

WaveReady®

CWDM Add/Drop for OSP Splice Enclosures with 1310 nm Bypass Variants



Key Benefits

- Add/drop ITU-T G.695- and G.694.2-compatible CWDM channels onto a fiber pair
- Deploy in outside-plant fiber splice enclosures
- Overlay on an existing SONET/SDH/ATM channel with 1310 nm bypass variants
- Field upgradeable to 8 channels per fiber
- Provides low-loss pass-through for CWDM channels
- Power monitoring with passive optical tap port at each common fiber output
- No electrical power required for thermally stable passive optics

Applications

- Conserve or reclaim fiber for wireless backhaul, broadband, and other services
- Supports linear (bus) and ring add/drop architectures

Compliance

- Telcordia GR-63 (NEBS)
- Telcordia GR-1221
- ITU-T G.694.2 and G.695

The WaveReady Coarse Wavelength Division Multiplexing (CWDM) Optical Add/Drop Module (OADM) splice packs are part of a family of flexible, low-cost solutions that expand the capacity of existing fiber.

Through the use of CWDM technology, individual channels can be optically added or dropped from a fiber pair while allowing pass-through traffic to continue through the bus or ring.

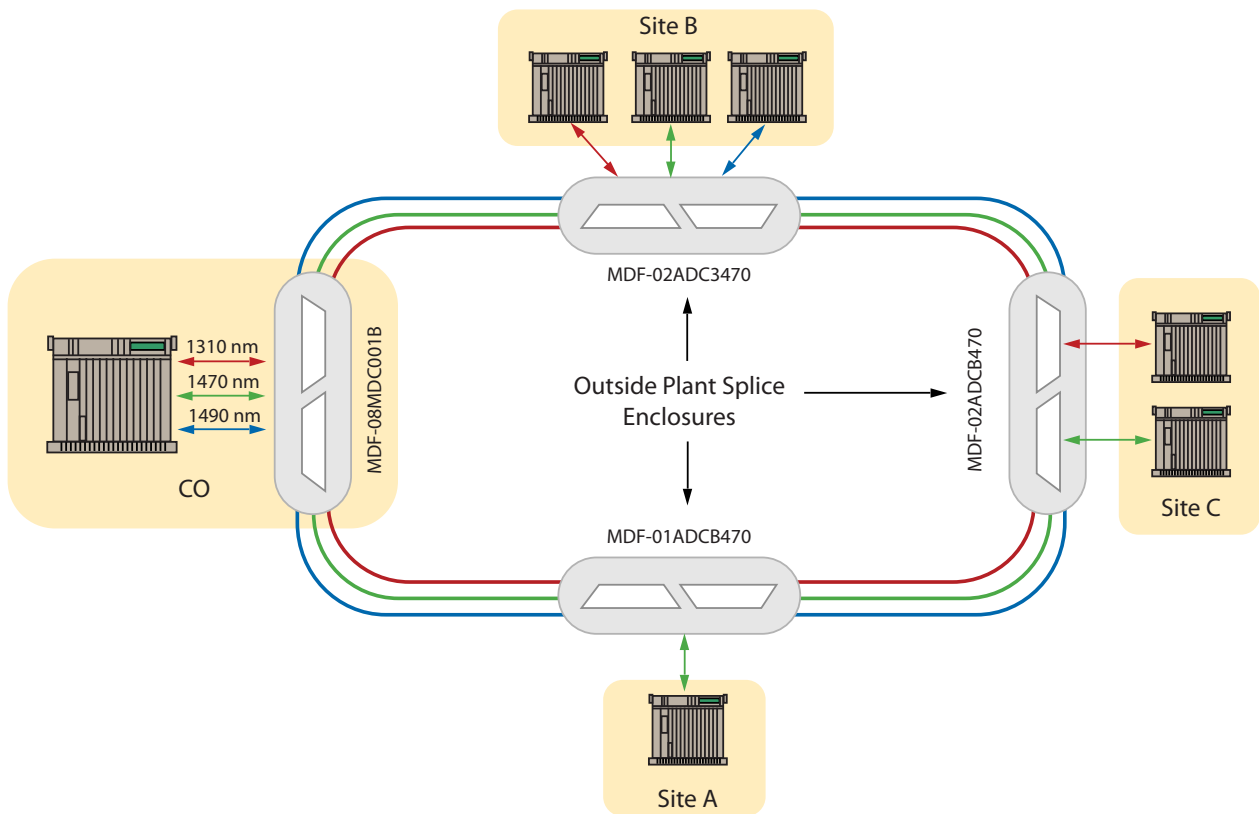
CWDM OADM bidirectional splice packs provide both east and west add/drop functionality and are readily deployed in existing outside plant splice enclosures in combination with WaveReady CWDM multiplexing/demultiplexing products at the headend. They provide ample room for fiber management and splice holders.

