

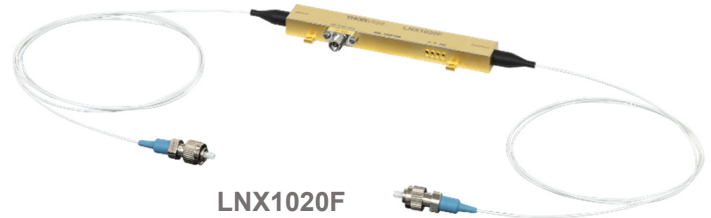
LNX1020 Series: 1060 nm 20 GHz LiNbO₃ Intensity Modulators

FEATURES

- Operating Wavelength of 1060 ± 30 nm
- 50 mW Optical Power Handling
- ≥20 dB Extinction Ratio

APPLICATIONS

- Quantum Optics
- Analog Modulation up to 20 GHz
- RF-Over-Fiber (RFOF) and Microwave Photonics
- High-Speed Telecommunications
- Pulse Generation for YDFA
- Test and Measurement

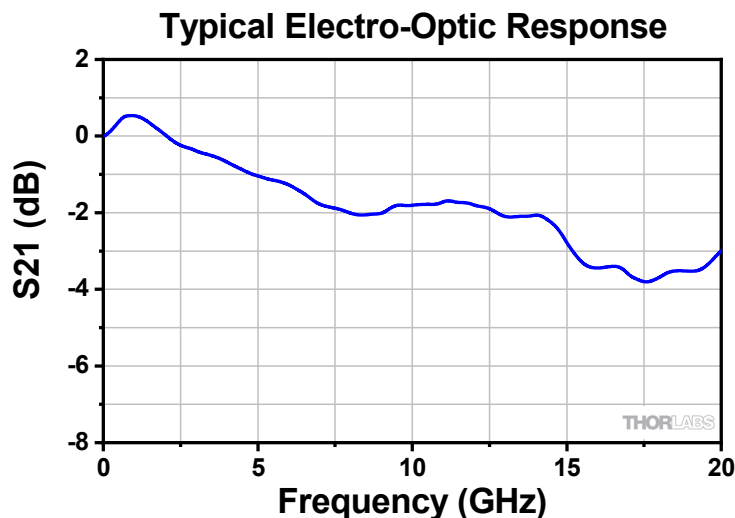


DESCRIPTION

The LNX1020 Series LiNbO₃ X-Cut intensity modulators are based on Annealed Proton-Exchanged (APE) waveguide technology and can provide modulation from DC to 20 GHz. A DC voltage is applied to bias port electrodes to control the modulator bias. The input and output fibers are polarization-maintaining (PM). The key of the fiber connectors is aligned to the slow axis of the PM fiber, which is in turn aligned with the extraordinary mode of the chip. The RF port input connector is a field-replaceable 2.92 mm female connector. Units are available with FC/PC (LNX1020F) and FC/APC (LNX1020A) connectors.

- **LNX1020F** 20 GHz Intensity Modulator, X-Cut, FC/PC Connectors, 1030 nm - 1090 nm
- **LNX1020A** 20 GHz Intensity Modulator, X-Cut, FC/APC Connectors, 1030 nm - 1090 nm

TYPICAL PERFORMANCE GRAPHS



TYPICAL SPECIFICATIONS

All specifications are at 25 °C unless otherwise specified.

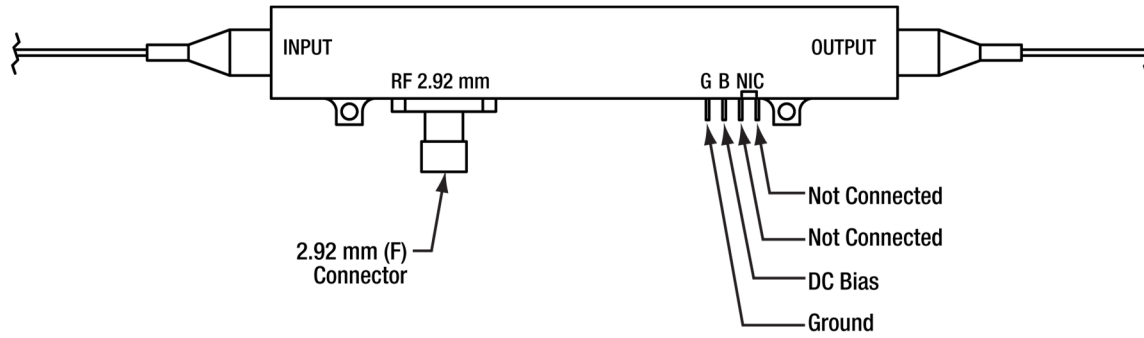
| Optical Specifications | Min | Typ. | Max |
|--|--|--------------|---------|
| Operating Wavelength | 1030 nm | 1060 nm | 1090 nm |
| Insertion Loss (20 mW Input, Peak Bias, Without Connector) | - | 4.5 dB | 5 dB |
| Optical Return Loss | 30 dB | 40 dB | - |
| Optical Extinction Ratio (20 mW Input, DC) | 20 dB | - | - |
| Optical Power Handling | 50 mW | - | - |
| Chirp | -0.1 | 0 | 0.1 |
| Electrical Specifications | Min | Typical | Max |
| E/O Bandwidth (-3 dB Drop from 1 GHz) | 15 GHz | 20 GHz | - |
| Operating Frequency Range | DC to 20 GHz (Minimum) | | |
| RF Port V_{π} (@ 1 GHz) | - | 4.0 V | 4.5 V |
| Bias Port V_{π} (@ 1 kHz) | - | 4.5 V | 5 V |
| S11 (DC to 10 GHz) | - | - | -7 dB |
| S11 (DC to 20 GHz) | - | - | -5 dB |
| DC Port Impedance | - | 1 M Ω | - |
| Mechanical Specifications | | | |
| Crystal Orientation | X-Cut | | |
| RF Connector | Field-Replaceable 2.92 mm Female | | |
| Fiber Type (Input and Output) | Corning PM98-U40D-H (PANDA Polarization Maintaining) | | |
| Fiber Connectors | 2.0 mm Narrow Key, FC/PC (LNx1020F) or FC/APC (LNx1020A), Key Aligned to Slow Axis | | |
| Fiber Lead Length | >0.7 m (Max 1.3 m) | | |
| Fiber Jacket | Ø900 μ m Loose Tube | | |
| Environmental Specifications | Min | Typical | Max |
| Operating Temperature | 10 °C | - | 60 °C |

ABSOLUTE MAXIMUM RATINGS

All specifications are at 25 °C unless otherwise specified.

| Parameter | Min | Typical | Max |
|---------------------|--------|---------|--------|
| Storage Temperature | -40 °C | - | 85 °C |
| Optical Input Power | - | - | 100 mW |
| RF Input Power | - | - | 25 dBm |
| DC Bias Voltage | -50 V | - | 50 V |

MECHANICAL DRAWING



MANUFACTURING AND COMPLIANCE

Manufactured by: Thorlabs Inc., Ann Arbor, MI 48103 USA

All specifications are subject to change without notice.

