻抗: 3.3kΩ
	S2	可接受 12~30V 电压输入
	S3	全部端子为双向输入端子，支持 NPN 和 PNP 接法
	S4	最大输入频率: 1kHz
	S5	全部为可编程数字量输入端子，用户可通过功能码设定端子功能

端子类型	端子名称	说明
欧式接线端子继电器输出	RO1A	RO1 继电器输出; RO1A 常开, RO1B 常闭, RO1C 公共端 触点容量: 3A/AC 250V, 1A/DC 30V
	RO1B	公共端
	RO1C	公共端
	RO2A	RO2 继电器输出; RO2A 常开, RO2B 常闭, RO2C 公共端 触点容量: 3A/AC 250V, 1A/DC 30V
	RO2B	公共端
	RO2C	公共端
欧式接线端子通讯	485+	RS485 通讯端口，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 4、5 位接入
	485-	RS485 通讯端口，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 4、5 位接入
	CAN1H	CAN 通讯端口 1，支持网桥 CANopen 主站 (1M 速率，最多支持 20 个从站节点，最长距离 20m)，同时可以选择为 CANopen 从站协议; 请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 2、3 位接入
	CAN1L	CAN 通讯端口 2，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 6 位接入，支持 CAN 主从控制
	CAN2H	CAN 通讯端口 2，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 6 位接入，支持 CAN 主从控制
	CAN2L	通讯线屏层连接端子
	CGND	通讯线屏层连接端子
欧式接线端子外接电源	+24V E	外接电源输入，输入电压范围 24V±15%，电源电流至少 1A 注意: 该电源可以不接，不影响单元的正常工作的。
	COM	变频器提供用户电源，最大输出电流 200mA
	S1	开关量输入端子 内部阻抗: 3.3kΩ
	S2	可接受 12~30V 电压输入
	S3	全部端子为双向输入端子，支持 NPN 和 PNP 接法
	S4	最大输入频率: 1kHz
	S5	全部为可编程数字量输入端子，用户可通过功能码设定端子功能
RJ45 接口	CAN1H	CAN 通讯，与欧式接线端子通讯中 CAN1 电气直连，功能一致
	CAN1L	CAN 通讯，与欧式接线端子通讯中 CAN1 电气直连，功能一致
	485+	RS485 内部总线，用于外引键盘或 PC 连接、调试; 终端匹配电阻通过选择拨码开关 SW1 的第 1 位接入
	485-	RS485 内部总线，用于外引键盘或 PC 连接、调试; 终端匹配电阻通过选择拨码开关 SW1 的第 1 位接入
	+8V	外引键盘供电
	CGND	外引键盘供电
	PE	接地端子
GD600A 不控整流单元控制回路端子	RO1A	RO1 继电器输出; RO1A 常开, RO1B 常闭, RO1C 公共端 触点容量: 3A/AC 250V, 1A/DC 30V
	RO1B	公共端
	RO1C	公共端
	CANH	CAN 通讯端口，请使用屏蔽双绞线，支持整流单元与逆变单元内部 CAN 协议，终端匹配电阻通过选择拨码开关 SW1 的第 2 位接入
	CANL	CAN 通讯端口，请使用屏蔽双绞线，支持整流单元与逆变单元内部 CAN 协议，终端匹配电阻通过选择拨码开关 SW1 的第 2 位接入
	RS485+	485 内部总线，用于外引键盘或 PC 连接、调试; 终端匹配电阻通过拨码开关 SW1 的第 1 位选择接入
	RS485-	485 内部总线，用于外引键盘或 PC 连接、调试; 终端匹配电阻通过拨码开关 SW1 的第 1 位选择接入
	+8V	外引键盘供电
	CGND	外引键盘供电
	PE	接地端子
GD600/GD600A 逆变单元控制回路端子	+10V	本机提供的+10.5V 电源
	A11	输入范围: A11 电压电流可选 0~10V、0~20mA; A12~10V~+10V 电压输入阻抗; 电压输入时 20kΩ，电流输入时 250Ω
	A12	A11 电压或电流输入由功能码 P05.50 切换设定 分辨率: 在 10V 对应 50Hz 时，最小分辨率 5mV 25°C，输入 5V 或 10mA 以上时，误差±0.5%
	GND	+10.5V 的参考地
	AO1	输出范围: 0~10V 电压或 0~20mA 电流 电压或电流输出由功能码 P06.32 切换设定 25°C，输出 5V 或 10mA 以上时，误差±0.5%
	PW	开关量的外部电源输入端子 电压范围: 12~24V 变频器提供用户电源，最大输出电流 200mA
	+24V	变频器提供用户电源，最大输出电流 200mA
	COM	+24V 的参考地
	S1	开关量输入; 内部阻抗: 3.3kΩ
	S2	可接受 12~30V 电压输入
	S3	全部端子为双向输入端子，支持 NPN 和 PNP 接法
	S4	最大输入频率: 1kHz
	S5	全部为可编程数字量输入端子，用户可通过功能码设定端子功能
	H1	安全转矩停止 (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
	H2	安全输入信号线使用屏蔽线，接线长度控制在 25m 以内 出厂时 H1、H2 端子均与+24V 短接，使用 STO 功能时需要将端子上的短接线拆除
	Y1	开关容量: 200mA/30V 输出频率范围: 0~1kHz
	CME	开路集电极输出的公共端，出厂时与 COM 短接
欧式接线端子继电器输出	RO1A	RO1 继电器输出; RO1A 常开, RO1B 常闭, RO1C 公共端 触点容量: 3A/AC 250V, 1A/DC 30V
	RO1B	公共端
	RO1C	公共端
	RO2A	RO2 继电器输出; RO2A 常开, RO2B 常闭, RO2C 公共端 触点容量: 3A/AC 250V, 1A/DC 30V
	RO2B	公共端
	RO2C	公共端
	485+	RS485 通讯端口，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 4、5 位接入
	485-	RS485 通讯端口，请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 4、5 位接入
	CAN2H	请使用屏蔽双绞线，终端匹配电阻通过选择拨码开关 SW1 的第 6 位接入，支持 CAN 主从控制
	CAN2L	通讯线屏层连接端子
	CGND	通讯线屏层连接端子
欧式接线端子数字量输入	+24V E	外接电源输入，输入电压范围 24V±15%，电源电流至少 1A 注意: 该电源可以不接，不影响单元的正常工作的。
	COM	变频器提供用户电源，最大输出电流 200mA
	S1	开关量输入端子 内部阻抗: 3.3kΩ
	S2	可接受 12~30V 电压输入
	S3	全部端子为双向输入端子，支持 NPN 和 PNP 接法
	S4	最大输入频率: 1kHz
	S5	全部为可编程数字量输入端子，用户可通过功能码设定端子功能

整流单元和逆变单元之间通过 RJ45 进行 CANopen 总线连接，下图为 RJ45 端子接口说明。

PIN	端子	说明
8, 16	CAN_H	CAN 总线高电平
7, 15	CAN_L	CAN 总线低电平
3, 6, 10, 11, 14	NC	-
5, 13	RS485+	对内 RS485 通讯端子，用于连接外引键盘和 PC
4, 12	RS485-	对内 RS485 通讯端子，用于连接外引键盘和 PC
1, 9	CGND	可作为外引键盘供电电源负及信号线共地线
2	+8V	外引键盘供电电源正

注意: 此网口定义与我司 TS 系列 PLC 顺序相反，请勿直接与 TS 系列 PLC 连接。

4 键盘

不同系列产品标配键盘可能存在差异; 若产品支持，还可根据需要选配 LCD 键盘。

快速运行操作如下图所示:

6 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中，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。

注意: 不同系列产品功能参数存在差异，详见对应系列产品完整版电子说明书。

6.1 整流单元常用功能参数

功能码	名称	参数详细说明	缺省值	更改
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 注意: 不控整流单元中该功能码为保留。	1	◎
P00.02	通讯运行指令通道选择	0: Modbus 通讯通道 1: CANopen 通讯通道 2: 可编程卡通讯通道 3: PROFIBUS-DP 通讯通道 4: PROFIBUS-DP 通讯通道 5: 以太网通讯通道 注意: 不控整流单元中该功能码为保留。	0	◎
P00.04	制动单元作用起始电压	400.0~800.0V	700.0V	○
P01.14	自动运行使能	0: 不能使能 1: 使能 注意: 不控整流单元中该功能码为保留。	0	○
P05.01	S1 端子功能选择	0: 无功能 1: 运行 (上升沿有效)	1	◎
P05.02	S2 端子功能选择	2: 故障复位 (上升沿有效)	2	◎
P05.03	S3 端子功能选择	3: 外部故障 (上升沿有效)	0	◎
P05.04	S4 端子功能选择	4: 进线断路器反馈 (电平有效) 5~6: 保留 7: 逆变单元禁止运行 (电平有效) 8: 逆变单元自由停机 (电平有效) 9: 逆变单元设定方式停机 (电平有效) 10~15: 保留 注意: 无网桥型整流单元中该功能码为保留。	0	◎
P05.05	S5 端子功能选择	0: 不能使能 1: 运行 (上升沿有效) 2: 故障复位 (上升沿有效) 3: 外部故障 (上升沿有效) 4: 进线断路器反馈 (电平有效) 5~6: 保留 7: 逆变单元禁止运行 (电平有效) 8: 逆变单元自由停机 (电平有效) 9: 逆变单元设定方式停机 (电平有效) 10~15: 保留 注意: 无网桥型整流单元中该功能码为保留。	0	◎
P06.03	继电器 RO1 输出选择	0: 无输出 1: 运行准备就绪 2: 运行中 3: 故障输出 4: 母线过压 5: 母线欠压 6: 三相输入过压 7: 三相输入欠压	0	○
P06.04	继电器 RO2 输出选择	0: 无输出 1: 运行准备就绪 2: 运行中 3: 故障输出 4: 母线过压 5: 母线欠压 6: 三相输入过压 7: 三相输入欠压	0	○

