

PCI-DPGA™

Digital Pulse Generation & Analysis

Description

The rtX PCI-DPGA, Digital Pulse Generation & Analysis, board is a platform for performing a wide range of digital waveform generation and analysis using a high performance microprocessor. Capabilities include PWM waveform generation, PWM frequency and duty cycle measurement, arbitrary pulse train generation and measurement, and stepper and brushless DC motor waveform generation and measurement.

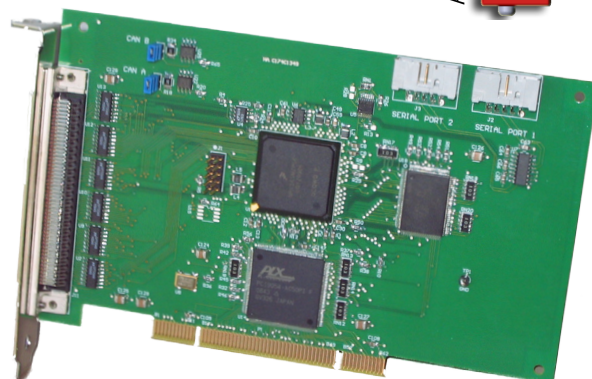
The DPGA contains standard functions such as the PWM inputs and outputs that measure duty cycle and frequency but the DPGA also contains 48 programmable channels that use the timing processor unit (TPU3) of the onboard Freescale microprocessor.

These programmable channels can be used for a wide range of functions including quadrature encode, decode for stepper motor control or monitoring or simply to add additional channels of PWM inputs, outputs or digital IO. These channels are very versatile and can be used for a wide variety of digital functions. The internal timebase for all functions is derived from the system clock of 50MHz.

Software Support Package

The software support package for the rtX PCI-DPGA board provides a logical device for ADI's ADvantage Framework supporting PWM generation and measurement and real-time drivers for the rtX's QNX operating system. Check with ADI for the latest information on which other functions are available.

The rtX PCI-DPGA can easily be connected to models or interactively controlled via user interface or test scripts. The DPGA has a microprocessor on the IO board so the overhead to the model is very small. For example, regardless of the framerate of the model the microprocessor running on the DPGA can generate pulses and measure pulses and simply pass the results to the model at the framerate of the model.



Features

- 8 dedicated channels for PWM waveform generation
- 8 dedicated channels for PWM frequency and duty cycle measurement
- 8 channels of general purpose I/O
- 48 channels of programmable waveform generation and/or measurement
- 2 channels Controller Area Network (CAN)
- All digital I/O is compatible with standard TTL levels
- Requires a half-length PCI slot

Specifications

PWM Input

Channels	.....	8
Time resolution	.....	Selectable range (80 ns to 20 μ s in steps of 80 ns)
Frequency range	.....	20kHz to 0.763Hz
Duty cycle	.....	0 - 100%
Duty cycle step size	.....	resolution * frequency * 100%
Pulse polarity	.....	Software configurable
TTL level	.....

PWM Output

Channels	.....	8
Time resolution	.....	Selectable range (80 ns to 20 μ s in steps of 80 ns)
Frequency range	.....	3MHz to 0.763 Hz
Max frequency	.....	1 / (resolution * 4)
Min frequency	.....	1 / (resolution * 65536)
Duty cycle	.....	0 - 100%
Duty cycle step size	.....	resolution * frequency * 100%
TTL level	.....

General Purpose I/O

General purpose digital inputs and outputs		
Channels	.....	8 bidirectional
TTL level	.....

Controller Area Network (CANbus) Interface (Optional)

Supports two CAN interfaces		
Channels	.....	2
High-speed transceiver	.....	ISO 11898-2 / J1939 / J2284
Jumper-selectable termination		

rtX - The expandable Real-Time Simulator