# MXH914 PCIe 4.0 x4 NTB  Adapter

**Dolphin**
INTERCONNECT SOLUTIONS
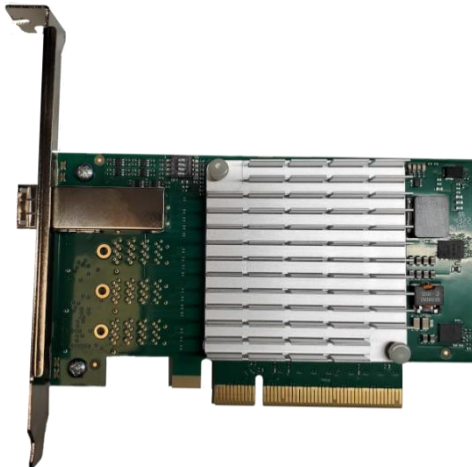
## Features

- ✓ Low Profile, Half Length PCIe form factor
- ✓ Microchip Switchtec® Gen 4.0 PFX PCIe PM40028
- ✓ Full host Clock isolation support
- ✓ Automatic support for host running CFC or SSC
- ✓ Link compliant with Gen 1.0, 2.0, 3.0 and 4.0 PCIe
- ✓ RDMA support through PIO and DMA
- ✓ Single SFF-8644 connector
      - PCIe 4.0 copper cable
      - PCIe 4.0 Fiber optic cable
- ✓ Copper and fibre-optic cable support
- ✓ Link status LEDs through face plate
- ✓ Flash for custom system configuration
- ✓ <500ns - Cut Through latency.
- ✓ eXpressWare™ software suite license

The MXH914 Gen 4.0 PCI Express NTB Host Adapter represents our introductory-level Gen 4.0 adapter solution. It is designed to accommodate a single x4 PCIe connection and employs the Microchip Switchtec® Gen4 PCIe switch to facilitate host-to-host communication. This adapter serves various purposes, such as clustering and hot-add applications, making it particularly well-suited for linking smaller systems that do not require the complete PCIe 4.0 x16 bandwidth.

Application developers using the MXH914 host adapter can harness its impressive 64 GT/s performance while benefiting from application-to-application latency under 500 nanoseconds. Additionally, it offers full compatibility with our eXpressWare software suite.

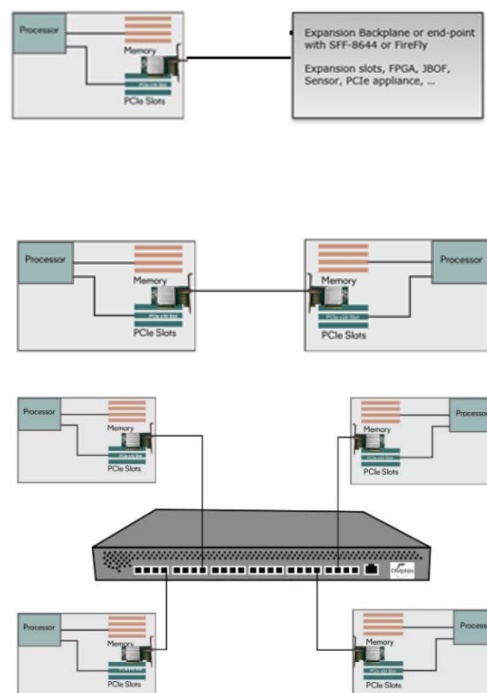www.dolphinics.com/products/MXH914.html

## Configurations

The MXH914 enables the establishment of various PCIe network configurations, including:

**Single-Node Transparent Hot Add**: Dolphin eXpressWare adds PCIe hot add support with Linux systems. Cabled PCIe expansion systems and IO devices can dynamically be added, hot-swapped or removed from the system without rebooting the host.

**Two-Node Network**: By utilizing one x4 cable, a robust two-node network can be established, providing full PCIe Gen4 x4 performance between the two connected systems.

**Multiple-Node Network**: A more extensive configuration can be realised with one or more Dolphin's MXS924, 24 port PCIe Gen 4.0 Switch.
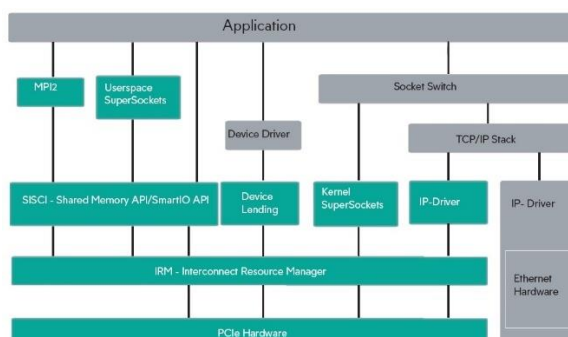
Topology Configurations

# eXpressWare PCIe Software

The MXH914 card is bundled with a full license for the Dolphin's eXpressWare clustering software, which includes.

- ✓ SISCI API - a robust and powerful shared memory programming environment for PCIe
- ✓ Standard TCP/IP drivers
- ✓ SuperSockets socket accelerator software
- ✓ SmartIO - access to remote PCIe devices over PCIe
- ✓ Board management software
- ✓ Transparent Hot Add

Dolphin's software suite uses DMA and PIO data transfer schemes to support large and small data transfers effectively. PIO transfers are optimized for small packet transfers, minimizing latency. DMA seamlessly moves data with minimal CPU utilization. The eXpressWare software is compatible with Linux, Windows, and VxWorks. The software framework is designed to develop and deploy inter-processor communication systems rapidly.



For more details, please visit www.dolphinics.com/software.

## Specifications

| PCI Express | ➢ Base Specification 4.0<br>➢ External Cabling Specification 4.0<br>➢ Card Electromechanical Specification 4.0 | Operating Environment | ➢ Operating Temperature: 0˚C - 55˚C (32˚F - 131˚F)<br>➢ Relative Humidity: 5% -95% non-condensing | | | |
|---|---|---|---|---|---|---|
| | | Altitude vs Temperature | | **250 LFM** | | **350 LFM** |
| | | | 45 (°C) | 3000m | 55 (°C) | 3000m |
| | | | 35 (°C) | 4500m | 45 (°C) | 4500m |
| | | | 25 (°C) | 6000m | 35 (°C) | 6000m |
| Application Performance | ➢ ~500ns latency (application to application)<br>➢ About 7 GBytes/s throughput (system dependent) | Storage Environment | ➢ Storage Temperature: -40°C to 70°C (-40˚F to 158˚F)<br>➢ Relative Humidity 95% (non-condensing) at 35°C | | | |
| Cut-Through Latency | <500ns | Mechanical Dimensions | ➢ Low profile, half-length, 68.90 mm (2.731 inches) x116.2 mm (4.5 inches) | | | |
| Active Components | Microchip Switchtec® Gen4 PFX Switch | Dolphin Software | ➢ Super Sockets Berkley Sockets API<br>➢ Microsoft WinSock2/LSP support<br>➢ IPO PCIe driver<br>➢ SISCI API<br>➢ Smart IO | | | |
| Max Link Speeds | 64GT/s | Usage Modes | Non-transparent bridging (NTB) | | | |
| Configuration | DIP-switch | Operating Systems | Windows, Linux, VxWorks | | | |
| Topologies | ➢ Dual-nodes direct cable<br>➢ Multi-Node Switch | Regulatory | ➢ CE Mark<br>➢ FCC Class B<br>➢ UL94V-0 compliant<br>➢ RoHS Compliant | | | |
| Cable Connections | ➢ SFF-8644 connector for copper/fiber cables<br>➢ Supports single x4 Connector.<br>➢ PCIe 4.0 copper, up to 4m<br>➢ PCIe 4.0 fiber, up to 100m | Mounting Brackets | ➢ Full height Bracket installed.<br>➢ The half-height bracket is included with a board shipping box. | | | |
| Maximum power rating | ➢ 12 Volt: max 1.49A (no port power) 1.62 A (max cable port power)<br>➢ +3.3 Volt: Not connected.<br>➢ +3.3 Volt AUX: 0.03A | Product Codes | ➢ MXH914 - Host NTB Adapter | | | |
| Typical power rating | ➢ 12 Volt: 1.0 A (no cable port power)<br>➢ +3.3 Volt: Not connected.<br>➢ +3.3 Volt Aux: 0,01 A | Regulatory Approvals | ➢ EN 55032:2012<br>➢ EN 55035:2017<br>➢ EN 61000-3-2:2014<br>➢ EN 61000-3-3:2013<br>➢ 47 CFR Part 15, Subpart B (Clause 15.107 and 15.109) in conjunction with ANSI C63.4:2014<br>➢ CISPR 35:2016 Edition 1.0 (CISPR/I/412/CDV) Korean Harmonized standard, KN 35 | | | |