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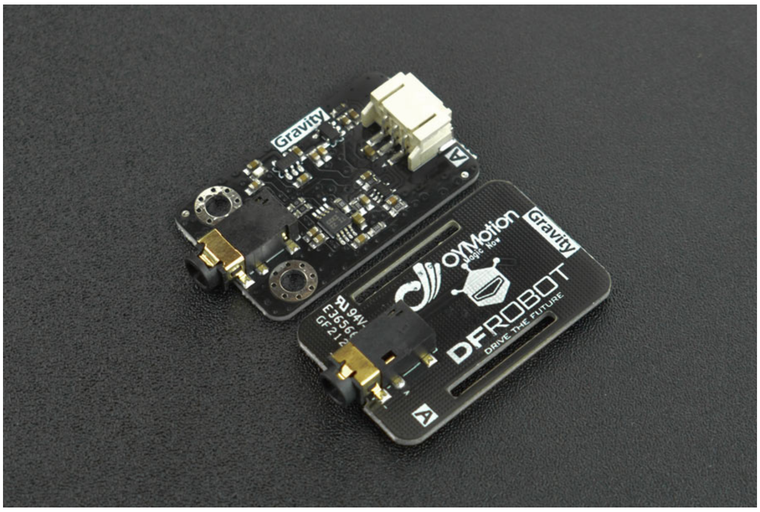

Gravity: Analog EMG Sensor by OYM

SKU:SEN0240 Brand:DFRobot Reward Points: 495

$49.50

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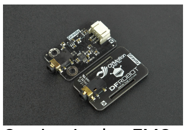
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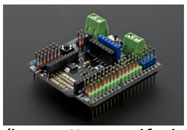
(https://www.dfrob 1009.html)
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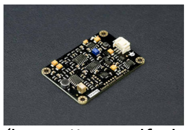

(https://www.dfrob 1663.html)
=
You h… Tota…
BU…

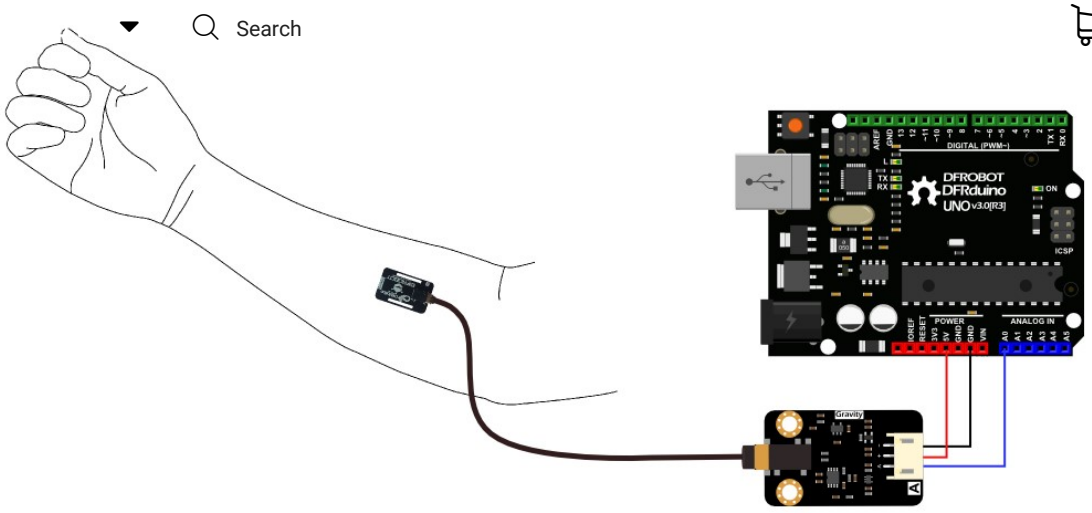
INTRODUCTION

This EMG sensor is launched by the cooperation of DFRobot and OYMotion, which can detect sEMG to reflect muscle and neural activities of human.

