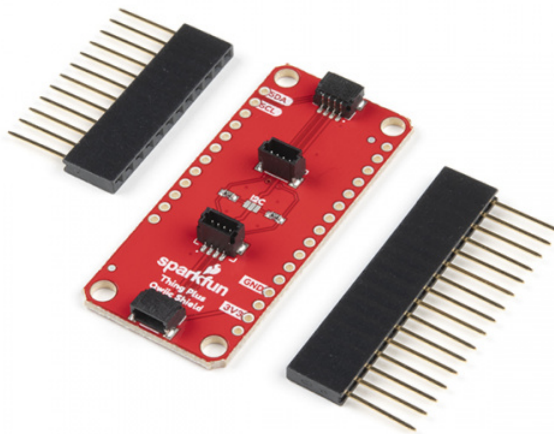# SparkFun Qwiic Shield for Thing Plus Hookup Guide

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^{2}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.
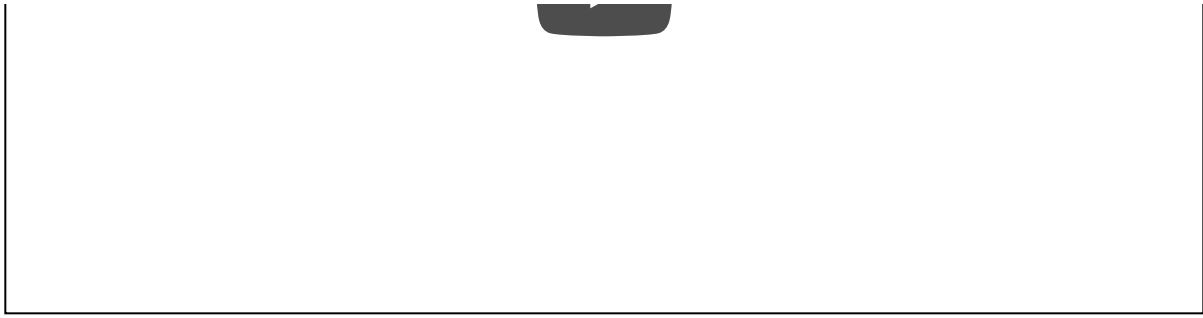

SparkFun Qwiic Shield for Thing Plus
O DEV-16790

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:
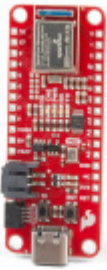
SparkFun Thing Plus - ESP32 WROOM
◉ WRL-15663

SparkFun Thing Plus - SAMD51
◉ DEV-14713

SparkFun Thing Plus - Artemis
◉ WRL-15574

The Qwiic Shield includes a set of stackable headers to fit the Thing Plus footprint but you may also need some headers to solder to your Thing Plus. Or if you would prefer to use another header type for your shield assembly we've listed a few options below:
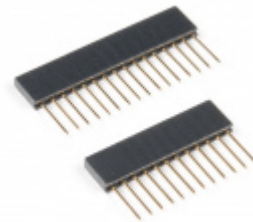
Break Away Headers - Straight
◉ PRT-00116

Female Headers
○ PRT-00115

Break Away Headers - Long
◉ PRT-10158

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 - 500mm

◯ PRT-14429

Qwiic Cable - 50mm

⊚ PRT-14426

Lastly, if you want to use a non-Qwiic I^2C 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:

Solder Lead Free - 15-gram Tube
◯ TOL-09163

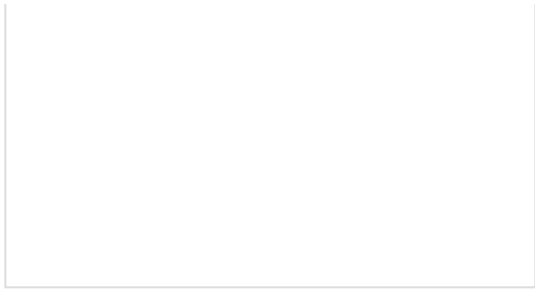**Soldering Iron - 30W (US, 110V)**
◉ TOL-09507

Suggested Reading

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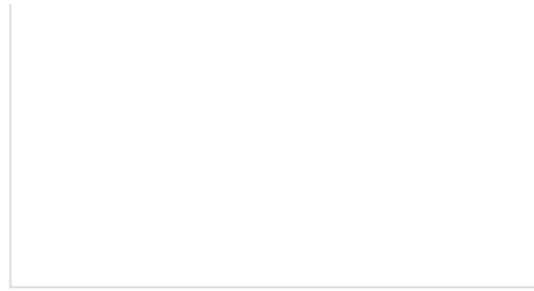

Qwiic Connect System

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.

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.
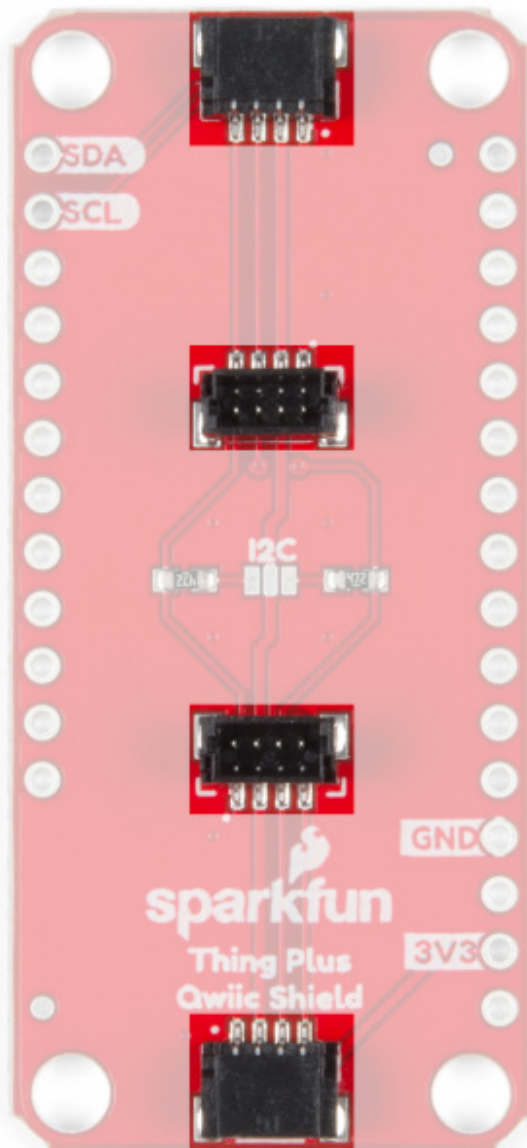
I²C Jumper

This jumper is a little different than our normal I²C 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 I²C breakouts come with pull up resistors on them so if you are using a Qwiic I²C device or another SparkFun I²C 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.
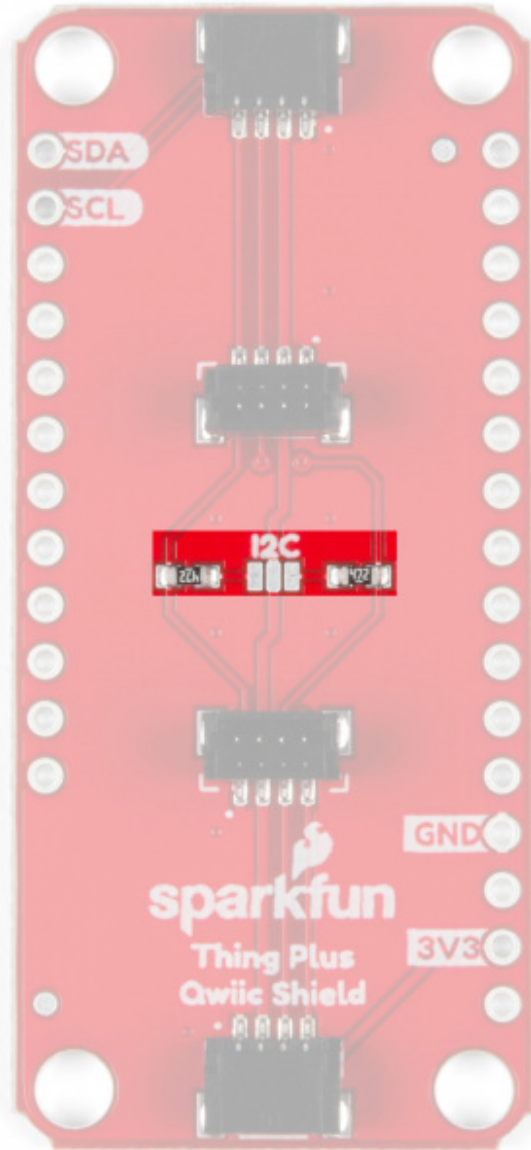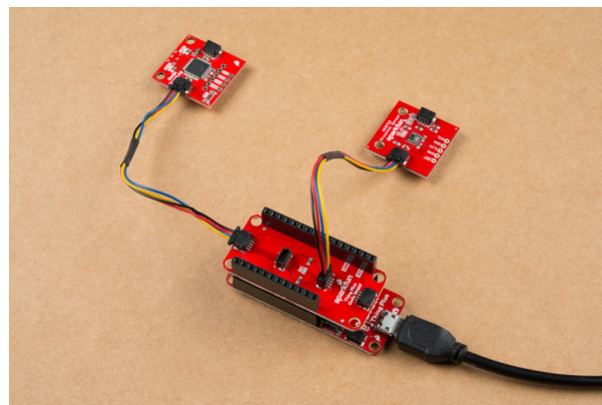

