# 1550 Isolator / 1480nm WDM

## thermal matching high reliability, compact Ø=4.2mm, 40dB isolation

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The OIWD Series 3-port fiber optical isolator integrates a 1480 nm WDM with a 1550 nm isolator in a compact format of 4.2 mm diameter and 32 mm length. It guides single mode 1550 nm light in the forward direction while minimizing back reflection and back scattering in the reverse direction for both polarized and unpolarized light. A third port directs single mode 1480 nm light into one of the isolator ports for pumping an erbium-doped fiber. Leveraging Agiltron's advanced all-glass thermal matching micro-optics design, the isolator offers ultra-high reliability, high stability over a wide operating range (-45°C to 85°C), low insertion loss, dual-stage high isolation, and a compact structure. Automated production also makes it cost-effective. These Telcordia-qualified components are ideal for applications in fiber amplifier systems, pump laser diodes, and optical fiber sensors.

## Features

- Low Insertion Loss
- High Isolation
- Low PDL
- High Reliability
- Low Cost

## Specifications

| Parameter | Min | Typical | Max | Unit |
|---|---|---|---|---|
| Isolator Operation Wavelength | 1528 | | 1564 | nm |
| Isolator Channel Insertion Loss (-20 to 80 °C) | 0.6 | 0.7 | 1 | dB |
| Isolator Channel Isolation (-20 to 80 °C) | 35 | 40 | 45 | dB |
| Pump Channel Wavelength Range | 1450 | | 1495 | nm |
| Pump Channel Insertion Loss (-20 to 80 °C) | | 0.5 | 0.6 | dB |
| Pump Channel Isolation (-20 to 80 °C) | | | 15 | dB |
| Signal Channel Isolation (-20 to 80 °C) | | | 25 | dB |
| Polarization Dependent Loss | | | 0.2 | dB |
| Polarization Mode Dispersion [1] | | | 0.1 | ps |
| Return Loss (Input/Output) | 55 | | 0.1 | dB |
| Directivity | 55 | | | dB |
| Wavelength Dependent Loss | | | 0.45 | dB |
| Operating Temperature | -45 | | +80 | °C |
| Storage Temperature | -50 | | +85 | °C |
| Optical Power Handling | | | 500 | mW |

[1]. Special order for PMD ≤ 0.05ps with compensator

## Applications

- Optical Fiber Amplifier
- Pump Laser Source
- Fiber Optic Sensor
- Instrumentation

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Rev 10/06/24

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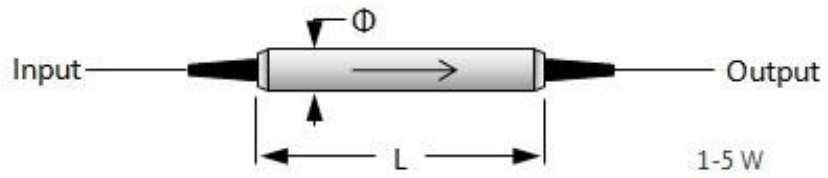
## Mechanical Dimensions (mm)

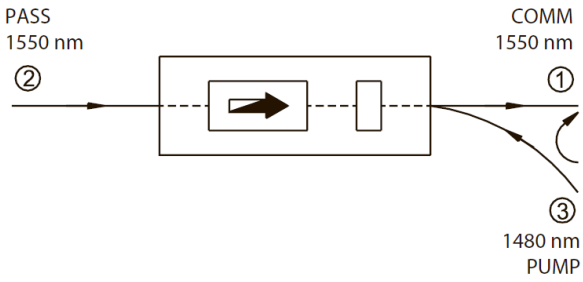



Ø=4.2mm L=32mm

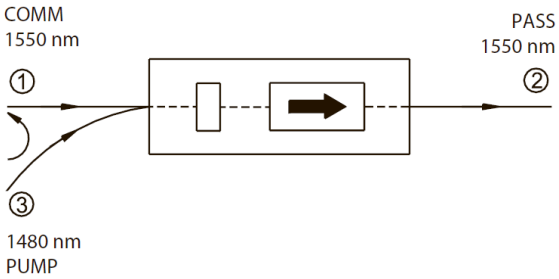
*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

