

# Eco Capture Quad SDI M.2 Technical Specifications

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## Recommended OS

- Windows 10/11/Server 2016/Server 2019/Server 2022/Server 2025 (x86 & x64) and above
- Linux x86, x64 & ARM architecture, with 2.6.35 and above

## Supported APIs

- Windows
  - DirectShow
  - DirectKS
  - Wave API/DirectSound/WASAPI
- Linux
  - V4L2
  - ALSA

## Supported Software

- VLC
- VirtualDub
- OBS
- XSplit
- vMix
- VidBlaster
- Wirecast
- Microsoft Media Encoder
- Adobe Flash Media Encoder
- Any other DirectShow/V4L2 encoding/streaming software

## Input Interfaces

- 4x MMCX
  - SD/HD/3G/2K SDI

## Host Interfaces

- M.2 2280 Type M (PCIe Gen2 x4)

## Input features

- Support for input video resolutions up to 2048x1080 pixels

## SDI Specific Features

- Integrated cable equalizer extending the cable length as follows:
  - up to 330m for SD-SDI signals
  - up to 190m for HD-SDI signals
  - up to 150m for 3G-SDI signals
- Support for SD/HD/3Ga/3Gb/3Gb-DL/3Gb-DS standards
- Support for 2K (2048x1080) mode
- Support for RGB 4:4:4, YCbCr 4:4:4, YCbCr 4:2:2 color sampling
- Support for 10/12-bit color depth
- Support for extraction of SMPTE 352 payload identifier

- Support for up to 8 (mono) audio channels at 48KHz
- Support for extraction of audio formation information & channel status data
- Limited support of 3Gb-DS: only the first stream can be captured
- Limited support for capture of the first link of dual link interfaces:
  - YCbCr 4:2:2 10-bit 1080p 50/59.94/60: captured as 1080i 50/59.94/60
  - YCbCr 4:4:4 10-bit: captured as 4:2:2
  - RGB 4:4:4: R/B sub-sampled
- Support for Closed Caption via SDK

## Video Capture Formats

- Support for capture image resolutions up to 2048x1080 pixels
- Support for capture frame rates up to 144fps (Actual capture frame rate can be limited by PCIe bandwidth. For the resolution of 1280x1024 and higher, the actual frame rate may be limited by the onboard video processing hardware pixel clock. For example, the maximum frame rate of 1920x1080 resolution can up to 80fps.)
- Support for 4:2:0 8-bit capture formats: NV12, I420, YV12
- Support for 4:2:2 8-bit capture formats: YUY2, YUYV, UYVY
- Support for 4:4:4 8-bit capture formats: V308, IYU2, V408, BGR24, BGR32
- More capture formats are supported via SDK

## Video Processing Features

- Video processing pipelines with ~180Mpixels/s processing bandwidth
- 10-bit 4:4:4 video processing
- Video scaling
- Video de-interlacing
  - Weave
  - Blend top & bottom field
- Video color format conversion
  - Auto or manual selection of input color format & quantization range
  - Auto or manual selection of capture color format, quantization range & saturation range
  - Support for RGB, YCbCr 601, YCbCr 709, YCbCr 2020 color formats
  - Support for Limited or Full quantization range
  - Support for Limited, Full & 'Extended gamut' saturation range
- Video frame rate conversion

## Multiple Cards per System

- Support for multiple cards plugged to one system
- On-board dip switch to set card number with 16 positions
- System hardware device tree will display "01: Eco Capture Quad SDI M.2" when dip switch is set to 0001, and so on
- The video and audio device names displayed in your software will include the card number (set by the dip switch)

## Multiple Replicated Capture Streams

- Unlimited capture streams for any one input channel, but the capture streams should be in the same capture format.

## Timestamp & A/V Synchronization

- Hardware based 100ns high resolution clock
- Audio frames (192 audio samples) & video frames are stamped with hardware clock
- Hardware clock can be synchronized across cards (via SDK)

## Video Capture SG-DMA

- ~400MB/s per channel DMA bandwidth in PCIe 2.x system
- ~200MB/s per channel DMA bandwidth in PCIe 1.x system
- Support for auto detection of Intel tiled GPU surface
- Support for DirectGMA for AMD video adapter chipsets
- Support for GPUDirect for Nvidia video adapter chipsets

## SDK

- Magewell Capture SDK for DirectShow (Windows) or V4L2 (Linux) for easy integration
- Magewell Capture SDK for DirectKS (Windows) or ioctl (Linux) for maximum flexibility & performance

## Windows Driver Tweaks

- All options can be controlled by three levels of registry key: global level, product level and device level
- Video, Audio, Crossbar filter names can be customized via registry keys

## Firmware Upgrade

- Multiple cards in one system can be upgraded simultaneously
- Cards can be upgraded without a system power shutdown (In most cases, even a reboot is not needed)
- Safe upgrade. If power off or system break down occur when the firmware is being upgraded, it will automatically restore to the initial version.

## LED Indicator

- Status LEDs indicate the working state of each channel:
  - Pulsing slowly: input signal unlocked
  - On: input signal locked
  - Double blinks: memory failed or FPGA configuration failed
  - Off: firmware or power supply abnormal

## Form Factor

- M.2 2280 standard size

## Accessories

- 4 X MMCX to BNC cables (32cm)

## Power Consumption

- Max current at 3.3V: ~ 2.17 A
- Max power consumption: ~ 7.16 W

## Working Environment

- Operating temperature: 0 to 40deg C
- Storage temperature: -20 to 70 deg C
- Relative Humidity: 5% to 90% non-condensing