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SALMAN INDUSTRIAL SOLUTIONS

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已获资质 Qualification

ISO9001体系认证及**CE**产品认证

Received **ISO9001** and **CE** recognition

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销售服务联络地址
Sales service contact address

三碁微信服务号
SAVCH Wechat Service Number

SAVCh®

SA710P

水泵行业专用变频器

Inverter for Pump Industry

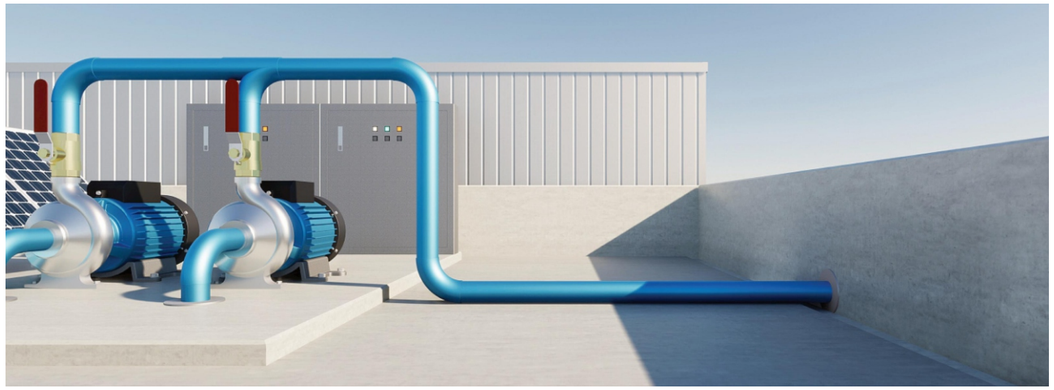
工业智能 节能 绿色电能

WWW.SAVCH.NET

SA710P 水泵行业专用变频器/Inverter for Pump Industry

SA710P是一款水泵行业专用变频器，在SA710P平台基础上，针对供水行业的控制逻辑与应用功能定制开发的产品系列，简单易操作，性能稳定可靠，扩展性强，功能完善。可应用于污水处理、暖通空调、化工、冶金、电力等行业的水泵类负载驱动。
SA710P is a dedicated frequency converter for the water pump industry. This product series is custom-developed with control logic and application functions tailored for the water supply industry built on the SA710P platform. It is simple to operate, stable, reliable in performance, and has strong expandability with comprehensive features. It can be applied to pump loads in industries such as sewage treatment, HVAC, chemical engineering, metallurgy, and power.

功率范围：三相380V：0.75-630kW
Power Range: Three-phase 380V: 0.75-630kW



产品特点/Product Feature

节能高效，功能多样，扩展灵活，稳定可靠，水泵量身之作

High Efficiency, multiple Functions, Flexible Expansion, stable and reliable – tailored for water pumps

用户友好性：结构紧凑，简易操作，易安装，易维护；
节能高效：AEO及同步电机参数自匹配算法，节能省电；
高可靠性：高防护等级，3C3防护涂层，适用宽温度范围-10~50℃；恶劣电网；恶劣EMC环境下稳定工作；
扩展灵活：可同时支持两张扩展卡；扩展卡的类型有总线卡类；编码器反馈类；IO卡类；
集成多样水泵应用功能：PID控制、休眠/唤醒功能、多泵循环、多泵联机、定时启停、水泵清洁。

User Friendliness: Compact structure, user-friendly operation, easy installation, maintenance friendliness.
High Efficiency: AEO and motor parameters auto-adaptation algorithm for PM motor to achieve high energy efficiency.
High Reliability: With a high protection level, 3C3 protective coating;robust in harsh Grid and EMC environment, full load at wide input voltage range (380Vac-15% ~ 480Vac+10%)
Flexible Expansion: Supports two option cards at the same time, including fieldbus cards , encoder cards, and IO cards.
Integrated pump applications : PID control, sleep/wake functions, multiple pump circulation, multiple pump interconnection, scheduled start/stop, and pump cleaning.

主要特色功能/Main featured functions

- **多泵循环控制/Multiple Pump Circulation Control**

多泵循环控制包括定量控制和定量循环两种模式，用于扩大控制流量或压力范围，实时跟踪管网用水量变化并自适应的增加或减少运行泵数，确保供水系统达到最佳的性能。
注：定量控制最多同时控制8台电机，定量循环最多同时控制4台电机（视实际电机数量所需，可选配IO扩展卡）
Multiple pump circulation control includes fixed quantity control and fixed quantity circulation. These two modes are designed to expand the control range of flow or pressure. They track real-time changes in water consumption in the pipeline network and adaptively increase or decrease the number of operating pumps to ensure the optimal performance of the water supply system.
Note: Fixed quantity control can simultaneously control up to 8 motors, and fixed quantity circulation can simultaneously control up to 4 motors (depending on the actual number of motors needed, an optional IO expansion card can be selected).

