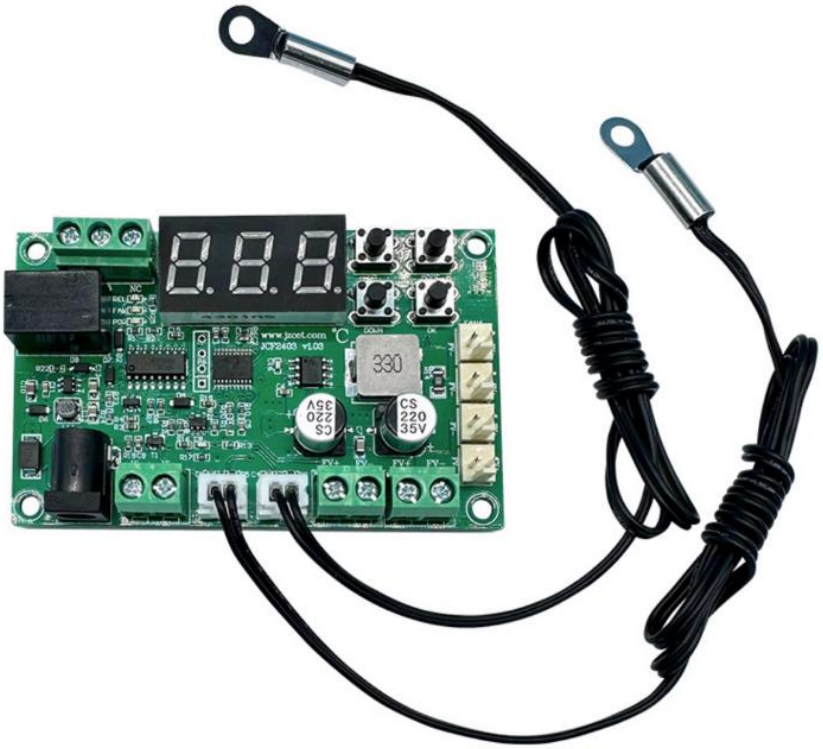
JCF2403 型 直流风机温控调速器

JCF2403 DC Fan Temperature Control Governor

用户手册 / User Manual v1.1



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版本信息/Version information:

版本号 Version number	主要变更内容 Main change content	日期 date
V1.0	初始版本 The initial version	2023-07
V1.1	更正安装孔尺寸标注错误的问题 Correct the issue of incorrect labeling of installation hole dimensions	2024-03

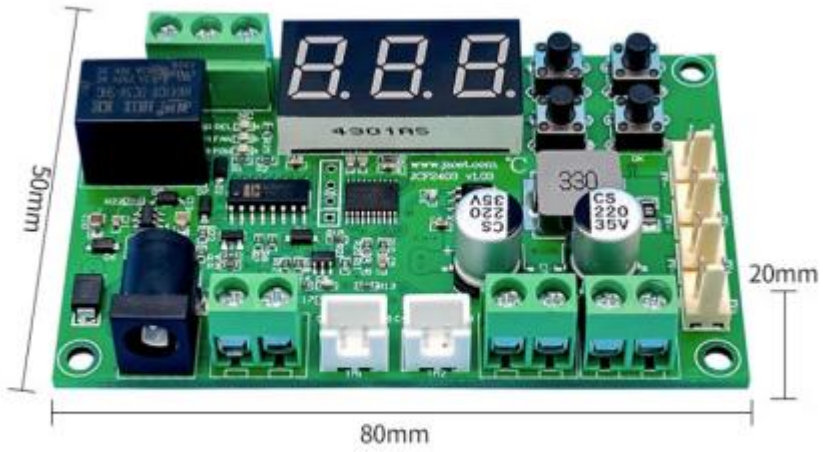
1.功能概述/Function overview

JCF2403 型直流风机智能温控调速器采用程控线性调压技术，工业级品质，稳定耐用；兼容性优异，可支持各种直流 12V/24V 风机接入，
双温度探头实时测温，调速器通过检测到温度来控制风机的电源电压，从而实现风机转速控制，温度越高风机转速越快，温度越低风机转速越慢，自动平衡温度和风机转速，真正达到按需散热、节能降噪、延长风机寿命的效果，
调速器还支持一路独立的温控开关（继电器输出），可用于高温报警，温控加热/制冷等领域,还可以用于基于温控调压输出的其他领域。
The JCF2403 DC fan intelligent temperature control governor adopts programmable linear voltage regulation technology, with industrial grade quality and stability and durability, supporting various DC 12V/24V fan connections,
Dual temperature probes, and the governor controls the power supply voltage of the fan by detecting temperature,The higher the temperature, the faster the fan speed, while the lower the temperature, the slower the fan speed, truly achieving the effect of on-demand heat dissipation, energy conservation and noise reduction, and extending the fan life,
The governor also supports an independent temperature control switch (relay output), which can be used in fields such as high temperature alarm, temperature controlled heating/cooling,also for other fields based on temperature controlled voltage regulation output.

2.技术参数/Technical parameters

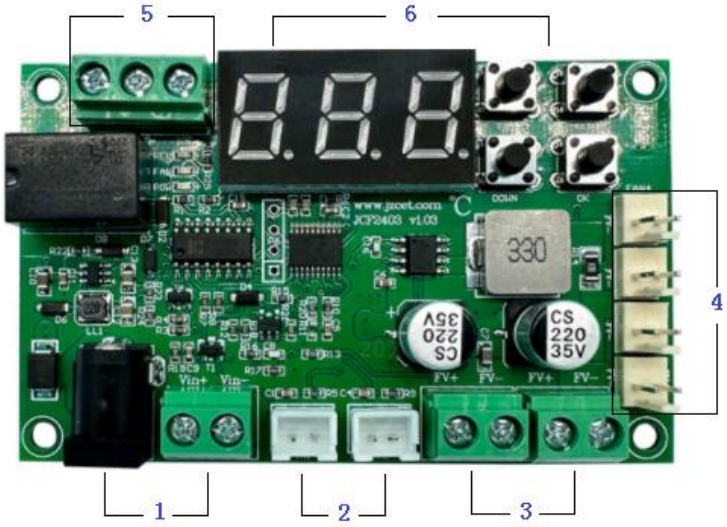
1.工业级方案，程控线性调压技术，直流 12V/24V 的 2,3,4 线风机均支持接入
Industrial grade solution, stable performance
2.宽电压设计，供电电源范围：DC9V~30V,最大驱动（输出）电流 3A
Wide voltage design, power supply range: DC9V~30V, maximum current 3A
3.带 LED 数码管显示，直观指示调速器的工作状态
With LED display, it can visually indicate the working state
4.电源防反接保护，接口防浪涌保护
Power supply anti reverse protection, interface anti surge protection
5.风机启动、全速温度可自由设置，支持最小转速和关停风机两种工作模式
Fan start and full speed temperature can be freely set, supporting two working modes: minimum speed and fan shutdown
6.集成一路独立的温控开关继电器
Integrate an independent temperature control switch relay
7.支持接入两路温度探头，测温范围：-20~120℃，
Support two temperature probes, measurement range of -20~120 ℃
8.测温精度：±1℃
Temperature measurement accuracy: ± 1 ℃
9.工作温度范围：-30~80℃
Working temperature range: -30~80 ℃

3. 产品尺寸/Product size



整机外形尺寸：80*50*20mm 安装孔尺寸：73.5*43.5mm

4.接口说明/interface specification



1 号端子：调速器供电端口（一个 DC5.5*2.1 直插口+1 个接线端子接口，2 选 1 使用）
NO.1: Governor power supply port
2 号端子：2 个温度探头插口
No.2: Temperature probe socket
3 号端子：2 路风机接线端口，风机的电源线不带插头的，可以接在此处
No.3: fan wiring port
4 号端子：4 个 KF2410-2P 插口（插口针间距 2.54mm），带此插头的风扇可以直接插在此处
No.4: fan wiring port
5 号端子：温控开关继电器输出接线端口
No.5: Temperature control switch relay output wiring port
6 号位：数码显示窗及按键
No.6: Display window and buttons

