

MGW Diamond-H

4K & Dual-Channel SD/HD HEVC Encoder



MGW Diamond-H is a small, power-efficient dual channel HD or single channel 4K HEVC video encoder ideal for field-based applications. It features a powerful encoding engine with the ability to output up to four streams simultaneously.

MGW Diamond-H is a portable appliance featuring impressive size, weight and power (SWaP) characteristics. It provides best-in-class video quality over industry standard video/audio connectivity.

MGW Diamond-H encodes up to four channels from two sources at HD resolution, or one at 4K. Offering two HDMI 2.0 and one 12G SDI inputs makes MGW Diamond-H a flexible portable appliance for IPTV distribution or site-to-site streaming within corporate, sports or broadcast markets.

Featuring Ultra High Definition and High Dynamic Range (HDR) support, MGW Diamond-H can capture 4Kp60 HDR10 or HLG video. In-built Power over Ethernet (PoE+) makes it very robust, secure and reliable, and easy to integrate.

Low Latency Streaming over WAN with SPRINT Protocol

VITEC's SPRINT Protocol is the ultimate solution for achieving the best end-to-end latency when streaming over lossy networks. When combined with MGW Ace Decoder, our technology delivers glass-to-glass latency as low as 100ms over the Internet.

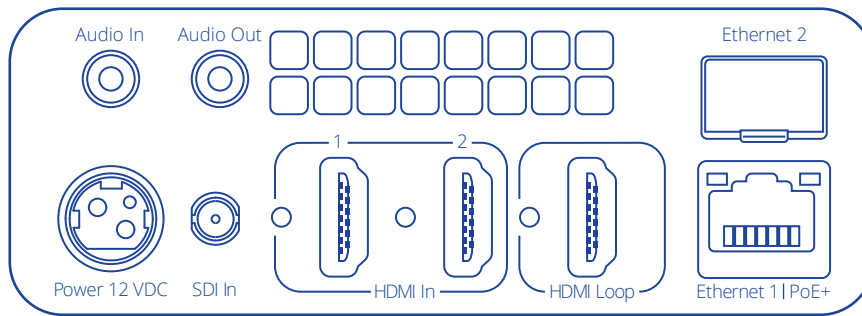
Features & Benefits

- Two channel low latency streaming from two HDMI and/or one SDI source simultaneously
- Support for Ultra High Definition (4K) and High Dynamic Range (HDR)
- Up to four output streams
- Next-generation HEVC (H.265) compression support to reduce network bandwidth utilization by up to 50%, compared to H.264
- Stream protection for reliable video/audio and metadata transmission (Zixi™, SRT, RIST, SPRINT and Pro-MPEG)
- Stream and record simultaneously to ensure content is stored while streaming over unreliable networks
- Power over Ethernet (PoE+) and SFP ports allow gigabit Ethernet over RJ45 or fiber
- Compact, low-power hardware design – optimized for field use

Applications

- IPTV distribution
- Stream desktop, laptop or camera content to devices on the local network
- IP Video contribution
- Inter-site video streaming

Rear Panel Interfaces



Technical Specification

Video Interfaces

Video Inputs

- 2x HDMI (Type A connector)
- Supported standards:
 - HDMI 2.0, from SD up to 4Kp60
- 1x SDI interface (HD-BNC)

Supported standards:

- 12G-SDI (SMPTE 2082-1)
- 3G/HD/SD-SDI (SMPTE 259M-C, SMPTE 292M, SMPTE 274M, SMPTE 296M, SMPTE 424M, 425M Level A only)

Video Output

- 1x HDMI (Type A connector) for HDMI Loop-through
 - Supported standards: HDMI 2.0, from SD up to 4Kp60

Input Resolutions/Frame Rates

- 4096x2160p @ 60, 59.94, 50, 30, 29.97, 25, 24, 23.98 Hz (4K DCI)
- 3840x2160p @ 60, 59.94, 50, 30, 29.97, 25, 24, 23.98 Hz (UHD)
- 2048x1080p @ 60, 59.94, 50, 30, 29.97, 25, 24, 23.98 Hz (2K)
- 1920x1080p @ 60, 59.94, 50, 30, 29.97, 25, 24, 23.98 Hz
- 1920x1080i @ 60, 59.94, 50 Hz
- 1280x720p @ 60, 59.94, 50, 30, 29.97, 25 Hz
- 720x480/576i @ 60, 59.94, 50 Hz

Video Output

- Simultaneous HEVC and H.264 IP video encoding of up to 2x independent channels (up to 1080p60 per channel)
- Up to 4x output streams with independent resolution (downscaling), frame rate and bit rate
- Up to 1x 4Kp60 output stream

HEVC (H.265) MPEG-H HEVC (ISO/IEC 23008-2)

- Main/Main 10 and Main 4:2:2
 - Level up to level 5.2, Main and High Tier
- Selectable GOP structure and size: I, IP, IBP, IBBP, I(3)BP
- Bit rate: 36Kbps to 80Mbps
 - Regulation modes: Constant (CBR), Variable (VBR)
- Frame rate: Follow input or input/2
- Output Resolutions: Configurable from CIF up to 3840x2160p60
- Encoding latency less than 30ms (p60)

H.264 (MPEG-4 AVC Part 10) - ISO/IEC 14496-10 MPEG-4 AVC - Rec. ITU-T H.264

- Profiles:
 - Baseline Profile L3
 - Main Profile L3 and L4
 - High Profile L4 and L4.2
- Selectable GOP structure and size: I, IP, IBP, IBBP, I(3)BP, I(4)BP
- Bit rate: 64Kbps to 80Mbps
 - Regulation Modes: Constant (CBR), Variable (VBR)
- Output Resolutions: Configurable from CIF up to 3840x2160p60
- Frame rate: Follow input or input/2
- Encoding latency less than 30ms (p60)

Audio Input

- HDMI Embedded audio (stereo and mono)
- SDI Embedded audio (stereo and mono)
- Analog unbalanced audio (stereo and mono) (HDMI2)

Audio Output

- Up to 32x audio encoding channels
- Codec: MPEG-4 AAC-LC (ISO/IEC 14496-3) and AAC-ELD
- Stereo and mono modes
- Bit rate: 32Kbps - 256Kbps in stereo, 16Kbps - 128Kbps in mono
- Sampling rate: 48 kHz
- AC-3 and E-AC-3 passthrough

Ancillary Data Support

- High Dynamic Range (HDR) - HDMI:
 - HDR10 (SMPTE ST 2084/ITU-R BT.2100)
 - HLG (ITU-R BT.2100) from SDI (SMPTE ST 2108)
- Timecode SDI (SMPTE12M-2)
- Closed captions - SDI:
 - 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
 - Stream ID/tagging for easier streaming port management
- RIST Main and Simple profile
- SPRINT
- RTMP and RTMPS (H.264)
- Unicast and Multicast (IGMPv3) streaming
- HTTPS, SSH
- 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 Avedia (ArtioCreate Portals/Signs) IPTV & Digital Signage Platforms

Network Interfaces

- 1x Gigabit Ethernet port for streaming and/or management (10/100/1000 Base-T, Auto Detect, Half/Full Duplex) with PoE+ (IEEE802.3at)
- 1x SFP port for gigabit Ethernet over RJ45 or fiber
- DHCP/Static IP address, IPv4 and IPv6 support

Peripherals

- 1x USB 2.0 port for easy configuration of system settings
- 1x Hardware system reset for factory reset or reboot

Management

- Secure web-based remote management interface (HTTPS), password protected
- Custom SSL certificate loading capability
- Customizable Notice and Consent login banner
- Zixi/SRT 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 LEDs for power, network activity, temperature and fan errors, streaming and video source indications
- Recovery or initialization of Ethernet settings using USB memory stick
- System discovery to retrieve encoder IP address on a network
- SSH/Telnet interface for management (status and control)

Advanced Features

- Multi-channel low latency UHD streaming from HDMI or SDI sources with metadata
- Hardware-based resolution and frame rate scaling
- Highly flexible hardware-based resolution scaling and frame rate sampling
- Zixi, SRT, RIST, SPRINT and ProMPEG FEC error correction/packet recovery
- Time-synchronized playback: synchronize playback of multiple independent streams when paired with MGW Ace Decoder
- On-the-fly bit rate change and Zixi ABR streaming for auto-adaptive bit rate based on network conditions (HEVC/H.264)
- Record up to 2x sources to USB memory stick
- Syslog connectivity to remote server for centralized log collection

- HDMI loop-through from either HDMI
- Customizable EDID for source control
- Latency monitoring when paired with MGW Ace Decoder
- Fast boot time, less than 20 seconds

Environmental/Regulation

- Operating Temperature: 0°C to 40°C (23°F to 104°F)
- Relative Humidity: 10% to 90% (non-condensing)
- EMC Standards: FCC part 15/ICES-003 Class A & CE
- Power Supply options:
 - PoE+ (48V): 21.5W max, typical 19.5W IEEE 802.3at PD Type 2 Class 4
 - LLDP or 2-event classification/T2P
 - DC Jack (12V) 19.5W max, typical 17.5W
- MTBF: Ground - 11.98 years, Airborne Inhabited Cargo - 6.54 years (as per MIL-HDBK-217F, 20°C, operation time 100%)
- Not controlled under ITAR
- TAA-compliant

Physical

- Dimensions: 1.64" (H) x 4.54" (W) x 4.90" (D), 41.6mm (H) x 115.4mm (W) x 124.4mm (D)
- Weight: 1.10lbs (0.5kg)
- Enclosure: Industrial-grade, with mounting holes for seamless installation in vehicles/onto flat surfaces
- Optional rack-mount kit for standard 1RU 19" wide racks

Ordering Information (P/N)

- 18874 - MGW Diamond-H-Encoder-TS - 1x 4K*
- 18944 - MGW Diamond-H-Encoder-TS - 1x HD*
- 18681 - MGW Diamond-H-Encoder-TS - 2x HD or 1x4K*
- 18875 - MGW Diamond-H-Encoder - 1x 4K
- 18680 - MGW Diamond-H-Encoder - 2x HD or 1x 4K
- 19038 - MGW Diamond/Pico - Power Supply – Lockable
- 19235 - MGW Diamond/Pico+ - License - Recording
- 19365 - MGW Diamond-H-Encoder - PCB/OEM - 2x HD or 1x 4K