



Powered By



EPOCH

Features 3G-SDI, a 12 bit video processing pipeline, fully programmable pristine image scaling capability, DVI/HDMI output with 3 x 1D LUTs for 2K preview, dual link, multi channel I/O with full duplex Uncompressed video up to 2K and Stereoscopic 3D capability.

A NEW GENERATION BEGINS

Every so often, the application of advanced technology, modern industrial design and manufacturing processes yields a break-through that delivers real advantages over its predecessors. Introducing Bluefish444's EPOCH.

Broadcast Engineering Redefined

Let's face it, 'broadcast quality' 10 years ago is much like comparing VHS is to Blu-ray today! Everyone's quick to spruik their product as being 'broadcast quality' but with the advent of 3G-SDI, 12bit video processing and Stereoscopic 3D capability, Bluefish444's new Epoch truly delivers what others just talk about. The quality & flexibility of our scalers is unsurpassed!

Epoch's 4 lane PCI-e cards have a maximum bandwidth of 1.1GB/s delivering full duplex DMA. Add to that the precision of our hardware based Color Space Conversion, 2K video resolution and our proprietary RapidFlow+MR² technology, it's no wonder we're the Professionals' Choice!

Extreme Reliability

1000's of customers attest to using our products in 'mission critical' environments such as digital intermediary post and live broadcast where they're running 24/7. Our engineering, know how and products are backed by a three year warranty.

Flexibility of our hardware

From MR²'s routing architecture, to RapidFlow's agnostic scaling and cross conversion options, our hardware upgrade path and the power to choose is yours for the taking. It's a whole new ball game. A new Epoch if you will.



Unsurpassed quality hardware scaling & extreme workflow flexibility.

RapidFlow+MR² is a technology allowing the highest quality real-time hardware scaling for format conversion and extreme workflow flexibility through highly flexible signal routing. This technology is implemented in two optional hardware modules onboard the Epoch video card called Jetstream and VariVue.

Epoch, Jetstream and VariVue use the RapidFlow+MR² technology to work together seamlessly to enable up, down or cross conversion of any input or output video signal to/from Epoch whilst simultaneously routing the converted video signal(s) to any combination of Epoch's monitoring and output options. All at the highest possible quality.



RapidFlow is the process of high quality format conversion achieved with the Jetstream hardware module on board an epoch board.

Master Routing Resource

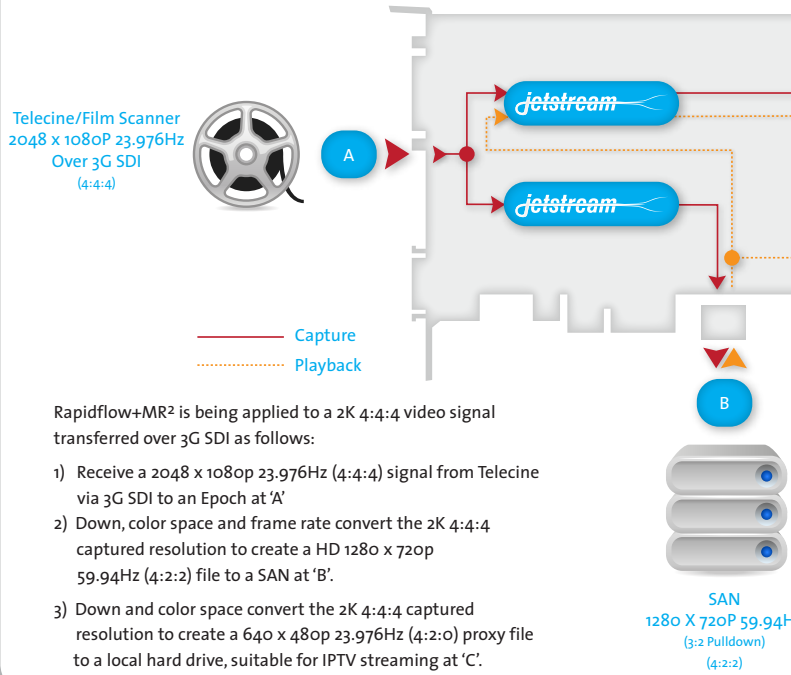


New to the Epoch boards is the software controlled on board master routing resource (MR²). The master routing resource acts like a telephone exchange for super connectivity. Allowing video streams passed to the Epoch video card via BNC or host workstation to be routed to any of Epoch's multiple outputs simultaneously, using the Jetstream and/or VariVue hardware module if desired.

