Athermal AWG Mux/Demux Module

1. Description

This document presents the generic specification for the 40-channel 100GHz MUX/DEMUX component supplied for use in DWDM system.

Opfuture's Dense Wavelength Division Mux/Demultiplexer Modules are part of a series of high performance products based on silica-on-silicon planar technology and a unique Athermal packaging design requiring no electrical power, software or temperature control for a completely passive DWDM solution. This product range offers a combination of very low loss and high channel isolation along with long term reliability and low cost per channel for 40 channel, 100GHz solutions. Each module can perform Mux and Demux functions. Both C- and L-band devices are available with Broad Gaussian spectral response. Custom frequency grids, fiber types and connectionism options are also available.

Different input and output fibers, such as SM fibers, MM fibers and PM fiber can be selected to meet different applications. The component is designed for minimum roll-off over the ±80pm clear bandwidth whilst not exceeding the maximum insertion loss of 6.0 dB.

Issue V0 released to reflect Opfuture's standard 100GHz AWG specifications, and can be modified according to customer requirement.

2. Features

Low Insertion Loss

High Isolation

Low PDL

Compact Design

Good channel-to-channel uniformity

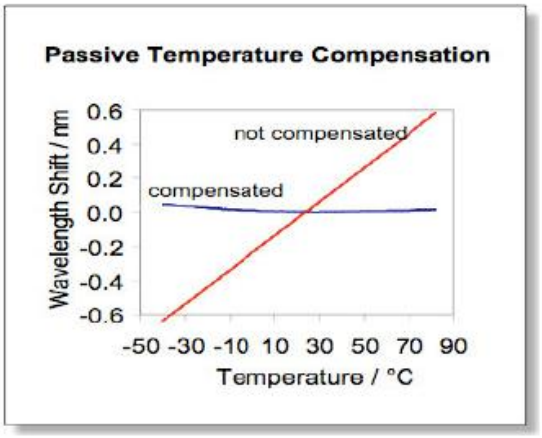
Wide Operating Wavelength

Wide Operating Temperature

High Reliability and Stability

3. Applications

CWDM System



4. Compliance

Telcordia GR-1209-CORE-2001

Telcordia GR-1221-CORE-1999

ITU-T G.694.1

RoHS

5. Specifications

40CH AAWG Module

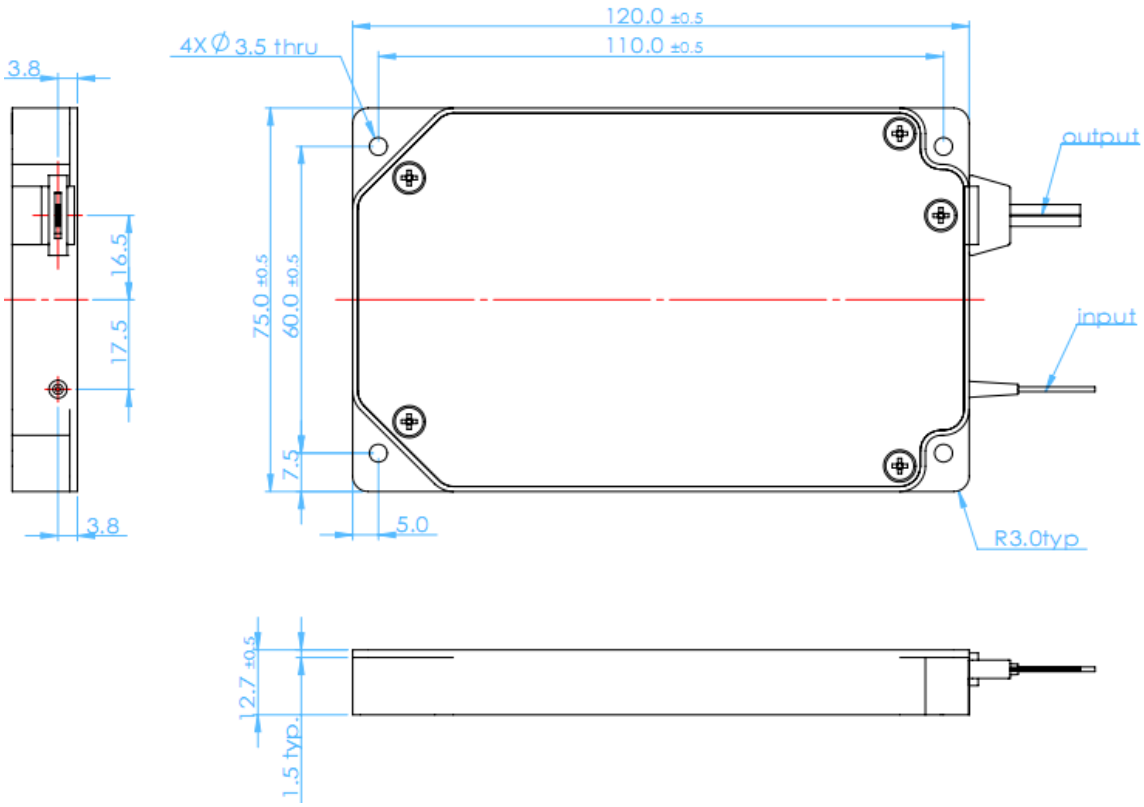
Parameters	Condition	Specs			Units
		Min	Typ	Max	
Number of Channels			40		
Number Channel Spacing	100GHz		100		GHz
Cha. Center Wavelength	ITU frequency.		C -band		nm
Clear Channel Passband			±12.5		GHz
