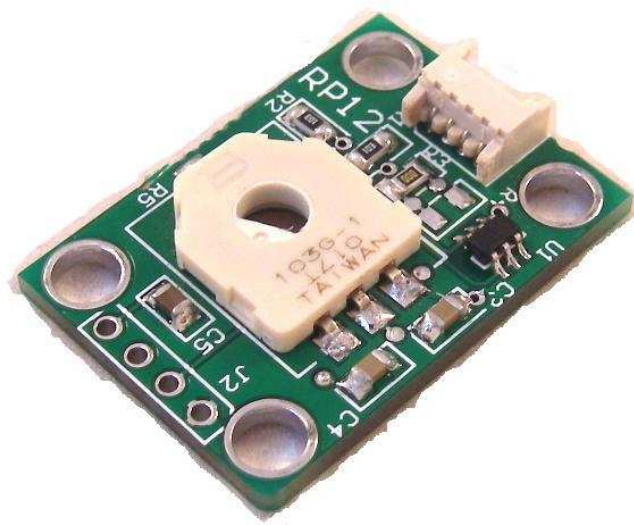


RP12 16Bit Digital Rotary Position Sensor

Technical Reference Guide

PCB Rev 1.0



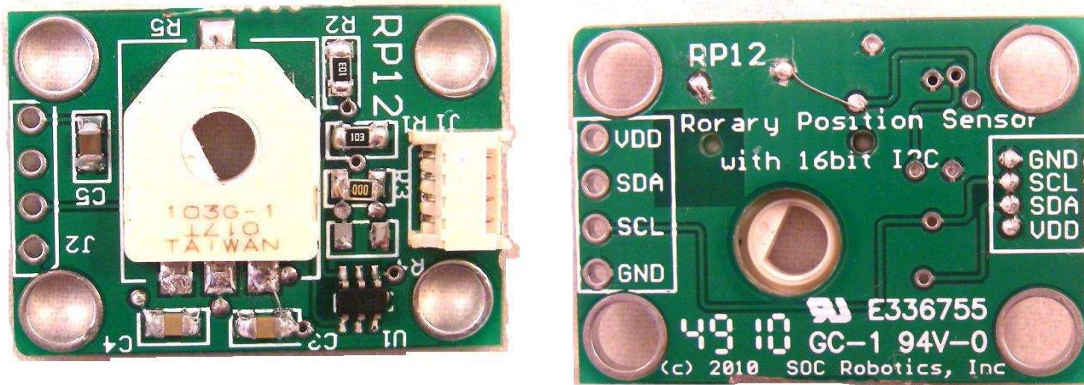
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Overview

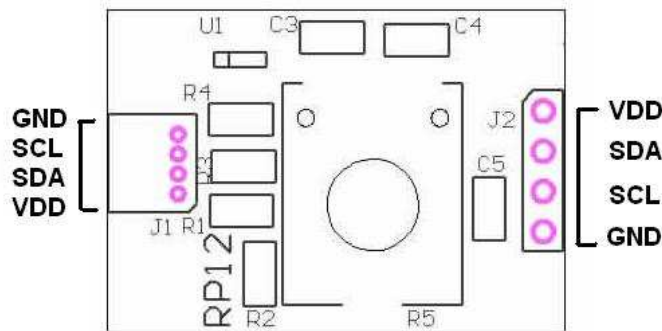
The **RP12** is Rotary Position sensor based on a resistive sensing element that outputs a 16 bit digital position reading on an I2C communications port. The rotary sensing element can rotary 360 degrees continuously but has a small 3-4 degree dead band where the rotary position is undefined. The resistive sensing element has a keyed 0.157in diameter hole in the center of the sensor through which a keyed rod can be inserted. A connecting rod machined with a 1/4in ID to 0.160in OD to allow attachment to a 1/4in diameter stepper or DC motor is available. The digital output is capable of resolving 0.01 degree absolute making it an extremely precise rotary sensor.

The board operates from 2.7 to 5.5VDC. The resistive sensing element is a 10K ohm resistor with a center tap connected to a 16 bit A/D converter in either a factory configured bipolar or unipolar configuration. The unipolar configuration outputs a 15 bit value while the bipolar configuration outputs a true 16 bit value. The A/D is a Texas Instruments ADS1100 with a programmable gain amplifier with 1, 2, 4 or 8x gain and a software controlled sample rate of 8 to 128 samples per second. The I2C address is set at the factory to 0x08, 0x09, 0x0A, 0x0B, 0x0C, 0x0D, 0x0E or 0x0F and can not be changed. Sample software is available from our web site to access the ADS1100 using a Wasp, MM130, MM165, MM165USB or similar controller. Default I2C address is 0x08.

