

How to use LM75 Thermometer Module to Detect the Temperature in the Room

LM75 thermometer module is a digital temperature sensor module which acquires the current temperature information effectively. With 9bit high accuracy ADC chip, it has high precise temperature sensing. It is very convenient for you to operate it with I2C communication.



Principle

It uses a dedicated digital chip for high-precision analysis temperature information, the temperature can get real-time information through I2C.You can read the value from Raspberry Pi GPIO pins. It's easy to use.

Tasks

- Master the use of WiringPi and GPIO
- Learn how to use LM75 thermometer module
- Write a program to get the information of temperature and humidity

Electronic Components:

- 1 * Raspberry Pi and power
- 1 * LM75 temperature sensor

You may purchase all the components from our website www.52pi.com



Experimental Procedures:

1. Wiring Connection:

- Connect the VCC PINS of DHT11 Sensor to GPIO 3.3V Pins of Raspberry Pi
- Connect GND to Raspberry Pi GPIO GND
- Connect DATA to Raspberry Pi GPIO NO.4 PINS



After login, check /boot/overlay/README file and you will see

Name:	dht11		
Info:	Overlay for the	DHT11/DHT21/DHT22 humidity/temperature	sensors
	Also sometimes for	ound with the part number(s) AM230x.	
Load:	dtoverlay=dht11,	<param/> = <val></val>	
Params:	gpiopin	GPIO connected to the sensor's (default 4)	DATA output.

2. Update the system and install the packages:

Download the latest Raspberry Pi Raspbian image from official website and burn it to the TF card.



Insert it into Raspberry Pi and start the system. After login, update the system and install I2C-tools. Run the following command:

sudo apt-get update sudo apt-get upgrade sudo apt-get -y install i2c-tools

Modify the Configuration:
 Login and edit the file /boot/config.txt:
 sudo su vim.tiny /boot/config.txt

Add the following command: device_tree = bcm2710-rpi-3-b.dtb dtparam = i2c_arm = on

Save and exit, then restart the raspberry pi. You may run this command to start I2C as well:

sudo raspi-config

Chang	re lleer Paceword	
	ge user rassworu	Change password for the default user (pi)
8 Boot	Options	Choose whether to boot into a desktop environment or the command line
4 Wait	for Network at Boot	Choose whether to wait for network connection during boot
i Inter	rnationalisation Options	Set up language and regional settings to match your location
Enabl	le Camera	Enable this Pi to work with the Raspberry Pi Camera
Add t	to Rastrack	Add this Pi to the online Raspberry Pi Map (Rastrack)
3 Overo	clock	Configure overclocking for your Pi
Advar	nced Options	Configure advanced settings
) About	t raspi-config	Information about this configuration tool

Then choose

🗕 Raspberry Pi Software Configuration Tool (raspi-config) 🕨 You may need to configure overscan if black bars are present on display A1 Overscan A2 Hostname Set the visible name for this Pi on a network A3 Memory Split Change the amount of memory made available to the GPU A4 SSH Enable/Disable remote command line access to your Pi using SSH A5 SPI Enable/Disable automatic loading of SPI kernel module (needed for e.g. PiFace) Enable/Disable automatic loading of 12C kernel module Enable/Disable shell and kernel messages on the serial connection A6 12C A7 Serial 2 Force audio out through HDMI or 3.5mm jack A8 Audio 8 A9 1-Wire Enable/Disable one-wire interface * AA GPIO Server Enable/Disable remote access to GPIO pins (Select) <Back>

Then restart the system. Login and open a terminal:

Run this command: i2cget -y 1 0x48 0x00 w |awk '{printf("%0.1f C\n",(a=((("0x"substr(\$1,5,2)substr(\$1,3,1))*0.0625)+0.1))>128?a-256:a)}'



The result is as below picture:

pi@raspberrypi: \$ i2cget -y 1 0x48 0x00 w |awk '[printf(*%0.1f C\n", (a=((("0x"substr(\$1,5,2)substr(\$1,3,1))*0.0625)+0.1))>128?a-256:a)]' 34.6 C

Run the shell script: sudo vim.tiny Im75.sh

#!/bin/bash while true

do i2cget -y 1 0x48 0x00 w | awk '{printf("%.1f C.\n", (a=((("0x"substr(\$1,5,2)substr(\$1,3,1))*0.0625)+0.1))>128?a-256:a)}' sleep 1 done

Then entitle executive power and perform: chmod +x Im75.sh && bash Im75.sh

If you want to make it with C language, you may download the LM75C.tar.gz.zip from wiki.52pi.com and run this command:

```
unzip LM75_C.tar.gz.zip
tar -xf LM75_C.tar.gz
cd LM75 C/
make
./test.o
This is the result:
pi@raspberrypi:~/tater/LM75_C $
pi@raspberrypi:~/tater/LM75_C $ Is
lm75.c
        lm75.h Makefile test.c
pi@raspberrypi:~/tater/LM75_C $
pi@raspberrypi:~/tater/LM75_C $
pi@raspberrypi:~/tater/LM75_C $ make
gcc -Wall -c lm75.c -o lm75.o -lm
gcc -Wall Im75.o test.c -o test.o -Im
pi@raspberrypi:~/tater/LM75_C $
pi@raspberrypi:~/tater/LM75_C $ Is
        Im75.h Im75.o Makefile test.c
lm75.c
                                            test. o
pi@raspberrypi:~/tater/LM75_C $ ./test.o
t = 34.500000
t = 34.500000
t = 34.500000
```

I wish you enjoy it as much as we do. Feel free to contact us if you have any question.