INDUSTRIAL & HARSH ENVIRONMENT

ROBUST & RELIABLE FIBER OPTIC INTERCONNECT SOLUTIONS
ROBUST AND RELIABLE INTERCONNECT SOLUTIONS FOR HARSH ENVIRONMENTS

Diamond offers a wide range of strong, reliable, and customizable indoor / outdoor field fiber optic optical connectors with superior optical performances for both standard and custom products. Our connectors can also integrate High Power PS and Polarization Maintaining PM technology. These products are built to withstand adverse temperatures, such as weather, shock, vibration, tensile stress, external pressure, corrosive surroundings and more. These conditions are much harsher than those typically endured by standard commercial connectors and cable assemblies.

Striving for innovation

Our strengths at a glance
- High Power Technology PS
- Polarization Maintaining PM
- Ingress Protection IP65 - IP68
- Field repairable solutions
- Single-mode / Multimode - APC / PC
- Unparalleled high Return Loss RL
- Custom solutions

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OUR TECHNOLOGIES

Active Core Alignment ACA
Diamond exclusively uses ceramic ferrules with titanium inserts, a composite ferrule, for its connectors. Diamond’s patented Active Core Alignment process, perfectly centers the fiber core on the axis of ferrule, ensuring Insertion Loss & values are reduced to a minimum.

Available connectors: all butt-joint based connectors.

Power Solution PS
Diamond Power Solution connections utilize various beam expansion methods (Expanded Beam), which can vary greatly depending on the scope of the application. The different PS types available are as follows: PS Collimated (contact), PM-PS (contact), PSI (free standing), PSi (collimator), PSI Free Space (diverging), PSb Ball Lens (expanded beam) and PSI Lensed (focused).

Available connectors: E-2000®, F-3000®, Mini AVIM®, DMI, FC, X-Beam and more upon request.

Polarization Maintaining PM
Diamond Polarization Maintaining connectors are renowned for their exceptional performance. The Active Core Alignment process minimizes core offset to ensure low Insertion Loss. Active Polarization Orientation guarantees optimal alignment of polarization axes for high Extinction Ratio on polarization maintaining and polarizing fibers.

Available connectors: E-2000®, F-3000®, FC, SC, DMI, AVIM® family and others upon request.

HYBRID DM4 MULTIPURPOSE TERMINI

The DM4 insert is the core of the existing HE-2000®, MIL-38999 DM4 and MIL-83526 DM4 Diamond connectors. Furthermore, the design of the DM4 insert is constructed to fit into a variety of different connector housings.

Available connectors:
- Custom Housing
- ML-38999 DM4 Family
- Compact DM4
- ML-83526 DM4
- HE-2000®

Characteristics of DM4 insert
- Based on standard 2.5-mm Allenros with integrated springs to prevent termini separation
- Up to 4 channels
- Genderless mating and self-aligning design
- Easy termini insertion and removal for field termination and repair

Features of termini
- Compatible with several fiber types such as Multimode MM, Single-mode SM, Polarization Maintaining PM, Power Solution PS and small-core fibers
- Steady and repeatable low Insertion Loss
- High and steady Extinction Ratio when terminated with polarization maintaining fibers
- Electrical pins 20 AWG

Features
DM4 BASED INTERCONNECT SOLUTIONS

**HE-2000®**
- Push-pull connector with automatic protection cap
- Up to 10,000 mating cycles
- Harsh-environment plastic shell, made from nylon with 25% fiber-glass reinforcement

**Features**
- Automatic protection shutter on IP4X connector
- Ingress Protection IP67
- Mechanical and color coding
- On-site installable / field-replaceable

**Ideally suitable for**
- Industry 4.0
- Oil & Gas
- Lidars, Sensors
- ABB Sensors
- ITIK
- Transportation

**MIL-38999 DM4 Family**
- Size 13 and 25 shells (according to MIL std 38999 series III)
- Available on cable reel up to 500 meters length
- 4 to 12 channels

**Features**
- Ingress Protection IP67
- On-site installable / field-replaceable of size 13
- Vibration / shock resistant

**Ideally suitable for**
- Military
- Oil & Gas
- ABB Sensors
- Transportation

**HE-2000® connector**

**MIL-38999 DM4 size 13 connector**

**MIL-83526 DM4 connector**
MIL-83526 DM4
- Keyed, self-aligning connector housing aides in "blind mating" applications
- Aluminium case suitable for wet applications

Features
- Ingress Protection IP68
- Rugged construction for highly reliable optical connections

Ideally suitable for
- Oil & Gas
- Transportation

Compact DM4
- Light and small factor solution
- Aluminium case
- Easily pluggable by screwing

Features
- Lightweight
- On-site installable / field repairable

Ideally suitable for
- High density packaging solutions
- Dry applications
- Industry 4.0

MT FAN-OUT INTERCONNECTS
DiaFlex (Fan-Out Connector)
- Cable retention 700 N
- Easy to use
- Robust metal fiber divider
- Small external diameter allows for flexible usage
- Custom connector types and cable lengths

Features
- Multi-fiber connector for 8/12/24 fibers
- Replaceable fiber whips
- Protective cap with feed-in eye
- Ingress Protection IP68

Ideally suitable for
- Building sites
EXPANDED BEAM XB

Unlike conventional ferrules, the lensed-ferrule operates on the Expanded Beam principle, ensuring reliable and low maintenance optical connections with insensitivity to dirt and debris. The use of high precision components and unique assembly techniques results in a highly repeatable, low IL ferrule, that opens new perspectives in the context of optical connections, where mating-cycles, dust insensitivity, reliability and low losses are required.

