

Polarization Maintaining Components

OZ Optics Limited

September 2024



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- **OZ Optics Canada**
- **OZ Optics Türkiye**
- **OZ Optics China**

Company Background



- **Founded in 1985**
- **Corporate Headquarter Located in Ottawa, Canada**
- **Manufacturing Facility in Ottawa / Canada, Izmir / Türkiye and Jiaxing / China**
- **Ten Product Groups:**
 - Laser-to-Fiber Delivery Systems
 - High Power Fiber Optic Components
 - Polarization Maintaining Products
 - Attenuators
 - Opto-Electronic Packaging
 - Fiber Optic Test Equipment
 - Fiber Optic Sensor Systems
 - Fiber Optics Components for Gyroscope
 - OCT
 - BioPhotonics
 - Quantum
- **Sales Offices in Canada, USA, Europe, Türkiye and China**

➤ Ottawa, Canada



➤ Izmir, Türkiye



➤ Jiaxing, China



Corporate Statements and Quality Policy



Our Vision

- ✓ Capture and expand market share
- ✓ Be the preferred supplier of choice
- ✓ Maximize shareholder value

Our Mission

To become the leading provider of innovative optical products to telecom and non-telecom sectors

Our Core Values

- ✓ Leadership
- ✓ Teamwork
- ✓ Boldness
- ✓ Commitments
- ✓ Innovation
- ✓ Rewards

Our Quality Policy

Provide our Customers with a competitive advantage, leveraging performance, price and delivery, through a continuous process of Quality advancement in all areas of our Company.

Communicate effectively to our Customers, Suppliers and Shareholders our commitment to Quality, continuous improvement and to abide by any applicable requirements.

Promote opportunities of professional development for all members of our company through education, training and personal challenge.



Company Profile

Over 467 employees worldwide

OZ Canada



243+
Employees

OZ China



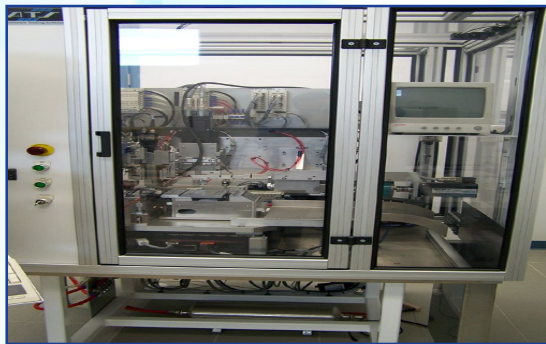
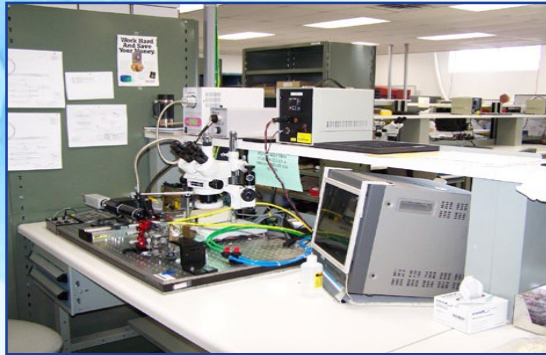
87+
Employees

OZ Türkiye



137+
Employees

Company Profile



Advanced Proprietary Processing Technology



**Canada
Certificate: FM 63463**



**China
Certificate: FM 577647**



**Turkey
Certificate: FM 601414**

ISO9001:2015 Certified



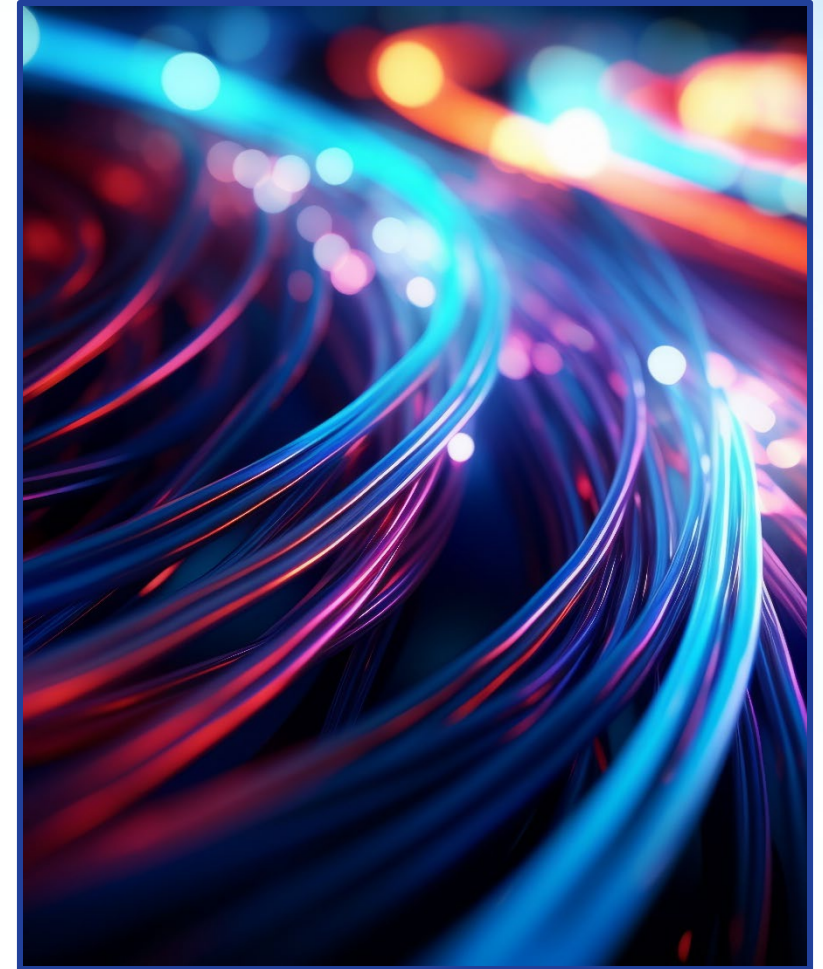
Broad Patent Portfolio



Company Profile

OZ Optics is Lead by an Experienced Team:

- **Ömür Sezerman, Chairman, President & CEO**
 - Founder and CEO since inception (40 years)
- **Zahide Sezerman, VP of Human Resources**
 - With OZ Optics since inception (40 years)
- **Garland Best, VP of Components Division**
 - 33 years at OZ Optics
- **Gordon Youle, VP of Test Equipment Division**
 - 26 years at OZ Optics
- **Saeed Pilevar, Senior VP of Business Development**
 - 3 months at OZ Optics
- **Onur Koca, General Manager of OZ Türkiye**
 - 3 year at OZ Optics
- **Bing Li, General Manager of OZ Optics China**
 - 21 years at OZ Optics



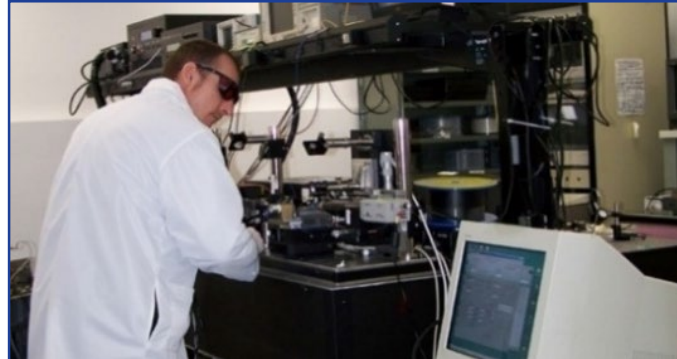
Company Profile

Experienced and Well-Trained Staff in Following Fields:
Optical, Mechanical, Electronics & Software

➤ CNC Machine Shop



➤ Femto-Second Laser Lab



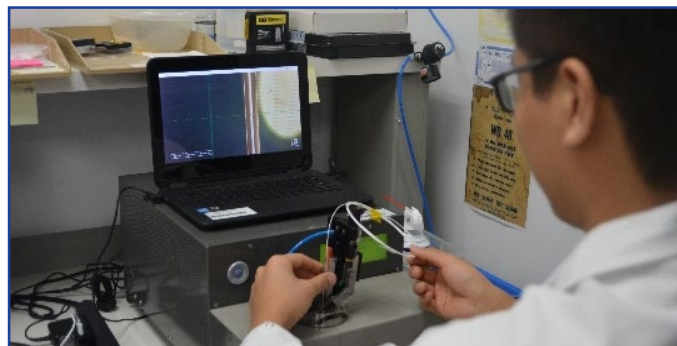
➤ AR Coating



➤ Clean Room



➤ Laser Conditioning / Cleaving





Core Competencies



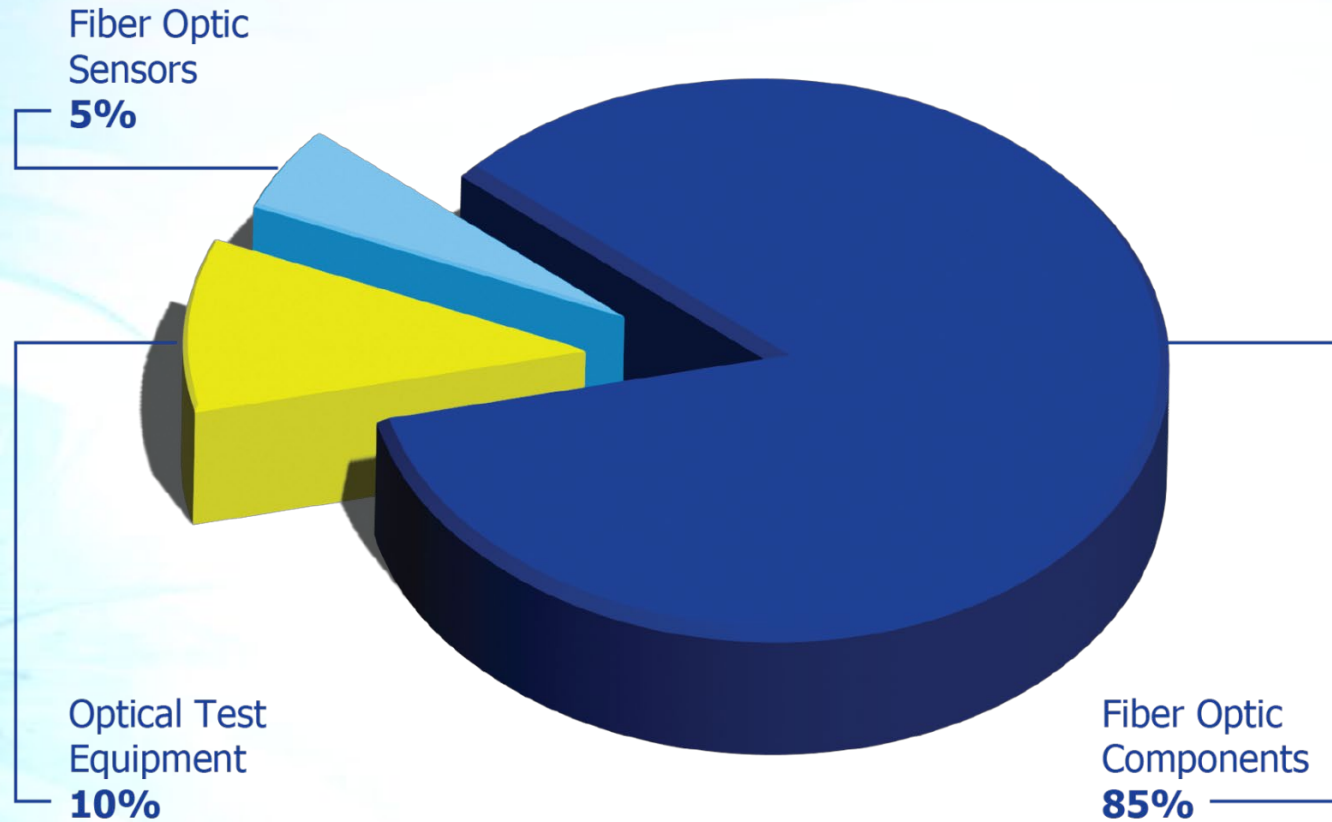
- **Pioneer in Polarization Maintaining (PM) Components & Custom Test Equipment, Including Polarization Test Equipment and FTTH Equipment**
- **Leader in Wavelength Flattened, High Power & Low PDL Components**
- **Leader in High Power Fiber Optic Delivery Systems**
- **Widest Range in Attenuator Product Offering**
- **Fiber Optic Distributed Strain and Temperature Sensors**
- **Complete product line for OCT, Gyroscope & BioPhotonics applications & 2 Micron**
- **Now available: Spectrometers and Quantum Light Sources**



Leading Technology



➤ **Three Product Groups** ➤ **Over 1,000 Products** ➤ **Leading Edge R&D**





Leading Technology

Featured Products

World's Largest Online Fiber Optic Catalog

Most Products are in Stock



Quantum Light Sources



Fiber Optic Products for Biophotonics Applications



Fiber Optic Products for Gyroscopes



Polarization Maintaining Components



Delivery Systems



High Power Components



Test Equipment



High and Low Power Patchcords

Polarization Maintaining Fiber Optic Components

Patent Numbers: USA 7058275, 7095931, 7295731, China 1672073



Polarization Maintaining Connectors and Patchcords



Polarization Maintaining and Polarizing Splitters / Combiners / Fused Couplers / Switches



All Fiber Manual and Electrically Driven Polarization Controllers / Seramblers



Polarization Dependent Loss Emulators



Fiber Pigtailed Polarizers



PM Fiber Directional Taps and PLC Splitters



Isolators



PM Fiber Pigtailed Circulators

Laser and Laser Diode to Fiber Delivery Systems



Laser to Fiber Couplers



Pigtail, Receptacle Style Collimators and Focusers



Bulkhead Receptacles



Bare Fiber Adaptors with Magnetic Clips



Wavelength Division Multiplexers(WDMs) and RBB Combiners



OCT Modules and 2 micron Components



Evanesence Based Variable Split Ratio Fiber Splitter/Coupler



OEM Laser Diode to Fiber Couplers

High Power Fiber Optic Components

Patent Numbers: Canada 2494133, USA 7058275, 7095931, 7295731, China 1672073



High Power, High Temperature Connectors and Patchcords



OZPEN™ CO-2 Fiber Optics Cleaning Unit for High Power Components



High Power Laser to Fiber Couplers, Collimators and Focusers



High Power Mode Field Adapters



High Power Optical Taps and Power Monitors



High Power Isolators



High Power Splitters and Wavelength Division Multiplexers (WDMs)



Shutters, Receptacles and Sleeve Thru Adapters with Sensors



Leading Technology

Featured Products

Fiber Optic Attenuators

Polarization Maintaining, Single Mode and Multi-Mode Fibers



Benchtop Digital

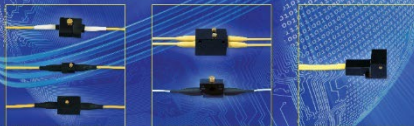
Variable Attenuators



Digital Variable Attenuators

Electrically Controlled Variable Attenuators

MEMS Variable Attenuators



PM, SM and MM Fiber Pigtailed Inline Variable Attenuators

Single and Multi Channel Miniature Variable Attenuators

Reflective Style Variable Attenuators



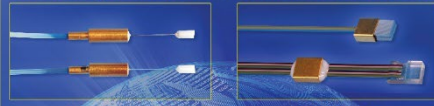
Air Gap Variable Attenuators

Plug Type Fixed Attenuators

Attenuating Fiber Patchcords

Fiber Optic Components for Optoelectronic Packaging

Hermetically Sealable Patchcords with Glass or Metal Solder



Single Channel

Multi Channel



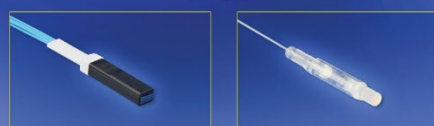
Metalized Fibers

PM, SM and MM Fiber Pigtailed V-Groove Arrays



Polarization Measurement System for V-Grooves

Tapered, Lensed Fiber, Polished and Laser Shaped



Precision Collimator and Focuser Array

Fused Fiber Collimator

Fiber Optic Test Equipment



Quantum Entangled Photons Sources

High-Resolution Optical Spectrometers



Optical Fiber Length Meters

Back Reflection Meters

High-Speed Polarization Controller-Scrambler



Handheld and Benchtop Extinction Ratio Measurement Systems

Multichannel, Benchtop and Handheld Digital Variable Attenuators

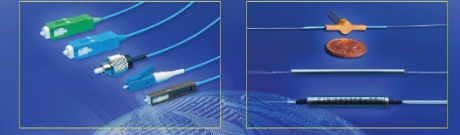


High Power Visual Fault Locators

Powermeters with Smart Detector Heads

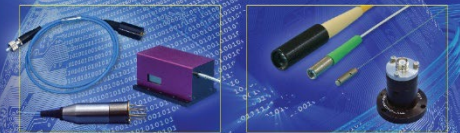
Laser Diode Stable Sources

Fiber Optic Components for 2 Micron Wavelengths



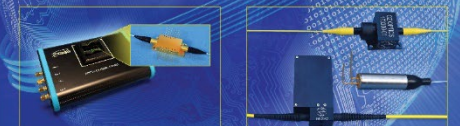
Fiber Optic Patchcords

Fused Couplers, Taps, Beam Splitters and Combiners



Fiber Pigtailed Laser Diode Sources

Pigtailed, Rectangular Style Collimators and Focusers



High Speed Electro-Optic Polarization Controllers and Scramblers

Manual and Electrically Controlled Variable Attenuators



Polarizers

Isolators



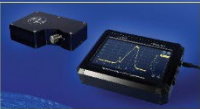
Leading Technology

Featured Products

New Fiber Optic Products



Polarization Entangled Photon Sources



High-Resolution Optical Spectrometers



High Speed Electro-Optic Polarization Controllers and Scramblers



Polarization Entanglement Tomography Analyzers



Fiber Optic Coils For Gyroscopes



Universal Optical DNA Band Detection Systems for Pathogens



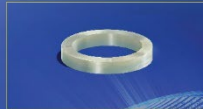
Motor Driven Polarization Dependent Loss Emulators



Detector Heads and Optical Power Monitors



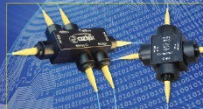
Fiber Optic Products for Gyroscopes



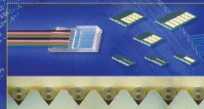
Fiber Optic Coils for Gyroscopes



ASE Sources



Wavelength Division Multiplexers



PM, SM and MM Fiber Pigtailed V-Groove Arrays



Fused Couplers, Taps, Beam Splitters and Combiners



Fiber Optic Polarizers



Fiber Optic Patchcords



SM and PM Fiber Pigtailed Circulators



Isolators

Quantum Entangled Photons Sources



Hyper-Entangled Photon Source Broadband Telecom



Polarization-Entangled Photon Source Broadband Telecom



Bright Polarization-Entangled Photon Source Broadband Telecom



Bright Polarization-Entangled Photon Source Narrowband Telecom



Correlated Photon Pair Sources



Polarization-Entangled Photon Source Narrowband at 610 nm



Polarization Entanglement Tomography Analyzer

Fiber Optic Products for OCT Applications



OCT Modules



Manual and Electrically Controlled Broadband Variable Attenuators



Manual and Electrically Controlled Fiber Optic Delay Lines



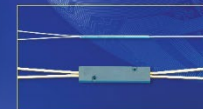
Manual and Electrically Controlled Polarization Controllers / Scramblers



Fiber Pigtailed Broadband SLED Sources



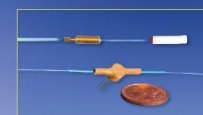
Fiber Collimators / Focusers



Broadband Fused Couplers



SM and PM Fiber Pigtailed Circulators





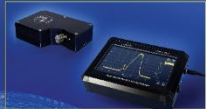
Leading Technology

Featured Products

Fiber Optic Products for Biophotonics Applications



Universal Optical DNA Rapid Detection Systems for Pathogens



High-Resolution Optical Spectrometers



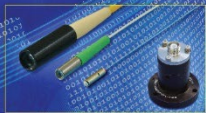
Fiber to Photodiode Couplers with Removable Filters



High and Low Power Patchcords



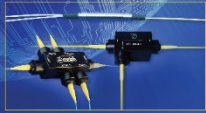
High Power Laser to Fiber Couplers



Pigtails, Rectenable Style Collimators and Focusers



Fiber Optic U-Bracket Assemblies



Wavelength Division Multiplexers and Beam Splitters



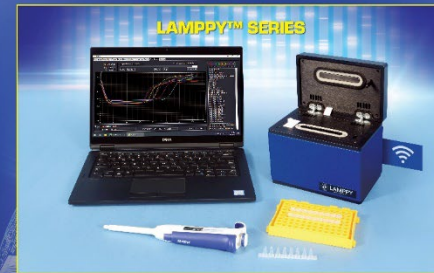
Turnkey, Ultra Stable Laser Modules



Pocket Optical Power Meter and Detectors

Universal Optical DNA Rapid Detection System

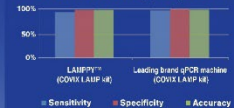
For Pathogens Including:
COVID-19, SARS, EBOLA, CHOLERA, SALMONELLA, ETC.



Features:

- Use to detect viral, fungal, and bacterial DNA/RNA
- Rapid DNA/RNA detection (as little as 20 minutes)
- Highly sensitive and specific detection of low viral levels
- Intuitive software displays real time data during testing
- Melt analysis available with the included software
- Lid heater prevents evaporation and condensation
- Compact modular design allows for easy cleaning and maintenance
- Pair with an external battery for a portable and field-deployable system
- Test up to 8 samples simultaneously (higher throughput systems with up to 96 samples available upon request)
- Wireless communication with dual-band Wi-Fi and Bluetooth connectivity
- A fraction of the cost of qPCR based systems
- OZ Optics also offers private labelling for volume OEM applications

Clinical trial: LAMPYY™ vs. Leading brand qPCR machine

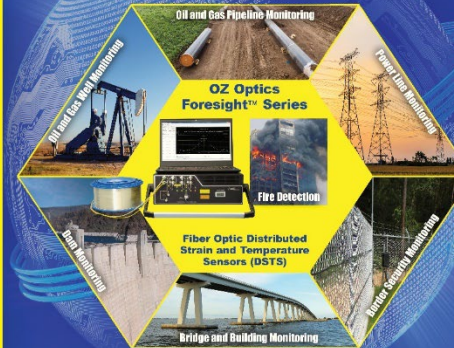


In a lab study done at Acibadem University using saliva samples taken from patients at the Acibadem Hospitals, LAMPYY was compared to a well-known conventional qPCR machine in performance and speed. The comparison study was carried out with a sample size of 262 using the COVID LAMP-based kit on both instruments and then verified with the KrosQuant SARS-COV-2 (2019 nCoV) Real Time PCR Diagnostic Kit on a leading brand conventional qPCR machine.

Fiber Optic Distributed Strain and Temperature Sensors

USA Patent Numbers: 7499151, 7599047, and 9568307

- BOTDA only, BOTDR only, or both BOTDA and BOTDR modules in one unit
- Simultaneous measurement of strain and temperature
- Fast, dynamic measurement of strain and/or temperature up to 200 km sensing range
- Uses standard telecommunications fibers to minimize costs



Fiber Optic Sensors for Pipeline Monitoring

USA Patent Numbers: 7499151, 7599047, and 9568307

- Pipeline leakage detection
- Sensitive detection of corrosion / erosion, cracks and buckling
- BOTDA only, BOTDR only, or both BOTDA and BOTDR modules in one unit
- Simultaneous measurement of strain and temperature
- Fast, dynamic measurement of strain and/or temperature up to 200 km sensing range
- Uses standard telecommunication fiber to minimize costs



Pipeline Monitoring



Corrosion and Erosion Monitoring



Fire Detection



Leading Technology

Featured Products



Fiber Optic Sensors for Fire Detection

USA Patent Numbers: 7499151, 7599047, and 9568307

- BOTDA only, BOTDR only, or both BOTDA and BOTDR modules in one unit
- Simultaneous measurement of strain and temperature
- Fast, dynamic measurement of strain and/or temperature up to 200 km sensing range
- Uses standard telecommunications fiber to minimize costs



Fiber Optic Sensors for Bridges, Dams and Buildings

USA Patent Numbers: 7499151, 7599047, and 9568307

- BOTDA only, BOTDR only, or both BOTDA and BOTDR modules in one unit
- Simultaneous measurement of strain and temperature
- Fast, dynamic measurement of strain and/or temperature up to 200 km sensing range
- Uses standard telecommunications fibers to minimize costs



Bridge Monitoring



Dam Monitoring



Building Fire Detection

Fiber Optic Sensors for Power Line and Smart Power Generator Monitoring

USA Patent Numbers: 7499151, 7599047, and 9568307

- BOTDA only, BOTDR only, or both BOTDA and BOTDR modules in one unit
- Simultaneous measurement of strain and temperature
- Fast, dynamic measurement of strain and/or temperature up to 200 km sensing range
- Uses standard telecommunication fiber to minimize costs



Underground Power Line Monitoring



Power Line Monitoring



Optical Ground Wire (OPGW)



Construction of OPSW



Gas Generator Monitoring

Fiber Optic Sensors for Security Monitoring

USA Patent Numbers: 7499151, 7599047, and 9568307

- BOTDA only, BOTDR only, or both BOTDA and BOTDR modules in one unit
- Simultaneous measurement of strain and temperature
- Fast, dynamic measurement of strain and/or temperature up to 200 km sensing range
- Uses standard telecommunication fiber to minimize costs



Border Security Monitoring



Highway Health Monitoring



Industry Standards

All Products Manufactured are in Strict Accordance with International Industry Standards:

- **ISO 9001:2015 Certified (Canada, China and Türkiye)**
- **REACH Compliance**
- **RoHS Compliance**
- **CE Compliance**
- **Telecordia Compliance**
- **Controlled Goods Directorate Registered**
- **Critical Supplier for F35 and F18 Project**
- **TSCA (Toxic Substance Control Act) Compliance**
- **CHEMSHERPA Compliance**
- **IEC 61010 Compliance**



Marketing Strategy

Application Market

Using our strong direct sales and distributors, we address the following markets:

- **Energy – Oil and Gas**
- **Military and Homeland Security**
- **Educational**
- **Industrial**
- **Telecom / Datacom**
- **Medical & Pharmaceutical**





Marketing Strategy

Application Market

By leveraging the technology and expertise gained since its inception, OZ Optics has attracted a broad range of customers in the telecom / datacom, medical, military, security, industrial, construction, aerospace, power utilities, petrochemical and educational sectors.





Marketing Strategy

Global Sales Network

OZ Optics has resellers and distributors in over 30 Countries and Regions with over 10,000 customers worldwide:



Austria



Germany



Luxembourg



Sweden



Belgium



Greece



Netherlands



Switzerland



Brazil



Hong Kong



Norway



Taiwan



Canada



India



Poland



Thailand



China



Ireland



Portugal



Türkiye



Denmark



Italy



Singapore



United Kingdom



France



Japan



South Korea

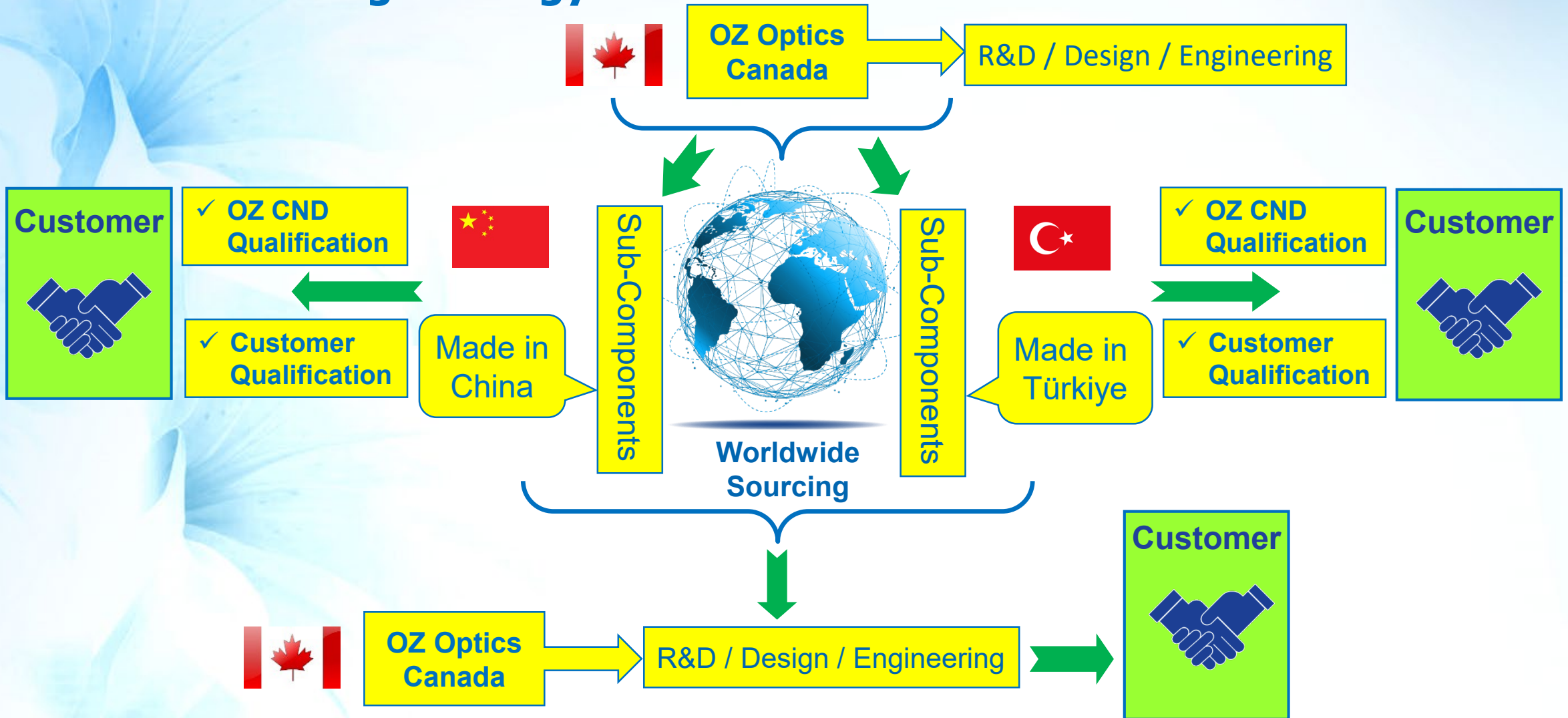


United States



Operation Strategy

Manufacturing Strategy





Marketing & Operation Strategy

Competitive Advantage

- Superior Technology
Innovative Engineering
- Competitive Pricing
- Global Presence
- Extensive Experience
In Fiber Optics Manufacturing
- Exceptional Quality and Service



Branch Network



OZ OPTICS CANADA (Headquarters)



OZ OPTICS TÜRKIYE (Türkiye Factory)



OZ OPTICS CHINA (Jiaxing Factory)



Branch Network

Facility - Ottawa Headquarters

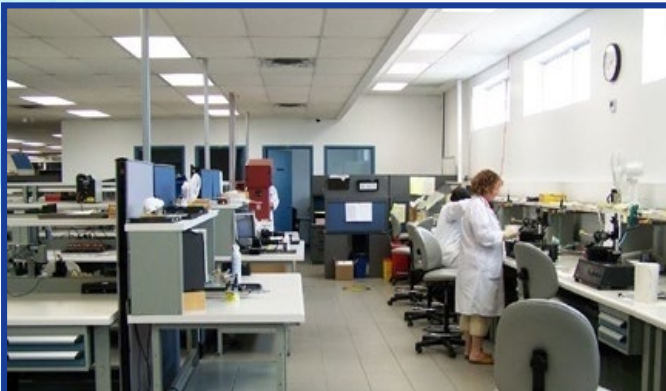
- 60,000 sq ft. - Manufacturing and R&D Facilities
- 15,000 sq ft. - Admin, Sales and Marketing
- 15,000 sq ft. - Training and Fitness Facilities





Branch Network

Facility - Ottawa Headquarters



Production Area



Training Centre Building



Meeting Room



Swimming Pool



Branch Network

Facility - Türkiye Factory (Izmir, Türkiye)

- Operational Since 2000
- 33,000 sq ft. Manufacturing Facility
- Located in Free Trade Zone
- Low Tax Rates
- Sub Component Parts Manufacturing
- High Quality Labor
- AR Coating Machine & Clean Room onsite





Branch Network

Facility - China Factory (Jiaxing, China)

- Operational Since June 2010
- Wholly Foreign Owned Enterprise
- Cost Effective Manufacturing
- High Quality Labor
- Supply Chain Integration





Branch Network

Facility - China Factory (Jiaxing, China)

- Located in Economic Development Zone
- 4000+ sq meters - Total Area
 - 500 sq meters – Administration, Sales and Marketing
 - 3500 sq meters – Manufacturing Area
 - ✓ 500 sq meter – Class 10,000 Clean Room
 - ✓ 300 sq meter – ESD Working Area





OZ Optics China

Zhejiang OZ Optics Technologies Co., Ltd

- Operational since June 2010
- Wholly Foreign Owned Enterprise
- NPI & Production Line Setup
- On-site Training by OZ CND
- Began Mass Production in September 2010
- Completed Main Facility Expansion in 2019





Polarization Maintaining Components

OZ Optics is the pioneer in PM Fiber Optic Components. We offer the widest range of PM components and we were the first company in the world to manufacture PM fiber components and test equipment, starting in 1985.

Features:

- **High Power Handling Capability**
(Over to 5 Watts at 1550 nm Tested to over 50 Watts CW at 1064 nm)
- **Better than 30 dB Extinction Ratios Can Be Achieved**
- **Wavelength Flattened Response for S, C & L Bands**
(1470 nm – 1620 nm)
- **Complete Support for Non-Telecom Wavelengths and Applications**
(375 – 2100 nm)



Polarization Maintaining Components



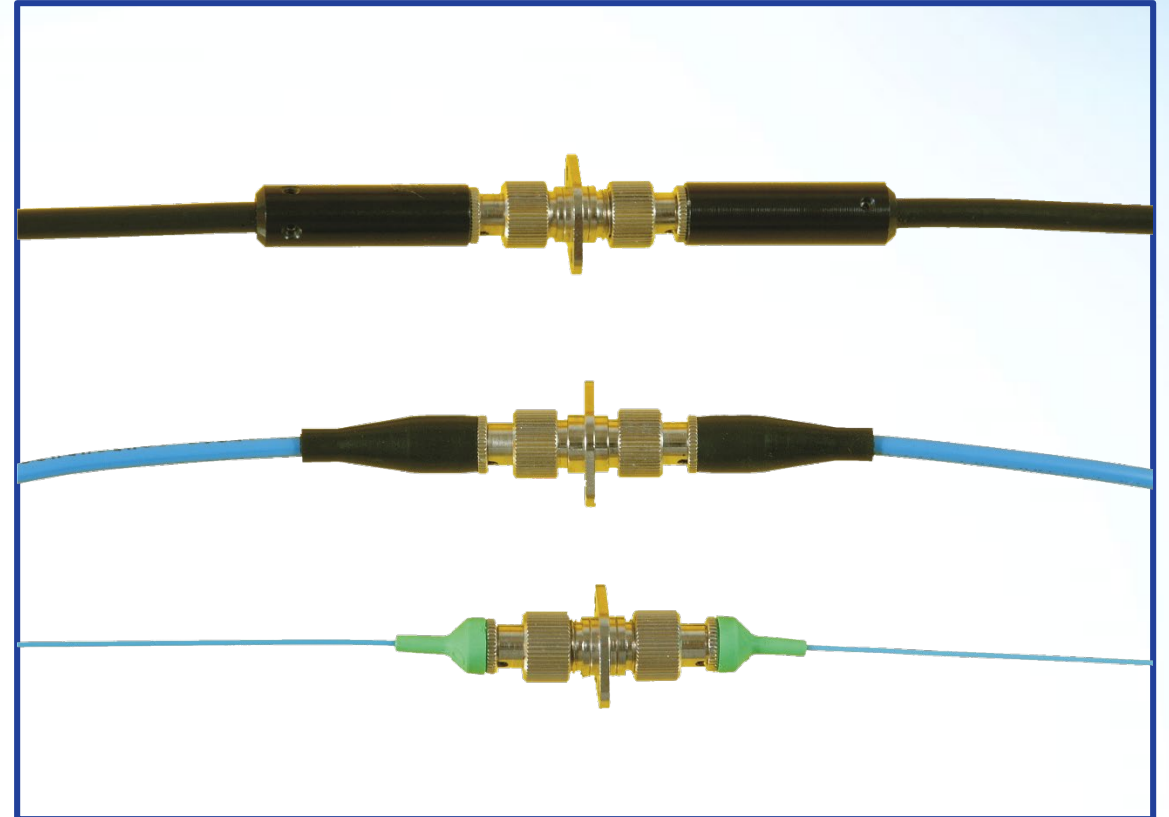
OZ Optics Offers:

- **Patented Fiber Alignment Technology**
- **Low Cost, Superior Service & Exceptional Quality**
- **High Volume Manufacturing Capability**

Polarization Maintaining Patchcords



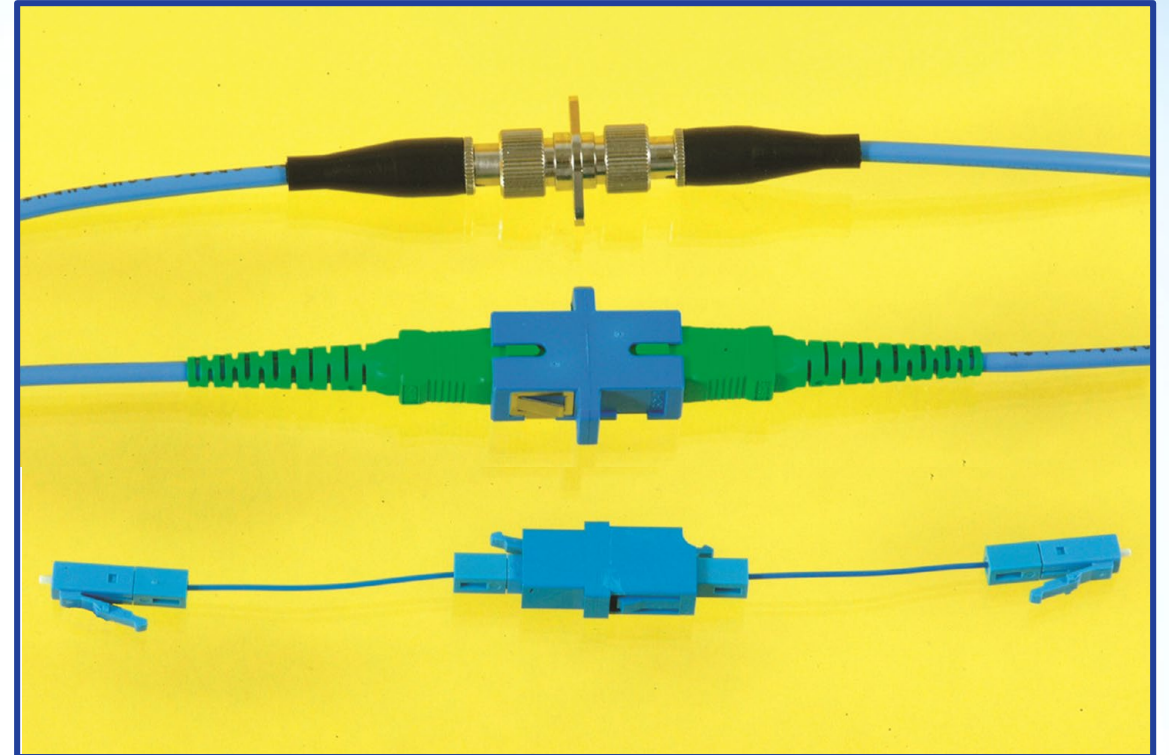
- **Up to 30 dB Polarization Extinction Ratios**
- **< 0.3 dB Insertion Loss, up to 60 dB Backreflection**
- **Super, Ultra, Angled FC/PC, SC, AT&T – ST, LC, MU, E2000, DMI and Custom Connectors**



Polarization Maintaining Patchcords



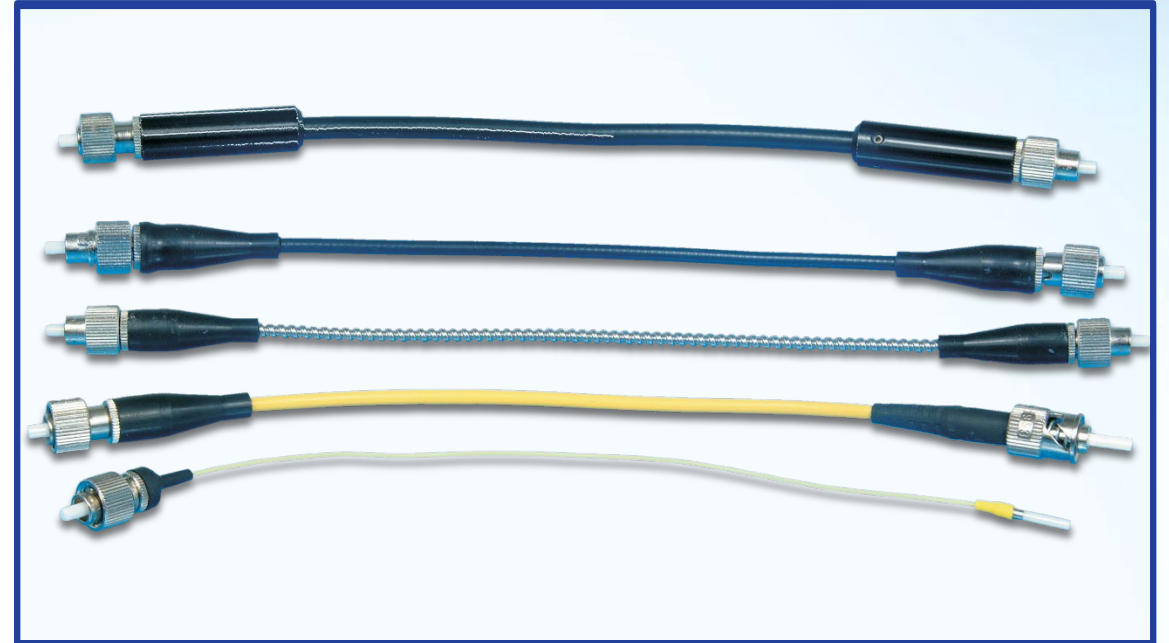
- Up to 30 dB Polarization Extinction Ratios
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Polarization Maintaining Patchcords



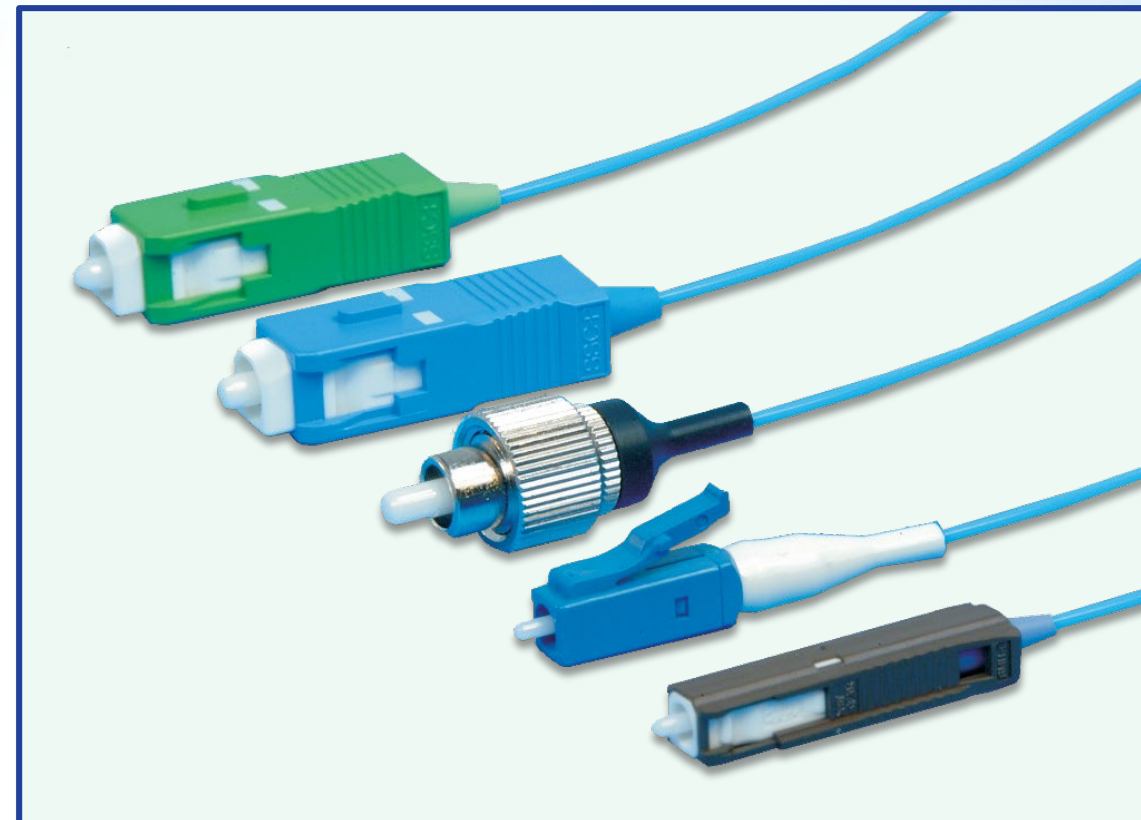
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- **< 0.3 dB Insertion Loss, up to 60 dB Backreflection**
- **Super, Ultra, Angled FC/PC, SC, AT&T – ST, LC, MU, E2000, DMI and Custom Connectors**
- **Multi-Fiber PM Patchcords Based on MT Connector Design**



Polarization Maintaining Patchcords



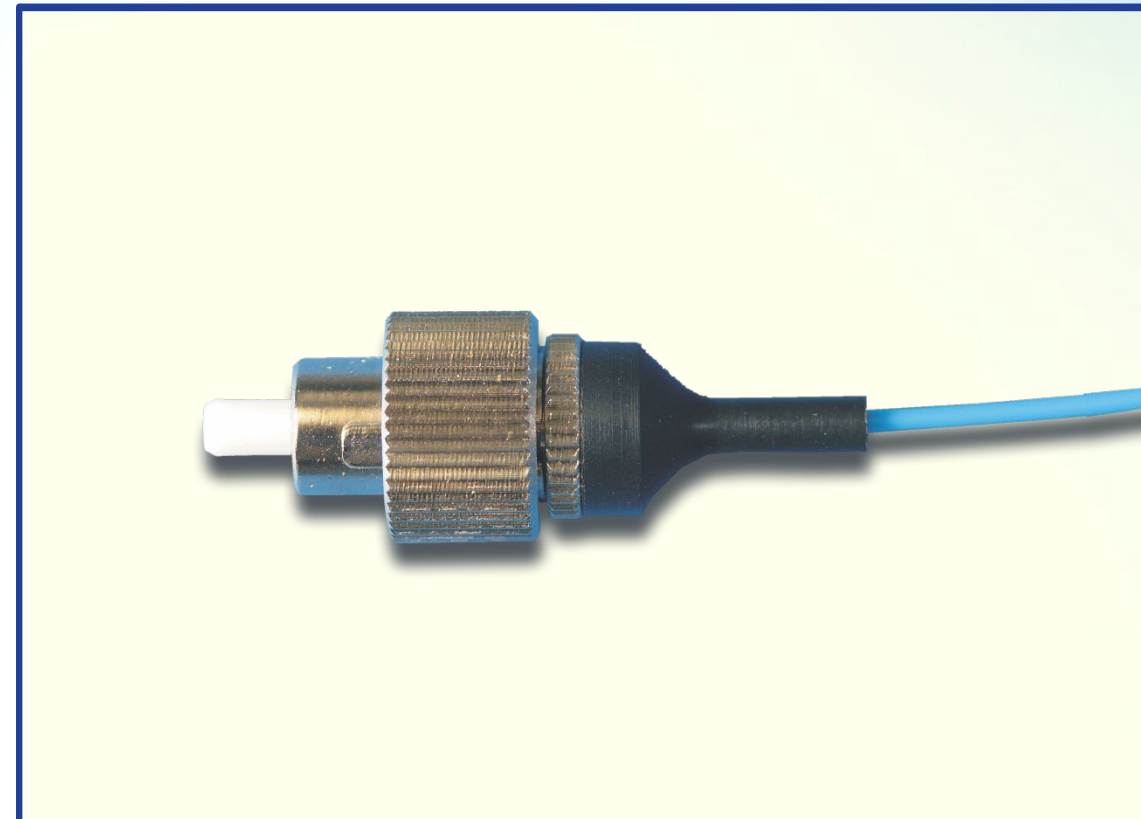
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- Multi-Fiber PM Patchcords Based on MT Connector Design



Polarization Maintaining Patchcords



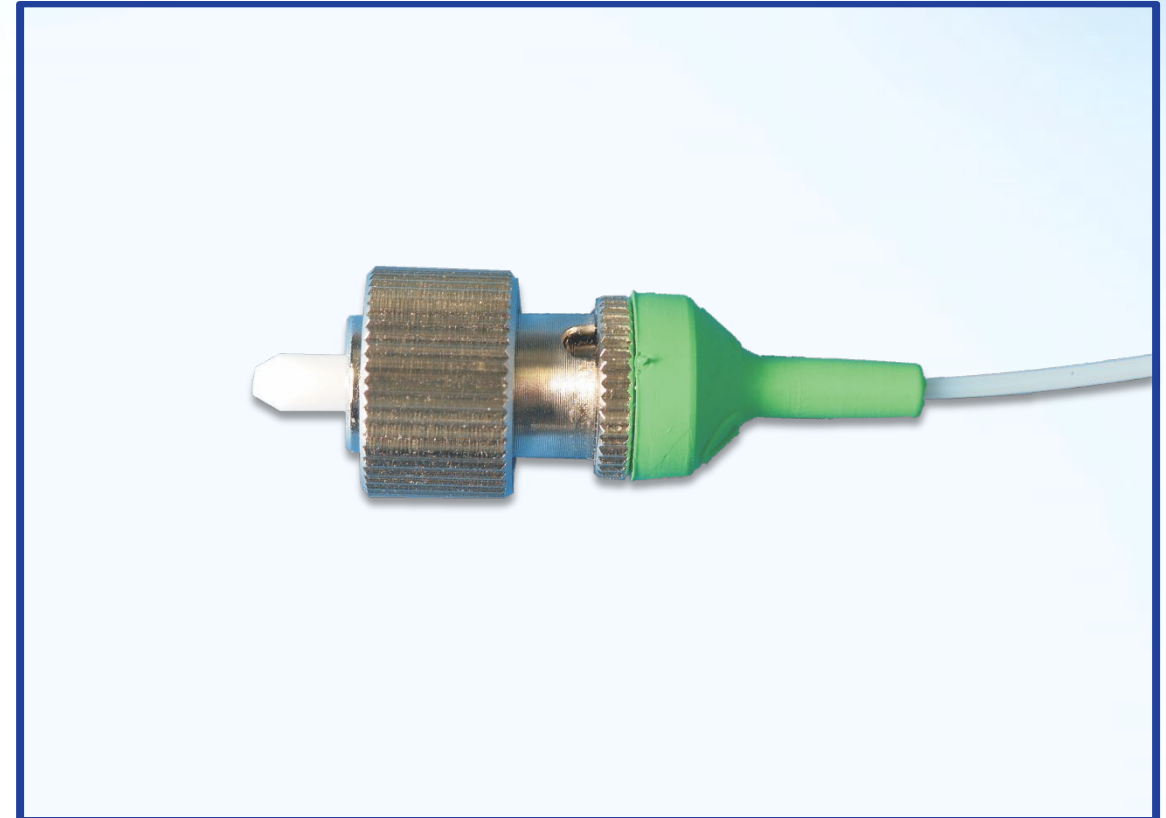
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- **Multi-Fiber PM Patchcords Based on MT Connector Design**



Polarization Maintaining Patchcords



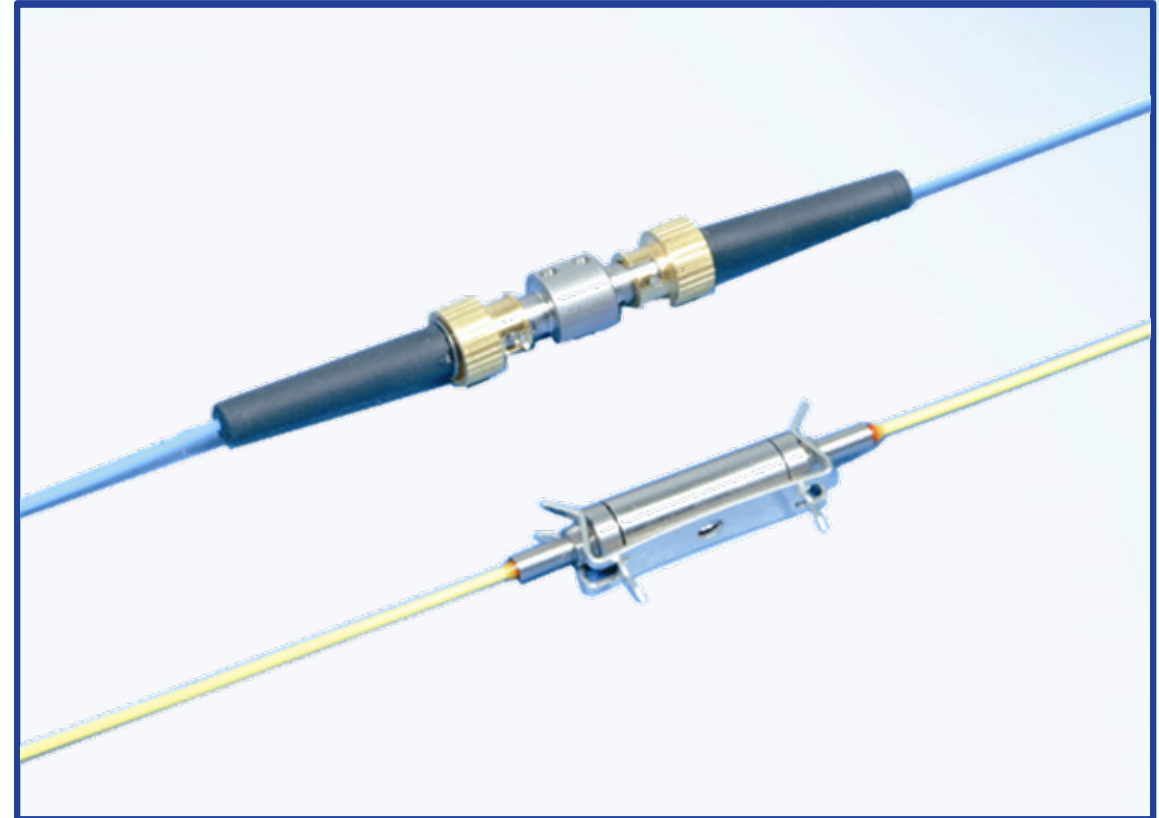
- **Up to 30 dB Polarization Extinction Ratios**
- **< 0.3 dB Insertion Loss, up to 60 dB Backreflection**
- **Super, Ultra, Angled FC/PC, SC, AT&T – ST, LC, MU, E2000, DMI and Custom Connectors**
- **Multi-fiber PM Patchcords Based on MT Connector Design**



▶ Miniature PM Connectors and Patchcords



- PC Board Mountable
- Small Form Factor Allows Dense Packing in Small Spaces
- Up to 30 dB Polarization Extinction Ratios
- < 0.3 dB Insertion Loss, up to 60 dB Backreflection



PM Hermetically Sealable Patchcords



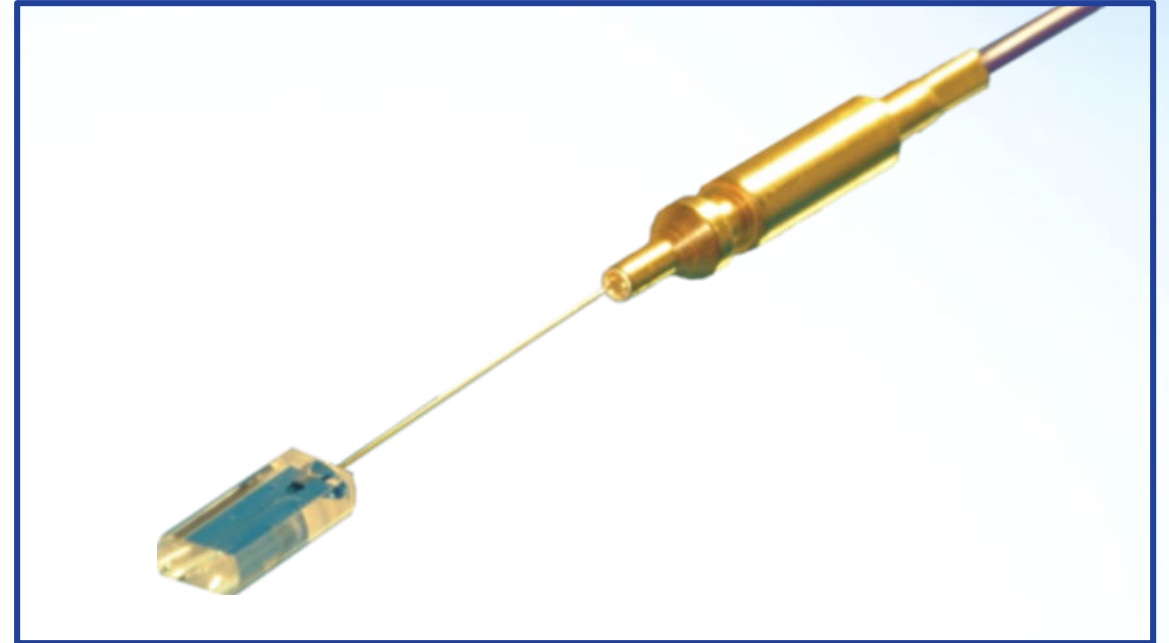
- 20 dB, 25 dB Polarization Extinction Ratios
- Custom OEM Designs & Terminations
- Patchcord with Optical Tap Is Available



PM Hermetically Sealable Patchcords



- 20 dB, 25 dB Polarization Extinction Ratios
- Custom OEM Designs & Terminations
- Ideal for Component Packaging



PM Hermetically Sealable Patchcords



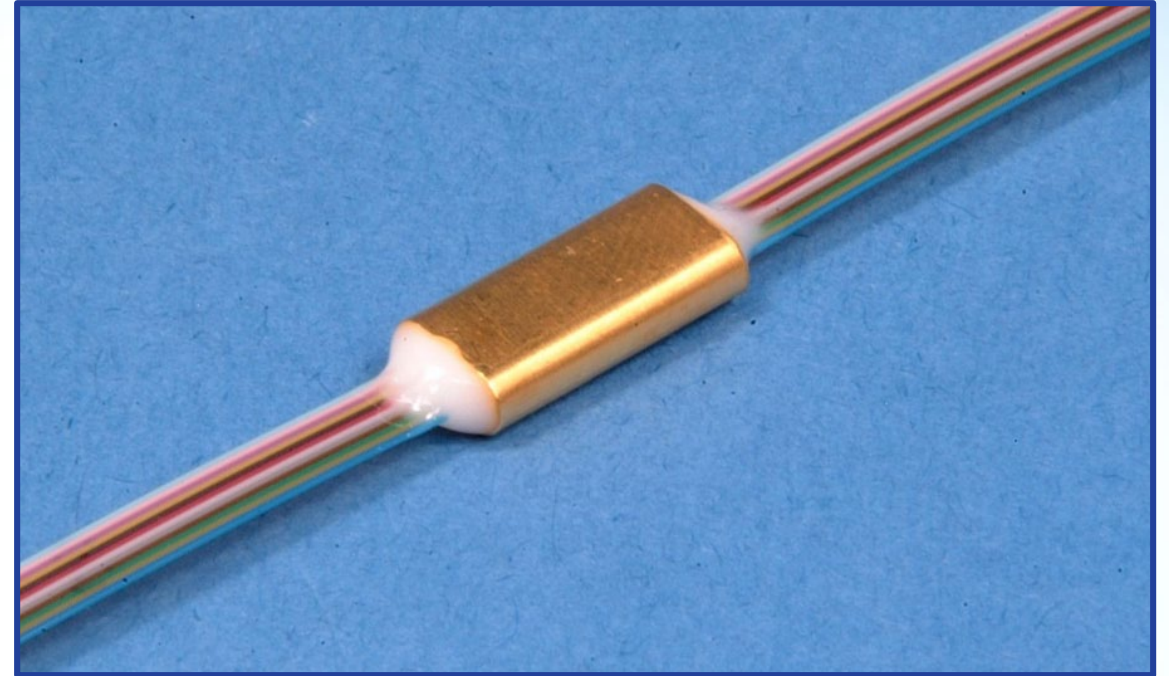
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- 20 dB, 25 dB Polarization Extinction Ratios
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PM Hermetically Sealable Patchcords



- 20 dB, 25 dB Polarization Extinction Ratios
- Custom OEM Designs & Terminations
- Patchcord with Optical Tap Is Available

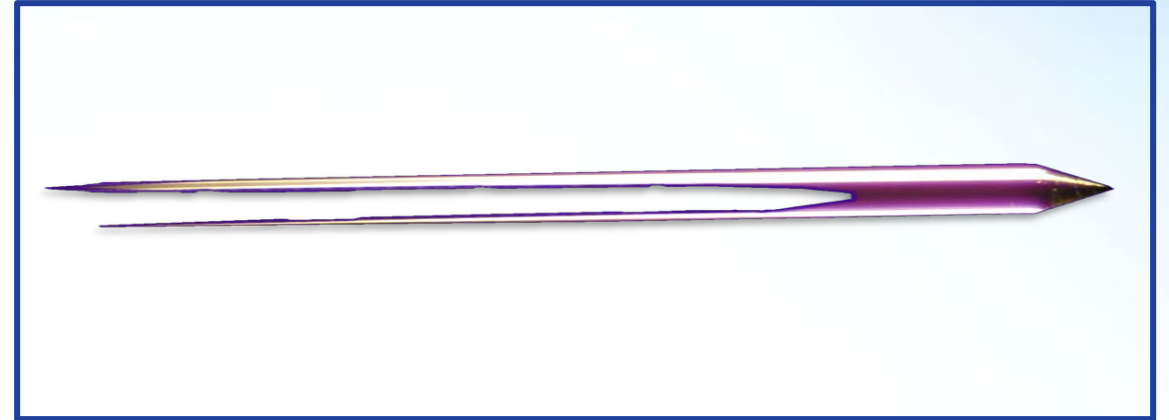




Tapered PM Fibers



- Improves Coupling from Waveguides, Diodes
- As Small as 2 Micron Spot Sizes
- Circular & Oval Spot Profiles





PM Fiber Pigtailed V-Grooves

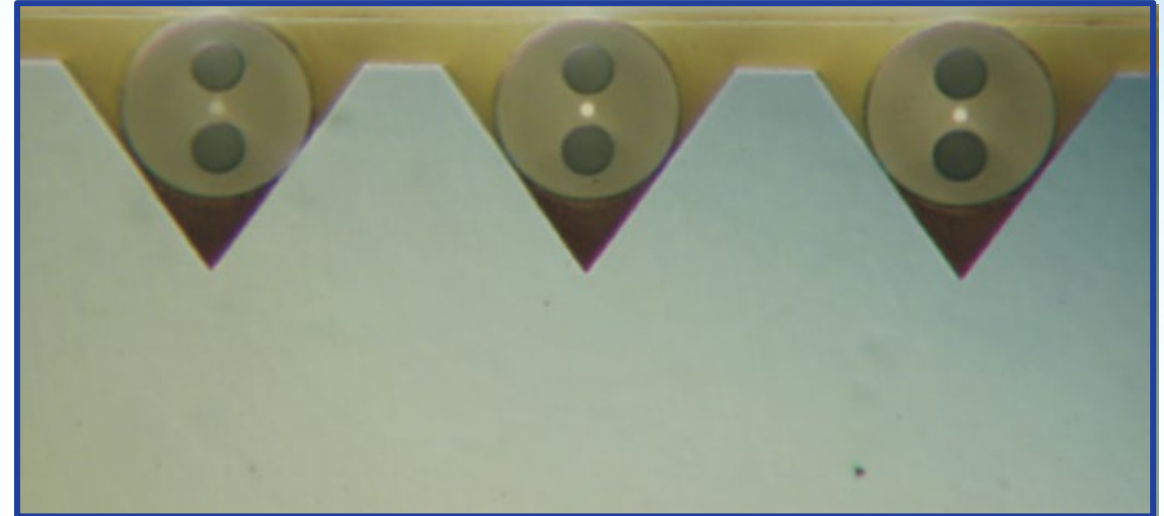


- 127, 250, 400 or 500 Micron Spacing
- Over 20 dB Extinction Ratios
- Rods Aligned to Within 0.5 Degrees



PM Fiber Pigtailed V-Grooves

- 127, 250, 400 or 500 Micron Spacing
- Over 20 dB Extinction Ratios
- Polarization Axis Aligned to Within 0.5 Degrees



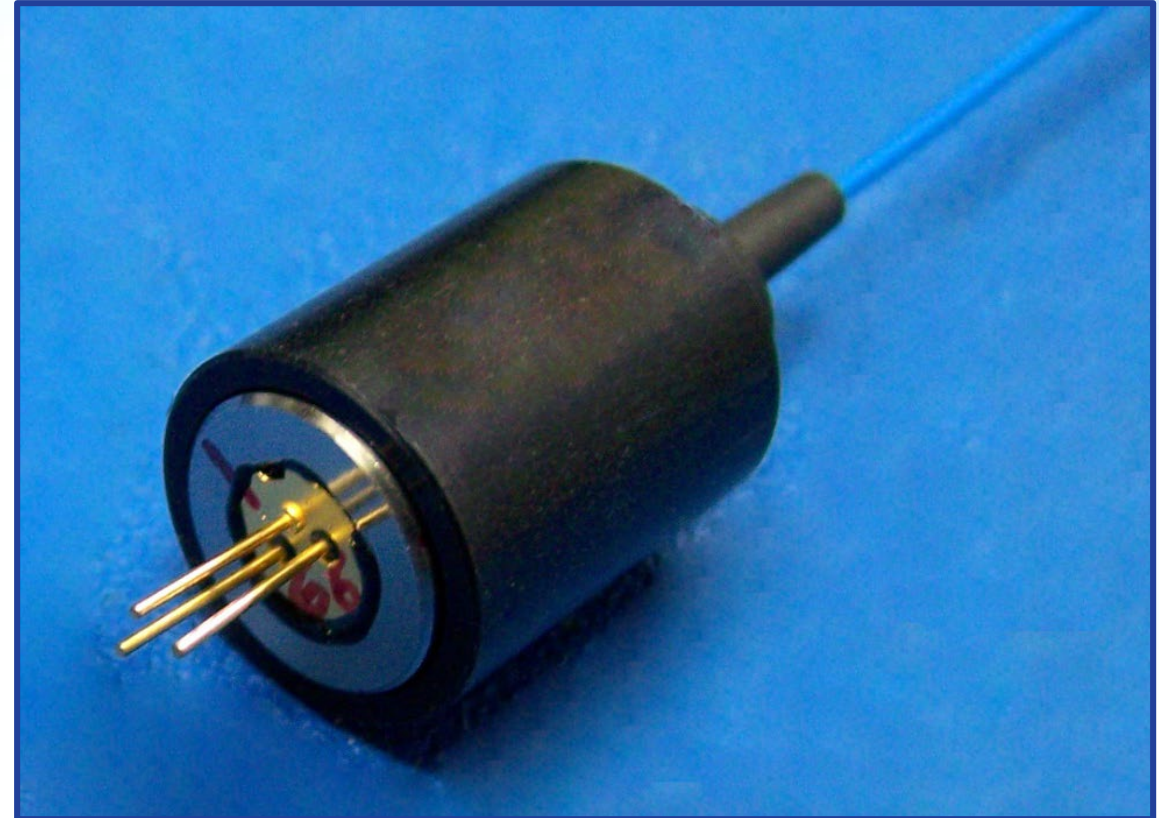
PM Fiber Pigtailed V-Grooves

- 127, 250, 400 or 500 Micron Spacing
- Over 20 dB Extinction Ratios
- Polarization Axis Aligned to Within 0.5 Degrees



PM Fiber Pigtailed Sources

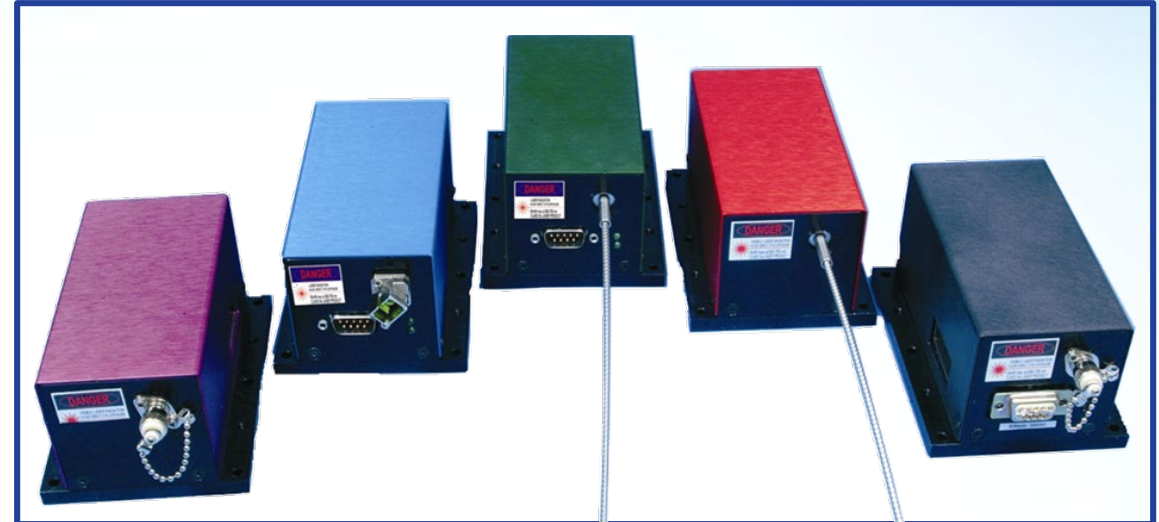
- Up to 30 dB Polarization Extinction Ratios
- > 80% Coupling for Lasers, 40% for Laser Diodes
- 375 nm to 2050 nm Wavelengths





PM Fiber Pigtailed Sources

- Up to 30 dB Polarization Extinction Ratios
- > 80% Coupling for Lasers, 40% for Diodes
- 375 nm to 2050 nm Wavelengths



Polarization Maintaining Sources



- **Up to 40 dB Polarization Extinction Ratios**
- **> 80% Coupling for Lasers, 40% for Diodes**
- **375 nm to 2050 nm Wavelengths**
- **Motorized Polarization Rotator Available as an Option**



Polarization Entangled Photon Sources



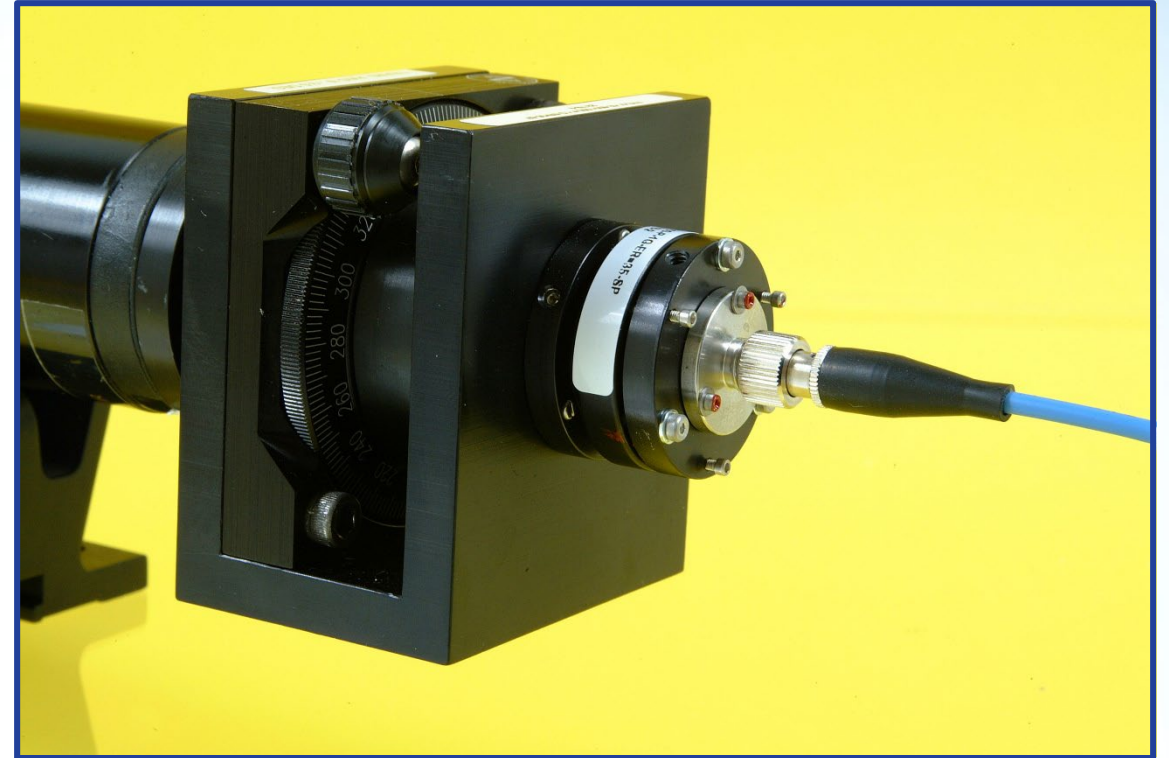
- Quantum Computing and Network Applications
- Broad Bandwidth Covering C- and L- Bands
- Narrow Bandwidth Version for 810 nm
- Compact, Operates at Room Temperature



Polarization Maintaining Source Couplers



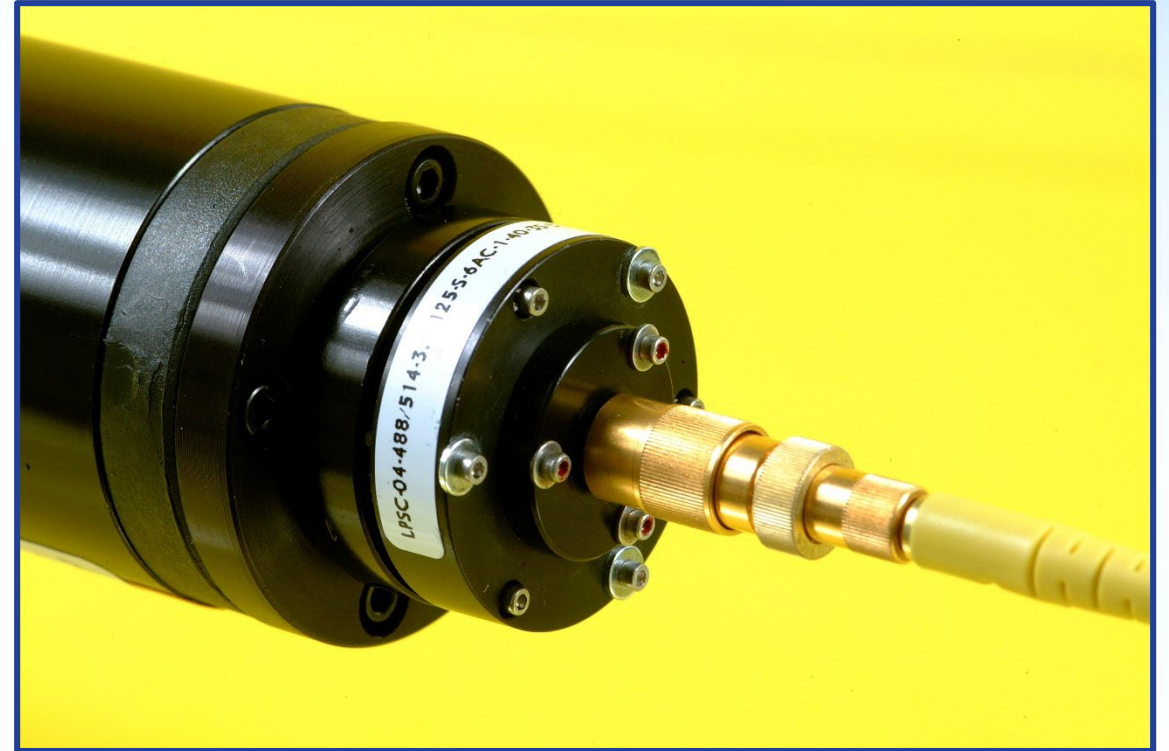
- Up to 30 dB Polarization Extinction Ratios
- > 80% Coupling for Lasers, 40% for Diodes
- 375 to 2050 nm Wavelengths



Polarization Maintaining Source Couplers



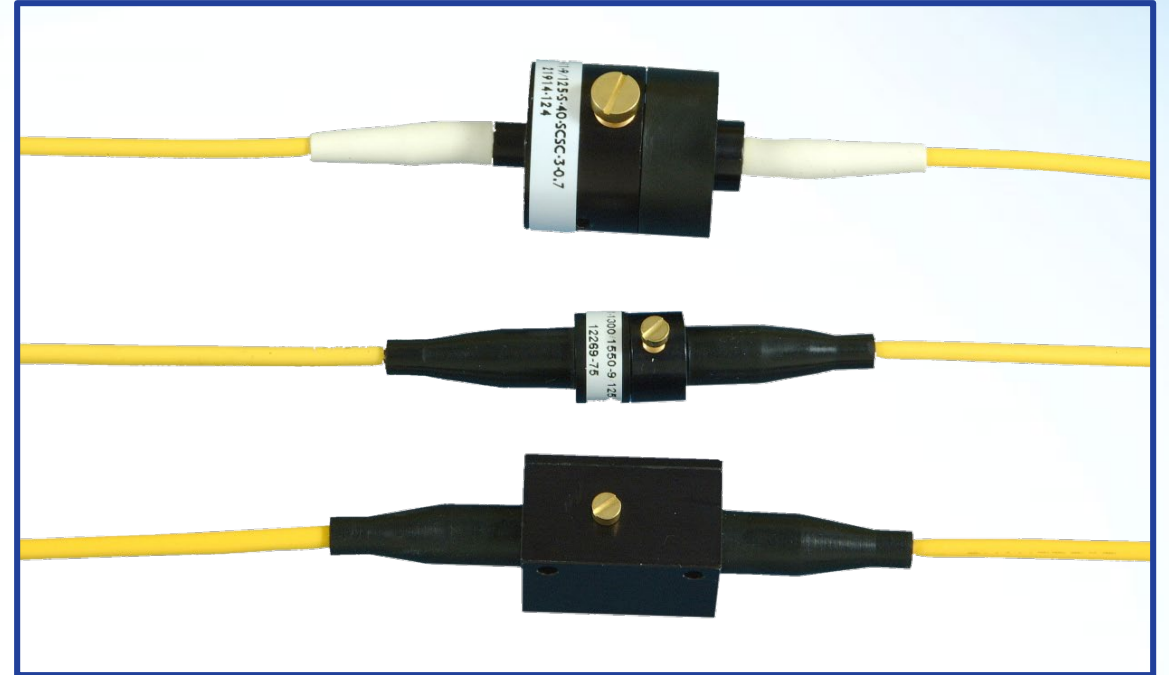
- Up to 30 dB Polarization Extinction Ratios
- > 80% Coupling for Lasers, 40% for Diodes
- 375 to 2050 nm Wavelengths





PM Fiber Variable Attenuator

- Up to 30 dB Extinction Ratios, Up to 10 Watts CW Power
- 0.6 dB to 80 dB Attenuation, -40, -50, -60 dB Backreflection
- Meets Telcordia Specifications
- MEMS Based Attenuators Available



Fiber Optic Fixed Filters

- 400 nm to 2200 nm Wavelengths, SMF, PMF & MMF
- -40 dB, -50 dB, -60 dB Backreflection
- Filters Can Be Fixed or Removable





Fiber Optic Fixed Filters

- 400 to 2200 nm Wavelengths, SMF, PMF & MMF
- -40 dB, -50 dB, -60 dB Backreflection
- Filters Can Be Fixed or Removable



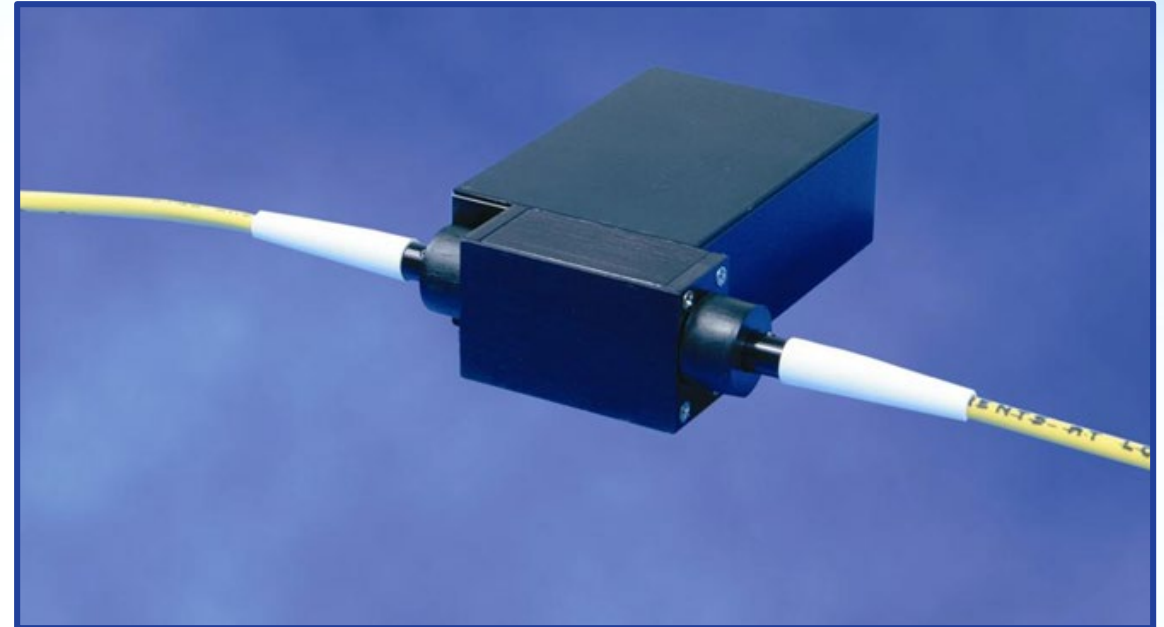
Tunable Filters

- **< 1.2 nm Line Width,
0.1 nm Resolution**
- **50 nm Tuning Range,**
- **Manual, Motor Driven
and Digital Versions**



Tunable Filters

- **< 1.2 nm Line Width, 0.1 nm Resolution**
- **50 nm Tuning Range**
- **Manual, Motor Driven and Digital Versions**



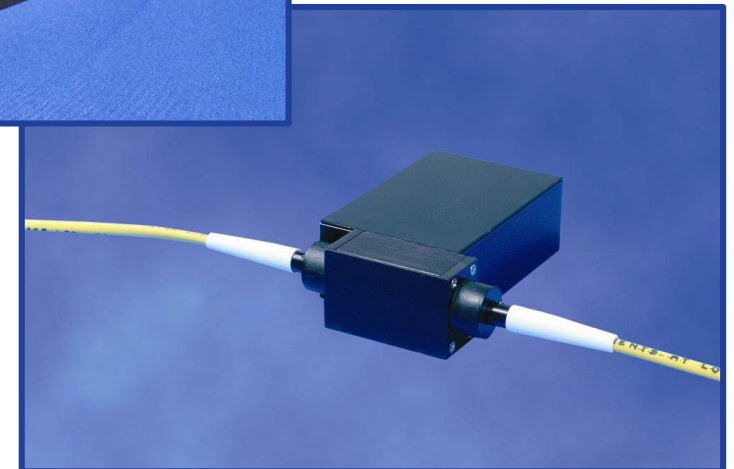
Tunable Filters

- **< 1.2 nm Line Width, 0.1 nm Resolution**
- **50 nm Tuning Range**
- **Manual, Motor Driven and Digital Versions**



Tunable Bandwidth Filters

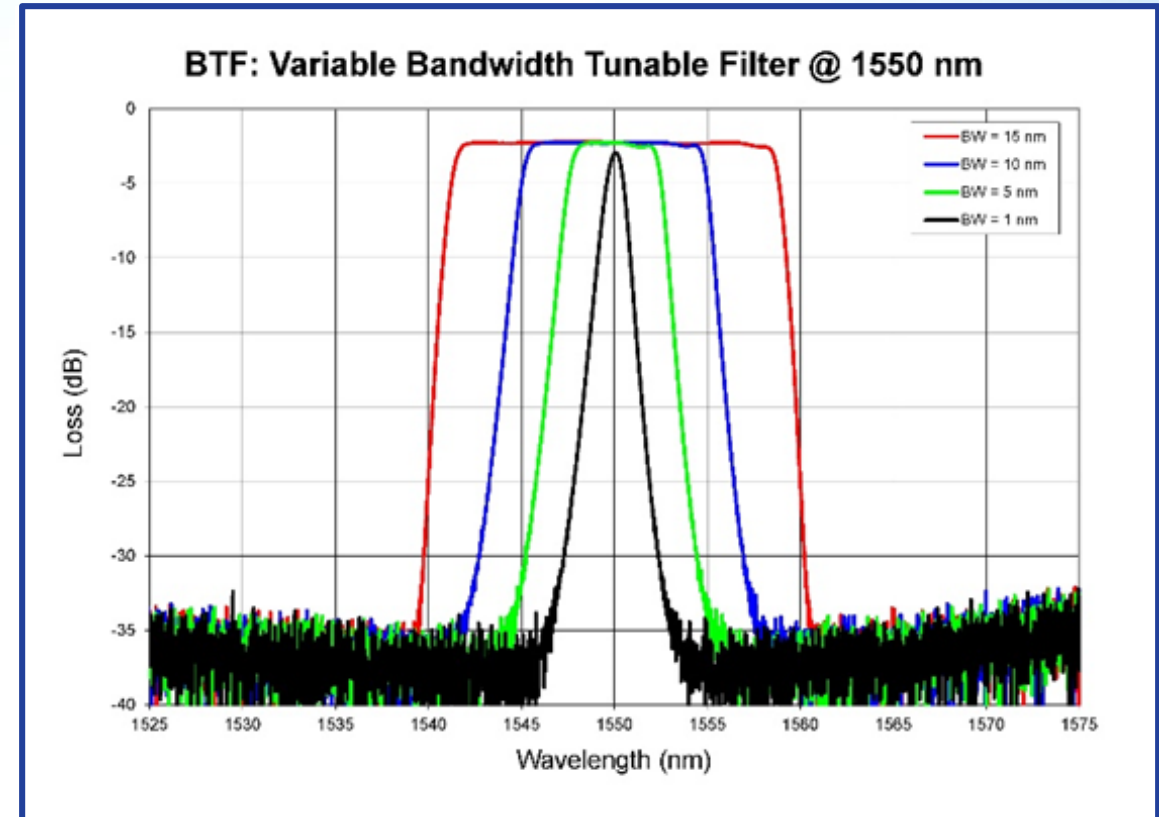
- 1 to 18 nm FWHM Adjustable Line Width
- 45 nm Tuning Range
- Flat Top Filter Shape
- Manual and electrically driven versions





