ENC2x67

Video Encode PCIe Card

ENC2x67 is Ittiam’s industrial grade field-proven off-the-shelf PCIe card based on dual DM6467T processors from Texas Instruments. ENC2x67 is a compact full HD video encoding platform capable of dual-channel 1080p30 encoding over a wide range of encoding bit-rates (compression ratios in the range 10:1 to 100:1).

ENC2x67 can be leveraged to create differentiated, cost-effective video encoding solutions. ARM Cortex™-A9 on ENC2x67 serves as the application processor for running Ittiam’s optimized system software and communicating with a C64x DSP for high-speed video processing. ENC2x67 can be interfaced with host PC platforms via PCIe 2.0 bus (x1 lane).

ENC2x67 hardware platform is offered along with System Software comprising of Board Support Package (BSP), Codecs, Media Framework and Application/UI software for video encoding use cases like live streaming, live recording and file streaming. Other offerings include a ready-to-manufacture Hardware Design License.

HIGHLIGHTS

• PCIe Card based on TI’s DM6467T Processor for live streaming and recording applications
• Capture and encoding of 2 HD-SDI video inputs (up to 1080i60 / 1080p30) and 2 analog stereo audio inputs
• Low latency operation (<80msec capture to network latency)
• Industrial temperature range (-30°C to +75°C)

System Software

Ittiam offers System Software on ENC2x67 to enable single or dual-channel server and recorder use cases. Lowest per-channel power-consumption and best-in-class streaming latency is delivered through software optimizations at every level – media codecs, device drivers, streaming protocols and multimedia framework. An efficient scheduler maximizes the efficiency of operation across multiple cores and co-processors. Centralized configuration management, device management, firmware upgrade and UI complete the System Software offering.

Ittiam also provides system SDK on the host PC to realize the use cases for a Digital Video Recorder (DVR) application. A comprehensive web-based GUI and user-friendly documentation enable customers to jump-start their own DVR system realization. System software is available off-the-shelf on ENC2x67 and host PC (x86, 32-bit Ubuntu Linux).

Industrial & Defense Solutions from Ittiam

Ittiam has over a decade of experience in delivering Industrial & Defense multimedia solutions on a wide range of embedded platforms. Ittiam’s I&D Solutions for Original Equipment Manufacturers (OEMs) include high quality, field-proven and production ready Software IPs, Media SDKs and System Solutions for applications in Surveillance, Enterprise, Medical, Defense, Avionics and In-Flight Entertainment. These solutions enable OEMs across the globe to realize standards-compliant, high-performance and reliable products while significantly shortening time to market.
ENC2x67: Platform Advantage

ENC2x67 is an off-the-shelf solution for a PC based Server / DVR system which includes a rugged, field-proven industrial grade hardware, and a feature-rich SDK, including a browser based Web UI. With Ittiam’s hardware and system software solution, OEMs/ODMs can focus on customizing the Web UI for any specific requirements. A wide array of configurable media and networking parameters allow easy customizations by the customer. Multiple ENC2x67 can be plugged into a hot PC to achieve higher channel densities.

System Specifications

**Processing Power**
2x TMS320DM6467T - 500 MHz ARM926EJ-S - 1.0 GHz C64x DSP

**Memory Capacity**
256MByte DDR2 SDRAM (for each TMS320DM6467T)

**Audio/Video Inputs**
2x HD-SDI 1080p30 4:2:2 8 bit (max) Selectable Single-ended (HD-BNC) / Differential (RJ45) Inputs
2x Line In Stereo, Up to 48KHz, 16-bits/sample

**Loop-through Video Outputs**
2x HD-SDI 1080p30 4:2:2 8 bit (max) Single-ended (HD-BNC)

**Data/Communication Interfaces**
PCIe 2.0 x1 lane

**Debug Interfaces**
2x RS-232 (one for each TMS320DM6467T)

**Power Input**
+5V DC DC Jack

**Power Consumption**
16 W (Typical)

**Dimensions**
6.6” x 5.2” x 0.78” (167 x 132 x 19.7 mm)

**Temperature Range**
-30°C to +75°C (Operating); -40°C to +85°C (Storage)

**Video Standards:**

**Video / Audio Encoding:**
H.264 MP Level 4.2, AAC-LC

**Other Features:**
Low Latency Mode, Text Overlay, VANC Metadata Capture

**System Management:**
Built In tests, Camera disconnect/reconnect handling, Software upgrade over PCIe, Time synch with Host PC, Soft-Reset for each DM6467T, Statistics, Logs

