CompuScope BASE-8 digitizer product introduction

The BASE-8 CompuScope is an 8-bit analog-to-digital PCI card with a sampling speed of 500 MS/s, 200 MHz bandwidth, and up to 256 MS of optional on-board memory. The BASE-8 CompuScope is ideal for Original Equipment Manufacturers (OEMs) who require analog-to-digital conversion in their systems and need to keep the cost as low as possible. Key features include:

- 1 digitizing channel
- 500 MS/s maximum sampling rate
- 8-bit vertical resolution
- Optional 8, 64, or 256 MS of on-board memory
- 200 MHz input analog bandwidth
- Timing synchronization with External Trigger Input
- Ease of system development with Software Development Kits (SDKs) for C/C#, MATLAB, and LabVIEW. Operation under Visual Basic.NET, LabWindows/CVI, and Delphi is also possible from the C/C# Software Development Kit
- Pre-Trigger Multiple Record functionality, which helps optimize the use of the on-board memory by stacking data from successive acquisitions
- Accuracy of ±1% for precise absolute measurements
- On-board self-calibration to guarantee consistent accuracy across input ranges and modes of operation. Self-calibration can be automatic or user-controlled to minimize down time and ensure availability of the card for measurement in test systems.
- Full-featured front-end, with software control over input ranges and coupling
- Excellent frequency response and minimal phase distortion characteristics
- Timestamping of acquired records using an on-board 44 bit counter that is clocked by a 66 MHz crystal oscillator. This is particularly useful in Multiple Record mode. Optionally, the time-stamp counter can use the sample clock as its source.
- On-board Phase Lock Loop (PLL) circuitry creates sampling clock signal that is disciplined to on-board 10 MHz reference signal with 1 Part Per Million (PPM) accuracy

BASE-8 CompuScope digitizer connectors and headers

CompuScope cards connect to the outside world through connectors, both analog (SMAs) and digital (PCI bus). This section describes these connectors for the BASE-8 card.

The connectors and headers on the BASE-8 digitizer are shown below:

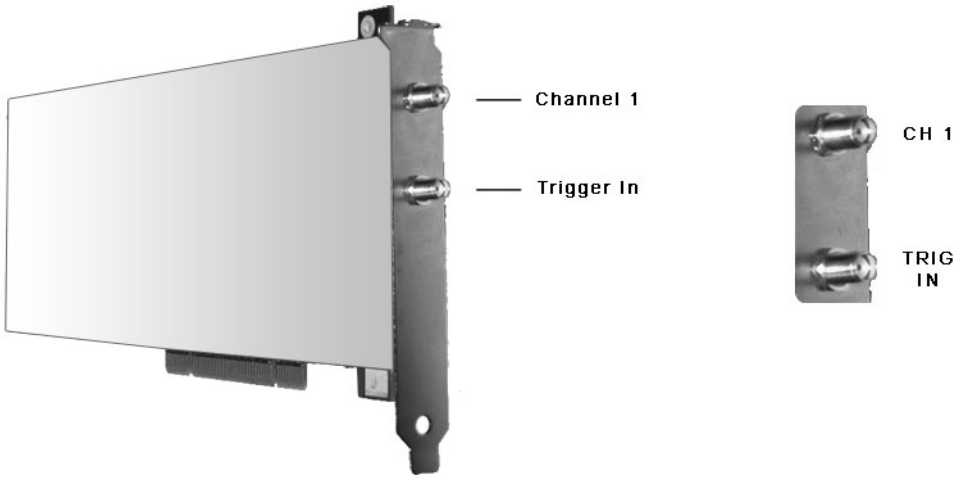

Figure 1: Connectors on the BASE-8 Digitizer

- **Channel 1 SMA** connector is the single-ended signal input for Channel 1.
- **Trigger In SMA** connector is used to input a signal that is used as an External Trigger. External Trigger is defined exactly as in an oscilloscope. This signal can be used to trigger the system but cannot be viewed or digitized.

BASE-8 CompuScope digitizer frequency response and bandwidth-limiting filter

A graph indicating the input frequency response of the input channel is shown below.

Designed to satisfy a wide range of applications, BASE-8 digitizers provide frequency measurements as precise and reliable as possible over the analog bandwidth of the card. The BASE-8 digitizers have a very flat frequency response, minimizing the attenuation or amplification of frequency components.

The figure below illustrates the actual frequency response of the BASE-8 digitizers using the following acquisition parameters. The sampling rate is 500 M/s. The input range is ±2V with DC input coupling and 50 Ω terminating input impedance.

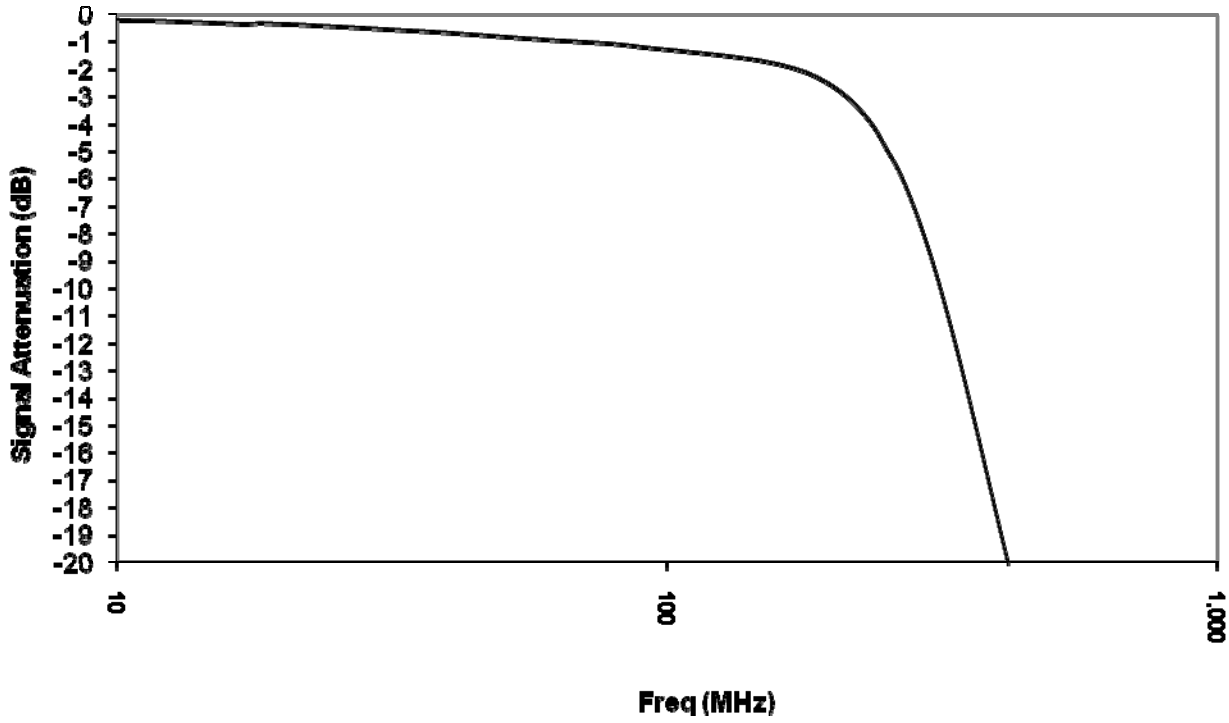

Figure 2: Illustration of the BASE-8 frequency response