The PCIe® protocol offers many benefits to today’s system designers not offered by other fabrics: low latency, power savings and guaranteed transmission. Traditionally, this protocol has been constrained to inside the box type applications with some limited extension and expansion applications that use short, bulky copper cables.

Samtec’s FireFly™ based PCIe®-Over-Fiber solution offers key features that solve the challenges of transmitting the PCIe® protocol over longer links. The miniature size of Samtec’s high-density optical engines allows them to be easily designed into the downstream system, ultimately making these systems smaller. Highly flexible, small diameter, industry standard optical patch cords provide connection to the control system. Other key features include:

- Gen 3 x4, scalable to x8 and x16 widths; Gen 4 in development
- Support for PCIe® low power states
- Duplex auxiliary signals allow both transparent and non-transparent bridging
- High-performance signal quality with BER better than 1E-15
- Enables links up to 100 m
- Enables nontraditional FPGA/ASIC based endpoints
- Industry leading miniature footprint allows close placement to the IC, which enables lower drive voltages/pre-emphasis resulting in reduced power consumption
- Host/Target adaptor card supporting transparent and NTB links in development

PCIe® card electromechanical height compliant heatsink

MTP® connectors for high-density panel applications and minimal keep out areas on the board

PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG. MTP® is a registered trademark of US Conec Ltd.

**System**
- PCUO – PCIe®-Over-Fiber FireFly™ Optical Cable System
- UEC5 – Micro Edge Card Socket
- UCC8 – Positive Latch Connector

For more information on Samtec’s PCIe®-Over-Fiber FireFly™ Solutions, please visit samtec.com/firefly or contact Samtec Optical Group at firefly@samtec.com
ADAPTOR CARD WITH FIREFLY™ (PCOA)

- PCIe® x16 card edge connector
- Reconfigurable switch allows single x4, dual x4, quad x4, single x8, dual x8 and x16 connections
- Reconfigurable Host/Target or NTB Host
- Supports Gen 3; Gen 4 in development

EXTENDED TEMP PCIe®-OVER-FIBER FIREFLY™ SYSTEM (PTUO)*

- Extended temperature ranges from -40 °C to 85 °C and -5 °C to +85 °C
- Operational shock and vibration to methods specified in MIL-STD 810G
- D38999 connector options
*in development

PCle®-OVER-FIREFLY™ COPPER SYSTEM (PCUE)

- 34 AWG Eye Speed® ultra low skew twinax cable
- Cost-effective drop-in replacement for shorter inside the box applications
- Optimized for use with connector UEC5-2

PCIe®, Over-Fiber assemblies are part of Samtec’s family of FireFly™ optical and copper solutions:

**Optical FireFly™ (ECUO)**

- 14 Gbps x12
- 14 Gbps x4
- 16 Gbps x12
- 25 Gbps x4
- 28 Gbps x4

**High Temp Optical FireFly™ (ETUO)**

- 10 Gbps x12
- 10 Gbps x4

**Copper FireFly™**

- 14 Gbps x4 bidirectional (ECUE)
- 14 Gbps x12 unidirectional (ECUE)
- 28 Gbps x4 bidirectional (ECUE-2)

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