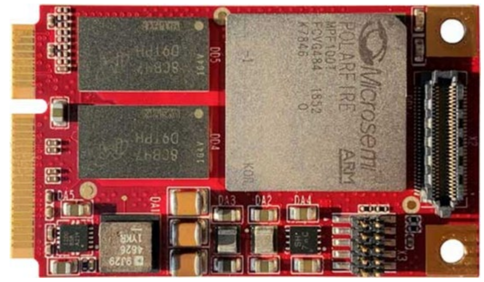
UVDR Module

AMPEX
A DELTA INFORMATION SYSTEMS COMPANY

MiniPCIe 3G/HD-SDI capture/playback for uncompressed EO/IR

Ground truth for EO/IR

Uncompressed Video Data Recorder (UVDR) Module captures uncompressed SDI exactly as the sensor delivers it and plays back the same pixels on demand. Think Wireshark for SDI: a pcap-style truth set that includes the full stream, not just pictures, so ancillary data lines and timing are preserved alongside the video. What you record is what you can put back into the chain for analysis, acceptance, and safety of flight. Programs get hard evidence when the question is, “What did the system really see?” Frame timing and line numbering remain intact for one-to-one correlation with bus logs, GPS, and test instrumentation. Playback delivers the identical stream back into benches and payload processors, which enables conclusive A/B tests and fault isolation. Teams get a defensible ground truth set that speeds sensor tuning, algorithm validation, and certification work.



Metadata that stays aligned

Mission context matters. UVDR preserves and re-inserts VANC and KLV so timing, GPS, platform state, and other cues remain frame-true. Following MISB ST 0605 with ANC transport per SMPTE ST 291 and ST 336 keeps video and metadata married through capture and playback. Exploitation tools stay honest and correlation across systems stays tight from bench to flight.

Features

- **Compatible with most Ampex TuffServ systems for embedded capture**
- **Bit-accurate uncompressed capture and playback**
- **Wireshark-style full stream capture: video plus ANC/VANC and KLV**
- **3G-SDI/HD-SDI auto detect up to 1080p60; v210 and ST 268 method 0**
- **Retimed loop output during record for live view**
- **Optional raw SDI tap for signal analysis**

Deterministic playback for proof

Playback is bit for bit with real-time, frame-cadence-preserving playout, returning the same pixel values and ANC payloads as recorded. UVDR outputs a standards-valid SDI stream with the same start of frame markers and VANC alignment, so benches and payload processors see the exact conditions that produced the issue. Engineers can single step frames, loop clips, or run at mission speed to validate fixes and compare algorithm outputs without guesswork. This enables repeatable A/B testing, fast regression after firmware changes, and clean closure of discrepancy reports with evidence that matches the original capture. Timing remains deterministic across runs, so hardware triggers, timecode, and external logs align on every pass.

Built to fit real workflows

UVDR fits how ranges and labs actually work. It auto detects common 720p and 1080p formats and presents a clean retimed loop during record so operators can watch live while building the lossless file. Capture starts with a simple utility or your own app through the ACCE CLI, and files drop into the same storage the team already uses for mission data. For long runs, pair UVDR with host storage sized for uncompressed rates and add a parallel encoder to generate a compact quick look stream for distribution. The result is one path for fast situational awareness and one path that remains the ground truth set for analysis, airworthiness, and certification. Start and stop can be scripted from the CLI or integrated into your control app so clips align with bus logs, triggers, and test cards. Post mission, the same file plays back into benches, preserving timing and ANC for repeatable review. Because loop and playback are standards-compliant SDI, the same captures feed existing analyzers, displays, and downstream recorders without special tools. The miniPCIe full-size F1 card with U.FL breakouts keeps cabling short and lightweight for tight racks and flight-line carts. Drivers for Linux and ACCE CLI with sample utilities make integration straightforward on headless racks or operator workstations. When deeper investigation is needed, enable the raw SDI tap to capture the bitstream for tooling while the uncompressed file remains the truth set for acceptance and evidence

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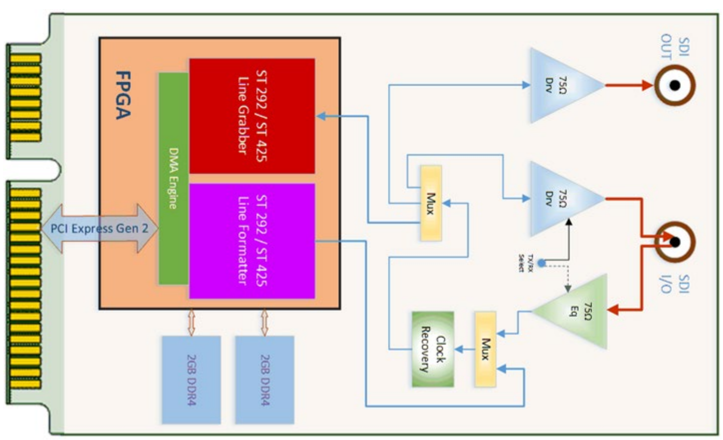
Specifications [1,2]

PERFORMANCE	
SDI link rate:	1.485 Gb/s (HD-SDI); 2.97 Gb/s (3G-SDI)
Max format:	1080p60 4:2:2 10-bit
Loop during record:	Retimed SDI output
Playback:	Bit for bit; real time; frame cadence preserved
Data rate example:	1080p30 v210 ~175 MB/s ~630 GB/hour
INTERFACE	
Form factor:	PCI Express Mini Card (miniPCIe) full size F1
PCIe link:	Gen2 x1
VIDEO/FORMATS	
Video I/O:	1 x 3G-SDI/HD-SDI bidirectional
Standards:	SMPTE ST 424; ST 292
Supported formats:	720p50/60; 1080p25/30/50/60; auto detect
Pixel formats:	YCbCr 4:2:2 10-bit; v210; SMPTE ST 268 method 0
METADATA/ANC	
VANC/KLV:	Preserved and re-inserted per MISB ST 0605
ANC transport:	SMPTE ST 291; RP 201; ST 336
Raw tap:	Optional raw SDI bitstream capture
OPERATING MODES	
Modes:	Acquire; Playback
SOFTWARE	
Drivers:	Linux
API:	ACCE CLI
CONTROLS/STATUS	
Controls:	Mode select; HANC/VANC clipping; cable EQ
Status:	Format detect; sync present; error flags



[1] Specifications subject to change without notice

[2] Contact Ampex for availability of options

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