## Configurations

**Type F**




**Type B**




## Ordering Information (Part Number)

| | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
|---|---|---|---|---|---|---|---|---|
| **Prefix** | **Isolation** | **Isolator Wavelength** | **WDM Wavelength** | **Configuration** | **Fiber Type** | **Fiber Cover** | **Fiber Length** | **Connector** [1] |
| **OIWD-** | Single Stage = 1<br>Dual Stage = 2 | 1550nm = 5<br>1585nm = 6<br>Special = 0 | 1480nm = 4<br>Special = 0 | F = F<br>B = B | SM28 = 1<br>SM28e = 2<br>PM1310 = 3<br>Special = 0 | Bare Fiber = 1<br>900μm Tube = 2 | 0.25m = 1<br>0.5m = 2<br>1.0m = 3<br>1.5m = 4<br>2.0m = 5<br>Special = 0 | None = 1<br>FC/PC = 2<br>FC/APC = 3<br>SC/PC = 4<br>SC/APC = 5<br>ST/PC = 6<br>LC/PC = 7<br>LC/APC = A<br>LC/UPC = U<br>Special = 0 |

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

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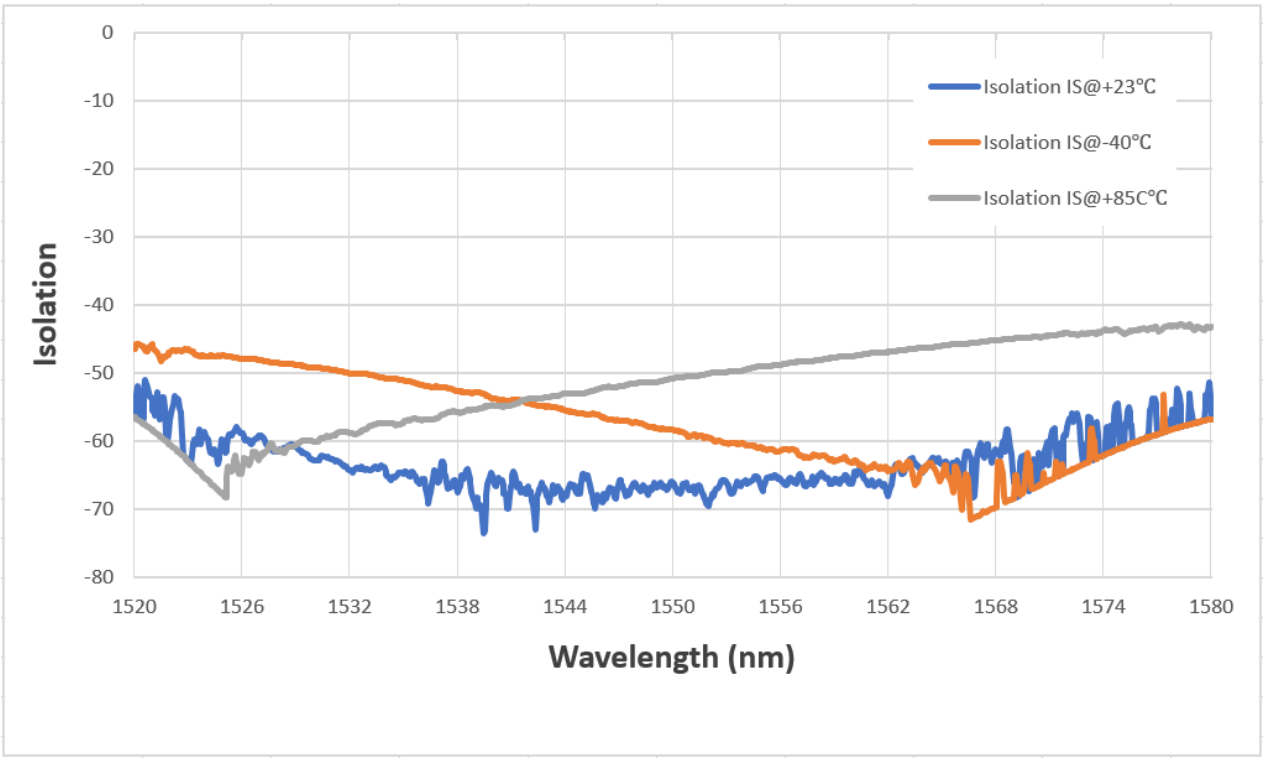
### Function Diagram

