

## 10-20 GHz 1550nm Optical Phase Modulator PM-1550-10G series

### Overview

PM-1550-10G is used for optical signal phase modulation and spectral broadening. This device is composed of a high polarization extinction ratio polarizer and an electro-optic phase modulator suitable for short and long-haul telecommunication applications. Based on Lithium Niobate ( $\text{LiNbO}_3$ ) material, PM-1550-10G is fabricated with waveguides using High Temperature Proton Exchange (HTPE), and group-velocity matched electrodes operating at high frequency band. The PM-1550-10G provides highly reliable performance over wide temperature range and with extended life time in comparison with other competing technologies such as InP and silicon photonics.

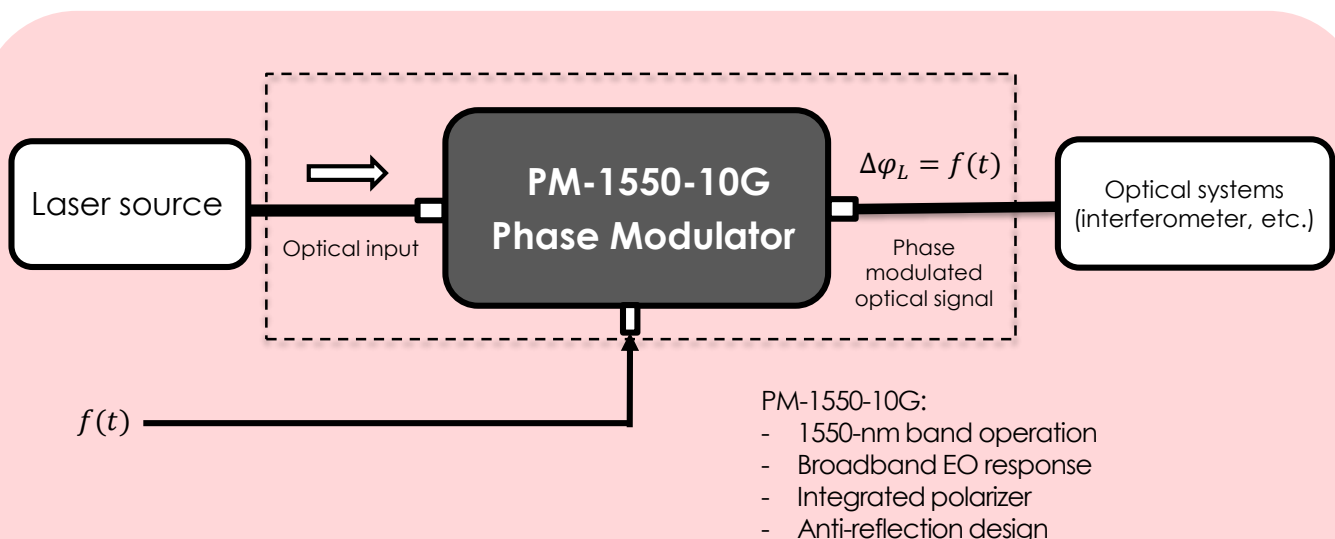
### Key Features

- 1550 ± 30 nm operation
- EO bandwidth (-3dB) > 10 GHz, Max. to 20 GHz
- Insertion loss < 4.0 dB
- $V_{\pi}$  (RF port, at 1 GHz) < 5 V
- Polarizer-integrated, High-PER

### Applications

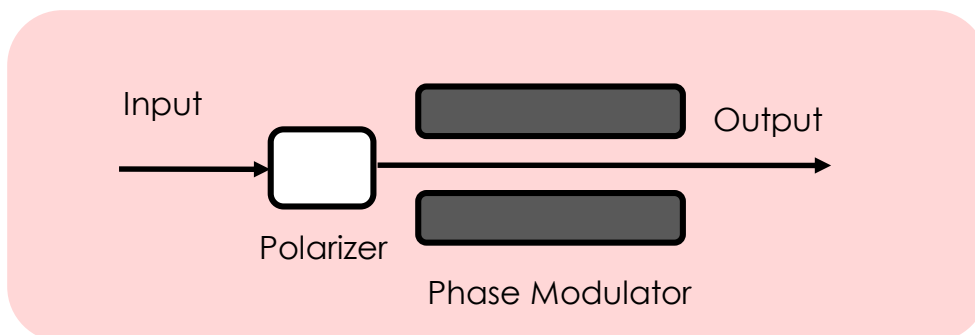
- Short/Long-haul communication WDM
- Spectral broadening, shifting & chirping
- Quantum Key Distributions (QKD)
- Laser phase modulation,
- Phase-Shifting Key format
- Side bands generation
- Interferometric sensor
- Free-space optical communication (FSOC)

### Application Diagram



Specifications			
Model	PM-1550-10G-P	PM-1550-10G-A	PM-1550-10G-S
Substrate	X-cut, Y-propagation Lithium Niobate		
Operation wavelength	1550 ± 30 nm		
Input optical power	70 mW (typ.), 100 mW (max.)		
Chip insertion loss	≤ 3.5 dB	≤ 4.0 dB	≤ 4.5 dB
V <sub>π</sub> (RF port, 100kHz)	≤ 3.0 V	≤ 3.5 V	≤ 4.0 V
EO bandwidth (RF Port)	≥ 10 GHz, Max. to 20 GHz		
Polarization extinction ratio	≥ 60 dB		
Optical return loss	≤ -45 dB		
Return loss (RF Port)	≤ -10 dB (DC to 10 GHz)		
RF input power	26 dBm max.		
Impedance (RF Port)	50 ± 5 Ω		
Chip polished angle	6 ± 0.5 degree		
Chip dimension	43.2 mm (L) x 2 mm (W) x 1 mm (H), tolerance 10 %		
Operating temperature	- 30 °C ~ + 70 °C		
Storage temperature	- 50 °C ~ + 80 °C		

## Mechanical Drawing



## Customization

- Customization for PER higher than 75dB
- Custom phase modulator design for different wavelengths
- ODM/OEM for other LiNbO<sub>3</sub> device, including polarizer, phase modulator and intensity modulator, Y splitter/combiner and anti-reflection