

## Features

- ✓ Full bi-directional IP wireless bridge with up to 65Mbps throughput at distances of up to 2km.
- ✓ DVD-quality video (30fps@720x480-NTSC, 25fps 720x576-PAL) using MPEG2 standard encoding
- ✓ Broad range stereo audio (32/44.1/48 KHz, 16bit stereo) using MPEG1 layer II standard encoding
- ✓ Composite and S-Video video inputs
- ✓ 2 audio channel inputs
- ✓ High Performance Intel® XScale® IXP Network Processor for near wire speed packet forwarding
- ✓ Super compact, lightweight design
- ✓ Featuring the HauteRoute OS™ advanced operating system
- ✓ Simple to configure Web Based management interface
- ✓ Radio Module options supporting 902-928Mhz at up to 700mW, 2.4GHz at up to 400mW, 4.9GHz FCC Part 90Y or 5Ghz at up to 400mW<sup>1</sup>
- ✓ One 10/100 Base-TX Ethernet Port (with Auto MDI/MDIX)
- ✓ HauteLine™ high performance, low latency protocol for bridge connections of up to 60 Mbps actual throughput
- ✓ Optional Hardware Acceleration for IPSec and AEP. FIPS 140-2 compliant protocols
- ✓ Passive 12VDC Power Over Ethernet – run from virtually any power source
- ✓ Only 15Watts max power and 13Watts typical power consumption
- ✓ 0°C to 70°C Operating Temperature
- ✓ RS232 Serial Port and USB 2.0 Host Interface Port for device control
- ✓ Voltage and Temperature Monitor; Watchdog Timer
- ✓ Pelco-D Pan Tilt Zoom Protocol over IP support through onboard serial port (coming soon)

# HauteRoute™ HR-IXPSXPi-Modular SD Resolution Video Encoder and Router



## Turn ANY CCTV or Analog video source into a Wireless IP Streaming Server

The HR-IXPSXPi-SD Modular Encoder and Router is a complete, turn key solution for video streaming from virtually any analog input source to any playback destination. It is built on top of a high

performance single board computer (SBC) based upon the Intel XScale IXP Network processor. It can be ordered with any one radio module operating on either 900Mhz, 2.4GHz, 4.9 FCC Part 90Y Public Safety, or 5GHz bands.

It uses the HauteSpot Networks high speed HauteLine™ protocol delivering up to 65Mbps actual TCP/IP throughput with no jitter, consistently low delay variation, and full bi-directional operation. The modularity of the radio elements of the HR-IXPSXPi-SD allow it to be field upgradeable to different frequencies.

The HR-IXPSXPi-SD has an amazingly small form factor, which allows for it to be placed in a variety of locations from the back of a camera, to simple mounting on a wall, to a large pocket. The 4"x7"x1.5" lightweight steel enclosure is rugged and can be fitted with an Anton Bauer Gold Mount camera mount.

The highly efficient network processor and soft radio design of the HR-IXPSXPi-SD allows it to have extremely low power consumption while achieving high power output. Typical operating power consumption is only 15 Watts maximum and 10 Watts typical, allowing the HR-IXPSXPi-SD to run for hours off standard camera batteries.

The integrated MPEG2 encoder is designed to efficiently compress high resolution analog images for streaming using RTP unicast or multicast, without adding significant latency. The MPEG1 audio encoder delivers superior sound quality, while compressing sound down for network transport.

The HR-IXPSXPi-SD is designed for use with a HR-IXPSXPi Modular Bridge/Router attached to any IP network, with playback and decoding through any standard multimedia computer or through an inexpensive set top box decoder.

A simple to configure Web management is standard.

## Detailed Specifications

Processor Board Hardware Features:	
Intel XScale IXP Processor	
One 10/100 Base-TX Ethernet Ports (with Auto MDI/MDIX)	
32Mbytes SDRAM	
16 Mbytes Flash	
2 Type III Mini PCI Slots	
RS-232 Serial Management Port	
5 Bits General Purpose Digital I/O	
Voltage/Temperature Monitor	
Watch-Dog Timer	
Serial EEPROM	
Wide Input Voltage (9 to 48VDC)	
Supports Power Over Ethernet (PoE)	
USB 2.0 Host Interface	
0°C to 70°C Operating Temperature	
Radio Module Specifications	
Receive Sensitivity - HR-IXPSXP "-2" option	
<b>5GHz OFDM:</b>	<b>2.4GHz OFDM/DSSS:</b>
-90dBm @ 6Mbps	-96dBm @ 1Mbps
-89dBm @ 9Mbps	-96dBm @ 2Mbps
-88dBm @ 12Mbps	-96dBm @ 5.5Mbps
-87dBm @ 18Mbps	-92dBm @ 6Mbps
-84dBm @ 24Mbps	-91dBm @ 9Mbps
-79dBm @ 36Mbps	-92dBm @ 11Mbps
-77dBm @ 48Mbps	-90dBm @ 12Mbps
-74dBm @ 54Mbps	-87dBm @ 18Mbps
	-85dBm @ 24Mbps
	-80dBm @ 36Mbps
	-78dBm @ 48Mbps
	-76dBm @ 54Mbps
Transmit Output Power (Typical) – HR-IXPSXP "-2" option	
<b>5GHz :</b>	<b>2.4GHz OFDM :</b>
20dBm+/-2 @6-24Mbps	26dBm +/-2dBm @6-24Mbps
19dBm+/-2 @36Mbps	25dBm +/-2dBm @ 36Mbps
18dBm+/-2 @48Mbps	24dBm +/-2dBm @ 48Mbps
17dBm+/-2 @54Mbps	23dBm +/-2dBm @ 54Mbps
17dBm+/-2 @108Mbps	23dBm +/-2dBm @ 108Mbps
	<b>2.4GHz DSSS:</b>
	26dBm +/-2dBm for all rates
Receive Sensitivity – HR-IXPSXP "-5" option	
<b>5GHz OFDM:</b>	
-94dBm @ 6Mbps	
-93dBm @ 9Mbps	
-92dBm @ 12Mbps	
-90dBm @ 18Mbps	
-86dBm @ 24Mbps	
-83dBm @ 36Mbps	
-77dBm @ 48Mbps	
-74dBm @ 54Mbps	

### Optional Battery System

**PS-BAT370A** - Portable Li-Ion Battery Bank: 14.8V 24.6Ah (370 Wh)



- 370 Wh Portable power bank is designed to run 14.8V mobile electronics up to 14 hours in field
- Weighs less than 5 lbs
- Advanced Polymer Li-Ion battery technology ( 14.8V 25Ah ) with full protection IC
- Smart Fast charger ( 100-240V AC )
- Can run HR-IXPSX for more than 14 hours per charge
- Perfect for field use with portable wireless devices.

### Transmit Output Power (Typical) – HR-IXPSXP "-5" option

**5GHz OFDM:**  
 26dBm+/-2 @6-24Mbps  
 24dBm+/-2 @36Mbps  
 22dBm+/-2 @48Mbps  
 21dBm+/-2 @54Mbps  
 21dBm+/-2 @108Mbps

### Receive Sensitivity – HR-IXPSXP "-5" option

#### 900-928Mhz OFDM:

-93dBm @ 1Mbps  
 -91dBm @ 2Mbps  
 -88dBm @ 5.5Mbps  
 -90dBm @ 6Mbps  
 -89dBm @ 9Mbps  
 -88dBm @ 11Mbps  
 -87dBm @ 12Mbps  
 -86dBm @ 18Mbps  
 -82dBm @ 24Mbps  
 -79dBm @ 36Mbps  
 -73dBm @ 48Mbps  
 -70dBm @ 54Mbps

### Transmit Output Power (Typical) – HR-IXPSXP "-9" option

#### 900-928Mhz OFDM:

28dBm +/-2dBm @1-24Mbps  
 26dBm +/-2dBm @ 36 Mbps  
 24dBm +/-2dBm @ 48 Mbps  
 23dBm +/-2dBm @ 54 Mbps

### Video Encoding Hardware Features:

Real-time MPEG2 (MP@ML, SP@ML) hardware compression (I-, B-, and P-frames) on video  
 525/60 NTSC 30fps @720x480  
 625/50 PAL 25fps @720x576  
 Constant and Variable bit rate 1-15Mbps, Default 6Mbps (CBR, VBR)  
 Audio capture formats: 32/44.1/48 KHz, 16bit stereo, 192/224/384Kbits/sec MPEG1 layer II.  
 Video Inputs: Composite BNC or S-Video  
 Audio Inputs: 2 Channels XLR  
 Programmable GOP lengths  
 Adaptive field/frame (motion compensation type 8 DCT)  
 Field/frame motion estimation  
 - B-frame: ±296(H) x ±184(V)  
 - P-frame: ±326(H) x ±202(V)  
 - Half-pel accuracy  
 4:2:2 to 4:2:0 conversion  
 Speckle noise reduction  
 Sharpness control  
 Recursive noise reduction  
 Inverse telecine (3:2 pulldown)  
 Scene change detection  
 Adaptive quantization  
 Supports elementary program, and transport streams  
 Automatic VBI extraction  
**Environmentals:**  
 Dimensions: 4"x1.5"x7"  
 Weight: 15 oz  
 0°C to 70°C Operating Temperature

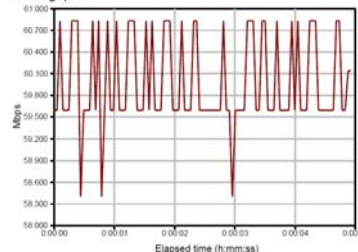
### Ordering Information

**HR-IXPSXPi-SD** – Base model, no radio module  
**HR-IXPSXPi-SD-2** 2.4GHz  
**HR-IXPSXPi-SD-4** 4.9GHz FCC Part 90Y  
**HR-IXPSXPi-SD-5** 5GHz  
**HR-IXPSXPi-SD-9** 900MHz

**For military, US Federal Government and export, the HR-IXPSXPi-SD is also available supporting 1.8 and 4.4GHz**

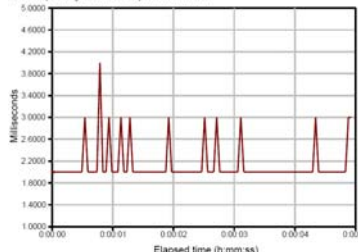
Electronic components warranted for 1 year.

### Throughput



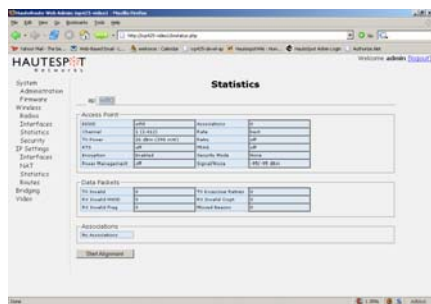
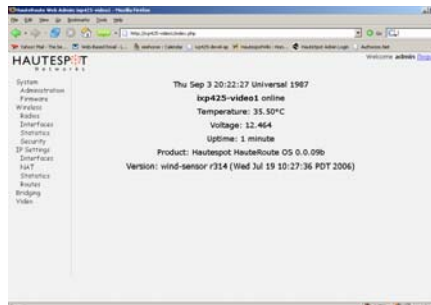
Throughput Test Results For 60Mbps RTP stream

### Jitter (delay variation) Maximum



Jitter Variation for 60Mbps RTP stream

## Sample Management Interface



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