

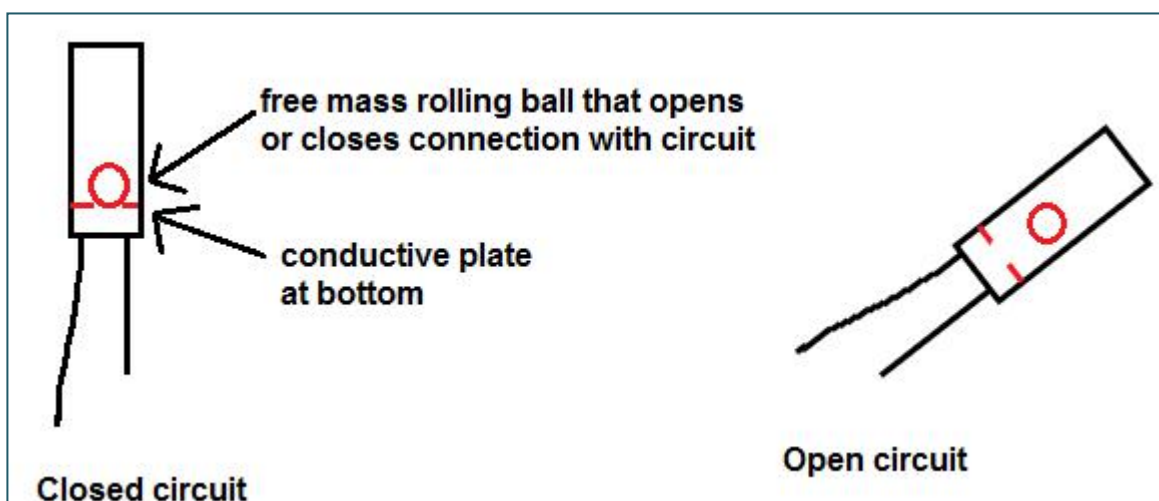
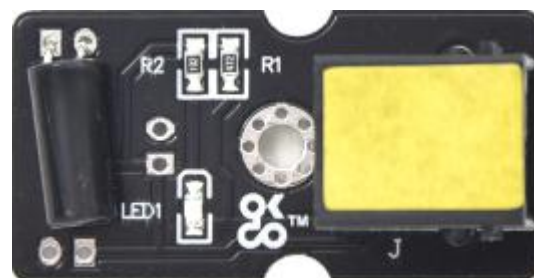
Tilt Sensor (000x0000 Article Number) (TS2143)

Product Details

This is the TelePort tilt sensor. There is a metal ball in the sensor. When the ball touches the bottom, the circuit is connected.

As a tilt switch, it is also dubbed as a ball-type tilt-sensing trigger switch.

When it is inclined towards the trigger end(two metal legs), the inner circuit is connected and low levels are output; when it is inclined to another end or in horizontal level, the inner circuit is in OFF state and high levels are output. Here is the principle of tilt sensor to illustrate how it works:



Features and Benefits

- Compatible with RJ11 6P6C OKdo TelePort Control boards and expansion shields.
- The sensor can detect changes in angle outputting the same HIGH/LOW as a basic switch but dependant on orientation rather than manual button pressing.
- Ideal for use cases like movement alarms and motion counting.

Technical Specifications

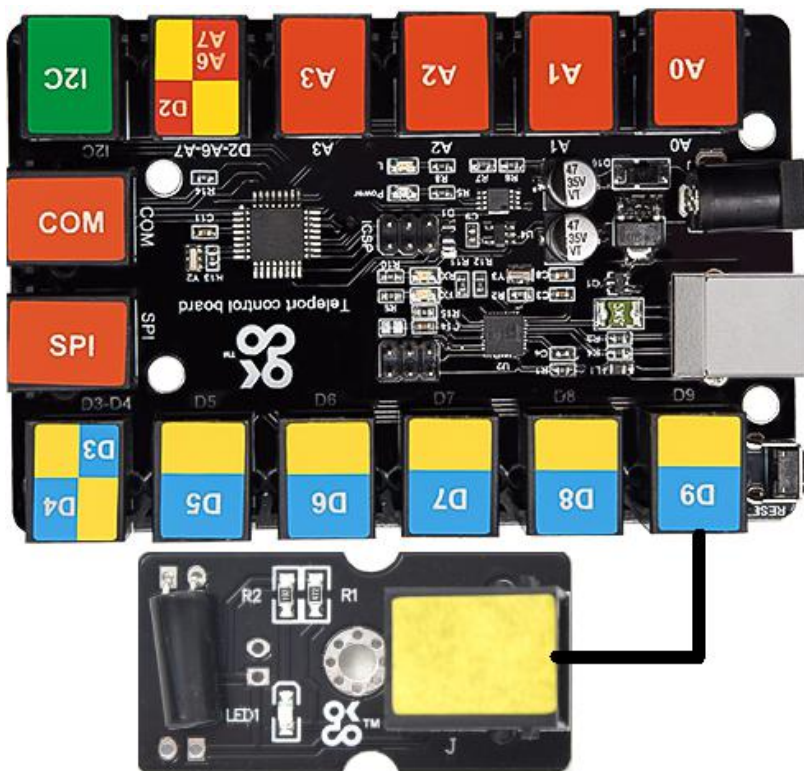
Sensor type	Digital input
Working voltage	3.3V-5V
Dimensions	44mm*20mm*18mm
Weight	5.5g

Applications

- Attitude and heading navigation system
- Pressure switch
- Automatic vending (tilt alert)
- This module is compatible with the TS2180-Raspberry Pi shield, the TS2179-Micro:bit shield and the TS2178-TelePort main board.

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➤ Arduino Application



This module is compatible with the TS2178 TelePort control board.

Test Code

```
int ledPin = 13;           // Connect LED to pin 13
int switcher = 9;         // Connect Tilt sensor to Pin9

void setup()
{
  pinMode(ledPin, OUTPUT); // Set digital pin 13 to output mode
  pinMode(switcher, INPUT); // Set digital pin 3 to input mode
}

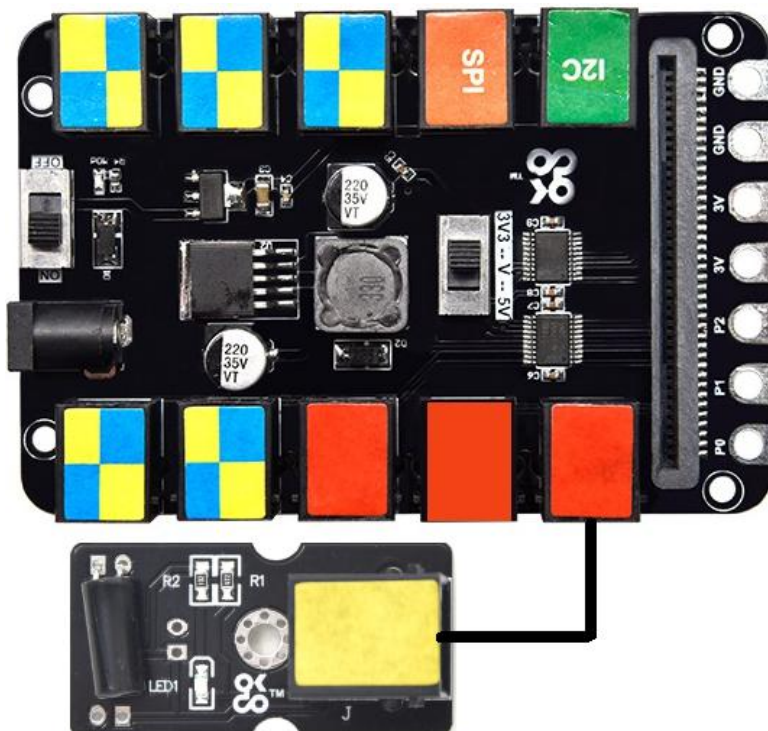
void loop()
{
  if(digitalRead(switcher)==LOW) //Read sensor value
  {
    digitalWrite(ledPin, HIGH); // Turn on LED when the sensor is tilted
  }
  else
  {
    digitalWrite(ledPin, LOW); // Turn off LED when the sensor is not triggered
  }
}
```

Test Result

Wire up, upload code and power it up. When the tilt sensor is inclined to the triggering end, D13 of the control board and the indicator of the sensor will light up; on the contrary, both of indicators will go off.

