Cisco Prisma Optical Passive Components

This data sheet includes optical wavelength filters, multiplexers, and demultiplexers that operate in the C-band from 1525 to 1565 nm as well as band filters to combine C-band transmission optics with1310-nm sources. Included here are shelf-based components (LGX style), cassette-based components for use in field fiber enclosures, and passives designed to fit in Cisco® nodes.

As commonly used in fiber-optic distribution systems, these passive components are used to combine or separate individual or bands of wavelengths into a single fiber to economize and improve the efficiency of optical transmission systems for voice, video, and data networks. Typical applications include overlay of narrowcast and broadcast cable TV signals and bidirectional transmission of data.

The products specified here include all those for use with Cisco Prisma® headend optical transmitters including the legacy1310-nm line, the SuperQAM1.2 products, and the high-performance LRMW transmitters. Also included are passives designed to work with the GS7000 and GainMaker® line of nodes. The shelf-based passives are packaged in industry-standard LGX-style modules of varying widths depending on the number and type of connectors used (Figure 1). Cassette-style passives for field use may be screw-mounted in widely available splice enclosures and consist of metallic housings with connectorized, color-coded, and labeled break-out cables for ease of identification. Passives for use in the GS7000 nodes are fit into a specially designed housing that readily mounts in the lid of the node.

The passives are available in a variety of configurations that reflect differing uses and channel plans. Overlay and multiwave-reverse systems use contiguous ITU channels, while iWDM channel plans maximize co-propagating wavelengths when power, modulation type, or increased linearity performance is required. The options are described in the tables that follow.

The iWDM plan consists of 16 wavelengths in the C-band in the range of ITU 21 through ITU 62. Although there are predefined offsets for some of the 16 wavelengths, the multiplexer and demultiplexer of optical signals can continue to be supported through standard ITU optical passives because the offsets are within the guard band of the passive - typically 0.12 nm.

Cisco Prisma interoperable multiwavelength optics passives multiplexer and demultiplexer components (Figure 1) are essential when iWDM is implemented to increase network efficiency by significantly reducing fiber counts. Most units are available in the industry-recognized, LGX-compatible form factor to allow easy, snap-in mounting in a variety of enclosures and cabinets.

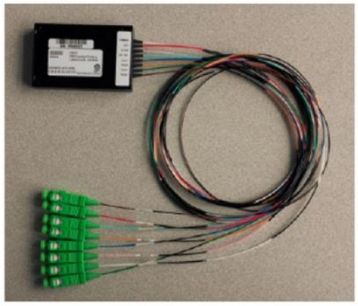
Features

- Channel spacing is 100 GHz, compliant with the ITU standard wavelength grid.
- Filters passbands are compatible with 100-GHz systems for all channel plans.
- Analog, QAM, and baseband digital modulation are supported for maximum flexibility in application.
- LGX modules easily snap into a wide variety of enclosures and cabinets.

- Cassette modules for outside plant environments use 900-um breakout cables for easy fiber handling.
- Wavelength multiplexer and demultiplexer groupings include
  - Matched pairs of LGX and cassette modules for ease of system configuration
  - Compatibility of all wavelength combinations for flexibility in deployments
- Connector types include
  - LC/APC connectors in LGX modules for improved density in headend racks
  - SC/APC connectors on cassettes for easy handling in outside plant environments

Cisco Prisma LGX iWDM

GS7000 Module



Cassette

Specifications

Table 1 lists the common specifications for all filters in this data sheet. Table 2 lists the physical dimensions of the various form factors available (LGX, cassette, and GS7000 optical hub). Table 3 lists the multiple-channel and band-pass filters available in the LGX module form factor, and Table 4 lists single-channel DWDM filters available in the LGX module. Table 5 lists cassette versions of the filters for field use, and Table 6 lists the filters available in the GS7000 Optical Hub form factor. Table 7 lists miscellaneous filters.

Table 1. Common Specifications (Unless otherwise noted, these specifications may be used for all modules.)

