RX IR/Green/UV Series Low Power Picosecond Lasers

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Overview

With patented pulse selection and over a thousand picosecond lasers shipped worldwide, the RX Series lasers, with its new revolutionary packaging has smaller form factor and higher performance compared to its ancestor, the RGH series. The RX now provides from 10W to 100W* of IR, 5W to 70W* of Green and 3W to 45W* of UV output powers on the simplest, most compact AIO (All-in-One) platform from single shot to 2MHz (optional to 8MHz).

Proprietary technologies enable the RX Series lasers to provide twice as much pulse energy as comparable competitors' systems. Such high pulse energies allow for process efficiency optimization by spatial scaling, since the beam can be split numerous times to simultaneously feed multiple work stations yielding the lowest Cost of Ownership (COO).

The user-friendly control interface allows Total Pulse Control and Burst Mode operation, where a user selectable number of up to 10 ps pulses with adjustable 14 ns incremental separation and programable amplitude can be released in an envelope, further enabling ablation rate increases on many materials. With adjustable repetition rate from single shot to 8MHz, the user can change the operating PRF and change the operating power or pulse energy through PEC (Power or Pulse Energy Control) function on the fly to maximize process flexibility.

Photonics Industries picosecond lasers have proven their robustness for even the most demanding industrial manufacturing environments for applications ranging from metal engraving/marking, LED dicing, thin film removal, small feature structuring, glass, sapphire and ceramics cutting, drilling, etc. to 3D LIDAR.

Features

- ***Short pulse (< 10ps for IR, ~7ps for Green and UV) laser***
- ***Wide range of wavelengths: 1064 nm, 532 nm, 355 nm. 266 nm available upon request.***
- ***The most compact, rugged, All-in-One form factor***
- ***The highest efficiency ps laser with power consumption < 400 W typical***
- ***Repetition rates from single shot up to 8MHz***
- ***Excellent TEM_{00} beam with typical $M^2 \leq 1.2$***
- ***Exceptional Beam Pointing Stability < 20 µrad***
- ***PEC (Power or Pulse Energy Control)***
- ***PSO (Position Synchronized Output) support for external triggering to any arbitrary PRF while maintaining a constant, stable pulse energy with low jitter.***
- ***Burst Mode for individually controllable bursts of up to 10 pulses with a separation of 14 ns.***
- ***POD (Pulse-On-Demand), where a burst of pulses with separation equal to the PRF, can be triggered internally, externally, or continuously, while maintaining constant pulse energy.***

Applications

- **Cutting/scribing display glass and functional foils for FPDs**
- **Glass and sapphire cutting and drilling**
- **Semiconductor scribing and dicing**
- **PCB processing**
- **Solar cell scribing and drilling**
- **LED scribing, dicing and patterning**
- **Metal and Ceramic cutting, drilling and marking**
- **Medical device cutting, drilling and marking**
- **Glass Reinforced Plastic & Carbon Fiber Cutting**
- **Ink-Jet Nozzle Drilling**
- **Printing & Embossing Tools**
- **Nanotexturing**

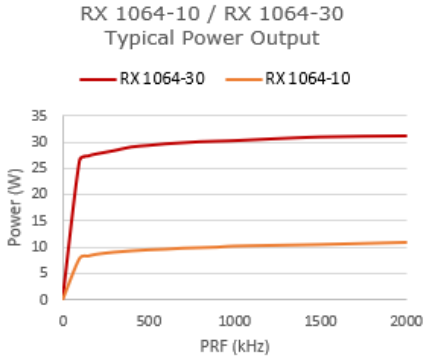
* For higher power models, please see the RX High Power Series

