ESP8266 WiFi PIR motion sensor (EasyIoT Cloud REST API) (/blog/2-uncategorised/74-esp8266-wifi-pir-motion-sensor-easyiot-cloud-rest-api)

ESP8266 (/component/tags/tag/11-esp8266) ESP8266 Arduino IDE (/component/tags/tag/32-esp8266-arduino-ide) PIR sensor (/component/tags/tag/35-pir-sensor)

motion sensor (/component/tags/tag/36-motion-sensor) EasyIoT Cloud (/component/tags/tag/41-easyiot-cloud)

1

In this tutorial we will show how to build WiFi PIR motion sensor connected to EasyIoT Cloud. We will use ESP8266, PIR module and Arduino IDE.
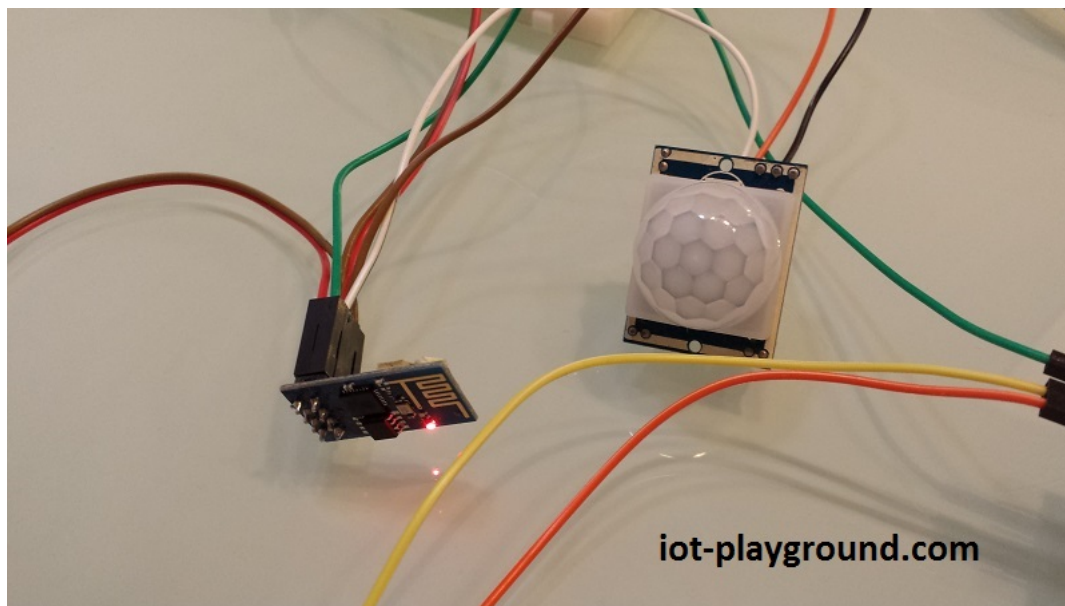
Contents

Introduction

ESP8266 PIR motion sensor

Materials

-ESP8266 WiFi module

ESP8266 ESP-01 Serial WIFI Wireless Transceiver Module

$2.45 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=201501780189&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=82

$8.10 AliExpress (http://s.click.aliexpress.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FFree-shipping-ESP8266-serial-port-V
Wireless-module-WIF-transceiver-wireless-module-ESP-01%2F32397903869.html&aff_short_key=BY7YzVz)

ESP8266 ESP-03 Serial WIFI Wireless Transceiver Module

$2.07 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=381374501949&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=82

ESP8266 ESP-12 Serial WIFI Wireless Transceiver Module

$2.09 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=381374534484&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=82

ESP8266 ESP-05 Serial WIFI Wireless Transceiver Module

$1.88 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=181776813702&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824

$3.89 AliExpress (http://s.click.aliexpress.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FESP8266-ESP-05-Remote-Serial-Por
Transceiver-Wireless-Module%2F32622910348.html&aff_short_key=BY7YzVz)

ESP8266 ESP-07 Serial WIFI Wireless Transceiver Module

$2.18 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=191604510029&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824

$1.87 AliExpress (http://s.click.aliexpress.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FNew-version-10PCS-ESP-07-ESP826
REMOTE-Serial-Transceiver-wireless-Module-ESP-07-UNO-ROBOT%2F32469025036.html&aff_short_key=BY7YzVz)

ESP8266 Lua Nodemcu WIFI Network Development Board

$7.43 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=381374628646&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824

$3.20 AliExpress (http://s.click.aliexpress.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FNew-Wireless-module-CH340-NodeM
Lua-WIFI-Internet-of-Things-development-board-based-ESP8266%2F1000001008616.html&aff_short_key=BY7YzVz)

-PIR sensor

Pyroelectric Infrared Motion Sensor Detector Module HC-SR501

$0.99 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=151919077902&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824

$0.72 AliExpress (http://s.click.aliexpress.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FFree-shipping-5PCS-LOT-HC-SR501
HCSR501-SR501-human-infrared-sensor-module-Pyroelectric-infrared-sensor-imports%2F1124339452.html&aff_short_key=BY7YzVz)

-3.3V power supply (battery or regulator)

5pcs 3.3V regulator module 800mA

$1.13 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=400985442255&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824

$1.59 AliExpress (http://s.click.aliexpress.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2F5-5V-turn-3-3V-DC-DC-step-down-po
supply-module-5PCS%2F715784045.html&aff_short_key=BY7YzVz)

2xAA 3V Battery Holder Box Case Wire

$1.09 ebay (http://rover.ebay.com/rover/1/711-53200-19255-0/1?
icep_ff3=2&pub=5575120461&toolid=10001&campid=5337668238&customid=&icep_item=281676005285&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824

$0.99 AliExpress (http://s.click.aliexpress.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FPlastic-Battery-Storage-Case-Box-Hc
For2-X-AA-2xAA-3V-with-wire-leads%2F32519404098.html&aff_short_key=BY7YzVz)

See buying guide at the end of tutorial for details.

EasyIoT Cloud configuration

Register to **EasyIoT Cloud (http://cloud.iot-playground.com/)** service. If you do not receive registration email check spam folder. If it's not there contact us and we will activate your account.

Then go to **Configure->Modules->Add Module.** Set Digital Input (DI) module type and name it PIR sensor.

Next click on Sensor.Parameter1. Set Description to PIR and check UI notifications to enable real time notification in WEB interface.

Then press save button. After Save you will see InstanceId/ParameterId - you will need it later in program.

Go back to module configuration and add two more parameters (Add parameter button).

Two parameters are to set text in module. Name first parameter Settings.StatusText1 and second Settings.StatusText2. Set value for first "Motion" and for second "Ok".

Next we will set picture for module. We add two more parameters and name it Settings.Icon1 and Settings.Icon2. For first parameter set value to "siren_2.png" and second parameter value "siren_1.png".

After you added all parameters module configuration should look like this:

Program

Program is written in Arduino ESP8266 IDE. See Arduino ESP8266 IDE (/2-uncategorised/67-arduino-esp8266-ide) tutorial how to connect ESP8266 module to computer to upload program. Program is available at our GitHub (https://github.com/iot-playground/EasyIoT-Cloud/blob/master/EIoTCloudRestApi/examples/ESP8266_PIR_sensor_REST.ino/ESP8266_PIR_sensor_REST.ino.ino). You will also need EIoTCloudRestApi library (/2-uncategorised/71-eiotcloudrestapi-library). In library set access point username and password.

In program change EIOT_CLOUD_INSTANCE_PARAM_ID

```
// EasyIoT Cloud definitions - change EIOT_CLOUD_INSTANCE_PARAM_ID

#define EIOT_CLOUD_INSTANCE_PARAM_ID     "xxxx"
```

InstanceId/ParameterId in parameter configuration.

EasyIoT Cloud Beta ⓘ

InstanceId/ParameterId/	
MQTT topic	
Name	Sensor.Parameter1
Description	PIR
Value	0
Unit	
UI notifications	✔
DB Logging	☐

iot-playground.com

↩ Back	✓ Save parameter	⊖ Delete parameter

If you are change GPIO pin on ESP8266 then aslo change GPIO pin in program.

Untitled_Project (https://codebender.cc/sketch:176284?referrer=EasyIoT) by EasyIoT (https://codebender.cc/user/EasyIoT?referrer=EasyIoT) Clone & Edit   ⬇ Download

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referrer=EasyIoT) referrer=EasyIo

```
10   #include <ESP8266WiFi.h>
11   #include "EIoTCloudRestApi.h"
12
13   // EasyIoT Cloud definitions - change EIOT_CLOUD_INSTANCE_PARAM_ID
14   #define EIOT_CLOUD_INSTANCE_PARAM_ID   "xxxx"
15
16   #define INPUT_PIN        2
17
18   EIoTCloudRestApi eiotcloud;
19   bool oldInputState;
20
21   void setup() {
22     Serial.begin(115200);
23     eiotcloud.begin();
24
25     pinMode(INPUT_PIN, INPUT_PULLUP);
26
27     oldInputState = !digitalRead(INPUT_PIN);
28   }
29
30   void loop() {
31     int inputState = digitalRead(INPUT_PIN);;
32
33     if (inputState != oldInputState)
34     {
35       eiotcloud.sendParameter(EIOT_CLOUD_INSTANCE_PARAM_ID, (inputState == 1));
36       oldInputState = inputState;
37     }
38   }
39
```

To program your Arduino from your browser, install the codebender plugin or app. Learn more (https://codebender.cc/static/plugin)

Please select a board ▼	▼	→ Run on Arduino

Hardware

In our case we use ESP8266 01, but you can use any other ESP8266 (/69-esp8266) with FDTI programmer. For power supply you can use 2 AA batteries or 3.3V regulator AMS1117 (see buying guide).

PIR sensor is power by 5V, but if we look at schematic we will see that is's 3.3V internally. Because ESP8266 is 3.3V, we can bypass PIR internal regulator.
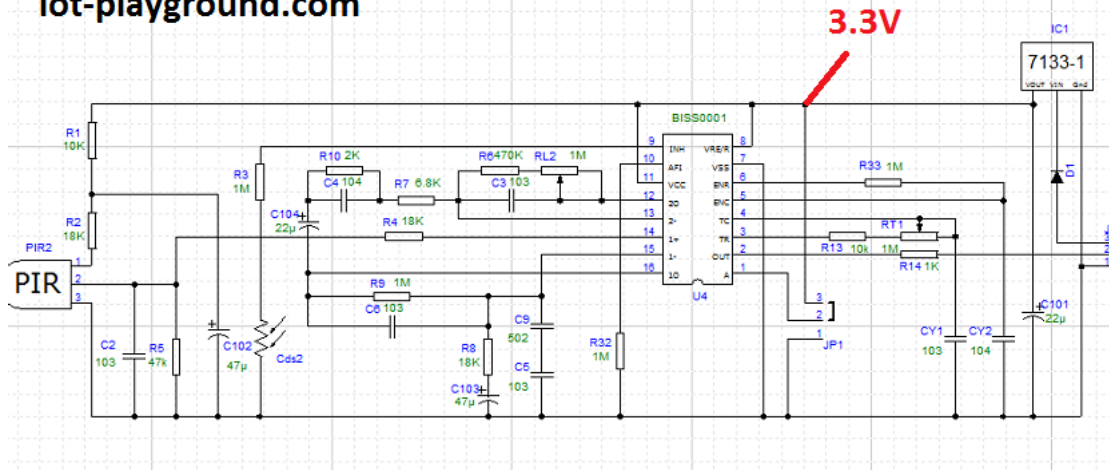
Connection after regulator is available at JP1 pin 3. In our case we will connect 3.3V power supply to this point and not to 5V power supply.

On board this point is shown on following picture.
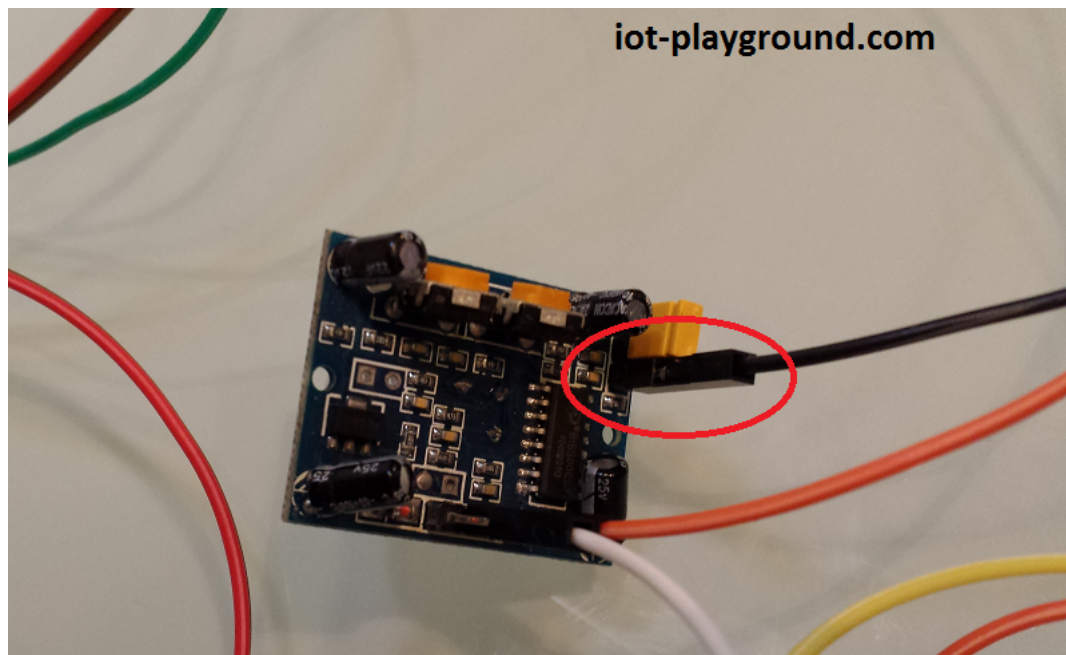
ESP8266 to PIR sensor connection.

PIR	ESP8266
3.3VCC after internal regulator	3.3V VCC
GND	GND
OUT	GPIO2 on ESP8266

See more tutorials at http://iot-playground.com/build (http://iot-playground.com/build)

Buying guide

To support this site and EasyIoT framework development please buy in our store.

Pyroelectric Infrared Motion Sensor Detector Module HC-SR501

New Adjustable Infrared IR PIR Motion Sensor Detector Module Security Motion HC-SR501

00-19255-0/1?
d=5337668238&customid=&icep_item=151919077902&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg)   >

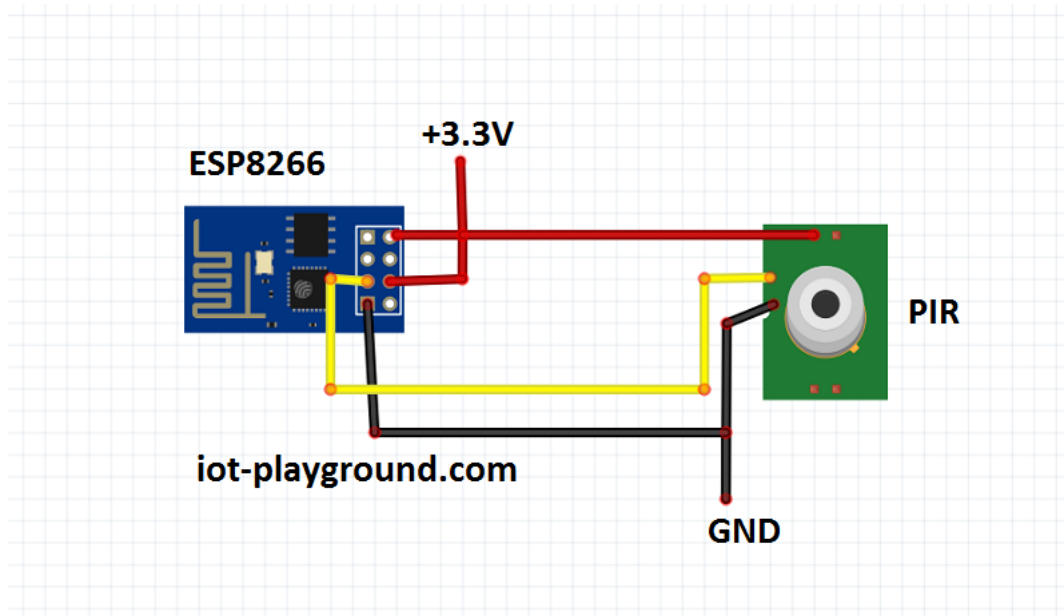$0.72 (http://s.click.aliexpress.com/deep_link.htm?
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238&customid=&icep_item=151919077902&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg)
human-infrared-sensor-module-Pyroelectric-infrared-sensor-imports%2F1124339452.html&aff_short_key=BY7YzVz)   > >

5PCS Pyroelectric Infrared Motion Sensor Detector Module HC-SR501

s.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FFree-shipping-5PCS-LOT-HC-SR501-
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man-infrared-sensor-module-Pyroelectric-infrared-sensor-imports%2F1124339452.html&aff_short_key=BY7YzVz)

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dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FHot-10pcs-lot-Adjust-Infrared-IR-PIR-Motion-Sensor-
238&customid=&icep_item=201414880948&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg)
Detector-Module-Security-Motion-HC-SR501%2F968259823.html&aff_short_key=BY7YzVz)   > >

5pcs 3.3V regulator module 800mA

Basic regulator module based on AMS1117
s.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FHot-10pcs-lot-Adjust-Infrared-IR-PIR-
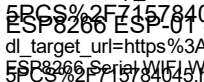r-Module-Security-Motion-HC-SR501%2F968259823.html&aff_short_key=BY7YzVz)

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ESP8266 ESP-01 Serial WIFI Wireless Transceiver Module

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d=5337668238&customid=&icep_item=201501780189&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg) >

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WIF-transceiver-wireless-module-ESP-01%2F32397903869.html&aff_short_key=BY7YzVz) > >

ESP8266 ESP-03 Serial WIFI Wireless Transceiver Module
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ESP8266 serial WIFI model ESP-03.
transceiver-wireless-module-ESP-01%2F32397903869.html&aff_short_key=BY7YzVz)

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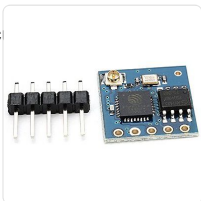
ESP8266 ESP-12 Serial WIFI Wireless Transceiver Module
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ESP8266 serial Port WIFI wireless module ESP-12

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ESP8266 ESP-05 Serial WIFI Wireless Transceiver Module

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d=5337668238&customid=&icep_item=181776813702&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg) >

$3.89 (http://s.click.aliexpress.com/deep_link.htm?

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Wireless-Module%2F32632910348.html&aff_short_key=BY7YzVz) > > (http://s.click.aliexpress.com/deep_link.htm?
38&customid=&icep_item=181776813702&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg)
ESP8266 Lua Nodemcu WIFI Network Development Board
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ESP8266 Lua Nodemcu WIFI Network Development Board
48.html&aff_short_key=BY7YzVz)

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d=5337668238&customid=&icep_item=381374628646&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg) >

$3.20 (http://s.click.aliexpress.com/deep_link.htm?

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38&customid=&icep_item=381374628646&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg)
Internet-of-Things-development-board-based-ESP8266%2F1000001008616.html&aff_short_key=BY7YzVz) > >

(http://s.click.aliexpress.com/deep_link.htm?dl_target_url=https%3A%2F%2Fwww.aliexpress.com%2Fitem%2FNew-Wireless-module-CH340-NodeMcu-
V3-Lua-WIFI-Internet-of-Things-development-board-based-ESP8266%2F1000001008616.html&aff_short_key=BY7YzVz)

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Comments (/component/jcomments/feed/com_content/74)

#5 (/2-uncategorised/74-esp8266-wifi-pir-motion-sensor-easyiot-cloud-rest-api#comment-563) **Andreas** 2016-03-13 17:14 **+1**

When i use this setup with a nodeMCU and esp8266-12E on back i have several problems.

in USB-Connected mode over a USB3 port, i can load the sketch and i can see on the serial monitor all running fine. If motion then it sends the expected 1 to IOT Server.

When i power off and power it on with a powersupply (5V 1A) it always jump between motion status and ok status.