



RASPBERRY PI

UTILIZING A RASPBERRY PI WITH ANALOG INPUTS & OUTPUTS

PCF 8591



PCF8591

8-bit A/D and D/A converter

Rev. 7 — 27 June 2013

Product data sheet

1. General description

The PCF8591 is a single-chip, single-supply low-power 8-bit CMOS data acquisition device with four analog inputs, one analog output and a serial I²C-bus interface. Three address pins A0, A1 and A2 are used for programming the hardware address, allowing the use of up to eight devices connected to the I²C-bus without additional hardware. Address, control and data to and from the device are transferred serially via the two-line bidirectional I²C-bus.

The functions of the device include analog input multiplexing, on-chip track and hold function, 8-bit analog-to-digital conversion and an 8-bit digital-to-analog conversion. The maximum conversion rate is given by the maximum speed of the I²C-bus.

http://www.nxp.com/documents/data_sheet/PCF8591.pdf

PCF 8591 DEMOBOARD : YL-40

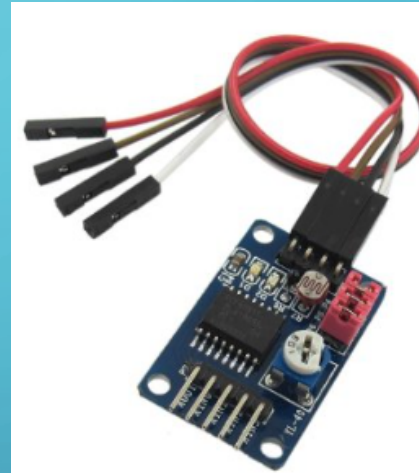


It is not clear from the schematic (or looking at the board) but the four inputs are:

- AIN0 - Jumper P5 - Light Dependent Resistor (LDR)
- AIN1 - Jumper P4 - Thermistor
- AIN2 - Not connected
- AIN3 - Jumper P6 - Potentiometer

It also seems that the board has I2C pull-up resistors which are not required because the Raspberry Pi already has them. This does not appear to cause any problems.

PCF 8591 DEMOBOARD AVAILABLE FROM AMAZON



Roll over image to zoom in

PCF8591 AD/DA Converter Module Analog to Digital to Analog Conversion

by Gino

★★★★☆ 4 customer reviews

Price: **\$1.50** + \$2.49 shipping

Note: Not eligible for Amazon Prime. Available with free Prime shipping from [other sellers on Amazon](#).

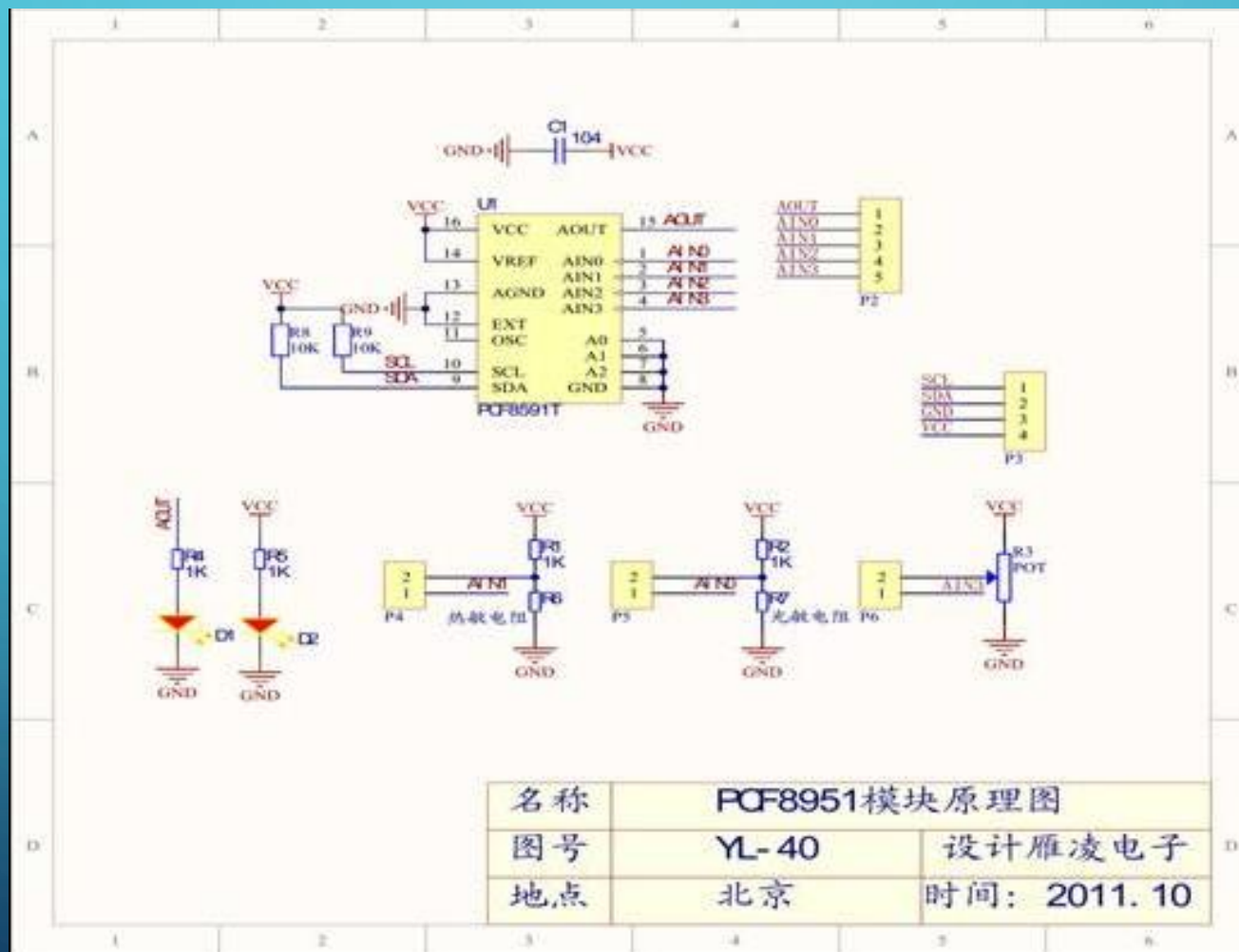
In Stock.

Ships from and sold by [holding](#).

Estimated Delivery Date: May 6 - 22 when you choose Standard at checkout.

- Product Name : PCF8591 AD/DA Converter Module;Working Voltage : 2.5-6V
- PCB Size : 36 x 23mm/1.4" x 0.92"(L*W);Hole Diameter : 3mm/0.1"
- Hole Center Distance : 31 x 18mm/1.2" x 0.7"(L*W)
- Net Weight : 8g
- Package Content : 1 x PCF8591 AD/DA Converter Module

YL-40 CIRCUIT DIAGRAM



I2C & PCF 8591 MODULE

Notes

- You need to load the I2C kernel modules before you can use I2C devices. Use the **gpio** command: **gpio load i2c**
- Use the **i2cdetect** program to scan your I2C bus to make sure the Pi can see your devices. PCF8591's will normally show up as 0x48, but when using multiple ones, they'll each have a unique address (or should have!)
- If you have a Rev 1 Pi, then the **i2cdetect** command is: **i2cdetect -y 0** if you have a Rev. 2 Pi, then use **i2cdetect -y 1**
- The **gpio** command supports the **i2cdetect** command and automatically caters for board revision. Simply type: **gpio i2cd**
- The **wiringPi** PCF8591 driver knows which revision Pi you have, so you know need to take any special precautions – your code will work on either a Revision 1 or 2 Pi.
- The PCF8591 does not have programmable internal pull-up resistors, but the pins when in input mode effectively have an internal pull-up active.
- The analog output pin is normally in a high impedance mode until the very first read or write to the device. It may be prudent to perform an initial analog write to the device to set it to the initial value you need.

[HTTP://WIRINGPI.COM/EXTENSIONS/I2C-PCF8591/](http://wiringpi.com/extensions/i2c-pcf8591/)

PYTHON TKINTER

Tkinter tutorial

This is Tkinter tutorial. It covers the basics of GUI programming in Python with Tkinter. The tutorial is suitable for beginners and intermediate programmers.

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- [Introduction](#)
- [Layout management](#)
- [Widgets](#)
- [Menus & toolbars](#)
- [Dialogs](#)
- [Drawing](#)
- [Nibbles](#)

Tkinter

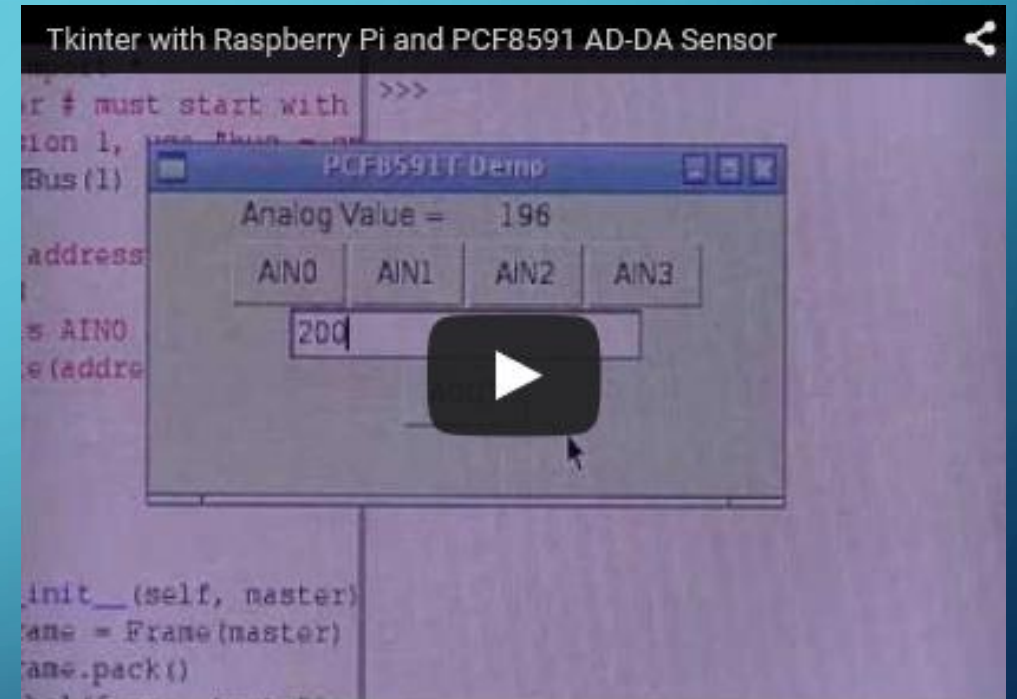
Tkinter is a Python binding to the Tk GUI toolkit. Tk is the original GUI library for the Tcl language. Tkinter is implemented as a Python wrapper around a complete Tcl interpreter embedded in the Python interpreter.

<http://zetcode.com/gui/tkinter/>

PYTHON TKINTER

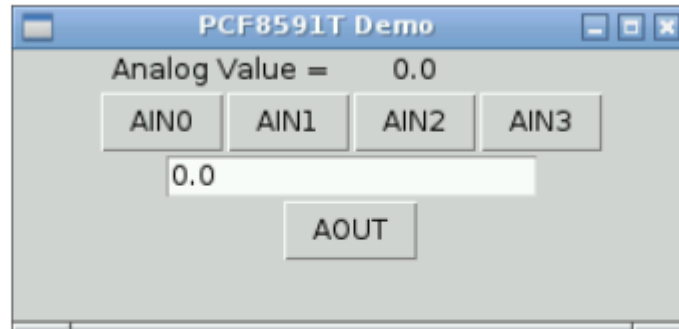
Use Python Tkinter with
Raspberry Pi and PCF8591
AD-DA Sensor Board

www.bristolwatch.com



https://youtu.be/_yPwCNgPIdg

PYTHON TKINTER & RASPBERRY PI DEMO OF PCF 8591



Use Python Tkinter with Raspberry Pi and PCF8591 AD-DA Sensor

by Lewis Loflin

In this demo we'll be using Python Tkinter to build a user interface to control-read a [PCF8591T sensor module](#). The PCF8591T features four-8-bit analog to digital converters and a single 8-bit digital to analog converter.

This will operate through the I2C interface on the Raspberry Pi. Tkinter will be used to program general the user interface pictured above. This features four buttons (labeled AIN0-AIN4) that when pressed will read corresponding AD channel.

<http://www.bristolwatch.com/rpi/pcf8591.html>