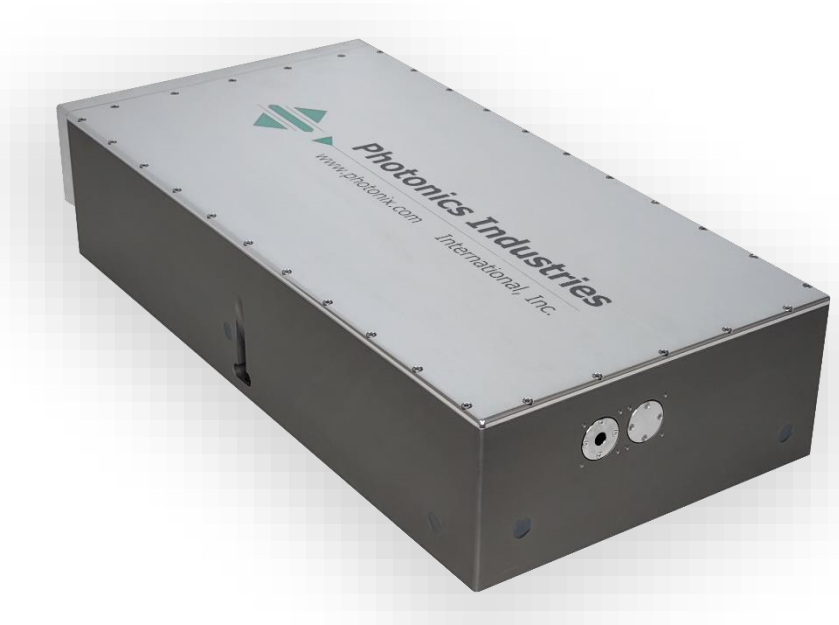


# FS Series

FS Femtosecond Lasers

## DPSS, Ultrafast Lasers

Experience unmatched precision with Photronics Industries' FS Series Femtosecond Lasers. With ultra-short pulses (<500 fs), up to 100 W at 1030 nm, and high repetition rates up to 8 MHz, these compact lasers deliver high-efficiency performance for any application requiring speed, accuracy, or versatility. Designed for seamless integration, the FS Series delivers up to 700  $\mu$ J single-pulse energy in a compact all-in-one design, eliminating bulky external components. With power consumption under 600 W, it's perfect for industrial systems and advanced research.



### APPLICATIONS

- UV Marking and Engraving
- Processing of Polymers and Organic Materials
- Thin Film Removal and Processing
- Polymer Cutting & Drilling
- Quantum Technology Development
- Solar Cell Manufacturing
- Semiconductor and Microelectronics Processing
- Medical Device Manufacturing

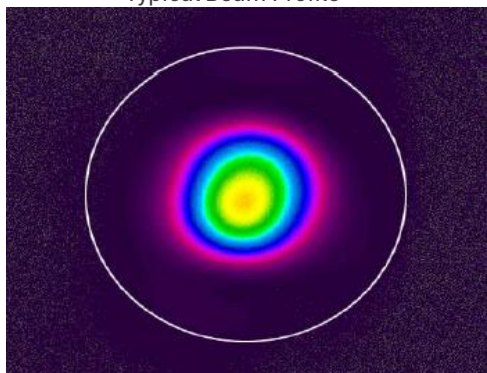
### FEATURES

- Up to 700 $\mu$ J Pulse Energy at 100kHz
- True TEM<sub>00</sub> Output
- Ultrafast Short Pulse Widths
- Burst Mode for Pulse Control
- Robust & Compact Form Factor
- Dynamic **Pulse Energy Control - PEC**
- **Position Synchronized Output - PSO**
- Power Monitoring and Self-Calibration

