

# 1310/1550 nm Three Stage Optical Circulator



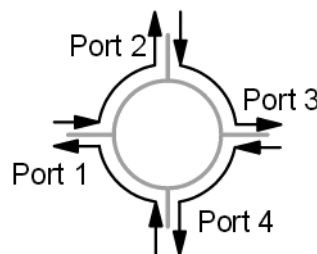
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The OC Series 1310/1550 PM Optical Circulator is a non-reciprocal device that maintains polarization while redirecting light at 1310/1550 nm from port-to-port in only one direction while minimizing back reflection and back scattering in the reverse direction. Employing Agiltron's advanced micro optics design, it features low insertion loss, high extinction ratio, high isolation, compact package, and high stability. The excellent characteristics of this product make it an ideal choice for application in fiber amplifier systems, pump lasers, and optical fiber sensors.



## Features

- Low Insertion Loss
- Low PDL
- High Channel Isolation
- Compact Package
- High Reliability & Stability
- Cost Effective

## Applications

- Optical Fiber Amplifier
- Metropolitan Area Network
- Fiber Optic Sensor
- Dispersion Compensation
- Test and Measurement
- Instrumentation

## Specifications

Parameter	Min	Typical	Max	Unit	
Operating Wavelength	1310	1295 ~ 1325		nm	
	C Band	1530 ~ 1565			
	L Band	1570 ~ 1610			
	C + L	1525 ~ 1610			
Insertion Loss <sup>[1]</sup>	3- Port	1310, C ,L	0.8	1.0	dB
	4-Port	C +L	0.9	1.2	dB
Isolation (2→1, 3→2, or 4→3) <sup>[2]</sup>	3- Port	1310, C ,L	48		dB
	4-Port	C +L	40		dB
Directivity (1→3 or 2→4)		48			dB
Polarization Dependent Loss	3- Port		> 50		dB
	4-Port		< 0.15		dB
Polarization Mode Dispersion		< 2.0			dB
Return Loss <sup>[1]</sup>		< 0.1			ps
Optical Power Handling		> 50			dB
Operating Temperature Range	0	< 500			mW
Storage Temperature	-40		+75		°C
Fiber Type			+85		°C
Fiber Length		Corning SMF-28			
		> 1			m

### Notes:

- [1]. Excluding connectors
- [2]. @λop, Top, SOP

**Note:** For a polarized input light version, the isolation is optimized to block the light reflection of the same polarization. Although lights of other polarizations may also be blocked, the extinction may be poor. PM isolators can be specially made to block backward propagating lights of all polarizations. PM isolators can also be made with a light polarizing function.

**Warning:** This is an OEM module designed for system integration. Do not touch the PCB by hand. The electrical static can kill the chips even without a power plug-in. Unpleasant electrical shock may also be felt. For laboratory use, please buy a Turnkey system.

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Rev 12/06/24

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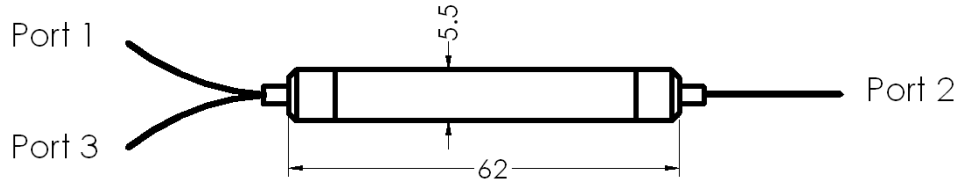


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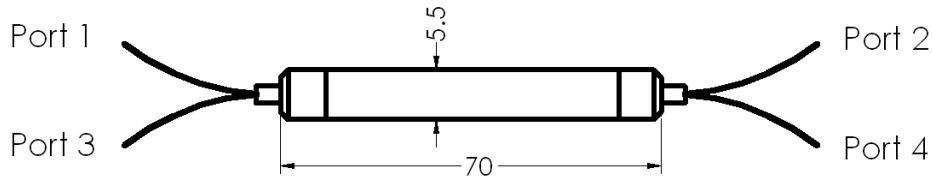
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### Mechanical Dimensions (mm)

#### 3-Port Circulator



#### 4-Port Circulator



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

### Ordering Information (Part Number)

Prefix	Type	Wavelength	Grade	Package Type	Fiber Type	Fiber Cover	Fiber Length	Connector <sup>[1]</sup>
OCPI-	3 Port = 33 4 Port = 43 Special = 00	1310 = 3 1550 = 5 C Band = C L Band = L C+L = 2 Special = 0	Standard = 1 Special = 0	5.5 x 62 = 1 5.5 x 70 = 2 Special = 0	SMF-28 = 1 Special = 0	Bare fiber = 1 900um loose tube = 3 Special = 0	0.25m = 1 0.5 m = 2 1.0 m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = A LC/UPC = U Special = 0

[1]. The connector cannot be installed directly onto bare fiber, as it 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 can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

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+1 781-935-1200

sales@photonwares.com

www.agiltron.com

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## Application Notes

### Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

### Fiber Cleanliness

Fibers with smaller core diameters ( $<5 \mu\text{m}$ ) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

### Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

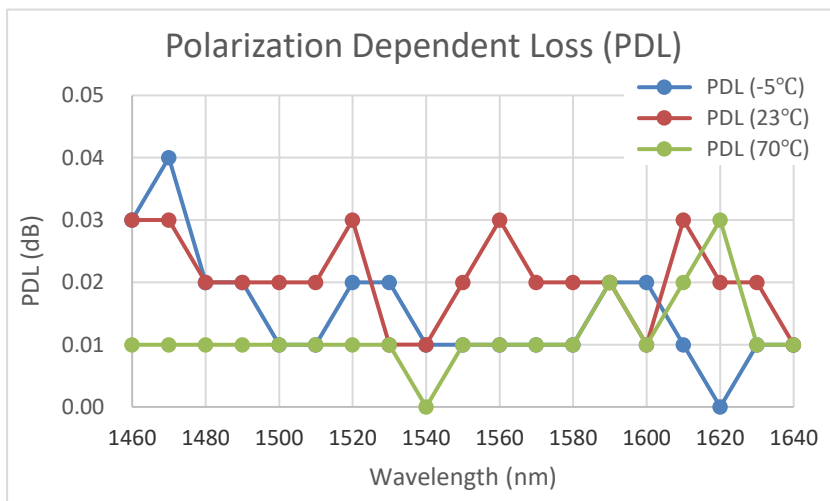
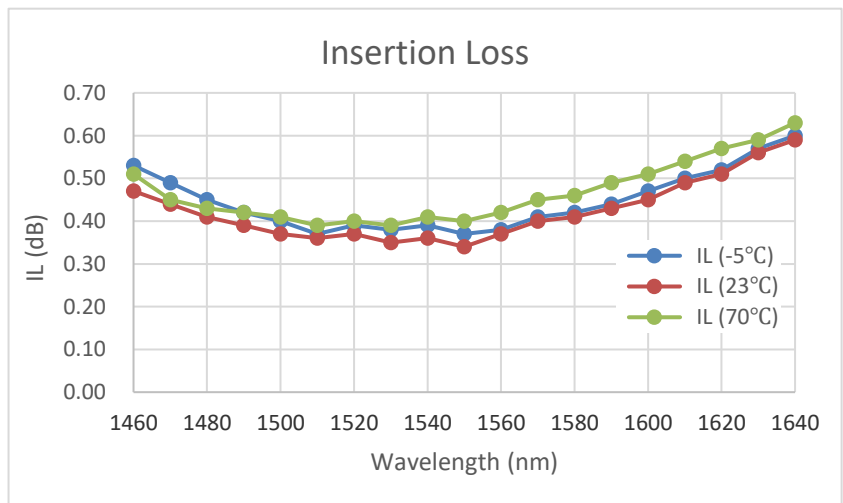
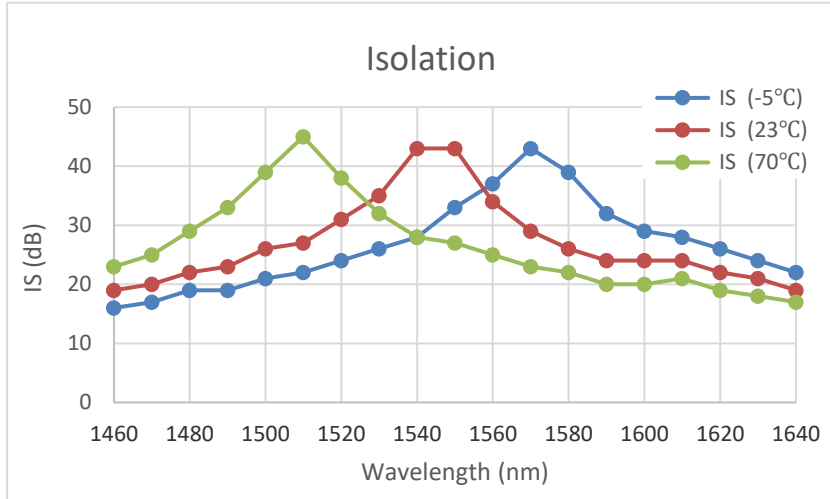
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### Typical Wavelength Dependence for Single Stage



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### Typical Wavelength Dependence for Dual Stage

