

SparkFun Qwiic 12 Bit ADC - 4 Channel (ADS1015)

DEV-15334

A lot of the time you just need to add more analog inputs to solve a problem. It happens. The SparkFun Qwiic 12 Bit ADC can provide four channels of I²C controlled ADC input to your Qwiic enabled project. These channels can be used as single-ended inputs, or in pairs for differential inputs. What makes this even more powerful is that it has a programmable gain amplifier that lets you "zoom in" on a very small change in analog voltage (but will still effect your input range and resolution). Utilizing our handy Qwiic system, no soldering is required to connect it to the rest of your system. However, we still have broken out 0.1"-spaced pins in case you prefer to use a breadboard.

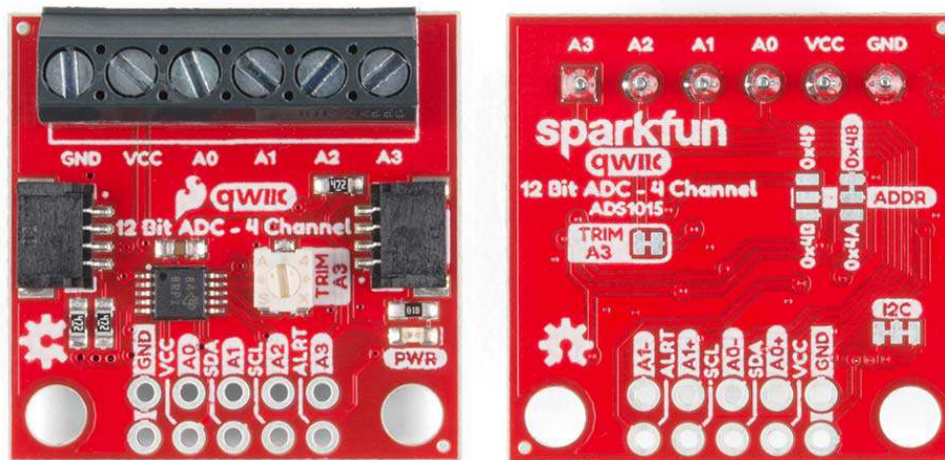
The ADS1015 uses its own internal voltage reference for measurements, but a ground and 3.3V reference are also available on the pin outs for users. This ADC board includes screw pin terminals on the four channels of input, allowing for solderless connection to voltage sources in your setup. It also has an address jumper that lets you choose one of four unique addresses (0x48, 0x49, 0x4A, 0x4B). With this, you can connect up to four of these on the same I²C bus and have sixteen channels of ADC. The maximum resolution of the converter is 12-bits in differential mode and 11-bits for single-ended inputs. Step sizes range from 125 μ V per count to 3mV per count depending on the full-scale range (FSR) setting.

We have included an onboard 10K trimpot connected to channel A3. This is handy for initial setup testing and can be used as a simple variable input to your project. But don't worry, we added an isolation jumper so you can use channel A3 however you'd like.

The SparkFun Qwiic connect system is an ecosystem of I²C sensors, actuators, shields and cables that make prototyping faster and less prone to error. All Qwiic-enabled boards use a common 1mm pitch, 4-pin JST connector. This reduces the amount of required PCB space, and polarized connections mean you can't hook it up wrong.

FEATURES

- ADS1015
 - Operating Voltage (V_{DD}): 2.0V-5.5V
 - (Note: When powering with a Qwiic cable, the input range is only 3.3v)
 - Operating Temperature: -40°C to 125°C
 - Operation Modes: Single-Shot, Continuous-Conversion (Default), and Duty Cycling
 - Analog Inputs:
 - Measurement Type: Single-Ended (Default)
 - Input Voltage Range: GND to V_{DD}
 - Full Scale Range (FSR): $\pm 0.256\text{V}$ to $\pm 6.114\text{V}$ (Default: 2.048V)
 - Resolution:
 - 12-bit (Differential) or 11-bit (Single-Ended)
 - LSB size: 0.125mV - 3mV (Default: 1 mV)
 - Sample Rate: 128 Hz to 3.3 kHz (Default: 1600SPS)
 - Current Consumption (Typical): $150\mu\text{A}$ - $200\mu\text{A}$
 - I²C Address: 0x48 (Default), 0x49, 0x4A, or 0x4B
- Screw pin terminals for solderless connection to voltage sources
- Four unique I²C addresses:
 - 0x48
 - 0x49
 - 0x4A
 - 0x4B
- 2x Qwiic connection ports
- Onboard 10K trimpot





<https://www.sparkfun.com/products/15334/12-3-19>