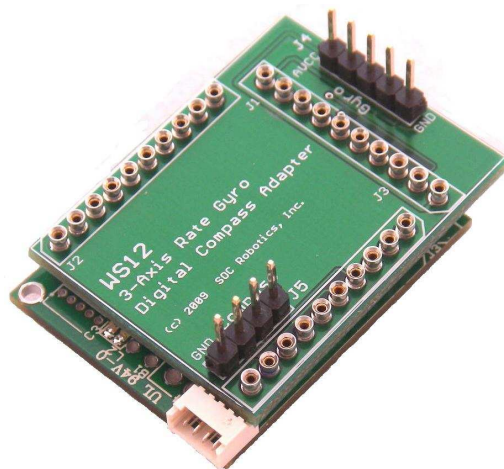


WS12 Gyro/Digital Compass Mounting Adapter

Technical Reference Manual

PCB Rev 1.0



www.soc-robotics.com

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1.0 Description

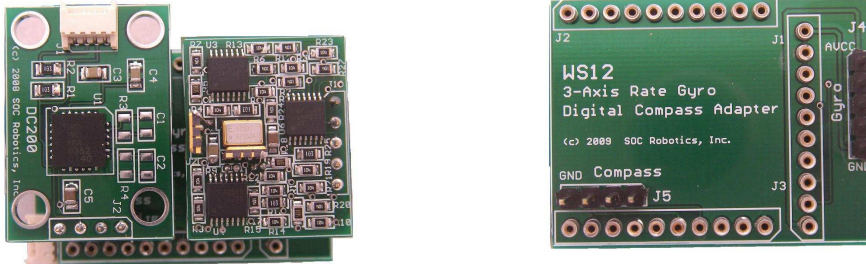
1.1 Features

- Mounting adapter for Wasp, WaspARM or WaspX
- Accepts RG10, RG20 or RG30 rate gyros
- Accepts DC200 digital compass
- 0.1" pin header for easy mounting
- Small form factor (1.15x1.50in)
- Compatible with Wasp/WaspARM/WaspX
- Sample programs included in Wasp Application Code
- Desktop Data Acquisition Device (DAD) for real time display



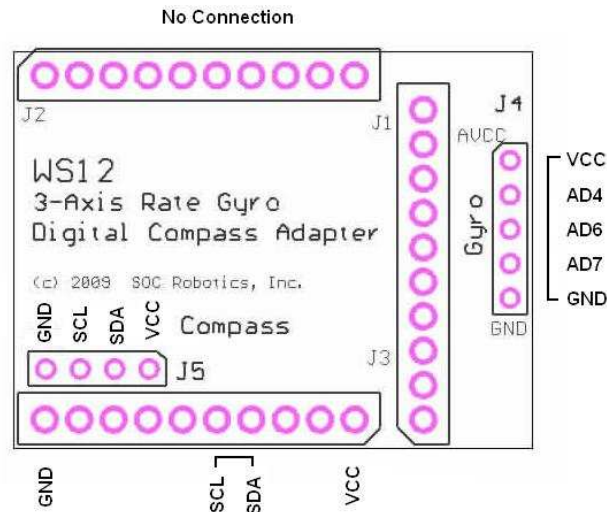
1.2 Introduction

The WS12 is a passive adapter that allows the RG10, RG20, RG30, DG200 and DG220 rate gyros, or the DC200 digital compass to be attached to the Wasp, WaspARM or WaspX embedded processors. The WS12 routes the rate gyro analog outputs to the Wasp analog inputs. The digital output of the DC200 is routed to the I2C signal lines of the Wasp.



The picture above shows the WS12 attached to a Wasp Embedded Processor with a DC200 and RG30 mounted on top (WS12 mounting adapter shown on the right).

WS12 Connector Pin Assignment



The WS12 has two headers – one for the DC200 digital compass and one for the RG10, RG20 or RG30 rate gyros. The DC200 and Rate Gyros mount to the WS12 either by soldering them in place or with a mounting connector.

