###### 4pin 黑色热敏传感器模块

###### 4pin Thermal Thermistor Temperature Sensor Module

###### AB145

**用途/Uses：**
**温度检测，温度控制传感器，环境温度检测**

**Temperature Detection, Temperature Control Sensors, Ambient Temperature Detection**
**模块特色/Module Features：**
**1、采用NTC热敏电阻传感器，灵敏度好
2、比较器输出，信号干净，波形好，驱动能力强，超过15mA。
3、配电位器调节温度检测阀值
4、工作电压3.3V-5V
5、输出形式 ：DO数字开关量输出（0和1）和AO模拟量电压输出
6、设有固定螺栓孔，方便安装
7、小板PCB尺寸：3.2cm x 1.4cm
8、使用宽电压LM393比较器**

**1、Using NTC thermistor sensor, good sensitivity**

**2、Comparator output, clean signal, good waveform, strong driving ability, more than 15mA.**

**3、With potentiometer to adjust the temperature detection valve value**

**4、Operating voltage 3.3V-5V**

**5、Output form: DO digital switch output (0 and 1) and AO analog voltage output.**

**6, with fixed bolt holes, easy to install**

**7, small board PCB size: 3.2cm x 1.4cm**

**8、Use wide voltage LM393 comparator**

**模块使用说明/Module usage instructions:**
**1、热敏电阻模块对环境温度很敏感，一般用来检测周围环境的温度；
2、通过对电位器的调节，可以改变温度检测的阀值（即控制温度值），如需要控制环境温度为50度时，模块则在相应环境温度调到其绿灯亮，DO则输出低电平，低于此设定温度值时，输出高电平，绿灯不亮；
3、DO输出端可以与单片机直接相连，通过单片机来检测高低电平，由此来检测环境的温度改变；
4、DO输出端可以直接驱动本店继电器模块，由此可以组成一个温控开关，控制相关设备的工作温度，也可以接风扇用来散热等；
5、本模块的温度检测范围为20-80摄氏度；
6、本模块也可以换成带有线的温度传感器，用于水温，水箱等的控制**

1. **小板模拟量输出AO可以和本店AD模块相连，通过AD转换，可以获得环境温度更精准的数值**

**1、Thermistor module is very sensitive to the ambient temperature, generally used to detect the temperature of the surrounding environment;**

**2, through the adjustment of the potentiometer, you can change the temperature detection threshold (i.e., control temperature value), such as the need to control the ambient temperature of 50 degrees, the module is tuned in the corresponding ambient temperature to its green light, DO is output low level, lower than the value of this set temperature, the output of a high level, the green light does not light;**

**3, DO output can be directly connected to the microcontroller, through the microcontroller to detect the high and low levels, and thus to detect the temperature change of the environment;**

**4, DO output can be directly driven by the store relay module, which can form a temperature control switch, control the working temperature of the relevant equipment, can also be connected to the fan used to dissipate heat;**

**5, the temperature detection range of this module is 20-80 degrees Celsius;**

**6, the module can also be replaced by a temperature sensor with a line, for water temperature, water tank and other control**

**7, small board analog output AO can be connected to the store AD module, through the AD conversion, you can get a more accurate value of the ambient temperature**

**模块接口说明（4线制）/Module Interface Description (4-wire)**

**1 VCC 外接3.3V-5V**

**2 GND 外接GND**

**3 DO 小板开关数字量输出接口（0和1）**

**4 AO 小板模拟量输出接口**

**1 VCC external 3.3V-5V**

**2 GND External GND**

**3 DO Small board switching digital output interface (0 and 1)**

**4 AO Small board analog output interface**