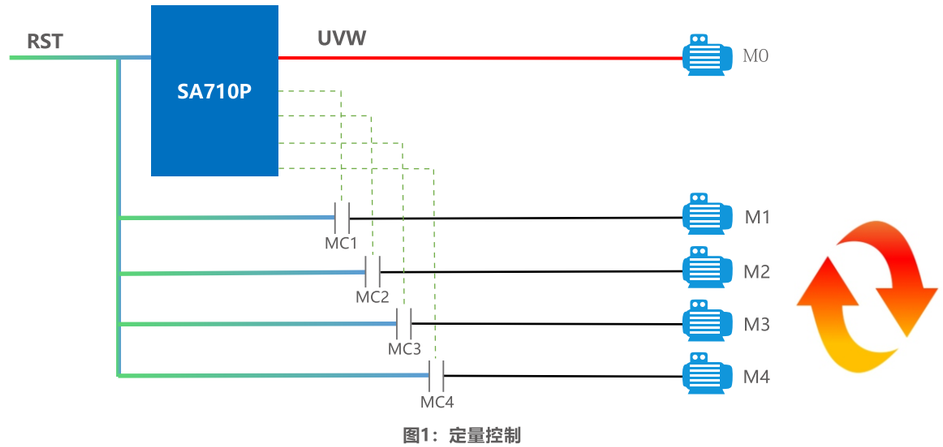


图1：定量控制

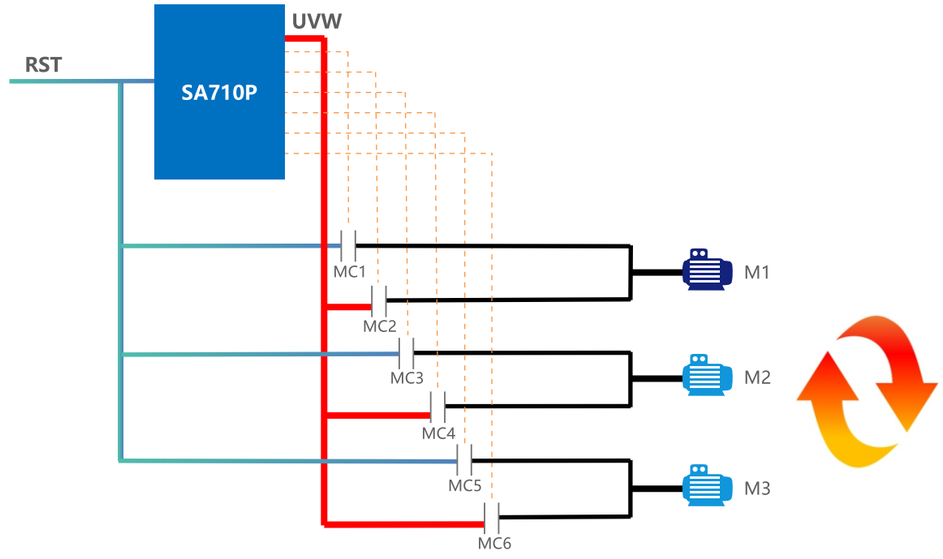
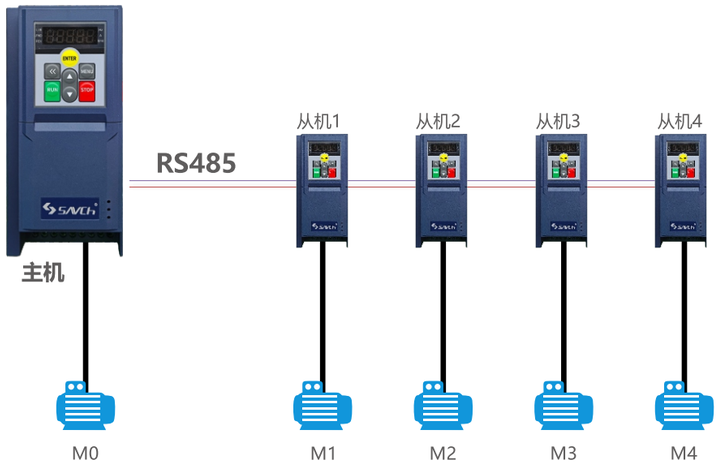


图2：定量循环

- **多泵联机/Multiple Pump Interconnection**

通过RS485可将多台变频器进行组网实现主从控制，从而扩大控制流量或压力范围。
注：最多支持5台机器进行联机。
Through RS485, multiple VFDs can be networked to achieve master-slave control, thereby expanding the control range of flow or pressure.
Note: It supports the interconnection of up to 5 VFDs .



图三：多泵联机

- **定时启停/Scheduled Start-Stop**

定时启停功能（基于RTC）可为用户设置排程，让系统在指定时间自行启动和停机。
The scheduled start-stop function (based on RTC) allows users to set schedules, enabling the system to start and stop automatically at specified time.

- **水泵清洁/Pump Clean**

水泵清洁功能有助于清除堵塞的管道或在下游的阀门。通过电机周期性正转、休眠、反转，实现水泵自清洁功能，减少手动清理水泵的维护工作量。
The pump clean function helps clear blocked pipes or valves downstream. By periodically rotating, going into sleep mode, and reversing the motor, the pump achieves self-cleaning, reducing the manual maintenance workload of cleaning the pump.

- **水管填充/Pipe Fill**

启用水管填充功能后，变频器在每次上电后启动都会缓慢平稳地向水管中注水，防止水锤效应。
Pipe fill function ensures that the VFD slowly and smoothly fills the pipes with water each time it starts up after power up, preventing water hammer effects.

- **干抽保护/Dry Run Protection**

此功能可防止水泵在缺水状态下运行，从而避免水泵叶轮过早磨损，提高轴承和密封件使用寿命。
This function prevents the pump from operating in a dry run state, avoiding premature wear of the pump impeller and extending the life of bearings and seals.

- **水管破裂检测/Pipe Rupture Detection**

通过实时监测变频器的运行频率与输出电流，及时识别水管破裂风险，避免因水管破裂带来的损失。
By continuously monitoring the VFD's operating frequency and output current, the system can promptly identify the risk of pipe rupture, preventing losses associated with pipe breakage.

- **摩擦损失补偿Friction Loss Compensation**

通过调整压力设定值，有效抵抗水流摩擦阻力，从而确保用水设备达到高效、节能、稳定运行。
By adjusting the pressure setpoint, this function effectively counteracts the frictional resistance of water flow, ensuring that water equipment operates efficiently, energy-efficiently, and stably.