1.3 Theory of Operation

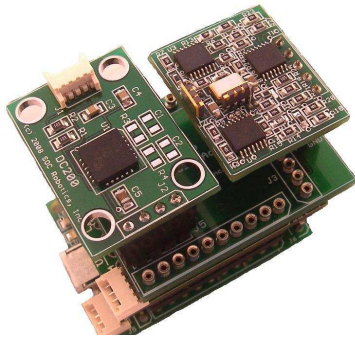
The WS12 is a simple wiring adapter with no digital or analog components mounted on the board.

1.4 Software Overview

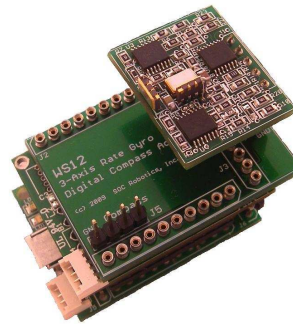
A sample application (with full source code) that configures the A/D in a Wasp (Atmega644) and outputs the rate gyro readings to the UART is available for download from our web site. A desktop GUI application called DAD is also available to display gyro output in real time in a graph is also available for download.

1.5 Related Products

The WS12 is compatible with a number of related products. The WS12 attaches to either a Wasp, WaspARM or WaspX embedded data acquisition processor.

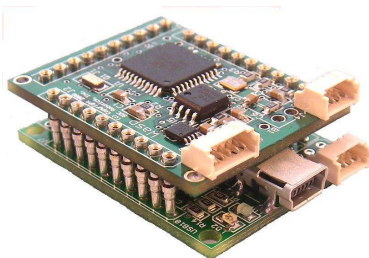


WS12 on Wasp with RG30 and DC200

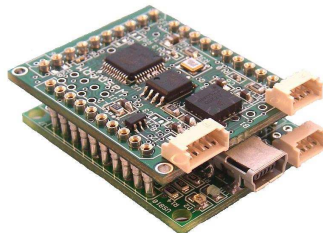


RG30 on WS12 on Wasp and USB10

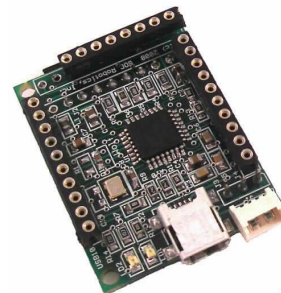
The Wasp family of products are small AVR and ARM7 based processors that can be programmed by the user to perform data acquisition tasks or using a sample data acquisition program can be turned into a real time data logger. By combining the Wasp with a USB10 a complete data acquisition system that communicates with the desktop via USB becomes possible.



Wasp on USB10

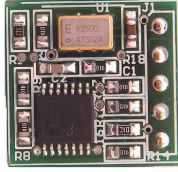


WaspARM on USB10

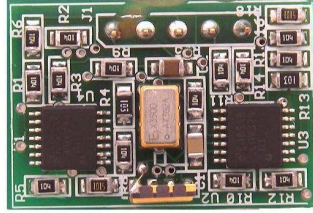


USB10

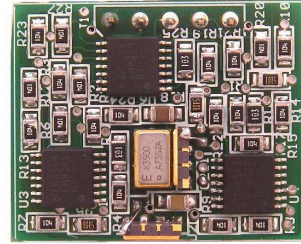
The RG10 is a single axis rate gyro, the RG20 is a dual axis rate gyro and the RG30 is a three axis rate gyro.



RG10



RG20

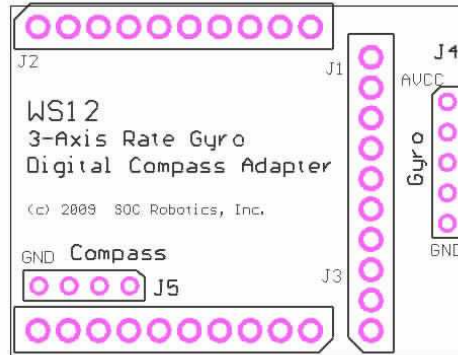


RG30

2.0 Electrical and Mechanical Description

2.1 Component Layout

Components are mounted on one side of the board.