Specifications – FS Series			
	FS1-1030-5	FS2-1030-50	FS2-1030-100
Wavelength <sup>1</sup>	1030 ± 5nm		
Average Power @ 1MHz	5W	50W	100W
Pulse Energy @100kHz	>5µJ	>25µJ	>700µJ
Pulse Width <sup>2</sup>	<450fs to 5ps	500fs to 5ps	
Pulse repetition rate <sup>3,4</sup>	Single shot to 2MHz		
Pulse-to-pulse stability <sup>5</sup>	~1% rms		
Long-term power stability <sup>6</sup>	<1% rms		
Beam spatial mode <sup>†</sup> & M <sup>2</sup>	TEM <sub>00</sub> - M <sup>2</sup> <1.3		
Beam Diameter	~2mm @ Laser Exit		
Pulse Picker Leakage	40dB		
Beam Roundness	~90%		
Beam pointing stability <sup>†</sup>	<25 µrad		
Polarization ratio	>100:1		
<b>Operational Specifications and Characteristics</b>			
Interface	RS232, Ethernet, Software GUI, External TTL Triggering		
Warm-up time	< 30 Minutes		
Electrical requirement	32 V DC, 28 A		32V DC, 36A
Line frequency	50-60 Hz		
Power consumption <sup>7</sup>	<600W	<700W	<1000W
Dimensions	20 x 10 x 4.25 in.		22 x 10 x 4.25
Weight	60lbs [~27kg]		~65lbs [~29.5kg]
<b>Environmental Requirements</b>			
Ambient temperature <sup>2</sup>	Ambient 15°C to 30°C (59°F to 86°F) Operating Range		
	Relative humidity 0% to 80% max, non-condensing		
Storage conditions	-10°C to 40°C; sea level to 12000 m		
	0% to 80% relative Humidity, non-condensing		
Cooling system <sup>8</sup>	Water-Cooled		

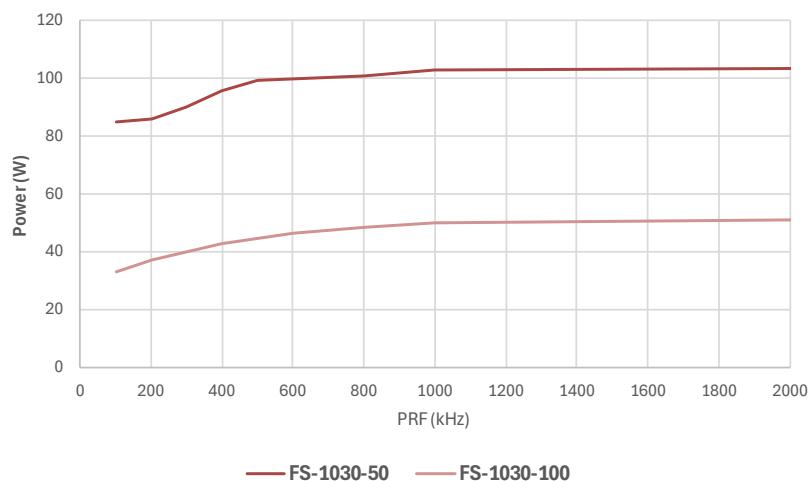
[1.] Multi-wavelength options are available. Contact us. [2.] Specifiable pulse width. [3.] Lower repetition rates, down to single shot, achieved by utilizing PSO. [4.] Fixed pulse repetition rate at ~32 MHz available on request. [5.] Measured at ambient temperature ± 2°C. [6.] Measured over 8 hours ± 1°C. [7.] Power consumption data does not include an external chiller's power consumption. [8.] Air-cooled option available for low power FS Series models. Please contact us for more information. [†] Tested with laser mounted horizontally. [NB] All specifications are at the optimized repetition rate. For 5W data, please contact us [\*] Preliminary Product.

