A 4K-CAPABLE SDI VIDEO CARD WITH BI-DIRECTIONAL HD-BNC’S PROVIDING 4K 60P CAPTURE AND PLAYBACK

<table>
<thead>
<tr>
<th>MAJOR FEATURES FOR KRONOS K8 &amp; K8[R]</th>
<th>KB</th>
<th>KB[R]</th>
<th>KB</th>
<th>KB[R]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bi-directional SDI (HD-BNC)</td>
<td>8</td>
<td>8</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>1.5G HD/SD-SDI</td>
<td>8</td>
<td>8</td>
<td>Embedded audio</td>
<td>YES</td>
</tr>
<tr>
<td>3G-SDI (Level A+B)</td>
<td>8</td>
<td>4</td>
<td>Low-latency hardware keyers</td>
<td>4</td>
</tr>
<tr>
<td>Maximum UHD Channels</td>
<td>2</td>
<td>1</td>
<td>Bypass relays</td>
<td>4</td>
</tr>
<tr>
<td>Dual Link 1.5G (4:2:2:4/4:4:4:4)</td>
<td>YES</td>
<td>YES</td>
<td>Colour space converter</td>
<td>YES</td>
</tr>
<tr>
<td>Dual Link 3G (Level A+B)</td>
<td>YES</td>
<td>YES</td>
<td>Customisable pixel formats and rasters</td>
<td>YES</td>
</tr>
<tr>
<td>Quad Link 1.5G</td>
<td>YES</td>
<td>YES</td>
<td>Multi-card support</td>
<td>YES</td>
</tr>
<tr>
<td>Quad Link 3G (Level A+B)</td>
<td>YES</td>
<td>YES</td>
<td>Thunderbolt compatible</td>
<td>YES</td>
</tr>
<tr>
<td>4K/UHD HDR</td>
<td>YES</td>
<td>YES</td>
<td>16-bit half float pixel format</td>
<td>YES</td>
</tr>
<tr>
<td>LTC I/O</td>
<td>YES</td>
<td>YES</td>
<td>Full-duplex DMA</td>
<td>YES</td>
</tr>
<tr>
<td>Reference I/O</td>
<td>YES</td>
<td>YES</td>
<td>VBI, HANC &amp; VANC</td>
<td>YES</td>
</tr>
<tr>
<td>Optional AUX I/O via STEM port</td>
<td>YES</td>
<td>YES</td>
<td>NVIDIA GPUDirect</td>
<td>YES</td>
</tr>
<tr>
<td>LTC I/O (HD-BNC), RS-422 (RJ45), AES Audio I/O (DB25)</td>
<td>EX-1</td>
<td>EX-1</td>
<td>AMD DirectGMA</td>
<td>YES</td>
</tr>
<tr>
<td>Analogue Audio I/O (2 x 3.5mm TRS), RS-422 (RJ45), AES Audio I/O (DB25)</td>
<td>EX-2</td>
<td>EX-2</td>
<td>Stereoscopic/3D imaging</td>
<td>YES</td>
</tr>
</tbody>
</table>

DATA SHEET
### KRONOS K8 FEATURES

**Part No. K83GUP**

### ORDERING INFORMATION

<table>
<thead>
<tr>
<th>KRONOS OPTIONS</th>
<th>Part No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KRONOS K83GUP + EX-1 AUXILIARY I/O</td>
<td>K4001EX1</td>
<td>$3,495</td>
</tr>
<tr>
<td>KRONOS K83GUP + EX-2 AUXILIARY I/O</td>
<td>K4001EX2</td>
<td>COMING SOON</td>
</tr>
<tr>
<td>Upgrade any KRONOS K8 SKU to 8x3G</td>
<td>K4002EX2</td>
<td>$4,005</td>
</tr>
</tbody>
</table>

### KRONOS OPTIONS

**EX-1**

Part No. EX1

**EX-2**

Part No. EX2

### Upgrade any KRONOS K8 SKU to 8x3G

**8x3G UPGRADE**

Part No. K83GUP

for multi-channel 4K via a licence
**KRONOS K8 FEATURES**

### VIDEO FORMATS

**SUPPORTED YUV SDI VIDEO MODES**

- (2K) 2048 x 1080p/PsF @ 23.98, 24, 25, 29.97, 30 FPS
- (2K) 2048 x 1080PsF @ 48, 50, 59.94, 60 FPS
- (HD) 1920 x 1080p/PsF @ 23.98, 24, 25, 29.97, 30 FPS
- (HD) 1920 x 1080PsF @ 48, 50, 59.94, 60 FPS
- (HD) 1920 x 1080i @ 25, 29.97, 30 FPS
- (HD) 1280 x 720p @ 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 FPS
- (SD) 720 x 576i @ 25 FPS PAL
- (SD) 720 x 486i @ 29.97 FPS NTSC

**SUPPORTED RGB SDI VIDEO MODES**

- (2K) 2048 x 1080p/PsF @ 23.98, 24, 25, 29.97, 30 FPS
- (HD) 1920 x 1080p/PsF @ 23.98, 24, 25, 29.97, 30 FPS
- (HD) 1920 x 1080i @ 25, 29.97, 30 FPS
- (SD) 720 x 576i @ 25 FPS PAL
- (SD) 720 x 486i @ 29.97 FPS NTSC

**SUPPORTED HSDL SDI VIDEO MODES**

- (2K) 2048 x 1080p/PsF @ 23.98, 24, 25, 29.97, 30 FPS
- (HD) 1920 x 1080p/PsF @ 23.98, 24, 25, 29.97, 30 FPS
- (HD) 1920 x 1080i @ 25, 29.97, 30 FPS
- (UHD) 3840 x 2160p @ 23.98, 24, 25, 29.97, 30 FPS
- (UHD) 3840 x 2160PsF @ 48, 50, 59.94, 60 FPS

**SUPPORTED UHD RGB SDI VIDEO MODES**

- (4K) 4096 x 2160p @ 23.98, 24, 25, 29.97, 30 FPS
- (UHD) 3840 x 2160p @ 23.98, 24, 25, 29.97, 30 FPS
- (UHD) 3840 x 2160PsF @ 48, 50, 59.94, 60 FPS

**SUPPORTED PIXEL FORMATS**

- 2VUY, YUVS, BV8, V210, AYUV_4224, AYUV_4444, YV12, I420
- ARGB, BGRA, RGB24, Cineon, DPX, RGB48

*KRONOS K8 [R] includes 4 channels of 3G-SDI (1 Channel of UHD) as standard. KRONOS K8 [R] can be upgraded via the 8x3G Upgrade Licence to 8 channels of 3G-SDI (2 Channels of UHD) within the card’s free warranty period.*

**HARDWARE**

**MAJOR HARDWARE FEATURES**

- High-performance, 3G bypass relays
- Low-latency hardware keyers
- Fully programmable 4 x 4 x 33-bit colour matrix
- 12-bit video signal path throughout
- Automatic cross-locking and phasing across formats
- Audio sample-rate converters
- (MR) Master Routing Resource
- ISIM (Input Stream Integrity Management)
- 4K/UHD HDR modes
- Stereoscopic/3D modes
- 8-lane PCI-Express Gen3 (16-lane compatible)
- Full-duplex DMA data transfer bandwidth
- LTC I/O (Via reference or interlock connectors)
- STEM Port

**VIDEO I/O**

**SDI VIDEO**

- 3G (Level A/B) SMPTE 424M
- Dual Link 1.5G SMPTE 372M
- Quad Link 1.5G SMPTE 2036-1
- Quad Link 3G SMPTE 2036-1
- Maximum HD video channels
- Maximum UHD video channels
- 12/10/8-bit 4:4:4:4 SDI
- 12/10/8-bit 4:2:2:4 SDI
- Reference IN/OUT (Dedicated HD-BNC)
- Interlocking I/O supporting KRONOS and Epoch | Neutron cards

**ANCILLARY**

- HANC
- RP-188 timecode
- 16 channels of embedded audio per SDI
- Video payload ID
- Custom packets
- VANC
- Closed Captioning
- 3 Line VITC
- Custom packets

**AUDIO I/O**

**AUDIO SIGNALS**

- 16 channels of embedded audio IN per SDI
- 16 channels of embedded audio OUT per SDI
- Dolby digital pass-through SDI

**OPTIONAL AUX I/O VIA STEM PORT**

- LTC I/O (HD-BNC), RS-422 (RJ45), AES audio I/O (DB25)
- Analogue audio I/O (2 x 3.5mm TRS), RS-422 (RJ45), AES audio I/O (DB25)

**SPECIFICATIONS**

- **Width**: PCIE SINGLE SLOT
- **Length**: 200MM (HALF LENGTH PCIE)
- **Internal clearance (L)**: 184MM
- **Height**: FULL HEIGHT PCIE
- **Weight**: 300G
- **Power requirement**: PCI & AUX 6-PIN

**REFERENCES**

- YES
- YES
- YES
- YES
- YES

**BLUEFISH444.COM**
Bi-directional I/O’s provide unrivalled flexibility with eight industry-standard HD-BNC video connectors, each allowing 3G/HD/SD-SDI inputs or outputs.

Low-latency + full control over framestores supporting frame, field and sub-field interrupts enables access to the video at sub-frame latency.

4K/UHD 60p plus HDR/SDR Support for capture and playout of 4K/UHD or HD high frame-rate or High Dynamic Range content.

4K/HD/SD-SDI capture and playout of 4K/UHD or HD high frame-rate and High Dynamic Range content.

Low-latency HD/UHD hardware keyers allowing video layers to be combined in hardware with microseconds of delay.

High-quality 3G/HD/SD Bypass Relays, hardware and software watchdog timer for disaster recovery during live broadcasts.

Bi-directional I/O’s provide unrivalled flexibility with eight industry-standard HD-BNC video connectors, each allowing 3G/HD/SD-SDI inputs or outputs.

KRONOS K8 FEATURES

IngeSTore
- 4 channels 3G/HD/SD capture
- Free Uncompressed, DVCPro, DVHD codecs
- Optional codecs are available
- Optional Edit-While-Record workflows
- Optional REST API and HTTP client

Maximum Connectivity with reference and LTC I/O as standard, with options for RS-422, AES audio, or stereo analogue sound.

Maintaining a 12-bit processing pipeline means maximum quality, and is 4 times the colour precision of traditional 10-bit processing.

Full-duplex asynchronous DMA to independently transfer video, audio and ancillary data.

Popular 3rd-party API support for DirectShow, V4L2, MediaLooks, CUDA and more supporting accessible video, audio and ancillary I/O.

Bi-directional I/O’s provide unrivalled flexibility with eight industry-standard HD-BNC video connectors, each allowing 3G/HD/SD-SDI inputs or outputs.

Low-latency + full control over framestores supporting frame, field and sub-field interrupts enables access to the video at sub-frame latency.

4K/UHD 60p plus HDR/SDR Support for capture and playout of 4K/UHD or HD high frame-rate or High Dynamic Range content.

Low-latency HD/UHD hardware keyers allowing video layers to be combined in hardware with microseconds of delay.

High-quality 3G/HD/SD Bypass Relays, hardware and software watchdog timer for disaster recovery during live broadcasts.

Bi-directional I/O’s provide unrivalled flexibility with eight industry-standard HD-BNC video connectors, each allowing 3G/HD/SD-SDI inputs or outputs.

Low-latency + full control over framestores supporting frame, field and sub-field interrupts enables access to the video at sub-frame latency.

4K/UHD 60p plus HDR/SDR Support for capture and playout of 4K/UHD or HD high frame-rate or High Dynamic Range content.

Low-latency HD/UHD hardware keyers allowing video layers to be combined in hardware with microseconds of delay.

High-quality 3G/HD/SD Bypass Relays, hardware and software watchdog timer for disaster recovery during live broadcasts.

For a comprehensive and up-to-date list of supported software, contact sales@jbanda.com

JB&A Distribution | Telephone: +415 256 2800 | Fax: +415 256 2811 | sales@jbanda.com