Advantages of Expanded Beam
- High rate of mating cycles
- Less sensitive to dirt and debris
- Low risk of damage
- High data rate capacity
- Easy cleaning process

Expanded Beam XB lensed-ferrule
- Low Insertion Loss
- High power compatibility
- On-site installable / field repairable
- Various connector bodies available

Features
- Non-contact connection
- High precision ferrule
- High optical performance

Initially suitable for
- Building sites
- Industry 4.0
- Military
- FTTA
- FBG Sensors

Optical specifications
- Insertion Loss: Typical 0.6dB / Maximum 1dB per connection
- Return Loss: Minimum 35dB
- Optical power: Up to 3 Watts@1550nm

Easy cleaning by using clean canned air
revos E-2000® XB
- Integrated caps and shutters
- E-2000® connector with Active Core Alignment
- Easy lever locking
- Available on cable reel up to 500 meters length

Features
- Ingress Protection: IP68
- High precision ferrule
- Expanded Beam XB termini available

Ideally suitable for
- Industry 4.0

X-BEAM Junior
- Integrated Expanded Beam lens system to protect the fiber end-face
- Hermetic coupling (EN 1779 / DIN EN 13185)
- Low loss connection and high repeatability
- Genderless design to simplify mating
- Available on cable reel up to 500 meters length
- Loopback bulkheads available

Features
- Ingress Protection: IP65
- Rugged construction for high reliability
- IEC 60529 compliant
- On-site installable / field repairable

Ideally suitable for
- Military

E-2000® is a registered trademark of DIAMOND SA in the European Union, USA and other countries.
MODULAR SOLUTION

STEP-BY-STEP TO YOUR PERSONALIZED HARSH ENVIRONMENT INTERCONNECT

Add (if in brackets)*

Add options*

Choose coating

*Standard add-ons, custom configurations available upon request.

SPECIAL APPLICATIONS

Vacuum Feedthrough
Diamond proposes Vacuum Feedthrough V-FT solutions for a large range of optical fiber and adapters, using an epoxy sealing technology. V-FT integrates a standard 2.5mm ferrule permanently sealed in a standard CF flange with a variety of adapters. The obtained feedthrough benefits from a very low leak rate. It can be ordered for many type of fibers, including Single mode SM, Multi mode MM, Polarization Maintaining PM, Power Solution PS, large core Multimode MM and others. Multi-channel systems are also available using standard CF building block elements.

High Temperature Connectors
Diamond High Temperature assemblies rely upon a combination of specialized assembly techniques and materials, together with special fibers with appropriate coatings suitable for deployment within applications up to 150°C. Further to the traditional advantages, these assemblies offer immunity to electromagnetic interference, better environmental stability and enhanced remote sensing compared to traditional electronic sensors. Assemblies are available in PC and APC version with Multimode or Single-mode fibers.

Features

- Reliable operation up to 150°C
- Low insertion loss
- Ultra high polish for high Return Loss RL

Vacuum Feedthrough V-FT solutions

High Temperature connectors

SPECIAL APPLICATIONS

Features

- High Return Loss RL
- Low loss due to proper Core Alignment ACL
- Contact, solder, solder
- Low leakage due to special sealing technology

- Compact, robust, stable
- Low insertion loss
- Reliable operation up to 150°F
- Ultra high polish for high Return Loss RL

Low loss due to Active Core Alignment ACA

High Return Loss RL

Compact, robust, stable

Low leakage due to special sealing technology

Low Insertion Loss IL

Reliable operation up to 150°C (320°F)

Ultra high polish for high Return Loss RL

Features

- Reliable operational up to 150°C (320°F)
- Low insertion loss &
- Ultra high polish for high Return Loss RL
AVIM® FAMILY – ULTRA-HARSH VIBRATION PROOF INTERCONNECT SOLUTION

Common qualities
- Low Insertion Loss IL, High Return Loss RL
- Vibration / shock resistant (35gms / 100-500g)

Features
- Low Insertion Loss IL
- High Return Loss RL
- Vibration / shock resistant

AVIM® – dynamic and proven
- Compatible with kevlar reinforced cables
- Unique AVIM 2-piece cleanable adapter

Features
- IEC 61754-3
- ESCC 3420/002

Mini AVIM® – compact, small and embeddable
- Titanium construction
- Compatible with secondary coated fibers
- Space qualified according to ESCC 3420/001
- Commercial, space or custom grade available upon request

Features
- Standards
- ESA SPACE QUALIFIED

Micro AVIM® – ultra-compact, ideal for circuit boards
- Minimum space requirement
- Footprint of 4.5 x 21 mm

Features
- Description in ESCC 3420/001
- Easy installation
- Lightweight

Midi AVIM® – light and easy to handle
- Full titanium construction
- Compatible with kevlar reinforced cables
- 100% compatible with Mini AVIM® mating adapters

Features
- Description in ESCC 3420/001

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PORTABLE CONNECTOR AND CABLE REPAIR SYSTEM

Diamond offers a complete range of solutions for fast, easy and high performing optical connector and cable repair in the field. The solution is suitable for a wide variety of applications, including different connector types necessary to meet your requirements. The ZEUS Fusion Field Termination Kit offers:

- Splice-on connectors for both fiber and cable
- Cable repair tools
- Fiber-to-fiber splicing equipment

Also available from Diamond is an Alberino® Patch Tool Set with all the necessary tools that allow you to choose and mount different connector bodies at the time of installation. In addition, our patented Alberino® technology provides you with Diamond high quality standards, including low loss transmission values that you can find in all our products. A tailored training is available on request.

Alberino® is a registered trademark of DIAMOND SA in the European Union, USA and other countries.