



Passive CWDM products

Multiplexer, Demultiplexer and OADM Products

Optelian offers an extensive suite of passive networking products with the functionality required to serve optical transport requirements. CWDM solutions for up to 16 channels per unit are available in a variety of packages for deployment in many environments. Specialty modules and customer-specific versions are an option. Multiple options for MUX-only, DMX-only, combined MUX and DMX, bidirectional MUX and DMX, and OADM ensure maximum flexibility and ideal fit.

LGX modules

LGX modules are packaged in the industry-standard format originally designed by Lucent Technologies. All are passive, with no power or ground, and have front access faceplate connectors. They are deployed in the Optelian family of CMS passive mounting shelves, or in any standard LGX-compatible passive mounting platform. For information on the CMS shelves, refer to the data sheet. LGX modules for CWDM are available in single-slot and double-slot widths.

DMS modules

DMS modules are packaged in a format similar to LGX but are more compact in height. All are completely passive with no power or ground, and have faceplate connectors for front access. DMS modules are designed to fit in the Optelian DMS-0104 passive mounting shelf. For detailed information on the Optelian DMS mounting solution, refer to the data sheet. DMS modules for CWDM are available in single-slot widths.

OMS cards

OMS format passive cards are designed to fit in the Optelian family of active mounting shelves (OMS). They contain passive optical elements, and all optical signals are transported passively. The cards additionally have electronics to allow connectivity to the OMS shelf purely for system detection purposes. For information on the OMS shelves, refer to the data sheet. All cards are single-slot width.

Splice trays

Optical devices are packaged in industry-standard outside plant (OSP) splice tray modules, such as FOSC-B. Custom packaging options are also available. Splice tray modules are designed to be installed in any general OSP enclosure, such as cabinets or huts.

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Physical form

Optelian's passive products provide customers maximum flexibility, delivered in industry-standard and customized formats to suit a wide range of network designs, site requirements, and mounting options.

LGX module common specifications

Parameter	Value
Operating temperature (SC or LC)	-40 to 65°C (-40 to 149°F)
Operating temperature (MPO)	-40 to 75°C (-40 to 167°F)
Relative Humidity (non-condensing)	5 to 95%
Dimensions, case (HxWxD) (single-slot)	10.2 x 2.8 x 16.5 cm (4.0 x 1.1 x 6.5 in.)
Dimensions, case (HxWxD) (double-slot)	10.2 x 5.8 x 15.2 cm (4.0 x 2.3 x 6.0 in.)

Note: selected LGX modules have minor differences in depth

DMS module common specifications

Parameter	Value
Operating temperature	-40 to 65°C (-40 to 149°F)
Relative Humidity (non-condensing)	5 to 95%
Optical connectors	LC/PC
Dimensions, case (HxWxD) (single-slot)	9.14 x 2.8 x 16.5 cm (3.6 x 1.1 x 6.5 in.)

OMS card common specifications

Parameter	Value
Operating temperature	-40 to 65°C (-40 to 149°F)
Relative Humidity (non-condensing)	5 to 95%
Optical connectors	LC/PC
Power supply and power consumption	-48V nominal; 2W typical
Dimensions	10.2 x 2.8 x 15.5 cm (4.0 x 1.1 x 6.1 in.)

Splice tray common specifications

Parameter	Value
Operating temperature	-40 to 65°C (-40 to 149°F)
Relative humidity (non-condensing)	5 to 95%
Fiber length	3 meters, 900 micrometer jacket
Connectors	None; fibers labeled with wavelength

CWDM filters

A range of products are available to deliver various types of CWDM filter functionality. Filters for 1, 2, 4, 8 and 16 channels (wavelengths) are available.

“MUX and/or DMX bidirectional” modules implement a filter for a full set of channels on a single common fiber. They can be deployed unidirectionally (all ports multiplexing, or all ports demultiplexing) or bidirectionally (mixed, with some ports multiplexing and other ports demultiplexing). All modules include a separate 1310 nm overlay port.

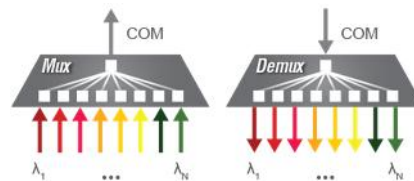
“MUX or DMX complementary” modules are single-circuit single-fiber filters provided in matched pairs, one module for multiplexing, and its complement for demultiplexing. Insertion losses per channel are complimentary such that end-to-end MUX-to-DMX loss is the same for each channel on the fiber.

