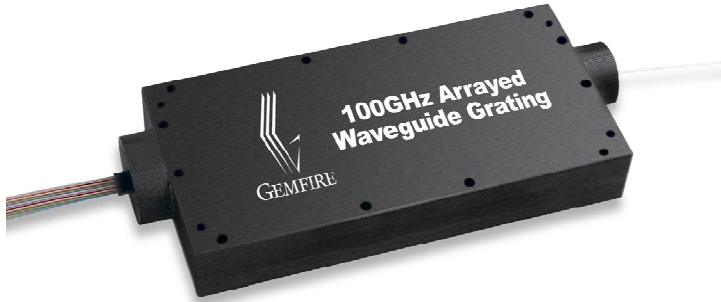


40-Channel 100GHz Thermal AWG

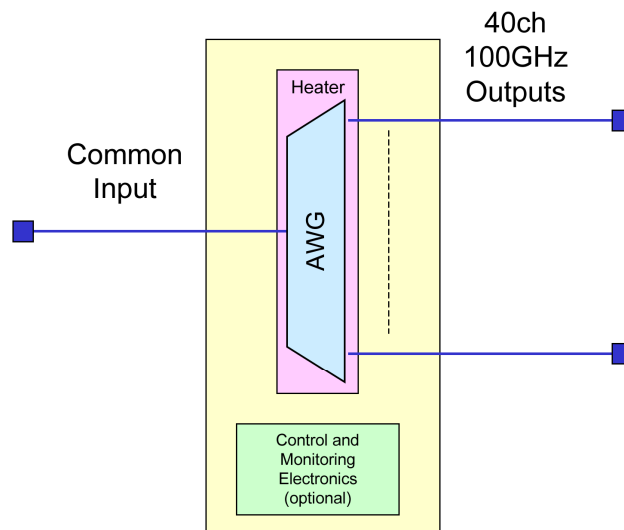


The Gemfire thermal AWG is a passive de-multiplexing device that spatially separates a stream of optical signals from a single-mode input fiber into different single mode fibers, each corresponding to an individual ITU channel in the specified wavelength band. The device can also be applied in the reverse format for multiplexing applications. 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.

KEY FEATURES:

- 40 Channels
- Low Insertion Loss & PDL
- Low Crosstalk
- Gaussian & Wide-Band Options
- High Uniformity
- Internal Thermal Regulation
- Electronics Option
- Compact Footprint
- MSA-Compliant Option Available
- Telcordia GR-1209/GR-1221 Qualified

Functional Schematic Diagram



GEMFIRE
Bringing new ideas to light™

Optical Specifications

| Parameters | Unit | Min | Max | Conditions |
|--------------------------------|-------|-----------------|-----------------|-------------------------|
| Number of Channels | | | 40 | |
| Channel Spacing | GHz | | 100 | |
| Nominal Center Frequencies | THz | 192.10 | 196.00 | C-Band On Grid |
| Clear Pass Band | nm | -0.1 | 0.1 | |
| Center Wavelength Accuracy | pm | -40 | 40 | Relative to ITU All SOP |
| Filter Bandwidth @ -1.0dB | nm | 0.2 (Gaussian) | | Avg. SOP |
| | | 0.4 (Wide Band) | | Avg. SOP |
| Filter Bandwidth @ -3.0dB | nm | 0.4 (Gaussian) | | Avg. SOP |
| | | 0.6 (Wide Band) | | Avg. SOP |
| Filter Bandwidth @ -20dB | nm | | 1.2 (Wide Band) | Avg. SOP |
| Adjacent Channel Crosstalk | dB | | -27 | Over CPB, All SOP |
| Non-Adjacent Channel Crosstalk | dB | | -30 | Over CPB, All SOP |
| Total Integrated Crosstalk | dB | | -22 | Over CPB, All SOP |
| Insertion Loss* | dB | | 4.25 (Gaussian) | Over CPB, All SOP |
| | | | 5.5 (Wide Band) | Over CPB, All SOP |
| Insertion Loss Uniformity | dB | | 1.0 | At ITU, Avg. SOP |
| Insertion Loss Ripple | dB | | 1.5 (Gaussian) | Over CPB, Avg. SOP |
| | | | 0.5 (Wide Band) | Over CPB, Avg. SOP |
| Polarization Dependent Loss | dB | | 0.5 (Gaussian) | Over CPB |
| | | | 0.4 (Wide Band) | Over CPB |
| Directivity | dB | -40 | | Over CPB, Avg. SOP |
| Return Loss | dB | -40 | | Over CPB, Avg. SOP |
| Chromatic dispersion | ps/nm | -20 | +20 | Over CPB, Avg. SOP |

