

80-Channel 50GHz Wide Band Thermal AWG

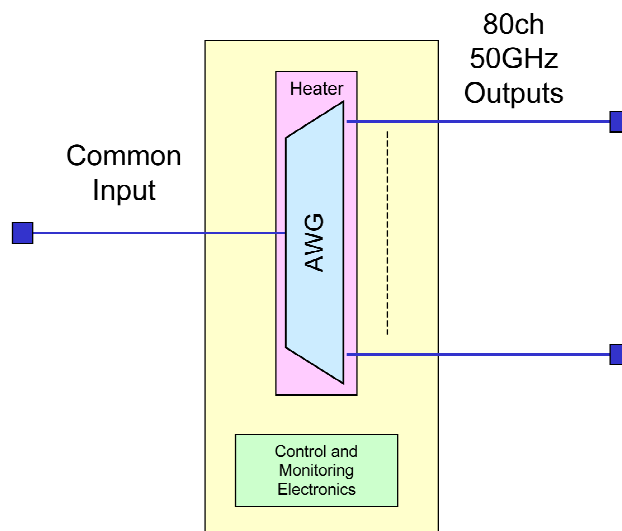


KEY FEATURES:

- 80 Channels
- Low Insertion Loss & PDL
- Low Crosstalk
- Wide Passband
- High Uniformity
- Internal Thermal Regulation
- Compact Footprint
- MSA-Compliant Option Available
- Telcordia GR-1209/GR-1221 Qualified

The Gemfire 80 channel Arrayed Waveguide Grating (AWG) is a cost effective, high-performance DWDM mux/demux device operating on 50GHz channel spacing in the C Band. The PhotonIC™ planar processed, silica-on-silicon chips use arrayed channel waveguides to separate or combine multiple wavelengths. Gemfire AWGs provide low insertion loss, excellent channel isolation, ease of fiber handling, and long-term reliability in a compact package. Due to the temperature-dependence of center wavelength, the AWG die requires a heater element (and control electronics when needed) that keeps the AWG at a certain temperature within 68~80 °C to maintain the optical performance from 5°C to 65°C of environmental temperature.

Functional Schematic Diagram



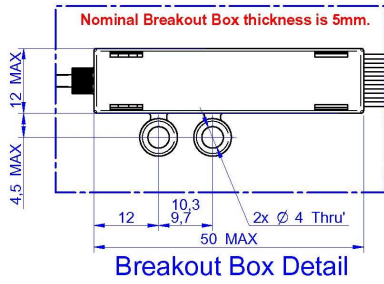
Optical Specifications

Parameters	Unit	Min	Max	Conditions
Channel Spacing	GHz		50	
Reference Pass Band	nm	-0.05	0.05	Relative to ITU Grid
ITU Frequency		192.10	196.05	
Centre Wavelength Accuracy	nm	-0.024	0.024	Maximum of the absolute deviation of 3dB centre wavelength from ITU grid over all channels
1dB Bandwidth	nm	0.18		1dB from minimum Insertion Loss, full width, average SOP
3dB Bandwidth	nm	0.28		3dB from minimum Insertion Loss, full width, average SOP
20dB Bandwidth	nm	0.62		20dB from minimum Insertion Loss, full width, average SOP
Insertion Loss	dB		7.0	Maximum of the insertion loss across the ITU pass band over all channels including connector loss, average SOP
Ripple	dB		0.6	Maximum of the loss variance across the ITU pass band over all channels, average SOP
Insertion Loss Uniformity	dB		1.5	Max. insertion loss variance across all channels
Return Loss	dB	40		
Adjacent Channel Isolation	dB	23		Ratio of peak transmission to the transmission over adjacent pass bands
Non-Adjacent Channel Isolation	dB	28		Ratio of peak transmission in channel pass bands to maximum transmission over all non-adjacent pass bands
Total Crosstalk	dB	20		Ratio of Power in channel to power in all other pass bands at ITU
Polarization Dependant Loss (PDL)	dB		0.5	Maximum ratio of transmissions over all polarization states, over the ITU pass band
Polarization Mode Dispersion	ps		1.0	In Reference Pass band over all channels
Chromatic Dispersion	ps/nm	-30	30	In reference Pass band over all channels

