48-AOM-0003

AOM double-pass with monitor diodes (In) and beam splitting unit 1 - 2

FEATURES

Double-Pass AOM Cluster with one modulator

- AOM center frequencies of 60-220 MHz
- Tunability determined by the respective modulator
- Highly efficient coupling into polarization-maintaining fiber cables
- Compact, robust, transportable and sealed opto-mechanical units
- Fully fiber-coupled
- Very high long-term stability, efficiency and reproducibility
- Monitor diodes at input
- Subsequent beam splitting 1 - 2 with adjustable splitting ratio

DESCRIPTION

Double-Pass AOM Clusters are versatile opto-mechanical units that enable dynamic frequency control and amplitude modulation of laser light with high bandwidth. These setups can be combined with beam splitters, monitor diodes, shutters and other established multicube™ components.

Optical Setup
The input port is fiber-coupled to a PM fiber cable. A photo diode right after the input port allows for continuous monitoring of the input laser power. In a polarization beam splitter, the radiation is deflected onto the AOM. The AOM diffracts the incident light and induces a frequency shift. Magnitude of the frequency shift and diffraction efficiency are determined by the applied radiofrequency signal. The system uses a double-pass AOM set up in a 'cat's-eye' configuration. In this configuration, the diffracted light is focused onto a retroreflective mirror, propagates back through the set up collinearly and is diffracted again by the acousto-optic modulator. On its way, the light passes through a quarter-wave plate twice. Due to its resulting perpendicular polarization, the light is subsequently transmitted by a PBS. The reflected light has undergone a frequency shift of twice the applied radiofrequency. Subsequently, the radiation splitting is achieved by using a rotary half-wave plate in combination with a polarization beam splitter. By use of the rotary half-wave plate, almost any desired splitting ratio can be achieved. At the output ports further polarizers are placed in order to define the polarization at output of the system.

Acousto-optic Modulators
The acousto-optic modulators form the centerpiece of all Integrated AOM Systems. As modulators we integrate purchased AOMs (e.g. MT-Series from AA Optoelectronics, AOMO-Series from Gooch & Housego as well as corresponding modulators from other manufacturers with a similar form factor). The achievable tunability of the output laser frequency as well as the efficiency of the system is determined by the diffraction efficiency of the AOM.

Fiber Couplers
A fundamental component of a Double-Pass AOM Cluster is the Laser Beam Coupler, which is the input into the opto-mechanical unit collimating the input radiation and, finally, couples the radiation back into the polarization-maintaining fiber cables. The stability of the Single-Pass AOM Cluster is determined by the stability of the laser beam coupler.

How to Order
Please provide us with
- Wavelength
- Maximum input laser power
- Center Frequency and tuning range (AOM)
- Cable lengths
- Connector types

We will get back to you with a customized offer.

TECHNICAL DATA

48-AOM-0003

Order code	48-AOM-0003
Configuration	AOM double-pass

Wavelengths*	397 - 1064 nm
AOM center frequency	60 - 220 MHz
Tuning range (FWHM)	≥ 20 MHz @ 852 nm
Number output ports	2
Fiber type	Polarization-maintaining
Connector type	FC APC (standard)
Cable lengths	Customer-specific
Power monitor (In/Out)	BPW-34 (SMA)
Max. transmission	≥ 50 % @ 852 nm
Polarization extinction ratio	≥ 23 dB @ 852 nm
Weight	
	* Further wavelengths on request

TECHNOTES

- Integrated AOM Systems
- Fiber Port Clusters
- Thermal Stability Test of the Fiber Port Cluster 1-6
  Thermal stability and thermal stress test

DOWNLOADS

980129090718.pdf (Dimensional drawing)

Double-Pass-AOM.pdf (Technote)

This is a printout of the page https://sukhamburg.com/products/details/48-AOM-0003 from 8/19/2025

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