# PmodACL™ Reference Manual

**Revision:** August 30, 2011
**Note:** This document applies to REV E of the board.

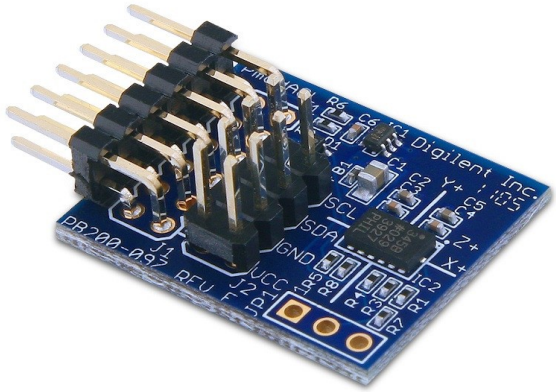
DIGILENT®
www.digilentinc.com
1300 NE Henley Court, Suite 3
Pullman, WA 99163
(509) 334 6306 Voice | (509) 334 6300 Fax

## Overview

The PmodACL is a 3-axis digital accelerometer module powered by the Analog Devices ADXL345.

Features include:

- user-selectable resolution
- single-tap/double-tap detection
- activity/inactivity monitoring
- free fall detection
- SPI and $I^2C$ interfaces




## Functional Description

The PmodACL uses a standard 12-pin connector and can communicate via SPI or $I^2C$. A pull-up resistor on the ~SS line keeps the ADXL345 in $I^2C$ mode unless the host drives the line low, in which case the device will communicate via SPI.

## Interface

All communications with the device must specify a register address and a flag indicating whether the communication is a read or a write. This is followed by the actual data transfer.

Device configuration is performed by writing to control registers within the device. Accelerometer data is accessed by reading device registers.

A full list of registers and their functionality, as well as communication specifications, is found in the ADXL345 datasheet available on the Analog Devices website.

***Interface Connector Signal Description***

| **Connector J1 – SPI Communications** | | |
|---|---|---|
| **Pin** | **Signal** | **Description** |
| 1 | ~SS | Slave Select |
| 2 | MOSI / SDA | SPI Master out Slave in Data / $I^2C$ Data |
| 3 | MISO | SPI Master in/Slave out Data |
| 4 | SCLK | Serial Clock |
| 5 | GND | Power Supply Ground |
| 6 | VCC | Power Supply (3.3V) |
| 7 | INT2 | Interrupt 2 |
| 8 | INT1 | Interrupt 1 |
| 9 | NC | Not Connected |
| 10 | NC | Not Connected |
| 11 | GND | Power Supply Ground |
| 12 | VCC | Power Supply (3.3V) |

The SPI interface standard uses four signal lines. These are slave select (~SS), master out slave in (MOSI), master in slave out (MISO), and serial clock (SCLK). These signals map to the following signals on the ADXL345: ~SS corresponds to the Chip Select signal (~CS), MOSI corresponds to Serial Data Input (SDI), MISO corresponds to Serial Data Output (SDO), and SCK corresponds to the Serial Clock signal (SCLK).

| Connector J2 – I²C Communications | | |
|---|---|---|
| **Pin** | **Signal** | **Description** |
| 1, 2 | SCLK | Serial Clock |
| | | |
| 3, 4 | SDA / SDI / SDIO | I²C Data / SPI Master out Slave in Data |
| 5, 6 | GND | Power Supply Ground |
| 7, 8 | VCC | Power Supply (3.3V) |

The I²C interface standard uses two signal lines. These are I²C data (SDA) and serial clock (SCLK). These signals map to the serial data (SDA) and serial clock (SCLK) respectively on the ADXL345.