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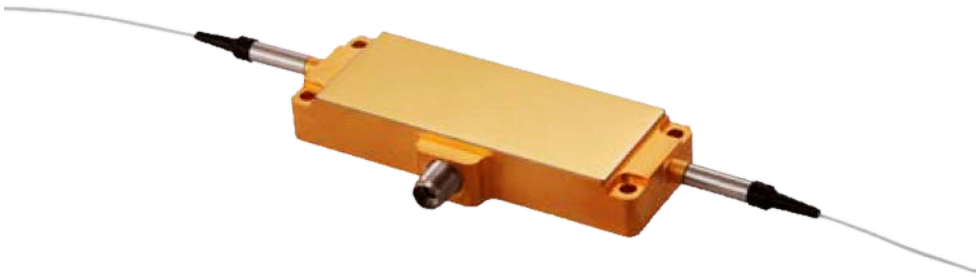
Acousto-Optic Modulator/Shifter

80MHz/200MHz TTL + Analog Modulation

User Manual



Version: 2025 -1

1 Device Setup

Note:

- Heatsinks must be installed with acoustic-optic modulator/shifter (AOMF) and its driver (AOMD). Inefficient or unstable heat dissipation will cause poor performance of AOMF, especially for polarization-maintaining (PM) AOMF.
- For PM AOMF, warm it up for at least 5 minutes under working condition for better polarization extinction ratio (OER).

1.1 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.

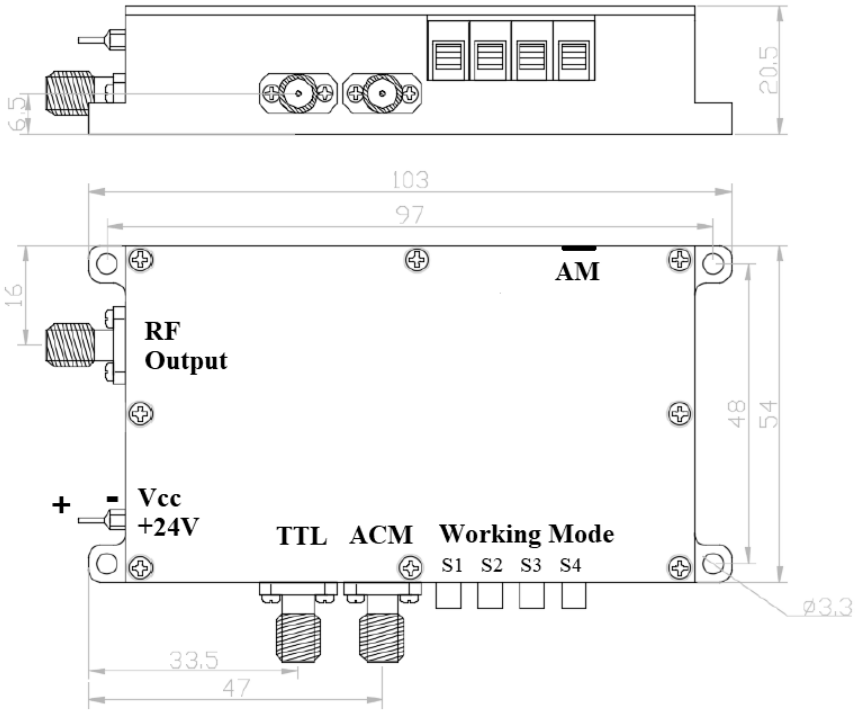


Figure 1: Drawing of AOM TTL driver

1.2 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.

1.3 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.

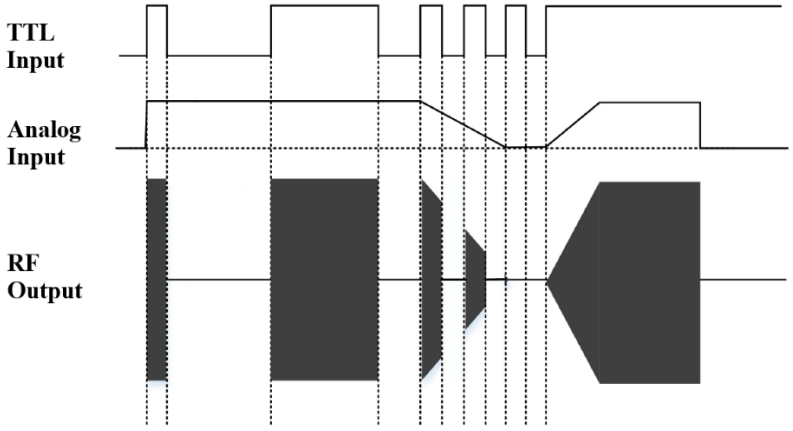


Figure 2: RF output vs TTL & analog inputs

1.4 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	TTL Only	Ana. Only	TTL & Ana.
S1	Up	TTL high level to enable RF output	Either		Either
	Down	TTL low level to enable RF output		●	
S2	Up	TTL input disabled, block RF output			
	Down	TTL input enabled, RF output depends on TTL & analog inputs	●	●	●
S3	Up	0 ~ 5V input range of analog modulation			
	Down	0 ~ 1V input range of analog modulation (recommended, essential for 80M AOMD)	●	●	●
S4	Up	Analog input disabled	●		
	Down	Analog input enabled		●	●

1.5 RF Output connection

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

1.6 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.

1.7 Optical fiber connection

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

2 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.**

3 Connection Diagram

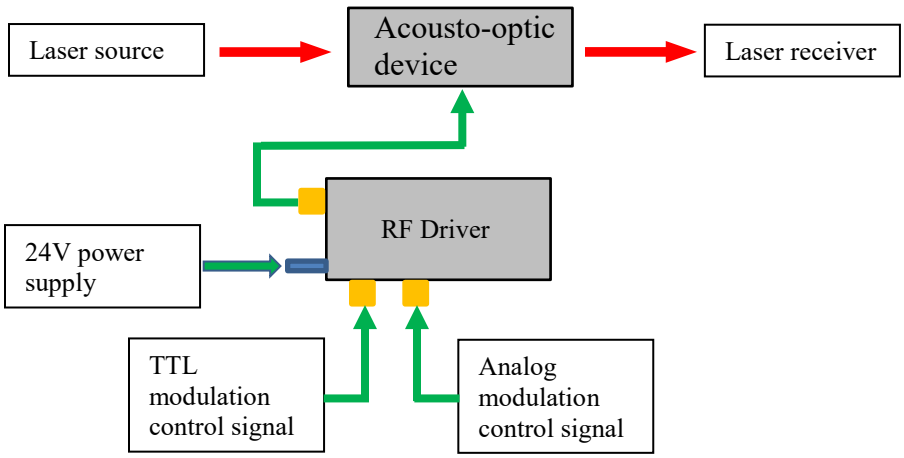


Figure 3: Connection diagram