NorthStar Photonics Cerberus Three-Channel Phase Modulator

The Cerberus Three-channel Integrated Optical Circuit Assembly (IOCA) Phase Modulator is a custom module designed by Northstar Photonics, LLC for use in interferometric fiber optic gyroscope (IFOG) applications. This design incorporates three individual IOC assemblies into a single light-weight package that delivers our world-class performance with minimum cross-talk. The proprietary Northstar Photonics IOC technology has demonstrated lifetime in vacuum of more than 60 years.

Parameter	IOCA Modulator
Package Dimensions 1)	22 mm x 34 mm x 6.75 mm
Electrical Interface	3 x 3-pin cables, push-pull
Electrical Crosstalk	< -52 dB for square wave modulation
Fiber Pigtail Length	> 2.0 m
Optical Fiber MFD	7.0 ± 1.0 µm
Optical Fiber Coating/Cladding	165 ± 5µm /80 ± 2 µm
Insertion Loss	> - 3.0 dB
Split Ratio (controlled environment)	48/52
Split Ratio (-40 C to 0 C)	45/55
Chip Polarization Extinction	< -65 dB
Residual Intensity Modulation	< 0.002
Fiber Polarization Cross Coupling	< -30 dB
Optical Return Loss	< -52 dB
Half-wave Voltage (Vπ)	Vπ ≤ 10.0 V
Frequency Response	> 95% from 0.02 Hz to 100 MHz
Frequency Response Lifetime	> 550,000 hours at < 10^{-3} torr and 50 C

1) Does not include fiber pigtails or cables