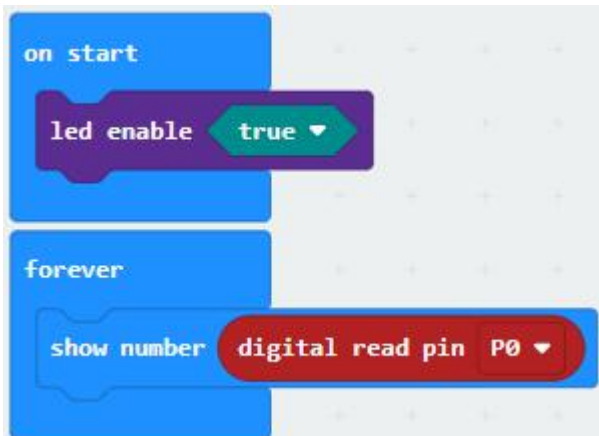
If you want to know more details about Arduino and the TelePort control board, you can refer to TS2178.

➤ Micro:bit Application



It is compatible with the Micro:bit board and the TS2179 Micro:bit expansion board.

Test Code



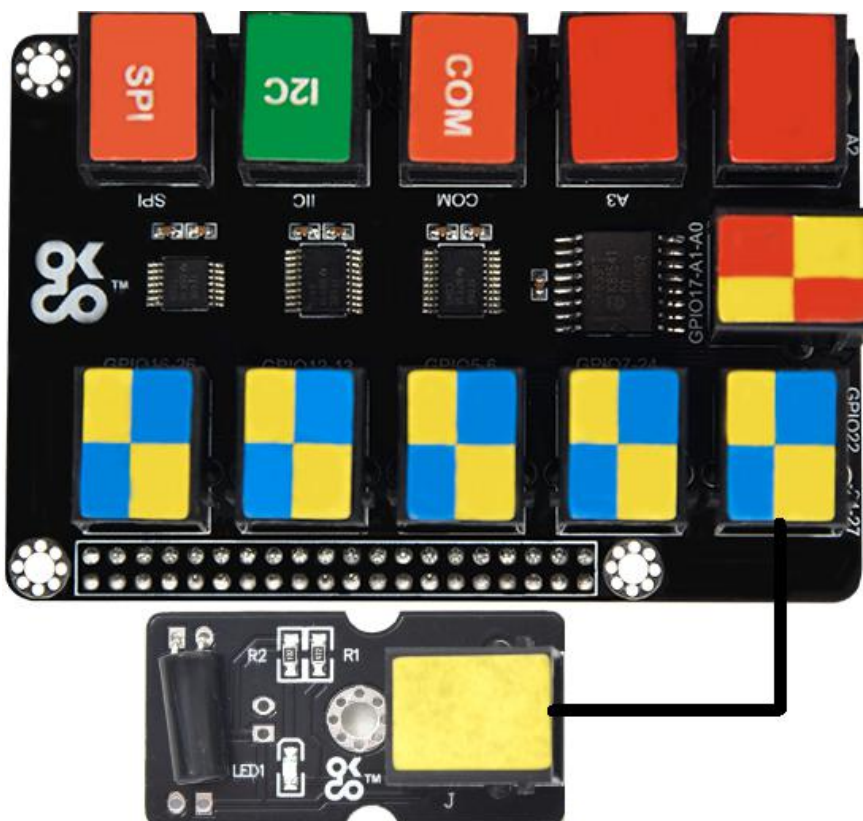
-①Run the "on start" block to boot the program
-②open the dot matrix of the Micro:bit
-③The program is run circularly under the command of "forever" block
-④The Micro:bit will show the digital signals detected by the tilt sensor.

Test Result

Wire up, insert the Micro:bit V2.0 into the shield, turn DIP switch to 3V3, upload test code and power it up. When the tilt sensor is inclined to the trigger terminal, the Micro:bit will display 0; if not, the Micro:bit will show 1.

If you want to know more details about the Micro:bit board and Micro:bit shield, you can refer to TS2179.