ENC2x67 hardware comes with a system software for the Host PC onto which ENC2x67 is mounted. This system software implements the following core functionality:

- **Control Application** to receive encoded audio / video and metadata from ENC2x67 over PCIe
- **Web UI** (browser based, IE/Firefox) for configuration and control by the end user
Host PC System Software Capabilities

- **Control Application** to receive encoded audio / video and metadata from ENC2x67 over PCIe
  - Extracts audio, video and metadata from PCIe data
  - Streams or records media as needed
  - Capable of managing & interfacing with multiple ENC2x67 cards
  - Manages network connections and storage
- **Web UI** (browser based, IE/Firefox) for configuration and control by the end user
  - Capture and encoding parameters (relayed to ENC2x67 over PCIe)
  - Recording and streaming parameters (for Host Application)

Use Case Realization (Server and Recorder)

- **Live Server**: Stream to one / more remote clients over IP network
  - MPEG-2 TS over UDP
  - KLV Metadata
  - Unicast / Multicast
- **Recorder**: Record to SATA or other connected storage device
  - MPEG-2 TS Split File Recording
  - KLV Metadata
  - Pre-Event Recording
  - Bookmarks
- **File Server**: Streaming recorded files over IP network
  - Trick modes (fast/slow forward & rewind, seek, pause, step forward)
  - Bookmarks

Applications

ENC2x67 is ideal for creating low-latency, cost-effective multichannel recording and / or streaming applications in the Industrial & Defense markets. With support for Full-HD video encoding and decoding, it can enable Digital Video Recorder (DVR), Network Video Recorder (NVR) solutions for applications like:

- Intelligence, Reconnaissance, Surveillance (ISR) & Situational Awareness
- Unmanned Aerial/Ground Vehicles (UAV/UGV) Navigation Systems
- Intelligent Security Systems
- Aerial Surveillance Systems
- Vision Aided Surgical Procedures and PACS
Product Code / Ordering Information

Use the product code ENC2x67 to enquire further

Product Packages

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<td><strong>Hardware</strong></td>
<td><strong>Ready-to-manufacture Hardware Design License</strong></td>
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<td>Hardware boards with firmware (BSP and System Software)</td>
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<td><strong>Off-The-Shelf System Software</strong></td>
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<td>• PCIe driver for ENC2x67 on Host PC</td>
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<td>• ENC2x67 Encoder Software: Audio/video capture &amp; encoding functionality, system</td>
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<td>management features and interfaces to communicate with Host PC software; Device</td>
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<td>software</td>
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<td><strong>Custom System Software</strong></td>
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Other Hardware Products from Ittiam

- neonCaster Gen I
- neonCaster Gen II NPM
- neonCaster Gen II Clove
- neonCaster I/O Boards (Nova) for NPM / Clove
- HD A/V Encode/Decode Cards
- openGear A/V Encoding Card

About Ittiam

Ittiam Systems Private Limited, headquartered in Bangalore, India, is a technology company focused on providing cutting-edge multimedia solutions for a wide range of products as well as cloud services. With its wide range of components, SDKs, applications, hardware platforms, turnkey systems and cloud based workflows, Ittiam offers solutions to Automotive, Broadcast, Consumer & Mobility and Industrial & Defense Markets. Ittiam operates through its network of offices and representatives around the world. Embedding Ittiam IP inside, annual volume of customers’ products shipped such as Smartphones, Tablets, Broadcast, Video Communication and Wi-Fi Devices is in several tens of millions units.

For more information, please visit [www.ittiam.com](http://www.ittiam.com) or contact Ittiam Sales

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