



上海稳压器厂
SHANGHAI
VOLTAGE REGULATOR PLANT
Tel: 400-186-8989



变频器系列

FREQUENCY CONVERTER
SERIES

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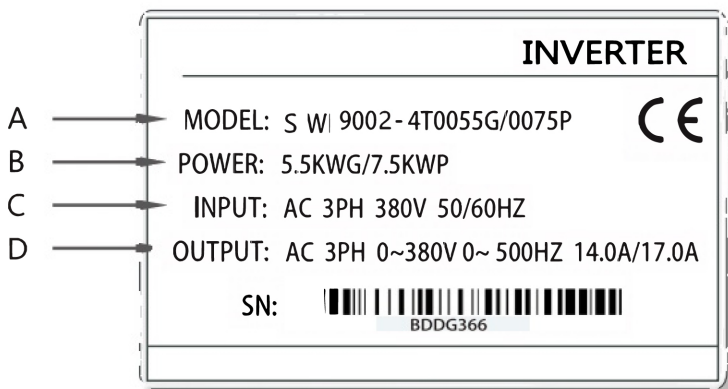
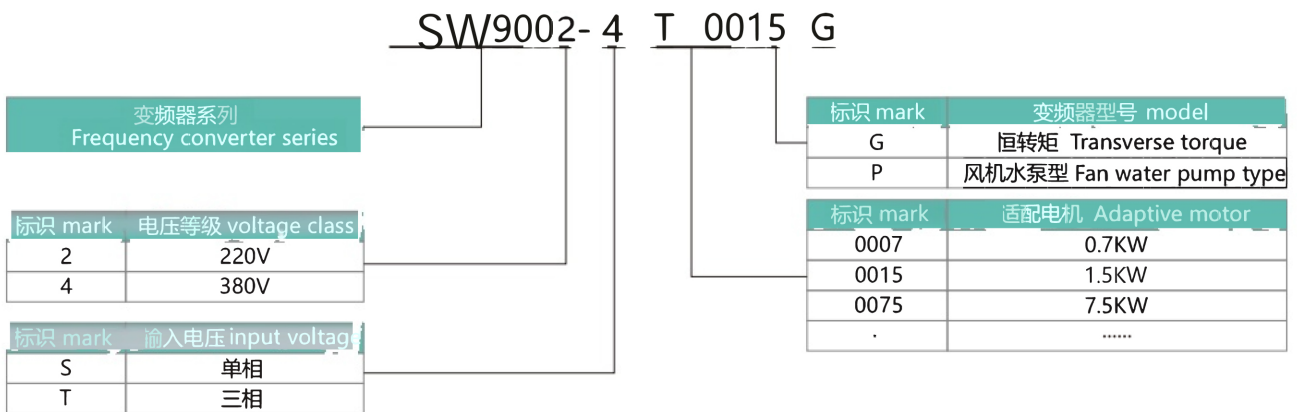
产品简介 Product profile

SW9002系列变频器采用高性能的矢量控制技术，实现了低速下的高转矩输出，具有良好的动态特性、超强的过载能力，性能稳定，保护功能强大，人机界面简洁、操作简易。可用于编织、造纸、拉丝、机床、包装、食品、风机、水泵及各种自动化生产设备的驱动。

The SW9002 series frequency converter adopts the high-performance vector control technology, which realizes the high torque output at low speed, has good dynamic characteristics, super overload capacity, stable performance, powerful protection function, simple man-machine interface, simple operation. Can be used for weaving, paper, wire drawing, machine tool, packaging, food, fan, water pump and a variety of automatic production equipment drive.



