HEVC

GEN2+
HARDWARE
ENCODER

MGW ACE
HEVC Encoder

VITEC
VIDEO INNOVATIONS

SD Card

POWER ERROR

VIDEO IN STREAM

RESET

MGW Ace Encoder

Compact HEVC / H.265 Hardware Encoder

VITEC
VIDEO INNOVATIONS

MGW Ace Encoder
Compact HEVC / H.265 Hardware Encoder

HEVC
H.265 - HIGH EFFICIENCY VIDEO CODING

MGW Ace Encoder is the world's first HEVC / H.265 hardware encoder in a professional grade portable streaming appliance. Powered by VITEC's HEVC GEN2+ encoder, MGW Ace Encoder delivers industry's best video quality enabling users to stream broadcast quality HD/SD video with up to 50% bandwidth savings compared to H.264. Additionally, the codec now supports Ultra Low Latency streaming in HEVC for a glass-to-glass latency down to 65ms. Designed to support a diverse set of video streaming applications – MGW Ace features a wide range of inputs including SDI, HDMI, DVI and composite.

Featuring compact size and low power consumption, MGW Ace Encoder makes it possible to take HEVC encoding from the server rooms into the field for professional and industrial applications with easy integration to transport cases, TV trucks, military vehicles and aircraft.

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/House of Worship venues, or distribution of mission-critical imagery - demand for high quality real-time video anywhere, anytime is growing leading to rising expenses for more satellite, cellular or other dedicated network bandwidth. MGW Ace Encoder's cutting edge HEVC compression and streaming capabilities allows broadcasters, A/V 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, 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 65ms glass-to-glass in Ultra Low Latency (ULL) mode.

A white paper comparing video quality of leading hardware encoders can be found on https://www.vitec.com/hevc/

Error-Free Content Delivery
Covering an event or for sensitive applications, MGW Ace Encoder is designed to always provide the best possible viewing experience. Shipping with Zixi™ stream protection technology, the appliance protects video, audio and metadata on networks with up to 30% packet loss or data corruption. For point-to-point application, paired with MGW Ace Decoder, the pair provides a bandwidth efficient error-free video streaming solution over any network including the Internet. Additionally, MGW Ace Encoder provides industry standard SMPTE 2022 ProMPEG error correction technology for compatibility with other decoders.

Flexible Connectivity Options with H.264 Backward Compatibility
Integrating with any video environment - the MGW Ace Encoder 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 optimized 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, MGW 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 is 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 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

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.

Increase Picture Quality and Details Using the Same Bandwidth

H.264 / AVC - 1080p @ 1.5Mbps

H.265 / HEVC - 1080p @ 1.5Mbps

Maintain the Same Video Quality Using 50% Less Bandwidth

H.264 / AVC - 1080p @ 6Mbps

H.265 / HEVC - 1080p @ 3Mbps

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Applications

Broadcast / House of Worship / Enterprise
• Satellite News Gathering and Field Broadcasting
• Point-to-Point contribution over the Internet using Zixi or ProMPEG
• Bandwidth efficient HEVC point to point streaming concurrently with live event distribution through Content Delivery Network using RTMP streaming (certified on Akamai's CDN)
• Video distribution of High-Res HDMI / DVI / Computer sources
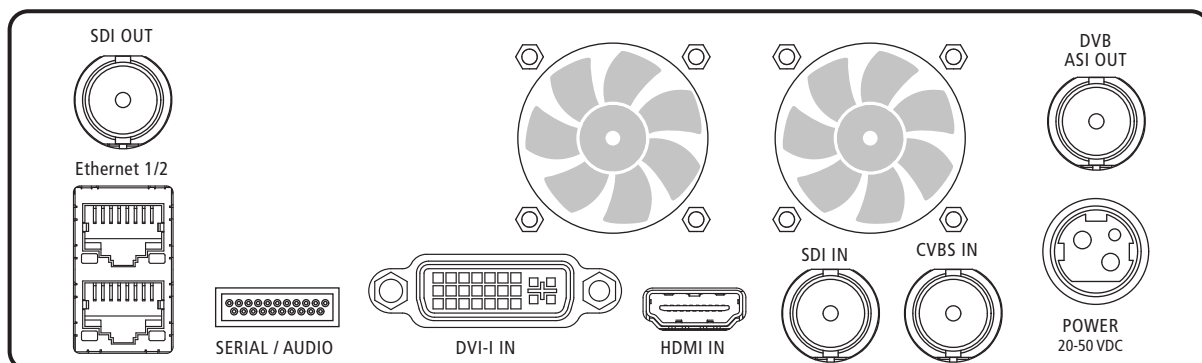• Sharing PC Screen views over IP with local and remote users
• Full HD 1080p monitoring

