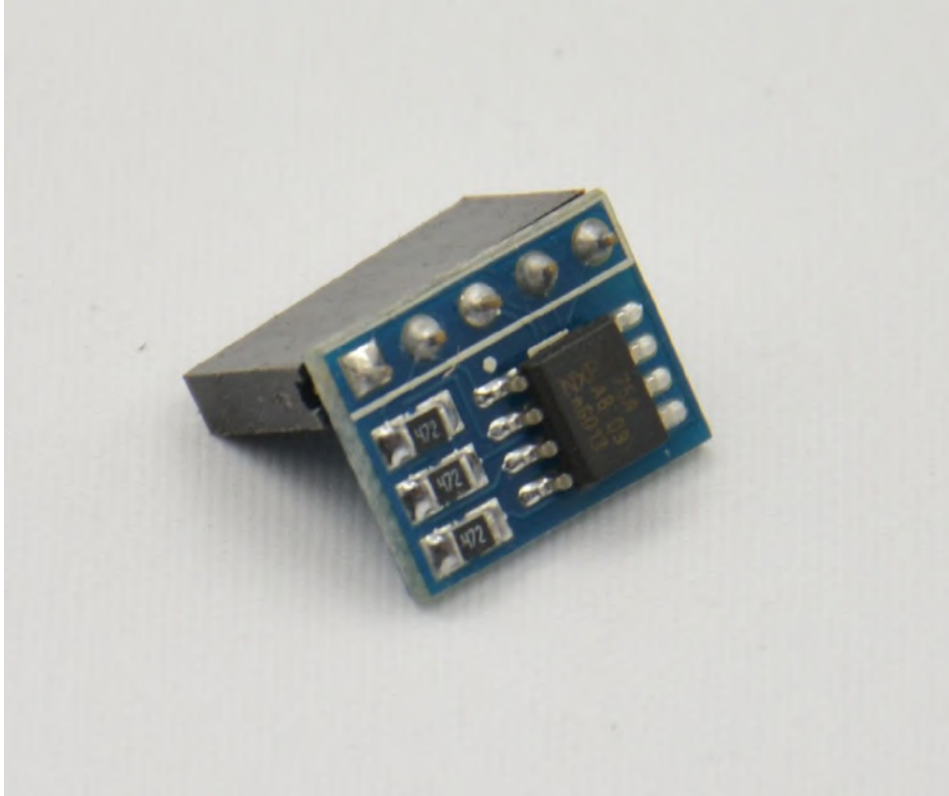


## LM75 Temperature Sensor Module





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## Attention:

Due to technical requirements components, please do not hand directly connected

Touch. Core board and development system contains static-sensitive devices. Quiet Electrical charge easily accumulate in the human body and the device can not detect possible Damage to equipment, it is recommended to take anti-static measures, it is recommended not to hand. Touch, stored in anti-static effect devices.





## Banana Pi Expand Module Serial:

### **Infinity cascade IO expand module:**

This module is designed specifically for the Banana Pi IO expansion modules. The module expand 32 IO, Multiple modules can cascade, infinity cascade, infinity GPIO.

### **I2C GPIO expand module:**

This module is designed specifically for the Banana Pi IO expansion modules. The Module use I2C bus to connect to Banana Pi. The module expand 8 Bidirectional GPIO and wit isolation protection function which can effectively excessive external voltage. There are 8 I2C address, you can choose one of them through setup the jumper. Multiple modules can cascade and maximum cascade 8 modules!

### **Prototype development module:**

The Prototype development module is designed specifically for the Banana Pi. The module suitable enthusiasts and user can weld peripheral to the module; The module expand some amphenol connector and some SMT, so the user can finish prototype test easily.

### **Berryclip expand module:**

The BerryClip module is designed specifically for learning how to use the GPIO of Banana Pi. There are 6 multiple color LED, 1 button and 1 Buzzer on the module.

### **Berryclip(DIY) expand module:**

The module is not the end product, you need weld them by yourself. The function of the module is the same as BerryClip module.

### **UNO compatibility module:**

The module makes Banana Pi compatible with Arduino Uno and many Arduino Shields. The module's GPIO is the same as Arduino Uno and you can choose the voltage of GPIO between 5V or 3V through setup jumper.

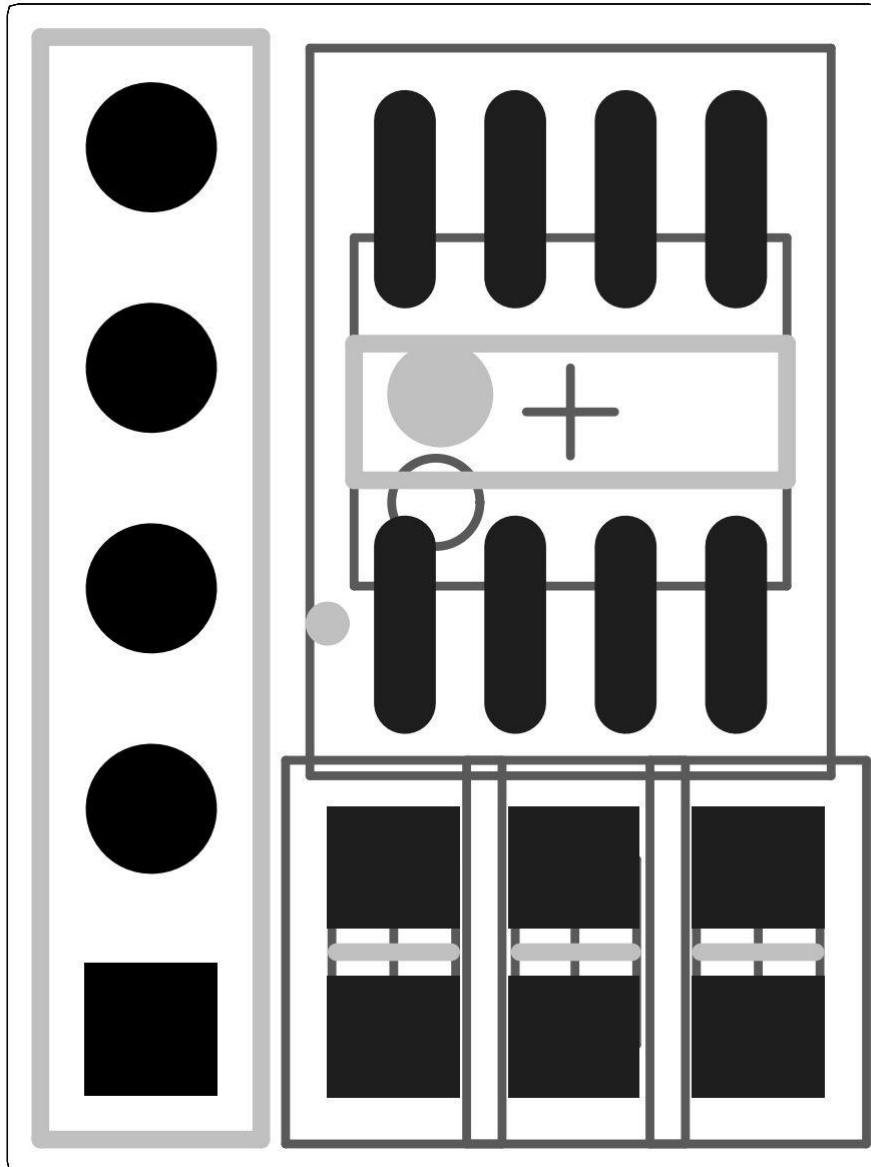
### **T Electric level convert module:**

The module expand the GPIO of Banana Pi to breadboard. It convert 3.3V electric to 5V electric level, then the Banana Pi can connect many 5V electric level peripheral.

### **IO extraction module:**

The module expand all of GPIO of Banana Pi to breadboard.

