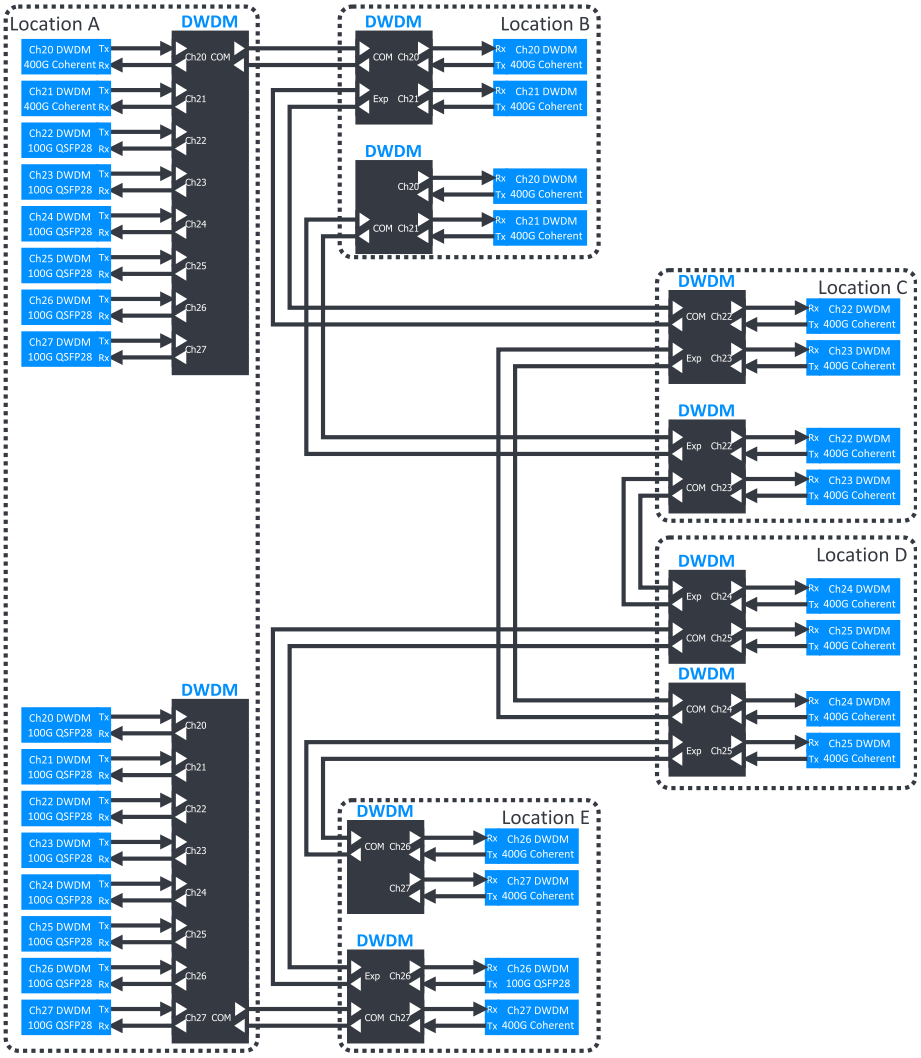
XenOpt

Passive Optical Systems



Example of a passive DWDM system designed by XenOpt

Catalogue of Passive Optical Systems:

Designing a system with a passive WDM assemblies is more **efficient way** of connecting locations. It removes the need of power supply on the location and lowers the risk of failures. The passive system is more affordable and easier to maintain. The designs can be **customized** to every customer's needs.

Online Catalogue

CWDM Single Fiber Filter

CWDM single fiber series, is a series of passive optical components optimized for use in single fiber CWDM transmission systems. Depending on fiber characteristics it enables transfer of up to 9 bidirectional channels over a single fiber strand using CWDM transponders. Standard single mode fiber G.652, that exhibits watermark peak attenuation, still allows transfer of at least 6 bidirectional channels and even more on shorter distances. All components are add/drop type – OADM so they can be daisy-chained. System using multiple wavelength ranges can be easily integrated using standard components. Each bidirectional data channel consists of two consecutive wavelengths, each transferring data in one direction.

Terminal connections are designed so that standard dual SM patch cords can be used to connect to standard transponder equipment. Each type of optical component is available in two versions (A and B). Use of both versions – one at each side – ensures that wavelengths on channel connectors are swapped, so that standard patch cables can be used, and that attenuation between different channels is balanced.

Devices are installed in standard LGX module that snaps into 1U rack mount bracket. Up to three LGX modules can be inserted in single 1U rack mount bracket. There is also a selection of unmanaged transponder modules that can be installed in place of LGX module. Managed transponders must be installed in separate rack mount enclosure.

