

# Phase Modulators

**STPMR**

**STPMN**



**2022 V1**

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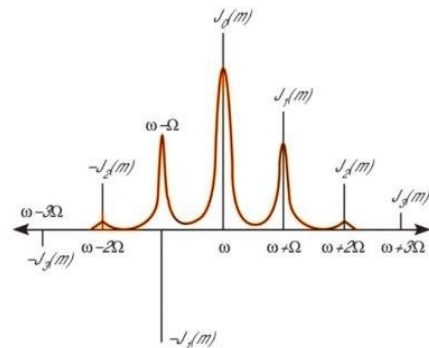
## Phase Modulators

Modulator for laser interference, frequency stabilization, atomic cooling and other precision optical systems.

A phase modulator is a modulation device developed based on the electro-optic effect and high-frequency resonator theory, which can phase modulate polarized light. It is often used in precision optics systems such as laser interference, optical frequency combs, laser frequency stabilization, atomic cooling, and the quantum state controlling. When an electrical signal of a specific frequency is injected into the high-frequency resonant cavity, the electromagnetic wave will be continuously reflected in the cavity to form a standing wave, resulting in electromagnetic resonance. The electro-optic crystal produces a birefringence effect under the action of electromagnetic resonance, which eventually leads to the phase change of the light. Our modulators use a variety of electro-optical crystals such as MLN, DKDP, KTP, LT, etc. The wavelength covers 350-3000 nm, the frequency covers 1-4 GHz, and the modulation depth is up to  $2\pi$  rad.

## Applications

- Laser frequency stabilization
- Laser interference
- Optical frequency comb
- Atomic cooling
- Quantum state control



## Product Specifications

General Specifications	
Interaction Material	MLN / KDP / DKDP
Operating Wavelength	280 ~ 960 nm
Polarization	Linear, horizontal
Transmission	> 98% ~ 99.2%
Active Aperture*	2 mm / 3mm
Center Frequency (Fc)	132 kHz ~ 3.07 GHz
Max Modulation Depth	1 $\pi$ rad ~ 1.5 $\pi$ rad
Shell Material	Aluminium alloy
Cooling	Conduction-cooled

\* The beam diameter is recommended to be less than 70% of the clear aperture.

## Selection Guide

### Ordering Information

	Type	Crystal Material	RB	Active aperture	Wavelength
<b>STPM</b>	<b>X</b>	<b>0001 -</b>	<b>XXX</b>	<b>-</b>	<b>XXX</b>
Resonance	R	MLN	L	2 GHz	02G
Non-Resonance	N	KTP	T	1 GHz	01G
				20 MHz	02M
				3 mm	030
				2 mm	020
				532 nm	532
				780 nm	780

Product Code	Wavelength	Active Aperture*	Operating Frequency	Optical Material	MAX Modulation Depth	Cooling
STPMR0001-L03G-030-780	780 nm	3 mm	2.5 GHz	MLN	1 πrad	Conduction-cooled
STPMR0002-K01G-030-280	280 nm	3 mm	1.2 GHz	KDP	1 πrad	Conduction-cooled
STPMR0003-L02G-020-532	532 nm	2 mm	1.8 GHz	MLN	1 πrad	Conduction-cooled
STPMR0012-L03G-030-935	935 nm	3 mm	3.07 GHz	MLN	1.5 πrad	Conduction-cooled
STPMR0005-L02G-020-370	370 nm	2 mm	1.75 GHz	MLN	1.5 πrad	Conduction-cooled
STPMR0013-L02M-030-780	780 nm	3 mm	25 MHz	MLN	1.2 πrad	Conduction-cooled
STPMN0003-L00M-030-461	461 nm	3 mm	132 kHz	MLN	1 πrad	Conduction-cooled
STPMR0017-L02M-030-650	650 nm	2 mm	20 MHz	MLN	1.3 πrad	Conduction-cooled
STPMR0006-D20M-030-355	355 nm	3 mm	20 MHz	DKDP	1 πrad	Conduction-cooled
STPMR0007-L42M-030-355	960 nm	3 mm	42 MHz	MLN	1 πrad	Conduction-cooled
STPMR0014-L02M-030-420	420 nm	2 mm	25 MHz	MLN	1.4 πrad	Conduction-cooled

\* The beam diameter is recommended to be less than 70% of the clear aperture.

## Dimensions

