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# SV730W 系列伺服 (EtherCAT 总线) 中英文使用说明书

## 1 前言

感谢您使用禾川 SV730W 系列伺服驱动器, 本说明书主要提供 SV730W 系列伺服 EtherCAT 总线型驱动器的规格尺寸、安装接线等相关使用说明信息。如需更详尽信息请扫描右侧二维码下载《SV730W 伺服系统 EtherCAT 总线技术手册》。



驱动器包装清单如下表:

序号	名称	数量
1	730W 系列伺服驱动器	1
2	安全端子	1
	抱闸端子	1
	34pin 端子 (CN1A 接口)	1
	动力输出接线端子	4
3	电源输入接线端子 *	1
3	730W 系列伺服说明书 (EtherCAT 总线)	1
4	合格证	1

- SIZE A 机型配送 9pin 电源输入接线端子 \*1, SIZE B 机型配送 6pin+5pin 电源输入接线端子 \*1。
- 确认物件在运输途中是否具有损伤。
- 如果发现问题, 请联系经销商。

### 安全注意事项

#### 安全图标

在接收检验、安装、配线、操作、维护及检查时, 应随时注意以下安全注意事项。

对于忽视说明书记载内容, 错误的使用本产品, 而可能带来的危害和损害的程度按下列标识加以区分和说明。

	该标志表示「可能会发生导致死亡或重伤事故的危險」的内容
	该标志表示「可能会导致伤害或财产损失事故发生」的内容
	对应当遵守的事项用以下的图形标志进行说明
	该图形表示禁止实施的「禁止实施」事项内容
	该图形表示必须实行的「强制实施」内容

⚠️ 危险	
关于安装和配线	
	切勿将电机直接连接到商用电源。否则, 会引发火灾、故障。
	请勿在电机、驱动器的周围放置可燃物。否则, 会引发火灾事故。
	驱动器必须要用外箱保护, 设置保护外箱时, 外箱壁、其他机器和驱动器之间要保持使用说明书规定的距离。否则, 会引发触电、火灾、故障、破损。
	应安装在尘埃较少、不会接触到水、油等的地方。否则, 会引发触电、火灾、故障、破损。
	电机、驱动器安装在金属等非可燃物上。否则, 会引发火灾事故。
	务必由专业电工进行接线作业。否则, 会引发触电。
	电机、驱动器的 FG 端子必须接地。否则, 会引发触电。
	必须事先切断上位断路器, 进行正确的接线。否则, 可能会引发触电、受伤、故障、破损。
	电缆应确保连接好, 通电部位须用绝缘物切实地做到绝缘。否则, 会引发触电、火灾、故障。

⚠️ 危险	
关于操作运行	
	请勿触摸驱动器内部。否则, 会引发烧伤、触电事故。
	请勿让电缆线受到损伤、承受过大的外力、重压、受夹。否则, 会引发触电、故障。
	切勿接触运转中的电机旋转部。否则, 会引发受伤事故。
	请勿将电缆线浸在油和水中使用。否则, 会引发触电、受伤、火灾事故。
	请勿用湿手进行接线和操作。否则, 会引发触电、受伤、火灾事故。
	使用轴端带键槽的电机时, 请勿裸手接触键槽。否则, 会引发受伤事故。
	电机、驱动器、散热器的温度会升高, 请勿触摸。否则, 会引发烧伤或部件损伤事故。
	请勿用外部动力驱动电机。否则, 会引发火灾事故。
关于其他使用上的注意事项	
	在地震发生后务必进行相关安全确认。否则, 会引发触电、受伤、火灾事故。
	为防止发生地震时造成火灾及人身事故, 应切实地进行设置和安装。否则, 会引发受伤、触电、火灾、故障、破损。
	务必在外部设置紧急停止电路, 以确保紧急时能及时地停止运转、切断电源。否则, 引发受伤、触电、火灾、故障、破损。
关于维护和点检	
	驱动器有危险高压部分, 进行配线和点检工作时, 必须切断电源放置使其放电后 (5 分钟以上) 进行, 并且, 绝对不允许对其进行分解。会引发触电事故。

⚠️ 注意	
关于安装和配线	
	电机和驱动器要按指定的匹配组合。否则, 会引发火灾、故障。
	不可直接接触连接器端子。否则, 会引发触电、故障。
	注意通风口不可堵塞, 或异物进入。否则, 会引发触电、火灾。
	试运行须在电机固定, 并与其他机械系统分离状态下实施。动作确认后再安装到机械系统上。否则, 会引发受伤事故。
	遵守指定的安装方法、安装方向。否则, 会引发受伤、故障。
	请根据设备本身的重量和产品的额定输出进行妥当安装。否则, 会引发受伤、故障。
关于操作和运转	
	请勿站在产品上、或在产品上放置重物。否则, 会引发触电、受伤、故障、破损。
	禁止极端的增益调整及变更, 会导致运作不稳定。否则, 会引发故障、破损。
	请勿在受日光直接照射的地方使用。否则, 会引发故障。
	请勿使电机及电机轴部受到较强的冲击。否则, 会引发故障。
	电机内置制动器的作用是保持制动, 禁止用在通常的制动场合。否则, 会引发受伤、故障。
	停电后恢复供电时, 有可能出现突然启动的情况, 故请勿靠近机器。务必做好机器设定, 以确保即使重启也可确保人身安全。否则, 会引发受伤事故。
	不要使用有故障、破损的电机和驱动器。否则, 会引发触电、火灾、受伤。
	请确认电源规格是否正常。引发故障发生原因。
	保持制动器不是确保机械安全的停止装置。请在机械侧设置确保安全用的停止装置。否则, 会引发受伤事故。
	报警时, 排除故障原因, 确保安全后, 解除报警, 重启。否则, 会引发受伤事故。
	制动器用继电器与紧急停止用断路器继电器需串联。否则, 会引发受伤、故障。
关于搬运和保管	
	不能保存在雨水及水滴溅到的场所、有毒性气体及液体的地方。否则, 会引发故障的。
	搬运时, 切勿抓持电缆或电机轴部。否则, 会引发受伤、故障。
	进行搬运时或安装作业时要以防落下或翻倒。否则, 会引发受伤、故障。
	需长期保存时, 请按本说明书记载的联系方法进行咨询。引发故障的原因。
	请保管在符合本说明书中规定保管环境的保管场所。否则, 会引发故障。

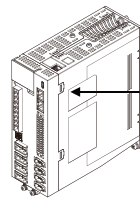
⚠️ 注意	
关于其他使用上的注意事项	
	废弃电池时, 请将电池用胶带等进行绝缘处理, 并根据有关部门的规定废弃处理。否则, 会引发故障。
	废弃时请作为工业废弃物处理。
关于维护和点检	
	除本公司外请勿进行拆卸修理工作。否则, 会引发故障。
	主回路电源开关不要频繁的打开和关闭。否则, 会引发故障。
	驱动器发生故障时, 请切断控制电源和主回路电源。否则, 会引发火灾事故。
	长时间不使用时务必切断主电源。因误动作等引发受伤事故。
关于维护和点检	
< 保证期限 >	• 产品的保证期间为本公司制造月起 18 个月。但是, 对对应制动器的电机, 轴的加速、减速次数不超出使用寿命为前提。
< 保证内容 >	• 按照本说明书的正常使用状态下, 在保证期间内, 发生故障时为无偿修理。但是, 即使在保证期间内有如下的故障发生时为有偿修理。 I 错误的使用方法, 以及不适当的修理以及改造时 II 收货之后的摔落, 以及不是公司品质原因的损伤。 III 超出产品规格使用该产品。 IV 火灾、地震、落雷、风灾与水灾、盐害、电压异常等其他灾害。 V 水、油、金属片、其他异物侵入。 • 保证范围为交付品本体, 如由交付品的故障诱发的损害, 判定为补偿范围外。

⚠️ 注意	
• 电机需要过温保护。	
• 内置固态短路保护不提供支路保护。必须按照国家电气规范和所属地区规范提供支路保护。	
< 注意 - 电击危险 >	
• 对母线电容器放电或指示母线电容器放电至 50 VDC 以下需要 5 分钟的时间	

## 2 产品型号说明

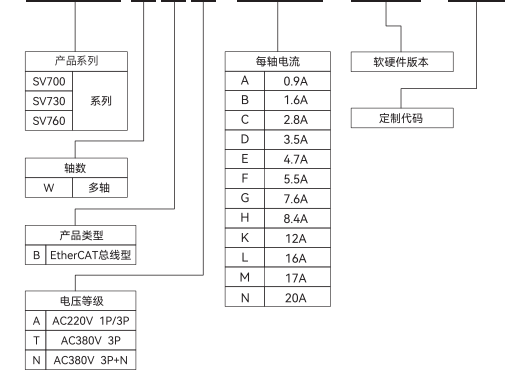
### 驱动器铭牌说明

#### SV730W 系列伺服驱动器侧面标签说明



### 型号说明

## SV730 W B A - CCCC - 0000 - 000



## 3 产品规格

### 环境规格

项目	规格
环境要求	开放式及室内使用
环境温度	0~55°C (环境温度在 45 度以上每升高 5 度降额 10%)
保存温度	-20 ~ 85°C (最高温度保证: 80°C 72 小时 无结露)
使用环境湿度	20 ~ 85%RH 以下 (无结露)
保管湿度	20 ~ 85%RH 以下 (无结露)
抗振性	5.88m/s <sup>2</sup> (0.6G) 以下, 10~60Hz (避免在共振点连接使用)
抗冲击强度	加速度 100m/s <sup>2</sup> 以下 (XYZ)
保护等级	IP20
清洁度	• 无腐蚀性气体、可燃性气体 • 无水、油、药剂飞溅
海拔高度	1000m 以下 (1000m ~ 2000m 时, 可降低额定值后使用)
污染等级	等级 2 或等级 1 的环境下
过电压类别	III
故障短路电流	5Ka
其他	无静电干扰、强电场、强磁场、放射线等

注 1) 将设备安装在污染等级为 2 的环境中。正常运行时额定时的最高周围空气温度 0~45°C。降额运行时的最高周围空气温度 0~55°C。

### AC220V (1P/3P) 基本规格

项目	规格	
型号 SV730W*A-****	C	G
整机最大适用电机容量 (kW)	1.6	4
单轴功率 (kW)	0.4	1
单轴连续输出电流 (Arms)	2.8	7.6
单轴瞬时最大输出电流 (Arms)	9.3	17
整机主输入回路	电源电压 (Arms)	单相 / 三相 AC200 ~ 240V、50/60Hz
控制电源	电流 (Arms)	7.6 19.2
电能损耗 *	主回路电能损耗 [W]	80 195
	控制回路电能损耗 [W]	15 17
	内置再生电阻电能损耗 [W]	— —
	合计电能损耗 [W]	95 212
再生电阻	内置再生电阻 电阻值 (Ω)	— —
	容量 (W)	— —
	外置最小容许电阻值 (Ω)	12 12
过电压等级	III	

## AC380V (3P+N) 基本规格

项目	规格		
型号 SV730W*N-****	C	G	
整机最大适用电机容量 (kW)	1.6	4	
单轴功率 (kW)	0.4	1	
单轴连续输出电流 (Arms)	2.8	7.6	
单轴瞬时最大输出电流 (Arms)	9.3	17	
整机主电源电压 (Arms)	三相四线 AC330 ~ 440V、50/60Hz		
输入回路电流 (Arms)	9.2	21.9	
控制电源	共用直流母线		
电能损耗 *	主回路电能损耗 [W]	80	195
	控制回路电能损耗 [W]	15	17
	内置再生电阻电能损耗 [W]	—	—
	合计电能损耗 [W]	95	212
再生电阻	内置再生电阻值 (Ω)	—	—
	电阻容量 (W)	—	—
	外置最小容许电阻值 (Ω)	12	12
过电压等级	III		

### 注意

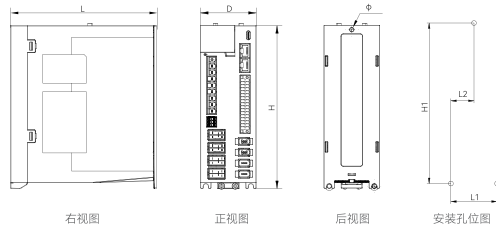
- 1) 以通常的额定负载率使用外置再生电阻器时, 当电阻器的温度将达到 200°C ~ 300°C, 请务必降低额定值后再使用。关于电阻器的负载特性, 请向生产厂家咨询。
- 2) 为确保安全, 建议使用带温控开关的外置再生电阻器。

## 4 伺服驱动器安装及尺寸说明

### SV730W 驱动配置表

伺服驱动器	SIZE WA	SIZE WB
AC220V 1P/3P	SV730WBA-CCCC	SV730WBA-GGGG
AC380V 3P+N	SV730WBN-CCCC	SV730WBN-GGGG

### SV730W 驱动器安装尺寸

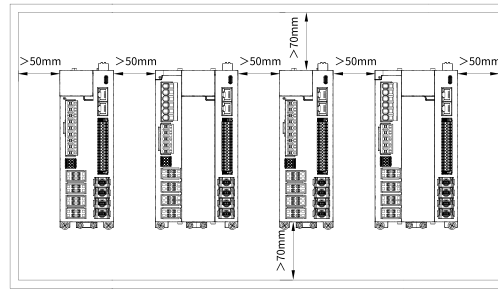


结构	L(mm)	H(mm)	D(mm)	L1(mm)	L2(mm)	H1(mm)	孔径(φ)	螺丝孔	锁紧扭矩(Nm)	重量(kg)
SIZE A	170	190	65	52.5	26.3	182.3	5.5	3-M5	3.5N·M	0.76
SIZE B	170	190	100	86.5	43.3	182.3	5.5	3-M5	3.5N·M	1.01

### 机柜安装说明

#### 注意事项

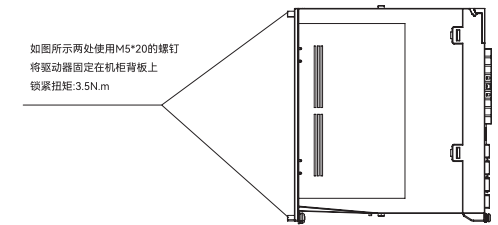
- 安装伺服驱动器时, 不可封住其吸排气孔, 也不可将其倾倒放置, 否则会造成故障。
- 为了使散热风扇能够有比较低的风阻, 以有效排出热量, 安装一台或多台驱动器时, 请依循安装间隔距离建议值。
- 请避免上下排列使用, 因下排驱动器在运转时所产生的热气上升, 容易造成上排驱动器不必要的温度增加。



注 1) 图中驱动器安装间隔距离 50mm 是按照在最高 55°C 的条件下, 无外界通风的情况。具体取决于客户的散热条, 比如柜体温度, 通风条件等, 如能保证驱动器的使用环境温度低于 55°C, 间隔距离可以低于 50mm。

### 结构安装说明

#### 注意事项



## 5 配线

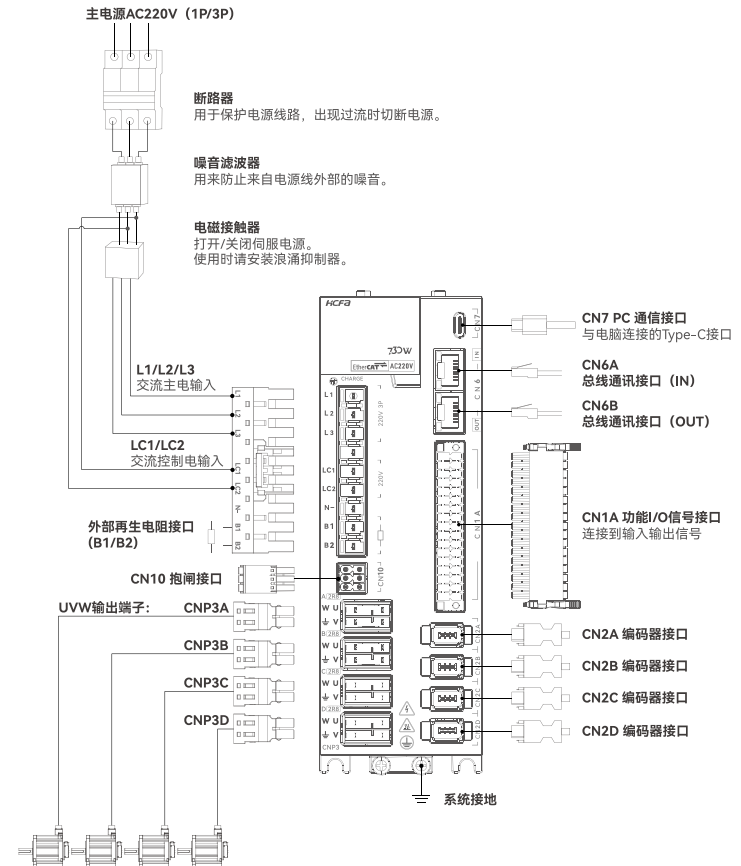
### 线缆要求

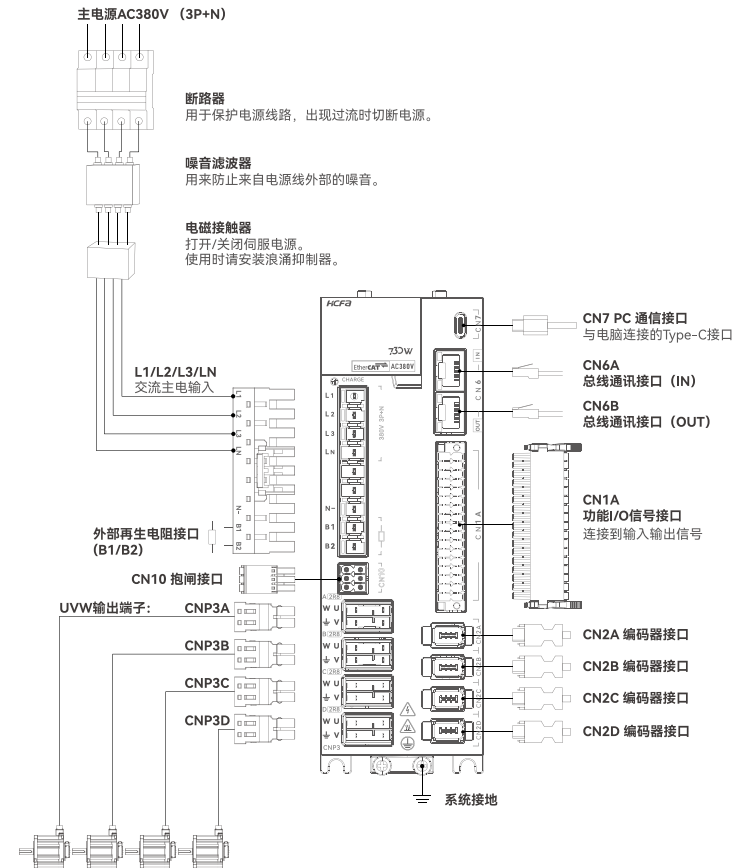
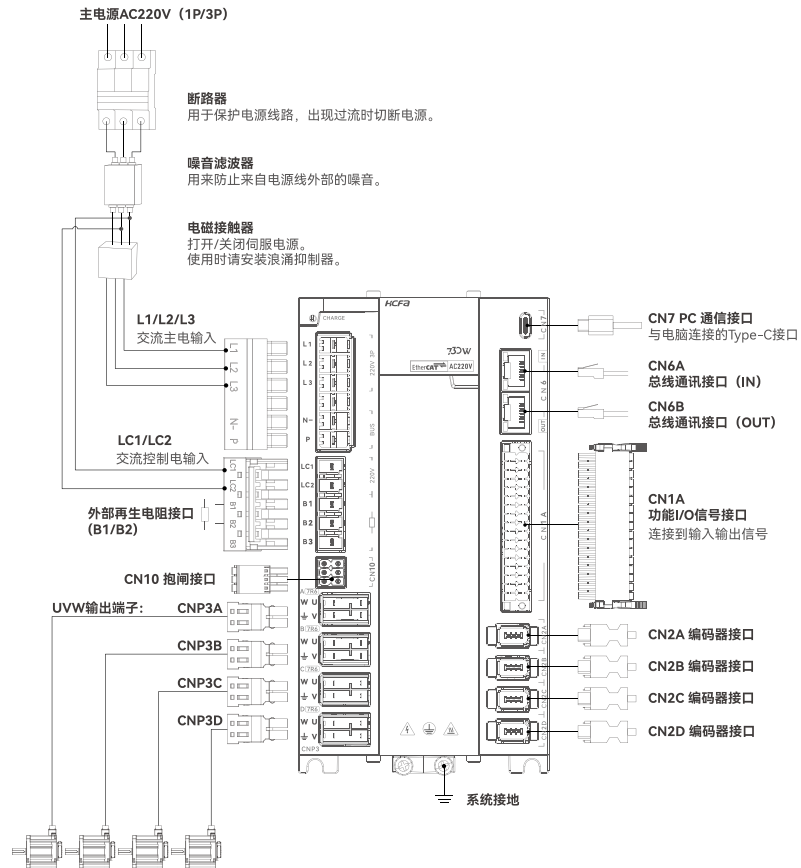
端子	名称	型号 SV730W*A-****			
		C	G	1	2
LC1、LC2	控制电源输入端子	0.82mm <sup>2</sup> (AWG18)	0.82mm <sup>2</sup> (AWG18)	—	—
L1、L2、L3	主回路电源输入端子	2.075mm <sup>2</sup> (AWG14)	3.332mm <sup>2</sup> (AWG12)	—	—
U、V、W	伺服电机连接端子	0.82mm <sup>2</sup> (AWG18)	1.318mm <sup>2</sup> (AWG16)	—	—
B1、B2	外置再生电阻连接端子	根据外置电阻实际功率定, 可咨询电阻厂商或我司技术人员			
接地端子		>2.075mm <sup>2</sup> (<AWG14)			

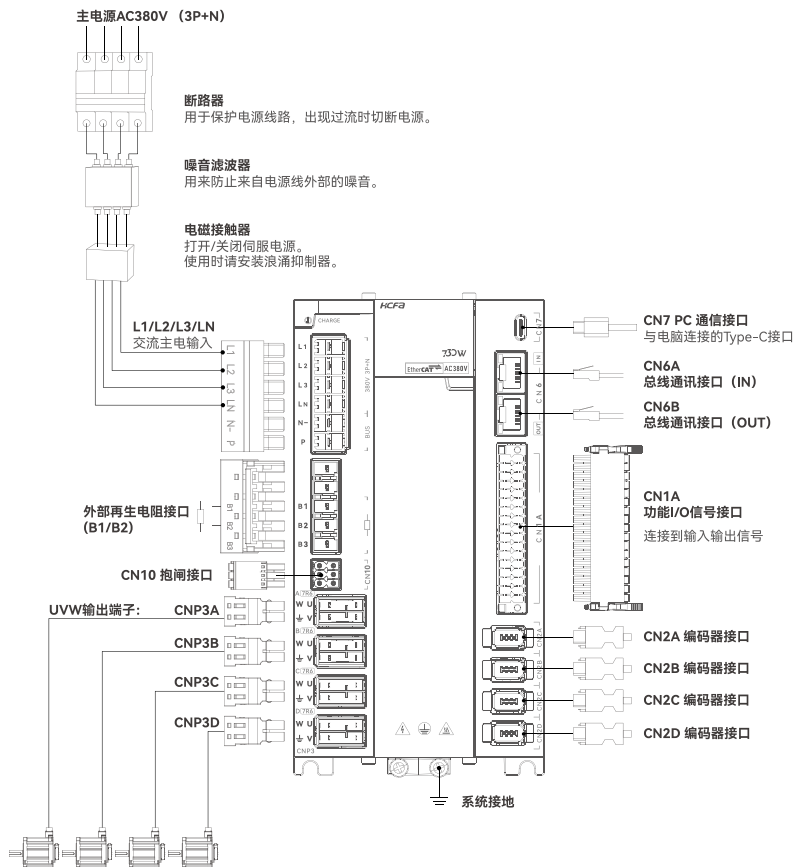
端子	名称	型号 SV730W*N-****			
		C	G	1	2
L1、L2、L3、N	主回路电源输入端子	2.075mm <sup>2</sup> (AWG14)	3.332mm <sup>2</sup> (AWG12)	—	—
U、V、W	伺服电机连接端子	0.82mm <sup>2</sup> (AWG18)	1.318mm <sup>2</sup> (AWG16)	—	—
B1、B2	外置再生电阻连接端子	根据外置电阻实际功率定, 可咨询电阻厂商或我司技术人员			
接地端子		>2.075mm <sup>2</sup> (<AWG14)			

注 1) 如有穿管、线槽等封闭, 或者现场环境温度较高 (>55°C) 时, 请将线轨规格加大一档。

### 四轴 2R8 AC220V 驱动器端口定义及配线说明







WA 结构 (CNP1)

No	信号名	规格
1	L1	AC220V (1P/3P) 输入
2	L2	
3	L3	
4	LN	—
5	LC1	AC220V (1P) 输入
6	LC2	
7	N-	—
8	B1	制动电阻
9	B2	

WB 结构 (CNP2)

No	信号名	规格
1	LC1	AC220V (1P) 输入
2	LC2	
3	B1	制动电阻
4	B2	
5	B3	

抱闸接口 (CNP10)

No	信号名	规格
1	24V	24V 输入
2	24V GND	—
3	BKA+	抱闸 A 输出
4	BKA-	
5	BKB+	抱闸 B 输出
6	BKB-	

编码器接口 (CN2A/ CN2B/ CN2C/ CN2D)

No	信号名	规格
1	PG5V	编码器电源 +5V
2	PGGND	编码器电源 0V
3	—	—
4	—	—
5	PS0+	串行数据 (正)
6	PS0-	串行数据 (负)

STO 接口 (CN3)

No	信号名	规格
1	—	—
2	—	—
3	HWBB1-	硬件基极封锁输入 1
4	HWBB1+	
5	HWBB2-	硬件基极封锁输入 2
6	HWBB2+	
7	—	—
8	—	—

EtherCAT 接口 (CN6) 上输入下输出

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
TD+	TD-	RD+	—	—	RD-	—	—

WB 结构 (CNP1)

No	信号名	规格
1	L1	AC220V (1P/3P) 输入
2	L2	
3	L3	
4	LN	—
5	N-	DC310V 输入或输出
6	P	

UVW 输出 (CNP3A/ CNP3B/ CNP3C/ CNP3D)

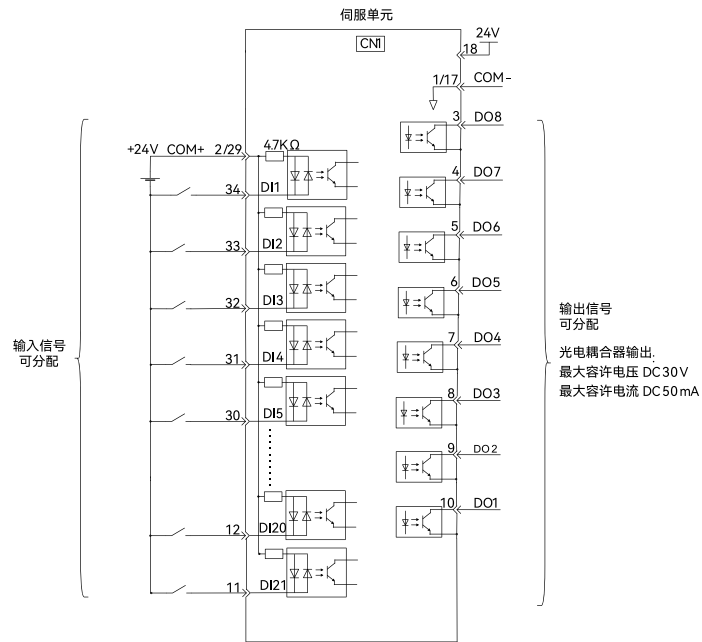
No	信号名	规格
1	W	UVW 输出
2	U	UVW 输出
3	PE	大地
4	V	UVW 输出

IO 接口 (CN1A)

No	信号名	功能	IO	No	信号名	功能	IO
1	COM-	输出公共端 1	P	2	COM+	输入公共端 1	P
3	DO8	D 轴报警信号	O	4	DO7	D 轴伺服准备完成	O
5	DO6	C 轴报警信号	O	6	DO5	C 轴伺服准备完成	O
7	DO4	B 轴报警信号	O	8	DO3	B 轴伺服准备完成	O
9	DO2	A 轴报警信号	O	10	DO1	A 轴伺服准备完成	O
11	DI21	紧急停机	I	12	DI20	D 轴原点开关	I
13	DI19	D 轴探针 1	I	14	DI18	D 轴探针 0	I
15	DI17	D 轴负向超程开关	I	16	DI16	D 轴正向超程开关	I
17	COM-	输出公共端 1	P	18	24V	24V 输入	—
19	DI15	C 轴原点开关	I	20	DI14	C 轴探针 1	I
21	DI13	C 轴探针 0	I	22	DI12	C 轴负向超程开关	I
23	DI11	C 轴正向超程开关	I	24	DI10	B 轴原点开关	I
25	DI9	B 轴探针 1	I	26	DI8	B 轴探针 0	I
27	DI7	B 轴负向超程开关	I	28	DI6	B 轴正向超程开关	I
29	COM+	输入公共端 1	P	30	DI5	A 轴原点开关	I
31	DI4	A 轴探针 1	I	32	DI3	A 轴探针 0	I
33	DI2	A 轴负向超程开关	I	34	DI1	A 轴正向超程开关	I

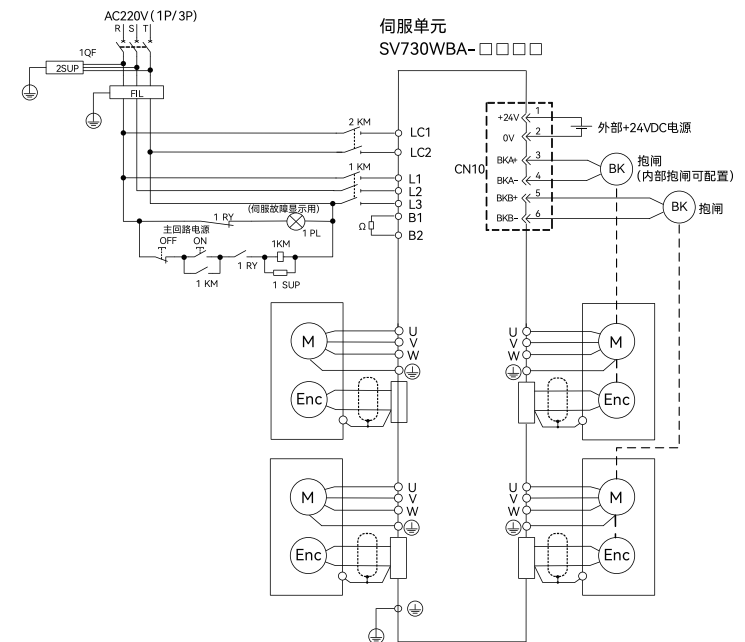
注 1) 输入输出引脚功能可以分配；  
使用输入功能时，须 24V 接入 COM+，输入引脚接 24V 地；  
使用输出功能时，须 18 引脚接 24V，COM- 接 24V 地，输出引脚可通过继电器或电阻并联到 18 引脚；  
探针功能只能在 13, 14, 20, 21, 25, 26, 31, 32 引脚分配。

输入输出信号的连接示例（总线型）

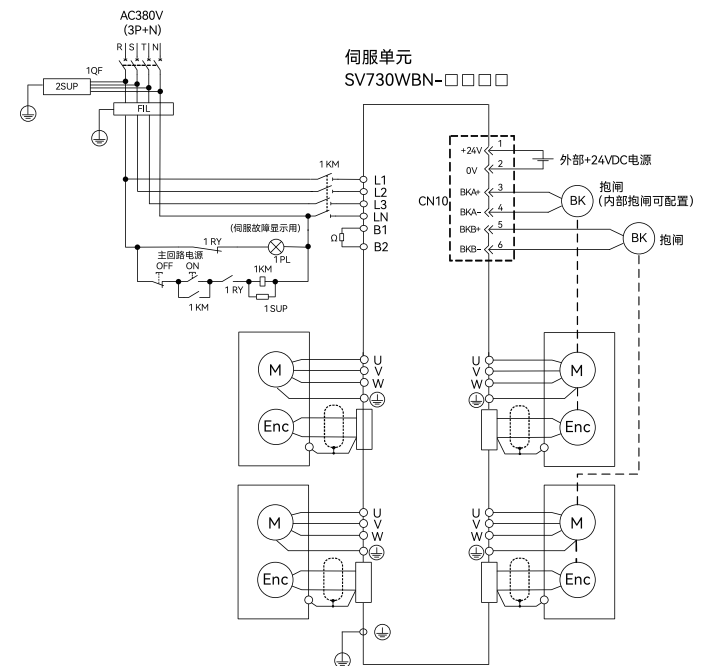


注 1) 探针功能仅在 DI3、DI4、DI8、DI9、DI13、DO14、DI18、DI19 中可分配；  
使用输入功能时，须 24V 接入 COM+，输入引脚接 24V 地；  
使用输出功能时，须 18 引脚接 24V，COM- 接 24V 地，输出引脚可通过继电器或电阻并联到 18 引脚：抱闸接线

抱闸接线 1



抱闸接线 2



Manual No.	HPPD1490015-00A
Version	1.0
Date	Mar. 2023

# SV730W series servo (EtherCAT bus) instruction manual

## 1 Preface

Thank you for using the HCFA SV730W series servo drive. This manual mainly provides the specifications, dimensions, installation and wiring, and other related information of the SV servo EtherCAT bus-type drive. For more detailed information, QR code on the right side to download <Technical manual for SV730W servo system EtherCAT bus type>.



Confirm the following items when unpacking:

No.	Name	Quantity
1	730W series servo drive	1
2	Accessories	
	STO terminal	1
	Holding brake terminal	1
	34-pin terminal (CN1A interface)	1
	Power output terminal	4
	Power supply input terminal*	1
3	Instruction manual for SV730W series servo (EtherCAT bus type)	1
4	Qualified certificate	1

- \* SIZE A models are equipped with a 9-pin power input terminal. \*1, SIZE B models are equipped with 6pin+5pin power input terminals. \*1
- Please confirm that there is no damage to those items during transportation.
- For any damages, please contact HCFA.

### Safety precautions

#### Safety symbols

Please always pay attention to the following safety precautions during acceptance, inspection, installation, wiring, operation, and maintenance. The safety instruction levels, which may be caused by the neglect of the instruction or incorrect use of this product, are classified and described in the following table.

<b>DANGER</b>	Indicates that incorrect handling may result in death or severe injury.
<b>CAUTION</b>	Indicates that incorrect handling may result in medium or slight personal injury or physical damage.
<b>Prohibitions</b>	Indicates "Prohibitions" (what must not be done).
<b>Strict Enforcement</b>	Indicates "Strict Enforcement" (what must be done).

DANGER		
Installation and wiring		
Do not connect the motor directly to a commercial power.	Otherwise, it may cause fire or malfunction.	
Do not place any combustibles near the servo motor and drive.	Otherwise, it may cause a fire.	
Please place the drive within a protective case, and leave specified clearances between the drive and control enclosure walls or other equipment.	Otherwise, it may cause an electric shock, fire, or malfunction.	
Please install the drive in a place that frees from excessive dust, water, and oil.	Otherwise, it may cause an electric shock, fire, malfunction, or damage.	
Please install the drive to incombustible, such as metal.	Otherwise, it may cause a fire.	
The wiring must be done by a professional electrician.	Otherwise, it may cause an electric shock.	
The FG terminal of the motor or the drive must be grounded.	Otherwise, it may cause an electric shock.	

Please cut off the upper circuit breaker before wiring.	Otherwise, it may cause an electric shock, injury, malfunction, or damage.
Please ensure a good connection of the cable with its electrified part being well insulated.	Otherwise, it may cause an electric shock, fire, or malfunction.
DANGER	
Operation and running	
Do not touch the internal parts of the drive.	Otherwise, it may cause burns or an electric shock.
The cables must not be excessively damaged, stressed, loaded, or pinched.	Otherwise, it may cause an electric shock, malfunction, or damage.
Do not touch the rotating parts of the servo motor during operation.	Otherwise, it may cause injury.
Do not immerse the cables in oil or water during operation.	Otherwise, it may cause an electric shock, injury, or fire.
Do not conduct wiring or perform operations with wet hands.	Otherwise, it may cause an electric shock, injury, or fire.
Do not touch the keyway of the motor shaft with bare hands.	Otherwise, it may cause injury.
Do not touch the motor, drive, and heat spreaders since they will heat up during operation.	Otherwise, it may cause burns or component damage.
Do not connect the motor to an external force.	Otherwise, it may cause a fire.
Other safety precautions	
Please ensure equipment safety after earthquakes.	Otherwise, it may cause an electric shock, injury, or fire.
Ensure a correct installation and setting to prevent fire or personal injury during earthquakes.	Otherwise, it may cause injury, electric shock, fire, malfunction, or damage.
Please provide an external emergency stop circuit to ensure that operation can be stopped and power switched off immediately.	Otherwise, it may cause injury, electric shock, fire, malfunction, or damage.
Maintenance and inspection	
As there's dangerous and high-voltage inside the drive, before wiring or inspection, turn off the power and wait for 5 minutes or more until the charge lamp turns off. Do not disassemble the drive.	Otherwise, it may cause an electric shock.

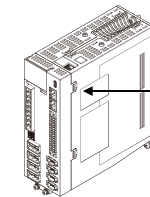
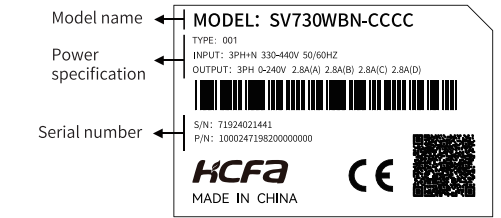
CAUTION	
Installation and wiring	
Please install the servo motor and drive following the combinations specified in this manual.	Otherwise, it may cause fire or malfunction.
Do not touch the connector terminals directly.	Otherwise, it may cause an electric shock or malfunction.
Do not block the intake and let any foreign materials enter into the equipment.	Otherwise, it may cause an electric shock or fire.
The test operation must be done with the motor being fixed but separated from the mechanical system. Only after confirming the operation can the motor be installed in the mechanical system.	Otherwise, it may cause injury.
The servo motor must be installed following the specified directions and methods.	Otherwise, it may cause injury and malfunction.
Ensure a proper installation in accordance with the weight and rated output of the equipment.	Otherwise, it may cause injury and malfunction.
Operation and running	
Do not stand or put any heavy objects on the equipment.	Otherwise, it may cause an electric shock, injury, malfunction, or damage.
Do not make extreme gain adjustments or changes, which will result in unstable running.	Otherwise, it may cause malfunction or damage.
Keep it away from the direct sunlight.	Otherwise, it may cause malfunction.
Do not subject the motor and its shaft to heavy impact.	Otherwise, it may cause malfunction.
The electromagnet brake on the motor is designed to hold its shaft and should not be used for ordinary braking.	Otherwise, it may cause injury and malfunction.
When power is restored after an instantaneous power outage, keep away from the machine because it may be restarted suddenly. Set the machine so that it is secured against personal injury if restarted.	Otherwise, it may cause injury.
Do not use any malfunctioning or damaged motor or drive.	Otherwise, it may cause an electric shock, fire, or injury.

Please confirm that the power supply specification is normal.	Otherwise, it may cause malfunction.
Holding brake is not a safety stopper used for ensuring machine safety. To ensure safety, install a stopper on the machine side.	Otherwise, it may cause injury.
When any alarm has occurred, eliminate its cause, ensure safety, and deactivate the alarm before restarting operation.	Otherwise, it may cause injury.
The brake relay and the emergency stop relay must be connected in series.	Otherwise, it may cause injury or malfunction.
Transportation and storage	
Do not subject the equipment to rain, droplets, toxic gas, or fluid.	Otherwise, it may cause malfunction.
Do not carry the motor by the cables or shaft during transportation.	Otherwise, it may cause injury and malfunction.
Do not drop or overturn the motor during transportation and installation.	Otherwise, it may cause injury and malfunction.
For long-term storage, please contact HCFA via the contact information listed in this manual.	Otherwise, it may cause malfunction.
Please store the product in a place that meets the storage requirement.	Otherwise, it may cause malfunction.
CAUTION	
Other safety precautions	
Please insulate the battery with adhesive tape and dispose of it following the law of each country (area).	
When disposing of the equipment, treat it as an industrial waste.	
Maintenance and inspection	
Please contact HCFA for further instructions on removal, installation, and repair.	Otherwise, it may cause malfunction.
Do not turn on and off the main circuit power switch too frequently.	Otherwise, it may cause malfunction.
Do not touch the heat sink and regenerative resistor of the motor and drive because their temperatures may be high while power is on or for some time after power-off.	Otherwise, it may cause burns or electric shock.
If the equipment is to be stored for a long time, please switch off the main power.	Otherwise, it may cause injury caused by the malfunction of the equipment.
Maintenance and inspection	
<Warranty period>	
• The term of warranty for the product is eighteen (18) months from the date of manufacture. However, for the motor with a brake, the warranty period does not exceed the maximum period that the shaft can accelerate or decelerate.	
<Warranty coverage >	
• This warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are stated in the manual. However, even during the warranty period, the repair cost will be charged to customers in the following cases.	
① A failure caused by improper storing or handling, repair, and modification.	
② A failure caused by drops or damages during transportation.	
③ A failure caused by using without following the product specifications.	
④ A failure caused by external factors such as inevitable accidents, including without limitation fire, earthquake, thunder and lightning, flooding and wind hazard, salty damage, and abnormal fluctuation of voltage.	
⑤ A failure caused by the intrusion of water, oil, metal sheet, and other foreign materials.	
• The warranty coverage is only for the product itself. HCFA bears no joint responsibility and makes no compensation for any further damages caused by product malfunction.	
CAUTION	
• The motor needs over-temperature protection.	
• Built-in solid-state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided following the National Electrical Code and your regional code.	
<CAUTION - Risk of electric shock>	
• It takes 5 minutes to discharge the busbar capacitor or to command the bus capacitor to discharge to below 50 VDC.	

