



VFD-EL-W 安装说明

小型泛用无感测向量变频器

请在装机之前，详细阅读本产品说明，并请妥善保存。
变频器乃精密的电力电子产品，为了操作者及机械设备的安全，请务必交由专业的电机工程人员安装试车及调整参数，本产品说明中有 [危险(DANGER)]、 [注意(CAUTION)] 等符号说明的地方，请务必仔细阅读，若有任何疑问的地方请联络本公司各地的代理商洽询，我们的专业人员会乐于为您服务。

请用户在操作本产品时，特别留意以下各事项

- 操作配线及安装变频器时，请务必确认电源是否关闭。
- 切断交流电源后，变频器数字操作器指示灯未熄灭前，表示变频器内部仍有高压，请勿触摸内部电路及零组件。
- 变频器的内部电路板上各项电路组件易受静电的破坏，在未做好防静电措施前，请勿用手触摸电路板。
- 禁止自行改变变频器内部的零件或线路。
- 变频器端子Ⓣ务必依照当地法规正确的接地。
- 变频器及配件安装场合，应远离火源发热体及易燃物。

- 请勿输入交流电源到变频器输出端子 U/T1、V/T2、W/T3 中。
- 变频器配线完成后，请先使用三用电表量测 U/T1、V/T2、W/T3 对地是否短路。若发生短路的状态时请勿上电，须在短路排除后才能上电使用。

- 变频器所安装之电源系统额定电压如下，请勿超过此适用范围：

- 230V 系列机种之变动范围为 180V~264V。
- 460V 系列机种之变动范围为 342V~528V。

- 只有合格的电机专业人员才可以安装、配线及维修变频器。
- 即使三相交流马达是停止的，变频器的主回路端子仍然可能带有危险的高压。
- 电解电容若长期不通电，其性能会下降，故长期放置不用的变频器必须每 2 年通电 3~4 小时左右 (注)，以恢复变频器内部电解电容的性能。注：变频器送电时，必须用可调的 AC 电源 (例如：AC 自耦变压器) 以 70~80% 的额定电压上电 30 分钟 (不要运行)，然后再以额定电压上电 1 小时 (不要运行)，使变频器内部电解电容的性能恢复，再开始运行变频器，不可直接以额定电压送电运行。

- 运送、安装时的外箱包装 (含木箱、木条等) 除虫处理注意事项：
 - 包装用的木材等包材若需要进行除虫等，禁止使用熏蒸方式。若因此造成机器损毁，不列为保固范围内。
 - 请采用其他方式，如木箱热处理或其他非熏蒸方法以进行除虫等环境清除作业。
 - 使用木箱热处理方式时：将包材置于温度 56℃ 以上的环境中且连续保持 30 分钟以上即可。

- 若变频器在保护接地导体上产生超过交流 3.5 mA 或直流 10 mA 的漏电流时，所采用的保护接地导体之最小规格需符合当地的国家法规或依据 IEC61800-5-1 做接地。

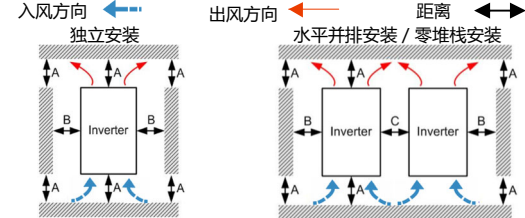
- VFD-EL-W 系列变频器设计于一般工业环境应用。因非线性负载会产生谐波电流，如需在公共低电压电网 (例如：住宅建筑物供电) 中使用，须加装适当的抑制设备 (例如：隔离变压器或是输入电抗器)，以抑制谐波电流造成公共低压电网系统上可能的干扰。如需进一步信息，请洽台达。

框号 / 散热方式 / 机种名

框号	容量范围	散热方式	230V 单相	460V 三相
A1	0.25-1 HP	自然风冷	VFD002EL21W(-1) VFD004EL21W(-1) VFD007EL21W(-1)	VFD004EL43W(-1) VFD007EL43W(-1)
A2	2 HP	强制风冷		VFD015EL43W(-1)
B	2-7.5 HP		VFD015EL21W(-1)	VFD022EL43W(-1)
			VFD022EL21W(-1)	VFD040EL43W(-1)
				VFD055EL43W(-1)

VFDxxxELxxW-1 与 VFDxxxELxxW 仅包装差异 (价格差异)，电气规格完全相同。

安装空间



机种	安装方式	最小距离(mm)			环境温度(°C)	
		A	B	C	Max.(不降容) ^{注 2}	Max.(降容)
VFD002EL21W(-1) VFD004EL21W(-1) VFD004EL43W(-1) VFD007EL43W(-1) VFD015EL43W(-1)	独立安装 水平并排安装 零堆栈安装 ^{注 1}	120 120 -	50 50 -	- 30 -	50	60
VFD007EL21W(-1)	独立安装 水平并排安装 零堆栈安装 ^{注 1}	120 120 -	50 50 -	- 30 -	50 ^{注 3} (安装风扇配件)	60 ^{注 3} (安装风扇配件)
VFD015EL21W(-1) VFD022EL21W(-1) VFD022EL43W(-1) VFD040EL43W(-1) VFD055EL43W(-1)	独立安装 水平并排安装 零堆栈安装	150 150 150	50 50 50	- 30 0	50	60
					40	50

注 1：框号 A1 / A2 不支持零堆栈安装方式，框号 B 支持零堆栈安装方式。

注 2：超过“Max. (不降容)”列对应的温度下，满负荷运行会缩短变频器的使用寿命。

注 3：VFD007EL21W(-1)增加风扇配件时，环境操作温度上限如上表所示；无风扇配件时，对应环境操作温度上限比表格中温度值降低 10℃。

为了使变频器散热效果降低，必须垂直安装。

变频器背面的安装面必须使用能承受较高温度且散热良好的金属材质。

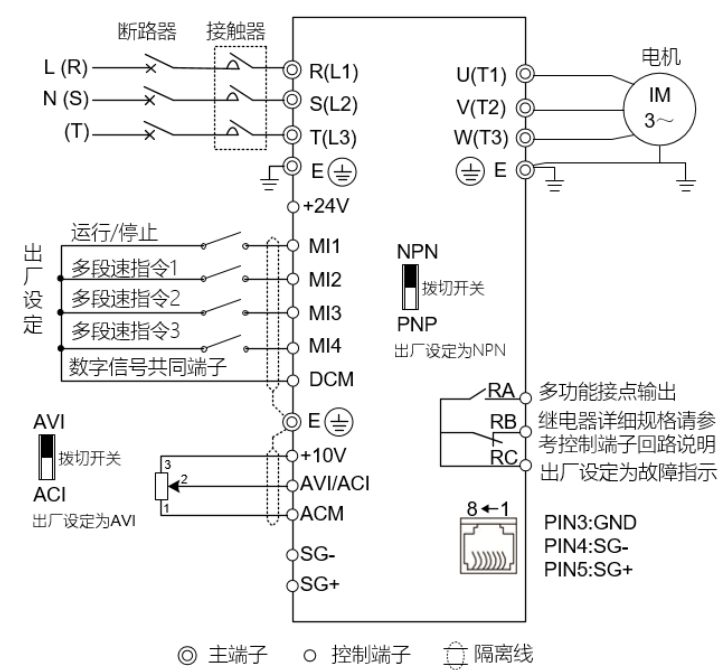
数字操作器



- ① 状态显示区：分别显示变频器运行、停止、正转、反转
- ② 主显示区：可显示频率、电流、电压、转向、使用者定义单位、异常等
- ③ 频率设定旋钮：可设定此旋钮作为频率命令来源
- ④ 上、下数值调整键：可上下翻，查看参数及设定修改参数值

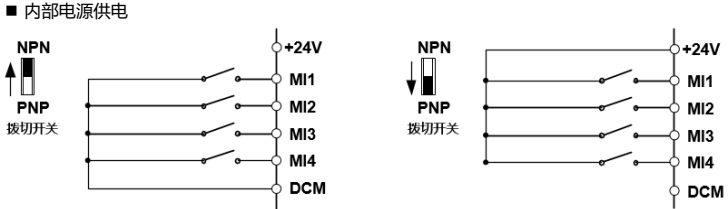
接线图

基本配线图：230V 单相 / 460V 三相

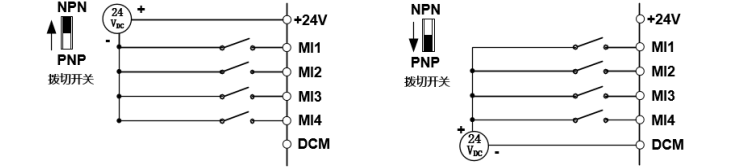


NOTE SG+, SG-端子与RJ45端子PIN5, PIN4为并联关系

NPN / PNP 模式接线



外部电源供电



参数列表

详尽的参数说明，请参阅使用手册。

表示运转中可设定。

灰底标示之参数/选项，仅适用于 V1.00_5.5 kW 机种。

00 用户参数

参数	参数名称	设定范围	出厂值
00.00	变频器机种识别码 (仅供读取)	0: 230V, 200 W 2: 230V, 400 W 3: 460V, 400 W 4: 230V, 750 W 5: 460V, 750 W 6: 230V, 1.5 kW 7: 460V, 1.5 kW 8: 230V, 2.2 kW 9: 460V, 2.2 kW 10: 460V, 4.0 Kw 11: 460V, 5.5 kW 13: 460V, 5.5 kW	##
00.01	变频器额定电流显示 (仅供读取)	依机种显示 (只读)	##
00.02	参数重置设定	0: 参数可设定可读取 1: 参数只读 7: 键盘锁住和频率设定旋钮锁住 8: 键盘锁住 9: 所有参数的设定值重置为出厂值 (50 Hz, 230V / 400V or 220V / 380V 依参数 00.12 而定) 10: 所有参数的设定值重置为出厂值 (60 Hz, 220V / 440V)	0
00.03	开机默认显示画面	0: F (频率指令) 1: H (输出频率) 2: A (输出电流) 3: U (依 00.04) 4: 正 / 反转指示	0
00.04	多功能显示选择	0: 显示用户定义 (U) 1: 显示触发计数内容 (c) 2: 显示多机能输入端子状态 (d) 3: 显示 DC bus 电压 (u) 4: 显示输出电压 (E) 5: 显示 PID 模拟反馈信号 (b) 6: 显示功率 (P) 7: 显示功率 (P) 8: 显示 PID 控制的设定值与反馈量 9: 显示 AVI (V) (I) 10: 显示 ACI (mA / V) (I) 11: 显示 IGBT 温度 (°C) (h)	0
00.05	使用者定义比例设定	0.1 ~ 160.0	1.0
00.06	软件版本	只读 (依出厂版本显示)	##
00.07	软件版本日期码	只读 (依出厂版本显示)	##
00.08	参数保护解码输入	0-9999 0-2: 记录密码错误次数	0
00.09	参数保护密码设定	0-9999 0: 未设定密码锁或 00.08 密码输入成功 1: 参数已被锁定	0
00.10	控制方式	0: V/F 电压频率控制; 1: 向量控制	
00.12	50 Hz 电源系统电压初始值设定	0: 230V / 400V 1: 220V / 380V	0
00.13	物理量数值 (对应最高操作频率 01.00)	0-9999	0
00.14	物理量小数点位置	0-3	0
00.15	输出相序选择	0: 标准 (预设) 1: 将运转方向对调	0
00.16	EEPROM 写入禁止	0: 关闭 EEPROM 写入禁止 (预设) 1: 开启 EEPROM 写入禁止，由 MI 控制 2: 开启 EEPROM 写入禁止，MI 无效	0

