

1. Introduction

Congratulations on your purchase of a SingleTact sensor system!

The SingleTact sensor interface module is the ideal way to interface your SingleTact pressure sensor with an external system or standalone product. This method is suitable for beginners and expert designers alike, and can be used to directly implement tactile pressure sensing in your application

This quick start guide will show you how to set up your SingleTact interface system and begin taking recorded measurements in both the analogue and digital domains.

If you are using the SingleTact USB system, please refer to the separate USB quick start guide.

Some important things to note are:

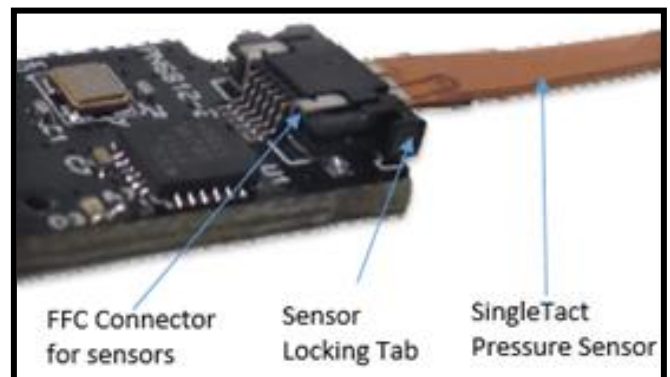
- The SingleTact interface board is an intermediate level tool, allowing pressure/force measurements to be interfaced with external standalone systems.
- The interface module requires external circuitry in order to be used (microcontroller or analogue controller).
- Each board can interface with a single SingleTact pressure sensor only.
- Multiple boards can be connected to an external controller.
- The SingleTact interface board features an analogue output and a configurable I²C output as standard.
- Our new **BLACK** modules are compatible with all SingleTact sensors, and tail extenders.
- Our obsolete **GREEN** modules are not compatible with SingleTact tail extenders.

2. Setting up your SingleTact System

2.1. Installing the Sensor (All Applications)

Connecting the SingleTact sensors to the interface board is simple, but care must be taken not to damage your sensor.

- Pull out the Sensor Locking Tab gently (it will move about 2mm, take care not to damage it).
- Insert the SingleTact sensor of your choice into the FFC Connector, taking care to match the orientation as shown on the right image.
- Push in the Sensor Locking Tab to secure the sensor in place.



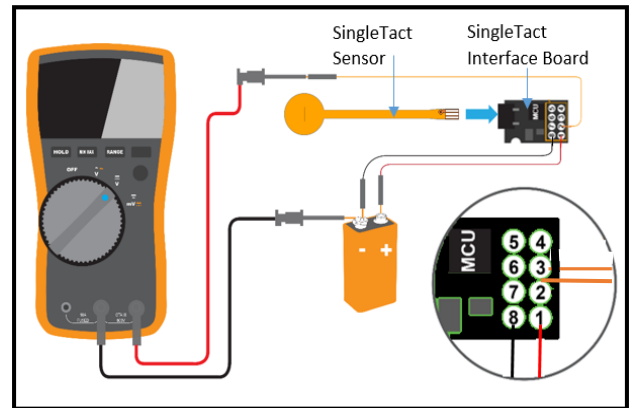
You are now ready to move onto preparing the SingleTact system for either analogue or digital outputs, whichever you need for your application!

2.2. Analogue Output

To use the analogue output from the SingleTact interface board:

- Connect the sensor to the interface board as described in section 2.1
- Connect a positive supply (3.7V to 9V) to pin 1 and ground (0V) to pin 8 as shown in the image
- Measure the voltage on pin 2 with a voltmeter, oscilloscope, or microcontroller

You can now make force measurements in the analogue domain!



The analog output swings from **0V** to **2V**, with valid outputs ranging from **0.5V** (no force) to **1.5V** (FSR force)

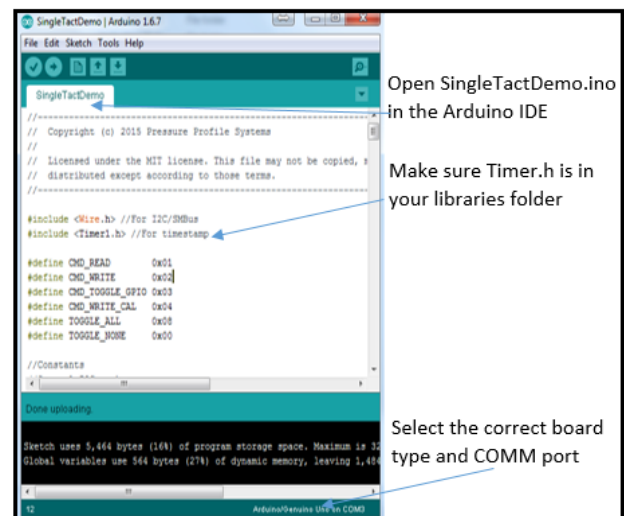
As pressure increases beyond the full-scale range (FSR), the output increases to **2V** and then saturates.

2.3. Digital I²C Output

This section is for using an Arduino Uno to read data from the SingleTact sensor. This is the recommended method. For other I²C implementations on MSP430 and Raspberry Pi, or using multiple sensors, consult the relevant application note. For custom implementations on other platforms, consult the manual.

NOTE: You should always program your Arduino, or other hardware, before connecting your sensor. Failure to do this can damage your SingleTact. Unplug the Arduino before making hardware changes.

