



# Xtreme-HD4 Datasheet

## EMS Video Capture Hardware PCIe, PCI-X & USB 3.0

Introducing our Xtreme range of video capture cards  
for capture display, record or streaming/broadcast



Electronic Modular Solutions Limited  
[www.ems-imaging.com](http://www.ems-imaging.com)

# Xtreme-HD4

## Quad Channel Capture Card Advanced Graphics Display Technology



### DESCRIPTION

The Xtreme-HD4 is a high end, four channel, high definition video capture card delivering high performance and flexibility in demanding environments.

The Xtreme-HD4 has four independent video capture channels, supporting high definition capture and analogue video. The signals are input on four DVI-I connectors and can support HDMI, DVI, VGA and analogue Component (YPbPr) at all resolutions up to 4096 x 2048, at 165 MHz Pixel Clock (digital modes) or 170 Msps in analogue modes.

The Xtreme-HD4 captures all four video channels simultaneously and triple buffers them into onboard storage for tear free video, alongside an audio stream that can be selected from four of the HDMI audio ports. This data can then be processed and copied using DMA transfers to the host system for display, storage or streaming.

### FEATURES

#### General Capture Card Features:

- 8 Lane PCI Express Gen.3 bus
- 3.2 GB/s total capture bandwidth in 4 PCIe lanes Gen.3 or 8 Lanes Gen.2
- 4 x EMS capture processors
- Frame buffer memory 4 x 256 MB
- All standard Vision Range features
- EMS unified Windows and Linux driver support

#### Quad DVI-I Capture Channel:

- HDMI / DVI / RGB / YPbPr Video Capture
- Maximum resolution up to 4096 x 2048, at 165 MHz Pixel Clock (Digital modes) or 170 Msps in analogue modes.
- HDMI audio capture with streaming from each DVI Channel
- ~800 MB/s bandwidth per capture processor, 3.2GB/s for the card

## VIDEO STREAMING

DirectShow drivers for WDM Streaming driver supports the following applications, to encode, record and stream video over networks or the Internet:

- Microsoft Media Encoder®
- VLC
- VirtualDub
- Any other DirectShow encoding software

For streaming applications, the XtremeDV-HD4 can be used with Windows Media Encoder to compress and stream captured video. To replay the video, use Windows® Media Player.

Any application compatible with Windows® DirectShow technology can use the Xtreme-HD4 due to its built-in WDM support.

## AUDIO FEATURES

HDMI Audio capture and streaming from each DVI Channel Supports audio capture to the PCI Express bus at popular sample rates from 44.1 to 96 ksamples/s at 16 bits/sample. The card supports playback and mixing of HDMI embedded audio.

## EMS VISION SOFTWARE

The Xtreme-HD4 is supplied with a powerful software application for configuring the format of the input sources and displaying the data.

Simply connect your video source into the card, run the Xtreme-HD4 application to automatically detect the video source format and display the captured video in a window on your desktop.



## SOFTWARE CAPABILITIES

### Timestamp support for streaming synchronization

- Synchronizations of multiple inputs across multiple cards
- Synchronize systems using network clock synchronization
- For edge blending and other applications

### Flexible and configurable EDID Management

- Allows programming of custom EDID parameters for Capture cards



### Low Input to Output Capture Latency

- DMA to third party graphics vendors back and front buffers via Direct3D
- Compatibility with AMD DirectGMA
- Compatibility with Nvidia GPUDirect

### User Mode filter for source selection

- Enables cropping support in DirectShow on all inputs
- Supports Start and Stop trigger interface on all Vision inputs

### EMS Unified XtremeDV Driver

- Multiple cards per system, 16 streams per input
- Frame sync and time stamping
- DirectShow interface
- The XRGBEasy API for advanced audio and video control
- Fully integrated for use with EMS VigiControl - Wall Control software for video wall applications

## MULTISTREAM

EMS's MultiStream feature is available on all EMS Capture cards and enables multiple independently formatted video streams to be setup in parallel.

