Optical Passives (OSP)

OP94M5x, OP94D5x

5-channel CWDM Multiplexer and Demultiplexer Field Passives

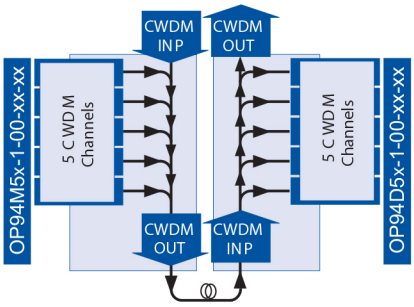
FEATURES

- 15 CWDM wavelengths in 3 groups of 5
- Designed for use with uncooled lasers based on 20 nm channel spacing
- Flat and wide operating passband on CWDM ITU grid (20 nm spacing)
- High channel isolation to minimize crosstalk
- Low polarization dependent loss (PDL)
- Operating temperature range –40° to +85°C
- Telcordia GR-1209 and GR-1221 qualified, providing excellent environmental and mechanical stability
- Ability to cascade and combine all 3 groups
- Variety of options for fiber and connector types
- Epoxy-free on optical path
- Optional integrated 1310 nm combiner/splitter

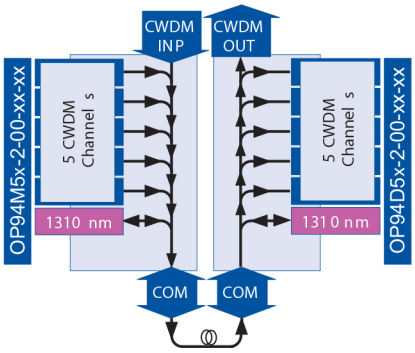
PRODUCT OVERVIEW

ARRIS's OP94M5x and OP94D5x series 5-channel CWDM field passives are designed to multiplex and demultiplex 5 CWDM ITU-grid optical wavelengths. The OP94M5x and OP94D5x modules function similarly and are available in three channel groups ("Very Low" from 1270 to 1350 nm, "Low" from 1430 to 1510 nm, or "High" from 1530 to 1610 nm). The 5-channel modules also include an additional port for cascading the "Low" and "High" channel groups where needed. All of these ruggedized modules have been designed for use in an outdoor environment within a temperature range of –40° to +85°C.

CWDM Cascade Ports



5-channel Mux and Demux Modules, with 5 “Very Low” channels (1270 - 1350 nm), 5 “Low” channels (1430 - 1510 nm), or 5 “High” channels (1530 - 1610 nm)



5-channel Mux and Demux Modules, with 5 “Low” channels (1430 - 1510 nm), or 5 “High” channels (1530 - 1610 nm), with optional integrated 1310 nm combiner/splitter

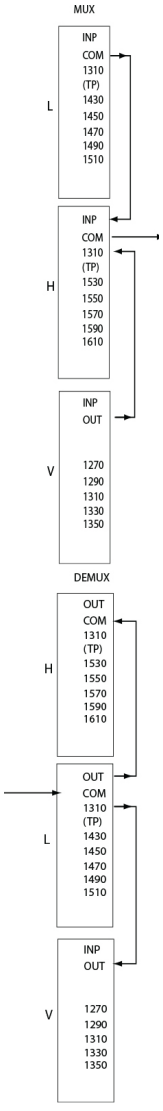
SPECIFICATIONS

Characteristics	Specification	
Physical		
Dimensions	3.8” L x 3.0” W x 0.3” H (9.7 cm x 7.6 cm x 0.8 cm)	
Weight	0.8 lb (0.4 kg)	
Environmental		
Operating Temperature Range	–40° to +85°C (–40° to +185°F)	
Storage Temperature Range	–40° to +85°C (–40° to +185°F)	
Humidity	5% to 95% non-condensing	
Optical		
Channel spacing	20 nm	
Return loss, min	45 dB	
Passband @ 0.5 dB	± 6.5 nm	
Passband for 1310 nm port @ 0.15 dBc	1263.5–1357.5 nm	
Passbands between CWDM INP/OUT and COM ports	1263–1357 nm (with five 13-nm-wide notches at 1270, 1290, 1310, 1330, and 1350 nm) for OP94D5V and OP94M5V; 1423–1617 nm (with five 13-nm-wide notches at 1430, 1450, 1470, 1490, and 1510 nm) for OP94D5L and OP94M5L; 1423–1617 nm (with five 13-nm-wide notches at 1530, 1550, 1570, 1590, and 1610 nm) for OP94D5H and OP94M5H	
Ripple within passband	0.5 dB	
Polarization dependent loss, max	0.15 dB (< 0.1 dB typ)	
Power handling, max (any input port)	21.8 dBm	
Center wavelengths of CWDM channel inputs/outputs	1270, 1290, 1310, 1330, and 1350 nm for OP94D5V and OP94M5V; 1430, 1450, 1470, 1490, and 1510 nm for OP94D5L and OP94M5L; 1530, 1550, 1570, 1590, and 1610 nm for OP94D5H and OP94M5H	
Insertion losses[1], max (dB)	**OP94M5x (5-channel Mux)**	**OP94D5x (5-channel Demux)**
Ch *xxxx* INP to COM	1.7 (1.9)	N/A
COM to Ch *xxxx* OUT	N/A	1.7 (1.9)
1310 to COM	1.1 (1.3)	1.1 (1.3)
CWDM INP to COM	2.0 (2.2)	N/A
COM to CWDM OUT	N/A	2.0 (2.2)
Paired insertion loss[2]	3.0 (3.2)	3.0 (3.2)
CWDM Directivity, min (dB)	55	N/A
Channel isolation, min (dB)		
Adjacent channels	N/A	35
Non-adjacent channels	N/A	45
1310 Directivity, min (dB)	65	65
1310-COM isolation, min (dB)	60	60

