



MGW Diamond

Multi-channel HEVC Portable Encoder



MGW Diamond Encoder

MGW Diamond is a small, power-efficient quad channel HEVC HD/SD video encoder ideal for field-based applications. It features a powerful encoding engine with the ability to output up to eight streams simultaneously. MGW Diamond is ideally suited to any multichannel application where stringent size, weight and power (SWaP) characteristics are demanded.

MGW Diamond captures up to 4x 3G/HD/SD-SDI or Composite inputs and streams live up to 8 channels, addressing diverse applications within sports, enterprise, defense and surveillance markets. Ready for Ultra High Definition, MGW Diamond can capture and stream 4K60p video from either its 4x3G-SDI or 12G-SDI inputs.

For data-sensitive applications, the MGW Diamond supports KLV / STANAG metadata ingest from various sources (SDI, IP or Serial), real-time image cropping and video scaling, Forward Error Correction (FEC) streaming and JITC compliant output streams. It packs all the needed capabilities for delivering any type of Intelligence, Surveillance, and Reconnaissance (ISR) or Situational Awareness (SA) video generated by ground vehicles, manned or unmanned airborne platforms and marine vessels.

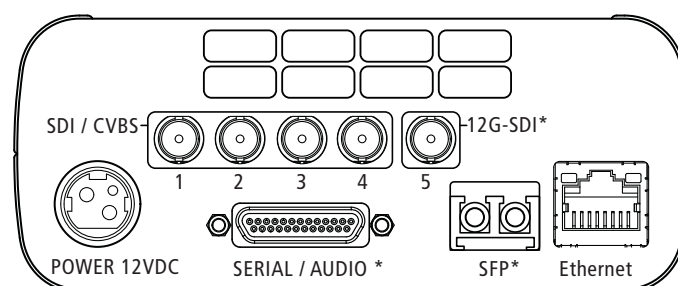
Applications

- Multi-site and/or Multi-channel IP Video contribution
- IP Video dissemination from multiple video sources (analog/digital) for Situation Awareness (SA) within ground vehicles, ships or aircraft
- Streaming Situational Awareness and FMV content across LANs and WANs with KLV / STANAG metadata
- Streaming Intelligence, Surveillance and Reconnaissance (ISR) video feeds from ground and airborne vehicles over RF or satellite link
- Streaming video to desktop/laptop, TV and mobile devices over bandwidth-constrained pipes

Benefits

- Low latency HD/SD streaming from 4x SDI/Composite sources simultaneously
- Up to 8x output streams from 4x input sources
- Next-generation HEVC (H.265) compression support to reduce network bandwidth utilization by up to 50% compared to H.264
- Ready for Ultra High Definition with 12G-SDI input and 4K60p HEVC streaming *
- Supports both HEVC and H.264 – built for the future without losing support for legacy receivers/decoders
- Stream protection for reliable video/audio and metadata transmission
- KLV / STANAG metadata ingest from SDI, IP plus multiplexing – JITC Compliant

Rear Panel Interfaces





Technical Specifications

Video Inputs

- SDI / Composite Inputs
- 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)
 - Analog Composite / RS-170 (NTSC, PAL, PAL-M)
- Quad channel mode in 3G-SDI, HD-SDI, SD-SDI and Composite

Input Resolutions / Frame Rates

- 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 (NTSC, PAL, PAL-M)

Audio Inputs

- SDI Embedded audio (Stereo and Mono)
- 4x Analog unbalanced audio (Stereo and Mono)

Video Output

- Simultaneous HEVC and H.264 IP Video encoding of 4x independent channels (up to 1080p60 per channel)
- Up to 8 output streams with independent resolution (downscaling), frame rate and bitrate
- Up to 1x 4K60p output stream *

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

- Main / Main 10 and Main 4:2:2 - up to 4:2:2 10-bits
- Level up to Level 5.2, Main and High Tier
- Selectable GOP structure and size
- Bit Rate: 36Kbps to 30Mbps
- Frame Rate: 1-60 fps. Configurable frame rate from 60 down to 1fps.
- Bit Rate Regulation Modes: Constant (CBR), Variable (VBR)
- Output Resolutions: Configurable from CIF up to 1920x1080p60
- Encoding latency less than 55ms

H.264 (MPEG-4 AVC Part 10) - 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: 64Kbps to 20Mbps
- Selectable GOP structure and size
- Frame Rate: 1-60 fps. Configurable framerate from 60 down to 1fps.
- Bit Rate Regulation Modes: Constant (CBR), Variable (VBR)
- Output Resolutions: Configurable from CIF up to 1920x1080p60
- Encoding latency less than 55ms

Audio Output

- 1x Encoded stereo audio per stream (8x total in the roadmap)
- Codec: MPEG-4 AAC-LC (ISO/IEC 14496-3)
- Stereo and Mono modes
- Bit Rate: 32Kbps - 256Kbps in Stereo, 16Kbps - 128Kbps in Mono
- Sampling Rate: 16 kHz - 48 kHz

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)
- RTMP (H.264)
- Unicast and Multicast (IGMPv3) streaming
- HTTPS, NTP, SSH, SAP

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

- 1x Gigabit Ethernet ports for streaming and/or management (10/100/1000 Base-T, Auto Detect, Half/Full Duplex)
- 1x SFP port for Gigabit Ethernet over RJ45 or Fiber
- DHCP / Static IP address

Management

- Secure Web based remote management interface (HTTPS), password protected
- Custom SSL certificate loading capability
- Customizable Notice and Consent login banner
- 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
- System Discovery to retrieve MGW Ace Encoder IP address on a network
- SSH/Telnet interface for management (status and control)

Peripherals

- 4x RS-232 / Serial interface for KLV ingest
- 1x USB 2.0 port for easy configuration of system settings
- 1x Hardware system reset for factory reset or reboot

Metadata

- Support for KLV over UDP and SDI (MISB STD 0605.7, VANC per SMPTE 336M)
- 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)
- UAS Datalink Local Metadata Set (MISB STD 0601.11, STD 0902.6)
- STANAG 4609 output stream over UDP/IP
- JITC-MISB Compliant streaming of HD/SD ISR video

Environmental / Regulation

- Operating Temperatures: -20° C to +55° C (-4° F to +131° F)
- Relative Humidity: 5% to 95% (non-condensing)
- EMC Standards: FCC part 15 / ICES-003 Class A and CE
- Power: 12VDC, 14W (Typical), 17W (Max)
- Not controlled under ITAR
- TAA Compliant

Physical

- 1.57" H x 4.29" W x 4.21" D (40.1mm H x 109.6mm W x 107.6mm D)
- 1.01lb (0.46Kg)
- Enclosure: Industrial-grade, with mounting holes for seamless installation in vehicles / onto flat surfaces
- Status LEDs for power, streaming and video source indication
- Optional rack-mount kit for standard 1RU 19" wide racks

Advanced Features

- Multichannel Low latency HD/SD streaming from SDI and/or Composite sources with metadata
- Hardware based resolution and frame rate scaling
- Highly flexible hardware based resolution scaling (11 configurations) and frame rate sampling (1 to 60fps)
- ProMPEG FEC or Zixi error correction / packet recovery
- Time-synchronized playback : synchronize the playback of multiple independent streams using with MGW Ace Decoder
- 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
- Fast boot time, less than 20 seconds

Ordering Information (P/N)

17245 → MGW Diamond - 2x channel HEVC/H.264 HD/SD Encoder (Breakout cable included)

17338 → MGW Diamond - 4x channel HEVC/H.264 HD/SD Encoder (Breakout cable included)

17335 → MGW Diamond - KLV license

17239 → MGW Diamond Encoder Breakout cable (4x Unbalanced audio inputs, 4xSerial, 1x Talkback audio output)

16858 → Rack-mount kit for standard 1RU 19" wide racks

* Feature to be activated by firmware upgrade.

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