New!

2-Channel 200 MSample/sec Real-time Recorder Instrument

SystemFlow

Features

- Complete dual channel recording system
- 19 inch 4U industrial rack-mount PC server chassis
- Complete high performance Windows® XP workstation
- Digitizes two analog inputs each at sampling rates to 200 Msamples/sec
- Two 16-bit 200 MHz A/D converters
- Real-time aggregate sustained recording rates up to 800 MByte/sec
- 4 terabytes of storage to NTFS RAID disk array
- Hot-swap SATA drives
- RAID levels 0, 1, 5, 6, 10, and 50
- Windows SystemFlow® Recording software
- Complete GUI with Signal Viewer analysis tool which includes a virtual oscilloscope and spectrum analyzer
- File headers include time stamping and recording parameters
- Ideal for communications, radar, wireless, SIGINT, telecom and satcom

Contact factory for options, for number and type of analog channels, recording rates, and disk capacity.

General Information

The Pentek RTS 2703 is a turnkey recording instrument that allows the user to record and analyze two high-bandwidth signals. The RTS 2703 provides sustained, aggregate recording rates of up to 800 MB/sec, forming a powerful dual-channel 4U rack-mount recording system.

The front end of the RTS 2703 consists of two Pentek Model 7850 PCIe modules each equipped with 200 MHz 16-bit A/D converters. The RTS 2703 retains all 16 bits of each A/D sample (2 bytes), recording two signals at up to 200 MSamples/sec.

A total of 4 TB of RAID storage is provided, allowing sustained 2 TB recordings at 200 MSamples/sec simultaneously on each of two channels for over one hour.

SystemFlow Software

Included with this instrument is Pentek's SystemFlow Recording Software. A software API allows users to integrate control of the RTS instrument into larger system applications.

The RTS 2703 features a Windows-based GUI (graphical user interface) providing a simple means to configure and control the instrument. Custom configurations can be stored as profiles and later retrieved for easy selection of pre-configured settings with a single click.

SystemFlow also includes signal viewing and analysis tools that allow the user to monitor the signal prior to, during and after a recording session. These tools include a virtual oscilloscope and a virtual spectrum analyzer.
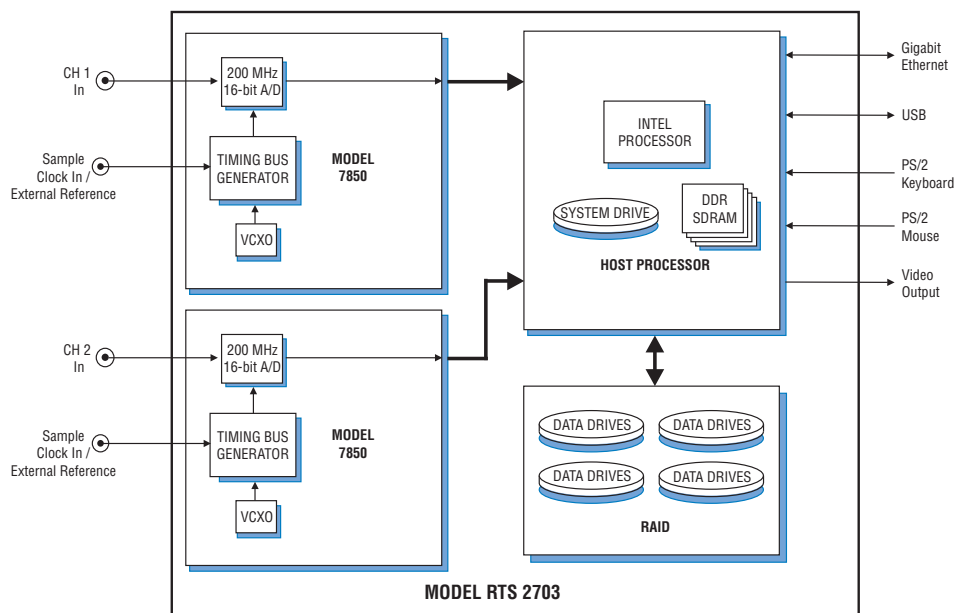
Built on a Windows XP Professional workstation, users can install post processing and analysis tools to operate on the recorded data. The RTS 2703 records data to the native NTFS file system, providing immediate access to the recorded data.