Tunable Bandwidth Filters

- Polarization Insensitive
- High Out-of-Band Suppression
- Singlemode, Multimode and PM Versions

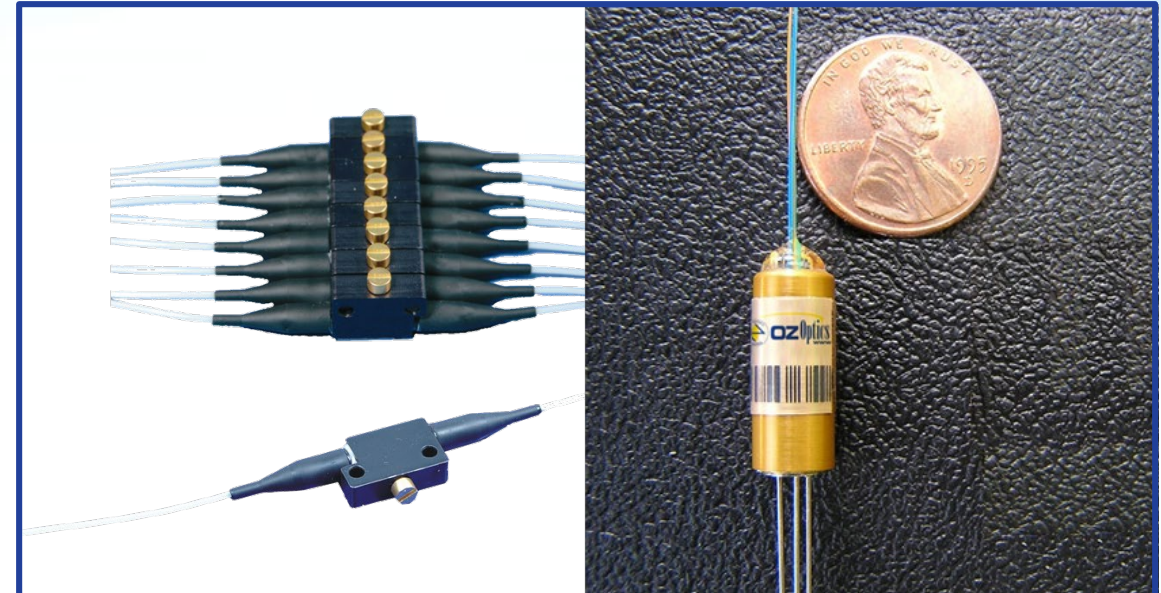




PM Fiber Variable Attenuator



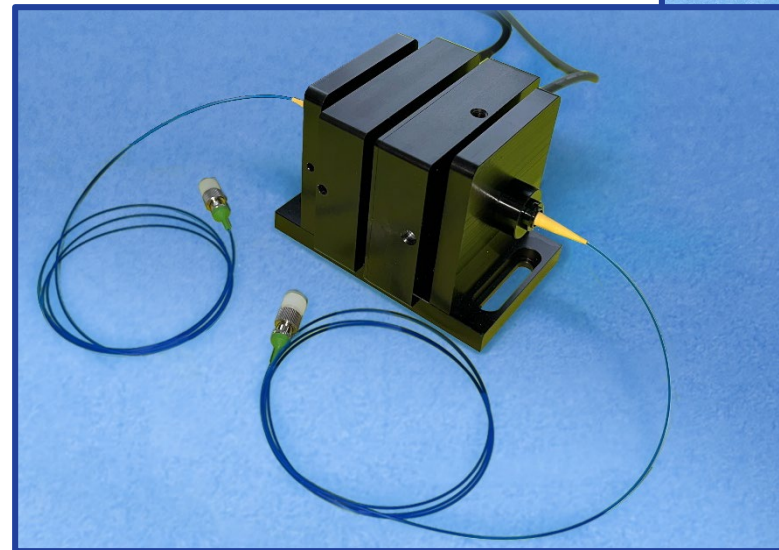
- Up to 30 dB Extinction Ratios, Up to 10 Watts CW Power
- 0.6 dB to 80 dB Attenuation, -40, -50, -60 dB Backreflection
- Meets Telcordia Specifications
- MEMS Based Attenuators Available



High Resolution Motorized Polarization Controller



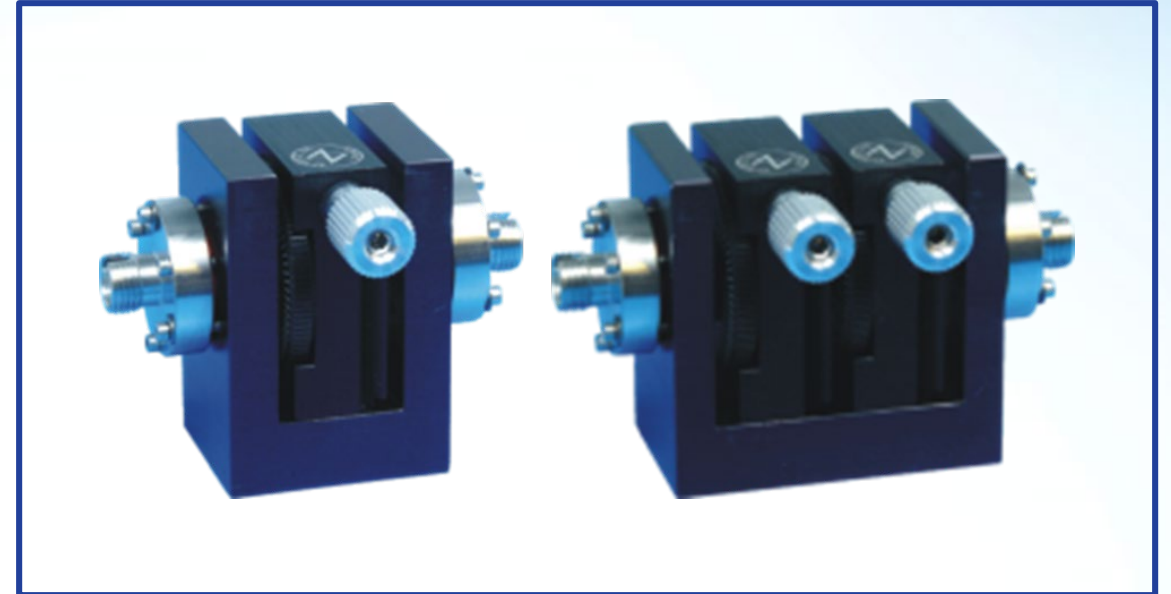
- Precision Rotation with Built-in Encoder
- Compact, Plug-and-Play Device with Touch Screen and GUIs
- 0.1° Repeatability



Polarization Rotators / Analyzers

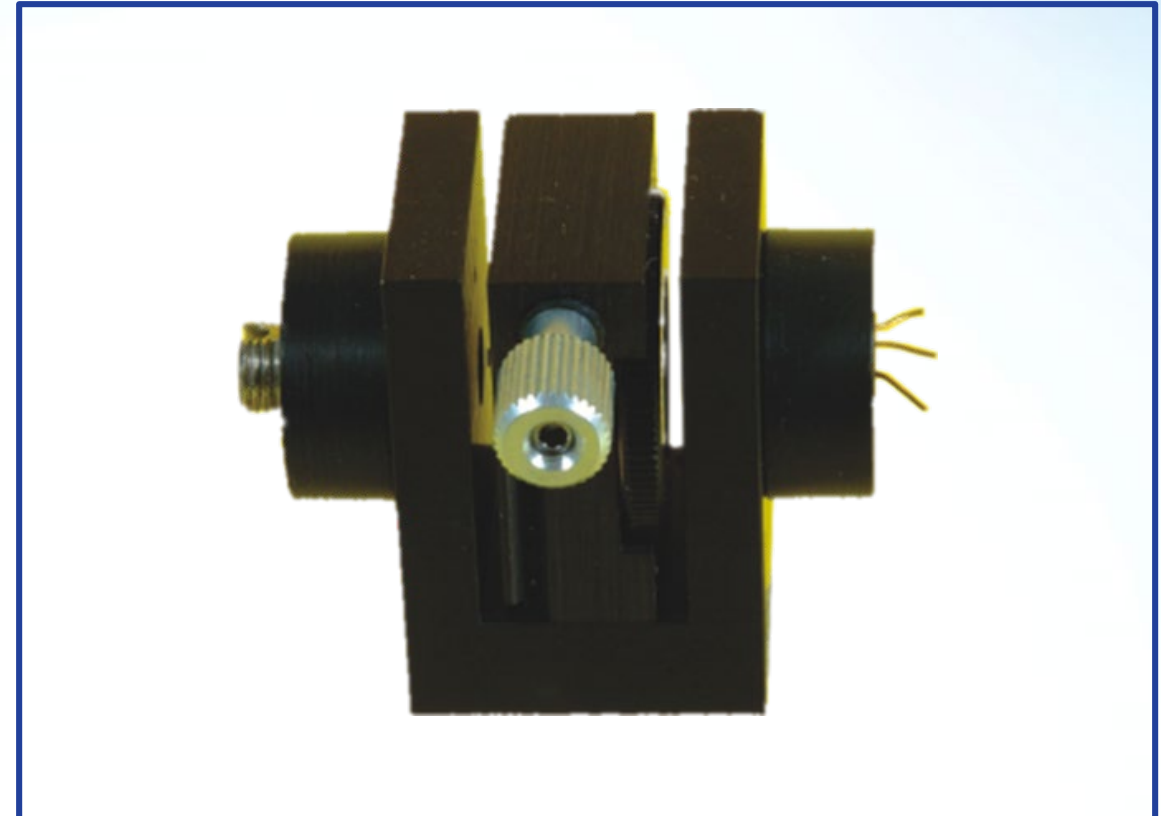


- **Greater than 30 dB Extinction Ratios**
- **-40, -50, -60 dB Backreflection Levels, 1 dB IL**
- **Fiber-Fiber, Source-Fiber & Fiber-Photodiode Versions**



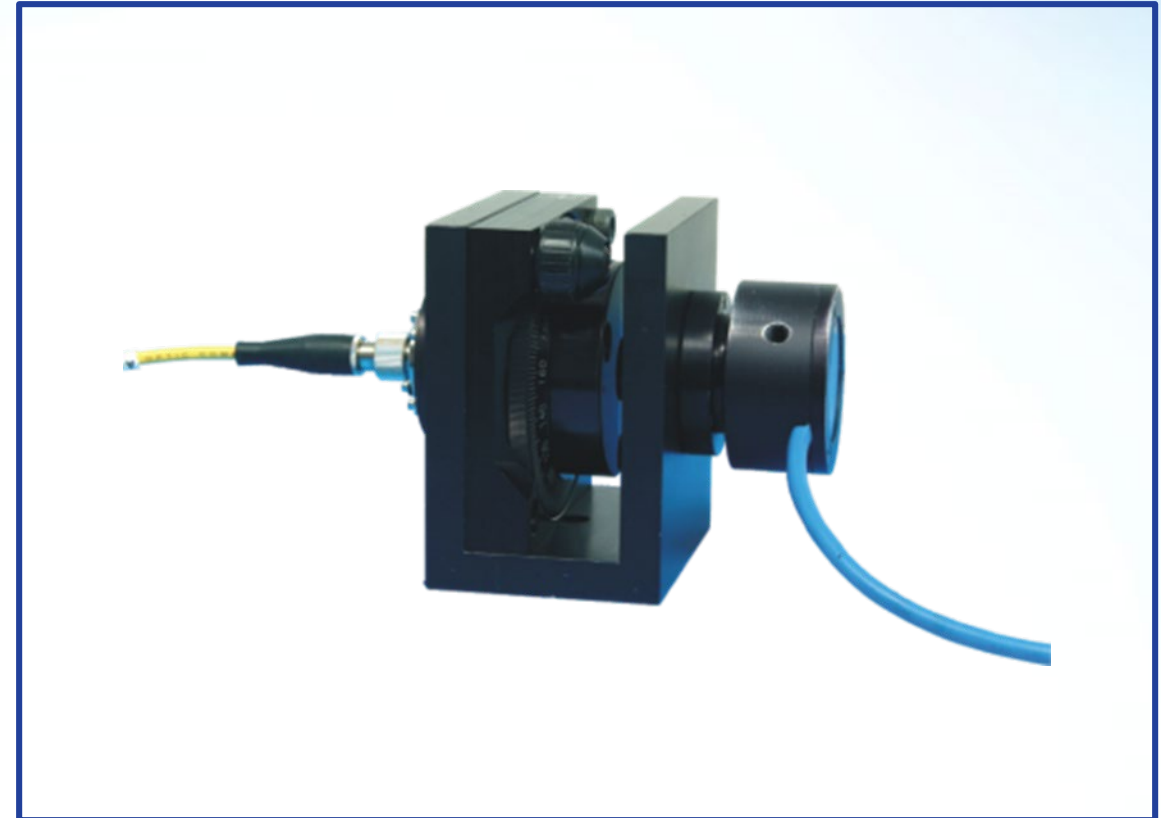
Polarization Rotators / Analyzers

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- **-40, -50, -60 dB Backreflection Levels, 1 dB IL**
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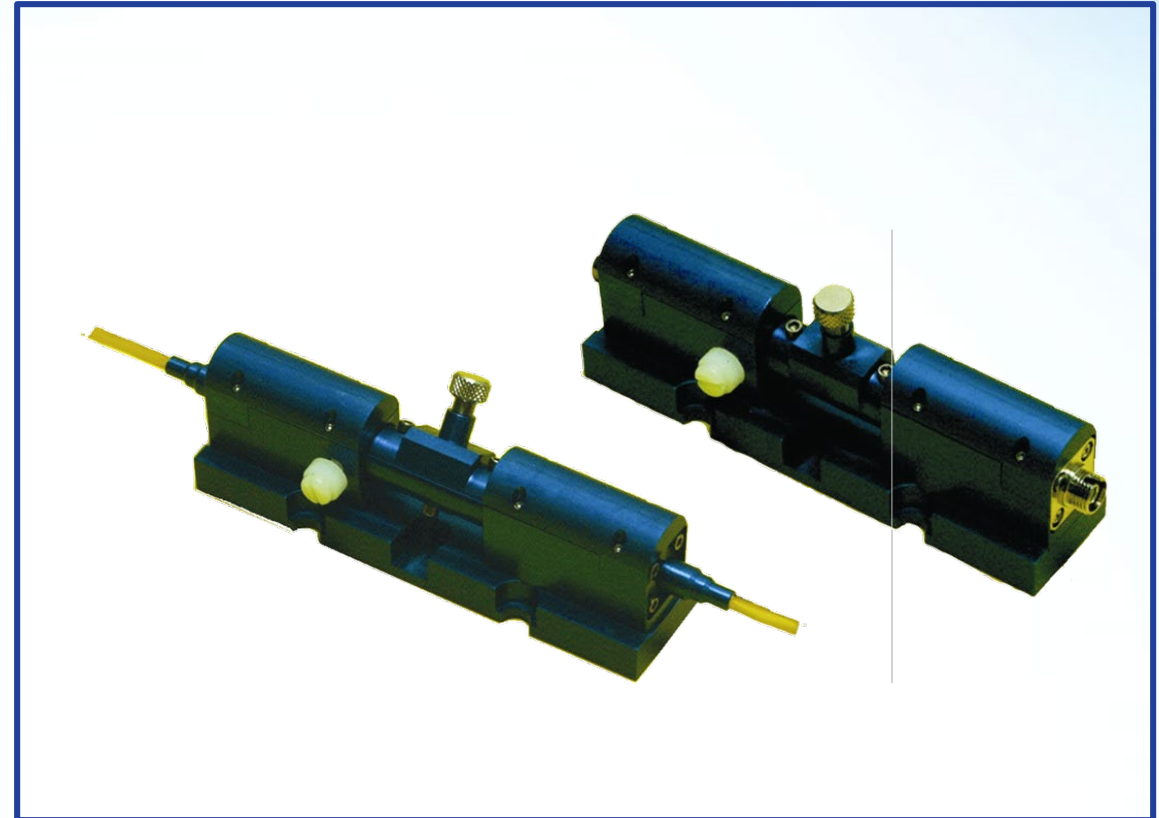




Manually Adjustable Polarization Controllers



- Designed to Control Polarization State
- All Fiber Version – No Intrinsic Loss
- Pigtail and Receptacle Versions

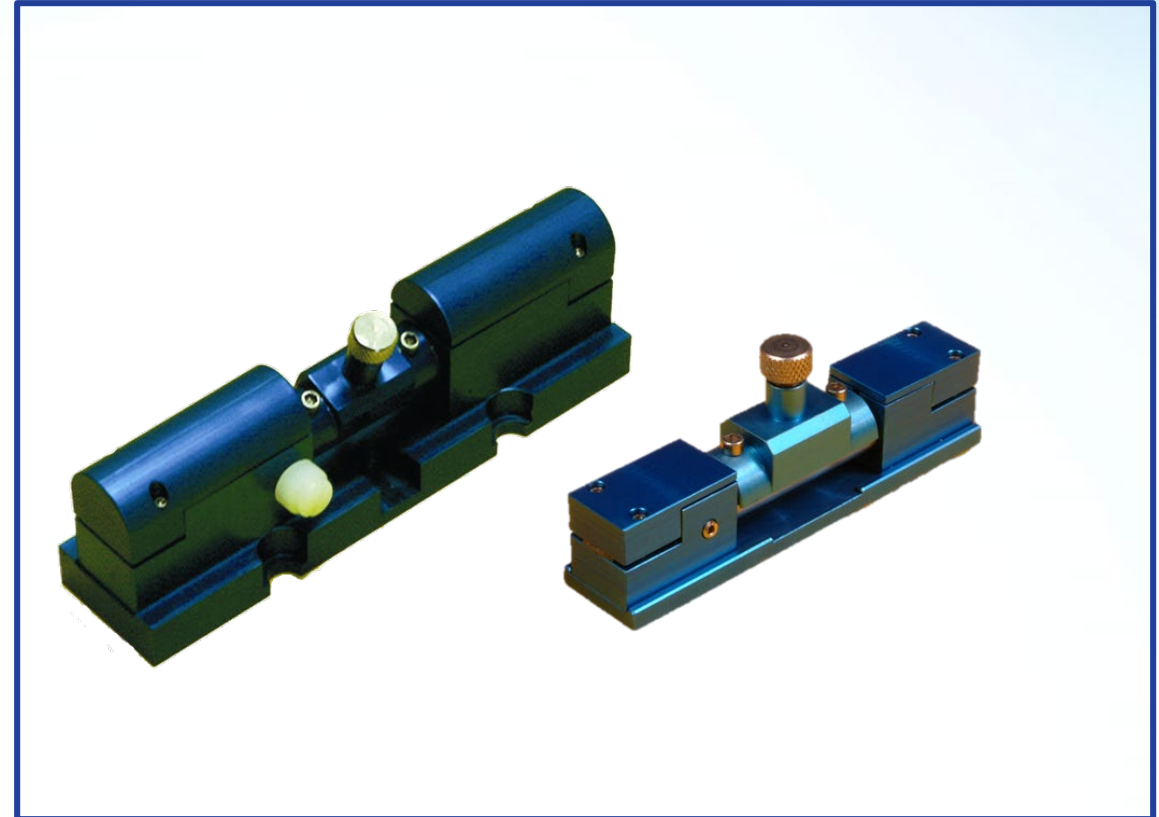




Manually Adjustable Polarization Controllers



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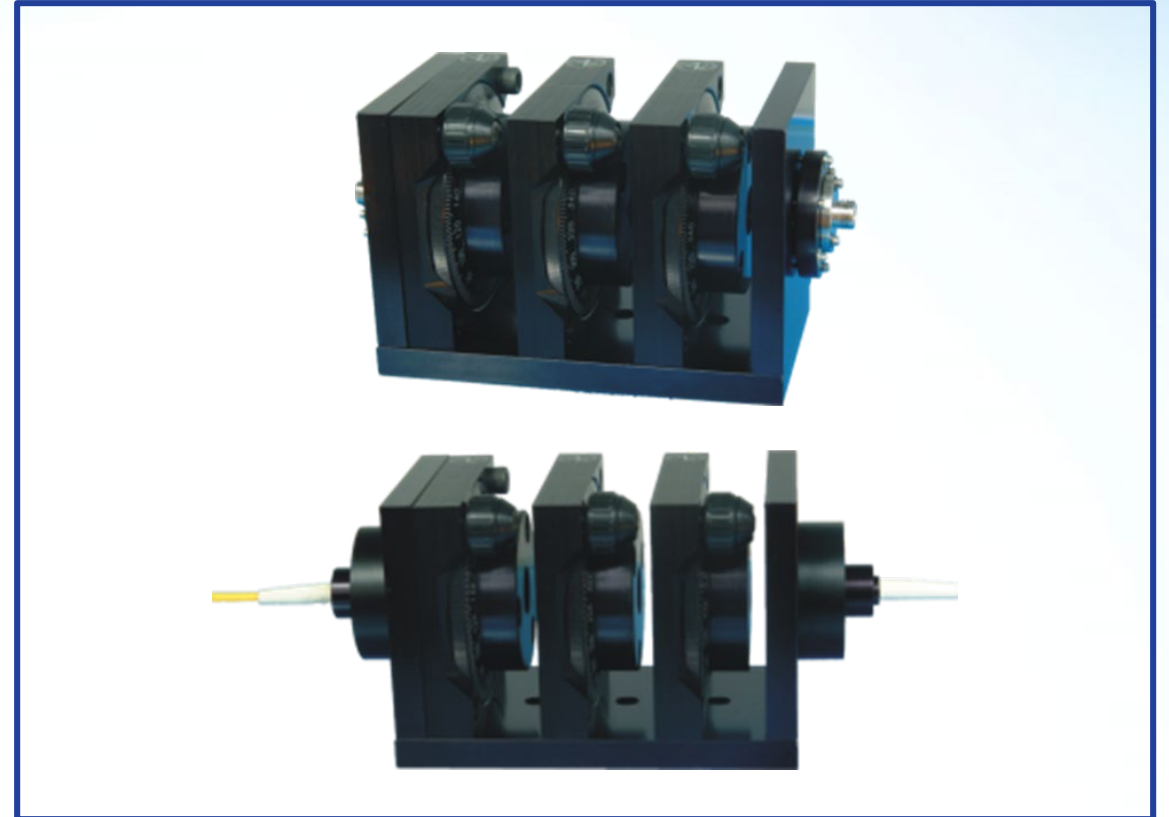




