



# DWDM Single Fiber series

passive optical components

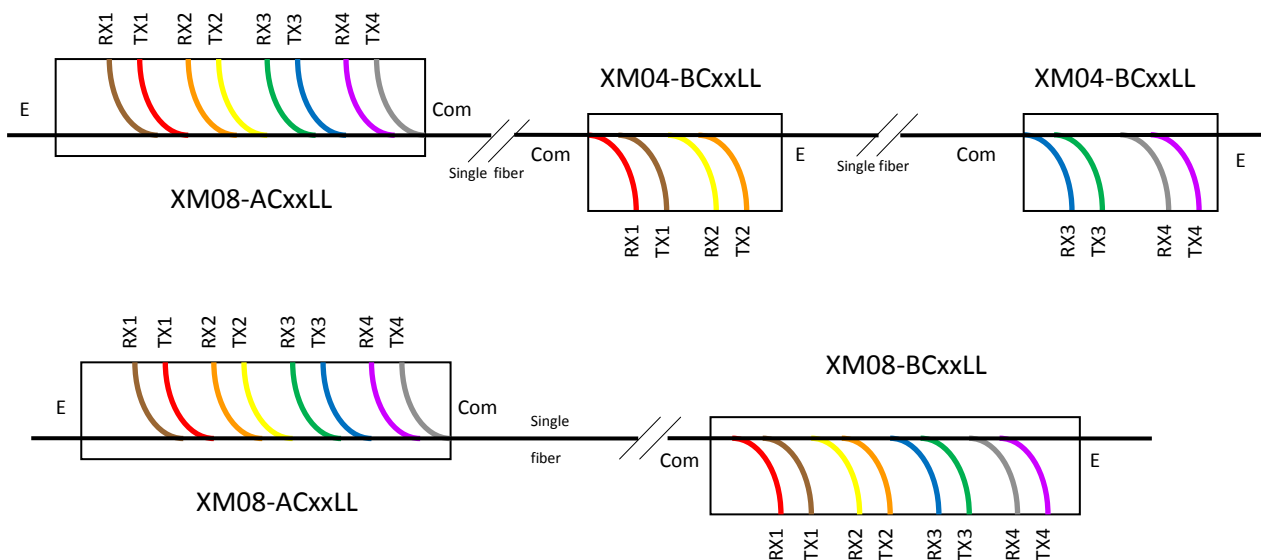


## Features:

- 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
- Standard versions available from stock

## Typical Applications or Product Overview:

- 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



## Description:

DWDM single fiber series is a series of passive optical components optimized for use in single fiber DWDM transmission systems. Depending on fiber characteristics it enables transfer of up to 16 bidirectional channels over a single fiber strand using low cost DWDM transponders.

For more channels, please refer to our AWG DWDM multiplexer datasheet. All components are OADM add/drop type 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 DWDM wavelengths, each transferring data in one direction. There are different channel options available that are adapted for amplified systems.

Terminal connections are designed so that standard dual SM patch cords can be used to connect to standard transponder equipment (i.e. SFP). 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.

#### Ordering:

XM02-ADxxLL	2 wavelengths (single channel single fiber) OADM
XM02-BDxxLL	

XM04-ADxxLL	4 wavelengths (dual channel single fiber) OADM
XM04-BDxxLL	

XM08-ADxxLL	8 wavelengths (quad channel single fiber) OADM
XM08-BDxxLL	

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 »/« (see detailed description on page 4).

Any combination of standard DWDM (*ITU-T G.694.2*) wavelengths combinations can be ordered with delivery time of up to 6 weeks (4 weeks typical).