“MUX, DMX two-circuit combo” modules include a multiplexing circuit with its common fiber, and a separate demultiplexing circuit with its common fiber, packaged in one single-width module. Insertion losses per channel are complimentary such that end-to-end MUX-to-DMX loss is the same for each wavelength on the fiber.

OADM modules multiplex and demultiplex a subset of channels on the common line. They exist in dual-common fiber and single-common fiber versions. Dual-fiber OADMs package a drop (DMX) of channels from the line, and separately package an add (MUX) of the same channels onto the line. Single-fiber OADMs have a single bidirectional common and express filter, permitting a wavelength to be either dropped or added uniquely on the line. In all cases, channels that are not dropped or added are expressed through.

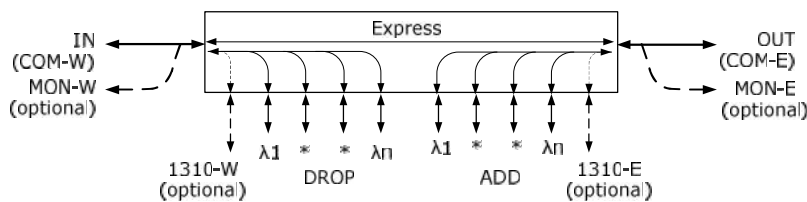
MUX and/or DMX bidirectional

MUX or DMX complementary pair; Also MUX, DMX two-circuit combo

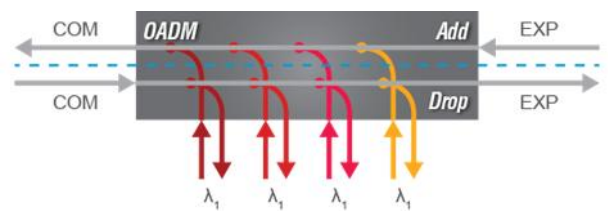


OADM single fiber

Bidirectional or unidirectional



OADM dual fiber

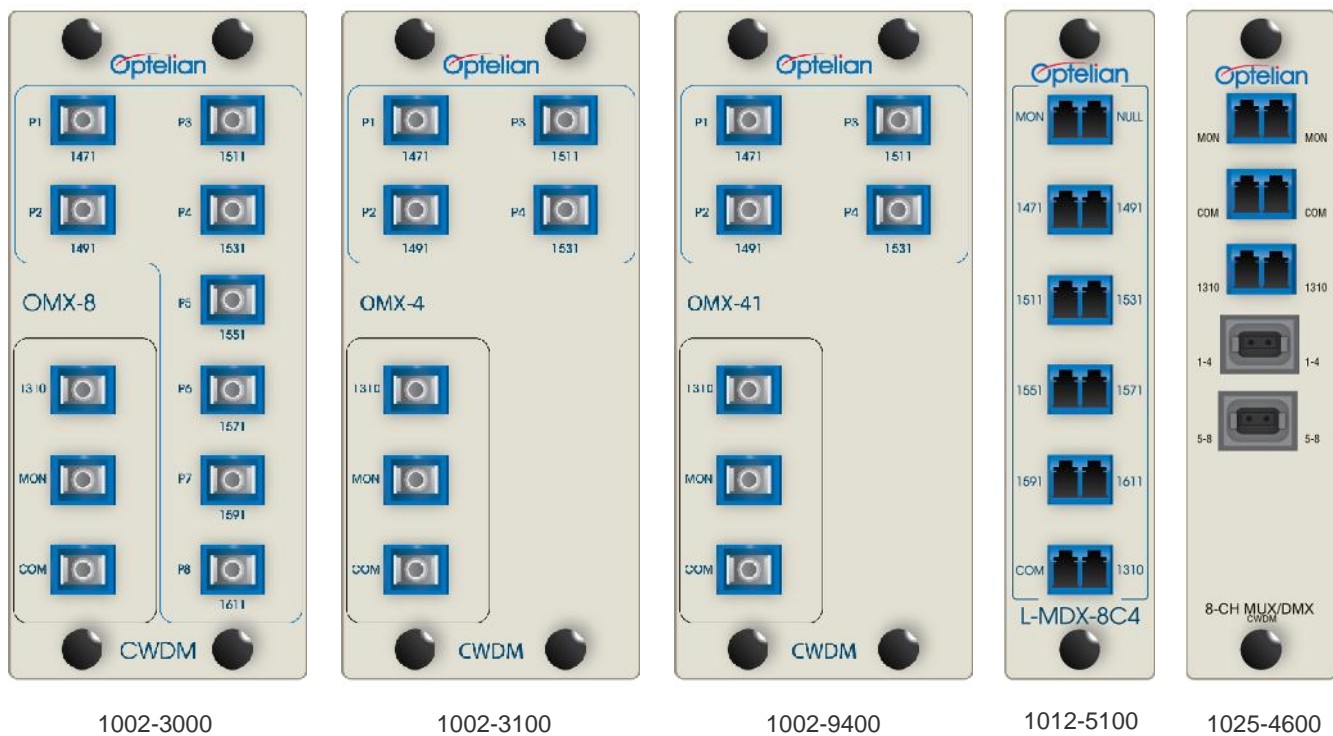


CWDM – common optical specifications

Parameter	LGX and OMS values	DMS values
CWDM operating wavelength	1260 to 1620 nm	1260 to 1620 nm
CWDM channel passband width	ITU ± 6.5 nm (maximum)	ITU ± 6.5 nm (maximum)
1310 nm channel passband width	1260 to 1360 nm	1260 to 1360 nm
1550 nm channel passband width	1520 to 1600 nm	-
Passband ripple	0.3 dB (maximum) *	0.3 dB (maximum)
Adjacent and 1310 channel isolation	40 dB (minimum)	30 dB (minimum)
Non-adjacent and 1310 channel isolation	40 dB (minimum)	40 dB (minimum)