Manually Adjustable Polarization Controllers



- **Designed to Control Polarization State**
- **Wave Plate Version**
 - **Has Angle Readouts, Repeatable Output**
- **Pigtail and Receptacle Versions**

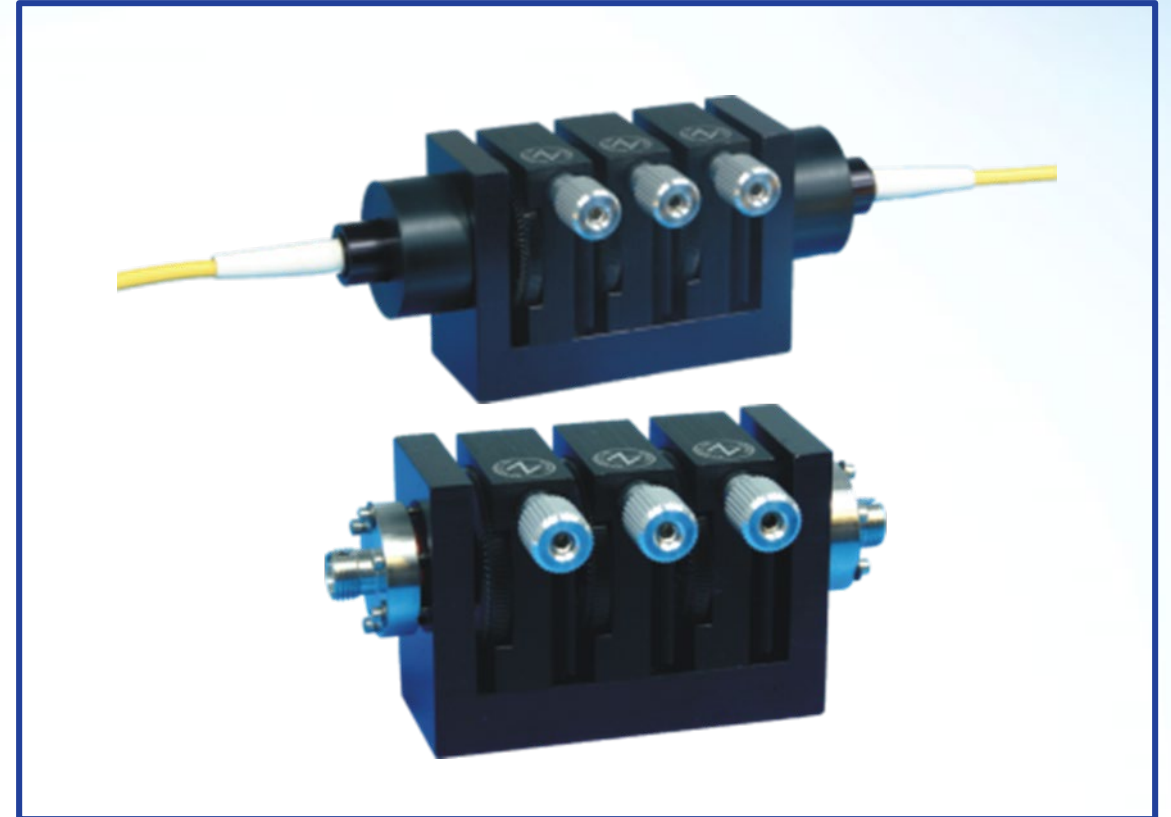




Manually Adjustable Polarization Controllers



- Designed to Control Polarization State
- Wave Plate Version
 - Has Angle Readouts, Repeatable Output
- Pigtail and Receptacle Versions





Electrically Driven Polarization Controllers



- Continuous Control of Polarization
- No Insertion Losses or Return Losses
- > 100 Hz Response Speed
- **New!** High Speed Version, up to 30 kHz Response Speed





High Speed Electrically Driven Polarization Controllers



- Continuous Control of Polarization
- Up to 30 kHz Response Speed
- Negligible Insertion Losses, Return Losses, or PDL
- Compact and PCB Mountable





High-Speed Electro-Optics Polarization Controller-Scrambler

- Rapid Response Time (< 10 Us) and Linear Response
- Based on Solid State Crystals Design
- Long Operating Lifetime
- Low Activation Loss
- Compact and PCB Mountable

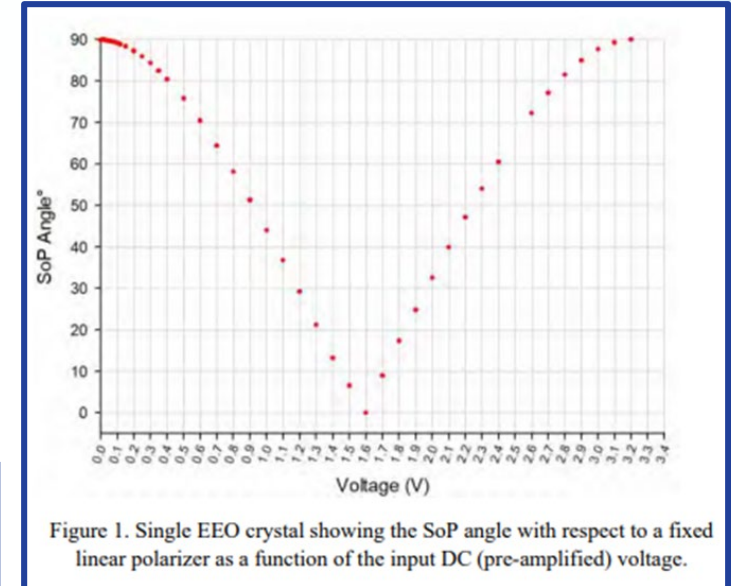
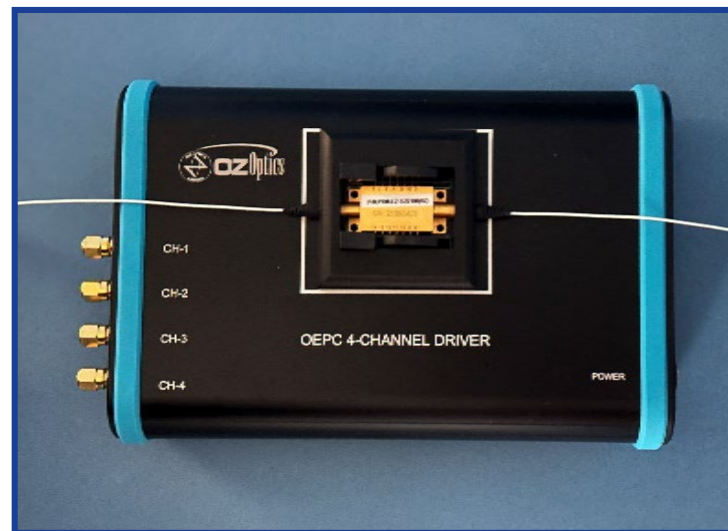
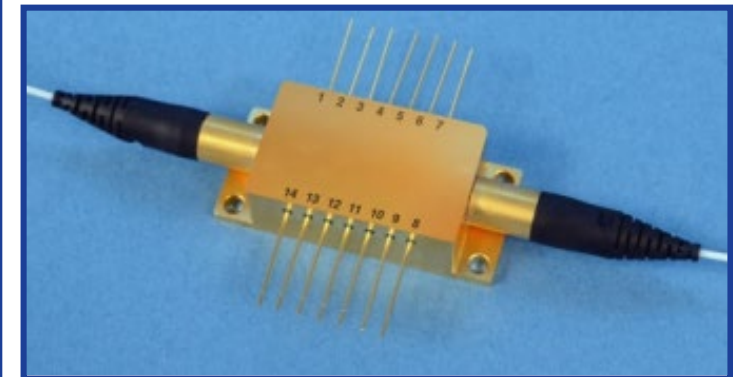


Figure 1. Single EEO crystal showing the SoP angle with respect to a fixed linear polarizer as a function of the input DC (pre-amplified) voltage.





Fiber Pigtailed Polarizers

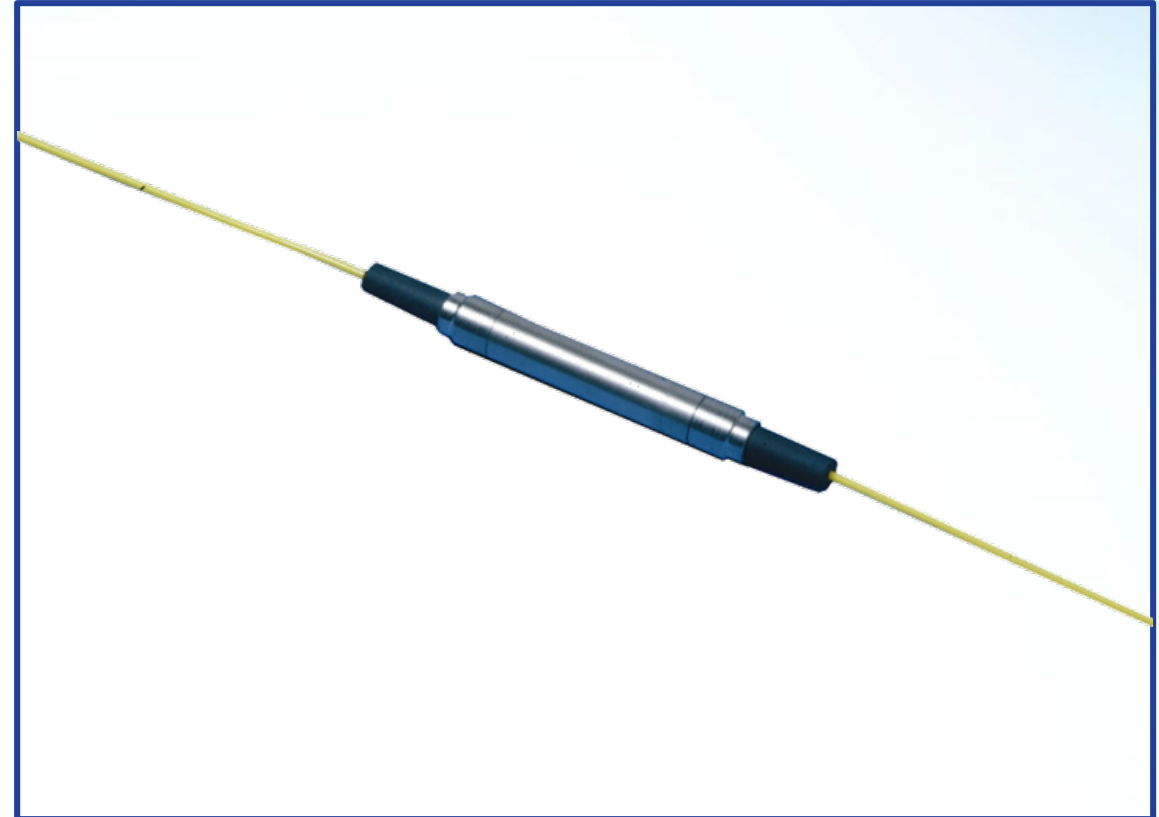


- Up to 30 dB Extinction Ratios
- Based on Free Space Optics
- 0.6 dB Insertion Loss, Low Cost, Compact
- -40, -50, -60 dB Backreflection Levels
- 400 – 2050 nm wavelengths



Fiber Pigtailed Polarizers

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Fiber Pigtailed Polarizers

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- -40, -50, -60 dB Backreflection Levels
- 400 – 2050 nm wavelengths





All-Fiber Polarizers



- **> 35 dB (Up to 50 dB) Extinction Ratios Possible**
- **< 0.5 dB Insertion Loss Achievable**
- **Low cost and compact size (3 mm OD housing)**
- **Broad operating wavelength**
- **-70 dB Backreflection Levels**



Polarization Maintaining Splitters



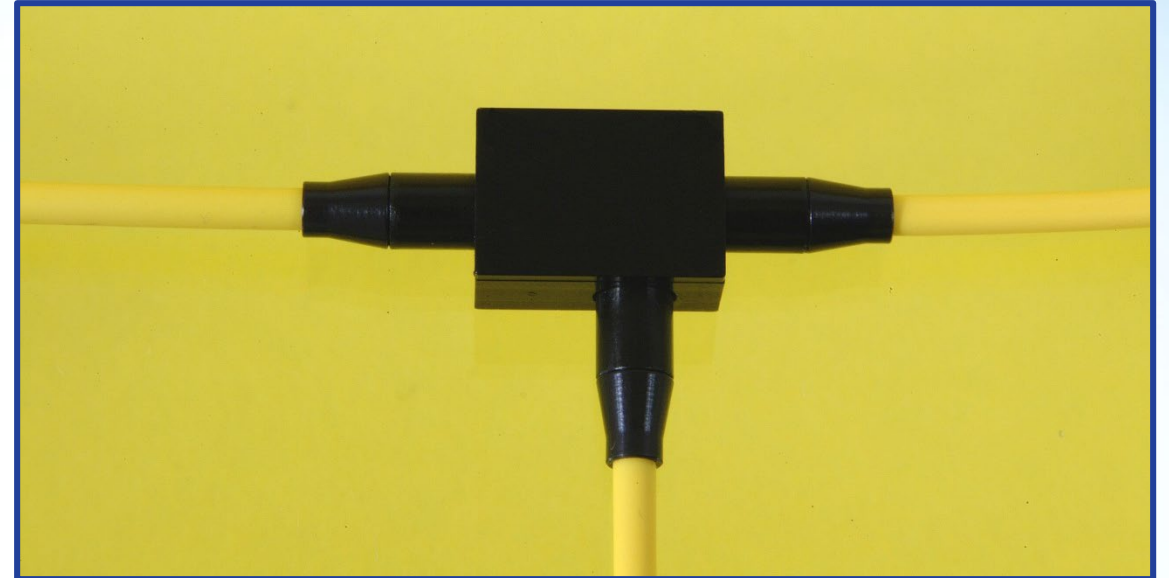
- Splits Polarized Light into 2 PM or SM Fibers
- 0.6 dB IL, -40, -50, -60 dB Backreflection
- 1x2 & 2x2 Versions Available
- 350 – 2050 nm Versions



Polarization Maintaining Splitters



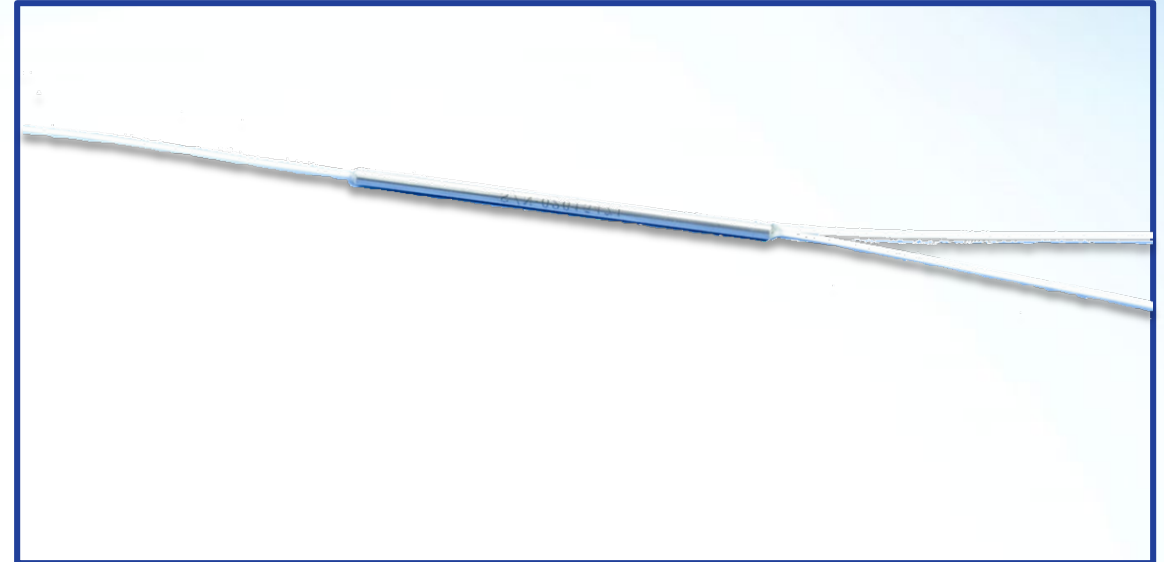
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- 0.6 dB IL, -40, -50, -60 dB Backreflection
- 1x2 & 2x2 Versions Available
- 350 – 2050 nm Versions



Polarization Maintaining Fused Splitters



- Splits Polarized Light into 2 PM Fibers
- 50/50 to 95/5 Split Ratios, Polarizing Versions
- 1x2 & 2x2 Versions Available
- 633 – 2000 nm Wavelengths





Polarizing Splitters / Combiners

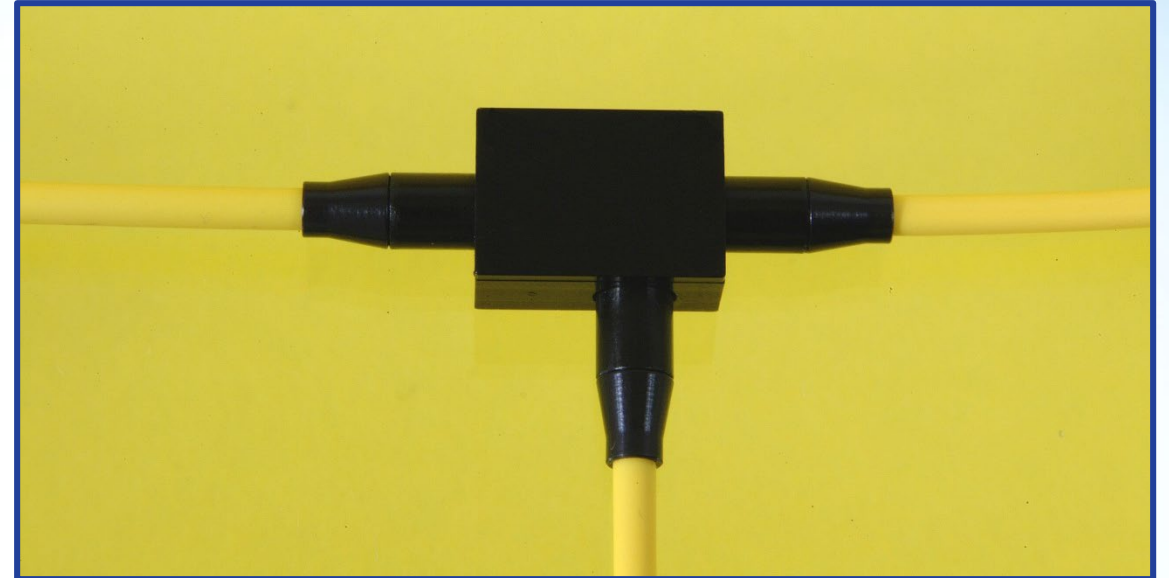
- Splits Light into Two Polarizations
- 0.6 dB IL, -40, -50, -60 dB Backreflection
- 1x2 & 2x2 Versions Available





Polarizing Splitters / Combiners

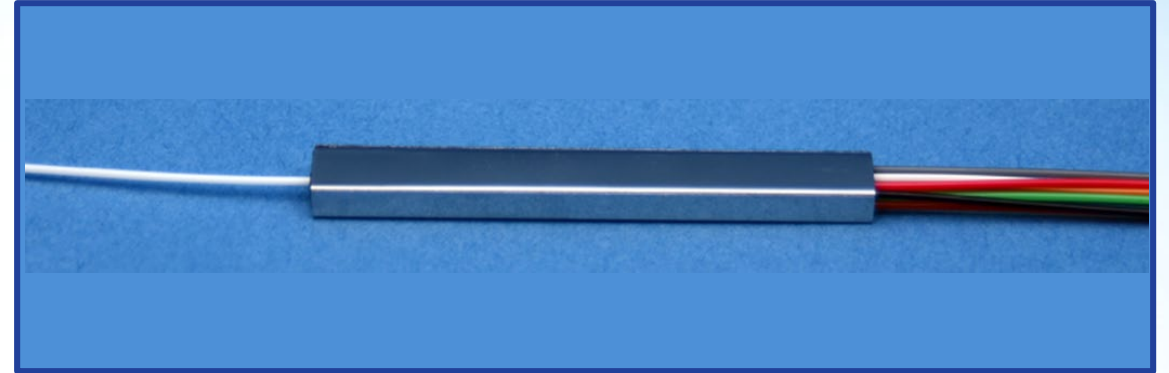
- Splits Light into Two Polarizations
- 0.6 dB IL, -40, -50, -60 dB Backreflection
- 1x2 & 2x2 Versions Available



PM Planar Light Circuit (PLC) Splitters



- 1x2 to 1x32 Splitter Configurations
- C, L and S Band Operation
- Miniature Package Size



PM Fiber Optic Circulators

- **0.7 dB Typical Insertion Loss**
- **532 – 1550 nm Wavelength Versions**
- **Up to 30 dB Extinction Ratios**

