

MGW Ace Encoder

HEVC/H.265 Hardware Encoder



The VITEC MGW Ace Encoder is a professional grade HEVC / H.265 hardware encoder in a compact, portable streaming appliance. Designed to support a diverse set of video streaming applications, the Ace Encoder features a wide range of inputs, including SDI, HDMI, DVI and composite.

High quality, real-time video with reduced latency and bandwidth costs

HEVC streaming reduces IPTV bandwidth costs

Whether it's live news broadcasting from the field, point-to-point contribution of HD video, live streaming from or within sports venues, or distribution of mission-critical imagery, demand for high quality real-time video is growing.

MGW Ace Encoder's cutting-edge HEVC compression and streaming capabilities enable broadcasters, AV teams, corporate IT as well as military forces and government agencies to drastically reduce Operating Expenses (OPEX).

Best-in class HEVC video quality and latency

Powered by VITEC's HEVC GEN2+, an all-hardware compression chip, the MGW Ace Encoder sets new industry standards in video quality, bit rate, and latency. This revolutionary encoder provides best-in-class HEVC video quality up to 4:2:2 10-bit, and an encoding latency down to 16ms glass-to-glass in Ultra Low Latency (ULL) mode.

Features & Benefits

- Next-generation HEVC / H.265 compression reduces network bandwidth by up to 50% compared to H.264
- Reduced costs associated with dedicated satellite, cellular, broadband network pipes
- Transport infrastructure agnostic: Satellite, xDSL, LANs, WANs, 3G/4G/LTE and FTtx
- Portable, low-power hardware design – optimised for field use and for vehicles (28VDC power input)
- Supports both HEVC and H.264 – built for the future without losing support for legacy receivers/decoders
- KLV / STANAG metadata ingest and multiplexing of up to two sources – SDI, Serial or IP
- Audio Talkback/IFB for easy communication between teams

Applications

Broadcast / Enterprise

- Satellite news gathering and field broadcasting
- Low Latency point-to-point contribution over Internet using Zixi™, SRT or ProMPEG
- Remote / At Home production (REMI) over dedicated transmission links or the Internet
- Bandwidth efficient HEVC point-to-point streaming concurrently with live event distribution through Content Delivery Network using RTMP streaming (certified on Akamai's CDN and AWS Media Live)
- Sharing PC Screen views over IP with local and remote users
- Full HD 1080p monitoring

Intelligence Surveillance Reconnaissance

- Streaming Situational Awareness and FMV content across LANs and WANs with KLV / STANAG metadata (up to 2 KLV streams supported)
- Intelligence, Surveillance and Reconnaissance (ISR) video from ground and airborne vehicles over RF link or satellite
- Streaming full motion video to desktop, TV and mobile devices over bandwidth-limited pipes

Ultra Low Latency over the internet

Whether for covering an event or for sensitive applications, the MGW Ace Encoder is designed to provide the best possible viewing experience. Thanks to its ULL mode, the Ace Encoder delivers unprecedented low glass-to-glass latency even over lossy networks or the Internet.

Flexible connectivity options with H.264 backward compatibility

The MGW Ace Encoder integrates with any video environment and offers a large selection of input, including 3G-SDI, HD-SDI, SD-SDI, DVI, HDMI and Composite video as well as analog and digital audio (embedded and discrete). The on-board hardware scaler can be used for real-time downscaling, cropping, frame-sampling delivering an optimised video output for your application.

A built-in video matrix enables routing of video sources to both the HEVC and H.264 compression cores for simultaneous H.265 and H.264 streaming. As a result, the Ace Encoder allows bandwidth efficient point-to-point H.265 streaming concurrently with H.264 RTMP streaming for large audience distribution through a Content Delivery Network (CDN). Certified on Akamai's CDN, MGW Ace Encoder ensures an optimal quality of service.