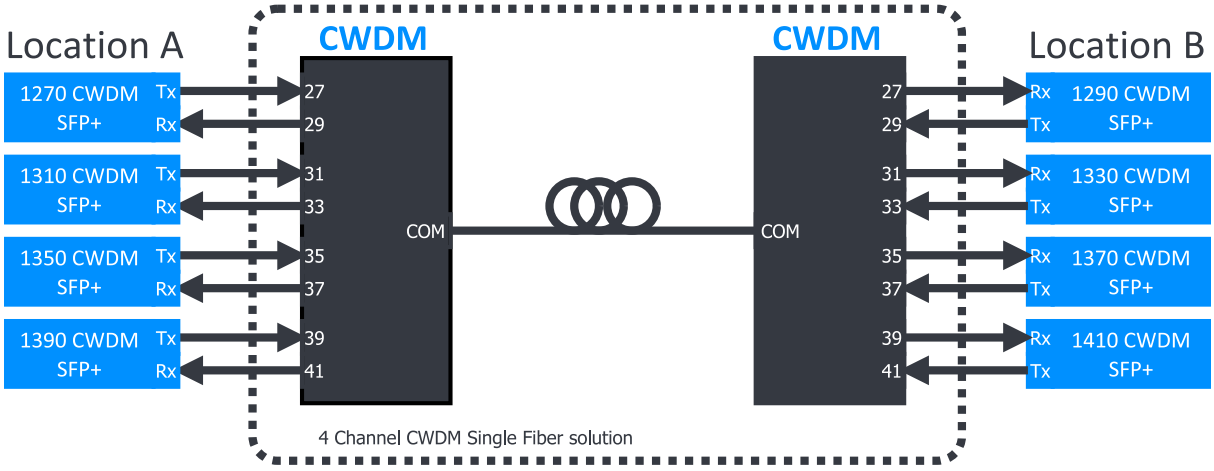
Features

- Optimized for single fiber applications
- Simplified component interconnection system using standard dual patch cords eliminates most interconnection errors
- Up to 9 bidirectional channels using all 18 standard CWDM wavelengths
- Very low inter-channel attenuation ripple
- Modular design enables later expansion
- Lower attenuation models available on request
- Standard versions available from stock
- Fully custom designed filter assemblies available on request

Applications

- Optimization of fiber use in fiber-based data transfer
- Concurrent transmission of different data formats i.e. Ethernet, Fiber Channel, TDM
- Optional components for monitoring and out of band fiber integrity and performance testing

Functional diagram



CWDM Dual Fiber Filter

CWDM Dual Fiber series is a series of passive optical components optimized for use in dual fiber CWDM transmission systems. Depending on fiber characteristics it enables transfer of up to 18 bidirectional channels over a fiber pair using CWDM transponders. All components are add/drop type – OADM so they can be daisy-chained. A system using multiple wavelength ranges can be easily integrated using standard components. Each bidirectional data channel uses a same wavelength on both fibers, each transferring data in one direction.

In custom versions any combination of wavelengths is possible. In addition to standard CWDM filters, wideband filters that support concurrent transmission of (existing) non CWDM optical signals using FP lasers are also available. Additional 1625nm or 1650nm test channel that enables OTDR testing of optical line while it is being used for data transmission is also available.

Devices are installed in standard LGX module that snaps into 1U or 2U rack mount bracket. Up to three LGX modules can be inserted in single 1U rack mount bracket. There is also a selection of unmanaged transponder modules that can be installed in place of LGX module. Managed transponders must be installed in separate rack mount enclosure.

