

DP-cPCI-2601

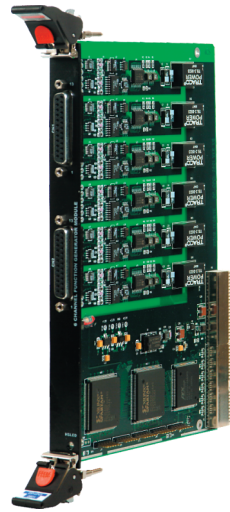
6 Channel Function Generator / Flow Simulator

KEY FEATURES AND BENEFITS

- 6 individually programmable channels for waveform generation
- Sine, Square, Ramp, Triangle and Pulse as built-in waveforms
- User defined arbitrary waveforms
- Programmable amplitude upto 20Vp-p in steps of 2 mV
- Programmable DC offset control from -10V to +10V in steps of 5 mV
- Linear sweep from 10 mHz to 5 kHz
- Arbitrary waveform upto 20 kHz
- Profile simulation
 - Continuous mode
 - Single shot mode
- 90µSec TTL trigger pulses
- Isolated analog outputs
- 500V channel to channel isolation
- Hot swap compliant
- Single slot 6U form factor
- Windows 2000 drivers provided
- RT Linux drivers provided

APPLICATIONS

- Low frequency waveform generation
- Verification of data acquisition system
- Automated testing system
- Simulation of shock and vibration signals
- Component/Circuit analysis
- Transducer testing
- Filter response testing
- Cross talk measurement



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DESCRIPTION

DP-cPCI-2601 is a 6 Channel 2MS/s Waveform Generator with high frequency performance, versatility and compact size in an economical cPCI bus format. Signal output in the range of 10 mHz to 5 KHz with 14 bit vertical resolution makes this single slot, 6U-sized cPCI card a powerful solution to meet most demanding test stimulus.

DP-cPCI-2601 uses Direct Digital Synthesis (DDS) technique to generate stable and accurate output waveforms down to 0.01 Hz resolution. DP-cPCI-2601 offers Sine, Square, Ramp, Triangle, Pulse as built-in wave shapes and user defined arbitrary waveform.

DP-cPCI-2601 can frequency sweep any of its function outputs. User can sweep upwards using linear sweeps. Unlike conventional Function Generators, there are no annoying discontinuities when sweeping through the entire frequency range. Further the DDS architecture inherently allows smooth and phase-continuous sweeps over the entire range.

DUAL MULTIPLYING DAC

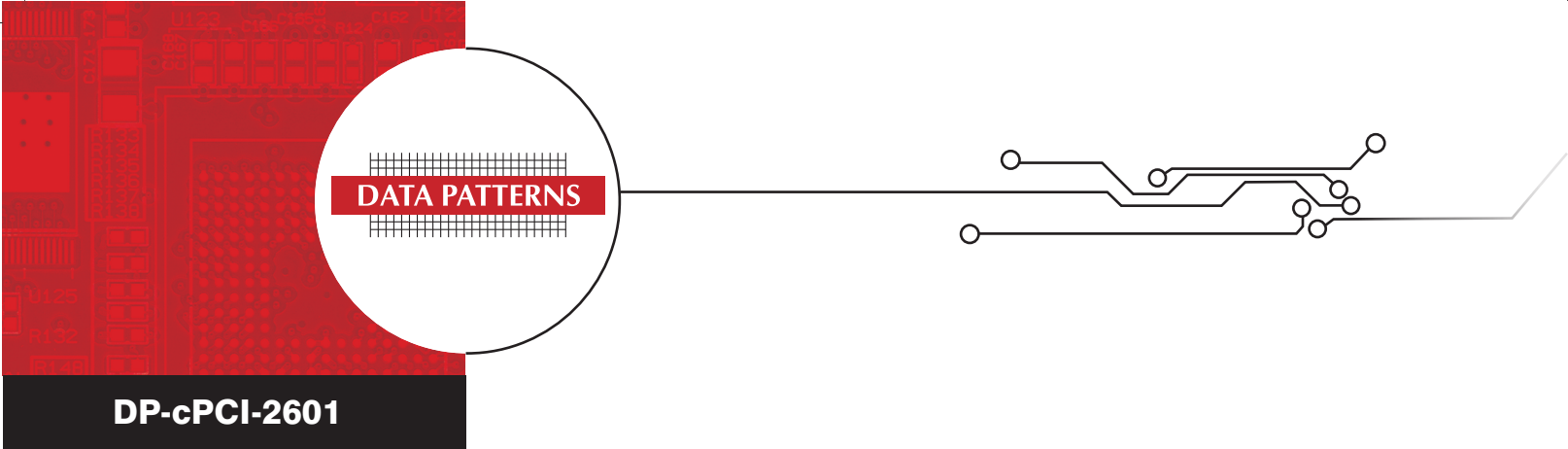
Each output channel has a dual multiplying 14 bit DAC for waveform and amplitude adjustments. Another 12 bit DAC provides a continuously programmable variable DC offset. A laser trimmed high precision reference generator provides Vref of +10V for DACs. The data from waveform memory drive DACs for output generation.

CALIBRATION FUNCTION

Calibration is done by operating the soft front panel. Calibration values are stored on the on-board EEPROM and are made available as and when the module is powered ON. These values do not get affected even when the module is interchanged between slots.

ISOLATED OUTPUT AND RANGE SELECTION

DC-DC Converter and opto-couplers across each channel provide isolation for the analog section from the cPCI backplane. A single pole 360KHz filter across each channel suppresses quantization noise. Isolation of 500V DC is also available between channel to channel as well as channel to field.



DATA PATTERNS

DP-cPCI-2601

Software controls are provided to select the desired wave shape amplitude, frequency and offset. User can create any variety of production or engineering stimulus.

TRIGGERING CAPABILITY

An internal timer in each channel repetitively provides TTL output trigger of 90 μ Sec at the beginning of every output cycle. This aids in synchronizing with other test instruments.

EXTERNAL TRIGGER

In addition to continuous output, the DP-cPCI-2601 can also wait for an external trigger to initiate either a single arbitrary waveform or a sequence of waveforms across output channels.

PROFILE SIMULATION

This module provides 2048 programable profiles for all output channels. Each channel can be programmed for various profiles of frequency, amplitude and cycles. The profiles can be generated in response to user defined time interval or external trigger input. The profiles are operable in both single shot and continuous mode. In single shot, a set of profiles can be executed in sequence once and in continuous mode the sequence is repeated over multiples times as defined by the user.

WAVEFORM GENERATION

Each channel has waveform memory of 1024 samples, with sampling rate variable from 10S/s (min) to 2MS/s (max). By programming the wave shape in the program memory, sine waves upto 5KHz with 325 points per cycle is generated. Sine waves greater than 20 KHz can be generated in arbitrary waveform mode, by programming multiple cycles in to the waveform memory.

SOFTWARE SUPPORT

DP-cPCI-2601 is supplied with device drivers on Windows 2000 and RT Linux. Please contact factory for support on other operating platforms like VxWorks, QNX, Lynx etc.

DATA PATTERNS

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SPECIFICATIONS

No. of Channel	6	TRIGGERING CHARACTERISTICS	
AMPLITUDE CHARACTERISTICS		External trigger input (TRIG IN)	
Amplitude	Upto 20Vpp	V_{IH}	2.3V
Resolution	14 bits (2 mV)	V_{IL}	0.8V
DC accuracy	$\pm 0.025\%$ of FSR	I_{IH}	5mA
DC offset range	-10V to +10V	Trigger Out (TRIG OUT)	
DC Offset resolution	12 bits (5mV)	V_{OH}	2.4V
Isolation (ch. to ch.)	500V	V_{OL}	0.8V
Output short circuit current	25mA	I_{OH}	0.5 mA
Output short circuit duration	Infinite	I_{OL}	8 mA
STANDARD WAVEFORMS		CPCI BUS INTERFACE DATA	Single-slot Backplane signal support Status lights Geographical addressing provision Blue light for Hot swap indication
Frequency resolution	0.01Hz	CONNECTOR	
Accuracy	$\pm 0.01\%$ of FSR	Backplane Interface	cPCI interface
Stability	100 ppm	Field Interface	2 x 25 Pin D type female connector
Frequency ranges	10 mHz - 5 KHz	ENVIRONMENT	
ARBITRARY WAVEFORMS		Commercial version only	
Waveform memory	1K Points per channel	ORDERING INFORMATION	
OPERATING MODES		DP cPCI 2601 3 0 0	
Normal mode	Normal & Triggered mode		
Triggered mode	Programmed output waveform One segment of profile/Trigger		

BLOCK DIAGRAM OF DP-cPCI-2601

