

功能码	名称	说明	缺省值	更改
		1: PROFINET通信断线恢复后, 故障自动复位 十位: 0: EtherNet/IP通讯断线恢复后, 需手动复位 1: EtherNet/IP通讯断线恢复后, 故障自动复位		
P19.15	变频器控制字	0x0000~0xFFFF	0x0000	●
P19.16	变频器状态字	0x0000~0xFFFF	0x0000	●
P20.00	编码器类型显示	0: 增量型编码器 1: 旋变编码器 2: Sin/Cos正弦弦编码器 3: Endat绝对值编码器	0	●
P20.01	编码器脉冲数	0~16000	1024	⊙
P20.02	编码器方向	0x000~0x111 个位: A8 方向 0: 正向 十位: Z 脉冲方向 (保留) 0: 保留 百位: CD/UVW 磁极信号方向 0: 正向 1: 反向	0x000	⊙
P20.03	编码器断线故障检测时间	0.0~10.0s	2.0s	○
P90.00~P90.15	DP自定义控制字1 位0~15选择	详情请参见完整版电子说明书	-	-
P90.18~P90.33	DP自定义控制字2 位0~15选择	详情请参见完整版电子说明书	-	-
P90.34~P90.49	DP自定义状态字1 位0~15选择	详情请参见完整版电子说明书	-	-
P90.50~P90.65	DP自定义状态字2 位0~15选择	详情请参见完整版电子说明书	-	-
P92.00	供水休眠功能选择	0~1 0: 无效 1: 有效	0	⊙
P92.02	休眠检查方式选择	0~1 0: 按设定频率小于等于休眠开始频率 (P92.03) 的方式休眠 1: 按反馈压力值大于等于休眠开始压力设定值 (P92.04) 的方式休眠	0	⊙
P93.00	PT100/PT1000温度检测使能	0x00~0x11 个位: PT100 温度检测 0: 不能 1: 使能 十位: PT1000 温度检测 0: 不能 1: 使能	0x00	⊙
P93.18	警告显示值	0: 无警告 1: PT100过温警告 (A-Ot1) 2: PT1000过温警告 (A-Ot2) 3: AIAO过温警告 (A-OHt) 4: PTC过温警告 (A-PTC) 5: AI5过温警告 (A-Ot5) 6: AI6过温警告 (A-Ot6) 7: AI7过温警告 (A-Ot7) 8: 逆变模块过温警告 (A-INV) 9: 整流模块过温警告 (A-REC)	0	●
P93.20	AIAO检测电机温度传感器类型	0~4 0: 无输入 1: PT100输入 2: PT1000输入 3: KTY84输入 4: PTC输入 注意: 主控板仅AI1支持AIAO测温, AI2不支持测温功能。	0	○
P93.21	AIAO检测温度值	-20.0~200.0℃	0.0℃	●
P93.24	PTC电机保护方式选择	0~2 0: 不检测 1: S端子输入保护 2: AIAO检测保护 注意: 将SW4拨到PTC时, S4端子支持PTC测温。	0	○
P93.27	PTC用AIAO检测时实际阻值	0~60000Ω	0Ω	●
P94.00	抱闸使能	0~1 0: 不能 1: 使能	0	⊙
P94.01	抱闸反馈模式	0~1 0: 不带反馈信号 1: 带反馈信号	1	⊙
P94.02~P94.08	抱闸时序相关参数	详情请参见完整版电子说明书	-	-

6 常见警告、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。

警告码显示	警告类型	可能的原因	纠正措施
A-Ot1	PT100 过温警告	● 调整负载避免出现长时间过载。 ● 定期清理变频器内部粉尘或油污。	● 检查输入电压。 ● 采用转速跟踪启动。 ● 需增加能耗制动功能或能量回馈单元。 ● 设置能耗制动功能参数。
A-Ot2	PT1000 过温警告	● 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)。 ● 匹配输出电机器, 降低电流谐波大。	● 调整过温警告点到合理范围。 ● 更换更大功率的逆变单元。 ● 检查设备和系统是否可靠接地。 ● 调整负载运行工况, 避免长时间过载运行。 ● 调整过温警告点到合理范围。
A-OHt	AIAO 过温警告	● 电机出现堵转。 ● 电机出现短路。 ● 电机出现三相不平衡。 ● 过温警告点偏低。	● 检查输入电压。 ● 采用转速跟踪启动。 ● 需增加能耗制动功能或能量回馈单元。 ● 设置能耗制动功能参数。
A-PTC	PTC 过温警告	● 增量型编码器 1: 旋变编码器 2: Sin/Cos正弦弦编码器 3: Endat绝对值编码器	● 检查输入电压。 ● 采用转速跟踪启动。 ● 需增加能耗制动功能或能量回馈单元。 ● 设置能耗制动功能参数。
A-INV	逆变模块过温警告	● 变频器过载。 ● 变频器载频过高。 ● 过温警告点偏低。	● 检查输入电压。 ● 采用转速跟踪启动。 ● 需增加能耗制动功能或能量回馈单元。 ● 设置能耗制动功能参数。
A-REC	整流模块过温警告	● 变频器过载。 ● 过温警告点偏低。	● 检查输入电压。 ● 采用转速跟踪启动。 ● 需增加能耗制动功能或能量回馈单元。 ● 设置能耗制动功能参数。
A-AI1OPn	PT1000 断线警告	● 温度传感器断线。	● 检查温度传感器接线, 正确接线。
A-AI2OPn	PT1000 断线警告	● 温度传感器断线。	● 检查温度传感器接线, 正确接线。
A-OPn	AIAO 断线警告	● 温度传感器断线。	● 检查温度传感器接线, 正确接线。
A-OV	母线过压警告	● 加速时间过短。 ● 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。	● 增大加速时间。 ● 检查输入电压。 ● 采用转速跟踪启动。 ● 需增加能耗制动功能或能量回馈单元。 ● 联系厂家。
A-UV	母线欠压警告	● 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异常。	● 调高电网输入电压。 ● 联系厂家。
A-DP	DP 通讯断线警告	● DP 通讯网线接触不良或者断开。 ● DP 通讯组态异常。 ● DP 通讯存在较大干扰。 ● P15.43 设备 ID 号不匹配。	● 检查 DP 通讯链路, 正确连线。 ● 排查 DP 通讯干扰源。 ● 检查设备和系统是否可靠接地。 ● 设置正确的设备 ID 号。
A-PN	PN 通讯断线警告	● PN 通讯网线接触不良或者断开。 ● PN 通讯组态异常。 ● PN 通讯存在较大干扰。 ● PN 通讯远端干扰源。 ● 检查设备和系统是否可靠接地。	● 检查 PN 通讯链路, 正确连线。 ● 正确进行 PN 通讯组态。 ● 排查 PN 通讯 远离干扰源。 ● 检查设备和系统是否可靠接地。
A-OL	过载警告	● 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。 ● 变频功率更大的变频器。 ● 选择功率更大的变频器。 ● 调整合适的过载输出方式。 ● 调整过载点到合理范围。	● 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。 ● 调整合适的过载输出方式。 ● 调整过载点到合理范围。
A-UL	欠载警告	● 欠载检出水平偏高。 ● 变频器与电机选型不合理。 ● 检查负载工况。	● 调整欠载检出水平到合理范围。 ● 检查负载工况。
A-FL	电机风机断线警告	● 风机反馈信号断线。 ● 电机风机应答信号丢失检测时间太久。	● 检查风机反馈信号, 正确接线。 ● 调整电机风机应答信号丢失检测时间到合理范围。