### Isolation vs Wavelength



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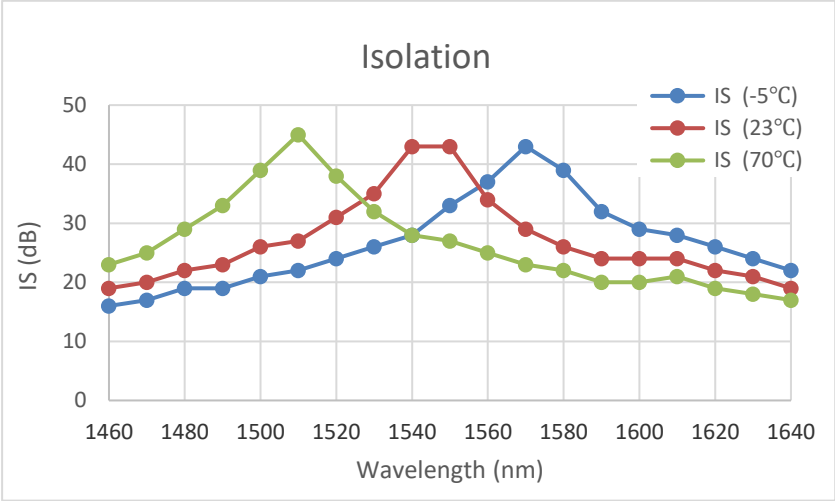
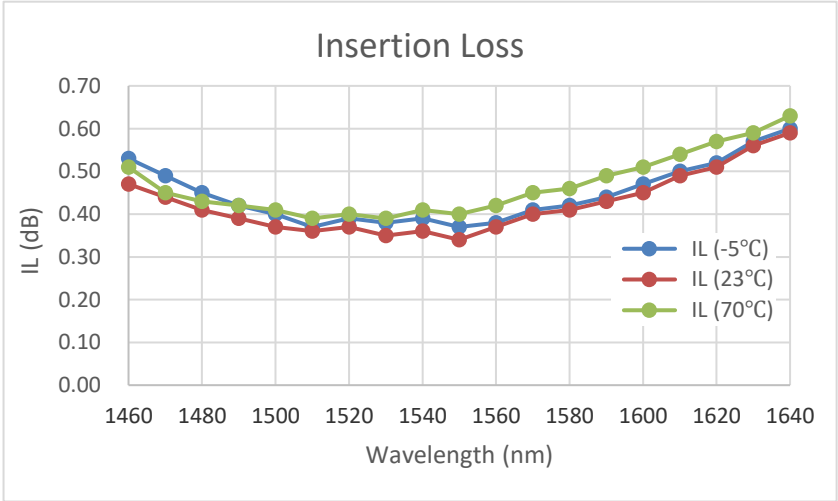
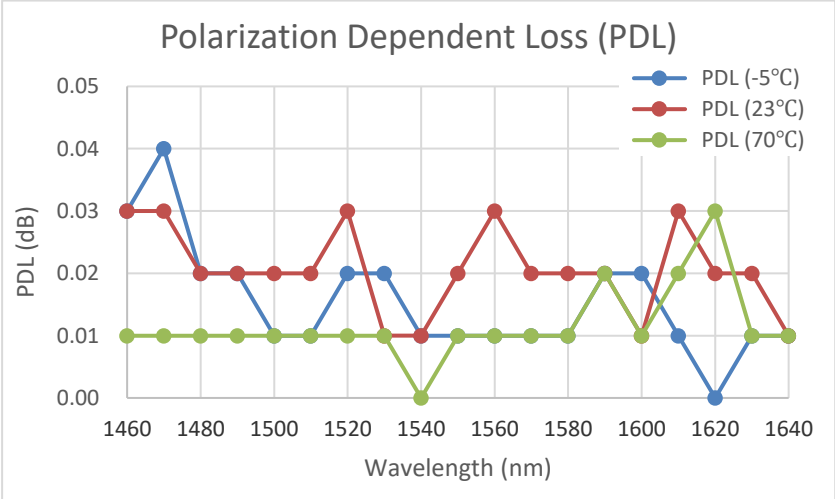
### Typical Wavelength Dependence for Single Stage