Polarization Dependent Loss	0.25 dB (maximum)	0.2 dB (maximum)
Directivity	50 dB (minimum)	50 dB (minimum)
Return Loss	35 dB (minimum)	50 dB (minimum)

* Passband ripple of 1371 nm port = 0.5 dB, because of the Water Peak

CWDM MUX and/or DMX bidirectional – LGX



CWDM MUX and/or DMX bidirectional – LGX - insertion loss specifications

Channel	1002-3000	1002-9400	1012-5400
Monitor	20.0 dB	20.0 dB	19.0 dB
1310	1.9 dB	1.9 dB	1.4 dB
1471	2.2 dB	2.2 dB	1.8 dB
1491	2.5 dB	2.5 dB	2.1 dB
1511	2.7 dB	2.7 dB	2.5 dB
1531	2.9 dB	2.9 dB	2.8 dB
1551	3.2 dB	-	3.2 dB
1571	3.4 dB	-	3.6 dB
1591	3.7 dB	-	3.9 dB
1611	3.9 dB	-	4.3 dB

For all: maximum end-of-life; includes one connector

CWDM MUX and/or DMX bidirectional – LGX - ordering information

Part Number	Description
1002-3000	OMX-8, CWDM MUX/DMX, 8 CH (1471-1611), 1310, 2.5% Monitor, LGX 2-Wide, SC/PC
1002-3100	OMX-4, CWDM MUX/DMX, 4 CH, 1310, Monitor, LGX 2-Wide
1002-9400	OMX-41, CWDM MUX/DMX, 4 CH, (1471, 1491, 1511, 1531 nm), 1310, 2.5% Monitor, LGX 2-Wide, SC/PC
1012-5100	L-MDX-8C4, CWDM MUX/DMX, 8 CH (1471-1611), 2.5% Monitor, LGX, LC
1025-4600	CWDM MUX/DMX, 8 CH (1471-1611 nm), 1310, 2% Monitor, 2 Circuit LGX, MPO Connector

Note: 1025-4600 is dual-circuit, and utilizes MPO fanout cables.

CWDM MUX and/or DMX bidirectional – OMS

CWDM MUX and/or DMX bidirectional – OMS - insertion loss specifications

Channel	1004-8011	1004-8115
Monitor	19.0 dB	19.0 dB
1310	1.4 dB	1.4 dB
1471	1.8 dB	1.8 dB
1491	2.1 dB	2.1 dB
1511	2.5 dB	2.5 dB
1531	2.8 dB	2.8 dB
1551	3.2 dB	-
1571	3.6 dB	-
1591	3.9 dB	-
1611	4.3 dB	-

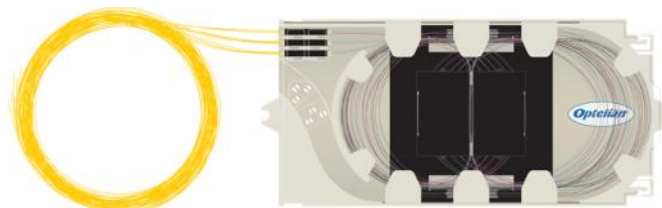
For all: maximum end-of-life; includes one connector