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	● 增大加速时间。 ● 更换逆变单元。
OUt2	E2	逆变单元 V 相保护	● 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。
OUt3	E3	逆变单元 W 相保护	● 驱动线连接不良。 ● 是否对地短路。 ● 机路使用环境差导致内部出现火花。 ● 定期清理变频器内部粉尘或油污。
OC1	E4	加速过电流	● 增大加速时间。 ● 调高电网输入电压。 ● 变频器功率偏小。 ● 变频功率更大的变频器。
OC2	E5	减速过电流	● 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)。 ● 增大加速时间。
OC3	E6	恒速过电流	● 外部存在强干扰源 (系统有接触器切换, 系统可靠接地)。 ● 增大加速时间。
OV1	E7	加速过电压	● 加速时间过短。

故障码显示		故障类型	可能的原因	纠正措施
OV2	E8	减速过电压	● 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。	● 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。
OV3	E9	恒速过电压	● 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异常。	● 调高电网输入电压。 ● 联系厂家。
UV	E10	母线欠压故障	● 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。
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。 ● 避免电机再启动或进行转速跟踪启动。 ● 调高电网输入电压。 ● 变频功率更大的变频器。 ● 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。 ● 输入侧螺丝是否紧固。 ● 输出线缆有破损或对地短路。	● 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。 ● 检查输出线缆是否有松动或破损。
SPO	E14	输出侧缺相	● 输出 U、V、W 缺相或负载三相严重不对称。	● 检查负载是否波动大和电机三相阻抗是否平衡。 ● 检查输出线是否有松动或破损。
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, 重新学习。 ● 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	● 负载过重或被堵转。	● 检查负载是否异常或过重, 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	失速故障	● 负载异常。 ● 同步电机参数设置是否正确。 ● 电机自学习参数不准。 ● 变频器未接电机。 ● 是否为弱磁应用。	● 检查负载是否异常、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。 ● 增加失速检出时间。 ● 适当调整弱磁系数、电流环参数。
E-DP	E29	PROFIBUS 通讯故障	● DP 通讯网线接触不良或者断开。 ● DP 通讯组态异常。 ● DP 通讯存在较大干扰。 ● P15.43 设备 ID 号不匹配。	● 检查 DP 通讯链路, 正确连线。 ● 排查 DP 通讯干扰源。 ● 检查设备和系统是否可靠接地。 ● 设置正确的设备 ID 号。
ENCIO	E37	编码器断线故障	● 编码器接触不良。 ● 编码器物理断线。	● 检查编码器, 确保正确接线。 ● 联系厂家。
ENCID	E38	编码器反向故障	● 检查编码器线序。 ● 检查编码器安装方式。	● 调整编码器线序。 ● 修改变频器编码器方向。
STO	E40	安全转矩停止	● 安全转矩信号正确动作与误动作。 ● 安全转矩信号供电异常。	● 检查接线, 确保接线正确。 ● 正确操作与使用安全转矩功能。
tPF	E81	转矩验证故障	● 松闸电流设定值及转矩验证故障检出时间设置不合理。 ● 实际输出电流未达到设定松闸电流。	● 检查松闸电流的设定值是否偏大。 ● 检查转矩验证故障检出时间是否偏小。 ● 检查电机额定功率是否设置正确。
E-PN	E57	PROFINET 通讯超时故障	● PN 通讯网线接触不良或者断开。 ● PN 通讯组态异常。 ● PN 通讯存在较大干扰。	● 检查 PN 通讯链路, 正确连线。 ● 正确进行 PN 通讯组态。 ● 排查 PN 通讯, 远离干扰源。 ● 检查设备和系统是否可靠接地。
E-FL	E91	电机风机应答断线	● 风机反馈信号断线。 ● 电机风机应答信号丢失。	● 检查风机反馈信号, 正确接线。 ● 调整电机风机应答信号丢失检测时间。

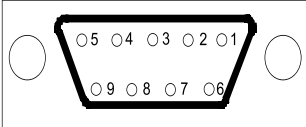
故障码显示	故障类型	可能的原因	纠正措施
		检测时间太久。	时间到合理范围。

7 常用通讯卡及 PG 卡

7.1 常用通讯卡

7.1.1 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	-
3	B-Line
4	RTS
5	GND_BUS
6	+5V BUS
8	A-Line
Housing	SHLD

7.1.2 CAN 多协议通讯卡 (EC-TX505D)

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	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。

1	2	协议类型
OFF	OFF	CANopen
ON	OFF	CAN 主从

7.1.3 PROFINET 通讯卡 (EC-TX509)、EtherNet/IP 通讯卡 (EC-TX510) 和 Modbus TCP 通讯卡 (EC-TX515)、三合一卡、多合一卡

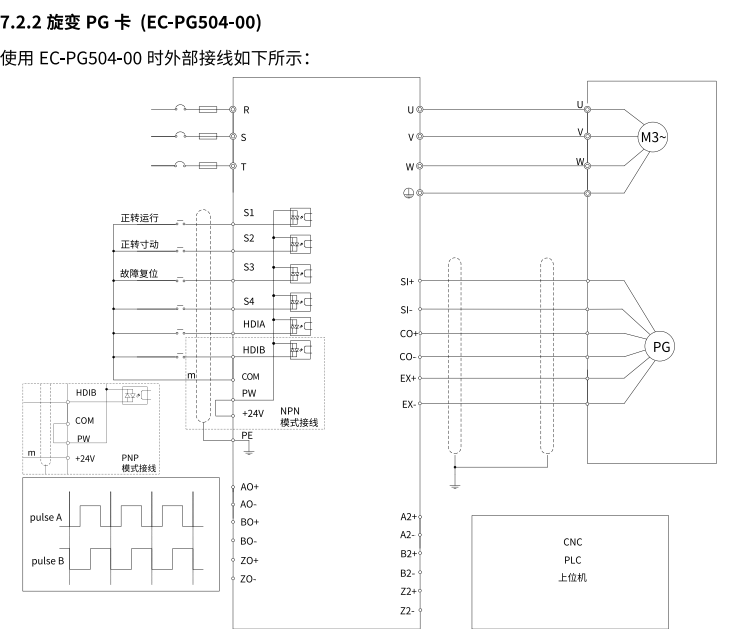
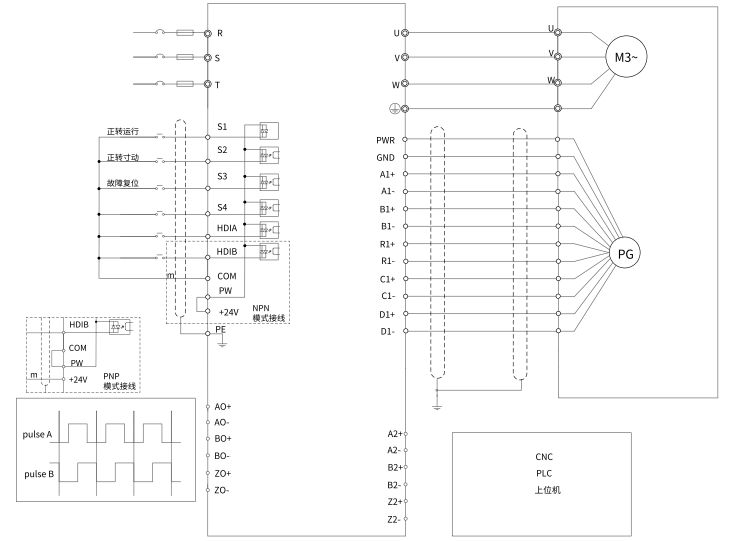
采用标准的 RJ45 接口, 端子信号定义如下:

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-)

7.2 常用编码器 PG 卡

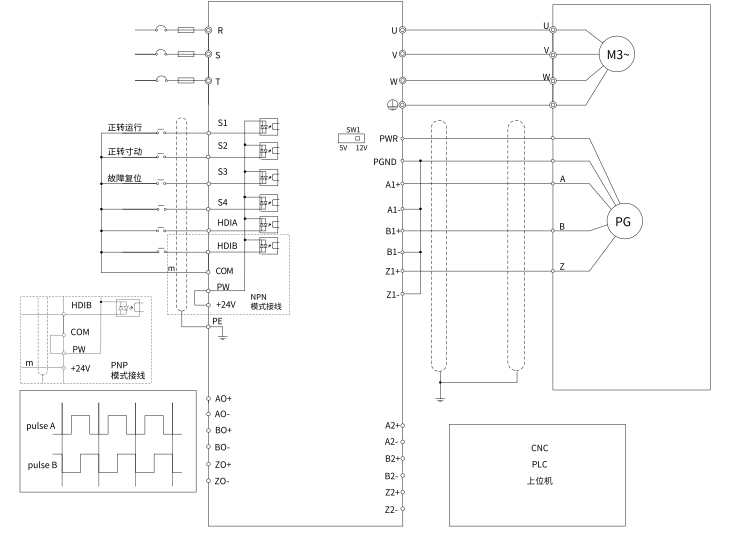
7.2.1 正弦弦 PG 卡 (EC-PG502)

带 CD 信号的编码器的外部接线如下所示:

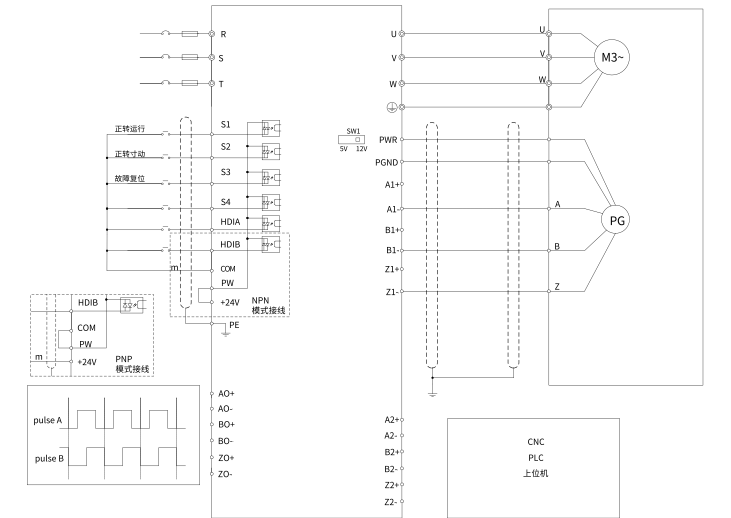


7.2.2 多功能增量 PG 卡 (EC-PG505-12)

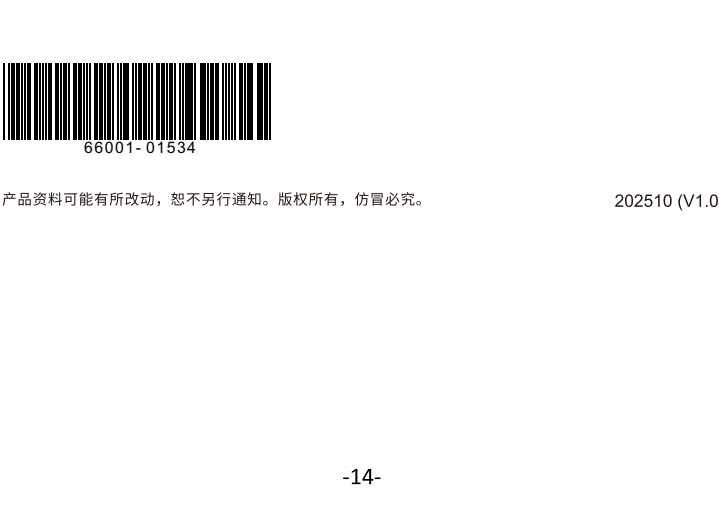
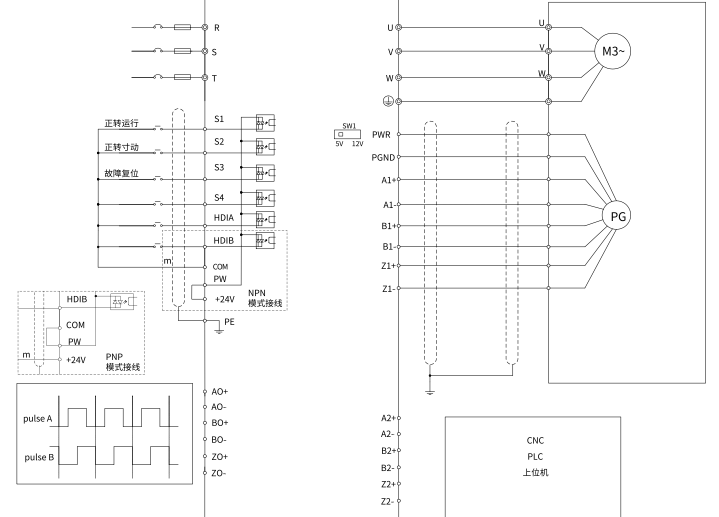
与集电极开路型编码器配套使用时的外部接线如下所示:



与推挽型编码器配套使用时的外部接线如下所示:



与差分型编码器配套使用时的外部接线如下所示:



IPE300-S VFD Quick Commissioning Guide

This guide briefly describes the external wiring, terminals, keypad, quick running, common function parameter settings, common faults and solutions, and widely used communication cards and PG cards of the IPE300-S variable-frequency drive (VFD).

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

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

Warning

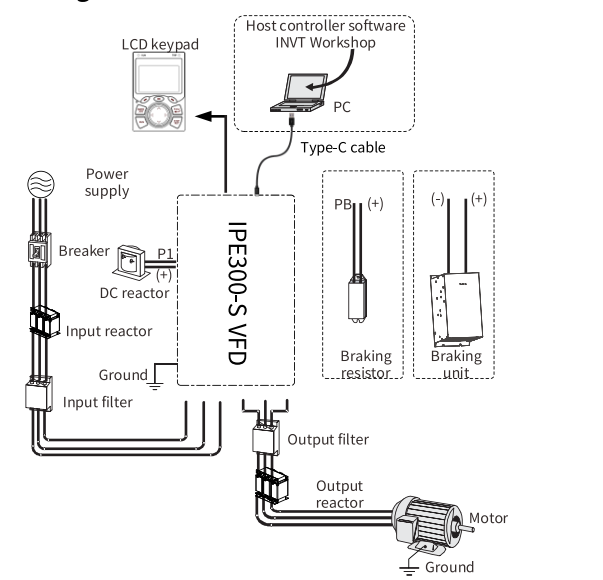
- This guide only provides the basic installation and commissioning information. Failure to comply with the safety instructions and installation and commissioning instructions in the relevant documentation may result in accidents such as equipment damage, personal injury, or even death.
- Only trained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

Danger

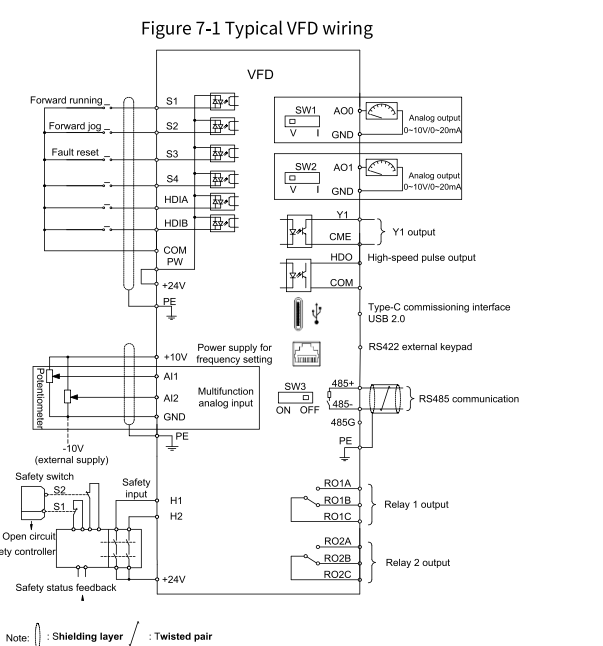
- Do not perform any operations, including wiring, inspection, or component replacement, when the power supply is applied. Before performing these operations, ensure all the input power supplies have been disconnected, and wait for at least the time designated on the VFD or until the DC bus voltage is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



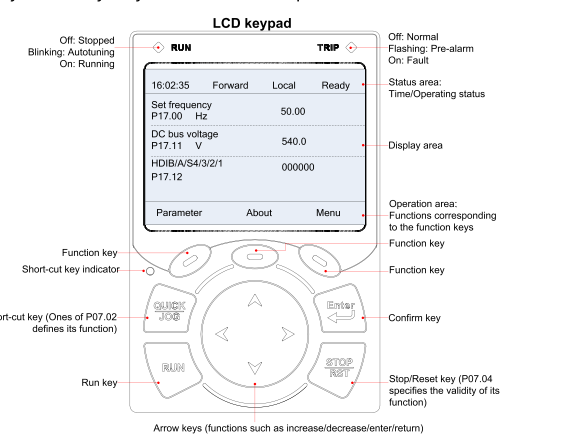
2 Terminal



Terminal	Description
Main circuit terminals	
R, S, T	3PH AC input terminals, connected to the grid.
U, V, W	3PH AC output terminals, usually connected to the motor.
P1	• P1 and (+) connect to external DC reactor terminals. • (+) and (-) connect to external braking unit terminals or the shared DC bus terminals. • PB and (-) connect to external braking resistor terminals.
(+)	
(-)	
PB	
PE	PE terminal. The PE terminals of each machine must be grounded reliably.
Control circuit terminals	
+10V	Locally provided +10V power supply. Max. output current: 30mA.
AI1	Analog input. Range: 0~10V/0~20mA. Function code P05.50 specifies whether voltage or current is used for input. Input impedance: 20kΩ (voltage input), 250Ω (current input). Load capacity: 50mA (voltage input). Resolution: 1% accuracy across the full range.
AI2	Analog input. Range: ~10V~+10V. Resolution: 1% accuracy across the full range.
GND	+10V reference ground.
AO0	Analog output. Range: 0~10V/0~20mA. Whether voltage or current is used for output is set through the SW1 switch. Resolution: 1% accuracy across the full range.
AO1	Analog output. Range: 0~10V/0~20mA. Whether voltage or current is used for output is set through the SW2 switch. Resolution: 1% accuracy across the full range.
RO1A	Relay output. RO1A: NO; RO1B: NC; RO1C: common. Contact capacity: 3A/AC 250V, 1A/DC 30V.
RO1B	
RO1C	
RO2A	Relay output. RO2A: NO; RO2B: NC; RO2C: common. Contact capacity: 3A/AC 250V, 1A/DC 30V.
RO2B	
RO2C	
HDO	Switch capacity: 50mA/30V. Output frequency range: 0~50kHz. Duty ratio: 50%. It can be used as a standard DO terminal with push-pull output. You can set its function by setting P06.00.
COM	Common terminal of open collector output; short connected to COM by default.
CME	
Y1	Switch capacity: 50mA/30V. Output frequency range: 0~1kHz.
485+	RS485 differential signal communication port. Use shielded twisted pairs for standard RS485 communication interfaces. You can determine whether to connect the 1200 terminal matching resistor of RS485 communication through the corresponding switch SW3.
485-	
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.
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 function codes.	
• Used as high frequency pulse input channels, in addition to digital input channels. • Max. input frequency: 50kHz. • Duty ratio: 30%~70%. • Supports quadrature encoder input when both HDIA and HDIB are available, with the speed measurement function.	
Safe torque off (STO) inputs	
• STO redundant input, connected to the external NC contact. When the contact opens, STO acts and the VFD stops output. • Safety input signal wires use shielded wires whose length is within 25m. • The H1 and H2 terminals are short connected to +24V by default. Remove the short connectors from the terminals before using the STO function.	

