TALON
RTR RUGGED RECORDER

SystemFlow

Features

- Two 3.0 GHz 14-bit A/Ds
- Two 2.8 GHz 16-bit D/As
- Real time record/playback rates up to 6.4 GB/sec
- Integrated DDCs and DUCs
- Capable of capturing RF signal frequencies up to 3 GHz
- Captures and reproduces IF bandwidths up to 560 MHz
- Captures baseband bandwidths up to 1.5 GHz
- 4U 19-inch rugged rackmount PC server chassis
- Windows® Professional workstation with high-performance Intel® Core™ i7 processor
- Designed to operate under conditions of shock and vibration
- Removable SSD drives
- Up to 61 terabytes of storage in integrated NTFS RAID disk array
- Selectable RAID levels of 0, 1, 5, 6, 10 and 50
- SystemFlow® GUI with signal viewer analysis tool
- C-callable API for integration of recorder into application
- 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 2745 is a turnkey, wideband recording and playback system that provides real-time capture of RF and IF signals. With two 3 GHz A/D converters and built-in DDCs, the system is ideal for capturing the IF outputs of RF downconverters with record-only bandwidths as high as 600 MHz. Selectable DDC tuning frequencies allow the RTR 2745 to accommodate a broad range of IF outputs.

Complemented by two 2.8 GHz D/As, record/play sample rates can be selected to provide a matching high-bandwidth record and playback system. In this mode, with up to 61 terabytes of solid-state storage available, users can record high-bandwidth signals at 560 MHz for many continuous hours in real-time.

The 3 GHz A/D converters can be clocked at sample rates from 1.5 GHz to 3.0 GHz and provide 14 bits of resolution for sample rates below 2 GHz. Sample rates of 2 GHz and above provide 12 bits of A/D resolution.

SystemFlow Software

The RTR 2745 includes the SystemFlow Recording Software. SystemFlow features a Windows-based GUI (Graphical User Interface) that provides a simple means to configure and control the system.

Custom configurations can be stored as profiles and later loaded when needed, allowing the user to select preconfigured 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 7 Professional workstation, the RTR 2745 allows the user to install post-processing and analysis tools to operate on the recorded data. The RTR 2745 records data to the native NTFS file system that provides immediate access to the recorded data.

Data can be off-loaded via two gigabit Ethernet ports, six USB 2.0 ports or two eSATA ports. Additionally, data can be copied to optical disk, using the 8X double layer DVD±R/RW drive.

Rugged and Flexible Architecture

Built-in digital downconverters provide a fixed decimation of 4 with selectable tuning frequencies to $f_s/2$. This provides excellent flexibility when trying to match the IF of a selected wideband RF downconverter.

Matching digital upconverters provide a fixed interpolation of 4 to allow for precise signal reproduction of recorded signals.

The 3 GHz A/Ds can operate without the digital downconverters to provide an extremely wide baseband capture. The system offers flexible sample rates ranging from 1.5 GHz to 3.0 GHz.

The RTR 2745 can stream data to disk at rates as high as 6.4 GB/sec, depending on storage option. An 8-bit packing mode is selectable when multichannel A/D sample rates exceed the real-time streaming rate to disk. ➤

MODEL RTR 2745
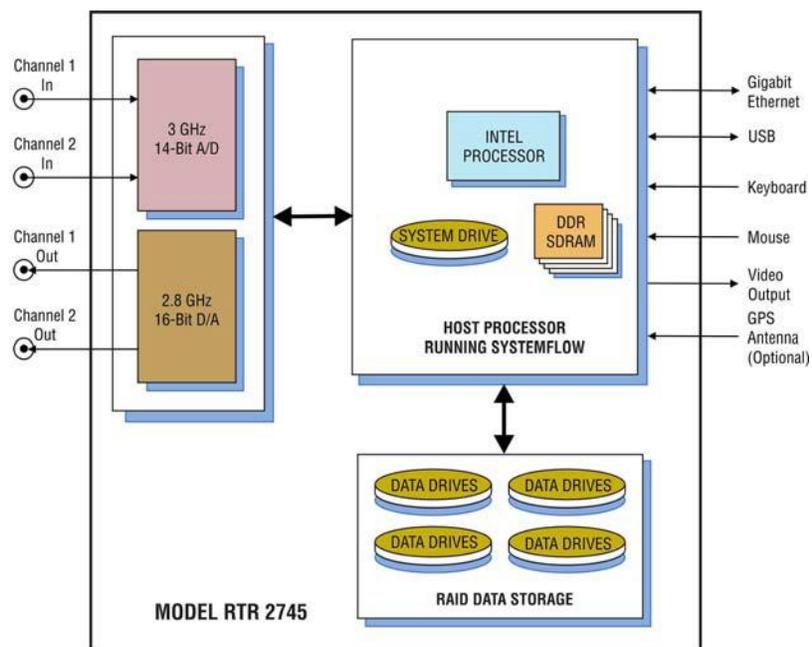
▶ SystemFlow Graphical User Interface
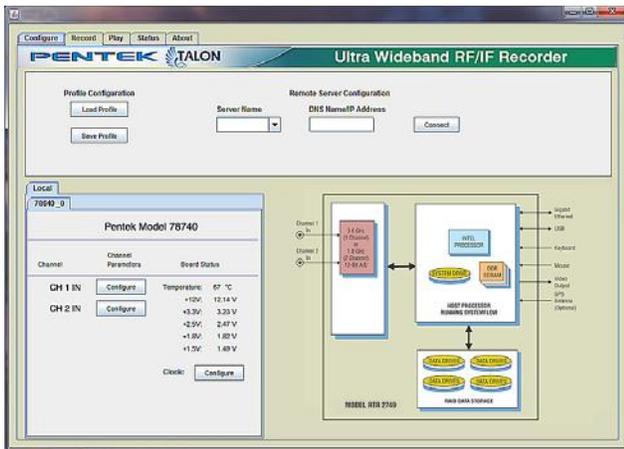