## 2 Product model description

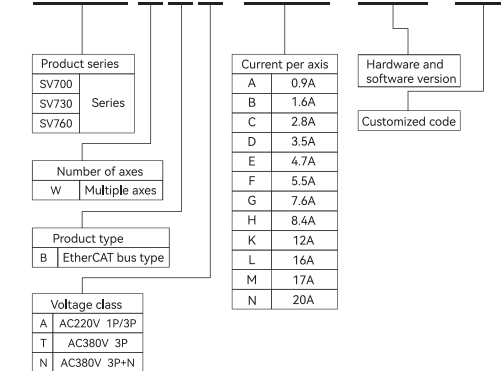
### Environmental specification

#### SV730W series servo drive side label description



### Model description

## SV730 W B A - CCCC - 0000 - 000



## 3 Product specification

### Environmental specification

Item	Specifications
Environmental requirement	Open environment or indoor use
Environmental temperature	0~55°C (For ambient temperatures above 45 degrees, the amount is reduced by 10 per cent for every 5 degrees of ambient temperature.)
Storage temperature	-20 ~ 85°C (Maximum temperature guarantee: 80°C for 72h, No condensation)
Ambient humidity	20 ~ 85%RH or less (No condensation)
Storage humidity	20 ~ 85%RH or less (No condensation)
Vibration resistance	5.88m/s <sup>2</sup> (0.6G) or less, 10~60Hz (Do not connect at the resonance point)

Impact strength	Acceleration 100m/s <sup>2</sup> or less (XYZ)
Protection level	IP20
Cleanliness	• Free from corrosive gas, flammable gas • Free from water, oil, chemical splash
Altitude	1000m or less (It can be used after being derated at the altitude of 1000 to 2000m)
Pollution level	Level 2 or level 1
Overvoltage classification	III
Short-circuit current	5Ka
Others	No electrostatic interference, strong electric field, strong magnetic field, radiation, etc.

Note 1) Install the device in a pollution level 2 environment.  
Maximum ambient air temperature for rated operation is 0~45° C.  
Maximum ambient air temperature for derated operation is 0 ~ 55° C.

#### Basic specification of AC220V (1P/3P)

Item	Specification	
Model SV730W*A-****	C	G
Maximum applicable motor capacity (kW)	1.6	4
Single axis power (kW)	0.4	1
Continuous output current of single axis (Arms)	2.8	7.6
Instantaneous maximum output current of single axis (Arms)	9.3	17
Main input circuit	Power voltage (Arms)	one-phase Three-phase AC200 ~ 240V, 50/60Hz
	Current (Arms)	7.6 19.2
Control power	one-phase AC200 ~ 240V, 50/60Hz	
	Main circuit power loss [W]	80 195
Power loss*	Control circuit power loss [W]	15 17
	Power loss of built-in regenerative resistor [W]	— —
	Total power loss [W]	95 212
Regenerative resistor	Built-in regenerative resistor Resistance value (Ω)	— —
	Capacity (W)	— —
	External minimum allowable resistance value (Ω)	12 12
Overvoltage rating	III	

#### Basic specification of AC380V (3P+N)

Item	Specification	
Model SV730W*N-****	C	G
Maximum applicable motor capacity (kW)	1.6	4
Single axis power (kW)	0.4	1
Continuous output current of single axis (Arms)	2.8	7.6
Instantaneous maximum output current of single axis (Arms)	9.3	17
Main input circuit	Power voltage (Arms)	3-phase 4-wire AC330 ~ 440V, 50/60Hz
	Current (Arms)	9.2 21.9
Control power	Common DC bus	
	Main circuit power loss [W]	80 195
Power loss*	Control circuit power loss [W]	15 17
	Power loss of built-in regenerative resistor [W]	— —
	Total power loss [W]	95 212
Regenerative resistor	Built-in regenerative resistor Resistance value (Ω)	— —
	Capacity (W)	— —
	Minimum allowable resistance value (Ω)	12 12
Overvoltage rating	III	

#### CAUTION

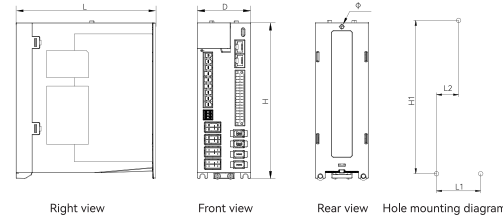
- When using an external regenerative resistor at the normal rated load rate, be sure to reduce the rated value before using the resistor when the temperature of the resistor is expected to reach 200° C to 300° C. Please consult the manufacturer for the load characteristics of the resistor.
- To ensure safety, it is recommended to use an external regenerative resistor with a temperature-controlled switch.

## 4 Servo drive installation and dimension description

#### SV730W drive configuration table

Servo drive	SIZE WA	SIZE WB
AC220V 1P/3P	SV730WBA-CCCC	SV730WBA-GGGG
AC380V 3P+N	SV730WBN-CCCC	SV730WBN-GGGG

#### SV730W drive mounting dimension

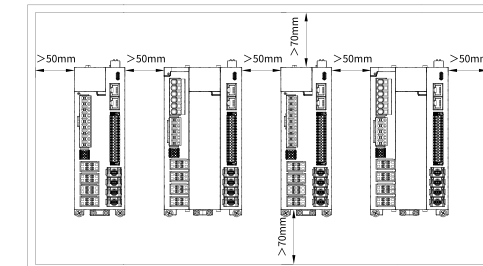


Structure	L(mm)	H(mm)	D(mm)	L1(mm)	L2(mm)	H1(mm)	Hole diameter (φ)	Screw hole	Locking torque (Nm)	Weight (kg)
SIZE A	170	190	65	52.5	26.3	182.3	5.5	3-M5	3.5N·M	0.76
SIZE B	170	190	100	86.5	43.3	182.3	5.5	3-M5	3.5N·M	1.01

#### Cabinet installation instructions

##### Attention

- When installing a servo drive, do not seal its air holes or place it upside down, otherwise, it will cause malfunction.
- When installing one or more drives, follow the recommended installation spacing distance to enable the cooling fan to have relatively low air resistance for effective heat exhaustion.
- Avoid mounting the drives in the upper and lower rows. Because the heat generated by the drives in the lower row during operation will rise, causing the drives in the upper row to warm up unnecessarily.

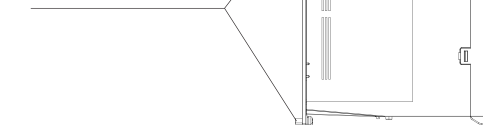


Note 1) The installation clearance of the drive in the diagram is 50mm, and the installation conditions are up to 55° C without external ventilation. More specific intervals depend on the cooling conditions such as cabinet temperature and ventilation. If the ambient temperature of the drive can be guaranteed to be lower than 55° C, the clearance can be lower than 50mm.

#### Cabinet installation instructions

##### Attention

As shown in the figure, use M5\*20 screws on both sides to secure the drive to the back plate of the cabinet. Locking torque: 3.5N.m



## 5 Wiring

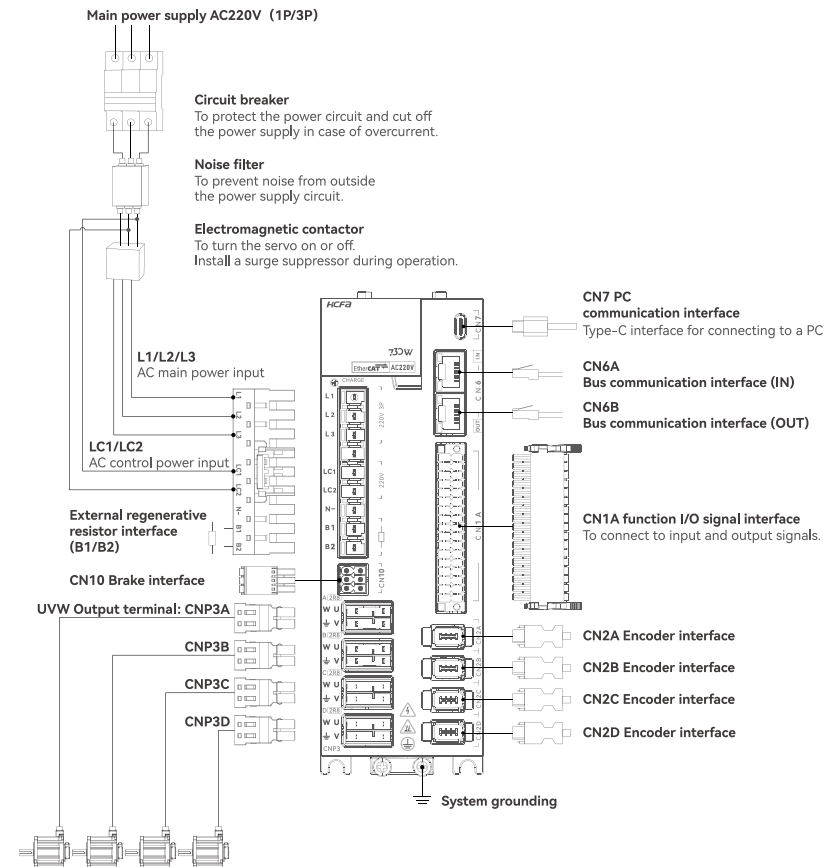
#### Recommended cable

Terminal	Name	SV730W*A-****			
		C	G	1	2
LC1, LC2	Control power input terminal	0.82mm <sup>2</sup> (AWG18)	0.82mm <sup>2</sup> (AWG18)	—	—
L1, L2, L3	Main circuit power input terminal	2.075mm <sup>2</sup> (AWG14)	3.332mm <sup>2</sup> (AWG12)	—	—
U, V, W	Servo motor connection terminal	0.82mm <sup>2</sup> (AWG18)	1.318mm <sup>2</sup> (AWG16)	—	—
B1, B2	External regenerative resistor connection terminal	Set according to the actual power of the external resistor. Consult resistor manufacturers or our tech staff.			
Ground terminal		>2.075mm <sup>2</sup> (<AWG14)			

