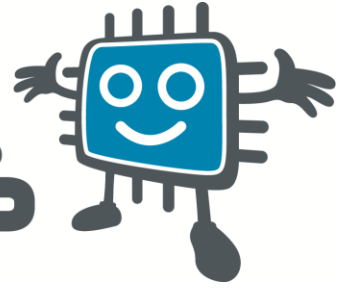


embedded adventures



Device: MOD-1009

This document Version: v2

Matches module version: v3

Date: 29 June 2013

Description: Pressure Sensor (barometer/altimeter)



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Introduction

The MOD-1009 is an MS5611 based absolute air pressure sensor module (barometer/altimeter).

Features

The MOD-1009 features the MS5611 from Measurement Specialities. Due to its 24 bit ADC, it is capable of discerning the altitude within 10cm, an astonishingly accurate result. Of course, this sensor is great for weather measurements as well, and includes a temperature sensor to allow for temperature-compensated pressure readings.

The module itself has been arranged so the output from the MS5611 is available as I2C and SPI.

Hackability

The MOD-1009 is 100% hackable.

At Embedded Adventures, we believe you have the most fun when you have the most control over your hardware. For the MOD-1009 we provide a datasheet, complete schematic and complete source code. After that, it's all up to you. We'd love to hear about the projects you're using it for – send us information and photos to myproject@embeddedadventures.com

Construction

It's all pre-built! Just add female or male header pins, or solder directly to the board, and away you go.

Connections

The MOD-1009 has one connection port.

VCC	Positive supply. 1.8V – 4V.
CS	Chip Select. Tie low when in use for SPI, tie high when using SPI
SCLK	Serial clock
MISO	SPI Data Out (from chip)
SDA/MOSI	I2C serial data / SPI Data In (to chip)
GND	Ground (Vss) connection.

Power

The MOD-1009 can be powered from 1.8V – 4V. If your microcontroller is using 5V, consider using a bidirectional level converter such as the MOD-1003 from Embedded Adventures (that's us!).

Pull up resistors

I2C requires the use of pull-up resistors. The board comes with the pull-up resistors enabled. If you are connecting to an existing I2C buss that already has pull-up resistors, or you are using internal pull-ups in your microcontroller, you can disable the pull-up resistors by cutting the PCB jumpers on the MOD-1009 board.

If you are using the SPI connection, you might consider removing the pull-up jumpers as well.

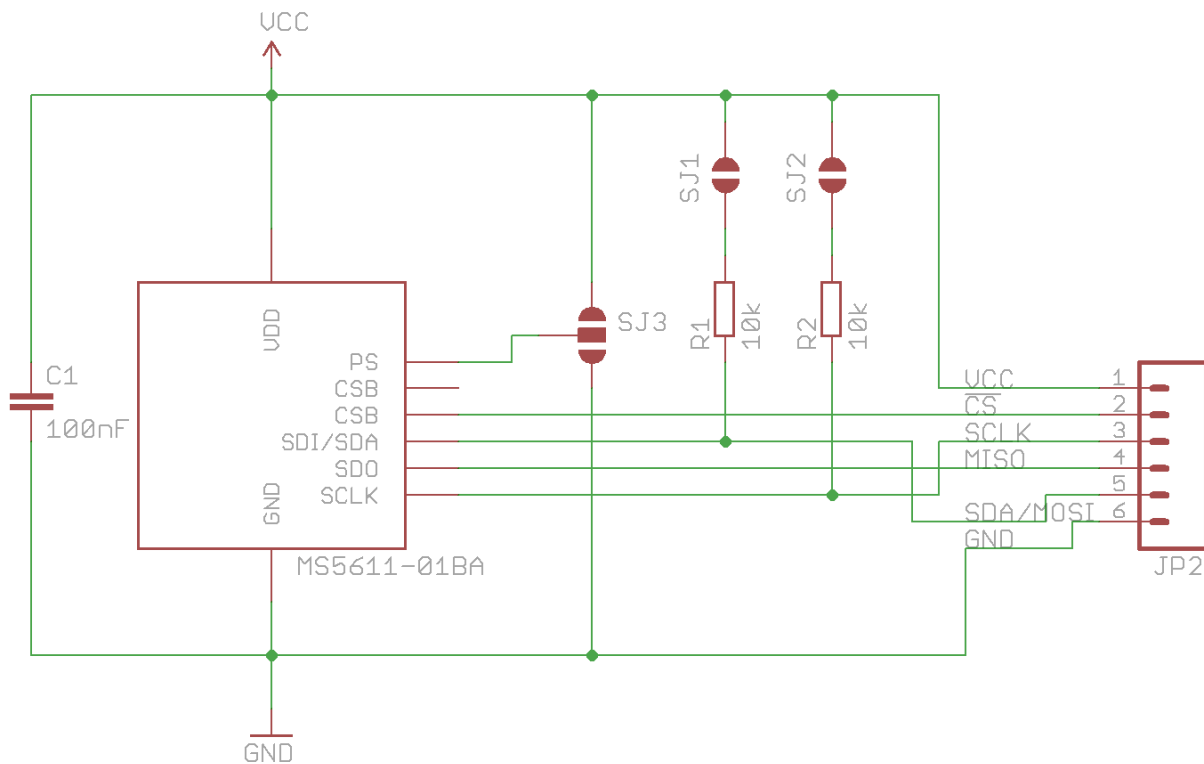
I2C

When using the module with an I2C connection, make sure you use the solder jumper on the middle and right pads of the solder jumper (as the module comes delivered). Also, you will need to tie the CS pin high, otherwise the module will not respond.

SPI

For SPI connections, solder the left and middle pads of the solder jumper. Make sure to pull CS low when you wish to communicate with the module.

Schematic

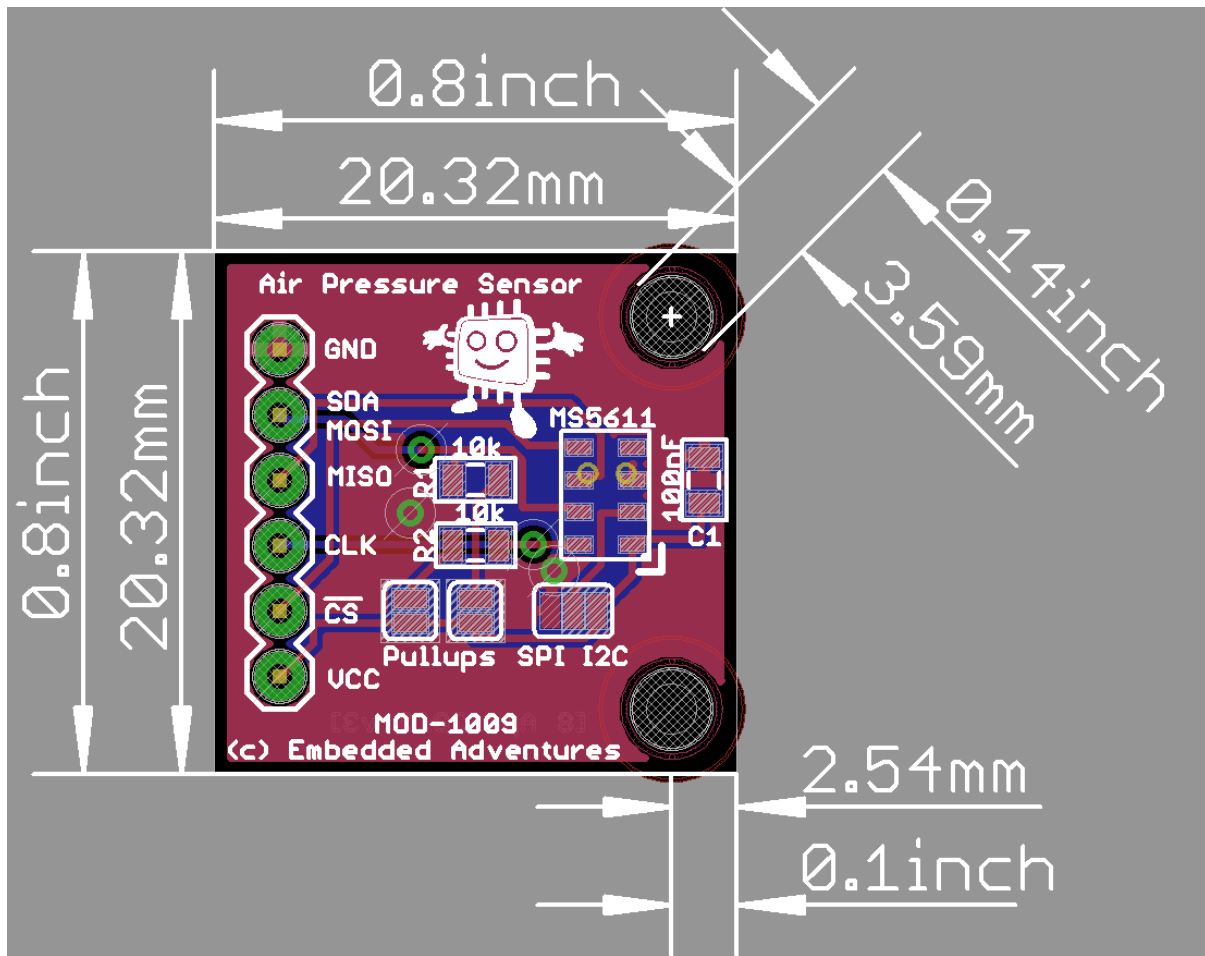


The MOD-1009 schematic is pretty straightforward. Don't forget to have a look at the MS5611 datasheet so you know how to get the most out of the pressure sensor.

Programming

See `ms5611.c` and `ms5611.h` available in the PicPack library. These rely on the `i2c.c` and `i2c.h` software i2c libraries. The PicPack library can be downloaded from the Tutorials | Downloads section of www.embeddedadventures.com

PCB



Versions

Version	Date	Comments
Version 1.0	7 June 2011	Initial Version for board v1
Version 1.1	12 June 2011	Fixed incorrect reference in power section
Version 3	29 June 2013	Updated for v3 of HW with SPI option