TALON
RTR RUGGED RECORDER

SystemFlow

Features

- Sixteen 250 MHz 16-bit A/Ds
- Sixteen independetly-configurable DDC decimations ranging from 2 to 65536
- Sixteen independetly-configurable DDC tuning frequencies
- Capable of recording RF frequencies to 700 MHz
- Capable of recording signals with bandwidths to 100 MHz
- 8 GB/s real-time aggregate recording rate
- 4U 19-inch rugged rackmount PC server chassis
- Windows® 7 Professional workstation with high-performance Intel® Core™ i7 processor
- Front panel removable-SSD drives
- Up to 61 terabytes of storage to NTFS RAID disk array
- Multiple RAID levels of 0, 1, 5 and 6
- SystemFlow® GUI with signal viewer analysis tool
- Optional GPS time and position stamping

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

General Information

The Talon® RTR 2750 is a turnkey recording system that provides phase-coherent recording of 16 independent input channels. Each input channel includes a 250 MHz 16-bit A/D and an FPGA-based digital down-converter with programmable decimations from 2-65536, thereby providing the ability to capture RF signals with bandwidths up to 100 MHz.

With options for AC- or DC-coupled input channels, RF signals up to 700 MHz in frequency can be sampled and streamed to disk in real-time at sustained aggregate recording rates up to 8 GB/sec in a 4U rackmount solution.

Designed to operate under conditions of vibration and extended operating temperatures, the RTR 2750 is ideal for military, airborne and field applications that require a rugged system. The hot-swappable solid state storage drives provide the highest level of performance under harsh conditions and allow for quick removal of mission-critical data.

A/D sampling rates, DDC decimations and trigger settings are among the selectable system parameters, providing a system that is simple to configure and operate.

An optional GPS time and position stamping facility allows the user to time-stamp each acquisition as well as track the location of a system in motion.

SystemFlow Software

The Talon RTR 2750 includes Pentek's SystemFlow® Recording Software. SystemFlow features a Windows-based GUI that provides a simple means to configure and control the system. User configurations can be stored as profiles and later loaded when needed, allowing the user to select preconfigured setups with a single click.

SystemFlow also includes signal viewing and analysis tools that allow the user to monitor signals prior to, during, and after a recording session. These tools include a virtual oscilloscope, a virtual spectrum analyzer and a spectrogram display.

For users who wish to create a custom user interface or to integrate the Talon recording system into a larger application, a C-callable API is also provided as part of SystemFlow. Source code and examples are supplied to allow for a quick and simple integration effort.

Built on a Windows 7 Professional workstation, the RTR 2750 allows the user to install post-processing and analysis tools directly onto the recording system. The RTR 2750 records data to the native NTFS file system, providing immediate access to the recorded data; no file conversion is required.

Data can be off-loaded through rear-access gigabit Ethernet ports or USB 3.0 ports. Additionally, data can be copied to optical disk, using the 8X double layer DVD±R/RW drive. Dual 10 or 40 gigabit Ethernet cards can be added to the system to provide an even faster offload facility.

Rugged and Flexible Architecture

The RTR 2750 is configured in a 4U 19" rack-mountable chassis, with hot-swap data drives, front panel USB ports and I/O connectors on the rear panel. Systems are scalable to accommodate multiple chassis to increase channel counts and aggregate data rates. All recorder chassis are connected via Ethernet and can be controlled from a single GUI either locally or from a remote PC.

The RTR 2750 includes as many as 32 hot-swappable SSDs to provide flexible storage capacities up to 61 TB. The 2.5-inch SSDs can be easily removed or exchanged during a mission to retrieve recorded data. Multiple RAID levels, including 0, 1, 5, and 6 provide a choice for the required level of redundancy. ➤

MODEL RTR 2750
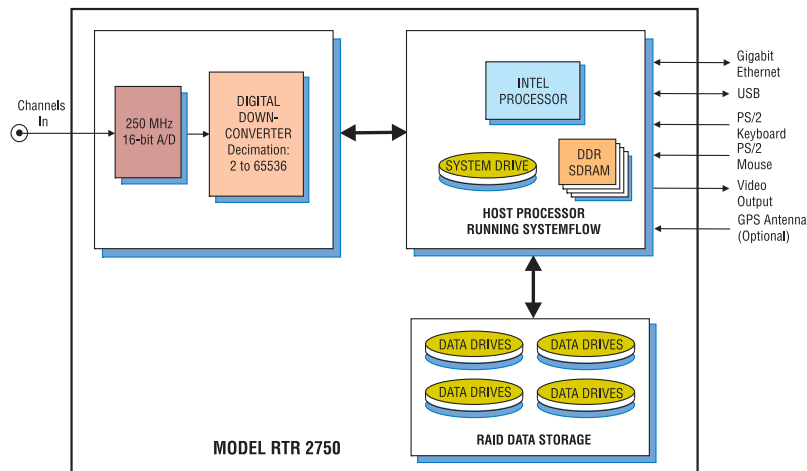
➤ **SystemFlow Graphical User Interface**
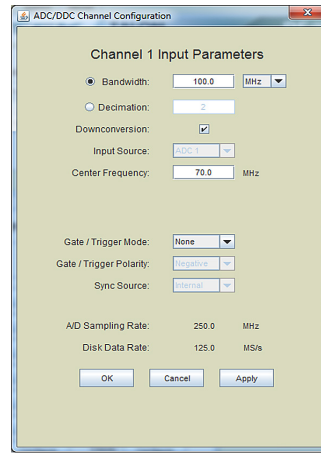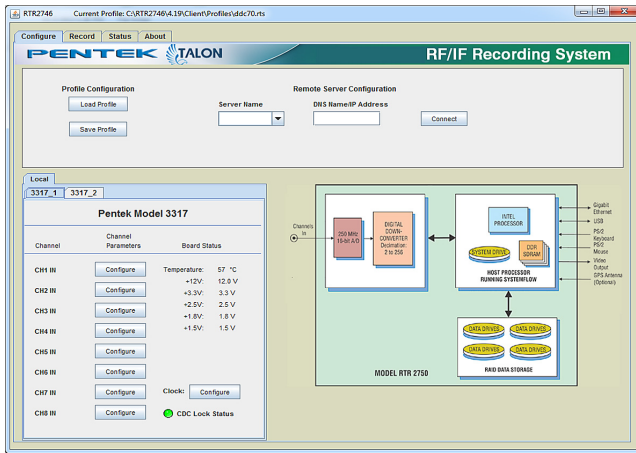