This sensor integrates filtering circuit and amplified circuit. It amplifies minimal sEMG within ±1.5mV 1000 times and depresses noises (especially power frequency interference) by differential input and analog filter circuit. The output signal is analog，which takes 1.5V as the reference voltage. The output voltage range is 0~3.0V. The signal strength depends on the intensity of muscle activities. The output signal waveform indicates the muscle activity and contributes to analyze and research the sEMG. Specifically, we can use Arduino as a controller to detect muscle activities, e.g. check whether the muscle is tense; the muscle strength, etc.

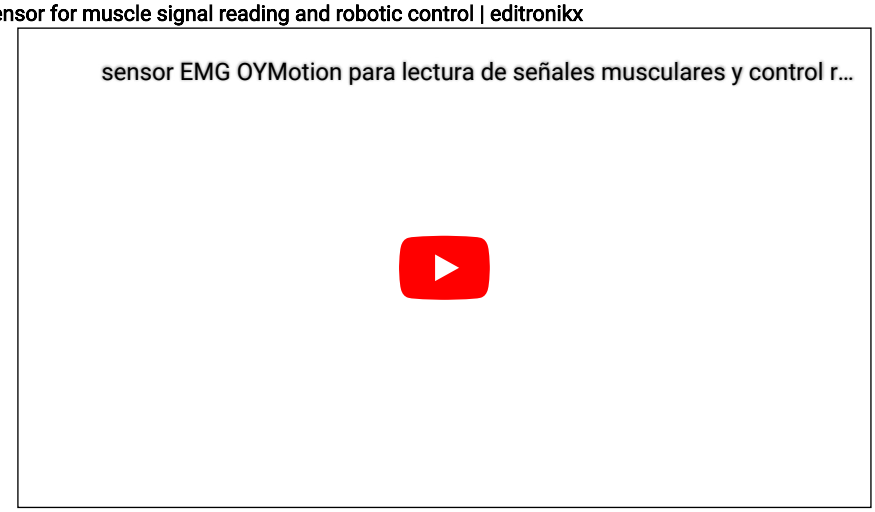
This is an active induction sensor can provide high quality signal collection and it is easy to use. Only simple preparations are needed to apply the module for either static or dynamic areas. Dry electrode is applied to the module and good quality signal are available even without conductive gel. Compared with disposable conductive gel needed by medical electrodes, it is more convenient to use and extend its long-life service. Therefore, it is more suitable for most of users.

Measurements with an analog EMG sensor are noninvasive, convenient and this can be applied in human-computer interactions. With the development of microcontrollers and integrated electric circuits, EMG circuits and sensors have not been applied to traditional medical muscle detection researches but control systems.



Connect EMG Sensor with Arduino

OYMotion EMG sensor for muscle signal reading and robotic control | editronikx



Attention:
1. The supply voltage range is 3.3~5.5V; The supply current should not be less than 20mA; The ripple current and disturbance current should be as low as possible. Stabilized DC voltage is recommended.
2. The effective spectrum range is 20Hz ~ 500Hz, and the ADC converter which has higher than 8-bit resolution and 1 kHz frequency are recommended to take samples and digitized to keep original information.
3. Placing the metal dry electrode should consistent with the direction of muscle.
4. The product is not a professional medical device and cannot diagnose and cure disease as an assistant device.

FEATURES

- Metal Dry Electrode: long life, easy to use
- Differential input, high common mode rejection ratio
- Low power consumption
- Single power supply

SPECIFICATION

Signal Transmitter Board

- Supply Voltage: +3.3V ~ 5.5V
- Operating Voltage: +3.0V
- Detection Range: +/-1.5mV
- Electrode Connector: PJ-342
- Module Connector: PH2.0-3P
- Output Voltage: 0 ~ 3.0V
- Operating Temperature: 0 ~ 50℃
- Size: 22mm*35mm (0.87inch*1.38inch)

Dry Electrode Board

- Electrode Connector: PJ-342

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- Wire Length: 50cm(19.69inch)
- Plate Size: 22 * 35 mm (0.87*1.38inches)
- weight: 36g

PROJECTS

Project 1. Head-mounted Myoelectric Mouse (https://www.dfrobot.com/blog-765.html)
Parts in need:
Arduino Leonardo Microcontroller (https://www.dfrobot.com/product-832.html)
Gravity : Digital Buzzer for Arduino (https://www.dfrobot.com/product-84.html)
Gravity: Analog EMG Sensor by OYMotion (https://www.dfrobot.com/product-1661.html)
6 DOF IMU Shield For Arduino (https://www.dfrobot.com/product-788.html)
Speech Module (https://www.dfrobot.com/product-1086.html)

Project 2 A Christmas present for cute kid & girl - A Clever Rabbit Hat - an EMG sensor based (https://www.dfrobot.com/blog-1129.html)
Things you may need in this project:

- Gravity: Analog EMG Sensor by OYMotion (https://www.dfrobot.com/product-1661.html) ×1
- Beetle - The Smallest Arduino (https://www.dfrobot.com/product-1075.html) ×1
- Lithium Battery Charger (https://www.dfrobot.com/product-851.html) ×1
- 3.7 V Lithium Battery ×1
- 9g 180° Micro Servo (https://www.dfrobot.com/product-255.html) ×2
- Rabbit Hat ×1
- Needles and Thread
- Two-step Toggle Switch ×1
- Elastic (Width: 1.5cm Length: 40cm) ×1
- Stick ×2
- Hot Melt Adhesive

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DOCUMENTS

Product wiki (https://www.dfrobot.com/wiki/index.php/Analog_EMG_Sensor_by_OYMotion_SKU:SEN0240)
More Documents
(https://www.dfrobot.com/wiki/index.php/Analog_EMG_Sensor_by_OYMotion_SKU:SEN0240#More_Documents)

SHIPPING LIST

- EMG Dry Electrode Board x1
- Wrist Belt x1
- Electrode Cable x1
- EMG Signal Transmitter Board x1
- Gravity Analog Cable 3Pin x1

REVIEW

FAQ

109 Comments SNG Film

Join the discussion…

Sort by Best

Akshay Chavan • 4 years ago
hello i have purchased this sensor m getting so much of trouble while connecting this sensor valuem getting is above 490000 , m attaching the pictures of it below kindly suggest me what can be done
5 • Reply • Share ›

DFRobot Support Mod → Akshay Chavan • 4 years ago
Set the sensor in your arm, and keep calm, after a while the reading would be lower than 400, you can set the zero point then. Can your sensor's reading lower down to 400?
1 • Reply • Share ›

Marco Romani Vasquez ➚ DFRobot Support • 3 years ago

I get an equal error, with high values, I have expected and never falls below that range, how can I fix it?

▲ | ▼ • Reply • Share ›

DFRobot Support Mod ➚ Marco Romani Vasquez • 3 years ago

Hey Marco, can you email techsupport@dfrobot.com with your exact setup. Since this module is dependant on a solid conenction to your muscles, it would be helpful if you supplied a picture of how you are trying to obtain readings.

▲ | ▼ • Reply • Share ›

walter chamba • 5 months ago

Buenas noches alguien me puede ayudar con el código de los servomotores no logro que trabaje

1 ▲ | ▼ • Reply • Share ›

carlo • a year ago

What gestures can it recognize? can it recognize single finger movements? I'm planning to create a Bluetooth mouse and the functions would be triggered through hand specifically finger movements. Thank you and Keep Safe!

▲ | ▼ • Reply • Share ›

DFRobot Support Mod ➚ carlo • 10 months ago

Hi, the sensor acquires muscle electrical signals, and due to the large size of the module, it is not recommended to wear it on the finger

▲ | ▼ • Reply • Share ›

Francisco Rodriguez • a year ago

Hello, where can I get the 3D model of the Signal Transmitter Board? I want to put it on top of a PCB and I need the location of the screw holes. And which screws does it use?

