

# Acousto-Optic Modulator Driver



DATASHEET

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## Features

- Low Loss
- Low Cost
- Stable

## Applications

- Fiber Lasers
- Pulse Picker
- Sensor

This series of AOM drivers is designed for use with an AOM modulator operated in the same resonance frequency. The driver provides a fixed high-frequency wave that matches the acoustic-crystal resonance. The electrical output power is fixed. There is a turning screw that is for matching the impedance and was preset to each device. Modulation input has digital and analog choices that match the input signal profile to some extent, although they are not perfect. 24V DC powers the product through a per-centric capacitor.

Do not power up when it is open or shorted to avoid permanent damage. The product should be well-grounded. Otherwise, the performance can be affected. This product generates heat and shall be mounted on a metal structure using fixing screws.

## Specifications

Parameter	Min	Typical	Max	Unit
Frequency	80 ± 0.1%		200 ± 0.1%	MHz
Driving Power <sup>[1]</sup>	0.1		3	W
Repetition Rate	DC		15	MHz
Supply Voltage		+24		V
Supply Current		280		mA
Return Loss	40			dB
Voltage Standing Wave Ratio		1.2 : 1		
Polarization Extinction (PM Only)	18	20	25	dB
Modulation Mode		Analog		
Control Signal Voltage	0		5	V
Output Impedance		50		Ω
AOM Interface		SMA		
Control Interface		SMA		
Operating Temperature	-5		60	°C
Storage Temperature	-45		85	°C

### Notes:

[1]. This is for generating internal grating. The power level is preset, but can be adjusted with a screw driver through the side hole

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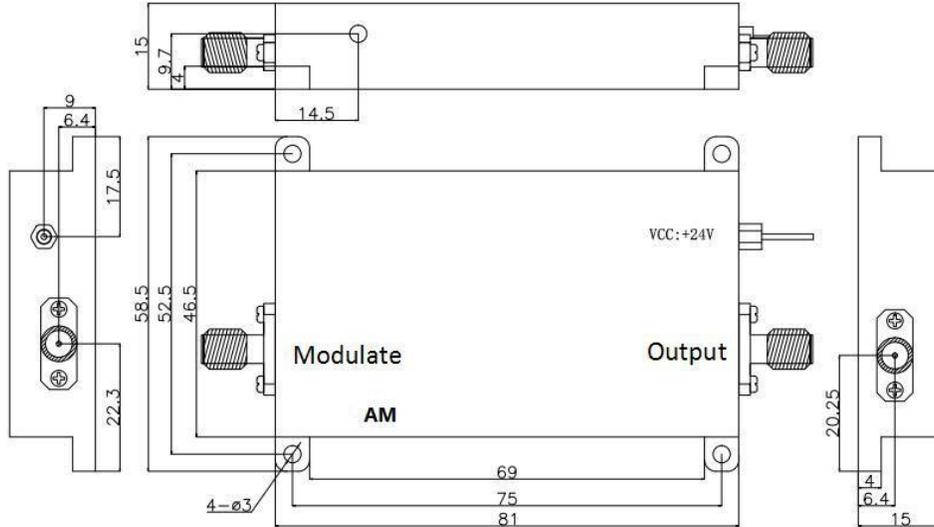
Rev 04/12/24

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### Mechanical Dimensions (mm)



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

### Electrical/Computer Connection

- The product heat dissipation method is conduction heat dissipation. The product should be installed on the metal structure with fixing screws, and the installation surface should be flat and have a certain size and thickness. A certain amount of space should be reserved around and above the product to dissipate heat.
- The product uses +24V DC power supply, and the power connector uses a through-core capacitor; during installation, connect the core of the through-core capacitor to the positive pole of the power supply, and connect the ground plate of the through-core capacitor to the negative pole of the power supply through a wire.
- The characteristic impedance of the product signal output port is 50ohm.
- Do not turn on the power when the signal output interface is open or short-circuited, which may damage the product.
- Ensure that the product is well grounded, otherwise it will have an impact on product performance.
- The output power adjustment is realized by changing the resistance value of the slotted multi-turn potentiometer. Turn the potentiometer clockwise to adjust the terminal, the output power will increase, and the counterclockwise rotation will decrease. The adjustment range of the output power is greater than 15dB.
- The product is sensitive to static electricity. Pay attention to static electricity protection during use.
- The +24V connector is a legacy 0.9mm diameter pin, the ground ear pin is part the this pin.

### Ordering Information

Prefix	Type	1	1	Frequency	1	1	Package	1
AOMD-	Analog = 11 Digital = 22			80MHz = 8 100MHz = 1 200MHz = 2			Module = 1 Box = 2 <sup>[1]</sup> Special = 0	

[1]. The fan is included in the box package.

