

FEATURES

- High Bandwidth
- X-cut for high stability
- High optical power handling
- Low drive voltage
- Low insertion loss

APPLICATIONS

- Quantum optics
- Pulse generation / picking

OPTIONS

- 800 nm band modulators versions

RELATED EQUIPMENTS

- RF amplifiers
- MBC Automatic Bias Controllers
- NIR-MPX950 Phase Modulators

The NIR-MX950-LN series are 10 GHz and 20 GHz intensity modulators especially designed for operation in the 950 nm wavelength band.

NIR-MX950 Mach-Zehnder modulators offer engineers working in the 950 nm band the intrinsic and unparalleled benefits of LiNbO₃ modulation: high bandwidth, high contrast and ease of use.

NIR-MX950 series Intensity Modulators use proton exchange waveguide process on a doped LiNbO₃ substrate. This unique combination confers them an unparalleled stability and a superior optical power handling.

NIR-MX950-LN-20 Performance Highlights

Parameter	Min	Typ	Max	Unit
Operating wavelength	850	900	960	nm
Insertion loss	-	5.5	-	dB
Optical input power	-	-	10	dBm
Electro-optical bandwidth	-	25	-	GHz
V _π RF @50 kHz	-	3.5	-	V
Electrical return loss	-	12	-	dB

Specifications given at 25 °C, 950 nm

NIR-MX950-LN-20 20 GHz Intensity Modulator

Electrical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Electro-optic bandwidth @-3 dB	S_{21}	RF electrodes, from 2 GHz	20	25	-	GHz
Ripple S_{21}	ΔS_{21}	RF electrodes, $f < 20$ GHz	-	0.5	1	dB
Electrical return loss	S_{11}	RF electrodes, $f < 20$ GHz	-	-13	-10	dB
V_{π} RF @50 kHz	$V_{\pi RF_{50\text{ kHz}}}$	RF electrodes	-	3.5	4.5	V
V_{π} DC electrodes	$V_{\pi DC}$	DC electrodes	-	3.9	4.5	V
impedance matching	Z_{in-RF}	-	-	50	-	Ω
DC input impedance	Z_{in-DC}	-	-	1	-	$M\Omega$

Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Crystal	-	-	Lithium Niobate X-Cut Y-Prop			
Operating wavelength	λ	-	850	900	960	nm
Insertion loss	IL	Without connectors	-	5.5	-	dB
DC extinction ratio	ER	Measured with narrow source linewidth < 200 MHz	20	25	-	dB
Optical return loss	ORL	-	-40	-45	-	dB
Chirp	α	-	-0.1	0	0.1	-

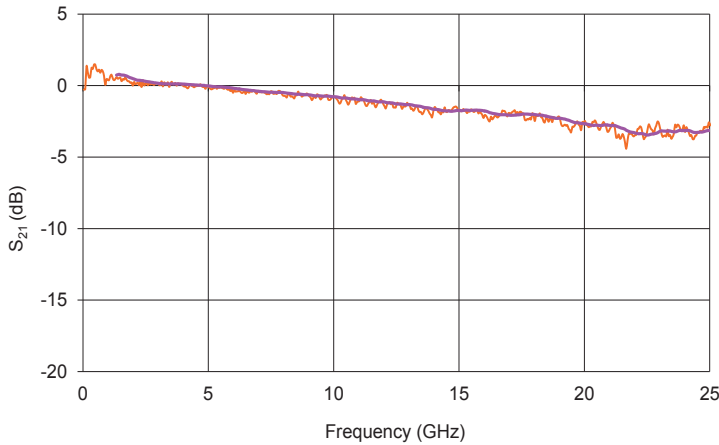
All specifications given at 25 °C, 944 nm.

Absolute Maximum Ratings

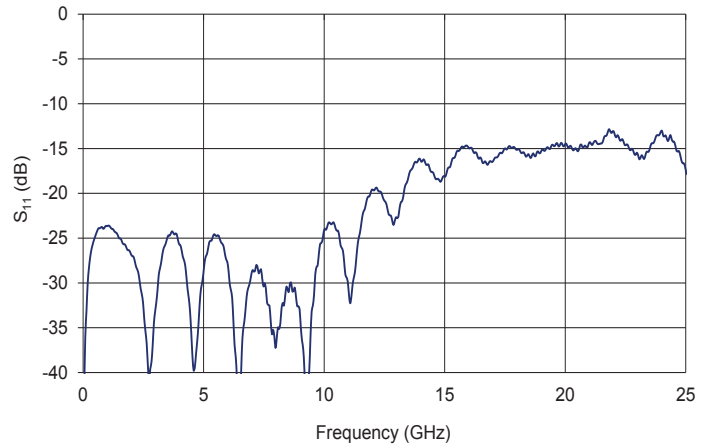
Parameter	Symbol	Min	Max	Unit
RF input power (CW mode)	EP_{in}	-	+28	dBm
Bias voltage	V_{bias}	-20	+20	V
Optical input power (CW mode)	OP_{in}	-	+10*	dBm
Operating temperature	OT	0	+70	°C
Storage temperature	ST	-40	+85	°C

*It might be necessary to warm the modulator when operating at high optical power or shorter wavelength.