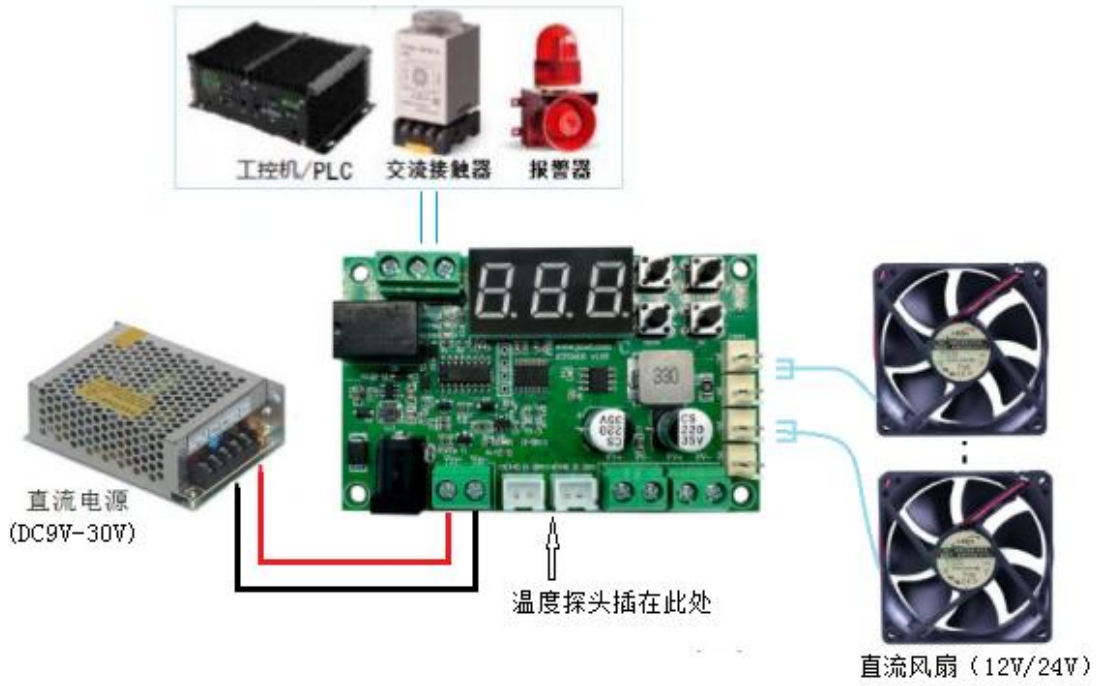
*全功能接线示意图/Wiring diagram:

(实际使用时，部分功能可能用不到，直接忽略其接线即可)

(in actual use, part of the unused functions, the wiring can be directly ignored)

*直流电源的电压必须大于等于所接风扇的额定电压，且输出电流必须大于风扇电流的总和

*The voltage of the power supply must be greater than or equal to the voltage of the fan, and the output current must be greater than the sum of fan currents



5.基础使用说明/Come into use

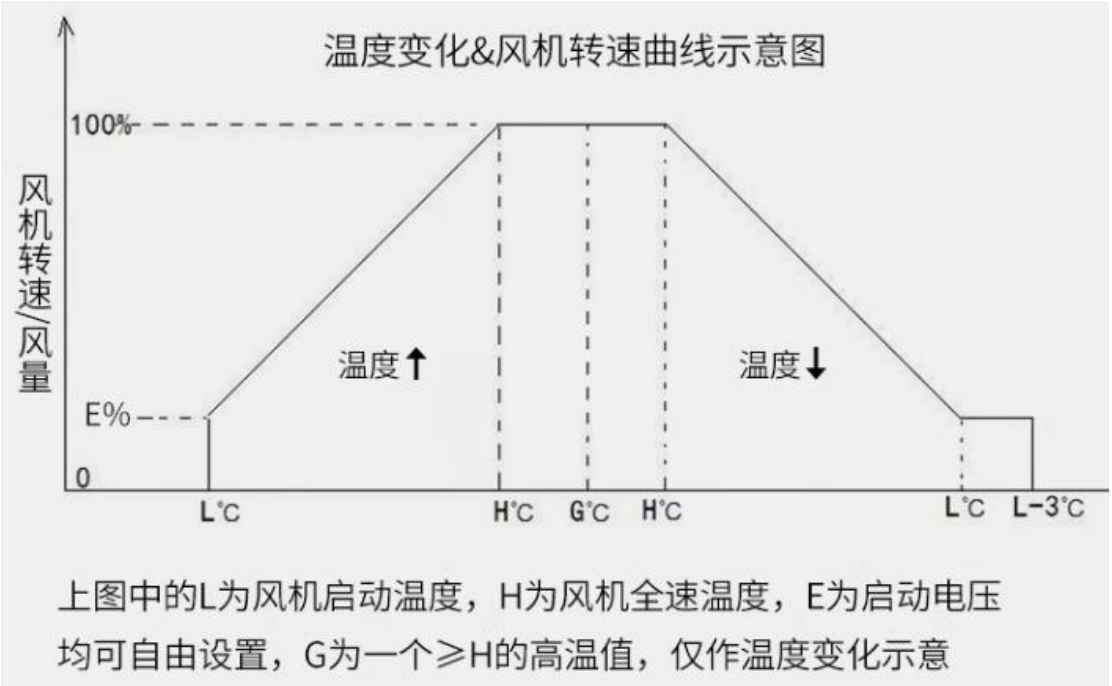
5.1,按接口说明连接好接线

5.2,供电正常后，主板上的 POW 灯会亮起，此时调速器开始检测当前温度，并根据当前设置的温度区间来调节风机的转速，以调速器出厂默认的温度区间为例，调速器出厂默认的温度区间为 L=30℃，H=50℃，当检测到当前温度大于等于 30℃时，调速器按线性比例调节风扇的转速，温度升高，风扇转速也会加快，当温度≥50℃时，风机变为全速。当温度降低到≤27℃（L-3）时，调速器使风扇处于最小转速或关闭风机。

5.1, Connect the wiring according to the interface instructions

5.2,After the power supply is normal, the POW light on the motherboard will light up. At this point, the governor will start to detect the current temperature and adjust the fan speed based on the current set temperature range. Taking the default temperature range of the governor factory as an example, the default temperature range of the governor factory is L=30 ℃, H=50 ℃. When the current temperature is detected to be greater than or equal to 30 ℃, the governor will adjust the fan speed in a linear proportion. As the temperature increases, the fan speed will also increase, When the temperature is ≥ 50 ℃, the fan becomes at full speed. When the temperature drops to ≤ 27 ℃ (L-3), the governor sets the fan at minimum speed or shuts down the fan.

风机转速&温度关系示意图：
Schematic diagram of the fan rotation speed & temperature relationship:



In the figure above, L is the starting temperature of the fan, and H is the temperature of the fan at full speed, which can be set freely.
G is for reference only,

6.数码面板操作说明

数码面板实时显示当前温度，带 4 个按键，通过按键可以设置调速器的所有参数
待机状态下，按 MODE 键可进入配置/切换参数项，配置时按↕键可以调整数值，OK 键确
*待机状态下，按↑键可以切换显示两个温度探头各自采集到的温度
*设置参数时，每设置一项参数（改变了参数值），都必须按一次 OK 键确认，再设下一项。

The digital panel displays the current temperature in real time, with four keys, through which all the parameters of the governor can be set, In idle state, press MODE key to enter the configuration / switch parameter items, and press ↕ key to adjust the value, and OK key to confirm
*In idle mode, press the ↑ key to switch between displaying the temperatures collected by each of the two temperature probes
* When setting the parameters, for each parameter set (the parameter value is changed), you must press the OK key once to confirm, and then set the next item.