We provide a laboratory ready to use box having 110-240ACV electricity input in the back, and SMA control signal input, and FC/APC fiber input and output on the front.

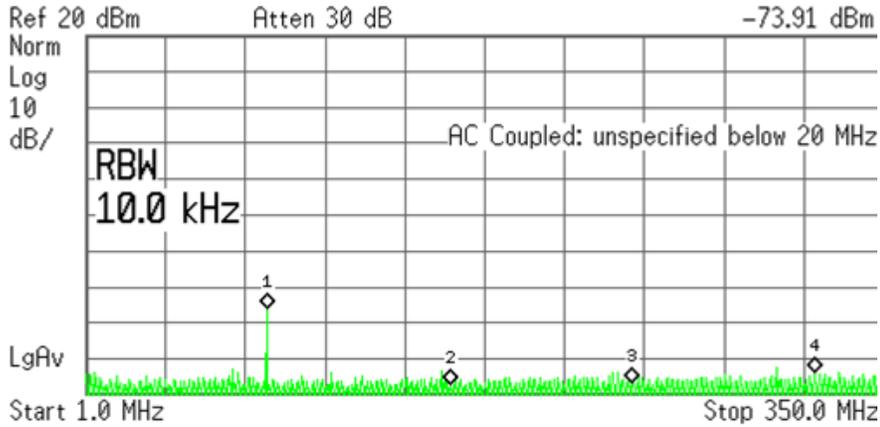
# Acousto-Optic Modulator Driver



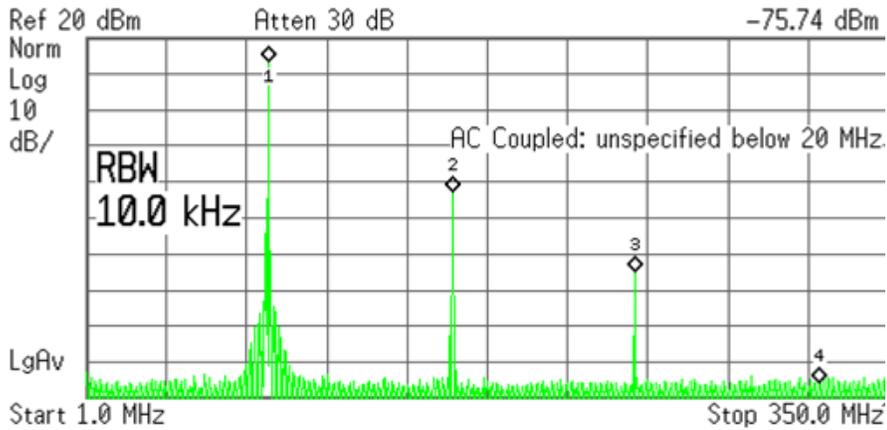
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### Typical Output Spectrum

#### 0 Volts Input



#### 5 Volts Input



# Acousto-Optic Modulator Driver



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### Device Setup

#### 1. Power supply connection

Please use the provided power cable to connect the 'Vcc +24V' and the negative plate of driver to a power supply.

#### Warning:

Incorrect connection to positive and negative electrodes will cause severe damage of driver and modulator.