SystemFlow Recorder Interface

The RTR 2750 GUI provides the user with a control interface for the recording system. It includes Configuration, Record, 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, 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 RTR 2750 Configure screens provide a simple and intuitive means for setting up the system parameters. The DDC 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.
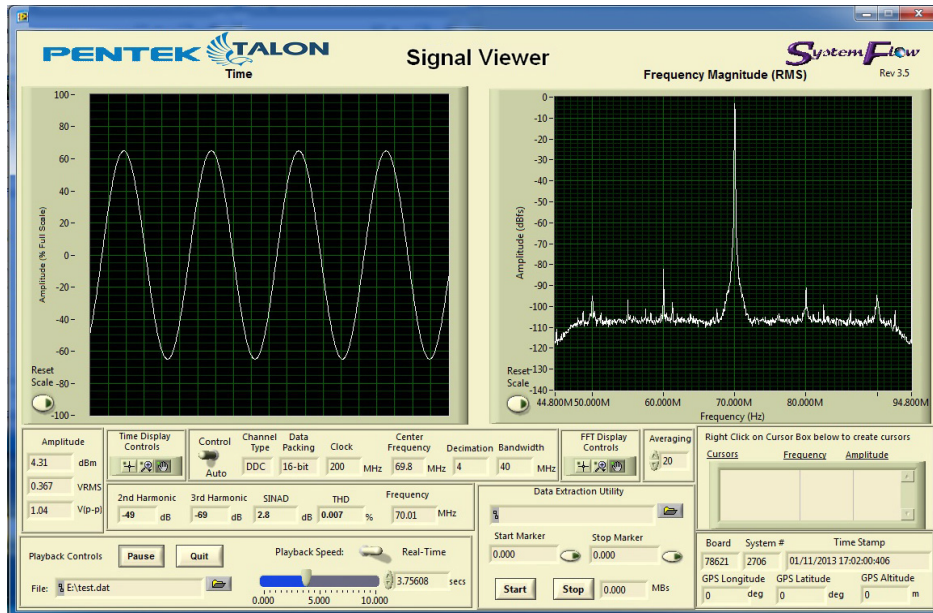
SystemFlow Signal Viewer

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. ➤

➤ Specifications

PC Workstation (standard configuration)
Operating System: Windows 7 Professional
Processor: Intel Core i7 processor
Clock Speed: 3.0 GHz or higher
SDRAM: 16 GB
RAID
    Storage: 15.3, 30.7 or 61.4 TB
    Supported Levels: 0, 1, 5 and 6

Analog Recording Inputs
Analog Signal Inputs
    Connector Type: Rear-panel female MMCX connectors
    Input Type: Transformer-coupled, optional DC-coupled
    Full-Scale Input: +4 dBm into 50 ohms
    3 dB Passband: 300 kHz to 700 MHz
    Anti-Aliasing Filters: External, user-supplied
A/D Converters
    Type: Texas Instruments ADS42LB69
    Sampling Rate (f_s): User selectable, 10 MHz to 250 MHz
    Resolution: 16 bits
    SNR: 73.2 dBFS
    SFDR: 87 dBc (HD2 and HD3)
            100 dBc (Non HD2 and HD3)
Digital Downconverters
    Type: Virtex-7 FPGA Pentek DDC IP Core
    Decimation (D): User selectable 2 to 65536
    IF Center Frequency Tuning: User selectable, 32-bit resolution
    DDC Usable Bandwidth: $0.8*f_s/D$, factory-supplied DDC coefficient tables

Clock and Trigger
A/D Clock
    Clock Sources: Selectable from onboard programmable VCXO or external clocks
External Clocks
    Connector Type: Rear panel female MMCX connector
    Input Type: Transformer-coupled
    Full-scale Input: 0 to +10 dBm
Trigger
    Connector Type: Rear panel female MMCX connector
    Input Type: LVTTL

Physical and Environmental
Dimensions
    4U Short Chassis: 19" W x 21" D x 7" H
Weight: 50 lb, approx.
Operating Temp: 0° to +50° C
Storage Temp: –40° to +85° C
Relative Humidity: 5 to 95%, non-condensing
Operating Shock: 15 g max. (11 msec, half sine wave)
Operating Vibration: 10 to 20 Hz: 0.02 inch peak, 20 to 500 Hz: 1.4 g peak acceleration
Power Requirements: 100 to 240 VAC, 50 to 60 Hz, 500 W max.

Model RTR 2750 Ordering Information and Options

Storage Options

Option -420	15.3 TB SSD total storage, 960 GB per channel
Option -430	30.7 TB SSD total storage, 1.92 TB per channel
Option -461	61.4 TB SSD total storage, 3.84 TB per channel

General Options (append to all options)

Option -261	GPS time & position stamping
Option -264	IRIG-B time stamping
Option -004	D-C coupled inputs

Contact Pentek for compatible Option combinations
Storage Options may change, contact Pentek for the latest information

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Specifications are subject to change without notice

PENTEK

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