SystemFlow Recorder Interface

The RTR 2745 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 RTR 2745 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, sampling frequency, 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.
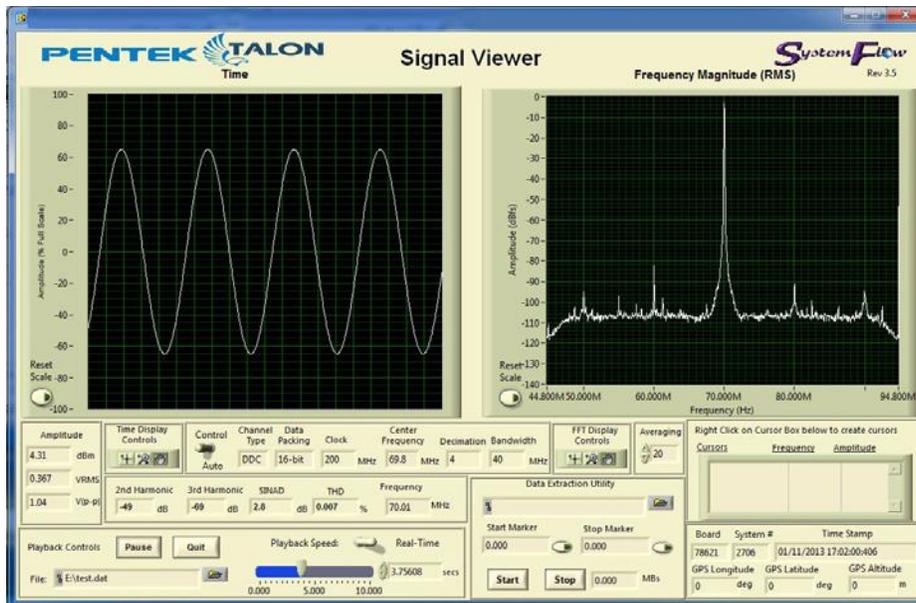
SystemFlow Signal Viewer

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 SystemFlow 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 or 10 Professional
Processor: Intel Core i7 processor
Clock Speed: 3.0 GHz or higher
SDRAM: 8 GB
RAID
    Storage: Up to 61.2 TB
    Drive Type: SATA III SSDs
    Supported Levels: 0, 1, 5, 6, 10 and 50

Analog Signal Inputs
Input Type: Transformer-coupled, rear panel female SSMC connectors
    Transformer Type: Mini-Circuits TC1-1-13M
    Full Scale Input: +6.6 dBm into 50 ohms
    3 dB Passband: 4.5 MHz to 3 GHz
A/D Converters
    Type: Texas Instruments ADC32RF45
    Sampling Rate: 1.5 GHz to 3 GHz
    Resolution: 14 bits below 2 GHz, 12 bits above 2 GHz
    A/D Record Bandwidth: $f_s/2$ = Nyquist bandwidth
Anti-Aliasing Filters: External, user-supplied
Digital Downconverter
    Type: Supplied in ADC32RF45
    Decimation (D): 4
    IF Center Frequency Tuning: DC to f_s, 32 bits
    DDC Usable Bandwidth: $0.8 * f_s/D$

Analog Playback Outputs
    Output Type: Transformer-coupled, rear panel female SSMC connectors
    Transformer Type: Coil Craft WBC4-14L
    Full Scale Output: +4 dBm into 50 ohms
    3 dB Passband: 1.5 MHz to 1,200 MHz
D/A Converters
Type: Texas Instruments DAC39J84
    Sampling Rate: 1.5 GHz to 2.8 GHz
    Resolution: 16 bits
Digital Upconverter
    Type: Supplied in DAC39J84
    Interpolation: 4

Sampling Clock
    Clock Sources: Selectable from onboard frequency synthesizer or externally supplied clock
    Synchronization: Onboard frequency synthesizer can be locked to a 10 MHz external reference clock.
    External Clock: Rear panel female SSMC connector, sine wave, 0 to +10 dBm, AC-coupled, 50 ohms, 1.5 GHz to 3.0 GHz

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 2745 Ordering Information and Options

Channel Options

Option -202	2-Channel record
Option -204	4-Channel record
Option -222	2-Channel playback
Option -224	4-Channel playback

Storage Options

Option -420	15.3 TB SSD storage capacity
Option -430	30.6 TB SSD storage capacity
Option -460	61.2 TB SSD storage capacity

General Options (append to all options)

Option -261	GPS time & position stamping
Option -264	IRIG-B time stamping
Note:	Not all option combinations are compatible

Contact Pentek for compatible Option combinations
Storage and Channel-count Options may change, contact Pentek for the latest information

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Specifications are subject to change without notice