

产品规格书 Product Specification Sheet

1. 品种 Type Model

- 1.1 种类 Kinds: 高压直流继电器 High voltage DC relay
- 1.2 型号 Type: YV50-12-AP
- 1.3 触点形式 Contact Arrangement: 常开型 Form A
- 1.4 触点材料 Contact Material: 触点镀银 Contact silver plating

2. 安全标准 Safety Standard

国际安全认证 Foreign Standard:

3. 线圈额定参数 Coil Rating (at 23°C)

- 3.1 额定电压 Rated Voltage: 12VDC
- 3.2 线圈电阻 Coil Resistance: $40 \pm 10\% \Omega$
- 3.3 额定功耗 Normal Operating Power: 3.6W
- 3.4 最大允许线圈电压 Max. Allowable Coil Voltage: 16VDC

4. 触点参数 Contact Specification

- 4.1 触点阻性负载 Contact Rating: 50A/750VDC
- 4.2 最大切换电流 Max. Contact Current: 500A/320VDC
- 4.3 最大切换电压 Max. Contact Voltage: 1000VDC
- 4.4 最大切换功率 Max. Allowable Capacity: 160KW

5. 性能 Performance

- 5.1 接触电阻 Contact Resistance: $\leq 2.0m\Omega$ (at 6VDC 20A)
- 5.2 动作电压 Operate Voltage: $\cong 9VDC$
- 5.3 释放电压 Release Voltage: $\cong 1VDC$
- 5.4 动作时间 Operate Time: Max. 30ms
- 5.5 释放时间 Release Time: Max. 10ms

5.6 寿命 Life

(1) 电气寿命 Electrically

结构型式 Version	触点负载 Contact Rating	环境温度 Ambient Temperature	通断比 ON: OFF	电耐久性 Electrical Endurance
常开型 Normally open type	阻性: 50A/450VDC	常温 Room Temperature	接通 1S/断开 9S	1×10^4 次 (ops)
常开型 Normally open type	阻性: 50A/750VDC	常温 Room Temperature	接通 1S/断开 9S	3×10^3 次 (ops)
常开型 Normally open type	阻性: 30A/1000VDC	常温 Room Temperature	接通 1S/断开 9S	5×10^2 次 (ops)

注: 本接触器为高压直流开关, 在其最终的损坏模式中, 它可能会失去应有的切断功能, 因此不要在超过它的切换能力和寿命参数的状态下使用 (请将该接触器当作一个有规定寿命的产品来对待, 必要时作替换)。

Note: This contactor is a high-voltage DC switch. In its final damage mode, it may lose its proper cut-off function, so don't use it when its switching ability and life parameters are exceeded (please treat this contactor as a product with a specified life, and replace it if necessary).

(2) 机械寿命 Mechanically

结构型式 Version	触点负载 Contact Rating	环境温度 Ambient Temperature	通断比 ON: OFF	电耐久性 Electrical Endurance
常开型 Normally open type	无负载 No load	常温 Room Temperature	接通 1S/断开 1S	2×10^5 次 (ops)

5.7 电流耐受 Current carrying capacity

50A	70A	100A	180A	300A	500A
持续	2h	20min	30s	10s	0.6s

5.8 介质耐压 Dielectric Strength (漏电流 Leak Current: 1mA)

(1) 断开触点间 Between Contacts: 2500VAC (50/60Hz 1min)

(2) 触点与线圈间 Between Coil To Contacts: 2500VAC (50/60Hz 1min)

5.9 绝缘电阻 Insulation Resistance

(1) 断开触点间 Between Contacts: $\cong 1000\text{M}\Omega (1000\text{VDC})$

(2) 触点与线圈间 Between Coil To Contacts: $\cong 1000\text{M}\Omega (1000\text{VDC})$

5.10 振动 Vibration

强度: 1.5mm 双振幅, 10~500Hz, 1 小时。继电器外观、结构和性能不应有异常。

Durability: 1.5mm Double amplitude, 10 to 500Hz, 1 hours. It shall be no abnormalities in appearance, construction and performance.

5.11 冲击 Shock

稳定性: $196\text{m/s}^2 (10\text{g})$, 6 次 (X、Y、Z 三个方向中的每个方向), 闭合回路的断开或开路回路的闭合时间应不超过 $200\mu\text{s}$ 。

Malfunction: $196\text{m/s}^2 (10\text{g})$, 6 shocks (each direction of X, Y, Z), No opening of any closed contact circuit or no closing of any opened contact circuit shall exceed $200\mu\text{s}$.

强度: $490\text{m/s}^2 (100\text{g})$, 6 次 (X、Y、Z 三个方向中的每个方向), 继电器外观、结构和性能不应有异常。

Durability: $490\text{m/s}^2 (100\text{g})$, 6 shocks (each direction of X, Y, Z), It shall be no abnormalities in appearance, construction and performance.

5.12 引出脚强度 Terminal Strength: 5N 1 分钟(minute)

引出脚在插入方向上施加 5N 的拉力, 继电器应无异常。(引出脚微弯可以接受)

At push in direction the terminal can endure 5N force for 1 minute, It shall be no abnormalities. (a little curving of the terminals shall be Acceptable)

5.13 耐焊接热 Soldering Heat Resistance: $260\pm 5^\circ\text{C}$, 10s.

继电器应无异常

There shall be no abnormalities.

5.14 焊接性能 Soldering Ability: $240\pm 5^\circ\text{C}$, $3\pm 0.5\text{s}$.

引出端被浸锡部分应有 90% 以上连续覆上一层锡层。90% of the dipped portion shall be soldered.

5.15 耐温性 Temperature Resistance

(1) 耐热 Heat Resistance

$85^\circ\text{C}\pm 2^\circ\text{C}$ 温度中放置 2 小时, 恢复常温 2 小时后, 继电器的结构及性能应无异常。Must be free from any abnormality in both the construction and characteristics after the relay is left in a temperature of $85\pm 2^\circ\text{C}$ for 2h and then in room temperature and humidity for 2h.

(2) 耐寒 Cold Resistance

$-40^\circ\text{C}\pm 2^\circ\text{C}$ 温度中放置 2 小时, 恢复常温 2 小时后, 继电器的结构及性能应无异常。Must be free from any abnormality in both the construction and characteristics after the relay is left in a temperature of $-40\pm 2^\circ\text{C}$ for 2h and then in room temperature and humidity for 2h.

5.16 耐湿性 Moisture Resistance

在温度 $40 \pm 2^\circ\text{C}$ 相对湿度 $90 \sim 95\% \text{RH}$ 中放置 48 小时, 恢复常温常湿 2 小时后, 继电器的结构及性能应无异常。且绝缘电阻应不小于 $50 \text{M}\Omega \text{ min. (500VDC)}$

Must be free from any abnormality in both the construction and characteristics after the relay is lift in a temperature of $40 \pm 2^\circ\text{C}$, and humidity of 90% to 95% RH for 48h and then in room temperature and humidity for 2h. Insulation resistance however must be no less than $50 \text{M}\Omega \text{ min. (500VDC)}$

6. 产品标识 Marking

6.1 外壳颜色 Case Color: 白色 White

6.2 激光打标位置 Laser Marking Position: 正面 Front



YONGNENG
 D1PD221 (生产编码 production code)
YV50-12-AP
 Coil: 12VDC
 Contact: 50A/1000VDC
 符合: IEC61810-7:2006
 符合: GB/T14048.4-2020
 东莞市永能电子有限公司

订货标记示例 ORDERING INFORMATION						
YV	50	-12	-A	P	X	
特殊参数 Special parameters:					无-标准型,字母或数字-特殊要求 None-Standard , Alphabetic or Numeric-Special Requirements	
负载极性 Load the polarity :					P-无极性 P-Nonpolarity	
触点形式 Contact form :					A-无辅助触点 A-Without auxiliary contact	
线圈规格 Coil voltage :					12,24,48 (VDC)	
触点电流 Contact Current :					50-50A	
基本型号 Type designation :					YV	

7. 标准测试条件 Standards Test Condition

7.1 温度 Temperature: $23 \pm 5^\circ\text{C}$

7.2 湿度 Humidity: $60 \pm 10\% \text{RH}$

7.3 方向 Direction of Measurement: 任意 Free

8. 使用条件 Operating Condition

- 8.1 温度 Temperature: -40 ~ +85 °C
- 8.2 湿度 Humidity: 5% ~ 85% RH
- 8.3 安装方向 Mounting Direction: 任意 Free

9. 贮存条件 Storage Condition

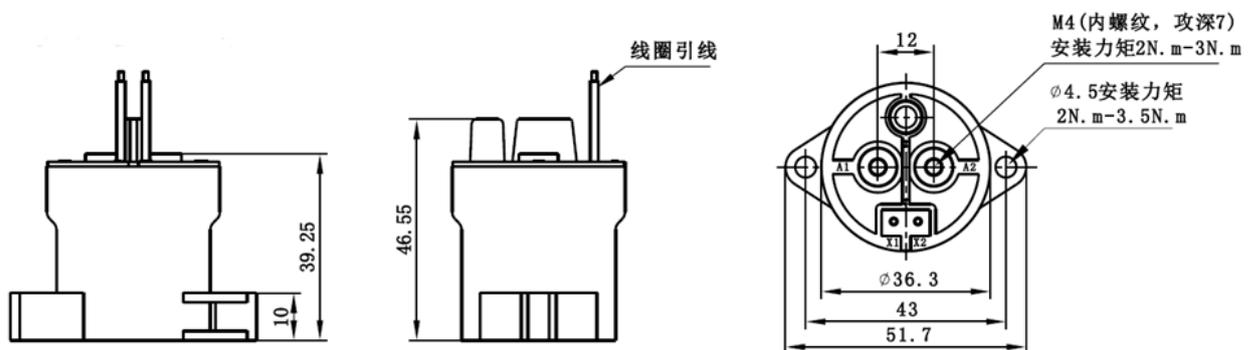
- 9.1 温度 Temperature: 0 ~ +40°C
- 9.2 湿度 Humidity: < 80% RH
- 9.3 环境 Environment

(1) 产品贮存场地不能有腐蚀性气体 Store in locations where the product is not exposed to corrosive gas.

