Pro Capture AIO 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
- Mac OS X 10.9 and above
- macOS 10.12 and above

Supported APIs

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

Supported Software

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

Input Interfaces

- DVI-I
  - DVI 1.0
  - HDMI 1.4a (via breakout cable)
  - VGA (via DVI2VGA connector)
  - Component (via breakout cable)
- DB9
  - YC (S-Video)
  - Composite video
  - Analog audio (L+R)
  - Component video
- BNC
  - SD/HD/3G SDI

Host Interfaces

- PCIe Gen2 x1

Input Features

- Auto scan of video input sources when there is no signal input to the currently selected input source
- Manual selection of video input source
- Auto selection of linked (embedded) audio input source when the video input source changes
- Manual selection of audio input source
- Support for standard crossbar based on video input source selection
- Support for input video resolutions up to 2048x2048 pixels

VGA & Component Specific Features

- 12-bit ADC
- Support for RGB & YCbCr (YUV) color formats
- Support for ‘Separated sync’, ‘Composite sync’, ‘Sync-on-green’ (SOG), ‘Sync-on-luminance’ (SOY)
- Support for DMT, CEA, CVT, GTF video timings
- Input signals up to 165MHz pixel rate are digitized with 1:1 sampling
- Input signals over 165MHz pixel rate can be digitized with horizontal sub-sampling (resulting in some image quality loss - NOT officially supported)
- Auto detection of RGB & YCbCr color formats
- Auto or manual sampling phase adjustment
- Auto horizontal alignment
- Support for customized video timings
- Support for customized video resolutions for CVT/GTF timings

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 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

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 (channels 1–8 from the 16 available in the SDI spec)
- 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

YC & Composite Specific Features

- 12-bit ADC
- Support for NTSC, PAL and SECAM standards
- Auto detection of video input standard

Video Capture Formats

- Support for capture image resolutions up to 2048x2048 pixels
- Support for capture frame rates up to 144fps (Actual capture 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 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
- Support for 4:4:4 10-bit capture formats: V410, Y410
- More capture formats are supported via Magewell Capture SDK

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
  - Weave
  - 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 capture 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 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
- Video OSD composition
  - Support for PNG OSD image (up to 2048x2048)
  - Support for dynamic loading of RGBA OSD image via SDK

Multiple Cards per System

- Support for multiple cards plugged to one system
- On-board rotary switch to set card number, with 16 positions from 0 to F
- System hardware device tree will display “01: Pro Capture AIO” when rotary switch is set to 1, and so on
- The video and audio device names displayed in your software will include the card number (set by the rotary switch)

Multiple Capture Streams

- Unlimited capture 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 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 easy integration, maximum flexibility and 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

- Normal profile PCIe x1 Add-on Card
- 92.76mm x 96.24mm (without PCI bracket)

Accessories

- **DVI** to **VGA** connector
- **DVI-I** to **HDMI + Component** breakout
- **DB9** to **YC + Composite + Analog Audio + Component**breakout

Power Consumption

- Max current at 12V: ~ 0.39 A
- Max current at 3.3V: ~ 0.2 A
- Max power consumption: ~ 5.03 W

Working Environment

- Operating temperature: 0 to 60 deg C
- Storage temperature: –20 to 70 deg C
- Relative Humidity: 5% to 90% non-condensing