Operating & Storage Conditions

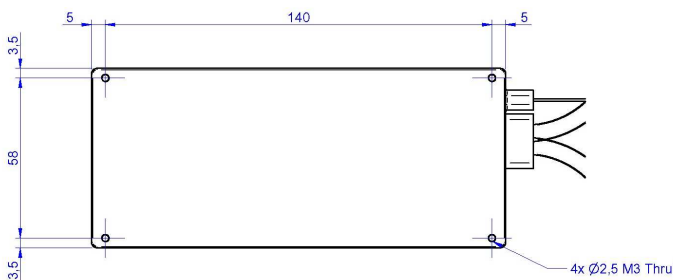
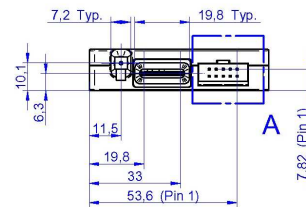
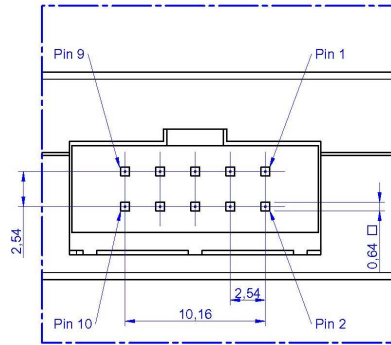
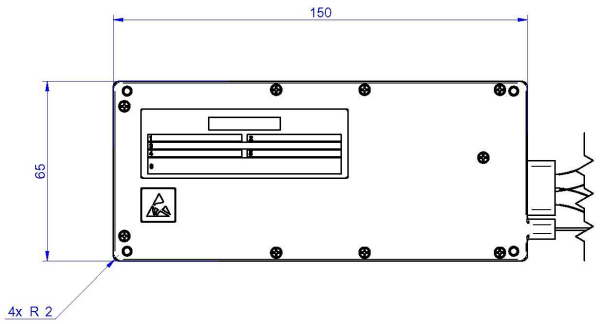
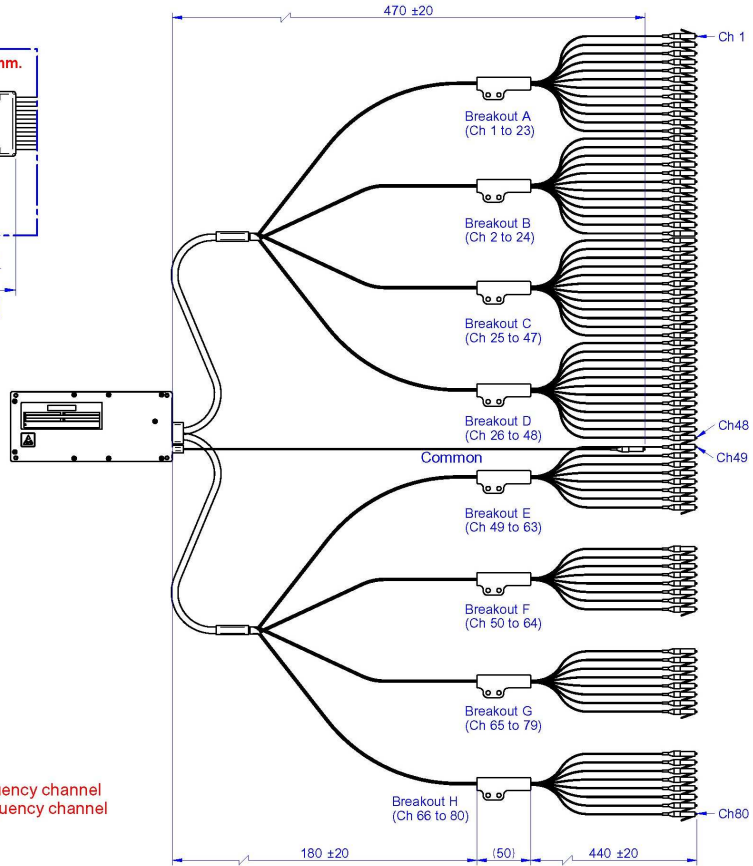
Parameters	Unit	Min	Max
Operating Temperature	°C	-5	65
Operating Humidity	% R.H.	5	95
Storage Temperature	°C	-40	85
Storage Humidity	% R.H.	5	95

Mechanical Drawings



Colour	Channel Number							
Blue	1	2	25	26	49	50	65	66
Orange	3	4	27	28	51	52	67	68
Green	5	6	29	30	53	54	69	70
Brown	7	8	31	32	55	56	71	72
Gray	9	10	33	34	57	58	73	74
White	11	12	35	36	59	60	75	76
Red	13	14	37	38	61	62	77	78
Black	15	16	39	40	63	64	79	80
Yellow	17	18	41	42				
Violet	19	20	43	44				
Rose	21	22	45	46				
Aqua	23	24	47	48				
Ribbon	1	2	3	4	5	6	7	8
Breakout	A	B	C	D	E	F	G	H

NB: Channel 1 will be the Highest Frequency channel
Channel 80 will be the Lowest Frequency channel



ELECTRICAL PIN FUNCTIONS		
Pin #	Name	Function
1	+5V	Heater Supply
2	+5V	Heater Supply
3	+5V	Control Circuit Supply
4	Ready	Output
5	Error / Alarm	Output
6	Reset / Enable	Input
7	TX	RS232 Transmit
8	GND	Ground
9	RX	RS232 Receive
10	GND	Ground

Electrical Interface

Pin #	Signal	Type	Description
1	+5V	Power	Supply to heater circuit
2	+5V	Power	Supply to heater circuit
3	+5V	Power	Supply to control circuit
4	Ready	TTL	Set HIGH when the internal temperature is at set-point temperature Set LOW when the internal temperature is not at set-point temperature (higher than the Upper Temperature Threshold or Lower than the Under Temperature Value)
5	Alarm	TTL	Set HIGH when the internal temperature is higher than the set-point temperature Set LOW when the internal temperature is not higher than the set-point temperature. Pin 4 and Pin 5 should be used to check the temperature's status
6	Enable	TTL	If set high, the heater circuit is activated
7	TX	TTL	RS232 transmit signal
8	GND	Power	
9	RX	TTL	RS232 transmit signal
10	GND	Power	Ground

Electrical Characteristics

Parameters	Unit	Min	Max	Notes
Set-Point Temperature Of Component	°C	65	85	Optimum Operating Temperature
Set-Point Temperature Stability	°C		±0.2	Over The Entire Operating Temperature Range
Heater Drive Voltage	V	5		
Heater Drive Current	A		2.5	
Heater Drive Dissipation	W	12.5	12.5	Typical
AWG Temperature Settling Time	Min		15	AWG Warm-Up Time From Cold Start (-15°C Ambient Temperature)

Ordering Information

80Ch 50GHz Wide Band AWG Part Numbers

On Grid

DMX-W80-HH1-002

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