CWDM OADM bidirectional splice packs interoperate with both the WaveReady transponders and optical regenerator solutions as well as ITU G.694.2-compliant small form-factor pluggable (SFP) transceivers and transponder cards, widely used in transmission equipment.

With countless hours of continual field operation, industry-leading JDSU optical multiplexing technology offers unparalleled reliability and leading-edge performance.

Typical Application

Installing CWDM add/drop modules in outside plant splice enclosures greatly minimizes service providers' operating expenses related to having equipment located inside a third-party building or site. It also simplifies network upgrades because providers can connect new customers without requesting access to a third-party building or site.



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Specifications

Optical Performance¹

MDF-01ADCBxx0

Parameter	Condition	Minimum	Maximum	Units
Free spectral range		1260–1360 and 1464.5–1617.5		nm
Operating channels		See tables in Ordering Information		
Working bandwidth at –0.5 dB	λ_{ITU}	$\lambda_{ITU} \pm 6.5$	—	nm
Isolation bandwidth		—	$\lambda_c \pm 13.5$	nm
Express bandwidth	λ_{ITU}	$1260 < \lambda_{ITU} < (\lambda_{ITU} - 13.5), (\lambda_{ITU} + 13.5) < \lambda_{ITU} < 1617.5$		nm
CWDM λ add insertion loss	Over channel bandwidth	—	1.4	dB
CWDM λ drop insertion loss	Over channel bandwidth	—	1.0	dB
Express loss	Over express bandwidth (λ_{ex})	—	2.2	dB
Monitor port insertion loss	Difference between East IN → West OUT and East IN → West MON or Difference between West IN → East OUT and West IN → East MON	15	19	dB
Isolation: CWDM drop channel	Adjacent 20 nm channels	40	—	dB
	Non-adjacent channels	45	—	dB
	CWDM express channel	30	—	dB
Return loss	All ports	45	—	dB
PDL	All channels	—	0.2	dB

1. Parameters are specified for the whole passband over all polarization states and operating temperature range unless stated otherwise.

MDF-01ADCBxx0 Functional Diagram

PORT 1 — West IN (red)

PORT 2 — West OUT (black)

PORT 3 — West xxxx ADD (green)

PORT 4 — West xxxx DROP (yellow)

PORT 5 — East xxxx ADD (green)

