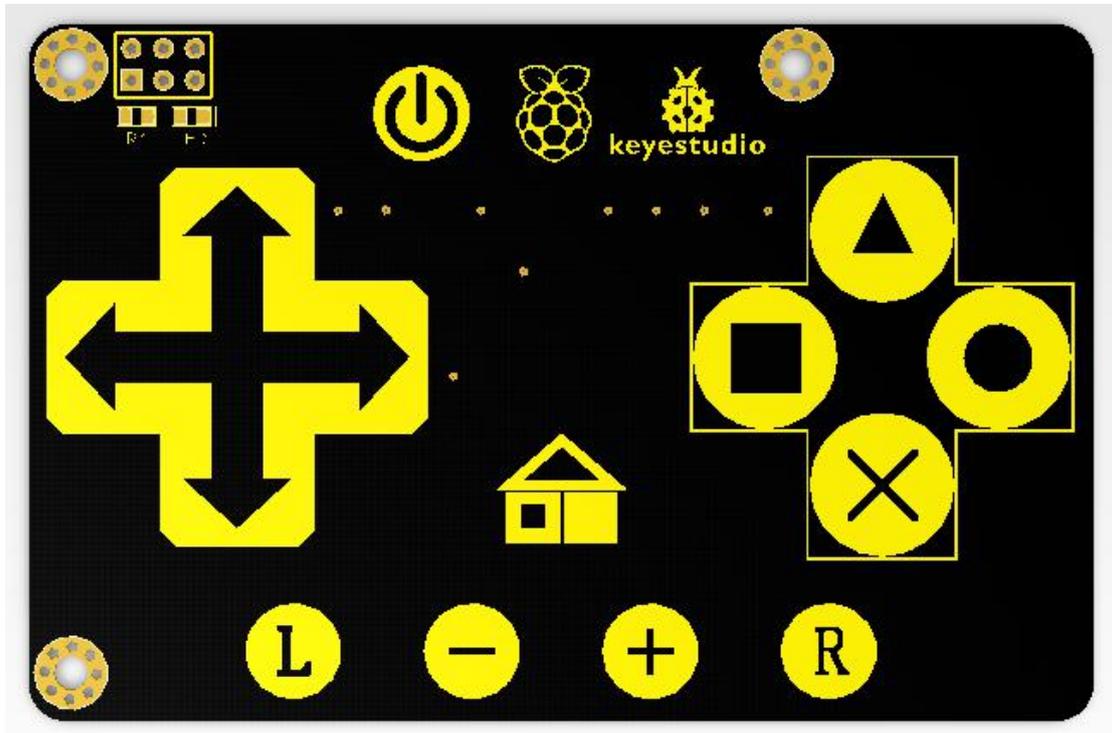


# keystudio

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## keystudio RPI TTP229L 16-key Capacitive Touch Keypad



### Introduction

This keypad is designed for Raspberry Pi and supplies your Pi with 16 keys. It has an I2C communication mode and uses 3.3 V supply voltage with a power indicator. We provide you with installation package, source codes and a document for complete your programs.

### Specification

Chip: TTP229-LSF

Supply Voltage: 3.3V

Interface: I2C

Size: 85x56x19.3 mm

### Connection Diagram

Plug it directly into Raspberry Pi to start your works as shown in below figure. After power-on have about 0.5sec stable-time. During the time do not touch the key pad, and all functions are disabled.

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## Sample Code

```
#include <bcm2835.h>
#include <stdio.h>
#include <unistd.h>
unsigned char WriteBuf;
unsigned char WriteBuf1;
unsigned int ReadBuf0;

int main(int argc, char **argv)
{
    if (!bcm2835_init())
        return 1;
    bcm2835_i2c_begin();
    bcm2835_i2c_setSlaveAddress(0x57);
    bcm2835_i2c_set_baudrate(10000);
    printf("start.....\n");

    while(1)
    {
        WriteBuf = 0x00;
        bcm2835_i2c_write_read_rs(&WriteBuf,2,&WriteBuf1,2);
        bcm2835_i2c_read (&ReadBuf0,2);
        printf("TTP229:%d\n",ReadBuf0);
        printf ("\r");
        fflush (stdout);
        bcm2835_delay(100);
    }

    bcm2835_i2c_end();
    bcm2835_close();

    return 0;
}
```

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## Program Writing

### 1. Installing bcm-2835 Library

Here is the tutorial for installing bcm-2835 library in Raspberry Pi. To install bcm-2835, first we need to download bcm2835 library. So we will provide an installation package or click its official web <http://www.airspayce.com/mikem/bcm2835/> to download it.

**Step1:-** Now after downloading library, copy it in any folder of your raspberry pi by winSCP(we provide its installation package, but please refer to usage by yourselves).

**Step2:-** Now it's time to extract the library, so open terminal of raspberry pi and go to the folder where you have copied your library and type this command: `tar zxvf bcm2835-1.26.tar.gz`

**Step3:-** Now to into library folder, type this command: `cd bcm2835-1.26`

**Step4:-** Now, we are ready to install bcm2835 library, so to start installation type this command: `./configure`

**Step5:-** then type this command: `make`

**Step6:-** then this: `sudo make check`

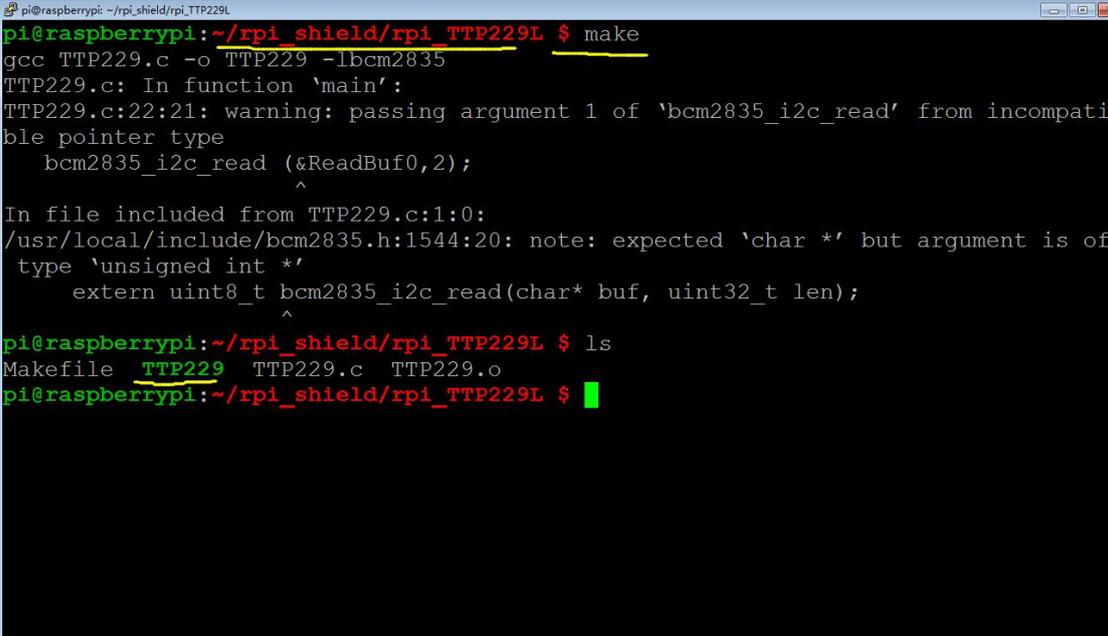
**Step7:-** and finally this: `sudo make install`

Congrats your library is installed. Now use “`#include <bcm2835.h>`” in your program to use bcm2835 library.

### 2. Programming

Now its time to write a program. If you need to create a new directory within raspberry pi, you can use the ‘`mkdir`’ command. So type at your terminal: `mkdir rpi_shield`

then copy the file `rpi_TTP229L` provided by us and put it into the directory `rpi_shield` through winSCP. Next , type this command: `cd rpi_TTP229L` to go inside the `rpi_TTP229L` folder. Then type this command: `make` to make an executable file, This means this is the file we run to launch the program as shown in below figure.



```
pi@raspberrypi: ~/rpi_shield/rpi_TTP229L
pi@raspberrypi: ~/rpi_shield/rpi_TTP229L $ make
gcc TTP229.c -o TTP229 -lbcm2835
TTP229.c: In function 'main':
TTP229.c:22:21: warning: passing argument 1 of 'bcm2835_i2c_read' from incompatible pointer type
    bcm2835_i2c_read (&ReadBuf0,2);
                      ^
In file included from TTP229.c:1:0:
/usr/local/include/bcm2835.h:1544:20: note: expected 'char *' but argument is of type 'unsigned int *'
    extern uint8_t bcm2835_i2c_read(char* buf, uint32_t len);
                                ^
pi@raspberrypi: ~/rpi_shield/rpi_TTP229L $ ls
Makefile  TTP229  TTP229.c  TTP229.o
pi@raspberrypi: ~/rpi_shield/rpi_TTP229L $
```

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Finally type this: `sudo ./TTP229` to launch the program.

## Result

Touch the keys, and corresponding value is printed on the terminal as shown in below figure. Use Ctrl+C to exit the processing program.

```
pi@raspberrypi:~/rpi_shield/rpi_TTP229L $ sudo ./TTP229
start.....
TTP229:0
TTP229:0
TTP229:0
TTP229:0
```

`sudo ./TTP229` to running program

```
TTP229:8
TTP229:8
TTP229:8
TTP229:8
TTP229:8
TTP229:0
TTP229:0
TTP229:2048
TTP229:2048
TTP229:2048
TTP229:2048
TTP229:2048
TTP229:0
TTP229:1024
TTP229:1024
TTP229:1536
TTP229:1536
TTP229:1536
TTP229:1536
TTP229:1536
TTP229:1536
TTP229:1536
TTP229:0
^Cpi@raspberrypi:~/rpi_shield/rpi_TTP229L $
```

Touching different keys to print various value

## Links :

Library: <http://www.keystudio.com/files/index/download/id/1483579307/>

PDF: <http://www.keystudio.com/files/index/download/id/1483580008/>