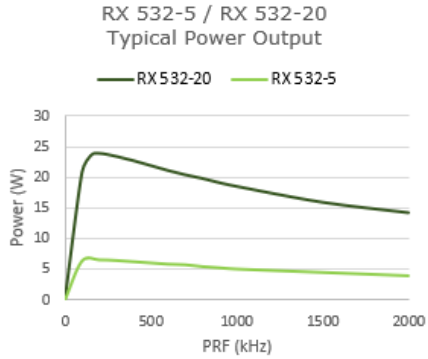
System Specifications

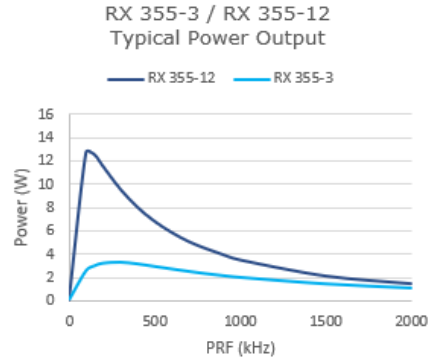
Model	RX 1064-10	RX 1064-30	RX 532-5	RX 532-20	RX 355-3	RX 355-12
Output Characteristics						
Wavelength (nm)	1064		532		355	
Average Power (W)	10 @ 2 MHz	30 @ 2 MHz	5 @ 150 kHz	20 @ 500 kHz	3 @ 300 kHz	12 @ 200 kHz
Maximum Pulse Energy (µJ)[a]	70	250	50	180	25	60
Pulse Width (ps)	< 10		~7			
Repetition Rate[b]	Single shot to 2 MHz (Option to 8 MHz)					
Pulse to Pulse Stability	~1% rms at 1 MHz					
Long Term Stability[c]	≤ 1% rms					
Beam Characteristics						
Beam Diameter at exit	~2 mm		~1 mm	~1.5 mm	~1 mm[d]	
Spatial Mode (M2)	TEM_{oo} M^2<1.2					
Beam Pointing Stability	< 20 µrad					
Beam Circularity	≥ 90%					
Beam Divergence	< 2 mrad		≤ 1 mrad			
Beam Bore Sight Accuracy	≤ 1 mm Lateral (to specified exit location); ≤ 6 mrad Angular (to specified exit direction)					
Operating Specifications						
Interface	Ethernet / RS 232 / GUI / External TTL Triggering					
Warm-up Time	< 15 min					
Electrical Requirement	100 to 240 V AC; or 32 V DC, 15 A					
Power Consumption	< 400 W (Excluding Chiller)					
Ambient Temperature	15°C to 30°C (59°F to 86°F) Operating Range, RH 90% Max, non-condensing					
Physical Characteristics						
Dimensions	10 in x 3.75 in x 24 in (WxLxH)					
Weight	~58 lbs					
Vibration	Up to 3g					
Cooling System	Closed Loop Chiller					

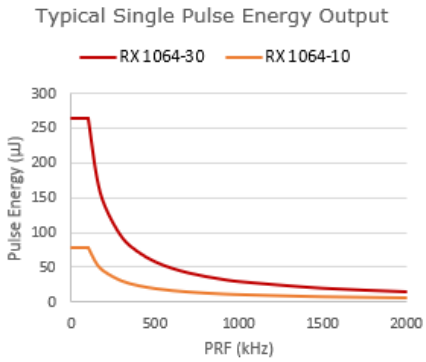
a) High PRF options will change the minimum PRF and maximum pulse energy.
b) Lower repetition rates, down to single shot, achieved by utilizing PSO or POD.
c) 8 hours ± 3°C
d) Expanded beam diameters (~6 mm) for UV available upon request.