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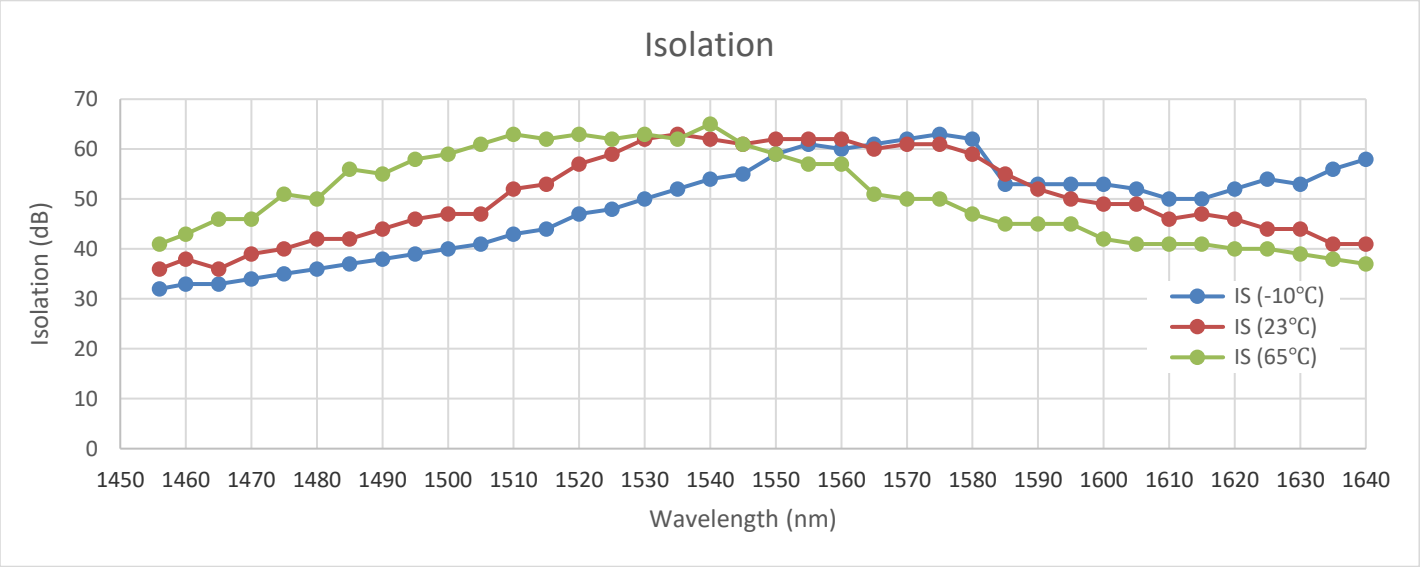
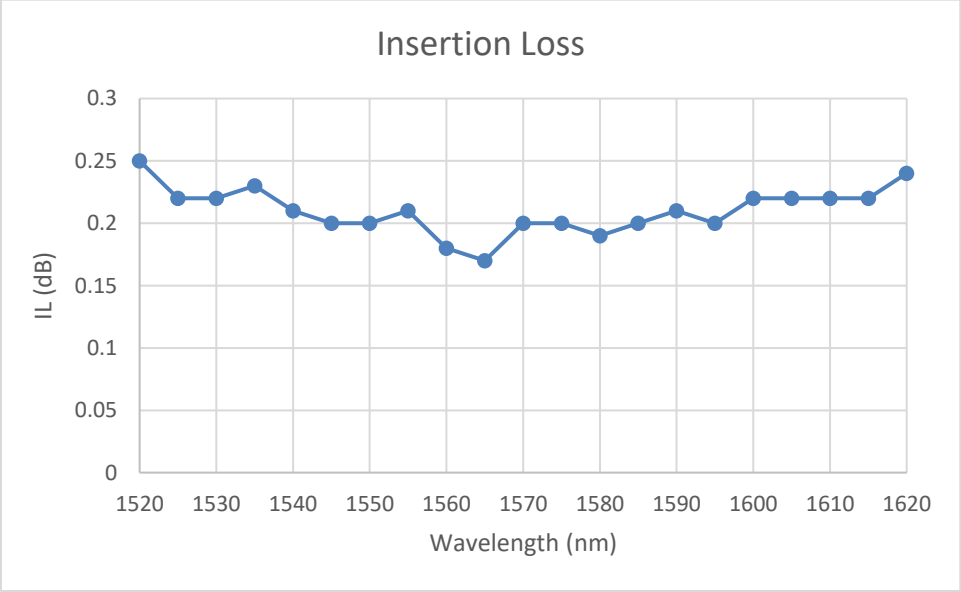
### Typical Wavelength Dependence for Dual Stage

