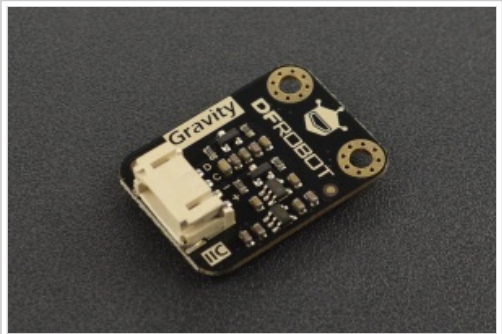


# (SKU:SEN0315) Gravity: PAJ7620U2 Gesture Sensor 手势识别传感器

来自DFRobot Product Wiki

## 目录

- 1 简介
- 2 技术规格
- 3 引脚说明
- 4 使用教程
  - 4.1 准备
  - 4.2 接线图
  - 4.3 样例代码
  - 4.4 高速模式:
  - 4.5 结果
  - 4.6 低速模式:
  - 4.7 结果
- 5 常见问题
- 6 更多



产品名称(300px)

## 简介

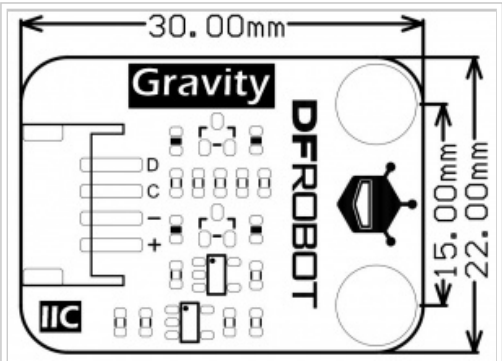
PAJ7620U2手势识别传感器是一款以IIC通信的3D手势识别交互式传感器。工作电流仅3.5mA, 手势识别距离达20mm。在最远20cm范围内，可以识别的手势多达13种。该手势传感器具备良好的手势识别稳定性，反应快，准确率高，可识别多种手势。支持两种手势识别模式，高速模式（可识别9种）和低速模式（可识别13种）。支持用户自定义识别手势。

PAJ7620U2手势识别传感器在高速模式下可识别上，下，左，右，前，后，顺时针，逆时针，快速挥手。而低速模式除了支持高速基础包含的所有手势外，还支持慢速上下，慢速左右，慢速前后，乱序。此外，低速模式可以自定义单位采样时间，还可根据自己需要轻松定义识别手势。

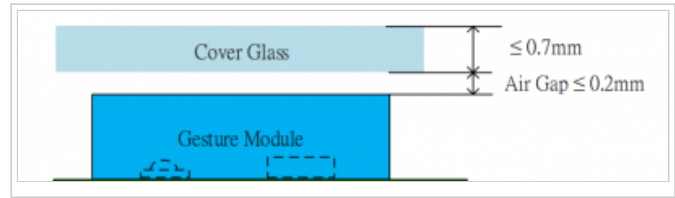
市面上主流的手势传感器可识别手势通常为六种，而对于非接触式遥控器，手势游戏机等应用，仅有的基础性6种识别模式完全不够。而PAJ7620U2手势识别传感器的出现，解决了手势识别模式欠缺的问题。PAJ7620U2手势识别传感器广泛适用于非接触式遥控器，机器人交互，手势操作游戏机，手势控制酷炫灯光等应用。设想一下，挥挥手控制电视空调；挥挥手调整灯光和音乐；挥挥手去操纵游戏...会不会很有意思呢？