参数项/Parameter item

数显代号	参数释义	参数说明
Lxx	风机启动温度 Start temperature of fan	设置风机的启动（下限）温度值 设置范围：-20~120℃ Set the start temperature value of the fan Setting range: -20~120℃
Hxx	风机全速温度 Full speed temperature of fan	设置风机的全速（上限）温度值 设置范围：-20~120℃，H 的值必须大于 L 的值 Set the full speed temperature value of the fan Set the range: -20~120℃, the value of H must be greater than the value of L
Uxx	风机额定电压 Fan rated voltage selection	设置调速器所接风扇的额定电压（调速器最大输出电压）： 设置范围：12/24 *此参数一定要按实际情况去设置，如果接入的是 12V 的风扇，U 参数就设为 U12，调速器的供电电源必须≥12V, 如果接入的是 24V 的风扇，U 参数就设为 U24，调速器的供电电源必须≥24V Set the voltage of the fan (maximum output voltage): Setting range: 12/24 *This parameter must be set according to the actual situation. If a 12V fan is connected, the U parameter is set to U12, and the power supply for the governor must be ≥ 12V, If a 24V fan is connected, the U parameter is set to U24, and the power supply for the governor must be ≥ 24V
Exx	风机启动电压 Fan starting voltage	设置风机的启动电压（调速器最小输出电压）： 设置范围：30%~80% 此参数用于匹配不同启动电压的风扇， 风机启动电压=E/10*U, 此参数默认为 5 即风机启动电压为 0.5*U, Set the starting voltage of the fan (minimum output voltage of the governor): Setting range: 30%~80% This parameter is used to match fans with different starting voltages, Fan starting voltage=U * E/10, When using, if the fan cannot operate normally at low temperatures, this parameter can be set higher

Pxx	工作模式 work pattern	设置调速器的工作模式 当温度小于设置的启动温度-3℃时，用此参数设置调速器是控制风机关闭还是维持风机处于最小（20%）的转速） 设置范围： 01 表示维持最小转速，00 表示关闭风机 Set up the working mode of the governor When the temperature is less than the set start temperature-3℃, use this parameter to set the governor to control the fan off or maintain the fan at the minimum (20%) speed) Setting range: 01 means maintaining the minimum rotation speed, and 00 means turning off the fan
bxx	温控继电器 开启温度 Temperature control relay Opening temperature	设置温控继电器的工作参数： 如果设置的 b 值＞C 值：当温度≥b 值时，温控继电器开启，当温度≤C 值时，温控继电器关闭，此项可用于高温报警或控制大功率制冷； 如果设置的 b 值＜C 值：当温度≤b 值时，温控继电器开启，当温度≥C 值时，温控继电器关闭，此项可以用于低温报警或控制加热器加热； 设置范围：-20~120℃ Set the parameters of the temperature control relay: If the set value of b is greater than the value of C: when the temperature is greater than or equal to the value of b, the temperature control relay is activated, When the temperature is ≤ C value, the temperature control relay is turned off, which can be used for high temperature alarm or Control high-power refrigeration; If the set value of b is less than the value of C: when the temperature is less than or equal to the value of b, the temperature control relay is turned on, When the temperature is ≥ C value, the temperature control relay is turned off, which can be used for low temperature alarm Or control the heating of the heater; Setting range: -20~120 ℃
Cxx	温控继电器 关闭温度	

***以设置风机的启动、全速温度为例 / For example**

* Take setting the start and full speed temperature of the fan

待机状态下，面板显示当前的温度值，按 1 下 MODE 键，数码管显示 Lxx，L 代表启动温度，xx 表示当前设置的温度值，按上下键可以调整参数值，
调整完成后，按 ok 键确认，回到待机界面
待机状态下，按 2 下 MODE 键，数码管显示 Hxx，H 代表全速温度，xx 表示当前设置的温度值，按上下键可以调整参数值，调整完成后，按 ok 键确认
设置完成，调速器将根据新设置的温度参数来自动控制风机的转速。

In the idle state, the panel shows the current temperature value, press 1 MODE key, the digital tube displays Lxx, L represents the start temperature, xx represents the currently set temperature value, Press the upper and lower keys to adjust the parameter value. After the adjustment is completed, press the ok key to confirm and return to the standby interface
In idle state, press MODE key for 2, the digital tube shows Hxx, H represents the full speed temperature, xx represents the current set temperature value, press the upper and lower key to adjust the parameter value, after the adjustment is completed, press OK key to confirm
When the setting is complete, the governor will automatically control the speed of the fan according to the newly set temperature parameters.

7.关于温控继电器的使用/About Temperature Control Relay

调速器内部集成一个独立的温控开关继电器，既可作为高/低温报警指示信号接入到 PLC/动环的开关量输入口，也可以直接作为开关控制其他大功率设备

继电器参数：AC250V/DC30V/最大负载电流 3A

继电器关闭（断开）时：COM1 和 NO1 断开、与 NC1 导通

继电器开启（闭合）时：COM1 和 NO1 导通、与 NC1 断开

*继电器的开/关由参数 d、C 以及当前温度共同来决定，与风机控制完全独立

*继电器本身不带电压输出，只是一个物理开关

The governor is internally integrated with an independent temperature control switch relay, which can be used as a high/low temperature alarm indicator signal to connect to the switch input port of the PLC/moving ring, or directly used as a switch to control other high-power equipment

Relay parameters: AC250V/DC30V/maximum load current 3A

When relay closed: CM1 and NO1 are disconnected and connected to NC1

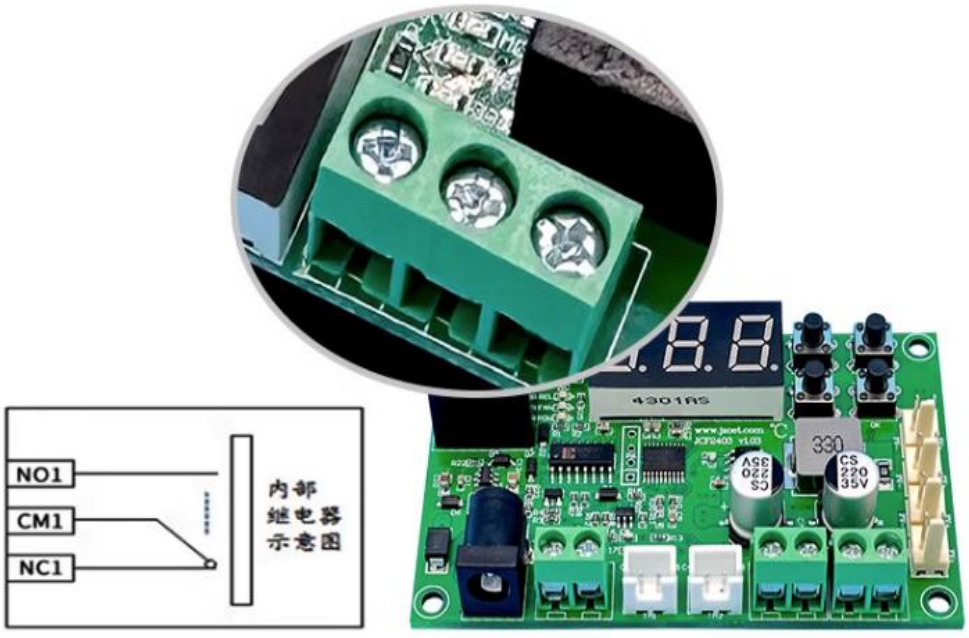
When relay open: CM1 and NO1 are connected, and NC1 is disconnected

*The opening/closing of the relay is determined by the parameters d, C, and the current temperature, and is completely independent of the fan control