SPECIFICATIONS (CONTINUED)

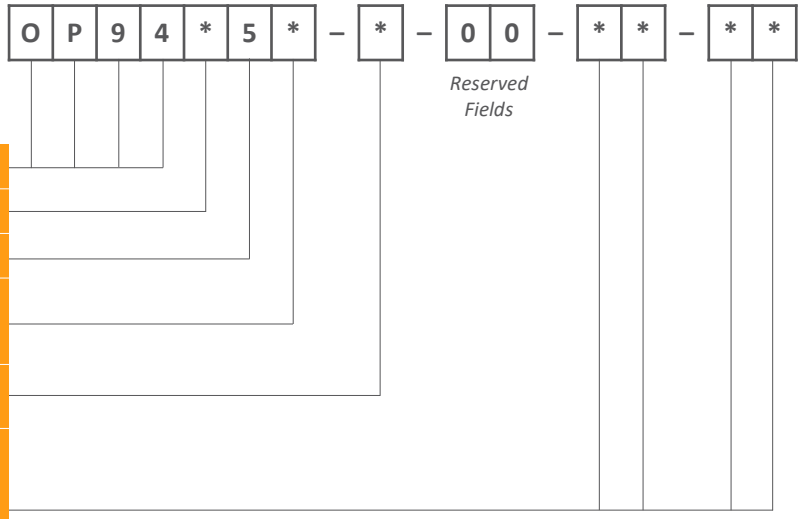
Characteristics	Specification
Optical Interface	
Optical connectors	SC/APC or none (See Ordering Information)
Model OP94M5x-1-00-yy-zz (5-channel mux modules)	• CWDM OUT (output to fiber network) • CWDM INP (input from cascaded CWDM group) • Ch *xxxx* INP (5 channels added for selected channel group)
Model OP94M5x-2-00-yy-zz (5-channel mux modules with 1310 combiner)	• COM (output from fiber network, I/O to/from network for 1310) • CWDM INP (input from cascaded CWDM group) • Ch *xxxx* INP (5 channels added for selected channel groups) • 1310 (input/output to/from fiber network for 1310 nm)
Model OP94D5x-1-00-yy-zz (5-channel demux module)	• CWDM INP (input from fiber network) • CWDM OUT (output to cascaded CWDM group) • Ch *xxxx* OUT (5 channel drops for selected channel group)
Model OP94D5x-2-00-yy-zz (5-channel demux modules with 1310 nm splitter)	• COM (input from fiber network, I/O to/from network for 1310) • CWDM OUT (output to cascaded CWDM group) • Ch *xxxx* OUT (5 channel drops for selected channel group) • 1310 (input/output to/from fiber network for 1310 nm)

NOTES:
1. Insertion losses shown without (and with) connectors, assuming -2 version.
2. Paired insertion loss when combined with corresponding applicable 5-wavelength demux module (from Ch *xxxx* INP to Ch *xxxx* OUT)



A 1310 nm I/O Port is provided on "L" and "H" models only. For cases in which a cascade of CWDM wavelengths that includes the 5 Very Low ("V") wavelengths is required, this port may be used to add those 5 wavelengths from the OUT port of a "V" model mux; see diagrams at right.

ORDERING INFORMATION



CWDM Field Passive
* = M (mux) or D (demux)
5-channel Module
* = H (5 CWDM channels in "High" Channel Group (1530-1610 nm) L (5 CWDM channels in "Low" Channel Group (1430-1510 nm) V (5 CWDM channels in "Very Low" Channel Group (1270-1350 nm)
* = 1310 nm I/O Port (1 = not present, 2 = present (available on "L" and "H" models only))
- = Packaging, Fiber, and Connector Type (All ports are identically connectorized.) R1-00 = Ruggedized package with 1.5-meter pigtail of 900 µm tight buffered fiber and no connector R2-00 = Ruggedized package with 1.5-meter pigtail of 2 mm loose tube fiber and no connector R2-AS = Ruggedized package with 1-meter pigtail of 2 mm loose tube fiber and SC/APC connectors

RELATED PRODUCTS

Optical Transmitters	Optical Passives
Digital Return	Optical Patch Cords
Optical Nodes	Installation Services

Customer Care

Contact Customer Care for product information and sales:

- United States: 866-36-ARRIS
- International: +1-678-473-5656

87-10140-RevF_OP94M5x-D5x_CWDM_Mux-Demux_Field 10/2018 EA-29028