



# ECWDM Dual Fiber series

extended temperature  
passive optical components

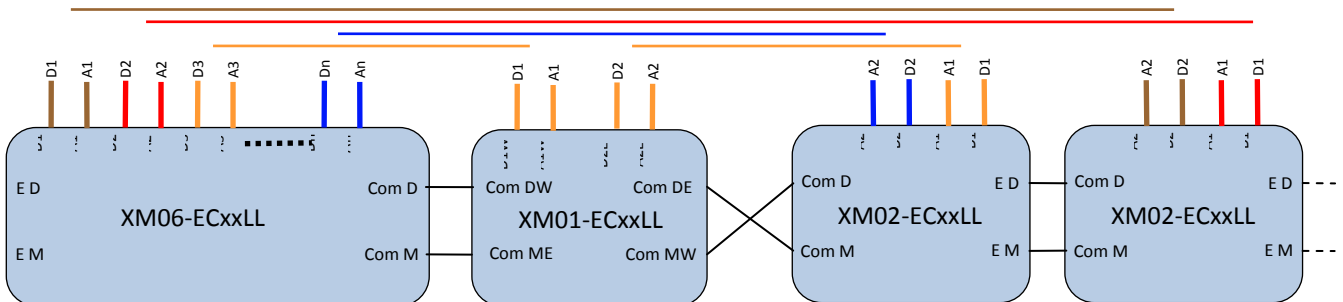
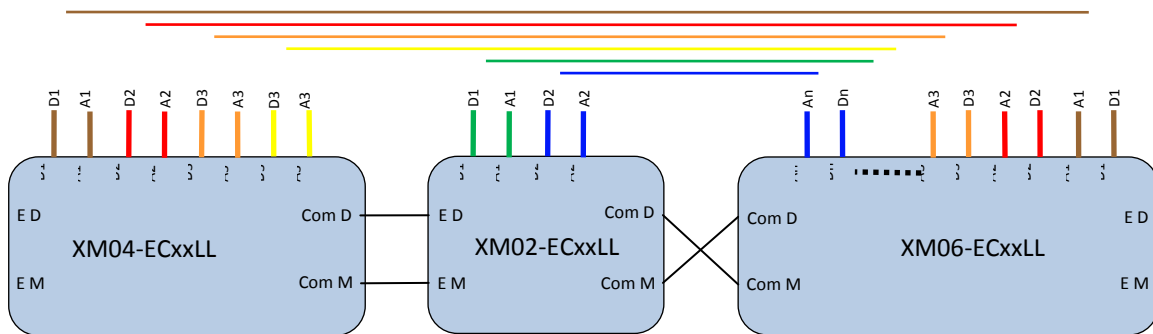


### Features:

- Optimized for dual fiber applications operating at wide temp. range
- 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 available

### Typical 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 GbE, 10GbE and/or CPRI / OBSI channels transported on top of colorless legacy connections



**Description:**

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 low cost CWDM transponders. Standard single mode fiber G.652A, that exhibits watermark peak attenuation, still allows transfer of at least 12 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 uses a same wavelength on both fibers, each transferring data in one direction. Standard components that are typically available from stock provide 2, 4, 6, 8 and 10 standard consecutive CWDM channels packed in 1U LGX box or 1U rack mountable enclosure.

Filters use advanced free space optics that significantly reduces insertion losses and dimensions of the packaged devices. Filter construction balances the attenuation on all used wavelength, so that exhibit very little attenuation ripple between different channels (typ. <0.3dB). Wavelengths exhibiting higher attenuations are in standard versions typically packed separately, so that easier optimization of total system attenuation is possible.

In custom versions any combination of wavelengths is possible. In addition to standard CWDM filters, there are also standard components with wideband filters that support concurrent transmission of (legacy) non CWDM optical signals – using existing legacy “colorless” transceivers (that can use even wide band FP lasers). 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 are designed so that standard dual LC SM patch cords can be used to connect to standard transponder equipment (i.e. SFP, SFP+...).

Devices are usually 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.

**Ordering:****XMnn-EyxxLb**

<b>n</b>	number of add/drop channels
<b>b</b>	type of enclosure (L – LGX, R – 1U rack mountable box)
<b>Y</b>	C – CWDM, H-CWDM with wide band filter

XM02-ECxxLL	2 wavelengths dual fiber OADM, east-west, 1U LGX box
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XM04-ECxxLL	4 wavelengths dual fiber OADM, single direction, 1U LGX box
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XM08-ECxxLL	8 wavelengths dual fiber OADM, single direction in 2U LGX
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XM08-ECxxLP	8 wavelengths dual fiber OADM, single direction in 1U rack mountable box
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If wavelengths are all sequential **xx** is replaced by middle two digits of lowest wavelength of component. If wavelengths are not sequential **xx** is replaced with list of middle digits of all wavelengths separated by »/«.

Here are some examples of typical extended temperature devices that are usually available from stock in limited quantities:

XM11-EH43LLM	11 wavelengths OADM CWDM 1431 to 1611 and wideband 1310 in 1U LGX box
XM10-EC43LLM	10 wavelengths OADM 1431 to 1611 in 1U rack mount box
XM09-EH47LLM	9 wavelengths OADM CWDM 1471 to 1611 and wideband 1310 in 1U LGX box
XM08-EC47LLM	8 wavelengths OADM 1471 to 1611 in 1U LGX box
XM05-EH47LLM	5 wavelengths OADM CWDM 1471 to 1531 and wideband 1310 in 1U LGX box
XM04-EC47LLM	4 wavelengths OADM CWDM 1471 to 1531
XM04-EC51LLM	4 wavelengths OADM CWDM 1471 to 1531

### Typical connections layouts:



### Optional accessories

- XM11 19" rack mounting bracket accommodates up to 3 LGX modules in 1U height
- XM11R 19" rack mounting bracket accommodates up to 3 LGX modules in 2U height, recessed
- XM12R 19" rack mounting bracket accommodates up to 6 LGX1 modules or 3 LGX2 modules in 2U height, recessed
- XM11B blank panel for 19" rack mounting bracket
- XM11G1 Cable guide bracket enables guiding and fixing of all optical cables when installed with rack mount bracket

### Optional Services:

- Optical fiber measurements and qualification
- Design and integration of complete system including active equipment
- Custom configurations and OEM production is possible for orders with typically at least 10 equal components.

## Technical Specifications

	4 ch	5 ch	8ch	9 ch
Express Channel pass band	1260 to 1620 nm			
Add Drop Channel	1271 to 1661 nm (all ITU G.694.2 specified channels)			
Bandwidth @ -0.5dB	≥ 14 nm for CWDM, 80nm for 1310W			
IL @ Express Channel	≤ 1.5 dB			
Express/1310W Channel Isolation	≥ 15 dB	≥ 40 dB	≥ 15 dB	≥ 40 dB
ILmax @ Add/Drop (component pair)	≤ 2.1 dB	≤ 2.4 dB	≤ 2.5 dB	≤ 2.6 dB
ILmax @ Add/Drop (single component)	≤ 1.5 dB	≤ 1.6 dB	≤ 1.8 dB	≤ 2.0 dB
ILmax Com to E or 1310W	≤ 1.1 dB			
Add-Drop Channel Ripple (A/B component pair)	≤ 0.3 dB			
Polarization Dependent Loss (dB)	≤ 0.10 dB			
Add Drop Channel Isolation (Adjacent)	≥ 30 dB			
Add Drop Channel Isolation (Non Adjacent)	≥ 40 dB			
Return Loss	≥ 45 dB			
Directivity	≥ 50 dB			
Polarization Mode Group Delay	< 0.2 ps			
Optical Power Handling	≥ 500 mW			
Operating Temperature	-40 to +85 °C,			
Operating Relative Humidity	5% - 90% non condensing			
Storage Temperature	-40 to +85 °C			
Connector Type	LC-UPC			
Packaging Dimension	1U Aluminum LGX Box (130mm x 127mm x 30mm)			2U LGX box or 1U rack mountable

### NOTES:

IL and PMD includes connector loss.

Different packing and lower Insertion loss versions are available on request.

To find out more, please contact: