New!

TALON
RTV VALUE RECORDER

SystemFlow

Features

- Single-channel multiband recording and playback system.
- 4U 19-inch industrial rack-mount PC server chassis
- Windows® 7 Professional workstation with high-perform-ance Intel® Core™ i3 processor
- 200 MHz max. 16-bit A/D sampling for recording
- 800 MHz max. 16-bit D/A sampling for playback
- 80 MHz recording and playback signal bandwidths
- Capable of record/playback of IF frequencies to 700 MHz
- Real-time aggregate recording rates up to 400 MB/sec
- 4 TB of data storage to NTFS RAID disk array
- SystemFlow® recording software with signal viewer analysis tool
- C-callable API for integration of recorder into application
- File headers include time stamping and recording parameters
- DDC decimation and DUC interpolation range from 2 to 65,536
- Optional GPS time and position stamping

General Information

The Talon© RTV 2601 is a turnkey multi-band recording and playback system used for recording and reproducing signals with bandwidths up to 80 MHz. The RTV 2601 uses a 16-bit, 200 MHz A/D converter to provide real-time sustained recording rates to disk of up to 400 MB/sec. The A/D is complemented with a 16-bit 800 MHz D/A that provides the ability to reproduce signals captured in the field.

The RTV 2601 comes in a 4U 19 in. rack-mount package that is 22.75 in. deep. Signal I/O is provided in the rear of the unit, while the hot-swappable data drives are available at the front. Air is pulled through the system from front to back allowing it to operate at ambient temperatures from 5 to 35 deg C.

The RTV 2601 includes a programmable digital downconverter so users can configure the system to capture signals with frequencies as low as 300 kHz and as high as 700 MHz. Corresponding signal bandwidths range from a few kilohertz to 80 MHz. A digital upconverter and D/A produce an analog output matching the recorded IF signal frequency.

The system includes a built-in sample clock synthesizer programmable to any desired frequency from 10 MHz to 200 MHz. This clock synthesizer can be locked to an external 10 MHz reference clock and has excellent phase noise characteristics. Alternately, the user can supply an external sample clock to drive the A/D and D/A convert-ers. The RTV 2601 also supports external triggering, allowing users to trigger a re-cording or playback on an external signal.

As an option, a GPS or IRIG receiver card can be supplied with the system provid-ing accurate time stamping of recorded data. Additionally, the GPS receiver delivers GPS position information that can be recorded along with the analog input signal.

SystemFlow Software and API

The RTV 2601 includes the Pentek System-Flow recording software. SystemFlow features a Windows-based GUI (Graphical User Interface) that provides a simple means to configure and control the recorder.

Custom configurations can be stored as profiles and later loaded when needed, so users can select preconfigured settings with a single click.

SystemFlow also includes signal viewing and analysis tools, for monitoring the sig-nal prior to, during, and after a recording session. These tools include a virtual oscillo-scope and a virtual spectrum analyzer.

In addition to the GUI, the RTV 2601 provides a C-callable API, which allows the user to integrate the recorder control into any application. A simple set of commands that provide configuration and control come with source code and examples to allow for an exceptionally fast integration. ➤

