

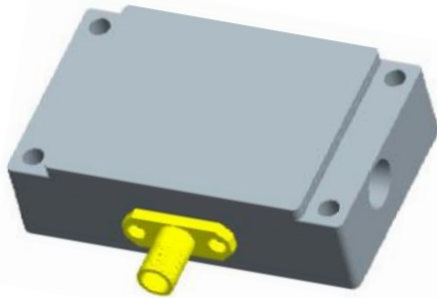
# Free-Space Acousto-Optic Modulators/Shifters



(532 to 2300nm, 0.7 to 2mm aperture, 80, 200 MHz driving)

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BUY NOW



## Features

- Low Loss
- Low Cost
- High Speed

## Applications

- Fiber Lasers
- Pulse Picker
- Sensor

These series of fiberoptic acoustic modulators are designed for laser systems. The device can be used in several configurations in which the common one is normally opaque and becomes transparent when the acoustic bragg diffraction condition is met. In addition to beam diffraction, it inevitably produces a wavelength frequency shift. We produce devices with three resonance frequencies of 100MHz, 120MHz, and 200MHz with different rise/fall response times.

## Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	523		2300	nm
Wavelength Bandwidth		±30		nm
Optical Aperture	0.7		2	mm
Acoustic Frequency	80		200	MHz
Modulation Bandwidth <sup>[1]</sup>	(80MHz)		5	MHz
	(200MHz)		40	
Wavelength Shift	(80MHz)	80		MHz
	(200MHz)	200		
Deflection Angle	(80MHz)	25		mrad
	(200MHz)	50		
Rise/Fall Time <sup>[2]</sup>	(80MHz)		50	ns
	(200MHz)		20	
Diffraction Efficiency	75		85	%
Return Loss	40			dB
Average Optical Power		1	20	W
Peak Pulse Optical Power			30	kW
Input Impedance		5		Ω
RF Power		2.5	4.5	W
Electrical Interface		SMA		
Ultrasonic Velocity		4200		m/s
Operating Temperature	-30		65	°C
Storage Temperature	-45		85	°C

### Note:

- [1]. It is approximately proportional to the driving frequency and inversely to the aperture size.
- [2]. 90/10 optical intensity changes

**Note:** The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

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Rev 07/29/24

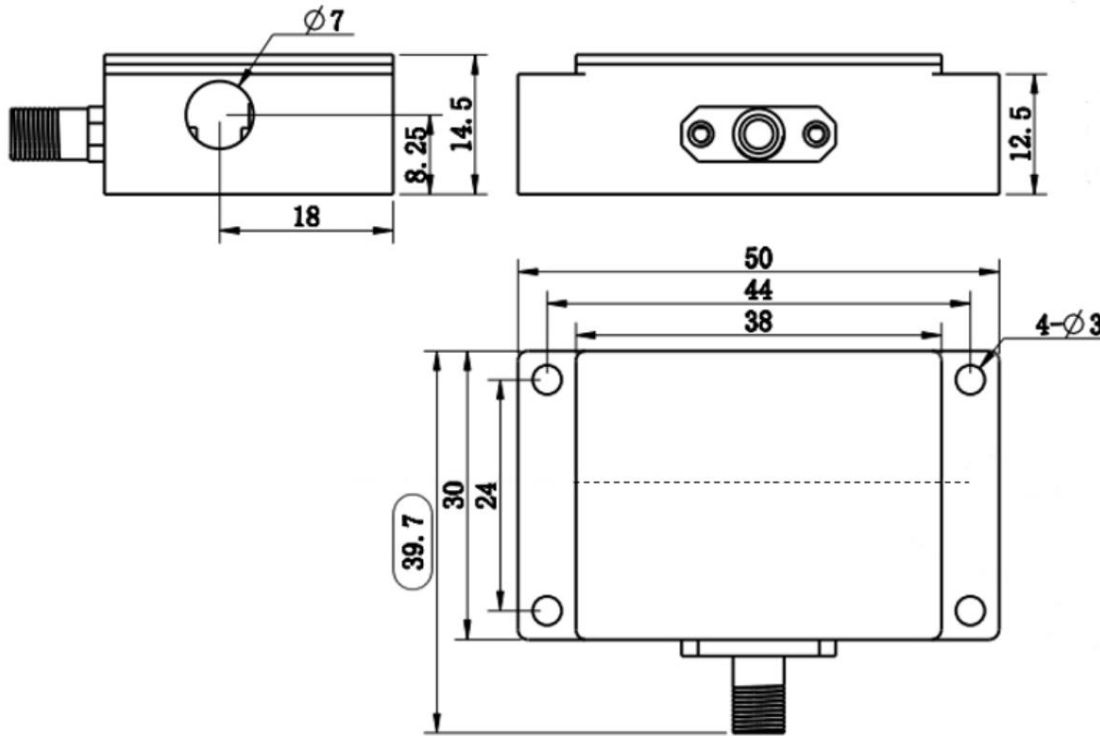
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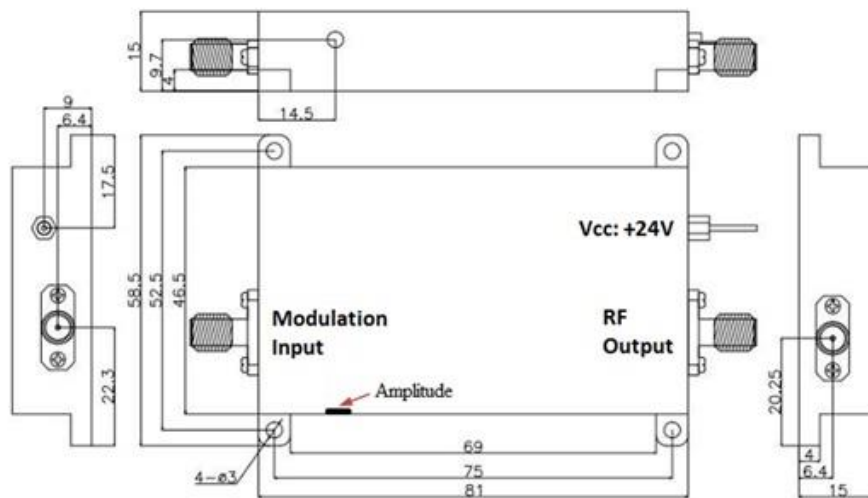
(532 to 2300nm, 0.7 to 2mm aperture, 80, 200 MHz driving)

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### Mechanical Dimensions (mm)



AOM



AOM Driver

\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

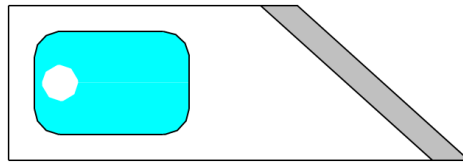
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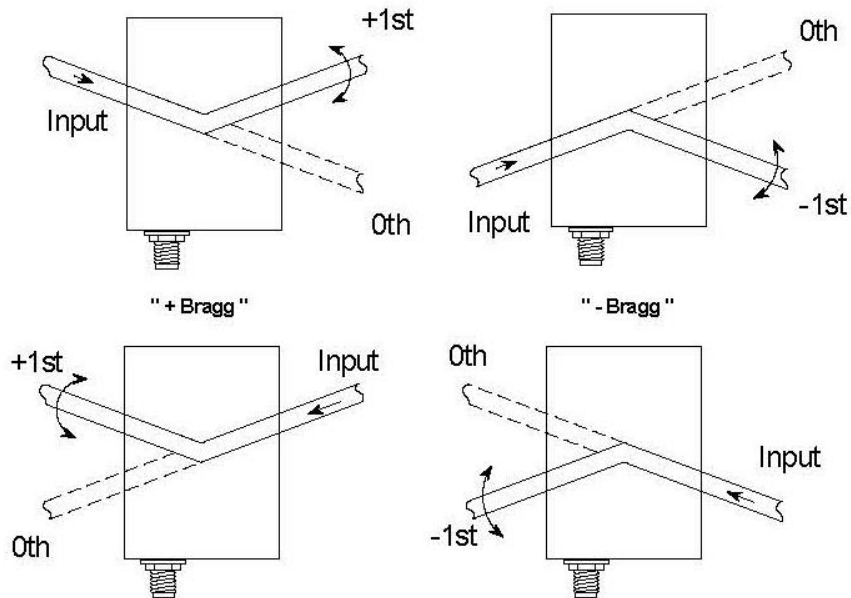
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### Laser Beam Passthrough Arrangement



Typical AOM Aperture Geometry- Rectangle



Possible laser beam input and output arrangements

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### Electrical Connection

Connect the device to the driver via the SMA connections

### Ordering Information

Prefix	Type	Wavelength	Aperture	Frequency	Driver *	Polarization		
	□ □	□	□	□	2	□	1	1
<b>AOMS-</b>	TeO2 = 11 Quartz = 22 Special = 00	980-1060 nm = 1 1230-1550 nm = 5 630-860nm = 8 530 nm = 3 1800-2000 nm = 2 Special = 0	0.7mm = 1 1.0mm = 2 1.5mm = 3 2.0mm = 4 3.0mm = 5 Special = 0	80MHz = 1 200MHz = 2	No = 2	Polarized = 1 Random = 2		

\* Order separately.  
Red means special order

### Operation Manual

1. Connect the driver to +24V using the provided cable but do not turn the power on.  
**Note:** Applying the wrong polarity will burn the driver.  
**Note:** Powering the driver without the load will damage the driver.
2. Connect the driver OUTPUT to the accustom-optic device via the two SMAs.
3. Turn on the +24V power
4. Input TTL control signal to the Modulation connection port

# Free-Space Acousto-Optic Modulators/Shifters

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## Quartz AOM

### 1. Device Drawing

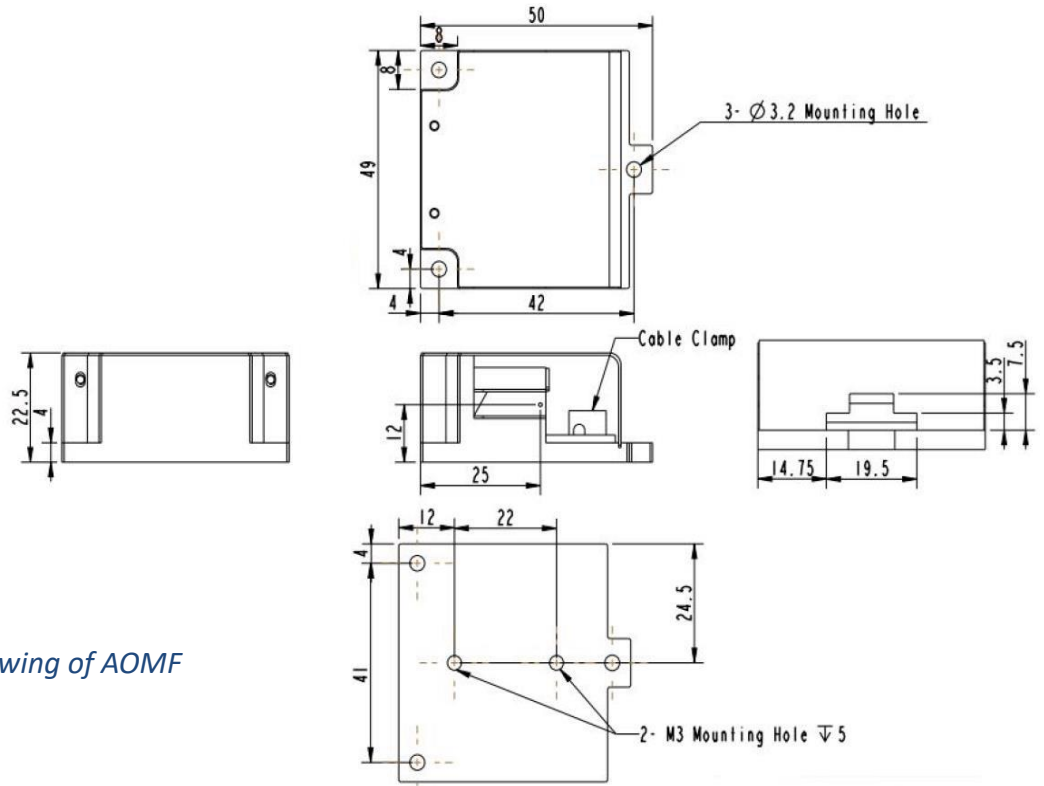


Figure 1: Drawing of AOMF

### 2. Device Setup

#### 2.1 AOMF

Connect its RF input to driver output by using provided RF cable.

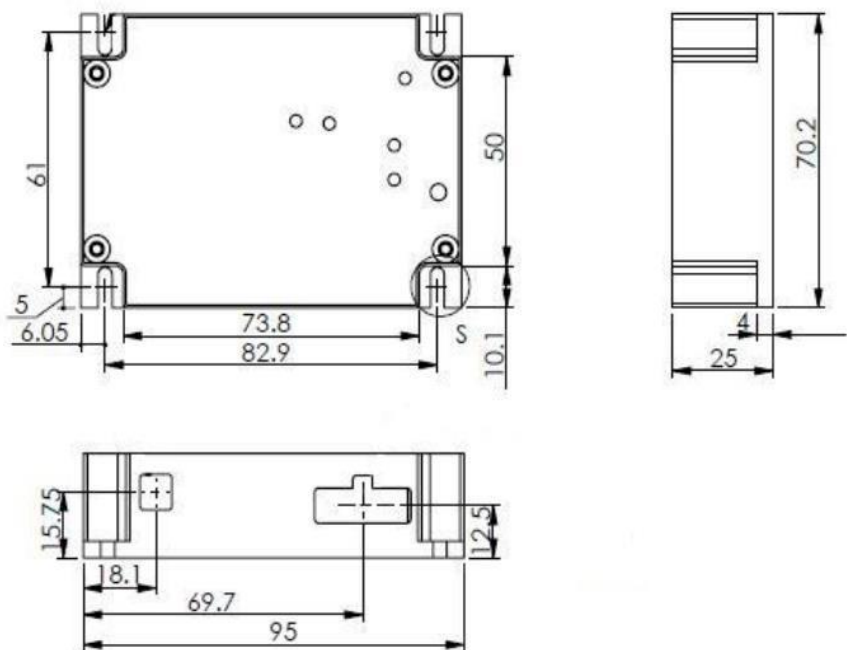


Figure 2: Drawing of AOMD

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### Quartz AOM

#### 2.2 AOMD

**Note:**

Incorrect connections will cause severe damage of driver and modulator/shifter.

The drawing of AOMD is displayed in **Figure 2**.

- Connect the SMA output of AOMD to AOMS.  
**Warning: Never leave AOMD output open when it is powered on.**
- Connect the provided 12-pin connector to AOMD.
- Connect DC power and control signals according to **Table 1** & **Figure 3**.

Table 1. Connector pin

Pin #	Description	Value
1	Sync signal output	3.3V
2	N/A	
3	Fixed-pulse-width modulation input	0 - 5V
4	GND	
5	Variable-pulse-width modulation input	0 - 5V
6	Analog modulation input	0 - 5V
7	NC	
8	Low power indicator output	3.3V
9	High power indicator output	3.3V
10	High VSWR fault indication output	3.3V
11	Enable control	3.3V, or open
12	DC power supply	+15 or +24 VDC

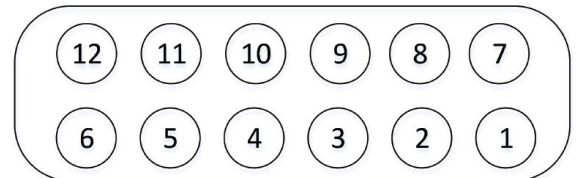


Figure 3: Pin layout of D9 connector

\* Pin 3 and Pin 5 cannot be operated simultaneously.

#### 2.3 Control Logic

Apply 0 ~ 5VDC control signal to Pin 6, see **Figure 4**

#### 2.4 Adjustment of maximum RF power

The maximum RF output power of AOMD can be adjusted from 0.5W to 25W.

Use a screwdriver (1.6mm) to turn the POT locating in the opening 'Level Control', clockwise to increase RF power, and counterclockwise to reduce RF power.

#### 2.5 Indicator States

- Green** Normal
- Red** Low 'Enable' signal and there is no RF output from AOMD.
- Yellow** Error: no load, or abnormal load, or power too high, or power too low.

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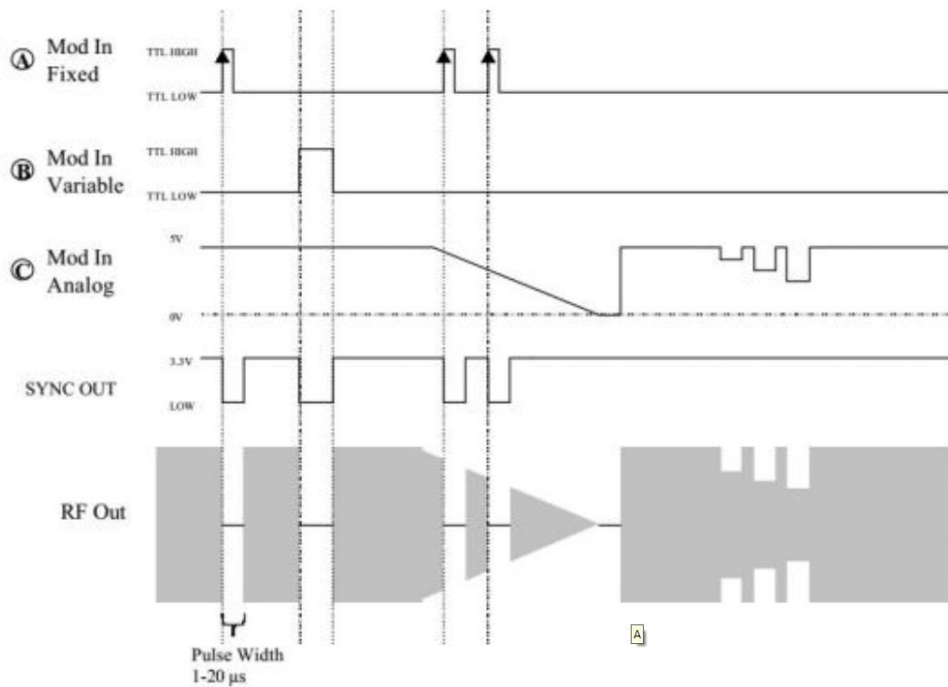
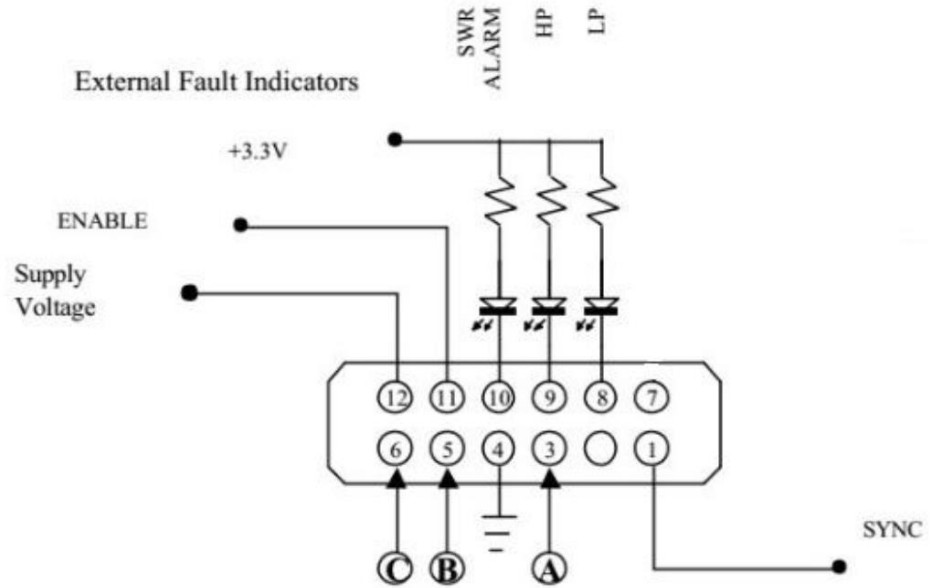


Figure 4: Control logic

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## Quartz AOM

### 3. Application Notes

- **Driver cannot run without a load**  
Acousto-optic device and its driver work at high frequency. If AOMD is powered on without load, like an acoustic-optic modulator, then it will be damaged.
- **Heatsink**  
Modulator and its driver will be heated up under work condition. Heatsink or big piece of metal plate is strongly recommended for driver installation. High temperature will cause damage to driver.
- **Warm-up**  
10-30 minutes warm-up is needed for stable output power of AOMD.