01 基本参数

参数	参数名称	设定范围	出厂值
01.00	最高操作频率设定	50.00-400.0 Hz	60.00
01.01	电机额定频率设定	0.10-400.0 Hz	60.00
01.02	电机额定电压设定	230V 机种: 0.1-255.0V 460V 机种: 0.1-510.0V	220.0 440.0
01.03	中间频率设定	0.10-400.0 Hz	1.50
01.04	中间电压设定	230V 机种: 0.1-255.0V 460V 机种: 0.1-510.0V	10.0 20.0
01.05	最低输出频率设定	0.10-400.0 Hz	1.50
01.06	最低输出电压设定	230V 机种: 0.1-255.0V 460V 机种: 0.1-510.0V	10.0 20.0
01.07	输出频率上限设定	0.1-120.0 %	110.0
01.08	输出频率下限设定	0.0-100.0 %	0.0
01.09	第一加速时间设定	0.1-600.0 秒 / 0.01 - 600.00 秒	10.0
01.10	第一减速时间设定	0.1-600.0 秒 / 0.01 - 600.00 秒	10.0
01.11	第二加速时间设定	0.1-600.0 秒 / 0.01 - 600.00 秒	10.0
01.12	第二减速时间设定	0.1-600.0 秒 / 0.01 - 600.00 秒	10.0
01.13	寸动加速时间设定	0.1-600.0 秒 / 0.01 - 600.00 秒	1.0
01.14	寸动减速时间设定	0.1-600.0 秒 / 0.01 - 600.00 秒	1.0
01.15	寸动频率设定	0.10-400.0 Hz	6.00
01.16	自动调适加减速选择	0: 直线加减速 1: 自动加速，直线减速 2: 直线加速，自动减速 3: 自动加减速 (依实际负载减速) 4: 自动加减速 (依直线)	0
01.17	S 曲线缓加速时间设定	0.0-10.0 秒 / 0.00-10.00 秒	0.0
01.18	S 曲线缓减速时间设定	0.0-10.0 秒 / 0.00-10.00 秒	0.0
01.19	加减速时间单位设定	0: 以 0.1 秒为单位 1: 以 0.01 秒为单位	0

02 操作方式参数

参数	参数名称	设定范围	出厂值
02.00	第一频率指令来源设定	0: 由数字操作器输入 1: 由外部端子 AVI 输入模拟 DC 0~+10V 控制 2: 由外部端子 ACI 输入模拟信号 DC 4-20 mA 3: 由通讯 RS-485 输入 4: 由数字操作器上所附旋钮控制	0
02.01	运转指令来源设定	0: 数字操作器输入 1: 外部端子操作键盘 STOP 键有效 2: 外部端子操作键盘 STOP 键无效 3: RS-485 通讯界面操作键盘 STOP 键有效 4: RS-485 通讯界面操作键盘 STOP 键无效	0
02.02	电机停车方式选择	0: 减速煞车方式停止，EF 自由运转停止 1: 自由运转方式停止，EF 自由运转停止 2: 减速煞车方式停止，EF 减速停止 3: 自由运转方式停止，EF 减速停止 4: 简易定位方式停止，EF 自由运转停止	0
02.03	PWM 载波频率选择	2-12 kHz	8
02.04	电机运转方向设定	0: 可反转 1: 禁止反转 2: 禁止正转	0
02.05	电源启动及运转命令来源变更变频器的运转控制 (限外部端子)	0: 电源启动时可运转，运转命令来源变更时，保持目前的运转状态。 1: 电源启动不可运转，运转命令来源变更时，保持目前的运转状态。 2: 电源启动时可运转，运转命令来源变更时，立即依照新的运转命令变更。 3: 电源启动不可运转，运转命令来源变更时，立即依照新的运转命令变更。 4: 重置或电源启动时可运转，运转命令来源为外部端子二线式时会依照外部端子状态变更运转命令。	1
02.06	ACI 断线选择	0: 减速至 0 Hz 1: 显示 Aerr 时立即停车 2: 以最后频率命令持续运转 3: 依参数 02.11 所设定的频率继续运转	1
02.07	外部端子频率递增 / 递减模式选择	0: 依键盘 UP / DOWN 键 2: 依设定速度 (参数 02.08) 3: 依脉波设定 (参数 02.08)	0
02.08	外部端子频率递增 / 递减键定速速率	0.01-10.00 Hz / 2 ms	0.01
02.09	第二频率指令来源设定	0: 由数字操作器输入 1: 由外部端子 AVI 输入模拟 DC 0~+10V 控制 2: 由外部端子 ACI 输入模拟信号 DC 4-20 mA 3: 由通讯 RS-485 输入 4: 由数字操作器上所附 V.R 控制	0
02.10	第一 / 第二频率命令的组合方式	0: 仅第一频率命令 1: 第一频率命令+第二频率命令 2: 第一频率命令-第二频率命令	0
02.11	键盘频率命令	0.00-400.0 Hz	60.00
02.12	通讯频率命令	0.00-400.0 Hz	60.00
02.13	频率命令记忆模式	0: 记忆关电前的频率 1: 仅记忆关电前的数字操作器频率命令 2: 仅记忆关电前的通讯频率命令	0
02.14	停机时初始频率命令模式	0: 依频率命令归零 1: 依频率命令 02.15 设定值	0
02.15	停机时初始频率命令设定	0.00-400.0 Hz	60.00
02.16	频率指令来源显示	Bit 0=1: 第一频率命令来源设定依据参数 02.00 Bit 1=1: 第二频率命令来源设定依据参数 02.09 Bit 2=1: 外部多功能输入端子设定	只读
02.17	运转指令来源显示	Bit 0=1: 数字操作器 Bit 1=1: 通讯 RS-485 Bit 2=1: 外部端子 Bit 3=1: 外部多功能输入端子	只读
02.18	物理量设定	0-参数 00.13	0
02.19	物理量	0-9999	只读

03 输出功能参数

参数	参数名称	设定范围	出厂值
03.00	多功能输出 (Relay 接点)	0: 无功能 1: 运转中指示 2: 设定到达频率 3: 零速中指示 4: 过转矩检出指示 5: 外部中断 B.B. 中指示 6: 低电压检出指示 7: 变频器操作模式指示 8: 故障指示 9: 任意频率到达指示 10: 设定计数值到达指示 11: 中间计数值到达指示 12: 过电压失速防止警告 13: 过电流失速防止警告 14: IGBT 过热警告 (85℃动作, 80℃ Off) 15: 过电压警告 16: 反馈信号异常 17: 正转信号指示 18: 反转信号指示 19: 零速 (含停机时) 20: 警告指示 21: 机械煞车控制 (需配合参数 03.11, 03.12) 22: 当变频器准备完成 23: 多泵系统错误指示 (only Master)	8
03.02	任意频率到达设定	0.00-400.0 Hz	0.00
03.05	计数值到达设定	0-9999	0
03.06	指定计数值到达	0-9999	0
03.07	计数值到达时 EF	0: 计数值到达时，无 EF 显示 1: 计数值到达 EF	0
03.08	散热风扇控制	0: 风扇持续运转 1: 停机运转一分种后停止 2: 随变频器运转 / 停止动作 3: 侦测散热片温度到达后再启动 (60℃动作, 40℃ Off) 4: 随变频器的运转 / 停止动作，但在零速时则待机	0 (仅强制风冷机种设定有效)
03.11	机械煞车释放频率	0.00-20.00 Hz	0.00

参数	参数名称	设定范围	出厂值
03.12	机械煞车动作频率	0.00-20.00 Hz	0.00
03.13	显示多功能输出端子状态	详见参数说明	只读

04 输入功能参数

参数	参数名称	设定范围	出厂值
↗04.00	数字操作器所附旋钮输入频率偏压调整	0.0-100.0 %	0.0
↗04.01	数字操作器所附旋钮输入频率偏压方向调整	0: 正方向 1: 负方向	0
↗04.02	数字操作器所附旋钮输入频率增益调整	0.1-200.0 %	100.0
04.03	数字操作器所附旋钮负偏压方向时为反转设定	0: 仅接受正偏压 1: 负偏压带反转命令	0
04.04	MI端子启停方式及多功能输入选择	模式一 (设置参数 04.19=0) 0: MI1 启动 (FWD) / 停止 模式二 (设置参数 04.19=1) 0: 二线式 (1) MI1, MI2 1: 二线式 (2) MI1, MI2 2: 三线式 MI1, MI2, MI3	0
04.05	保留	0:无功能	保留
04.06	启停功能或多功能输入指令一 (MI2)	1~3: 多段速指令一 ~ 三 4: 保留	1
04.07	启停功能或多功能输入指令二 (MI3)	5: 重置 (RESET) 6: 加减速禁止指令	2
04.08	多功能输入指令二 (MI4)	7: 第一、二加减速时间切换 8: 寸动运转 9: 外部中断 B.B 输入 10: 频率递增指令 Up Command 11: 频率递减指令 Down Command 12: 计数器触发信号输入 13: 计数器清除指令 14: EF 外部异常输入 15: PID 控制失效 16: 输出暂停 17: 参数锁定致能 18: 运转命令选择: 外部端子控制 19: 运转命令选择: 数字操作器控制 20: 运转命令选择: 通讯控制 21: 正转 / 反转指令 22: 第二频率命令来源设定生效 23: 简单定位正转停止极限 24: 简单定位反转停止极限 25: 多泵浦手动自动切换 29: EEPROM 写入禁止	3
04.09	多功能输入端子接点选择 (N.O / N.C)	0-63	0
04.10	数字端子输入响应时间	1-20 (*2ms)	1
↗04.11	最小 AVI 输入电压	0.0-10.0V	0.0
↗04.12	最小 AVI 输入电压对应频率	0.0-100.0 % F _{MAX}	0.0
↗04.13	最大 AVI 输入电压	0.0-10.0V	10.0
↗04.14	最大 AVI 输入电压对应频率	0.0-100.0 % F _{MAX}	100.0
↗04.15	最小 ACI 输入电流	0.0-20.0 mA	4.0
↗04.16	最小 ACI 输入电流对应频率	0.0-100.0 % F _{MAX}	0.0
↗04.17	最大 ACI 输入电流	0.0-20.0 mA	20.0
↗04.18	最大 ACI 输入电流对应频率	0.0-100.0 % F _{MAX}	100.0
04.19	MI 端子控制模式切换	0: 模式一 1: 模式二 (由参数 04.19 模式切换, 控制参数 04.04)	0
04.26	显示多功能输入端子状态	详见参数说明	只读
↗04.27	内部 / 外部多功能输入端子选择	0-63	0
↗04.28	内部多功能输入端子动作设定	0-63	0

05 多段速参数

参数	参数名称	设定范围	出厂值
↗05.00 ~ 05.06	第一 ~ 第七段速频率设定	0.00-400.0 Hz	0.00

06 保护功能参数

参数	参数名称	设定范围	出厂值
06.00	过电压失速防止功能设定	0: 无效 230V 机种: 330.0-410.0V 460V 机种: 660.0-820.0V	390.0V 780.0V
06.01	加速中过电流失速防止	20-250 % (0: 不动作)	170
06.02	运转中过电流失速防止	20-250 % (0: 不动作)	170
06.03	过转矩检出功能选择	0: 不检测 1: 定速运转中过转矩检测, 检出后继续运转直到 OL1 或 OL 保护功能动作 2: 定速运转中过转矩检测, 检出后停止运转 oL2 3: 加速中和定速运转中过转矩检测, 检出后继续运转直到 OL1 保护功能动作 4: 加速中和定速运转中过转矩检测, 检出后继续停止运转 oL2	0
↗06.04	过转矩检出准位设定	10-200%	150
06.05	过转矩检出时间	0.1-60.0 秒	0.1
06.06	电子热过载继电器保护器	0: 以标准型电机动作 1: 以特殊型电机动作 2: 不动作	2
06.07	电子热过载继电器保护器作用时间设定	30-600 秒	60
06.08	最近第一异常记录	0: 无异常记录	0
06.09	最近第二异常记录	1: oc (过电流)	0
06.10	最近第三异常记录	2: ov (过电压)	0
06.11	最近第四异常记录	3: oH1 (IGBT 过热)	0
06.12	最近第五异常记录	4: 保留	0
06.21	最近第六异常记录	5: oL (变频器过负载)	0
06.22	最近第七异常记录	6: oL1 (电子热动电驿动作)	0
06.23	最近第八异常记录	7: oL2 (电机过负载)	0
06.24	最近第九异常记录	8: EF (外部异常)	0
06.25	最近第十异常记录	9: oCa (加速中过电流) 10: ocd (减速中过电流) 11: ocn (恒速中过电流) 12-13: 保留	0

