

SDI-2CH-M2

M.2 Dual-Channel 12G-SDI Video Capture

FEATURES

Dual-Channel 12G/6G/3G/HD/SD-SDI Input

4K Ultra HD (3840x2160) up to 60 fps

4K DCI (4096x2160) up to 60 fps

10-bit YCbCr 4:2:2 / 12-bit RGB 4:4:4

4K Low Frame Rate Mode (23.98-30 fps)

1080p High Frame Rate Mode up to 120 fps

EO + IR Sensor Fusion Dual Capture

KLV Metadata Injection (STANAG 4609 / MISB ST 0601)

Genlock & SMPTE Timecode Sync

Sub-Frame Capture Latency (<1 Frame)

RS-422/RS-485 Gimbal Control Passthrough

Onboard H.264/H.265 Hardware Encoding

M.2 2280 Key M Form Factor

MIL-STD-810G Shock & Vibration Rated

-40C to +85C Operating Range

Linux & Windows Driver Support

Zero-Copy DMA Frame Delivery

SDI-2CH-M2 is a compact M.2 (2280, Key M) frame grabber module providing two independent SDI input channels with full auto-rate support from SD-SDI up to single-link 12G-SDI. Designed for electro-optical (EO/IR) turret and gimbal integration, it captures day/EO and thermal/IR feeds simultaneously with sub-frame latency, embedded KLV/STANAG 4609 telemetry, and genlock/timecode synchronisation for multi-camera arrays. A dedicated 1080p high frame rate mode up to 120 fps supports fast-moving targets and stabilised gimbal tracking where standard 50/60 fps capture is insufficient.

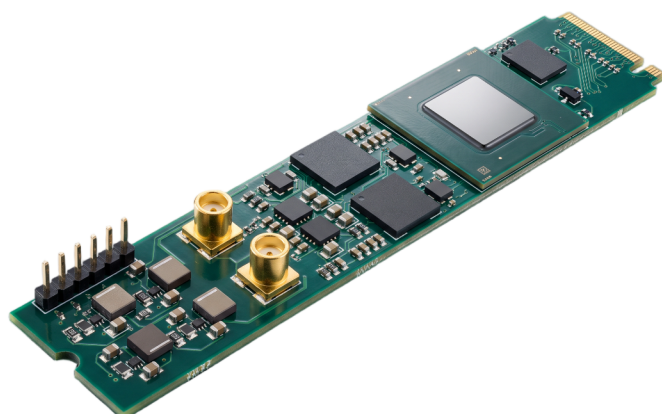
With auto-rate detection across every SDI generation and colour depth up to 12-bit RGB 4:4:4, SDI-2CH-M2 drops into SWaP-constrained mission computers and sensor payloads without a dedicated PCIe slot, delivering encoded, metadata-tagged video straight to the host over PCIe Gen3 x4.

Video Format Support: SDI-2CH-M2 supports the full range of single-link 12G-SDI configurations. 4K Ultra HD (3840x2160) and 4K DCI (4096x2160) are captured at 50, 59.94 and 60 fps with 10-bit YCbCr 4:2:2 sampling, while a low frame rate mode (23.98-30 fps) extends

colour depth up to 12-bit RGB 4:4:4 for colour-critical EO imagery. A dedicated 1080p high frame rate mode captures up to 120 fps (100, 119.88, 120 fps) for fast-moving targets and stabilised gimbal tracking, alongside standard 1080i at 50, 59.94 and 60 fps, both up to 10-bit YCbCr 4:2:2.

Built for EO/IR Sensor Fusion: Each of the two SDI channels can independently capture a day/EO or thermal/IR feed from the same turret, with per-channel resolution and frame rate. Genlock and SMPTE timecode (LTC/VITC) inputs keep multi-camera arrays frame-accurate, while an RS-422/RS-485 passthrough carries gimbal and camera control commands alongside the video path without a second cable run.

Ruggedised for the Platform Edge: Rated to MIL-STD-810G for shock and vibration and -40C to +85C operation, SDI-2CH-M2 is built to survive turret and vehicle-mounted deployment. Onboard H.264/H.265 hardware encoding and KLV metadata injection (MISB ST 0601, STANAG 4609) produce network-ready, telemetry-tagged full-motion video with zero-copy DMA delivery to the host, minimising CPU load on the mission computer.



MADE IN AUSTRALIA

DUAL-CHANNEL 12G-SDI EO/IR FRAME GRABBER



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Commercial Off The Shelf (COTS) and Modified Off The Shelf (MOTS) solutions for defence and aerospace.

Astute Systems is a global leader in rugged AI computing and software for autonomous military systems. Our GVA toolchain provides complete compliance with UK and Australian defence standards, delivering real-time battlespace management across land, sea, air and cyber domains.

SDI VIDEO INPUT

2x 12G/6G/3G/HD/SD-SDI input channels (micro-coax, SMA-style connectors)

Auto rate detection, SD-SDI to single-link 12G-SDI

1080P HIGH FRAME RATE MODE

1080p100, 1080p119.88, 1080p120 fps

1080i50, 1080i59.94, 1080i60 fps

Up to 10-bit YCbCr 4:2:2

4K ULTRA HD (3840X2160)

2160p50, 2160p59.94, 2160p60

10-bit YCbCr 4:2:2

4K DCI (4096X2160)

2160p50 (DCI), 2160p59.94 (DCI), 2160p60 (DCI)

10-bit YCbCr 4:2:2

4K UHD/DCI LOW FRAME RATE

23.98, 24, 25, 29.97, 30 fps

Up to 12-bit RGB 4:4:4

SENSOR FUSION

Simultaneous dual-channel EO (day) + IR (thermal) capture

Independent per-channel resolution/frame rate

METADATA & TELEMETRY

KLV metadata injection (MISB ST 0601)

STANAG 4609 compliant FMV muxing

GPS/INS telemetry embedding

SYNCHRONISATION

Genlock (tri-level/blackburst) input

SMPTE timecode (LTC/VITC) in/out

Multi-camera array sync

LATENCY & CONTROL

Sub-frame (<16.6 ms) capture-to-output latency

RS-422/RS-485 gimbal/camera control passthrough

GenICam-compatible control API

ONBOARD PROCESSING

H.264/H.265 hardware encoding per channel

Zero-copy DMA frame delivery

Optional onboard scaling/format conversion

HOST INTERFACE

M.2 2280 Key M (PCIe Gen3 x4)

6-pin header for power/control passthrough

Linux (kernel driver) & Windows (WDF driver) SDK

PHYSICAL & POWER

Dimensions: 22 x 80 mm (M.2 2280)

Power: <6 W typical, <8 W peak (3.3 V rail)

Passive / conduction-cooled option

ENVIRONMENTAL

Operating temperature: -40C to +85C

MIL-STD-810G shock & vibration

MIL-STD-461 EMI/EMC (optional)

Specifications subject to change without notice.
MIL-STD ratings require platform-specific qualification testing.

CONTACT YOUR LOCAL REPRESENTATIVE

FOR MORE INFORMATION ON HOW WE CAN ADAPT OUR SOLUTIONS TO MEET YOUR IO REQUIREMENTS

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