1004-8011

CWDM MUX and/or DMX bidirectional – OMS - ordering information

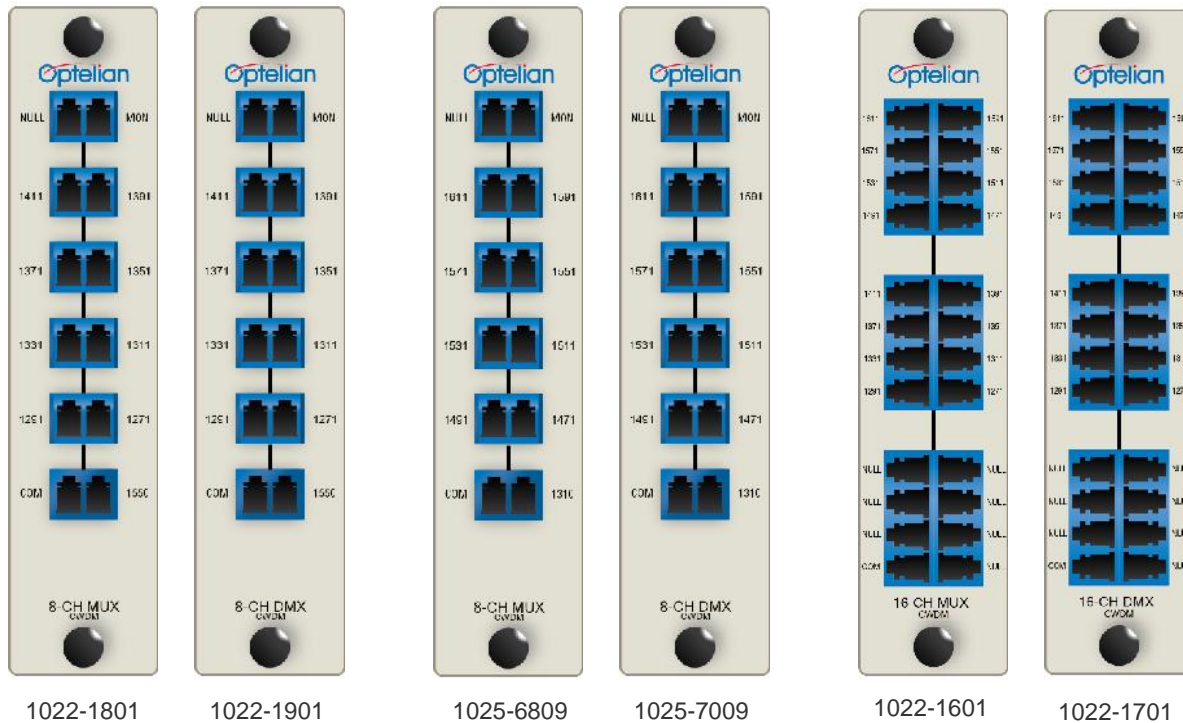
Part Number	Description
1004-8011	MDX-8C4, CWDM MUX/DMX 8 CH (1471-1611), 1310, 2.5% Bi-dir Monitor, OMS, LC/PC
1004-8115	MDX-4C4, CWDM MUX/DMX 4 CH (1471, 1491, 1511, 1531) 1310, 2.5% Bi-dir Monitor, OMS, LC/PC



CWDM MUX and/or DMX bidirectional – Splice Tray - ordering info

Part Number	Description
1025-4000	CWDM MUX/DMX 3 CH (1471,1491,1511), 1310, 1550, FOSC B

CWDM MUX, DMX complementary pair – LGX



CWDM MUX, DMX complementary pair – LGX – insertion loss specifications

CH #	Wavelength (nm)	1022-1801 MUX	1022-1901 DMX	1022-1601 MUX	1022-1701 DMX
1	1271	1.8 dB	4.3 dB	1.2 dB	6.6 dB
2	1291	2.1 dB	3.9 dB	1.6 dB	6.2 dB
3	1311	2.5 dB	3.6 dB	1.9 dB	5.9 dB
4	1331	2.8 dB	3.2 dB	2.3 dB	5.5 dB
5	1351	3.2 dB	2.8 dB	2.6 dB	5.2 dB
6	1371	3.6 dB	2.5 dB	3.0 dB	4.8 dB
7	1391	3.9 dB	2.1 dB	3.4 dB	4.5 dB
8	1411	4.3 dB	1.8 dB	3.7 dB	4.1 dB
9	1471	-	-	4.1 dB	3.7 dB
10	1491	-	-	4.5 dB	3.4 dB
11	1511	-	-	4.8 dB	2.6 dB
12	1531	-	-	5.2 dB	2.6 dB
13	1551	-	-	5.5 dB	2.3 dB
14	1571	-	-	5.9 dB	1.9 dB
15	1591	-	-	6.2 dB	1.6 dB
16	1611	-	-	6.6 dB	1.2 dB
Legacy	1550	1.4 dB	1.4 dB	-	-
-	2.5% MON	20 dB	20 dB	-	-