JITC Certified - KLV / STANAG metadata ingest for Intelligence, Surveillance and Reconnaissance (ISR) Applications

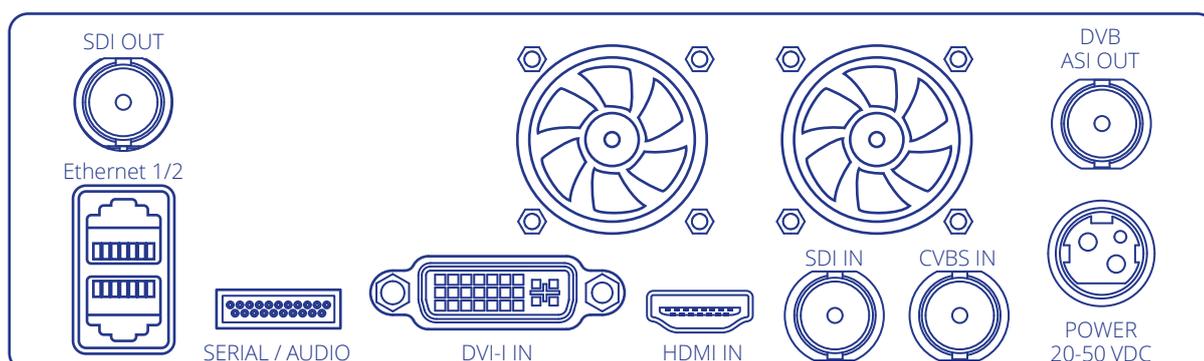
VITEC's MGW Ace Encoder was the world's first all-hardware HEVC ISR encoding system to receive the JITC certification, ensuring it delivers a HEVC MISB-Compliant IP stream. The industrial-grade design combined with the low power consumption allows high-quality Full Motion Video (FMV) streams to be delivered from the field through the most constrained network links. The secondary H.264 compression core allows Ace to deploy the next-generation ISR encoding solution while continuing to support legacy end-points and older IPTV receive suites.

The most complete HEVC offering for IPTV and Full Motion Video

The MGW Ace Encoder can be used as stand-alone or integrated seamlessly into a turn-key HEVC solution. VITEC's comprehensive HEVC product offering includes encoders, decoding appliances, IPTV video portal for distribution, archiving and playback, desktop and mobile video players in addition to PCI cards with SDK for integration projects.

Take advantage of the revolutionary compression technology to dramatically reduce bandwidth costs, extend high-quality video reach to disadvantaged users or allow more content to be streamed on existing network capacity.

Rear Panel



Technical Specification

Video Inputs

- 1 x 3G/HD-SDI/SD-SDI (SMPTE 259M-C, SMPTE 292M, SMPTE 274M, SMPTE 296M, SMPTE 424M, SMPTE 425M-A)
- 1 x HDMI v1.3
(support for HDCP and non-HDCP protected sources)
- 1 x DVI-D
- 1 x Composite/CVBS

Input Resolutions / Frame Rates:

- 2048x1080p @ 24, 23.976Hz
- 1920x1080p @ 60, 59.94, 50, 30, 29.97, 25, 24, 23.976 Hz
- 1920x1080i @ 60, 59.94, 50 Hz
- 1600x1200p @ 60, 50 Hz
- 1400x1050p @ 60, 50 Hz
- 1440x900p @ 60, 50 Hz
- 1366x768p @ 60, 50 Hz
- 1280x800p @ 60, 50 Hz
- 1280x1024p @ 60, 50 Hz
- 1280x768p @ 60, 50 Hz
- 1024x768p @ 60, 50 Hz
- 1280x720p @ 60, 59.94, 50, 30, 29.97, 25 Hz
- 720x480p @ 59.94 Hz
- 720x480i @ 59.94 Hz (NTSC)
- 720x576p @ 50 Hz
- 720x576i @ 50 Hz (PAL)

