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:

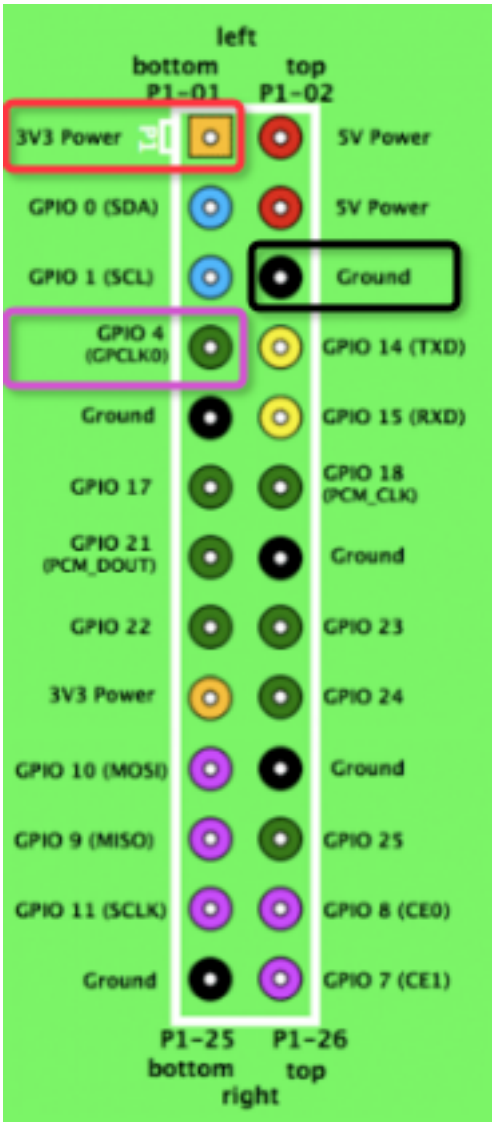
- 1 * Raspberry Pi and power
- 1 * LM75 temperature sensor

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 found with the part number(s) AM230x.
Load:   dtoverlay=dht11,<param>=<val>
Params: gpiopin                 GPIO connected to the sensor's DATA output.
                                (default 4)
```

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

3. Modify the Configuration:
Login and edit the file /boot/config.txt:

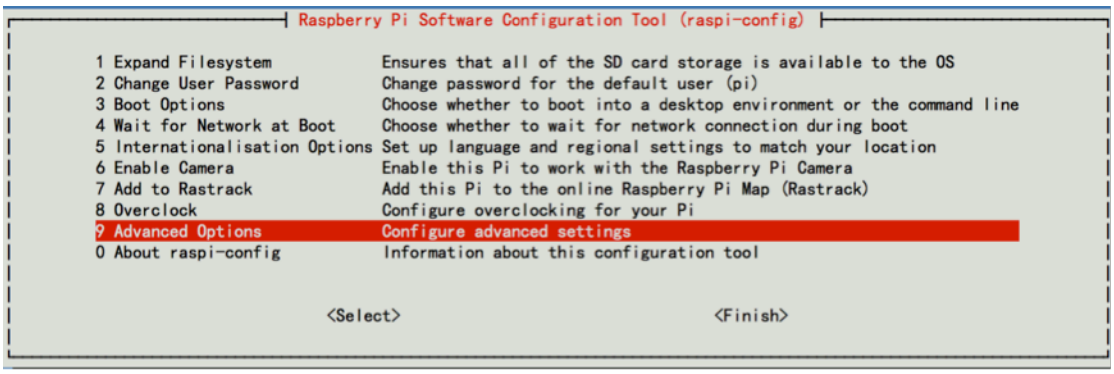
sudo su -
vim.tiny /boot/config.txt

Add the following command:

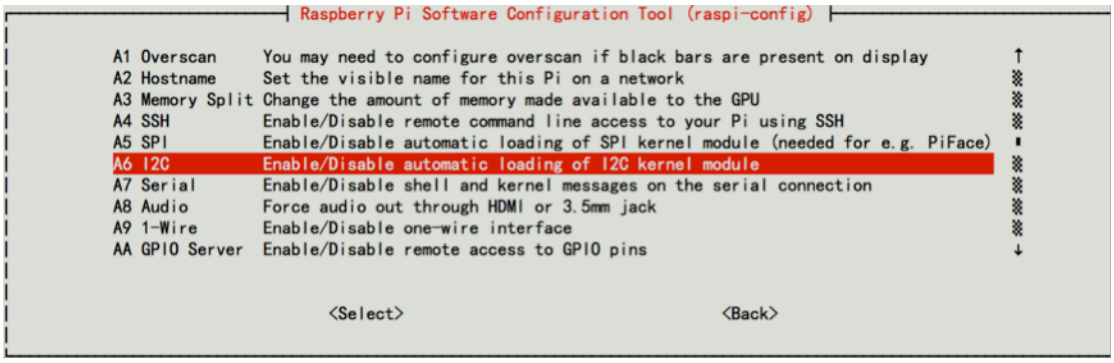
device_tree = bcm2710-rpi-3-b.dtb
dtparam = i2c_arm = on

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

sudo raspi-config



Then choose



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    lm75.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    lm75.sh    &&    bash    lm75.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 $ ls
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 lm75.o test.c -o test.o -lm
pi@raspberrypi:~/tater/LM75_C $
pi@raspberrypi:~/tater/LM75_C $ ls
lm75.c  lm75.h  lm75.o  Makefile  test.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.