产品规格/Product Specifications

- 技术规格/Technical Specifications

项目/Item		规格/Specification
输入/Input	电压/Voltage	三相380~480V -15%~+10% / Three-phase 380~480V -15%~+10%
	频率/Frequency	50/60Hz±5%
	最大不平衡度/Unbalance	3%
输出/Out put	输出电压/Output Voltage	三相0~100% 输入电压 / 3 Phase 0~100% Line in voltage
	输出频率/Output Frequency	0~590Hz
主要控制规格/Main Control	控制模式/Control algorithm	V/F，矢量控制；V/F control，Vector Control
	支持电机类型/ Support Motor Types	异步电机，同步电机 / Induction Motor, PM Motor
	起动转矩/Start Torque	0.5Hz 150%；
	过载能力/Overload	120% 额定输出电流(60s)；150% 额定输出电流(3s) 120% Output Current (60s); 150% Output Current (3s)
	载波频率/Switching Frequency	0.37~22kW:2k~16kHz； 30~90kW:2~8kHz； 110~160kW:2~4kHz； >=185kW:2~3kHz
	速度设定解析度/Speed resolution	数字：0.001Hz，模拟：最大操作频率的0.5‰/Digital: 0.001Hz; Analogue: 0.5‰ of the maximal setup
	开环转速控制精度/Speed accuracy at Speed Open Loop	±0.5%额定/±0.5% of Nominal speed
	控制命令来源/Source of Control Command	操作键盘，数字端子，通讯控制字/Keypad, DI inputs, Bus communication
	设定频率来源/Source of Reference	键盘，模拟量，脉冲，通讯给定/Keypad, Analogue inputs, Pulse inputs, Bus communication
	加减速时间/Acc/Dec	4组加减速时间0.05-6000.00s/4 sets of acceleration/deceleration time, range: 0.05-6000.00s
基本功能/Basic Functions	速度开环，速度闭环，过程闭环控制, 转矩开环，转矩闭环, 电机自学习、自动负载补偿、自动稳压功能、加减速曲线控制、直流制动、交流制动、速度限制，转矩限制，电流限制，飞车启动、瞬停不停、自动复位等。(注意:如果您需要速度闭环或者转矩闭环控制，您必须安装控制单元和PG卡)/ Speed open loop, speed close loop, Process close loop, torque control (with/without speed sensor, Motor auto tuning, Load compensation, DC compensation, DC brake/AC brake, speed limit, current/torque limit, fly start, KEB etc.(Note: Speed close loop or torque control with speed sensor is OK only when a control unit and PG card are installed)	
应用功能/Application Functions	端控多段速、可编程多段速，S ramp，机械制动、计数器、过程PID，点动控制等。/ Multistage speed control by terminals or PLC function, S ramp, Mechanic brake, counter, ProcessPID, Jog etc.	
保护功能/Protection Functions	电源缺相保护，欠压保护，过压保护，过流保护，过载保护，输出缺相保护，输出短路保护，输出接地保护，变频器过热保护，电机过热保护、信号断线保护等。/ Short circuit, Ground fault, line phase loss, under voltage, over voltage, over current, overload, over temperature, motor thermal protection, motor phase loss, control wire broken etc.	
控制端子/Control Terminals	功能模块连接端子/Connector	用于连接控制单元或操作键盘/ For connecting to the control unit or to the external control keyboard
环境/Operation Environment	防护等级/Protection Level	IP20
	工作温度/Operation Ambient Temperature	运行范围-10~50°； Operating range: -10℃ ~ 50℃ 按轻载机型使用，40℃可额定负载运行，40℃以上需降容使用； As light load type: Nominal current to 40°C, derate from 40°C
	工作湿度/Operation Ambient Humidity	5%-85%（95%时不结露）；/5%-85%（No condensing at 95%）；
	振动/Vibration	<=90kW:1.14g; >=110kW: 0.7g
	最大海拔/Altitude	1000m，1000m以上需降容使用；/1000m, derate from 1000m
	电机电缆长度/Motor cable length	屏蔽电缆：50米；非屏蔽电缆：100米；/ Shielded Cable: 50m；Un-shielded cable:100m
其他/Others	制动单元/Brake Chopper	22kW及以下内置 / Built in as default up to 22kW

• 产品型号说明/Product Model Description

SA710P – 4T 1.5G – PU0P CU0P

1 2 3 4 5

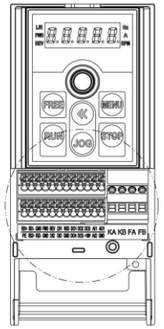
序号/No.	型号/Model	说明/Description
1	SA710P	代表变频器SA710P系列/Represents the frequency converter SA710P series
2	4T	代表输入电压等级：4T~三相380V/Representstive input voltage level: 4T~three phase 380V
3	1.5G	代表功率等级，1.5代表1.5kW；G代表重载/ Represents the power level,1.5 stand for1.5kW，G stand for heavy load
4	PU0P	代表功率单元的型号/Represents the model of the power unit
5	CU0P	代表控制单元的型号/Represents the model of the control unit