* Including connector loss

CPB=Clear Pass Band SOP=States of Polarization

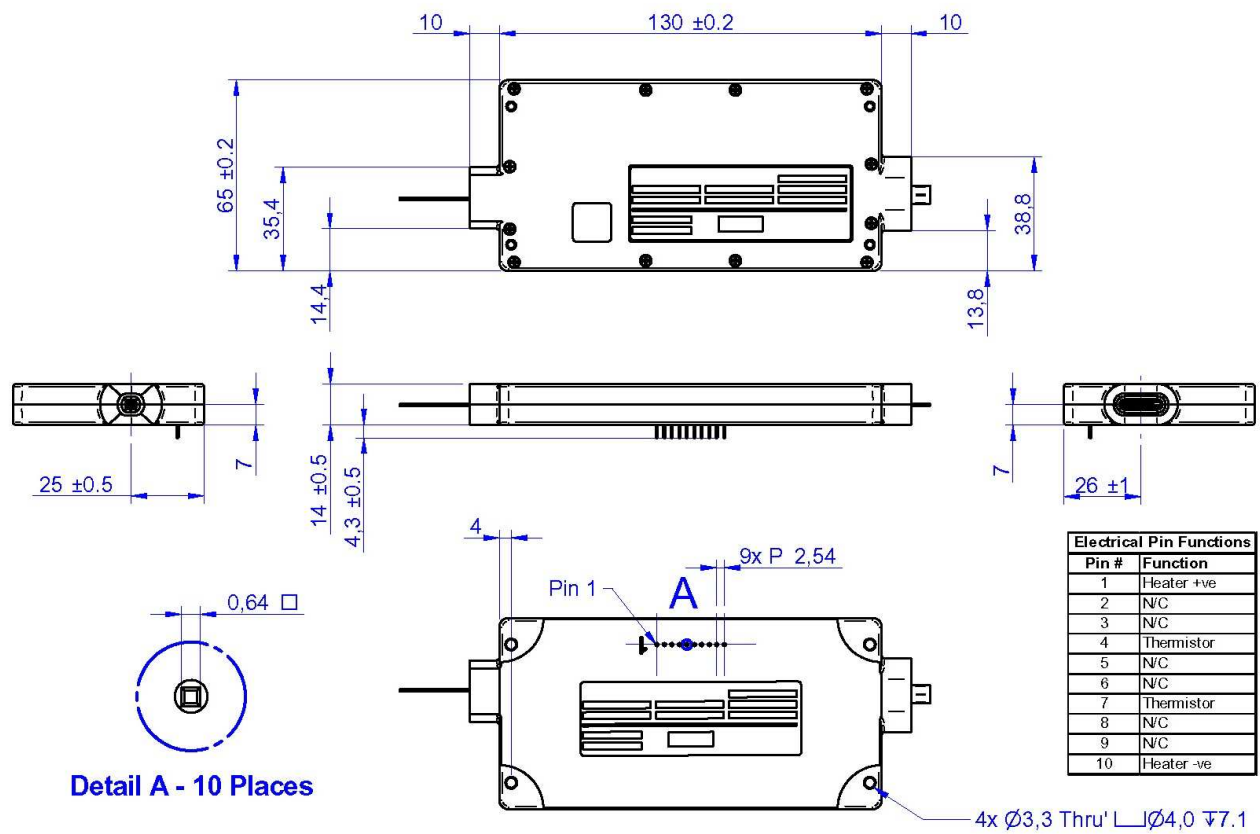
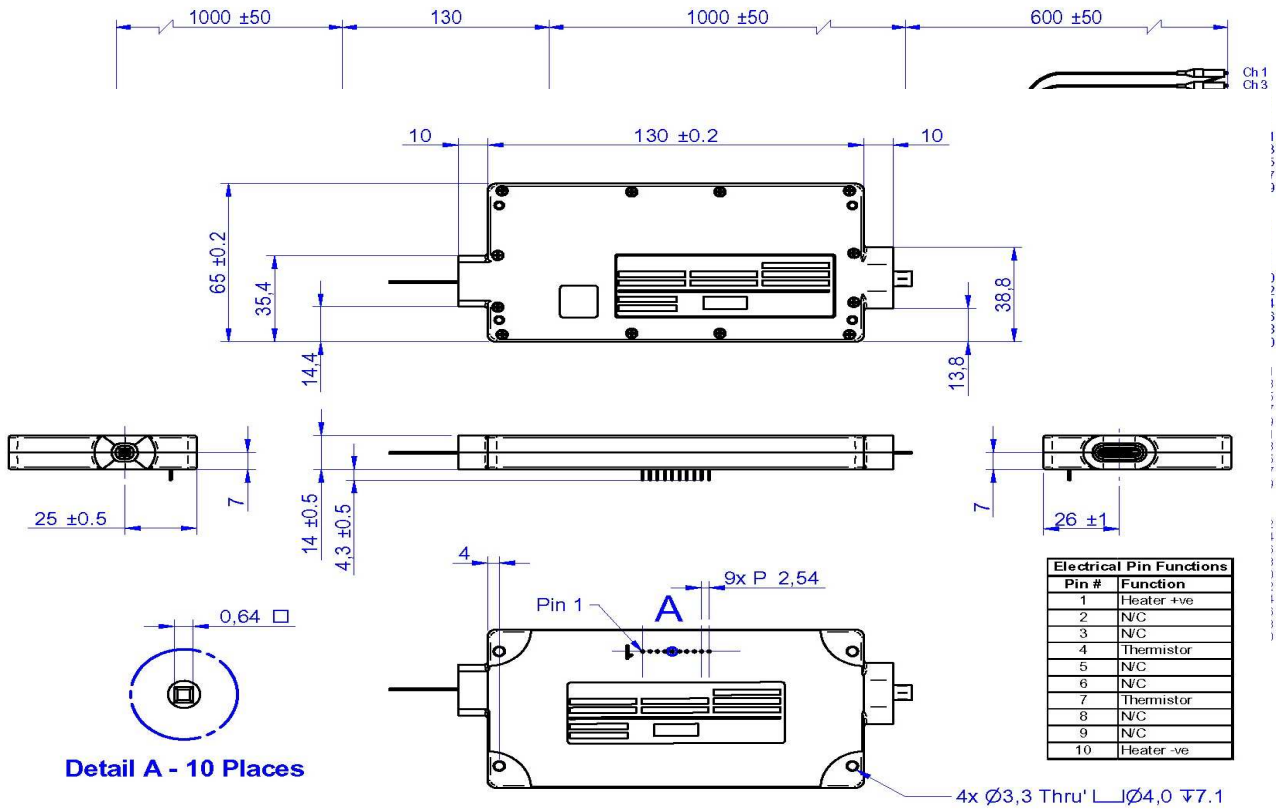
Operating & Storage Conditions

| Parameters | Unit | Min | Max |
|-----------------------|--------|-----|-----|
| Operating Temperature | °C | -5 | 65 |
| Operating Humidity | % R.H. | 0 | 90 |
| Storage Temperature | °C | -40 | 85 |
| Storage Humidity | % R.H. | 0 | 90 |

