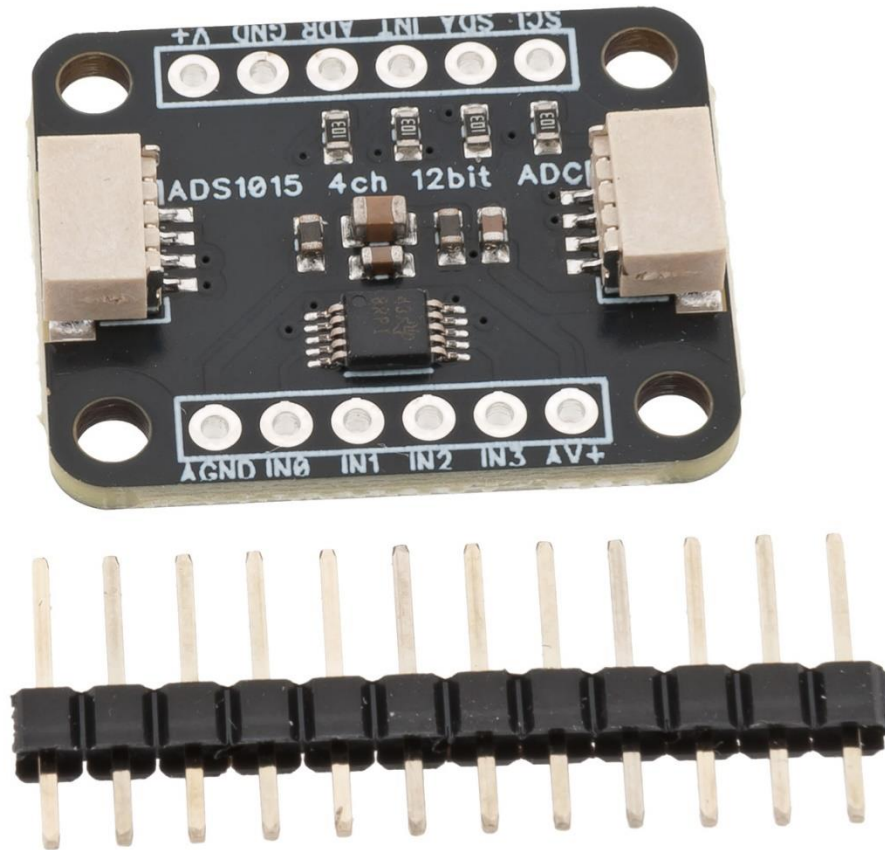


# ADS1015 4-channel 12-bit AD Converter

Part.no. 41024446



ADC module based around Texas Instruments ADS1015, 4-channel 12-bit I2C AD-converter with programmable gain amplifier (PGA) and comparator.

The module exposes all pins, adds two QWIC connectors for easy wiring and contains all necessary supporting components. Example code and libraries for Arduino and Raspberry Pi makes it easy to use.

To reduce interference, both AV+ and AGND are filtered with ferrite beads and capacitors. The SDA, SCL and INT lines are pulled to V+ with 10k resistors. Cut the solder jumpers on the rear to disable the pullup resistors.

ADS1015 features four input channels that can be used either as four independent, single-ended channels or two differential channels. The PGA can amplify small signals to improve the digital resolution.

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## Functions

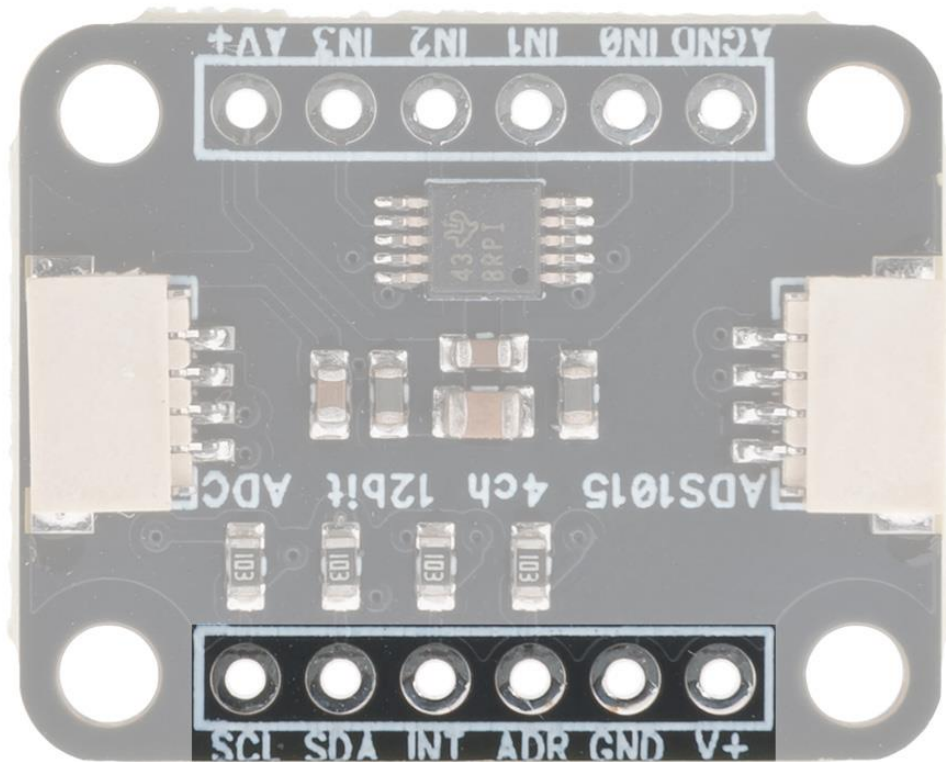
- Add four analog pins to any I2C capable host
- Integrated PGA, comparator and voltage reference
- 12-bit resolution
- Easy to connect using QWIIC

