

Ultrabroad Band MIR Single Mode Supercontinuum Source (1300-4500nm, 500mW)



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[Return to the Webpage](#)



The MSUP Series is a turnkey, ultra-broadband supercontinuum laser source that spans from 1.3 μm to 4.5 μm , delivering over 0.3 W of average optical power with exceptional spatial coherence and stability. Based on a pulsed fiber laser pumping a photonic crystal fiber (PCF), it provides single-mode output across the entire spectral range. Output options include bare fiber or collimated beam, with an optional tunable filter for wavelength selection. Featuring adjustable output power via front-panel controls or USB GUI, the benchtop unit offers plug-and-play operation, making it an ideal replacement for thermal and lamp-based sources in applications such as gas spectroscopy, molecular fingerprinting, environmental sensing, and mid-IR imaging.

Features

- Broad Single Mode MIR Light Source
- Tunable Wavelength
- Cover Most Molecular Vibration Energies

Applications

- Microscopy (FRET, TIRF, CLSM...)
- Absorption / Transmission / Reflection Spectroscopy
- Optical Device Characterization
- Metrology
- Hyperspectral Imaging

Specifications

Parameter	Min	Typical	Max	Unit
Wavelength Range	1.3		4.5	μm
Output Power (Full Emission Band)	300		500	mW
MIR Output Power (2.2 - 4.2 μm)	110			mW
Output Power Stability (Full Emission Band; Ambient Temperature $\pm 1^\circ\text{C}$)			± 1	%
Intensity Noise (RMS; 10 Hz - 1 MHz)		0.025		%
Repetition Rate	0.04	50	52	MHz
Output Beam Diameter (1/e ² ; Single Mode)		5		mm
Polarization		Random		
Input Voltage		100-240		V
Frequency		50-60		Hz
Power Consumption			700	W
Room Temperature Range	17		25	$^\circ\text{C}$
Temperature Stability (over 24 Hours)		< 3		$^\circ\text{C}$

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 04/10/25

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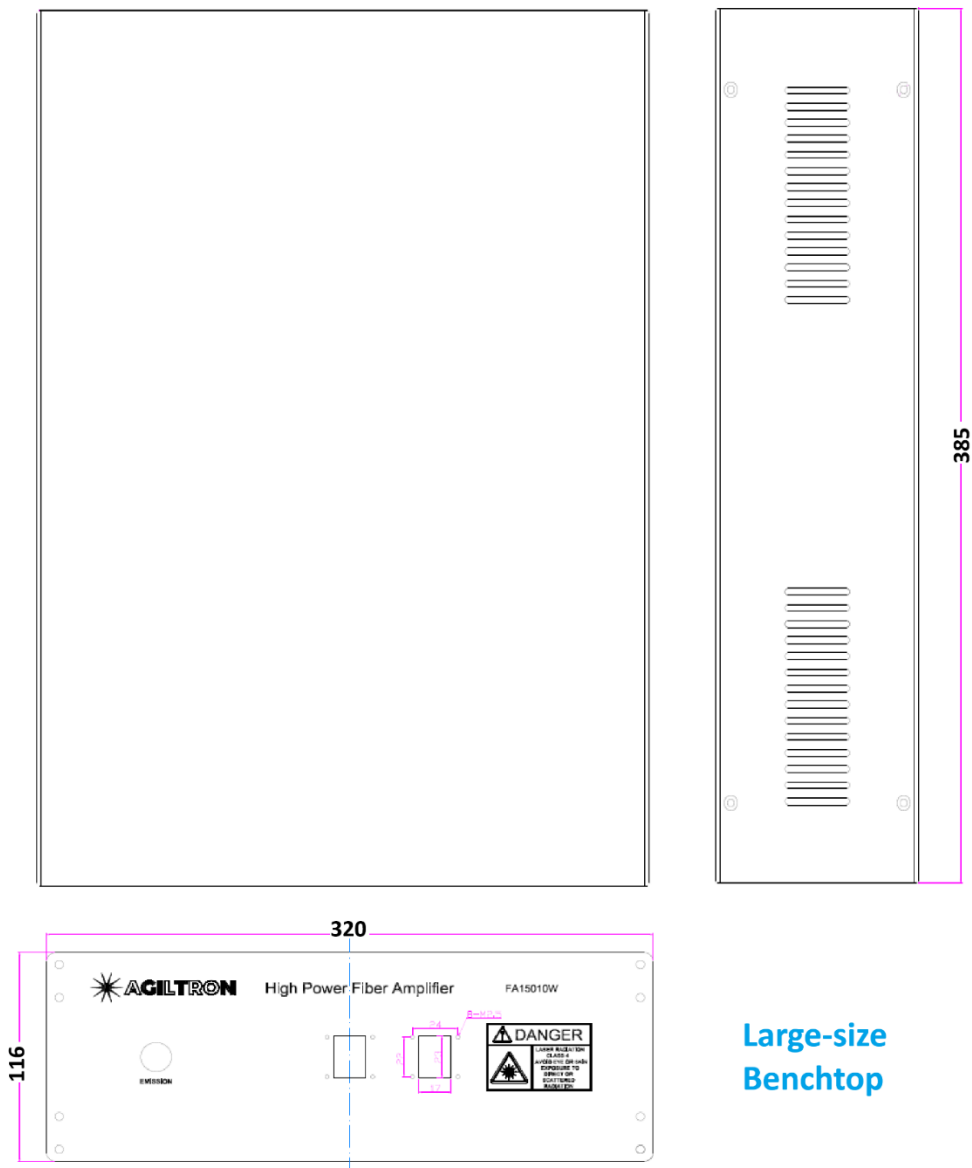
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DATASHEET

Mechanical Dimensions



Large-size
Benchtop

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

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DATASHEET

Ordering Information (Part Number)

	☐ ☐	☐ ☐	☐	☐	☐	☐
Prefix	Config	Total Output Power	Interface	Tunable *	Output	Connector ^[1]
MSUP-	Standard = 11 Special = 00	0.1W = 01 0.2W = 02 0.3W = 03 0.4W = 04 0.5W = 05 10W = 10 Special = 0	Non = 1 USB = 2 RS232 = 3 Special = 0	Non = 1 Yes = 2	Photonic Fiber = 1 Collimator 5mm = 5 Special = 0	None = 1 FC/PC = 2 SAM = 3 Special = 0

* This selection includes a grating-based tunable filter with USB control covering a certain wavelength range with collimated output beam.
[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

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DATASHEET

Setup

The laser head requires roughly 17.9" x 15.9" (44.5 cm x 40.4 cm) of optical table space. In addition, the laser head has air intakes and outlets on both sides of the enclosure, which are perforated to permit airflow. Allow at least an additional 3" (7.5 cm) on each side for proper circulation. After choosing the location, secure the laser head's pedestal posts to the optical table using the supplied CF175 clamps.

Use the supplied DB25, DB15, and DB26 high-density cables to connect the laser head to the controller, and use the supplied USB cable to connect the controller to a computer running Windows® 7, 8.1, or 10 (32 Bit or 64 Bit).

At this point, turn the controller on by holding down its Power On/Off push button for approximately 2 seconds. The controller will switch on after emitting a clicking sound, and the green indicator next to the Power button will illuminate. Observe the two status indicator LEDs on the controller front panel labeled "Temperature" and "Oscillator". The temperature indicator shows the status of the temperature control loops in the system. While the temperature status indicator is blinking, the temperature is stabilizing; once a stable temperature is achieved, the temperature status indicator will turn green. Depending on the laboratory temperature, this can take several minutes. The oscillator indicator should turn green within a few seconds of powering on the controller, which indicates a stable mode-locked condition. If the oscillator indicator is off, the oscillator can be reset using the GUI. If the temperature status indicator continues to blink for more than 10 minutes, please contact Technical Support for assistance.

The beam path of the laser can be purged using a gas inlet located in the back panel of the laser head. A gas supply connected to this inlet can flow gas through the internal beam path of the laser to reduce undesirable absorption lines in the environment. The gas supply should not be pressurized. The output port of the device includes a KF16 vacuum compatible flange which can be used to connect the output to other purge capable instruments or devices.

Starting the Laser

Before starting the laser, ensure that the interlock circuits are defeated by:

1. Turning the key-lock switch on the front panel of the controller in the clockwise direction towards "Enable"
2. Making sure that a short-circuited connection is established on the interlock BNC connector on the controller's back panel.

Before turning on the laser, ensure that the temperature and oscillator status indicators on the controller are both green.

Use the red Laser On/Off button on the front panel of the controller or the Laser On/Off button in the computer interface to enable laser emission. The Laser Emission indicators on the laser head and on the controller will blink for 5 seconds, then turn green once the laser output is enabled.

Please note the following when operating the laser:

1. The supercontinuum output spectral shape varies with the adjustment of the pump current. The laser is shipped with a data sheet that shows how the output spectrum changes at different pump current set-points. The pump current can be adjusted using the computer interface as described in Section
2. After the pump current has been adjusted, the Laser On/Off button will switch the output on at that current level. Power cycling the controller will reset the pump current back to its factory pre-set value. It is recommended to turn up the pump current set point starting from 0% in 5% steps the first time that the laser is switched on. Fine-tuning of the spectral shape can be achieved by fine adjustment of the pump current level.
3. The laser should be switched on and off for normal operation only by using the Laser On/Off push button on the controller or using the Laser On/Off button in the software described in section 4.5. The keylock switch on the front panel of the controller should only be used to enable or limit access to the laser emission for laser safety purposes. This switch should not be used to turn the laser emission on and off during normal operation of the laser.
4. In the event that the red interlock indicator is turned on, the laser emission cannot be enabled. Please ensure that the BNC interlock connector on the back panel of the controller has been shorted and that the keylock switch is in the unlocked position. At this point, press the Laser On/Off push button once to clear the interlock error. This switches the red interlock indicator off and allows the laser to be switched on using the Laser On/Off push button.

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DATASHEET |

Operating the Laser with a Computer

The laser can be independently operated and controlled using the included GUI for Windows® operating systems. The GUI also provides access to the oscillator reset button and a pump current control slider, neither of which are available through the controller hardware. The installation package and all the required drivers are provided with the laser.

A screenshot of the user control panel in the GUI is shown below. The indicators for the temperature, oscillator, laser emission, and interlock function identically to the same indicators on the controller. The Laser On/Off button also functions identically to the same button on the controller. In the event that the interlock trips, the Laser On/Off button will change to read Clear. Clicking the Clear button will deactivate the error indicator, making the laser ready to be turned on.

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Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. All versions of this laser are Class 1M laser products, tested according to IEC 60825-1:2007 / EN 60825-1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example telescopes and binoculars) may pose an eye hazard.

Wavelength = 1.3/1.5 μm .

Maximum power = 30 mW.