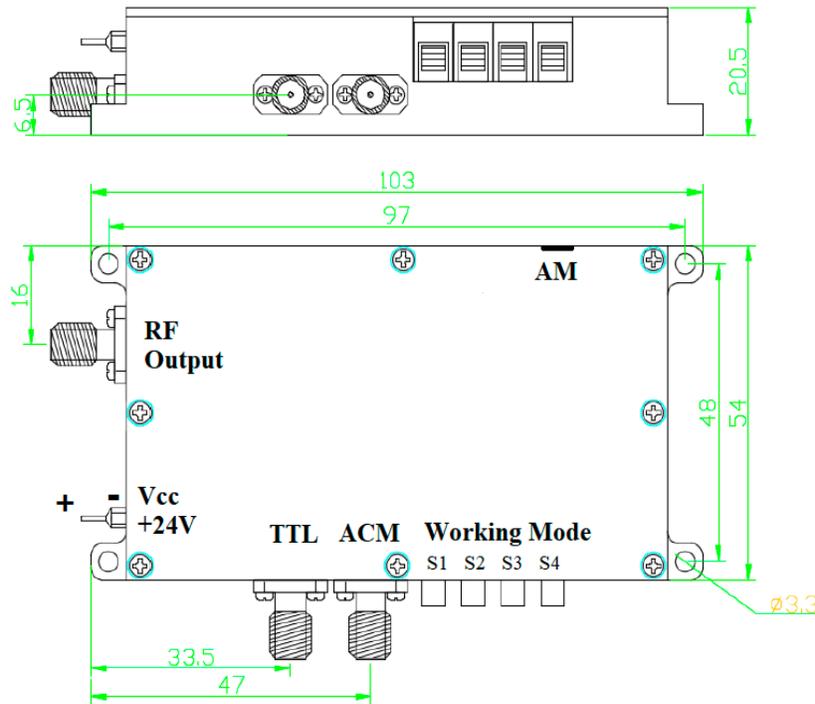


Figure 1: Drawing of AOM TTL driver

#### 2. Adjustment of driver output power

#### Warning:

The RF output power of driver has been matched with acousto-optic device in factory. Please DO NOT adjust it unless necessary.

When the RF output power of driver has to be adjusted a flat-head screw driver can be used to turn the small knob 'AM' located on the side of driver. Turn it clockwise to increase power, and counterclockwise to decrease power.

#### 3. Modulation Input

- The 'TTL' port of driver is for input of digital modulation control signal, which is standard TTL signal. Use the provided SMA cable to connect it to a signal source.
- The 'ACM' port of driver is for input of analog modulation control signal, which can be 0~1V or 0~5V. The voltage range can be set by 'Working Mode', see section 1.4 for details.

## Device Setup

### 4. Working Mode Control

A group of 4 switches are used for control of driver's working mode.

Table 1 Working mode control of driver

Switch #	Position	Working Mode
S1	Down	TTL high level
	Up	TTL low level
S2	Down	TTL input enabled
	Up	TTL input disabled
S3	Down	0 ~ 1V input range
	Up	0 ~ 5V input range
S4	Down	Analog input enabled
	Up	Analog input disabled

### 5. RF Output connection

Use the provided SMA cable to connect the 'RF Output' of driver to acousto-optic modulator.

### 6. Laser wavelength

An acousto-optic modulator is wavelength sensitive, i.e., a narrow-band device. The wavelength of input laser beam must match the nominal wavelength of modulator. Any wavelength deviation of input laser beam will cause significant increase of insertion loss.

### 7. Optical fiber connection

All connectors need to be properly cleaned and make sure connector type matches.

## Application Notes

- **Output impedance**  
50Ω
- **Driver cannot run without a load or with its output shorted.**  
Acousto-optic device and its driver work at high frequency. If driver is powered on when there is no load connected to it, such as an acoustic-optic modulator, then it will be damaged.  
A shorted output connection will also cause damage of driver.
- **Heatsink for driver**  
The driver will be heated up in work condition. A heatsink or a big piece of metal plate is strongly recommended for driver installation. High temperature will cause damage to driver.
- **Ensure driver is well grounded to achieve desired performance.**
- **Use caution when handle optical fibers.**
- **Always cover connectors with caps when they are unplugged**

## Connection Diagram

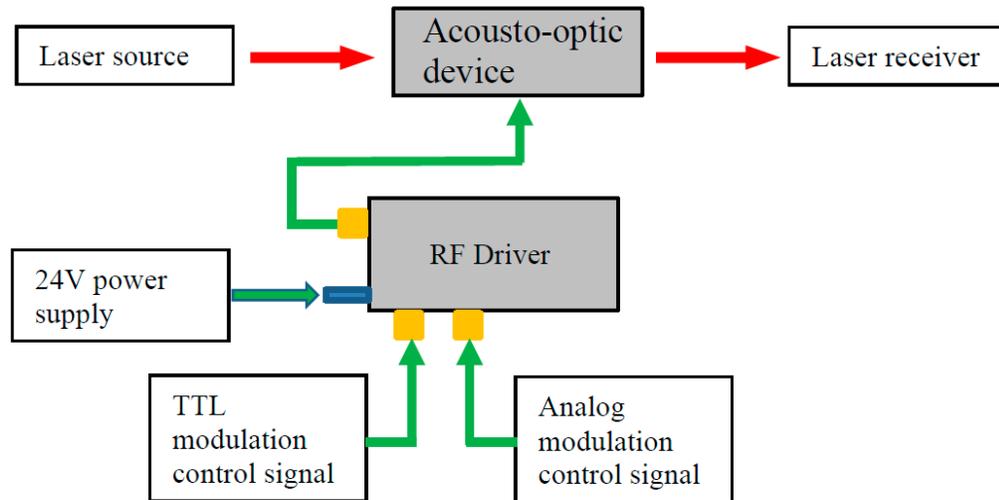


Figure 2: Connection diagram

## Application Notes

### Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

### Fiber Cleanliness

Fibers with smaller core diameters (<5  $\mu\text{m}$ ) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

### Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the handling by expanding the core side at the fiber ends.