Recorded data can be offloaded from the RTS 2703 via gigabit Ethernet, or USB 2.0 ports. Additionally, data can be copied to an optical disk, using the 8X double layer DVD ±R/RW drive on the front panel.

Flexible Architecture

Pentek's RTS 2703 provides a flexible architecture that can be easily customized to meet user needs. Multiple RAID levels, including 0, 1 and 5, provide a choice for the required level of redundancy. The total drive capacity is 4 TB using 10 drives, which are organized as two 5-drive, 2 TB arrays, one array for each A/D channel.

Channels can easily be added to a recording system by adding more RTS 2703 chassis. The SystemFlow software provides the capability of configuring and controlling multiple RTS 2703's, enabling scalable channel count and drive capacity. ➤

SystemFlow Graphical User Interface
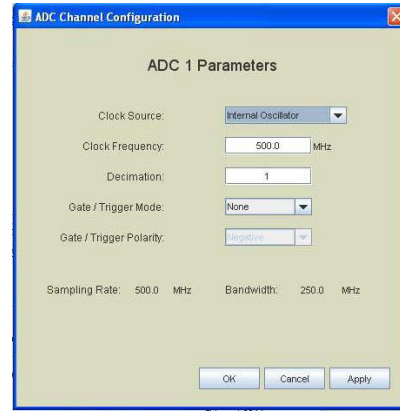
SystemFlow Recorder Interface

The RTS 2703 GUI provides the user with a control interface for the recording instrument. It includes Configuration, Record, and Status screens, each with intuitive controls and indicators. The user can easily move between screens to set configuration parameters. The signal viewer, integrated into the recording GUI, allows the user to monitor real-time signals or analyze recorded signals on disk.

SystemFlow Hardware Configuration Interface

The RTS 2703's configuration screens provide a simple and intuitive means for setting up the system parameters. The ADC configuration screen shown here, provides entries for clock selection, decimation and triggering. All parameters contain limit-checking and integrated help to provide an easier-to-use out-of-the-box experience.
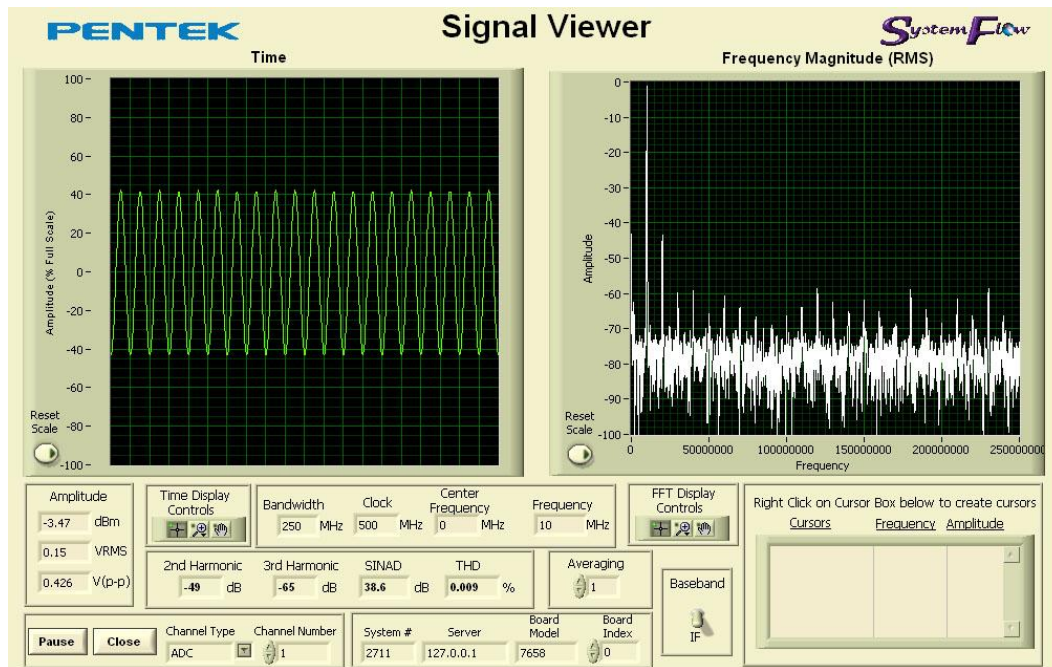
SystemFlow Signal Viewer

The SystemFlow Signal Viewer includes a virtual oscilloscope and spectrum analyzer for signal monitoring in both the time and frequency domains. It is extremely useful for previewing live inputs prior to recording, and for monitoring signals as they are being recorded to help ensure successful recording sessions. The viewer can also be used to inspect and analyze the recorded files after the recording is complete.