功能码	名称	参数详细说明	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 3: 以太网通讯通道	0	○
P00.02	通讯运行指令通道选择	0: Modbus 通讯通道 1: CANopen 通讯通道 2: 以太网通讯通道 3: EtherCAT/PROFINET 通讯通道 4: 可编程卡通讯通道 5: 无线通讯通道 (保留) 6: PROFIBUS-DP 通讯通道	0	○
P00.03	最大输出频率	Max(P00.04, 10.00)~590.00Hz	50.00Hz	◎
P00.04	运行频率上限	0.05~600.03Hz	50.00Hz	◎
P00.05	运行频率下限	0.00Hz~P00.04	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: 保留 5: 简单 PLC 程序设定 6: Modbus 通讯设定 7: PID 控制设定 8: Modbus 通讯设定 9: CANopen 通讯设定 10: 以太网通讯设定 11: 保留 12: 脉冲串 AB 设定 13: EtherCAT/PROFINET 通讯设定 14: PLC 可编程卡设定 15: PROFIBUS-DP 通讯设定 16: 张力设定 (仅 A 频率指令有效)	0	○
P00.07	B 频率指令选择	0: 无输出 1: 运行准备就绪 2: 运行中 3: 故障输出 4: 母线过压 5: 母线欠压 6: 三相输入过压 7: 三相输入欠压	11	○

功能码	名称	参数详细说明	缺省值	更改
P00.10	键盘设定频率	0.00Hz~P00.03	50.00Hz	○
P00.11	加速时间1	0.0~3600.0s	机型确定	○
P00.12	减速时间1	0.0~3600.0s	机型确定	○
P00.13	运行方向选择	0x00~0x12 个位：运行方向模式选择 0：默认方向运行 1：相反方向运行 2：禁止反转运行 十位：禁止反转下设定频率为负处理动作(有效) 0：减速停机 1：零频正转运行	0x00	○
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：动态自学习 2：完整参数静态自学习(学习空载电流和互感) 3：部分参数静态自学习(不学习空载电流和互感) 4：动态自学习2(只对异步机有效)/变频器参数自学习 (GD600A特有) 5：部分参数静态自学习2(只对异步机有效) 十位：初始磁极角自学习 0：无操作 1：旋转自学习 2：静止自学习 3：旋转自学习2 百位：系统惯量自学习 0：无操作 1：模式1 2：模式2 ● 注意： ● 变频器参数自学习 (个位4)、初始磁极角自学习 (十位) 和系统惯量自学习 (百位) 均为GD600A特有功能。 ● GD600A无部分参数静态自学习2 (个位5) 功能。	0	◎
P00.18	功能参数恢复	0：无操作 1：恢复出厂值(不包括电机参数) 2：清除故障记录 3：键盘参数锁定 4：保留 5：恢复出厂值(厂家测试模式) 6：恢复出厂值(包括电机参数)	0	◎
P01.00	启动运行方式	0：直接启动 1：先直流动再启动 2：转速追踪再启动 3：转速追踪再启动 (无磁) 4：转速追踪再启动 (软件) ● 注意：3和4均为GD600A特有功能。	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	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 2：同步磁阻电机 ● 注意：2为GD600A特有功能。	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	50.00Hz	◎
P02.03	异步电机1额定转速	1~6000RPM	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	◎
P02.15	同步电机1额定功率	0.1~3000.0kW	机型确定	◎
P02.16	同步电机1额定频率	0.01Hz~P00.03	50.00Hz	◎
P02.17	同步电机1极对数	1~128	2	◎
P02.18	同步电机1额定电压	0~1200V	机型确定	◎
P02.19	同步电机1额定电流	0.8~6000.0A	机型确定	◎
P02.23	同步电机1反电势	0~10000	300	◎
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	○
P03.09	电机1电流环比例系数	0~65535 ● 注意：GD600A上无效。	1000	○
P03.11	转矩设定方式选择	0：键盘设定转矩(P03.12)	0	○

功能码	名称	参数详细说明	缺省值	更改
		59: 切换到V/F控制 60: 切换到VFC控制 61: PID线性切换 62: 母线欠压停机输入 (GD600A: FVC 切换SVC使能) 63: 伺服使能 64: 正转极限限位 65: 反转极限限位 66: 编码器计数清零 67: 脉冲速增 68: 脉冲叠加使能 69: 脉冲速减 70: 电子齿轮选择 71: 切换到主机 72: 切换到从机 73: 卷径复位 74: 收放卷切换 75: 张力控制预驱动 76: 禁止卷径计算 77: 清除报警显示 78: 张力控制手动刹车 79: 强制断料触发 80: 初始卷径选择1 81: 初始卷径选择2 82: 保留 83: 张力PID切换 84: PID暂停标志 85: 厚度切块0 86: 厚度切块1 87: 长度清零端子 88: 张力模式切换(开环转矩/闭环速度) (GD600A: 保留) 89: 主从模式切换至非主从模式 (GD600A: 张力模式切换, 开环转矩/闭环速度) 90: 保留 91: 抱闸反馈信号 92~97: 保留 98: 上减速限位 99: 下减速限位 100: 保留 102: 抱闸检测 103~105: 保留 106: 防摇使能 107: 主从模式切换至非主从模式 108~111: 保留 注意: 91~111为GD600A特有功能。	-	-
P05.24~P05.37	AI1/AI2设置	详情请参见完整版电子说明书。	-	-
P06.01	Y1输出选择	0: 无效 1: 运行中 2: 正转运行中 3: 反转运行中 4: 点动运行中 5: 变频器故障 6: 频率水平检测FDT1 7: 频率水平检测FDT2 8: 频率到达 9: 零速运行中 10: 上限频率到达 11: 下限频率到达 12: 运行准备就绪 13: 预防磁中 14: 过载预警 15: 欠载预警 16: 简易PLC阶段完成 17: 简易PLC循环完成 18: 设定记数值到达 19: 指定记数值到达 20: 外部故障有效 21: 保留 22: 运行时间到达 23: Modbus通讯虚拟端子输出 24: PROFIBUS通讯虚拟端子输出 25: 以太网通讯虚拟端子输出 26: 直流母线电压建立完成 27: z脉冲输出 28: 脉冲叠加中 29: STO动作 30: 定位完成 31: 主轴回零完成 32: 主轴分度完成 33: 速度极限中 34: EtherCAT/PROFINET通讯虚拟端子输出 35: CANopen通讯虚拟端子输出	0	○
P06.03	继电器RO1输出选择	0: 无效 1: 运行中 2: 正转运行中 3: 反转运行中 4: 点动运行中 5: 变频器故障 6: 频率水平检测FDT1 7: 频率水平检测FDT2 8: 频率到达 9: 零速运行中 10: 上限频率到达 11: 下限频率到达 12: 运行准备就绪 13: 预防磁中 14: 过载预警 15: 欠载预警 16: 简易PLC阶段完成 17: 简易PLC循环完成 18: 设定记数值到达 19: 指定记数值到达 20: 外部故障有效 21: 保留 22: 运行时间到达 23: Modbus通讯虚拟端子输出 24: PROFIBUS通讯虚拟端子输出 25: 以太网通讯虚拟端子输出 26: 直流母线电压建立完成 27: z脉冲输出 28: 脉冲叠加中 29: STO动作 30: 定位完成 31: 主轴回零完成 32: 主轴分度完成 33: 速度极限中 34: EtherCAT/PROFINET通讯虚拟端子输出 35: CANopen通讯虚拟端子输出	1	○
P06.04	继电器RO2输出选择	0: 无效 1: 运行中 2: 正转运行中 3: 反转运行中 4: 点动运行中 5: 变频器故障 6: 频率水平检测FDT1 7: 频率水平检测FDT2 8: 频率到达 9: 零速运行中 10: 上限频率到达 11: 下限频率到达 12: 运行准备就绪 13: 预防磁中 14: 过载预警 15: 欠载预警 16: 简易PLC阶段完成 17: 简易PLC循环完成 18: 设定记数值到达 19: 指定记数值到达 20: 外部故障有效 21: 保留 22: 运行时间到达 23: Modbus通讯虚拟端子输出 24: PROFIBUS通讯虚拟端子输出 25: 以太网通讯虚拟端子输出 26: 直流母线电压建立完成 27: z脉冲输出 28: 脉冲叠加中 29: STO动作 30: 定位完成 31: 主轴回零完成 32: 主轴分度完成 33: 速度极限中 34: EtherCAT/PROFINET通讯虚拟端子输出 35: CANopen通讯虚拟端子输出	5	○

功能码	名称	参数详细说明	缺省值	更改
		36: 速度/位置控制切换完成 37: 任意频率到达 38~40: 保留 41: 来自PLC卡的Y1 42: 来自PLC卡的Y2 43: 来自PLC卡的HDO 44: 来自PLC卡的RO1 45: 来自PLC卡的RO2 46: 来自PLC卡的RO3 47: 来自PLC卡的RO4 48: 测温IO卡PT100温度过热报警 49: 测温IO卡PT1000温度过热报警 50: AIAO测温温度过热报警 51: 停机状态或零速运行中 52: 控制断线张力 53: 设定卷径到达 54: 停机卷径到达 55: 长度到达 56: 保留 57: 抱闸输出 58: 松闸准备就绪 59: 合闸准备就绪 60: 上限位到达 61: 下限位到达 62~64: 保留 65: 抱闸失灵 注意: 端子功能57~65为GD600A特有功能。	-	-
P06.17~P06.25	AO输出上下限设置	详情请参见完整版电子说明书。	-	-
P07.00	用户密码	0-65535	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	○
P14.08	CANopen模块地址	0~127	2	○
P14.09	CANopen波特率	0: 50kbps 1: 100kbps 2: 125kbps 3: 250kbps 4: 500kbps 5: 800kbps 6: 1Mbps	4	◎
P06.14	AO1输出选择	0: 运行频率 1: 设定频率 2: 斜坡给定频率 3: 运行转速(100%对应最大输出频率对应的转速) 4: 输出电流(100%对应2倍变频器额定电流) 5: 输出电流(100%对应2倍电机额定电流) 6: 输出电压(100%对应1.5倍变频器额定电压) 7: 输出功率(100%对应2倍电机额定功率) 8: 设定转矩值(100%对应2倍电机额定转矩) 9: 输出转矩(绝对值, 100%对应2倍电机额定转矩) 10: AI1输入值 11: AI2输入值 12: AI3输入值 13: 保留 14: Modbus通讯设定值1 15: Modbus通讯设定值2 16: PROFIBUS通讯设定AO1值1(1000表示100.0%) 17: PROFIBUS通讯设定AO2值1(1000表示100.0%) 18: 以太网通讯设定值1 19: 以太网通讯设定值2 20: EtherCAT/PROFINET 通讯 设定 AO1值1(1000表示100.0%) 21: EtherCAT/PROFINET 通讯 设定 AO1值2(1000表示100.0%) 22: 转矩电流(100%对应1倍电机额定电流) 23: 励磁电流(100%对应1倍电机额定电流) 24: 设定频率(双极性) 25: 斜坡给定频率(双极性) 26: 运行转速(双极性) 27: EtherCAT/PROFINET 通讯 设定 AO2值1(1000表示100.0%) 28: 来自PLC卡的AO1 29: 来自PLC卡的AO2 30: 运行转速(100%对应2倍电机额定频率对应的转速) 31: 输出转矩(实际值, 100%对应2倍电机额定转矩) 32: CANopen通讯设定AO1值1(1000表示100.0%) 33: CANopen通讯设定AO2值1(1000表示100.0%) 34: CANopen通讯设定AO1值2(10000表示100.0%) 35: CANopen通讯设定AO2值2(10000表示100.0%) 36: EtherCAT/PROFINET 通讯 设定 AO2值2(10000表示100.0%)	0	○

功能码	名称	参数详细说明	缺省值	更改
		37: 最终张力给定值 38: PROFIBUS 通讯 设定 AO1 值 2(10000表示100.00%) 39: PROFIBUS 通讯 设定 AO2 值 2(10000表示100.00%) 40: AI/AO测温 41~42: 保留 43: 吊钩绳长 注意: 端子功能40~43为GD600A特有功能。	-	-
P06.17~P06.25	AO输出上下限设置	详情请参见完整版电子说明书。	-	-
P07.00	用户密码	0-65535	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	○
P14.08	CANopen模块地址	0~127	2	○
P14.09	CANopen波特率	0: 50kbps 1: 100kbps 2: 125kbps 3: 250kbps 4: 500kbps 5: 800kbps 6: 1Mbps	4	◎

7 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。

7.1 整流单元常见故障及对策

故障码显示	故障类型	可能的原因	解决方法
Lvl	电网欠电压	● 电网电压比常规值低 20% 以上, 或者整流单元内部硬件检测电路异常。	● 检查电网输入电源。
ovl	电网过电压	● 电网电压比常规值高 20% 以上, 或者整流单元内部硬件检测电路异常。	● 检查电网输入电源。 ● 检查相关功能码的设置。
SPI1	电网缺 A 相	● 输入侧 A 相缺相, 检查 A 相的接线。	● 检查 A 相的接线, 检查电网电压。
SPI2	电网缺 B 相	● 输入侧 B 相缺相, 检查 B 相的接线。	● 检查 B 相的接线, 检查电网电压。
SPI3	电网缺 C 相	● 输入侧 C 相缺相, 检查 C 相的接线。	● 检查 C 相的接线, 检查电网电压。
PLLF	锁相失败	● 电网电压异常。	● 检查输入配线以及电网电压。
Lv	直流电压欠压	● 运行过程中母线电压欠压。	● 检查实际母线电压值。 ● 更改欠压点参数。 ● 更换主可控硅。
OV	直流母线电压过压	● 运行过程中母线电压过压。	● 检测实际母线电压值。 ● 更改过压点参数。 ● 更换主可控硅。
bCE	制动单元故障	● 制动线路故障或制动管损坏。	● 检查制动单元, 更换新制动管。 ● 增大制动电阻。
bOL	制动器过压	● 制动线路故障或制动管损坏。	● 检查制动单元, 更换新制动管。 ● 增大制动电阻。
bOC	制动器过电流	● 外接制动电阻阻值偏小。	● 更换主可控硅。
E-485	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。
E-CAN	CANopen 通讯	● 线路接触不良, 匹配电阻未	● 检查线路: 接通匹配电阻。

故障码显示	故障类型	可能的原因	解决方法
	故障	● 设置相同的波特率。 ● 检查周边环境, 排除干扰影响。 ● 周边干扰过大。	● 设置相同的波特率。 ● 检查周边环境, 排除干扰影响。
E-PN	PROFINET 通讯超时故障	● 上位机组态有误。 ● 检查周边环境, 排除干扰影响。 ● 周边干扰过大。	● 检查上位机组态。 ● 检查周边环境, 排除干扰影响。
OFFL	部分从站单元离线故障	● P17.15 实际从站数量与 P21.33 配置从站数量不符合。 ● 线路接触不良, 匹配电阻未接通。 ● 通讯波特率不匹配。 ● 通讯主从站所有地址。 ● 主从站地址设置冲突。	● 检查 P17.15 实际从站数量与 P21.33 配置从站数量。 ● 检查线路: 拔下首尾单元匹配电阻。 ● 设置相同的波特率。 ● 检查主从站所有地址。 ● 检查 CANopen 网络参数。
E-CAT	EtherCAT 通讯超时故障	● 上位机组态有误。 ● 周边干扰过大。	● 检查上位机组态。 ● 检查周边环境, 排除干扰影响。

注意: 不控整流单元无 Lvl、ovl、E-485、E-CAN、E-PN、OFFL、E-CAT 故障, 且 SPI1 故障为输入缺相故障。

7.2 逆变单元常见故障及对策

故障码显示	故障类型	可能的原因	纠正措施
OU11	E1 逆变 U 相保护	● 加减速太快。 ● 该相 IGBT 内部损坏。	● 增大加减速时间。 ● 更换逆变单元。
OU12	E2 逆变 V 相保护	● 干扰引起误动作。 ● 驱动线连接不良。 ● 是否对地短路。	● 检查设备和系统是否可靠接地。 ● 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。
OU13	E3 逆变 W 相保护	● 定期清理变频器内部粉尘或油污。	● 增大加减速时间。
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。 ● 三相输出电流不平衡。	● 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。
OC2	E5 减速过电流	● 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 (电机接地不良)。	● 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 (电机接地不良)。
OC3	E6 恒速过电流	● 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 (电机接地不良)。	● 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 (电机接地不良)。
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。	● 增大加减速时间。 ● 检查输入电压。 ● 采用转速跟踪启动。
OV2	E8 减速过电压	● 增加能耗制动组件或能量回馈单元。 ● 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。
OV3	E9 恒速过电压	● 增加能耗制动组件或能量回馈单元。 ● 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。
UV	E10 直流母线欠压	● 电网电压偏低。 ● 母线电压显示异常。 ● 缓冲接触器吸合异常。	● 调高电网输入电压。 ● 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。 ● 输入侧螺丝松动。	● 检查输入电源是否正常和输入线端是否有松动。
SPO	E14 输出侧缺相	● 输出线端有破损或对地短路。 ● 输出 U、V、W 缺相或负载三相严重不平衡。	● 检查输出线端是否有松动或破损。 ● 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 电机自主学习故障	● 电机容量与变频器容量不匹配。	● 更换变频器型号。 ● 正确设置电机类型和铭牌参数。