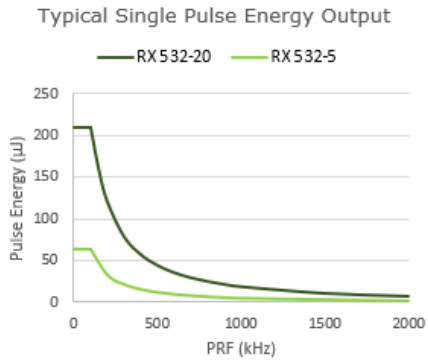
System Performance & Features

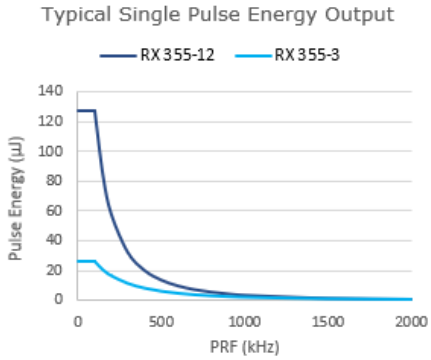


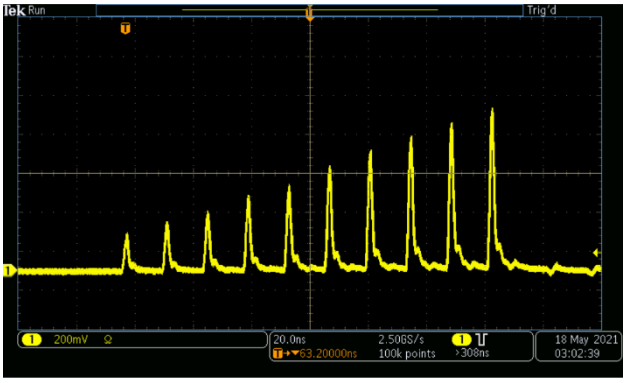


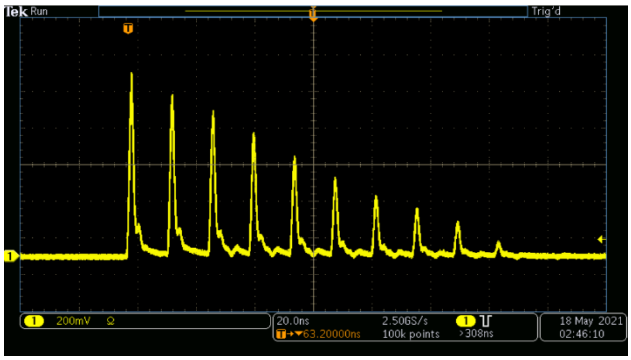


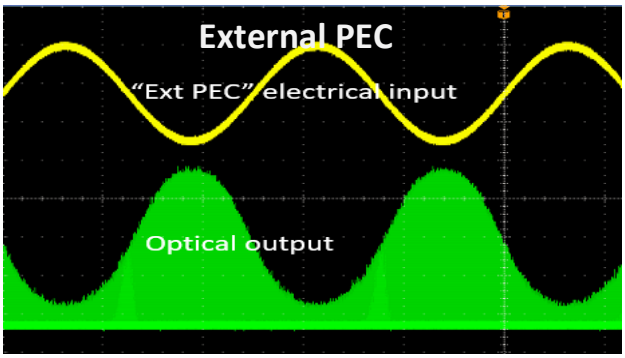












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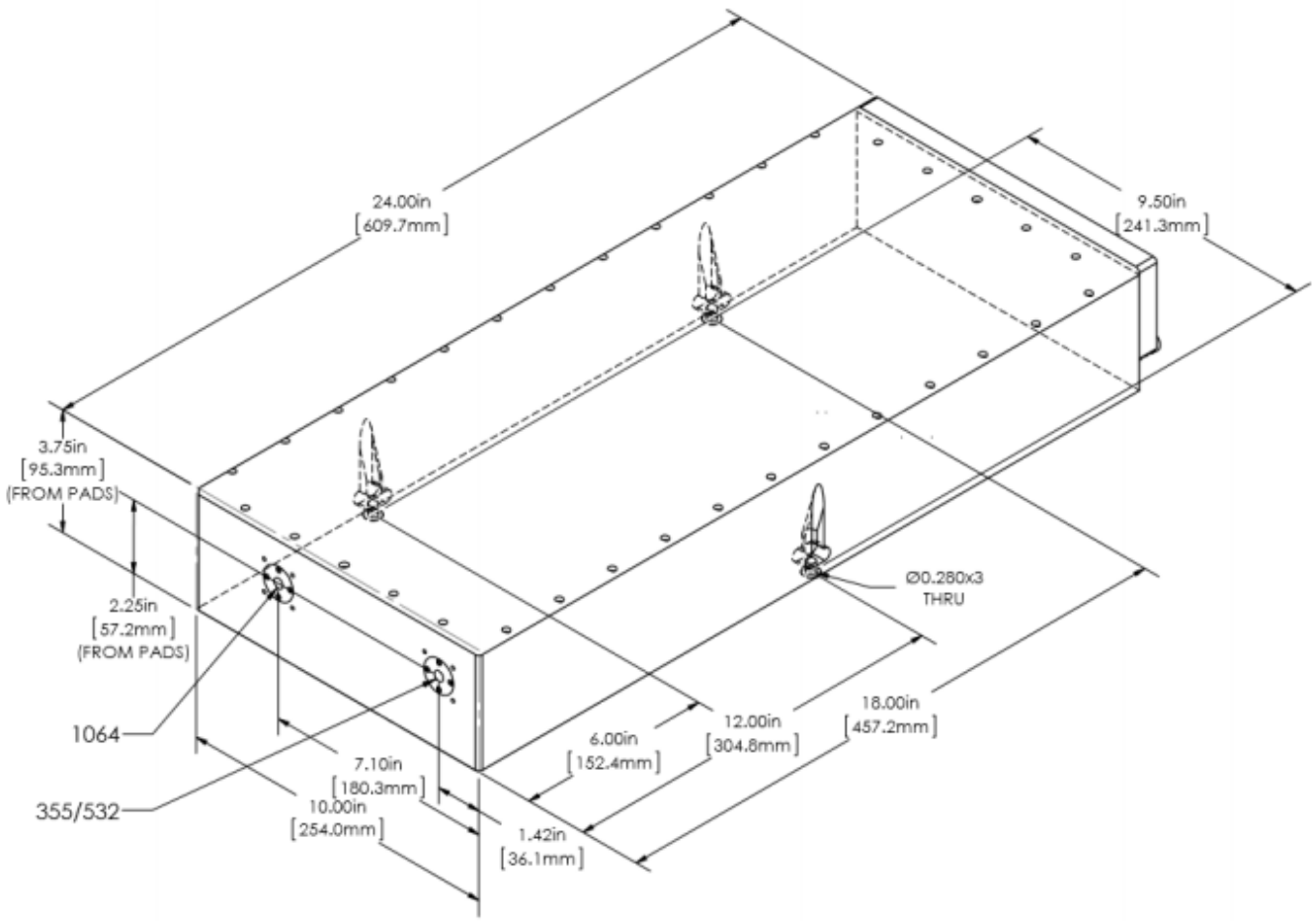
Dimensional Drawings

RX 1064-10 /-30, 532-5 / -20, 355-3 / -12



Due to Photonics Industries' commitment to continuous product improvement, specifications and drawings are subject to change without notice.

Photonics Industries conforms to provisions of US 21 CFR 1040.10 & 1040.11 and is made under one or more US patents listed below: 9,531,147, 8,817,831, 7,869,471, 7,346,092, 7,082,149, 7,079,557, 6,999,483, 6,980,574, 6,961,355, 6,842,293, 6,762,405, 6,690,692, 6,587,487, 6,584,134, 6,366,596, 6,356,578, 6,327,281, 6,246,707, 6,229,829, 6,108,356, 6,061,370, 6,028,620, 5,936,983, 5,898,717 and Pending Patents

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Photonics Industries International 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 industrial, scientific, defense, and medical industries. Check out our products and see how we can help you apply our lasers to your needs!

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