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Real-Time Recording System Environments

RTV Value Systems

RTS Commercial Systems

RTR Rugged Systems

RTX Extreme Systems

Pentek's Talon® high-speed real-time recording systems are designed to satisfy the requests of engineers and program managers looking for complete system solutions. And with Pentek's SystemFlow's® signal viewer and analysis tools, it couldn't be simpler. You can download the free SystemFlow® Simulator to your desktop or laptop PC.

The Sentinel™ intelligent tracking and recording software includes a scan facility that allows the user to search for signals of interest throughout the entire user-specified spectrum. The Sentinel RF signal intelligence software is provided with control facilities available in the GUI and API.

Pentek's unique QuickPac® drive solution, included with the Talon RTX Extreme series, allows users to remove and replace large volumes of data storage with minimum down time.

The Talon Product Comparison Chart, Analog Signal Recorder Selector and Digital Signal Recorder Selector provide an excellent starting point to help narrow down the appropriate Talon Recording System for your application.

Talon recorders come with free lifetime email and phone support. Let our system engineers customize the perfect system for your specific needs, click here for our recording system questionnaire.

Recording System Environments

Environmental extremes in temperature, humidity, air pressure, mechanical shock and vibration are common in many military, space and industrial applications. Over the years, Pentek has worked closely with customers to develop a number of strategies for deploying our technology in a wide range of environmentally stressed conditions.

- **Talon RTV Recording Systems** are low cost recorders designed for benign environments.
- **Talon RTS Recording Systems** are designed for laboratory and commercial applications.
- **Talon RTR Rugged Systems** are designed for field use in harsh environments.
- **Talon RTX Extreme Systems** are designed to meet military specifications for temperature, altitude, shock, vibration, radiated emissions, conducted emissions, ESD, sand and dust.



Talon 1-Page Overview

Pentek's recording systems are available with solid-state data storage that allows them to operate with no degradation under conditions of extreme shock and vibration. The Talon Recording Systems are fully tested to the most rigorous quality control measures and high standards. Please contact Pentek for rugged options at **sales@pentek.com**.

Talon RTV Value Systems

The RTV series is the value series of Talon recorders. These are the least expensive Talon recorders and are intended for laboratory use. They are limited in storage and streaming data rates to disk and have very few options available.

In addition to their low cost, they also have the advantage of shipping from stock, unlike the other series that typically have lead times from six to eight weeks. These recorders come in a rackmountable PC server chassis.

Value Systems - (top)

Talon Recorder updates
Subscribe Now!

Model	Description
Rackmount	
Model 2602	Talon Serial FPDP Value Rackmount Recorder
Model 2601	Talon 200 MS/sec RF/IF Value Rackmount Recorder

Talon RTV Value Rackmount Recorders

Pentek's Talon® RTV recording and playback systems are designed for laboratory and benign environments. The RTV series recorders represents exceptional value for the price and is available for expedited delivery from stock. Optional GPS time and position stamping and IRIG-B time stamping are available.

"We often receive customer requests for quick delivery. The popular, well-equipped configuration we chose for the RTV series of Talon® Recorders allows us to ship directly from stock. And, our cost-sensitive customers really appreciate the price tag."

- Chris Tojeira, Recording Systems Director

RTV Rackmount Chassis Design

The Talon RTV rackmount chassis comes in a 4U 19-inch rackmount package that is 22.75-inch deep. Signal I/O is provided in the rear of the unit, while the front-panel removable 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 degree Celsius (°C).



The Talon Rackmount RTV chassis

System Architecture

Built on a Windows workstation, the Talon® RTV series recorders 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. Front-panel removable drives can be easily removed and replaced with empty drives to provide additional data storage.