CWDM MUX, DMX complementary pair – LGX - ordering information

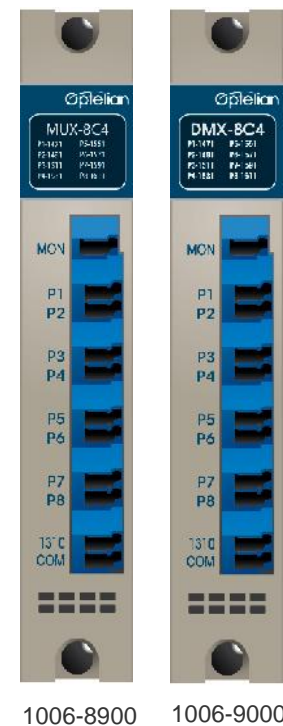
Part Number	Description
1022-1801	CWDM MUX, 8 CH, CH 1-8 (1271-1411 nm), 1550 nm, 2.5% Bi-dir Monitor, LGX, LC
1022-1901	CWDM DMX, 8 CH, CH 1-8 (1271-1411 nm), 1550 nm, 2.5% Bi-dir Monitor, LGX, LC
1025-6809	CWDM MUX, 8 CH, CH 9-16 (1471-1611 nm), 1310 nm, 2.5% Bi-dir Monitor, LGX, LC/APC
1025-7009	CWDM DMX, 8 CH, CH 9-16 (1471-1611 nm), 1310 nm, 2.5% Bi-dir Monitor, LGX, LC/APC
1022-1601	CWDM MUX, 16 CH, CH 1-16 (1271-1611 nm), LGX, LC
1022-1701	CWDM DMX, 16 CH, CH 1-16 (1271-1611 nm), LGX, LC

CWDM MUX, DMX complementary pair – OMS

CWDM MUX, DMX complementary pair – OMS - insertion loss specifications

Channel	1006-8900 MUX	1006-9000 DMX	1005-9025 MUX	1005-8925 DMX
Monitor	20.0 dB	20.0 dB	-	-
1310	1.4 dB	1.4 dB	0.9 dB	0.9 dB
1451	-	-	1.3 dB	4.2 dB
1471	1.5 dB	4.0 dB	1.7 dB	3.9 dB
1491	1.8 dB	3.7 dB	2.0 dB	3.5 dB
1511	2.2 dB	3.3 dB	2.4 dB	3.1 dB
1531	2.6 dB	2.9 dB	2.8 dB	2.8 dB
1551	2.9 dB	2.6 dB	3.1 dB	2.4 dB
1571	3.3 dB	2.2 dB	3.5 dB	2.0 dB
1591	3.7 dB	1.8 dB	3.9 dB	1.7 dB
1611	4.0 dB	1.5 dB	4.2 dB	1.3 dB

For all: maximum end-of-life; includes one connector



1006-8900

1006-9000

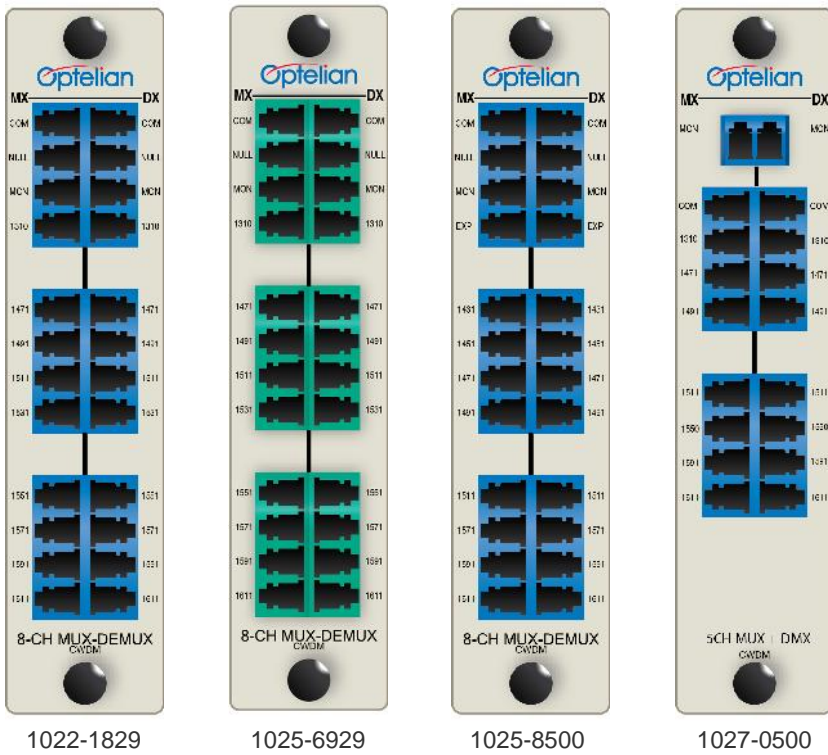
CWDM MUX, DMX complementary pair - OMS - ordering info

