



110 GHz 1550 nm Optical Intensity Modulator

Description

The IM110-15-XX is a 110 GHz thin-film lithium niobate Mach Zehnder (MZI) modulator that operates at 1550 nm. This device features flat performance through 145 GHz. Featuring low half-wave voltage and high linearity. This device supports various modulation formats OOK, PAM-N, DMT, and more. This device also features both input and output optical power monitoring photodiodes.

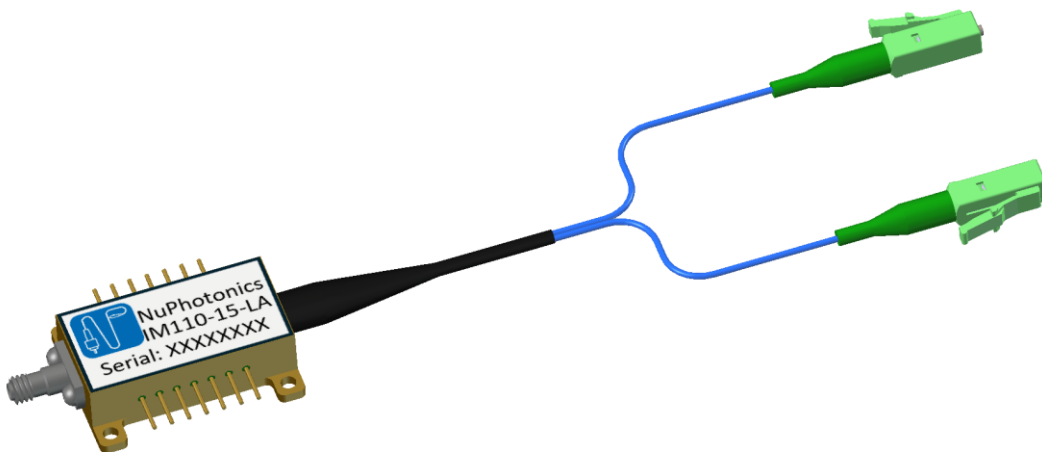
Features

- 110 GHz 3 dB bandwidth
- 145 GHz 6 dB bandwidth
- 0.8 mm RF connector
- Low half-wave voltage
- Polarization maintaining fiber
- Input/Output power monitoring photodiodes
- Ability to choose desired optical connector.
- Ability to choose desired fiber length.



Applications

- Telecommunications
- RF over Fiber (RfOF)
- Microwave Photonics



(Rendering)



IMPORTANT NOTICE: more information on warranty, changes, rights, notices, and other information are presented at the back of this data sheet. If the back sheet is not present, refer to www.nuphotonics.com for the company issued data sheet.

Electro-Optical Characteristics (T = 25°C)