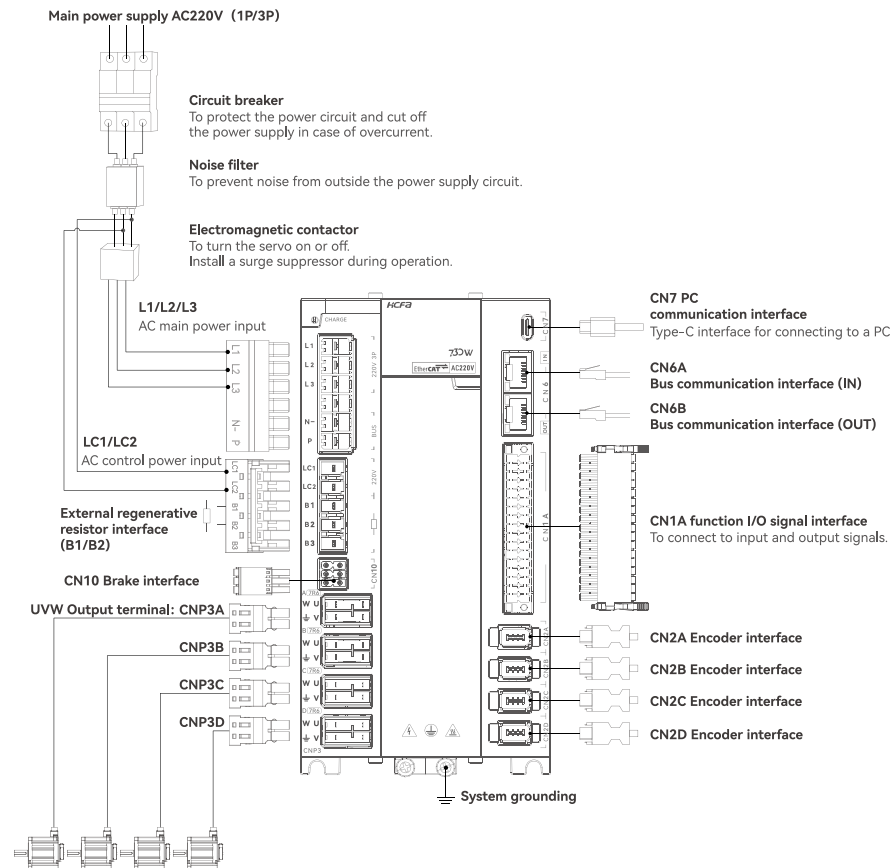
Terminal	Name	SV730W*N-****			
		C	G	1	2
L1, L2, L3, N	Main circuit power input terminal	2.075mm <sup>2</sup> (AWG14)	3.332mm <sup>2</sup> (AWG12)	—	—
U, V, W	Servo motor connection terminal	0.82mm <sup>2</sup> (AWG18)	1.318mm <sup>2</sup> (AWG16)	—	—
B1, B2	External regenerative resistor connection terminal	Set according to the actual power of the external resistor. Consult resistor manufacturers or our tech staff.			
Ground terminal		>2.075mm <sup>2</sup> (<AWG14)			

Note 1) If there is any closure such as a threading pipe or cable duct, or if the ambient site temperature is high (>55° C), please increase the wire rail specification by one size.

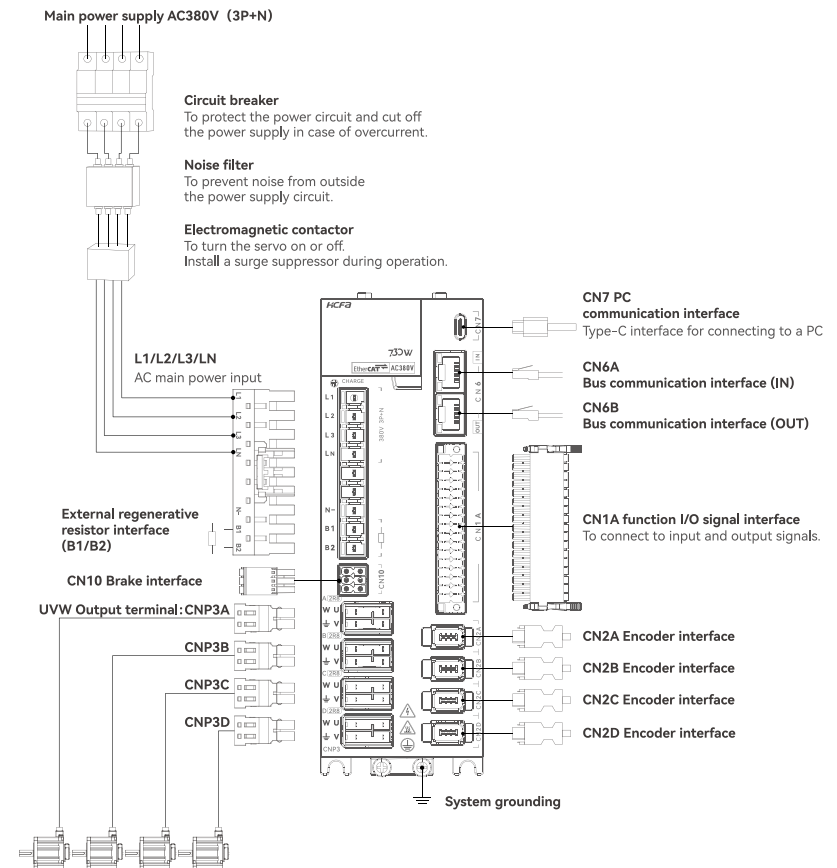
#### Four-axis 2R8 AC220V drive interface definition and wiring instructions



Four-axis 7R6 AC220V drive interface definition and wiring instructions

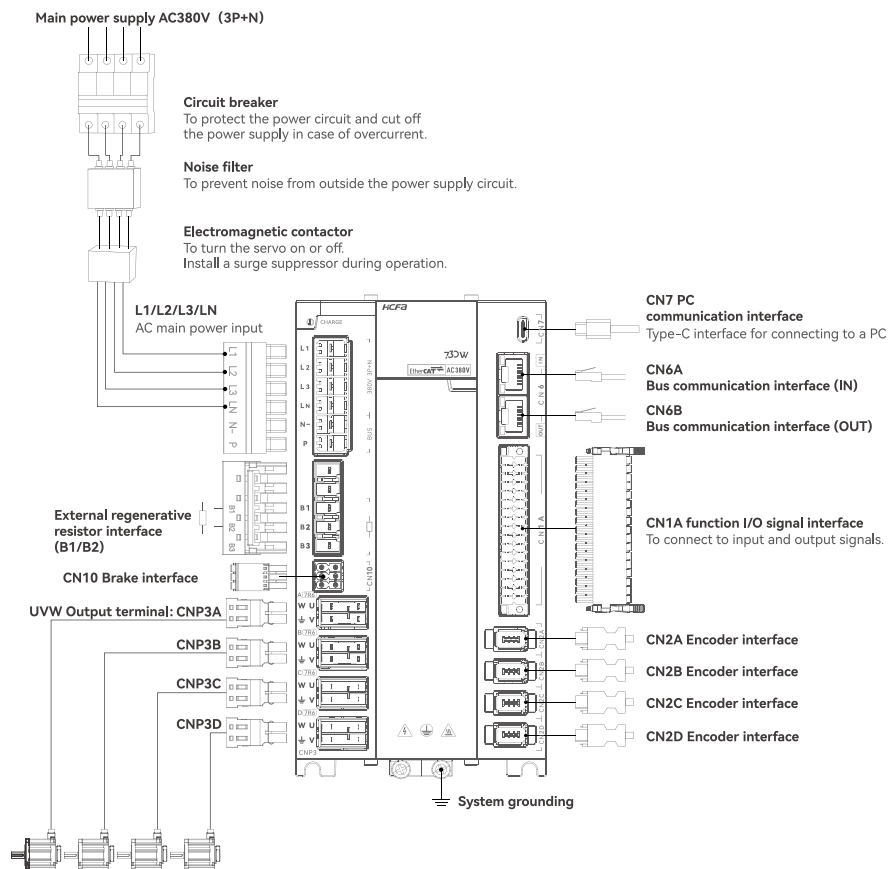


Four-axis 2R8 AC380V drive interface definition and wiring instructions





## Four-axis 7R6 AC380V drive interface definition and wiring instructions



## WA structure (CNP1)

No	Signal name	Specification
1	L1	AC220V (1P/3P) input AC380V (3P+N) input
2	L2	
3	L3	
4	LN	
5	LC1	AC220V (1P) input AC380V (3P+N) No input
6	LC2	
7	N-	—
8	B1	Brake resistor
9	B2	

## WB structure (CNP2)

No	Signal name	Specification
1	LC1	AC220V (1P) input AC380V (3P+N) No input
2	LC2	
3	B1	Brake resistor
4	B2	
5	B3	

## 抱闸接口 (CNP10)

No	Signal name	Specification
1	24V	24V input
2	24V GND	—
3	BKA+	Holding brake A output
4	BKA-	
5	BKB+	Holding brake B output
6	BKB-	

## Encoder interface (CN2A/ CN2B/ CN2C/ CN2D)

No	Signal name	Specification
1	PG5V	Encoder power supply +5V
2	PGGND	Encoder power supply 0V
3	—	—
4	—	—
5	PS0+	Serial data (positive)
6	PS0-	Serial data (negative)

## STO interface (CN3)

No	Signal name	Specification
1	—	—
2	—	—
3	HWBB1-	Hardware base blocking input 1
4	HWBB1+	
5	HWBB2-	Hardware base blocking input 2
6	HWBB2+	
7	—	—
8	—	—

## EtherCAT interface (CN6) top input, bottom output

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
TD+	TD-	RD+	—	—	RD-	—	—

## WB structure (CNP1)

No	Signal name	Specification
1	L1	AC220V (1P/3P) input AC380V (3P+N) input
2	L2	
3	L3	
4	LN	
5	N-	DC310V Input or output
6	P	

## UVW output (CNP3A/ CNP3B/ CNP3C/ CNP3D)

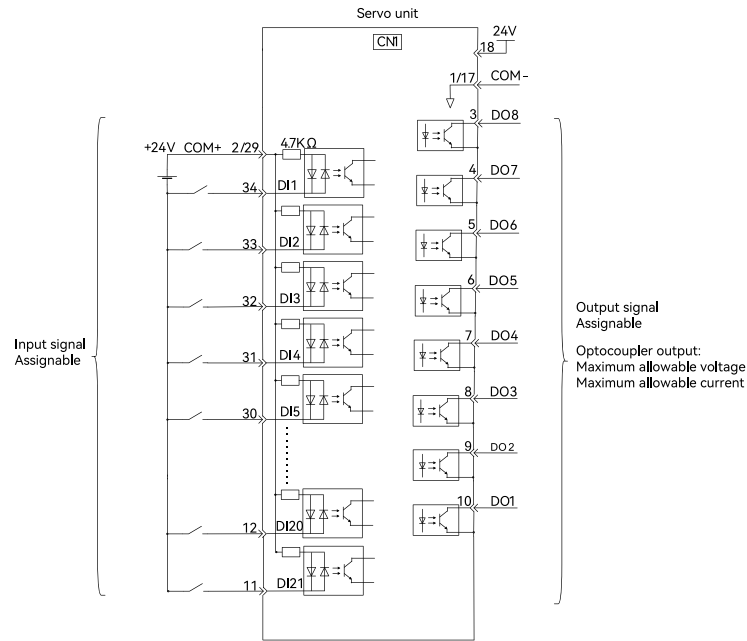
No	Signal name	Specification
1	W	UVW output
2	U	UVW output
3	PE	Ground
4	V	UVW output

## IO interface (CN1A)

No	Signal name	Function	IO	No	Signal name	Function	IO
1	COM-	Common output 1	P	2	COM+	Common output 1	P
3	DO8	D-axis alarm signal	O	4	DO7	D-axis servo is ready	O
5	DO6	C-axis alarm signal	O	6	DO5	C-axis servo is ready	O
7	DO4	B-axis alarm signal	O	8	DO3	B-axis servo is ready	O
9	DO2	A-axis alarm signal	O	10	DO1	A-axis servo is ready	O
11	DI21	Emergency stop	I	12	DI20	D-axis origin switch	I
13	DI19	D-axis probe 1	I	14	DI18	D-axis probe 0	I
15	DI17	D-axis negative overtravel switch	I	16	DI16	D-axis positive overtravel switch	I
17	COM-	Common output 1	P	18	24V	24V input	—
19	DI15	C-axis origin switch	I	20	DI14	C-axis probe 1	I
21	DI13	C-axis probe 0	I	22	DI12	C-axis negative overtravel switch	I
23	DI11	C-axis positive overtravel switch	I	24	DI10	B-axis origin switch	I
25	DI9	B-axis probe 1	I	26	DI8	B-axis probe 0	I
27	DI7	B-axis positive overtravel switch	I	28	DI6	B-axis negative overtravel switch	I
29	COM+	Common input 1	P	30	DI5	A-axis origin switch	I
31	DI4	A-axis probe 1	I	32	DI3	A-axis probe 0	I
33	DI2	A-axis negative overtravel switch	I	34	DI1	A-axis positive overtravel switch	I

Note 1)  
The functions of input and output pins can be assigned. When using input functions, 24V is connected to COM+, and the input pin needs to be connected to 24V ground. When using output functions, the No.18 pin needs to be connected to 24V, COM- needs to be connected to 24V ground, and the output pin can be connected to the No.18 pin in parallel through a relay or resistor. Output pins can be connected to the No.18 pin in parallel via a relay or resistor. Probe functions can only be assigned to pins 13, 14, 20, 21, 25, 26, 31, 32.

Example of connection of input and output signals (bus type)

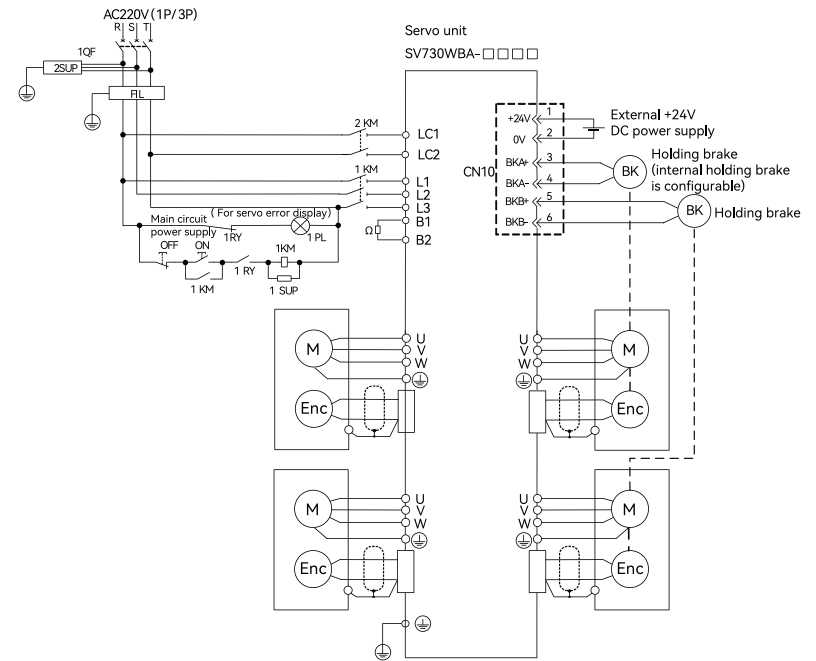


Note 1) Probe function is assignable only in DI3, DI4, DI8, DI9, DI13, DO14, DI18, DI19.

When using input functions, 24V needs to be connected to COM+ and the input pin needs to be connected to 24V ground.

When using output functions, the No.18 pin needs to be connected to 24V, COM- needs to be connected to 24V ground, and the output pins can be connected in parallel to the No.18 pin through a relay or resistor: Holding brake wiring.

Holding brake wiring 1



Holding brake wiring 2

