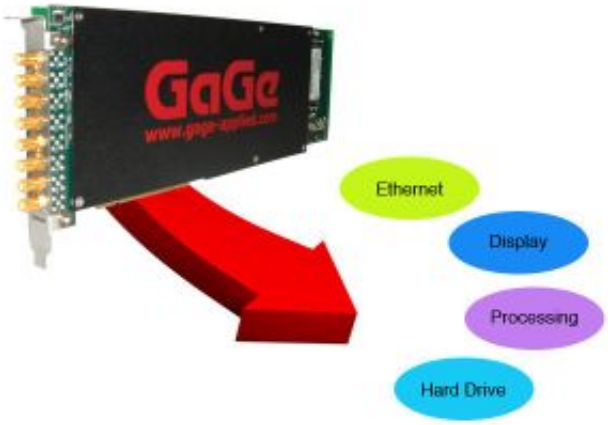
Gage eXpert FPGA Realtime Data Streaming

Order-Nr.: STR-181-000 Series/Model: eXpert Stream-to-Analysis



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FPGA Daten Streaming für Gage PCIe Digitizer / Oszilloskope

Main Product Features

- Allows streaming of waveform data directly to PC RAM
- Operates in Continuous one-shot or Segmented (Multiple Record) Mode
- Optimized Stream-to-Disk Systems available for high capacity data recording
- Stream-to-Analysis functionality enables user to create streaming application software
- Comprehensive tracking of data loss

Overview: All Gage PCI Express CompuScopes are able to Stream waveform data through the PCI Express bus directly to PC RAM. By contrast, older Memory Mode operation required storage of data in dedicated digitizer memory prior to data transfer. Streaming provides two distinct advantages over Memory Mode. First, Streaming may overcome the acquisition time limit imposed by the volume of dedicated digitizer memory. Second, in Streaming Mode, the user does not need to await completion of waveform acquisition before accessing the resulting waveform data, which is necessary in Memory Mode.

Gage Streaming software allows data streaming in either of two distinct modes: Continuous Mode or Segmented Mode. In Continuous Mode, signal digitization is initiated by a single trigger and then proceeds continuously – usually for several seconds or minutes - with no breaks until the acquisition is terminated. For example, a user might stream data in Continuous Mode for 10 minutes at a rate of 1 GigaSamples/second, which will create a total of 600 GigaSamples of data.

Alternately, in Segmented Mode, multiple triggers are detected during Streaming acquisition. Each trigger creates a pre-set amount of pre- and post-trigger data that form one Segment or waveform. Dead-time between successive waveforms may be as short as 2 microseconds. For example, a user might choose to stream waveforms consisting of 1000 pre-trigger Samples and 3000 post-trigger samples at 1 GS/s with a trigger rate of 100 kHz for 10 minutes. This would create a total data volume of 100 kHz X 4000 Samples X 600 seconds = 240 GigaSamples.

In either Continuous or Segmented Modes, the Gage Streaming driver streams data to a large PC RAM data buffer that resides at the OS Kernel level. This buffer must be emptied by transferring data to the ultimate data target. The data target may be either hard drive storage or a data analysis subroutine. Usage of these two targets is respectively referred to as Stream-to-Disk and Stream-to-Analysis.

PCI Express CompuScopes can sustain PCI Express data streaming transfer at rates of up to 3 GigaBytes/second. PCI Express CompuScopes are also equipped with at least 2 GigaBytes of dual–port acquisition memory, which can compensate for bus latencies. Nonetheless, because of the non-Real-Time Nature of the multi-tasking Windows Operating system, data loss may still occur – particularly as the digitizer data streaming rate approaches the maximum bus speed. Consequently, Gage Steaming software was designed to comprehensively account for and manage data loss at any streaming rate. This is done by arranging the streamed data into Data Blocks, each of which has a consecutive Block Number associated with it. If one or more Blocks of data are lost, the user will detect this loss as non-consecutive Block numbers and may determine the exact duration of the data loss.

Gage Stream-to-Analysis Functionality: Gage Stream-to-Disk systems are ideal for users who want to acquire to disk with no feedback during acquisition. All other users who do require access during acquisition require Stream-to-Analysis functionality. Here, the word "Analysis" is used in the most general sense and may include data elimination or simple in situ data monitoring, in addition to actual numerical calculations.

Application:

- **Communications Monitoring**
- **Signal Intelligence**
- **Radar Monitoring**
- **Ultrasound Scanning**
- **Laser Scanning**

Manufacturer page

http://www.gage-applied.com/

Datenblatt-Download

eXpert FPGA DSP Signal Averaging for Gage Digitizer (1.2 MiB)

Opening the Download-Files May require the Adobe-Acrobat-Reader.

Click here to download the Adobe-Acrobat-Reader.

If you have questions please don't hesitate to contact us any time.

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