故障码显示	故障类型	可能的原因	纠正措施
	故障	● 设置相同的波特率。 ● 检查周边环境, 排除干扰影响。 ● 周边干扰过大。	● 设置相同的波特率。 ● 检查周边环境, 排除干扰影响。
E-PN	PROFINET 通讯超时故障	● 上位机组态有误。 ● 检查周边环境, 排除干扰影响。 ● 周边干扰过大。	● 检查上位机组态。 ● 检查周边环境, 排除干扰影响。
OFFL	部分从站单元离线故障	● P17.15 实际从站数量与 P21.33 配置从站数量不符合。 ● 线路接触不良, 匹配电阻未接通。 ● 通讯波特率不匹配。 ● 通讯主从站所有地址。 ● 主从站地址设置冲突。	● 检查 P17.15 实际从站数量与 P21.33 配置从站数量。 ● 检查线路: 拔下首尾单元匹配电阻。 ● 设置相同的波特率。 ● 检查主从站所有地址。 ● 检查 CANopen 网络参数。
E-CAT	EtherCAT 通讯超时故障	● 上位机组态有误。 ● 周边干扰过大。	● 检查上位机组态。 ● 检查周边环境, 排除干扰影响。
dEu	E34 速度偏差故障	● 负载过重或者被堵转。	● 检查负载是否过重或堵转, 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。 ● 电机自主学习参数不准。 ● 变频器未接电机。 ● 弱磁应用。	● 检查负载是否异常、过重或堵转。 ● 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。 ● 适当调整弱磁系数及电流环参数。
ENC1o	E37 编码器断线	● 编码器线序错误, 或有信号线未接好。	● 检查编码器接线。
STO	E40 STO 安全转矩停止	● 外部使能安全转矩停止功能。	● 检查机构是否存在安全隐患。 ● 检查外部 STO 安全保护信号源。
E-PN	E57 PROFINET 通讯故障	● 上位机组态有误。 ● 周边干扰过大。	● 检查上位机组态。 ● 检查周边环境, 排除干扰影响。
SECAN	E58 CAN 通讯故障	● 主站模式下, 通讯网络设置了两个或以上相同站点的从站。 ● 主站模式下, 主站检测到的从站个数与主站设定的从站个数不一致。	● 检查通讯网络中从站站点设置是否重复。 ● 检查通讯网络中各从站与主站接线。
OT	E59 电机过温故障	● 电机过温输入端子有效。 ● 温度检测电阻异常。 ● 电机长时间过载运行或其存在异常。	● 检查电机过温输入端子 (端子功能 57) 接线。 ● 检查温度传感器是否正常。 ● 检查电机, 并进行维护。
E-CAT	E66 EtherCAT 通讯故障	● 上位机组态有误。 ● 周边干扰过大。	● 检查上位机组态。 ● 检查周边环境, 排除干扰影响。
S-Err	E69 主从 CAN 从机故障	● 从机有故障。	● 检查从机状态, 清除从机故障。
EncPo	E591 全闭环位置编码器断线	● SSI 编码器接线错误或损坏。 ● SSI 卡配置错误或损坏。	● 检查 SSI 编码器接线是否异常。 ● 检查 SSI 卡配置是否正确。 ● 检查 SSI 编码器是否损坏。
ENCPI	E592 SSI 位置偏差故障	● SSI 编码器接线错误或损坏。 ● SSI 卡配置错误或损坏。	● 检查 SSI 编码器接线是否异常。 ● 检查 SSI 卡配置是否正确。 ● 检查 SSI 编码器是否损坏。
E-PUP	E593 SSI 位置前限位	● SSI 编码器接线错误或损坏。 ● SSI 卡配置错误或损坏。	● 检查 SSI 编码器接线是否异常。 ● 检查 SSI 卡配置是否正确。 ● 检查 SSI 编码器是否损坏。
E-Pdn	E594 SSI 位置后限位	● SSI 编码器接线错误或损坏。 ● SSI 卡配置错误或损坏。	● 检查 SSI 编码器接线是否异常。 ● 检查 SSI 卡配置是否正确。 ● 检查 SSI 编码器是否损坏。
E-SSd	E595 SSI 定位断线故障	● SSI 编码器接线错误或损坏。 ● SSI 卡配置错误或损坏。	● 检查 SSI 编码器接线是否异常。 ● 检查 SSI 卡配置是否正确。 ● 检查 SSI 编码器是否损坏。
E-SSS	E596 SSI 初始定位故障	● SSI 编码器接线错误或损坏。 ● SSI 卡配置错误或损坏。	● 检查 SSI 编码器接线是否异常。 ● 检查 SSI 卡配置是否正确。 ● 检查 SSI 编码器是否损坏。
E-SSF	E597 SSI 定位超时故障	● SSI 编码器接线错误或损坏。 ● SSI 卡配置错误或损坏。	● 检查 SSI 编码器接线是否异常。 ● 检查 SSI 卡配置是否正确。 ● 检查 SSI 编码器是否损坏。
-	E599 SSI 位置给定非法故障	● SSI 编码器接线错误或损坏。 ● SSI 卡配置错误或损坏。	● 检查 SSI 编码器接线是否异常。 ● 检查 SSI 卡配置是否正确。 ● 检查 SSI 编码器是否损坏。

注意: E591~E599 均为 GD600A 特有功能。

故障码显示	故障类型	可能的原因	纠正措施
	故障	● 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。	● 使电机空载, 重新辨识。 ● 检查电机接线及参数设置。 ● 检查上限频率是否大于额定频率的 2/3。
E-NET	E30 不控整流 CAN 广播故障	● 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。 ● 更换配线, 提高抗扰性。
E-CAN	E31 CANopen 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。 ● 更换配线, 提高抗扰性。

表 A-1 GD600/GD600A 整流单元额定规格

型号	电源容量 (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)
GD600A-61-022-4-B	45	22	67	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	3PH 380V
GD600A-61-022-4-B-S	45	22	67	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	3PH 380V
GD600/GD600A-71-045-4-B	76	45	135	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	3PH 380V
GD600A-61-110-4-B	169	110	276	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	3PH 380V
GD600A-61-110-4-B-S	169	110	276	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	3PH 380V
GD600/GD600A-71-160-4	215	160	380	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	3PH 380V
GD600/GD600A-71-355-4	433	355	766	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	3PH 380V

表 A-2 逆变单元额定规格

型号	额定功率 (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)
GD600/GD600A-51-1R5-4	2.5	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。	537~679VDC
GD600/GD600A-51-2R2-4	3.9	2.2	5.5	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。	537~679VDC
GD600/GD600A-51-004-4	6.4	4	9.5	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。	537~679VDC
GD600/GD600A-51-5R5-4	9.2	5.5	14	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。	537~679VDC
GD600/GD600A-51-7R5-4	12.1	7.5	18.5	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。	537~679VDC
GD600/GD600A-51-011-4	16.4	11	25	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。	537~679VDC
GD600/GD600A-51-015-4	21	15	32	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。	537~679VDC
GD600/GD600A-51-018-4	25	18.5	38	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。	537~679VDC
GD600/GD600A-51-022-4	29.6	22	45	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。	537~679VDC
GD600/GD600A-51-030-4	39.4				

Goodrive600/Goodrive600A Series High-Performance Multi-drive VFD Quick Start Guide

This guide briefly describes the external wiring, product models, terminals, keypad, quick running, common function parameter settings, common faults and solutions, and product dimensions of GD600/GD600A series VFD.

Visit www.invt.com for more information and source download. For details, see 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.

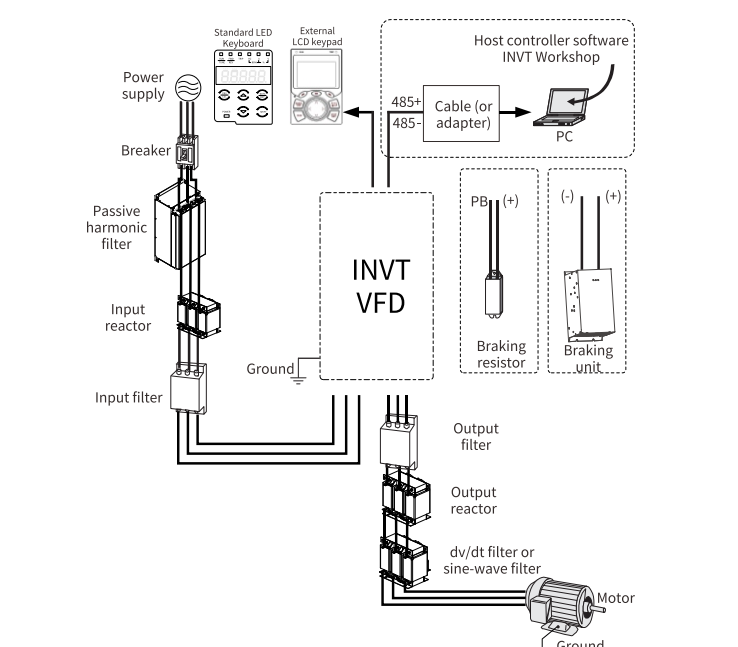
Danger

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
15 minutes	3PH 380V 132~315kW
20 minutes	3PH 380V 355kW and higher

1 External wiring



2 Product model

Field	Symbol	Field description	Example
Product series abbreviation	①	Product series abbreviation	GD600: Goodrive600 high-performance multi-drive VFD
Unit type	②	Unit type code	S1: Inverter unit 61: Uncontrolled rectifier unit 71: Half-controlled rectifier unit
Rated power	③	Power code	045: 45kW
Voltage class	④	Voltage class code	4: AC 3PH 380V(-15%)~440V(+10%) Rated voltage: 380V
Braking unit	⑤	Braking unit	Empty: No built-in braking unit B: Built-in braking unit
Order management number	⑥	Order management number	Empty: Supports bridge function; S: No bridge function