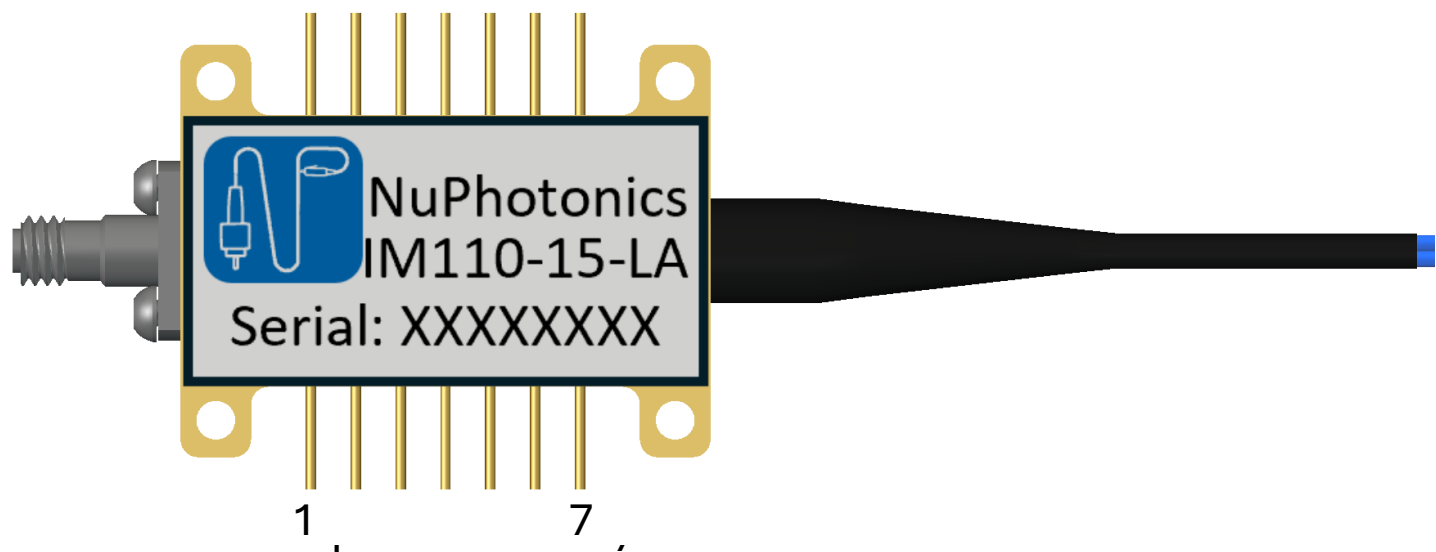
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Response Spectrum	λ	1545	1550	1555	nm	
Optical Insertion Loss	IL	-	6	7	dB	
Bandwidth	-3 dB	-	110	-	GHz	Small Signal measurement
	-6 dB	-	145	-		
Electrical Return Loss	S_{11}	-	-10	-8	dB	10 MHz – 145 GHz
RF Halfwave Voltage	V_{π}	-	3.3	-	V	
Extinction Ratio	ER	20	30	-	dB	At DC
RF Input Power	P_{rf}	-	-	15	dBm	
Optical Input Power	P_o	-	-	20	dBm	
Optical Return Loss	ORL	-	40	-	dB	1310 nm

Absolute Maximum Rating (T = 25°C)

Parameter	Symbol	Condition	Min.	Max.	Unit
Bias Voltage	V	-	-	4	V
Forward Current	I_F	-	-	70	mA
RF Input Power	P_{rf}	-	-	17	dBm
Optical Input power	P_{in}	-	-	23	dBm
Storage Temperature	T_{stg}	-	-25	90	°C
Storage Humidity	H_{stg}	-	-	85	% r.H.
Operating Temperature	T_{op}	-	-10	80	°C
Soldering Temperature	T_{st}	60 sec	-	200	°C
ESD Susceptibility		HBM	100		V

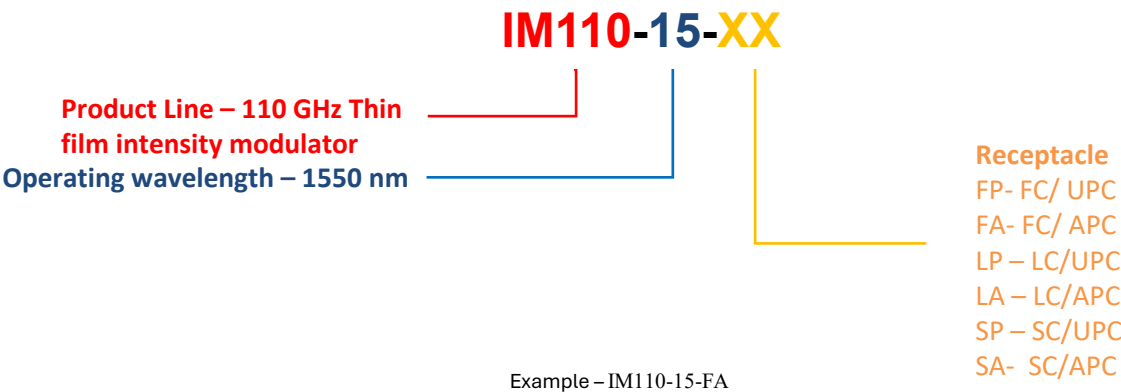
Operating at maximum ratings for a prolonged period will cause damage to the device.





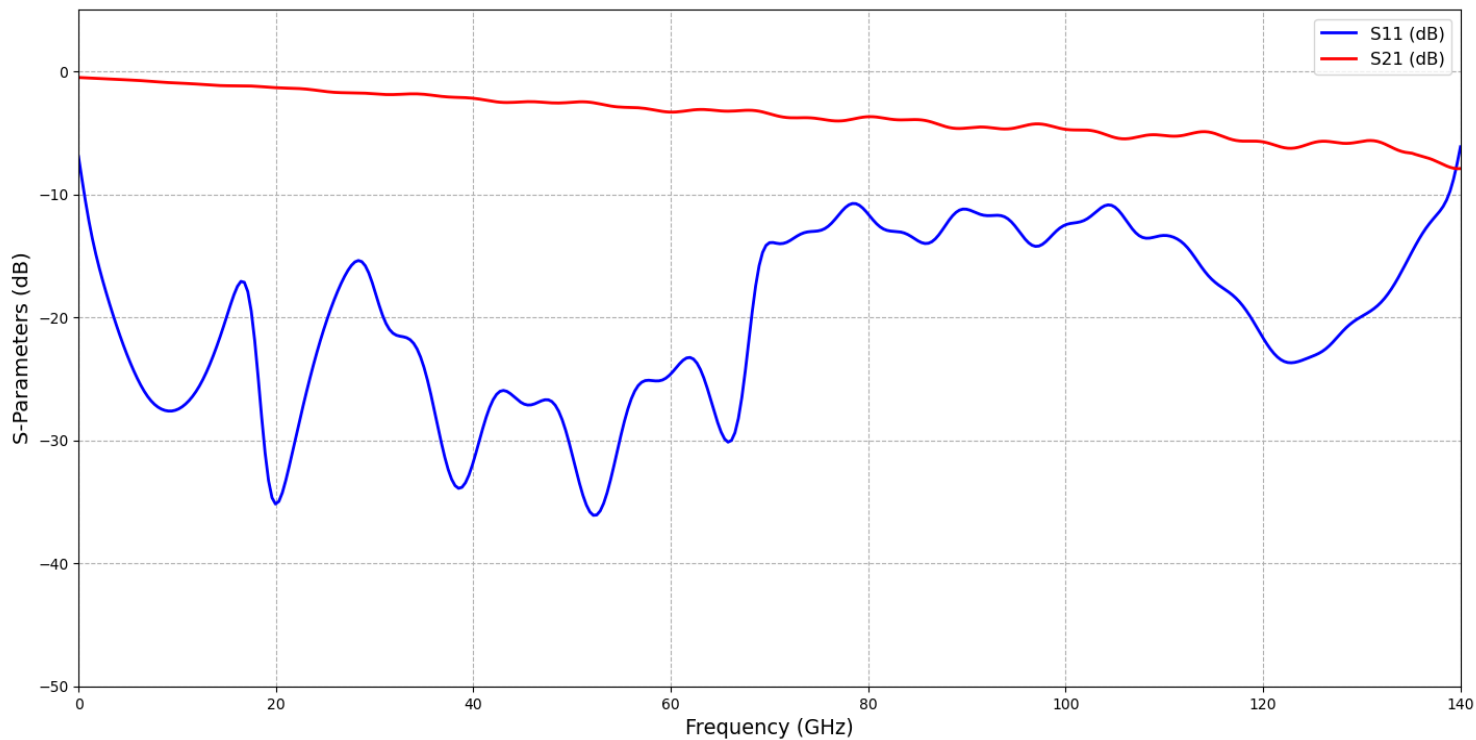
Pin #	Description:
1	No Connection
2	No Connection
3	Heater Bias Voltage (+)
4	Heater Bias Voltage (-)
5	No Connection
6	Output Monitor Photodiode Anode
7	Output Monitor Photodiode Cathode

Device Nomenclature

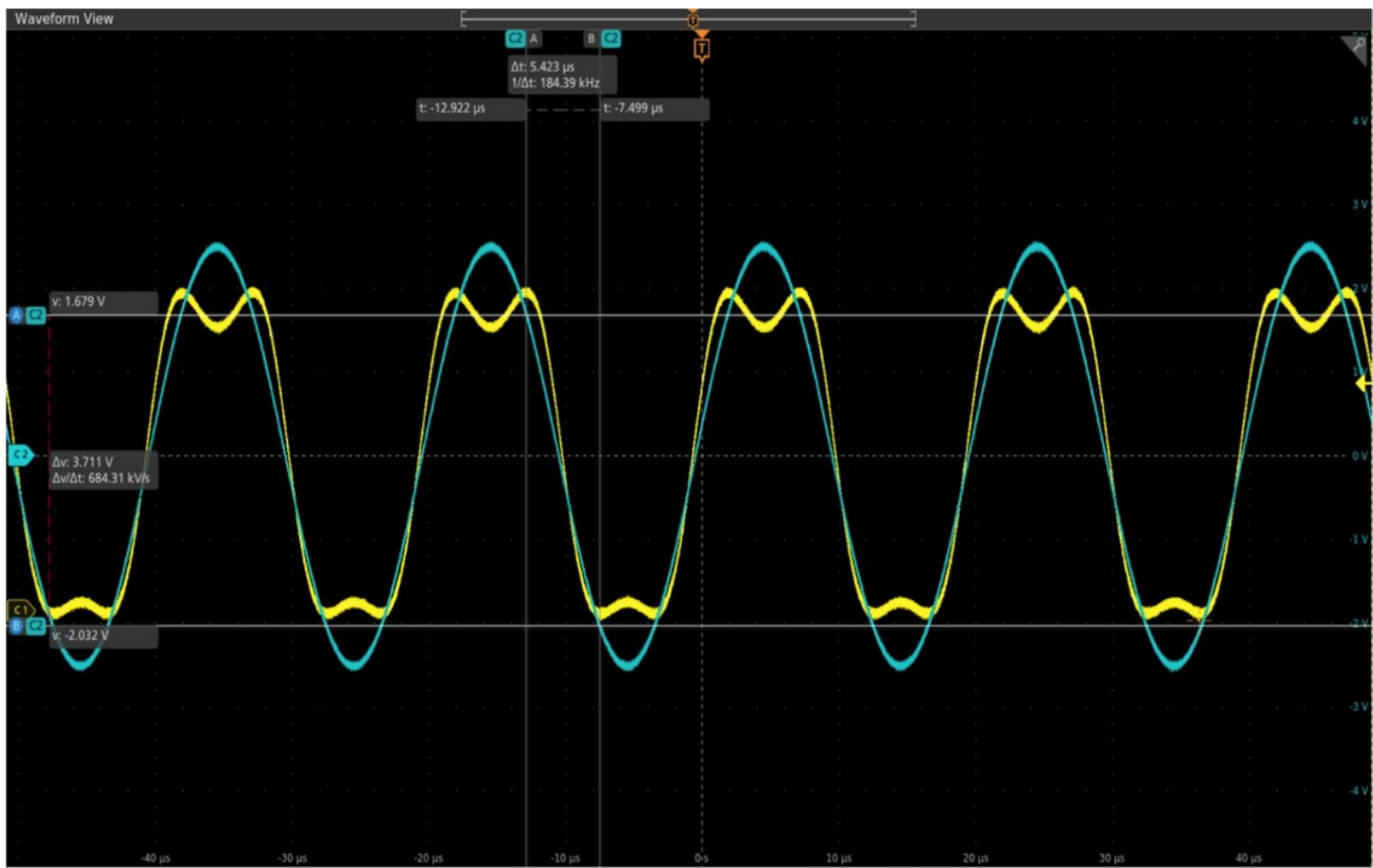


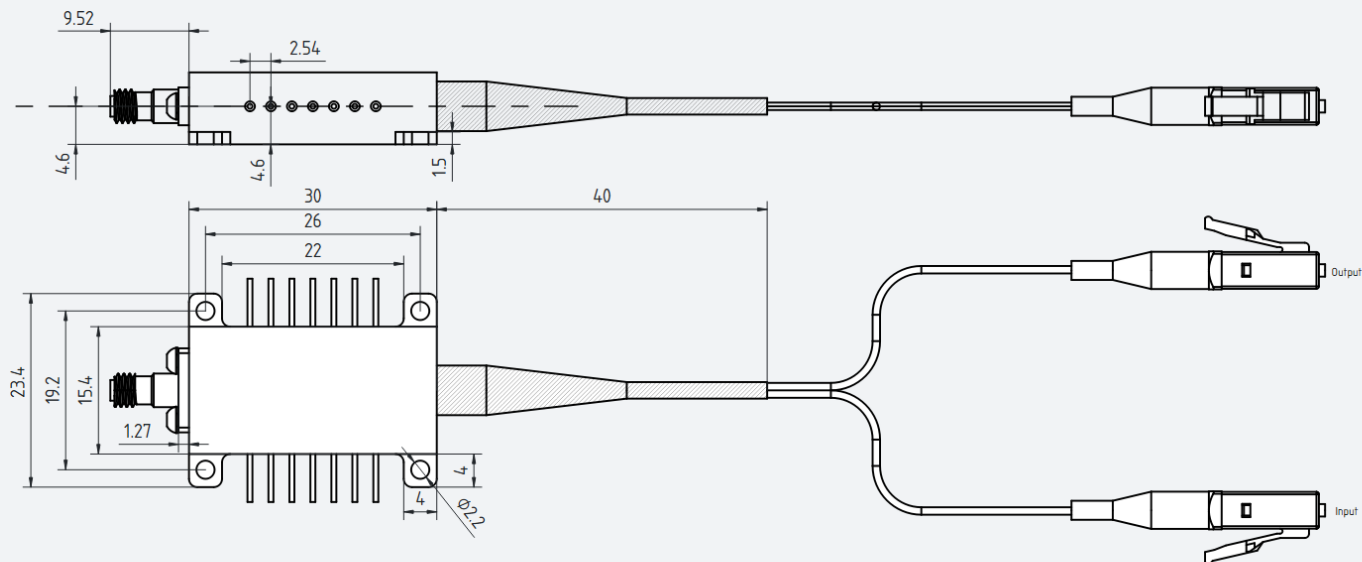
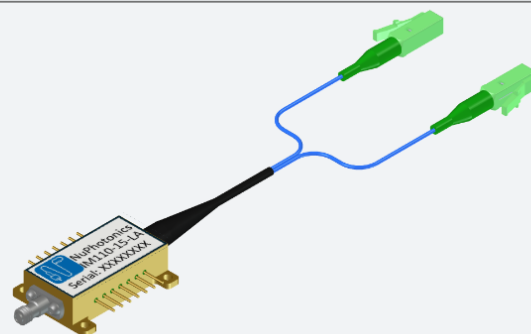
110 GHz Thin Film Intensity Modulator 1550 nm Operating wavelength FC/APC





V_{π} (RF)





Created by: Vinny Gjokaj		Title: IM110-15-FA	
Supplementary information: 4J29 - Au Finish		Size: A2	Sheet: 1 / 1
[All units in mm] [Tolerances are +/- 0.1 unless specified] 		Scale: 3:1	
		Part number: PN:IM110-15-FA	
		Drawing number: DN: 1.0A	
		Date: 24/06/2026	Revision: REV A

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Production Build: Customer ready devices. Small appearance changes may occur between devices.

Obsolete: Currently not supported.

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Revision History

1.0 – June 2026 – Initial Release