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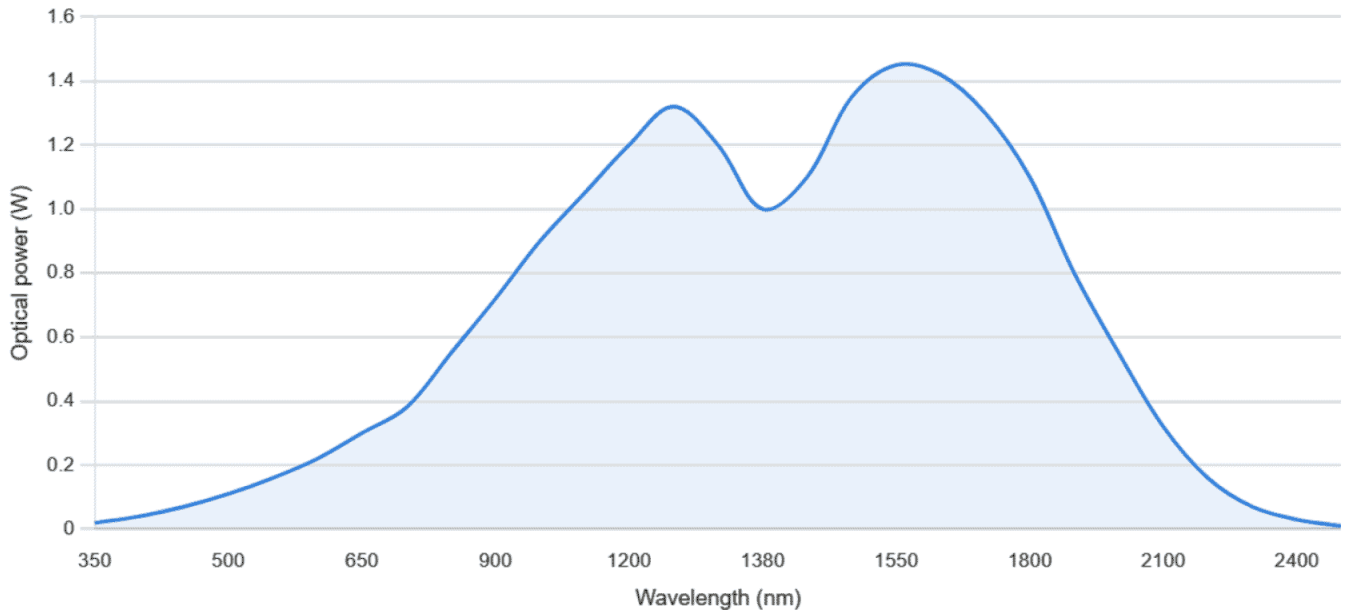
### Regular Single Mode / Polarization Maintaining Fiber Optical Power Handing vs Wavelength




Single mode fiber optical power is limited by nonlinear effects in addition to absorption that increase loss and generate heat. The curve shows the approximate safe CW power envelope for standard single-mode fiber. Actual limits depend on fiber design, core size, length, and laser characteristics. Specialty fibers can significantly increase the power limit.

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