OPTICAL SOLUTIONS

samtec.com/optics
FIREFLY™ MICRO FLYOVER SYSTEM™
samtec.com/firefly

- Designed for flexibility, optical (ECUO) for greater distances and copper (ECUE) for cost optimization
- Industry leading miniature footprint allows for higher density close to the data source
- x4 and x12 configurations
- PCIe®-Over-Fiber supports 3.0/4.0 data rates for low latency, power savings and guaranteed transmission
- -40 °C to +85 °C extended temperature system (ETUO) for military, aerospace and industrial applications
- Extreme Environment FireFly™ sealed and parylene-coated for exposed applications (ETMO)
- Supports data center, HPC and FPGA protocols, including Ethernet, InfiniBand™, Fibre Channel, Aurora and PCIe®
- Multiple end options available: MTP®, MXC®, MT, Glenair® Series 79, VITA 66.X and other common interfaces
- Development Kit available, visit samtec.com/kits

PCIe®-Over-Fiber Adaptor Card (PCOA), available in x4, x8 or x16 configurations; supports 3.0/4.0 platforms and transparent or non-transparent bridging

Extended Temp FireFly™ (ETUO) with Amphenol® Aerospace’s bulkhead interconnects (MT38999) for rugged optical solutions

Glenair® Series 79 MT connector is an End 2 option featuring a miniature form factor and shielding; ideal for mil/aero and industrial applications

<table>
<thead>
<tr>
<th>ECUO</th>
<th>PCUO/PTUO</th>
<th>ETUO/ETMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>FireFly™ Optical</td>
<td>PCIe®-Over-Fiber &amp; Extended Temp PCIe®-Over-Fiber</td>
<td>Extended Temp FireFly™ &amp; Extreme Environment FireFly™</td>
</tr>
<tr>
<td>x4</td>
<td>PCIe® 3.0 x4</td>
<td>10 x4, x12</td>
</tr>
<tr>
<td>x12</td>
<td>PCIe® 3.0 x8</td>
<td>(ETMO x4 only)</td>
</tr>
<tr>
<td>x12</td>
<td>PCIe® 3.0 x16</td>
<td>25 x4</td>
</tr>
<tr>
<td>x4</td>
<td>PCIe® 4.0 x4</td>
<td></td>
</tr>
<tr>
<td>16 Gbps</td>
<td>PCIe® 4.0 x8</td>
<td></td>
</tr>
<tr>
<td>16 Gbps</td>
<td>PCIe® 4.0 x16</td>
<td></td>
</tr>
</tbody>
</table>

MTP® and MXC® are registered trademarks of US Conec Ltd. Amphenol® is a registered trademark of Amphenol Corp.

samtec.com/firefly
HALO™ NEXT GEN OPTICAL

- Capable of up to 112 Gbps PAM4 per lane
- Up to 16 channels (8 channel bidirectional)
- Low 6 mm profile with a 2-piece contact system
- Designed to withstand high shock and vibration
- Features a low center of gravity for a stable connection to the board
- Optically pluggable for easy replacement and increased uptime

FIREHAWK™ RUGGEDIZED OPTICAL TRANSCEIVERS

- Chip Scale Package (CSP) with the industry’s smallest footprint and lowest profile, weighing less than 0.4 grams
- FireHawk™ for Mil/Aero with an integrated microcontroller to automate key functions (CSPO)
- FireHawk™ for Space designed to withstand the impacts of radiation without the need for a microcontroller (CSSO)
- Extreme performance with up to 40 Gbps aggregate transfer rate
- 10G x 4 data rate (10 Mbps to 10 Gbps per channel)
- Rugged BGA board attach withstands high shock and vibration
- -40 ºC to +85 ºC extreme temperature range (+95 ºC available)
- RVCON® optical cables are removable and replaceable for repair or reconfiguration
- Development Kit available, visit [samtec.com/kits](http://samtec.com/kits)
- Roadmap: 25G x 4 system (up to 25 Gbps per channel) in the same 10G connector footprint
From concept and prototype to development and production, Samtec-designed and Partner-designed kits and boards featuring FireFly™ and FireHawk™ simplify design and reduce time to market. For more information, please visit samtec.com/kits or contact KitsAndBoards@samtec.com.

**28 Gbps FireFly™ Evaluation Kit**

Samtec's 28 Gbps FireFly™ Evaluation Kit offers an easy-to-use platform for testing and real-time evaluation of the FireFly™ Micro Flyover System™. The kit supports copper or optical FireFly™ in x4 or x12 configurations. (Samtec P/N: REF-209623-01)

**14 Gbps FireFly™ FMC Development Kit**

Samtec's 14 Gbps FireFly™ FMC Development Kit is VITA 57.1 electrically compliant and provides up to 140 Gbps full-duplex bandwidth over 10 channels from an FPGA to an industry-standard multi-mode fiber optic cable. (Samtec P/N: REF-193429-01)

**25/28 Gbps FireFly™ FMC+ Development Kit**

Samtec's 25/28 Gbps FireFly™ FMC+ Module is VITA 57.4 electrically compliant and provides up to 400/448 Gbps full-duplex bandwidth over 16 channels from an FPGA to an industry-standard multi-mode fiber optic cable. (Samtec P/N: REF-200772-XXX-XX-01)

**10 Gbps FireHawk™ Evaluation Kits**

Samtec's FireHawk™ Evaluation Kits offer real-time evaluation of FireHawk™ rugged optical transceivers in a lab or benchtop setting. Rated to 10 Gbps per lane in a x4 configuration, the transceivers combine extreme density with extreme performance to meet the harshest environments.

<table>
<thead>
<tr>
<th>KIT NAME</th>
<th>SAMTEC KIT PN</th>
<th>ULTRA COMMUNICATIONS KIT PN</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FireHawk™ CSSO 10 Gbps Evaluation Kit</td>
<td>REF-230448-01</td>
<td>X805-0103-EVK-003</td>
<td>Space</td>
</tr>
<tr>
<td>FireHawk™ CSPO 10 Gbps Evaluation Kit</td>
<td>REF-230449-01</td>
<td>X805C-0102-EVK-003</td>
<td>Mil/Aero</td>
</tr>
</tbody>
</table>