2.2 Electrical Specifications

Electrical

Input power: NA

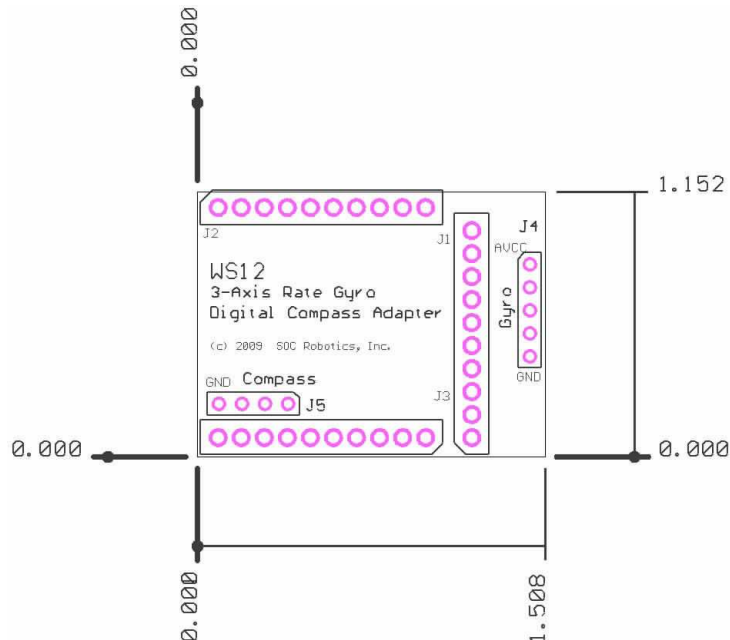
Mechanical

Dimensions: 1.15x1.50in

Weight: 8 grams

2.3 Mechanical Dimensions

Board dimensions are stated in inches.



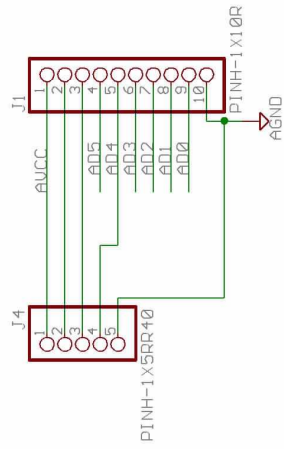
3.0 WS12 Circuit Schematics

<p>(c) Copyright 2009, SOC Robotics, Inc. All rights reserved.</p> <p style="text-align: center; font-size: 2em; color: green;">Wasp Sensor Adapter</p> <p style="text-align: center; font-size: 2em; color: green;">WS12</p> <p style="text-align: center; font-size: 1.5em; color: green;">PCB Rev 1.0</p>	<p style="color: green; font-weight: bold;">SOC Robotics, Inc.</p> <p>Vancouver, BC</p>	
	<p>TITLE: WaspSensor</p>	
	<p>Document Number: 20090609</p>	<p>REV: A</p>
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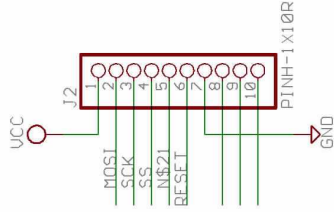
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Analog/Digital Port A

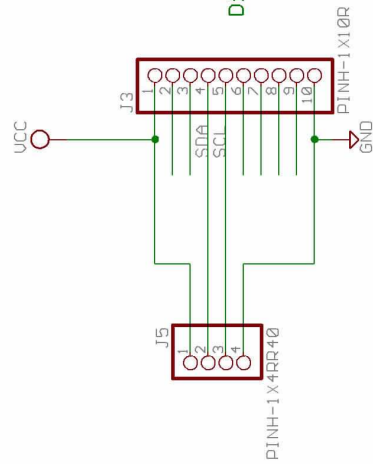
Rate Gyro Connector



Digital Port B



Digital Port C



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TITLE: WaspSensor

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Notes: