



IML-1550-40-V-ST

DEVICE

40 GHz 1550 nm Intensity Modulator – Space Tested

OVERVIEW

The Optilab IML-1550-40-V-ST Intensity Modulator is designed for analog modulation of up to 40 GHz for microwave links, antenna remoting, and RF over fiber. It has also been tested with qualification standards such as MIL-STD-883 and ESCC 22900 for space applications. Full Testing Report available upon request.

FEATURES

- 30+ GHz Bandwidth
- Excellent bias stability
- Low Drive Voltage of 2V
- 1525 nm to 1620 nm
- Zero chirp design
- Polarization Maintaining

USE IN

- 40 GHz RF over Fiber (RfOF)
- Fiber optic gyroscopes
- High frequency fiber optic links
- Inter-satellite communications
- Instrument for scientific missions
- Microwave photonics sub-systems

TESTS*

- Thermal Cycling
- Random Vibration
- Electro-Optical Measurement
- Radiographic Inspection
- Fine Leak Seal Tests
- Gross Leak Seal Tests
- Total Ionizing Dose
- Proton Displacement Damage

*Full Testing Report available upon request.

STANDARDS

- ESCC 22900
- MIL-STD-883





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SPECIFICATIONS

Input Optical Power	100 mW max
Operating Wavelength	1525 nm to 1610 nm
Chirp Value	$\leq \pm 0.2$
Insertion Loss	4 dB typical, 4.5 dB max
Extinction Ratio	≥ 25 dB
Optical Return Loss	≤ -45 dB
S_{21} Bandwidth (RF Port)	30 GHz typical @ -3 dB
S_{11} Return Loss (RF Port)	≤ -8 dB @ 30 GHz
V_{π} (RF Port)	4.5 V typical @ 30 GHz
RF Input Power	27 dBm max
Impedance (RF Port)	50 Ω typical
S_{21} Bandwidth (Bias Port)	500 MHz typ.
V_{π} (Bias Port)	≤ 2 V @ 1 kHz
Impedence (Bias Port)	> 1 M Ω
PD Responsivity	40 – 100 mA/W typical

GENERAL

Operating Temperature	-55°C to +75°C
Storage Temperature	-60°C to +90°C
Operating Humidity	0% to 90% Relative Humidity
Input Fiber	Panda – PM 1550
Output Fiber Type	Panda – PM 1550
Input Connector	PM FC/APC; request for others
Output Connector	PM FC/APC; request for others
Bias Port Connector	2 Pins (Pin 1 & 2)
Tap PD Connector	2 Pins (Pin 3 & 4)
RF Port Connectors	V Connector
Cabling	900 μ m tubing
Dimension	72x16x7mm

MECHANICAL





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TESTING SPECIFICATIONS

RADIATION

Total Ionizing Dose	
Source	Co-60 Gamma ray
Dose Rate	36 Gy/hr
Total Dose	1000 Gy
Proton Displacement Damage	
Proton Energy	34.96±3.82 MeV
Flux	1x10 ⁸ particles/(s·cm ²)
Total Fluence	1x10 ¹¹ particles/cm ²

THERMAL CYCLE

Range	-55°C to +75°C
Cycles	2
Ramp Speed	1°C/min
Stability Period	10 min

RANDOM VIBRATION

Power Spectral Density	0.3
Overall rms G	20.0
Test Duration	3min/axis

SEAL TESTS

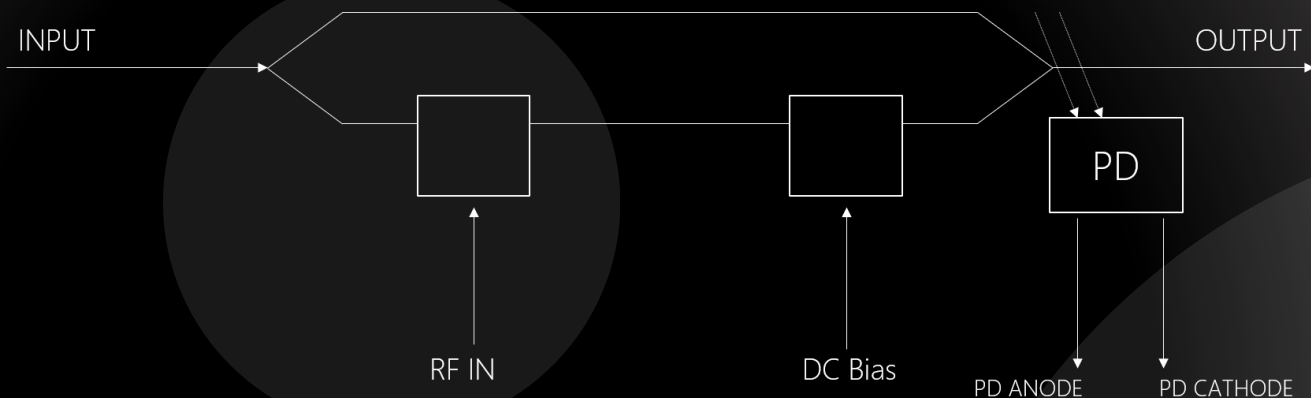
Fine Leak	
Source	He tracer gas
Result	No leak
Gross Leak	
Source	Perfluorocarbon gas
Result	No Leak





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FUNCTION
DIAGRAM





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Available Accessories

- **BCB-4**



The Optilab BCB-4 is a compact bias control board designed to maintain the linear operating point of optical intensity modulators.