FEATURES

- (1) Chan, 2.5 GS/sec/chan, 12-Bit D/A resolution
- DC Coupled into 50 ohms; 2, 8 MSamples/Ch
- 1ppm Internal Clock Stability, < 5psec Jitter
- SFDR less than -50 dbc @ 825 MHz (min)
- Full scale Trise/Tfall = 180 picoseconds (typ)
- Internal Master Clock, Int./Ext. Trigger
- Programmable segmentation size, trig, looping, etc.
- (2) TTL marker outputs
- Aluminum USB Enclosure
- Software GUI and API for Windows XP, Windows 7 (32-bit/64-bit), and others (email).

APPLICATIONS

- Radar Signal Generation and Testing
- Telecom / Data Communications
- Optical and Magnetic Storage Testing
- Arbitrary RF Signal Generation
- Wireless Communications Testing
- Real World Simulations
- Network Analysis
- Pulse Generation

DESCRIPTION

General

The 1 channel, 2.5 GSPS, DAx12000 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 DAx12000 will faithfully reproduce it.

The high speed D/A converter (DAC) can be clocked internally or externally (opt.). Because the DAC is only running at half of its maximum clock rate of 5.0 GHz, the signal quality is exceptional. Most products in the AWG market are usually running at their maximum clock rates at reduced quality to meet marketing goals.

Triggering

The DAx12000 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 DAx12000 comes standard with 2 Mega-Samples (8MS optional) of independent memory PER channel. Segment size controls are common to both channels.

GUI Interface and SDK

The DAx12000 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 programming interface for the DAx12000 is a simple DLL that uses C type software calls that are compatible with most software development tools.
### SPECIFICATIONS

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Conditions/other</th>
<th>Typical Values</th>
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</thead>
<tbody>
<tr>
<td>Vertical Resolution</td>
<td>Fclk = 2.5 GHz</td>
<td>12-Bit (1 out of 4096)</td>
</tr>
<tr>
<td>Output Impedance/Coupling</td>
<td></td>
<td>50 ohms / DC Coupling</td>
</tr>
<tr>
<td>Amplitude</td>
<td></td>
<td>750 mVpp typical single-ended into 50 ohms (SMA connectors)</td>
</tr>
<tr>
<td>(1) Fixed outputs</td>
<td>Fclk = 2.5GHz</td>
<td>750 mVpp typical single-ended into 50 ohms (SMA connectors)</td>
</tr>
<tr>
<td><strong>Rise Time</strong></td>
<td>(20-80%, no filters)</td>
<td>180 psec typical into 50 ohms</td>
</tr>
<tr>
<td><strong>Fall Time</strong></td>
<td>(20-80%, no filters)</td>
<td>180 psec typical into 50 ohms</td>
</tr>
<tr>
<td><strong>Internal Clock Jitter</strong></td>
<td></td>
<td>&lt; 5 psec typical</td>
</tr>
<tr>
<td><strong>Delay between trigger and output</strong></td>
<td></td>
<td>36 ns typical @ 2GHz</td>
</tr>
<tr>
<td><strong>Maximum re-trigger rate</strong></td>
<td></td>
<td>2 MHz</td>
</tr>
<tr>
<td><strong>SFDR (Spurious Free Dynamic Range)</strong></td>
<td>DC &lt; Fout &lt; 825 MHz, Fclk = 2.5 GHz</td>
<td>&lt; -50 dB Minimum</td>
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</tbody>
</table>

**Internal Clock Rate Generator**
- Frequency range: 25 MHz to 2.5 GHz
- Resolution: < 10 KHz (typ.)
- Stability: T = 0°C – 70°C +/- 1 ppm

**Memory**
- Base Model: 2 MWords x 12-Bits
- Maximum RAM: 8 MWords x 12-Bits

**# of User Segments**
- 1 to 60 segments (max)

**Segment Size Range**
- 48 Samples up to total memory

**Segment Resolution**
- 16 Samples

**Maximum Segment Loops**
- 65,534

**DIGITAL OUTPUTS:**
- Fclk/16 resolution, 50 ohms output impedance, 3.3V TTL

**DIGITAL INPUTS:**
- Ext. Clk Input (custom Option) 50 ohms SMA inputs: 100 MHz to 2.0 GHz, square Wave, 0dBm-10dBm, AC coupled.

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

**ENVIRONMENTAL (DAx12000)**
- **Temperature**
  - Operating: 0°C to 50°C Ambient
  - Non-operating: -40°C to 85°C
- **Humidity**
  - Operating: 20% to 80% (no condensation)
  - Non-operating: 5% to 95% (no condensation)
- **Power**
  - +5V: TBD Watts @ 2MWords Typical Not Active
  - TBD Watts @ 2 MWords Typical Active
- **Size**: DA22000-Box L=4.75”, W=4.75”, H=1.5”

### ORDER INFORMATION

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAx12000-2M</td>
<td>1-Ch, 2.5 GSPS w / 2 MEG Memory/Ch</td>
</tr>
<tr>
<td>DAx12000-8M</td>
<td>1-Ch, 2.5 GSPS w / 8 MEG Memory/Ch</td>
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