3 Keypad

The standard keyboard may vary between different product series.



4 Quick running

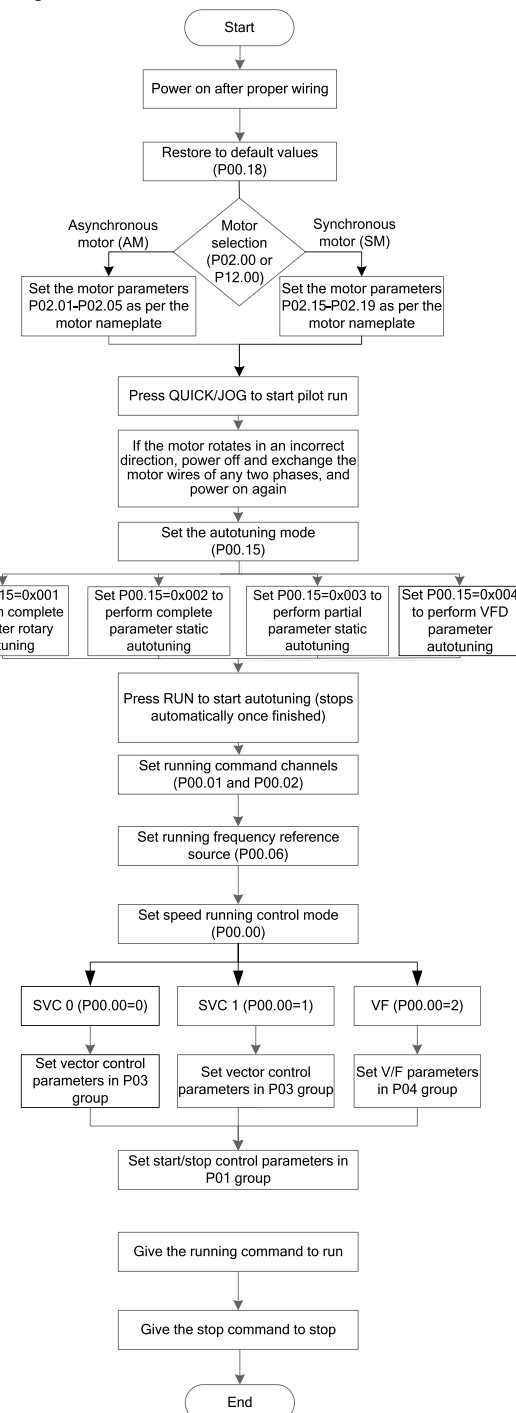
4.1 Check before power-on

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

4.2 First power-on

Ensure the wiring and power are correct, and close the air switch of the AC power at the VFD input side to power on the VFD. The LCD keypad interface enters the setup wizard, which guides you to complete the setup.

The quick startup diagram is as follows:



5 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 the stopped or running state.

"⊙" indicates that the value of the parameter cannot be modified when the VFD is in the 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.

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

Function code	Name	Description	Default	Modify
P00.00	Speed control mode	0: SVC 0 1: SVC 1 2: VF control 3: Closed-loop vector control mode	2	⊙
P00.01	Running command channel	0: Keypad 1: Terminal 2: Communication	0	○
P00.02	Communication running command channel	0: Modbus/Modbus TCP communication 1: PROFIBUS/CANopen/DeviceNet communication 2: Ethernet communication 3: EtherCAT/PROFINET/Ethernet IP communication 4: Programmable card 5: Wireless communication card 6: USB communication 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	Model depended (50.00Hz)	⊙
P00.04	Running frequency upper limit	P00.05~P00.03 (Hz) (Max. output frequency)	Model depended (50.00Hz)	⊙
P00.05	Running frequency lower limit	0.00Hz~P00.04 frequency upper limit (Running)	0.00Hz	⊙
P00.06	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 setting 13: EtherCAT/PROFINET/ EtherNet IP communication 14: Programmable card 15: AI5 16: AI6 17: AI7 18: Reserved	0	○
P00.07	B frequency command	Set P00.15=0x001 to perform complete parameter static autotuning Set P00.15=0x002 to perform partial parameter static autotuning Set P00.15=0x003 to perform partial parameter static autotuning Set P00.15=0x004 to perform partial parameter static autotuning	18	○
P00.10	Frequency set by keypad	0.00Hz~P00.03 (Max. output frequency)	Model depended (50.00Hz)	○
P00.11	ACC Time 1	0.0~3600.0s	Model depended (20.00s)	○
P00.12	DEC time 1	0.0~3600.0s	Model depended (20.00s)	○
P00.13	Running direction	0: Run in the default direction 1: Run in the opposite direction 2: Disable reverse running	0	○
P00.14	Carrier frequency setting		Model depended (8kHz)	○
P00.15	Motor parameter autotuning	0x000~0x234 Ones: Motor basic parameter autotuning 0: No operation 1: Complete parameter rotary autotuning 2: Complete parameter static autotuning 3: Partial parameter static autotuning 4: VFD parameter autotuning Tens: Initial pole angle autotuning 0: No operation 1: Rotary autotuning 2: Static autotuning 3: Rotary autotuning 2 Hundreds: System inertia autotuning 0: No operation 1: Mode 1 2: Mode 2	0x000	⊙
P00.18	Function parameter restoration	0: No operation	0	⊙

