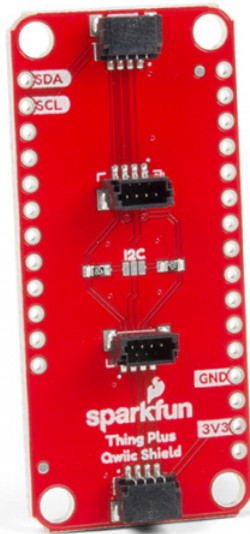


# SparkFun Qwiic Shield for Thing Plus Hookup Guide

## Introduction

The SparkFun Qwiic Shield for Thing Plus provides an easy-to-assemble way to add the SparkFun Qwiic ecosystem to any development board with the Thing Plus Footprint. This shield is also compatible with the Feather Footprint so you can add Qwiic functionality to any development board that uses the Thing Plus or Feather Footprints! It connects the I<sup>2</sup>C bus (GND, 3.3V, SDA, and SCL) on your Thing Plus to four SparkFun Qwiic connectors. The Qwiic ecosystem allows for easy daisy chaining so, as long as your devices are on different addresses, you can connect as many Qwiic devices as you'd like.



## SparkFun Qwiic Shield for Thing Plus

© DEV-16138

Product Showcase: SparkFun Thing Plus Qwiic Shield





## Required Materials

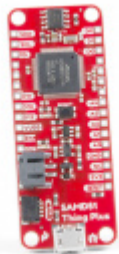
To follow along with this tutorial, you will need an Arduino development board with the Thing Plus footprint. This includes the all variants of the SparkFun Thing Plus boards and many other Thing Plus-compatible boards! Here are a few of the compatible boards:



SparkFun Thing Plus - ESP32 WROOM  
© WRL-15663



SparkFun Thing Plus - Artemis  
© WRL-15574



SparkFun Thing Plus - SAMD51  
© DEV-14713

You will also need some headers to solder to both your Thing Plus and Qwiic Shield:



Break Away Headers - Straight



Female Headers

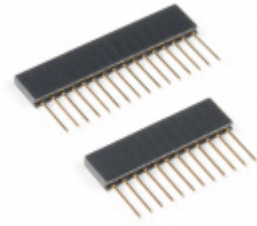
● PRT-00116



Break Away Headers - Long

● PRT-10158

● PRT-00115



Feather Stackable Header Kit

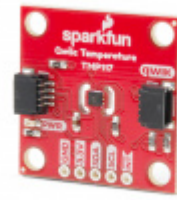
● PRT-15187

Now you probably would not want the Qwiic Shield for Thing Plus if you didn't have any Qwiic products to use with it, right? Well, if you don't have any Qwiic products, the following might not be a bad place to start:



SparkFun GPS Breakout - NEO-M9N, U.FL (Qwiic)

● GPS-15712



SparkFun High Precision Temperature Sensor - TMP117 (Qwiic)

● SEN-15805



SparkFun Qwiic Motor Driver

● ROB-15451



SparkFun Proximity Sensor Breakout - 20cm, VCNL4040 (Qwiic)

● SEN-15177

You will need some of our Qwiic cables to connect your devices to the shield. Below are a few options:



Qwiic Cable - 100mm

● PRT-14427



Qwiic Cable - 200mm

● PRT-14428



Qwiic Cable - 50mm

● PRT-14426



Qwiic Cable - 500mm

● PRT-14429

Lastly, if you want to use a non-Qwiic I<sup>2</sup>C device, these adapters help to convert it to a Qwiic connector:



Qwiic Cable - Breadboard Jumper (4-pin)

● PRT-14425



SparkFun Qwiic Adapter

● DEV-14495



Qwiic Cable - Female Jumper (4-pin)

● CAB-14988

## Required Tools

You will need a soldering iron, solder, and general soldering accessories to solder the header pins to the Qwiic shields:



Soldering Iron - 30W (US, 110V)

🔗 TOL-09507



Solder Lead Free - 15-gram Tube

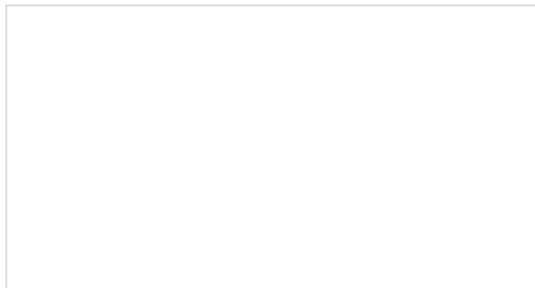
🔗 TOL-09163

## Suggested Reading

If you aren't familiar with the Qwiic system, we recommend reading here for an overview:

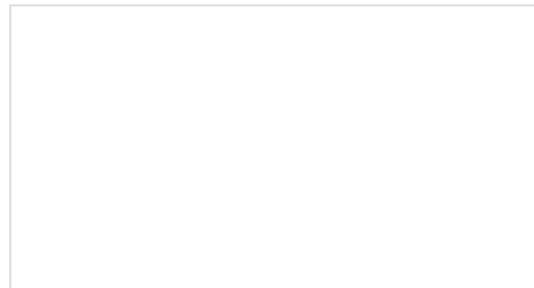


We would also recommend taking a look at the following tutorials if you aren't familiar with them:



### How to Solder: Through-Hole Soldering

This tutorial covers everything you need to know about through-hole soldering.



### Arduino Shields

All things Arduino Shields. What they are and how to assemble them.



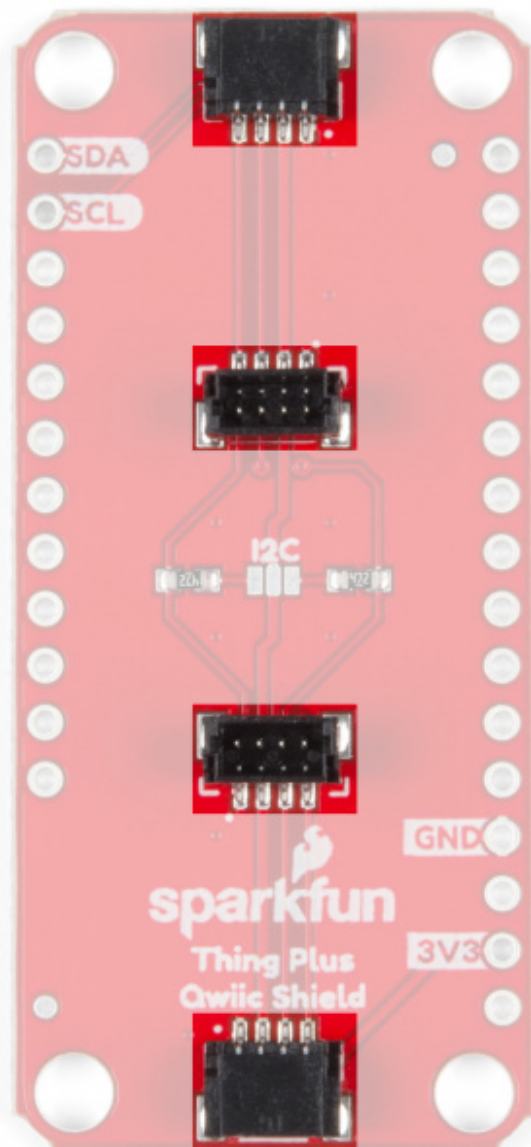
## I2C

An introduction to I2C, one of the main embedded communications protocols in use today.

## Hardware Overview

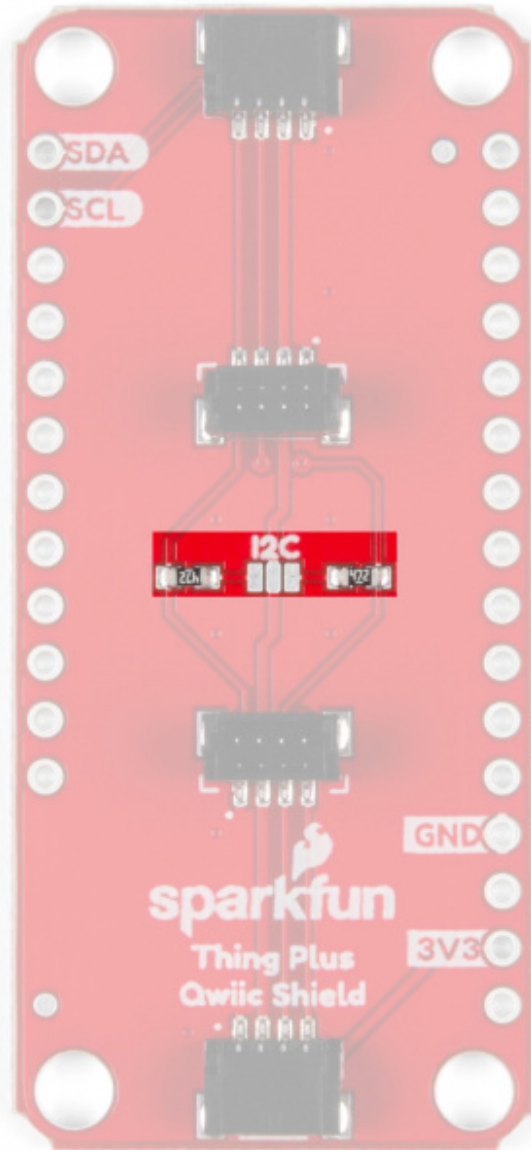
### Qwiic Connectors

The Qwiic Shield for Thing Plus has four Qwiic connectors on it. The two on the edges are the standard horizontal connectors and the two in the middle are vertical connectors.



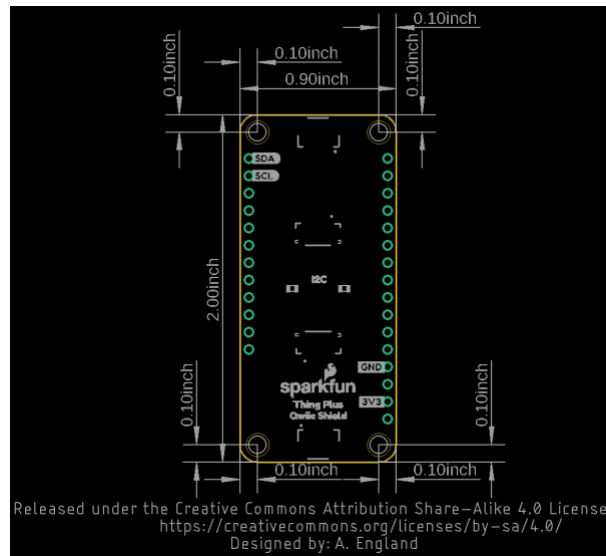
### I<sup>2</sup>C Jumper

This jumper is a little different than our normal I<sup>2</sup>C pull up jumpers as it is **open** by default. The jumper only needs to be closed if your slave device does **not** have pull up resistors. Essentially all SparkFun I<sup>2</sup>C breakouts come with pull up resistors on them so if you are using a Qwiic I<sup>2</sup>C device or another SparkFun I<sup>2</sup>C device, you can most likely leave it open. When closed, the SDA and SCL lines are pulled to **3.3V** by **4.7K** resistors. If you have never worked with solder jumpers before, check out this tutorial for some tips and tricks for working with them.



### Board Dimensions

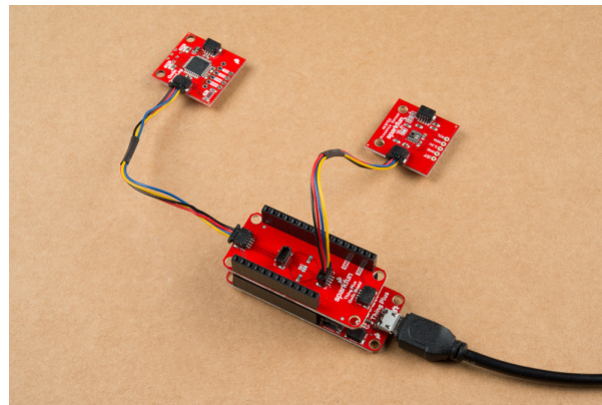
The shield measures 2.00in x 0.90in (50.8mm x 22.86mm) and has four mounting holes that fit a 4-40 screw.



## Hardware Assembly

All you need to get started using the Qwiic Shield for Thing Plus is to solder whichever headers you choose to the shield and, if necessary, to your Thing Plus (or compatible board). If you have never worked with an Arduino Shield before or need some tips, our [Arduino Shields Tutorial](#) provides detailed instructions on how to assemble and use them.

Once you have soldered headers to your shield and connected it to your Thing Plus, it's time to start connecting Qwiic devices! Below you can see the Qwiic Shield connected to a SparkFun Thing Plus - SAMD51 using the Feather Stackable Header Kit along with a couple of Qwiic Devices chained to it.



## Resources and Going Further

For more information, take a look at the resources below.

- [Schematic \(PDF\)](#)
- [Eagle Files \(ZIP\)](#)
- [Board Dimensions](#)
- [GitHub Repository](#)
- [Qwiic System Landing Page](#)
- [SFE Product Showcase](#)

If you are having trouble getting your Qwiic devices to connect using your newly assembled Qwiic Shield, you may want to take a look at these [tutorials](#) for help troubleshooting and reworking your shield.

- [Troubleshooting Tips - Hardware Checks](#)



- Arduino Shields Tutorial

Now that you have your Qwiic Shield ready to go, it's time to check out some Qwiic-enabled products. Below are a few to get started.



SparkFun Proximity Sensor Breakout - 20cm, VCNL4040 (Qwiic)

🕒 SEN-15177



SparkFun Inventor's Kit Guidebook - v4.1

🕒 BOK-15478



Qwiic Arcade - Blue

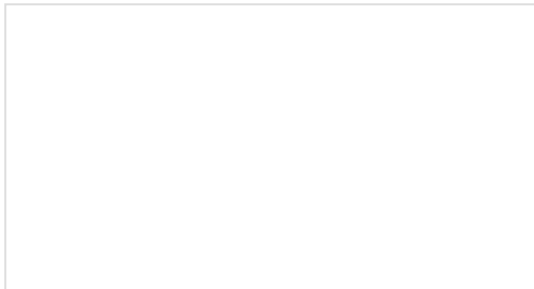
🕒 SPX-15592



SparkFun moto:bit - micro:bit Carrier Board (Qwiic)

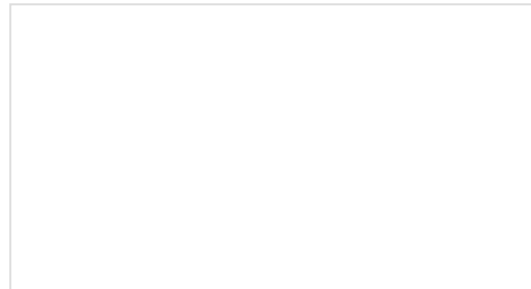
🕒 DEV-15713

Before you go, here are some other tutorials using the Qwiic Connect System you may want to look through:



XBee3 Thing Plus Hookup Guide

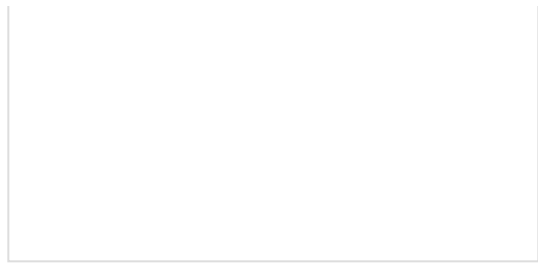
Get started with SparkFun's XBee3 Thing Plus - both the u.FL as well as the PCB antenna versions.



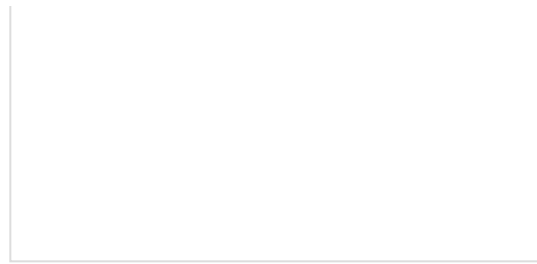
Qwiic IR Array (MLX90640) Hookup Guide

The Melexis MLX90640 contains a 32x24 array of thermopile sensors creating, in essence, a low resolution thermal imaging camera. In this guide, we'll go over how to connect your Qwiic Infrared Array with MLX90640 and get it communicating with Processing to produce a nice thermal image.





**Qwiic UV Sensor (VEML6075) Hookup Guide**  
Learn how to connect your VEML6075 UV Sensor and figure out just when you should put some sunscreen on.



**Qwiic Kit for Raspberry Pi Hookup Guide**  
Get started with the CCS811, BME280, VCNL4040, and microOLED via I2C using the Qwiic system and Python on a Raspberry Pi! Take sensor readings from the environment and display them on the microOLED, serial terminal, or the cloud with Cayenne!