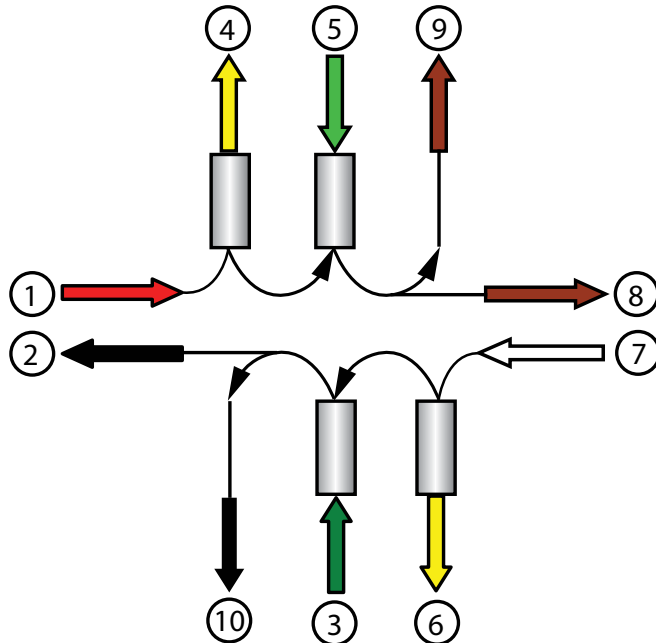
PORT 6 — East xxxx DROP (yellow)

PORT 7 — East IN (white)

PORT 8 — East OUT (brown)

PORT 9 — East OUT MON (brown)

PORT 10 — West OUT MON (black)



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Specifications cont'd

Optical Performance¹ cont'd

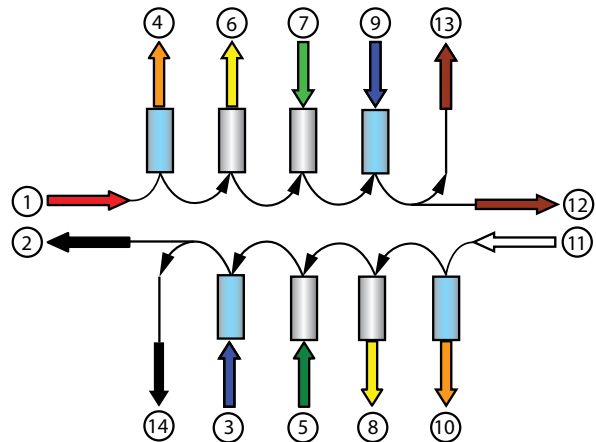
MDF-01ADC3xx0

Parameters	Condition	Minimum	Maximum	Units
Operating wavelength range		1260–1360 and 1464.5–1617.5		nm
Operating channels		See tables in Ordering Information		
Working bandwidth at –0.5 dB	λ_{ITU}	$\lambda_c \pm 6.5$	—	nm
Isolation bandwidth		—	$\lambda_c \pm 13.5$	nm
Express bandwidth	λ_{ex}	$1460 \leq \lambda_{ex} \leq (\lambda_c - 13.5), (\lambda_c + 13.5) \leq \lambda_{ex} \leq 1617.5$		nm
1310 bandwidth	f_{1310}	1260	1360	nm
CWDM λ add insertion loss	Over channel bandwidth	—	1.6	dB
CWDM λ drop insertion loss	Over channel bandwidth	—	1.2	dB
1310 add insertion loss	Over channel bandwidth	—	1.4	dB
1310 drop insertion loss	Over channel bandwidth	—	1.0	dB
Express loss	Over express bandwidth (λ_{ex})	—	2.4	dB
Monitor port insertion loss	Difference between East IN → West OUT and East IN → West MON or Difference between West IN → East OUT and West IN → East MON	15	19	dB
Isolation: ITU drop channel	Adjacent 20 nm channels	40	—	dB
ITU drop channel	Non-adjacent channels	45	—	dB
1310 drop channel		45	—	dB
ITU express channel	Over channel bandwidth	30	—	dB
1310 express channel	Over 1310 channel bandwidth	30	—	dB
Return loss	All ports	45	—	dB
PDL	All channels	—	0.2	dB

1. Parameters are specified for the whole passband over all polarization states and operating temperature range unless stated otherwise.

MDF-01ADC3xx0 Functional Diagram

PORT 1 — West IN (red) PORT 2 — West OUT (black)
 PORT 3 — West 1310 ADD (blue) PORT 4 — West 1310 DROP (orange)
 PORT 5 — West xxxx ADD (green) PORT 6 — West xxxx DROP (yellow)
 PORT 7 — East xxxx ADD (green) PORT 8 — East xxxx DROP (yellow)
 PORT 9 — East 1310 ADD (blue) PORT 10 — East 1310 DROP (orange)
 PORT 11 — East IN (white) PORT 12 — East OUT (brown)
 PORT 13 — East OUT MON (brown) PORT 14 — West OUT MON (black)



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Specifications cont'd

Optical Performance¹ cont'd

MDF-02ADCBxx0

Parameter	Condition	Minimum	Maximum	Units
Free spectral range		1260–1360 and 1464.5–1617.5		nm
Operating channels		See tables in Ordering Information		
Working bandwidth at –0.5 dB	λ_{ITU}	$\lambda_{ITU} \pm 6.5$	—	nm
Isolation bandwidth		—	$\lambda_c \pm 13.5$	nm
Express bandwidth	λ_{ex}	$1260 \leq \lambda_{ex} \leq (\lambda_{ITU} - 13.5), (\lambda_{ITU} + 13.5) \leq \lambda_{ex} \leq 1617.5$		nm
CWDM λ add insertion loss	Over channel bandwidth	—	1.9	dB
CWDM λ drop insertion loss	Over channel bandwidth	—	1.5	dB
CWDM $\lambda+20$ add insertion loss	Over channel bandwidth		1.6	
CWDM $\lambda+20$ drop insertion loss	Over channel bandwidth		1.2	
Express loss	Over express bandwidth	—	2.4	dB
Monitor port insertion loss	Difference between East IN → West OUT and East IN → West MON or Difference between West IN → East OUT and West IN → East MON	15	19	dB
Isolation: CWDM drop channel	Adjacent 20 nm channels	40	—	dB
CWDM drop channel	Non-adjacent channels	45	—	dB
CWDM express channel	Over channel bandwidth	30	—	dB
Return loss	All ports	45	—	dB
PDL	All channels	—	0.2	dB

1. Parameters are specified for the whole passband over all polarization states and operating temperature range unless stated otherwise.

MDF-02ADCBxx0 Functional Diagram

PORT 1 — West IN (red)

PORT 2 — West OUT (black)

PORT 3 — West xxxx+20 ADD (slate)

PORT 4 — West xxxx+20 DROP (violet)

PORT 5 — West xxxx ADD (green)

PORT 6 — West xxxx DROP (yellow)

PORT 7 — East xxxx ADD (green)

PORT 8 — East xxxx DROP (yellow)

PORT 9 — East xxxx+20 ADD (slate)

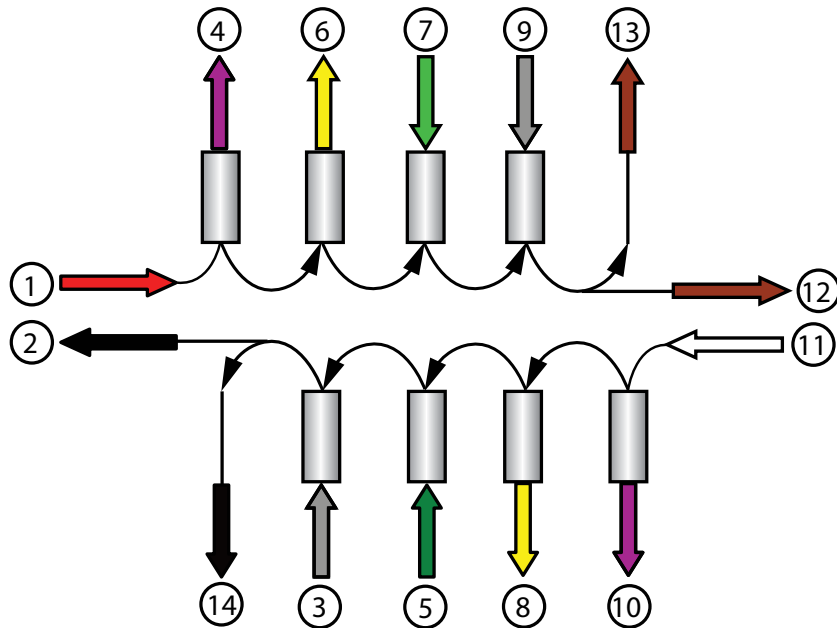
PORT 10 — East xxxx+20 DROP (violet)