参数	参数名称	设定范围	出厂值
		14: PHL (欠相) 15: 保留 16: cFA (自动加减速失败) 17: codE (软件或密码保护) 18: cF1.0 (内存写入异常) 19: cF2.0 (内存读出异常) 20~21: HPF1~HPF2 (保护线路异常) 22: 保留 23: HPF4 (保护线路异常) 24~28: cF3.0~cF3.4 (硬件线路异常) 29-31: 保留 32: AErr (ACI 模拟信号错误) 33: 保留 34: PiC1 (电机 PTC 热保护) 35: FbE (PID 反馈错误) 36: dEv (PID 反馈偏差过大) 37: oPHL (电机断线输出欠相)	
↗06.13	电机断线侦测时间	0.0: 不动作 0.1-60.0 秒: 断线侦测时间	0.0
↗06.14	电机断线侦测电流	10-100 %	30
06.26 06.31 06.36 06.41 06.46	第一 ~ 第五异常输出频率	0~65535	0
06.27 06.32 06.37 06.42 06.47	第一 ~ 第五异常输出电流	0~65535	0
06.28 06.33 06.38 06.43 06.48	第一 ~ 第五异常输出电压	0~65535	0
06.29 06.34 06.39 06.44 06.49	第一 ~ 第五异常母线电压	0~65535	0
06.30 06.35 06.40 06.45 06.50	第一 ~ 第五异常变频器内部温度	0~65535	0
06.51	OL2 过转矩检测选项	0: 过转矩准位以电机额定电流为基准 (07.00) 1: 过转矩准位以变频器额定电流为基准 (00.01)	0

07 电机参数

参数	参数名称	设定范围	出厂值
↗07.00	电机额定电流设定	30% FLA - 120% FLA (FLA 表示变频器额定电流)	100
↗07.01	电机无载电流设定	0% FLA-99% FLA	40
↗07.02	自动转矩补偿设定	0.0-10.0	0.0
↗07.03	转差补偿增益	0.00-10.00	0.00
↗07.04	电机参数自动量测设定	0: 不动作 1: 自动量测 R1 (电机不会运转) 2: 自动量测 R1+无载电流 (电机会运转)	0
07.05	电机一次侧电阻值 R1 (线-线) (电机 0)	0-65535 mΩ	0
07.06	电机额定转差 (电机 0)	0.00-20.00 Hz	3.00
07.07	转差补偿限制	0-250 %	200
07.08	转矩补偿低通滤波时间	0.01-10.00 秒	0.10
07.09	转差补偿低通滤波时间	0.05-10.00 秒	0.20
07.10	累计电机运转时间	0-1439 (分钟)	0
07.11	累计电机运转时间	0-65535 (天数)	0
07.12	电机 PTC 过热保护功能	0: 无功能 1: 开启电机 PTC 过热保护	0
07.13	电机 PTC 过热保护输入滤波器	0-9999 (per 2 ms)	100
07.14	电机 PTC 过热保护准位	0.1-10.0V	2.4
07.15	电机 PTC 过热警告准位	0.1-10.0V	1.2
07.16	电机 PTC 过热警告重置准位差值	0.1-5.0V	0.6
07.17	过热警告处理	0: 警告且减速停车 1: 警告且自由停车 2: 警告并继续运转	0

08 特殊参数

参数	参数名称	设定范围	出厂值
08.00	直流制动电流准位	0-100 %	0
08.01	启动时直流制动时间	0.0-60.0 秒	0.0
08.02	停止时直流制动时间	0.0-60.0 秒	0.0
08.03	停止时直流制动起始频率	0.00-400.0 Hz	0.00
08.04	瞬时停电再运转选择	0: 不继续运转 1: 由上往下追踪 2: 由下往上追踪	0
08.05	允许停电的最长时间	0.1-20.0 秒	2.0
08.06	B.B.速度追踪方式	0: 不使用 1: 由 B.B.前速度往下追踪 2: 由最小速度往上追踪	1
08.07	速度追踪的时间延迟设定	0.1-5.0 秒	0.5
08.08	速度追踪的动作准位	30-200 %	150
↗08.09	禁止设定频率 1 UP	0.00-400.0 Hz	0.00
↗08.10	禁止设定频率 1 DOWN	0.00-400.0 Hz	0.00
↗08.11	禁止设定频率 2 UP	0.00-400.0 Hz	0.00
↗08.12	禁止设定频率 2 DOWN	0.00-400.0 Hz	0.00
↗08.13	禁止设定频率 3 UP	0.00-400.0 Hz	0.00
↗08.14	禁止设定频率 3 DOWN	0.00-400.0 Hz	0.00
08.15	异常再启动次数选择	0-10	0
08.16	异常再启动次数自动复归时间	0.1-6000.0 秒	60.0
08.17	自动省电运转	0: 自动节能运转关闭 1: 开启自动节能运转	0

参数	参数名称	设定范围	出厂值
08.18	自动稳压功能 (AVR)	0: 自动稳压功能 1: 无自动稳压功能 2: 减速时取消自动稳压功能 3: 停止时取消自动稳压功能	0
↗08.20	振荡抑制	0.0-5.0	0.0

09 通讯参数

参数	参数名称	设定范围	出厂值
↗09.00	通讯地址	1-254	1
↗09.01	通讯传送速度	0: Baud rate 4800 bps 1: Baud rate 9600 bps 2: Baud rate 19200 bps 3: Baud rate 38400 bps	1
↗09.02	通讯错误处理	0: 警告并继续运转 1: 警告且减速停车 2: 警告且自由停车 3: 不处理也不显示	3
↗09.03	通讯超时检出	0.0: 不动作 0.1-120.0 秒	0.0
↗09.04	通讯数据格式	0: 7, N, 2 for ASCII 1: 7, E, 1 for ASCII 2: 7, O, 1 for ASCII 3: 8, N, 2 for RTU 4: 8, E, 1 for RTU 5: 8, O, 1 for RTU 6: 8, N, 1 for RTU 7: 8, E, 2 for RTU 8: 8, O, 2 for RTU 9: 7, N, 1 for ASCII 10: 7, E, 2 for ASCII 11: 7, O, 2 for ASCII	0
↗09.07	通讯响应延迟时间	0-200 (每一单位为 2 ms)	1

10 PID 控制参数

参数	参数名称	设定范围	出厂值
10.00	目标值端子选择	0: 无 PID 功能 1: 数字操作器 2: 保留 3: 保留 4: PID 参考目标值 (参数 10.11)	0
10.01	检出值端子选择	0: 正反馈 0-10 V (AVI) 1: 负反馈 0-10 V (AVI) 2: 正反馈 4-20 mA (ACI) 3: 负反馈 4-20 mA (ACI)	0
↗10.02	比例值 (P) 增益	0.0-10.0	1.0
↗10.03	I 积分时间	0.00-100.0 秒	1.00
↗10.04	D 微分时间	0.00-1.00 秒	0.00
10.05	积分上限	0-100 %	100
10.06	一次延迟	0.0-2.5 秒	0.0
10.07	PID 控制, 输出频率限制	0-110 %	100
10.08	PID 反馈讯号错误侦测时间	0.0-3600 秒 (0.0 不侦测)	60.0
10.09	PID 反馈讯号错误处理 (仿真输入讯号)	0: 警告且减速停车 1: 警告且自由停车 2: 警告并继续运转	0
10.10	PID 检出值增益	0.0-10.0	1.0
↗10.11	PID 参考目标值	0.00-400.0 Hz (参数 10.00 设定为 4 时有效)	0.00
10.12	PID 反馈讯号异常偏差量	0.0-100.0 %	10.0
10.13	PID 反馈讯号异常偏差量检测时间	0.1-300.0 秒	5.0
10.14	睡眠检出时间	0.0-6550 秒	0.0
10.15	睡眠频率	0.00 to F _{MAX} Hz	0.00
10.16	苏醒频率	0.00 to F _{MAX} Hz	0.00
10.17	PID 固定偏差 (offset)	0.00-60.00 Hz	0
10.18	PID 反馈参考物理量	1.0-99.9	99.9
10.19	PID 运算模式选择	0: 串联 1: 并联	0
10.20	PID 异常偏差量处理	0: 警告但继续运转 (不处理) 1: 错误且自由停车 2: 错误且减速停车 3: 减速停车, 延迟参数 10.21 设定时间后再启动 (不会显示错误或警告) 4: 减速停车, 延迟参数 10.21 设定时间再启动, 再启动的次数将受限于新增参数 10.50[PID 异常再启动次数]	0
10.21	PID 异常偏差再启动延迟时间	0-9999 秒	60
↗10.22	恒压保持误差范围设定	0-100 %	0
10.23	恒压保持停机侦测时间	0-9999 秒	10
↗10.24	漏水再启动偏差量	0-50 %	0
↗10.25	漏水再启动反馈值变化量	0: 不动作 0-100 %	0
↗10.26	漏水再启动反馈值变化量检测时间	0: 不动作 0.1-10.0 秒	0.5
10.35	多水泵运转模式	00: 不动作 01: 定时循环 (交替运转) 02: 定量控制 (多台恒压运转)	0
10.36	多水泵站号	1: Master 2-4: Slave	0
↗10.37	多水泵定时循环周期	1-65535 分	60
↗10.38	水泵切换启动频率	0.00 Hz~F _{MAX}	60.00
↗10.39	水泵到达启动频率后的侦测时间	0.0-3600.0 秒	1.0
↗10.40	水泵切换停止频率	0.00 Hz~F _{MAX}	48.00
↗10.41	水泵到达切换停止频率的侦测时间	0.0-3600.0 秒	1.0
↗10.42	水泵断线运转频率	0.0~F _{MAX}	0.00
10.43	水泵错误处置	Bit0: 运转中水泵发生错误时, 是否切换替代水泵 0: 停止所有水泵动作 1: 切换替代水泵 Bit1: 错误重置后停机或待机。 0: 错误重置待机。 1: 错误重置停机。 Bit2: 水泵有错误是否可运转 0: 不可启动运转 1: 可以选其他水泵运转	1
10.44	水泵启动时序选择	0: 依照水泵序号 1: 依照运转时间	0

参数	参数名称	设定范围	出厂值
↗10.45	水泵交替运转时间定	0.0-360.0 sec	60.0
↗10.49	指定参数10.12的设定方式	0: 使用旧的设定 (默认值), 依反馈偏差量判定 1: 设定低水压百分比 (%), 依反馈物理量判定是否异常	0
↗10.50	PID 异常再启动次数	0-1000 次	0

故障显示码

变频器本身有过电压、低电压及过电流等多项警示讯息及保护功能, 一旦异常故障发生, 保护功能动作, 变频器停止输出, 异常接点动作, 电机自由运转停止。

请依变频器的异常显示内容对照其异常原因及处置方法。

异常记录会保存在变频器内部存储器 (可记录最近五次异常讯息) , 可通过数字操作面板读出。

☞NOTE 异常发生后, 必须先将其异常状况排除, 按 RESET 键才有效。

代码	错误名称	代码	错误名称
0	无异常纪录	19	内存读出异常 (CF2.0)
1	过电流 (oc)	20	保护线路异常 (HPF1)
2	过电压 (ov)	21	保护线路异常 (HPF2)
3	IGBT 过热 (oH1)	22	保留
4	保留	23	保护线路异常 (HPF4)
5	变频器过负载 (oL)	24	硬件线路异常 (cF3.0)
6	电子热动电驿动作 (oL1)	25	硬件线路异常 (cF3.1)
7	电机过负荷 (oL2)	26	硬件线路异常 (cF3.2)
8	外部异常 (EF)	27	硬件线路异常 (cF3.3)
9	加速中过电流 (ocA)	28	硬件线路异常 (cF3.4)
10	减速中过电流 (ocd)	29	保留
11	定速中过电流 (ocn)	30	保留
12	保留	31	保留
13	保留	32	ACI 模拟信号错误(AErr)
14	欠相 (PHL)	33	保留
15	保留	34	电机 PTC 热保护(PiC1)
16	自动加减速模式失败 (cFA)	35	PID 反馈错误(FbE)
17	软件或密码保护 (codE)	36	PID 反馈偏差过大(dEv)
18	内存写入异常 (CF1.0)	37	电机断线输出欠相(oPHL)

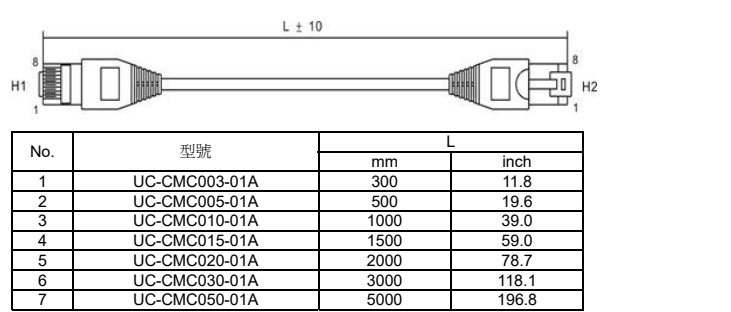
选购配件

通讯面板: VFD-PU08



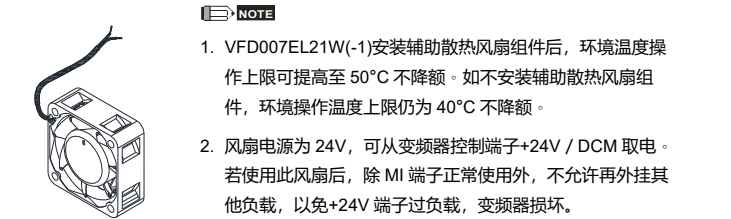
☞NOTE VFD-PU08 配件中不包含延长线, 需用户自行根据需求选择延长线。

标准延长线



散热风扇组件: MKEL-AFKM1

适用机种: VFD007EL21W(-1)





VFD-EL-W Instruction Sheet


Sensorless Vector Control Compact Drive



User manual-EN

- Please read this instruction sheet thoroughly before installation and keep this instruction sheet properly.
- To ensure the safety of operators and equipment, only qualified personnel familiar with AC motor drives are allowed to do installation, trial run and parameter settings. Always read this instruction sheet thoroughly before using the AC motor drive, especially the WARNING, DANGER and CAUTION notes. If you have any questions, please contact your dealer.

PLEASE READ PRIOR TO INSTALLATION FOR SAFETY.




DANGER

- Disconnect AC input power before connecting any wiring to the AC motor drive.
- Even if the power has been turned off, a charge may still remain in the DC-link capacitors with hazardous voltages before the indicator on the digital keypad is OFF. Do NOT touch the internal circuits and components.

There are highly sensitive MOS components on the printed circuit boards. These components are especially sensitive to static electricity. Take anti-static measure before touching these components or the circuit boards.

- Never modify the internal components or wiring.
- Ground the AC motor drive by using the ground terminal. The grounding method must comply with the laws of the country where the AC motor drive is to be installed.
- Do NOT install the AC motor drive in a location with high temperature, direct sunlight or inflammable materials or gases.



CAUTION

- Never connect the AC motor drive output terminals U/T1, V/T2 and W/T3 directly to the AC mains circuit power supply.
- After finishing the wiring of the AC motor drive, check if U/T1, V/T2, and W/T3 are short-circuited to ground with a multimeter. Do NOT power the drive if short circuits occur. Eliminate the short circuits before the drive is powered.

The rated voltage of power system to install motor drives is listed below. Ensure that the installation voltage is in the correct range when installing a motor drive.

- For 230V models, the range is between 180–264V.
- For 460V models, the range is between 342–528V.

Only qualified persons are allowed to install, wire and maintain the AC motor drives.

Even if the three-phase AC motor is stopped, a charge with hazardous voltages may still remain in the main circuit terminals of the AC motor drive.

The performance of electrolytic capacitor will degrade if it is not charged for a long time. It is recommended to charge the drive which is stored in no charge condition every 2 years for 3–4 hours to restore the performance of electrolytic capacitor in the motor drive. Note: When power up the motor drive, use adjustable AC power source (ex. AC autotransformer) to charge the drive at 70%–80% of rated voltage for 30 minutes (do not run the motor drive). Then charge the drive at 100% of rated voltage for an hour (do not run the motor drive). By doing these, restore the performance of electrolytic capacitor before starting to run the motor drive. Do NOT run the motor drive at 100% rated voltage right away.

Pay attention to the following precautions when transporting and installing this package (including wooden crate and wood stave)

- If you need to deworm the wooden crate, do NOT use fumigation or you will damage the drive. Any damage to the drive caused by using fumigation voids the warranty.
- Use other methods, such as heat treatment or any other non-fumigation treatment, to deworm the wood packaging material.
- If you use heat treatment to deworm, leave the packaging materials in an environment of over 56°C for a minimum of thirty minutes.

If the motor drive generates leakage current over AC 3.5 mA or over DC 10 mA on a grounding conductor, compliance with local grounding regulations or IEC61800-5-1 standard is the minimum requirement for grounding.

VFD-EL-W series is designed for the application of general industrial environment. Non-linear load causes harmonic current, if the drive uses with public low voltage (e.g.the power supplies to houses), then you have to assemble an appropriate restraint equipment (e.g. isolation transformer or input reactor) to restrain the interference may be caused. Contact with Delta for more information.

Frame Size / Cooling Method / Model Name

Frame size	Capacity	Cooling method	230V, one-phase	460V, three-phase	
A1	0.25-1 HP	Convective cooling	VFD002EL21W(-1) VFD004EL21W(-1) VFD007EL43W(-1)	VFD004EL43W(-1) VFD007EL43W(-1)	
A2	2 HP	Fan cooling		VFD015EL43W(-1)	
B	2-7.5 HP		VFD015EL21W(-1)	VFD022EL43W(-1)	
			VFD022EL21W(-1)	VFD040EL43W(-1)	
				VFD055EL43W(-1)	

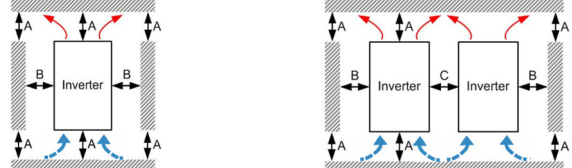
The difference between VFDxxxELxxW-1 and VFDxxxELxxW is the packing methods (and the prices), but the electrical specifications are all the same.

Mounting Clearance

Airflow direction: Inflow Outflow Distance

Single drive installation

Side-by-side horizontal installation / Zero stack installation



Models	Installation method	Minimum distance (mm)			Ambient temperature (°C)	
		A	B	C	Max. (w/o derating) ^{*Note 2}	Max. (derating)
VFD002EL21W(-1) VFD004EL21W(-1) VFD004EL43W(-1) VFD007EL43W(-1) VFD015EL43W(-1)	Single drive installation	120	50	-	50	60
	Side-by-side horizontal installation	120	50	30		
	Zero stack installation ^{*Note 1}	-	-	-	-	-
VFD007EL21W(-1)	Single drive installation	120	50	-	50 ^{*Note 3}	60 ^{*Note 3}
	Side-by-side horizontal installation	120	50	30		
	Zero stack installation ^{*Note 1}	-	-	-	-	-
VFD015EL21W(-1) VFD022EL21W(-1) VFD022EL43W(-1) VFD040EL43W(-1) VFD055EL43W(-1)	Single drive installation	150	50	-	50	60
	Side-by-side horizontal installation	150	50	30		
	Zero stack installation	150	50	0	40	50

Note 1: Frame A1 / A2 doesn't support zero stack installation; frame B supports it.


Note 2: Running the drive continuously with full load by the ambient temperature listed in the "Max. (derating)" column reduces the drive's life span.

Note 3: When VFD007EL21W(-1) is using a cooling fan, the maximum ambient temperature show as the table above; but when using no cooling fan, the maximum ambient temperature which show as above decreases 10°C.

Install the drive vertically to achieve the optimal heat dissipation performance.

The back surface of the drive for installation must be a metal material with higher temperature endurance and good heat dissipation.

Digital Keypad



1 **Status Display**
Display the driver's current status.

2 **LED Display**
Indicates frequency, voltage, current, user defined units and etc.

3 **Potentiometer**
For master Frequency setting.

4 **RUN Key**
Start AC drive operation.

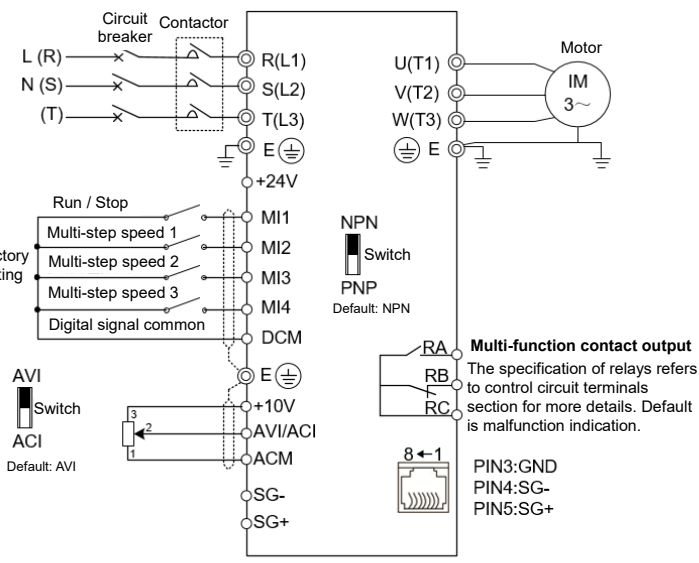
5 **UP and DOWN Key**
Set the parameter number and changes the numerical data, such as Master Frequency.

6 **MODE**
Change between different display mode.

7 **STOP/RESET**
Stops AC drive operation and reset the drive after fault occurred.

Wiring Diagram

230V one-phase / 460V three-phase



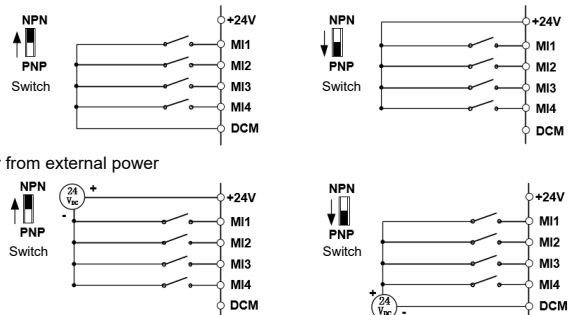
Main circuit (power) terminals Control circuit terminals Shielded leads & cable

NOTE Terminal SG+, SG- and PIN5, PIN4 of RJ45 are parallel.

Wiring for NPN / PNP mode

Supply from internal power

Supply from external power



Summary of Parameter Settings

Refer to VFD-EL-W series user manual for more detailed parameter information.

✂ means you can set this parameter during operation.

Parameters/ options marked in Gray are applied only for V1.00_5.5 kW models.

00 User Parameters

Pr.	Pr. Name	Setting Range	Default
00.00	Identity Code of the AC motor drive	0: 230V, 200 W 2: 230V, 400 W 4: 230V, 750 W 6: 230V, 1.5 kW 8: 230V, 2.2 kW 3: 460V, 400 W 5: 460V, 750 W 7: 460V, 1.5 kW 9: 460V, 2.2 kW 11: 460V, 4.0 kW 13: 460V, 5.5 kW	##
00.01	Rated Current Display of the AC motor drive	Display by models (read only)	##
00.02	Parameter Reset	0: Parameter can be read/written 1: All parameters are read only 7: Keypad and frequency setting knob locked 8: Keypad lock 9: All parameters are reset to factory settings (50 Hz, 230V / 400V or 220V / 380V depends on Pr.00.12) 10: All parameters are reset to default (60 Hz, 220V / 440V)	0
✂00.03	Start-up Display Selection	0: F (frequency command) 1: H (actual frequency) 2: A (output current) 3: U (user-defined, see Pr.00.04) 4: FWD/REV command	0
✂00.04	Content of Multi-function Display	0: Display the content of user-defined unit (Uxxx) 1: Display the counter value (c) 2: Display the status of multi-function input terminals (d) 3: Display DC bus voltage (u) 4: Display output voltage (E) 5: Display PID analog feedback signal (b) (%) 6: Output power factor angle (n) 7: Display output power (P) 8: Display PID setting and feedback signal 9: Display AVI (i) (V) 10: Display ACI (i) (mA) 11: Display the temperature of IGBT (h) (°C)	0
✂00.05	User-Defined Coefficient K	0.1–160.0	1.0
00.06	Software Version	Read-only	##
00.07	Software Version (Date)	Read-only	##
00.08	Password Input	0–9999	0
00.09	Password Set	0–9999	0
00.10	Control Mode	0: V/F control 1: Vector control	
00.12	50Hz Base Voltage Selection	0: 230V / 400V 1: 220V / 380V	0
00.13	User-defined Value (correspond to max. operating freq. Pr.01.00)	0–9999	0
00.14	Decimal place of User-defined Value	0–3	0
00.15	Output Phase Order Selection	0: Standard 1: Reverse the operation direction	0
00.16	Prohibit Write EEPROM Function	0: Disable 1: Enable, control via MI terminal 2: Enable, MI terminal is invalid	0

01 Basic Parameters

Pr.	Pr. Name	Setting Range	Default
01.00	Maximum Output Freq. (Fmax)	50.00–400.0 Hz	60.00
01.01	Maximum Voltage Freq. (Fbase)	0.10–400.0 Hz	60.00
01.02	Maximum Output Voltage (Vmax)	230V series: 0.1V–255.0 V 460V series: 0.1V–510.0 V	220.0 440.0
01.03	Mid-Point Freq. (Fmid)	0.10–400.0 Hz	1.50
01.04	Mid-Point Voltage (Vmid)	230V series: 0.1V–255.0 V 460V series: 0.1V–510.0 V	10.0 20.0
01.05	Minimum Output Freq. (Fmin)	0.10–400.0 Hz	1.50
01.06	Minimum Output Voltage (Vmin)	230V series: 0.1V–255.0 V 460V series: 0.1V–510.0 V	10.0 20.0
01.07	Output Freq. Upper Limit	0.1–120.0 %	110.0
01.08	Output Freq. Lower Limit	0.0–100.0 %	0.0
✂01.09	Accel Time 1	0.1–600.0 / 0.01– 600.0 sec	10.0
✂01.10	Decel Time 1	0.1–600.0 / 0.01–600.0 sec	10.0
✂01.11	Accel Time 2	0.1–600.0 / 0.01–600.0 sec	10.0
✂01.12	Decel Time 2	0.1–600.0 / 0.01–600.0 sec	10.0
✂01.13	Jog Acceleration Time	0.1–600.0 / 0.01–600.0 sec	1.0
✂01.14	Jog Deceleration Time	0.1–600.0 / 0.01–600.0 sec	1.0
✂01.15	Jog Freq.	0.10 Hz–F _{max} (Pr.01.00) Hz	6.00
01.16	Auto acceleration / deceleration (refer to Accel / Decel time setting)	0: Linear acceleration / deceleration 1: Auto acceleration, linear deceleration 2: Linear acceleration, auto deceleration 3: Auto acceleration / deceleration (Set by load) 4: Auto acceleration / deceleration (set by acceleration / deceleration Time setting)	0
01.17	Acceleration S-Curve	0.0 to 10.0 / 0.00 to 10.00 sec	0.0
01.18	Deceleration S-Curve	0.0 to 10.0 / 0.00 to 10.00 sec	0.0
01.19	Accel / Decel Time Unit	0: Unit is 0.1 sec 1: Unit is 0.01 sec	0

02 Operation Method Parameters

Pr.	Pr. Name	Setting Range	Default
✂02.00	Source of First Master Freq. Command	0: Digital keypad UP / DOWN keys or Multi-function Inputs UP / DOWN. Last used freq. saved. 1: 0– +10V from AVI 2: 4–20mA from ACI 3: RS-485 (RJ45 or SG+ / SG-) communication 4: Digital keypad potentiometer	0

Pr.	Pr. Name	Setting Range	Default
✂02.01	Source of First Operation Command	0: Digital keypad 1: External terminals. Keypad STOP / RESET enabled. 2: External terminals. Keypad STOP / RESET disabled. 3: RS-485 (RJ45) communication. Keypad STOP / RESET enabled. 4: RS-485 (RJ45) communication. Keypad STOP / RESET disabled.	0
02.02	Stop Method	0: STOP: ramp to stop; E.F.: coast to stop 1: STOP: coast to stop; E.F.: coast to stop 2: STOP: ramp to stop; E.F.: ramp to stop 3: STOP: coast to stop; E.F.: ramp to stop 4: Simple Positioning Stop; E.F.: coast to stop	0
02.03	PWM Carrier Freq. Selections	2–12 kHz	8
02.04	Motor Direction Control	0: Enable forward / reverse operation 1: Disable reverse operation 2: Disabled forward operation	0
02.05	The source of Power-On command and Running command modifies the operating control of the VFD	0: Start running when Power is on 1: Don't run when Power is on 2: When the source of the command changes, VFD's operation remains the same 3: When the source of the command changes, VFD's operation follows the new command 4: Runs when reset or power-on, changes operation command according to the external terminal status when the command source is 2-wire external terminal	1
02.06	Loss of ACI Signal (4-20mA)	0: Decelerate to 0 Hz 1: Coast to stop and display "AErr" 2: Continue operation by last freq. command 3: Continue the operation by following the setting at Pr.02.11	1
02.07	Up/Down Mode	0: By UP / DOWN Key 1: Based on acceleration / deceleration time 2: Constant speed (Pr.02.08) 3: Pulse input unit (Pr.02.08)	0
02.08	Accel / Decel Rate of Change of UP / DOWN Operation with Constant Speed	0.01–10.00 Hz / (2 ms)	0.01
✂02.09	Source of Second Freq. Command	0: Digital keypad UP / DOWN keys or Multi-function Inputs UP / DOWN. Last used freq. saved. 1: 0– +10V from AVI 2: 4–20mA from ACI 3: RS-485 (RJ45 or SG+ / SG-) communication 4: Digital keypad potentiometer	0
✂02.10	Combination of the First and Second Master Freq. Command	0: First Master Freq. Command 1: First Master Freq. Command+ Second Master Freq. Command 2: First Master Freq. Command - Second Master Freq. Command	0
✂02.11	Keypad Freq. Command	0.00–400.0 Hz	60.00
✂02.12	Communication Freq. Command	0.00–400.0 Hz	60.00
02.13	The Selections for Saving Keypad or Communication Freq. Command	0: Save Keypad & Communication Freq. 1: Save Keypad Freq. only 2: Save Communication Freq. only	0
02.14	Initial Freq. Selection (for keypad & RS-485)	0: By Current Freq Command 1: By Zero Freq Command 2: By Freq. Display at Stop	0
02.15	Initial Freq. Setpoint (for keypad & RS-485)	0.00–400.0 Hz	60.00
02.16	Display the Master Freq Command Source	Read Only Bit0=1: by First freq. source (Pr.02.00) Bit1=1: by Second Freq Source (Pr.02.09) Bit2=1: by Multi-input function	##
02.17	Display the Operation Command Source	Read Only Bit0=1: by Digital keypad Bit1=1: by RS-485 communication Bit2=1: by External terminal 2/3 wire mode Bit3=1: by Multi-input function	##
02.18	User-defined Value 2 Setting	0–Pr.00.13	0
02.19	User-defined Value 2	0–9999	##

03 Output Function Parameters

Pr.	Pr. Name	Setting Range	Default
03.00	Multi-function Output Relay (RA1, RB1, RC1)	0: No function	8
		1: AC drive operational supervision	
		2: Master freq. reached	
		3: Zero speed	
		4: Over torque detection	
03.01	Multi-function Output Relay (RA1, RB1, RC1)	5: Base-Block (B.B.) indication	0.00
		6: Low-voltage indication	
		7: Operation mode indication	
		8: Fault indication	
		9: Desired freq. reached	
03.02	Multi-function Output Relay (RA1, RB1, RC1)	10: Terminal count value reached	0
		11: Preliminary count value reached	
		12: Over Voltage Stall supervision	
		13: Over Current Stall supervision	
		14: Heat sink overheat warning	
03.03	Multi-function Output Relay (RA1, RB1, RC1)	15: Over Voltage supervision	0
		16: PID supervision	
		17: Forward command	
		18: Reverse command	
		19: Zero speed output signal	
03.04	Multi-function Output Relay (RA1, RB1, RC1)	20: Warning(FbE,Cexx, AoL2, AUE, SAvE)	0
		21: Brake control (Desired freq. reached)	
		22: AC motor drive ready	
		23: Multi-pump system error display (only Master)	
03.02	Desired Freq. Reached	0.00–400.0 Hz	0.00
03.05	Terminal Count Value	0–9999	0
03.06	Preliminary Count Value	0–9999	0
03.07	EF Active When Terminal Count Value Reached	0: Terminal count value reached, no EF display 1: Terminal count value reached, EF active	0

Pr.	Pr. Name	Setting Range	Default
03.08	Cooling Fan Control	0: Fan always ON 1: 1 minute after AC motor drive stops, fan will be OFF 2: Fan ON when AC motor drive runs, fan OFF when AC motor drive stops 3: Fan ON when preliminary heatsink temperature reached 4: Fan ON when AC motor drive runs, fan OFF when AC motor drive stops. Fan is at standby mode when AC is at 0 Hz.	0 (Only enable to fan cooling models)
03.11	Brake Release Freq.	0.00–20.00 Hz	0.00
03.12	Brake Engage Freq.	0.00–20.00 Hz	0.00
03.13	Display the Status of Relay	Read only	Read only

04 Input Function Parameters

Pr.	Pr. Name	Setting Range	Default
↗04.00	Keypad Potentiometer Bias	0.0–100.0 %	0.0
↗04.01	Keypad Potentiometer Bias Polarity	0: Positive bias 1: Negative bias	0
↗04.02	Keypad Potentiometer Gain	0.1–200.0 %	100.0
04.03	Keypad Potentiometer Negative Bias, Reverse Motion Enable/Disable	0: No negative bias command 1: Negative bias: REV motion enabled	0
04.04	MI Start Function & Multi-function Input Select	Mode 1 (Setting Pr.04.19 to 0) 0: MI1 Run (FWD) / Stop Mode 2 (Setting Pr.04.19 to 1) 0: two-wire: FWD / STOP, REV / STOP 1: two-wire: RUN / STOP, FWD / REV 2: three-wire operation	0
04.05	Reserved	0: No function	Reserved
04.06	Start-up / Stop or Multi-function Input Terminal (MI2)	1-3: Multi-step speed command 1-3 4: Reserved	1
04.07	Start-up / Stop or Multi-function Input Terminal (MI3)	5: External RESET 6: Accel. / decel. inhibit 7: Accel. / decel. time selection command	2
04.08	Multi-function Input Terminal (MI4)	8: Jog operation 9: External base block 10: Up – Increment master freq. 11: Down – Decrement master freq. 12: Counter trigger signal 13: Counter reset 14: EF External fault input 15: PID function disabled	3
04.09	Multi-function Input Contact (N.O / N.C)	0-63	0
04.10	Digital Terminal Input Debouncing Time	1–20 (*2 ms)	1
↗04.11	Min AVI Voltage	0.0–10.0V	0.0
↗04.12	Min AVI Freq.	0.0–100.0 % F _{MAX}	0.0
↗04.13	Max AVI Voltage	0.0–10.0V	10.0
↗04.14	Max AVI Freq.	0.0–100.0 % F _{MAX}	100.0
↗04.15	Min ACI Current	0.0–20.0 mA	4.0
↗04.16	Min ACI Freq.	0.0–100.0 % F _{MAX}	0.0
↗04.17	Max ACI Current	0.0–20.0 mA	20.0
↗04.18	Max ACI Freq.	0.0–100.0 % F _{MAX}	100.0
04.19	MI function mode control	0: Mode1 1: Mode2 (Switch the mode by Pr.04.19, and control by Pr.04.04)	0
04.26	Display the Status of Multi-function Input Terminal	Read only	Read only
↗04.27	Internal / External Multi-function Input Terminals Selection	0-63	0
↗04.28	Internal Terminal Status	0-63	0

05 Multi-step Speed Parameters

Pr.	Pr. Name	Setting Range	Default
↗05.00 – 05.06	1 st –7 th Step speed freq.	0.00-400.0 Hz	0.00

06 Protection Parameters

Pr.	Pr. Name	Setting Range	Default
06.00	Over-Voltage Stall Prevention	0: Disable over-voltage stall prevention 230V series: 330.0–410.0V 460V series: 660.0–820.0V	390.0 V 780.0 V
06.01	Over-Current Stall Prevention during Accel.	0: Disable 20–250 %	170
06.02	Over-Current Stall Prevention during Operation	0: Disable 20–250 %	170
06.03	Over-Torque Detection Mode (OL2)	0: Disabled 1: Enabled during constant speed operation. After the over-torque is detected, keep running until OL1 or OL occurs. 2: Enabled during constant speed operation. After the over-torque is detected, stop running. 3: After over-torque detection during acceleration and constant speed operation, continues operation until oL1 protection activates 4: After over-torque detection during acceleration and constant speed operation, stops and shows oL2 fault	0
↗06.04	Over-Torque Detection Level	10–200 %	150
06.05	Over-Torque Detection Time	0.1–60.0 sec	0.1

Pr.	Pr. Name	Setting Range	Default
06.06	Electronic Thermal Relay Selection	0: Standard motor (self-cooled by fan) 1: Special motor (forced external cooling) 2: Disabled	2
06.07	Electronic Thermal Relay Action Time	30–600 sec	60
06.08	Fault Record 1	0: No fault record	0
06.09	Fault Record 2	1: oc (Over current)	0
06.10	Fault Record 3	2: ov (Over voltage)	0
06.11	Fault Record 4	3: oH1 (IGBT overheat)	0
06.12	Fault Record 5	4: Reserved	0
06.21	Fault Record 6	5: oL (Overload)	0
06.22	Fault Record 7	6: oL1 (Electronics thermal relay protection 1)	0
06.23	Fault Record 8	22: Reserved	0
06.24	Fault Record 9	7: oL2 (Motor overload)	0
06.25	Fault Record 10	8: EF (External fault)	0
↗06.13	Multiple motor output phase lose check time	0.0: Disable 0.1–60.0 sec.	0.0
↗06.14	Multiple motor output phase lose check current level	10–100 %	30
06.26 06.31 06.36 06.41 06.46	Output Frequency Fault 1-5 (Hz)	0–65535	0
06.27 06.32 06.37 06.42 06.47	Output Current Fault 1-5	0–65535	0
06.28 06.33 06.38 06.43 06.48	Output Voltage Fault 1-5	0–65535	0
06.29 06.34 06.39 06.44 06.49	DC bus Voltage Fault 1-5	0–65535	0
06.30 06.35 06.40 06.45 06.50	Drive Internal Temperature Fault 1-5	0–65535	0
06.51	OL2 Over-Torque Detection Level Selection	0: Based on motor's rated current (Pr.07.00) 1: Based on driver's rated current (Pr.00.01)	0

07 Motor Parameters

Pr.	Pr. Name	Setting Range	Default
↗07.00	Motor Rated Current	30 %FLA – 120 % FLA (FLA Means VFD rated current)	100
↗07.01	Motor No-Load Current	0 %FLA – 99 % FLA	40
↗07.02	Torque Compensation	0.0–10.0	0.0
↗07.03	Slip Compensation Gain	0.00–10.00	0.00
↗07.04	Motor Parameters Auto Tuning	0: Disable 1: Auto-tuning R1 (Motor doesn't run) 2: Auto-tuning R1 + No-load current (with running motor)	0
07.05	Motor Line-to-Line Resistance R1 (Motor 0)	0–65535 mΩ	0
07.06	Motor Rated Slip (Motor 0)	0.00–20.00 Hz	3.00
07.07	Slip Compensation Limit	0–250 %	200
07.08	Torque Compensation Time Constant	0.01–10.00 sec.	0.10
07.09	Slip Compensation Time Constant	0.05–10.00 sec.	0.20
07.10	Accumulative Motor Operation Time (Min.)	0–1439 Min.	0
07.11	Accumulative Motor Operation Time (Day)	0–65535 Day	0
07.12	Motor PTC Overheat Protection	0: Disable 1: Enable	0
07.13	Input Debouncing Time of the PTC Protection	0–9999 (*2 ms)	100
07.14	Motor PTC Overheat Protection Level	0.1–10.0 V	2.4
07.15	Motor PTC Overheat Warning Level	0.1–10.0 V	1.2
07.16	Motor PTC Overheat Reset Delta Level	0.1–5.0 V	0.6
07.17	Treatment of the Motor PTC Overheat	0: Warn and Ramp to stop 1: Warn and Coast to stop 2: Warn and keep running	0

08 Special Parameters

Pr.	Pr. Name	Setting Range	Default
08.00	DC Brake Current Level	0–100 %	0
08.01	DC Brake Time during Start-Up	0.0–60.0 sec.	0.0

Pr.	Pr. Name	Setting Range	Default
08.02	DC Brake Time during Stopping	0.0–60.0 sec.	0.0
08.03	Start-Point for DC Brake	0.00–400.0 Hz	0.00
08.04	Momentary Power Loss Operation Selection	0: Operation stops after momentary power loss 1: Operation continues after momentary power loss, speed search starts with the Master Freq. reference value 2: Operation continues after momentary power loss, speed search starts with the minimum freq.	0
08.05	Maximum Allowable Power Loss Time	0.1–20.0 sec.	2.0
08.06	Base-block Speed Search	0: Disable speed search 1: Speed search starts with last freq. command 2: Starts with minimum output freq.	1
08.07	B.B. Time for Speed Search	0.1–5.0 sec.	0.5
08.08	Current Limit for Speed Search	30–200 %	150
↗08.09	Skip Freq. 1 Upper Limit	0.00–400.0 Hz	0.00
↗08.10	Skip Freq. 1 Lower Limit	0.00–400.0 Hz	0.00
↗08.11	Skip Freq. 2 Upper Limit	0.00–400.0 Hz	0.00
↗08.12	Skip Freq. 2 Lower Limit	0.00–400.0 Hz	0.00
↗08.13	Skip Freq. 3 Upper Limit	0.00–400.0 Hz	0.00
↗08.14	Skip Freq. 3 Lower Limit	0.00–400.0 Hz	0.00
08.15	Auto Restart After Fault	0 – 10	0
08.16	Auto Reset Time at Restart after Fault	0.1 – 6000.0 sec.	60.0
08.17	Auto Energy Saving	0: Disable 1: Enable	0
08.18	AVR Function	0: AVR Function enable 1: AVR Function disable 2: AVR Function disable for decal 3: AVR Function disable for stop	0
↗08.20	Compensation Coefficient for Motor Instability	0.0–5.0	0.0

09 Communication Parameters

Pr.	Pr. Name	Setting Range	Default
↗09.00	Communication Address	1–254	1
↗09.01	Transmission Speed	0: Baud rate 4800 bps 1: Baud rate 9600 bps 2: Baud rate 19200 bps 3: Baud rate 38400 bps	1
↗09.02	Transmission Fault Treatment	0: Warn and keep operating 1: warn and ramp to stop 2: warn and coast to stop 3: No warning and keep operating	3
↗09.03	Time-out Detection	0.0: Diabie 0.1–120.0 sec.	0.0
↗09.04	Communication Protocol	0: 7,N,2 for ASCII 1: 7,E,1 for ASCII 2: 7,O,1 for ASCII 3: 8,N,2 for RTU 4: 8,E,1 for RTU 5: 8,O,1 for RTU 6: 8,N,1 for RTU 7: 8,E,2 for RTU 8: 8,O,2 for RTU 9: 7,N,1 for ASCII 10: 7,E,2 for ASCII 11: 7,O,2 for ASCII	0
↗09.07	Response Delay Time	0–200 (unit: 2 ms)	1

10 PID Control Parameters

Pr.	Pr. Name	Setting Range	Default
10.00	PID Set Point Selection	0: Disable 1: Keypad 2: AVI (0–10 V) 3: ACI (4–20 mA) 4: PID set point (Pr.10.11)	0
10.01	Input Terminal for PID Feedback	0: Positive PID feedback from AVI 0–10 V 1: Negative PID feedback from AVI 0–10 V 2: Positive PID feedback from ACI 4–20 mA 3: Negative PID feedback from ACI 5–20 mA	0
↗10.02	Proportional Gain (P)	0.0–10.0	1.0
↗10.03	Integral Time (I)	0.00–100.0 sec.	1.00
↗10.04	Derivative Control (D)	0.00–1.00 sec.	0.00
10.05	Upper Bound for Integral Control	0–100 %	100
10.06	Primary Delay Filter Time	0.0–2.5 sec.	0.0
10.07	PID Output Freq. Limit	0–110 %	100
10.08	PID Feedback Signal Detection Time	0.0–3600 sec. (0: disable)	60.0
10.09	Feedback Signal Fault Treatment	0: Warn and ramp to stop 1: Warn and coast to stop 2: Warn and continue operation	0
10.10	Gain Over the PID Detection Value	0.0–10.0	1.0
↗10.11	PID Target Value	0.00–400.0 Hz (Valid when set Pr.10.00 as 4)	0.00
10.12	PID Deviation Level	0.0–100.0 %	10.0
10.13	PID Deviation Time	0.1–300.0 sec.	5.0
10.14	Sleep / Wake-up Detection Time	0.0–6550 sec.	0.0
10.15	Wake-up frequency	0.00 to F _{MAX} Hz	0.00
10.16	Sleep time	0.0–F _{MAX}	0.00
10.17	PID Offset	0.00–60.00 Hz	0
10.18	PID Feedback Physical Quantity Value	1.0–99.9	99.9
10.19	PID Mode Selection	0: Serial connection 1: Parallel connection	0
10.20	PID Deviation Treatment	0: Warning but continue to operate 1: Error and coast to stop 2: Error and ramp to stop 3: Ramp to stop and restart after time set at Pr.10.21 (No display of error and warning) 4: Ramp to stop and restart after time set at Pr.10.21. The number of times to restart will follow the setting at Pr.10.50.	0
10.21	Offset Level of Liquid Leakage	0–9999 sec.	60
↗10.22	Liquid Leakage Change Detection	0–100 %	0
10.23	Time Setting for Liquid Leakage Change	0–9999 sec.	10

Pr.	Pr. Name	Setting Range	Default
↗10.24	Offset Level of Liquid Leakage	0–50 %	0
↗10.25	Liquid Leakage Change Detection	0: Disable 0–100 %	0
↗10.26	Time Setting for Liquid Leakage Change	0: Disable 0.1–10.0 sec.	0.5
10.35	Multi-Pump control mode	0: Disable 1: Fixed Time Circulation (alternating operation) 2: Fixed quantity control (multi-pump operating at constant pressure)	0
10.36	Multi-pump ID	1: Master 2–4: Slave	0
↗10.37	Multi-pump's fixed time circulation period	1–65535 (minute)	60
↗10.38	Freq. to start switching pumps	0.00 Hz–F _{MAX}	60.00
↗10.39	Time detected when pump reaches the starting freq.	0.0–3600.0 sec.	1.0
↗10.40	Freq. to stop switching pumps	0.00 Hz–F _{MAX}	48.00
↗10.41	Time detected when pump reaches the stopping freq.	0.0–3600.0 (sec.)	1.0
↗10.42	Pump's Freq. at Time Out (Disconnection)	0.0–F _{MAX}	0.00
10.43	Pump's error handling	<u>Bit0: whether to switch to an alternative pump when operation pump error occurred.</u> 0: Stop all pump action 1: Switch to an alternative pump <u>Bit1: Standby or stop after resetting from error.</u> 0: Standby after reset. 1: Stop after reset. <u>Bit2: To run a pump or not when an error is occurred.</u> 0: Do not start. 1: Select an alternate pump.	1
10.44	Selection of pump startup sequence	0: By pump's ID # 1: By the running time.	0
↗10.45	Running time of multi-pump under alternative operation	0.0–360.0 sec	60.0
↗10.49	Assign the setting of Pr10.12 [PID feedback level]	0: Use the current setting (factory setting), verify if any error by checking feedback deviation, 1: Set low water pressure percentage (%), verify if any error by checking physical quantity value's feedback.	0
↗10.50	Number of times to restart when PID Error is occurred.	0–1000 times	0

● Fault Codes

The drive has a comprehensive fault diagnostic system that includes several different alarms and fault messages. Once a fault is detected, the corresponding protective functions will be activated. The following faults are displayed as shown on the drive digital keypad display. The five most recent faults can be read from the digital keypad or communication.