Specification	Units	Cisco Prisma LGX	Cisco GS7000 Optical Hub	Cisco Cassette
Insertion loss (maximum) multiplexer and demultiplexer	dB	8 channel: 2.3 16 channel: 3.0	8 channel: 2.3 16 channel: 3.0	8 channel: 2.5 16 channel: 3.3
Isolation (maximum)	dB	>28 (adjacent channels) >40 (nonadjacent channels)		
Channel bandwidth at –0.5 dB	nm	$\lambda_c \pm 0.12$		
Channel spacing	GHz	100		
Polarization dependent loss	dB	≤ 0.20		
Polarization mode dispersion	ps	≤ 0.15		
Express Port Insertion Loss **4 channel iWDM** **8 channel iWDM** **12, 16, 20, 40 channel ITU**	dB	 1.3 2.8 3.0		 1.6 3.0 1.0

Specification	Units	Cisco Prisma LGX	Cisco GS7000 Optical Hub	Cisco Cassette
Express Port Passband				
4 and 8 channel iWDM (excludes active channels)	nm	1520—1570		1520—1570
8 to 40 ITU channel (excludes active channels)		1260—1635		1260—1635
Upgrade Port Insertion Loss				
12, 16, 20, 40 channel ITU	dB	3.0		3.0
Upgrade Port Passband				
8 to 40 ITU channel (excludes active channels)		ITU 16—63		ITU 16—63
Directivity	dB	≥ 50		
Optical return loss	dB	≥ 45		
Optical connector type	-	LC/APC	SC/APC	SC/APC (900 um cable)
Environmental Specifications				
Operating temperature range	ºC/ºF	–5 to 65/23 to 149	–40 to 85/–40 to 185	–40 to 85/–40 to 185
Storage temperature range	ºC/ºF	–40 to 85/–40 to 185		
Note: Upgrade port in iWDM is designated as EXP (for Expansion)				

Table 2. Dimensions

Specification	Units	Height	Width	Depth
LGX Module				
Single wide	in.	5.1	1.15	6.5
	cm	13	2.92	16.5
Dual wide	in.	5.1	2.3	6.5
	cm	13	5.8	16.5
Cassette Modules				
8 channel	in.	0.31	1.8	2.8
	mm	8	45	70
12 channel	in.	0.31	3.5	4.3
	mm	8	90	110
16 or 20 channel	in.	0.31	3.3	4.7
	mm	8	85	120
40 channel	in.	0.71	3.7	5.5
	mm	18	95	140
GS7000 Optical Hub Modules				

Product-Specific Specifications

Table 3. Cisco Prisma LGX Modules

Multi-channel and band-pass multiplexer and demultiplexer filter description	Width	Cisco Part Numbers
Note: iWDM channels are ITU 21, 22, 24, 26, 28, 33, 36, 39, 44, 48, 52, 54, 57, 60, 61, 62		
4 CH-iWDM-21, 22, 24, 26 -EXP-DTP-LC/APC	1	OPLGX-MD04-2126-LA
4 CH-iWDM-28, 33, 36, 39 -EXP-DTP-LC/APC	1	OPLGX-MD04-2839-LA
4 CH-iWDM-44, 48, 52, 54 -EXP-DTP-LC/APC	1	OPLGX-MD04-4454-LA
4 CH-iWDM-57, 60, 61, 62 -EXP-DTP-LC/APC	1	OPLGX-MD04-5762-LA
8 CH-iWDM-21—39 -DTP-EXP-LC/APC	1	OPLGX-MD08-2139-LA
8 CH-iWDM-44—62 -DTP-EXP-LC/APC	1	OPLGX-MD08-4462-LA
8 CH-ITU 20—27 DTP-UG-EXP-LC/APC	1	1030034
8 CH-ITU 28—35 DTP-UG-EXP-LC/APC	1	1030035
8 CH-ITU 36—43 DTP-UG-EXP-LC/APC	1	1030036
8 CH-ITU 44—51 DTP-UG-EXP-LC/APC	1	1030037
8 CH-ITU 52—59 DTP-UG-EXP-LC/APC	1	1030038
12 CH-ITU 50—61 DTP-UG-EXP-LC/APC	1	1030065
16 CH-ITU 25—40 DTP-UG-EXP-LC/APC	2	1030017
16 CH-IWDM 21—62 DTP-LC/APC	2	OPLGX-MD16-2162-LA
16 CH-IWDM 21—62 DTP-LC/APC with quad bulkhead adaptors	1	OPLGX-MD16-2162-LQ
20 CH-ITU 20—39 DTP-UG-EXP-LC/APC	2	1030016
20 CH-ITU 40—59 DTP-UG-EXP-LC/APC	2	1030031
20 CH-ITU 20—39 DTP-UG-EXP-LC/APC with quad bulkhead adaptors	1	OPLGX-MD20-2039-LQ
20 CH-ITU 40—59 DTP-UG-EXP-LC/APC with quad bulkhead adaptors	1	OPLGX-MD20-4059-LQ
40 CH-ITU 20—59 DTP-UG-EXP-LC/APC with quad bulkhead adaptors	2	OPLGX-MD40-2059-LQ
Miscellaneous LGX modules		
2 band filter—red/blue bands RED: ITU18-39 and BLUE: 44-62 SC/APC **Note: this filter is in a cassette that is removable from the LGX module for field use**	1	OPLGX-BPF2-1862-SA
4 band filter— iWDM pass-bands 21—26, 28—39, 44—54, 57—62 -DTP-LC/APC	1	OPLGX-BPF4-2162-LA
1310/CWDM filter with SC/APC connectors **1310** port pass band 1280—1340 nm — **CWDM** port pass band 1420—1620 nm **1310** port insertion loss 1.2 dB—**CWDM** port insertion loss 0.8 dB **1310** port isolation 20 dB—**CWDM** port isolation 12 dB (see also Cisco PID 4004875 below for unpackaged filter version of this part)	1	4004874
1310/1550 Quad-filters with LC/UPC connectors **1310** port pass band 1260—1360 nm — **1550** port pass band 1460—1620 nm Quad—four filters are mounted into a single LGX style module **1310** port insertion loss 1.0 dB—**1550** port insertion loss 1.0 dB **1310** port isolation 40 dB—**1550** port isolation 30 dB	1	4034491