Audio Input/Output

- 1 x SDI Embedded audio input
- 1 x HDMI Embedded audio input
- 1 x Analog unbalanced stereo audio input, AC-coupled (RCA Female)
- 1 x Balanced analog stereo audio input (XLR)
- 1 x Analog unbalanced stereo audio output for talkback, AC-coupled (RCA emale)

Video Output - HEVC (H.265)

- Powered by VITEC HEVC GEN2+ encoder
- MPEG-H HEVC (ISO/IEC 23008-2)
- Modes:
 - Main / Main 10 Profiles : 4:2:0 8-bits / 10-bits
 - Main 4:2:2 Profile : up to 4:2:2 8-bits / 10-bits
 - Level up to 4.1, Main and High Tier
- Bit Rate: 50 Kbps - 100 Mbps
- GOP : I, IP, IB, Hierarchical IBBBBP and IBBBBBBBP
- Frame Rate: 1-60 fps. Configurable down sampling modes from 1 to 60fps
- Bit Rate Regulation Modes: Constant (CBR), Variable (VBR)
- Output Resolutions: Highly configurable from CIF up to 1920x1080
- Advanced scene change / fade and flash detection
- Encoding Latency: 10ms (Ultra Low Latency Mode), 55ms (Other)

Video Output - MPEG-4 AVC/H.264

- MPEG-4 AVC/H.264
(ISO/IEC 14496-10 MPEG-4 AVC – Rec. ITU-T H.264)
- Modes:
 - Baseline Profile L3
 - Main Profile L3 and L4
 - High Profile L4 and L4.2
- Bit Rate: 100 Kbps - 15 Mbps
- Frame Rate: 1-60 fps. Configurable down-sampling modes.
- Bit Rate Regulation Modes: Constant (CBR), Variable (VBR)
- Output Resolutions: Highly configurable from CIF up to 1920x1080
- Encoding Latency: 65ms

Audio Output

- MPEG-4 AAC-LC (ISO/IEC 14496-3), AAC-ELD, MPEG-1 L2
- Up to x16 audio encoding channels
- Stereo and mono modes
- Bit Rate: 32Kbps - 192Kbps in Stereo, 16Kbps - 128Kbps in Mono
- Sampling Rate: 16 kHz - 48 kHz

Ancillary Data Support

- Timecode (SMPTE12M-2)
- High Dynamic Range (HDR):
 - HDR10 (SMPTE ST 2084/ITU-R BT.2100)
 - HLG (ITU-R BT.2100) from SDI
(support of SMPTE ST 2108 HDR metadata)
- Ad Signaling:
 - SCTE104 messages capture from SDI input (VANC)
 - Embedded as SCTE35 in MPEG-TS
- Closed captions (HEVC channel):
 - CEA-708 / CEA-608
 - Transport: ANSI/SCTE 128, ATSC A/72
[CC in HEVC user data]

Network Protocols

- UDP TS: MPEG Transport Stream over UDP
- RTP TS: MPEG Transport Stream over RTP
- RTP ES (RTSP): Elementary stream over RTP
- Zixi™ Stream protection
 - Zixi™ P2P and Broadcaster modes
 - Zixi™ ABR streaming (Adaptive Bitrate)
 - Zixi™ Low Latency
- RTP TS with ProMPEG Forward Error Correction (SMPTE 2022)
- SRT Caller, Listener and RendezVous with FEC support:
 - SRT Listener multi-destination
(up to 100Mb/s output traffic)
 - Stream ID / tagging for easier streaming port management
- RIST Main and Simple profile
- RTMP and RTMPS (H.264)
- Unicast and Multicast (IGMPv3) streaming
- HTTPS, SSH, SAP
- NTP, PTP v1 & v2 (IEEE 1588-2002, IEEE 1588-2008)

Encryption

- Real-time AES encryption for video, audio and metadata
- 128 and 256 bit encryption key support
- Interoperability with AES-compliant systems such as VITEC EZ TV and FITIS distribution platforms

