

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.

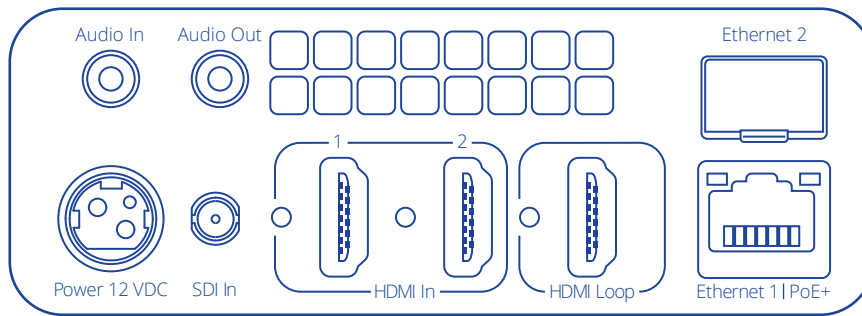
Features & Benefits

- 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 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

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 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
- 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 - 1x4K*
- 18944 - MGW Diamond-H-Encoder-TS - 1xHD*
- 18681 - MGW Diamond-H-Encoder-TS - 2xHD or 1x4K*
- 18875 - MGW Diamond-H-Encoder - 1x4K
- 18680 - MGW Diamond-H-Encoder - 2x HD or 1x4K
- 19038 - MGW Diamond/Pico - Power Supply - Lockable
- 19235 - MGW Diamond/Pico+ - License - Recording