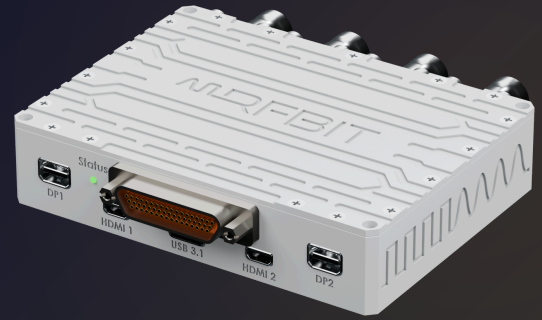


VCU-E

H.265 Video Encoder

The VCU-E is a 125 g video encoder for UAV, missile and manned platforms: four analog cameras, HDMI and DisplayPort sources, GigE Vision and USB cameras in, H.265 or H.264 streams out over Gigabit Ethernet at a glass-to-glass latency under 50 ms.



VCU-E

MAX RESOLUTION
4K60

CODEC
H.265

LATENCY
<50 ms

WEIGHT
125 g

The VCU-E compresses camera video on the platform, so the data link only has to carry a stream it can sustain. Dedicated hardware encodes H.265 / HEVC or H.264 / AVC at up to 3840 × 2160 at 60 fps, up to 8 streams at once, at 100 kbps to 50 Mbps with constant or variable bit rate. In its low-latency mode a frame is encoded slice by slice and starts leaving the unit before it has finished arriving, for a glass-to-glass latency under 50 ms.

Eight video inputs cover the cameras already on the platform: four composite PAL / NTSC inputs on BNC, HDMI and DisplayPort, GigE Vision cameras on the two Gigabit Ethernet ports and USB3 Vision

or UVC cameras on USB 3.1. Teledyne FLIR cameras are supported directly. HDMI and DisplayPort outputs show any input on a local screen.

Every stream, MISB ST 0601 KLV metadata (STANAG 4609) and the platform's serial data leave as one transport stream, encrypted with AES-256, while a 2 TB SSD records every input at full quality on board. Power, Ethernet, serial and CAN come in on a single 51-pin Micro-D connector, from a 9 to 36 VDC supply at under 12 W; a web GUI sets every parameter. The unit is conduction-cooled, ITAR-free and qualified to MIL-STD-810G and MIL-STD-461F.

Key Features

- ★ **H.265 / H.264 Hardware Encoding**
Up to 3840 × 2160 at 60 fps, up to 8 streams at once, 100 kbps to 50 Mbps, CBR or VBR
- ★ **Low Latency**
Sub-frame encoding; under 50 ms glass to glass, for operators steering by the video
- ★ **One Encrypted Stream**
Every stream, the KLV and serial data in one transport stream, AES-256; straight into TTS
- ★ **Eight Video Inputs**
4× analog on BNC, HDMI, DisplayPort, GigE Vision and USB3 Vision; Teledyne FLIR cameras directly
- ★ **KLV Metadata**
MISB ST 0601 KLV in the stream, STANAG 4609: position, sensor pointing and a time stamp on every frame
- ★ **2 TB Onboard Recording**
Every input recorded at full quality on the SSD while a lighter copy is streamed



UAV



MISSILE



ROCKET



AIRCRAFT

Technical Specifications — VCU-E

VIDEO

Codec	H.265 / HEVC · H.264 / AVC
Profiles	HEVC Main, Main 10 · AVC Baseline, Main, High
Max Resolution	3840 × 2160 at 60 fps
Simultaneous Streams	Up to 8
Bit Rate	100 kbps to 50 Mbps Changed by the user via software
Rate Control	CBR · VBR
Latency	<50 ms glass to glass
Recording	2 TB SSD, full quality on board

VIDEO INPUTS & OUTPUTS

Analog In	4× composite, PAL / NTSC, 75 Ω BNC
HDMI	1× in, up to 3840 × 2160 at 60 fps · 1× out
DisplayPort	1× in, up to 3840 × 2160 at 60 fps · 1× out
GigE Vision	GenICam cameras on both GigE ports
USB Cameras	USB3 Vision · UVC
Teledyne FLIR	Supported directly
Streaming	RTSP · RTP · UDP · MPEG-TS · SRT

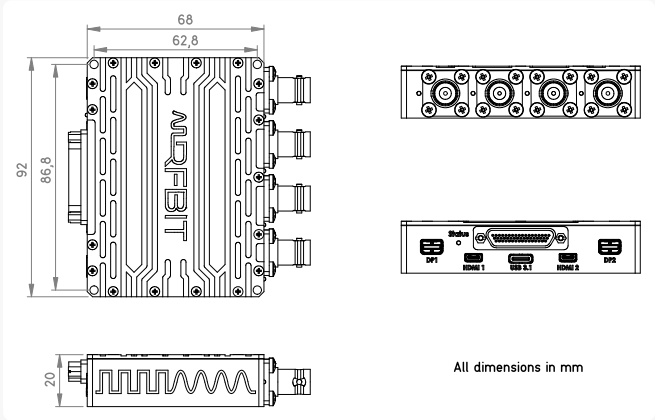
INTERFACES & POWER

Data Connector	1× 51-Pin Micro-D
Video Connectors	4× BNC · 2× Micro HDMI · 2× Mini DisplayPort
Digital Interfaces	2× Gigabit Ethernet · 2× RS-232 · 2× RS-422 · 2× CAN
USB	1× USB 3.1, Type-C
Input Voltage	9 – 36 VDC
Power Consumption	< 12 W
Power Protection	Over/under-voltage, over-current, short-circuit

ENVIRONMENTAL & EMC

Operating Temperature	–40 to +71 °C MIL-STD-810G 501.5 / 502.5 Proc II
Storage Temperature	–40 to +85 °C MIL-STD-810G 501.5 / 502.5 Proc I
Operating Altitude	Up to 40,000 ft MIL-STD-810G 500.5 Proc I & II
Humidity	95% R.H. MIL-STD-810G 507.5 Proc II
Cooling	Conduction, no fan
Vibration & Shock	MIL-STD-810G 514.6 · 516.6
EMC	MIL-STD-461F CE102 · CS114 · CS115 · CS116 · RE102 · RS103

MECHANICAL DRAWING



DIMENSIONS	WEIGHT	COOLING	MATERIAL
92 × 68 × 20 mm	125 g	Conduction	Aluminium

CONNECTOR PINOUT — 51-PIN MICRO-D



1–8	ETH1 · D0± to D3±	27, 28	RS-232 1 · TX, RX
9–16	ETH2 · D0± to D3±	29, 30	RS-232 2 · TX, RX
17–20	RS-422 1 · TX± RX±	32, 33	CAN 1 · H, L
21–24	RS-422 2 · TX± RX±	34, 35	CAN 2 · H, L
25, 26	PWR IN+	31, 36	DGND
50, 51	PWR IN–	37–49	Not connected

Ethernet, RS-422 and CAN run as differential pairs on neighbouring pins; DGND is the reference for RS-232 and CAN.

Video Formats

INPUT	FORMATS
Analog (CVBS)	PAL 720 × 576i at 50 Hz · NTSC 720 × 480i at 60 Hz
HDMI / DisplayPort In	640 × 480 to 3840 × 2160, up to 60 fps
GigE Vision	GenICam; Mono8, Mono16, RGB8, YUV422; up to 1 Gbit/s per port
USB3 Vision / UVC	Up to 5 Gbit/s (USB 3.1 Gen 1); Teledyne FLIR cameras supported directly

Accessories

PART NUMBER	DESCRIPTION
VCU-ACC-CBL-51D	51-Pin Micro-D Breakout Cable, 1 m (extra): 2× RJ45, serial, CAN and power leads
VCU-ACC-HDMI	Micro HDMI to HDMI Cable, 1 m (extra)
VCU-ACC-MDP	Mini DisplayPort to DisplayPort Cable, 1 m (extra)

Ordering Information

PART NUMBER	MODEL	SIDE	DIMENSIONS	WEIGHT
VCU-E	Video Encoder ◀ This model	Airborne	92 × 68 × 20 mm	125 g
VCU OEM	Board-Level Encoder	Integrated	88 × 64 × 13 mm	52 g