Table 4. OADM (Single-Channel DWDM Filter in LGX Module) on ITU Grid

Description (100 GHz)	Part Number	Description	Part Number
OADM,LGX-DWDM-ITU-16-SA	4003543	OADM,LGX-DWDM-ITU-38-SA	4003565
OADM,LGX-DWDM-ITU-17-SA	4003544	OADM,LGX-DWDM-ITU-39-SA	4003566
OADM,LGX-DWDM-ITU-18-SA	4003545	OADM,LGX-DWDM-ITU-40-SA	4003567
OADM,LGX-DWDM-ITU-19-SA	4003546	OADM,LGX-DWDM-ITU-41-SA	4003568
OADM,LGX-DWDM-ITU-20-SA	4003547	OADM,LGX-DWDM-ITU-42-SA	4003569

Description (100 GHz)	Part Number	Description	Part Number
OADM,LGX-DWDM-ITU-21-SA	4003548	OADM,LGX-DWDM-ITU-43-SA	4003570
OADM,LGX-DWDM-ITU-22-SA	4003549	OADM,LGX-DWDM-ITU-44-SA	4003571
OADM,LGX-DWDM-ITU-23-SA	4003550	OADM,LGX-DWDM-ITU-45-SA	4003572
OADM,LGX-DWDM-ITU-24-SA	4003551	OADM,LGX-DWDM-ITU-46-SA	4003573
OADM,LGX-DWDM-ITU-25-SA	4003552	OADM,LGX-DWDM-ITU-47-SA	4003574
OADM,LGX-DWDM-ITU-26-SA	4003553	OADM,LGX-DWDM-ITU-48-SA	4003575
OADM,LGX-DWDM-ITU-27-SA	4003554	OADM,LGX-DWDM-ITU-49-SA	4003576
OADM,LGX-DWDM-ITU-28-SA	4003555	OADM,LGX-DWDM-ITU-50-SA	4003577
OADM,LGX-DWDM-ITU-29-SA	4003556	OADM,LGX-DWDM-ITU-51-SA	4003578
OADM,LGX-DWDM-ITU-30-SA	4003557	OADM,LGX-DWDM-ITU-52-SA	4003579
OADM,LGX-DWDM-ITU-31-SA	4003558	OADM,LGX-DWDM-ITU-53-SA	4003580
OADM,LGX-DWDM-ITU-32-SA	4003559	OADM,LGX-DWDM-ITU-54-SA	4003581
OADM,LGX-DWDM-ITU-33-SA	4003560	OADM,LGX-DWDM-ITU-55-SA	4003582
OADM,LGX-DWDM-ITU-34-SA	4003561	OADM,LGX-DWDM-ITU-56-SA	4003583
OADM,LGX-DWDM-ITU-35-SA	4003562	OADM,LGX-DWDM-ITU-57-SA	4003584
OADM,LGX-DWDM-ITU-36-SA	4003563	OADM,LGX-DWDM-ITU-58-SA	4003585
OADM,LGX-DWDM-ITU-37-SA	4003564	OADM,LGX-DWDM-ITU-59-SA	4003586

Table 5. Cisco Cassette Modules

Multi-channel and band-pass cassette filter description	Cassette	Cisco Part Numbers
Note: iWDM channels are ITU 21, 22, 24, 26, 28, 33, 36, 39, 44, 48, 52, 54, 57, 60, 61, 62		
4 CH-iWDM 21, 22, 24, 26 EXP-DTP-SC/APC		1030011
4 CH-iWDM 28, 33, 36, 39 EXP-DTP-SC/APC		1030012
4 CH-iWDM 44, 48, 52, 54 EXP-DTP-SC/APC		1030013
4 CH-iWDM 57, 60, 61, 62 EXP-DTP-SC/APC		1030014
8 CH-iWDM 21, 22, 24, 26, 28, 33, 36, 39 EXP-DTP-SC/APC		4043602
8 CH-iWDM 44, 48, 52, 54, 57, 60, 61 62 EXP-DTP-SC/APC		4043603
8 CH-ITU 20—27 DTP-UG-EXP- SC/APC		OPCAS-MD08-2027-SA
8 CH-ITU 28—35 DTP-UG-EXP- SC/APC		OPCAS-MD08-2835-SA
8 CH-ITU 36—43 DTP-UG-EXP- SC/APC		OPCAS-MD08-3643-SA
8 CH-ITU 44—51 DTP-UG-EXP- SC/APC		OPCAS-MD08-4451-SA
8 CH-ITU 52—59 DTP-UG-EXP- SC/APC		OPCAS-MD08-5259-SA
12 CH-ITU 50—61-DTP-UG-EXP- SC/APC		OPCAS-MD12-5061-SA
16 CH-iWDM 21, 22, 24, 26, 28, 33, 36, 39, 44, 48, 52, 54, 57, 60, 61, 62 DTP-SC/APC		4043601
16 CH-ITU 25—40-DTP-UG-EXP- SC/APC		OPCAS-MD16-2540-SA
20 CH-ITU 20—39-DTP-UG-EXP- SC/APC		OPCAS-MD20-2039-SA
20 CH-ITU 40—59-DTP-UG-EXP- SC/APC		OPCAS-MD20-4059-SA
40 CH-ITU 20—59-DTP-UG-EXP- SC/APC		OPCAS-MD40-2059-SC
Miscellaneous cassette modules		
1310/CWDM filter with SC/APC connectors **1310** port pass band 1280—1340 nm — **CWDM** port pass band 1420—1620 nm **1310** port insertion loss 1.2 dB—**CWDM** port insertion loss 0.8 dB **1310** port isolation 20 dB—**CWDM** port isolation 12 dB (see also Cisco PID 4004874 above for LGX version of this part)		4004875

Table 6. Cisco GS7000 Optical Hub Filters

Description	GS 7000	Part Numbers Multiplexer and Demultiplexer
GS7000-OP-iWDM ITU 21, 22, 24, 26, 28, 33, 36, 39 EXP-DTP-MPO-SC/APC	2 wide	4043955
GS7000-OP-iWDM ITU 44, 48, 52, 54, 57, 60, 61, 62 EXP-DTP-MPO-SC/APC	2 wide	4043956
GS7000-OP-iWDM ITU 21, 22, 24, 26, 28, 33, 36, 39, 44, 48, 52, 54, 57, 60, 61, 62 DTP-MPO-SC/APC	3 wide	4043953

Table 7. Cisco Miscellaneous Filter Modules

Multi-channel filter description	Form Factor	Cisco Part Numbers
40 channel filter ITU 20—59 inclusive - DTP-UG-EXP-LC/APC	**1 RU**	**1030030**

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