## 技术规格

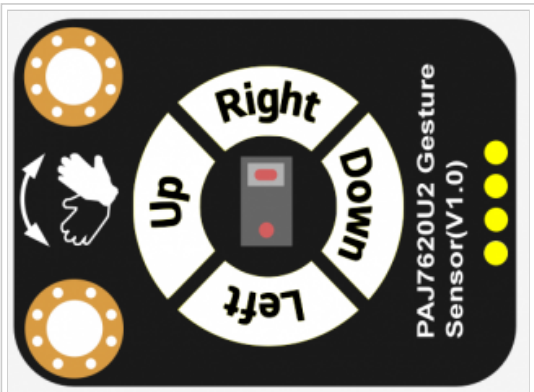
- 工作电压：3.3~5.5V
- 工作电流：3.5mA
- 通信接口：Gravity-IIC 4Pin
- IIC地址：0x73
- 尺寸：30mmx22mm
- 安装孔尺寸：15mm
- 可识别距离：30mm~200mm
- 手势更新率：120Hz
- 工作温度：-40℃~85℃
- 环境光免疫力：<100k Lux
- 盖板材料：推荐采用玻璃或PC;透明度须>90%;盖板材料厚度<0.7mm;盖板和模块应尽可能靠近，最远距离为0.2mm



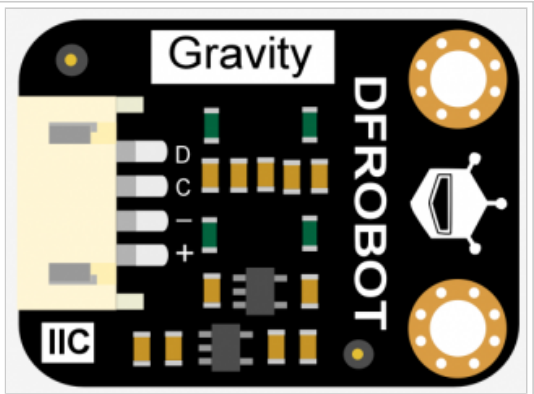
PAJ7620U2 Gesture Sensor 手势识别传感器尺寸图



引脚说明



顶部示意图



底部示意图

| 丝印 | 功能描述     |
|----|----------|
| D  | IIC数据SDA |
| C  | IIC时钟SCL |
| -  | 电源负极     |
| +  | 电源正极     |

使用教程

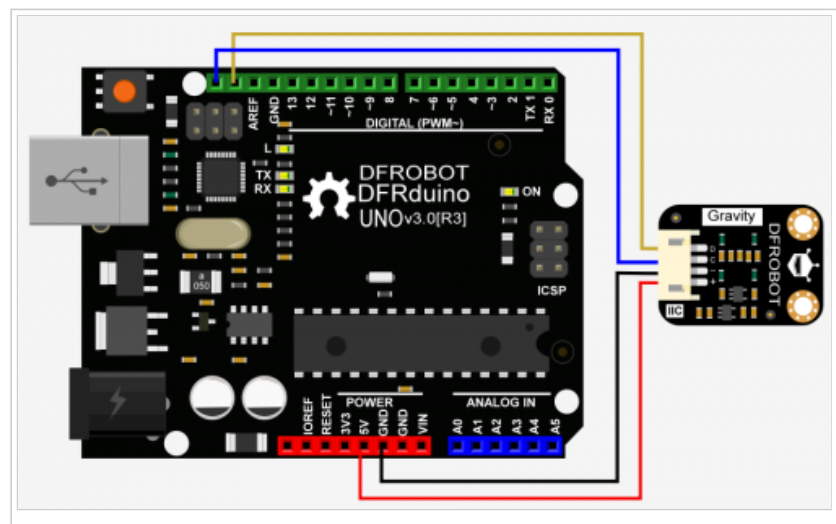
准备

- 硬件
  - UNO x1
  - IO 传感器拓展板 x1
  - PAJ7620U2手势识别传感器x1

- 软件
- Arduino IDE 点击下载Arduino IDE (<https://www.arduino.cc/en/Main/Software>)

接线图

准备好硬件后，按照下图将模块与UNO连接好



样例代码

点击下载库文件例程和库文件 ([https://github.com/DFRobot/DFRobot\\_PAJ7620U2](https://github.com/DFRobot/DFRobot_PAJ7620U2))。如何安装库?  
(<http://www.dfrobot.com.cn/community/forum.php?mod=viewthread&tid=1854&page=1&extra=#pid6955>)