🔧 NOTE

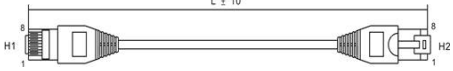
Wait 5 seconds after a fault has been cleared before performing reset via keypad of input terminal.


Fault code	Description	Fault code	Description
0	No fault	19	Power board CPU READ failure (cF2.0)
1	Over-current (oc)	20	Hardware protection failure (HPF1)
2	Over-voltage (ov)	21	Hardware protection failure (HPF2)
3	IGBT Overheat (oH1)	22	Reserved
4	Reserved	23	Hardware protection failure (HPF4)
5	Overload(oL)	24	Hardware circuit failure (cF3.0)
6	Overload (oL1)	25	Hardware circuit failure (cF3.1)
7	Motor Overload (oL2)	26	Hardware circuit failure (cF3.2)
8	External Fault (EF)	27	Hardware circuit failure (cF3.3)
9	Over-current during acceleration (ocA)	28	Hardware circuit failure (cF3.4)
10	Over-current during deceleration (ocd)	29~31	Reserved
11	Over-current during constant speed (ocn)	32	ACI analog signal error (AErr)
12~13	Reserved	33	Reserved
14	Phase-loss (PHL)	34	Motor PTC overheat protection (PTC1)
15	Reserved	35	PID feedback error (FbE)
16	Auto acceleration / deceleration failure (CFA)	36	Unusual PID feedback deviation (dEv)
17	Software / password protection (codE)	37	Motor disconnection output phase loss (oPHL)
18	Power board CPU WRITE failure (cF1.0)		

● Optional Accessory

Keypad: VFD-PU08

Communication Cable




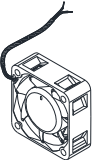
 **NOTE** VFD-PU08 doesn't contain the communication cable, you can pick and purchase the communication cable according to your needs. (Refer to the table below)

No.	Model	mm	inch
1	UC-CMC003-01A	300	11.8
2	UC-CMC005-01A	500	19.6
3	UC-CMC010-01A	1000	39.0
4	UC-CMC015-01A	1500	59.0
5	UC-CMC020-01A	2000	78.7
6	UC-CMC030-01A	3000	118.1
7	UC-CMC050-01A	5000	196.8

Fan Kit: MKEL-AKFM1



Suitable Model: VFD007EL21W(-1)

-  **NOTE**
- After assembling a cooling fan to VFD007EL21W(-1), the maximum ambient temperature increases to 50°C and without derating; if you don't assemble the cooling fan, the maximum ambient temperature still has 40°C and without derating.
 - The 24V fan can get power from the control terminal +24V / DCM of the AC motor drive. Do not add any other load to the control terminal except MI terminals when using the fan, prevent the +24V terminal from overload and not to damage the AC motor drive.




● Notes de sécurité, d'attention, et de danger

POUR VOTRE SÉCURITÉ, VEUILLEZ LIRE CE QUI SUIIT AVANT DE PROCÉDER À L'INSTALLATION

 DANGER	<ul style="list-style-type: none">L'alimentation CA doit impérativement être débranchée avant de procéder aux branchements du moteur CA.Même une fois l'alimentation coupée, une charge électrique contenant des tensions dangereuses peut rester présente dans les condensateurs de liaison à courant continu (DC-link) tant que le LED D'ALIMENTATION n'est pas ÉTEINT. Ne touchez ni le circuit ni les composants internes.Les cartes de circuits imprimés comportent des composants MOS extrêmement sensibles.Ces composants sont particulièrement sensibles à l'électricité statique. Ne touchez pas ces composants ni les cartes de circuits imprimés sans avoir pris des mesures antistatiques. Ne réassemblez jamais les composants internes ou les branchements.Mettez le moteur CA à la terre via le terminal de mise à la terre. La méthode de mise à la terre doit être conforme à la législation en vigueur dans le pays où est installé le moteur CA.N'INSTALLEZ JAMAIS le moteur CA dans un endroit exposé à des températures élevées, à la lumière directe du soleil ou à des éléments inflammables.
 CAUTION	<ul style="list-style-type: none">Ne branchez jamais directement les terminaux de sortie U/T1, V/T2 et W/T3 du moteur CA sur l'alimentation secteur CA.Assurez-vous que la tension d'installation est dans les cadres mentionnées ci-dessous pendant l'installation des moteurs CA.La tension nominale du système d'alimentation pour installer des moteurs:<ol style="list-style-type: none">Pour les modèles de 230V, l'écart variable est entre 180V et 264VPour les modèles de 460V, l'écart variable est entre 342V et 528V.Seuls des techniciens qualifiés sont autorisés à installer, brancher et entretenir les moteurs CA.Même lorsque le moteur CA triphasé est à l'arrêt, une charge électrique contenant des tensions dangereuses peut rester présente dans les principaux terminaux du moteur CALes performances du condensateur électrolytique peuvent se détériorer s'il n'est pas rechargé pendant une période prolongée. Il est recommandé de recharger un moteur stocké sans charge tous les 2 ans pendant 3 à 4 heures* pour restaurer les performances du condensateur à électrolyte dans le moteur CA.*Remarque: Peandant la mise sous tension du moteur CA, utilisez une source d'alimentation CA réglable (par ex. un autotransformateur CA) pour charger le moteur graduellement à 70%–80% de la tension nominale pour 30 minutes. (Ne démarrez pas le moteur CA). Et puis chargez le moteur CA à la tension nominale pour une heure (Ne démarrez pas le moteur CA) pour restaurer les performances du condensateur à électrolyte avant de démarrer le moteur CA. Ne faites jamais marcher le moteur CA directement à la tension nominale.Veuillez utiliser une source d'alimentation CA réglable (par ex. un autotransformateur CA) pour charger le moteur graduellement jusqu'à la tension nominale; le moteur ne doit pas être chargé directement avec la tension nominale.



	<ul style="list-style-type: none">Faites cependant bien attention aux points suivants pendant le transport et l'installation de cet emballage (y compris la caisse en bois et les lattes de bois).<ol style="list-style-type: none">Si vous devez vermifuger la caisse en bois, n'utilisez pas de fumigation, vous risquez d'endommager le variateur de vitesse c.a. Tout dommage causé au variateur de vitesse c.a. par la fumigation annule la garantie.Employez d'autres méthodes, telles que le traitement thermique ou toute d'autre façon sauf la fumigation, pour vermifuger des matériaux d'emballage en bois.Si vous choisissez le traitement thermique pour vermifuger, laissez les matériaux d'emballage dans un environnement avec une température supérieure à 56°C pendant au moins trente minutesSi un moteur CA produit une fuite de courant de plus que 3.5mA CA (courant alternatif) ou de plus que 10mA CC (courant continu) au conducteur de protection par la mise à la terre, les critères minimaux requis du conducteur de protection à installer doivent se conformer à des lois et des règlements nationaux et locaux ou à suivre IEC61800-5-1 pour faire la mise à la terre.
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Installation

 CAUTION	<ul style="list-style-type: none">Evitez que des particules de fibres, des bouts de papier, de la poussière de sciure de bois, des particules métalliques etc. n'adhèrent au dissipateur thermique.Installez le moteur CA dans un meuble métallique. En cas d'installation superposée de plusieurs moteurs, utilisez une cloison de séparation métallique entre chaque moteur CA pour éviter la surchauffe mutuelle et prévenir le risque d'incendie.Installez le moteur CA exclusivement dans des environnements à degré de pollution 2: normalement, seule une pollution non conductrice se produit; une conductivité temporaire provoquée par la condensation peut survenir.
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Branchements


Après avoir retiré le capot avant, assurez-vous que les terminaux d'alimentation et de contrôle sont parfaitement signalés. Veuillez lire les instructions suivantes avant de procéder aux branchements.

 DANGER	<ul style="list-style-type: none">Seuls des techniciens qualifiés ayant une parfaite connaissance des moteurs CA sont autorisés à installer, brancher et entretenir les moteurs CA. Assurez-vous que l'alimentation est coupée avant de procéder aux branchements afin de prévenir tout risque d'électrocution.Il est impératif d'éteindre et de débrancher l'alimentation du moteur CA avant de procéder aux branchements. Même une fois l'alimentation coupée, une charge électrique contenant des tensions dangereuses peut rester présente dans les condensateurs CC du bus. Il est par conséquent recommandé aux utilisateurs de mesurer la tension restante avant de procéder aux branchements. Pour votre sécurité, n'effectuez aucun branchement tant que la tension n'est pas redescendue à un niveau sûr < à 25 Vcc. Procéder à un branchement tant qu'une charge électrique reste présente peut provoquer des étincelles et un court-circuit.Les terminaux R/L1, S/L2 and T/L3 sont les entrées du système d'alimentation secteur.Si l'alimentation secteur est incorrectement branché aux autres terminaux, il pourrait entraîner des défauts importants ou endommager gravement le matériel. La tension et le courant devraient se situer dans la fourchette tel qu'indiqué sur la plaque signalétique de l'appareil (voir Chapitre 1-1).Toutes les unités doivent être directement mises à la terre sur un terminal de mise à terre commun afin d'éviter les impacts de foudre et les risques d'électrocution.Veillez à parfaitement resserrer les vis des terminaux du circuit principal afin d'éviter les étincelles provoquées par des vis desserrées par des vibrations.
 CAUTION	<ul style="list-style-type: none">Lors des branchements, et pour garantir votre sécurité, veillez à utiliser des fils dont les spécifications sont conformes aux normes locales en vigueur.Vérifiez les points suivants une fois les branchements terminés:<ol style="list-style-type: none">Tous les branchements sont-ils corrects ?Tous les fils sont-ils reliés ?Y a-t-il des courts-circuits entre les terminaux ou avec la mise à la terre ?


● Safety, Danger & Caution Markings

PLEASE READ PRIOR TO INSTALLATION FOR SAFETY.

 DANGER	<ul style="list-style-type: none">AC input power must be disconnected before any wiring to the AC motor drive is made.Even if the power has been turned off, a charge may still remain in the DC-link capacitors with hazardous voltages before the indicator on the digital keypad is OFF. Please do not touch the internal circuit and components.There are highly sensitive MOS components on the printed circuit boards. These components are especially sensitive to static electricity. Please do not touch these components or the circuit boards before taking anti-static measures.Never reassemble internal components or wiring.Ground the AC motor drive using the ground terminal. The grounding method must comply with the laws of the country where the AC motor
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	<p>drive is to be installed.</p> <ul style="list-style-type: none">DO NOT install the AC motor drive in a place subjected to high temperature, direct sunlight and inflammables.
 CAUTION	<ul style="list-style-type: none">Never connect the AC motor drive output terminals U/T1, V/T2 and W/T3 directly to the AC mains circuit power supply.Rated voltage of power system to install motor drives is as below, make sure that the installation voltage is within the ranges mentioned below while installing the motor drives:<ol style="list-style-type: none">For 230V models, the variable range is between 180V and 264V.For 460V models, the variable range is between 342V and 528V.Only qualified persons are allowed to install, wire and maintain the AC motor drives.Even if the 3-phase AC motor is stopped, a charge may still remain in the main circuit terminals of the AC motor drive with hazardous voltages.The performance of electrolytic capacitor will degrade if it is not charged for a long time. It is recommended to charge the drive which is stored in no charge condition every 2 years for 3–4 hours to restore the performance of electrolytic capacitor in the motor drive. Note: When power up the motor drive, use adjustable AC power source (ex. AC autotransformer) to charge the drive at 70%–80% of rated voltage for 30 minutes (do not run the motor drive). Then charge the drive at 100% of rated voltage for an hour (do not run the motor drive). By doing these, restore the performance of electrolytic capacitor before starting to run the motor drive. Do NOT run the motor drive at 100% rated voltage right away.Pay attention to the following precautions when transporting and installing this package (including wooden crate and wood stave)<ol style="list-style-type: none">If you need to deworm the wooden crate, do NOT use fumigation or you will damage the drive. Any damage to the drive caused by using fumigation voids the warranty.Use other methods, such as heat treatment or any other non-fumigation treatment, to deworm the wood packaging material.If you use heat treatment to deworm, leave the packaging materials in an environment of over 56°C for a minimum of thirty minutes.If the motor drive produces a leakage current of over 3.5mAAC or over 10mA DC on the Protective Earthing conductor, the minimum specifications required of the Protective Earthing conductor to be installed have to comply with the national, local laws and regulations or follow IEC61800-5-1 to do grounding.

