

# Erbium Doped Fiber Amplifier for Narrowline Pulse Laser Space Qualifiable

1540-1560nm up to 100W pulse



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## Features

- Wide Wavelength Range
- High Output Power
- Suppress Nonlinearity

## Applications

- Doppler LiDAR
- Fiber Optic Distributed Sensing
- Fiber Laser

The EDFA-P serial single-frequency pulsed erbium-doped fiber amplifier is designed for narrow-linewidth pulse amplification, supporting input laser pulses with spectral linewidths down to the kHz level while effectively suppressing nonlinear effects and delivering high pulse energy with peak power up to 100 W. It is available with single-mode or polarization-maintaining fiber output and is well suited for applications such as distributed sensing and Doppler lidar, with a special version optimized for space communications. The EDFA-P is offered as either a compact module with a universal control-interface PCB for system integration or a turnkey benchtop unit featuring a computer interface and GUI for laboratory use. The default operating mode is a hybrid pumping scheme that combines a low DC bias pump with a pulsed pump boost synchronized to the input signal, keeping the population inversion ready, minimizing turn-on delay, providing excellent pulse-to-pulse energy stability, and strongly suppressing amplified spontaneous emission (ASE).

## Specifications

Parameter		Min	Typical	Max	Unit
Wavelength		1540	1550	1560	nm
Pulse Width		10		200	ns
Pulse Frequency		5		20	kHz
Input Pulse Peak Power		10		50	mW
Output Pulse Peak Power		10		100	W
Output Single Pulse Energy (@200ns,10kHz)		10		20	uJ
Input/Output Isolation			≥ 35		dB
Fiber Type		SMF-28/PM1550			
Connector		FC/APC			
Operating Mode		ACC			
Dimensions	Benchtop	255(W)×285(D)×115(H)			mm
	Module	125(W)×150(D)×31.5(H)			
Power Supply	Benchtop	AC 100~240V, ≤15W			V
	Module	DC 12V, ≤15W			
Control Mode (Module)		RS232 Serial communication			
Communication Interface (Module)		DB9 Female			
Operating Temperature		-5 ~ +55			°C
Operating Humidity Range		0 ~ 70			%

### Notes:

ACC mode-automatic current control: EDFA pumping working current is set by the user and automatically locked by EDFA to achieve constant pumping current. When the input optical power fluctuates, the output power will also fluctuate accordingly, which is applicable to all EDFA models.

**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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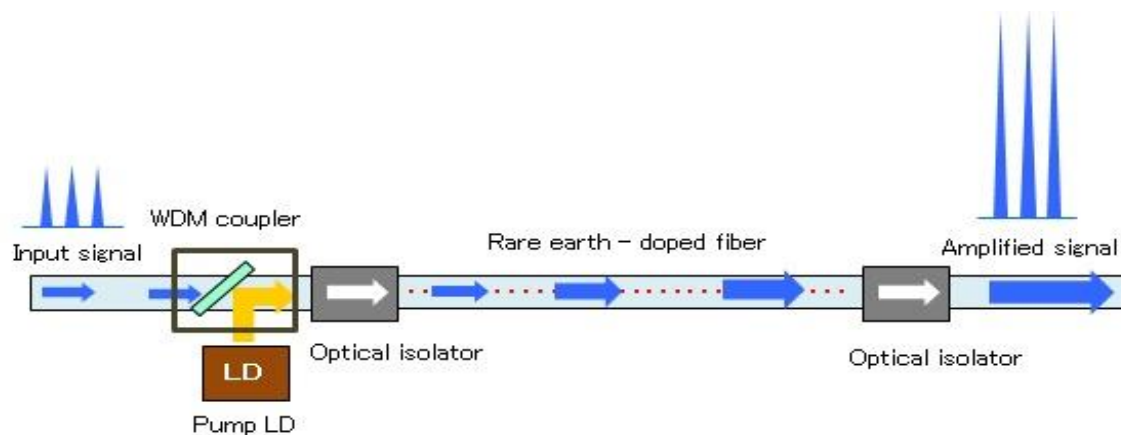
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### Function Diagram



### Package Choices



Component



Benchtop- USB/GUI



GUI Adapting PCB

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## Mechanical Dimensions (mm)

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Module 125(W)×150(D)×31.5(H)