函数参考：

```
DFRobot_PAJ7620U2(TwoWire *pWire=&Wire);
/**
 * @brief 构造函数
 * @param mode 构造设备时，可以指定它的默认工作模式
 */

int begin(void)
/**
 * @brief 初始化函数
 * @return 返回0表示初始化成功，返回其他值表示初始化失败
 */

void setGestureHighRate(bool b);
/**
 * @brief 设置高速手势识别模式
 * @param b true表示配置为高速识别模式，以最快速度识别手势并返回。
 * @n false表示低速模式，在低速模式下，系统会做更多的判断
 * @n 在高速识别模式下，可以快速识别的动作包括向左滑动 向右滑动 向上滑动 向下滑动
 * @n 向前滑动 向后滑动 逆时针 顺时针 快速挥手 9个动作
 * @n 高级用户如果想要用这些动作的组合，需要在外部自己完成算法逻辑的编写，比如左右左快速挥手
 * @n 因为每个人用到的动作手势有限，我们没有将更多的扩展动作手势集在库中，需要用户在ino文件中自己完成编程
 * @n
 * @n 在低速识别模式下，每2秒识别一个动作，我们将一些扩展动作集成到库内部，方便基础用户使用
 * @n 可以识别的动作包括向左滑动 向右滑动 向上滑动 向下滑动 向前滑动 向后滑动
 * @n 逆时针 顺时针 快速挥手 9个基础动作 左右慢挥手 上下慢挥手 前后慢挥手 乱序慢挥手 4个扩展动作
 */

String gestureDescription(eGesture_t gesture);
/**
 * @brief 获取手势号码对应的字符串描述
 * @param gesture 包含在eGesture_t中的手势号码
 */
```

```
* @return 手势号码对应的文字描述信息，如果输入了手势表中不存在的手势，返回空字符串
* @n 正常的返回值可能是 "None", "Right", "Left", "Up", "Down", "Forward", "Backward", "Clockwise",
* @n "Anti-Clockwise", "Wave", "WaveSlowlyDisorder", "WaveSlowlyLeftRight", "WaveSlowlyUpDown",
* @n "WaveSlowlyForwardBackward"
*/

eGesture_t getGesture(void);
/**
 * @brief 获取手势
 * @return 返回当前手势，可能的值为eGestureNone eGestureRight eGestureLeft eGestureUp
 * @n eGestureDown eGestureForward eGestureBackward eGestureClockwise
 * @n eGestureWave eGestureWaveSlowlyDisorder eGestureWaveSlowlyLeftRight
 * @n eGestureWaveSlowlyUpDown eGestureWaveSlowlyForwardBackward
 */
```

高速模式：

代码功能：可以识别以下手势。

 注：顺时针和逆时针手势需要至少转两圈以上 更多操作详见问答部分参考视频

| 高速模式可识别手势                                 |                    |
|---|--------------------|
| gesture code                              | gesture dscription |
| 1   | Right              |
| 2   | Left               |
| 4   | Up                 |
| 8   | Down               |
| 16  | Forward            |
| 32  | Backward           |
| 64  | Clockwise          |
| 128                                       | Anti-clockwise     |
| 256                                       | Wave(quickly)      |
| the totality of recognizable gesture is 9 |                    |

```
/*!
 * @file GestureRecognize_HighRate.ino
 * @brief Present the 9 built-in gestures data the sensor supports.
 * @n Wave your hand above the sensor (within 0~20cm), it can recognize 9 kinds of gestures: move up, down, left, right, forward,
 * @n backward, clockwise, anti-clockwise, wave.
 * @n For more usages of the sensor, refer to the description about setGestureHighRate in function setup.
 *
 * @copyright Copyright (c) 2010 DFRobot Co.Ltd (http://www.dfrobot.com)
 * @licence The MIT License (MIT)
 * @author Alexander(ouki.wang@dfrobot.com)
 * @version V1.0
 * @date 2019-07-16
 * @get from https://www.dfrobot.com
 * @url https://github.com/DFRobot/DFRobot_PAJ7620U2
 */

#include <DFRobot_PAJ7620U2.h>

DFRobot_PAJ7620U2 paj;

void setup()
{
  Serial.begin(115200);
  delay(300);
  Serial.println("Gesture recognition system base on PAJ7620U2");
  while(paj.begin() != 0) {
```

```

    Serial.println("initial PAJ7620U2 failure! Please check if all the connections are fine, or if the wire sequence is correct?");
    delay(500);
}
Serial.println("PAJ7620U2 init completed, start to test the gesture recognition function");

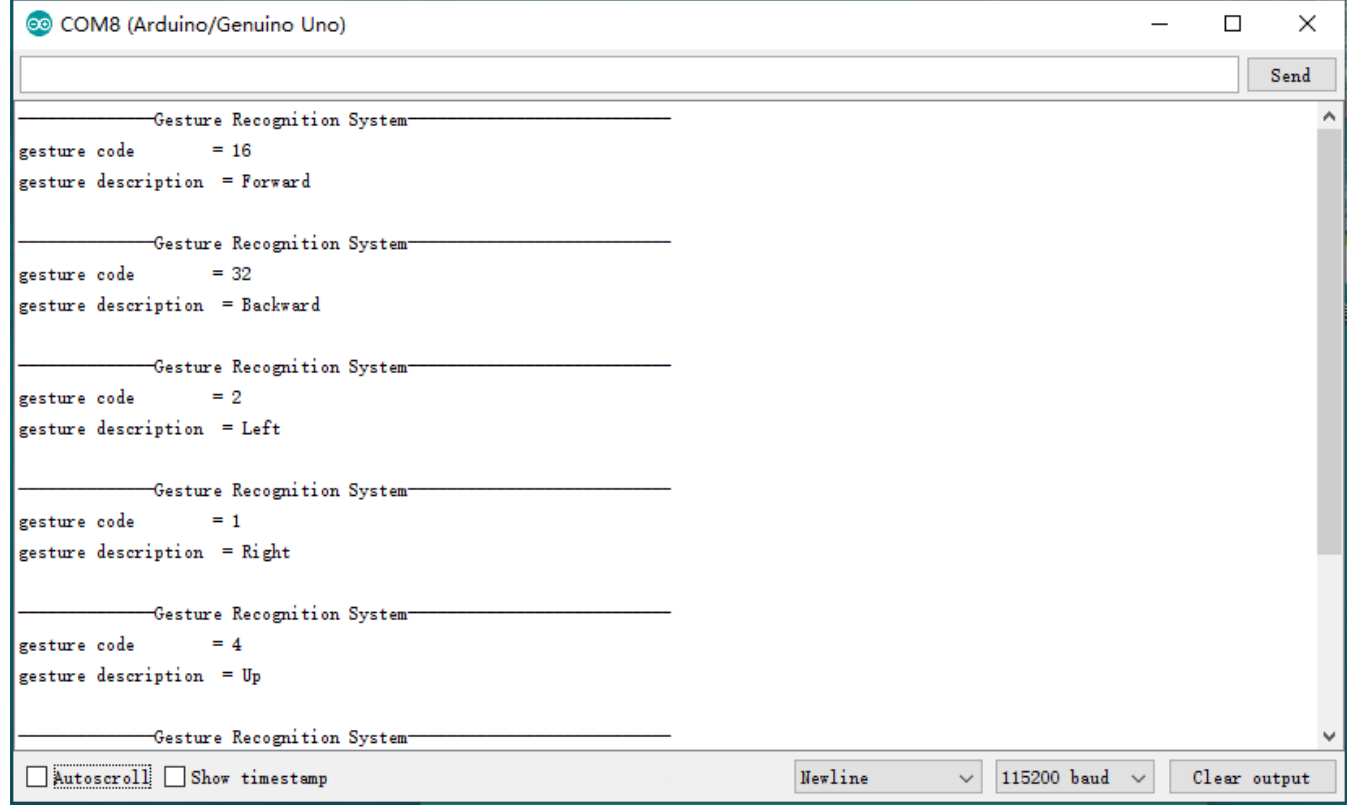
/*Set fast detection mode
*If the parameter is set to false, the module enters slow detection mode, and it detects one gesture every 2s. We have integrated
*some gestures inside the module to make it convenient for beginners.
*The slow mode can recognize 9 basic gestures and 4 expanded gestures: move left, right, up, down, forward, backward, clockwise,
*counter-clockwise, wave, slowly move left and right, slowly move up and down, slowly move forward and backward,
*wave slowly and randomly.
*
*
*
*If the parameter is set to true, the module enters fast detection mode.
*The fast mode can recognize 9 gestures: move left, right, up, down, forward, backward, clockwise, counter-clockwise, wave
*To detect the combination of these gestures, like wave left, right and left quickly, users needs to design their own algorithms logic.
*Since users only use limited gestures in this mode, we are not going to integrate too much expanded gestures in the library.
*If necessary, you can complete the algorithm logic in the ino file by yourself.
*/
paj.setGestureHighRate(true);
}

void loop()
{
    /* Read gesture number (return eGesture_t enumerated type)
    * eGestureNone eGestureRight eGestureLeft eGestureUp eGestureDown eGestureForward
    * eGestureBackward eGestureClockwise eGestureAntiClockwise eGestureWave eGestureWaveSlowlyDisorder
    * eGestureWaveSlowlyLeftRight eGestureWaveSlowlyUpDown eGestureWaveSlowlyForwardBackward
    */
    DFRobot_PAJ7620U2::eGesture_t gesture = paj.getGesture();
    if(gesture != paj.eGestureNone ){
        /* Get the string description corresponding to the gesture number.
        * The string description could be
        * "None", "Right", "Left", "Up", "Down", "Forward", "Backward", "Clockwise", "Anti-Clockwise", "Wave",
        * "WaveSlowlyDisorder", "WaveSlowlyLeftRight", "WaveSlowlyUpDown", "WaveSlowlyForwardBackward"
        */
        String description = paj.gestureDescription(gesture);//Convert gesture number into string description
        Serial.println("-----Gesture Recognition System-----");
        Serial.print("gesture code      = ");Serial.println(gesture);
        Serial.print("gesture description = ");Serial.println(description);
        Serial.println();
    }
}