MODEL RTV 2601
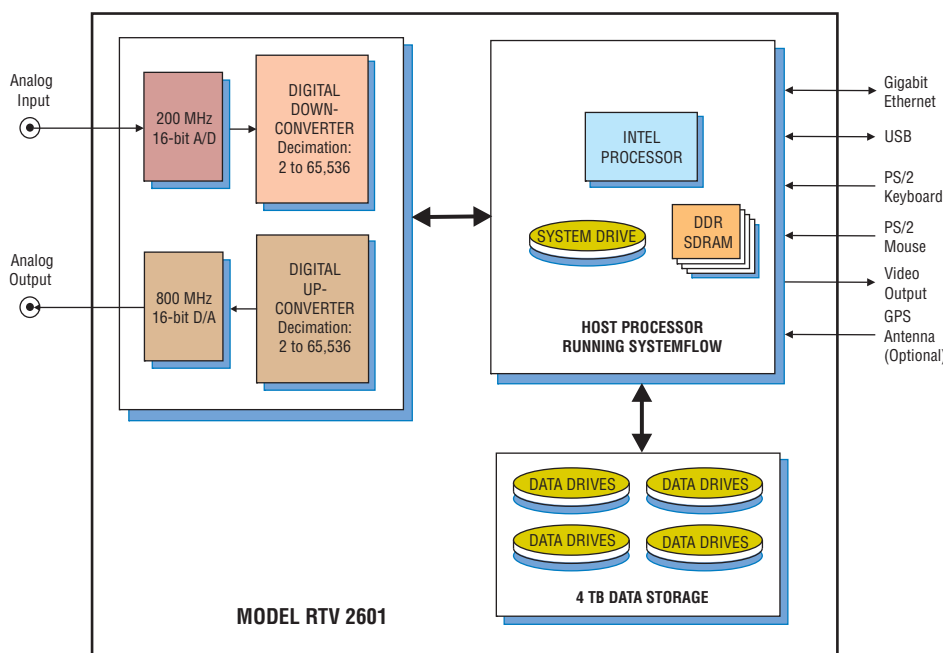
➤ **SystemFlow Graphical User Interface**
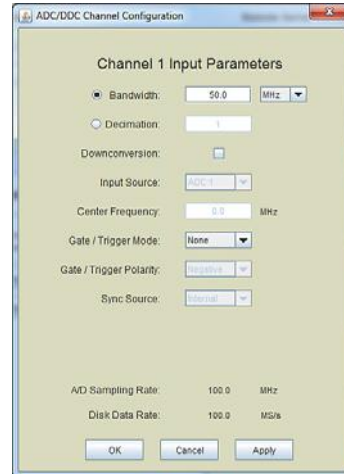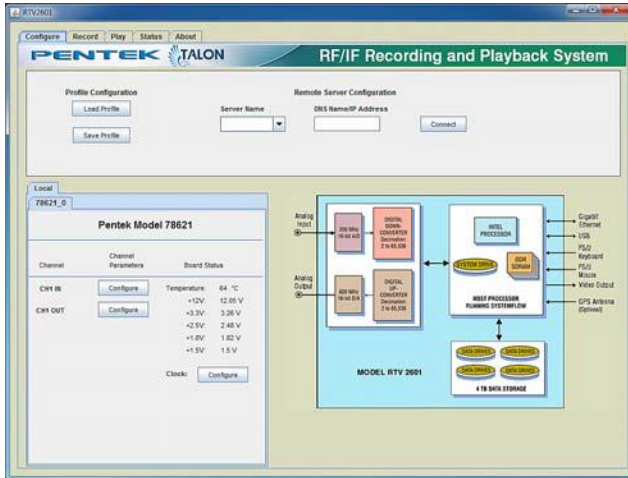
SystemFlow Recorder Interface

The RTV 2601 GUI provides the user with a control interface for the recording system. It includes Configuration, Record, Playback and Status screens, each with intuitive controls and indicators. The user can easily move between screens to set configuration parameters, control and monitor a recording, play back a recorded signal and monitor board temperature and voltage levels. The signal viewer, integrated into the recording GUI, allows the user to monitor real-time signals or signals recorded on disk.

SystemFlow Hardware Configuration Interface

The RTV 2601 Configure screens provide a simple and intuitive means for setting up the system parameters. The configuration screen shown here, allows user entries for input source, center frequency, decimation, as well as gate and trigger information. All parameters contain limit-checking and integrated help to provide an easier-to-use out-of-the-box experience.
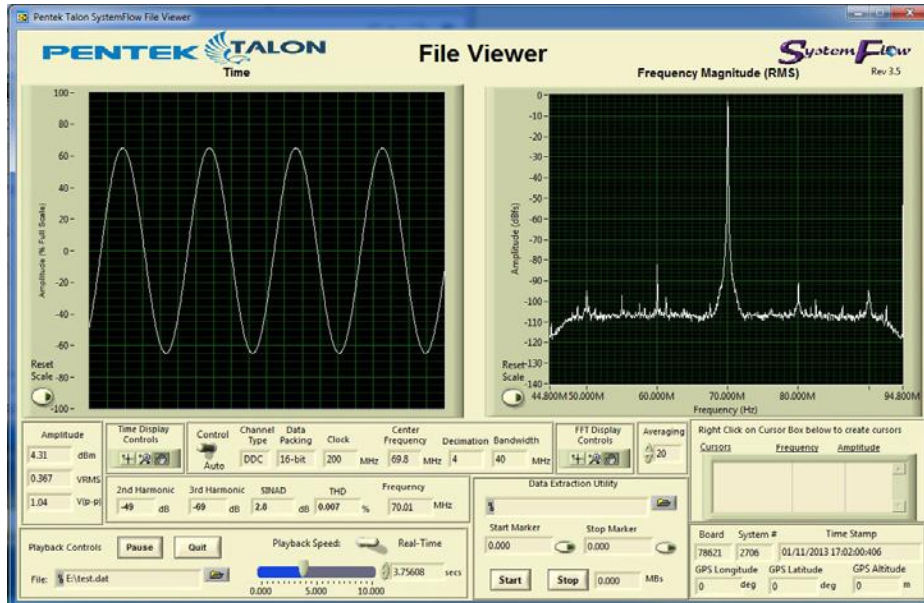