▲ | ▼ • Reply • Share ›

DFRobot Support Mod ➚ Francisco Rodriguez • a year ago

Sorry we don't have a size file, the positioning hole on this module has a diameter of 3mm

▲ | ▼ • Reply • Share ›

박채운 • a year ago

hello i have purchased this sensor for my project and i have question about function of this sensor about filter. In INTRODUCTION of document about this sensor, there is sentence like "This sensor integrates filtering circuit and amplified circuit." and i think it might contain analog filter IC. Here are my questions.
1. What kind of filter does this sensor contain?(e.g. low pass filter, notch filter)
2. and what is the cut-off frequency of that analog filter?
Please reply to me ASAP! thanks!

▲ | ▼ • Reply • Share ›

Raztou3D • a year ago

Hi all,

While all is working, I need more data from my sensors. To do so, I want to use your EMGFilter library, however, EMG signal are active between 5 and 450 Hz. So I feel that your 20 and 150 Hz cutoff frequencies are trimming too much of the signal.

Could you please tell me what the coefficients would be for my proposed cut-off frequencies? I am aware that with such request, I will have to use the 1000Hz sampling frequency and won't use the 500Hz one.

In short, how do I adapt the following lines to 450Hz LPF and 5Hz HPF ?

```
// coefficients of transfer function of LPF
// coef[sampleFreqInd][order]
static float lpf_numerator_coef[2][3] = {{0.3913, 0.7827, 0.3913},
{0.1311, 0.2622, 0.1311}};
static float lpf_denominator_coef[2][3] = {{1.0000, 0.3695, 0.1958},
{1.0000, -0.7478, 0.2722}};
// coefficients of transfer function of HPF
static float hpf_numerator_coef[2][3] = {{0.8371, -1.6742, 0.8371},
{0.9150, -1.8299, 0.9150}};
static float hpf_denominator_coef[2][3] = {{1.0000, -1.6475, 0.7009},
{1.0000, -1.8227, 0.8372}};
```

Thanks in advance for your help !

▲ | ▼ • Reply • Share ›

Neonil Rosca • 2 years ago

Hi i have the same issue with this sensor the values are above 1000 and nothing is detected when i flex the muscle

▲ | ▼ • Reply • Share ›

DFRobot Support Mod ➚ Neonil Rosca • 2 years ago • edited

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Hi Neonil,
Could you follow the WIKI and calibrate it correctly in the first place?
Reply • Share ›

Neonil Rosca ➚ DFRobot Support • 2 years ago
Hi can you send a link to the calibration or explain it.
Reply • Share ›

Neonil Rosca ➚ Neonil Rosca • 2 years ago
i tried the sketch that says to set the treshold to zero and find the maximun value when relaxed bu with that the value is always high and is not changing
Reply • Share ›

DFRobot Support Mod ➚ Neonil Rosca • 2 years ago
Could you please follow this WIKI and try again.

https://wiki.dfrobot.com/An...

Please make sure to install the correct library and follow the calibration steps correctly.
Reply • Share ›

Neonil Rosca ➚ DFRobot Support • 2 years ago
Hey DFRobot, i found the issue.
The problem is not with the code or calibration but in the humidity of the skin.
I think that will be nice to mention that in the wiki.
also maybe you can find some some solutions (like a gel or some liquid or mabe the shape of the PCB) to improve the connection between the skin and the sensor.
I hope that this comment will help other people that have this issue because i found a large nr. of users with this exact problem.
1 Reply • Share ›

DFRobot Support Mod ➚ Neonil Rosca • 2 years ago
Hey,

Thanks for your valuable feedback.
Reply • Share ›

Ah Chung • 2 years ago
Hello, I am a MAC user, I have followed the wiki instruction and installed the EMGfilter library in the Arduino IDE, however, everytime I run the verify or upload , the error message popup as below. Please help, thank you so much.

/Users/chungpolyu/Documents/Arduino/sketch_nov16e/sketch_nov16e.ino: In function 'void setup()':
/Users/chungpolyu/Documents/Arduino/sketch_nov16e/sketch_nov16e.ino:67:56: warning: invalid conversion from 'int' to 'SAMPLE_FREQUENCY' [-fpermissive]
myFilter.init(sampleRate, humFreq, true, true, true);
^
In file included from /Users/chungpolyu/Documents/Arduino/sketch_nov16e/sketch_nov16e.ino:38:0:
/Users/chungpolyu/Documents/Arduino/libraries/EMGFilters/EMGFilters.h:57:10: note: initializing argument 1 of 'void EMGFilters::init(SAMPLE_FREQUENCY, NOTCH_FREQUENCY, bool, bool, bool)'
void init(SAMPLE_FREQUENCY sampleFreq,
^~~~
/Users/chungpolyu/Documents/Arduino/sketch_nov16e/sketch_nov16e.ino:67:56: warning: invalid conversion from 'int' to 'NOTCH_FREQUENCY' [-fpermissive]
myFilter.init(sampleRate, humFreq, true, true, true);
^
In file included from /Users/chungpolyu/Documents/Arduino/sketch_nov16e/sketch_nov16e.ino:38:0:
/Users/chungpolyu/Documents/Arduino/libraries/EMGFilters/EMGFilters.h:57:10: note: initializing argument 2 of 'void EMGFilters::init(SAMPLE_FREQUENCY, NOTCH_FREQUENCY, bool, bool, bool)'
void init(SAMPLE_FREQUENCY sampleFreq,
^~~~
Sketch uses 4680 bytes (14%) of program storage space. Maximum is 32256 bytes.
Global variables use 442 bytes (21%) of dynamic memory, leaving 1606 bytes for local variables. Maximum is 2048 bytes.
Reply • Share ›

Josue Daniel Martinez Hernande • 2 years ago
Do you have more technical information about the sensor such as the SNR or CMRR value?
Reply • Share ›

Kean Mun • 2 years ago
Hello, I've recently purchased this sensor and have attempted to use the sample code as per the description provided in the wiki, however the values I'm getting are above 1000, which the wiki mentioned is problematic. Could you kindly help me on this?
Reply • Share ›

Kean Mun ➚ Kean Mun • 2 years ago

!! seems that this is a common problem for a lot of people, and after contacting tech support, it apparently only works for people with an average or slightly higher than average body fat percentage

Reply • Share ›

DFRobot Support Mod ➚ Kean Mun • 2 years ago

Hi, We are going to make a video regarding its usage and accuracy, and release it soon.

Reply • Share ›

braulio| • 2 years ago

hola buen dia una pregunta si ago un pedido hasta tehuacan puebla mexico si yega el envo hasta aqui?

Reply • Share ›

Maxime • 3 years ago

Hello, i have purchased this sensor, but the library given "EMGFilter" on github is empty and arduino return this : "Specified folder/Zip file does not contain a valid library." Can you help me?

Reply • Share ›

DFRobot Support Mod ➚ Maxime • 3 years ago

Hi,
You need to decompress the zip file, then put the decompressed package in the library, and you need to ensure that the .cpp and .h files are in the first-level directory of the EMG file package

Reply • Share ›

eng master95 • 3 years ago

Hi
I bought this sensor. The reading is fluctuating, and there is no noticeable change when I contract the muscle, also I feel with a light electrical pulse on the skin.

Reply • Share ›

DFRobot Support Mod ➚ eng master95 • 3 years ago

Hi
Do you have any calibration steps?
And are you thin?

Reply • Share ›

Jeogus • 3 years ago

When I run the example code, I got an error. I manually installed the EMG filter library
how do I solve it?

void init(SAMPLE_FREQUENCY sampleFreq,

^

exit status 1
invalid conversion from 'int' to 'SAMPLE_FREQUENCY' [-fpermissive]

Reply • Share ›

DFRobot Support Mod ➚ Jeogus • 3 years ago

Hi
Add sensor library to your Arduino IDE libraries.

