

Optical Attenuators

Efficient attenuator based on electro-optical crystals or rotatable wave plates

Optical attenuator is an optical component that can change the output power of laser continuously. It is consisted of a half-wave plate (or an electro-optic crystal) and a polarizer. The polarization state of the incident light is modulated by the half-wave wafer (or electro-optical crystal), and the incident light is divided into two beams after passing through the polarizer, and the purpose of changing the power of transmitted light is achieved by changing the power ratio of the two beams. Optical attenuators are widely used in precision laser processing, laser detection, laser sensing etc. This product also has unique advantages in ultra-fast and ultra-short pulse laser systems.

CASTECH provides two types of attenuators: mechanical and electro-optical type. **Mechanical attenuator** modifies the polarization state of light by rotating the half-wave plate. It is characterized by compact structure and adaptability.

Electro-optical attenuator can be used as a high-speed optical switch which can accomplish a modulation in nanoseconds.

CASTECH's optical attenuator has two control schemes, electric and manual. Attenuator can be equipped with PBS, Brewster window, or removable optical trap as optional accessories. Users can choose the appropriate type of product according to the usage requirements.



Applications

- Laser industrial processing
- Laser sensing system
- Ultrafast laser system

CASTECH's products are produced independently throughout the entire process and can be customized according to customer needs. Refer to the following list for standard products.

Model Number: Mechanical Attenuators COA-Oc-b-a-p-λ-h Electro-Optical Attenuator COA-Ec-b-a-p-λ-h

Type (t)	Control mode (c)	Polarizer(b)	Aperture (a)	Power (p)	Wavelength (λ)	Housing (h)
Mechanical	A (Automatic)	B (Brewster window) P (PBS)	5 mm	50 (≤50 W)	266 nm 355 nm ...	P01
	M (Manual)		10 mm	100 (≤100 W)		P02
			12 mm			...
Electro-Optical	A (Automatic)		20 mm	50 (≤50 W)		P04
		

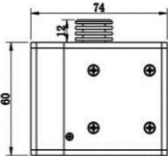
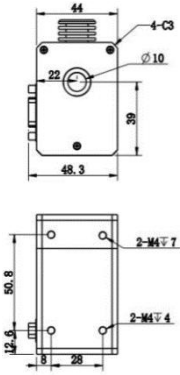
Typical Specifications

Type	Aperture	Attenuation Range	Modulation speed	Resolution	LIDT
Mechanical-Automatic	20 mm	0.5-96 %	<0.7 s	<0.03°	10 J/cm ² @1064 nm,10 ns,10 Hz
Electro-Optical	10 mm	0.5-96 %	ns order	<0.03°	3 J/cm ² @532 nm,10 ns,10 Hz

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Housing dimensions(mm):

P02



P04