SystemFlow Signal Viewer

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. ➤
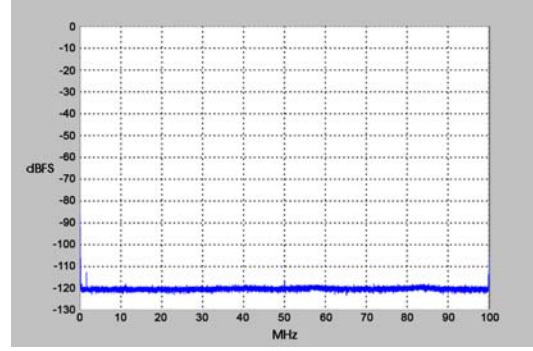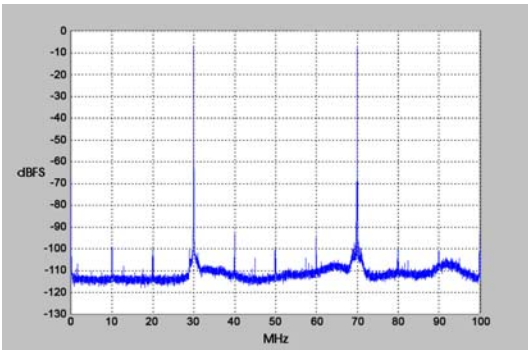
➤ A/D Performance

Spurious Free Dynamic Range
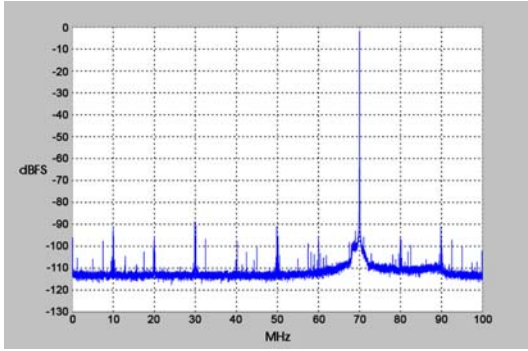
f_{in} = 70 MHz, f_s = 200 MHz, Internal Clock

Spurious Pick-up

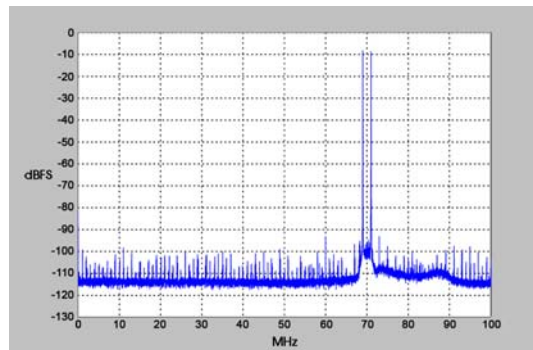f_s = 200 MHz, Internal Clock

Two-Tone SFDR

f_1 = 30 MHz, f_2 = 70 MHz, f_s = 200 MHz

Two-Tone SFDR

f_1 = 69 MHz, f_2 = 71 MHz, f_s = 200 MHz

Input Frequency Response

f_s = 200 MHz, Internal Clock

D/A Performance

Spurious Free Dynamic Range
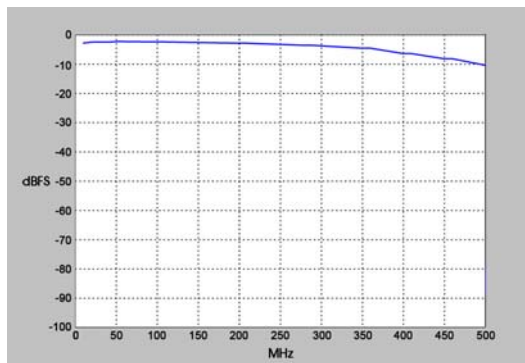
f_{out} = 70 MHz, f_s = 200 MHz, Internal Clock