Function code	Name	Description	Default	Modify
P01.00	Start mode	1: Restore to default values (excluding motor parameters) 2: Clear fault records 5: Restore to default values (factory test mode) 6: Restore to default values (including motor parameters) 0: Direct start 1: Start after DC braking (without excitation) 2: Start after speed tracking (with excitation) 3: Start after speed tracking (without excitation) 4: Start after speed tracking (software) Note: Mode 2 and Mode 3 are not supported when the device power level is ≤ 2.2kW.	0	⊙
P01.08	Stop mode	0: Decelerate to stop 1: Coast to stop	0	○
P01.09	Starting frequency of 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 and protection at power-on	0: The terminal-based running command is valid at power-on 1: Asynchronous motor (AM) 1: Synchronous motor (SM)	0	○
P02.00	Motor 1 type	0: Asynchronous motor (AM) 1: Synchronous motor (SM)	0	○
P02.01	AM 1 rated power	0.1~3000.0kW	Model depended (0.4kW)	⊙
P02.02	AM 1 rated frequency	0.01Hz~P00.03 (Max. output frequency)	Model depended (50.00Hz)	○
P02.03	AM 1 rated speed	1~6000rpm	Model depended (1400rpm)	⊙
P02.04	AM 1 rated voltage	0~1200V	Model depended (380V)	⊙
P02.05	AM 1 rated current	0.8~6000.0A	Model depended (1.0A)	⊙
P02.15	SM 1 rated power	0.1~3000.0kW	Model depended (0.4kW)	⊙
P02.16	SM 1 rated frequency	0.01Hz~P00.03 (Max. output frequency)	Model depended (50.00Hz)	⊙
P02.17	SM1 pole pair count	1~128	Model depended (380V)	⊙
P02.18	SM 1 rated voltage	0~1200V	Model depended (380V)	⊙
P02.19	SM 1 rated current	0.8~6000.0A	Model depended (1.0A)	⊙
P02.23	SM 1 counter-emf	0~10000V	300V	○
P03.00	Motor 1 speed-loop proportional gain 1	0.0~200.0	20.0	○
P03.01	Motor 1 speed-loop integral time 1	0.000~10.000s	0.200s	○
P03.02	Motor 1 speed-loop proportional gain 2	0.0~200.0	20.0	○
P03.03	Motor 1 speed-loop integral time 2	0.0~200.0	0.200s	○
P03.04	Flux weakening coefficient in constant power zone	0.1~2.0	1.0	○
P03.22	Minimum weakening point of AM in constant power zone	5~100%	10%	○
P03.23	Max. voltage limit	0.0~120.0%	100.0%	○
P03.24	Current-loop bandwidth of motor 1	0~2000	400	○
P03.11	Torque setting method	0: Keypad (P03.12) 1: Keypad (P03.12) 2: AI1 3: AI2 4: AI3 5: Pulse frequency HDIA 6: Multi-step torque 7: Modbus/Modbus TCP communication	0	○
P03.26	Flux-weakening proportional gain	0~8000	1000	○
P03.33	Flux-weakening integral gain	0.0~300.0%	100.0%	○

Function code	Name	Description	Default	Modify
P03.50	AM vector energy-saving mode	0~3 0: Invalid 1: Max. efficiency 2: Optimal power factor 3: MTPA	0	⊙
P04.01	Motor 1 torque	0.0~10.0% (0.0%: 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	○
P04.57	AM 1 V/F energy-saving mode	0~3 0: Invalid 1: Max. efficiency 2: Optimal power factor 3: MTPA	0	⊙
P05.00	HDIA input type	0x00~0x11 Ones: HDIA input type 0: HDIA is high-speed pulse input 1: HDIA is digital input Tens: HDIB input type (Reserved) 0: HDIB is high-speed pulse input 1: HDIB is digital input	0x00	⊙
P05.01	S1 function	0: No function	1	⊙
P05.02	S2 function	1: Run forward (FWD)	4	⊙
P05.03	S3 function	2: Run reversely (REV)	7	⊙
P05.04	S4 function	3: Three-wire running control (SIN)	0	⊙
P05.05	HDIA function	4: Jog forward 5: Jog reversely 6: Coast to stop 7: Fault reset 9: External fault input 10: Increase frequency setting (UP) 11: Decrease frequency setting (DOWN)	0	⊙
P05.24	AI1 lower limit	0.00V~P05.26 (AI1 upper limit)	0.00V	○
P05.26	AI1 upper limit	P05.24 (AI1 lower limit)~10.00V	10.00V	○
P05.29	AI2 lower limit	-10.00V~P05.31 (AI2 middle value 1)	-10.00V	○
P05.35	AI2 upper limit	P05.33 (AI2 middle value 2)~10.00V	10.00V	○
P05.38	HDIA high-speed pulse input function	0~2 0: Input set through frequency 1: Reserved 2: Input set through the encoder, used together with HDIB	0	⊙
P05.44	HDIB high-speed pulse input function	0~2 0: Input set through frequency 1: Reserved 2: Input set through the encoder, used together with HDIA	0	⊙
P05.50	AI1 input signal type	0: Voltage 1: Current Note: You can set the AI1 input signal type through the corresponding function code.	0	⊙
P05.51	AI1 function	Same as the description for P05.01 (S1 function)	0	⊙
P05.52	AI2 function	Same as the description for P05.01 (S1 function)	0	⊙
P06.00	HD01 output type	0~1 0: Open collector high-speed pulse output 1: Open collector output	0	⊙
P06.01	Y1 output	0: Invalid	0	○
P06.02	HD01 output	1: Running	0	○
P06.03	Relay RO1 output	2: Running forward 3: Running reversely 4: Jogging 5: VFD in fault 6: Frequency level detection FDT1 8: Frequency reached	1	○
P06.04	Relay RO2 output	0: Invalid 1: Running 2: Running forward 3: Running reversely 4: Jogging 5: VFD in fault 6: Frequency level detection FDT1 8: Frequency reached	5	○
P06.14	AO1 output	0: Running frequency (100% corresponds to the max output frequency)	0	○
P06.15	AO0 output	0: Running frequency (100% corresponds to the max output frequency)	0	○
P06.16	HD01 high-speed pulse output	1: Set frequency (100% corresponds to the max output frequency) 2: Ramp reference frequency (100% corresponds to the max output frequency) 3: Rotational speed (100% corresponds to the speed corresponding to the max output frequency) 4: Output current (100% corresponds to twice the VFD rated current) 5: Output current (100% corresponds to twice the motor rated current)	0	○

