

Ampheia™

Ultra-Low Noise | Single frequency | Fiber Amplifier



Applications

- Atom Trapping
- Particle Analysis
- Optical Metrology
- Laser Interferometry
- Frequency Conversion
- Quantum Sensing

Features

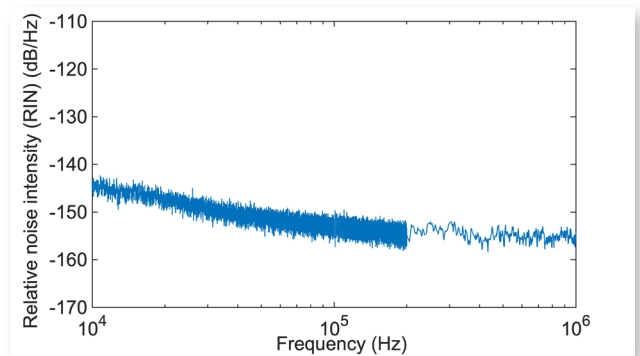
- Up to 50 W, CW, single-frequency emission
- Ultra-low noise and perfect beam quality
- Single-stage fiber amplifier with integrated seed laser
- Signal to noise ratio (OSNR > 60 dB)
- Robust and maintenance free
- Easy installation and user-friendly interface

The Ampheia™ Series is a family of high-power fiber amplifiers, which with a pinnacle of perfection seamlessly boosting ultra-low relative intensity noise (RIN) and single-frequency operation while delivering 20 W, 40 W, and 50 W at 1064 nm in a perfect beam.

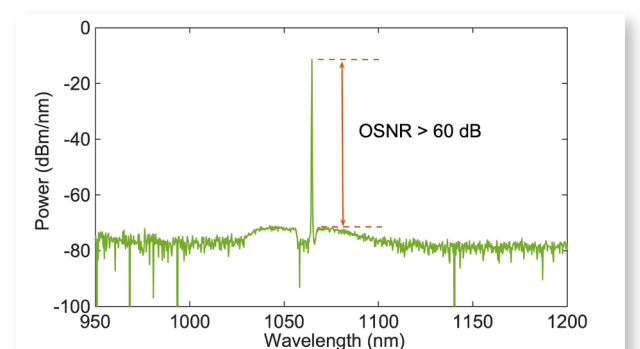
Ampheia™ is a single-stage fiber amplifier built around an internal seed laser and presents affordable, outstanding laser performance tailored for quantum applications. Offered in a 19 inch 3U rack case, this amplifier offers excellent robustness.

With single-frequency precision, the fiber amplifier offers a long coherence length. Thoroughly designed and manufactured, Ampheia™ Series of fiber amplifiers guarantee a high level of reliability, making them ideal for stand-alone use or seamless integration as an OEM component. It caters to a spectrum of applications ranging from atomic trapping, optical metrology, laser interferometry, frequency conversion to quantum sensing.

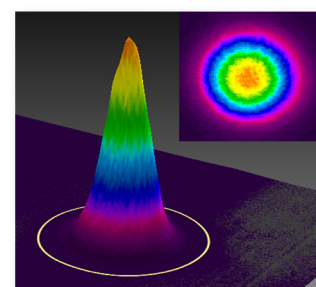
Typical Relative Intensity Noise (RIN)



Typical Optical Signal to Noise Ratio (OSNR)



Typical TEM₀₀ Beam



HÜBNER Photonics



Optical Specifications

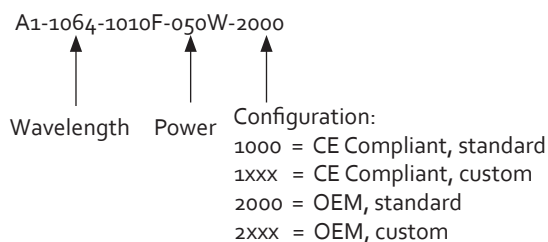
| | Ampheia™ | | |
|---|-------------------|--------|-------|
| Wavelength | 1064.2 ±0.6 nm | | |
| Output power after integrated isolator | 20 W | 40 W | 50 W |
| Operation mode | Continuous wave | | |
| Spectral linewidth (FWHM) | < 30 kHz | | |
| Coherence length | > 1 km | | |
| Polarization extinction ratio (PER) (Vertiacally polarized) | > 30 dB | | |
| Beam quality (M ²) | < 1.1 | < 1.15 | < 1.2 |
| Spatial mode | TEM ₀₀ | | |
| Nominal beam diameter at 1/e ² | 1± 0.1 mm | | |
| Noise [100 Hz- 10 MHz] | < 0.05 % RMS | | |
| Relative intensity noise (RIN) [10 kHz- 1 MHz] | < - 145 dB/Hz | | |
| Optical signal to noise ratio (OSNR) | > 60 dB | | |
| Output power tunability | 5 to 100 % | | |
| Fiber delivery cable length | 2 m | 1.2 m | 1.0 m |

Electrical/Meachanical/Operational Enviromental Specifications

| | |
|--|---|
| Fiber amplifier rack weight | 14.3 kg (31.5 lbs.) |
| Fiber amplifier rack dimensions (LxWxH) | 470.5x423x133 mm (18.52x16.65x5.24 in.) |
| Laser head weight | 0.56 kg (1.23 lbs.) |
| Laser head dimensions (LxWxH) | 155x55x45 mm (6.10x2.17x0.87 in.) |
| Intended use environment | Laboratory (indoor) |
| Ambient temperature, operation | 18 - 30 °C (Air-cooled) |
| Ambient temperature, storage | -10 to +60 °C |
| Humidity | 0 - 60 % RH non-condensing |
| Laser head heat sink thermal impedance (at 30°C ambient) | < 2 K/W |
| System power consumption | < 300 W |
| Maximum heat dissipation of laser Head | < 2 W ¹ |

1. With emergency shutter 50W closed, under less than 60s.

Model Number



Communication Interface

| | |
|-------------------|---------------|
| Communication | USB or RS-232 |
| Standard Baudrate | 115200 |



WARNING
 VISIBLE OR INVISIBLE
 LASER RADIATION
 Avoid Exposure to beam
 Class 4 Laser Product
 Classified per
 IEC 60825-1:2014



Wvl (nm) Max.Pwr (W)
 1064 50

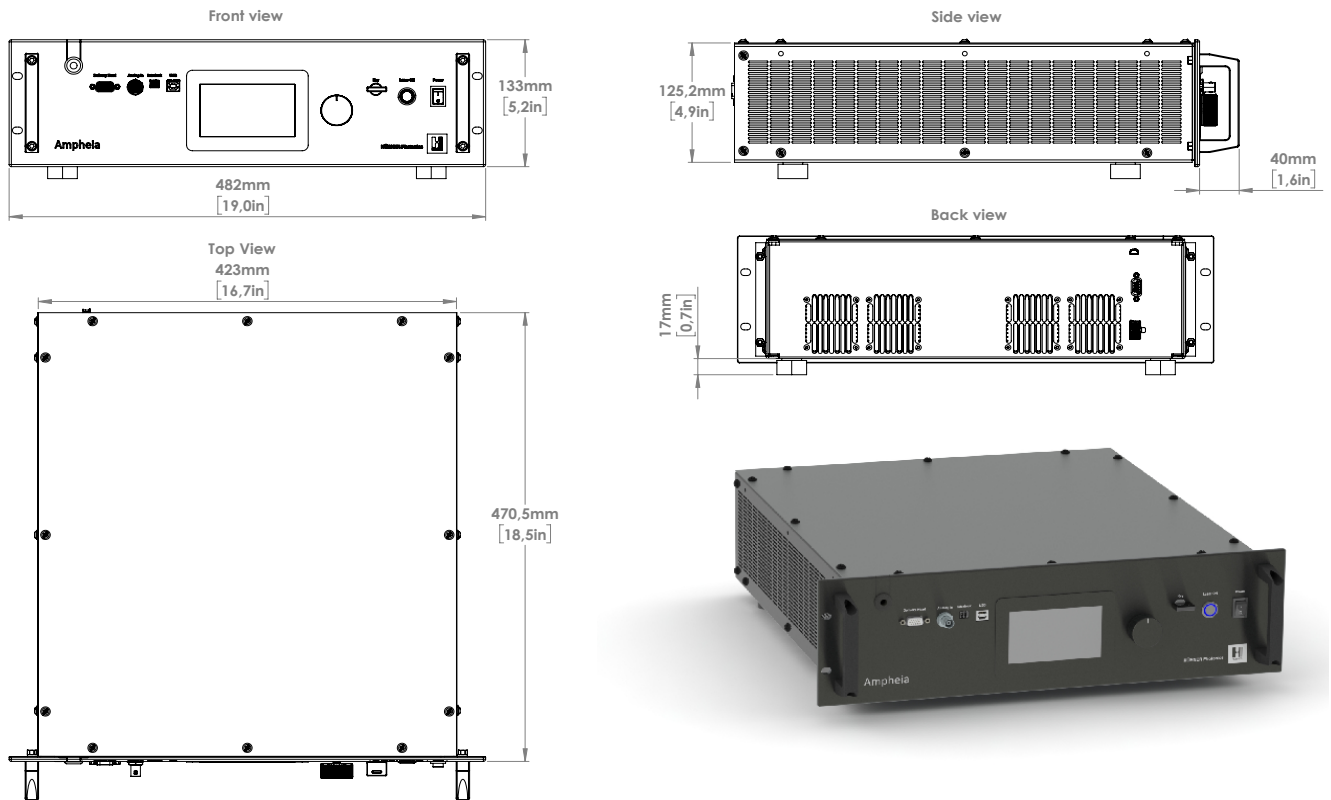


This device is
 sensitive to
 Electrostatic
 Discharge
 (ESD).

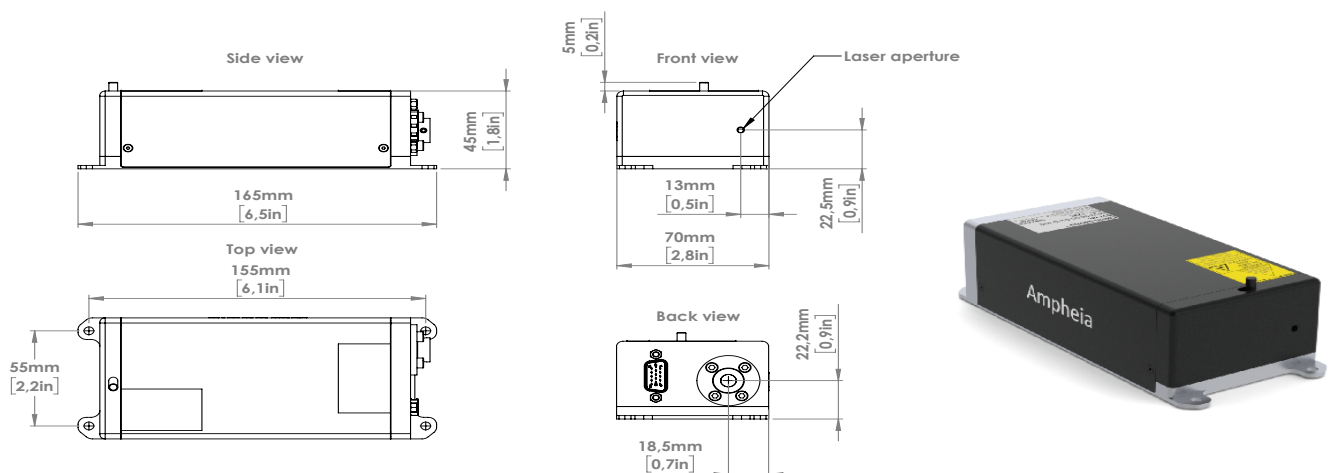
Ampheia™

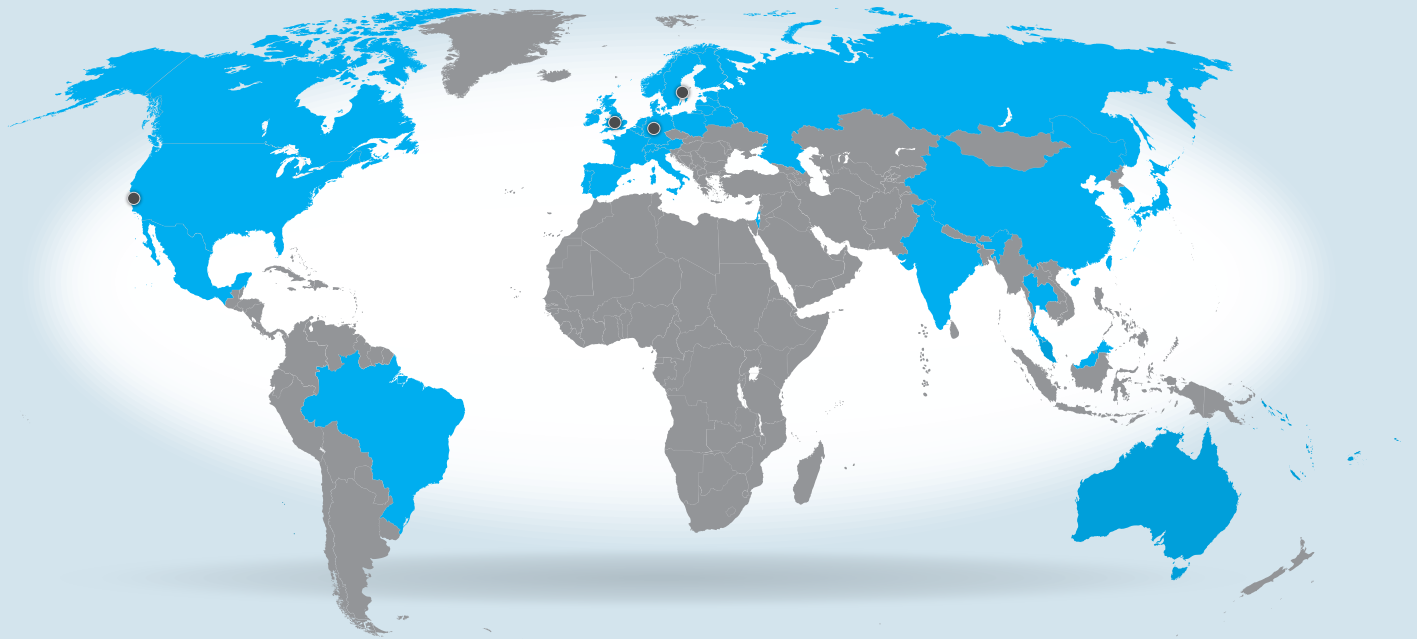
Mechanical Specifications

Fiber Amplifier Rack dimensions



Laser head dimensions





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