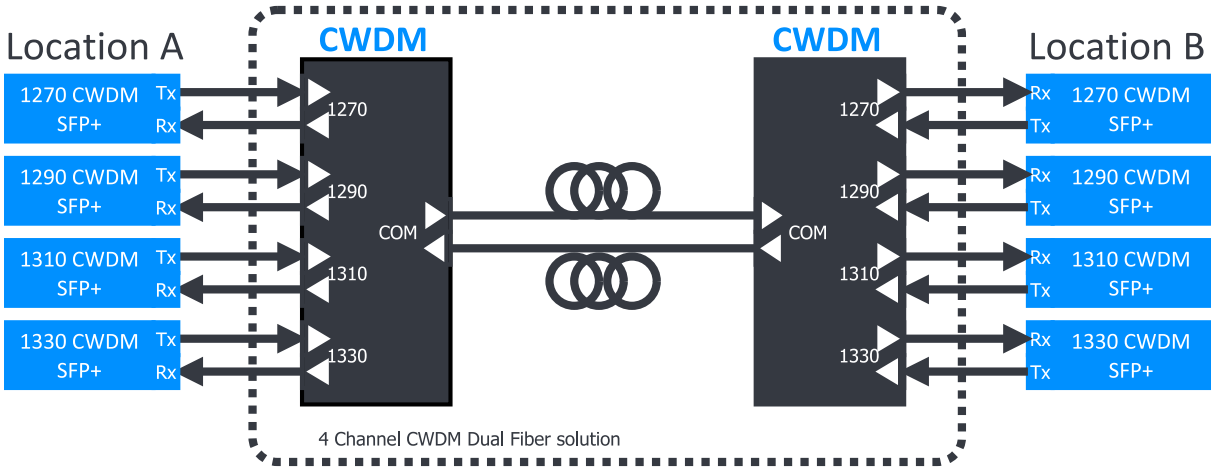
Features

- Optimized for dual fiber applications
- Simplified component interconnection system using standard dual patch cords eliminates most interconnection errors
- Up to 18 bidirectional channels using all 18 standard CWDM wavelengths
- Very low inter-channel attenuation ripple
- Modular design enables later expansion
- Lower attenuation models available on request
- Optimized versions for CPRI/OBSAI connections
- Fully custom designed filter assemblies available on request

Applications

- Optimization of fiber use in fiber-based data transfer
- Concurrent transmission of different data formats i.e. Ethernet, Fiber Channel, TDM
- Out of band monitoring, fiber integrity and performance monitoring
- Multiple CPRI / OBSI channels transported on top of colorless legacy connections

Functional diagram



DWDM Single Fiber Filter

DWDM single fiber series is a series of passive optical components optimized for use in single fiber DWDM transmission systems. Depending on the fiber characteristics it enables transfer of up to 22 bidirectional 100GHz channels over a single fiber strand using DWDM transponders and even more channels can be added on demand.

All components are OADM add/drop type so they can be daisy-chained. A system using multiple wavelength ranges can be easily integrated using standard components. Each bidirectional data channel consists of two consecutive DWDM wavelengths, each transferring data in one direction. There are different channel mapping available that are suitable for amplified systems.

Terminal connections are designed so that standard dual SM patch cords can be used to connect to standard transponder equipment. Each type of optical assembly is available in two versions (A and B). Use of both versions – one at each side – ensures that wavelengths on channel connectors are swapped, so that standard patch cables can be used, and that attenuation between different channels is balanced.

Devices are installed in standard 1U rack mountable chassis or in LGX module that snaps into 1U or 2U rack mount bracket. Up to three LGX modules can be inserted in single 1U rack mounted bracket. There is also a selection of unmanaged transponder modules that can be installed in place of LGX module. Managed transponders must be installed in separate rack mount enclosure.

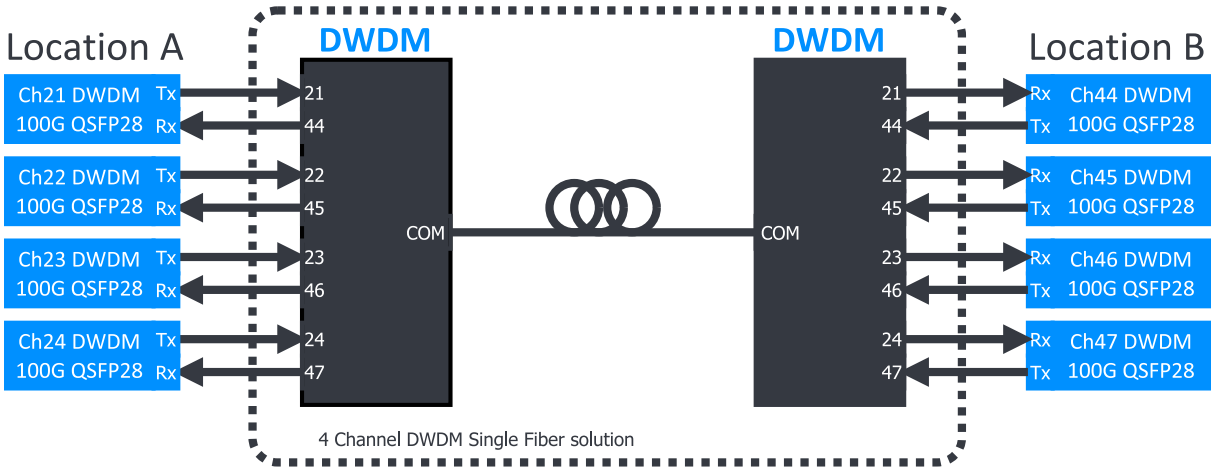
Features

- Optimized for single fiber applications
- Simplified component interconnection system using standard dual patch cords eliminates most interconnection errors
- Up to 16 bidirectional channels using 32 standard DWDM wavelengths
- Very low inter-channel attenuation ripple
- Modular design enables later expansion
- Lower attenuation models available on request
- Fully custom designed filter assemblies available on request

Applications

- Optimization of fiber use in fiber-based data transfer
- Concurrent transmission of different data formats i.e. Ethernet, Fiber Channel, TDM
- Out of band monitoring, fiber integrity and performance monitoring

Functional diagram



DWDM Dual Fiber Filter

DWDM dual fiber is a series of passive optical components optimized for use in dual fiber DWDM transmission systems. All assemblies can be add/drop type – OADM so they can be daisy-chained. A system using multiple wavelength ranges can be easily integrated using standard assemblies. Custom versions are available on request. Each bidirectional data channel uses a same wavelength on both fibers, each transferring data in one direction.