Function code	Name	Description	Default	Modify
P06.17~P06.21	AO1 attribute settings	6: Output voltage (100% corresponds to 1.5 times the VFD rated voltage) 7: Output power (100% corresponds to twice the motor rated power)	-	-
P06.37~P06.41	AO0 attribute settings	For details, see the full version of product e-manual.	-	-
P07.00	User password	0~65535	****	○
P07.27~P07.32	Present fault type-5th-last fault type	0~91 (0: No fault) For details, see the full version of product e-manual.	0	●
P08.28	Auto fault reset	0~10	0	○
P08.29	Auto fault reset interval	0.1~3600.0s	1.0s	○
P08.74	ITE detection delay time	0.00~60.000s	4.000s	○
P08.76	Motor fan control and diagnostic functions	0~2 0: Fan control and diagnostic functions disabled 1: Fan control and diagnostic functions enabled; pre-alarm triggered if fan signal feedback is lost 2: Fan control and diagnostic functions enabled; fault triggered if fan signal feedback is lost	0	⊙
P08.77	Motor fan response signal loss detection time	0.0~30.0s	0.5s	○
P08.78	Motor fan switch-off delay time	0.00~100.00s	5.00s	○
P08.79	Motor fan start delay time	0.00~100.00s	0.00s	○
P11.05	Current limit	0x000~0x11 Ones: Inverter module overtemperature alarm point function selection 0: Invalid 1: Always valid Tens: Current selection upon hardware current limit overload 0: Report a fault and stop 1: Continue to run Hundreds: Enable SM hardware current limit action 0: Disable 1: Enable (available only in electric mode)	0x001	⊙
P11.06	Auto current limit level	50.0~200.0%	Model depended (160.0%)	⊙
P11.07	Frequency fall rate at current limiting	0.00Hz/s~P00.03 (Max. output frequency)	10.00Hz/s	⊙
P13.08	Vector control optimization mode	0x0000~0xFFFF Bit 0: Enable counter-emf self-adaptation (valid only in PM-SVC1) Bit 1: Enable SM weakening flux optimization (working with P03.22 to adjust the compensation) Bit 2: Enable current loop parameter optimization Bit 3: Reserved Bit 4: Enable SM MTPA Bit 5: Enable observer optimization Bit 6: Online autotuning of stator resistance Bit 7: Initial position identification optimization	0x0070	○
P14.00	Local communication address	1~247 Note: The communication address of a slave cannot be 0.	1	○
P14.01	Communication baud rate setting	0: 1200bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps 6: 57600bps 7: 115200bps	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	○
P14.19	Address mapping function control	0x00~0x11 Ones: Read address mapping function 0: Invalid 1: Enable Tens: Write address mapping function 0: Invalid 1: Enable	0x00	○
P14.20~P14.31	485 communication custom consecutive read address setting	For details, see the full version of product e-manual.	-	-

Function code	Name	Description	Default	Modify
P11.10	Overload pre-alarm detection time	0.1~3600.0s	1.0s	○
P11.11	Underload pre-alarm detection level	0%~P11.09 (Overload pre-alarm detection level)	Model depended (50%)	○
P11.12	Underload pre-alarm detection time	0.0~3600.0s (0.0 disables underload pre-alarm)	1.0s	○
P11.14	Speed deviation detection value	0.0~50.0%	10.0%	○
P11.15	Speed deviation detection time	0.0~10.0s	2.0s	○
P11.31~P11.51	Fault severity group	For details, see the full version of product e-manual.	-	-
P11.61	Software overvoltage alarm point	0.0V~P99.07 (software overvoltage point)	Model depended (800.0V)	○
P11.62	Software undervoltage alarm point	P99.08 (software undervoltage point)~P11.61(V)	Model depended (350.0V)	○
P11.63	Overvoltage/undervoltage alarm point function	0x00~0x11 Ones: Undervoltage alarm point function selection 0: Report a fault 1: Report an alarm Tens: Overvoltage alarm point function selection 0: Report a fault 1: Report an alarm	0x00	○
P11.64	Inverter overtemperature alarm point	0.0~105.0℃	Model depended (0℃)	○
P11.65	Rectifier overtemperature alarm point	0.0~105.0℃	Model depended (0℃)	○
P11.66	Inverter/Rectifier overtemperature alarm point function selection	0x00~0x11 Ones: Inverter overtemperature alarm point function selection 0: Report a fault 1: Report an alarm Tens: Rectifier overtemperature alarm point function selection 0: Report a fault 1: Report an alarm	0x00	○
P11.67	To-ground short circuit detection method	0~2 0: Detect after power-on 1: Detect after power-on and before each run 2: Detect before each run	0	⊗
P13.01	Initial pole detection method	0~2 0: Disable 1: High-frequency superposition 2: Pulse superposition	2	⊗
P13.08	Vector control optimization mode	0x0000~0xFFFF Bit 0: Enable counter-emf self-adaptation (valid only in PM-SVC1) Bit 1: Enable SM weakening flux optimization (working with P03.22 to adjust the compensation) Bit 2: Enable current loop parameter optimization Bit 3: Reserved Bit 4: Enable SM MTPA Bit5: Enable observer optimization Bit 6: Online autotuning of stator resistance Bit 7: Initial position identification optimization	0x0070	○
P14.00	Local communication address	1~247 Note: The communication address of a slave cannot be 0.	1	○
P14.01	Communication baud rate setting	0: 1200bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps 6: 57600bps 7: 115200bps	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	○
P14.19	Address mapping function control	0x00~0x11 Ones: Read address mapping function 0: Invalid 1: Enable Tens: Write address mapping function 0: Invalid 1: Enable	0x00	○
P14.20~P14.31	485 communication custom consecutive read address setting	For details, see the full version of product e-manual.	-	-

Function code	Name	Description	Default	Modify
P14.32~P14.43	485 communication custom consecutive write address setting	For details, see the full version of product e-manual.	-	-
P15.01	Module address	0~127	2	○
P14.48	Channel for mapping function codes to PZDs	0x00~0x12 Ones: Channel for mapping function codes to PZDs 0: Reserved 1: Group P15 2: Group P16 Tens: Save at power failure 0: Disable 1: Enable	0x12	○
P14.49~P14.59	Mapped function code of received PZD2~PZD12	For details, see the full version of product e-manual.	-	-
P14.60~P14.70	Mapped function code of sent PZD2~PZD12	For details, see the full version of product e-manual.	-	-
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: 0.01Hz) 6: Setting of the upper limit of reverse running frequency (0~Fmax, unit: 0.01Hz) 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 100.0% of the motor rated current)	0	○
P15.13~P15.23 and P16.43~P16.53	Sent PZD2~Sent PZD2	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)	0	○
P15.24	Communication disconnection fault handling 1	0x000~0x111 Ones: After PROFIBUS communication disconnection recovery, a manual reset is required. 1: After PROFIBUS communication disconnection recovery, the fault is automatically reset. Tens: 0: After CANopen communication disconnection recovery, a manual reset is required. 1: After CANopen communication disconnection recovery, the fault is automatically reset.	0x000	○
P15.25	DP communication timeout time	0.0~60.0s	5.0s	○
P15.26	CANopen communication timeout time	0.0~60.0s	5.0s	○
P15.27	CANopen communication baud rate	0~7 0: 1000kbps 1: 800kbps 2: 500kbps 3: 250kbps 4: 125kbps 5: 100kbps 6: 50kbps 7: 20kbps	3	○
P15.28	CAN communication address	0~127	1	○
P15.43	DP Device ID	0x0000~0xFFFF	0x0000	○
P15.44	DP communication protocol processing	0~1 0: Control words and status words are freely defined by bit 1: Control words and status words are fixed (original GD series mode)	0	○
P15.45	Communication control word expression format	0~1 0: In decimal format 1: In binary format	0	○

Function code	Name	Description	Default	Modify
P16.00	All-in-one communication card protocol selection	0~15 0: PROFINET 1: EtherCAT (Reserved) 2: PowerLink (Reserved) 3: EtherNet/IP 4: Modbus TCP 5: EtherNet/IP 6: PROFINET+EtherNet UDP 7: EtherCAT+Ethernet UDP (Reserved)	0	○
P16.31	PROFINET communication timeout time	0.0~60.0s	5.0s	○
P16.54	EtherNet/IP communication timeout time	0.0~60.0s	5.0s	○
P16.80	Communication disconnection fault handling 2	0x00~0x11 Ones: 0: After PROFIBUS communication disconnection recovery, a manual reset is required. 1: After PROFIBUS communication disconnection recovery, the fault is automatically reset. Tens: 0: After Ethernet IP communication disconnection recovery, a manual reset is required. 1: After Ethernet IP communication disconnection recovery, the fault is automatically reset.	0x00	○
P19.15	VFD control word	0x0000~0xFFFF	0x0000	●
P19.16	VFD status word	0x0000~0xFFFF	0x0000	●
P20.00	Encoder type display	0: Incremental encoder 1: Resolver encoder 2: Sin/Cos encoder 3: EnDat absolute encoder	0	●
P20.01	Encoder pulse count	0~16000	1024	○
P20.02	Encoder direction	0x000~0x111 Ones: AB direction 0: Forward 1: Reverse Tens: Z pulse direction (Reserved) 0: Reserved Hundreds: CD/UVW pole signal direction 0: Forward 1: Reverse	0x000	○
P20.03	Encoder disconnection fault detection time	0.0~10.0s	2.0s	○
P90.00~P90.15	DP custom control word 1 bit 0~15	For details, see the full version of product e-manual.	-	-
P90.16~P90.33	DP custom control word 2 bit 0~15	For details, see the full version of product e-manual.	-	-
P90.34~P90.49	DP custom status word 1 bit 0~15	For details, see the full version of product e-manual.	-	-
P90.50~P90.65	DP custom status word 2 bit 0~15	For details, see the full version of product e-manual.	-	-
P92.00	Water supply sleep function	0~1 0: Invalid 1: Enable	0	○
P92.02	Sleep check method	0~1 0: At a set frequency less than or equal to P92.03 (Sleep start frequency) 1: At a feedback pressure greater than or equal to P92.04 (Sleep start pressure)	0	○
P93.00	Enabling PT1000/PT1000 temperature detection	0x00~0x11 Ones: PT1000 temperature detection 0: Disable 1: Enable Tens: PT1000 temperature detection 0: Disable 1: Enable	0x00	○
P93.18	Alarm display value	0~1 0: No alarm 1: PT1000 overtemperature alarm (A-Ot1) 2: PT1000 overtemperature alarm (A-Ot2) 3: AIAO overtemperature alarm (A-OHt) 4: PTC overtemperature alarm (A-PTC) 5: A15 overtemperature alarm (A-Ot5) 6: A16 overtemperature alarm (A-Ot6) 7: A17 overtemperature alarm (A-Ot7) 8: Inverter module overtemperature alarm (A-INV)	0	●

Function code	Name	Description	Default	Modify
P93.20	Type of sensor for AIAO to detect motor temperature	0~4 0: None 1: PT100 input 2: PT1000 input 3: KTY84 input 4: PTC input Note: On the main control board, only A11 supports AIAO temperature measurement; A12 does not support this function.	0	○
P93.21	AIAO detected temperature	-20.0~200.0°C	0.0°C	●
P93.24	PTC motor protection method	0~2 0: Disable 1: S terminal input protection 2: AIAO detection protection Note: When SW4 is set to PTC, the S4 terminal supports PTC temperature measurement.	0	○
P93.27	PTC actual resistance value via AIAO detection	0~60000Ω	0Ω	●
P94.00	Enable brake	0~1 0: Disable 1: Enable	0	○
P94.01	Brake feedback	0~1 0: Without feedback signal 1: With feedback signal	1	○
P94.02~P94.08	Brake-release frequency parameters	For details, see the full version of product e-manual.	-	-

6 Common alarms, 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".

Alarm code display	Alarm type	Possible cause	Solution
A-Ot1	PT100 overtemperature alarm	● The motor has been overloaded for an extended period. ● The motor current contains excessive harmonics. ● The motor is stalled. ● The motor is short-circuited. ● The motor experiences three-phase imbalance. ● The overtemperature alarm point is too low.	● Adjust the load to avoid prolonged overload operation. ● Remove the dust or oil stain inside the VFD regularly. ● Check for motor stalling, short connection, and load device exceptions.
A-Ot2	PT1000 overtemperature alarm		● Check for abnormal VFD three-phase output voltage and motor three-phase resistance imbalance.
A-OHt	AIAO overtemperature alarm		● Check for strong interference (whether the motor cable is far away from the contactor and the system is grounded reliably).
A-PTC	PTC overtemperature alarm		● Use a properly rated output reactor to reduce excessive current harmonics.
			● Adjust the overtemperature alarm point to a reasonable range.
A-INV	Inverter module overtemperature alarm	● VFD overload. ● The VFD carrier frequency is too high. ● The overtemperature alarm point is too low.	● Use an inverter unit with a higher power rating. ● Check that the devices and system are grounded reliably. ● Adjust the load operating conditions to avoid long-term overload operation. ● Adjust the overtemperature alarm point to a reasonable range.
A-REC	Rectifier module overtemperature alarm	● VFD overload. ● The overtemperature alarm point is too low.	● Use an inverter unit with a higher power rating. ● Adjust the load operating conditions to avoid long-term overload operation. ● Adjust the overtemperature alarm point to a reasonable range.
A-A1OPn	PT100 disconnection alarm	● Temperature sensor disconnection.	● Check the temperature sensor wiring and ensure it is connected correctly.
A-A2OPn	PT1000 disconnection alarm		
A-OPn	AIAO disconnection alarm		
A-OV	Bus overvoltage alarm	● ACC/DEC time is too short. ● Exception occurs in the input voltage.	● Increase ACC/DEC time. ● Check the input voltage. ● Use speed tracking start function.