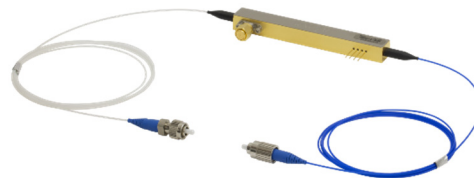


## Low- $V_{\pi}$ Lithium Niobate Intensity Modulator

LNLVL-IM-Z



### Description

The LNLVL-IM-Z is a broadband  $\text{LiNbO}_3$  z-cut intensity modulator optimized for a low  $V_{\pi}$ . This modulator is ideal for RF-over-fiber and microwave photonics applications. The electro-optic response ( $S_{21}$ ) is smooth from DC to 40 GHz. The input fiber is polarization maintaining (PM) and the output fiber is standard single mode fiber; both are terminated with FC/PC connectors. The key of the input FC/PC connector is aligned to the slow axis of the PM fiber, which is in turn aligned with the extraordinary mode of the chip. The RF input connector is a field replaceable 2.92 mm (K) connector. The bias voltage is applied through a separate set of pins.

The LNLVL-IM-Z includes an internal polarizer that is aligned with the extraordinary mode of the chip.

### Specifications

LNLVL-IM-Z			
<b>Optical Specifications</b>	<b>Min</b>	<b>Typical</b>	<b>Max</b>
Operating Wavelength <sup>a</sup>	1525 nm	-	1605 nm
Insertion Loss	-	4.5 dB	5.5 dB
Optical Return Loss	40 dB	-	-
Optical Extinction Ratio	20 dB	-	-
Optical Input Power	-	-	100 mW
<b>Electrical Specifications</b>	<b>Min</b>	<b>Typical</b>	<b>Max</b>
E/O Bandwidth (3 dB)	-	10 GHz	-
Operating Frequency Range	DC to 40 GHz (Minimum)		
RF $V_{\pi}$ @ 1 GHz	-	2.2 V	-
RF $V_{\pi}$ @ 20 GHz	-	3.5 V	3.9 V
RF $V_{\pi}$ @ 40 GHz	-	5.0 V	6.0 V
DC Bias $V_{\pi}$ @ 1 kHz	-	9.0 V	11.0 V
S11 (DC to 25 GHz)	-	-12 dB	-10 dB
S11 (25 to 40 GHz)	-	-8 dB	-6 dB
RF Port Input Power	-	-	24 dBm
<b>Mechanical Specifications</b>			
Crystal Orientation	Z-Cut		
RF Connection	Female 2.92 mm (K)		
Fiber Type	Input: PANDA Polarization Maintaining Output: SMF-28 <sup>†</sup> Single Mode		
Fiber Connectors	2.0 mm Narrow Key FC/PC		
Fiber Lead Length	1.5 m (Typ.)		
Fiber Jacket	Ø900 µm Loose Tube		
<b>Environmental Specifications</b>	<b>Min</b>	<b>Typical</b>	<b>Max</b>
Operating Temperature	0 °C	-	70 °C
Storage Temperature	-40 °C	-	85 °C



- a. The modulator is designed for use at the specified wavelengths. Using the modulator at other wavelengths may cause an increase in the optical loss that is not covered under warranty. In some cases, this loss can be temporary; for instance, the increase in loss caused by shorter wavelengths can usually be reversed by heating the modulator to 80 °C for an hour.

† SMF-28 is a registered trademark of Corning.

## Mechanical Drawing