Network Interfaces

- 2x Gigabit Ethernet ports for streaming and/or management (10/100/1000 Base-T, Auto Detect, Half/Full Duplex)
- DHCP / Static IP address, IPv4 and IPv6 support
- Optional USB to Wi-Fi dongle for wireless system management (P/N 14324)

DVB-ASI Output

- 1x DVB-ASI output for HEVC channel delivery over coaxial cable (188-byte packets)

Management

- Status LEDs for power, network activity, temperature and fan errors, streaming and video source indications
- Secure web-based remote management interface (HTTPS), password protected:
 - Custom SSL certificate loading capability
 - Customisable notice and consent login banner
- System and channel event logging
- Zixi™/SRT streaming statistics for easier configuration and enhanced quality of service
- Autostart mode recovers saved configuration after powercycle
- Remote firmware and software upgrade capability via command line or web GUI
- Recovery or initialisation of Ethernet settings over USB thumb drive
- System discovery to retrieve MGW Ace Encoder IP address on a network
- Easy-to-use HTTPS Rest API for control and status monitoring from 3rd party control software
- SNMPv2 and v3 support
- Reverse SSH

Metadata

- Up to 2 simultaneous KLV metadata streams per channel
- Support for KLV over IP, Serial and SDI (MISB STD 0605.7, VANC per SMPTE 336M),
- Support for CoT over Serial/RS-232
- Absolute time system and timestamps (MISB STD 0603.4)
- Time stamping and transport of compressed motion imagery and metadata (MISB STD 0604.5)
- Security Metadata Universal and Local Sets for Digital Motion Imagery (MISB STD 0102.11)
- Cursor on Target (CoT), conversions to Key-Length-Value (KLV) metadata (MISB STD 0805.1)
- UAS datalink local metadata set (MISB STD 0601.11, STD 0902.6)
- STANAG 4609 output stream over UDP/IP
- JITC-MIS compliant streaming of HD/SD ISR video

Environmental / Regulation

- Operating Temperatures: -20° C to +50° C (-4° F to 122° F)
- Relative Humidity: 5% to 95% (non-condensing)
- EMC Standards: FCC part 15 class A and CE
- Designed to meet MIL-STD-810 and MIL STD-461 criteria
- Power: 28VDC, 55W Max
- MTBF:
 - Ground - 20.06 years
 - Airborne Inhabited Cargo - 11.88 years (as per MIL-HDBK-217F, 20°C, operation time 100%)
- Not controlled under ITAR
- TAA Compliant

Physical

- Dimensions: 65mm H x 196mm W x 199mm D (2.55" H x 7.71" W x 7.83" D)
- Weight: 2.2Kg (4.85lb)
- Enclosure: industrial-grade, with mounting holes for seamless installation in vehicles / onto flat surfaces
- Optional rack-mount kit for standard 1.5RU 19" wide racks (16858)

Advanced Features

- Stream Profiles : Automatic HEVC encoder configuration based on user application for an optimised video encoding quality
- Encode and stream a single source in multiple formats (HEVC and H.264)
- Stream to one or more destinations (2 targets per encoding channel, 4 streams total)
- Highly flexible hardware based resolution scaling (11 configurations) and frame rate sampling (1 to 60fps)
- Time-synchronised playback : synchronise the playback of multiple independent streams using with MGW Ace Decoder
- Zixi™, SRT and ProMPEG FEC error correction / packet recovery
- On-the-fly bitrate change and Zixi™ ABR streaming for auto adaptive bitrate based on network conditions (HEVC/H.264)
- Latency monitoring when paired with MGW Ace Decoder
- Talkback feature for audio feedback (two-way communication between the encoder and the decoder)

Ordering Information

- 14846 – MGW Ace Encoder HD/SD (Breakout cable included)
- 14908 – MGW Ace Encoder Breakout cable (2xAES audio inputs, analog Balanced and Unbalanced audio inputs, Talkback Audio output and Serial)