(2) 贮存中应避免阳光直照产品 Keep product is not exposed to the direct ray of the sun.

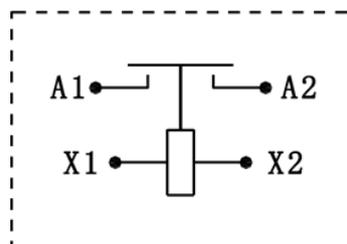
10. 产品结构 Configuration

外形及结构简图 Outline And Construction Schematic



接线图

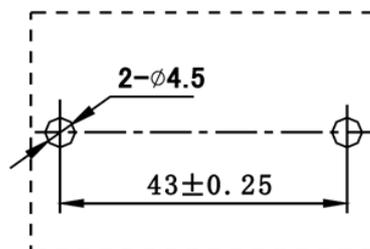
Wiring Diagram



说明: A1、A2为负载端, X1、X2为线圈端, 负载、线圈均无极性

安装孔位图

PCB Layout



注 Remark :

- 1.未标注尺寸公差 Unmarked dimensional tolerance
≤1mm: ±0.2mm ; (1~5)mm: ±0.3mm ; ≥5mm: ±0.4mm.
- 2.安装孔尺寸公差: ±0.1mm.
The tolerance of PCB layout is always: ±0.1mm.
- 3.引出脚尺寸为预焊前尺寸.
Extended terminal dimension is dimension before soldering.

11. 其他说明 Other instructions

11.1 凡安装接触器时均要使用垫圈以防螺丝松脱, 客户端所有接线端子或铜排必须直接与接线柱接触 When installing contactors, washers should be used to prevent the screws from loosening. All terminals or copper bars of the client must be in direct contact with the terminals.

11.2 拧紧螺丝的扭力范围见以下规定, 超出扭力最大值可导致产品破裂。The torque range for tightening the screws is as specified below. Exceeding the maximum torque may cause the product to break.

11.3 触头的力距 (M5 螺栓): 2-3N.m The force distance of the contact (M5 bolt): 2-3N.m

11.4 安装处的扭力: 3.5 N.m Max. Torque at installation: 3.5 N.m Max

11.5 不要使用跌落过的产品。Do not use dropped products.

11.6 避免把产品安装在强磁场的地方 (靠近变压器或磁铁处), 或靠近有热辐射的物体。Avoid installing the product in places with strong magnetic fields (near transformers or magnets), or close to objects with thermal radiation.

11.7 本接触器为高压直流开关, 在其最终的击穿模式中, 它可能会失去应有的切断功能, 因此不要在超过它的切换能力和寿命参数的状态下使用 (请将该接触器当作一个有规定寿命的产品来对待, 必要时要作替换)。接触器一旦失去断开切断能力, 则有可能会引起其周围零件燃烧, 所以要设计好线路图, 确保电源可在 1 秒钟内被切断。This contactor is a high-voltage DC switch. In its final breakdown mode, it may lose its proper cut-off function, so do not use it in a state that exceeds its switching capacity and life parameters (please use this contactor as a product with a specified lifespan is treated and replaced if necessary). Once the contactor loses the ability to cut off, it may cause the surrounding parts to burn, so the circuit diagram should be designed to ensure that the power supply can be cut off within 1 second.

11.8 内部气体的扩散寿命 Diffusion Life of Internal Gas

本接触器采用密封仓触点, 仓内充有气体, 气体的扩散寿命由触点仓内的温度 (即环境温度+触点通电产生的温升) 所决定, 因此应确保环境温度为-40 至+85℃。This contactor adopts sealed chamber contacts, the chamber is filled with gas, and the diffusion life of the gas is determined by the temperature in the contact chamber (that is, the ambient temperature + the temperature rise generated by the contact energization), so it should be ensured that the ambient temperature is -40 to +85° C.

11.9 产品线圈的驱动电路功率必须大于产品线圈功率，否则会降低产品的切断能力。The power of the drive circuit of the product coil must be greater than the power of the product coil, otherwise it will reduce the cut-off capability of the product.

11.10 不要让杂物和油污沾到主引出端上，且外接线端子应与产品的主引出端可靠接触，否则有可能会造成引出端发热厉害。Do not let sundries and oil stains on the main terminal, and the external terminal should be in reliable contact with the main terminal of the product, otherwise it may cause the terminal to heat up.