Gooch & Housego
ENABLING PHOTONIC TECHNOLOGIES

# SUBMINIATURE PUMP SIGNAL WDM

## Fused Fiber Coupler

DATASHEET

The subminiature pump signal WDM provides low loss multiplexing of pump and signal in an ultra-short 32 mm length package.

Designed for space constrained optical amplifiers, the product is manufactured using ø80 µm cladding fiber. This enables low fiber bend radius without compromising mechanical integrity.

Gooch & Housego proprietary manufacturing technology provides uniquely low insertion loss for signal and pump paths. This promotes low noise figure and the efficient use of pump power in optical amplifiers.

Standard wavelengths of operation are based on 980 nm pumping and C, L or C+L signal bands. However many other wavelength combinations are available for diverse requirements such as sensing, fiber lasers and fiber Gyros. Do not hesitate to contact us with your specific requirements.

Reliability is assured through qualification to Telcordia GR-1221.


### Key Features

- 32 mm package length
- ø80 µm cladding fiber
- C, L or C+L signal bands
- Ultra-low typical <0.05dB excess loss
- High power handling
- Proven reliability

### Applications

- Miniature optical amplifiers
- Miniature modules
- Fiber Gyros
- Fiber lasers
- Sensors

### Compliance

- Telcordia GR-1221

## Optical Specifications

| Wavelength | | Grade | Available Fiber Type Option[5] | Insertion Loss (dB)[1] | WDL (dB)[2] | PDL (dB)[3] | TDL (dB)[4] | Isolation (dB) |
|---|---|---|---|---|---|---|---|---|
| Pump | Signal | | | Max | Max | Max | Max | Min |
| 980nm | C band L band | M | 4 | 0.10 | 0.07 | 0.02 | 0.02 | 18 |
| | | N | 4 | 0.15 | 0.10 | 0.02 | 0.02 | 18 |
| | | B | 4,9 | 0.20 | 0.10 | 0.02 | 0.02 | 16 |
| 980nm | C+L band | B | 4,9 | 0.50 | 0.40 | 0.02 | 0.02 | 10 |

1 Insertion loss over operating wavelength range (not including PDL and TDL).

2 Change in insertion loss over the operating wavelength range.

3 Change in insertion loss over all input polarization states in signal wavelength range.

4 Change in insertion loss from -5 – 75°C.

5 Cross reference to ordering information table for available options.

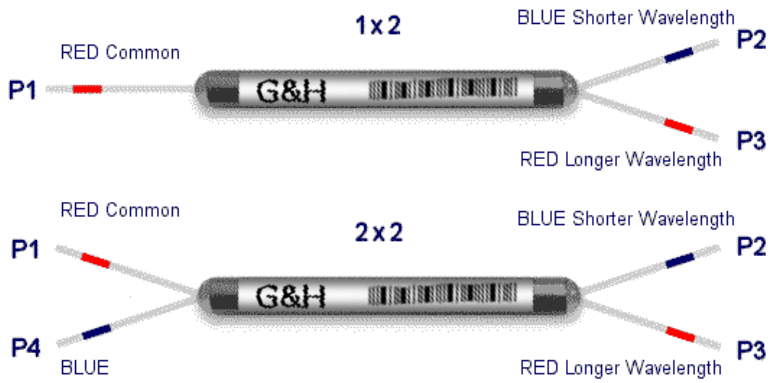
| Parameter | | Specification |
|---|---|---|
| Operating wavelength range[1] | C band | 1528-1563 nm |
| | C + L band | 1528-1605 nm |
| | L band | 1570-1605 nm |
| | 980 nm | 970-990 nm |
| Return loss/directivity[1] | | 55 dB |
| Pigtail tensile load | | 5 N |
| Optical power handling | | 4 W |
| Operating/storage temperature range | | -40 – +75°C/-40 – +85°C |
| Environmental qualification | | Telcordia GR 1221 |

1 Measured reference port P3 input for signal wavelength, P2 input for pump wavelength and P1 input for signal and pump wavelengths.

## Housing Option

| Housing Code | Description | 1x2, 2x2 Dimensions (mm) | Pigtail |
|---|---|---|---|
| 1 | Subminiature | 3.0 (∅) x 32 (L) | Primary-coated fiber, 80 µm cladding |

## Configuration



## Order code

Order codes are comprised of a standard device prefix (e.g. FFW) followed by code letters or numbers, which correspond to available options.

**Sample:** FFW-5C11M2410 (Fused Fiber WDM, 980 nm pump, C band signal, subminiature housing, 1x2, M grade, ø80 µm cladding fiber (980 nm), 1 m pigtail, no connector).

| Order code | | | | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | F | W | - | 5 | | 1 | | | 2 | | | 0 |

| | | | | |
|---|---|---|---|---|
| ① | **Pump wavelength** | 980 nm | | |
| | **Code** | 5 | | |
| ② | **Signal wavelength** | C+L band | C band | L band |
| | **Code** | 1 | C | L |
| ③ | **Housing** | Subminiature | | |
| | **Code** | 1 | | |
| ④ | **Port configuration** | 1x2 | 2x2 | |
| | **Code** | 1 | 2 | |
| ⑤ | **Grade** | Grade M | Grade N | Grade B |
| | **Code** | M | N | B |
| ⑦ | **Fiber type** | ø80 µm cladding fiber (980 nm) | ø80 µm cladding high NA fiber (980 nm) | |
| | **Code** | 4 | 9 | |
| ⑧ | **Pigtail length**[1] | 0.5 m | 1 m | |
| | **Code** | 0 | 1 | |
| ⑨ | **Connector** | None | | |
| | **Code** | 0 | | |

1 Minimum pigtail length. Further pigtail lengths available on request.

## Other products which may be of interest

- HI REL couplers
- High power multimode combiners
- Combiners with all types of signal feedthrough fiber
- Ultra-low ratio tap couplers
- WDMs for combining signals with red pointer lasers
- OCT wideband couplers