

## Pro Capture Mini HDMI Technical Specification

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### Supported OS

- Windows 7/8/8.1/10/2008/2008 R2/2012 (x86 & x64)
- Linux (V4L2 kernel driver source code under NDA, supports x86, x64 & arm architecture)

### 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 20pin connector
  - DVI 1.0
  - HDMI 1.4a

### Output Interfaces

- PCIe Gen2 x1

## Input Features

- Support for input video resolutions up to 2048x2160 pixels

## HDMI Specific Features

- 225MHz HDMI receiver
- Adaptive HDMI equalizer support for cables lengths up to 30M
- Support for customized EDID
- Support for extraction of AVI/Audio/SPD/MS/VS/ACP/ISRC1/ISRC2/Gamut InfoFrames
- Full colorimetry support
- Support for 8/10/12-bit color depths
- Support for RGB 4:4:4, YCbCr 4:4:4, YCbCr 4:2:2 color sampling
- Support for up to 8-channel IEC60958/IEC61937 audio streams
- 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 Output Formats

- Support for output image resolutions up to 2048x2160 pixels
- Support for output frame rates up to 144fps (Actual output frame rate can be limited by PCIe bandwidth, and at higher image resolutions - above 1280x1024 - by the pixel clock of the on-board video processing hardware. eg. Max frame rate at 1920x1080 = ~80fps. )
- Support for 4:2:0 8-bit output formats: NV12, I420, YV12
- Support for 4:2:2 8-bit output formats: YUY2, YUYV, UYVY
- Support for 4:4:4 8-bit output formats: V308, IYU2, V408, BGR24, BGR32
- Support for 4:4:4 10-bit output formats: V410, Y410
- More output formats are supported via Pro Capture SDK for DirectKS

## Video Processing Features

- Two video processing pipelines with ~180Mpixels/s processing bandwidth for each one
- Full 10-bit video processing
- Video cropping
- Video scaling
- Video de-interlacing
  - Wave
  - Blend top & bottom field
  - Top field only
  - Bottom field only
- Video aspect ratio conversion
  - Auto or manual selection of input aspect ratio
  - Auto or manual selection of output aspect ratio
  - Three aspect ratio conversion modes: Ignore (Anamorphic), Cropping or Padding (Letterbox or Pillarbox)
- Video color format conversion
  - Auto or manual selection of input color format & quantization range
  - Auto or manual selection of output 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
- Video OSD composition
  - Support for PNG OSD image (up to 2048x2160)
  - Support for dynamic loading of RGBA OSD image via SDK

## Multiple Cards per System

- Support for multiple cards plugged to one system

## Multiple Output Streams

- Unlimited output streams for any one input channel
- Independent cropping, aspect ratio, color format, resolution, frame rate, de-interlacing and color adjustment settings for each individual stream

## Ultra Low Latency Support

- Latency of 64 video lines
- Partial notification mode in SDK

## 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 Output SG-DMA

- ~400MB/s per channel DMA bandwidth in PCIe 2.0 system
- ~200MB/s per channel DMA bandwidth in PCIe 1.0 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

- Pro Capture SDK for DirectShow for easy integration (Windows)
- Pro Capture SDK for DirectKS for maximum flexibility & performance (Windows)

## 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)

## Form Factor

- Mini PCIe Add-on Card
- 30mm x 51mm

## **Accessories**

- **SHD to HDMI type A** breakout

## **Power Consumption**

- Max current at 3.3V ~1.2 A
- Max power consumption ~4.0 W

## **Working Environment**

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