## Specifications

- Supply voltage: 2 - 5.5 VDC
  - Current consumption: 150  $\mu$ A
  - Resolution: 12 bits
  - Sample rate: 128 smp/s - 3.3 ksmp/s
  - Full-scale range:  $\pm 0.256$  V -  $\pm 6.144$  V
  - I2C address: 0x73 (default) / 0x72, 0x74, 0x75
  - Dimensions: 25 x 20 mm
  - Mounting holes: c-c 20 x 15 mm /  $\varnothing 2.5$  mm
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# Connections

Voltage supply and I2C:



All connections for I2C, interrupt, address and voltage supply is lined up nicely for use on breadboards and protoboards. Two QWIIIC connectors on each end provides an easy way to wire up the module.

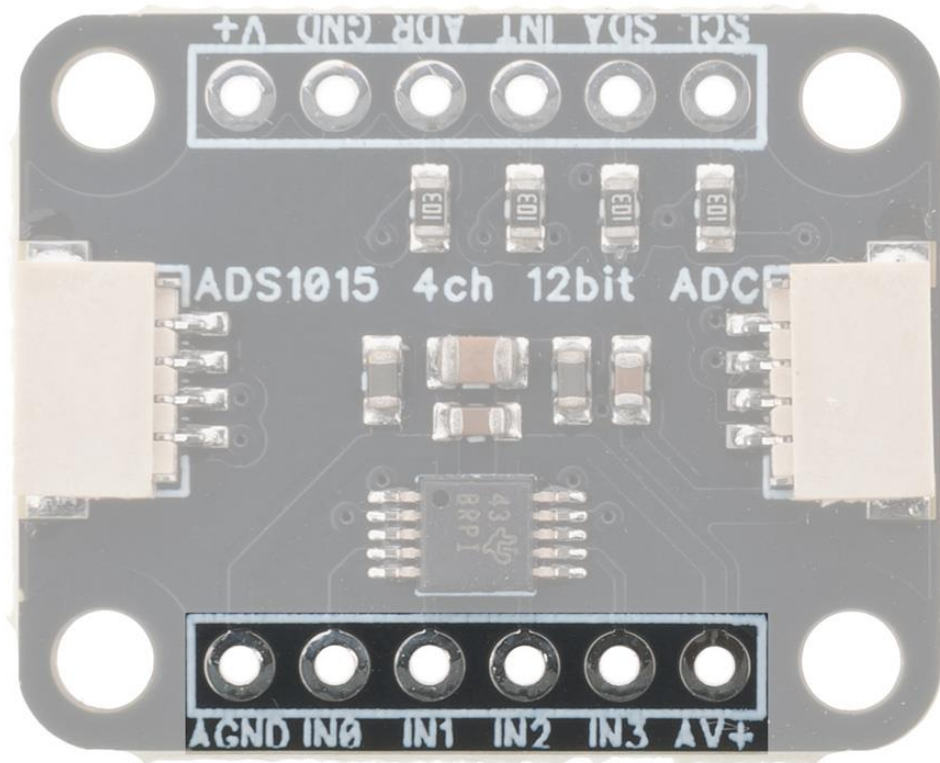
SCL, SDA, INT and ADR are all pulled to V+ using 10k resistors. SCL and SDA pullups can be disabled by cutting the solder jumpers on the back.

INT (or ALERT/READY) is an active low output that can be used either as a comparator or window comparator that will trigger when a signal falls inside or outside of a set threshold or as a "conversion ready" output that will go low at the end of conversion.

ADR is used for programming the I2C address of the device. The pin can be pulled to V+, GND, SCL or SDA, for a maximum of four devices on the same I2C bus. Default address (10k to V+) is 0x72. To change the address, simply bridge ADR to GND, SDA or SCL.

Connect to	I2C Address
GND	1001000 (0x72)
V+	<b>1001001 (0x73) / default</b>
SDA	1001010 (0x74)
SCL	1001011 (0x75)

Analog connections:



All the analog pins of the ADC are lined up on the opposite side and has the four input channels (IN0 - IN3) and filtered connections for GND (AGND) and V+ (AV+).

Use AGND as the negative reference for single-ended signals. AV+ can be used as the positive reference when wiring up potentiometers. Please note that the current output is very limited and cannot be used to power additional circuitry.

When using the ADC to read differential signals, IN0 and IN1 becomes IN0+ and IN0- while IN2 and IN3 becomes IN1+ and IN1-.

Full scale readings depend on the gain of the internal PGA and can be programmed from  $\pm 256\text{mV}$  to  $\pm 6.144\text{V}$ . See datasheet for more details.

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## Additional resources

- [Arduino Library @ GitHub](#)
- [Python Library @ GitHub](#)
- [ADS1015 Datasheet @ Texas Instruments](#)

## Mechanical dimensions

