Model 2726	200 MS/sec RF/IF	Talon RTR Rugged Recorder	Portable

Features

- Designed to operate under conditions of shock and vibration
- 16.9" W x 9.5" D x 13.4" H portable system
- Lightweight: approximately 30 pounds
- Rugged aluminum alloy chassis
- Shock- and vibration-resistant SSDs perform well in vehicles, ships, and aircraft
- IF signal record/playback at up to 700 MHz
- 80 MHz recording and playback signal bandwidths
- 200 MHz 16-bit A/D
- 800 MHz 16-bit D/As
- SFDR > 80 dBFS
- Real-time aggregate recording rates up to 2.4 GB/sec
- Up to 7.6 TB of storage with hot-swappable SSD drives
- NTFS file format
- SystemFlow® GUI with Signal Viewer analysis tool
- File headers include time stamping and recording parameters
- Ideal for communications, radar, wireless, SIGINT, telecom, and satcom
- Optional GPS time and position stamping
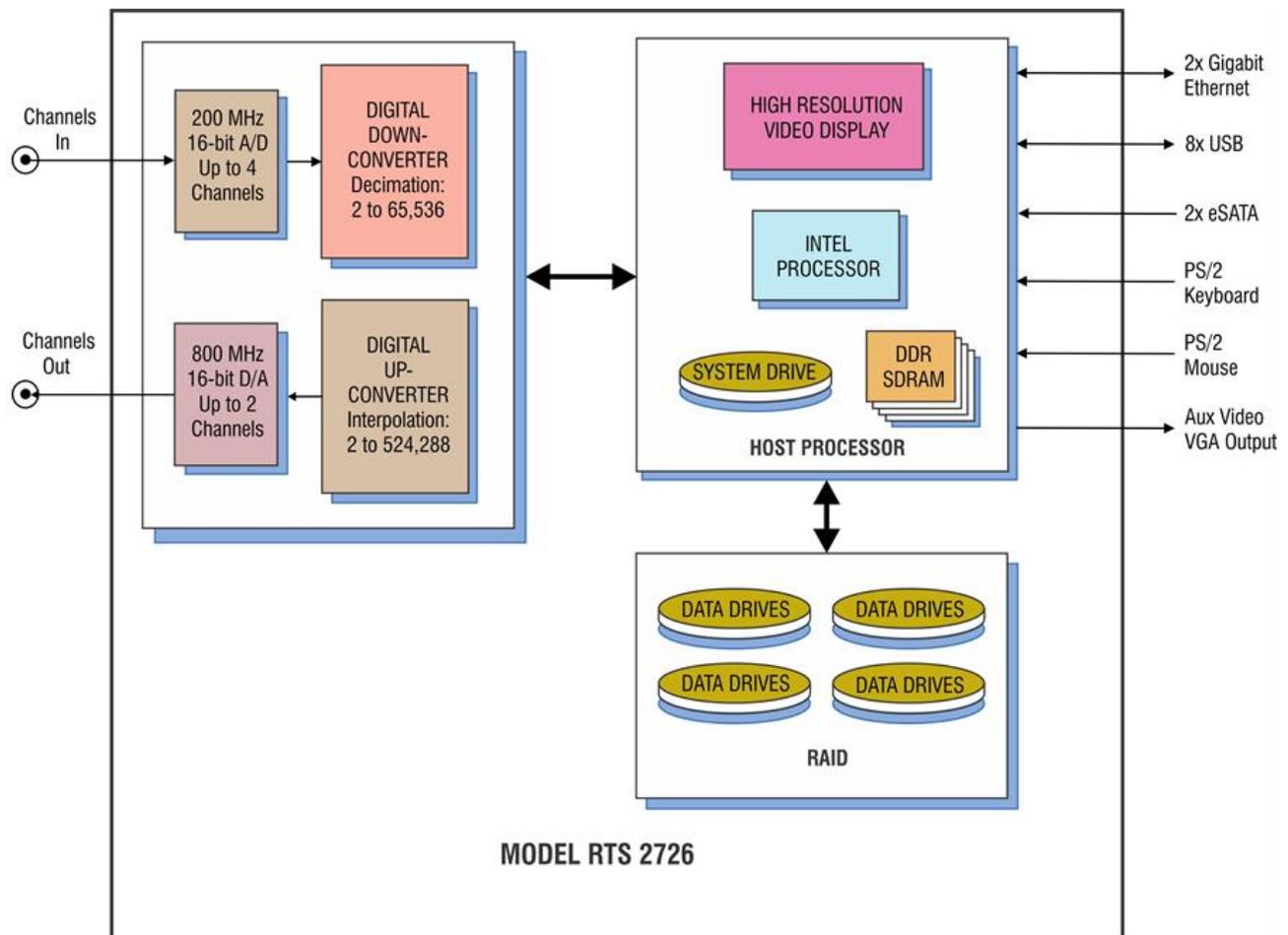- Complete high-performance Windows® workstation