型号命名及铭牌定义 Model & nameplate definition



- A: 变频器型号: frequency inverter model
- B: 额定功率: rated power
- C: 额定输入 rated input
- D: 额定输出 rated output

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产品技术规范 specification

- ◆ 输入：额定电压/频率 单相220V、三相220V、三相380V，50Hz/60Hz
变动容许值 电压：-20%~+20% 电压失衡率：<3% 频率：±5%
- ◆ 输出：输出额定电压 0~220V/380V
输出频率范围 0Hz~500Hz
- ◆ input: rated voltage / frequency Single-phase 220V, three-phase 220V, three-phase 380V, 50Hz / 60Hz
variable allowable voltage: -20%~ + 20% voltage imbalance: <3% Frequency: ± 5%
- ◆ output: Output rated voltage is 0~220V / 380V
Output frequency range is 0Hz~500Hz



控制功能 control function

- ◆ 频率分辨率：数字设定：0.01Hz；模拟设定：最高频率 × 0.025%
- ◆ 过载能力：150% 额定电流运行 60s 停机（其中SW 9001-4T4500G 为：130% 额定电流运行60s 停机）
- ◆ 调制方式：优化空间电压矢量SVPWM调制
- ◆ 控制方式：开环矢量控制（SVC）；闭环矢量控制（FVC）；V/F 控制。
- ◆ 启动转矩：0.25Hz/150%（SVC）；0Hz/180%（FVC）。
- ◆ V/F曲线：四种方式：直线型；多点型；完全 V/F 分离；不完全 V/F 分离。
- ◆ 加减速曲线：直线或 S 曲线加减速方式；四种加减速时间，加减速时间范围 0.0~6500.0s。
- ◆ 直流制动：直流制动起始频率：0.00Hz~ 最大频率；制动时间：0.0s~36.0s；制动动作电流值：0.0%~100.0%。
- ◆ 点动控制：点动频率范围：0.00Hz~50.00Hz；点动加减速时间 0.0s~6500.0s。
- ◆ 内置PID：可方便实现过程控制闭环控制系统。
- ◆ 过压过流失速控制：对运行期间电流电压自动限制，防止频繁过流过压跳闸。
- ◆ 简易 PLC、多段速运行：通过内置 PLC 或控制端子实现最多 16 段速运行。
- ◆ 快速限流功能：最大限度减小过流故障，保护变频器正常运行。
- ◆ 自动电压调整(AVR)：当电网电压变化时，维持输出电压恒定不变
- ◆ 自动节能运行：根据负载情况，自动优化V/F曲线，实现节能运行
- ◆ 转矩限定与控制：“挖土机”特性，对运行期间转矩自动限制，防止频繁过流跳闸；矢量控制模式可实现转矩控制。
- ◆ 虚拟 IO：五组虚拟 DIDO，可实现简易逻辑控制。
- ◆ 定时控制：定时控制功能设定时间范围 0.0Min ~ 6500.0Min。
- ◆ 多电机切换：两组电机参数，可实现两个电机切换控制。
- ◆ 恒压供水控制：与供水控制板连接，可以实现多泵恒压供水控制功能
- ◆ 多线程总线支持：支持六种现场总线：Modbus、Profibus-DP、CANlink、CANopen、Profinet、EtherCAT。
- ◆ 电机过热保护：选配 IO 扩展卡 1，模拟量输入 AI3 可接受电机温度传感器输入（PT100、PT1000）。
- ◆ 多编码器支持：支持差分、开路集电极、UVW、旋转变压器等
- ◆ 运行命令：操作面板给定、控制端子给定、串行通讯口给定。可多种方式切换
- ◆ 频率指令：10 种频率指令：数字给定、模拟电压给定、模拟电流给定、脉冲给定、串行口给定。可通过多种方式切换
- ◆ 辅助频率指令：10 种辅助频率指令。可灵活实现辅助频率微调、频率合成
- ◆ 参数拷贝：可通过 LCD 操作面板选件实现参数的快速复制
- ◆ 瞬间过电流保护：在额定输出电流的 250% 以上时停机
- ◆ 按键锁定：可实现按键部分或全部锁定，定义部分按键的作用范围，以防止误操作