Wavelength Stability	Maximum range of the wavelength error of all channels and temperatures in average polarization.		±0.05		nm
-1 dB Channel Bandwidth	Clear channel bandwidth defined by passband shape. For each channel	0.24			nm
-3 dB Channel Bandwidth	Clear channel bandwidth defined by passband shape. For each channel	0.43			nm
Optical Insertion Loss at ITU grid	Defined as the minimum transmission at ITU wavelength for all channels. For each channel, at all temperatures and polarizations.		4.5	6.0	dB
Adjacent Channel Isolation	Insertion loss difference from the mean transmission at the ITU grid wavelength to the highest power, all polarizations, within the ITU band of the adjacent channels.	25			dB
Non-Adjacent Channel Isolation	Insertion loss difference from the mean transmission at the ITU grid wavelength to the highest power, all polarizations, within the ITU band of the nonadjacent channels.	29			dB
Total Channel Isolation	Total cumulative insertion loss difference from the mean transmission at the ITU grid wavelength to the highest power, all polarizations, within the ITU band of all other channels, including adjacent channels.	22			dB
Insertion Loss Uniformity	Maximum range of the insertion loss variation within ITU across all channels, polarizations and temperatures.			1.5	dB
Directivity(Mux Only)	Ratio of reflected power out of any channel(other than channel n)to power in from the input channel n	40			dB
Insertion Loss Ripple	Any maxima and any minima of optical loss across ITU band, excluding boundary points, for each channel at each port			1.5	dB
Optical Return loss	Input & output ports	40			dB
PLD	Worst-case value measured in ITU band		0.3	0.5	dB

in Clear Channel Band					
PMD				0.5	ps
Maximum Optical Power				24	dBm
Operating Temperature		-5		65	℃
Storage Temperature		-40		85	℃

1. IL Represents the worst case over a +/-0.08nm window around the ITU wavelength ；
2. PDL was measured on average polarization over a +/- 0.08nm window around the ITU wavelength.