Typical Beam Profile



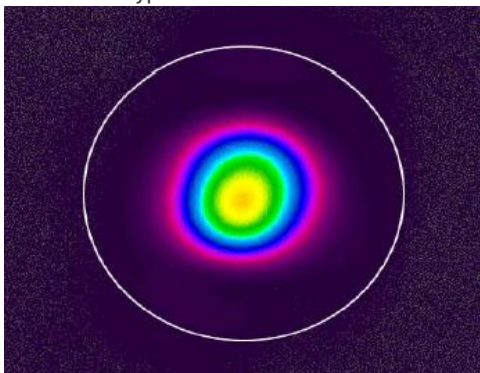
FS-1030-100 @ 1MHz

Power Vs. PRF

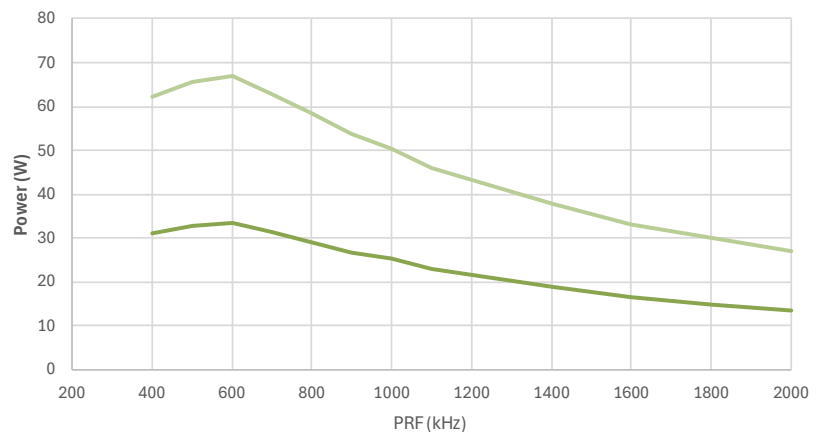


Specifications – FS Series			
	FS1-515-2.5*	FS2-515-25	FS2-515-50
Wavelength <sup>1</sup>	515 ± 3nm		
Average Power @ 1MHz	2.5W	25W	50W
Pulse Energy @100kHz	>4μJ	>125μJ	>350μJ
Pulse Width <sup>2</sup>	<400fs to 5ps	<500fs to 5ps	
Pulse repetition rate <sup>3,4</sup>	Single shot to 2MHz		
Pulse-to-pulse stability <sup>5</sup>	~2% rms		
Long-term power stability <sup>6</sup>	≤1% rms		
Beam spatial mode† & M <sup>2</sup>	TEM <sub>00</sub> - M <sup>2</sup> <1.3		
Beam Diameter	~1.5mm @ Laser Exit		
Pulse Picker Leakage	40dB		
Beam Roundness	~90%		
Beam pointing stability†	~25 μrad		
Polarization ratio	>100:1		
<b>Operational Specifications and Characteristics</b>			
Interface	RS232, Ethernet, Software GUI, External TTL Triggering		
Warm-up time	< 30 Minutes		
Electrical requirement	32 V DC, 28 A		32V DC, 36A
Line frequency	50-60 Hz		
Power consumption <sup>7</sup>	<600W	<700W	<1000W
Dimensions	20 x 10 x 4.25 in.		22 x 10 x 4.25 in.
Weight	60lbs [~27kg]		65lbs [~29.5kg]
<b>Environmental Requirements</b>			
Ambient temperature <sup>2</sup>	Ambient 15°C to 30°C (59°F to 86°F) Operating Range		
	Relative humidity 0% to 80% max, non-condensing		
Storage conditions	-10°C to 40°C; sea level to 12000 m		
	0% to 80% relative Humidity, non-condensing		
Cooling system <sup>8</sup>	Water-Cooled		

[1.] Multi-wavelength options are available. Contact us. [2.] Specifiable pulse width. [3.] min PRF for standard model is 1 MHz, custom min PRF down to 100 kHz is available. Lower repetition rates, down to single shot, achieved by utilizing PSO. [4.] Fixed pulse repetition rate at ~32 MHz available on request. [5.] Measured at ambient temperature ± 2°C. [6.] Measured over 8 hours ± 1°C. [7.] Power consumption data does not include an external chiller's power consumption. [8.] Air-cooled option available for low power FS Series models. Please contact us for more information. [†] Tested with laser mounted horizontally. [NB] All specifications are at the optimized repetition rate. For 2.5W data, please contact us [\*] Preliminary Product.

**Typical Beam Profile**


FS-1030-100 @ 1MHz

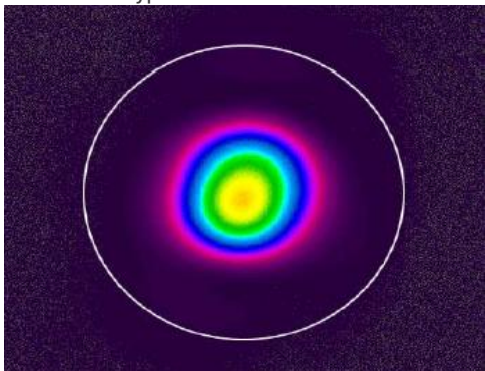
**Power Vs. PRF**


— FS-515-25    — FS-515-50\*

Specifications – FS Series			
	FS1-343-1*	FS-343-10*	FS1-343-25*
Wavelength <sup>1</sup>	343 ± 2nm		
Average Power @ 1MHz	1W	10W	25W
Pulse Energy @100kHz	1μJ	60μJ	180μJ
Pulse Width <sup>2</sup>	<400fs to 5ps	<500fs to 5ps	
Pulse repetition rate <sup>3,4</sup>	Single shot to 2MHz		
Pulse-to-pulse stability <sup>5</sup>	~2% rms		
Long-term power stability <sup>6</sup>	≤1% rms		
Beam spatial mode† & M <sup>2</sup>	TEM <sub>00</sub> - M <sup>2</sup> <1.3		
Beam Diameter	~1.5 mm @ Laser Exit		
Pulse Picker Leakage	40dB		
Beam Roundness	~90%		
Beam pointing stability <sup>†</sup>	<25 urad		
Polarization ratio	>100:1		
<b>Operational Specifications and Characteristics</b>			
Interface	RS232, Ethernet, Software GUI, External TTL Triggering		
Warm-up time	< 30 Minutes		
Electrical requirement	32 V DC, 28 A		32V DC, 36A
Line frequency	50-60 Hz		
Power consumption <sup>7</sup>	<600W		<900W
Dimensions	20 x 10 x 4.25 in.		22 x 10 x 4.25 in.
Weight	60lbs [~27kg]		65lbs [~29.5kg]
<b>Environmental Requirements</b>			
Ambient temperature <sup>2</sup>	Ambient 15°C to 30°C (59°F to 86°F) Operating Range		
	Relative humidity 0% to 80% max, non-condensing		
Storage conditions	-10°C to 40°C; sea level to 12000 m		
	0% to 80% relative Humidity, non-condensing		
Cooling system <sup>8</sup>	Water-Cooled		

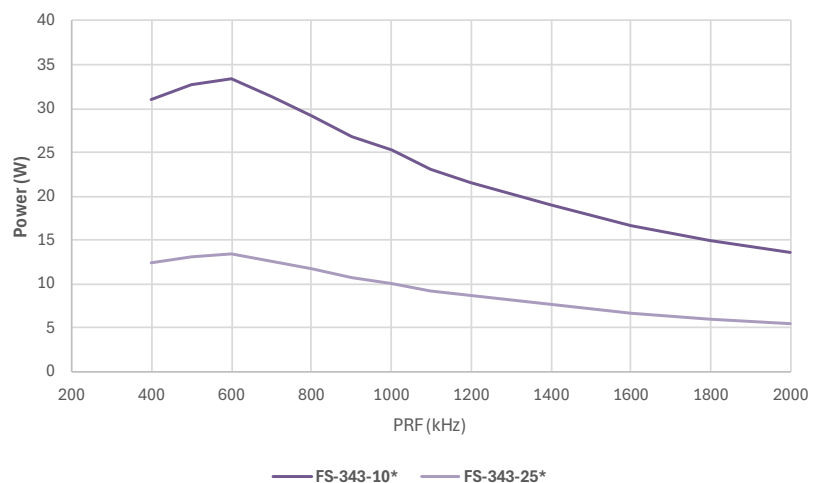
[1.] Multi-wavelength options are available. Contact us. [2.] Specifiable pulse width. [3.] Lower repetition rates, down to single shot, achieved by utilizing PSO. [4.] Fixed pulse repetition rate at ~32 MHz available on request. [5.] Measured at ambient temperature ± 2°C. [6.] Measured over 8 hours ± 1°C. [7.] Power consumption data does not include an external chiller's power consumption. [8.] Air-cooled option available for low power FS Series models. Please contact us for more information. [†] Tested with laser mounted horizontally. [NB] All specifications are at the optimized repetition rate. For 1W data, please contact us [\*] Preliminary Product.

Typical Beam Profile



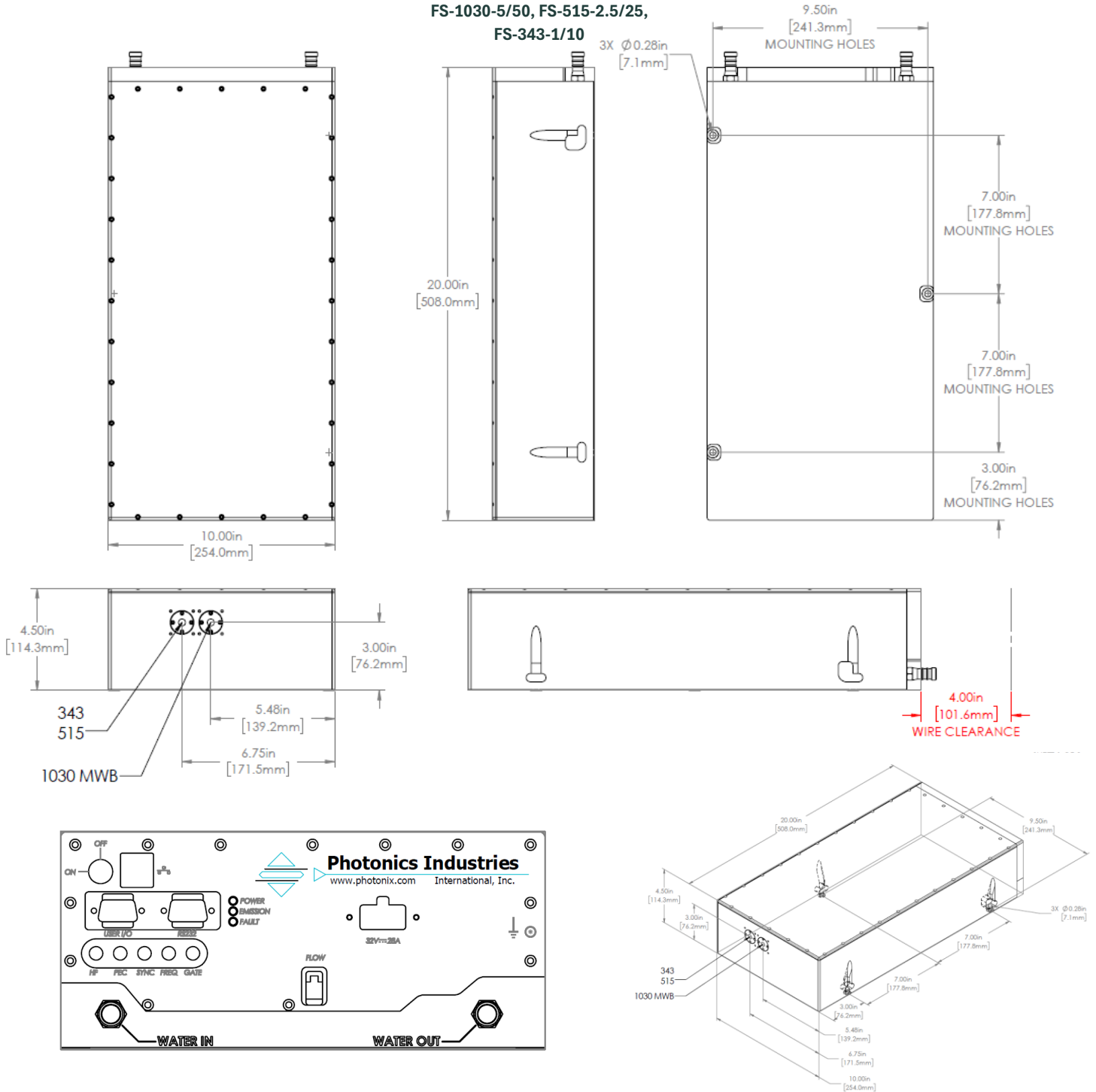
FS-1030-100 @ 1MHz

Power Vs. PRF



**Dimensional Drawings**

**FS-1030-5/50, FS-515-2.5/25,  
FS-343-1/10**

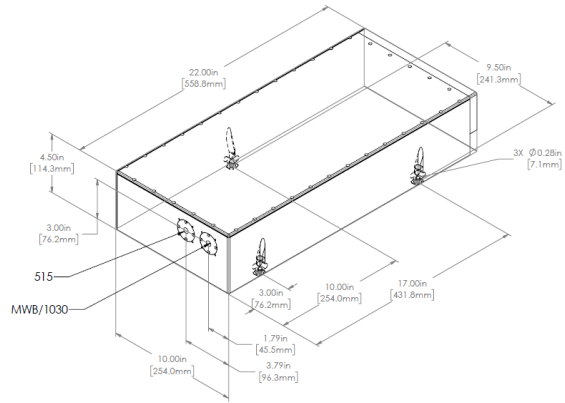
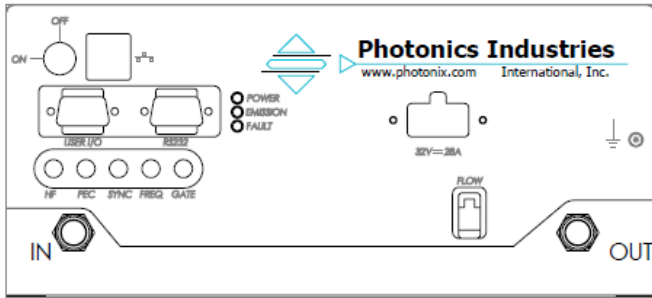
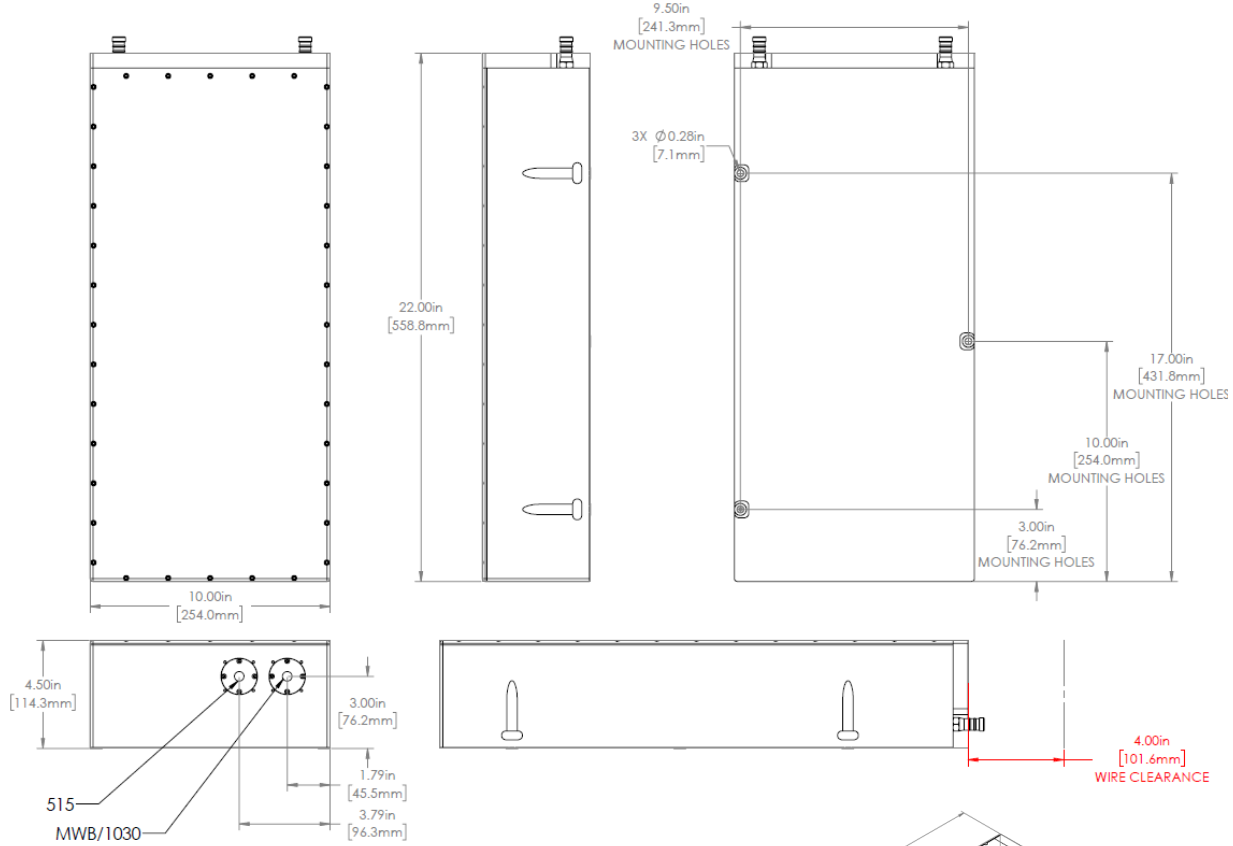


**Options:**

Multi-wavelength	Multi-wavelength output, blended or selectable	[MWB], [MWS]
Deep Ultraviolet (DUV)	266nm Wavelength available upon request	
Format	FS-1030/515/343	- [Power Level] [xxx]

**Dimensional Drawings**

**FS-1030-100, FS-515-50, FS-343-25**



**Options:**

Multi-wavelength	Multi-wavelength output, blended or selectable	[MWB], [MWS]
Deep Ultraviolet (DUV)	266nm Wavelength available upon request	
Format	FS-1030 - [Power Level]	[xxx]



Our ongoing policy is to improve the design and specification of our products. The information provided is non-binding.

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Photonics Industries International Inc. is the pioneer of intracavity harmonic lasers and is at the forefront of developing, manufacturing, and marketing a wide range of nanosecond, sub-nanosecond, picosecond, and femtosecond lasers for the industrial, scientific, defense and medical industries.

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