```

## 结果

结果：可识别9种手势，可以在串口打印出相应的手势描述，如下图所示：



低速模式：



注：低速模式下默认采样时间为2s,所以完成一项操作后可能需等待1s 更多操作详见问答部分参考视频

代码功能：可以识别以下手势。

| 低速模式可识别手势                                  |                           |
|--|---------------------------|
| gesture code                               | gesture dscription        |
| 1  | Right                     |
| 2  | Left                      |
| 3  | WaveSlowlyLeftRight       |
| 4  | Up                        |
| 8  | Down                      |
| 12   | WaveSlowlyUpDown          |
| 16   | Forward                   |
| 32   | Backward                  |
| 48   | WaveSlowlyForwardBackward |
| 64   | Clockwise                 |
| 128  | Anti-clockwise            |
| 256  | Wave(quickly)             |
| 512  | WaveSlowlyDisorder        |
| the totality of recognizable gesture is 13 |                           |

```

/*!
 * @file GestureRecognize_LowRate.ino
 * @brief Present the 9 built-in gestures the sensor supports and 4 extended gestures in the slow mode.
 * @n Wave you hand above the sensor(within 0~20cm), it can detect: move left, right, up, down, forward, backward, clockwise,
 * @n anti-clockwise, wave, slowly move left and right, slowly move up and down, slowly move forward and backward, wave randomly and slowly.
 * @n For more usages of the sensor, refer to the description about setGestureLowRate in function setup.
 *
 * @copyright Copyright (c) 2010 DFRobot Co.Ltd (http://www.dfrobot.com)
 * @licence The MIT License (MIT)
 * @author Alexander(ouki.wang@dfrobot.com)
 * @version V1.0
 * @date 2019-07-16
 * @get from https://www.dfrobot.com
 * @url https://github.com/DFRobot/DFRobot_PAJ7620U2
 */

#include <DFRobot_PAJ7620U2.h>

DFRobot_PAJ7620U2 paj;

void setup()
{
  Serial.begin(115200);
  delay(300);
  Serial.println("Gesture recognition system base on PAJ7620U2");
  while(paj.begin() != 0){
    Serial.println("initial PAJ7620U2 failure! Please check if all the connections are fine, or if the wire sequence is correct?");
    delay(500);
  }
  Serial.println("PAJ7620U2init completed, start to test the gesture recognition function");

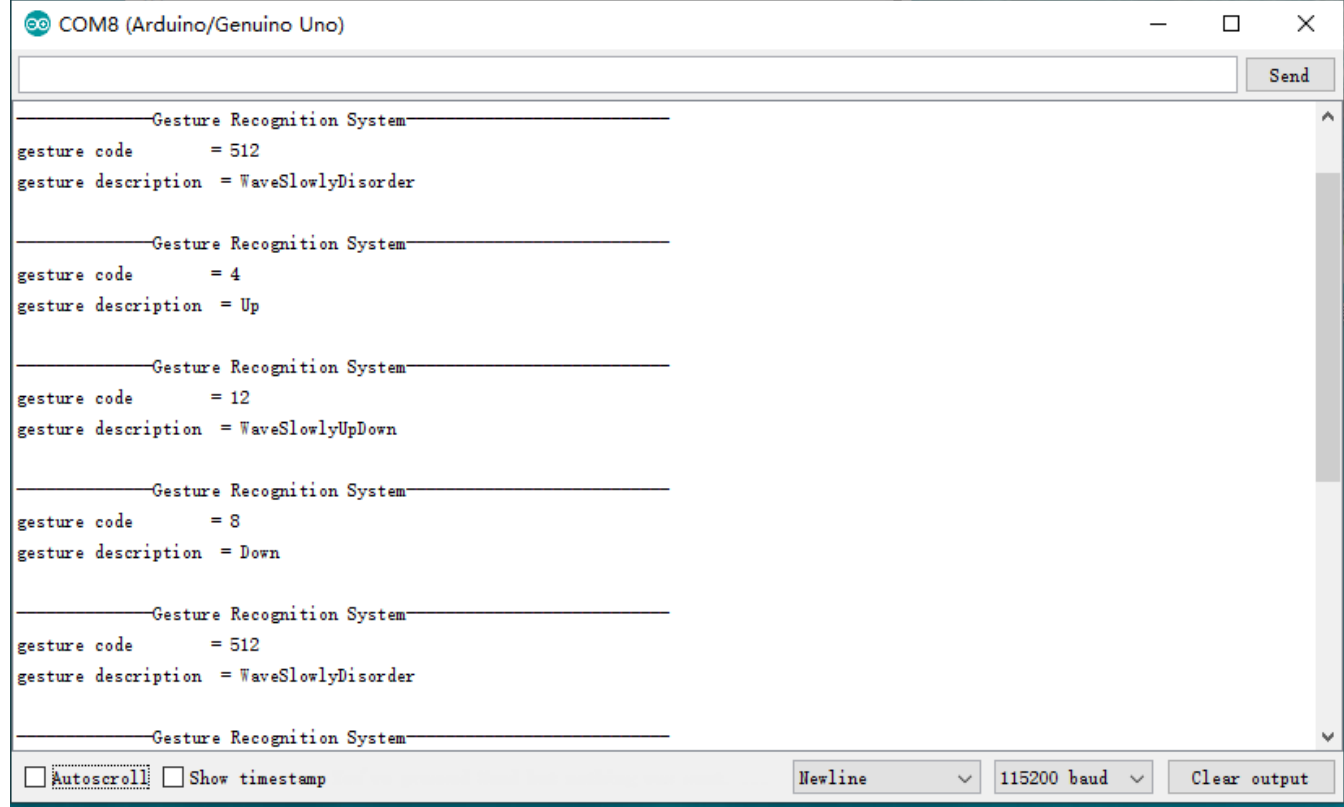
  /*Set fast detection mode