The master routing resource (MR²) within Epoch enables a user to flexibly configure the Epoch's main and preview outputs to suit their individual workflow. This flexibility of workflow enables users to make better use of their existing video equipment and time. There is no longer the need for external converters, or, to output or ingest each format required through individual passes.



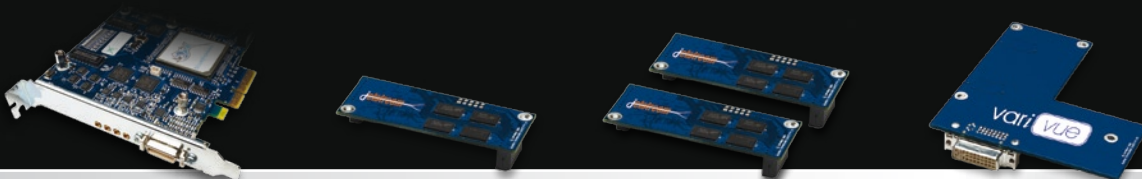
RAPIDFLOW+MR² APPLIED EXAMPLE 2K FULL DUPLEX



“Epoch with it’s RapidFlow+MR² technology and modular design was engineered to deliver uncompressed video processing with unparalleled quality while allowing maximum workflow flexibility,” said Craig Mott, Managing Director of Bluefish444.

“Bluefish444 has built its reputation on high quality 4:4:4 digital intermediary solutions and now we have extended our product line through Epoch to suit any professional video user of uncompressed SDI. Epoch works just as well for high bandwidth DI 3G SDI RGB workflows as it does for low bandwidth real time video encoding for IPTV/DVD production and everything in between, including live broadcast.”

Applications include digital intermediary, digital content creation, video servers, encoding, decoding & streaming of compressed files, live and non-live CG supporting Windows, Linux and Mac OSX operating systems.



Base Board

+1 Jetstream Mod

+2 Jetstream Mods

+1 VariVue DVI/HDMI

Epoch|2K Horizon

Epoch|2K Core

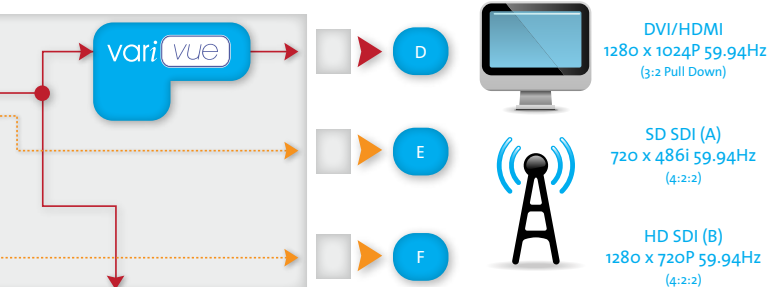
Epoch|2K Ultra

Epoch|Horizon

Epoch|Core

Epoch|Ultra

TO AN WORKFLOW



Local Hard Drive
640 x 480P 23.976Hz
(4:2:0) Proxy
Streaming or Mobile Device

- 4) Up, frame rate convert and monitor the already downconverted 640 x 480p 23.976Hz captured resolution as DVI/HDMI at 1280 x 1024p 59.94Hz at 'D'.
 - 5) Simultaneously playback HD 1280 x 720p 59.94Hz file from SAN via SDI output A as downconverted SD SDI 720 x 486i 59.94Hz (4:2:2) for broadcast at 'E'.
 - 6) Simultaneously playback HD 1280 x 720p 59.94Hz (4:2:2) file from SAN via SDI output B for broadcast at 'F'.
- All in a single pass!

vari VUE

The VariVue hardware module is an optional dedicated video hardware scaling and preview module that is fitted to the Epoch video card. It acts as a low cost, high quality third preview option to the Epoch video board for LCD, Plasma and Projector devices. Once fitted, VariVue provides the highest quality real-time DVI / HDMI preview options for the Epoch's SDI I/O.

