DAx14000 - 4.0 GS/sec, 12-Bit, Arbitrary Waveform Generator (USB interface)

Made by WavePond® - A division of Chase Scientific Company

FEATURES

- 1 Chan, 4.0 GS/sec, 12-Bit D/A resolution
- DC Coupled into 50 ohms; 4 / 16 MSamples/Ch
- 1ppm Internal Clock Stability, < 5psec Jitter
- Wideband SFDR < -40 dbc @ (DC to 1.5 GHz)
- Full scale Trise/Tfall = 180 picoseconds (typ)
- Prog. Master Clock (25MS/s - 4GS/s), Int./Ext. Trig
- 10 MHz External or Internal Reference Clock
- Programmable Segmentation Size, Trig, Looping
- (2) TTL marker outputs
- USB Box (standard)
- Software GUI and API for WinXP, Win7-32/64

APPLICATIONS

- Radar Signal Generation and Testing
- Telecom / Data Communications
- Optical and Magnetic Storage Testing
- Arbitrary RF Signal Generation
- Wireless Communications Testing
- Electron Para./Spin Resonance Spectroscopy
- Network Analysis
- Pulse Generation (pulse shaping)

DESCRIPTION

General

The 4.0 GSPS, DAx14000 is a highly versatile PC controlled Arbitrary Waveform Generator. It incorporates many advanced features such as programmable segment sizes, looping, and individual segment triggering. Since the data downloaded to the card can be arbitrary almost any waveform that the user can imagine can be created. Whether it be random noise, a custom shaped pulse, a pure sine wave, a modulated subcarrier, or an encoded radar signature, the DAx14000 will faithfully reproduce it.

The high speed D/A clock generator can be referenced internally or externally to 10 MHz. The internal clock generator is user programmable from 25 MS/sec to 4.0 GS/sec with less than 5 psec jitter. The internal clock accuracy is 1ppm standard or can lock to external 10 MHz reference clock.

Triggering

The DAx14000 board can be triggered by a TTL signal, pulsed PECL, or software command. Looping can be set for continuous or under user program control.

Memory

The DAx14000 comes standard with 4 MSamples of QDR SRAM memory (16MS optional).

GUI Interface and SDK

The DAx14000 comes with a GUI program that can perform tasks like loading waveforms from a file to generating sine / square / and triangle waves, changing clock rates, triggering etc. The user can use the command line API or a simple DLL type API. The command line version works with any application or compiler - compatibility is guaranteed. You can also use script files.
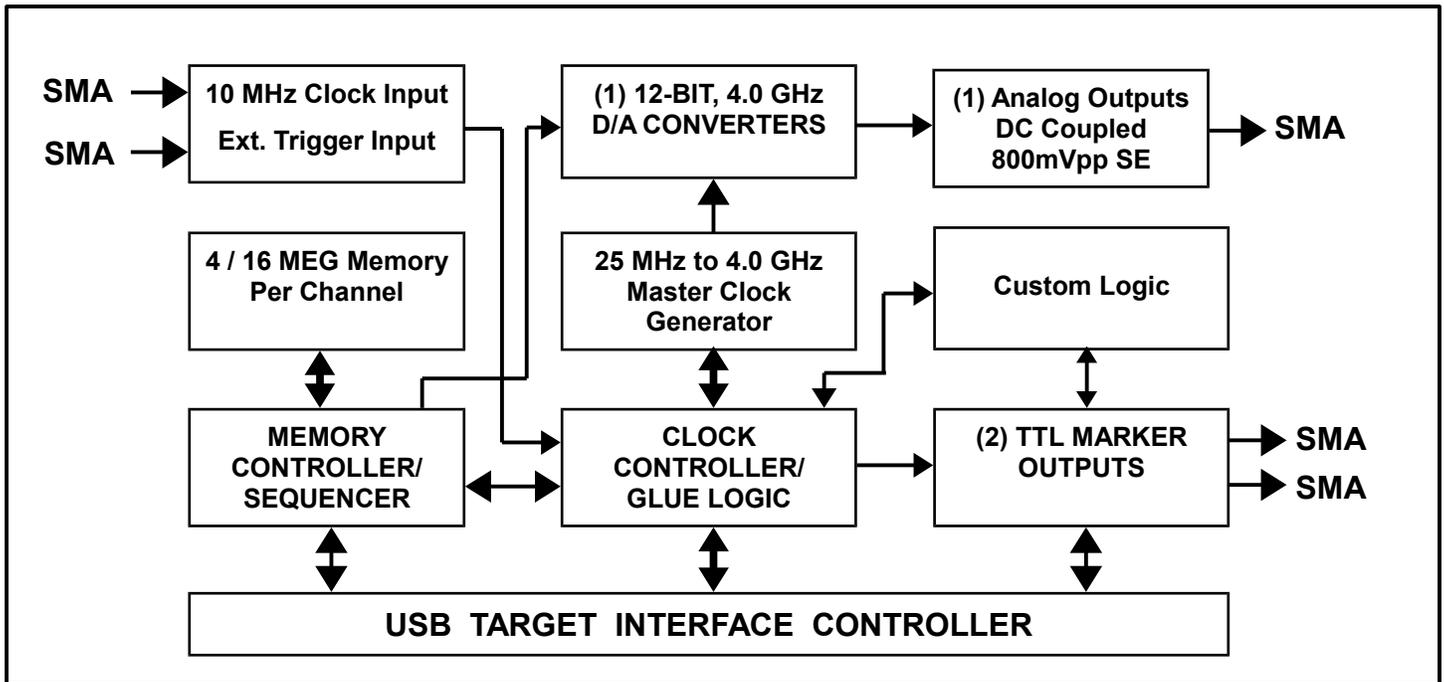
DAx14000 BLOCK DIAGRAM

SPECIFICATIONS

Analog Output: (Dual Channel)
(T=25°C unless otherwise stated)

Parameter	Conditions/other	Typical Values
Vertical Resolution	Fclk = 4.0 GHz	12-Bit (1 out of 4096)
Output Impedance/Coupling		50 ohms / DC Coupling
Amplitude		
(1) Fixed output	Fclk = 4.0GHz	635 mVpp typical single-ended into 50 ohms (SMA connectors)

Rise Time (20-80%, no filters)		180 psec typical into 50 ohms
Fall Time (20-80%, no filters)		180 psec typical into 50 ohms
Internal Clock Jitter		< 5 psec typical
Delay between trigger and output		42 ns typical @ 4GHz
Maximum re-trigger rate		2 MHz

SFDR (Spurious Free Dynamic Range)

DC < Fout < 1.5 GHz, Fclk = 4.0 GHz		< -40 dB typical

Internal Clock Rate Generator

Frequency range		25 MHz to 4.0 GHz
Resolution		< 10 KHz (typ.)
Stability	T = 0°C – 70°C	+/- 1 ppm

Memory

Waveform	Base Model	4 MWords x 12-Bits
	Maximum RAM	16 MWords x 12-Bits
# of User Segments		**1 to 60 segments (max)**
Segment Size Range		**128 Samples up to total memory**
Segment Resolution		**32 Samples**
Maximum Segment Loops		**65,534**

DIGITAL OUTPUTS:

(2) TTL Markers Fclk/16 resolution, 50 ohms output impedance, 3.3VTTL

DIGITAL INPUTS:

Ext. Clk Input 50 ohms SMA inputs: 10 MHz, square Wave, 0dBm-10dBm, AC coupled.

TTL Trigger Input Rising Edge Retriggerable SMA connector, DC coupled, Threshold=1.0V, 50 ohms.

ENVIRONMENTAL (DAx14000)

Temperature

Operating	0°C to 50°C Ambient
Non-operating	-40°C to 85°C

Humidity

Operating	20% to 80% (no condensation)
Nonoperating	5% to 95% (no condensation)

Power

+5V	10.0 Watts Typical @ 4 MW, 4 GSPS, Active
	11.7 Watts Typical @ 4 MW, 4 GSPS, Active

Size

DA14000-Box	L=4.75", W=4.75", H=1.5"

ORDER INFORMATION

Model Number	Description
DAx14000-4M	1-Ch, 4.0 GSPS w / 4 MEG Memory
DAx14000-16M	1-Ch, 4.0 GSPS w / 16 MEG Memory

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