Board Dimensions

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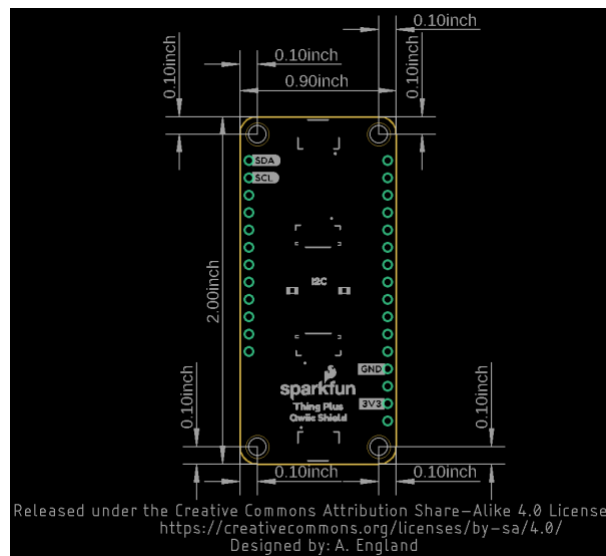
Hardware Assembly

All you need to get started using the Qwiic Shield for Thing Plus is to solder the included stackable headers or 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 included with the shield 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 IR Array Breakout - 110 Degree FOV, MLX90640 (Qwiic)
○ SEN-14843

SparkFun Qwiic Cable Kit
○ KIT-15081

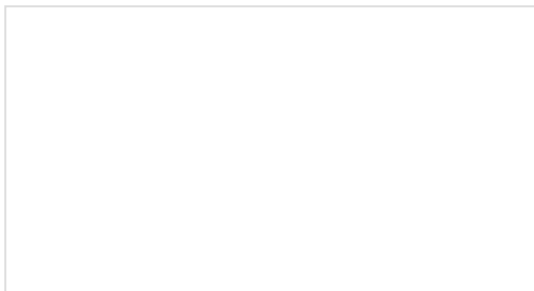**SparkFun Transparent Graphical OLED Breakout (Qwiic)**
◉ LCD-15173

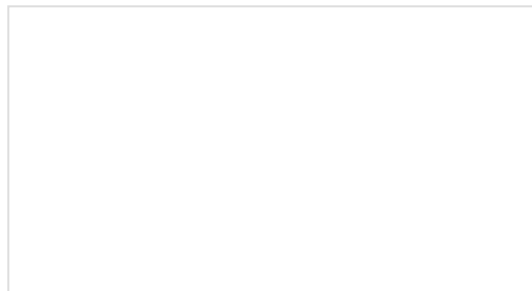**SparkFun RED-V RedBoard - SiFive RISC-V FE310 SoC**
◉ DEV-15594

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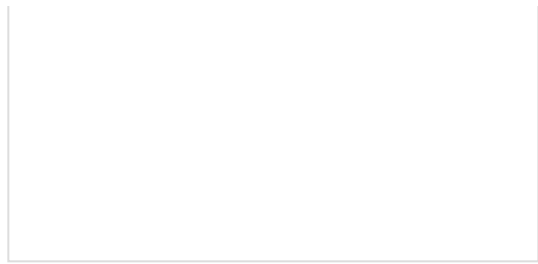

Qwiic Human Presence Sensor (AK9753) Hookup Guide
How to get started with your Qwiic enabled AK9753 Human Presence Sensor.

**Qwiic Distance Sensor (VL53L1X) Hookup Guide**
The Qwiic VL53L1X time of flight sensor is capable of several modes, as well as having a range of 4M. Let's hook it up and find out just how far away that thing over there is.

SparkFun GPS Breakout (ZOE-M8Q and SAM-M8Q) Hookup Guide

The SparkFun ZOE-M8Q and SAM-M8Q are two similarly powerful GPS units but with different project applications. We'll compare both chips before getting each up and running.
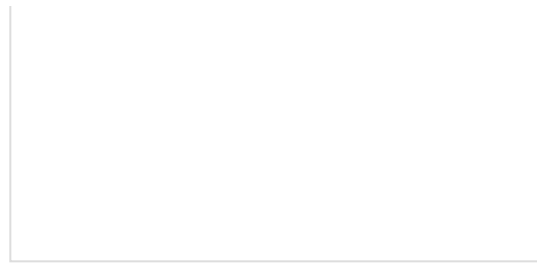
SparkFun AS3935 Lightning Detector Hookup Guide (v20)

Are you worried about the looming clouds in the distance, how far away is that storm exactly? Add lightning detection with the AS3935 to your next weather station or your next bike ride!