## Product Specification



### Product Overview:

This module is designed specifically for the Banana Pi. The module use the NXP LM75 Temperature chip. The temperature register always stores an 11-bit 2's complement data giving a temperature resolution of 0.125°C. The module use I2C bus to connect to Banana Pi.



### Product Feature:

- 11bit high resolution ADC in chip
- temperature resolution of 0.125°C.
- Connect through I2C bus

### Port:

- Banana Pi insert port

### Product Parameters:

- Working voltage: 2.8V-5.5V
- Temperatures range from -55°C to +125°C
- Supply current of 3.5µA in shutdown mode for power conservation
- Temperature accuracy of:  $\pm 2^{\circ}\text{C}$  from -25°C to +100°C
- Temperature accuracy of:  $\pm 3^{\circ}\text{C}$  from -55°C to +125°C

### Typical Application:

- Industrial controllers
- Environmental monitoring
- Smart home
- Interactive devices

### How to use:

Insert the temperature sensor module to the Banana Pi, Pay attention don't make the direction reversed! The correct direction of insert module is above the Banana Pi's PCB, just like the below picture. Then, power up the Banana Pi, open the terminal use the command "dmesg | grep "lm75" " to check the module. If the module have been recognized the terminal will show "lm75 1-0048: hwmon0: sensor 'lm75' "