1 • Reply • Share ›

Raztou3D ➚ DFRobot Support • 2 years ago • edited

Hi, tried this several times now ... but I still get the same issue !
I can find the "EMGFilters" under Sketch-> Include Library->"Contributed Libraries"->EMGFilters. When I select it it just adds the line "#include <emgfilters.h>" at the top of my file ... but doesn't clear the error on compilation ! Please help !
Also, I am trying to run the code on an Arduino Nano 33 BLE (maybe this can help).

Reply • Share ›

Raztou3D ➚ Raztou3D • 2 years ago

For all the people with the "invalid conversion from 'int' to 'SAMPLE_FREQUENCY' [-fpermissive]" issue I found an easy solution ... in the code, just replace these two lines :

int sampleRate = SAMPLE_FREQ_1000HZ;
int humFreq = NOTCH_FREQ_50HZ;

by these two :
SAMPLE_FREQUENCY sampleRate = SAMPLE_FREQ_1000HZ;
NOTCH_FREQUENCY humFreq = NOTCH_FREQ_50HZ;

Explanation : you avoid the error by giving the right type to the variable from the start, so no non-supported conversions to be made ...

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And voila :)

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Sofiane.Kɒz • 3 years ago

hi I have a problem when I launch the arduino IDE series monitor to check the value that is 0 no matter what I do.

Reply • Share ›

DFRobot Support Mod ➚ Sofiane.Kɒz • 3 years ago

Hi
When we use thie sensor, we need to make sure we are strong people.
In our company tests, many thin boys and girls usually do not detect any EMG values.

Reply • Share ›

Sofiane.Kɒz ➚ DFRobot Support • 3 years ago

what do I have to do then? your emg doesn't work with thin people !!!!!!?

Reply • Share ›

DFRobot Support Mod ➚ Sofiane.Kɒz • 3 years ago • edited

Im sorry
But if you can find one stronger people,or put this sensor on your body which stronger than your arm.....
Don't forget to calibration it.

Reply • Share ›

Justin Lee • 3 years ago

i have downloaded the arduion 1.8 for mac osx. i have copied the sample code and i am still not able to get this thing to work. can someone on here please give me step by step instructions along with the correct code so that i can make this work. i keep getting error messages about emgfilters.h library not included.

Look i am a total rookie on this stuff and don't know what i am doing.

heres what i need to do...
1.make the beetle ble and emg sensor broadcast to a program to show me what the muscle voltages are. right now i have the beetle plugged into my usb port on my iMac

Someone please help because this is completely frustrating me.

Reply • Share ›

Justin Lee ➚ Justin Lee • 3 years ago

this is the error message i get

Build options changed, rebuilding all

/Users/justinlee/Documents/Arduino/sketch_oct12d/sketch_oct12d.ino:16:24: fatal error: EMGFilters.h: No such file or directory

#include "EMGFilters.h"

^

compilation terminated.

exit status 1

Error compiling for board Arduino/Genuino Uno.

Reply • Share ›

Justin Lee ➚ Justin Lee • 3 years ago

Arduino: 1.8.5 (Mac OS X), Board: "Arduino/Genuino Uno"

Build options changed, rebuilding all

/Users/justinlee/Documents/Arduino/sketch_oct12d/sketch_oct12d.ino:16:24: fatal error: EMGFilters.h: No such file or directory

#include "EMGFilters.h"

^

compilation terminated.

exit status 1

Error compiling for board Arduino/Genuino Uno.

This report would have more information with

"Show verbose output during compilation"

option enabled in File -> Preferences.

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DFRobot Support Mod ➚ Justin Lee • 3 years ago

Hey Justin,

In your Arduino IDE can you please reimport the EMGFilters library. They can be downlaoded here: https://codeload.github.com... . To install a library from a zip file you can follow Arduino's offical instructions here: https://www.arduino.cc/en/G... . Please follow the instructions under the "Importing a .zip Library". Let us know if that error still persists after installing the library.

• Reply • Share ›

Justin Lee ➚ DFRobot Support • 3 years ago

is there any way you can just type out the code for how it should look so that i can just paste it into IDE so it will work please?
as someone who is completely new to this.

• Reply • Share ›

DFRobot Support Mod ➚ Justin Lee • 3 years ago

Unfortunately you must have the library installed for the code to work and that can not be pasted into the IDE. After the libraries are installed , our sample code should work with no problems.

• Reply • Share ›

Justin Lee ➚ DFRobot Support • 3 years ago

ARDUINO ide refuses to upload the zip library

• Reply • Share ›

DFRobot Support Mod ➚ Justin Lee • 3 years ago

If that is the case, can you follow the manual installation instructions.

• Reply • Share ›

Justin Lee ➚ DFRobot Support • 3 years ago

would you please try and copy the code that you have on the page and try to run it either on the arduino web editor or on the 1.8.5 ide and tell me what happens

• Reply • Share ›

Justin Lee ➚ DFRobot Support • 3 years ago • edited

i was able to import the emg filters.
when i hit verify this is what came up...
/home/builder/opt/arduino-builder/arduino-builder -compile -core-api-version 10611 -hardware /home/builder/opt/arduino-builder/hardware -hardware /home/builder/.arduino15/packages -tools /home/builder/opt/arduino-builder/tools -tools /home/builder/.arduino15/packages -built-in-libraries /home/builder/opt/libraries/latest -logger humantags -fqbn arduino:avr:uno -build-cache /tmp -build-path /tmp/084939791/build -verbose -prefs runtime.tools.avrdude.path=/home/builder/.arduino15/packages/arduino/tools/avrdude/6.3.0-arduino14 -prefs runtime.tools.bossac.path=/home/builder/.arduino15/packages/industruino/tools/bossac/1.7.0-industruino -prefs runtime.tools.x86-linux-gcc.path=/home/builder/.arduino15/packages/arduino/tools/x86-linux-gcc/7.2.0 -prefs runtime.tools.arduino101load.path=/home/builder/.arduino15/packages/Intel/tools/arduino101load/2.0.1 -prefs runtime.tools.linuxuploader.path=/home/builder/.arduino15/packages/arduino/tools/linuxuploader/1.5.1 -prefs runtime.tools.arm-linux-gcc.path=/home/builder/.arduino15/packages/arduino/tools/arm-linux-gcc/4.9.3 -prefs runtime.tools.arm-none-eabi-gcc.path=/home/builder/.arduino15/packages/arduino/tools/arm-none-eabi-gcc/7-2017q4 -prefs runtime.tools.esptool.path=/home/builder/.arduino15/packages/esp8266/tools/esptool/2.5.0-3-20ed2b9 -prefs runtime.tools.core2-32-poky-linux.path=/home/builder/.arduino15/packages/Intel/tools/core2-32-poky-

see more

• Reply • Share ›

DFRobot Support Mod ➚ Justin Lee • 3 years ago

Hey Justin, can you unzip the library I posted above and then drag the folder titled "EMGFilters" into your Arduino/libraries directory. I have just confirmed that both this method and the above code worked with this library and implementation method.

• Reply • Share ›

Justin Lee ➚ DFRobot Support • 3 years ago

LIBRARIES THAT COULD NOT BE IMPORTED:

[EMGFilters] parse library.properties: library.properties not found

• Reply • Share ›

DFRobot Support Mod ➚ Justin Lee • 3 years ago

you just need to add this library file to the Arduino IDE's libaries file directory.

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eng master95 • 3 years ago

Hello, I am working on a project of manufacturing a powered prosthesis for below-knee amputees, which works using EMG signals. In such a case, the sensor is positioned under a socket which is a critical pressured place. I tried a Myoware muscle sensor and it had a bad accuracy, maybe that because it was in a pressured position. Is this sensor will act better?

Reply • Share ›

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