- Download and install the Arduino Software from: <https://www.arduino.cc/en/main/software>
- Download the SingleTact Arduino firmware (ExampleArduinoInterface) from: http://www.singletact.com/SingleTact_latest_software.zip
- Connect the Arduino to the PC using a USB cable
- Open the Arduino IDE software
- In the Arduino Software:
 - Go to File --->Open and open "SingleTact Demo.ino"
 - Go to Sketch --->Include Library --->Add .zip Library and select "Timer1.zip"
 - Go to Sketch --->Verify/Compile
 - Go to Sketch ---> Upload. You should see "Done uploading" in the green bar, as shown on the right



QUICK START GUIDE

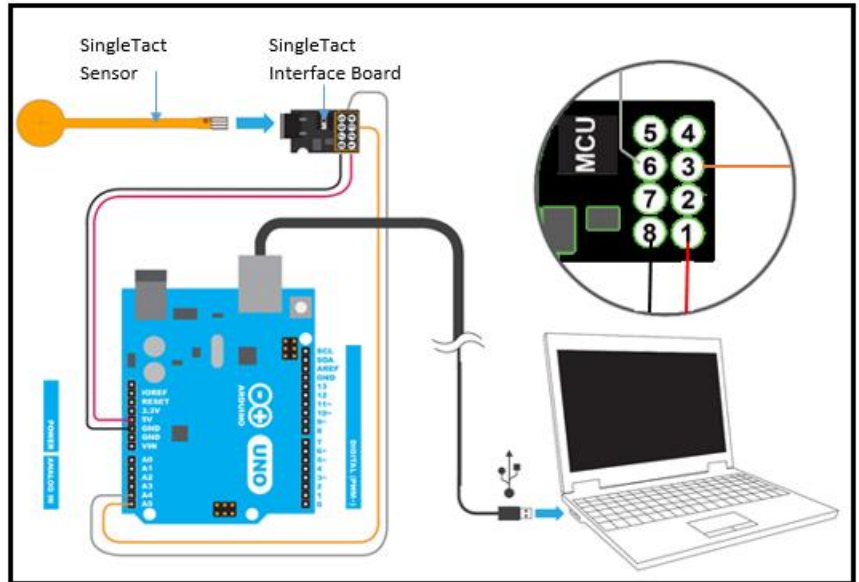
If you receive an error, make sure the Arduino is selected under Tools --->Port.

NOTE: USB communication may need additional driver installation from the Arduino software package.

NOTE: Program the Arduino before connecting the SingleTact sensor as shown below.

- Connect the sensor to the interface board as described in section 2.1
- Connect pin 1 to the Arduino 5V pin
- Connect pin 8 to the Arduino GND pin
- Connect pin 3 to Arduino pin A5 (SCL)
- Connect pin 6 to Arduino pin A4 (SDA)
- Connect the Arduino to the computer using a USB cable

You are now ready to begin making recorded measurements in the digital domain!



3. Making Measurements using the SingleTact DAQ Software

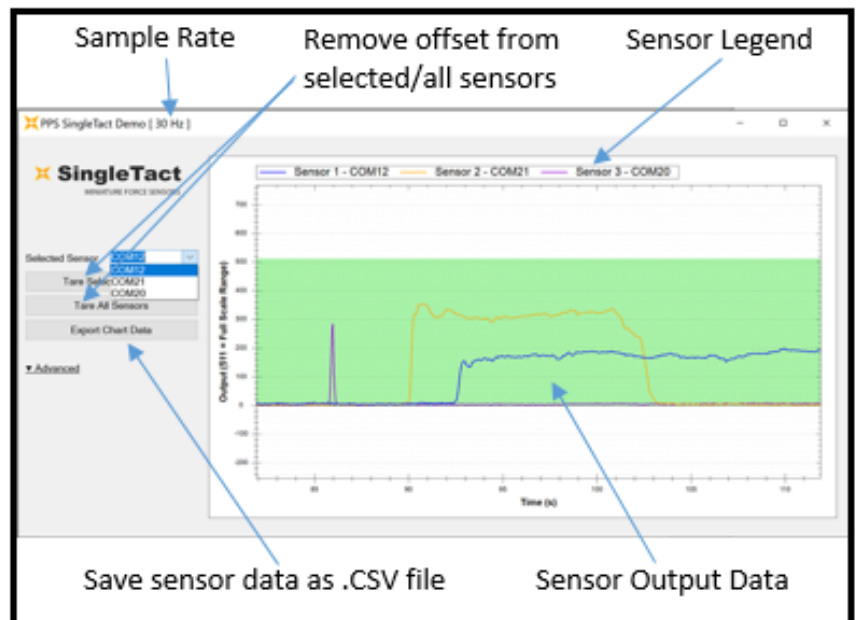
The SingleTact Data Acquisition (DAQ) software is the graphic user interface (GUI) GUI and recording tool for the SingleTact pressure sensors.

- Download the executable app from: <http://www.single tact.com/software-download/download-links/>
- Connect the assembled SingleTact system to the PC
- Run 'SingleTact Demo.exe'

The sensor data will be shown on the GUI graph. You can choose whether to interface with a single sensor or all at once.

The sensor data can be saved as a .CSV file for later analysis using the GUI.

You are now ready to use your SingleTact system to make pressure and force measurements!





Remember that the GUI is scaled from 0 to 511, and so the measured force will be given by the following equation, unless otherwise stated on the GUI:

$$Force = \frac{Output * Sensor Rating}{512} (N)$$

4. What's Next?

Additional information can be found in the detailed SingleTact manual, such as:

- Using SingleTact Tail Extenders
- Advanced DAQ Options
- Troubleshooting

The manual can be found here: http://www.singletact.com/SingleTact_Manual.pdf

If you are looking to use multiple sensors on a single microcontroller, or are wanting examples for the MSP430 and Raspberry Pi platforms, then consult the appropriate application notes: <https://www.singletact.com/app-notes/>

Assistance for your specific application may be found on our forum and community pages.

You can also post questions to our forums or share your project story via our community pages: <http://www.singletact.com/community/>