  *If the parameter is set to false, the module enters slow detection mode, and it detects one gesture every 2s. We have integrated
  *some gestures inside the module to make it convenient for beginners.
  *The slow mode can recognize 9 basic gestures and 4 expanded gestures: move left, right, up, down, forward, backward, clockwise,
  *counter-clockwise, wave, slowly move left and right, slowly move up and down, slowly move forward and backward,
  *wave slowly and randomly.
  *
  *
  *
  *If the parameter is set to true, the module enters fast detection mode.
  *The fast mode can recognize 9 gestures: move left, right, up, down, forward, backward, clockwise, counter-clockwise, wave.
  *To detect the combination of these gestures, like wave left, right and left quickly, users needs to design their own
  *algorithms logic.
  *Since users only use limited gestures in this mode, we are not going to integrate too much expanded gestures in the library.
  *If necessary, you can complete the algorithm logic in the ino file by yourself.
  */
  paj.setGestureHighRate(false);
}

void loop()
{
  /* Read gesture number (return eGesture_t enumerated type)
  * eGestureNone eGestureRight eGestureLeft eGestureUp eGestureDown eGestureForward
  * eGestureBackward eGestureClockwise eGestureAntiClockwise eGestureWave eGestureWaveSlowlyDisorder
  * eGestureWaveSlowlyLeftRight eGestureWaveSlowlyUpDown eGestureWaveSlowlyForwardBackward
  */
  DFRobot_PAJ7620U2::eGesture_t gesture = paj.getGesture();
  if(gesture != paj.eGestureNone ){
    /* Get the string description corresponding to the gesture number.
    * The string description could be
    * "None", "Right", "Left", "Up", "Down", "Forward", "Backward", "Clockwise", "Anti-Clockwise", "Wave",
    * "WaveSlowlyDisorder", "WaveSlowlyLeftRight", "WaveSlowlyUpDown", "WaveSlowlyForwardBackward"
    */
    String description = paj.gestureDescription(gesture);//Convert gesture number into string description
    Serial.println("-----Gesture Recognition System-----");
    Serial.print("gesture code = ");Serial.println(gesture);
    Serial.print("gesture description = ");Serial.println(description);
    Serial.println();
  }
}