Each stream can be formatted completely independently and individual selection of resolution, colour space, and cropping region can be set for each stream. This maximizes bandwidth utilization of the capture card PCIe interface, and also simplifies development tasks for application developers who does not need to implement video stream reformatting separately

## GRAPHICS CARD INTEGRATION

When the Xtreme-HD4 is used with a EMS graphics card, it is able to transfer the data directly to the graphics card thereby increasing performance and allowing both sources to be viewed at full frame rate.

When the video data is displayed on a non-EMS graphics card, the Xtreme-HD4 may still be able to boost performance by using the graphics card's DirectGMA interface to transfer directly to its off-screen memory, for example AMD DirectGMA and Nvidia GPUDirect. This is dependent upon the graphics card driver software capabilities.

The Xtreme-HD4 is an ideal solution for applications that require both a real time camera feed, with synchronized audio, as well as high resolution image capture at full frame rates.

## MODELS AVAILABLE

Product Name/ Order Code	Description
Xtreme-HD4	Quad Channel HDMI / DVI / RGB / YPbPr Capture Card

*\* Adapters for other types of video connectors such as DVI/HDMI, DVI/VGA or DVI/Component are not included with the XtremeDV-HD4 but are available from EMS, contact our sales team for details*

## ACCESSORIES AVAILABLE

Product Name	Description
DVI/VGA	DVI-A to VGA adapter
DVI/HDMI	DVI to HDMI adapter
DVI/COMPONENT	DVI to YPbPr adapter

*All products are shipped with the latest software available, unless stated otherwise.*

*Special requirements may be organized by contacting our Sales team.*





## SPECIFICATIONS

Board Format	Full size, 8 Lane PCIe 3.0 interface
Connectors	Two DMS59 high density video connectors
Maximum Sample Rate	170Mpixels per second analogue RGB or 165 MHz DVI. Analogue modes up to 340MHz pixel clock can be captured using dual-pass sampling.
Maximum Data Rate	800 MB/s bandwidth per capture processor, 3.2 GB/s for the card.
Video Sampling	24 bits per pixel / 8-8-8 format.
Video Capture Memory	256MB per capture channel, triple buffered
Analogue RGB Mode Support	640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1600 x 1200, 1920 x 1080, 1920 x 1200, custom modes.
DVI Single Link Mode Support	640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1600 x 1200, 1920x1080, 1920 x 1200, and custom modes.
HD Modes	1080p, 1080i, 720p, 576p, 576i, 480p and 480i using a Component-DVI connector For HDCP support, contact the Sales department for more information
Input Mode Detection	Automatic detection of input modes in hardware, enabling the tracking of mode changes in the source signal. DirectShow streams are maintained at a fixed resolution across mode changes.
Pixel Transfer Formats	RGB: 5-5-5, 5-6-5 or 8-8-8 (24bit/32bit) pixels. YUV: 4:2:2. MONO: 8bit.
Update Rate	User defined, captured frame rate will match the source providing max data rate (800MB/s) is not exceeded.  Multi-buffered to eliminate tearing artifacts.
Video Format Options	Analogue RGB plus HSync and VSync (5 wire). Analogue RGB with Composite Sync (4 wire). Analogue RGB with Sync on Green/YPbPr (3 wire). DVI Single Link. HDMI 1.3
Operating System Support	Windows XP, Windows Server 2003, Windows Vista, Windows Server 2008, Windows Server 2012, Windows 7, Windows 8 and Linux* support (not audio) See <a href="http://www.EMS.co.uk">www.EMS.co.uk</a> for updates.
Power Requirements	Max current at 1.9A @ 12V Max current at 2.5A @ 3.3V Max power 31 Watts
Operating Temperature	0 to 35 deg C / 32 to 96 deg F
Storage Temperature	-20 to 70 deg C / -4 to 158 deg F
Relative Humidity	5% to 90% non-condensing.
Warranty	3 years.

We are continuously developing the technology used within our product ranges delivering outstanding innovative solutions, therefore the specification may change from time to time.

\* Denotes not yet available, contact sales for details