Electrical Characteristics

| Parameters | Unit | Min | Max | Notes |
|-----------------------|-------|-----|------|---|
| Heater Resistance | Ohms | | | 4.75 Typical |
| Heater Drive Voltage | V | | 8 | |
| Heater Drive Current | A | | 1.6 | |
| Heater Power | W | | 12.5 | Max heater power required to reach device set point temperature from -5°C ambient (air flow <1.5m/s warm up time <10mins) |
| Thermistor Resistance | kOhms | | | 50 Typical (at 25°C) |

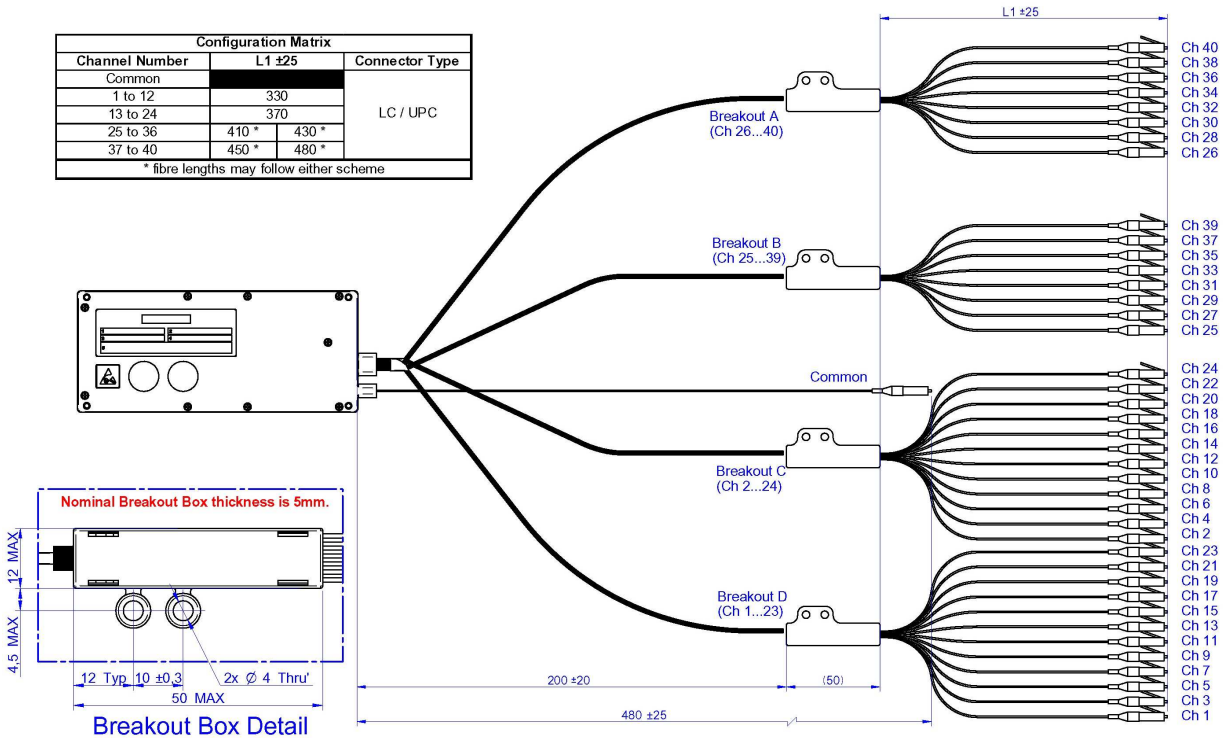
Mechanical Drawings (option without electronics)



