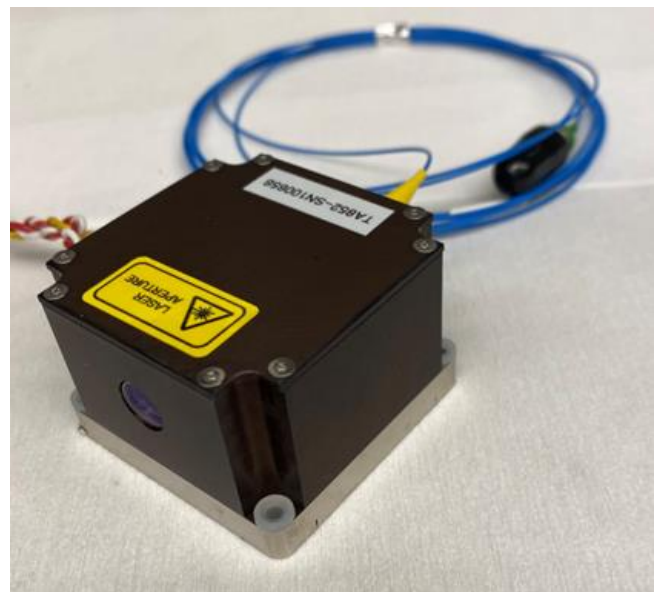


Lasers

## Tapered Amplifiers

Tapered Amplifiers provide a coherent high-power beam, inheriting all properties of a seed source. It has been an essential optical component for quantum sciences, such as laser cooling and trapping, cold atom sensors, electromagnetically induced transparency, and quantum spectroscopy, which require relatively high power and a coherent light source. It also used in commercial laser modules like master oscillator power amplifier (MOPA) laser and external cavity laser.

AOSense offers two compact tapered amplifiers: free-space tapered amplifier unit and fiber pigtailed tapered amplifier unit, which has fiber coupled input.



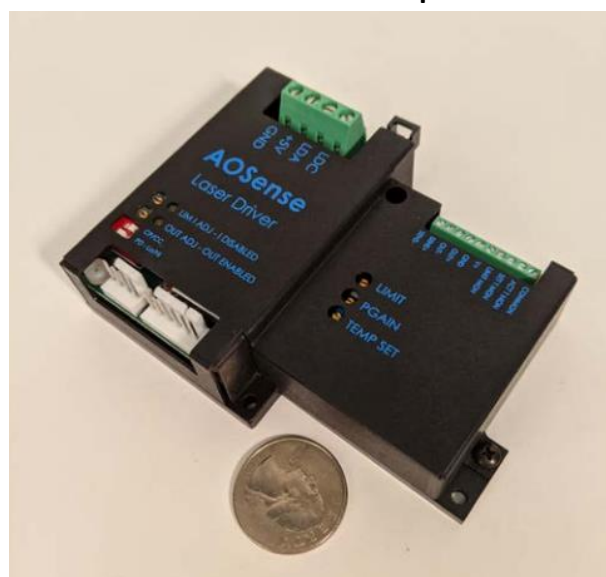
### Features

- ⊗ **> 3 W optical power**
- ⊗ **High beam quality**
- ⊗ **Fiber-coupled or Free-space**

## Specifications

Optical	AOS-TA-780X 852X	AOS-TA-
Wavelength Operation without ASE (nm)	780 ~ 805	847 ~ 869
Max. Optical Power (W)	> 3	> 3
Beam Quality (M <sup>2</sup> )	< 1.7	< 1.7
Typ. Linewidth	Depends on master laser	Depends on master laser
ASE suppression	> 40dB	> 40dB
Polarization Extinction Ratio	100:1	100:1
Seed Power (mW)	20 ~ 60, 50 (Typical)	10 ~ 30, 20 (Typical)
Fiber type	N/A	PM with APC
Electrical		
Max. Operation Current (A)	4.5, 4.2 (Typical)	5, 4.5 (Typical)
Mechanical		
Beam Height (mm)	~ 20	~ 20
Dimensions (mm) Free-Space	50(L) x 50(W) x 33.44(H)	50(L) x 50(W) x 33.44(H)
Dimensions (mm) Fiber Pigtailed TA	55.6(L) x 50(W) x 33.44(H)	55.6(L) x 50(W) x 33.44(H)
Thermal		
Storage Temperature (Celsius)	-20 ~ 60	-20 ~ 60
Operating Temperature (Celsius)	15 ~ 30	15 ~ 30, 20 (Typical)
Storage Temperature (Celsius)	-20 ~ 60	-20 ~ 60

## Current/Temperature Driver for Tapered Amplifier or Laser



## Current/Temperature Driver for Tapered Amplifier or Laser

### Current Control

Driving Current	5 A
Operation Power	Single DC supply 5V
Short Term Stability (1 Hr)	<200 ppm
PD feedback	
Range	15 ~ 500 $\mu$ A, 50 ~ 5000 $\mu$ A
Output stability	< 0.005 %
External Modulation	
Analog Input Damage Threshold	>-0.5 V, < 0.5 V
Input Pin Impedance	1 M $\Omega$
3 dB, Constant Current	80 kHz
BW at 90 % Depth of Modulation	70 kHz
Output Rise/Fall Time	5.9 / 10 $\mu$ s
Output Turn-On Delay	>1.5 s
Show Start Output On-Time	250 ms
Optional Pulse Generator	1 Hz ~ 150 kHz, Duty Factor of 0 ~ 100%

### Temperature Control

Driving Current	5A
Operation Power	Single DC supply 5 V
Features	Temperature Setpoint Proportional Gain PID control loop to control heater or cooler Temperature Monitor
Max Output Power	135 W
Stability	
Short Term (1 Hr)	0.0005 ~ 0.002 $^{\circ}$ C
Long Term (24 Hr)	0.002 ~ 0.005 $^{\circ}$ C

### Optional Pulse Generation

Transmission	>65%
Adjustable Frequency Range	>30 dB <sup>(a)</sup>
Adjustable Duty	780 nm $\pm$ 1 nm 1 Hz (1 Hz ~ 999 Hz)
Display Resolution	0.1 kHz (1.0 kHz ~ 9.99 kHz) 1 kHz (1 kHz ~ 150 kHz)
Clear aperture	1.4 mm diameter
Maximum power	2%
Stray magnetic field	Output Current 5~30 mA
Ambient Temperature	-20 ~ 70 $^{\circ}$ C

For more information, contact us at [sales@aosense.com](mailto:sales@aosense.com)