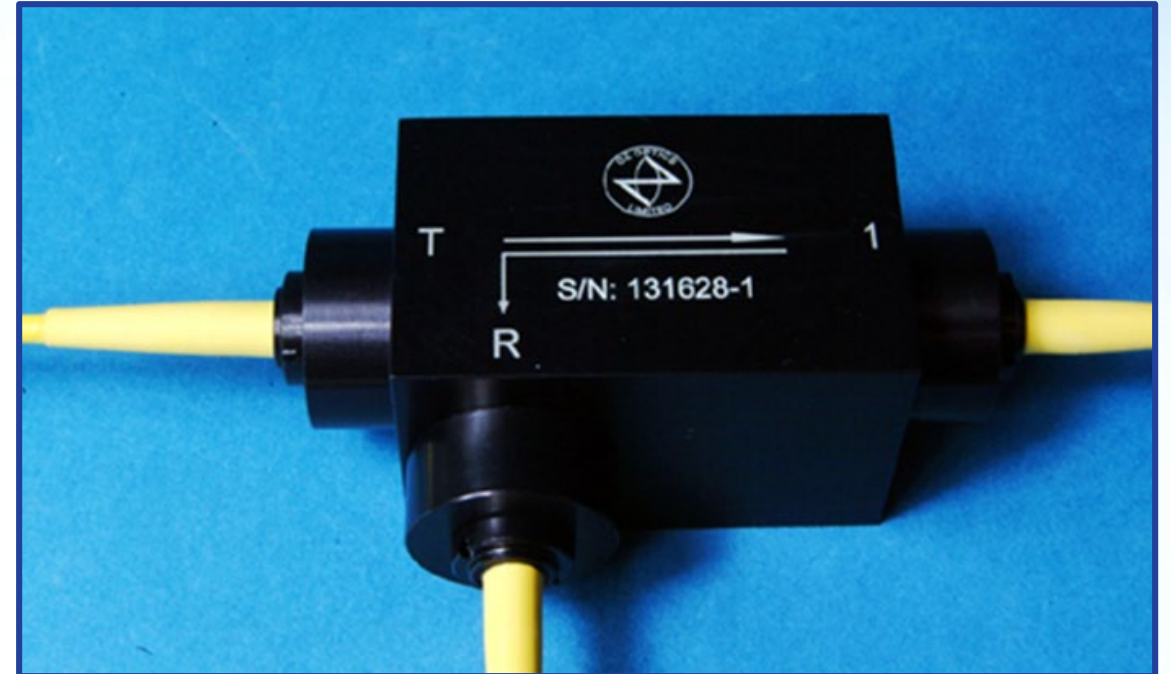




PM Fiber Optic Circulators



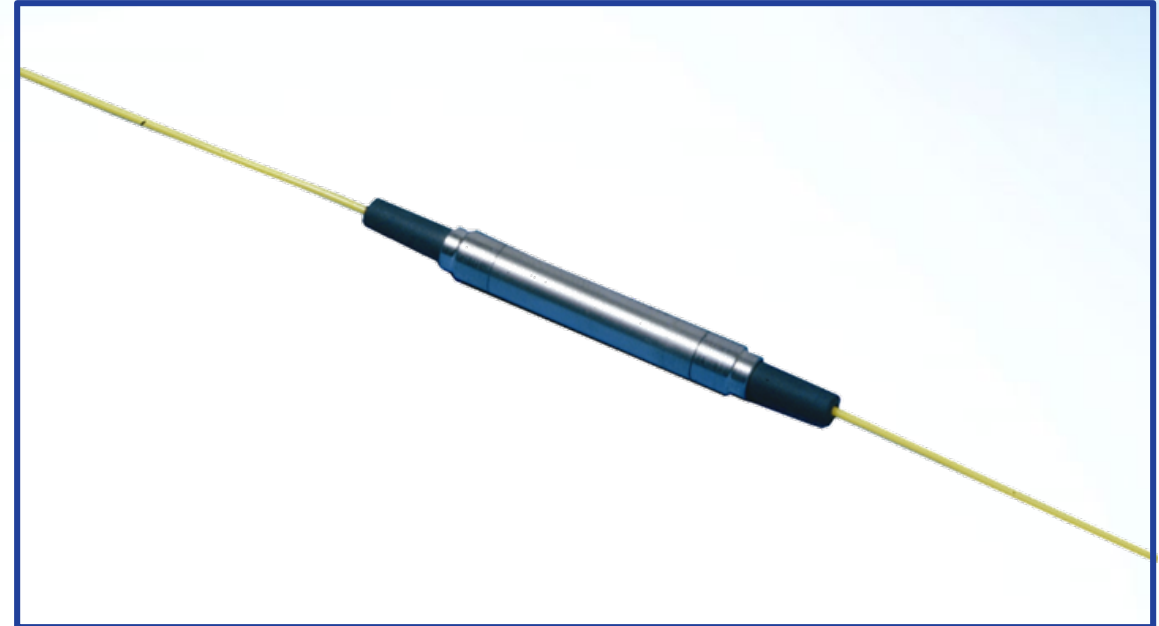
- 0.7 dB Typical Insertion Loss
- 532 – 1550 nm Wavelength Versions
- Up to 30 dB Extinction Ratios





Fiber Pigtailed Isolators

- **< 0.8 dB IL, as Much as 60 dB Isolation**
- **-40 dB, -50 dB, -60 dB Backreflection**
- **532 nm to 2050 nm Wavelengths**
- **Singlemode or PM Fiber Versions**
- **Polarizing or Polarization Independent Versions**



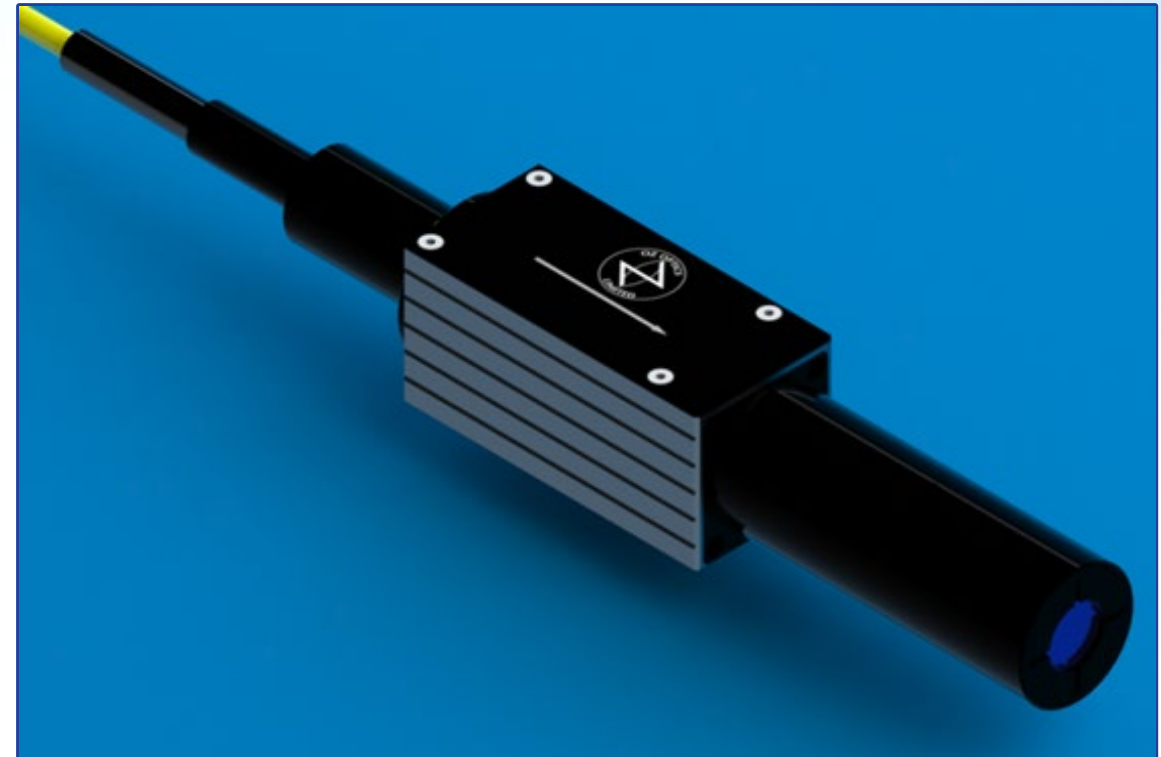
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Fiber Pigtailed Isolators

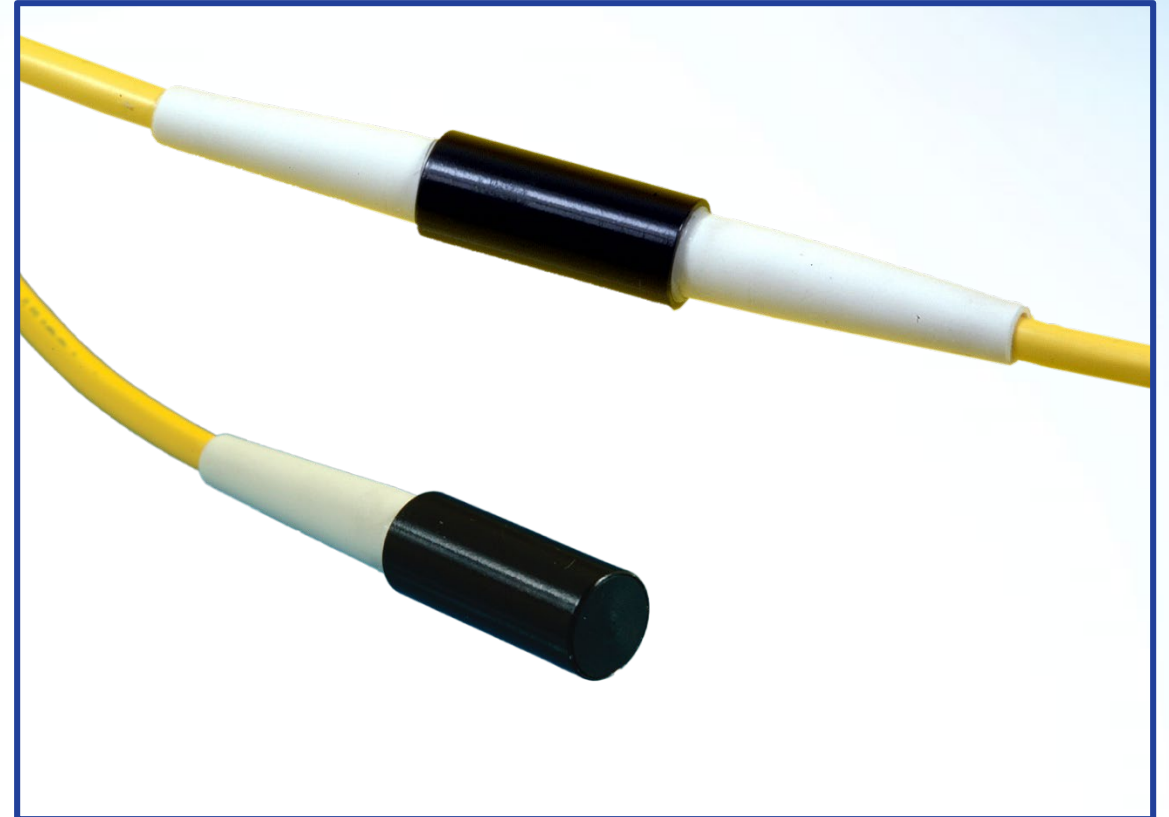
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- **-40 dB, -50 dB, -60 dB Backreflection**
- **532 nm to 2050 nm Wavelengths**
- **Singlemode or PM Fiber Versions**
- **Polarizing or Polarization Independent Versions**





Faraday Mirrors and Rotators

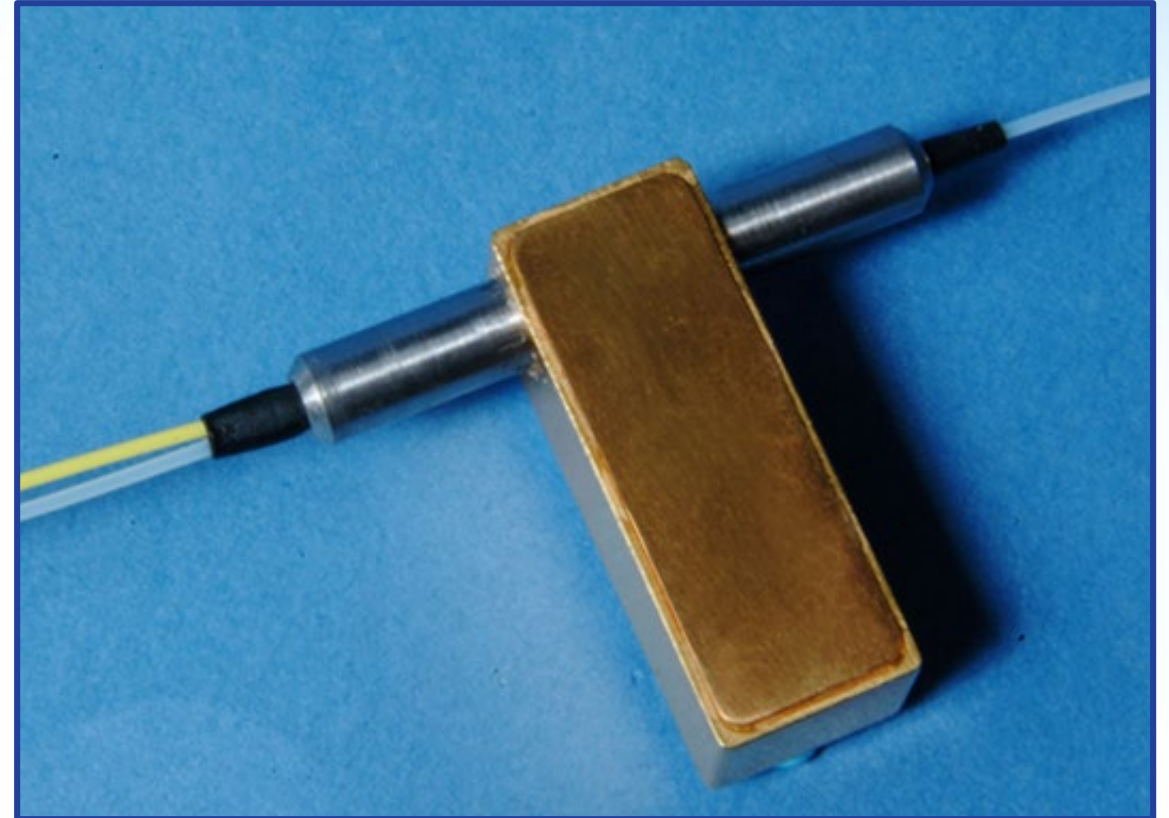
- Used in EDFA, Tunable Lasers, Etc.
- 0.7 dB Typical Insertion Loss
- -40, -50, -60 dB Backreflection



Polarization Maintaining Fiber Switch

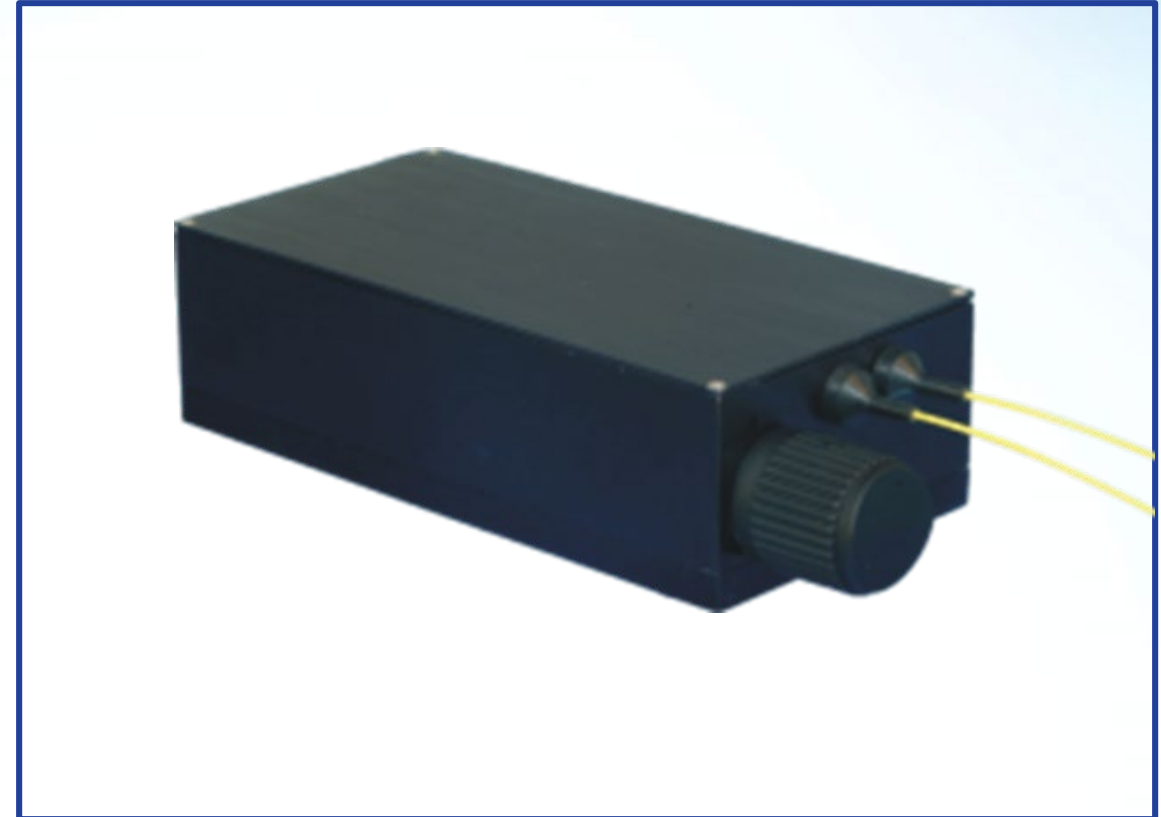


- **> 20 dB Polarization ER**
- **Latching and Non-Latching Versions**
- **< 0.6 dB Loss**
- **Now Offering MEMS Based 1 x N Optical Switches (Non-Latching)**



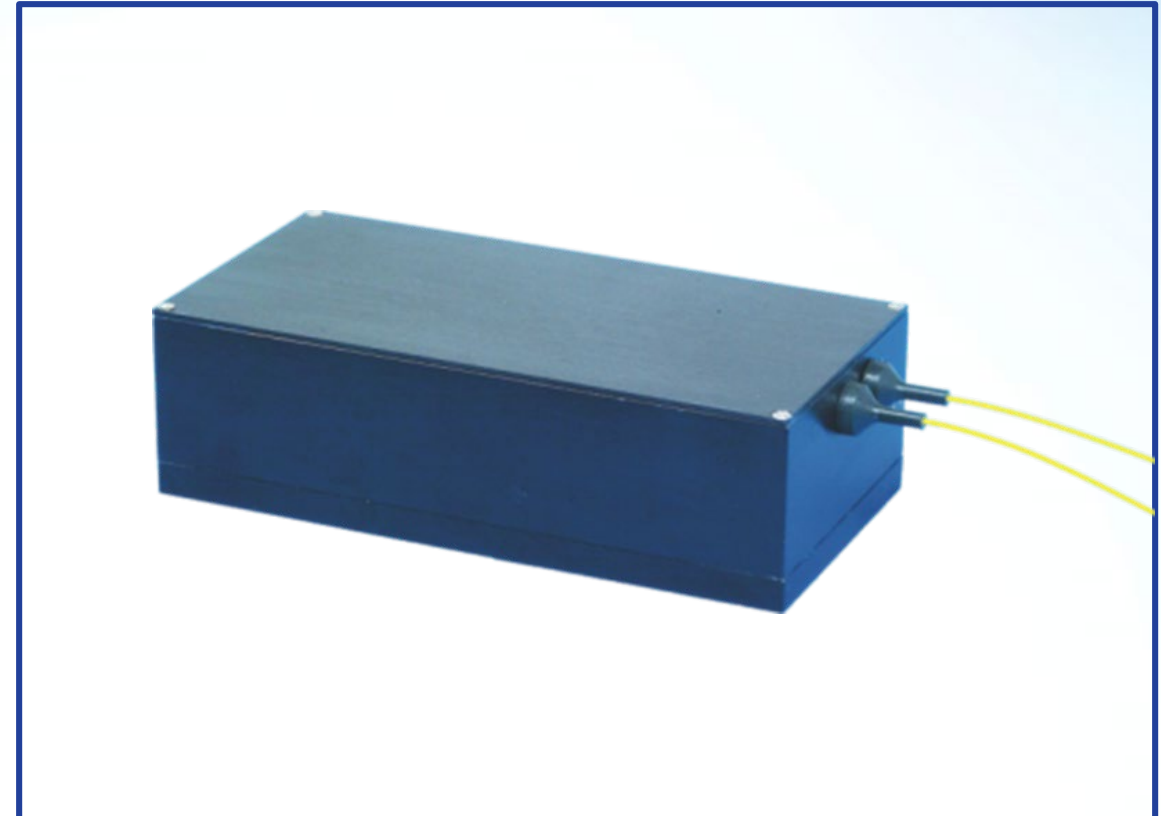
Variable Optical Delay Lines

- **Motor Driven Version Is Available**
- **Over 1200 ps Delay Range, < 1.5 dB IL**
- **As Fine as 0.003 ps Resolution**



Variable Optical Delay Lines

- **Motor Driven Version Is Available**
- **Over 1200 ps Delay Range, < 1.5 dB IL**
- **As Fine as 0.003 ps Resolution**