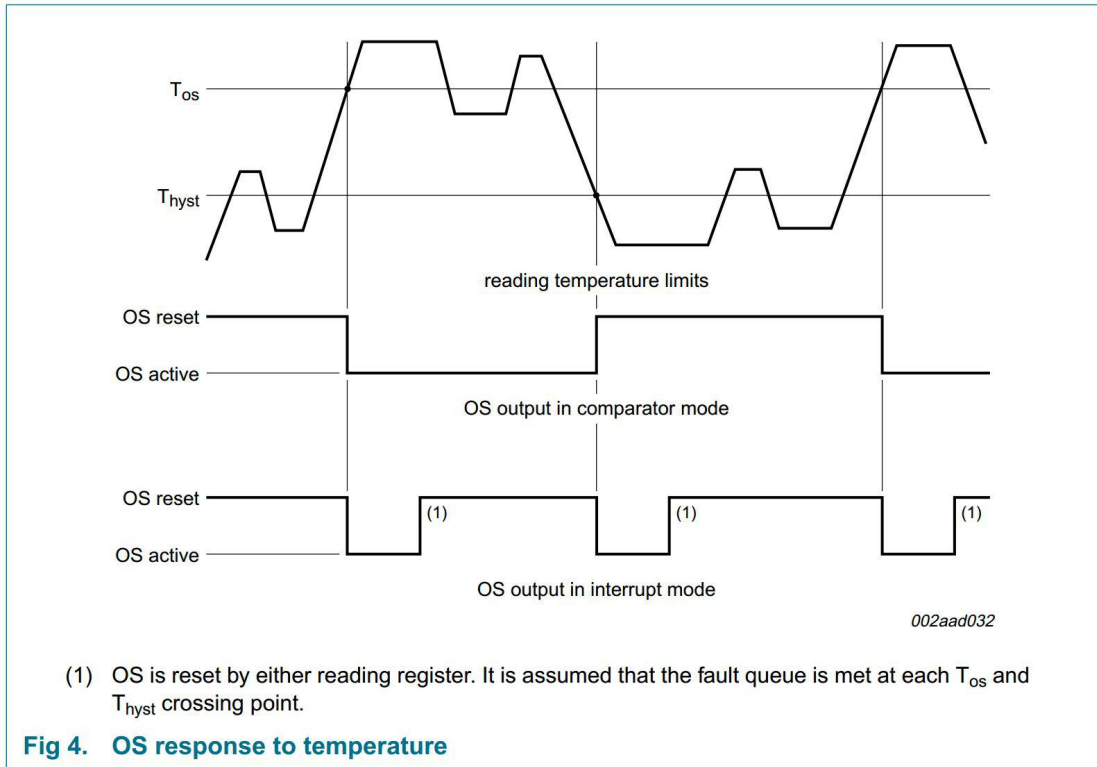
### **More information:**

The LM75A is a temperature-to-digital converter using an on-chip band gap temperature sensor and Sigma-delta A-to-D conversion technique. The device is also a thermal detector providing an over temperature detection output. The LM75A contains a number of data registers: Configuration register (Conf) to store the device settings such as device operation mode, OS operation mode, OS polarity and OS fault. Temperature register (Temp) to store the digital temp reading, and set-point registers (Tos and Thyst) to store programmable over temperature shutdown and hysteresis limits, that can be communicated by a controller via the 2-wire serial I2C-bus interface. The device also includes an open-drain output (OS) which becomes active when the temperature exceeds the programmed limits. There are three selectable logic address pins so that eight devices can be connected on the same bus without address conflict.

The temperature register always stores an 11-bit 2's complement data giving a temperature resolution of 0.125°C. This high temperature resolution is particularly useful in applications of measuring precisely the thermal drift or runaway. The device is powered-up in normal operation mode with the OS in comparator mode, temperature threshold of 80°C and hysteresis of 75°C, so that it can be used as a

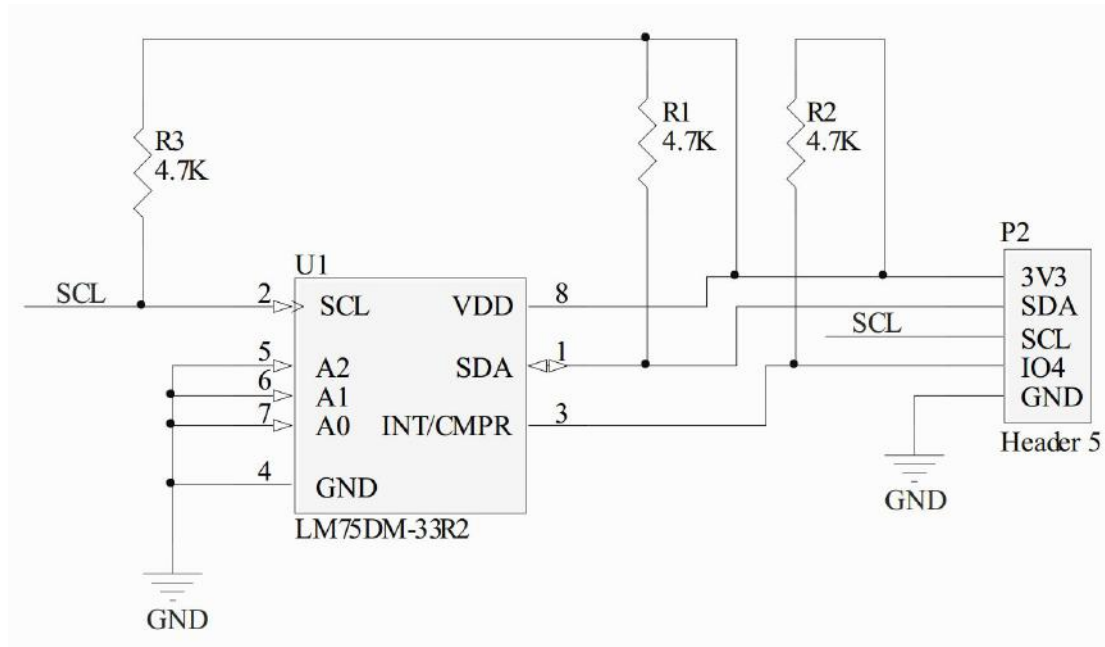
stand-alone thermostat with those pre-defined temperature set points.

**OS response to temperature:**





Schematic diagram:



More information please check:

[http://www.nxp.com/products/sensors/i2c\\_temperature\\_voltage\\_monitors/series/LM75A.html](http://www.nxp.com/products/sensors/i2c_temperature_voltage_monitors/series/LM75A.html)

Test bench:

- Install i2c-tools: `sudo apt-get install i2c-tools`
- Read the device address: `sudo i2cdetect -y -a 1`
- If the address is 0x48, the module has running