3 Terminal

Figure 3-1 GD600/GD600A series VFD typical wiring

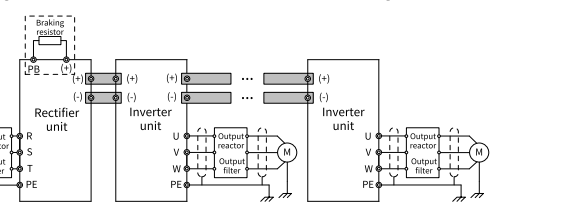


Figure 3-2 GD600/GD600A series half-controlled rectifier unit wiring

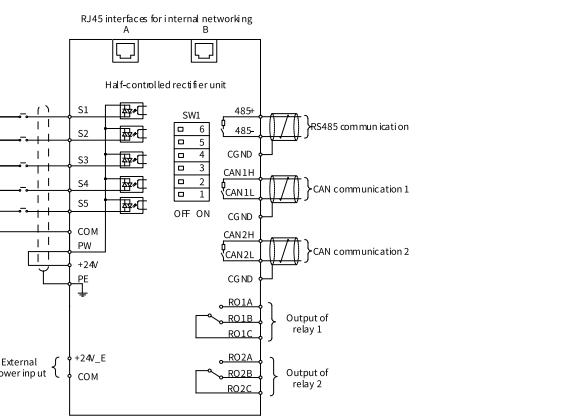


Figure 3-3 GD600A series uncontrolled rectifier unit wiring

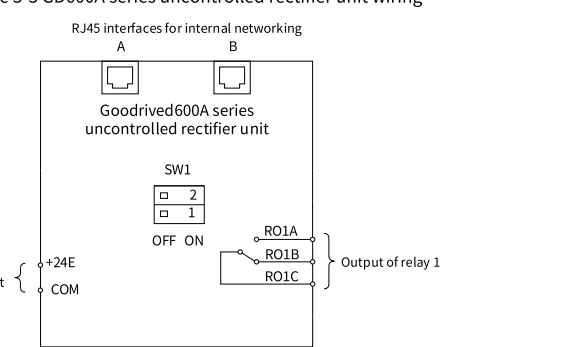


Figure 3-4 GD600/GD600A series inverter unit wiring

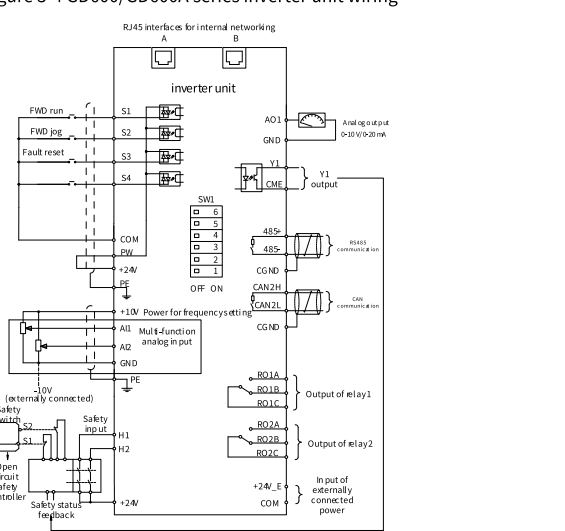


Table 3-1 VFD terminal description

Terminal type	Terminal name	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
	(+)	(+) and (-) connected to the braking unit
	(-) and PB	(-) and PB connected to the braking resistor
European-style connection terminal analog input and output	⊕	Grounding terminal for safe protection; each unit must carry one PE terminal and proper grounding is required.
	PW	Used to provide input digital working power from the external to the internal
	S1	12~30V voltage input is acceptable
	S2	Bi-direction input terminals, supporting both NPN and PNP
European-style connection terminal digital input and output	S3	Max. input frequency: 1kHz
	S4	All are programmable digital input terminals, the functions of
	S5	Max. input frequency: 1kHz
	S6	All are programmable digital input terminals, the functions of

4 Keypad

The standard keypad may vary depending on the product series. If available, you can choose an optional LCD keypad based on your needs.

LED keypad

OFF: Stopped
Running: Running
On: Running

Display area

Function key: FWD, TRIP, HZ, L, A, V, T, S, R, P, M, N, O, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, *, #, /, \, ^, _

Confirmation key

Right shift key

Power indicator

Up/Down key (to shift upward/downward, increase/decrease)

The keypad is used to set the VFD parameters. It includes a display area, function keys, a confirmation key, a right shift key, a power indicator, and a up/down key for scrolling through the parameters.

5 Quick running

Ensure that all terminals have been securely connected.

Ensure that the motor power matches the VFD power.

5.1 Check before power-on

Ensure that all terminals have been securely connected.

Ensure that the motor power matches the VFD power.

5.2 Operating upon first power-on

After confirming the wiring and power are correct, close the air switch of the AC power at the VFD input side to power on the VFD. Using a LED keypad for example, the keypad displays **8.8.8.8**, upon power-on and then the set frequency (50.00 in the example), indicating the VFD is initialized and ready to run. (For details about other types of keypad, see the corresponding product e-manual of full version.)

Figure 5-1 Rectifier unit start/stop control

The quick startup flowchart is as follows:

```

graph TD
    Start([Start]) --> PowerOff[Power off after ensuring correct wiring]
    PowerOff --> RestoreDefault[Restore to default values]
    RestoreDefault --> SetFreq[Set the running command channel (P00.02)]
    SetFreq --> SetRunCmd[Set the running command to P00.02]
    SetRunCmd --> SetStopCmd[Set the stop command to P00.03]
    SetStopCmd --> End([End])
    
```

Figure 5-2 Inverter unit start/stop control

The flowchart for the inverter unit start/stop control is as follows:

```

graph TD
    Start([Start]) --> PowerOff[Power off after ensuring correct wiring]
    PowerOff --> RestoreDefault[Restore to default values]
    RestoreDefault --> SetFreq[Set the running command channel (P00.02)]
    SetFreq --> SetRunCmd[Set the running command to P00.02]
    SetRunCmd --> SetStopCmd[Set the stop command to P00.03]
    SetStopCmd --> End([End])
    
```

6 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.)

6.1 Rectifier unit common function parameters

Function code	Name	Description	Default	Modify
P00.01	Channel of running commands	0: Keypad 1: Terminal 2: Communication Note: This function code in the uncontrolled rectifier unit is reserved.	1	⊙
P00.02	Communication mode of running commands	0: Modbus 1: CANopen 2: Programmable card 3: PROFIBUS-DP 4: PROFINET-IO/EtherCAT 5: Ethernet Note: This function code in the uncontrolled rectifier unit is reserved.	0	⊙
P00.04	Starting voltage of the braking unit	400.0~800.0V	700.0V	○
P01.14	Enabling auto run	0: Disable 1: Enable Note: This function code in the uncontrolled rectifier unit is reserved.	0	○
P05.01	Function of S1	0: No function	1	⊙
P05.02	Function of S2	1: Run (rising edge active)	2	⊙
P05.03	Function of S3	2: Fault reset (rising edge active)	0	○
P05.04	Function of S4	3: External fault (rising edge active)	0	⊙
P05.05	Function of S5	4: Incoming circuit breaker feedback (level active) 5~6: Reserved 7: Disable inverter unit run (level active) 8: Enable the inverter unit to coast to stop (level active) 9: Enable the inverter unit to stop in the set manner (level active) 10~15: Reserved Note: In non-bridged rectifier units, this function code is reserved.	0	⊙
P06.03	RO1 output	0: No output 1: Ready for running 2: Running 3: Fault output 4: Bus overvoltage 5: Bus undervoltage 6: Three-phase input overvoltage 7: Three-phase input undervoltage 8: Module overheat output 9: Radiator overheat output 10: Breaker action 11~31: Reserved Note: In non-bridged rectifier units, only the 0, 1, and 3 functions of RO1 are used.	0	○
P06.04	RO2 output	0: No output 1: Ready for running 2: Running 3: Fault output 4: Bus overvoltage 5: Bus undervoltage 6: Three-phase input overvoltage 7: Three-phase input undervoltage 8: Module overheat output 9: Radiator overheat output 10: Breaker action 11~31: Reserved Note: In non-bridged rectifier units, only the 0, 1, and 3 functions of RO1 are used.	0	○
P20.00	Local communication address	0x00~0x12 Ones place: Run mode selection 0: Run at the default direction. 1: Run at the opposite direction. 2: Disable reverse running. Tens place: Action taken when the setting frequency is negative if reverse running is disabled. 0: Decelerate to stop. 1: Run forward at zero frequency.	1	⊙
P20.01	Communication baud rate	0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 38400 bps 6: 57600 bps 7: 115200 bps Note: In non-bridged rectifier units, this function code is reserved.	4	⊙
P20.02	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 Note: In non-bridged rectifier units, this function code is reserved.	1	⊙
P21.01	CANopen module address	0~127 Note: In non-bridged rectifier units, this function code is for simplified CAN broadcast casting.	1	○
P21.29	CANopen communication baud rate	0: 50kbps 1: 100kbps 2: 125kbps 3: 250kbps 4: 500kbps 5: 800kbps 6: 1M bps Note: In non-bridged rectifier units, this function code is for simplified CAN broadcast baud rate.	4	○
P21.33	Number of CANopen slave nodes	0~31 Note: In non-bridged rectifier units, this function code is reserved.	0	○
P21.34	Number of CANopen slave	0: Slave 1: Master	0	○

6.2 Inverter unit common function parameters

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 0: Keypad 1: Terminal 2: Communication	2	⊙
P00.01	Channel of running commands	0: Keypad 1: Terminal 2: Communication	0	○
P00.02	Communication mode of running commands	0: Modbus 1: CANopen 2: Ethernet 3: EtherCAT/PROFINET 4: Programmable card 5: Wireless communication (Reserved) 6: PROFIBUS-DP	0	○
P00.03	Max. output frequency	Max(P00.04, 10.00)~590.00Hz	50.00Hz	⊙
P00.04	Upper limit of running frequency	P00.05~P00.03(Hz)	50.00Hz	⊙
P00.05	Lower limit of running frequency	0.00Hz~P00.04	0.00Hz	⊙
P00.06	Setting channel of A frequency command	0: Keypad digital 1: A1 2: A2 3: A3 4: Reserved 5: Simple PLC program 6: Multi-step speed running 7: PID control 8: Modbus communication 9: CANopen communication 10: Ethernet communication 11: Reserved 12: Pulse train AB 13: EtherCAT/PROFINET communication 14: Programmable card 15: PROFIBUS-DP 16: Tension setting (valid only for A frequency command)	0	○
P00.07	Setting channel of B frequency command	0: No output 1: Ready for running 2: Running 3: Fault output 4: Bus overvoltage 5: Bus undervoltage 6: Three-phase input overvoltage 7: Three-phase input undervoltage 8: Module overheat output 9: Radiator overheat output 10: Breaker action 11~31: Reserved Note: In non-bridged rectifier units, this function code is reserved.	11	○
P00.10	Set frequency via keypad	0.00Hz~P00.03	50.00Hz	○
P00.11	ACC time 1	0~3600.0s	Model depended	○
P00.12	DEC time 1	0~3600.0s	Model depended	○
P00.13	Running direction	0x00~0x12 Ones place: Run mode selection 0: Run at the default direction. 1: Run at the opposite direction. 2: Disable reverse running. Tens place: Action taken when the setting frequency is negative if reverse running is disabled. 0: Decelerate to stop. 1: Run forward at zero frequency.	0x00	○
P00.15	Motor parameter autotuning	Ones place: Basic motor parameter autotuning 0: No operation 1: Dynamic autotuning 2: Complete parameter static autotuning (including empty-load current and mutual inductance) 3: Partial parameter static autotuning (excluding empty-load current and mutual inductance) 4: Dynamic autotuning 2 (valid only for AMs)/VFD parameter autotuning (only for GD600A) 5: Partial parameter static autotuning 2 (valid only for AMs) Tens place: Initial magnetic pole autotuning 0: No operation 1: Rotary autotuning 2: Static autotuning 3: Rotary autotuning 2 Hundreds place: System inertia autotuning 0: No operation 1: Mode 1 2: Mode 2 Note: Only GD600A has these functions: VFD parameter autotuning (option 4 for the ones place), initial magnetic pole autotuning (tens place), and initial magnetic pole	0	⊙
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	○
P03.09	Current-loop proportional coefficient P of motor 1	0~65535 Note: It is invalid for GD60A.	1000	○
P03.11	Torque setting method selection	0: Keypad (P03.12) 1: Keypad (P03.12) 2: A1 3: A2 4: A3 5: Reserved 6: Multi-step torque 7: Modbus communication 8: CANopen communication 9: Ethernet communication 10: Reserved 11: EtherCAT/PROFINET/EtherNet/IP communication 12: Programmable card 13: PROFIBUS-DP 14: Tension setting Note: 100% corresponds to the motor rated current.	0	○
P03.54	Current loop	0~2000	400	○

6.2 Inverter unit common function parameters

Note: Function parameters may vary with product. For details, see the corresponding product e-manual of full version.

6.2 Inverter unit common function parameters

Function code	Name	Description	Default	Modify
P00.01	Channel of running commands	0: Keypad 1: Terminal 2: Communication Note: This function code in the uncontrolled rectifier unit is reserved.	1	⊙
P00.02	Communication mode of running commands	0: Modbus 1: CANopen 2: Programmable card 3: PROFIBUS-DP 4: PROFINET-IO/EtherCAT 5: Ethernet Note: This function code in the uncontrolled rectifier unit is reserved.	0	⊙
P00.04	Starting voltage of the braking unit	400.0~800.0V	700.0V	○
P01.14	Enabling auto run	0: Disable 1: Enable Note: This function code in the uncontrolled rectifier unit is reserved.	0	○
P05.01	Function of S1	0: No function	1	⊙
P05.02	Function of S2	1: Run (rising edge active)	2	⊙
P05.03	Function of S3	2: Fault reset (rising edge active)	0	○
P05.04	Function of S4	3: External fault (rising edge active)	0	⊙
P05.05	Function of S5	4: Incoming circuit breaker feedback (level active) 5~6: Reserved 7: Disable inverter unit run (level active) 8: Enable the inverter unit to coast to stop (level active) 9: Enable the inverter unit to stop in the set manner (level active) 10~15: Reserved Note: In non-bridged rectifier units, this function code is reserved.	0	⊙
P06.03	RO1 output	0: No output 1: Ready for running 2: Running 3: Fault output 4: Bus overvoltage 5: Bus undervoltage 6: Three-phase input overvoltage 7: Three-phase input undervoltage 8: Module overheat output 9: Radiator overheat output 10: Breaker action 11~31: Reserved Note: In non-bridged rectifier units, only the 0, 1, and 3 functions of RO1 are used.	0	○
P06.04	RO2 output	0: No output 1: Ready for running 2: Running 3: Fault output 4: Bus overvoltage 5: Bus undervoltage 6: Three-phase input overvoltage 7: Three-phase input undervoltage 8: Module overheat output 9: Radiator overheat output 10: Breaker action 11~31: Reserved Note: In non-bridged rectifier units, only the 0, 1, and 3 functions of RO1 are used.	0	○
P20.00	Local communication address	0x00~0x12 Ones place: Run mode selection 0: Run at the default direction. 1: Run at the opposite direction. 2: Disable reverse running. Tens place: Action taken when the setting frequency is negative if reverse running is disabled. 0: Decelerate to stop. 1: Run forward at zero frequency.	1	⊙
P20.01	Communication baud rate	0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 38400 bps 6: 57600 bps 7: 115200 bps Note: In non-bridged rectifier units, this function code is reserved.	4	⊙
P20.02	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 Note: In non-bridged rectifier units, this function code is reserved.	1	⊙
P21.01	CANopen module address	0~127 Note: In non-bridged rectifier units, this function code is for simplified CAN broadcast casting.	1	○
P21.29	CANopen communication baud rate	0: 50kbps 1: 100kbps 2: 125kbps 3: 250kbps 4: 500kbps 5: 800kbps 6: 1M bps Note: In non-bridged rectifier units, this function code is for simplified CAN broadcast baud rate.	4	○
P21.33	Number of CANopen slave nodes	0~31 Note: In non-bridged rectifier units, this function code is reserved.	0	○
P21.34	Number of CANopen slave	0: Slave 1: Master	0	○

6.2 Inverter unit common function parameters

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 0: Keypad 1: Terminal 2: Communication	2	⊙
P00.01	Channel of running commands	0: Keypad 1: Terminal 2: Communication	0	○
P00.02	Communication mode of running commands	0: Modbus 1: CANopen 2: Ethernet 3: EtherCAT/PROFINET 4: Programmable card 5: Wireless communication (Reserved) 6: PROFIBUS-DP	0	○
P00.03	Max. output frequency	Max(P00.04, 10.00)~590.00Hz	50.00Hz	⊙
P00.04	Upper limit of running frequency	P00.05~P00.03(Hz)	50.00Hz	⊙
P00.05	Lower limit of running frequency	0.00Hz~P00.04	0.00Hz	⊙
P00.06	Setting channel of A frequency command	0: Keypad digital 1: A1 2: A2 3: A3 4: Reserved 5: Simple PLC program 6: Multi-step speed running 7: PID control 8: Modbus communication 9: CANopen communication 10: Ethernet communication 11: Reserved 12: Pulse train AB 13: EtherCAT/PROFINET communication 14: Programmable card 15: PROFIBUS-DP 16: Tension setting (valid only for A frequency command)	0	○
P00.07	Setting channel of B frequency command	0: No output 1: Ready for running 2: Running 3: Fault output 4: Bus overvoltage 5: Bus undervoltage 6: Three-phase input overvoltage 7: Three-phase input undervoltage 8: Module overheat output 9: Radiator overheat output 10: Breaker action 11~31: Reserved Note: In non-bridged rectifier units, this function code is reserved.	11	○
P00.10	Set frequency via keypad	0.00Hz~P00.03	50.00Hz	○
P00.11	ACC time 1	0~3600.0s	Model depended	○
P00.12	DEC time 1	0~3600.0s	Model depended	○
P00.13	Running direction	0x00~0x12 Ones place: Run mode selection 0: Run at the default direction. 1: Run at the opposite direction. 2: Disable reverse running. Tens place: Action taken when the setting frequency is negative if reverse running is disabled. 0: Decelerate to stop. 1: Run forward at zero frequency.	0x00	○
P00.15	Motor parameter autotuning	Ones place: Basic motor parameter autotuning 0: No operation 1: Dynamic autotuning 2: Complete parameter static autotuning (including empty-load current and mutual inductance) 3: Partial parameter static autotuning (excluding empty-load current and mutual inductance) 4: Dynamic autotuning 2 (valid only for AMs)/VFD parameter autotuning (only for GD600A) 5: Partial parameter static autotuning 2 (valid only for AMs) Tens place: Initial magnetic pole autotuning 0: No operation 1: Rotary autotuning 2: Static autotuning 3: Rotary autotuning 2 Hundreds place: System inertia autotuning 0: No operation 1: Mode 1 2: Mode 2 Note: Only GD600A has these functions: VFD parameter autotuning (option 4 for the ones place), initial magnetic pole autotuning (tens place), and initial magnetic pole	0	⊙
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	○
P03.09				

Function code	Name	Description	Default	Modify
	bandwidth of motor 1	Note: It is invalid for GD600A.		
P04.01	Torque boost of motor 1	0.0~10.0% (of motor 1 rated voltage) Note: The value 0.0% indicates automatic torque boost.	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	0: No function	1	○
P05.02	Function of S2	1: Run forward	2	○
P05.03	Function of S3	2: Run reversely	7	○
P05.04	Function of S4	3: Three-wire running control 4: Jog forward 5: Jog reversely 6: Coast to stop 7: Reset faults 8: Pause running 9: External fault input 10: Increase frequency setting (UP) 11: Decrease frequency setting (DOWN) 12: Clear the frequency increase/decrease setting 13: Switch between A setting and B setting 14: Switch between combination setting and A setting 15: Switch between combination setting and B setting 16: Multi-step speed terminal 1 17: Multi-step speed terminal 2 18: Multi-step speed terminal 3 19: Multi-step speed terminal 4 20: Pause multi-step speed running 21: ACC/DEC time selection 1 22: ACC/DEC time selection 2 23: Simple PLC stop reset 24: Pause simple PLC 25: Pause PID control 26: Pause wobbling frequency 27: Reset wobbling frequency 28: Counter reset 29: Switch between speed control and torque control 30: Disable ACC/DEC 31: Trigger the counter 32: Reserved 33: Clear the frequency increase/decrease setting temporarily 34: DC braking 35: Switch from motor 1 to motor 2 36: Switch the running command channel to keypad 37: Switch the running command channel to terminal 38: Switch the running command channel to communication 39: Pre-exciting command 40: Clear electricity consumption 41: Keep electricity consumption 42: Switch the setting source of braking torque upper limit to keypad 43: Position reference point input (only valid for S2, S3 and S4) 44: Disable spindle orientation 45: Spindle zeroing / Local positioning zeroing 46: Spindle zero position selection 1 47: Spindle zeroing position selection 2 48: Spindle scale division selection 1 49: Spindle scale division selection 2 50: Spindle scale division selection 3 51: Terminal for switching between position control and speed control 52: Disable pulse input 53: Clear position deviation 54: Switch position proportional gains 55: Enable cyclic digital positioning 56: Emergency stop 57: Motor overtemperature fault input 58: Enable rigid tapping 59: Switch to V/F control 60: Switch to FVC control 61: Switch PID polarities 62: Input for bus undervoltage stop (GD600A: FVC switching to SVC enabled)	0	◎