Each VariVue hardware module contains the same hardware scaling technology enabled in Jetstream and in addition provides the following capture and playback preview options:

- SDI resolutions previewed as DVI up to 1920 x 1200p 60 Hz 4:4:4
- SDI resolutions previewed as HDMI up to 1920 X 1200p 60 Hz 4:2:2/4:4:4 with 8 channels of 24 bit embedded audio.

VariVue has 3 x 1D LUT's on all outputs allowing for calibration of the display device and log/linear conversion.

VariVue's preview output contains a high quality hardware based scaler. This converts the selected input or output to the LCD, Plasma or Projector's native resolution and frame rate, bypassing the lower quality internal scaler of the monitoring device. This provides for low cost and flexible monitoring within the workflow as a wide range of TFT, Plasma and projectors can be used.

VIDEO MODES

SAME VIDEO MODES SUPPORTED AS EPOCH BASE BOARD (REFER TO BACK PAGE)

MONITORING EPOCH SDI INPUT & OUTPUTS

ANY OF THE SUPPORTED VIDEO MODES DESCRIBED ABOVE CAN BE HARDWARE UP, DOWN OR CROSS CONVERTED AND PREVIEWED VIA:

DVI OUTPUT UP TO 1920 x 1200P 60 Hz 4:4:4

OR

HDMI OUTPUT UP TO 1920 x 1200P 60 Hz 4:2:2/4:4:4 & 8 CHANNELS OF 24BIT EMBEDDED AUDIO

OTHER KEY FEATURES

MASTER ROUTING RESOURCE (MR2) ALLOWS MONITORING OF ANY INPUT OR OUTPUT.

3 x 1D LUT FOR COLOR CALIBRATING PREVIEW FROM LCD/PLASMA/PROJECTOR AND LOG/LINEAR CONVERSION

jetstream

The Jetstream hardware module is a dedicated video hardware scaling module, providing the highest quality real-time video scaling up, down or cross conversion of any video resolution to any other video resolution including, if needed, non standard industry resolutions.

Epoch video cards can have up to two Jetstream hardware modules added to effectively double the scaling capacity. Each Jetstream hardware module is intuitively programmed to act singularly or in concert with a second Jetstream hardware module to scale high bandwidth video streams. Accordingly, even the highest bandwidth video signals such as two simultaneous streams of 3G-SDI can be real-time scaled down to resolutions less than SD-SDI if required.

VIDEO MODES

SAME VIDEO MODES SUPPORTED AS EPOCH BASE BOARD (REFER TO BACK PAGE)

KEY FEATURES

NUMBER OF SCALER MODULES PER JETSTREAM HARDWARE MODULE	2
MAXIMUM NUMBER OF JETSTREAM HARDWARE MODULES APPLIED TO INPUT OR OUTPUT	2
MAXIMUM NUMBER OF SCALER MODULES APPLIED TO INPUT OR OUTPUT	4
JETSTREAM SCALING HARDWARE MODULE BANDWIDTH RELATIVE TO BANDWIDTH OF HD 4:2:2	2 X
RESOLUTION AGNOSTIC SCALING OF ANY HORIZONTAL AND VERTICAL RESOLUTION TO ANY OTHER HORIZONTAL AND VERTICAL RESOLUTION	Y
12 BIT SCALE PROCESSING	Y
SINC(x) VIDEO INTERPOLATION ALGORITHM USING 25 X 25 TAPS	Y
1/128TH SUB PIXEL SCALING ACCURACY	Y
UP/DOWN/CROSS AND RELATED FRAME RATE CONVERSION INCLUDING 3:2 PULLDOWN	Y
FRAME STORE ENABLING REPEATING OR DROPPING OF FIELDS OR FRAMES FOR FRAME RATE CONVERSION	Y
AFD/CLOSED CAPTION AND TIMECODE TRANSCODING THROUGH FORMAT CONVERTERS	Y
HARDWARE DE INTERLACING	Y
MASTER ROUTING RESOURCE CONTROLLED BY SOFTWARE TO SCALE ANY INPUT, OUTPUT OR FRAMESTORE IMAGE AND PASS THE RESULT TO OUTPUT OR HOST.	Y
FIELD UPGRADABLE FIRMWARE DESIGN VIA SOFTWARE UPGRADE	Y
ABILITY FOR 3RD PARTY DEVELOPERS TO CUSTOM DEVELOP EACH SCALER MODULE WITHIN JETSTREAM HARDWARE VIA FIRMWARE AND SOFTWARE UPGRADE	Y

IMAGE CONVERSION CAPABILITIES

Source image size	Scale input Individually	Scale output Individually	Number Jestream Per Epoch	Scale Input & Output Simultaneously (Full Duplex)
Dual Link 3G SDI - 2048 X 1080p 60 Hz 4:4:4	1 STREAM	1 STREAM	2	N
Single Link 3G SDI - 1920 X 1080p 60 Hz 4:2:2	2 STREAMS	2 STREAMS	2	1 STREAM
Dual Link HD SDI - 2048 X 1080i 60 Hz 4:4:4	1 STREAM	1 STREAM	2	1 STREAM
Single Link 3G SDI - 1920 X 1080p 60 Hz 4:2:2	1 STREAM	1 STREAM	1	N
Dual Link HD SDI - 2048 X 1080i 60Hz 4:4:4	1 STREAM	1 STREAM	1	N
2 X Single Link HD SDI - 1920 X 1080i 60 Hz 4:2:2 (Stereoscopic 3D)	1 STREAM	1 STREAM	1	N
Single Link HD SDI 1920 X 1080i 60 Hz 4:2:2	2 STREAMS	2 STREAMS	1	1 STREAM



bluefish444
THE PROFESSIONALS' CHOICE

FEATURE	EPOCH HORIZON	EPOCH CORE	EPOCH ULTRA	EPOCH 2K HORIZON	EPOCH 2K CORE	EPOCH 2K ULTRA	FEATURE	EPOCH HORIZON	EPOCH CORE	EPOCH ULTRA	EPOCH 2K HORIZON	EPOCH 2K CORE	EPOCH 2K ULTRA
VIDEO MODES							INPUT HARDWARE FEATURES						
720x486i @ 59.94 Hz NTSC	Yes	Yes	Yes	Yes	Yes	Yes	4 GENERAL PURPOSE INPUT PINS	Yes	Yes	Yes	Yes	Yes	Yes
720x576i @ 50.00 Hz PAL	Yes	Yes	Yes	Yes	Yes	Yes	LTC INPUT PORT	Yes	Yes	Yes	Yes	Yes	Yes
1280x720p @ 23.976Hz, 24Hz, 25Hz, 29.97Hz, 30Hz, 50Hz, 59.94Hz, 60Hz	Yes	Yes	Yes	Yes	Yes	Yes	AUDIO SAMPLE RATE CONVERTERS	Yes	Yes	Yes	Yes	Yes	Yes
1920x1080i @ 47.96Hz, 48Hz, 50Hz, 59.94Hz, 60Hz	Yes	Yes	Yes	Yes	Yes	Yes	GENLOCK BI, TRI AND CROSS LOCK = BI FOR HD, TRI FOR SD	Yes	Yes	Yes	Yes	Yes	Yes
1920x1080PsF @ 23.976Hz, 24Hz, 25Hz, 29.97Hz, 30Hz	Yes	Yes	Yes	Yes	Yes	Yes	OUTPUT HARDWARE FEATURES						
1920x1080P @ 23.976Hz, 24Hz, 25Hz, 29.97Hz, 30Hz, 47.96Hz, 48Hz, 50Hz, 59.94Hz, 60Hz	Yes	Yes	Yes	Yes	Yes	Yes	PROGRAMMABLE 4 x 4 HARDWARE COLOUR	Yes	Yes	Yes	Yes	Yes	Yes
2048x1080P @ 23.976Hz, 24Hz, 25Hz, 29.97Hz, 30Hz, 47.96Hz, 48Hz, 50Hz	Yes	Yes	Yes	Yes	Yes	Yes	SPACE CONVERSION	Yes	Yes	Yes	Yes	Yes	Yes
2048x1080P @ 23.976Hz, 24Hz, 25Hz, 29.97Hz, 30Hz, 47.96Hz, 48Hz, 50Hz, 59.94Hz, 60Hz	Yes	Yes	Yes	Yes	Yes	Yes	REAL TIME HARDWARE OVERLAY FOR INTERNAL KEYING	Yes	Yes	Yes	Yes	Yes	Yes
2048x1080i @ 47.96Hz, 48Hz, 50Hz, 59.94Hz, 60Hz	Yes	Yes	Yes	Yes	Yes	Yes	4 X 1D LUTs ON ALL SDI OUTPUTS	Yes	Yes	Yes	Yes	Yes	Yes
2048x1556PsF @ 14.98Hz, 15Hz, 18.98Hz, 19Hz	No	No	No	Yes	Yes	Yes	BUILT-IN SAFE AREA, SAFE TITLE AND LETTERBOX GENERATOR	Yes	Yes	Yes	Yes	Yes	Yes
DIGITAL VIDEO INPUT SIGNAL FORMATS							OTHER FEATURES						
3G-SDI CAPABLE	Yes	Yes	Yes	Yes	Yes	Yes	(MR?) MASTER ROUTING RESOURCE	Yes	Yes	Yes	Yes	Yes	Yes
12 BIT INPUT	3G	3G	3G	Yes	Yes	Yes	RGB => YUV 12 BIT HARDWARE COLOUR	Yes	Yes	Yes	Yes	Yes	Yes
1 x 2K/HD/SD 4:2:2 SDI	Yes	Yes	Yes	Yes	Yes	Yes	SPACE CONVERSION	Yes	Yes	Yes	Yes	Yes	Yes
2 x 2K/HD/SD 4:2:2 SDI	No	No	No	Yes	Yes	Yes	3:2 PULLDOWN	Yes	Yes	Yes	Yes	Yes	Yes
2K/HD/SD 4:4:4, 4:4:4:4 (RGBA/YUVA)	No	No	No	Yes	Yes	Yes	ISIM (INPUT STREAM INTEGRITY MANAGEMENT)	Yes	Yes	Yes	Yes	Yes	Yes
HD/SD 4:2:2:4 VIDEO AND KEY (YUVA)	No	No	No	Yes	Yes	Yes	12 BIT VIDEO PROCESSING THROUGHOUT SIGNAL PATH FOR HIGHEST QUALITY VIDEO	Yes	Yes	Yes	Yes	Yes	Yes
2 x INDEPENDENT SDI STREAMS	No	No	No	Yes	Yes	Yes	BYPASS RELAY	Yes	Yes	Yes	Yes	Yes	Yes
DIGITAL VIDEO OUTPUT SIGNAL FORMATS							PIXEL FORMATS						
3G-SDI CAPABLE	Yes	Yes	Yes	Yes	Yes	Yes	2VUY, YUVS, BV8, ARGB, BGRA, RGB24, CINEON, DPX, V210, AYUV_4224, AYUV_4444, RGB48, VV12, I420 AND CUSTOMISABLE PIXEL FORMATS	Yes	Yes	Yes	Yes	Yes	Yes
12 BIT OUTPUT	Yes	Yes	Yes	Yes	Yes	Yes	HARDWARE SCALING SUPPORT						
2 x 2K/HD/SD 4:2:2 SDI	Yes	Yes	Yes	Yes	Yes	Yes	JETSTREAM SCALING MODULES	0	1	1	0	2	2
2K/HD/SD 4:4:4, 4:4:4:4 (RGBA/YUVA)	No	No	No	Yes	Yes	Yes	DVI/HDMI 3rd OUTPUT PREVIEW						
HD/SD 4:2:2:4 VIDEO AND KEY (YUVA)	Yes	Yes	Yes	Yes	Yes	Yes	VARIvUE DVI/HDMI OUTPUT MODULE	0	0	1	0	0	1
2 x INDEPENDENT SDI STREAMS	No	No	No	Yes	Yes	Yes	EXTERNAL BREAK OUT BOX (OPTIONAL)						
ANALOG VIDEO AND DVI/HDMI I/O							SUPPORTED APIs						
SD COMPOSITE	Yes [†]	Yes [†]	Yes [†]	Yes [†]	Yes [†]	Yes [†]	WINDOWS API C++	Yes	Yes	Yes	Yes	Yes	Yes
SD COMPONENT	Yes [†]	Yes [†]	Yes [†]	Yes [†]	Yes [†]	Yes [†]	DIRECTSHOW FILTERS API	Yes	Yes	Yes	Yes	Yes	Yes
HD COMPONENT	Yes [†]	Yes [†]	Yes [†]	Yes [†]	Yes [†]	Yes [†]	MAC OS X QUICKTIME API	Yes	Yes	Yes	Yes	Yes	Yes
DVI/HDMI I/O	Yes [†]	Yes [†]	Yes [†]	Yes [†]	Yes [†]	Yes [†]	LINUX API	Yes	Yes	Yes	Yes	Yes	Yes
ANCILLARY DATA							COMPATIBLE WITH POPULAR RETAIL APPLICATIONS:						
HANC							ADOBE CREATIVE STUDIO 4™						
RP188 TIMECODE IN	Yes	Yes	Yes	Yes	Yes	Yes	APPLE FINAL CUT STUDIO 2™	BLUEFISH444 SYMMETRY™					
RP188 TIMECODE OUT	Yes	Yes	Yes	Yes	Yes	Yes	DRASTIC TECHNOLOGIES QUICK CLIP PRO™	DRASTIC TECHNOLOGIES MEDIA NXS™					
EMBEDDED AUDIO	Yes	Yes	Yes	Yes	Yes	Yes	ASSIMILATE SCRATCH™	EYEOON DIGITAL FUSION™					
CUSTOM PACKETS	Yes	Yes	Yes	Yes	Yes	Yes	AUTODESK COMBUSTION™	FOR FULL COMPATIBILITY LIST CONTACT US AT WWW.BLUEFISH444.COM					
VANC							AUTODESK 3D STUDIO MAX™						
CLOSED CAPTIONING	Yes	Yes	Yes	Yes	Yes	Yes	1STR = 1 STREAM						
3 LINE VITC	Yes	Yes	Yes	Yes	Yes	Yes	2STR = 2 STREAMS						
CUSTOM PACKETS	Yes	Yes	Yes	Yes	Yes	Yes	3G = 3G-SDI ONLY						
DIGITAL AUDIO INPUT SIGNAL FORMAT							YES* = OPTIONAL						
6 CHANNELS OF AES/EBU (BALANCED, XLR)	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	ALL PRODUCTS COME WITH A THREE YEAR WARRANTY						
8 CHANNELS OF AES ID3 (UNBALANCED, BNC)	Yes	Yes	Yes	Yes	Yes	Yes							
16 CHANNELS OF EMBEDDED AUDIO PER SDI	Yes	Yes	Yes	Yes	Yes	Yes							
DIGITAL AUDIO OUTPUT SIGNAL FORMAT													
6 CHANNELS OF AES/EBU (BALANCED, XLR)	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*							
8 CHANNELS OF AES ID3 (UNBALANCED, BNC)	Yes	Yes	Yes	Yes	Yes	Yes							
16 CHANNELS OF EMBEDDED AUDIO PER SDI SIGNAL	Yes	Yes	Yes	Yes	Yes	Yes							
ANALOG AUDIO OUTPUT SIGNAL FORMAT													
2 CHANNELS -10dBu (UNBALANCED, RCA)	Yes	Yes	Yes	Yes	Yes	Yes							

Symmetry Bundled FREE

Each Bluefish444 card comes with the acclaimed Symmetry seamless acquisition, review and playout station for all Windows production environments.



Quadrant
DIGITAL SOLUTIONS

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SDK Functionality

Our Windows and Linux SDK's share a common API allowing developers to port from one platform to another with greater ease and efficiency. An extensive set of samples and interfaces are provided making integration of Bluefish444 cards with developer applications extremely efficient. Please visit our website for further information or to download our 'free' SDK.

www.bluefish444.com