| Low Profile Form Factor | 4K 60p | 12-bit Processing | 8/10/12-bit SDI I/O |

ĒPOCH | 4K NEUTRON

ĒPOCH | NEUTRON

TINY STARS RADIATING IMMENSE POWER

Born from Epoch | 4K Supernova the smallest star is formed. Epoch | 4K Neutron a tiny star radiating immense power.

In an industry that always demands "bigger and better" Bluefish444 have yet again delivered! This time we have gone one step further, the Epoch | Neutron range packs a massive amount of power into a form factor that defies belief.

Bi-Directional I/O's provide unrivalled flexibility

Like its brethren, the Epoch | Neutrons provide flexibility like no other allowing industry standard BNC video connectors to be 3G/HD/SD SDI inputs or outputs.

World's most accessible video card

With an all new form factor Bluefish444's Epoch | Neutron range opens a whole new galaxy of options! Bluefish444 have compressed functionality of much bigger cards into a low profile, half height PCIe video card allowing integration with rack mount, small form factor, PCIe, or Thunderbolt enclosures. A great price point allows unprecedented accessibility for all SDI I/O users from 3rd party SDK developers to video editors.

Unified hardware, drivers and SDK

The Bluefish444 unified driver extends to the Epoch | Neutron range making it fully compatible with Industry leading 3rd party content creation tools and the extensively developed Bluefish444 SDK. Platform independent hardware alongside unified Windows, Mac OS X, and Linux Drivers/SDK delivers a powerful package in every environment.

ĒPOCH | NEUTRON + 4K NEUTRON

Simply Smarter – Condensing the form factor

Available with a low profile or full height shield, the Epoch | Neutron cards are not only in a low profile form factor but also half the length of a full size PCIe card. Many server products, rack mounted chassis and small form factor computers have little to no room for full sized PCIe Express cards. Epoch | Neutron cards are so compact that some 2 RU servers can install up to 6 low profile Neutrons allowing unprecedented expandability in such a small space.

Thunderbolt Expansion Chassis Compatibility

Popular PCI Express and Thunderbolt expansion chassis are designed to be light and portable. The Epoch | Neutron range is compatible with them all from the smallest single slot devices right through to much larger multi-slot devices. For the full list of qualified 3rd party chassis visit **www.bluefish444.com**.

It's Smaller, so what did we lose?

Bluefish444 have condensed much of the bigger cards' functionality into a flexible, Low Profile and Half Height video card. But surely we have had to remove some features, or quality to do this, right?

Wrong! Bluefish444 have maintained the build quality and the image quality found in our bigger cards and have even added new features!

Maintaining a 12-bit processing pipeline

A 12-bit image processing pipeline is standard on all Bluefish444 video cards. This allows 8, 10 & 12-bit SDI video signals to be produced from 8, 10, 12 & 16-bit pixel formats providing the highest image quality available from your source material.

A 12-bit image pipe means that 4096 discreet values of red, green & blue are maintained per pixel; that's 64 times the colour precision of a traditional 10-bit processing pipeline!

Maintaining the highest quality RGB <=> YUV Colour Space Conversions

Image processing includes a fully programmable 4 x 4 x 33-bit colour matrix providing the highest quality colour space conversions that are a standard requirement in professional video workflows.

The fully programmable 4 x 4 x 33-bit colour matrix reduces colour space conversion errors and ensures the highest quality colour accuracy during capture, monitoring and mastering.
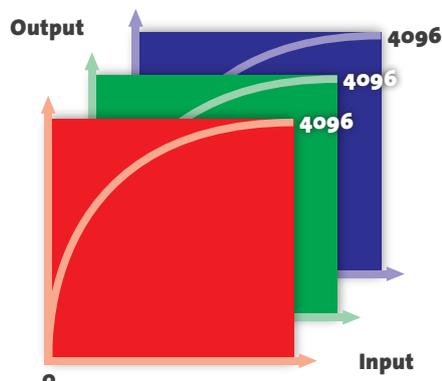
12-bit Processing of RGB <=> YUV Colour Space Conversion

4X4X32-BIT

Primary Hardware Colour Corrector

When the Bluefish444 programmable matrix is combined with the onboard 1D LUTs it provides a powerful primary hardware colour corrector. 4 x 1D x 12-bit LUTs on all SDI outputs gives maximum control over lift, gamma and gain prior to monitoring or mastering your precious video assets.