Function code	Name	Description	Default	Modify
		63: Enable servo 64: Limit on forward running 65: Limit on reverse running 66: Clear encoder counting 67: Increase pulses 68: Enable pulse superposition 69: Decrease pulses 70: Electronic gear selection 71: Switch to the master 72: Switch to the slave 73: Roll diameter reset 74: Winding/unwinding switchover 75: Tension control pre-driving 76: Disable roll diameter calculation 77: Clear alarm display 78: Manual braking in tension control 79: Trigger a forcible material feeding interrupt signal 80: Initial roll diameter selection 1 81: Initial roll diameter selection 2 82: Reserved 83: Tension PID switchover 84: PID pause flag 85: Thickness switchover 0 86: Thickness switchover 1 87: Length clearing terminal 88: Switch over between open-loop torque mode and closed-loop speed mode (GD600A: Reserved) 89: Switch from master/slave mode (GD600A: Switch over between open-loop torque mode and closed-loop speed mode) 90: Reserved 91: Brake feedback signal 92~97: Reserved 98: Upward DEC limit position 99: Downward DEC limit position 100: Reserved 102: Brake detection 103~105: Reserved 106: Anti-sway enable 107: Switch from master/slave mode to a non master/slave mode 108~111: Reserved Note: Functions 91~111 are exclusive to GD600A.		
P05.24~P05.37	AI1/AI2 settings	For details, see the full version of corresponding product e-manual.	-	-
P06.01	Y1 output	0: Invalid	0	○
P06.03	RO1 output	1: Running	1	○
P06.04	RO2 output	2: Running forward 3: Running reversely 4: Jogging 5: VFD in fault 6: Frequency level detection FDT1 7: Frequency level detection FDT2 8: Frequency reached 9: Running in zero speed 10: Frequency upper limit reached 11: Frequency lower limit reached 12: Ready for running 13: Pre-exciting 14: Overload pre-alarm 15: Underload pre-alarm 16: Simple PLC stage completed 17: Simple PLC cycle completed 18: Set counting value reached 19: Designated counting value reached 20: External fault is valid 21: Reserved 22: Running time reached 23: Modbus communication virtual terminal output 24: PROFIBUS communication virtual terminal output 25: Ethernet communication virtual terminal output 26: DC bus voltage established 27: 2 pulse output 28: Superposing pulses 29: STO action 30: Positioning completed 31: Spindle zeroing completed 32: Spindle scale division completed 33: In speed limit 34: EtherCAT/PROFINET communication virtual terminal output 35: CANopen communication virtual terminal output 36: Speed/position control switchover completed 37: Any frequency reached	5	○

Function code	Name	Description	Default	Modify
		38~40: Reserved 41: V1 from the programmable card 42: V2 from the programmable card 43: HDO from the programmable card 44: RO1 from the programmable card 45: RO2 from the programmable card 46: RO3 from the programmable card 47: RO4 from the programmable card 48: IO card detected PT100 OH pre-alarm 49: IO card detected PT1000 OH pre-alarm 50: AAO detected OT pre-alarm 51: Stopped or running in zero speed 52: Control for tension disconnection 53: Specified roll diameter reached 54: Roll diameter of stop reached 55: Length reached 56: Reserved 57: Brake output 58: Ready for brake release 59: Ready for brake closing 60: Upward limit position reached 61: Downward limit position reached 62~64: Reserved 65: Brake malfunction Note: The terminal functions 57~65 are only for GD600A.		
		0: Running frequency 1: Set frequency 2: Ramp reference frequency 3: Rotational speed (100% corresponds to the speed corresponding to the max. output frequency) 4: Output current (100% corresponds to twice the motor rated current) 5: Output current (100% corresponds to twice the motor rated current) 6: Output voltage (100% corresponds to 1.5 times the VFD rated voltage) 7: Output power (100% corresponds to twice the motor rated power) 8: Set torque (100% corresponds to twice the motor rated torque) 9: Output torque (Absolute value, 100% corresponds to twice the motor rated torque) 10: A1 input 11: A12 input 12: A13 input 13: Reserved 14: Value 1 set through Modbus communication 15: Value 2 set through Modbus communication 16: AO1 value 1 set through PROFIBUS communication (1000 corresponds to 100.0%) 17: AO2 value 1 set through PROFIBUS communication (1000 corresponds to 100.0%) 18: Value 1 set through Ethernet communication 19: Value 2 set through Ethernet communication 20: AO1 value 1 set through EtherCAT/PROFINET communication (1000 corresponds to 100.0%) 21: AO1 value 2 set through EtherCAT/PROFINET communication (10000 corresponds to 100.00%) 22: Torque current (100% corresponds to the motor rated current) 23: Exciting current (100% corresponds to the motor rated current) 24: Set frequency (bipolar) 25: Ramp reference frequency (bipolar) 26: Rotational speed of running (bipolar) 27: AO2 value 1 set through EtherCAT/PROFINET	0	○
P06.14	AO1 output			○

Function code	Name	Description	Default	Modify
		communication (1000 corresponds to 100.0%) 28: AO1 from the programmable card 29: AO2 from the programmable card 30: Rotational speed of running (100% corresponds to the speed at twice the motor rated frequency) 31: Output torque (Actual value, 100% corresponds to twice the motor rated torque) 32: AO1 value 1 set through CANopen communication (1000 corresponds to 100.0%) 33: AO2 value 1 set through CANopen communication (1000 corresponds to 100.0%) 34: AO1 value 2 set through CANopen communication (10000 corresponds to 100.00%) 35: AO2 value 2 set through CANopen communication (10000 corresponds to 100.00%) 36: AO2 value 2 set through EtherCAT/PROFINET communication (10000 corresponds to 100.00%) 37: Final tension reference value 38: AO1 value 2 set through PROFIBUS communication (10000 corresponds to 100.00%) 39: AO2 value 2 set through PROFIBUS communication (10000 corresponds to 100.00%) 40: AI/AO based temperature measurement 41~42: Reserved 43: Hook rope length Note: The terminal functions 40~43 are only for GD600A.	-	-
P06.17~P06.25	AO output upper/lower limit settings	For details, see the full version of corresponding product e-manual.		
P07.00	User password	0-65535	0	○
P14.00	Local communication address	Note: The communication address of a slave cannot be to 0.	1	○
P14.01	Communication baud rate	0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 38400 bps 6: 57600 bps 7: 115200 bps	4	○
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	○
P14.08	CANopen module address	0~127	2	○
P14.09	CANopen communication baud rate	0: 50kbps 1: 100kbps 2: 125kbps 3: 250kbps 4: 500kbps 5: 800kbps 6: 1Mbps	4	◎

7 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".

7.1 Rectifier unit common faults and solutions

Fault code display	Fault type	Possible cause	Solution
Lvl	Grid undervoltage	• The grid voltage is 20% lower than the general value, or the internal hardware circuit of the rectifier unit is abnormal.	• Check the grid input power.
ovl	Grid overvoltage	• The grid voltage is 20% higher than the general value, or the internal hardware circuit of the rectifier unit is abnormal.	• Check the grid input power. • Check the settings of related function codes.
SP11	Grid phase-A loss	• Phase A on the input side is lost. Check the	• Check the wiring of phase A and the grid voltage.

Fault code display	Fault type	Possible cause	Solution
SP12	Grid phase-B loss	• Phase B on the input side is lost. Check the wiring of phase B.	• Check the wiring of phase B and the grid voltage.
SP13	Grid phase-C loss	• Phase C on the input side is lost. Check the wiring of phase C.	• Check the wiring of phase C and the grid voltage.
PLLf	Phase lock failure	• The grid voltage is abnormal.	• Check the input wiring and grid voltage.
Lv	DC undervoltage	• Bus undervoltage occurs during running.	• Check the actual bus voltage. • Modify the undervoltage threshold parameter. • Replace the main control board.
OV	DC bus overvoltage	• DC bus overvoltage occurs during running.	• Check the actual bus voltage. • Modify the overvoltage threshold parameter. • Replace the main control board. • Check the braking unit wiring.
bCE	Braking unit fault	• Braking circuit fault or braking pipe damage.	• Check the braking unit, and replace with a new braking pipe. • Increase the brake resistance.
bOL	Brake overload	• Braking circuit fault or braking pipe damage. • Resistance of the external braking resistor is small.	• Check the braking unit, and replace with a new braking pipe. • Increase the brake resistance.
bOC	Brake overcurrent	• Grid voltage too low. • Abnormal bus voltage display. • Abnormal buffer capacitor closing.	• Increase grid input voltage. • Contact us.
E-485	RS485 communication fault	• Baud rate set improperly. • Communication line fault. • Incorrect communication address. • Change or replace the wire or improve the anti-interference capability.	• Set a proper baud rate. • Check the wiring of communication interfaces. • Set the communication address correctly. • Change or replace the wire or improve the anti-interference capability.
E-CAN	CANopen communication fault	• Line contact is poor. The matching resistor is not switched on. • Communication baud rates do not match. • The peripheral interference is too large.	• Check the lines and switch on the matching resistor. • Set the same baud rate. • Check the surrounding environment, and eliminate interference effects.
E-PN	PROFINET communication timeout	• The configuration on the host controller is incorrect. • Check the surrounding environment, and eliminate interference effects.	• Check the configuration on the host controller. • Check the surrounding environment, and eliminate interference effects.
SPO	Phase loss on output side	• The number of actual slave nodes (P17.15) conflicts with the number of set slave nodes (P21.33). • Line contact is poor. The matching resistor is not switched on. • Communication baud rates do not match. • The master/slave addresses conflict.	• Check the values of P17.15 and P21.33. • Check the lines and switch on the matching resistors at the beginning and end units. • Set the same baud rate. • Check all master/slave addresses. • Check CANopen network parameters.
OH2	Inverter module overheating	• 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	• Baud rate set improperly. • Communication line fault. • Incorrect communication address. • Communication suffers from strong interference.	• Set a proper baud rate. • Check the wiring of communication interfaces. • Replace cables to enhance anti-interference.
tE	E20 Motor autotuning fault	• The motor capacity does not match the VFD capacity. • Incorrect motor parameter settings. • The parameters	• Change the VFD model. • Set the proper motor type and nameplate parameters. • Empty the motor load and carry out autotuning again. • Check motor wiring and

Note: The uncontrolled rectifier unit does not have faults including Lvl, ovl, E-485, E-CAN, E-PN, OFFL, and E-CAT, and SP11 is an input phase loss fault.