```

## 结果

结果：可识别13手势，可以在串口打印出相应的手势描述，如下图所示：



## 常见问题

问：有高速模式演示视频吗？

答：<https://www.bilibili.com/video/av76484181>

问：有低速模式演示视频吗？

答：<https://www.bilibili.com/video/av76484092>

更多问题及有趣的应用，可以 [访问论坛](http://www.dfrobot.com.cn/community/forum.php) (http://www.dfrobot.com.cn/community/forum.php) 进行查阅或发帖！

## 更多

原理图 (<https://github.com/John-1997/schematiC>)  
Datasheet (<https://github.com/John-1997/Datasheet.git>)  
SVG 文件 (<https://github.com/John-1997/the-SVG-of-PAJ7620U2.git>)

 DFRobot商城购买链接 (<http://www.dfrobot.com.cn/goods-2677.html>)

来自 “[http://wiki.dfrobot.com.cn/index.php?title=\(SKU:SEN0315\)\\_Gravity: PAJ7620U2\\_Gesture\\_Sensor\\_手势识别传感器&oldid=130918](http://wiki.dfrobot.com.cn/index.php?title=(SKU:SEN0315)_Gravity:_PAJ7620U2_Gesture_Sensor_手势识别传感器&oldid=130918)”

- 本页面最后修改于2020年4月9日 (星期四) 11:16。
- 此页面已被浏览过1,474次。



