
NOTE : This is just a simplified version of the guide, You can get a much detailed version for free by using this link.

LINK : https://github.com/3dunify/arduino_motion_sensor

1) Connection Setup

Connection Between NodeMCU & SR501 PIR Sensor

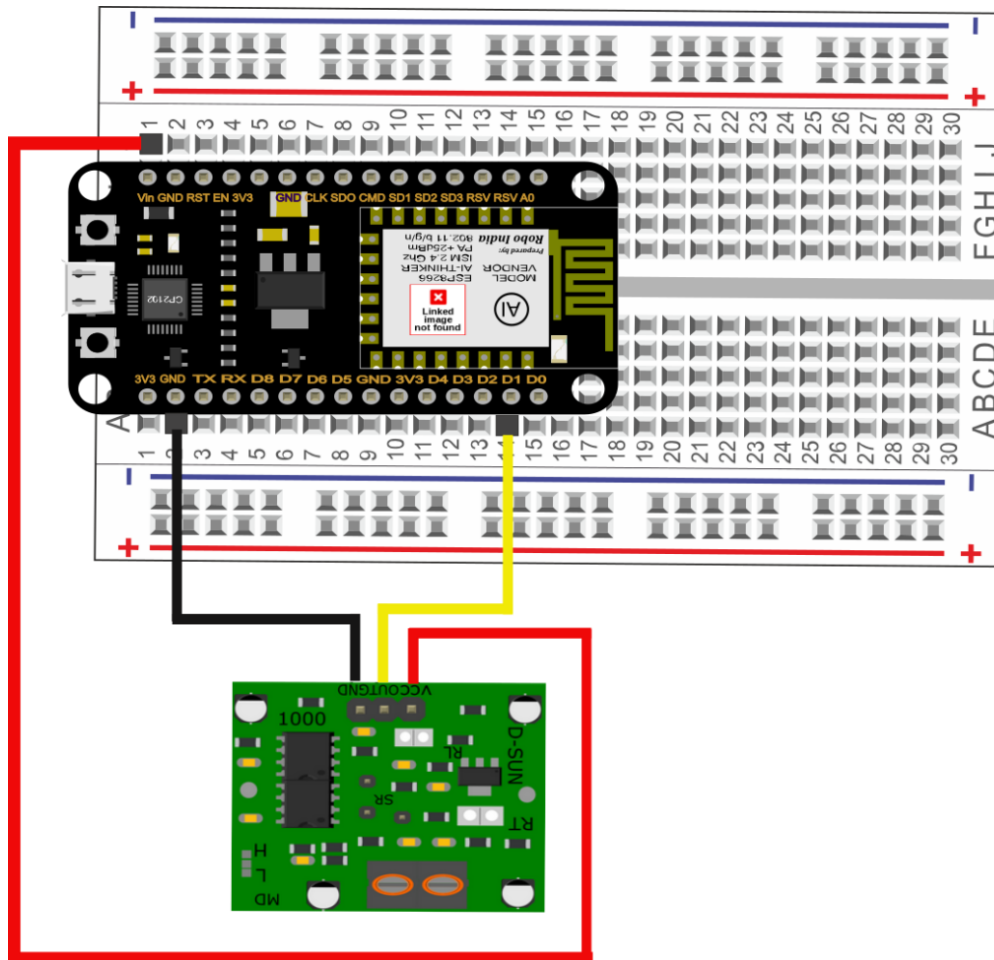
1.1) Connection:

NodeMCU	PIR Sensor
GND	GND
Vin	VCC
D1	Out Pin

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1.2) Schematics:



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2) Instructions on connecting the NodeMCU and SR-501 Sensor:

2.1)

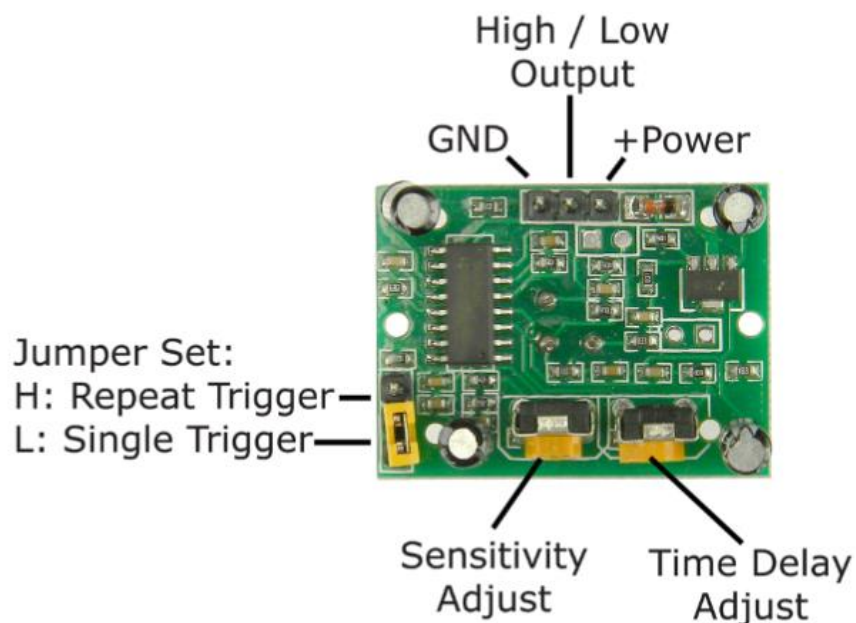


Figure 1 Pinouts of SR-501 Sensor

2.2) ☐ 1) Using the above images as reference connect the ground or GND wire from the SR-501 sensor to the Ground or GND wire on the NodeMCU, The NodeMCU will have two GND wires , you can connect it to any one of them.

☐ 2) Just like the above step , Now connect the VIN or Positive of the SR-501 sensor to the VIN or Positive on the NodeMCU.

☐ 3) Lastly, Connect the OUT or Middle PIN on the SR-501 to the D1 ON the NodeMCU.

The connection part is complete. The next step is to download Arduino IDE.

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3) Downloading and Installing Arduino IDE:

Visit this link below to download install the Arduino IDE.

<https://www.arduino.cc/en/software>

- ☐ 1) Launch the Arduino IDE.
-

Now before completing the connection process we need to install something called a Library in the Arduino IDE,

3.1) Installing Library (s):

3.2) Installing NodeMCU Library:

Installing with Boards Manager

- ☐ Start Arduino and open the Preferences window.
- ☐ Enter `https://arduino.esp8266.com/stable/package_esp8266com_index.json` into the *File>Preferences>Additional Boards Manager URLs* field of the Arduino IDE.
- ☐ Open Boards Manager from Tools > Board menu and install *esp8266* platform (and don't forget to select your ESP8266 board from Tools > Board menu after installation).

3.3) Installing BLYNK Library in 2 Methods:

Method 1:

Install Blynk as ZIP file in Arduino IDE

- ☐ Blynk library is available as a downloadable ZIP.
- ☐ Download Blynk Library by clicking this link : <https://github.com/blynkkk/blynk-library/releases/tag/v1.1.0>.
- ☐ In the Arduino IDE, navigate to Sketch > Include Library > Add .ZIP Library. At the top of the drop down list, select the option to "Add .ZIP Library".

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Method 2:

- ☐ Open the IDE and click to the "Sketch" menu and then Include Library > Manage Libraries.
- ☐ Click on Include Library > Manage Libraries then the Library Manager will open. Search for **Blynk** library and in the version selection choose the latest version to date.
- ☐ Finally click on Install.

That's it!

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Final Steps

4) Downloading and Installing BLYNK App,

☐ Please visit the below link and install either the Android or iOS

<https://docs.blynk.io/en/downloads/blynk-apps-for-ios-and-android>

4.1) Setting up BLYNK on your Phone:

Use the screenshots below as reference,

1. ☒ Click on **New Project**.
2. ☐ Give it a name (in my case "**Motion Detector**")
3. ☐ Click on "Choose Device" and scroll down and click on "NodeMCU" and click on WiFi as Connection Type and finally click Create.
4. ☐ Copy the **AUTH TOKEN** or send the code to your email. Copy this 35 Character code and keep it safe, we will be needing this when editing the Arduino Project file.
5. ☐ Click on the "Rounded Plus" icon on the right side of the top bar.
6. Keep scrolling down until you find "Notifications" , and then click on "Notification" which is under "Twitter".
7. Then again click on the "Rounded Plus" symbol and now scroll and find "Controllers" and click on "Styled Button".
8. Now tap on the Button symbol and leave the name default and tap on "Output" and scroll down to "Virtual" and select "V0", You can customize the button as you wish.

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5) Importing Arduino Project:

- 1) ☒ Launch Arduino IDE.
- 2) ☐ Go to File and click on Open.
- 3) ☐ Then go to Downloads or wherever you saved the project .INO file and click on it.

5.1)

- 4) ☐ Click on Open
- 5) ☐ Now, Hold Ctrl + F and in the dialog box copy and search this keyword “`char auth[]`” without the commas, And now paste your generated Auth code within the highlighted area.

Example:

```
char auth[] = "f1_dJF0xnTnRELQjAjRDvJLZOq_96Q23e";
```

- 6) ☐ Now again Hold Ctrl + F and copy and paste these texts individually one by one , First start with `char ssid[]` and then `char pass[]` and replace them with your WiFi Password and SSID / WiFi Name.

Example:

```
char ssid[] = "Your-WiFi-Name";
```

```
char pass[] = "Your-Wifi-Pass";
```

- 7) Finally , Click Save.

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5.2) Compiling and Uploading:

Now all there is left to do is Verify and Upload the code to your NodeMCU. Here is a step by step instruction.

- 1) ☐ After you completed adding your Auth , SSID & Pass , Now simply find the below buttons and first click on the “Tick” Symbol and wait for it to complete.

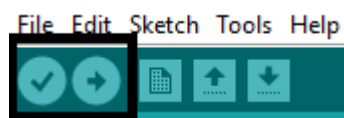


Figure 2 The first "Tick" is for Compiling and the 2nd "Arrow" starts the uploading process to the NodeMCU.

- 2) ☐ If successful , it should display a message like this below,

```
Done compiling.  
BSS      : 25552 )          - zeroed variables      (global, static) in RAM/HEAP  
Sketch uses 279624 bytes (26%) of program storage space. Maximum is 1044464 bytes  
Global variables use 29100 bytes (35%) of dynamic memory, leaving 52820 bytes for
```

Figure 3 After successfully uploaded it shows these lines in the output panel.

- 3) ☒ Now Open Device Manager, And Under Ports you should find a device called “Silicon Labs CP210x USB to UART Bridge” or similar, Note down the COM Port number next to it.

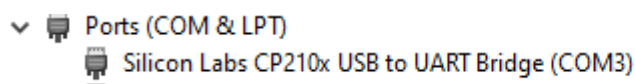


Figure 4 In Device Manager, Sometimes you have to Refresh and Unplug and Replug to make it appear, When successful you should see something similar to this image.

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- 4) ☐ Now lastly, Go to Tools-> Boards, And verify that its showing NodeMCU.
- 5) ☐ And confirm the COM Port number and click on the right arrow icon which will start the uploading process.

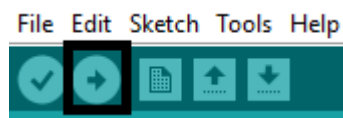


Figure 5 Clicking the "Arrow" will start uploading the code.

- 6) ☐ When successful, It should say "Hard Resetting via RTS pin"

That's it! Now the last step is setting up BLYNK.

You have successfully completed all the steps to setup and get your Motion Sensor working!

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TIP: This is optional , but it lets you control how many times you want to be notified when motion is detected and how much range in which you want the detection to be active.

6) Calibration OF SR-501:

You can also calibrate the SR-501 Sensor by turning the potentiometers using a screwdriver ,

6.1) Sensitivity Adjustment

The PIR sensor has a potentiometer on the back to adjust the sensitivity.

Rotating the pot clockwise will increase the sensitivity and thus the range, and vice versa.

6.2) Time-Delay Adjustment

There is another potentiometer on the back of the PIR sensor to adjust the Time-Delay.

Turning the potentiometer clockwise increases the delay, while turning the potentiometer counter-clockwise decreases the delay.

6.3) Trigger Selection Jumper

There are two trigger modes that determine how the sensor will react when motion is detected.

Single Trigger Mode (L): The constant motion will cause a single trigger.

Multiple Trigger Mode (H): The constant motion will cause a series of triggers.

The board comes with a berg jumper (some modules have a solder bridge jumper) allowing you to choose one of two modes.

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7) For any more help,

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Thank You for being a valuable customer to 3DUnify!