

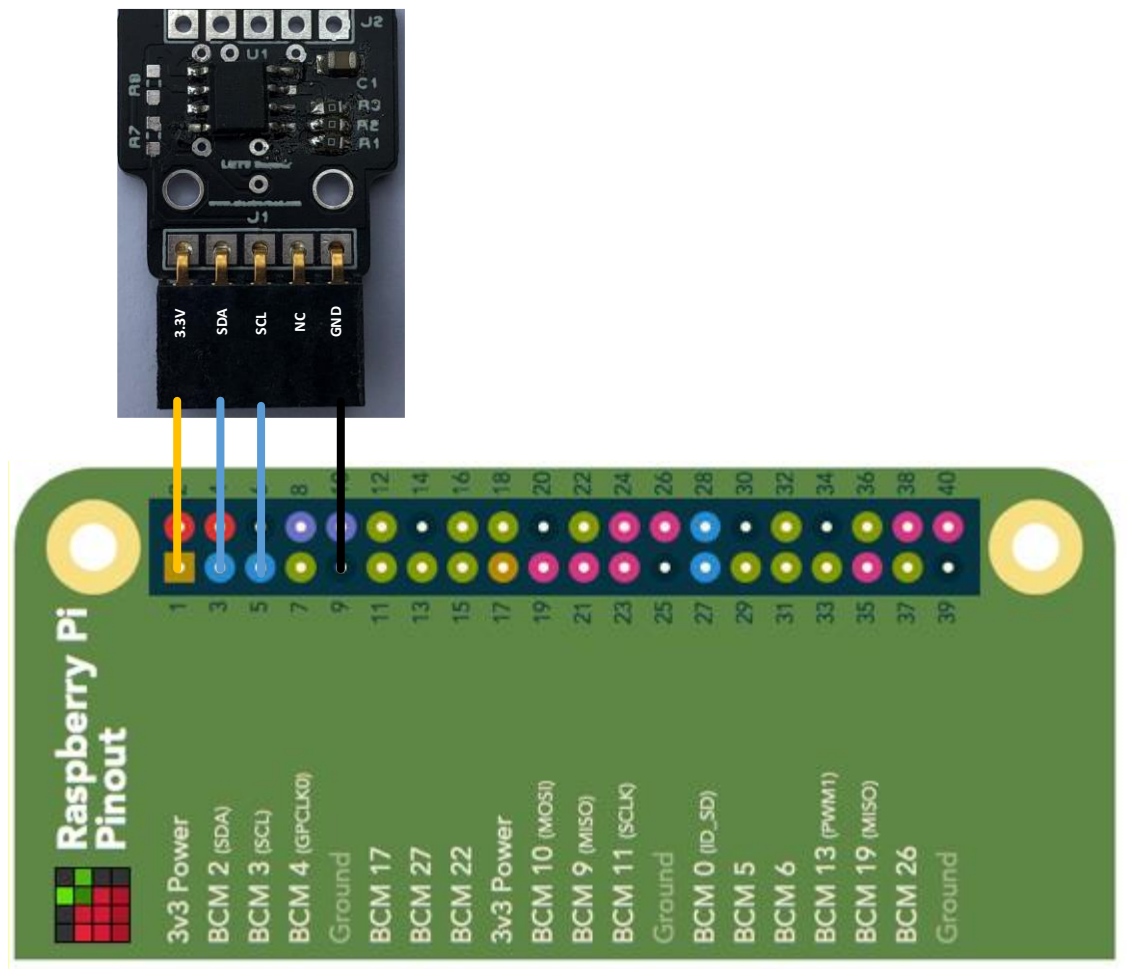
# LM75 Temperature Sensor for the Raspberry Pi



## LM75 Sensor for the Raspberry Pi Features

- I2C Temperature Sensor
- Compatible with LM Sensors
- I2C Address settable by external Resistors.
- Multiple Sensors can be cascaded.
- Use for remote Temperature Alarms
- Use to Graph and Datalog Temperatures

## Connection Diagram

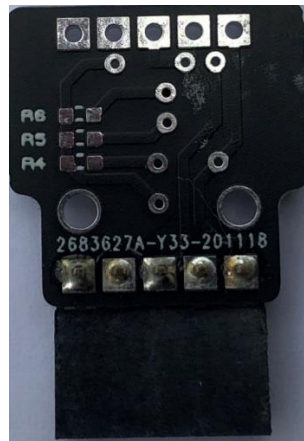


*Figure 1 Connections to the Raspberry Pi*

The LM75 sensor board is designed to fit directly onto the raspberry PI GPIO port bottom row from pins 1-9. The front of the LM75 sensor with the chip on it should face towards the Raspberry pi board. Be careful to ensure the board is the correct way round or the board may get damaged if inserted the wrong way round.

