Digilent PmodCMPS™ Reference Manual

Revision: September 9, 2013
**Note:** This document applies to REV B of the board.

Overview

The Digilent PmodCMPS features the popular Honeywell HMC5883L 3-axis digital compass and can add compass heading readings to any Digilent host board with an I^2C interface.

Pmod CMPS Features Include:

- I^2C communication interface with daisy chain connectors
- ±8 gauss field detection
- external header for access to DRDY (data ready) pin
- optional pull-up resistors for SCL and SDA pins
- 160 Hz maximum data output rate

Functional Description

The PmodCMPS can be configured to run in single measurement or continuous measurement mode. Each mode has different maximum output rates. The magnetic field measured on each axis is represented as a signed 16-bit word with the five most significant bits being the sign bits.
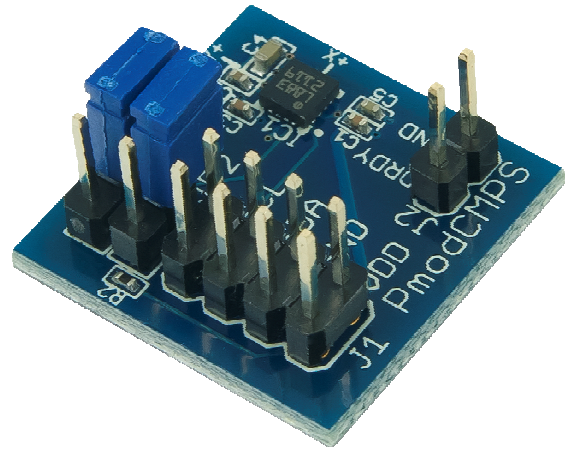
There are two eight bit registers for each axis. Once one data register is read, the other five data registers must be read before any new data can be written to those registers.

The internal address pointer automatically increments when a register is successfully read from. Once the address pointer is incremented past 0x09, it will roll over to 0x03, which represents the first axis output data register.

I^2C Interface

The PmodCMPS is an I^2C slave device that is compatible with standard and fast modes (100 kHz and 400 kHz, respectively). The 7-bit address of the PmodCMPS will be 0x1E. This address corresponds to 0x3C for a write operation and 0x3D for a read operation. Details on the I^2C operations are provided below:

Write

A write operation can be initiated with a Start condition on the I^2C bus, followed by 0x3C. When writing to a register, the desired registers address must be sent as the next byte after the PmodCMPS acknowledges that it has been addressed. The bytes sent by the master to the PmodCMPS are shown below:

1. 7-bit addresss of the PmodCMPS + write bit (0)
2. Address of internal register to write to
3. Data

Doc: 502-285

Read

A read operation can be initiated with a Start condition on the I^{2}C bus, followed by 0x3D. After the PmodCMPS acknowledges that it has been addressed on the 9th clock pulse, the data to be read will be output from the device on the next 8 clock pulses. The data sent will be from the address pointed to by the internal address pointer. This will have either been automatically incremented from the previous read operation, or set by the previous write operation.

1. 7-bit address of the PmodCMPS + read bit (1)
2. Master reads data byte sent from PmodCMPS
3. (Loop)

Note that step three is necessary when reading the 6 axis data registers. The master should read all six data registers at once.

Set Address Pointer

The address pointer can be set to any register by only completing steps one and two from the write procedure (listed above). After the PmodCMPS acknowledges the register address, the master should create a Stop condition on the I^{2}C bus.

Note: For more information on the operation of the PmodCMPS, please see the HMC5883L data sheet available from www.honeywell.com.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for digilent *manufacturer:*

Other Similar products are found below :

PMODALS PMODLVLSHFT PMODMIC3 PMODSWT NEXYS VIDEO 240-064 240-037 PMODCON3 PMODGYRO PMODMAXSONAR PMODOD1 410-083 410-221 410-293-B TDGL012 BREADBOARD EXPANSION FOR NI MYRIO 410-063 410-163 410-242 410-267 410-310 CHIPKIT WF32 410-135 PMODUSBUART WS2812 LED STRIP CMOD A7-15T PMOD JSTK2 PCAM 5C: 5 MP FIXED FOCUS COLOR CAMERA M PMOD BLE: BLUETOOTH LOW ENERGY INTERFACE EMBEDDED VISION BUNDLE NETFPGA-1G-CML 410-357-B 410-377 410-165 PMOD SF3 CORA Z7: ZYNQ-7000 SINGLE CORE CORA Z7: ZYNQ-7000 DUAL CORE PMOD AQS: DIGITAL GAS SENSOR FOR AIR QUA FMC PCAM ADAPTER ANALOG DISCOVERY 2 PRO BUNDLE PMOD PIR PASSIVE INFRARED MOTION SENSOR ECLYPSE Z7 ZYNQ-7000 SOC ZMOD ADC 1410 DUAL CHANNEL 14-BIT ADC ZMOD DAC 1411 DUAL CHANNEL 14-BIT DAC USB104 A7:ARTIX-7 FPGA BOARD PC/104 240-081 6015-410-001 PMODDA1 PMODOLED PMODSD