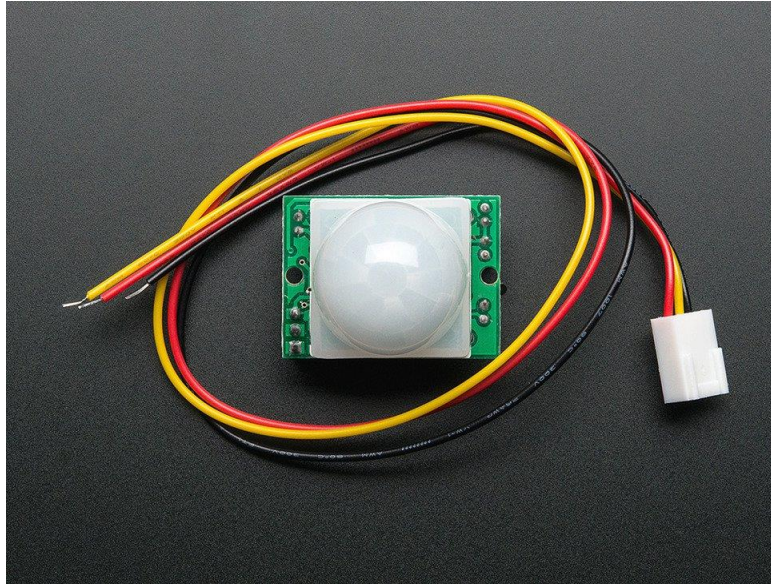


CMPT 433

How to connect Adafruit's PIR Motion Sensor to the BeagleBone Green



<https://www.adafruit.com/product/189>

Group: Embedded Enthusiasts

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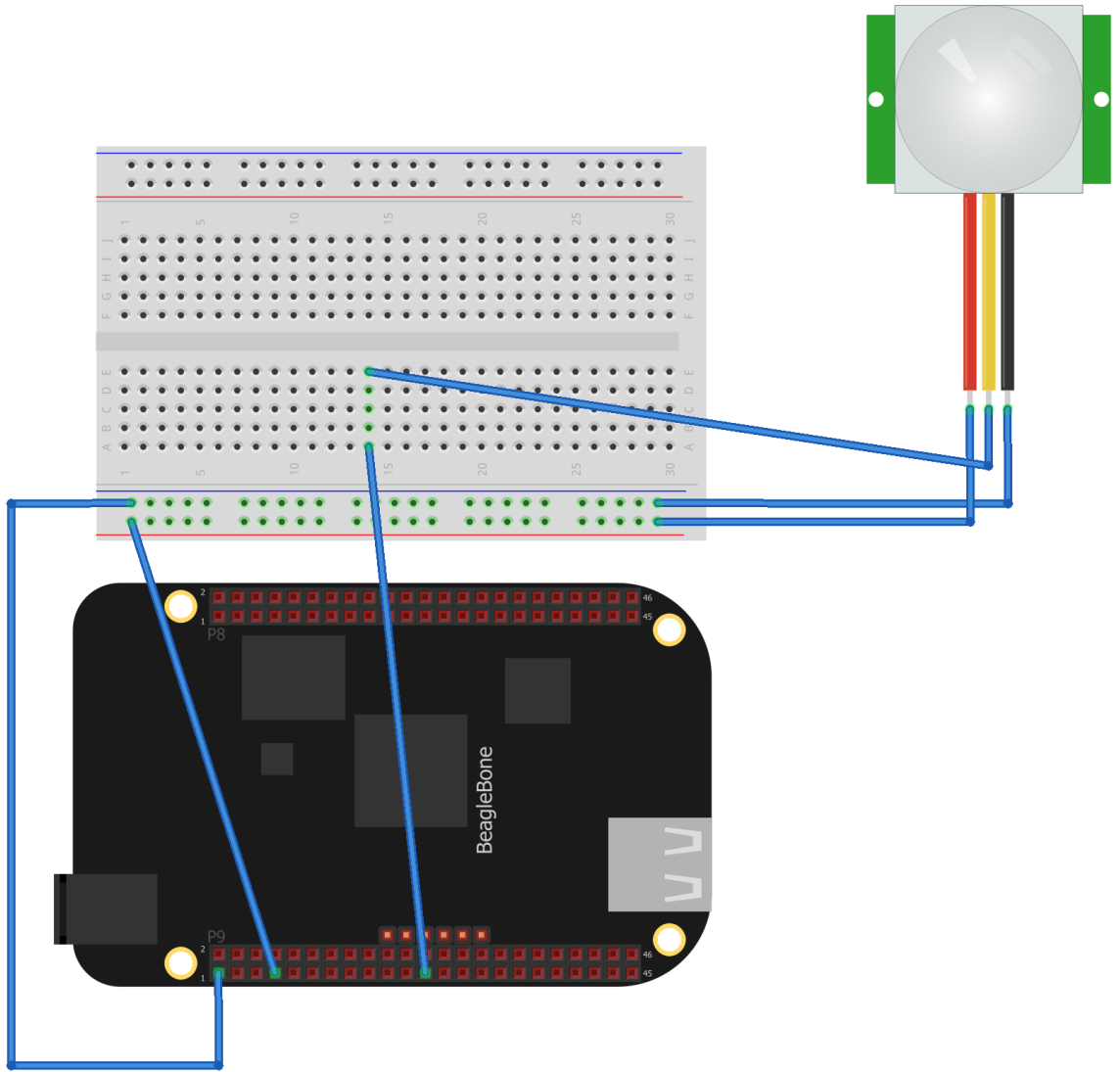
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Wiring up the PIR motion sensor to the BeagleBone Green

1. Make sure the BeagleBone Green is powered off.
2. Connect the BeagleBone Green's DGND pin (P9#1) to a – (blue) bar on the breadboard.
3. Connect the PIR Motion Sensor's GND pin to the same – (blue) bar you used in the previous step. This connects the motion sensor's GND pin to the BeagleBone Green's DGND pin.
4. Connect the BeagleBone Green's SYS_5V pin (P9#7) to a + (red) bar on the breadboard.
5. Connect the PIR Motion Sensor's +5V pin to the same + (red) bar you used in the previous step. This connects the motion sensor's +5V pin to the BeagleBone Green's SYS_5V pin.
6. Connect the BeagleBone Green's GPIO_49 pin (P9#23) to any 5-slot column on the breadboard.
7. Connect the PIR Motion Sensor's OUT pin to the same 5-slot column you used in the previous step. This connects the motion sensor's OUT pin to the BeagleBone Green's GPIO_49 pin.
8. Note: You do not have to use the GPIO_49 pin. Any unused GPIO pin will do. Just make sure it is not being used (by the ZEN Cape, for example).
9. You can now plug in your BeagleBone to your host.

See the next page for the wiring diagram



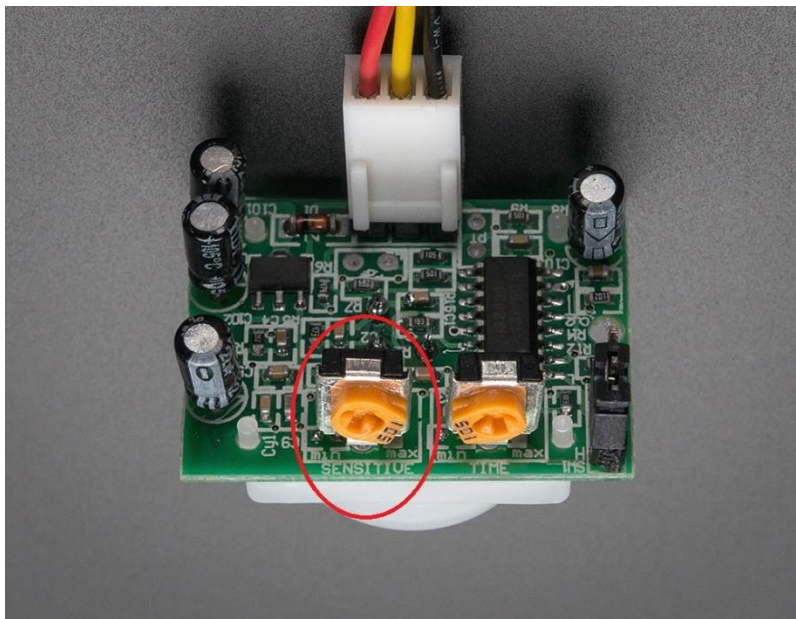
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Reading the motion sensor's input on the target (assuming you used the GPIO_49 pin)

1. Change to the sysfs directory for GPIO:
cd /sys/class/gpio
2. Export GPIO_49:
echo 49 > export
3. Change to the new gpio49 directory:
cd gpio49
4. Configure the pin as an input:
echo in > direction
5. Read the value (it reads 1 if the motion sensor detects movement, 0 otherwise):
cat value
6. To read the value from a C program, refer to the GPIO guide on the course website

Changing the motion sensor's sensitivity

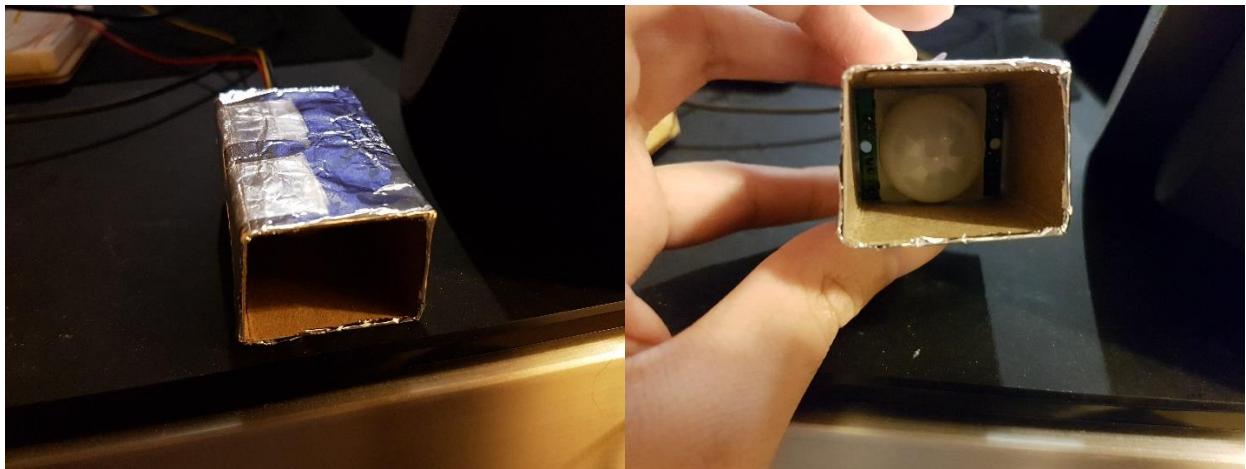
To change the motion sensor's sensitivity, you have to do it through the hardware:



Turning the SENSITIVE knob counter-clockwise decreases the sensitivity. Turning it clockwise increases the sensitivity. You can use a flat-head screwdriver to do this.

Troubleshooting

Even in the lowest sensitivity, you may still find the motion sensor to be too sensitive (especially on its sides). If this is the case, the solution that worked for us was to wrap the motion sensor with an aluminum-wrapped cardboard box as shown below:



Reference

Course GPIO Guide:

<http://www.cs.sfu.ca/CourseCentral/433/bfraser/other/GPIOGuide.pdf>

Adafruit's PIR Motion Sensor page:

<https://learn.adafruit.com/pir-passive-infrared-proximity-motion-sensor/overview>

<https://learn.adafruit.com/pir-passive-infrared-proximity-motion-sensor/testing-a-pir>