Spurious Free Dynamic Range
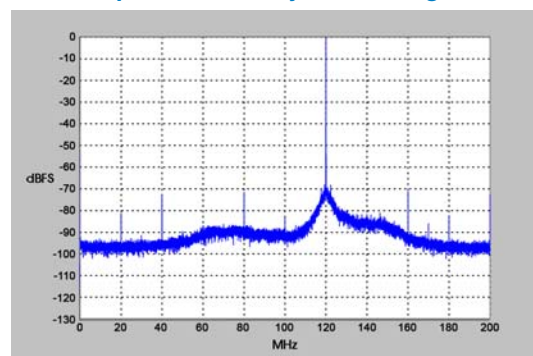
f_{out} = 120 MHz, f_s = 400 MHz, External Clock ➤

➤ System Architecture

Built on a Windows 7 Professional workstation, the RTV 2601 allows the user to install post-processing and analysis tools to operate on the recorded data. The recorder stores data in the native NTFS file system, providing immediate access to any installed Windows application. Alternately, the NTFS drive can be accessed remotely over the built-in gigabit Ethernet link from a remote Windows or Linux machine.

Recorded data can be off-loaded via the rear-panel gigabit Ethernet port, two front-panel USB 3.0 ports, two rear-panel USB 3.0 ports or four rear-panel USB 2.0 ports. A built-in DVD +/- R/RW drive allows the user to burn recorded data to disk. Hot-swappable front-panel drives can be easily removed and replaced with empty drives to provide additional data storage.

Specifications

PC Workstation (standard configuration)
Operating System: Windows 7 Professional
Processor: Intel Core i3 processor
Clock Speed: 2.0 GHz or higher
SDRAM: 8 GB
RAID
  Storage: 4 TB
  Number of Drives: Six, removable, front panel access
  Optical Drive: DVD+/-R/RW, front panel access
  USB Ports: Front panel: 2x USB 3.0; rear panel: 2x USB 3.0, 4x USB 2.0
  Ethernet: Single 1GbE, rear panel
  Supported RAID Levels: 0

Analog Recording Input
Analog Signal Inputs
  Input Type: Transformer-coupled, rear-panel female SSMC connectors
  Transformer Type: Coil Craft WBC4-6TLB
  Full Scale Input: +8 dBm into 50 ohms
  3 dB Passband: 300 kHz to 700 MHz
A/D Converters
  Type: Texas Instruments ADS5485
  Sampling Rate (f_s): 10 MHz to 200 MHz
  Resolution: 16 bits
  A/D Record Bandwidth: $f_s/2$ = Nyquist bandwidth
  Anti-Aliasing Filter: External, user-supplied

Digital Downconverter
  Type: Virtex-6 FPGA, Pentek DDC IP Core
  Decimation(D): 2 to 65,536
  IF Center Frequency Tuning: DC to f_s, 32 bits
  DDC Usable Bandwidth: $0.4*f_s/D$

Analog Recording Output
  Output Type: Transformer-coupled, rear-panel female SSMC connector
  Full Scale Output: +4 dBm into 50 ohms
  3 dB Passband: 300 kHz to 700 MHz
Digital Upconverter and D/As
  Interpolation: 2 to 65,536
  Input Data Rate: 250 MHx max.
  Bandwidth: matches digital downconverter
  Output IF: DC to 400 MHz
  Output Signal: Analog, real or quadrature
  Output Sampling Rate: 800 MHz max. with 2, 4 or 8 interpolation
  Resolution: 16 bits
Clock Sources: Selectable from onboard programmable VCXO or external
External Clocks
  Function: Synthesizer reference clock (10 MHz typical) or A/D or D/A sample clock
  Type: Rear-panel female SSMC connector, sine wave, 0 to +10 dBm, AC-coupled, 50 ohms, 10 to 800 MHz

Physical and Environmental
Size: 19" W x 22.75" D x 7" H
Weight: 50 lbs
Operating Temp: +5° to +35° C
Storage Temp: –40° to +85° C
Relative Humidity: 5 to 95%, non-condensing
Power Requirements: 100 to 240 VAC, 50 to 60 Hz, 500 W max.

Model RTV 2601 Options Information

General Options

Option -261	GPS time & position stamping
Option -264	IRIG-B time stamping

Specifications are subject to change without notice

PENTEK

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