VITEC

MGW Pico TOUGH

Military Grade H.264 Encoder

MGW Pico TOUGH is the world's smallest, most power-efficient MIL-STD certified MPEG-4 H.264 HD/SD video encoder. It encodes and streams real-time video with frame-accurate metadata from any video source. Pico TOUGH's fanless, pocket-size enclosure is designed for use on unmanned and manned vehicles, in fly-away kits or hand-carried in extreme conditions.

Designed to meet the growing demand for real-time imagery in the most demanding environments, MGW Pico TOUGH encoder packs all the necessary capabilities for any Surveillance, Intelligence and Reconnaissance (ISR) sensor or Situational Awareness (SA) video in an ultra-small airborne and marine certified enclosure.

The unit supports simultaneous encoding and streaming of analog and HD-SDI sources, asynchronous and synchronous KLV / STANAG metadata ingested from various sources, real-time image cropping and video scaling, Forward Error Correction streaming (FEC) and JITC compliant output streams.

With under 1lb/400g weight, 6.5W power consumption for HD or dual channel streaming and only 18 seconds from power-on to live IP stream, Pico TOUGH is the ideal video encoder for any aerospace project, ground forces and manned/unmanned platforms needing low latency, high-quality video streaming.

Features & Benefits

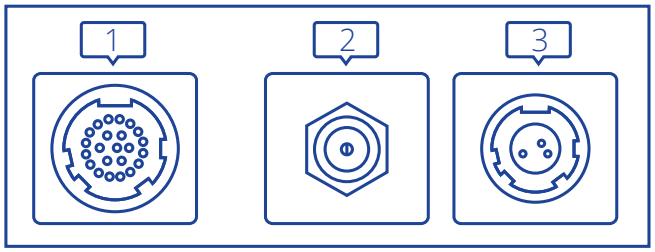
- Low latency HD/SD streaming from SDI and Composite simultaneously
- Zixi™ Error Correction and Pro-MPEG FEC built-in
- KLV / STANAG metadata support from serial, IP and SDI VANC
- Hardware-based resolution and frame-rate scaling
- Motion-adaptive adjustment of bit-rate utilisation in static scenes
- Credit card size: Under 1lb/400g weight and 6.5W power for Full HD H.264 streaming
- Fast boot time - 18 seconds from power on to streaming video
- Not controlled under ITAR

Applications

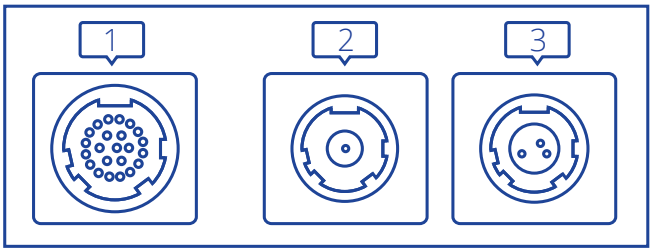
- IP streaming of HD/SD Intelligence, surveillance, reconnaissance (ISR) imagery
- Real-time Situational Awareness (SA) video from deployed assets
- Broadcast quality video contribution in harsh environments

Rear Panel Interfaces

18310



14917



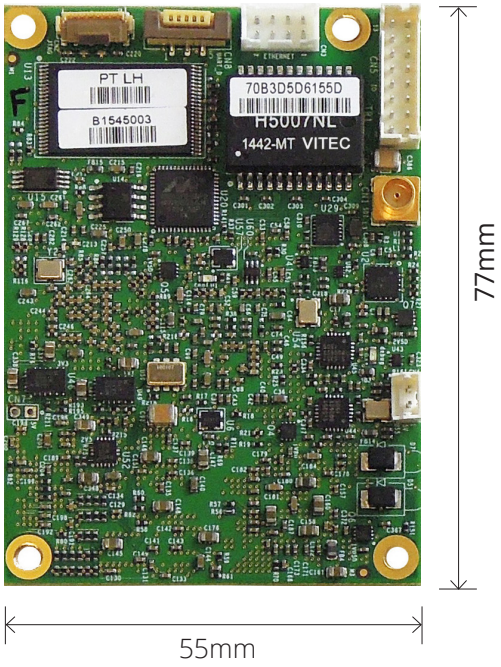
1 - Ethernet, CVBS Analog Video in, RS-232, USB & Reset

2 - 3G, HD.SD-SDI

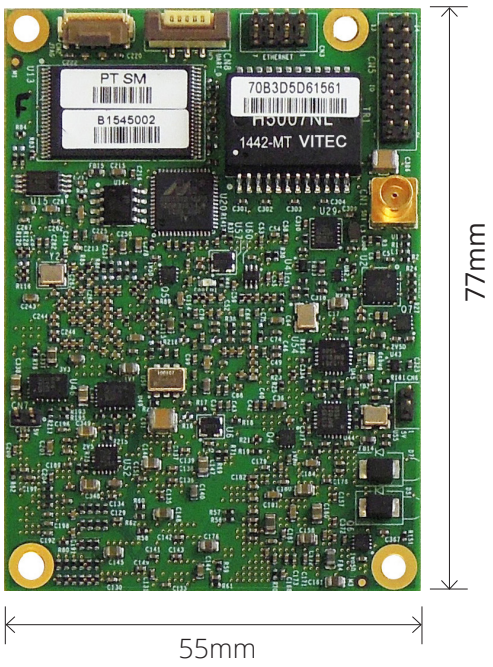
3 - Power 16-40VDC MIL-STD-704

PCB

With Secure-lock headers



For mounting onto a main board



Technical Specification

Video Inputs

- 1 x 3G/HD/SD-SDI (SMPTE 259M-C, SMPTE 292M, SMPTE 274M, SMPTE 296M, SMPTE 424M, SMPTE 425M Level A only)
- 1 x Analog Composite RS-170

Input Resolutions / Frame Rates

- 1920x1080p @ 60, 59.94, 50, 30, 29.97, 25, 24 Hz
- 1920x1080i @ 60, 59.94, 50 Hz
- 1280x720p @ 60, 59.94, 50, 30, 29.97, 25 Hz
- 720x480i @ 59.94 Hz
- 720x576i @ 50 Hz

Audio Inputs

- SDI Embedded audio (stereo and mono)
- Analog unbalanced audio (stereo and mono. Special order)

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 - 15Mbps
- 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

Audio Output

- MPEG-4 AAC-LC (ISO/IEC 14496-3)
- Stereo and mono modes
- Bit Rate: 32Kbps - 192Kbps in stereo, 16Kbps - 192Kbps in mono
- Sampling Rate: 16 kHz - 48 kHz

Network Protocols

- Streaming Modes: UDP TS, RTP TS
- Error-Correction Technologies:
  - Pro-MPEG : RTP TS with Forward-Error-Correction (FEC SMPTE 2022)
  - Zixi™ with auto adaptive bitrate stream
- Peripheral: HTTPS, DHCP, 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 power cycle
- 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

Security

- 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, 20°C, Operation time 100%):
  - Ground - 73.64 years
  - Airborne Inhabited cargo - 42.75 years
- MIL-STD-810G Certified
- MIL-STD-461F Certified
- Not controlled under ITAR
- TAA Compliant

OEM / Integration Ready PCB

- MGW Pico TOUGH was designed with industrial, aeronautic and commercial integrators in mind. The encoder is also available as a PCB-only unit in two optional integration options:
  - Mountable board to be attached onto a host board with board lockable headers exposing all input and output interfaces
  - Comprehensive SDK for command and control over IP

Physical

- Dimensions: 30.50mm H x 94mm W x 72.50mm D (1.20" H x 3.70" W x 2.85" D) Additional 20mm D for MIL connectors
- Weight: 398g (0.87lb)
- 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 and/or composite sources with metadata
- Hardware-based resolution and frame-rate scaling
- Motion-adaptive adjustment of bit-rate utilisation in static scenes
- PID re-mapping for audio and video and KLV programs
- Forward Error Correction
- Fast boot time - 18 seconds from power on to streaming video

Power

- DC Input: 16-40VDC, 6.3W (Standard), 7.3W (Max)
- MIL-DTL-38999 series III Circular Connector
- MIL-STD-704

Ordering Information

18310 – MGW Pico TOUGH (System) with SDI BNC connector

14917 – MGW Pico TOUGH (System) with SDI MILDTL-38999 connector

18703 – Cables Kit for 18310 (Power supply, A/V, network and data cables MIL-DTL-38999 to Commercial plugs)

16519 – Cables Kit for 14917 (Power supply, A/V, network, SDI and data cables MIL-DTL-38999 to Commercial plugs)

16507 – MGW Pico TOUGH PCB/OEM (PCB for integration into 3rd party systems)

16506 – MGW Pico TOUGH PCB/OEM Mountable (PCB for integration into 3rd party systems, stackable boards)

16483 – MGW Pico TOUGH Developer Kit (PCB, I/O extension board with stand, documentation)

16706 – MGW Pico TOUGH Developer Kit Mountable (PCB-mountable model, I/O extension board with stand, documentation)