



Qwiic PT100 - ADS122C04

SPX-16770 ROHS

Do you need to measure temperature accurately and reliably? This could be the perfect solution! The SparkX Qwiic PT100 is based on the ADS122C04 24-bit ADC and is perfect for measuring temperature with a 100 Ohm Platinum Resistance Thermometer (PRT).

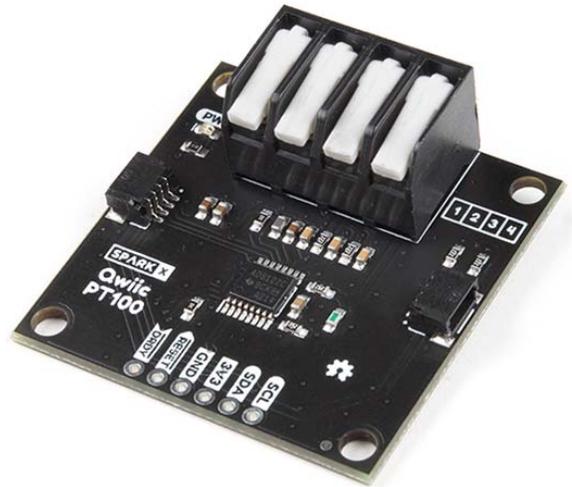
PRT sensors use a thin strip of platinum to measure temperature. The resistance changes with temperature according to the laws of physics and remember “*Ye cannae change the laws of physics!*” By passing a small (1mA) current through the PRT, the ADS122C04 is able to measure the sensor’s resistance very accurately and the Arduino library converts this to temperature using a polynomial equation. PRT sensors can be used to measure temperatures in the range -200°C to +850°C depending on which sensor you choose. The sensors are extremely stable and do not age the way other resistance sensors can.

The Qwiic PT100 can be configured so it can use 2-wire, 3-wire or 4-wire sensors. Why is this important? Well, normally the resistance of your sensor cable would degrade the accuracy of your temperature measurement. Adding an extra Ohm of cable resistance could throw your measurement off by more than 2 degrees. 3-wire or 4-wire sensing automatically compensates for the cable resistance, providing true temperature measurement with long cables. The ADS122C04 can sample at 20Hz and has a built-in digital filter so it can *automatically* reject 50Hz and 60Hz power noise, making it the perfect choice for scientific and industrial applications.

Our [Arduino Library](#) includes a full set of examples from reading the temperature in Centigrade or Fahrenheit through to being able to manually configure the ADS122C04 and read the raw ADC measurement. Want to use the PT100 as a 24-bit single-ended or differential ADC? You can absolutely do that! The library functions give you all the flexibility you need.

Out in the field and don’t have the datasheet to hand? Don’t worry! Flip the board over and you’ll find a connection guide for 2-wire, 3-wire and 4-wire configurations. The sensor is attached using latch terminals so you don’t need a screwdriver either!

Need to use multiple sensors? The Qwiic PT100 can be configured with four different I²C addresses so you can connect four together on a single I²C bus. If you need to connect more than four then the [SparkFun Qwiic Mux](#) will let you do that.



Note: A PT100 sensor is required for use. Any three or four wire PT100 sensor will work. While we don't currently carry a PT100 sensor, we plan to carry one in the near future.

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.

Experimental Product: SparkX products are rapidly produced to bring you the most cutting edge technology as it becomes available. These products are tested but come with no guarantees. Live technical support is not available for SparkX products. Head on over to our [forum](#) for support or to ask a question.

FEATURES

- ADC122C04
 - Operating Voltage (V_{DD}): 2.3V to 5.5V
 - (Note: When powering with a Qwiic cable, the input range is only 3.3V)
 - Operating Temperature: -40°C to +125°C
 - Conversion Modes: Single-Shot (Default), Continuous-Conversion
 - Operating Modes: Normal (Default), Turbo
 - Analog Inputs:
 - Measurement Type: Two Differential (Default) or Four Single-Ended
 - Input Voltage Range: GND to V_{DD}
 - Programmable Input Multiplexer
 - Programmable Gain Amplifier: x1 to x128
 - Programmable Voltage Reference
 - Internal Precision 2.048V Reference
 - Resolution:
 - 24-bits (up to 20 bits effective resolution)
 - LSB size depends on the selected voltage reference
 - Sample Rate: 20Hz to 2.0kHz
 - At 20Hz the built-in digital filter provides simultaneous 50Hz and 60Hz noise rejection for industrial applications
 - Programmable Current Sources: 10 μ A to 1.5mA
 - Current Consumption (Typical):
 - 250 μ A to 955 μ A (depending on the selected mode)
 - 0.1 μ A in Power-down mode
 - Internal Temperature Sensor
- Latch terminals for easy sensor connection
- Configurable I²C address:
 - 0x45 (Default)
 - 0x44
 - 0x41
 - 0x40
- 2x Qwiic connection ports
- Connection guide (on the back of the PCB)
- Power LED
 - Can be disabled for low power applications