7.2 Inverter unit common faults and solutions

Fault code display	Fault type	Possible cause	Solution
Out1	Inverter U-phase protection	• ACC/DEC too fast. • IGBT module is damaged.	• Increase ACC/DEC time. • Replace the inverter unit.
Out2	Inverter V-phase	• Misoperation caused by interference.	• Check whether the devices and system are grounded reliably.

Fault code display	Fault type	Possible cause	Solution
OUT3	E3 Inverter W-phase protection	• Drive wires connected poorly. • To-ground short circuit occurred. • Sparks occurred inside due to poor use environment conditions.	• 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.
OC1	E4 Overcurrent during ACC	• ACC/DEC too fast.	• Increase ACC/DEC time.
OC2	E5 Overcurrent during DEC	• Grid voltage too low. • VFD power too small. • Load transient or exception occurred. • Three-phase output current imbalance.	• Increase grid input voltage. • Select a VFD with larger power. • Check for motor stalling, short connection, and load device exceptions. • Check for abnormal VFD three-phase output voltage and motor three-phase resistance imbalance.
OC3	E6 Overcurrent during constant speed running	• Strong external interference sources (contactor switchover or improper grounding).	• Check for strong interference (whether motor cable far away from contactor and system grounded reliably).
OV1	E7 Overvoltage during ACC	• ACC/DEC time is too short.	• Increase ACC/DEC time.
OV2	E8 Overvoltage during DEC	• Input voltage exception. • The motor starts during rotating. • Load energy regeneration is too large. • Dynamic braking disabled.	• Check the input voltage. • Use the speed tracking start function. • Add dynamic braking devices or regenerative units. • Set dynamic braking function parameters.
OV3	E9 Overvoltage during constant speed running	• Grid voltage too low. • Abnormal bus voltage display. • Abnormal buffer capacitor closing.	• Increase grid input voltage. • Contact us.
UV	E10 DC bus undervoltage	• Grid voltage too low. • Abnormal bus voltage display. • Abnormal buffer capacitor closing.	• Increase grid input voltage. • Contact us.
OL1	E11 Motor overload	• Grid voltage 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. • The motor in rotating is restarted. • Grid voltage too low. • Load is too large. • 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 Input side phase loss	• R/S/T input phase loss or violent fluctuation. • Input-side screws loosened.	• Check for abnormal input power and loose input cables.
SPO	E14 Phase loss on output side	• Output cables are 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 overheating	• 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	• Baud rate set improperly. • Communication line fault. • Incorrect communication address. • Communication suffers from strong interference.	• Set a proper baud rate. • Check the wiring of communication interfaces. • Replace cables to enhance anti-interference.
tE	E20 Motor autotuning fault	• The motor capacity does not match the VFD capacity. • Incorrect motor parameter settings. • The parameters	• Change the VFD model. • Set the proper motor type and nameplate parameters. • Empty the motor load and carry out autotuning again. • Check motor wiring and

Fault code display	Fault type	Possible cause	Solution
		gained from autotuning deviate sharply from the standard parameters. • Autotuning timeout.	parameter settings. • Check whether the upper limit frequency is greater than 2/3 of the rated frequency.
OC1	E4 Overcurrent during ACC	• ACC/DEC too fast.	• Increase ACC/DEC time.
OC2	E5 Overcurrent during DEC	• Grid voltage too low. • VFD power too small. • Load transient or exception occurred. • Three-phase output current imbalance.	• Increase grid input voltage. • Select a VFD with larger power. • Check for motor stalling, short connection, and load device exceptions. • Check for abnormal VFD three-phase output voltage and motor three-phase resistance imbalance.
OC3	E6 Overcurrent during constant speed running	• Strong external interference sources (contactor switchover or improper grounding).	• Check for strong interference (whether motor cable far away from contactor and system grounded reliably).
OV1	E7 Overvoltage during ACC	• ACC/DEC time is too short.	• Increase ACC/DEC time.
OV2	E8 Overvoltage during DEC	• Input voltage exception. • The motor starts during rotating. • Load energy regeneration is too large. • Dynamic braking disabled.	• Check the input voltage. • Use the speed tracking start function. • Add dynamic braking devices or regenerative units. • Set dynamic braking function parameters.
OV3	E9 Overvoltage during constant speed running	• Grid voltage too low. • Abnormal bus voltage display. • Abnormal buffer capacitor closing.	• Increase grid input voltage. • Contact us.
UV	E10 DC bus undervoltage	• Grid voltage too low. • Abnormal bus voltage display. • Abnormal buffer capacitor closing.	• Increase grid input voltage. • Contact us.
OL1	E11 Motor overload	• Grid voltage 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. • The motor in rotating is restarted. • Grid voltage too low. • Load is too large. • 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 Input side phase loss	• R/S/T input phase loss or violent fluctuation. • Input-side screws loosened.	• Check for abnormal input power and loose input cables.
SPO	E14 Phase loss on output side	• Output cables are 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 overheating	• 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	• Baud rate set improperly. • Communication line fault. • Incorrect communication address. • Communication suffers from strong interference.	• Set a proper baud rate. • Check the wiring of communication interfaces. • Replace cables to enhance anti-interference.
tE	E20 Motor autotuning fault	• The motor capacity does not match the VFD capacity. • Incorrect motor parameter settings. • The parameters	• Change the VFD model. • Set the proper motor type and nameplate parameters. • Empty the motor load and carry out autotuning again. • Check motor wiring and

Fault code display	Fault type	Possible cause	Solution
		communication fault	the host controller is incorrect. • The peripheral interference is too large.
S-Err	E69 CAN slave fault in master/slave mode	• A slave fault occurs.	• Check the slave status and remove the slave fault.
EncPo	E591 Full closed-loop position encoder disconnection		• Check whether the SSI encoder wiring is abnormal. • Check whether the SSI card configuration is incorrect.
ENCPI	E592 SSI position deviation fault		• Check whether the SSI encoder is damaged.
E-PUP	E593 SSI position front limit		
E-Pdn	E594 SSI position rear limit	• Incorrect or damaged SSI encoder wiring.	
E-SSd	E595 SSI positioning disconnection fault	• Incorrectly configured or damaged SSI card.	
E-SSS	E596 SSI initial positioning fault		
E-SSF	E597 SSI positioning timeout fault		
-	E599 SSI position reference invalid		

Note: E591~E599 are only for GD600A.

Appendix A Product specifications

Table A-1 Rectifier unit rated specifications

Model	Power capacity (kVA)	Rated output power (kW)	Rated output current DC (A)	Max. working temperature (°C)	Rated power frequency (Hz)	Rated power voltage (V)
GD600A-61-022-4-B	45	22	67	50°C. Derate by 1% for every increase of 1°C when the temperature exceeds 40°C.	50Hz/60Hz	3PH 380V
GD600A-61-022-4-B-S	45	22	67			
GD600/GD600A-71-045-4-B	76	45	135			
GD600A-61-110-4-B	169	110	276			
GD600A-61-110-4-B-S	169	110	276			
GD600/GD600A-71-160-4	215	160	380			
GD600/GD600A-71-355-4	433	355	766			

Table A-2 Inverter unit 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)
GD600/GD600A-51-1R5-4	2.5	1.5	3.7			
GD600/GD600A-51-2R2-4	3.9	2.2	5.5			
GD600/GD600A-51-004-4	6.4	4	9.5			
GD600/GD600A-51-5R5-4	9.2	5.5	14			
GD600/GD600A-51-7R5-4	12.1	7.5	18.5			
GD600/GD600A-51-011-4	16.4	11	25			
GD600/GD600A-51-015-4	21	15	32			
GD600/GD600A-51-018-4	25	18.5	38			
GD600/GD600A-51-022-4	29.6	22	45			
GD600/GD600A-51-030-4	39.4	30	60			
GD600/GD600A-51-037-4	49.3	37	75			
GD600/GD600A-51-045-4	60.5	45	92			
GD600/GD600A-51-055-4	75.7	55	115			
GD600/GD600A-51-075-4	98.7	75	150			
GD600/GD600A-51-090-4	118.9	90	180			
GD600/GD600A-51-110-4	141.5	110	215			
GD600/GD600A-51-132-4	171.1	132	260			
GD600/GD600A-51-160-4	200.7	160	305			

50°C. Derate by 1% for every increase of 1°C when the temperature exceeds 40°C.