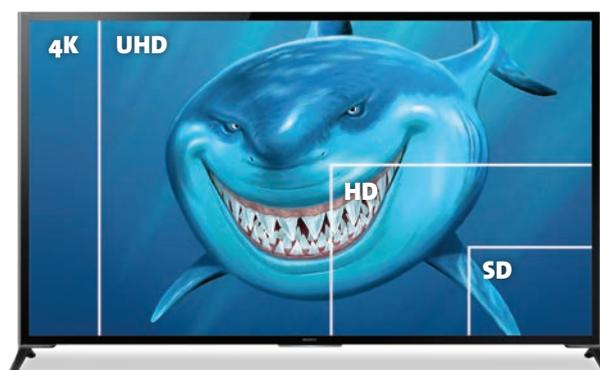### 4 X 1D LUTs for Colour Correction & Monitor Calibration

Output

4096

4096

4096

Input

0

NEW Low Latency Video Keyer

The new low latency hardware video keyer enables video layers to be combined in hardware with microseconds delay. This feature allows animated logo's, captions, ticker tapes, etc. to be keyed over live video feeds at full 12-bit precision and with minimum latency. The hardware keyer can also function as an image pre-multiplier to assist in previewing images with alpha data.
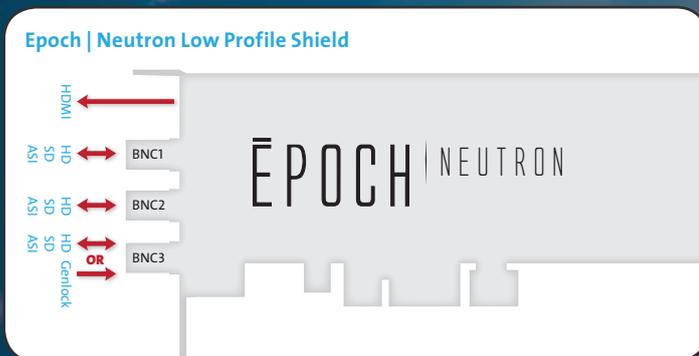

NEW HDMI 1.4 Monitoring

Both Epoch | Neutron cards include a cost effective HDMI 1.4a monitoring solution, with deep colour and can even extend to higher than HD resolution support.

Options, Options, and more Options

With the Epoch | Neutron range there is a variety of both low profile and full height shield options allowing the same physical hardware to be used in any number of applications and inside any number of enclosures or chassis.

Customized shield configurations provide direct RS422 connection, 8 channel AES/EBU I/O, LTC I/O and analog audio monitoring as alternate configurations allowing your system to achieve the I/O you need on all the right interfaces.

Epoch | 4K Neutron Full Height Shield

RS422
AES/EBU Audio
Analog Audio
Genlock

HDMI

3G / HD / SD / ASI — BNC1
3G / HD / SD / ASI — BNC2
3G / SD / SD / ASI — **OR** — BNC3 — Genlock

ĒPOCH | 4K NEUTRON

Epoch | Neutron Low Profile Shield

HDMI

HD / SD / ASI — BNC1
HD / SD / ASI — BNC2
HD / SD / ASI — **OR** — BNC3 — Genlock

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Feature	Epoch	Neutron	Epoch	4K Neutron
2 out	YES	YES
2 in	YES	YES
1 in 1 out (1 fill + 1 key OUT)	YES	YES
1.5G SDI	YES	YES
Dual link SDI	YES	YES
4224 SDI	YES	YES
4444 SDI	YES	YES
HDMI out to HD/2K	YES	YES
Keyer	YES	YES
16-bit Half Float pixel format	YES	YES
Colour Space conversion	YES	YES
Interlocking Genlock	YES	YES
3G SDI	NO	YES
4K SDI support (2 x 3G)	NO	YES
HDMI out to 4K	NO	YES*
LUT 1D	NO	YES

Available with future free firmware update.

For a full list of the Epoch | Neutron range of optional shields please visit www.bluefish444.com

Flexible, Cross Platform SDK support

Our Windows, Linux and Mac OS X 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.

Windows 7   MAC OS X   Linux

Bluefish444 Symmetry software

Symmetry is Bluefish444's integrated 2K/HD/SD 3D and DI acquisition, review and playback software for Windows included free with the Epoch | Neutron range of video cards.

Symmetry™   Thunderbolt   Windows 7   Windows 8

fluid MODULAR WORKFLOW SOLUTIONS

Record 1 or 2 streams of HD/SD to uncompressed or DNxHD media whilst simultaneously editing in Avid Media Composer or Adobe Premiere with the Epoch | Neutron range.

ingeSTore   Thunderbolt   Windows 7   Windows 8

Cross platform support with Industry leading 3rd party software

Avid Media Composer
support through the Open IO plug-in architecture.

AVID   Media 8   Thunderbolt   Windows 7 / Windows 8   MAC OS X

Adobe Creative Cloud
support through the Adobe Mercury Transmit plug-in architecture.

Adobe Creative Cloud   Thunderbolt   Windows 7 / Windows 8   MAC OS X   **4K 60p**

ASSIMILATE SCRATCH®
support through a Bluefish444 plug-in.

ASSIMILATE SCRATCH®   Thunderbolt   Windows 7 / Windows 8   MAC OS X   **4K 60p**

Other compatible software

Other compatible software for the Epoch | Neutron range.

NUKE BY THE FOUNDRY   drastic.tv   Telestream Wirecast Live Streaming Production Studio

Feature	Epoch | Neutron	Epoch | 4K Neutron
SDI Video		
SD	Yes	Yes
HD 1.5G	Yes	Yes
3G	No	Yes
Dual Link 1.5G	Yes	Yes
Dual Link 3G	No	Yes
Quad Link 1.5G	No	No
Quad Link 3G	No	No
Maximum Channels	2	4
8/10/12-bit 4:4:4:4 SDI	Yes	Yes
8/10/12-bit 4:2:2:4 SDI	Yes	Yes
HDMI 1.4a		
SD/HD/2K	Yes	Yes
ARC	No	No
UHD (3840 x 2160)@ 24, 25, 29, 30	No	Yes*
4K DCI (4096 x 2160) @ 24	No	Yes*
3D Frame Packing	No	Yes*
Deep Color	Yes	Yes
Genlock		
Bi-Level/Tri-Level Genlock A	Yes	Yes
Bi-Level/Tri-Level Genlock B	Yes	Yes
Interlocking Genlock between Neutron cards	Yes	Yes
HANC		
RP188 timecode	Yes	Yes
16 Channels of Embedded Audio per SDI	Yes	Yes
Video Payload ID	Yes	Yes
Custom Packets	Yes	Yes
VANC		
Closed captioning	Yes	Yes
3 Line VITC	Yes	Yes
Custom Packets	Yes	Yes
Audio Signals		
16 channels of Embedded Audio Input per SDI	Yes	Yes
8 Channels of AES ID3 Input(unbalanced, BNC)	Yes	Yes
16 channels of Embedded Audio Output per SDI	Yes	Yes
8 Channels of AES ID3 Output(unbalanced, BNC)	Yes	Yes
2 channels -10DBU Output (Unbalanced, RCA)	Yes	Yes
Dolby Digital Pass-through SDI	Yes	Yes
Major Hardware Features		
High Performance, 3G Bypass Relays	Yes	Yes
Fully Programmable 4 x 4 x 32-bit Colour Matrix	Yes	Yes
12-bit video signal path throughout	Yes	Yes
Automatic Cross-Locking and intelligent output phasing across formats	Yes	Yes
LTC I/O (optional)	Yes	Yes
Audio sample rate converters	Yes	Yes
(MR2) Master Routing Resource	Yes	Yes
ISIM (Input Stream integrity management)	Yes	Yes
RS 422 Serial Port	Yes	Yes
4-lane PCI-Express (8 and 16 lane compatible)	Yes	Yes
Full Duplex DMA data transfer bandwidth 1.1GB/s	Yes	Yes
256MB On Board Memory	Yes	Yes

Feature	Epoch | Neutron	Epoch | 4K Neutron
Supported YUV SDI Video Modes		
720 x 486i @ 29.97fps NTSC	Yes	Yes
720 x 576i @ 25fps PAL	Yes	Yes
1280 x 720p @ 23.976, 24, 25, 29.97, 30, 50, 59.94, 60fps	Yes	Yes
1920 x 1080i @ 25, 29.97, 30fps	Yes	Yes
1920 x 1080P/PsF @ 23.976, 24, 25, 29.97, 30fps	Yes	Yes
1920 x 1080p/PsF @ 48, 50, 59.94, 60fps	Yes (DL only)	Yes
1920 x 1080P/PsF @ 23.976, 24, 25, 29.97, 30fps	Yes	Yes
2048 x 1080p/PsF @ 23.976, 24, 25, 29.97, 30fps	Yes	Yes
2048 x 1080P/PsF @ 48, 50, 59.94, 60fps	Yes (DL only)	Yes
Supported RGB SDI Video Modes		
720 x 486i @ 29.97fps NTSC	Yes (DL only)	Yes
720 x 576i @ 25fps PAL	Yes (DL only)	Yes
1920 x 1080i @ 25, 29.97, 30fps	Yes (DL only)	Yes
1920 x 1080P/PsF @ 23.976, 24, 25, 29.97, 30fps	Yes (DL only)	Yes
2048 x 1080p/PsF @ 23.976, 24, 25, 29.97, 30fps	Yes (DL only)	Yes
Supported 4K YUV SDI Video Modes SMPTE 2036-1		
3840 x 2160p @ 23.976, 24, 25, 29.97, 30fps	No	Yes
3840 x 2160p @ 48, 50, 59.94, 60fps	No	Yes**
4096 x 2160p @ 23.976, 24, 25, 29.97, 30fps	No	Yes
4096 x 2160p @ 48, 50, 59.94, 60fps	No	Yes**
Supported 4K RGB SDI Video Modes SMPTE 2036-1		
3840 x 2160p @ 23.976, 24, 25, 29.97, 30fps	No	Yes**
4096 x 2160p @ 23.976, 24, 25, 29.97, 30fps	No	Yes**
Supported Pixel Formats		
2VUY, YUVS, BV8, V210, AYUV_4224, AYUV_4444, YV12	Yes	Yes
ARGB, BGRA, RGB24, Cineon, DPX, RGB48	Yes	Yes
Custom using flexible hardware pixel format engine	Yes	Yes
Supported API'S		
Windows API C++	Yes	Yes
DirectShow Filters API Yes	Yes	Yes
Mac OS X API C++	Yes	Yes
Linux API	Yes	Yes
Compatible With Popular Retail Apps		
Bluefish444 Symmetry®	Yes	Yes
Bluefish444 Fluid® Modules	Yes	Yes
Adobe Creative Cloud®	Yes	Yes
Avid Media Composer®	Yes	Yes
Assimilate Scratch®	Yes	Yes
Drastic Technologies Quick Clip Pro®	Yes	Yes
Drastic Technologies Media NXS®	Yes	Yes
Drastic Technologies Preview Pro®	Yes	Yes
Drastic Technologies 4K Scope®	Yes	Yes
Telestream Wirecast® - Direct Show (windows)	Yes	Yes
The Foundry Nuke® - Monitor out support	Yes	Yes

Available with future free firmware update.
**Requires 2 x Epoch | 4K Neutron synchronised.*

Epoch | Neutron + 4K Neutron come with a two year warranty

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