SystemFlow Software and API

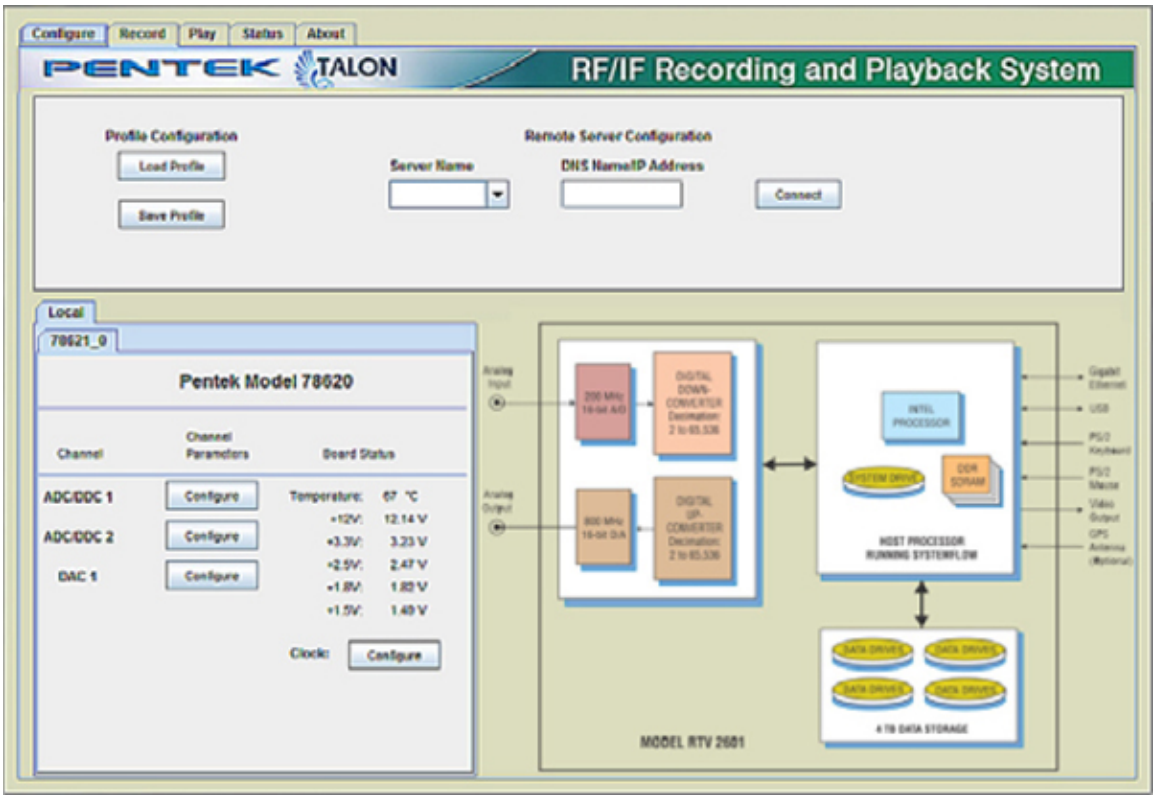
The Talon® RTV series recorders includes the Pentek SystemFlow® recording software. SystemFlow features a Windows-based GUI (Graphical User Interface) that provides a simple means to configure and control the recorder. Custom configurations can be stored as profiles and later loaded when needed, so users can select preconfigured settings with a single click.

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

In addition to the GUI, the RTV series recorders provides a C-callable API (Application Programming Interface), 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.

SystemFlow Recorder Interface

The Talon® RTV series recorders 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 Graphical User Interface

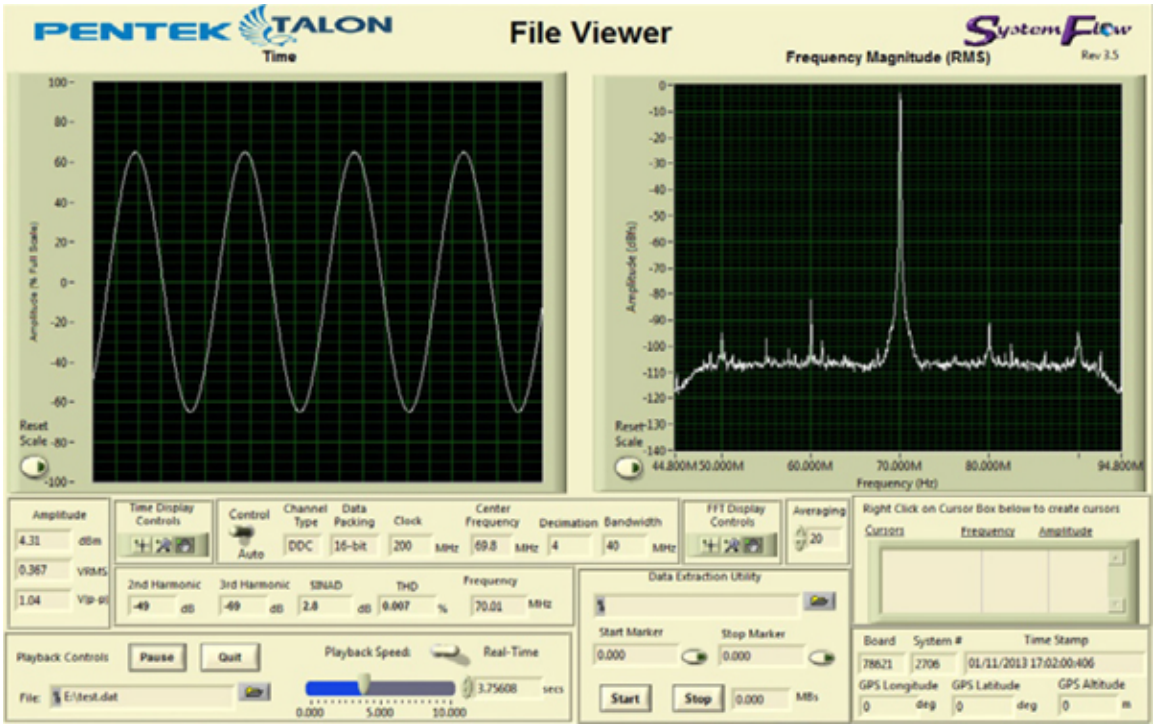
SystemFlow Hardware Configuration Interface

The Talon® RTV series recorders configuration screens provide a simple and intuitive means for setting up the system parameters. The channel configuration screen shown here, provides 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-touse 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.



SystemFlow Signal Viewer

Talon RTS Commercial Systems

The RTS series is the commercial series of Talon recorders. These are intended for benign environments, have great flexibility in channel count and are capable of holding large volumes of data storage.

These systems use HDDs (hard disk drives) for data storage and are limited in their sustained data rate to disk. These recorders come in a rackmountable PC server chassis.

Commercial Systems - (top)

Talon Recorder updates
Subscribe Now!

Model	Description
Portable	
Model 2623	Talon 6 GHz RF/IF Sentinel Intelligent Signal Scanning Portable Recorder
Model 2613	Talon 3 GHz RF/IF Sentinel Intelligent Signal Scanning Portable Recorder
Rackmount	
Model 2718	LVDS Digital I/O Rackmount Recorder
Model 2716	Serial FPDP Rackmount Recorder
Model 2715	10 Gigabit Ethernet Rackmount Recorder
Model 2707	500 MS/sec RF/IF Rackmount Recorder
Model 2706	200 MS/sec RF/IF Rackmount Recorder

Model 2620	Talon 6 GHz RF/IF Sentinel Intelligent Signal Scanning Rackmount Recorder

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Talon RTR Rugged Systems

The RTR series is the rugged series of Talon recorders. RTR recorders come in both a portable (briefcase style) and rackmountable PC server chassis form factor. Both use SSDs (solid state drives) to help the systems tolerate shock and vibration.

They also include enhanced cooling to allow them to operate in higher-temperature environments (up to 55 deg C.) The RTR series recorders provide the highest streaming data rates to disk of all of the Talon series.



Rugged Systems - (top)

Talon Recorder updates



Model	Description
Portable	
Model 2738	LVDS Digital I/O Rugged Portable Recorder
Model 2736A	Serial FPDP Rugged Portable Recorder
Model 2736	Serial FPDP Rugged Portable Recorder
Model 2735A	1-, 10-, 40-Gigabit Ethernet Portable Recorder
Model 2735	1-, 10-, 40-Gigabit Ethernet Portable Recorder
Model 2729A	Talon 3.6 GS/sec Ultra Wideband RF/IF Rugged Portable Recorder
Model 2728A	1 GS/sec RF/IF Rugged Portable Recorder
Model 2728	1 GS/sec RF/IF Rugged Portable Recorder
Model 2727A	500 MS/sec RF/IF Rugged Portable Recorder
Model 2727	500 MS/sec RF/IF Rugged Portable Recorder
Model 2726A	200 MS/sec RF/IF Rugged Portable Recorder
Model 2726	200 MS/sec RF/IF Rugged Portable Recorder
Model 2623	Talon 6 GHz RF/IF Sentinel Intelligent Signal Scanning Portable Recorder
Model 2613	Talon 3 GHz RF/IF Sentinel Intelligent Signal Scanning Portable Recorder
Rackmount	
Model 2758	LVDS Digital I/O Rugged Rackmount Recorder
Model 2756	Serial FPDP Rugged Rackmount Recorder
Model 2755	1-, 10-, 40-Gigabit Ethernet Rugged Rackmount Recorder
Model 2750	250 MS/sec RF/IF Rugged Rackmount Recorder
Model 2749	3.6 GS/sec Ultra Wideband RF/IF Rugged Rackmount Recorder
Model 2748	1 GS/sec RF/IF Rugged Rackmount Recorder
Model 2747	500 MS/sec RF/IF Rugged Rackmount Recorder
Model 2746	200 MS/sec RF/IF Rugged Rackmount Recorder

Model 2745	3.0 GS/sec Ultra Wideband RF/IF Rugged Rackmount Recorder
Model 2654	Talon 26.5 GHz Sentinel Intelligent Signal Scanning Rackmount Recorder
SFF	
Model 2558	LVDS Digital I/O Rugged SFF Recorder
Model 2556	Serial FPDP Rugged SFF Recorder
Model 2555	1-, 10-, 40-Gigabit Ethernet Rugged SFF Recorder
Model 2549	3.6 GS/sec Ultra Wideband RF/IF SFF Recorder
Model 2548	1 GS/sec RF/IF Rugged SFF Recorder
Model 2547	500 MS/sec RF/IF Rugged SFF Recorder
Model 2546	200 MS/sec RF/IF Rugged SFF Recorder

Talon RTX Extreme Systems

The RTX series is the extreme rugged series of Talon recorders. Designed to operate in the toughest environments, the recorder chassis can handle high levels of shock and vibration as well as high altitude use. The sealed chassis protects the recorder's electronics from humidity, water, dust, sand and salt fog. The RTX systems are designed to operate in most thermal environments, making them ideal for UAVs, aircraft pods, tight equipment bays, military vehicles and most outdoor environments.

Extreme Systems - (top)

Talon Recorder updates
Subscribe Now!

Model	Description
SFF	
Model 2684	Talon 26 GHz Sentinel Intelligent Signal Scanning RTX Extreme Recorder
Model 2596	Serial FPDP Extreme 1/2 ATR Recorder
Model 2590	8-Channel 250 MS/sec RF/IF Extreme 1/2 ATR Recorder
Model 2589	3.6 GS/sec Ultra Wideband RF/IF Extreme 1/2 ATR Recorder
Model 2586	200 MS/sec RF/IF Extreme 1/2 ATR Recorder



Development Tactics and Techniques for Small Form Factor RF Signal Recorders white paper describes engineering considerations and design techniques used to develop small form factor rugged recorders that can handle extremely high data rates associated with very wide bandwidth RF signal recording.

It is intended to provide engineers with ideas on how to bring this capability into confined and often extreme environments while focusing on military specification compliance, SWaP and ease of use with confidence.

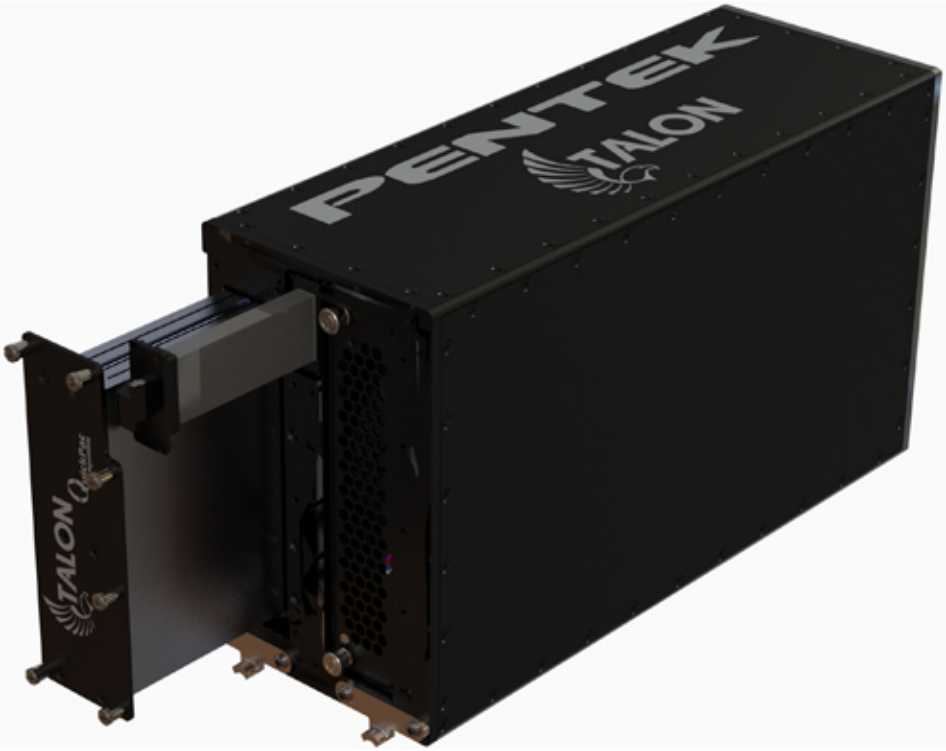
QuickPac Drive Packs

The Pentek QuickPac® drive packs add a valuable convenience to the recorder by providing the ability to quickly remove all data storage from the recorder via the front panel. QuickPac drive packs can be easily removed from the recorder by loosening a set of captive thumb screws. A separate operating system drive can be removed as well, allowing users to extract all non-volatile memory from the system in just a few seconds.

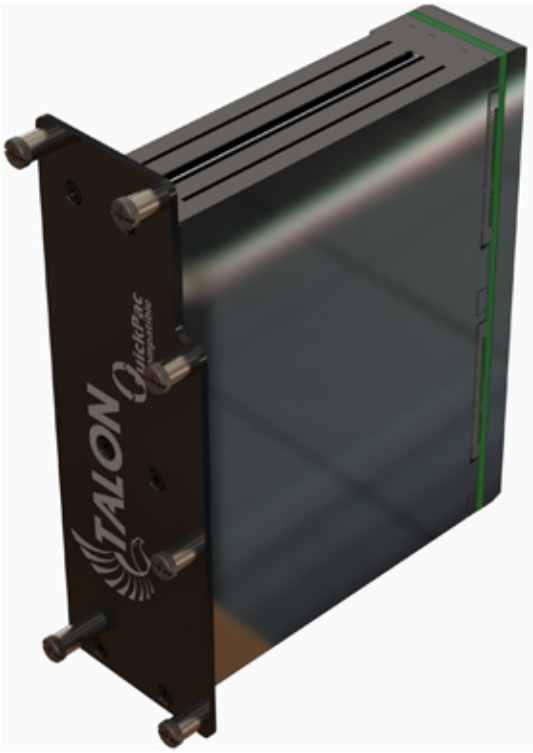
QuickPac drive packs include a high insertion cycle connector to provide an extremely durable data storage drive for Talon recorders. Spare QuickPac drive packs can replace full ones in seconds to minimize mission downtime. QuickPac drive packs filled with mission data can be taken to the lab where data can be retrieved, post-processed and archived with a Talon data offload system.

Talon recording systems supporting QuickPac Drive Packs

Model	Description
SFF	
Model 2684	Talon 26 GHz Sentinel Intelligent Signal Scanning RTX Extreme Recorder
Model 2596	Serial FPDP Extreme 1/2 ATR Recorder
Model 2590	8-Channel 250 MS/sec RF/IF Extreme 1/2 ATR Recorder
Model 2589	3.6 GS/sec Ultra Wideband RF/IF Extreme 1/2 ATR Recorder
Model 2586	200 MS/sec RF/IF Extreme 1/2 ATR Recorder



Talon SFF recorder showing QuickPac Drive Pack partially withdrawn



Pentek's QuickPac drive pack for Talon SFF recorders

Talon Data Offload System

Data stored on the removable Talon QuickPac drive packs can be accessed in a Talon data offload system for analysis, allowing the Talon recorder to remain deployed in the field.

The Talon data offload system has a lockable door on the front of the unit that covers the cavity in which the QuickPac drive canister is inserted. The Talon data offload system connects to a PC via a cable on the back of the unit.

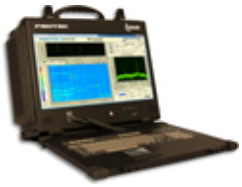


Talon Data Offload System

Talon Solutions Chart

Compare Talon products by selecting from the ones below. Comparison categories include Storage Drive Type, Max. Storage Capacity, Drive Removal, Dimensions, Weight, Max. Record Rate, Operating Temp, Operating Altitude, Vibration, Shock, EMI/EMC, Sand and Dust.

Compare

- ☑  **RTV Value**: Inexpensive, Quick Delivery
- ☑  **RTR Rugged Portable**: Handheld, Rugged, SSDs
- ☑  **RTR Rugged SFF**: ⅓ Rackmount, Rugged, SSDs
- ☑ 

RTX Extreme SFF: ½ ATR, MIL Environments, QuickPac Drives, SWaP

Compare

- ☑  **RTS Commercial**: Commerical, HDDs
- ☑  **RTR Rugged Rackmount**: Rugged, SSDs
- ☑  **RTX Extreme Rackmount**: Extreme Environments, QuickPac Drives

Submit

Talon Recorder Chassis Type	RTV Value	RTS Commercial	RTR Rugged Portable	RTR Rugged Rackmount	RTR Rugged SFF	RTX Extreme Rackmount	RTX Extreme SFF
Storage Drive Type	HDDs	HDDs	SSDs	SSDs	SSDs	SSDs	SSDs
Max. Storage	4 TB	256 TB	122.88 TB	245 TB	61.44 TB	245 TB	61.44 TB

Capacity							
Drive Removability	Individual (no trays)	Individual (with trays)	Individual (with trays)	Individual (with trays)	Individual (with trays)	Talon QuickPacs®	Talon QuickPacs®
Chassis Type	Rackmount	Rackmount	Portable	Rackmount	⅓ Rackmount	Rackmount	½ ATR
Dimensions (HxWxL)	7" x 19" x 22"	7" x 19" x 26"	13.4" x 16.9" x 9.5"	7" x 19" x 21"	5.25" x 8.5" x 14"	7" x 19" x 22"	7.7"x4.9"x14.1"
Weight	50 lbs	50 lbs and up	25 lbs	45 to 50 lbs	17 lbs	45 to 55 lbs	18 lbs
Max. Record Rate	400 MB/sec	1,600 MB/sec	4,000 MB/sec	8,000 MB/sec	4,000 MB/sec	8,000 MB/sec	4,000 MB/sec
Operating Temp.	10° to 35° C	5° to 45° C	0° to 50° C	-10° to 55° C	-10° to 45° C	-20° to 55° C	-40° to 55° C
Operating Altitude	-	10,000 feet	10,000 feet	10,000 feet	10,000 feet	15,000 feet	60,000 feet
Vibration	-	-	1.4 g 20-500 Hz	1.4 g 20-500 Hz	-	MIL-STD-810 Method 514.5	MIL-STD-810 Method 514.5
Shock	-	-	15 g	15 g	-	MIL-STD-810 Method 516.5	MIL-STD-810 Method 516.5
EMI/EMC	-	-	-	-	-	MIL-STD-461	MIL-STD-461
Sand and Dust	-	-	-	-	-	MIL-STD-810 Method 510	MIL-STD-810 Method 510

Emissions Specifications Summary

CE101: Conducted Emissions, Power Leads, 30 Hz to 10 kHz
CE102: Conducted Emissions, Power Leads, 10 kHz to 10 MHz
CS101: Conducted Susceptibility, Power Leads, 30 Hz to 50 kHz
CS114: Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 400 MHz
CS116: Conducted Susceptibility, Damped Sinusoidal Transients, Cable and Power Leads, 10 kHz to 100 MHz
RE101: Radiated Emissions, Magnetic Field, 30 Hz to 100 kHz
RE102: Radiated Emissions, Electric Field, 10 kHz to 18 GHz
RS101: Radiated Susceptibility, Magnetic Field, 30 Hz to 100 kHz
RS103: Radiated Susceptibility, Electric Field, 10 kHz to 40 GHz



QuickPac® is Pentek's drive packaging technology that is included in the RTX series of Talon Recording Systems. QuickPac drives are designed to allow users to remove and replace large volumes of data storage in a Talon Recorder with minimum down time.

SystemFlow® is the user interface software that comes with every Talon Recording System. This software includes a graphical user interface for control of the recorder & signal analysis and a C-callable API that allows the integration of the recorder into a larger system or to design a custom user interface.

SystemFlow Simulator for Talon Recording Systems

Login or register to download and install the free SystemFlow® Simulator to your desktop or laptop PC. Pentek's SystemFlow Simulator software package simulates SystemFlow® recording software, which is installed on all Talon® recording systems.

The SystemFlow Simulator allows you to learn how to use the Talon recording system's SystemFlow software interface before you acquire a recorder. The Simulator can simulate the operating environment of all the different Talon recorder models.



Login or register to download the free SystemFlow Simulator

High-Speed, Real-Time Recording Systems Handbook

Written by Rodger Hosking, Vice President and Co-founder of Pentek

In today's world of high-speed A/D converters real-time signal recording has become a challenging task that requires specialized hardware and intelligent application software. When designing a real-time recorder capable of streaming sustained data to disk, the system developer has to consider the limitations presented by the recorder's operating and file systems, the limitations of disk drive technology, the hardware interfaces, and the RAID controller technology.

Fortunately for the application developer, serial fabrics have emerged to provide the high-speed interfaces required to move this data; disk drive and RAID HBAs (Host-Bus Adapters) have begun to exploit serial interfaces; finally, the emergence of SSD (Solid State Drive) technology provides a performance level previously unattainable in real-time recording systems.



Recorder Handbook

Recording System Questionnaire

Need assistance selecting the best high-speed recording system? Let our system engineers customize the perfect system for your specific needs. Complete Pentek's recording system questionnaire, by clicking here.



Talon® Recording Systems Catalog

Pricing and Availability

For the latest pricing, delivery and available options, please fill out this form and your request will be delivered to the appropriate department. To learn more about our products or to discuss your specific application please contact our sales department at sales@pentek.com, 201-818-5900 or contact your local representative.

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