

# MAGEWELL

## Pro Capture Dual SDI 4K Plus Technical Specifications

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### Supported OS

- Windows
  - Windows 7/8/8.1/10/Server 2008/Server 2008 R2/Server 2012/Server 2016 (x86 & x64)
- Linux (support x86, x64 & ARM architecture)
  - Ubuntu 12.04/14.04/16.04/17.04/17.10/18.04 (x86 & x64)
  - CentOS 6.5/7 (x86 & x64)
  - Fedora 25/26/27 (x86 & x64)
  - Red hat 6.5 and above (x86 & x64)
  - Other Linux OS with kernel version 2.6.35 and above
- Mac
  - OS X 10.9/10.10/10.11
  - macOS 10.12/10.13/10.14

### Recommended OS (tested)

- Windows
  - Windows 7 Ultimate/8.1 Enterprise/10 Enterprise/Server 2008 R2 DataCenter/Server 2012 R2 DataCenter/Server 2016 R2 DataCenter (x86 & x64)
- Linux
  - Ubuntu 12.04/14.04/16.04 (x86 & x64)
  - Ubuntu 17.04/17.10 (x64)
  - CentOS 6.5/7.2 (x86 & x64)
  - Fedora 25/26 (x64)
  - Red hat 6.5 (x86 & x64)
- Mac
  - OS X 10.9.5/10.10/10.11.2/10.11.3/10.11.4
  - macOS 10.12/10.13.2/10.13.3/10.14.3

### Supported APIs

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

### Supported Software

- Adobe Flash Media Encoder
- Livestream
- Microsoft Media Encoder
- OBS
- Skype
- Vahana
- VirtualDub
- VidBlaster

- Video Stitch
- VLC
- vMix
- Wirecast
- XSplit
- Any other DirectShow/V4L2 encoding/streaming software

## Input Interfaces

- HD-BNC x8
  - Four connectors are compatible with SD/HD/3G SDI
  - Two connector is compatible with SD/HD/3G/6G SDI
  - Two connector is compatible with SD/HD/3G/6G/12G SDI
  - Support for input of Single Link, Dual Link, Quad Link

## Host Interfaces

- PCIe Gen2 x8

## Input Features

- Support for input video resolutions up to 4096x2160 pixels
- Auto detection of Single Link, Dual Link, Quad Link

## SDI Specific Features

- Integrated cable equalizer supporting cable lengths up to 230M for HD signals
- Support for SD/HD/3Ga/3Gb/3Ga-DL/3Gb-DS/6G/12G
- Support for 2K (2048x1080) & 4K (4096x2160) 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
- Support for Closed Caption

## Video Capture Formats

- Support for capture image resolutions up to 4096x2160 pixels
- 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
- Support for 4:4:4 10-bit capture formats: V410, Y410
- More capture formats are supported via Magewell Capture SDK for DirectKS

## Video Processing Features

- Two video processing pipelines with ~720 Mpixels/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 4096x2160)
  - 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 Dual SDI 4K+" 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, color adjustment and OSD 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

- ~1600MB/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 chipset

## SDK

- Magewell Capture SDK for DirectShow for easy integration (Windows)
- Magewell 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)
- 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: idle
  - On: input signal locked

- Off: input signal unlocked
- Double blinks: memory failed or FPGA configuration failed

## Form Factor

- Low profile PCIe x8 Add-on Card
- 127.89mm x 102.92mm (without PCI bracket)

## Power Consumption

- Max current at 12V:
  - 4 x 3G SDI: ~ 1.42 A
  - 2 x 6G SDI: ~ 1.41 A
  - 1 x 12G SDI: ~ 1.42 A
- Max current at 3.3V:
  - 4 x 3G SDI: ~ 1.84 A
  - 2 x 6G SDI: ~ 1.73 A
  - 1 x 12G SDI: ~ 1.66 A
- Max power consumption:
  - 4 x 3G SDI: ~ 23.05 W
  - 2 x 6G SDI: ~ 22.62 W
  - 1 x 12G SDI: ~ 22.52 W

## Working Environment

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