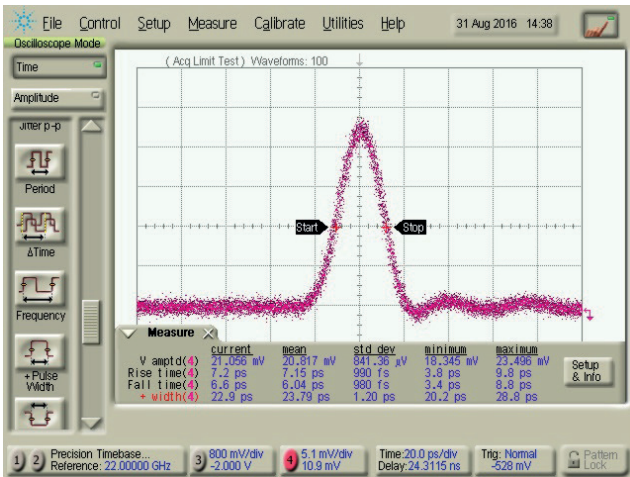
NIR-MX950-LN-20 Typical S_{21} Curve



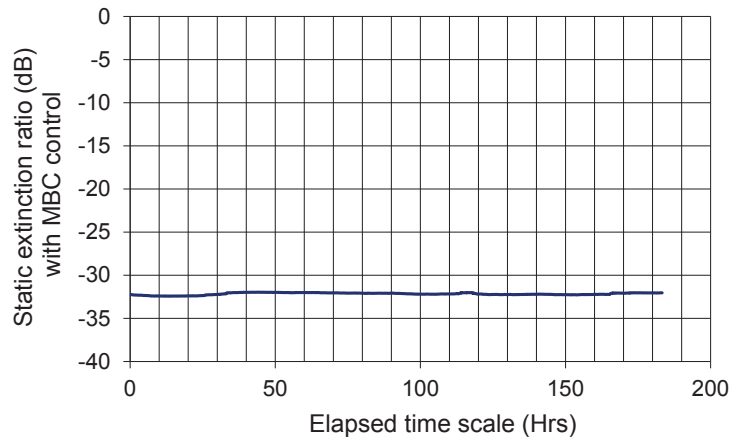
NIR-MX950-LN-20 Typical S_{11} Curve



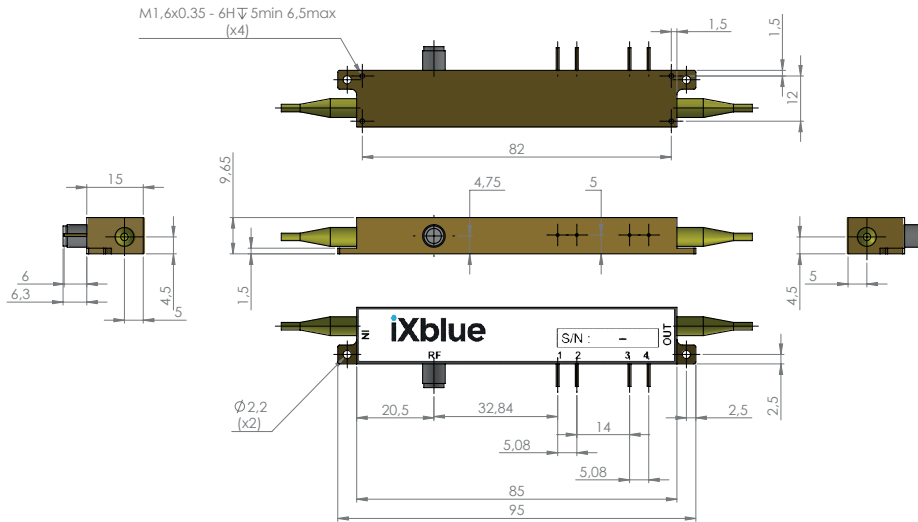
NIR-MX950-LN-20: 30 ps Square Pulse



Stability with Time and Temperature



Mechanical Diagram and Pinout
All measurements in mm



Port	Function	Note
IN	Optical input port	Polarization maintaining fiber, Corning PM 85-U25D, Length 1.5 meter. Buffer diameter 900 mm
OUT	Optical output port	Polarization maintaining fiber, Corning PM 85-U25D, Length 1.5 meter. Buffer diameter 900 mm
RF	RF input port	Wiltron female K
1	Ground	Pin feed through diameter 1.0 mm
2	DC	Pin feed through diameter 1.0 mm
3, 4	Not connected	Pin feed through diameter 1.0 mm

Ordering information

NIR-MX950-LN-BW-Y-Z-AB-CD

BW = Bandwidth : 20 GHz
 Y = Input fiber : P Polarization maintaining S Standard single mode
 Z = Output fiber : P Polarization maintaining S Standard single mode
 AB = Input connector : 00 bare fiber FA FC/APC FC FC/SPC (slow axis parallel to connector key)
 CD = Output connector : 00 bare fiber FA FC/APC FC FC/SPC (slow axis parallel to connector key)
 Note : optical connectors are Senko with narrow key or equivalent

About us

ixBlue Photonics produces specialty optical fibers and Bragg gratings based fiber optics components and provides optical modulation solutions based on the company lithium niobate (LiNbO₃) modulators and RF electronic modules.

ixBlue Photonics serves a wide range of industries: sensing and instruments, defense, telecommunications, space and fiber lasers as well as research laboratories all over the world.