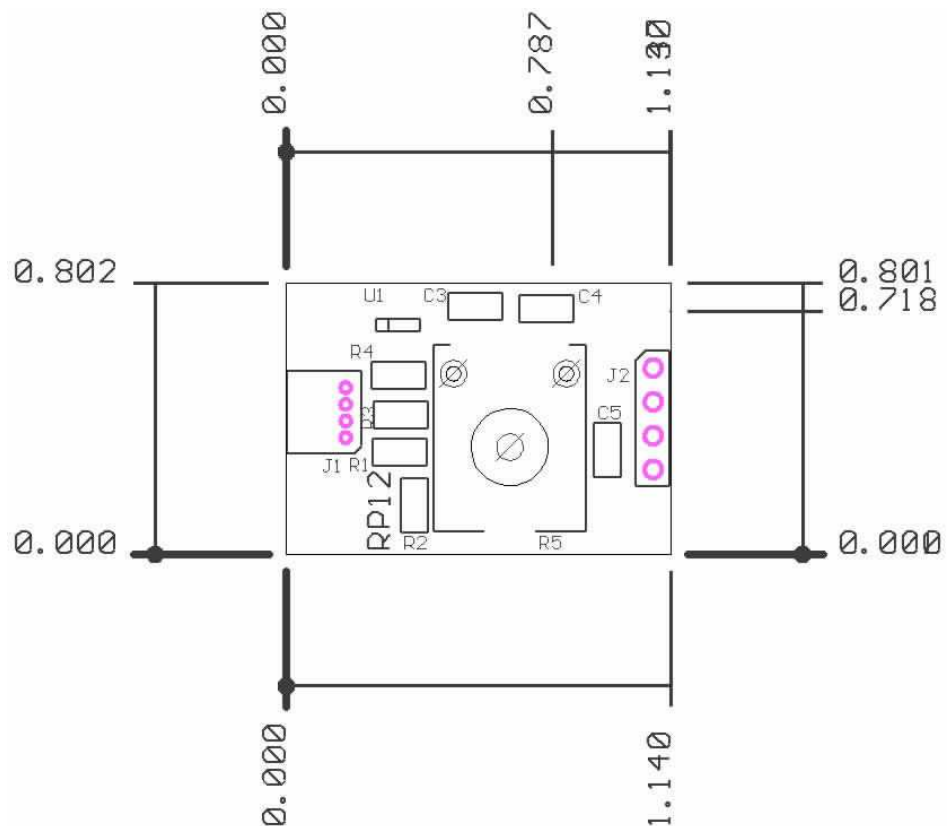
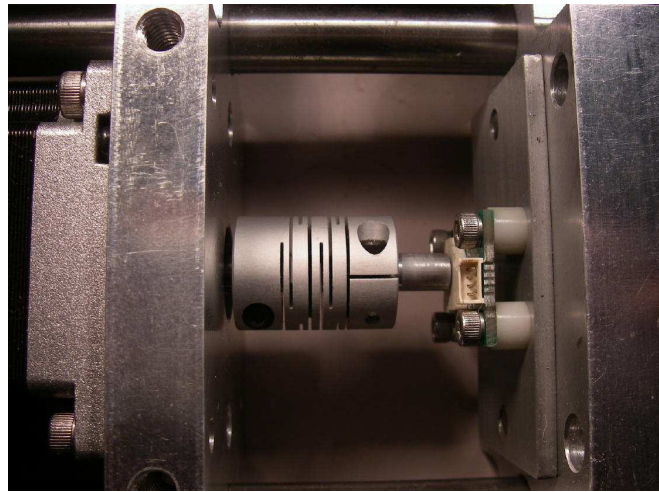
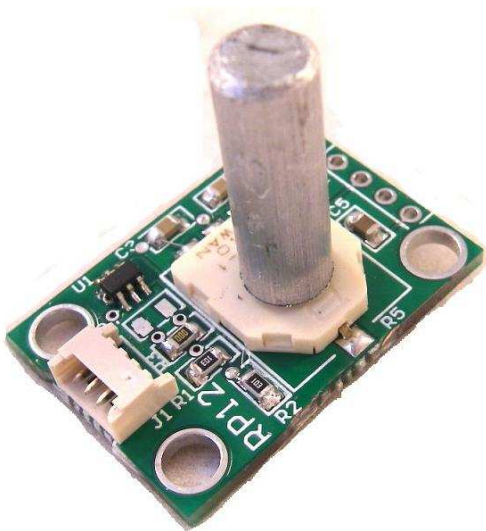
Two connectors are provided – one with a small Molex four pin connector and the other a four pin header without connector.