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

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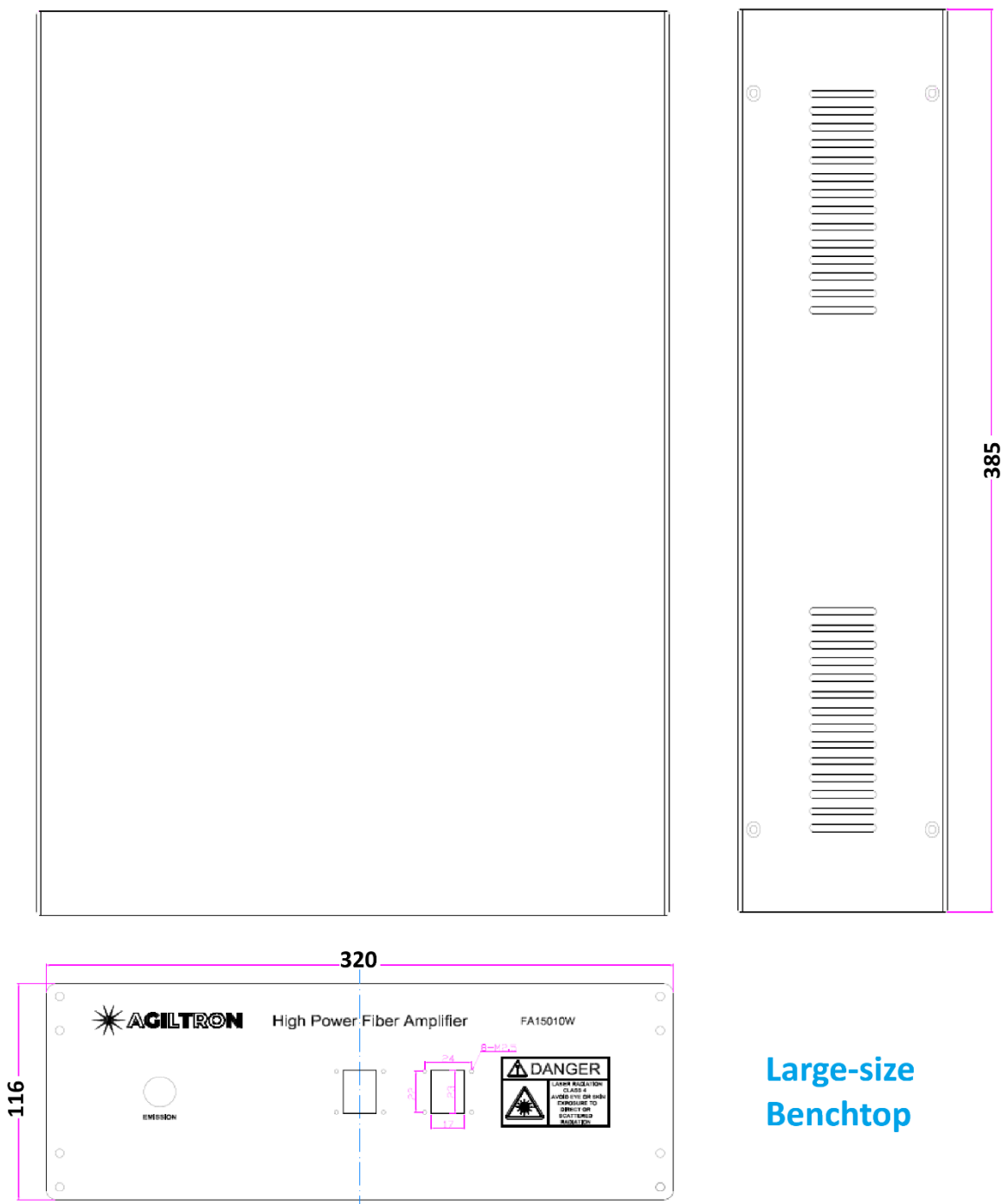
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## Mechanical Dimensions (mm)



Large-size  
Benchtop

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### Ordering Information

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prefix	Type	Pulse Power/Energy	Package	Fiber Type	Fiber Cover	Fiber Length	Connector <sup>[6]</sup>	Low Temperature	High Temperature	Grade
EDFA-	Pulse = P	100W/20μJ = 1 Special = 0	Component = 1 Benchtop = 2 Special = 0	SM28 = 1 PM1550 = 2	0.9mm tube = 3 Special = 0	0.25m = 1 0.5m = 2 1.0m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 LC/PC = 7 LC/APC = A LC/UPC = U High Power FC/PC = H Special = 0	-5°C = 1 -30°C = 2 Special = 0	40°C = 1 70°C = 2 Special = 0	Standard = 1 Space = 2 Special = 0

### 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 μm) 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 how handling by expanding the core side at the fiber ends.

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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  $\mu\text{m}$ .

Maximum power = 30 mW.



\*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

\*IEC is a registered trademark of the International Electrotechnical Commission.