



# I2C Tutorial

## Introduction

This tutorial will help you to connect devices that use the I2C interface. An example of such a device is the MCU-6050 sensor which is used in both our Accelerometer and Thermometer classes.

- 1.) Install I2C Tools, this can be done with “sudo apt-get install i2c-tools” in the terminal.
- 2.) Enable I2C. Type “sudo raspi-config”, go to “Advanced Options”, then enable I2C. You may need to restart the Pi after doing this.

```

##### Raspberry Pi Software Configuration Tool (raspi-config) #####
1 Expand Filesystem          Ensures that all of the SD card storage is availab
2 Change User Password       Change password for the default user (pi)
3 Enable Boot to Desktop/Scratch Choose whether to boot into a desktop environment,
4 Internationalisation Options Set up language and regional settings to match you
5 Enable Camera              Enable this Pi to work with the Raspberry Pi Camer
6 Add to Rastrack            Add this Pi to the online Raspberry Pi Map (Rastra
7 Overclock                  Configure overclocking for your Pi
8 Advanced Options           Configure advanced settings
9 About raspi-config         Information about this configuration tool

                                <Select>                                <Finish>
#####
```

```

##### Raspberry Pi Software Configuration Tool (raspi-config) #####
A1 Overscan                  You may need to configure overscan if black bars are present on display
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 Device Tree               Enable/Disable the use of Device Tree
A6 SPI                       Enable/Disable automatic loading of SPI kernel module (needed for e.g. PiFace)
A7 I2C                       Enable/Disable automatic loading of I2C kernel module
A8 Serial                    Enable/Disable shell and kernel messages on the serial connection
A9 Audio                     Force audio out through HDMI or 3.5mm jack
A0 Update                    Update this tool to the latest version

                                <Select>                                <Back>
#####
```

- 3.) Once you have restarted, you can test that the sensor has been detected by entering: “sudo i2cdetect -y 1”. Or “sudo i2cdetect -y 0” if you have an older Pi (256 RAM).

```
pi@raspberrypi ~  
File Edit Tabs Help  
pi@raspberrypi ~ $ sudo i2cdetect -y 1  
00: 0 1 2 3 4 5 6 7 8 9 a b c d e f  
10: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
20: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
30: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
40: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
50: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
60: -- -- -- -- -- -- -- 68 -- -- -- -- -- --  
70: -- -- -- -- -- -- -- -- -- -- -- -- -- --
```

- 4.) The device should show up as been connected at a specific memory address. If this is different from the default **0x68** then be sure to use the alternate constructor in Accelerometer or Thermometer.