PORT 11 — East IN (white)

PORT 12 — East OUT (brown)

PORT 13 — East OUT MON (brown)

PORT 14 — East IN MON (black)



Specifications cont'd

Optical Performance¹ cont'd

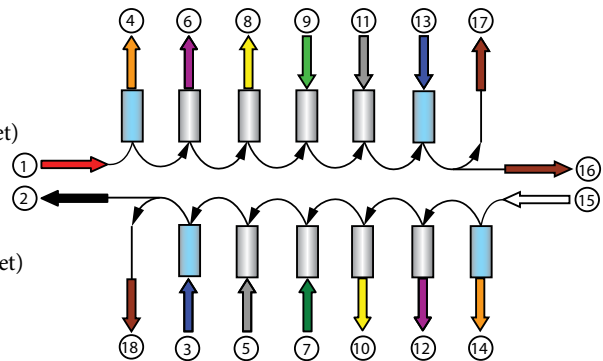
MDF-02ADC3xx0

Parameters	Condition	Minimum	Maximum	Units
Operating wavelength range		1260–1360 and 1464.5–1617.5		nm
Operating channels		See tables in Ordering Information		
Working bandwidth at –0.5 dB	λ_{ITU}	$\lambda_c \pm 6.5$	—	nm
Isolation bandwidth		—	$\lambda_c \pm 13.5$	nm
Express bandwidth	λ_{ex}	$1460 \leq \lambda_{ex} \leq (\lambda_c - 13.5), (\lambda_c + 13.5) \leq \lambda_{ex} \leq 1617.5$		
1310 bandwidth	λ_{1310}	1260	1360	nm
CWDM λ add insertion loss	Over channel bandwidth	—	2.5	dB
CWDM λ drop insertion loss	Over channel bandwidth	—	2.1	dB
CWDM λ +20 add insertion loss	Over channel bandwidth	—	2.2	dB
CWDM λ +20 drop insertion loss	Over channel bandwidth	—	1.8	dB
1310 add insertion loss	Over channel bandwidth	—	1.4	dB
1310 drop insertion loss	Over channel bandwidth	—	1.0	dB
Express loss	Over express bandwidth (f_{ex})	—	2.8	dB
Monitor port insertion loss	Difference between East IN → West OUT and East IN → West MON or Difference between West IN → East OUT and West IN → East MON	15	19	dB
Isolation: ITU drop channel	Adjacent 20 nm channels	40	—	dB
ITU drop channel	Non-adjacent channels	45	—	dB
1310 drop channel		45	—	dB
ITU express channel	Over channel bandwidth	30	—	dB
1310 express channel	Over 1310 channel bandwidth	0	—	dB
Return loss	All ports	45	—	dB
PDL	All channels	—	0.2	dB

1. Parameters are specified for the whole passband over all polarization states and operating temperature range unless stated otherwise.