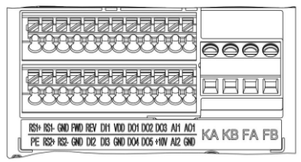
• 产品规格型号/Product model specifications

型号/Model	功率/Power (kW)	电压/Voltage (V)	电流/Current		通风量/Air (m^3/h)
			输入/Input (A)	输出/Output (A)	
SA710P-4T0.75G-PU0PCU0P	0.75	3×380-440	3.7	2.3	17.2
		3×440-480	3.2	2.1	
SA710P-4T1.5G-PU0PCU0P	1.5	3×380-440	6	3.8	17.2
		3×440-480	5.2	3.5	
SA710P-4T2.2G-PU0PCU0P	2.2	3×380-440	8.5	5.3	17.2
		3×440-480	7.3	4.8	
SA710P-4T4.0G-PU0PCU0P	4.0	3×380-440	15	9.6	45.5
		3×440-480	12.9	8.8	
SA710P-4T5.5G-PU0PCU0P	5.5	3×380-440	20.8	13	90
		3×440-480	19.1	11.8	
SA710P-4T7.5G-PU0PCU0P	7.5	3×380-440	27.1	17	90
		3×440-480	23.4	15.5	
SA710P-4T11G-PU0PCU0P	11	3×380-440	35.9	25	124
		3×440-480	31.4	22.7	
SA710P-4T15G-PU0PCU0P	15	3×380-440	43.4	32	170
		3×440-480	40.2	29.1	
SA710P-4T18.5G-PU0PCU0P	18.5	3×380-440	51.5	38	230
		3×440-480	46.1	34.5	
SA710P-4T22G-PU0PCU0P	22	3×380-440	61	45	272
		3×440-480	54.5	40.9	
SA710P-4T30G-PU0PCU0P	30	3×380-440	82.5	61	303
		3×440-480	74	52	
SA710P-4T37G-PU0PCU0P	37	3×380-440	72	75	374
		3×440-480	65	68	
SA710P-4T45G-PU0PCU0P	45	3×380-440	88	91	408
		3×440-480	80	82	
SA710P-4T55G-PU0PCU0P	55	3×380-440	110	112	476
		3×440-480	100	102	
SA710P-4T75G-PU0PCU0P	75	3×380-440	148	150	595
		3×440-480	135	140	
SA710P-4T90G-PU0PCU0P	90	3×380-440	175	180	646
		3×440-480	155	160	
SA710P-4T110G-PU0PCU0P	110	3×380-440	206	215	714
		3×440-480	183	190	
SA710P-4T132G-PU0PCU0P	132	3×380-440	251	260	850
		3×440-480	231	240	
SA710P-4T160G-PU0PCU0P	160	3×380-440	304	315	1029
		3×440-480	291	302	

型号/Model	功率/Power (kW)	电压/Voltage (V)	电流/Current		通风量/Air (m^3/h)
			输入/Input (A)	输出/Output (A)	
SA710P-4T185G-PU0PCU0P	185	3×380-440	350	365	1190
		3×440-480	320	335	
SA710P-4T200G-PU0PCU0P	200	3×380-440	381	395	1292
		3×440-480	348	361	
SA710P-4T220G-PU0PCU0P	220	3×380-440	420	435	1411
		3×440-480	383	398	
SA710P-4T250G-PU0PCU0P	250	3×380-440	472	480	1564
		3×440-480	436	443	
SA710P-4T280G-PU0PCU0P	280	3×380-440	525	540	1700
		3×440-480	475	490	
SA710P-4T315G-PU0PCU0P	315	3×380-440	590	605	1870
		3×440-480	531	540	
SA710P-4T355G-PU0PCU0P	355	3×380-440	647	660	2125
		3×440-480	580	590	
SA710P-4T415G-PU0PCU0P	415	3×380-440	718	745	2380
		3×440-480	653	678	
SA710P-4T450G-PU0PCU0P	450	3×380-440	836	805	2600
		3×440-480	722	714	
SA710P-4T500G-PU0PCU0P	500	3×380-440	932	918	3100
		3×440-480	805	793	
SA710P-4T560G-PU0PCU0P	560	3×380-440	1021	1028	3600
		3×440-480	882	888	
SA710P-4T630G-PU0PCU0P	630	3×380-440	1080	1100	4100
		3×440-480	1017	1000	

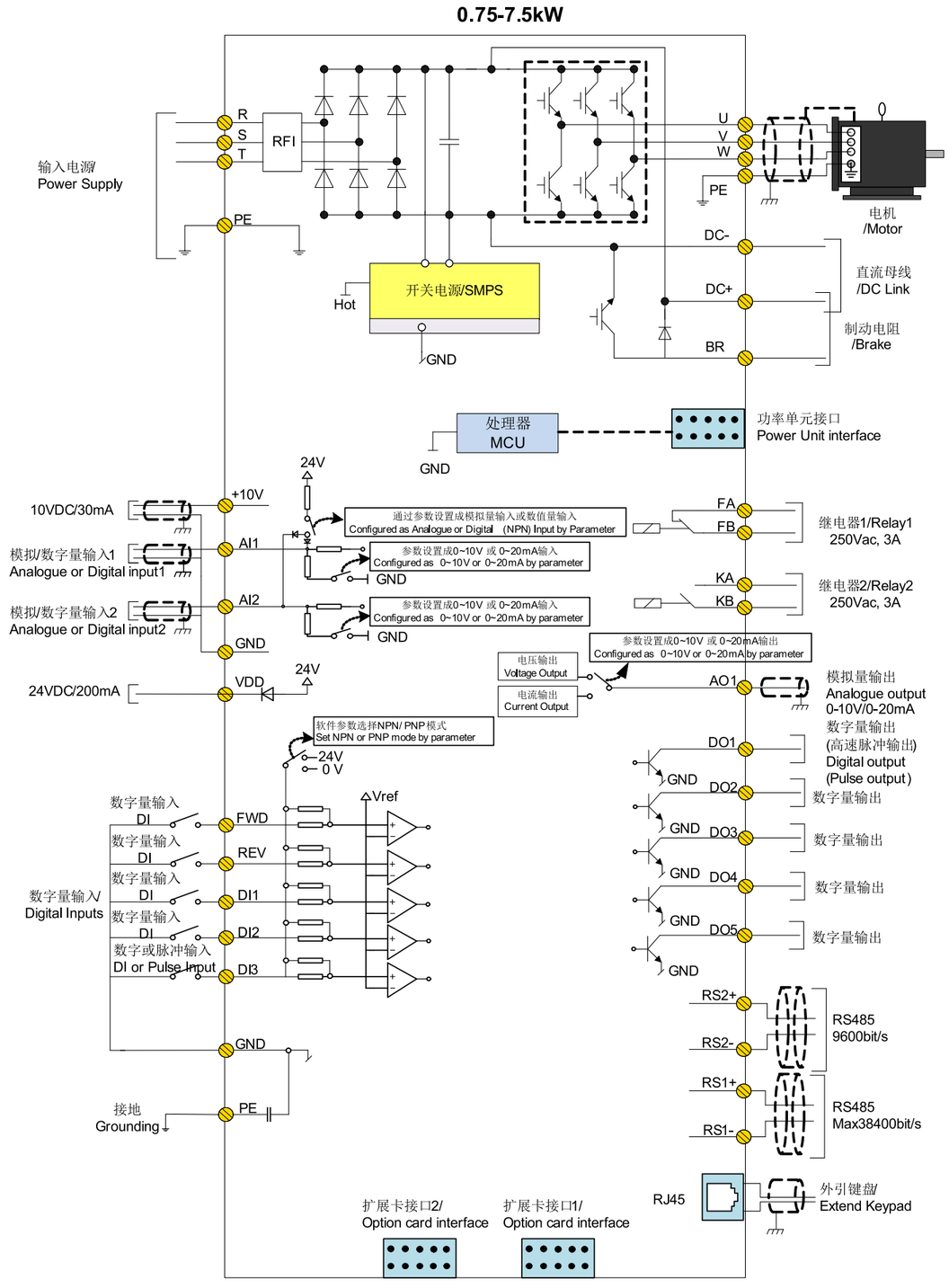
• 控制端子/Control Terminal



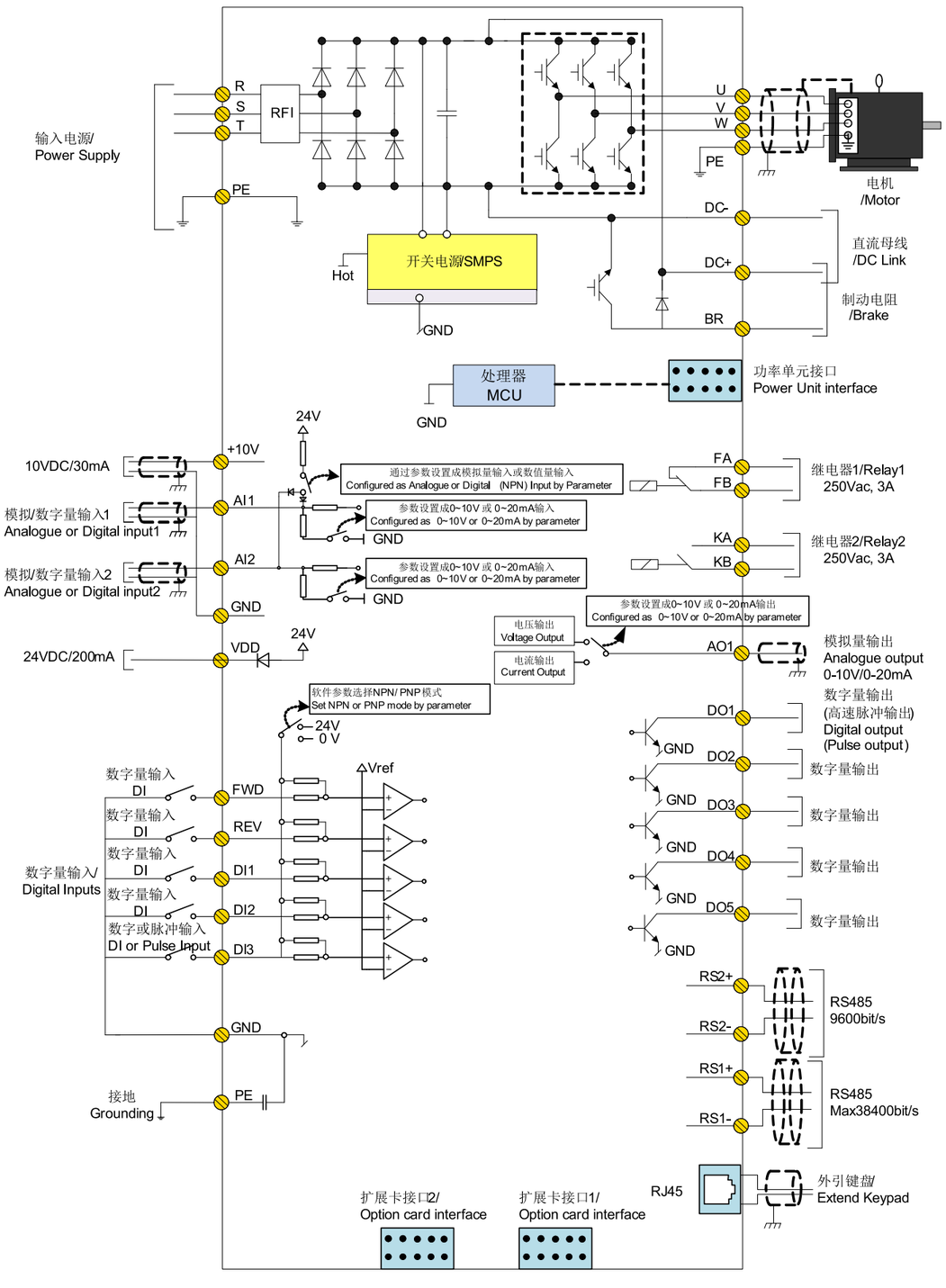


端子名/Terminal name	说明/Description	规格/Specification
FWD,REV,DI1,DI2,DI3	数字量输入端子/ Digital inputs	输入类型：NPN模式和PNP模式 / Input type: NPN; PNP; 输入电压 / Input Voltage：0~30V；输入阻抗 / Input Impedance：3.6kΩ; DI3可配置为脉冲输入/DI3 can be configured as pulse input
DI3	脉冲输入端子/ Pulse Input	频率范围 / Frequency Range：0.00~100.00kHz；电源范围 / Power Supply Range：24V ± 20%; 占空比范围 / Duty Cycle Range：40%~60%；
DO1,DO2,DO3, DO4,DO5	数字量输出端子/ Digital Output	OC 门输出；/ Output type: Open Collector; 输出电流范围 / Output Current：0~40mA；输出电压范围 / Output Voltage：0~30V；
DO1	脉冲输出端子/ Pulse Output	作为脉冲输出时 / Can be configured as pulse output: 负载能力：阻性负载 / Load Capacity: Resistive>1kΩ，容性负载 / capacitive <10nf; 脉冲频率范围 / Frequency Range：0.00~100.00kHz; 占空比范围 / Duty Cycle Range：40%~60%；
RS1+, RS1−	RS485通讯/ RS485 Communication	最大通讯速率38400bit/s，用于上位机通讯; Max Baud Rate: 38400bit/s;Configurable terminatio in resistor, open in default;
RS2+, RS2−		通讯速率9600bit/s，用于多泵联机；For multi-pump connection ,Baud Rate: 9600bit/s;
FA−FB(继电器1/Relay1) KA−KB(继电器2/Relay2)	继电器输出/ Relay Output	阻性负载 / Resistive Load：250VAC 3A/30VDC 3A； 感性负载 / Inductive Load：250VAC 0.2A/24VDC 0.1A（cosφ=0.4）；
