PmodMIC™ Reference Manual

Revised March 19, 2015
This manual applies to the PmodMIC rev. B

Overview

The Digilent PmodMIC is a small microphone module with a digital interface. With Semiconductor® SA575 Low Voltage Compandor and Texas Instruments® ADCS7476 12-bit Analog-to-Digital Converter, you can capture your audio inputs with ease.
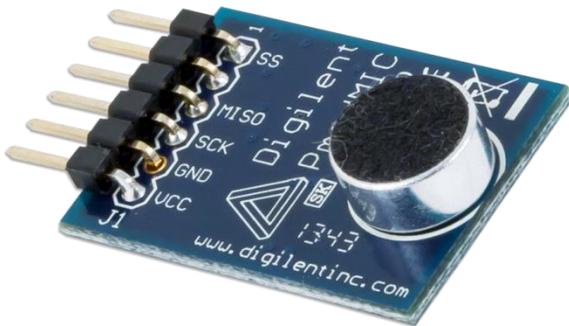
Features include:

- Dynamic Range compressor
- 12-bit ADC
- Condenser Microphone

The PmodMIC.

1   Functional Description

The PmodMIC is designed to digitally report to the host board whenever it detects any external noise. By sending a 12-bit digital value representative of frequency and volume of the noise, this number can be processed by the system board and have the received sound accurately reproduced through a speaker.

The dynamic range compressor on the microphone module helps restrict incoming audio decibels by making the softer sounds louder and the louder sounds softer. The SA575 has its compressor rated for a unity gain level of 0.5 decibels meaning that incoming audio signals will have their decibel level decreased by half, bringing a signal with at -40dB to -20dB.

2   Interfacing with the Pmod

The PmodMIC communicates with the host board via the SPI protocol. The 12 bits of digital data are sent to the system board in 16 clock cycles with the most significant bit first. For the ADC7476, each bit is shifted out on each falling edge of the serial clock line after the chip select line is brought low with the first four bits as leading zeroes

and the remaining 12 bits representing the 12 bits of data. The datasheet for the ADC7476 recommends that for faster microcontrollers or DSPs that the serial clock line is first brought to a high state before being brought low after the fall of the chip select line to ensure that the first bit is valid.

2.1 Pinout Table Diagram

Pin	Signal	Description
1	SS	Chip Select
2	NC	Not Connected
3	MISO	Master-In-Slave-Out
4	SCK	Serial Clock
5	GND	Power Supply Ground
6	VCC	Power Supply (3.3V/5V)

The PmodMIC is capable of converting up to 1 MSa per second of 12-bit data, making it an ideal Pmod to use in conjunction with the PmodI2Sfor an audio development application.

Any external power applied to the PmodMIC must be within 3V and 5.5V to ensure that the on-board chips operate correctly; however, it is recommended that Pmod is operated at 3.3V.

3   Physical Dimensions

The pins on the pin header are spaced 100 mil apart. The PCB is 1.1 inches long on the sides parallel to the pins on the pin header and 0.8 inches long on the sides perpendicular to the pin header.