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控制功能 control function

- ◆ Frequency resolution: digital setting: 0.01Hz; simulation setting: maximum frequency 0.025%
- ◆ Overload capacity: 150% rated current for 60s shutdown (SW 9001-4T4500G: 130% rated current running for 60s shutdown)
- ◆ Modulation mode: optimize the spatial voltage vector SVPWM modulation
- ◆ Control mode: open-loop vector control (SVC); closed-loop vector control (FVC); and V / F control.
- ◆ Start-up torque: 0.25Hz / 150% (SVC); 0Hz / 180% (FVC).
- ◆ V / F curve: four ways: straight line; multi-point type; complete V / F separation; incomplete V / F separation.
- ◆ Increase and deceleration curve: straight-line or S-curve increase and deceleration mode; Four acceleration and deceleration times, acceleration and deceleration time range 0.0~6500.0s.
- ◆ DC brake: DC brake starting frequency: 0.00Hz~ maximum frequency; Brake time: 0.0s~36.0s; Brake action current value: 0.0%~100.0%.
- ◆ Point movement control: point movement frequency range: 0.00Hz~50.00Hz;
- ◆ Tap action, acceleration and deceleration time is 0.0s~6500.0s.
- ◆ Built-in PID: it can easily realize the process control closed-loop control system.
- ◆ Overvoltage and overvoltage loss speed control: automatically limit the current voltage during operation to prevent frequent overflow pressure trip.
- ◆ Simple PLC, multi-segment speed operation: up to 16 segments running through the built-in PLC or control terminals.
- ◆ Fast current limiting function: minimize the overcurrent fault and protect the normal operation of the frequency converter.
- ◆ Automatic Voltage Adjustment (AVR): When the power grid voltage changes, keep the output voltage constant
- ◆ Automatic energy saving operation: according to the load situation, automatically optimize the V / F curve to realize energy saving operation
- ◆ Torque limit and control: the "excavator" characteristic, to automatically limit the torque during the operation, to prevent frequent overcurrent trip; the vector control mode can realize the torque control.
- ◆ Virtual IO: five sets of virtual DIDO, which can achieve simple logic control.
- ◆ Timing control: the timing control function shall set the time range of 0.0Min ~ 6500.0Min.
- ◆ Multi-motor switch: two sets of motor parameters, can realize two motor switch control.
- ◆ Constant pressure water supply control: connected with the water supply control board, it can realize the multi-pump constant pressure water supply control function
- ◆ Multi-threaded bus support: support for six fieldbuses: Modbus, Profibus-DP, CANlink, CANopen, Profinet, EtherCAT.
- ◆ Motor overheating protection: the IO extension card 1 is optional, and the analog input AI3 can accept the motor temperature sensor input (PT100, Pt1000).
- ◆ Multi-encoder support: support for differential, open-circuit collector, UVW, rotary transformer, etc
- ◆ Run command: operation panel given, control terminal given, serial communication port given. It can be switched in many ways
- ◆ Frequency instructions: 10 frequency instructions: digital given, analog voltage, analog current, pulse, serial port given. It can be switched in many ways
- ◆ Auxiliary frequency instructions: 10 auxiliary frequency instructions. It can flexibly realize the auxiliary frequency fine-tuning and frequency synthesis
- ◆ Parameter copy: Quick replication of parameters through the LCD operation panel option
- ◆ Instant overcurrent protection: stop at more than 250% of the rated output current
- ◆ Key lock: Part or all of the keys can lock, defining the scope of some keys to prevent misoperation

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保护功能 Protection function

- ◆ 缺相保护：输入缺相保护，输出缺相保护
- ◆ 过压保护：主回路直流电压在 820V 以上时停机
- ◆ 欠压保护：主回路直流电压在 350V 以下时停机
- ◆ 过热保护：逆变桥过热时会触发保护
- ◆ 过载保护：150% 额定电流运行 60s 停机（其中 SW9002-4T04500G 为：130% 额定电流运行60s 停机）
- ◆ 过流保护：超过变频器 2.5 倍额定电流停机保护
- ◆ 制动保护：制动单元过载保护，制动电阻短路保护
- ◆ 短路保护：输出相间短路保护，输出对地短路保护



- ◆ Lack of phase protection: input lack of phase protection, output lack of phase protection
- ◆ Overvoltage protection: stop when the main circuit DC voltage is above 820V
- ◆ Undervoltage protection: stop when the main circuit DC current is below 350V
- ◆ Overheat protection: protection is triggered when the inverter bridge overheat
- ◆ Overload protection: 150% rated current for 60s shutdown (sw 9002-4T 04500G: 130% rated current running for 60s shutdown)
- ◆ Overcurrent protection: 2.5 times the rated current of the frequency converter
- ◆ Brake protection: Brake unit overload protection, brake resistance short-circuit protection
- ◆ Short circuit protection: output alternate with short circuit protection, output short circuit to ground protection

使用环境 service environment

- ◆ 使用场所：室内，不受阳光直晒，无尘埃、腐蚀性气体、可燃性气体、油雾、水蒸汽、滴水或盐份等
- ◆ 海拔高度：1000m 以下使用无需降额，1000m 以上每升高 100m 降额 1%
- ◆ 环境温度：-10℃ ~ +40℃，温度超过 40℃ 时需要降额使用，环境温度每升高 1℃ 降额 1.5%，最高使用环境温度为 50℃
- ◆ 湿度：小于 95%RH，无凝露
- ◆ 存储温度：-20℃ ~ +60℃
- ◆ 防护等级：IP20(在选用状态显示单元或键盘的状态下)
- ◆ 冷却方式：强制冷风
- ◆ Place of use: indoor, not from direct sunlight, no dust, corrosive gas, combustible gas, oil mist, water steam, Dripping water or salt, etc
- ◆ Elevation: use below 1000m, 1% for every 100m increase above 1000m
- ◆ Ambient temperature: -10℃ ~ +40℃, required when the temperature exceeds 40℃. By 1.5%, the maximum ambient temperature is 50℃
- ◆ Humidity: less than 95%RH, no condensation exposure
- ◆ Storage temperature: -20℃ ~ +60℃
- ◆ levels of protection: IP20 (in the selected status display unit or keyboard state)
- ◆ cooling-down method: Forced cold wind

安装方式 way to install

壁挂式、柜内安装

Wall-mounted and in cabinet installation

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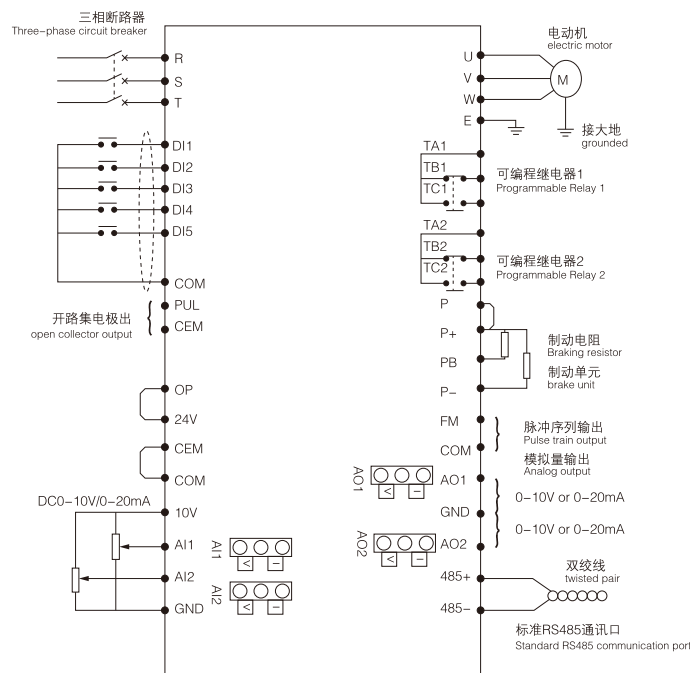
产品特点 Feature

- ◆ 高性能矢量控制(低速高转矩输出, 具有良好的动态特性、超强的过载能力)
- ◆ 设计上运用独有的树状散热器, 开关电源等多项技术, 使机器性能更加优越
- ◆ 电路及工艺上采用多种防护技术和新元器件, 显著提高整机抗干扰能力
- ◆ 通过内置PLC或控制端子实现多段速运行
- ◆ 调制方式: 优化空间电压矢量SVPWM调制和FVPWM调制
- ◆ 自动节能运行: 根据负载情况, 自动优化V/F曲线, 实现节能运行
- ◆ 开关输入通道: 正、反转指令; 8路可编程开关量输入, 可分别设定52种功能
- ◆ 超强的过载能力: 150% 额定电流运行 60s 停机
- ◆ 通讯功能: 支持六种现场总线: Modbus、Profibus-DP、CANlink、CANopen、Profinet、EtherCAT。



- high performance vector control (low speed and high torque output, good dynamic characteristics, super overload capability)
- ◆ design uses a unique tree radiator, switch power supply and other technologies, make the machine performance More superior
- ◆ circuit and technology using a variety of protection technology and new components, significantly improve the whole machine anti-interference ability
- ◆ operates quickly with built-in PLC or control terminals
- ◆ modulation mode: optimize the spatial voltage vector SVPWM modulation and F VPWM
- ◆ automatic energy saving operation: according to the load situation, automatically optimize the V / F curve, to realize the energy saving operation
- ◆ switch input channel: positive and reverse instructions; 8-road programmable switch quantity input, can be set respectively 52 Features
- ◆ super overload capacity: 150% rated current running for 60s shutdown
- ◆ communication function: supports six fieldbuses: Modbus, Profibus-DP, CANlink, CANopen, Profinet, and EtherCAT.

基本运行接线图 Basic operation wiring diagram



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操作显示说明 Operation display description

升级双显控制面板，可以对变频器进行功能参数修改、运行停机控制、工作状态监控等操作，其外形及功能区如下图所示：

Upgrade the dual-display control panel to modify the functional parameters, operation shutdown control, and working state monitoring of the frequency converter. The shape and functional areas are shown in the figure below:



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外形与安装尺寸(mm) Outline and installation dimension(mm)

变频器型号 model	安装孔位 mounting hole(mm)		外形尺寸(mm)Outline size			安装孔径Mounting Aperture mm
	A	B	长(H)Length	宽(W)Width	高(D)Height	
SW9002-4T0015G SW9002-4T0022G SW9002-4T0030G	79	154	164	89	125	Φ4
SW9002-4T0040G SW9002-4T0055G	86	173	184	97	145	Φ4
SW9002-4T0075G	101	204	220	126	182	Φ4
SW9002-4T0110G SW9002-4T0150G	131	245	257	146.5	185	Φ4
SW9002-4T0185G SW9002-4T0220G	151	303	320	170	205	Φ6
SW9002-4T0300G SW9002-4T0370G	120	385	400	200	220	Φ6
SW9002-4T0450G SW9002-4T0550G	200	493	510	260	252	Φ6
SW9002-4T0750G	200	493	530	260	252	Φ8
SW9002-4T0900G SW9002-4T1100G	200	630	660	320	300	Φ8
SW9002-4T1320G SW9002-4T1600G SW9002-4T1850G	250	755	780	400	345	Φ10
SW9002-4T2000G SW9002-4T2200G	300	872	900	460	355	Φ10
SW9002-4T2500G SW9002-4T2800G	360	922	950	500	355	Φ12
SW9002-4T3150G SW9002-4T3550G	500	1029	1050	650	365	Φ12
SW9002-4T4000G SW9002-4T4500G SW9002-4T5000G	500	1265	1300	650	385	Φ14
SW9002-4T5600G SW9002-4T6300G SW9002-4T7200G	600	1415	1450	850	435	Φ14
SW9002-4T8000G SW9002-4T10000G	1000	1415	1450	1100	465	Φ14