Part Number	Description
1005-9025	MUX-9C6, CWDM MUX 9 CH (1451-1611), 1310, OMS, LC/PC
1005-8925	DMX-9C6, CWDM DMX 9 CH (1451-1611), 1310, OMS, LC/PC
1006-8900	MUX-8C4, CWDM MUX 8 CH (1471-1611), 1310, 2% Monitor, OMS, LC/PC
1006-9000	DMX-8C4, CWDM DMX 8 CH (1471-1611), 1310, 2% Monitor, OMS, LC/PC

CWDM MUX, DMX complementary pair – Splice Tray - ordering info

Part Number	Description
1025-4700	CWDM MUX, 8 CH (1471-1611 nm), 1310, 2.5% Monitor, FOSC-B
1025-4710	CWDM DMX, 8 CH (1471-1611 nm), 1310, 2.5% Monitor, FOSC-B
1025-8300	CWDM MUX, 8 CH (1431-1611 nm), 2.5% Monitor, With DWDM Expansion, FOSC-B
1025-8400	CWDM DMX, 8 CH (1431-1611 nm), 2.5% Monitor, With DWDM Expansion, FOSC-B

CWDM MUX, DMX complementary 2-CCT combo – LGX



CWDM MUX, DMX complementary 2-CCT combo – LGX - insertion loss specifications

Channel	1022-1829 MUX	1022-1829 DMX	1027-0500 MUX	1027-0500 DMX
Monitor	19.0 dB	19.0 dB	19.0 dB	19.0 dB
1310	1.4 dB	1.4 dB	1.2 dB	1.2 dB
1550	-	-	2.9 dB	2.9 dB
1471	1.8 dB	4.0 dB	3.0 dB	1.5 dB
1491	2.1 dB	3.7 dB	2.6 dB	1.9 dB
1511	2.5 dB	3.3 dB	2.3 dB	2.3 dB
1531	2.8 dB	2.9 dB	-	-
1551	3.2 dB	2.6 dB	-	-
1571	3.6 dB	2.2 dB	-	-
1591	3.9 dB	1.8 dB	1.9 dB	2.6 dB
1611	4.3 dB	1.5 dB	3.0 dB	1.5 dB

For all: maximum end-of-life; includes one connector

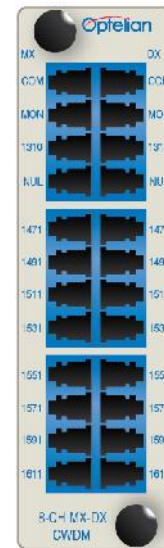
CWDM MUX, DMX complementary 2-CCT combo – LGX - ordering info

Part Number	Description
1022-1829	CWDM MUX,DMX, 8 CH, CH 9-16 (1471-1611 nm), 1310, 2% Monitor, 2 Circuits LGX, LC
1025-6929	CWDM MUX,DMX, 8 CH, CH 9-16 (1471-1611 nm), 1310, 2.5% Monitor, 2 Circuits LGX, LC/APC
1025-8500	CWDM MUX,DMX, 8 CH (1431-1611 nm), With DWDM Expansion, 2.5% Monitor, 2 Circuits LGX
1027-0500	CWDM MUX,DMX, 5 CH, 1310, 1550, 2% Monitor, 2 Circuits LGX, LC

CWDM MUX, DMX complementary 2-CCT combo - DMS

CWDM MUX, DMX complementary 2-CCT combo - DMS - insertion loss specifications

Channel	1025-5816 MUX	1025-5816 DMX
Monitor		
1310	1.4 dB	1.4 dB
1471	1.2 dB	3.2 dB
1491	1.4 dB	3.0 dB
1511	1.7 dB	2.7 dB
1531	2.0 dB	2.2 dB
1551	2.2 dB	2.0 dB
1571	2.7 dB	1.7 dB
1591	3.0 dB	1.4 dB
1611	3.2 dB	1.2 dB



1025-5816

For all: maximum end-of-life; includes one connector

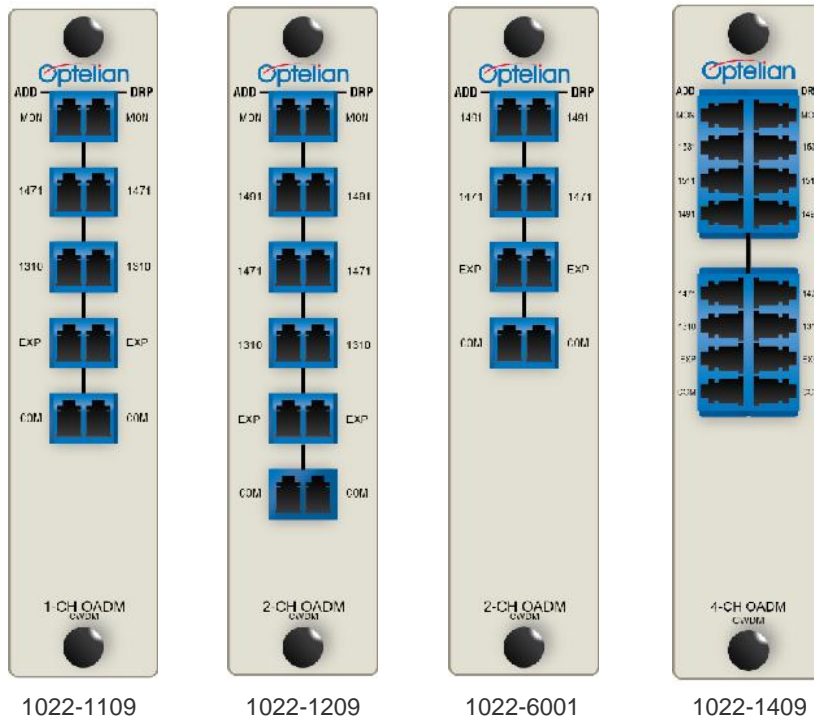
CWDM MUX, DMX complementary 2-CCT combo - DMS - ordering info

Part Number	Description
1025-5816	CWDM MUX,DMX, 8 CH, CH 9-16 (1471-1611 nm), 1310, 2% Monitor, 2 Circuits Passive DMS, LC

CWDM OADM dual fiber - LGX

CH #	Wavelength (nm)	1-channel 1022-xxxx	2-channel 1022-xxxx	4-channel 1022-xxxx
9	1471	1109	1209	1409
10	1491	1110		
11	1511	1111	1211	
12	1531	1112	1212	
13	1551	1113	1213	1413
14	1571	1114	1214	
15	1591	1115	1215	
16	1611	1116		

Note: 1022-6001 2-channel OADM similar but without 1310 nm or monitor port



Above illustrates one example of each type; others are similar except for faceplate port labeling

CWDM OADM dual fiber - LGX - insertion loss specifications

Channel	1 CH ADD	1 CH DROP	2 CH ADD	2 CH DROP	4 CH ADD	4 CH DROP
1	1.8 dB	0.7 dB	1.8 dB	1.1 dB	1.8 dB	2.8 dB
2	-	-	2.1 dB	0.7 dB	2.1 dB	2.5 dB
3	-	-	-	-	2.5 dB	2.1 dB
4	-	-	-	-	2.8 dB	1.8 dB
1310	1.4 dB	1.4 dB	1.4 dB	1.4 dB	1.4 dB	1.4 dB
Express	1.8 dB	1.8 dB	2.1 dB	2.1 dB	2.8 dB	2.8 dB

For all: maximum end-of-life; includes one connector

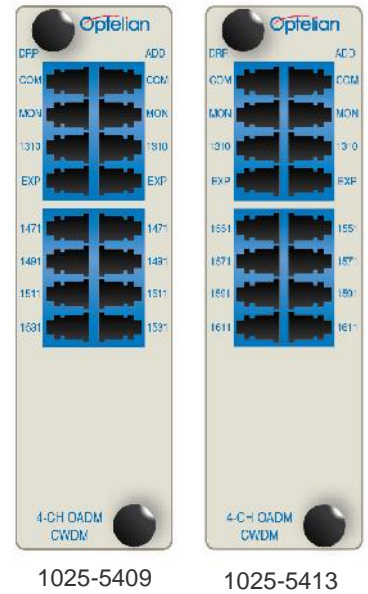
CWDM OADM, dual fiber – LGX - ordering information

Part Number	Description
1022-1109	CWDM OADM 1 CH (1471 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1110	CWDM OADM 1 CH (1491 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1111	CWDM OADM 1 CH (1511 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1112	CWDM OADM 1 CH (1531 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1113	CWDM OADM 1 CH (1551 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1114	CWDM OADM 1 CH (1571 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1115	CWDM OADM 1 CH (1591 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1116	CWDM OADM 1 CH (1611 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1209	CWDM OADM 2 CH, CH 9-10 (1471-1491 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1210	CWDM OADM 2 CH, CH 10-11 (1491-1511 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1211	CWDM OADM 2 CH, CH 11-12 (1511-1531 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1212	CWDM OADM 2 CH, CH 12-13 (1531-1551 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1213	CWDM OADM 2 CH, CH 13-14 (1551-1571 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1214	CWDM OADM 2 CH, CH 14-15 (1571-1591 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1215	CWDM OADM 2 CH, CH 15-16 (1591-1611 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-6001	CWDM OADM 2 CH,(1471, 1491 nm), LGX
1022-1409	CWDM OADM 4 CH, CH 9-12 (1471-1531 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC
1022-1413	CWDM OADM 4 CH, CH 13-16 (1551-1611 nm), 1310, 2.5% Bi-dir Monitor, LGX, LC

CWDM OADM dual fiber - DMS

CWDM OADM, dual fiber - DMS - insertion loss specifications

Channel	Wavelength (nm)	1025-5409 ADD	1025-5409 DROP	1025-5413 ADD	1025-5413 DROP
Legacy	1310	1.1 dB	1.0 dB	1.1 dB	1.0 dB
9	1471	0.9 dB	2.0 dB	-	-
10	1491	1.3 dB	1.7 dB	-	-
11	1511	1.7 dB	1.3 dB	-	-
12	1531	2.0 dB	0.9 dB	-	-
13	1551	-	-	0.9 dB	2.0 dB
14	1571	-	-	1.3 dB	1.7 dB
15	1591	-	-	1.7 dB	1.3 dB
16	1611	-	-	2.0 dB	0.9 dB
Express	-	2.5 dB	2.5 dB	2.5 dB	2.5 dB



For all: maximum end-of-life; includes one connector

CWDM OADM, dual fiber – DMS - ordering information

Part Number	Description
1025-5409	CWDM OADM, 4 CH, CH 9-12 (1471, 1491, 1511, 1531 nm), 1310, 2% Monitor, DMS, LC
1025-5413	CWDM OADM, 4 CH, CH 13-16 (1551, 1571, 1591, 1611 nm), 1310, 2% Monitor, DMS, LC

CWDM OADM single fiber - LGX

CH #	Wavelength (nm)	2-channel module
1	1271	1022-4101
2	1291	
3	1311	1022-4103
4	1331	
5	1351	1022-4105
6	1371	
7	1391	1022-4107
8	1411	
9	1471	1022-4109
10	1491	
11	1511	1022-4111
12	1531	
13	1551	1022-4113
14	1571	
15	1591	1022-4115
16	1611	

CWDM OADM single fiber - LGX - insertion loss specifications

Channel	ADD	DROP	EXP-COM
Any	1.8 dB	0.7 dB	1.8 dB

For all: maximum end-of-life; includes one connector

CWDM OADM, single fiber – LGX - ordering information

Part Number	Description
1022-4101	CWDM 1-Fiber OADM, 2-CH, CH 1-2 (1271, 1291 nm), LGX, LC
1022-4103	CWDM 1- Fiber OADM, 2-CH, CH 3-4 (1311, 1331 nm), LGX, LC
1022-4105	CWDM 1- Fiber OADM, 2-CH, CH 5-6 (1351, 1371 nm), LGX, LC
1022-4107	CWDM 1- Fiber OADM, 2-CH, CH 7-8 (1391, 1411 nm), LGX, LC
1022-4109	CWDM 1- Fiber OADM, 2-CH, CH 9-10 (1471, 1491 nm), LGX, LC
1022-4111	CWDM 1- Fiber OADM, 2-CH, CH 11-12 (1511, 1531 nm), LGX, LC
1022-4113	CWDM 1- Fiber OADM, 2-CH, CH 13-14 (1551, 1571 nm), LGX, LC
1022-4115	CWDM 1- Fiber OADM, 2-CH, CH 15-16 (1591, 1611 nm), LGX, LC

For additional information

This document provides technical specifications for one class of products in the Optelian portfolio. Your Optelian account representative can assist you in providing additional documentation for other products in the portfolio.

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