The PXH830 Gen3 PCIe NTB Adapter is our high performance cabled interface to external processor subsystems. Based on Broadcom® Gen3 PCIe Express bridging architecture, the PXH830 host adapter includes advanced features for non-transparent bridging (NTB) and clock isolation. The PXH830 card will utilize the new MiniSAS-HD / iPass+™ HD connectors currently being standardized by the PCI-SIG as the new PCIe Gen3 cable option.

For high performance application developers, the PXH830 host adapter combines 128 Gb/s performance with an application to application latency starting at 0.54 microseconds. Inter-processor communication benefits from the high throughput and low latency. Using the latest SmartIO technology software from Dolphin, applications can now access remote PCIe devices as if they was attached to the local system.

The PXH830 performs both Remote Direct Memory Access (RDMA) and Programmed IO (PIO) transfers, effectively supporting both large and small data packets. RDMA transfers result in efficient larger packet transfers and processor off-load exceeding 11 Gigabytes per second. PIO transfers optimize small packet transfers at the lowest latency. The combination of RDMA and PIO creates a highly potent data transfer system.

Dolphin's software suite takes advantage of PCIe Express' RDMA and PIO data transfer scheme. Delivering a complete deployment environment for customized and standardized applications. The suite includes a Shared-Memory Cluster Interconnect (SISCI) API as well as a TCP/IP driver and SuperSockets software. The SISCI API is a robust and powerful shared memory programming environment. The optimized TCP/IP driver and SuperSockets™ software remove traditional networking bottlenecks, allowing standard IP and sockets applications to take advantage of the high performance PCIe Express interconnect without modification. The overall framework is designed for rapid development of inter-processor communication systems.

The PXH830 is carefully designed for maximum cable length and supports copper cables up to 9 meters at full PCIe Express Gen3 speed. Fiber optics extends this distance to 100 meters.

The PXH830 card comes with a full license to the Dolphin eXpressWare software.

**Features**

- **PCI Express Gen3 compliant** - 8.0 Gbps per lane
- **Link compliant with Gen1, Gen2, and Gen3 PCIe**
- **PCI Express iPass+ HD interconnect System/ SFF-8644/ MiniSAS-HD® Connectors**
- **Four x4 Gen3 PCIe Express cable ports that can be configured as:**
  - One - x16 PCIe Express port
  - Two - x8 PCIe Express ports
- **Two NTB ports max**
- **RDMA support through PIO and DMA**
- **Copper and fiber-optic cable connectors**
- **Full host clock isolation. Supports hosts running both CFC and SSC**
- **Non-transparent bridging to cabled PCIe Express systems**
- **Low Profile PCIe form factor**
- **EEPROM for custom system configuration**
- **Link status LEDs through face plate**
Cluster connections

When used for multi-processor connections, the PXH830 adapter is capable of connecting up to three nodes at Gen3 x8 without a switch as shown in figure 1 or two nodes at Gen3 x16. Each port is 32 Gb/s. Two ports create a 64 Gb/s x8 link. Four port create a 128 Gb/s x16 link. All ports have latencies as low as 0.54 microseconds. The PXH830 supports any system with a standard x16 PCIe slot.

Performance

Each connection supports 32 Gb/s with a maximum of 128 Gb/s. Figure 2 illustrates the latency at various packet sizes. The bottom axis are packet sizes the side axis is latency in microseconds. PXH830 latencies are as low as 0.54 microseconds.

Specifications

<table>
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<tr>
<th>Specification</th>
<th>32 Gb/s per port /128 Gb/s</th>
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<tbody>
<tr>
<td>Application Performance</td>
<td>0.54 microsecond latency (application to application) &lt; 130 nanoseconds cut through latency port to port</td>
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<tr>
<td>Active Components</td>
<td>Broadcom/PLX Gen 3 PCIe Switch with DMA</td>
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<tr>
<td>PCI Express</td>
<td>Base Specification 3</td>
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<td>Topologies</td>
<td>Point to point or 3 node Mesh Topology</td>
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<tr>
<td>Cable Connections</td>
<td>Four x4 iPass®+ HD / MinSAS-HD /SFF-8644 copper cables, 0.5 - 9 meters</td>
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<td>Power Consumption</td>
<td>10 Watts (typical, 14 Watts worst case ) + 800 milliwatts (typical) pr connected x4 AOC</td>
</tr>
<tr>
<td>Mechanical Dimensions</td>
<td>Low profile, Half Lenght - 68.90 mm (2.731 inches) x 167.65 mm (6.600 inches)</td>
</tr>
<tr>
<td>Dolphin Software</td>
<td>SuperSockets Berkley Sockets API Microsoft WinSock2 /LSP support IPoPCIe driver SISCI API</td>
</tr>
<tr>
<td>PCIe Bracket</td>
<td>Full height plate mounted Half height plate included</td>
</tr>
</tbody>
</table>

Regulatory

- CE Mark
- FCC Class A
- UL94V-0 compliant
- RoHS Compliant

Configuration

- DIP-switch
- NTB /Long cable /short cable /safe boot

Operating Systems

- Windows
- Linux
- VxWorks
- RTX

Operating Systems supported

- Windows, RTX, Linux, VxWorks

Operating Environment

- Operating Temperature: 0°C - 55°C (32°F - 131°F)
- Operating Temperature with AOC: 0°C - 45°C (32°F - 113°F)
- Air Flow: 150 LFM
- Operating Temperature: 0°C - 50°C (32°F - 122°F)
- Air Flow: ~0 LFM
- Relative Humidity: 5% - 95% (non-condensing)

Product Codes

- PXH830 PCIe Network Adapter