MDF-02ADC3xx0 Functional Diagram

PORT 1 — West IN (red) PORT 2 — West OUT (black)
 PORT 3 — West 1310 ADD (blue) PORT 4 — West 1310 DROP (orange)
 PORT 5 — West xxxx+20 ADD (slate) PORT 6 — West xxxx+20 DROP (violet)
 PORT 7 — West xxxx ADD (green) PORT 8 — West xxxx DROP (yellow)
 PORT 9 — East xxxx ADD (green) PORT 10 — East xxxx DROP (yellow)
 PORT 11 — East xxxx+20 ADD (slate) PORT 12 — East xxxx+20 DROP (violet)
 PORT 13 — East 1310 ADD (blue) PORT 14 — East 1310 DROP (orange)
 PORT 15 — East IN (white) PORT 16 — East OUT (brown)
 PORT 17 — East OUT MON (brown) PORT 18 — West OUT MON (black)



Specifications cont'd

Physical

Parameter	Typical
Size (H x W x D)	27.9 x 14 x 1.9 cm (11 x 5.5 x 0.75 in)
Weight	0.68 kg (1.5 lb)
Fiber type	SMF-28 or equivalent
Fiber pigtail length	3.0 ± 0.1 m
Optical connector	
Monitor ports	LC/PC
All other ports	None

Environmental

Parameter	Minimum	Typical	Maximum
Normal operating temperature	−40°C	—	85°C
Storage temperature	−40°C	—	85°C

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Ordering Information

For more information about these or other products and their availability, contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at customer.service@jdsu.com.

MDF-01ADCBxx0

Description	Part Number	Wavelength (nm)
Single-channel CWDM OADM	MDF-01ADCB470	1471
Single-channel CWDM OADM	MDF-01ADCB490	1491
Single-channel CWDM OADM	MDF-01ADCB510	1511
Single-channel CWDM OADM	MDF-01ADCB530	1531
Single-channel CWDM OADM	MDF-01ADCB550	1551
Single-channel CWDM OADM	MDF-01ADCB570	1571
Single-channel CWDM OADM	MDF-01ADCB590	1591
Single-channel CWDM OADM	MDF-01ADCB610	1611

MDF-01ADC3xx0

Description	Part Number	Wavelength (nm)
1+1-channel CWDM OADM	MDF-01ADC3470	1471
1+1-channel CWDM OADM	MDF-01ADC3490	1491
1+1-channel CWDM OADM	MDF-01ADC3510	1511
1+1-channel CWDM OADM	MDF-01ADC3530	1531
+1-channel CWDM OADM	MDF-01ADC3550	1551
+1-channel CWDM OADM	MDF-01ADC3570	1571
+1-channel CWDM OADM	MDF-01ADC3590	1591
+1-channel CWDM OADM	MDF-01ADC3610	1661

MDF-02ADCBxx0

Description	Part Number	Wavelength Channel 1 (nm)	Wavelength Channel 2 (nm)
2-channel CWDM OADM (1471, 1491)	MDF-02ADCB470	1471	1491
2-channel CWDM OADM (1511, 1531)	MDF-02ADCB510	1511	1531
2-channel CWDM OADM (1551, 1571)	MDF-02ADCB550	1551	1571
2-channel CWDM OADM (1591, 1611)	MDF-02ADCB590	1591	1611

MDF-02ADC3xx0

Description	Part Number	Wavelength	Wavelength + 20 nm
2 + 1-channel CWDM OADM (1310, 1471, 1491)	MDF-02ADC3470	1471	1491
2 + 1-channel CWDM OADM (1310, 1511, 1531)	MDF-02ADC3510	1511	1531
2 + 1-channel CWDM OADM (1310, 1551, 1571)	MDF-02ADC3550	1551	1571
2 + 1-channel CWDM OADM (1310, 1591, 1611)	MDF-02ADC3590	1591	1611

Associated Parts

Description	Part Number
8-channel multiplexer/demultiplexer with 1310 nm LC connectors	MDX-08MDC001B
8-channel universal multiplexer or demultiplexer with 1310 nm SC connectors	MDX-08UXC001A
4-channel universal multiplexer or demultiplexer with 1310 nm SC connectors	MDX-04UXC001A
2RU JDSU passive optics shelf—6 LGX-compatible modules	MDX-MN0204