



## **Application Guide**

# OVERVIEW

Protokraft designs and manufactures high-speed optoelectronic components and subsystems for use in harsh environment networking equipment applications. The company provides optoelectronic components and subsystems for short and intermediate reach (1 meter to 20 kilometer) harsh environment optical networks, including optical network switches, optical enterprise and storage area networks (SAN's) and tactical optical access networks. These active optical subsystems integrate the functions of optical transceivers into the natural structure of a passive optical connector.

Network equipment designers receive the benefits of reduced printed circuit board space allocated to discrete electro-optic devices, reduced fiber cabling requirements and most importantly - enhanced system link budgets - since four relatively high loss optical interface points can be removed from each system link.

Protokraft's patented core technology enables robust optical transceivers to be packaged directly into cylindrical or rectangular connector shells. These optical transceivers are optimized for Fast Ethernet, Fibre Channel, Gigabit Ethernet and Serial FPDP networking applications.



Protokraft optoelectronic components offer numerous cost, performance and reliability advantages to harsh environment network equipment system designers:

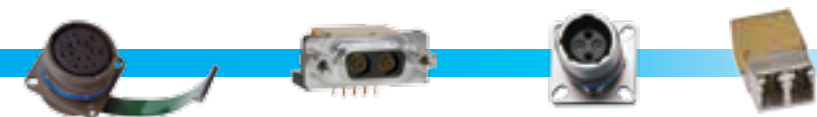
- Eliminate intra-enclosure fiber optic cable assemblies and disconnects
- High speed signals remain in the electrical domain inside the system chassis
- Reduce weight, space, energy consumption and improve overall system reliability
- Reclaim up to 3.0dB (up to 42%) of optical link budget from interconnection losses

Protokraft is privately held and located in the scenic Tri-Cities region of Northeastern Tennessee.



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## COMMON FEATURES

- Operating temperature range from -40°C to +85°C
- Integrate electro-optical conversion into a robust connector body
- High speed signals remain in the electrical domain inside the system chassis
- Recover up to 3.0dB of optical link budget without increasing power consumption

## ADVANTAGES

- Improve system performance and reliability by increasing optical link budgets
- Eliminate problematic intra-enclosure fiber optic cables and disconnects
- Enable significant space and weight savings

# OPTICAL TRANSCEIVERS

## Fiber Optic Links

- Fast / Gigabit Ethernet
- 1x/2x Fibre Channel
- ARINC 664
- ARINC 818
- sFPDP
- sRIO
- Custom



## Electrical Interface

- CML
- LVDS
- RS-422
- RS-485
- LVTTTL
- LVPECL
- GPS Timing Pulses



# OPTICAL TRANSMITTERS & RECEIVERS

## Fiber Optic Interfaces

- 1x/2x/4x Fibre Channel
- Gigabit Ethernet
- Fast Ethernet
- Serial FPDP



## Electrical Interface

- CML
- LVPECL
- LVDS



## Optical Interfaces

- MIL-DTL-38999
- ARINC 801
- Duplex LC
- EN 4531
- \*ELIO®
- DB-9

## Electrical Interfaces

- SMT Solder Pads
- Plated-Through-Hole (PTH)
- SMT Connectors
- MIL-DTL-83513
- MIL-DTL-32139
- MIL-DTL-24308

\*ELIO is a trademark of SOURIAU CONNECTION TECHNOLOGY

## Optical Interfaces

- MIL-DTL-38999
- ARINC 801
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## Electrical Interfaces

- Plated-Through-Hole (PTH)
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# OPTICAL MEDIA CONVERTERS

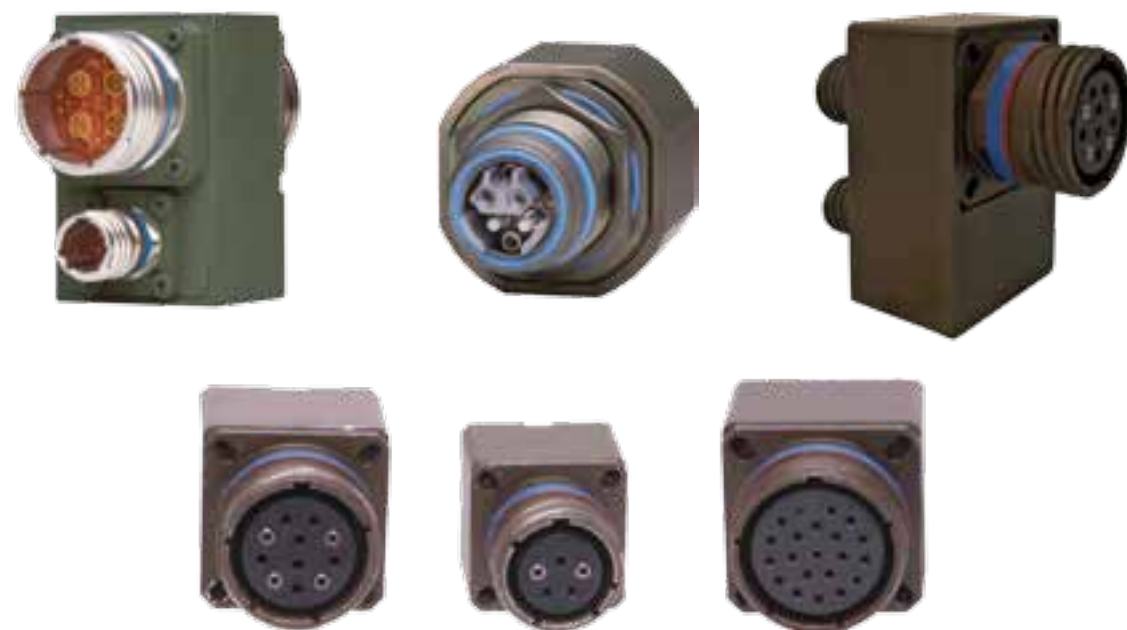
## Fiber Optic Links

- 100Base-FX
- 1000Base-SX
- 1000Base-LX



## Electrical Interface

- 10/100Base-TX
- 1000Base-TX



### Optical Interfaces

- MIL-DTL-38999
- MIL-DTL-28876
- \*TFOCA II®

### Electrical Interfaces

- SMT Connectors
- MIL-DTL-83513
- MIL-DTL-32139
- MIL-DTL-24308
- MIL-DTL-38999

\* TFOCA II is a trademark of Amphenol Fiber Systems International

# OPTICAL MEDIA INTERFACE ADAPTERS



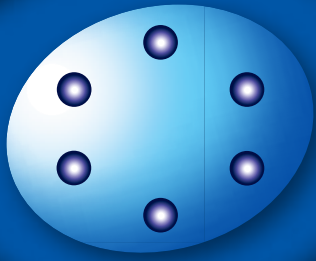
### Optical Interfaces

- MIL-DTL-38999
- MIL-DTL-28876
- Mighty Mouse
- \*TFOCA II®

### Electrical Interfaces

- SMT Connectors
- MIL-DTL-83513
- MIL-DTL-32139
- MIL-DTL-24308
- MIL-DTL-38999
- Mighty Mouse

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