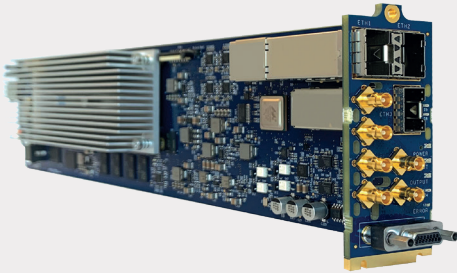


# MGW Diamond+ OG

Multi-codec, Broadcast-grade 4K/Multi-channel HD openGear® Encoder Card



MGW Diamond+ OG is a broadcast-grade HEVC, H.264 and MPEG-2 IP encoder that is ideal for contribution or point-to-point streaming applications and compatible with the openGear ecosystem for seamless integration. It features a powerful encoding engine with the ability to output up to 4 independent streams simultaneously.

MGW Diamond+ OG is available as an openGear card for easy integration within production studios, broadcast facilities or corporate server room.

MGW Diamond+ OG captures up to 4x 3G/HD/SD-SDI and streams live up to 4 channels, addressing diverse applications within broadcast, sports, enterprise and federal markets. Featuring Ultra High Definition and High Dynamic range (HDR) support, MGW Diamond+ OG can capture and stream 4K60p HDR video from either its 4x3G-SDI or 12G-SDI inputs.

MGW Diamond+ OG reliably delivers broadcast-quality content over dedicated IP networks but also over lossy networks such as the Internet thanks to its support of stream protection protocols.

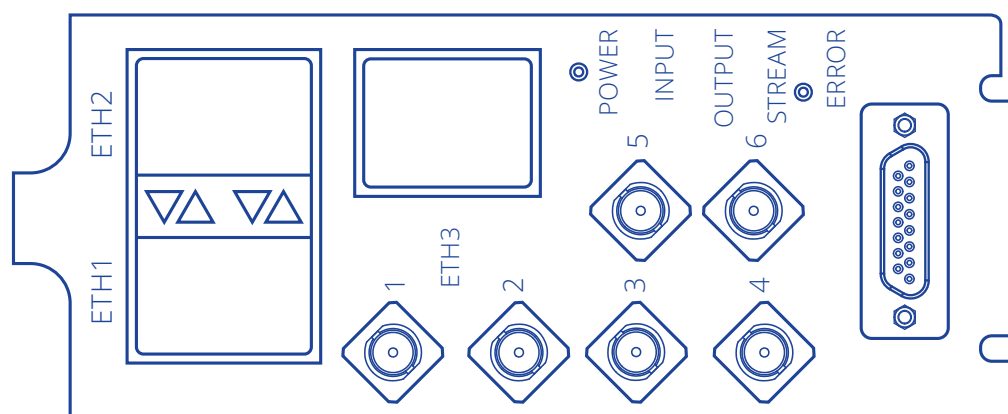
## Features & Benefits

- HEVC / H.264 and MPEG-2 broadcast grade codec
- Up to 4K60p input and encoding support
- Support for 32 channels of audio
- Large protocol support including UDP/ RTP TS, Zixi™, RIST and SRT
- Future-proof design with SMPTE2110 support in the roadmap
- Compatible with openGear ecosystem for seamless integration

## Applications

- Broadcast Contribution over IP
- Site-to-Site primary distribution
- Remote production over any network
- Remote / At Home production over the Internet / REMI
- IPTV distribution

## Rear Panel Interfaces



## Technical Specification

### Video Inputs

- 4x SDI (HD-BNC)
- Supported standards:
  - 12G-SDI (SMPTE 2082-1) - SDI1 and SDI2
  - 4x3G-SDI (SMPTE 425-5 Level A / Two-Sample Interleave)
  - 3G/HD/SD-SDI (SMPTE 259M-C, SMPTE 292M, SMPTE 274M, SMPTE 296M, SMPTE 424M, 425M Level A only)
- Quad channel mode in 3G-SDI, HD-SDI, SD-SDI

### 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)
- 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)

### Video Output

- HEVC, H.264 or MPEG-2 IP Video encoding of 4x independent channels (up to 1080p60 per channel)
- Up to 1x 4K60p output stream in HEVC or H.264

### 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: I, IP, IBP, IBBP, I(3)BP, I(4)BP
- Bit Rate: 36Kbps to 100Mbps
- Frame type: Progressive and Interlaced
- Frame rate downsampling from 60/59.94/50 fps down to 30/29.97/25 fps
- Bit Rate Regulation Modes: Constant (CBR), Variable (VBR)
- Output Resolutions: Configurable from CIF up to 4096x2160p60
- 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 100Mbps
- Frame type: Progressive and Interlaced
- Frame rate downsampling from 60/59.94/50 fps down to 30/29.97/25 fps
- Selectable GOP structure and size: I, IP, IBP, IBBP, I(3)BP, I(4)BP
- Bit Rate Regulation Modes: Constant (CBR), Variable (VBR)
- Output Resolutions: Configurable from CIF up to 4096x2160p60
- Encoding latency less than 55ms

### MPEG-2 - ISO/IEC 13818 - Rec. ITU-T H.222.0

- Main and High profile (4:2:0 8-bit)
- Bit Rate: 64Kbps to 100Mbps
- Selectable GOP structure and size: I, IP, IBP, IBBP, I(3)BP, I(4)BP
- Frame type: Progressive and Interlaced
- Frame rate downsampling from 60/59.94/50 fps down to 30/29.97/25 fps
- Frame Rate: 1-60 fps
- Output Resolutions: Configurable from CIF up to 1080p (max 1080p30 / 1080i59.94)

### Audio Output

- Up to x32 audio encoding channels
- 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

## Ancillary Data Support

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

## Network Protocols

- UDP TS: MPEG Transport Stream over UDP
- RTP TS: MPEG Transport Stream over RTP
- Zixi™ Stream protection:
  - Zixi™ P2P and Broadcaster modes
  - Zixi™ ABR streaming (Adaptive Bitrate)
  - Zixi™ Low latency
- SRT (Caller, Listener and RendezVous)
- RIST
- RTMP & RTMPS (H.264)
- Unicast and Multicast (IGMPv3) streaming
- HTTPS, NTP, SSH, SAP

## Advanced Features

- Low latency mode in 4K/HD/SD streaming from SDI
- Hardware-based resolution and frame rate scaling
- Latency monitoring when paired with MGW Ace Decoder
- Time-synchronised playback: synchronise the playback of multiple independent streams using MGW Ace Decoder
- On-the-fly bitrate change
- Fast boot time, less than 30 seconds

## Network Interfaces

- 1x Gigabit Ethernet port for streaming and/or management (10/100/1000 Base-T, Auto Detect, Half/Full Duplex)
- Connected to internal OGX frame
- 2x SFP+ port (10Gb/s) for management and/or streaming
- 1x SFP25 port (25Gb/s) for SMPTE-2110 support up to 4k60p (Roadmap)
- DHCP / Static IP address, IPv4 and IPv6 support

## Management

- Secure web-based remote management interface (HTTPS), password-protected
- Custom SSL certificate loading capability
- Customisable notice and consent login banner
- Stream Transport protection 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
- 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
- Debug tools (ping and traceroute) directly available in the web interface
- System discovery to retrieve MGW Diamond+ OG IP address on a network
- SSH/Telnet interface for management (status and control)

## Peripherals

- 1x RS-232 / Serial interface (Roadmap)
- 1x Hardware system reset for factory reset or reboot
- 4x GPIO for tally control (Roadmap)

## Environmental / Regulation

- Operating Temperatures: 0° C to +40° C (23° F to +104° F)
- Relative Humidity: 5% to 95% (non-condensing)
- EMC Standards: FCC part 15 / ICES-003 Class A and CE
- Power: 20W (Typical), 25W (Max)
- MTBF: Ground - 43.88 years, Airborne Inhabited Cargo - 14.32 years (as per MIL-HDBK-217F, 20°C, operation time 100%)
- TAA-compliant

## Physical

- Compatible with OGX and OG3 openGear frames
- Full Rear I/O Module (2 slots) for up to 10 cards within a 2RU openGear chassis

## Ordering Information (P/N)

- 18554 - MGW Diamond+ OG - 4x HD or 1x4K channel - HEVC/H.264/MPEG-2 Encoder (Main and Rear I/O openGear modules)