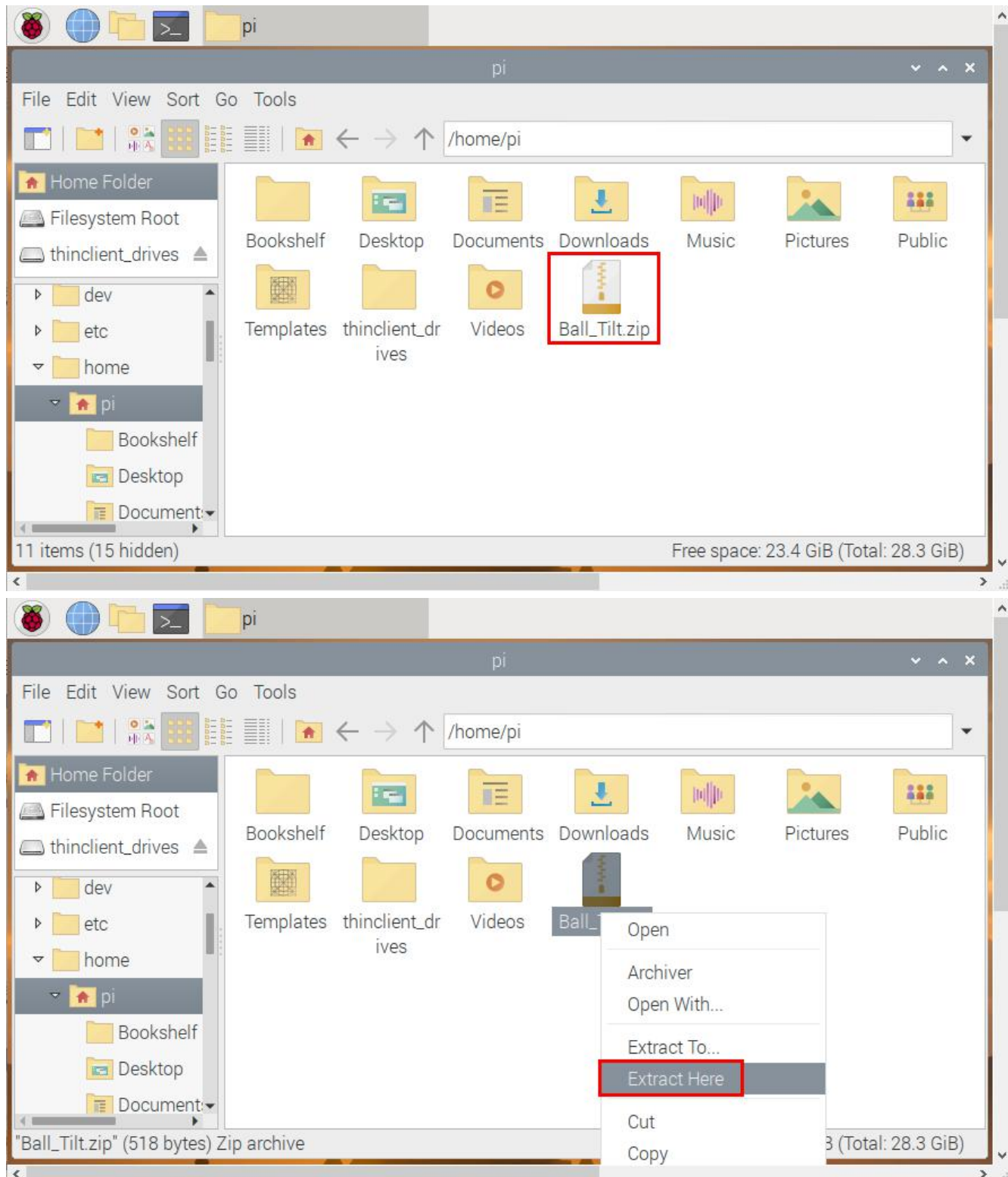
➤ Raspberry Pi Application

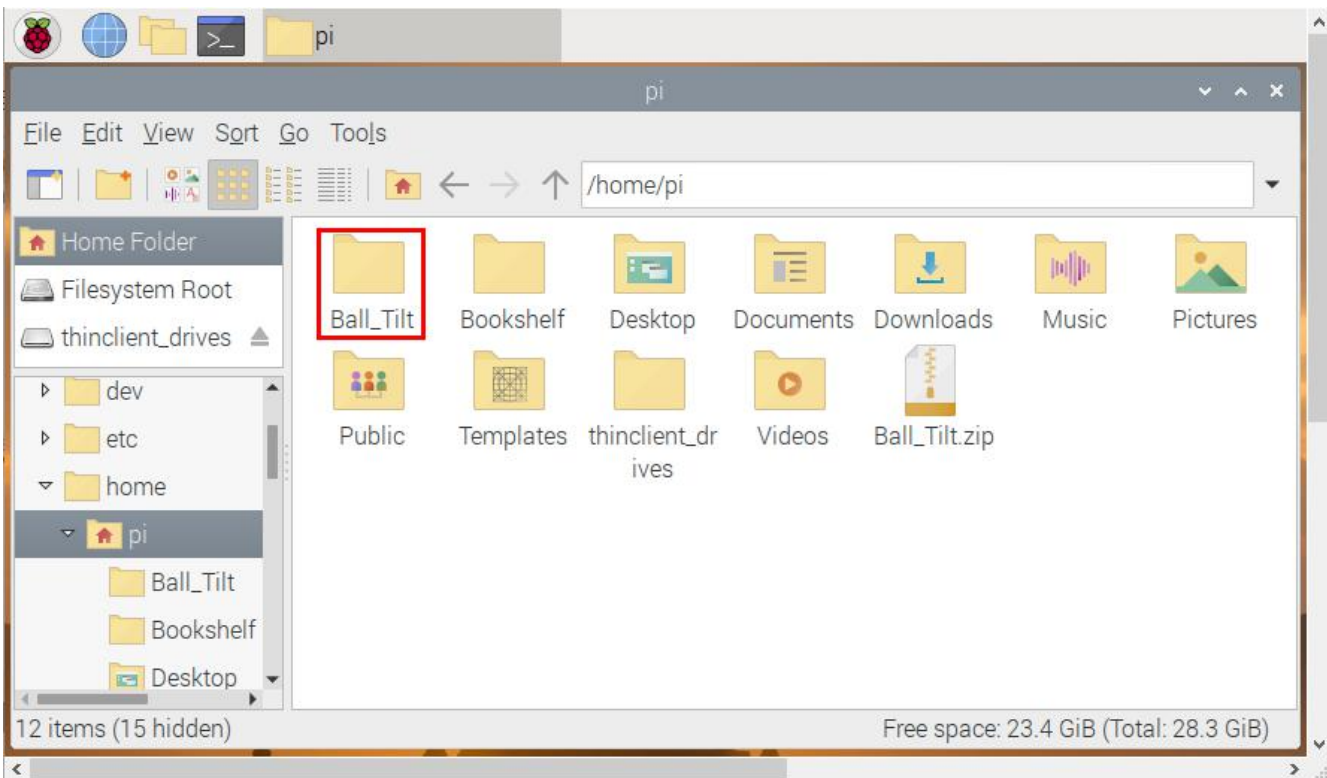


This module is compatible with the Raspberry Pi board and the TS2180 Raspberry Pi shield.

Copy the test code to Raspberry Pi system to run it

(1) Save the test code in the **pi** folder of Raspberry Pi system. Then place the **Ball_Tilt.zip** file we provide in the **pi** folder, right-click and click **Extract Here**. As shown below:





(2) Compile and run test code:

Input the following code and press "Enter"

```
cd /home/pi/Ball_Tilt
gcc Ball_Tilt.c -o Ball_Tilt -lwiringPi
sudo ./Ball_Tilt
```

(3) Test Result:

Insert the shield into the Raspberry Pi board. After programming finishes, when the tilt sensor is inclined to the trigger end, the terminal will display 0; if not, the terminal will show 1.

Note: press Ctrl + C to exit code running

```
File Edit Tabs Help
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 1
val = 0
val = 0
val = 0
val = 0
val = 0
val = 0
val = 0
val = 0
val = 0
val = 0
val = 0
val = 0
```

Test Code

File name: **Ball_Tilt.c**

```
#include <wiringPi.h>
#include <stdio.h>
#define tiltPin 3 //tilt pin BCM GPIO 22
int main()
{
    wiringPiSetup();
    char val;
    {
        pinMode(tiltPin,INPUT); //set the tilt pin INPUT mode
    }

    while(1)
    {
        val=digitalRead(tiltPin); // digital read
        printf("val = %d\n", val);
        delay(50);
    }
}
```

If you want to know how to utilize Raspberry Pi and the Raspberry Pi shield, you can refer to TS2180.

END