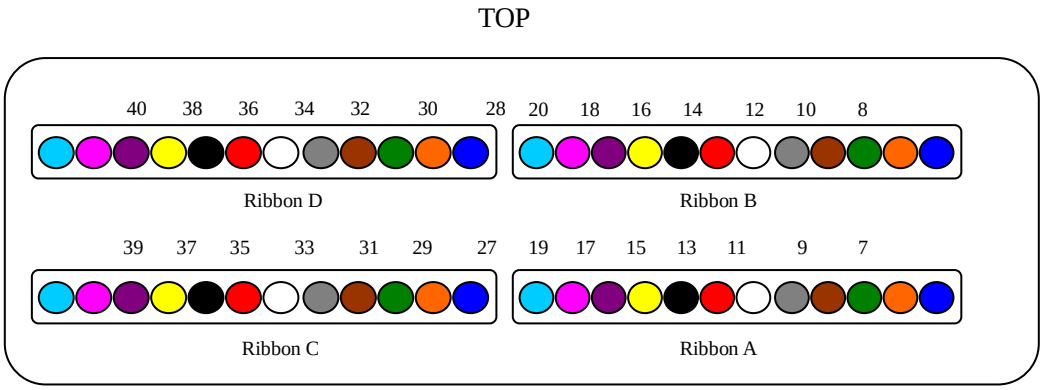
6. Mechanical Dimensions

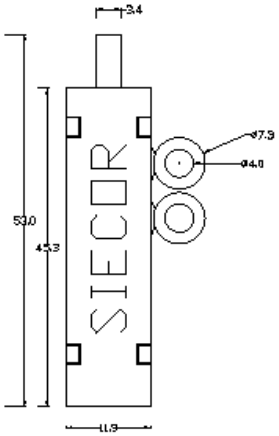
40CH AAWG Module

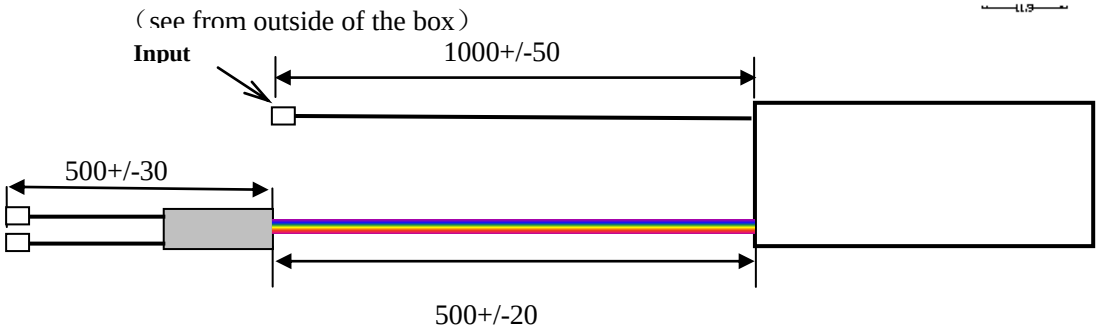


6. Fiber Coding and Connector Specifications

Fiber Type	Common G657A fiber with 900mm loose tube，Channels SMF-28e.											
Fiber Format	4x 12-fiber ribbons											
Fiber Length	Common	1000mm ± 50mm with 900um loose tube										
	Channels	Ribbon500mm± 20 mm and Fan out 500mm± 30mm with 900um loose tube										
Common	Color	white										
Ribbon Identification	Label with ribbon number to be placed midway between ribbon end-points											
Connector Options	Common	FC/APC										
	Channels	FC/APC										
Identification in Ribbon	1	Blue	2	Orange	3	Green	4	Brown	5	Grey	6	White
	7	Red	8	Black	9	Yellow	10	Purple	11	Pink	12	Aqua








: Fan-out


: Bare Ribbon Fiber

: Single Fiber with 900um tube


: Connector

7. Ordering information

OAWG - □ □ □ □ □ - □

A B C D E F

A	Band：C=C- band L=L-band D=C+L band
B	Channel Number：32=32CH 40=40CH 48=48CH
C	Start Wavelength：C60=1529.55nm H59=1529.94nm C59=1530.33nm ..... =ITU Grid
D	Filter shape： G = Gaussian B=Broad Gaussian Flat-top
E	Fiber Length： 1.0=1.0m 1.2=1.2m 1.5=1.5m
F	COM Connector： FC/UPC，FC/APC，SC/UPC， SC/APC，LC/UPC，LC/APC

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ITU Grid:

Ch. No.	Freq (THz)	WL (nm)	Ch. No.	Freq (THz)	WL (nm)
1	196.00	1529.553	21	194.00	1545.322
2	195.90	1530.334	22	193.90	1546.119
3	195.80	1531.116	23	193.80	1546.917
4	195.70	1531.898	24	193.70	1547.715
5	195.60	1532.681	25	193.60	1548.515
6	195.50	1533.465	26	193.50	1549.315
7	195.40	1534.250	27	193.40	1550.116
8	195.30	1535.036	28	193.30	1550.918
9	195.20	1535.822	29	193.20	1551.721
10	195.10	1536.609	30	193.10	1552.524
11	195.00	1537.397	31	193.00	1553.329
12	194.90	1538.186	32	192.90	1554.134
13	194.80	1538.976	33	192.80	1554.940
14	194.70	1539.766	34	192.70	1555.747
15	194.60	1540.557	35	192.60	1556.555
16	194.50	1541.349	36	192.50	1557.363
17	194.40	1542.142	37	192.40	1558.173
18	194.30	1542.936	38	192.30	1558.983
19	194.20	1543.730	39	192.20	1559.794
20	194.10	1544.526	40	192.10	1560.606