In addition to standard DWDM filters, wideband filters that support concurrent transmission of (existing) non DWDM optical signals or multi channel DWDM signals are also available. Additional 1625nm or 1650nm test channel that enables OTDR testing of optical line while it is being used for data transmission is also available.

Terminal connections in standard products are designed so that standard dual LC SM patch cords can be used to connect to standard transponder equipment. Devices are installed in standard 1U rack mountable or LGX box that snaps into 1U or 2U rack mount bracket. Up to three LGX modules can be inserted in single 1U rack mount bracket. There is also a selection of unmanaged transponder modules that can be installed in place of LGX module. Managed transponders must be installed in a separate rack mount enclosure.

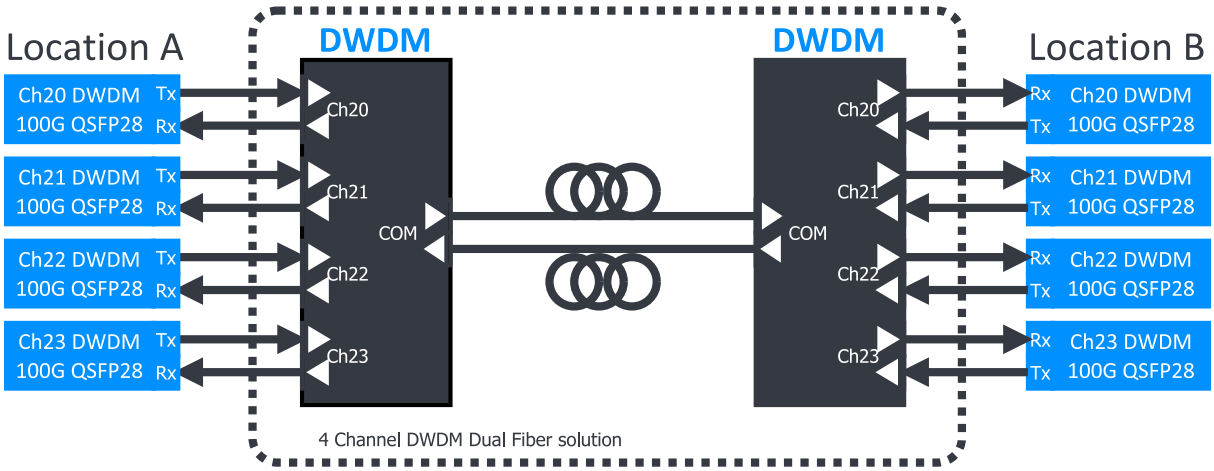
Features

- Optimized for dual fiber applications
- Simplified component interconnection system using standard dual patch cords eliminates most interconnection errors
- High number of connections over fiber pair.
- Limited only by system power budget.
- Very low inter-channel attenuation ripple
- Modular design enables later expansion without interrupting established links
- Lower attenuation models available on request (for specific channel configurations)
- Fully custom designed filter assemblies available on request

Applications

- Optimization of fiber use in fiber-based data transfer
- Concurrent transmission of different data formats i.e. Ethernet, Fiber Channel, TDM
- Out of band monitoring, fiber integrity and performance monitoring

Functional diagram



Hybrid Filters

Hybrid Filters represent a versatile solution made using DWDM (Dense Wavelength Division Multiplexing), CWDM (Coarse Wavelength Division Multiplexing) and wide band components, offering enhanced flexibility and performance in optical networking environments. These filters seamlessly integrate the capabilities of DWDM, CWDM and legacy technologies. Hybrid filters can be both single fiber or dual fiber solution.

Optimized for efficiency and versatility, Hybrid Filters facilitate the concurrent transfer of bidirectional channels over fiber strand or fiber pair. Leveraging the combined advantages of DWDM and CWDM principles, these filters support multiple bidirectional channels using standard transponders, ensuring optimal performance across a range of network architectures and applications.

Custom versions allow applications where fibers connecting legacy equipment can be used to transfer additional services.