RP12 Connector Pin Assignment



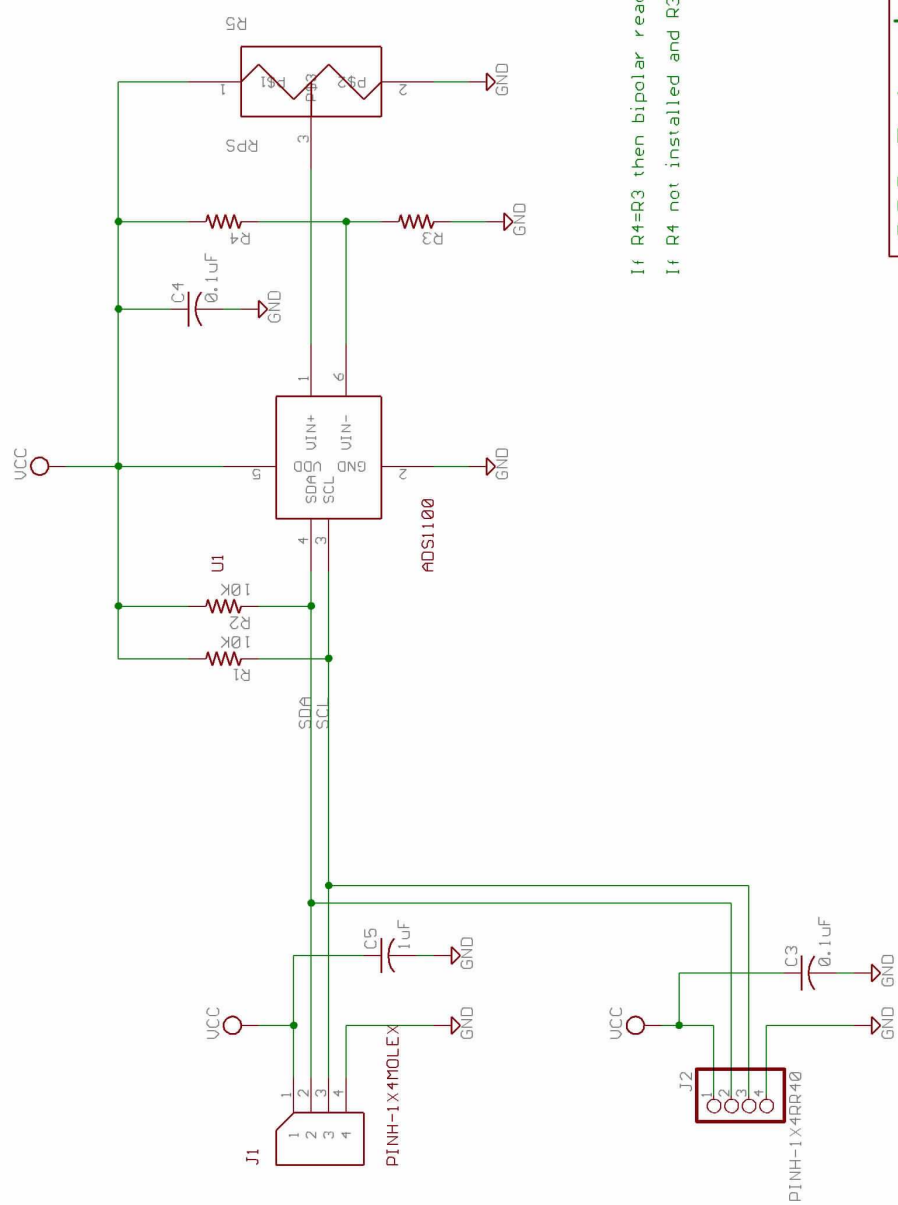
The picture below shows the optional keyed adjustment rod on the left and the RP12 mounted to a stepper motor on the right.



RP12 Circuit Schematic

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	RP12	
	PCB Rev 1.0	
	SOC Robotics, Inc. Vancouver, BC	
TITLE: RP12		
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Date: 11/19/2010 06:42:56p		
REU: A		
Sheet: 1/2		

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If R4=R3 then bipolar reading.
 If R4 not installed and R3 0R then unipolar reading.

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Notes: