

Digilent PmodDA3™ Digital To Analog Module Converter Board Reference Manual



215 E Main Suite D | Pullman, WA 99163
(509) 334 6306 Voice and Fax

Revision: December 5, 2012

Overview

The Digilent PmodDA3 Digital to Analog Module Converter changes signals from digital values to analog voltages on a single channel with sixteen bits of resolution. The PmodDA3 uses a standard 6-pin header to interface with your Digilent system board.

Features include:

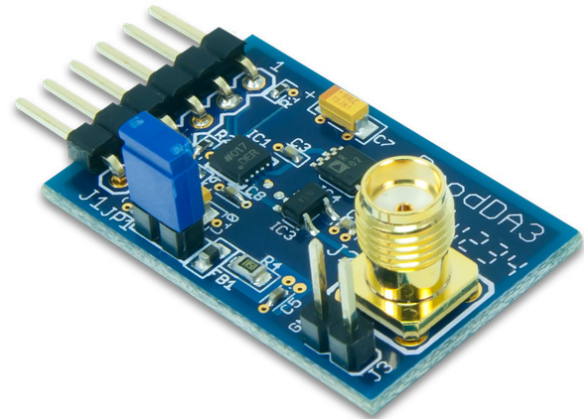
- one Analog Devices AD5541A 16-bit digital-to-analog converter
- 6-pin header
- 2.5V reference voltage
- very low noise
- SMA connector for analog out

Functional Description

The PmodDA3 can produce an analog output ranging from 0V to 2.5V. It has two simultaneous D/A conversion channels, each with a 12-bit converter that can process separate digital signals.

The PmodDA3 comes equipped with an Analog Devices AD5541A digital-to-analog converter. This converter sends commands via the SPI/MICROWIRE™ serial bus to the D/A converter to produce outputs. The controller can operate with clock rates up to 50MHz. A two byte write to the device will store the value written into the serial input register. The LDAC pin controls when the output synchronizes with the stored value in the serial input register. When the LDAC pin is brought low, the output synchronizes simultaneously.

We designed the PmodDA3 to work with either Digilent programmable logic system boards or embedded control system boards. Most Digilent system boards, such as the Nexys, Basys, or Cerebot, have 6-pin connectors that



allow the PmodDA3 to plug directly into the system board or to connect via a Digilent six-wire cable

See Table 1 for a description of the signals on the interface connectors J1 and J3. For additional design information, please refer to the PmodDA3 schematic available on the Digilent web site at www.digilentinc.com.

The PmodDA3 is usually powered through the connection with your Digilent system board. The ground and power connections are on pins five and six of the digital interface connector J1. You can also power the PmodDA3 from an external power supply provided through pins one and two on the J3 connector. If you use an external power supply, leave JP1 unloaded. Damage may result if you load this jumper when supplying power from an external source.

Digilent conventionally recommends providing 3.3V to power your Pmod modules. However, you can operate the PmodDA3 at any power supply voltage between 2.7V and 5.5V. Operators should exercise caution if using any voltage greater than 3.3V to avoid damage to their Digilent system board. Refer to the reference manuals and schematics for your

system board for more information. These reference documents are available on the Digilent website.

For more information on the digital-to-analog converter, consult the Analog Devices AD5541A datasheet available at:

www.analog.com.

Digital Interface – J1	Signal
1	CS
2	DIN
3	LDAC
4	SCLK
5	GND
6	DVDD
Digital Interface – J3	
1	GND
2	AVDD

Table 1: *Interface Connector Signal Descriptions*