Eco Capture HDMI 4K 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

- JST SHD 20-Pin socket (Part number: 11520)
  - DVI-D 1.0
  - HDMI 1.4
- FPC 20-Pin socket (Part number: 11524)
  - DVI-D 1.0
  - HDMI 1.4

Host Interfaces

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

Input features

- Support for input video resolutions up to 4096x2160 pixels

HDMI Specific Features

- 297MHz HDMI receiver
- Adaptive HDMI equalizer
- Support for customized EDID
- Support for extraction of AVI/Audio/SPD/MS/VS/ACP/ISRC1/ISRC2/Gamut InfoFrames

- Full colorimetry support
- Support for RGB/YUV 4: 4: 4 8-bit format signals with a pixel frequency of no more than 297MHz
- Support for YUV 4:2:2 12-bit format signals with a pixel frequency of no more than 297MHz
- Support for RGB/YUV 4:4:4 10/12-bit format signals with a pixel frequency of no more than 170MHz
- Support for up to 8-channel IEC60958/IEC61937 audio streams via SDK
- Support for extraction of audio formation information & channel status data
- Support for extraction of video timing information
- Support for extraction of 3D format information
- Support for extraction of Sony/Canon DSLR time code
- Support for Side-by-Side Half, Top-and-Bottom, Frame Packing 3D mode

Video Capture Formats

- Support for capture image resolutions up to 4096x2160 pixels, including
  - YUY2: 4096×2160p60/2160p60/1080p144/1080p60
  - BGR24: 4096×2160p60/2160p60/1080p144/1080p60
- Support for capture frame rates up to 144fps (Actual capture frame rate can be limited by PCIe bandwidth & image resolution)
- 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 pipeline with ~360Mpixels/s processing bandwidth
- 8-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 HDMI 4K 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

- ~1200MB/s per channel DMA bandwidth in PCIe 2.x system
- ~800MB/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. This function is only available for firmware version 1.21 and above.

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

- **SHD** to **HDMI type A** cables (31cm) (Part number: 11520)
- **FPC** ribbon cable (Part number: 11524)
- **FPC** to **HDMI type A** adapter (Part number: 11524)

Power Consumption

- Max current at 3.3V: ~ 1.12 A
- Max power consumption: ~ 3.75 W

Working Environment

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