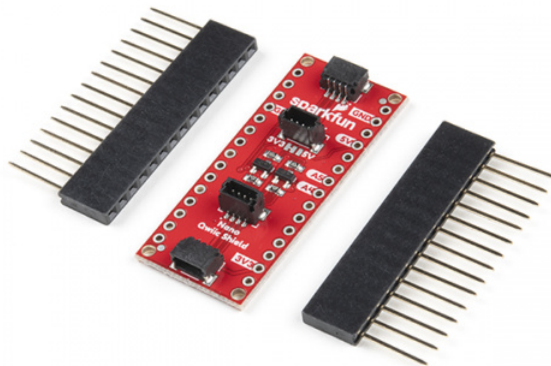# SparkFun Qwiic Shield for Arduino Nano Hookup Guide

Introduction

The SparkFun Qwiic Shield for Arduino Nano allows you to add the SparkFun Qwiic ecosystem to development boards that use the Arduino Nano Footprint in an easy-to-assemble shield. It connects the I^2C bus (GND, 3.3V, SDA, and SCL) on your Arduino Nano 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.
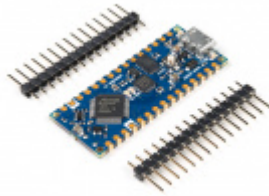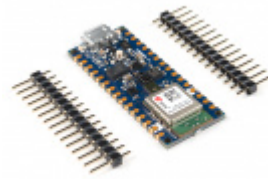

SparkFun Qwiic Shield for Arduino Nano
◉ DEV-16789

Required Materials

To follow along with this guide, you will need an Arduino with the Nano footprint. This includes the all variants of the Arduino Nano and many other Arduino Nano-compatible boards! Here are just a few of the compatible boards.

Arduino Nano Every
○ DEV-15590

Arduino Nano 33 BLE Sense
⊖ DEV-15580

Arduino Nano 33 BLE
◉ DEV-15588

Arduino Nano 33 IoT with Headers
◉ DEV-15589

The shield comes with a set of stackable headers but, if you would prefer to use other headers or another set of stackable headers, here are a few options:

Break Away Headers - Straight
◉ PRT-00116

Female Headers
○ PRT-00115

Break Away Headers - Long

Arduino Nano Stackable Header Kit

◉ PRT-10158   ◉ PRT-16279

Now you probably would not want the Qwiic Shield for Arudino Nano 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 Qwiic Keypad - 12 Button
⊖ COM-15290

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
O PRT-14429

Qwiic Cable - 50mm
◉ PRT-14426

Lastly, if you want to use a non-Qwiic I^{2}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.

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

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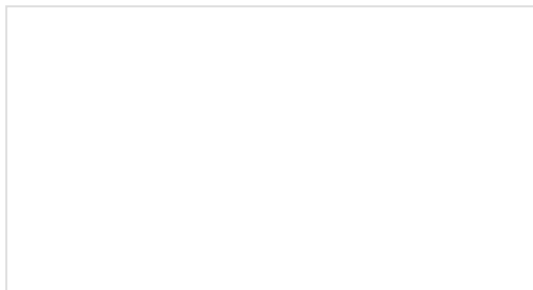◉ TOL-09507

Suggested Reading

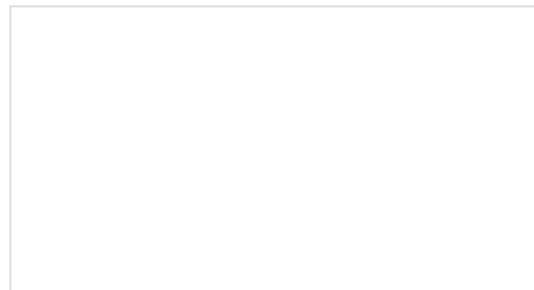If you aren't familiar with the Qwiic ecosystem, we recommend reading here for an overview:

Qwiic Connect System

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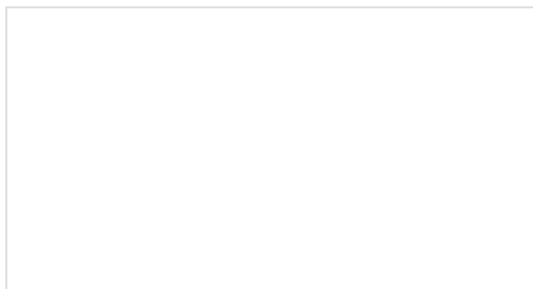

How to Solder: Through-Hole Soldering
This tutorial covers everything you need to know about through-hole soldering.

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

Arduino Shields v2
An update to our classic Arduino Shields Tutorial! All things Arduino shields. What they are and how to

assemble them.

Hardware Overview

The Qwiic Shield for Arduino Nano is pretty straight forward shield but has a few extra bits we'll cover in this section.

Qwiic Connectors

Just like our other Qwiic adapter boards, the Qwiic Shield for Arduino Nano comes with several Qwiic connectors. There are two horizontal Qwiic connectors on the edges of the board and two vertical ones in the center.
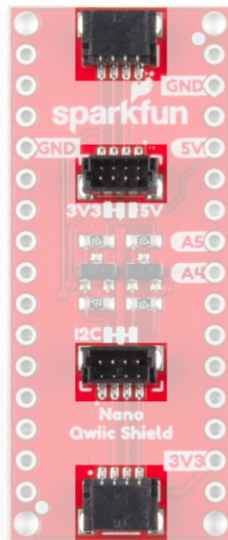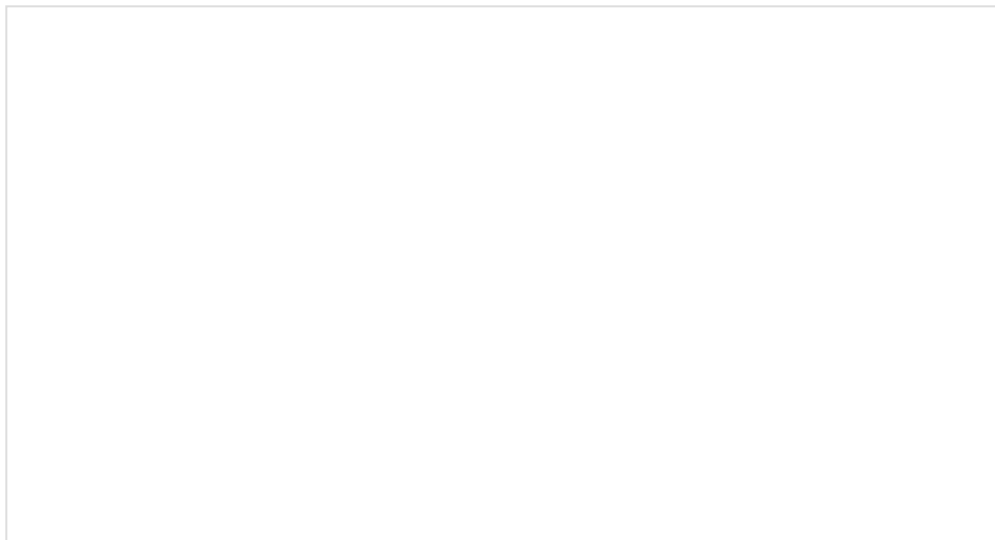

Logic Shifting Circuit and IOREF Jumper

The Qwiic Shield for Arduino Nano has a configurable logic shifting circuit depending on the voltage your Arduino Nano runs at. There is a jumper on the shield to set the IOREF voltage for the logic shifting circuit. The jumper defaults to **3.3V** which works fine for 33 Nanos like the Arduino 33 Nano BLE but you will need to switch the jumper to **5V** for Arduino Nanos that run at **5V** like the Arduino Nano Every.
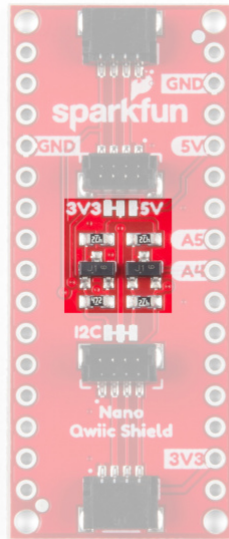
> ℹ️ Never worked with solder jumpers before just need some tips or a quick refresher? Check out our How to Work with Jumpers and PCB Traces tutorial.
>
>
>
> ## How to Work with Jumper Pads and PCB Traces
> APRIL 2, 2018
> Handling PCB jumper pads and traces is an essential skill. Learn how to cut a PCB trace, add a solder jumper between pads to reroute connections, and repair a trace with the green wire method if a trace is damaged.

I²C Jumper

The I²C jumper pulls the Qwiic SDA and SCL lines up to **3.3V** through **4.7K** resistors. The reference voltage set by the IOREF Jumper has no effect on the voltage of the pull up resistors. You can disable them by severing the trace in between the pads if you have many devices on your I²C bus.
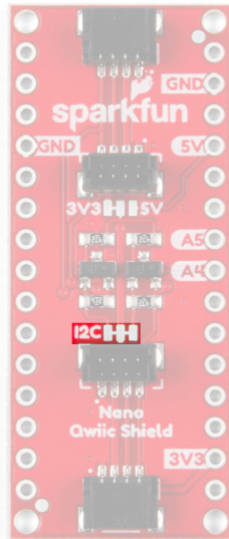
Board Dimensions

The shield measures 1.7in. x 0.7in. (43.18mm x 17.78mm) and has four mounting holes with a 0.07in diameter that match those on the Nano footprint.
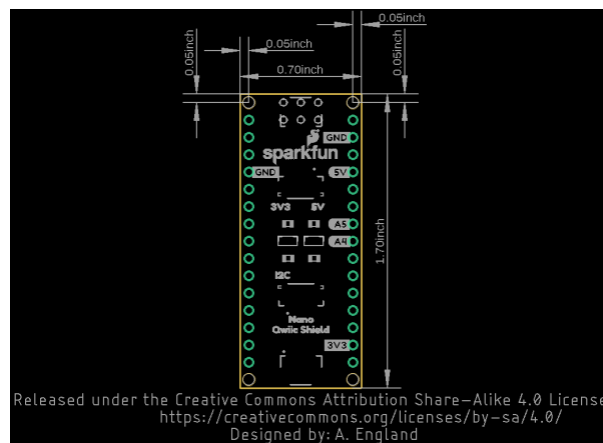
Hardware Assembly

All that is needed to get started using the Qwiic Shield for Arduino Nano is to solder the included stackable header kit or your chosen headers to the shield and, if necessary, to your Arduino Nano. 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. Take care to match the markings on the Qwiic Shield to the appropriate pins on your Nano to avoid shorting anything out and possibly damaging your Nano. Also, some variants of the Nano like the Nano 33 BLE Sense have sensors or antennas that can be affected by the Qwiic Shield's placement on top such that you may want to consider placing the Qwiic Shield below your Arduino Nano.

Once you have soldered headers to your shield and connected it to your Nano, it's time to start connecting some Qwiic devices! Below you can see the Qwiic Shield attached to an Arduino Nano Every using some female and male headers with a couple of Qwiic devices attached.
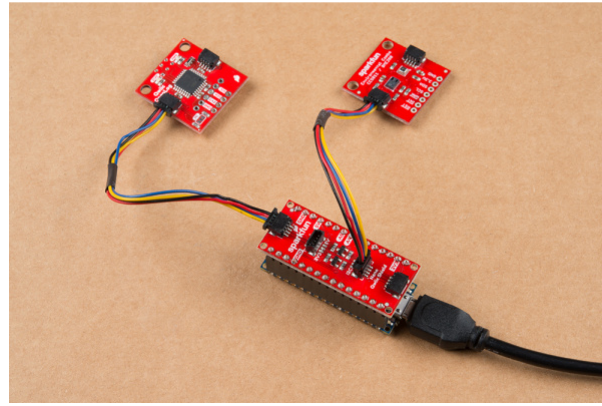
Resources and Going Further

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

- Schematic (PDF)
- Eagle Files (ZIP)
- Board Dimensions
- GitHub Repository
- Qwiic System Landing Page

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.
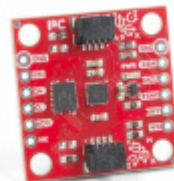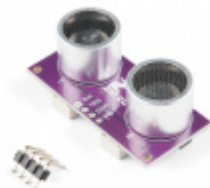

SparkFun Grid-EYE Infrared Array Breakout - AMG8833 (Qwiic)

◉ SEN-14607

SparkFun RedBoard Turbo - SAMD21 Development Board

◉ DEV-14812

Zio Ultrasonic Distance Sensor - HC-SR04 (Qwiic)
⊖ SEN-15171

SparkFun 9DoF IMU Breakout - ICM-20948 (Ding and Dent)
◉ DD-15182

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

Using the PSoC 6 Pioneer Board with the Pioneer IoT Add-on Shield
Cypress's PSoC 6 Pioneer Board is a development tool for the powerful PSoC 6 processor. In this tutorial, we'll show you how to use the PSoC 6 Pioneer Board along with the SparkFun/Digi-Key Pioneer IoT Add-on Shield to send data to a Raspberry Pi via BLE or WiFi.
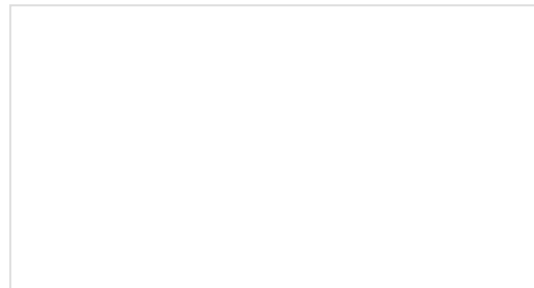
IoT Power Relay
Using the ESP32 to make a web-configured timed relay.
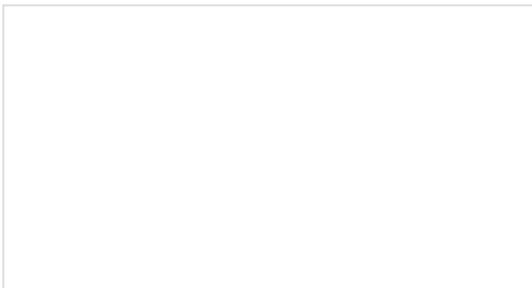
SparkFun Qwiic RFID-IDXXLA Hookup Guide
The Qwiic RFID ID-XXLA is an I2C solution that pairs with the ID-LA modules: ID-3LA, the ID-12LA, or the ID-20LA, and utilizes 125kHz RFID chips. Let's take a look at the hardware used for this tutorial.

Qwiic Scale Hookup Guide
Create your own digital scale quickly and easily using the Qwiic Scale!