Following versions are usually available from stock (all channels are consecutive):

XM10-A(B)D20LL	10 wavelengths (5 channel) OADM
XM08-A(B)D20LL	8 wavelengths (quad channel) OADM
XM08-A(B)DLL	8 wavelengths (quad channel) OADM
XM04-A(B)DnnLL	4 wavelengths (quad channel) OADM 1471 to 1531
XM04-A(B)DnnLL	4 wavelengths (quad channel) OADM 1531 to 1611
XM04-A(B)D27LL	4 wavelengths (quad channel) OADM 1271 to 1331
XM02-A(B)D59LL	2 wavelengths (quad channel) OADM 1591, 1611
XM02-A(B)D55LL	2 wavelengths (quad channel) OADM 1551, 1571
XM02-A(B)D51LL	2 wavelengths (quad channel) OADM 1511, 1531
XM02-A(B)D47LL	2 wavelengths (quad channel) OADM 1471, 1491
XM02-A(B)D31LL	2 wavelengths (quad channel) OADM 1311, 1331

### Technical Specifications

Parameter	Thin film DWDM OADM					Unit
	2 ch	4 ch	6ch	8 ch	10 ch	
Express Channel pass band	1331 to 1611					nm
Add Drop Channel	1271 to 1661 nm					nm
Bandwidth @ -0.5dB	≥ 15					nm
IL @ Express Channel	≤ 1.1	≤ 1.8	≤ 2.4	≤ 3.1	≤ 3.6	dB
Express Channel Isolation	≥ 15					dB
ILmax @ Add/Drop (A & B component pair)	≤ 1.8	≤ 2.5	≤ 3.3	≤ 4.1	≤ 4.5	dB
ILmax @ Add/Drop (single component)	≤ 1.2	≤ 2.0	≤ 2.7	≤ 3.4	≤ 3.9	dB
Add-Drop Channel Ripple (A/B component pair)	≤ 0.4					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
Optical Power Handling	≥ 500					mW
Operating Temperature	0 to +70					°C
Storage Temperature	≤ 1.1					°C
Connector Type	LC-PC					
Packaging Dimension	LGX Box (130mm x 127mm x 30mm)					mm

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

### Typical connections layouts:

#### Single fiber Single side OADM examples:



Figure 1 XM10-AC43LL - Single fiber Single side 10 wavelengths DWDM OADM version A



Figure 2 XM10-BC43LL - Single fiber Single side 10 wavelengths DWDM OADM version B

#### Single fiber Dual side OADM examples:



Figure 3 XM04-?C47LL - Single fiber Dual side 4 wavelengths DWDM OADM (1471 to 1531nm)



Figure 4 XM04-?C55LL - Single fiber Dual side 4 wavelengths DWDM OADM (1551 to 1611nm)

**Designation**

1	2	3,4		5	6	7,8	9	10	11	12	13	
X	M	n	-	A B E F G	C D FL H	n	L S	9 L M P R	-	-	-	
1	XenOpt											
2	Passive modules (OADM, MUX, ...)											
4	Number of ports/channels in packing											
3,4	Module type (A- OADM single fiber, type A; B - OADM single fiber, type B, E - OADM dual fiber, AWG; F - OADM dual fiber, type A (obsolete) G - OADM dual fiber, type B (obsolete))											
5	WDM type (CWDM, DWDM, FWDM, DWDM L band, Hybrid)											
6	Middle numbers of lowest wavelength for sequential wavelengths or List of middle numbers of all wavelengths separated with "/".If total length of designation exceeds 18 characters, this part of designation is shortened to 3 characters starting with Letter X that acts as index that points to detailed description in Common Log. For each such device a separate datasheet is issued.											
7,8	Connector type: LC, SC											
9	Package and temperature range: 9 – 19” box, commercial temperature range L – LGX box, commercial temperature range M – LGX box, industrial temperature range P – Small package, commercial temperature range R – Small package, industrial temperature range											
1	Reserved											
1	Reserved											
2	Reserved											
1	Reserved											
3	Reserved											

**Optional accessories**

- XMR1 19” rack mounting bracket accommodates up to 3 LGX modules in 1U height
- XMR1R 19” rack mounting bracket accommodates up to 3 LGX modules in 2U height, recessed
- XMR2R 19” rack mounting bracket accommodates up to 6 LGX1 modules or 3 LGX2 modules in 2U height, recessed
- XMR1B blank panel for 19” rack mounting bracket
- XMR1G1 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.

**Optional accessories**