

MGW Nano TOUGH

Military Grade Rugged HD/SD H.264 Encoder



MGW Nano TOUGH is a rugged, MIL-STD certified H.264 HD/SD Encoder featuring low latency video streaming, metadata processing and hardware-based motion stabilisation. Its fanless, 100% silent and lightweight enclosure is designed for extreme conditions.

MGW Nano TOUGH is a rugged, MIL-STD certified H.264 HD/SD Encoder featuring low latency video streaming for ISR and Situational Awareness video. Nano TOUGH supports critical metadata processing and hardware-based motion stabilisation. It contains a real-time image stabilisation chip optimised for footage from ground and airborne vehicles.

Weighing less than 2lb/1kg, based on a solid state-of-the-art design containing no moving parts, the Nano TOUGH features 100% silent operation. Its low power mode requires only 10W for Full HD 1080p compression and streaming. Nano TOUGH is the ideal appliance for airborne applications or portable missions in extreme conditions.

Features & Benefits

- The small ruggedised HD H.264 Encoder with KLV weighing under 2lb/1kg
- Zixi™ Error Correction and Pro-MPEG FEC built-in
- MIL-STD461F, MIL-STD-810G and IP65 certified
- Metadata processing and hardware-based motion stabilisation
- Best-in-class connectivity options: 3G, HD/SD-SDI, Composite and HDMI video inputs

Applications

- IP streaming of HD/SD Intelligence, surveillance, reconnaissance (ISR) imagery
- Real-time Situational Awareness (SA) video from deployed assets
- Broadcast quality video contribution in harsh environments

Technical Specification

Video Inputs

- 1 x HD-SDI/SD-SDI (SMPTE 259M-C, SMPTE 292M, SMPTE 274M, SMPTE 296M, SMPTE 424M, SMPTE 425M)
- 1 x HDMI (support for HDCP and non-HDCP protected sources), MIL-DTL-38999 Circular connector
- 1 x Analog Composite RS-170 (BNC, 75 Ohm optional)

Input Resolutions / frame rates

- 1920x1080p @ 60, 59.94, 50, 30, 29.97, 25, 24 Hz
- 1920x1080i @ 60, 59.94, 50 Hz
- 1600x1200p @ 85, 60, 50 Hz
- 1366x768p @ 60, 50 Hz
- 1280x1024p @ 60, 50 Hz
- 1280x800p @ 60, 50 Hz
- 1280x768p @ 60, 50 Hz
- 1024x768p @ 60, 50 Hz
- 1280x720p @ 60, 59.94, 50, 30, 29.97, 25 Hz
- 720x480p @ 30, 29.97 Hz
- 720x480i @ 59.94 Hz
- 720x576p @ 25 Hz
- 720x576i @ 50 Hz

Audio Inputs

- 1x SDI embedded audio (stereo and mono)
- 1x HDMI embedded audio (stereo and mono)

Video Output

- H.264 (ISO/IEC 14496-10 AVC MPEG-4 part 10).
Modes:
 - Baseline Profile L3
 - Main Profile L3 and L4
 - High Profile L4 and L4.1
- Bit Rate: 100Kbps - 14Mbps
- Frame Rate: 5-60 fps. Down sampling modes: third, half, three quarters
- Bit Rate Regulation Modes: Constant (CBR), Variable (VBR)
- Output Resolutions: Configurable from QCIF up to 1920x1080p30 / 1280x720p60
- Encoding Latency: 65 milliseconds (TurboVideo™ mode)

Audio Output

- MPEG-4 AAC-LC (ISO/IEC 14496-3), MPEG-1 L2
- 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) with TurboVideo™ Mode
 - Zixi™ Stream protection
 - RTP TS with ProMPEG Forward Error Correction (SMPTE 2022)
 - HTTPS, NTP, SSH, SAP

Management

- Secure web-based remote management interface (HTTPS)
- Dashboard with dynamically updating I/O signal detection and streaming stats
- Autostart mode recovers saved configuration after powercycle
- Remote firmware and software upgrade capability via command line / web GUI
- System and channel event logging
- SSH interface with "get/set" or XML API for integration with 3rd-party control software

Encryption

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

Metadata

- Cursor on Target (CoT) over serial RS-232, KLV over serial/IP, KLV over SDI (VANC per SMPTE 336M)
- UAS datalink local metadata set (MISB STD 0601.5, STD 0902)
- Time stamping and transport of compressed motion imagery and metadata (MISB STD 0604.2)
- Cursor on Target (CoT) Conversions to Key-Length-Value (KLV) metadata (MISB EG 0805)
- Security metadata universal and local sets for digital motion imagery (MISB STD 0102.8)
- STANAG 4609 output stream over UDP/IP
- JITC-MIS compliant streaming of HD/SD ISR video

Environmental / Regulation

- Operating Temperatures: -40°C to +70°C (-40°F to +158°F)
- Relative Humidity: 5% to 95% (non-condensing)
- MTBF (As per MIL-HDBK-217F):
 - Ground - 9.00 years
 - Airborne - 12.70 years
- MIL-STD-810G Certified
- MIL-STD-461F Certified
- Not controlled under ITAR
- TAA Compliant

Physical

- Dimensions: 37.2mm H x 142mm W x 140mm D (1.46" H x 5.59" W x 5.51" D) Additional 20mm D for MIL connectors
- Weight: 940g (2.07lb)
- Enclosure: Military-grade rugged aluminium case, composite MIL connectors
- Status LEDs for power, network activity, streaming and video source indications
- Fanless, no moving parts design, 100% silent operation
- Mounting holes for seamless installation in vehicles / flat surface

Advanced Features

- Low latency HD/SD streaming from SDI or HDMI sources with metadata
- Hardware-based resolution and frame-rate scaling
- Real-time image stabilisation and cropping (Area of Interest Isolation)
- Motion-adaptive adjustment of bit-rate utilisation in static scenes
- Zixi™ Real-time error correction guarantees secure and artefact-free full motion video on networks with packet loss of up to 30%

Power

- DC Input: 16-40VDC, Max 12W
- MIL-DTL-38999 series III Circular Connector
- MIL-STD-704

Ordering Information

- 14696 – MGW Nano TOUGH HD/SD