## Changing the I2C Address

As shipped the board will show up with an I2C address of 0x48



The Address of the sensor can be changed by fitting 0 Ohm 0805 links in R1 to R6 as shown in the table below

I2C Address	R1	R2	R3	R4	R5	R6	
0x48	•	•	•				
0x49	•	•				•	
0x4A	•		•		•		
0x4B	•				•	•	
0x4C		•	•	•			
0x4D		•		•		•	
0x4E			•	•	•		
0x4F				•	•	•	

## Reading the Sensor on the Raspberry Pi

From a fresh install of Raspbian first open a Terminal window and download the LM sensors package

**sudo apt-get install lm-sensors**

Next check that the I2C port on the raspberry pi is available for use by typing

**sudo raspi-config**

you should get a screen like below, select interface options 3

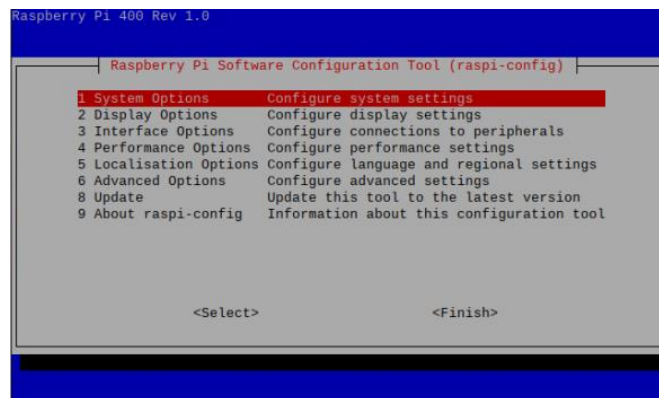


Figure 2 Raspberry pi Configuration screen

Next select option 5 to enable the I2C communications

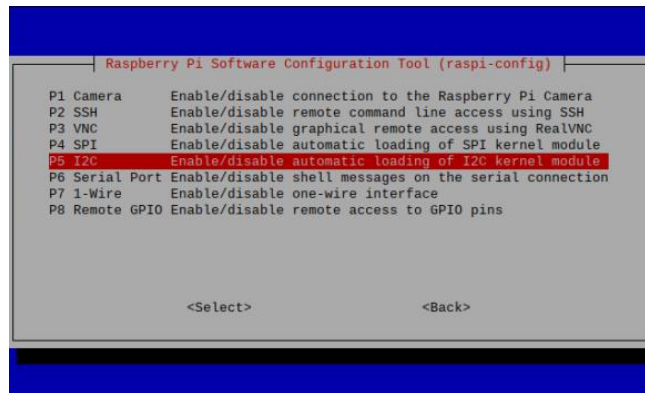


Figure 3 Select I2C

And click on Yes and then finish, the raspberry pi now needs to be reset for this to take effect.

Next type the command

**sudo i2cdetect -y 1**

This should bring up a table like below showing the LM75 sensor at address 48

	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
00:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40:	--	--	--	--	--	--	--	48	--	--	--	--	--	--	--	--
50:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
60:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Figure 4 I2C Detect Table

If you get this far then the hardware is working and connected correctly, next step is to tell the system which chip is connected.

This must be done as administrator so first type

**sudo bash**

Then tell the system the device is available by typing

**echo lm75 0x48 > /sys/class/i2c-adapter/i2c-1/new\_device**

To test that it has worked type

**sudo watch sensors**

This will bring up a watch window showing the current temperature

```
Every 2.0s: sensors                                raspberrypi: Wed Mar 17 20:51:47 2021
lm75-i2c-1-48
Adapter: bcm2835 (i2c@7e804000)
temp1:    +25.5°C (high = +80.0°C, hyst = +75.0°C)

cpu_thermal-virtual-0
Adapter: Virtual device
temp1:    +29.2°C

rpi_volt-isa-0000
Adapter: ISA adapter
in0:      N/A
```

Figure 5 Watch sensors window

To view a graphic version we can install a package called psensor with the command

**sudo apt-get install psensor**

Running psensors will give a graphical display of the temperature and can be used to log data and send automated alerts by email.



Figure 6 pSensors graph showing Sensor Data

## Schematic

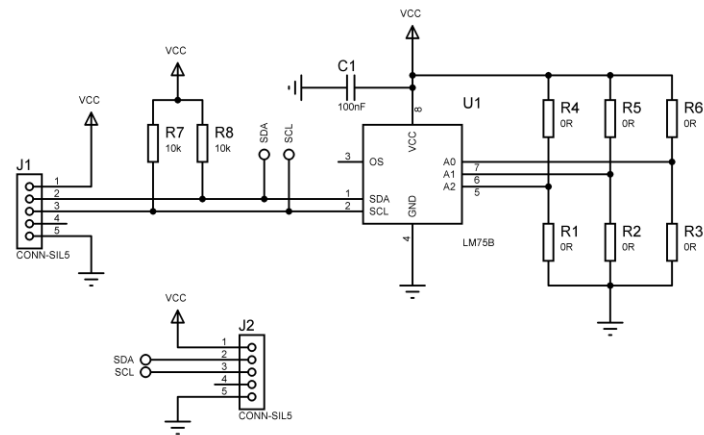


Figure 7 LM75 Temperature Sensor Schematic