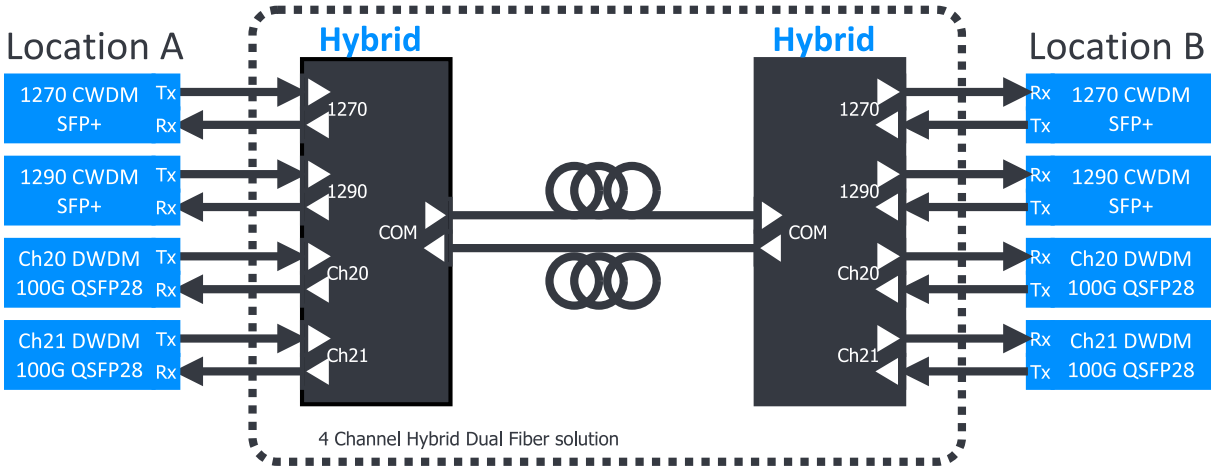
Features

- Optimized performance for DWDM and CWDM applications
- Flexible configuration options to accommodate diverse network architectures
- Designed for seamless integration into existing optical networks
- The modular design of the filters enables easy customization and future expansion
- Fully custom designed filter assemblies available on request

Applications

- Optimization of fiber use in data transfer applications
- Concurrent transmission of different data formats
- Out-of-band monitoring for fiber integrity and performance monitoring
- Integration into both single fiber or dual fiber transmission systems
- Seamless expansion and scalability of optical networks

Functional diagram



Coexistence PON Mux

The Coexistence PON Mux is a vital component in PON – passive optical networks, enabling the simultaneous operation of multiple services over a single fiber. Through wavelength division multiplexing (WDM), it integrates signals from GPON, XGS-PON, NG-PON2, CATV, and OTDR systems, optimizing spectral efficiency and minimizing interference. It facilitates broadband internet, telephony, multimedia streaming, and high-definition television delivery while enabling seamless network monitoring and diagnostics with OTDR equipment. The Coexistence Mux ensures robust connectivity and performance across diverse optical applications, making it indispensable in modern telecommunications infrastructure.

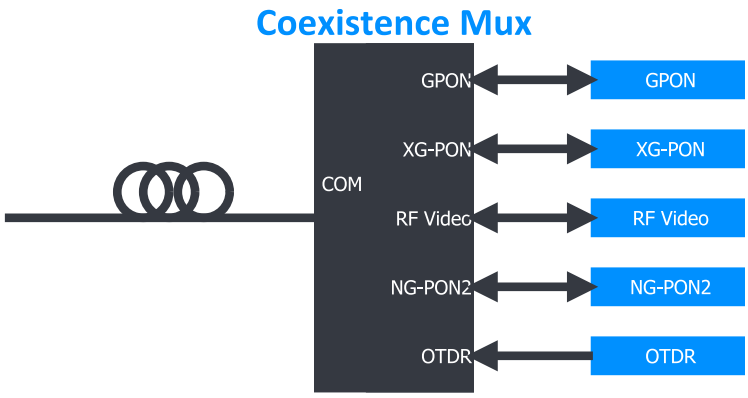
Features

- Low Insertion Loss
- High Isolation
- Low polarisation dependent loss - PDL
- Good channel to channel uniformity
- Wide Operating Wavelength
- Wide Operating Temperature: From -40°C to 85°C
- High Reliability and Stability

Applications

- GPON system
- EPON Network
- WDM PON Networks

Functional diagram



Example of Coexistence Mux integration

Splitter

The splitter is a type of optical power management device based on silica optical waveguide technology. It is widely used in passive optical networks to realize optical signal power splitting with 1xN or 2xN splitting ratio. XenOpt provides a series of customized splitters to meet different requirements on Package (Bare Fiber, Mini Module, ABS Box, LGX Box, Rack Mount, Cassette, and Wall Mount), Port Configuration (1x2, 1x4, 1x8, 1x16, 1x32, 1x64, 2x2, 2x4, 2x8, 2x16, 2x32, and 2x64), Input Fiber Type, Input Fiber Length, Output Fiber Type, Output Fiber Length, Input connector, and Output Connector etc..

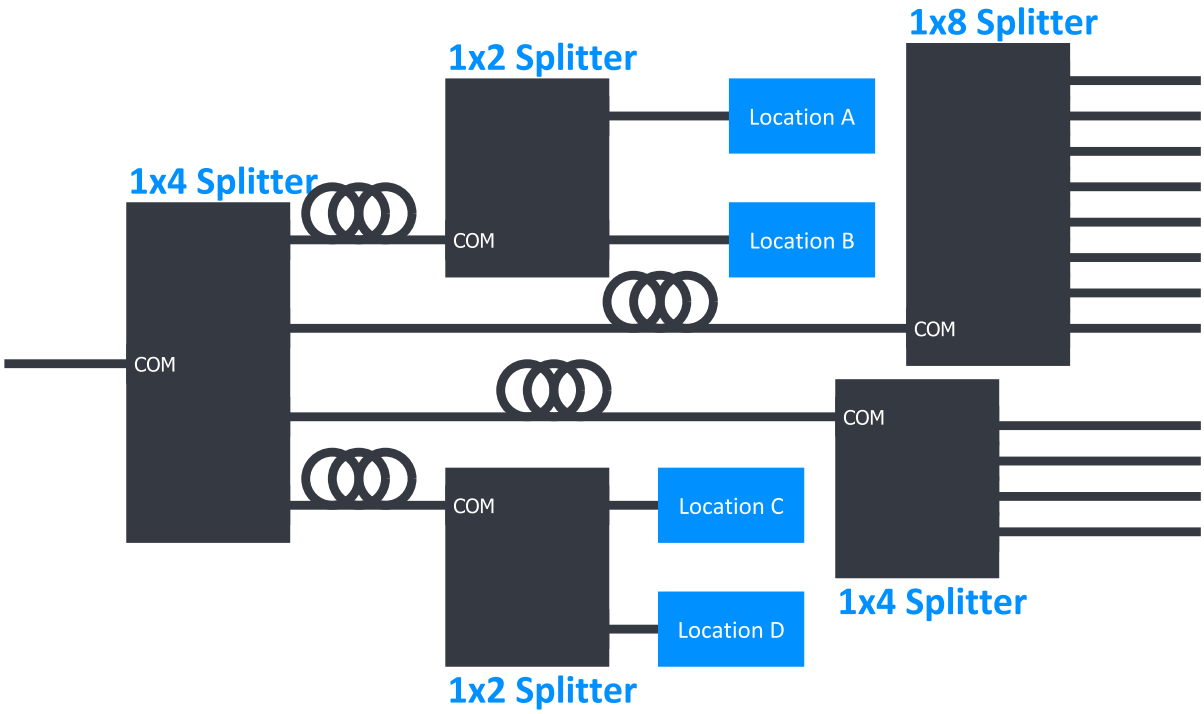
Features

- Low Insertion Loss
- High Isolation
- Low PDL
- Compact Design
- Good channel-to-channel uniformity
- Wide Operating Wavelength
- High Reliability and Stability
- GR-1209-CORE
- GR-1221-CORE
- YD/T-1272Q
- Q/CT-2295
- RoHS

Applications

- FTTH Systems
- PON Network
- CATV Links
- Communication Equipment

Functional diagram



Example of usage of splitters for PON network

Fiber-Optic TAP

Fiber-optic TAPs have long been used by service organizations and IT professionals, but their lower density compared to network switching infrastructure limited their deployment. The XenOpt TAPs deliver high densities while maintaining modular construction, allowing for easy installation within networks during deployment. These TAPs provide a permanent, fail-safe, and passive access point to network traffic, enabling connection to protocol analysers, network monitoring devices, and intrusion detection/prevention systems without network interruption.

Operating passively, fiber-optic TAPs divert a portion of network traffic to a monitoring port for analysis without affecting network performance. They ensure full line-rate access to traffic for enterprise fiber-optic networks, compatible with all intrusion detection/prevention systems, protocol analysers and network monitoring devices. Unlike using switching equipment's SPAN or mirror functionality, which may mask physical-layer and formatting errors, TAPs pass traffic bit-by-bit, allowing monitoring equipment to detect and log all errors.

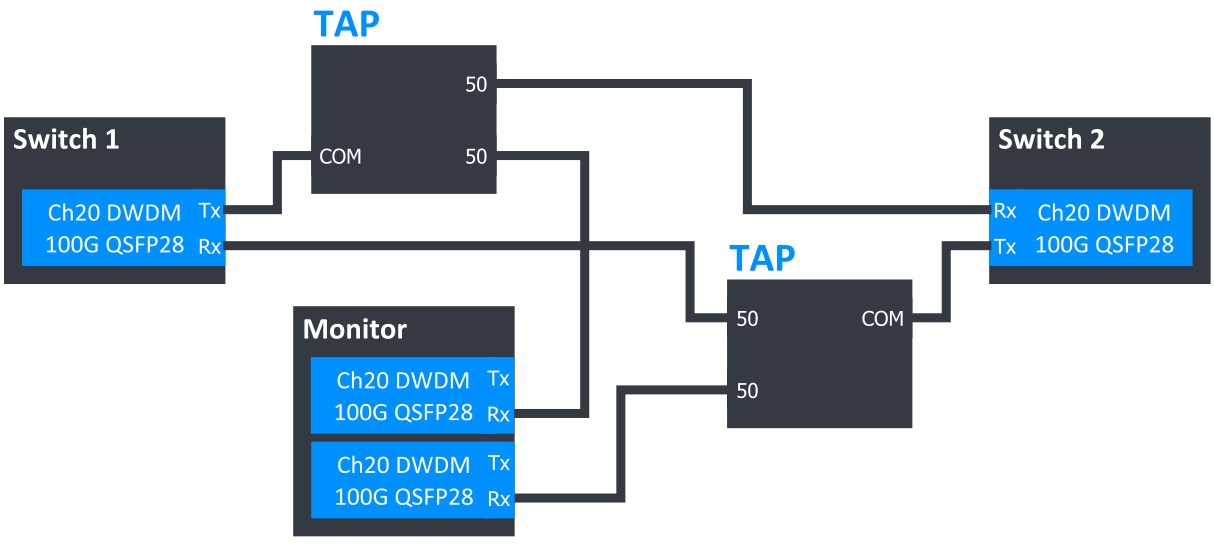
Features

- Provides passive access to fiber-optic network traffic that will not cause a point of failure
- Enables dynamic connection of analysis, monitoring, and security devices into networks
- Minimizes space with up to 12 dual fiber TAPs in a modular 1U rack mount configuration
- Shows all traffic, bit-for-bit, unlike Mirror or SPAN ports
- Preserves network switch equipment investment by allowing all switch ports to be utilized for business use rather than for SPAN or Mirror port functionality

Applications

- Laboratory
- Use for monitor the optical levels
- Metro applications

Functional diagram



Example of usage of TAP to monitor traffic

DCM – Dispersion Compensation Module

Dispersion compensation modules (DCM) are used for compensating the chromatic dispersion of a long span of transmission fiber.

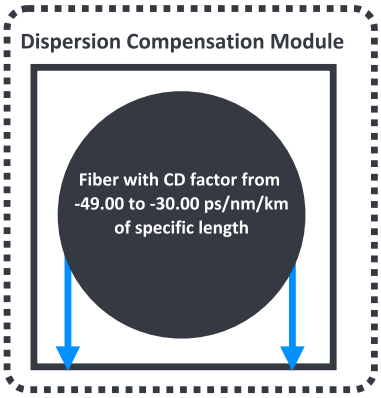
Dispersion compensation modules are based on fiber cable with negative dispersion coefficient optimized to provide dispersion slope compatible with G.652 or G.657 cable but can still be used with other types of optical cables. Fiber based DCM modules excel in linear continuous transfer characteristics, that can accommodate systems with adjustable channel bandwidth that channelized solutions cannot support. DCM fiber exhibits low attenuation and high linearity. In addition to standard version that supports power levels of up to 6dBm we have available also high-power versions that can operate with up to 23dBm of optical power without exhibiting nonlinear effects.

Features

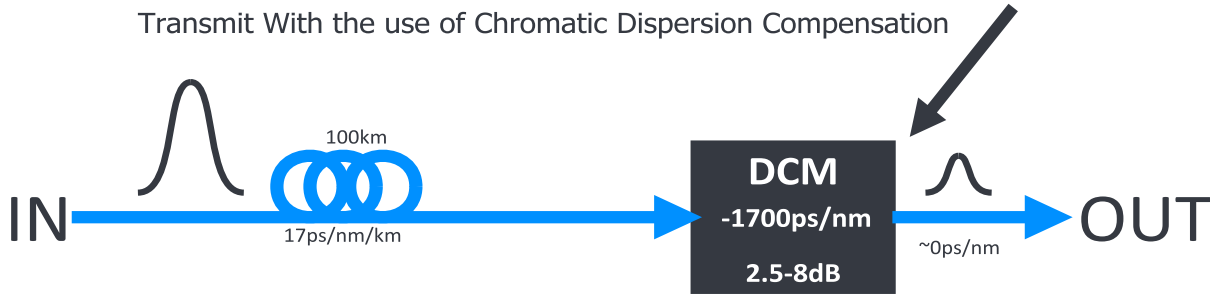
- Wide band continuous Dispersion Compensation for DWDM System
- Optimized for G.652 and G.657 fiber C-Band Slope Compensation
- Low Polarization Mode Dispersion
- Performance indicators have passed Telcordia GR-2854-CORE standard authentication
- Reliability exceeds Telcordia GR-1221- CORE standard specification
- Various package styles, connector types and jumper lengths available

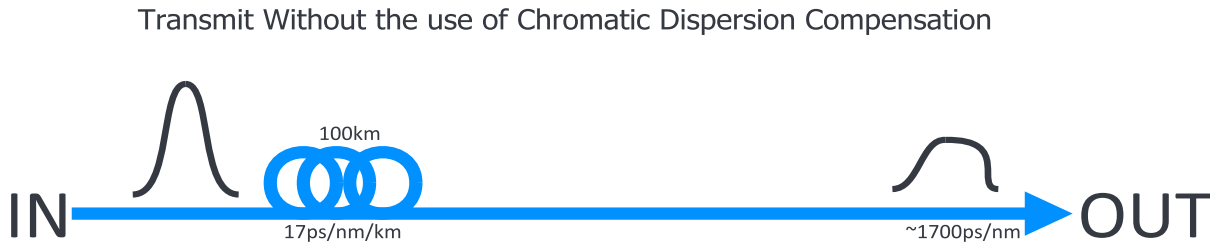
Applications

- G.652 and G.657 Standard Single-Mode Fiber Long Distance and Metropolitan Area Communication System
- DWDM Transmission System
- CATV System



Functional diagram





FBG – Fiber Bragg Grating DCM

Fiber Bragg grating dispersion compensation modules (FBG DCM) are used for compensating the chromatic dispersion of a long span of transmission fiber where also low attenuation is needed.

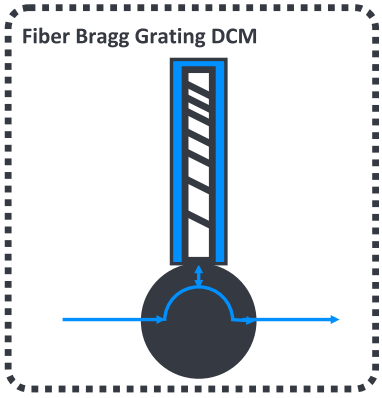
Dispersion compensation modules are devices with negative dispersion coefficient optimized to provide dispersion slope compatible with G.652 and G657 cable but can still be used with other types of optical cables. Fiber Bragg grating DCM modules prevent nonlinear dispersion impairments in optical DWDM transmission systems. They excel in linear continuous transfer characteristics, that can accommodate systems with adjustable channel bandwidth that channelized solutions cannot support. FBG DCM exhibits low attenuation and high linearity. In addition to standard version that supports power levels of up to 6dBm we have available also high-power versions that can operate with up to 23dBm of optical power without exhibiting nonlinear effects.

Features

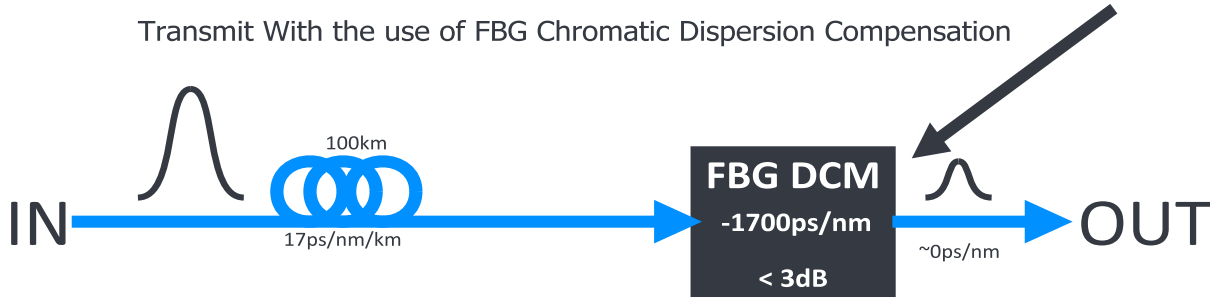
- Wide band continuous Dispersion Compensation for DWDM System
- Optimized for G.652 and G657 fiber C-Band Slope Compensation
- Low Insertion Loss
- Low Polarization Mode Dispersion
- Performance indicators have passed Telcordia GR-1209-CORE standard authentication
- Reliability exceeds Telcordia GR-1221-CORE standard specification
- Various package styles, connector types and jumper lengths available

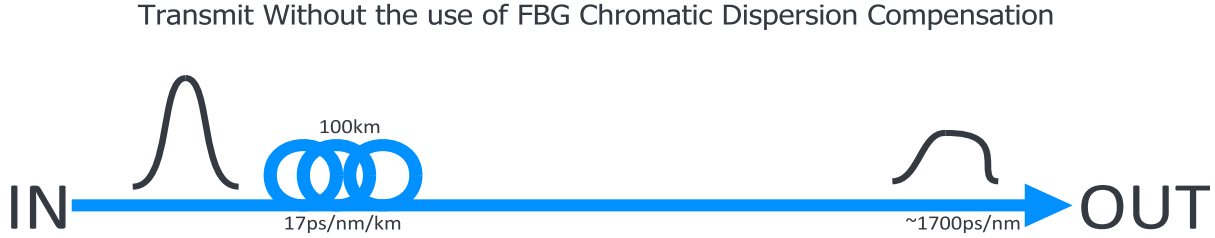
Applications

- G.652 and G657 Standard Single-Mode Fiber Long Distance and Metropolitan Area Communication System
- DWDM Transmission System
- CATV System



Functional diagram





Contents

sales@xenya.si
www.xenopt.com
Celovška cesta 172 SI 1000 Ljubljana
+38615140610