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

Benefits
• **Next-generation HEVC / H.265 compression reduces network bandwidth by up to 50% compared to H.264**
• **Reduces 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 – optimized 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 2 sources – SDI, Serial or IP**
• **Audio Talkback/IFB for easy communication between teams**

Rear panel

SDI OUT
Ethernet 1/2
SERIAL / AUDIO
DVI-I IN
HDMI IN
SDI IN
CVBS IN
DVB ASI OUT
POWER 20-50 VDC

* DVB output port will be activated via firmware update

Technical Specifications

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:
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 Female)

Video Output - HEVC (H.265)
• Powered by VITEC HEVC GEN2+ encoder
• MPEG-H HEVC (ISO/IEC 23008-2)
Modes:
　o Main / Main 10 Profiles : 4:2:0 8-bits / 10-bits
　o Main 4:2:2 Profile : up to 4:2:2 8-bits / 10-bits
　o Level up to 4.1, Main and High Tier
• Bit Rate: 50 Kbps - 30 Mbps
• GOP : I, IP, IB, Hierarchical IBBBP 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)

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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:

    o Baseline Profile L3

    o Main Profile L3 and L4

    o 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), MPEG-1 L2
- Stereo and mono modes
- Bit Rate: 32Kbps - 192Kbps in Stereo, 16Kbps - 128Kbps in Mono
- Sampling Rate: 16 kHz - 48 kHz

Ancillary Data Support (HEVC)

- Closed captions : CEA-708 / CEA-608
- Transport: ANSI/SCTE 128, ATSC A/72 [CC in HEVC user data]
- Timecode (SMPTE12M-2)

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
    o Zixi P2P and Broadcaster modes
    o Zixi ABR streaming (Adaptive Bitrate)
    o Zixi Low Latency
- RTP TS with ProMPEG Forward Error Correction (SMPTE 2022)
- RTMP (H.264)
- Unicast and Multicast (IGMPv3) streaming
- HTTPS, NTP, SSH, SAP

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
- Optionnal USB to Wi-Fi dongle for wireless system management (P/N 14324)

Management

- Secure Web based remote management interface (HTTPS)
- Dashboard with dynamically updating I/O signal detection and streaming stats
- Zixi streaming statistics for easier configuration and enhanced Quality of Service
- Autostart mode recovers saved configuration after power cycle
- Remote firmware and software upgrade capability via command line or web-GUI
- System and channel event logging
- Easy to use HTTPS Rest API for control and status monitoring from 3rd party control software
- Status LED's for power, network activity, Temperature and Fan Errors, streaming and video source indications
- Recovery or initialization of Ethernet settings over USB thumb drive

Security

- Real-time AES encryption for video, audio and metadata. Interoperability with EZ TV and FITIS systems
- Password-protected HTTPS and CLI control interfaces

Metadata

- Up to 2 simultaneous KLV metadata stream 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

- Operating Temperatures: -20º C to +50º C (-4º F to 122º 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 - 3.70 years, Airborne - 4.96 years (as per MIL-HDBK-217F)
- Not controlled under ITAR
- TAA Compliant

Physical

- Dimensions: 2.55" H x 7.71" W x 7.83" D (65mm H x 196mm W x 199mm D)
- Weight: 4.85lb (2.2Kg)
- 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 optimized 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)
- ProMPEG FEC or Zixi 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)
- Customizable Notice and Consent login banner

Ordering Information

14846 ⟶ MGW Ace Encoder HD/SD

14324 ⟶ USB to Wi-Fi dongle

www.vitec.com