Installation

 CAUTION	<ul style="list-style-type: none">Prevent fiber particles, scraps of paper, shredded wood saw dust, metal particles, etc. from adhering to the heat sink.Install the AC motor drive in a metal cabinet. When installing one drive below another one, use a metal separation between the AC motor drives to prevent mutual heating and to prevent the risk of accidental fire.Install the AC motor drive in Pollution Degree 2 environments only: normally only nonconductive pollution occurs and temporary conductivity caused by condensation is expected.
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Wiring



After removing the front cover, please check if the power and control terminals are clearly visible. Please read following precautions to avoid wiring mistakes.

 DANGER	<ul style="list-style-type: none">It is crucial to cut off the AC motor drive power before doing any wiring. A charge may still remain in the DC bus capacitors with hazardous voltages even after the power has been turned off a short time. Therefore, it is suggested to measure the remaining voltage with a DC voltmeter on +1/DC+ and DC- before doing any wiring. For your personnel safety, please do not start wiring before the voltage drops to a safe level < 25 VDC. Wiring the installation with a remaining voltage condition may cause injuries, sparks and short circuits.Only qualified personnel familiar with AC motor drives is allowed to perform installation, wiring and commissioning. Make sure the power is turned off before wiring to prevent electric shocks.The terminals R/L1, S/L2, T/L3 are for mains power input. If mains power is wrongly connected to other terminals, it may result in damage to the equipment. The voltage and current should lie within the range as indicated on the nameplate (see Chapter 1-1).All units must be grounded directly to a common ground terminal to prevent electrical shocks or damage by lightning.Please make sure to tighten the screw of the main circuit terminals to prevent sparks due to the loosening of vibrations.
 CAUTION	<ul style="list-style-type: none">When wiring, please choose the wires with specification that complies with local regulations for your personal safety.Check following items after finishing the wiring:<ol style="list-style-type: none">Are all connections correct ?Any loose wires ?Any short-circuits between the terminals or to ground ?

● Başlamak

- Ürünün kurulumunu yapmadan önce lütfen bu bilgi dökümanını tamamen okuyunuz ve ürünle birlikte gelen bilgi dökümanı veya CD'yi referans olarak kullanıcılara dağıttınız.
- Donanım ve operatörlerin güvenliği için, ürünün kurulumu, test çalışması ve parametre ayarları sadece AC sürücü bilgisi olan yetkili kişiler tarafından gerçekleştirilmelidir. AC motor sürücüsünü kullanmadan önce her zaman bu dökümanı okuyunuz. Özellikle WARNING, DANGER ve CAUTION notlarına dikkat ediniz. Sorularınız için teknik servisimizle bağlantıya geçebilirsiniz.



GÜVENLİ KURULUM İÇİN LÜTFEN ÖNCE AŞAĞIDAKİ NOTLARI OKUYUNUZ.

 DANGER	<ul style="list-style-type: none">Topraklama metodu AC motor sürücüsünün kurulduğu ülke topraklama kurallarına uygun yapılmalıdır.AC motor sürücü kablo bağlantıları yapıldıktan sonra U/T1, V/T2 ve W/T3 terminaleri ile toprak hattı arasında ölçü aleti ile kısa devre ölçümü yapılmalıdır. Eğer kısa devre varsa sürücüyü kesinlikle enerjilendirmeyin ve kısa devre durumunu ortadan kaldırın.The rated voltage of power system to install motor drives is listed below. Ensure that the installation voltage is in the correct range when installing a motor drive.<ol style="list-style-type: none">For 230V models, the range is between 180–264V.For 460V models, the range is between 342–528V.AC motor sürücüsü dahili devrelerinde kullanılan MOS IC komponentler statik elektriğe karşı duyarlıdır. Lütfen devrelere anti-statik önlemler almadan çıplak elle dokunmayınız ve komponentleri sökmeyiniz.Never reassemble internal components or wiring.Eğer bağlantı değişikliği yapılması gerekiyorsa, ilk önce AC motor sürücüsünün enerjisini kesiniz. Enerji kesildikten sonra DC devrelerdeki kapasitörlerin deşarj olması için belli bir süre bekleyiniz. Eğer kapasitörler deşarj olmadan bağlantı yapılmak istenirse bu durum kısa devre ve yangına sebep olabilir. Güvenli bağlantı için kapasitörler deşarj olana kadar bekleyiniz.AC motor sürücüsünün kurulumunu direk güneş ışığının temas ettiği, aşırı sıcak ve yanıcı ortamlarda yapmayınız.Paketlerin nakliyesi ve yerleşiminde aşağıdaki hususlara dikkat edilmelidir (ahşap kasa ve ahşap kutu dahil olmak üzere)<ol style="list-style-type: none">Ahşap kasaların kurtlardan arındırılması gerekirse, buhar kullanımı sürücülerde hasara neden olacaktır. Buhar kaynaklı sürücü hasarları garanti dahilinde olmamaktadır.Farklı yöntemler kullanın, mesela ısı uygulaması veya diğer buharsız uygulamalar tercih edilebilir.Eğer ısı uygulaması ile kurtlardan arındırma yaparsanız, paketi 56°C üzerindeki bir ortam sıcaklığında en az otuz dakika bekletiniz.
 CAUTION	<ul style="list-style-type: none">AC motor sürücüsünün U/T1, V/T2, W/T3 terminallerine kesinlikle besleme bağlamayınız.AC motor sürücüsü ile motor arasındaki kablo çok uzun olduğu zaman, motor izolasyonu zarar görebilir. Motorun zarar görmesini önlemek için özel motor (frequency duty motor) kullanın veya reaktör kullanın.AC motor sürücüsü voltaj oranı ≤ 240V (460V modeller için ≤ 480V) ve ana besleme akım kapasitesi ≤ 5000A RMS (≥ 40HP (30kW) modeller için (≤10000A RMS) olmalıdır.AC motor sürücüsünün kurulumu aşındırıcı sıvı ve gazlardan uzak, kuru, temiz ve havalandırılması iyi olan yerlere yapılmalıdır.The performance of electrolytic capacitor will degrade if it is not charged for a long time. It is recommended to charge the drive which is stored in no charge condition every 2 years for 3~4 hours to restore the performance of electrolytic capacitor in the motor drive. Note: When power up the motor drive, use adjustable AC power source (ex AC autotransformer) to charge the drive at 70%~80% of rated voltage for 30 minutes (do not run the motor drive). Then charge the drive at 100% of rated voltage for an hour (do not run the motor drive). By doing these, restore the performance of electrolytic capacitor before starting to run the motor drive. Do NOT run the motor drive at 100% rated voltage right away.Lütfen ön kapağını taktıktan sonra sürücüye enerji veriniz. Sürücü üzerinde ıslak elle çalışmayınız. Sürücünün çalışma için uygun olduğuna emin olunuz. Hata displayi oluştuğktan sonra, hatayı gidermek için RESET tuşuna basmadan önce 5 saniye bekleyiniz.Güç faktörünü iyileştirmek için kapasitör kullanmayınız.Sürücünün güç faktörünü iyileştirmek için DC reaktör kullanınız.Lütfen sürücünün ana devreleri üzerinde aşırı akıma bağlı motor hatalarını önlemek için herhangi bir güç faktörü iyileştirme kapasitörü kullanmayınız.

● 序文

ご使用になる前に、本取扱説明書をお読みになり、製品を正しくご使用ください。またいつでも閲覧できるように安全な場所に本取扱説明書を保管してください。インバータは精密な電力電子製品で、作業者及び機械設備の安全のため、必ず専門の電機技術者の指導の下で操作して下さい。本説明書に「危険」、「注意」などの記載事項は、必ず確認して下さい。使用上問題があれば、購入先または弊社にお問い合わせください。

本製品をご使用する前に、必ず下記を確認して下さい

	<div><input checked="" type="checkbox"/> 本製品を配線及び設置する際は、必ず電源が OFF である事を確認して下さい。</div> <div><input checked="" type="checkbox"/> AC 電源を OFF 後、インバータのインジケーターが消灯する前は残留高電圧があり、非常に危険なため、内部回路及び入出力端子などに、絶対に触らないで下さい。</div> <div><input checked="" type="checkbox"/> インバータ内部回路基板の部品は静電気に弱いので、静電気せずに手で触らないで下さい。インバータ内の部品などの改造は厳禁です。</div> <div><input checked="" type="checkbox"/> インバータ端子④は必ず現地の法規に従い、正しく接地して下さい。</div> <div><input checked="" type="checkbox"/> インバータ及びオプション部品の設置は、熱源及び可燃物から遠ざけて下さい。</div>
	<div><input checked="" type="checkbox"/> インバータの出力端子（U/T1、V/T2、W/T3）に AC 電源を絶対に入れないで下さい。焼損の原因になります。</div> <div><input checked="" type="checkbox"/> インバータ配線完了後、必ずマルチメーターを用いて、各相（U/T1、V/T2、W/T3）とグラウンド間でショートしていないことを確認してから、電源を入れてください。</div> <div><input checked="" type="checkbox"/> インバータの入力電源許容範囲は下記となります。<div>1. 200V 級インバータは 180V~264V</div><div>2. 400V 級インバータは 342V~528V</div></div> <div><input checked="" type="checkbox"/> インバータの設置、配線及び修理メンテナンス作業は、必ず資格のある技術者が行ってください。</div> <div><input checked="" type="checkbox"/> 3 相交流モーターが停止しても、インバータの主回路端子は依然として高電圧が発生する可能性があります、大変危険です。</div> <div><input checked="" type="checkbox"/> 電解キャパシータは長期間非通電の場合、その性能は低下する可能性があります。そのため、長期間放置する場合、必ず 2 年間毎に 3〜4 時間（備考）の通電を行い、インバータの電解キャパシタ性能を回復させてください。<div>備考：インバータに通電する時は、例えば可変トランスなどを使い、定格電圧の 70〜80%電圧で 30 分間通電（非運転状態）してから、定格電圧で 1 時間通電（非運転状態）する事で、電解キャパシータの性能を回復させてください。</div>絶対に、定格電圧で通電した状態で運転しないで下さい。</div> <div><input checked="" type="checkbox"/> 搬送或いは設置時に使う梱包材（木箱、紙箱など）の消毒についての注意事項：<div>1. 部品の損傷を防ぐ為に、梱包材を消毒する際、絶対に燻蒸（くんじょう）方式を採用しない事。燻蒸以外の方式を採用して下さい。燻蒸消毒方式を採用する事で、部品が損傷した場合は、保証対象外になります。</div><div>2. 高温消毒の方式を採用する場合は、梱包材を 56℃ 以上に加熱し、30 分間以上を放置してください。</div></div> <div><input checked="" type="checkbox"/> インバータの接地線に流れる電流が 3.5mA（交流）、或いは 10mA（直流）を超える場合、現地の法規、または IEC61800-5-1 で定めた方法に沿って接地してください。</div>

■ China RoHS

部件名称 Part Name	有害物质 - Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
金属部件 Metal parts	X	O	O	O	O	O
塑料部件 Plastic parts	O	O	O	O	O	O
电子件 Electronic	X	O	O	O	O	O
触点 Contacts	O	O	X	O	O	O
线缆和线缆附件 Cables & cabling accessories	O	O	O	O	O	O
本表格依据 SJ/T11364 的规定编制。 This table is made according to SJ/T 11364. O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。 O: Indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572. X: 表示该有害物质至少在在该部件的某一均质材料中的含量超出 GB/T26572 规定的限量要求。 X: Indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572.						

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