Advanced signal analysis capabilities include automatic calculators for signal amplitude and frequency, second and third harmonic components, THD (total harmonic distortion) and SINAD (signal to noise and distortion). With time and frequency zoom, panning modes, and dual annotated cursors to mark and measure points of interest, the System-Flow Signal Viewer can often eliminate the need for a separate oscilloscope or spectrum analyzer in the field.

Clocking and Synchronization

The RTS 2703 contains two Model 7850 PCIe modules, each providing one 200 MHz 16-bit A/D converter and a 200 MHz oscillator used as the A/D sample clock for each module.

For synchronous operation across the two channels, a timing cable connects between the two 7850 modules ensuring synchronous clocking, gating and triggering operations between the two A/D channels. One 7850 acts as the timing master and the other as the slave.

In the synchronous mode, the 200 MHz oscillator of the master supplies the sample clock for both channels. If the master 7850 is configured to accept an external sample clock, it is used as the sample clock for both channels. Additionally, the gate, trigger and sync signals from the master also control the slave.

Specifications

PC Workstation

Operating System: Windows XP Pro
Processor: Intel Dual Xeon processor
Speed: 1.8 GHz or greater
SDRAM: DDR3, 2 GBytes
System Drive: 500 GB SATA II
USB 2.0 Ports: Two on front panel, two on rear panel
Ethernet: Two rear panel RJ-45 GigE ports
Optical Drive: DVD/CD R/W
Mouse/Keyboard: Two PS/2 rear panel connectors
Front Panel Controls: Power on/off, system reset, alarm reset
Front Panel Indicators: Power on, system HD active, GigE ports active (2), RAID HDs active (10), alarm

RAID Arrays

Number of RAID Arrays: 2
Number of Drives: 10 total (5 drives per array)
Disk Drive Type: SATA II
Drive Access: Hot-swap, removable via front panel
Indicators: Power (10) and activity (10)
Storage: 4 TB total (2 TB per array)
Supported Levels: 0, 1, 5, 6, 10, and 50

Recording

A/D Sampling Rate: 200 MSamples/sec per channel, maximum (RAID 0)
Aggregate Recording Rate: 800 MS/sec, maximum (2 A/D channels at 200 MS/sec each, 2 bytes/sample, RAID 0)
File Format: NTFS
Length of Recording: More than 1 hour for both channels at 200 MS/sec.

Analog Recording Inputs

Data Acquisition Modules
Type: Pentek Model 7850
Quantity: 2
A/D Converters
Type: Texas Instruments ADS5485
Sampling Rate: 30 MHz to 200 MHz
Resolution: 16 bits
Analog Signal Inputs
Quantity: 2 (Ch 1 inputs on each 7850)
Full Scale Input: +8 dBm into 50 ohms
3 dB Passband: 250 kHz to 350 MHz
Connectors: Two rear panel SMC connectors
Input Impedance: 50 ohms, transformer-coupled
Transformer Type: Coil Craft WBC1-1TLB

A/D Sample Clock

Internal Sample Clock: Two internal 200 MHz oscillators, one on each 7850
External Sample Clock
Quantity: 2 (Clock In, on each 7850)
Frequency: 30 MHz to 200 MHz
Connectors: Two rear panel SMCs
Input Level: Sine wave, 0 to +10 dBm
Input Impedance: 50 ohms, transformer-coupled
Synchronization: LVPECL timing cable connects two 7850 A/D modules as a master/slave pair, providing identical sample clock, gate/trigger and sync signal to both channels

Physical and Environmental

Chassis: 4U, standard 19-inch rack-mount
Dimensions: 19" W x 26" D x 7" H
Weight: 80 lb
Operating Temp: 0° to 50° C
Storage Temp: –20° to 80° C
Relative Humidity: 5 to 95%, non-cond.