Photonics Industries
International, Inc.

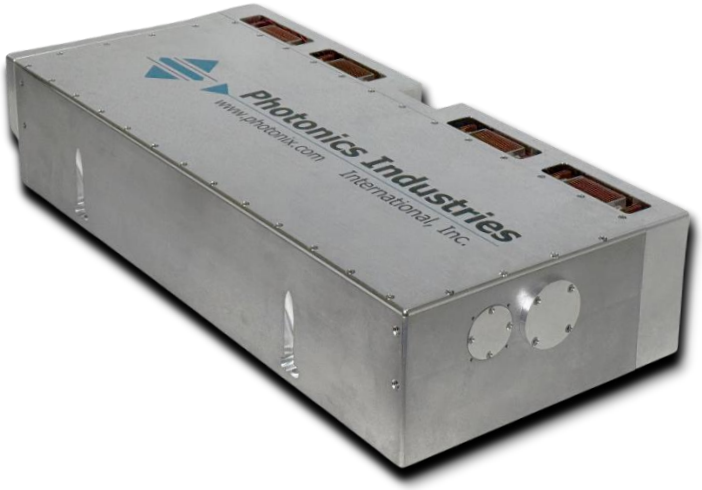
FS Air Cooled Series

Femtosecond Lasers

FS0 Series – Fiber based, air-cooled [1], monolithic rugged body femtosecond ultrashort pulsed lasers delivering tunable pulse durations **<350 fs to 5 ps** with industry-leading **8 W** output power. Single pulse energy up to 20 **µJ** at 100Khz provides exceptional peak power capability for micromachining of super hard materials with a wide operational range up to 2 MHz[2] as standard.

DIGI-Burst ™ mode is standard, providing individual control of 2 to 10 sub-pulses for fully customizable sub-pulse control and process recipe optimization. Additional standard FLEX-Pulse™ control features include **PSO** (Position Synchronized Output) and **PEC** (Pulse Energy Control) The exceptionally efficient and solid state AIO design requires <600W, removing the need for a separate 19" chassis for power supply. Laser head-based drive and control interfacing ensures fast and simple machine and system integration.

With its robust performance and streamlined form factor, the FS0 Series is optimized for industrial OEM system integration, but also suitable for complex scientific research, providing reliability and efficiency in a robust air-cooled and compact form.



Features:

- High power laser: up to 20W, ultra-short pulse.
- <350 fs to 5 ps tunable pulse duration.
- High 8 µJ single pulse energy as standard
- DIGI-Burst™ - Megahertz Burst mode.
- FLEX-Pulse™ - Pulse Control Suite.
    - PSO- Position Sync Output
    - PEC – Pulse Energy Control
- Wavelength options: 1030nm, 515nm, 343nm
- Excellent TEM00 beam, M2 typically under 1.3.
- Smallest Power to Volume Air Cooled FS Laser.
- Compact, rugged, All-In-One (AOI), 100% Air Cooled.

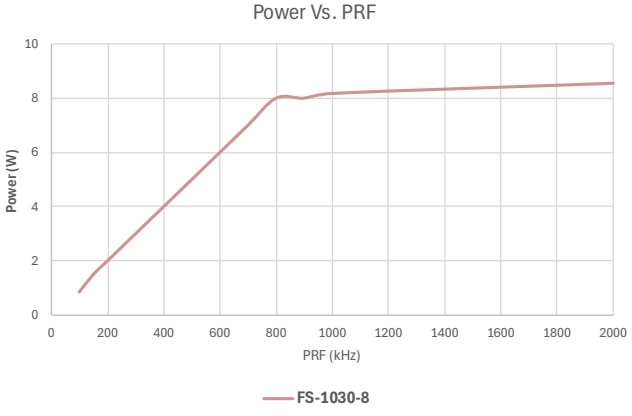
Applications:

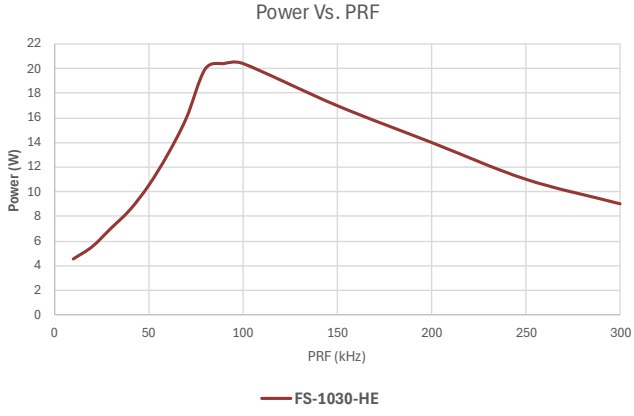
- Micromachining, 3D Micro structuring and Drilling
- Diamond Marking and Drilling
- CNC Micro-Fabrication
- Semiconductor and LIPSS – Surface Modifications
- Hydrophobic and hydrophilic material manufacturing
- LCD/LED/OLED display repair
- Terahertz, X-ray & OPO/OPA systems
- Photoemission, Raman, multiphoton microscopy

1 – Ambient radiator water cooling available. 2 – Options include 8 MHz and 32 MHz-QCW mode.

Specifications – **FS-AC Series** [1,2,3,4]		
	FS-1030-8	**FS-1030-HE**
Wavelength Output (nm)	1030 ±5	
Average Power (W)	8 @ 1MHz	20 @ 100kHz
Pulse Energy (µJ)	~8 @ 1MHz	~20 @ 100kHz
Pulse Width at 1 MHz	< 350 to 5ps	
Pulse repetition rate (kHz)[5]	Single Shot to 2000	
Pulse-to-pulse stability (RMS %)	<1	
Long-term power stability (RMS %)[6]	≤1	
Beam spatial mode & M^2 [7]	TEM_{00} - M^2 <1.3	
Beam Diameter at Exit (mm)	2 ± 0.5	
Beam Divergence (nominal) (mrad)	<2	
Beam Circularity (%)	>90	
Beam Pointing Stability (µrad)	<25	
Pulse Picker Leakage (dB)	40	
Polarization ratio	>100:1	
	DIGI-Burst™ Mode	
DIGI-Burst™ Burst Mode (kHz)	Single Shot to 1000	
Max Sub-pulses in Burst [10]	10	
	Operational Specifications and Characteristics	
Interface	RS232, Ethernet, Software GUI, External TTL Triggering	
Warm-up time	< 30 minutes from standby, <15 minutes from cold start	
Electrical requirement	100 to 240 V AC	
Line frequency (V & Hz)	50-60	
Power consumption (W)	<500	
Dimensions	22 x 10 x 4.5 in. | [558 x 254 x 114.3mm]	
Weight	~47lbs [21.3kg]	
	Environmental Requirements	
Ambient temperature [2]	Ambient 15°C to 30°C (59°F to 86°F) Operating Range	
	Relative humidity 0% to 80% max, non-condensing	
Storage conditions	5°C to 40°C; sea level to 12000 m	
	0% to 80% relative Humidity, non-condensing	
Cooling system	Air Cooled	Rad Cooled

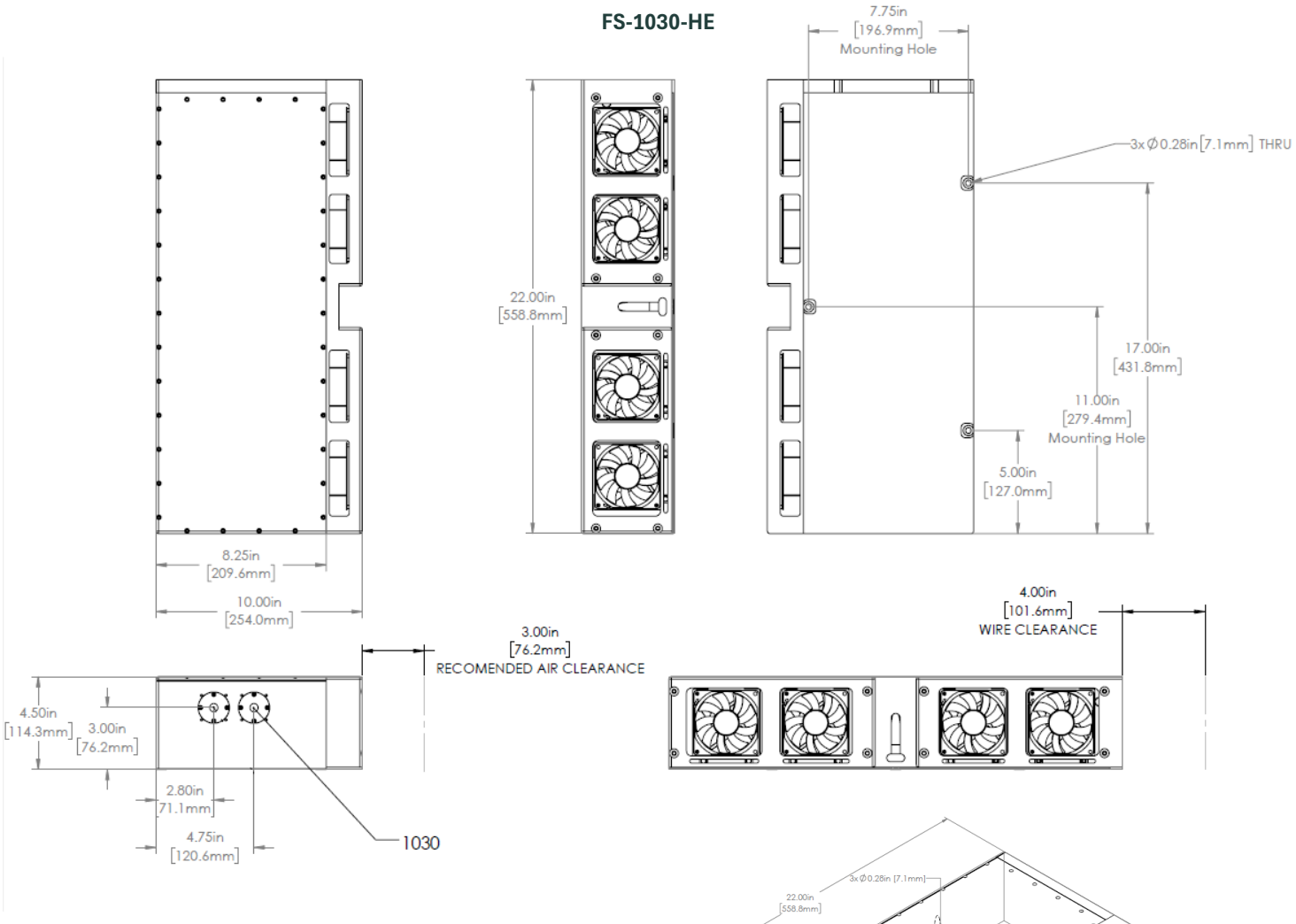
Notes:
[1] After warm-up time, steady state ambient temperature
[2] Steady-state operation (no pulse gating or constant no gating or PRF change).
[3] Single pulse operation [Burst = 1]
[4] Maximum power with PEC =0.
[5] Option up to 8000 kHz
[6] Measured over 8 hours ± 1°
[7] ALL beam parameters and stability are at specification 200 kHz repetition rate.
[8] Each sub pulse is individually programmable.
Our ongoing policy is to improve the design and specifications of our products. The information provided is non-binding.

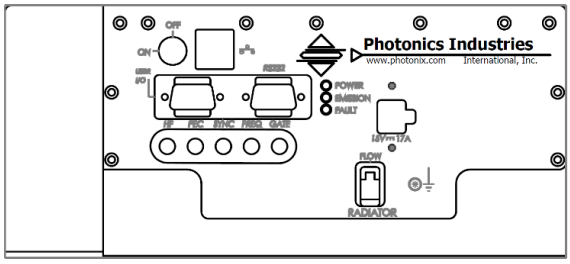


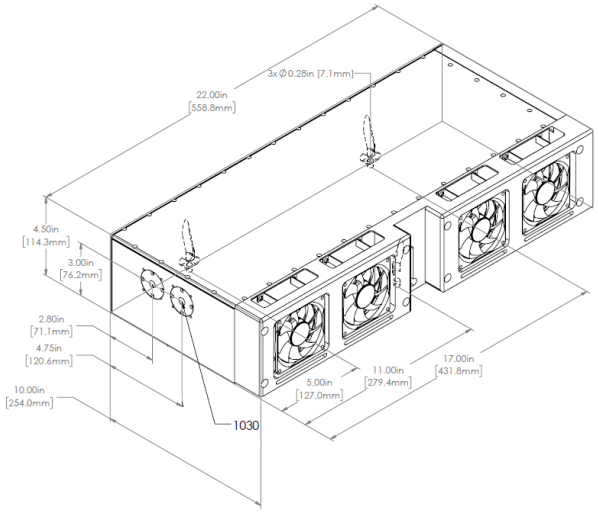


Dimensional Drawings

FS-1030-8
FS-1030-HE







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Photonics Industries International, Inc.

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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.

For more information **www.photonix.com**