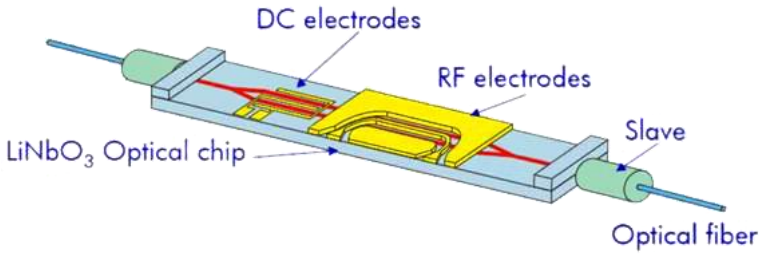
Lithium Niobate Fiber Optical Modulator

(10 GHz, 4.5-5.5V, bias control option)

DATASHEET

BUY NOW

This series of Lithium Niobate fiber optic modulators is designed for laboratory testing, featuring low operating voltage for easy use with a function generator as the driver. It includes a bias control section with an integrated micro-heater and optical power monitor, allowing manual bias adjustment by applying voltage to the heater while monitoring output intensity. An automatic bias control option is available, maintaining Vπ through slow-speed dithering feedback circuitry. The modulators use a Mach-Zehnder interferometer structure for optical output power modulation, and each modulator comes with field-replaceable RF input connectors for added convenience.



Features

- Low Voltage
- Bias Control
- Feedback

Applications

- Laboratory Uses
- Concept Proving
- Instrumentation

Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength	1520		1605	nm
Insertion Loss	4	4.5	5.2	dB
Return Loss	40			dB
Extinction Ratio	15 (H frequency)	20 (H-F)	27 (L frequency)	dB
Optical Input Power			10	mW
RF VπVoltage (at 1KHz)		5	6.5	V
Bandwidth	DC	10	14	GHz
S21 (Electro-Optic Bandwidth-3dB)	10			GHz
S11 (130MHz to 10 GHz)			-10	dB
RF Port Resistance (DC)			40	Ω
RF Input Power			24	dBm
Bias Port Resistance (DC)			1	MΩ
Bias Voltage Range	-15		15	V
Photodetector Responsivity			20	mA/W
Photodetector Extinction Ratio			6	dB
Photodetector Bandwidth		100		kHz
Operating Temperature	-1		70	°C
Storage Temperature	-45		85	°C

Notes:

Over the maximum power input will burn the device over time

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link]:

Rev 09/06/24

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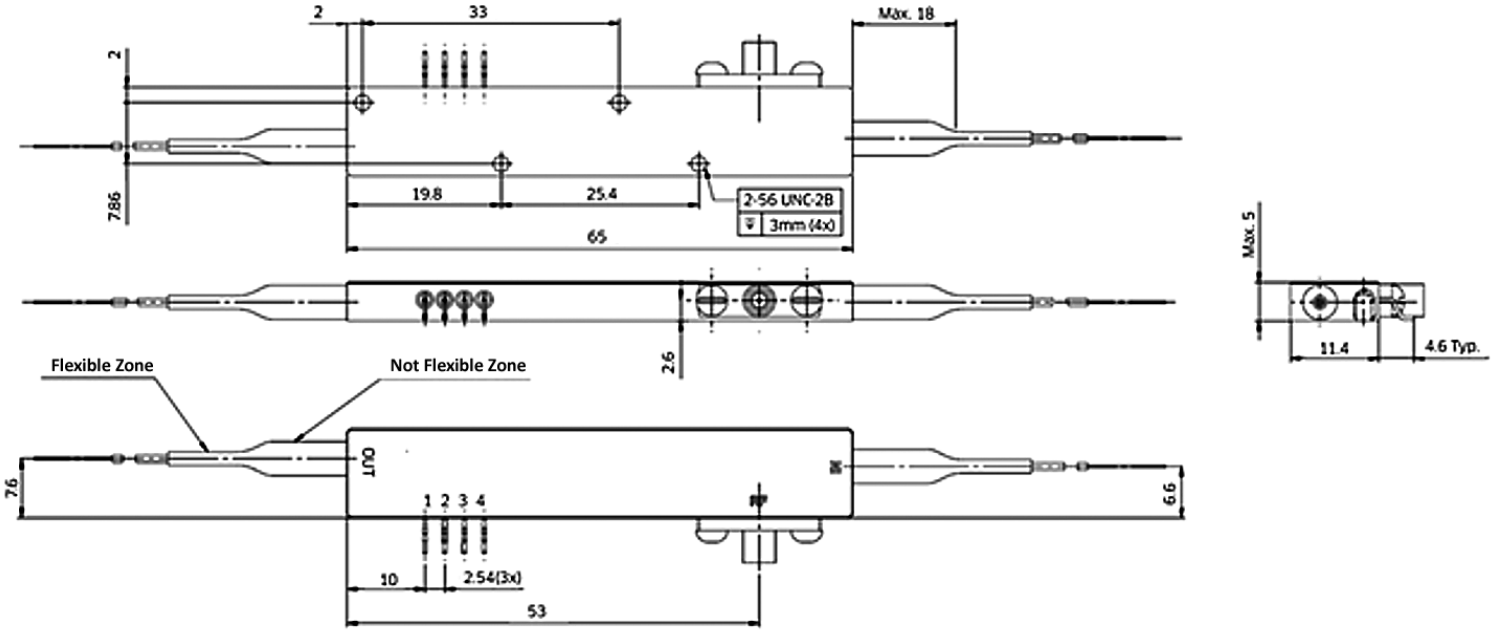
Dimensions (mm)



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

Electrical Connection (RF Input via SMA)

Pin	Description
1	PD cathode
2	PD anode
3	DC bias
4	Ground

Ordering Information

	☐	☐	☐	1	☐	☐	☐	☐	☐
Prefix	**Configuration**	**Feedback**	**Wavelength**	**Frequency**	**Input Fiber**	**Output Fiber**	**Cable**	**Fiber Length**	**Connector**
LNML-	Amplitude = 1	No = 1 Yes = 2	1520-1620nm = 2	10GHz = 1	PM1550 = 5	SMF28e = 1	0.9mm tube = 1 Special = 0	0.5m = 1 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/APC = A LC/UPC = U Special = 0

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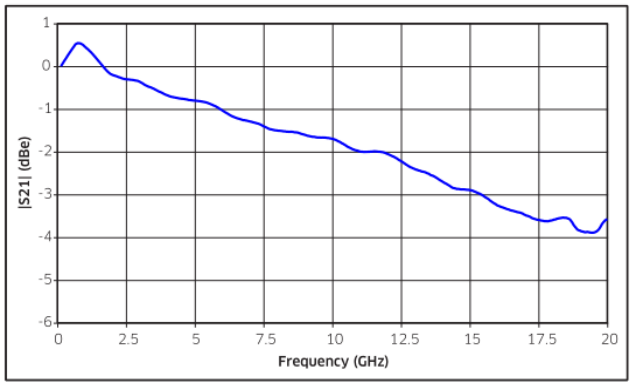
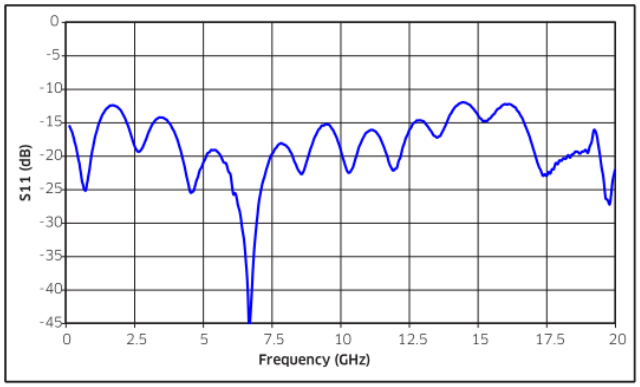
Performances



Electro optical response



Electrical return loss

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 μm) 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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