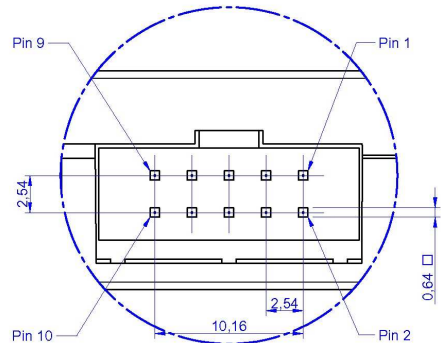
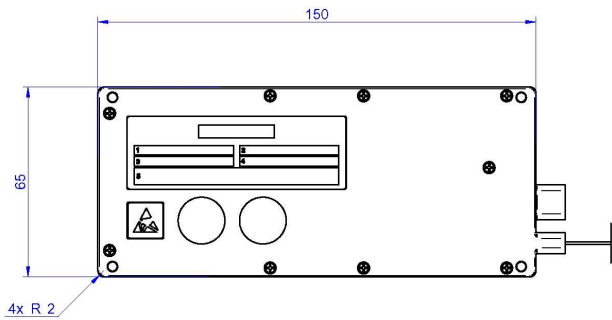
Mechanical Drawings (option with electronics)

| Configuration Matrix | | |
|----------------------|-------------|----------------|
| Channel Number | L1 ±25 | Connector Type |
| Common | | LC / UPC |
| 1 to 12 | 330 | |
| 13 to 24 | 370 | |
| 25 to 36 | 410 * 430 * | |
| 37 to 40 | 450 * 480 * | |

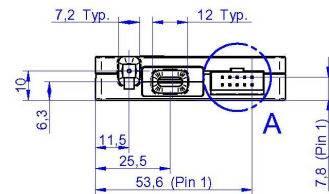
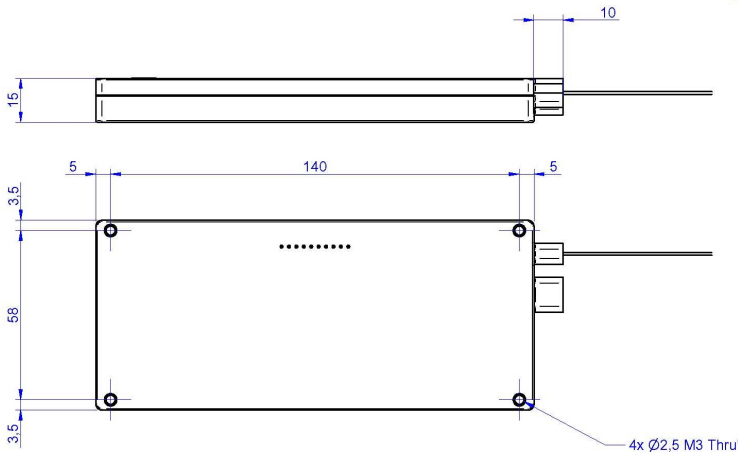
* fibre lengths may follow either scheme



NB: Channel 40 will be the Highest Frequency channel
Channel 01 will be the Lowest Frequency channel



DETAIL A - Electrical Connector



| 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

| Without Internal Electronics | | With Internal Electronics | |
|------------------------------|------------|---------------------------|----------------------------|
| Pin # | Function | Pin # | Function |
| 1 | Heater +ve | 1 | Heater Supply +5V |
| 2 | N/C | 2 | Heater Supply +5V |
| 3 | N/C | 3 | Control Circuit Supply +5V |
| 4 | Thermistor | 4 | Ready |
| 5 | N/C | 5 | Error / Alarm |
| 6 | N/C | 6 | Reset Enable |
| 7 | Thermistor | 7 | TX (RS232) |
| 8 | N/C | 8 | GND |
| 9 | N/C | 9 | RX (RS232) |
| 10 | Heater -ve | 10 | GND |

Ordering Information

40Ch 100GHz Thermal AWG Part Numbers

| | |
|-----------------------------|-----------------|
| On Grid Gaussian | DMX-G40-HH2-ST3 |
| On Grid Wide Band | DMX-W40-HH2-CBA |
| On Grid Gaussian w/ Elect. | DMX-G40-HH1-ST6 |
| On Grid Wide Band w/ Elect. | DMX-W40-HH1-1DD |

Gemfire Corporation

2255 D Martin Avenue
Santa Clara, CA 95050
408-380-7800 or 1-866-4GEMFIRE
www.gemfire.com