*The relay itself does not have a voltage output, it is just a physical switch

内部结构如下图

The internal structure is shown in the following figure:



7.1，使用实例 1 / Usage Example 1

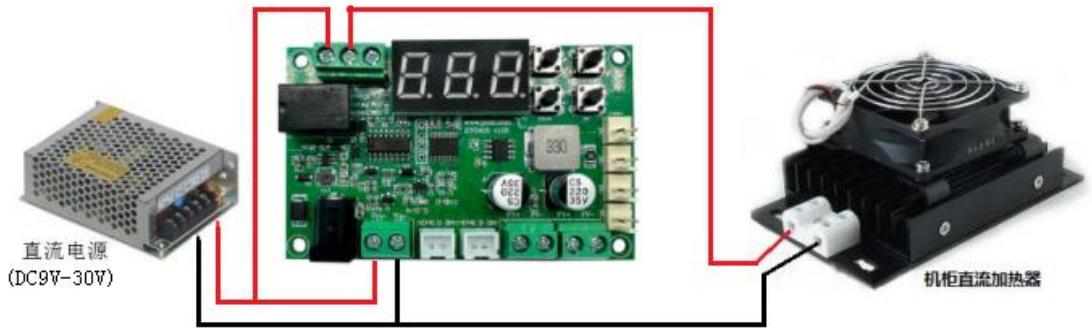
作为开关控制加热器自动温控加热，当机柜温度低于温控继电器开启温度（b 参数值）时自动开启加热，当机柜温度高于温控继电器关闭温度（C 参数值）时自动关闭加热， 以此保持机柜恒温/防凝露

*设置时 b 参数值必须小于 C 参数值

*如果加热器的电流超过 3A,则需要在调速器和加热器之间加中间继电器以扩大驱动电流

As a switch controlled heater for automatic temperature control heating, when the cabinet temperature is lower than the parameter b value,Automatically turn on heating, and automatically turn off heating when the cabinet temperature is higher than the parameter b value,

the value of parameter b must be less than the value of parameter C



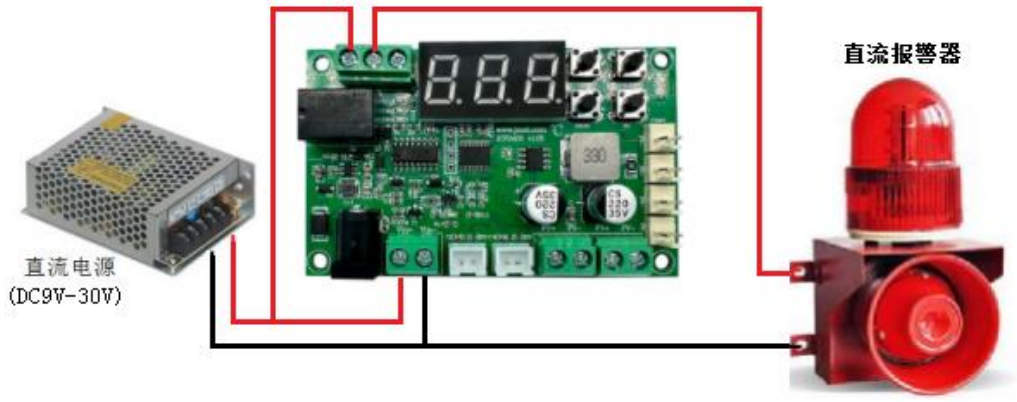
7.1，使用实例 2/Usage Example 2

作为开关实现高温报警，当机柜温度高于温控继电器开启温度（b 参数值）时自动开启报警，当机柜温度低于温控继电器关闭温度（C 参数值）时自动关闭报警

*设置时 b 参数值必须大于 C 参数值

As a switch to achieve high temperature alarm, it automatically turns on the alarm when the cabinet temperature is higher than the parameter b value, and automatically turns off the alarm when the cabinet temperature is lower than the parameter C value

*The value of parameter b must be greater than the value of parameter C



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