AI1, AI2	模拟量数字量输入/ Analogue Inputs	可通过参数选择为模拟量电压输入、模拟量电流输入或者数字量输入： 1. 作为模拟量电压输入：输入阻抗 10kΩ；输入电压范围：0~10V； 2. 作为模拟量电流输入：输入阻抗 ≤500Ω；输入电流范围：0~20mA； 3. 作为数字量输入： 输入类型：NPN PNP； 输入阻抗：10KΩ； 电压范围：0-30V Configurable as analogue voltage inputs, analogue current inputs as well as digital inputs. 1. As Analogue Voltage Inputs: Input Impedance: 10kΩ;Input Voltage Range: 0~10V; 2. As Analogue Current Inputs: Input Impedance: ≤500Ω;Input Current Range: 0~20mA; 3. As Digital Inputs: Input Type: NPN PNP；Input Impedance: 10kΩ；Input Voltage Range: 0-30V;
AO1	模拟量输出/ Analogue Output	可通过参数配置0~10V电压输出或者0~20mA电流输出，输出范围：0~20mA or 0~10V；/ Configurable as analogue voltage output or current output，Output Range: 0~10V or 0~20mA; 负载能力/Load Capacity: 电压输出时：负载阻抗大于500Ω； / As Voltage Output: Impedance > 500Ω; 电流输出时：负载阻抗小于500Ω； / As Current Output: Impedance < 500Ω;
VDD	24V 电源/ Power Supply	最大输出电流 / Max：200mA
+10V	10V电源/ Power Supply	最大负载 / Max：30mA
GND	信号地/ Signal Ground	
PE	大地/Safety Ground	
扩展卡接口/Connector for Option Card		用于外接扩展卡，位于控制单元底部/ Support one option card of different types, at the bottom of the Control Unit
外引键盘接口/Connect for External Keypad		用于外接控制键盘，位于控制单元中部 RJ45 for external keypad, at the middle of the Control Unit

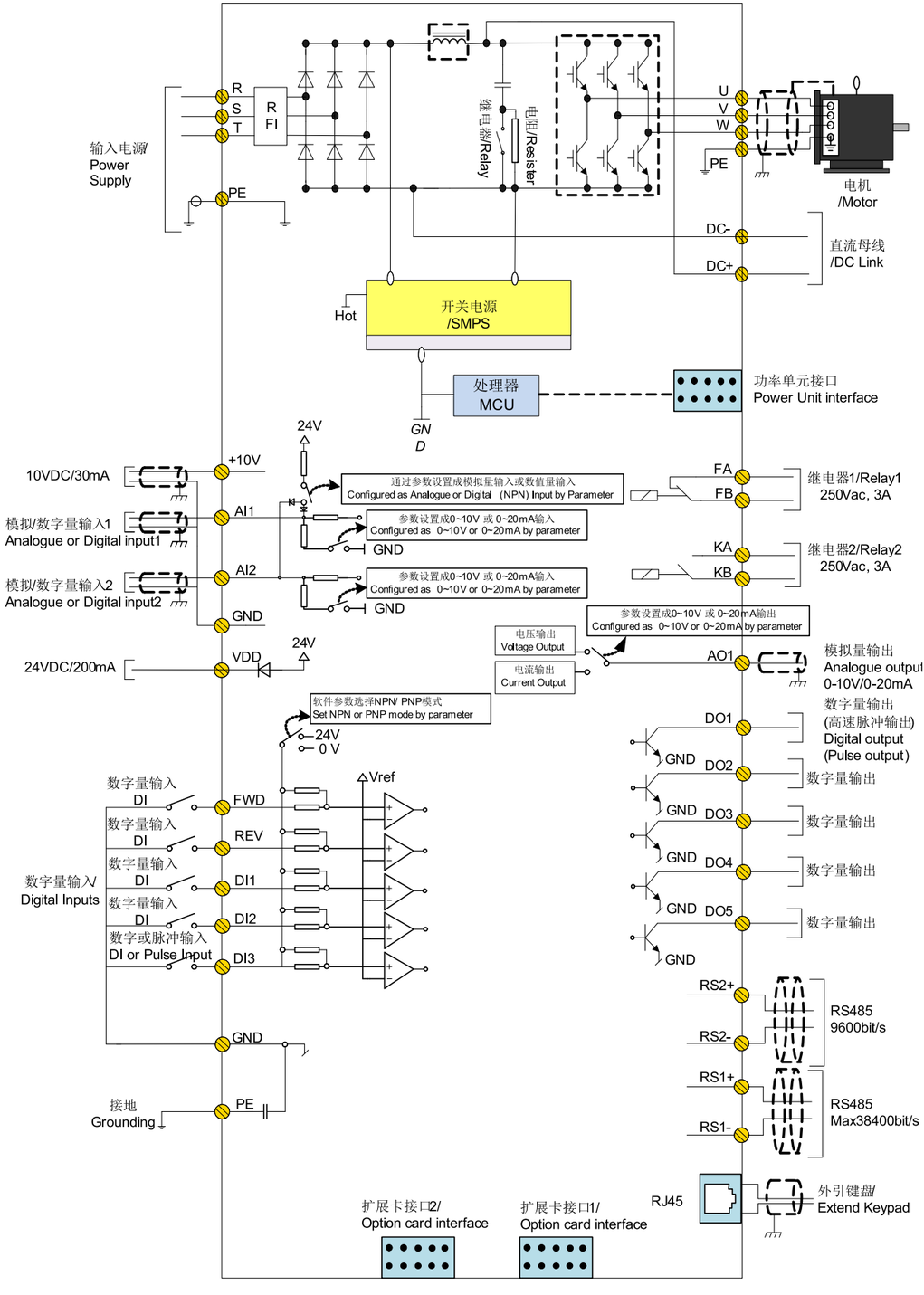
• 电气图/Electrical Diagram



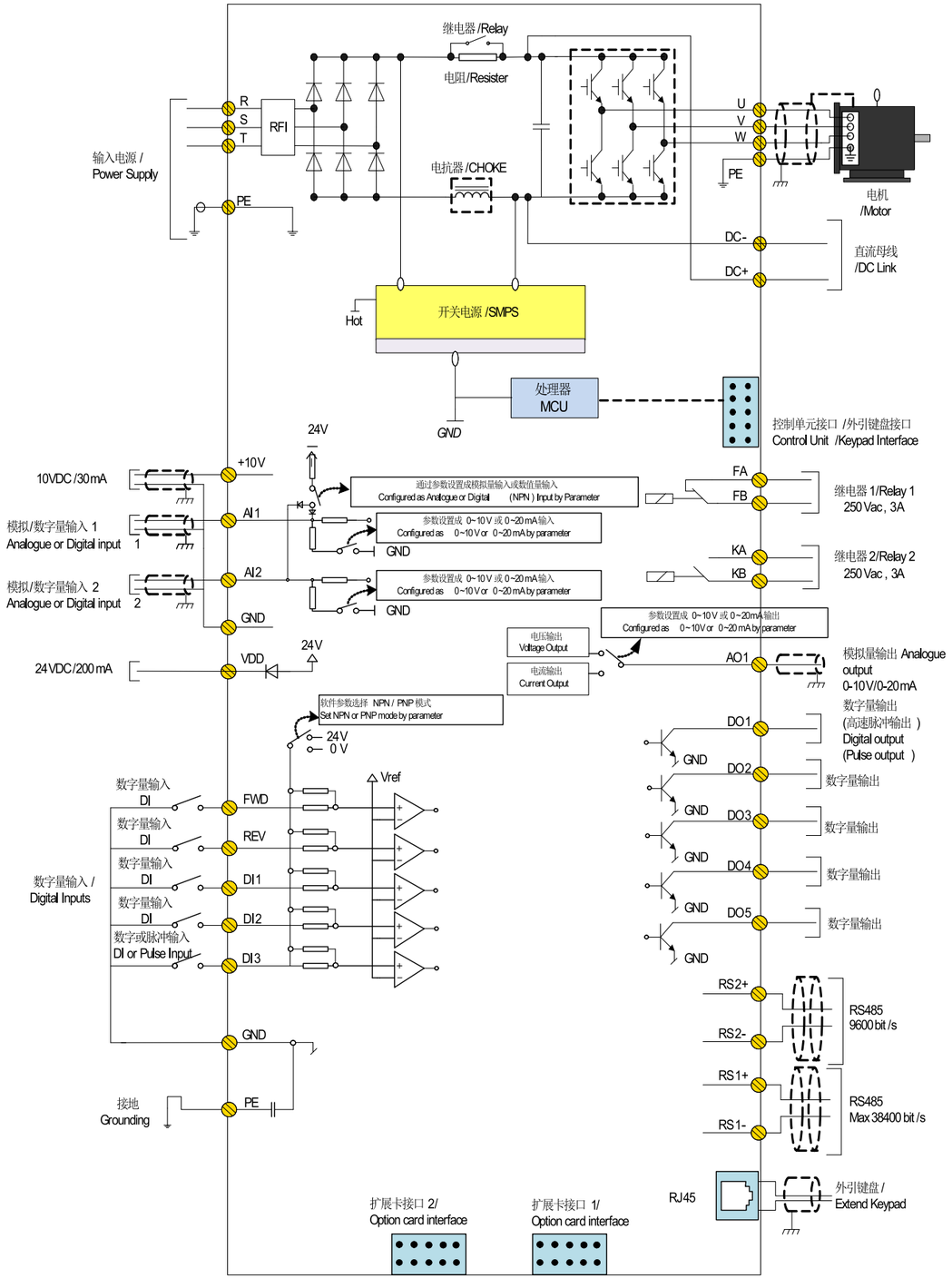
11-22kW



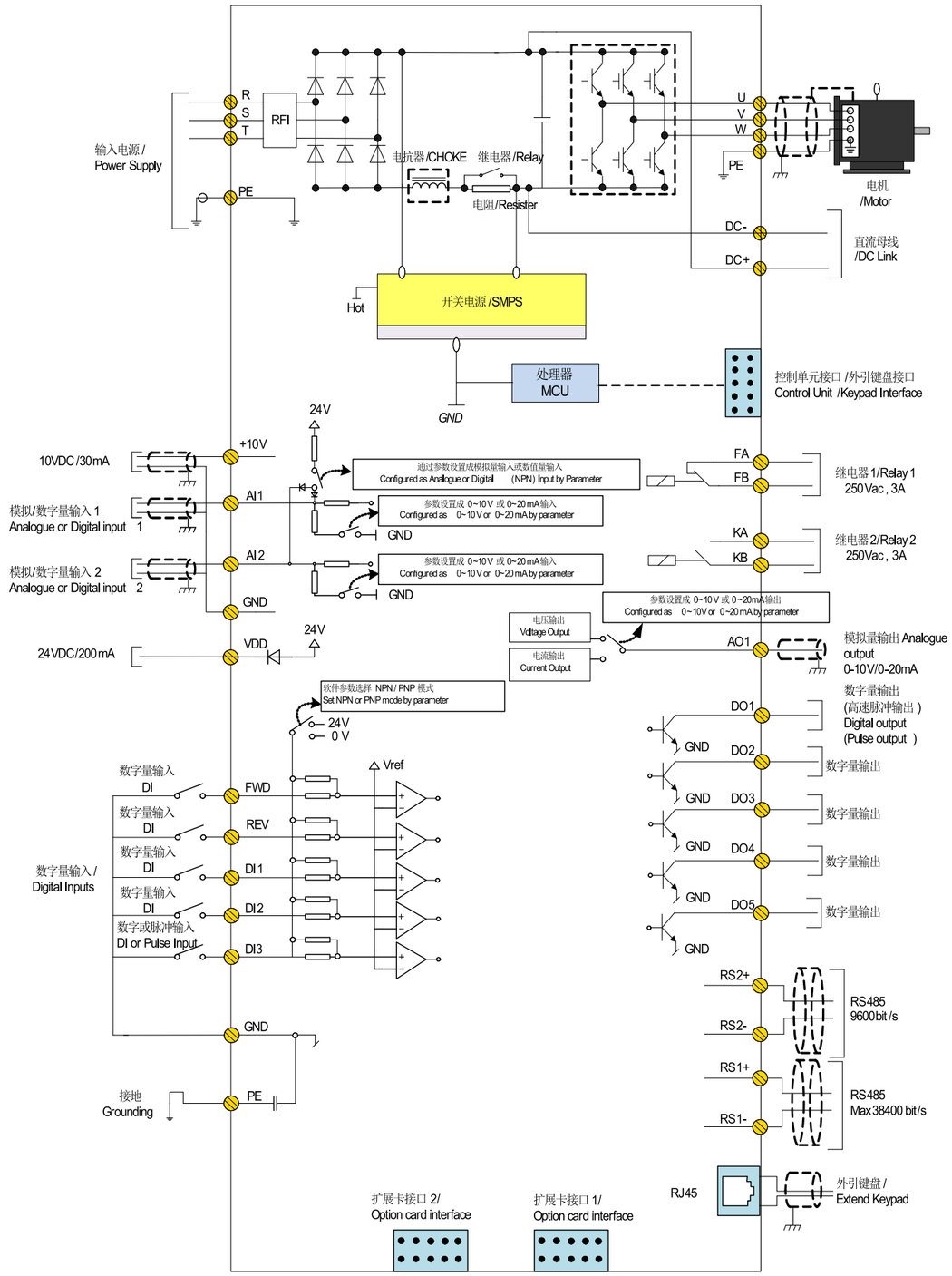
30~90kW



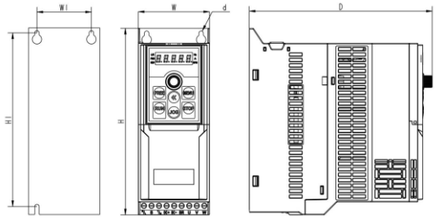
110~450 kW



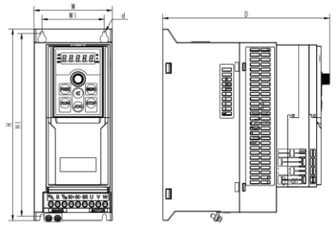
500~630 kW



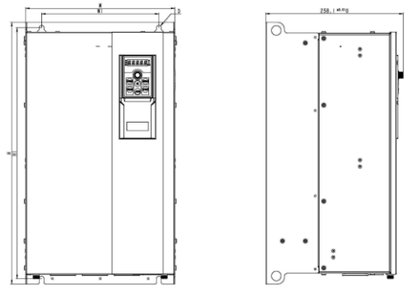
产品尺寸/Product Dimensions



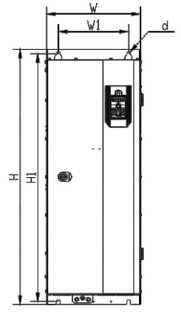
D1 Size



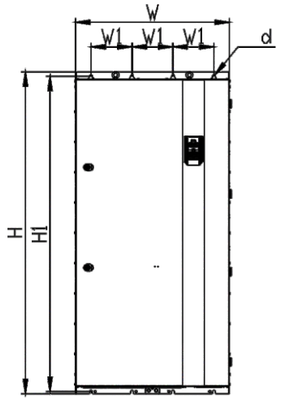
D2-D4 Size



D5-D6 Size



D7-D9 Size



D10 Size

机壳 /Frame size	功率及电压等级/Power and voltage level	尺寸/size (mm)					
	3×380–480V	W	H	D	W1	H1	d
D1	0.75-2.2kW	72	188	185	55	175	4.5
D2	4.0kW	88	215	188	70	205	4.5
D3	5.5-7.5kW	100	250	194	80	240	4.5
D4	11-22kW	170	370	212	145	355	6.5
D5	30-55kW	280	490	258	220	470	9
D6	75-110kW	330	620	278	270	600	9
D7	132-185kW	320	870	380	240	845	13
D8	200-355kW	500	1070	410	380	1040	13
D9	415-450kW	650	1220	430	480	1190	13
D10	500-630kW	750	1570	505	3*200	1540	13

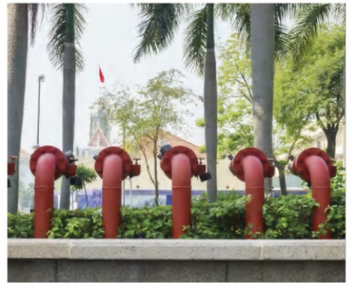
产品应用/Product Application

- 可用于以下供水系统/Can be used for the following water supply systems

▶ 建筑工程/Construction projects

▼ 商场供水/Commercial water supply
学校供水/School water supply
住宅供水/Residential water supply
工业生产/Industrial production
生活用水/Domestic water use
矿业开采/Mining operations
水利工程/Hydraulic engineering
温汤浴场、泳池维护等/
Hot spring baths, and swimming pool maintenance, etc.



▼ 农业灌溉/Agricultural irrigation