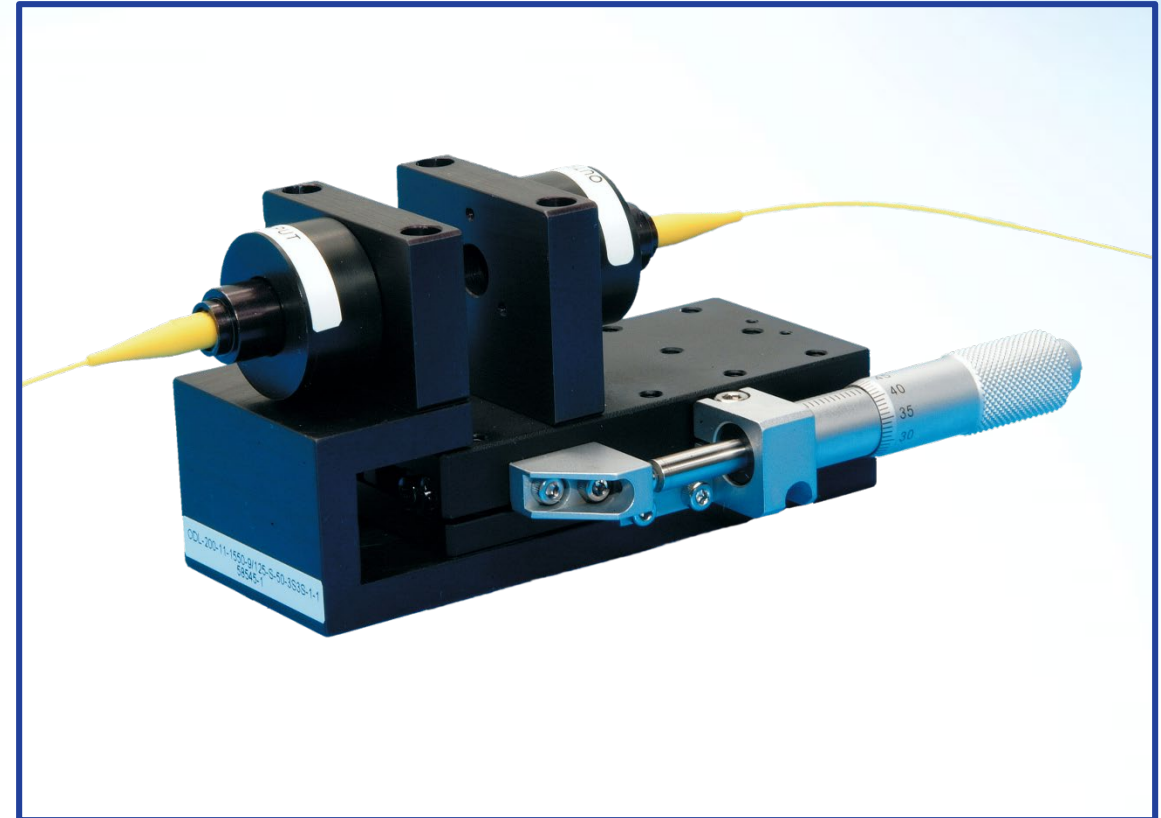
Variable Optical Delay Lines

- **Motor Driven Version Is Available**
- **Over 600 ps Delay Range, < 1 dB IL**
- **As Fine as 0.003 ps Resolution**



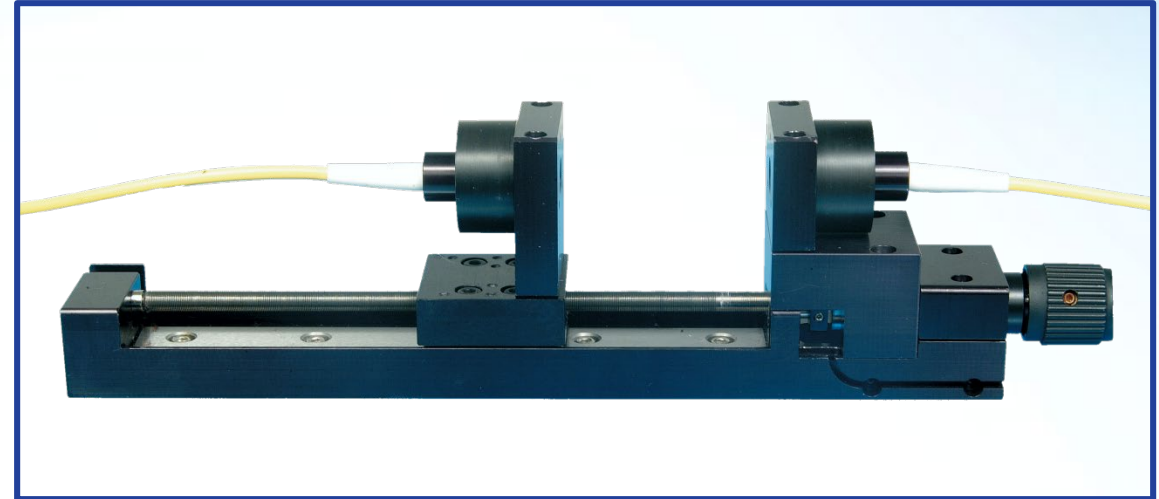
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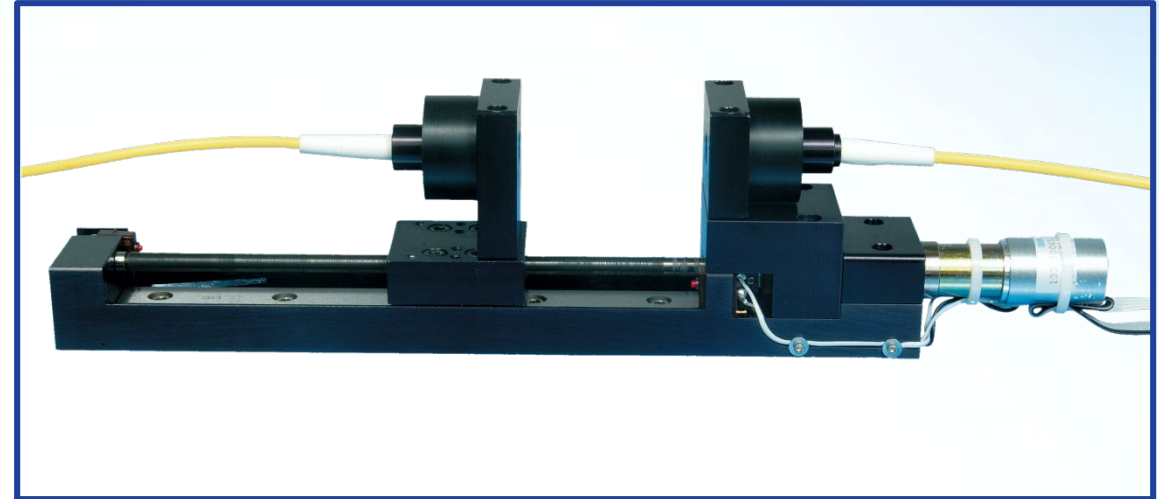
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Variable Optical Delay Lines

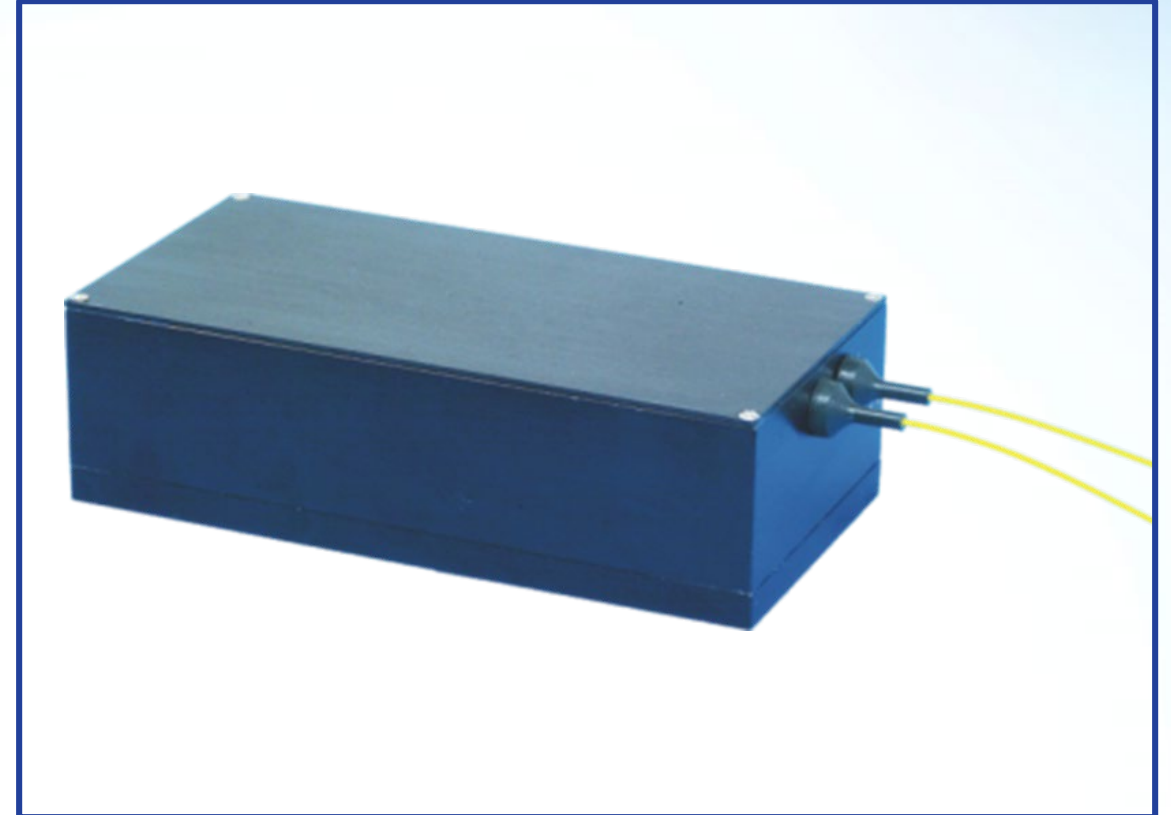
- **Motor Driven Version Is Available**
- **Over 600 ps Delay Range, < 1.2 dB IL**
- **As Fine as 0.003 ps Resolution**



Differential Polarization Delay Lines



- **Varies the Delay Between Two Polarizations**
- **± 50 ps Delay, 0.1 ps Resolution**
- **< 1.2 dB Losses over the Delay Range**



Polarization Measurement Systems



- Includes Source, Meter & Master PM Patchcord
- Measures up to 40 dB Extinction Ratios
- Available for 400 – 2000 nm
- FC, SC, LC, MU, E2000 or Custom Connectors & Ferrules
- Test Systems for PM Fiber Pigtailed V-Groove Assemblies



Polarization Measurement Systems



- Includes Source, Meter & Master PM Patchcord
- Measures up to 40 dB Extinction Ratios
- Available for 400 – 2000 nm
- FC, SC, LC, MU, E2000 or Custom Connectors & Ferrules
- Test Systems for PM Fiber Pigtailed V-Groove Assemblies



Polarization Dependent Loss Emulator



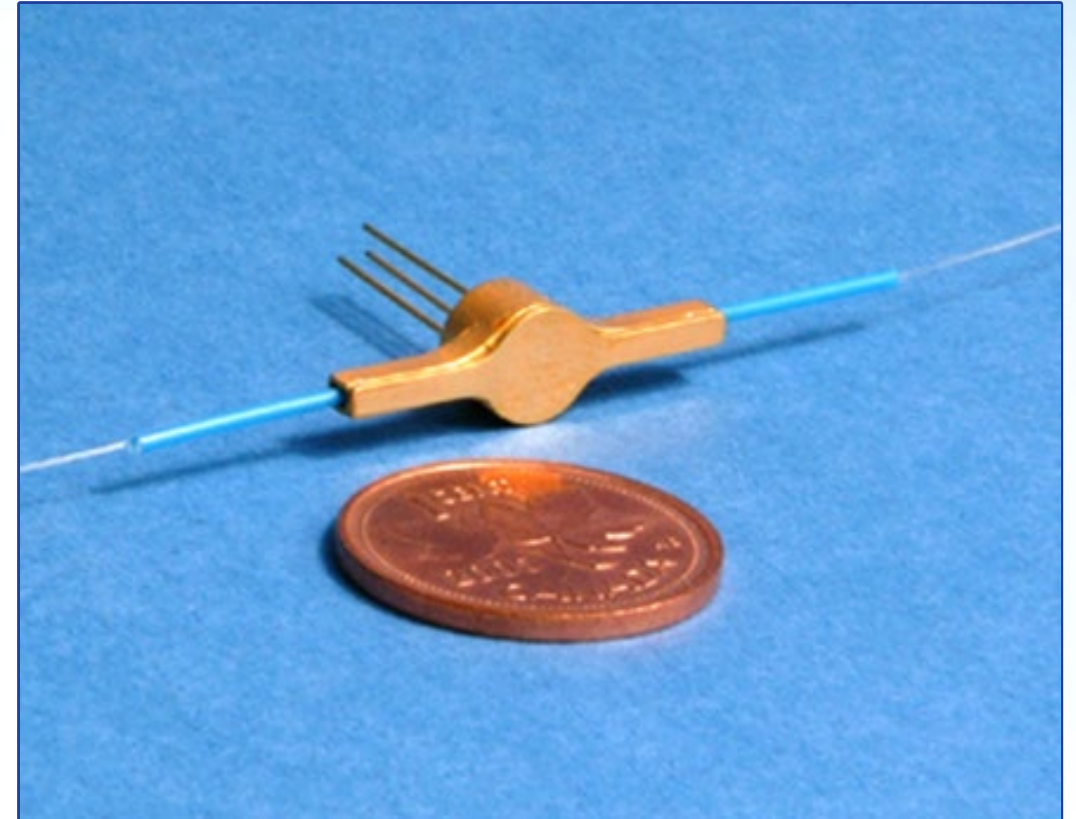
- 0.05 dB to 10 dB Polarization Dependent Loss
- Fixed or Manually Variable PDL
- Broad Wavelength Range, Compact, and Low Cost
- PMD Free Version Available



PM Fiber Power Monitors/Tap Couplers



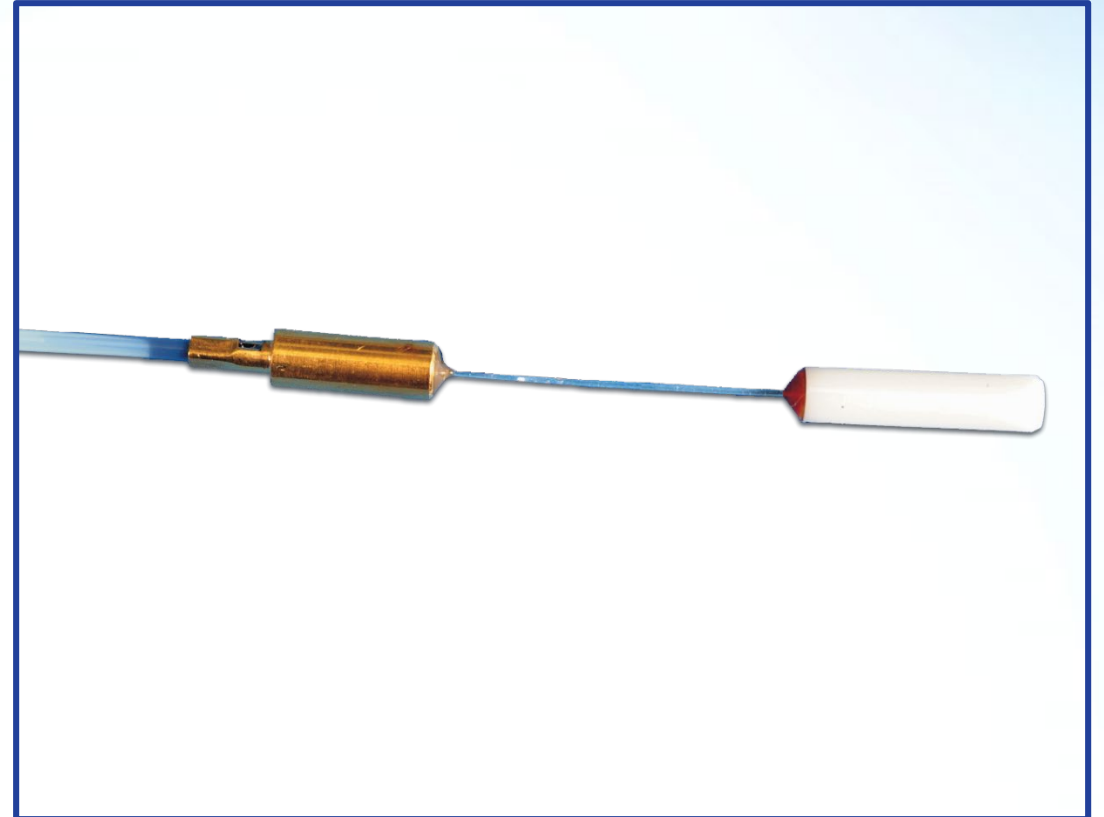
- **Wide Wavelength Range, up to 2 Watts Power Handling**
- **Single Channel**
- **Digital Display Version Used to Monitor and Measure Power Simultaneously**
- **Allows Optical Monitoring Without Disconnecting**
- **Can Be Locally or Remotely Accessed**
- **Ideal for FTTH Networks**



PM Fiber Power Monitors/Tap Couplers



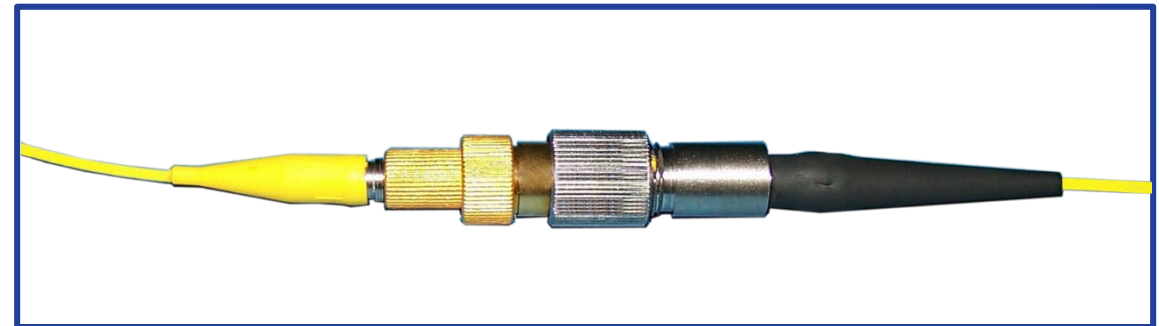
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- **Allows Optical Monitoring Without Disconnecting**
- **Can Be Locally or Remotely Accessed**
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▶ PM Components for OCT Applications



- **Complete Module or Separate Components Such As:**
 - **Broadband Isolators**
 - **Sources**
 - **Attenuators**
 - **Collimators**
 - **Fused Splitters**
 - **Delay Lines**





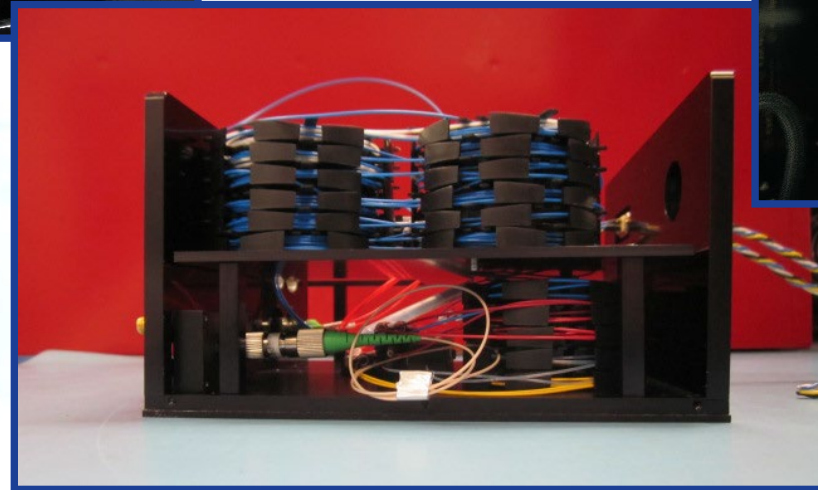
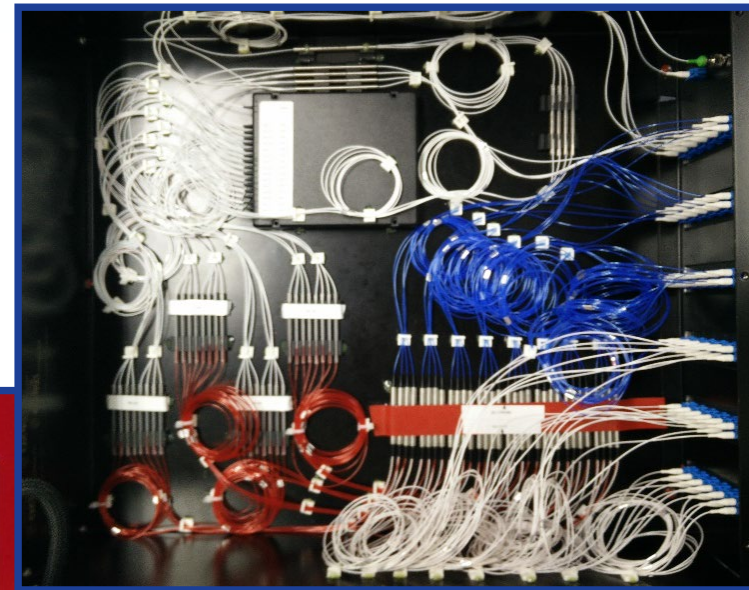
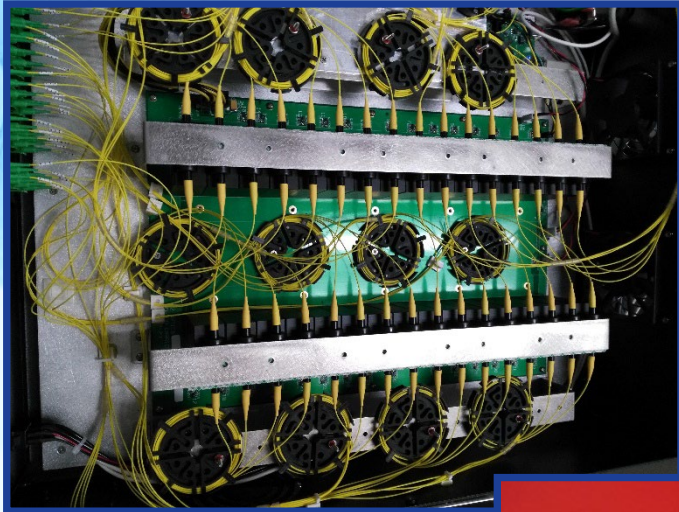
Fiber Modules/Systems/Routings



- **Advanced fusion splicers for multimode, singlemode, polarization maintaining and specialty fibers.**
- **3D CAD capabilities for enclosure and mounting hardware design.**
- **Extensive inventory of test and measurement equipment, including broadband and tunable laser sources, optical power meters, return loss meters, optical spectrum analyzers, polarization meters and controllers, etc.**
- **Skilled technicians well versed in fiber routing and layout.**



Fiber Modules/Systems/Routings



Thank You for Choosing OZ Optics

Please Contact Our Sales Department:

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