

CE1



Contribution Encoder

The CE1 Contribution Encoder is an essential part of MediaKind's Contribution and Distribution offering, which enables live events to be captured reliably, in the highest possible quality and with low transmission latency and bandwidth.

The CE1 is the latest generation of contribution encoder from MediaKind and provides exceptional performance, low latency video compression capability, with the additional benefits of support for the latest IP standards such as UHD SMPTE ST 2110, SRT and Zixi as well as BISS-CA encryption to prevent unauthorized access to valuable, high quality contribution feeds.

The CE1 provides a highly flexible contribution encoding platform that can provide basic 4:2:0 8 bit HD video

encoding all the way up to the highest quality, low bitrate HEVC 4:2:2 10 bit UHD, High Dynamic Range, Wide Color Gamut video encoding.

A basic CE1 can be configured today and easily upgraded when required by the addition of software licenses, or hardware option cards.

In a world of rapidly changing standards and technology it is important to invest in equipment that offers confidence in future-proofing.

The CE1 is based on a ruggedized X86 server platform, with four PCIE option card slots, giving it great potential to support new standards and protocols as they are developed and adopted.

Product Overview

Multi-Channel Contribution Encoder

The CE1 is a compact, flexible, multi-channel contribution encoder capable of addressing a wide range of use cases. It can be configured to meet your exact requirements through the simple range of hardware and software options, and can be easily upgraded in the future as your needs change.

Encoding flexibility

4:2:0 8 bit MPEG-4 AVC or HEVC encoding can be provided using just the CE1 base unit processing power, but for UHD and 4:2:2 10 bit support with ultra-low latency modes the additional processing power required is provided by an video encoding option card.

All IP Workflow

The CE1 supports the latest IP standards such as SMPTE ST 2110 for inputs, and SRT for IP outputs. An optional 25G Ethernet NIC is available to enable SMPTE ST 2110 input up to UHD resolution.

The CE1's inclusion of NMOS IS-04 and IS-05 provides the connection management for this type of workflow.

Secure Delivery of High Value Content

With the value of content, particularly high quality, high value content such as UHD sports content increasing, it remains important to prevent unauthorized access to it. The CE1 supports BISS-CA, the latest 128 bit, rotating key, content protection standard, as well as the long established BISS-1/E encryption

Contribution to public cloud

As content production and playout in public or private cloud instances begins to be adopted, the ability to push content in to the cloud, even over unmanaged and error prone networks becomes important. The CE1 can provide support for SRT (Secure Reliable Transport) to ensure error free contribution to the cloud and RTMP to publish directly to Social Media platforms.

Automated High Availability

For outside content providers who need to transmit the highest quality live events, high reliability and availability is provided by the CE1. MediaKind removes the single point of failure by processing the streams in a 1+1 active/active configuration, unaided by any separate management system while maintaining PTS & PCR alignment. This results in a standalone automated seamless switch, whether a TSolP, SDI or SMPTE ST 2110 workflow.

Unit Features

The CE1 base unit is a compact single 'RU' unit that is only 560 mm deep, thus fitting in standard racks and flight cases as well as OB environments.

Dual hot swappable power supplies help provide the reliability required when covering premium events.

There are four option card slots which enables a wide range of options to be supported so that the unit can not only be customized to meet your needs today, but can easily have its capabilities expanded in the future if required.

The option cards available include:

- SDI Input (4 x HD SDI or 4 x 3G SDI or 1 x 12G SDI inputs)
- Dual 25GbE NIC with SMPTE ST 2110 acceleration
- Dual 10GbE NIC with SFP+
- 4 x HD or 1 x UHD Encoder Accelerator card, providing 4:2:0 8 bit or 4:2:2 10 bit encoding and a range of low and ultra low latency modes

The CE1 feature licenses include:

- HD and UHD encode licenses (inc. required audio capabilities)
- Advanced Stream Processing that includes multiplexing, SRT, RTMP/S support
- Content Protection that enables BISS-CA encryption (BISS-1/E encryption is included as standard)

Specifications

I/O Connectivity

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|-------------------------|--|
| SDI Input | <p>SDI option card:</p> <p>Provides 4 x HD SDI or 4 x 3G SDI or 1 x 12G SDI inputs</p> <p><i>HD SDI: SMPTE 292M</i></p> <p><i>3G SDI: SMPTE 424M</i></p> <p><i>12G SDI SMPTE 2082</i></p> <p><i>Embedded Audio: SMPTE 299M (HD)</i></p> <p><i>SDR/HDR Signalling: SMPTE ST 425-5</i></p> |
| IP Input/Output | <p>Base unit</p> <p>2 x 100/1000BaseT Ethernet ports via RJ45 connector</p> <p>Dual 10GbE NIC option card:</p> <p>Dual SFP+ cages</p> <p>10GBASE optical transceivers or 10GbE SFP DAC</p> <p>Dual 25GbE NIC option card:</p> <p>Dual SFP28 cages</p> <p>Can support 1GbE, 10GbE or 25GbE</p> <p>Can provide hardware acceleration for SMPTE ST 2110 input</p> <p><i>Note: SMPTE ST 2110 input requires the dual 25GbE NIC option card.</i></p> |
| ASI Input/Output | <p>ASI option card:</p> <p>Provides 4 x ASI configured as Inputs or Outputs</p> <p>Connector: 4 x BNC (F) 75 Ohm</p> <p>Max. input rate: 208 Mbps</p> <p>Packet length: 188/204 byte packets</p> <p>Standard: EN50083-9</p> |

Control and Monitoring

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| Front Panel | <p>Limited control and monitoring is available through the front panel keypad and display.</p> |
| IP | <p>Full control and status monitoring is provided via:</p> <ul style="list-style-type: none"> • Web browser user interface • REST API <p><i>Note: If control and monitoring is required via an option card network port contact your MediaKind representative for availability.</i></p> |

Video and Audio Processing

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| Video and Audio Input | <p>SDI (requires SDI option card)</p> <p>4 x 1080p, 1080i, 720p inputs or 1 UHD input</p> <p>UHD SDI input can be either 4 x 3G SDI or 1 x 12G SDI</p> <p>SMPTE ST 2110 (requires Dual 25GbE NIC option card)</p> <p>SMPTE ST 2110 support:</p> <p>-20 (video) support for UHD, 1080p, 1080i and 720p at 4:2:2 10 bit formats.</p> <p>-30, -31 (audio) support for up to 6 channels (for 5.1) and 1ms audio packets</p> <p>-40 (data) support for AFD, CC, SCTE104, SMPTE 2031 and OP-47 Teletext</p> <p>AMWA NMOS IS-04 & IS-05</p> |
| Video Encoding | <p>UHD*</p> <p>4:2:2 10 bit or 4:2:0 8 bit HEVC encoding</p> <p>2160p 23.98, 24, 25, 29.97, 50 or 59.94 frame rates</p> <p>CBR output with low latency mode</p> <p>HD</p> <p>4:2:2 10 bit* or 4:2:0 8 bit MPEG-4 AVC or HEVC encoding</p> <p>1080i 25/29.97 or 720p50/59.94 or 1080p50/59.94</p> <p>CBR output</p> <p>Low latency mode*</p> |
| Audio Encoding | <p>MPEG-1 Layer-II, AAC, HE-AAC, HE-AAC v2</p> <p>Dolby Digital® 2.0 / 5.1, Dolby Digital Plus® 2.0, 5.1, Dolby AC-3®</p> |
| Audio Pass-through | <p>Dolby E®</p> <p>Dolby Digital®, Dolby Digital Plus®</p> <p>Linear PCM (as SMPTE 302)</p> |

*Requires Accelerator Card

Output Stream Processing

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| Transport Stream Output | <p>Single or multi-service MPEG Transport Stream(s)</p> <p>UDP or RTP encapsulated</p> <p>RTMP/RTMPS</p> |
| Encryption | <p>BISS v1 Mode 1 and E</p> <p>BISS v2 Fixed Key and CA Mode</p> <p>SRT Encryption modes (fixed key 128/256 AES)</p> |
| SRT and Zixi | <p>Optional SRT output generation.</p> <p>Zixi sender</p> |
| High Availability | <p>Automated (standalone) 1+1 output synchronisation with PTS alignment (either SDI or ST 2110 inputs)</p> |

All processing functions need the appropriate software licenses to have been purchased

Physical and Power

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| Dimensions (W x D x H) | 440 x 560 x 44mm (17.2 x 22 x 1.75" approx.) |
| Input Voltage | 110 VAC / 240 VAC |
| Power Consumption | 550 Watt max |
| Cooling | Integrated fans |

Environmental Condition

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| Operating Temperature | 0°C to 50°C (32° to 122°F) |
| Storage Temperature | -20°C to 65°C (4° to 150°F) |
| Relative Humidity | 5% to 95% (Non-condensing) |

Compliance

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| Compliance | CE Marked in accordance with all applicable EU Directives, UL Compliant |
| EMC Compliance | EN55032, EN55024 and FCC CFR47 Part 15B Class A |
| Safety Compliance | EN62368-1 and IEC62368-1 |