Broadcast Systems SDK for Multichannel AV Encoder

BSS-MES-SDK

Product Brochure

- Based on H.264 / MPEG2, HD / SD, interlaced / progressive video on DM8169/DM8168
- Target Applications: Head-End Servers, IPTV and Contribution
**MULTI-CHANNEL ENCODE SDK**

Multimedia Blocks for Multi-Channel Encoding System

**SOLUTION BENEFITS**
- High-density audio and video encoding
- Support for multiple video resolutions
- Support for popular audio – video codec combinations
- Ittiam’s broadcast quality MPEG-2 and H.264 encoders
- Broadcast quality ISO / IEC – 13818 – Part 1 compliant output TS streams with AV synchronization
- Reduces time to market with complete encode system implementation with Ittiam neonCaster hardware

**TARGET PLATFORM (s)**
- Processor: DM8169; OS: Linux
- Hardware Platform: Ittiam neonCaster

**STANDARD DELIVERABLES**
- Encode SDK libraries with support for standard encoding configurations and features
- API Document and User Guide
- neonCaster SDK (based on TI EZSDK) and BSP
- Application demonstrating use cases and APIs in source form for easy integration into customer specific application
- Validated on Ittiam I/O Board with neonCaster (single video input)

**OPTIONAL DELIVERABLES**
- Advanced APIs to create custom encoding configurations
- Custom I/O Board design for multi-channel video input
- Support for advanced features

**STANDARD FEATURES**
- AV encoding system with MPEG2/H.264 video and AAC/MP12 audio (stereo audio for each video channel)
- Support for simultaneous encoding of 2 HD or 8 SD AV channels and streaming over IP
- Support for dynamic change of encoded bitrate to enable statistical multiplexing

**ADVANCED FEATURES**
- Advanced configurations with various combinations of HD and SD use cases (subject to platform performance limits)
- User data insertion (Closed captions, AFD), text overlay
- Capture and encoding of VBI information from input video
- Automatic video resolution detection
- Support for AC3/EAC3 encode
- MPTS support at output
- Support for streaming via ASI/custom buffer interfaces
- Multiple audio channels for single video source
- Video pre-processing: De-interlacing, wide scaling range

*All advanced features available on request and not part of standard deliverables*
**Technical Specifications**

**Media Features / Formats**
- System Input: 3G-SDI / Composite* / Component* / Line-in* / Mic* / Buffer*
- System Output: MPEG2-TS SPTS / MPTS* over IP / ASI* / Buffer*
- Video Input:
  - 480i60, 576i50, 480p60, 720p50, 1080i50, 1080i60, 1080p50, 1080p60
- Video Output:
  - H.264 up to HP@L4.3
  - MPEG2 up to MP@HL
  - Bitrate Up to 15 Mbps

**User Features**
- User configurable output video resolution
- User configurable output video bit rate mode – VBR / CBR
- User configurable output audio volume
- Configurable target encoded frame rate (up to 1080p 60 frames/sec)
- Initialization time and Run time controls for target encoded bit rate
- Configurability to set intra-period and inter-period

**Exceptions and Errors**
- Comprehensive error detection, reporting and recovery mechanism
- Video Input Signal Presence detection

**Standards Compliance**
- MPEG2 Video Encoding: ISO/IEC 13818-2
- H.264 Video Encoding: ISO/IEC 14496-10
- MP12 audio Encoding: MPEG-2 Audio Layer III ISO/IEC 13818-3
- AAC-LC audio Encoding: ISO/IEC 13818-3
- HE-AAC audio Encoding: MPEG-4 AAC-LC ISO/IEC 14496-3
- AC3 audio Encoding: ATSC A/52B
- MPEG2 - TS: ISO/IEC 13818 – 1
- Fully interoperable with industry standard STBs and other devices

**Reliability**
- Software Development as per Ittiam Quality Management System - Product Realization Process
- Production tested and proven to work on DM8168 Evaluation Module
- Proven to work over multitude of open and closed networks
- Interoperability tested with a host of industry standard video playback systems

**Platform Details**
- DM816x (as part of neonCaster)
- 1.2/1.35 GHz Cortex A8
- 600 MHz HDVICP2.0
- 1/1.125 GHz DSP
- 796 MHz, 32 bits DDR3
- EZSDK 05.03.01.15

**Roadmap**
- Logo Insertion
- Video pre-processing like Noise Filter
- Dynamic GOP adaptation
- CALM based loudness monitoring and control
- Statistical multiplexing

*Advanced features which are customized on the SDK offering based on customer requirements and I/O hardware
^ - Integration of AC3/E-AC3 requires confirmation from Dolby Systems
• **ITTIAm BROADCAST SOLUTIONS**
  - Ittiam’s Broadcast Solutions for Original Equipment Manufacturers (OEMs) include high quality Codecs and production ready Software Systems for applications in Contribution, Distribution and Multiscreen Delivery. Available for licensing as integrated SDKs, together with Ittiam’s neonCaster Hardware Platform, these solutions enable OEMs to significantly shorten time to market for their products.

• **neonCaster**
  - The neonCaster Gen II Hardware Platform is a configurable and scalable platform for high performance, high density broadcast applications. With support for multi-channel HD encoding and transcoding, this platform can realize a range of applications in the broadcast market. neonCaster Gen II Platform employs a flexible multi-module architecture which can be leveraged to create differentiated, cost-effective broadcast solutions. At the core of the architecture is the Netra Processor Module (NPM) which is based on Texas Instrument’s DM816x (Netra) Processor. NPM interfaces with different I/O Boards to meet Audio/Video interface requirements of the end product. The Platform is intended to be housed in a 1 RU system.

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**BSS SDK FOR AV ENCODER**

**Example Configurations**

**6 SD/ 2 HD Encode Configuration**
- Simultaneous encoding of up to 6 SD or 2 HD video channels (H.264/MPEG2)
- Simultaneous encoding of up to 6/2 stereo audio channels (MP-12/AAC-LC)
- MPEG2-TS output format: SPTS
- MPEG2-TS output mode: CBR/VBR

**AV Input**
- Custom I/O Card
- Video De-interlacer/Scaler
- AV Encode
  - MPEG2,H.264/MP12, AAC-LC
- MPEG2-TS Packetize
  - MPEG2 TS (SPTS) over GbE (UDP/IP) or ASI

**Example Configurations**

- **BSS SDK FOR AV ENCODER**
  - **Encoder Configuration**
    - Simultaneous encoding of up to 6 SD or 2 HD video channels (H.264/MPEG2)
    - Simultaneous encoding of up to 6/2 stereo audio channels (MP-12/AAC-LC)
    - MPEG2-TS output format: SPTS
    - MPEG2-TS output mode: CBR/VBR

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