General Information

The Talon® RTR 2726 is a turnkey, multiband recording and playback system that allows the user to record and reproduce high-bandwidth signals with a lightweight, portable, and rugged package. The RTR 2726 provides aggregate recording rates of up to 2.4 GB/sec and is ideal for the user who requires both portability and solid performance in a compact recording system.

The RTR 2726 is supplied in a small footprint portable package measuring only 16.9 inches wide, 9.5 inches deep, and 13.4 inches high, and weighing just 30 pounds. With measurements similar to a small briefcase, this portable workstation includes an Intel® processor, a high-resolution 17-inch LCD monitor, and a high-performance SATA RAID controller.

At the heart of the RTR 2726 are Pentek's Cobalt® Series Virtex-6 software radio boards featuring A/D and D/A converters, DDCs (Digital Downconverters), DUCs (Digital Upconverters), and complementary FPGA IP cores. This architecture allows the system engineer to take full advantage of the latest technology in a turnkey system. Optional GPS time and position stamping allows the user to record this critical signal information.

2726 Block Diagram

MODEL RTS 2726

(Block diagram labels: Channels In → 200 MHz 16-bit A/D Up to 4 Channels → DIGITAL DOWN-CONVERTER Decimation: 2 to 65,536; Channels Out ← 800 MHz 16-bit D/A Up to 2 Channels ← DIGITAL UP-CONVERTER Interpolation: 2 to 524,288; HOST PROCESSOR: HIGH RESOLUTION VIDEO DISPLAY, INTEL PROCESSOR, SYSTEM DRIVE, DDR SDRAM; RAID: DATA DRIVES ×4; 2x Gigabit Ethernet, 8x USB, 2x eSATA, PS/2 Keyboard, PS/2 Mouse, Aux Video VGA Output)

Rugged and Flexible Architecture

The RTR 2726 is configured in a portable, lightweight chassis with hot-swap SSDs, front panel USB ports and I/O connections on the side panel. It is built on an extremely rugged, 100% aluminum alloy unit, reinforced with shock-absorbing rubber corners and an impact-resistant protective glass. Using shock- and vibration-resistant SSDs, the RTR 2726 is designed to reliably operate as a portable field instrument.

The hot-swappable SSDs provide storage capacities of up to 7.6 TB. Drives can be easily removed or exchanged during or after a mission to retrieve recorded data. Multiple RAID levels, including 0, 1, 5, and 6, provide a choice for the required level of redundancy.

SystemFlow Software

All Talon recorders include the Pentek SystemFlow® recording software. SystemFlow software provides three ways for users to configure and control a Talon recorder:

- The SystemFlow GUI provides a point-and-click user interface. It includes Configure, Record, Playback, and Status screens, each with intuitive controls and indicators. The user can easily move between screens to configure parameters, control and monitor a recording, and play back a recorded stream.

- The SystemFlow API provides a set of C-callable libraries that allow engineers to develop their own user interface to configure and control their Talon recorder.

- The SystemFlow Telnet interface provides a simple set of commands to configure and control the recorder. This eliminates the need for any software development and is most suitable for unmanned operation.

SystemFlow software allows the recorder to be set up to run autonomously by implementing scripts using the API or telnet interface. All three interfaces can be run from a remote connection over Gigabit Ethernet.

A simple header that holds the recording parameters is added to the beginning of the file. An optional GPS receiver allows the user to precisely timestamp files and optionally track the recorder's position throughout a mission. The system records all data to the native NTFS file system, allowing for quick and easy access to the data from any computer.

Click below to view a video about SystemFlow.

SystemFlow Simulator

To learn more about the SystemFlow Software, you can download and install the free SystemFlow Simulator to your desktop or laptop PC. The SystemFlow Simulator allows you to learn how to use the Talon recording system's SystemFlow software interface before you acquire a recorder or while you are waiting for delivery of a Talon recording system.

The Simulator can simulate the operating environment of all the different Talon recorder models. The Simulator also demonstrates the SystemFlow Signal Viewer by playing recorded signals to simulate the appearance of live signals being digitized and recorded by a Pentek analog signal recorder.

Features

- Provides real-time recording system simulation

- Demonstrates SystemFlow signal & file viewer tools

- Capable of simulating all Talon analog and digital recording systems

- Full Talon SystemFlow GUI

- Simulator can be used to develop Talon system profiles for use in the final system

- Can be used with the SystemFlow API to develop and test custom user interface

SystemFlow GUI

The RTR 2726 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.

Setting System Parameters

The RTR 2726 configuration GUI provides a simple and intuitive means for setting up the system parameters:

- Pull–down selections are implemented with an arrow next to the parameter window.
- User entry fields allow numeric data entry.
- Grayed–out fields are unavailable for change or data entry because of other configuration selections.

All parameters contain limit-checking and integrated help to provide an easier-to-use out-of-the-box experience. Details about each field on the configuration screens are provided in the RTR 2726 user manual.

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.
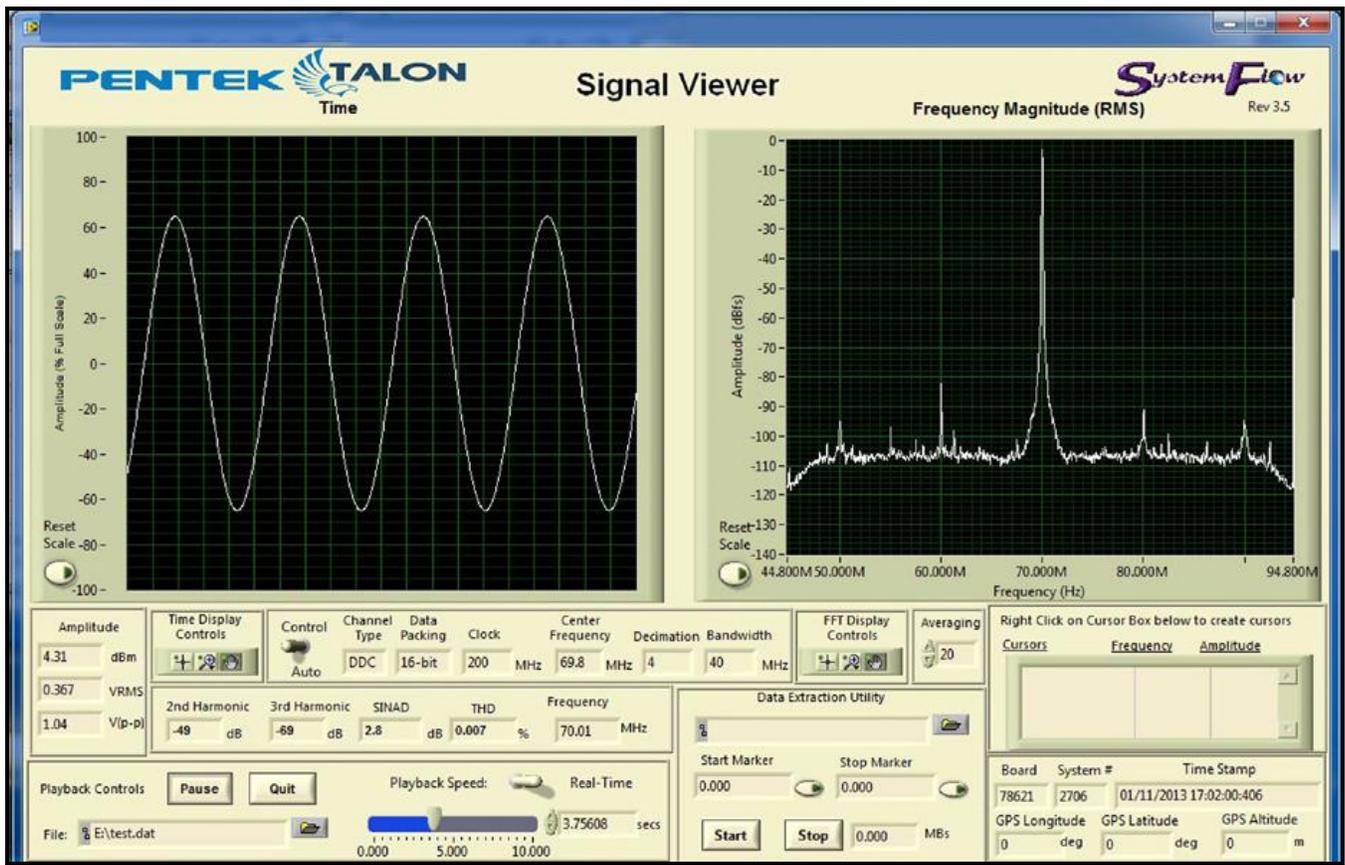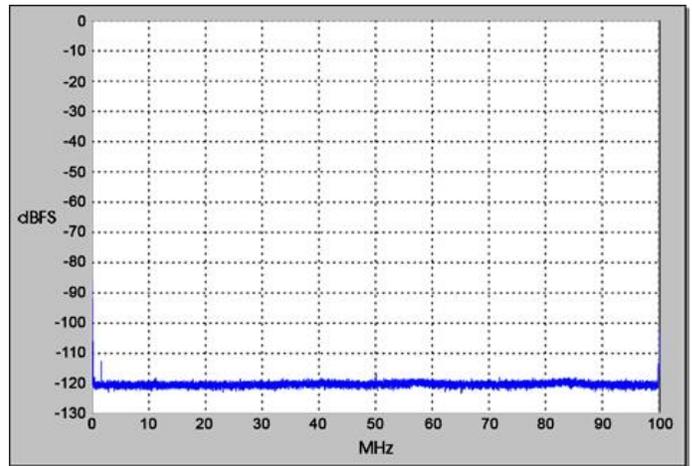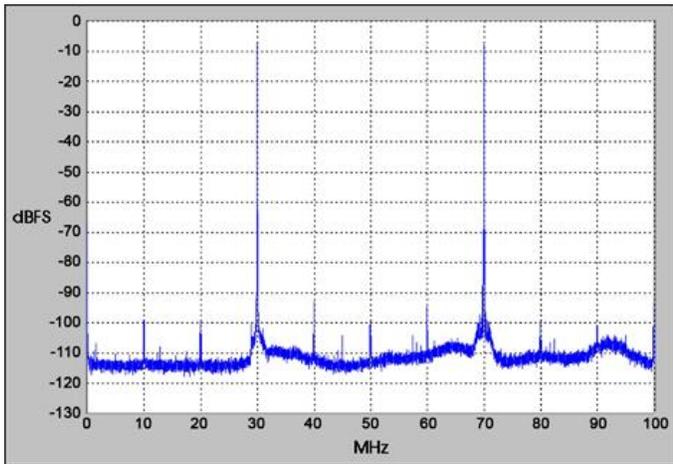
A/D Performance

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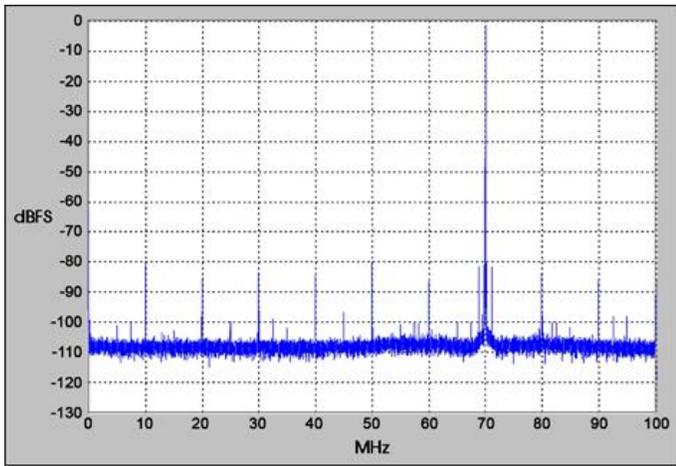
f_{in} = 70 MHz, f_s = 200 MHz, Internal Clock

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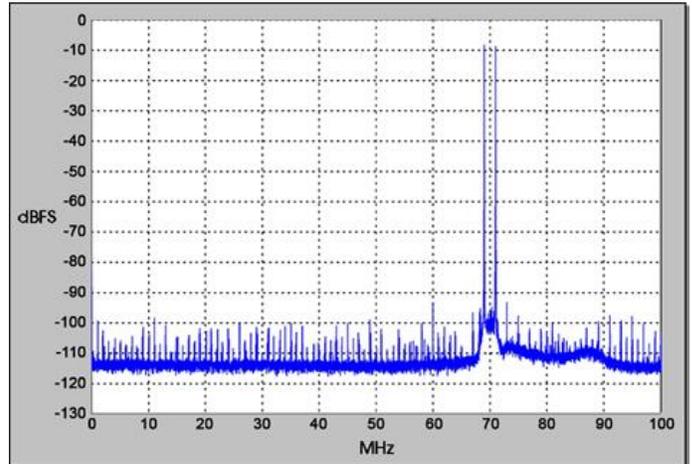
f_1 = 69 MHz, f_2 = 71 MHz, f_s = 200 MHz

Adjacent Channel Crosstalk
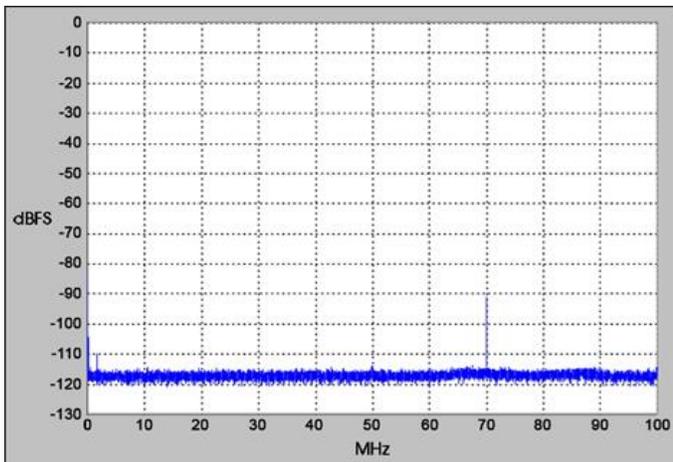
f_{in} Ch2 = 70 MHz, f_s = 200 MHz, Ch1 shown

Input Frequency Response
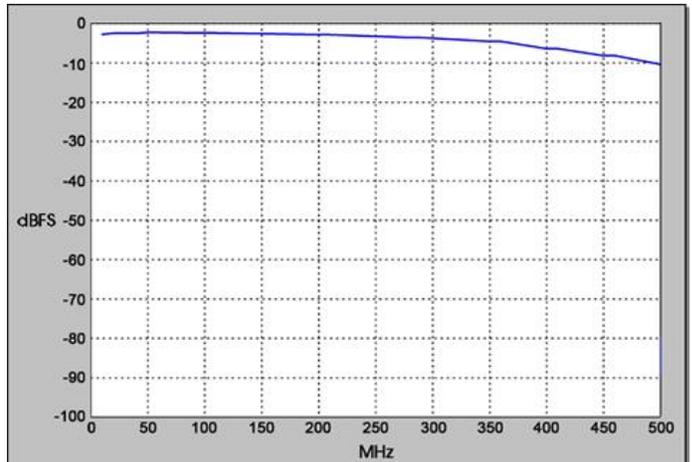
f_s = 200 MHz, Internal Clock

D/A Performance

Spurious Free Dynamic Range

f_{out} = 70 MHz, f_s = 200 MHz, Internal Clock

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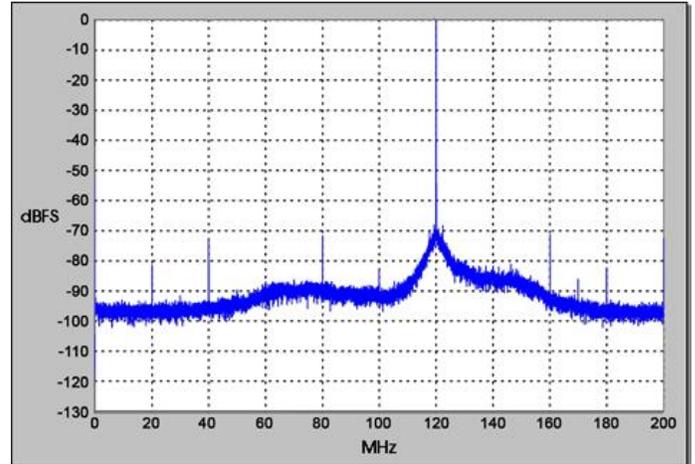
f_{out} = 120 MHz, f_s = 400 MHz, External Clock

Specifications

PC Workstation (standard configuration)
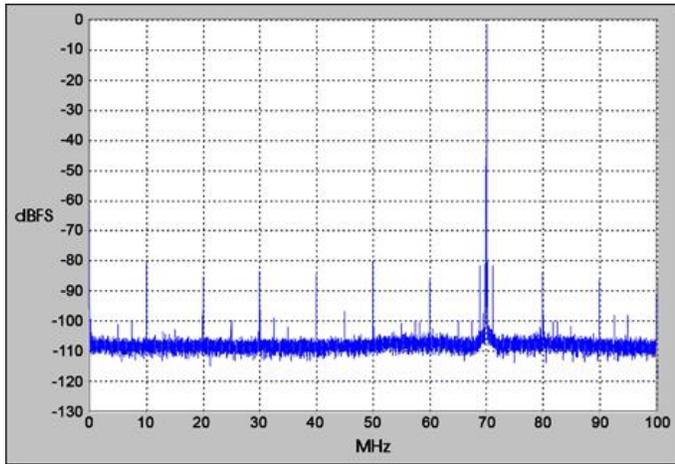
Operating System: Windows
Processor: Intel Core i7 processor
Operating System Drive: 128 GB SSD
SDRAM: 8 GB
Monitor: Built-in 17" high-resolution LCD 1440 x 900 pixels, 200 nits
RAID
  Total Storage: 1.92, 3.8 or 7.6 TB
  Supported RAID Levels: 0, 1, 5 and 6
  Drive Bays: Hot-swap, removable, rear panel
USB 2.0 Ports: Eight (8) left side, two (2) front panel
USB 3.0 Ports: Two (2) left side
1 Gb Ethernet Port: One (1) left side
eSATA 3 Ports: Two (2) left side
Aux Video Output: 15-pin VGA left side

Analog Signal Inputs

Quantity: 1, 2, 3, or 4
Input Type: Transformer-coupled, 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 Filters: 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: $0.4*f_s/D$
Bandwidth Range: 2.5 kHz to 80 MHz at f_s = 200 MHz

Analog Signal Outputs

Quantity: 1 or 2
Output Type: Transformer-coupled, female SSMC connectors
Full Scale Output: +4 dBm into 50 ohms
3 dB Passband: 300 kHz to 700 MHz

Digital Upconverter, Interpolator and D/As

D/A Resolution: 16 bits
Output Signal: Analog, real or quadrature
Type: Texas Instruments DAC5688 and Pentek-installed IP core interpolator
IP Core Interpolation: 2 to 65,536
DAC5688 Interpolation: 2, 4 or 8
Overall Interpolation: 2 to 524,288
Input Data Rate to DAC5688: 250 MS/sec max.

Output Sampling Rate: 800 MHz max
Output IF: DC to 400 MHz
Bandwidth Range: Matches recording bandwidths

Clock Sources

Selectable from onboard programmable VCXO, external or LVDS clocks

External Clocks

Type: Female SSMC connector, sine wave, 0 to +10 dBm, AC-coupled, 50 ohms, 10 to 200 MHz

Physical and Environmental

Dimensions: 13.4" H x 16.9" W x 9.5" D
Weight: 30 lb maximum
Power: 90 to 265 VAC, 50 - 60 Hz
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.

Specifications are subject to change without notice.

Ordering Information

Click here for more information.

General Options	
Option -201	1-channel recording
Option -202	2-channel recording
Option -203	3-channel recording
Option -204	4-channel recording
Option -208	8-channel recording
Option -221	1-channel playback
Option -222	2-channel playback
Option -224	4-channel playback
Option -228	8-channel playback
Storage Options	
Option -405	1.9 TB SSD storage capacity; Max. Data Rate 2.0 GB/sec
Option -410	3.8 TB SSD storage capacity; Max. Data Rate 2.4 GB/sec
Option -415	7.6 TB SSD storage capacity; Max. Data Rate 2.4 GB/sec
General Options (append to all options)	
Option -261	GPS time and position stamping
Option -264	IRIG-B time stamping
Contact Pentek for compatible Option combinations. Storage and General Options may change, contact Pentek for latest information.	

Pricing and Availability

To learn more about our products or to discuss your specific application please contact your local representative or Pentek directly:

Pentek, Inc.
One Park Way
Upper Saddle River, NJ 07458 USA
Tel: +1 (201) 818-5900
Email: sales@pentek.com

Lifetime Applications Support

Pentek offers the worldwide military embedded computing community shorter development time, reliable, rugged solutions for a variety of environments, reduced costs, and mature software development tools. We offer free lifetime support from our engineering staff, which customers can depend on through phone and email, as well as software updates. Take advantage of Pentek's 30 years of experience in delivering high-performance radar, communications, SIGINT, EW, and data acquisition MIL-Aero solutions worldwide.