

# RGH Series Harmonic Options

High Power and High Repetition Rate Picosecond Lasers

## Features

- Variable Repetition Rate: Single Shot to 2 MHz
- Power up to 15 W in Green; 9 W in UV
- Pulse Width <15 ps, optional 20 - 100 ps
- Compact Industrial Grade Picosecond Laser
- Burst Mode
- Total Pulse Control
- Excellent Beam Quality (M2 Typically <1.3)
- Exceptional Beam Pointing Stability
- Wide Range of Powers and Harmonic Options
- Low Maintenance



The RGH Series offers 4 standard picosecond models from 5W to 50W along with its harmonic versions with <15 picosecond pulse and optional 20 ps or longer. The RGH Series lasers are the most compact high power picosecond lasers available in an industrially reliable package. The advantages of Photronics Industries (PI) RGH Series ps lasers stem from PI's proprietary power scaling technology enabling the use of a lower power ps oscillator. Here we achieve 5000hrs/spot vs. 1000hrs/spot on the saturable absorber. Our simpler design enables a smaller/lighter weight laser head which can even be mounted to a gantry for more flexible processing solutions. PI's RGH laser is live-vibration tested to ensure industrial robustness. Furthermore our AOM power control can be a standard feature enabling novel processing for a myriad of innovative applications. These next generation manufacturing applications include:

- Scribing and dicing of microelectronics and LEDs
- Tempered glass processing for Flat Panel Displays (FPD)
- Micromachining traditionally difficult materials

If these standard models do not address your specific need, please contact us. We will put our 20 years of experience building industrial high power lasers to work for you.



# RGH Green Specifications

Wavelength	532 nm		
Model Number	RGH-532-3	RGH-532-8	RGH-532-15
Average Power @ 100 kHz	3 W	8 W	15 W
Repetition Rate†	Single Shot to 1 MHz, Option to 2 MHz		
M <sup>2</sup>	<1.3	<1.3	<1.3 <sup>1</sup>
Polarization	Horizontal		
Pulse Width	<15 ps*		
Spatial Mode Profile	TEM00		
Long Term Instability (8h ±3°C)	< ±2%		
Pulse to Pulse Stability @ 1 MHz	<2% rms		
Output Beam Diameter	2 mm (nominal)		
Beam Divergence	<1 mrad		
Beam Ellipticity	<15 %		
Beam Point Instability	<25 urad /°C		
Boresight Accuracy	± 0.5 mm and <5 mrad		
Ambient Temperature	15 to 30 °C (50 to 86 °F) Operating Range		
Relative Humidity	Non-condensing, 90% Max		
Cooling	Closed Loop Chiller		
Weight	Laser Head	~ 90 lbs (~ 40 kg)	
	Power Supply	~ 22 lbs (~ 10 kg)	
Laser Head Dimensions (Fundamental) <sup>3</sup>	10 in x 4.1 in x 31 in	14 in x 4.1 in x 34.6 in	
Power Supply Dimensions	19 in x 5.25 in x 13.5 in		

\* 20 - 100 ps optional

†Low rep rate performance (<100kHz) achieved by selecting higher rep rate pulses with the AOM

<sup>1</sup>M<sup>2</sup> value is specified from 100 kHz

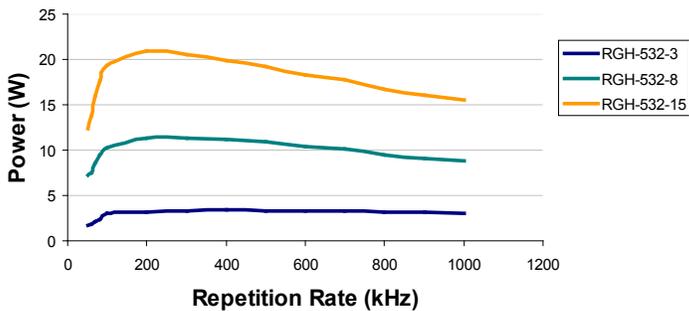
<sup>2</sup>M<sup>2</sup> value is specified from 200 kHz

<sup>3</sup> Extension may be required for harmonics

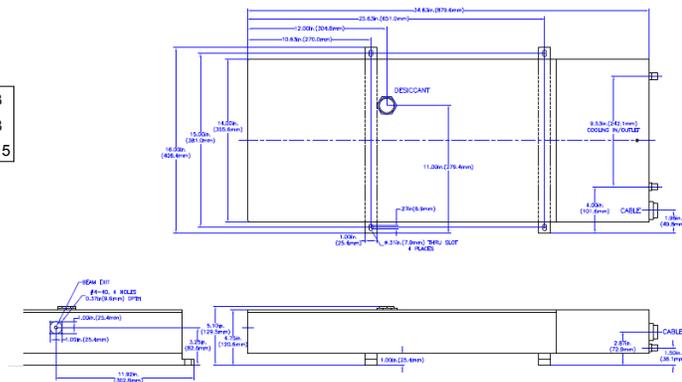
## Options:

Internal AOM for external gating, FPS and PEC (20% specified power reduction)

## Green Performance Curves



## Dimensional Drawing (14" x 4.1" x 34.6")



# RGH UV Specifications

Wavelength	355 nm		
Model Number	RGH-355-1.5	RGH-355-5	RGH-355-9
Average Power @ 100 kHz	1.5 W	5 W	9 W
Repetition Rate†	Single Shot to 1 MHz, Option to 2 MHz		
M <sup>2</sup>	<1.3	<1.3	<1.3 <sup>1</sup>
Polarization	Vertical		
Pulse Width	<15 ps*		
Spatial Mode Profile	TEM00		
Long Term Instability (8h ±3°C)	< ±2%		
Pulse to Pulse Stability @ 1 MHz	<3% rms		
Output Beam Diameter	2 mm (nominal)		
Beam Divergence	<1 mrad		
Beam Ellipticity	<15 %		
Beam Point Instability	<25 urad/°C		
Boresight Accuracy	± 0.5 mm and <5 mrad		
Ambient Temperature	15 to 30 °C (50 to 86 °F) Operating Range		
Relative Humidity	Non-condensing, 90% Max		
Cooling	Closed Loop Chiller		
Weight	Laser Head	~ 90 lbs (~ 40 kg)	
	Power Supply	~ 22 lbs (~ 10 kg)	
Laser Head Dimensions	10 in x 4.1 in x 31 in		14 in x 4.1 in x 34.6 in
(Fundamental) <sup>3</sup>			
Power Supply Dimensions	19 in x 5.25 in x 13.5 in		

\* 20 - 100 ps optional

†Low rep rate (<100kHz) performance achieved by selecting higher rep rate pulses with the AOM option

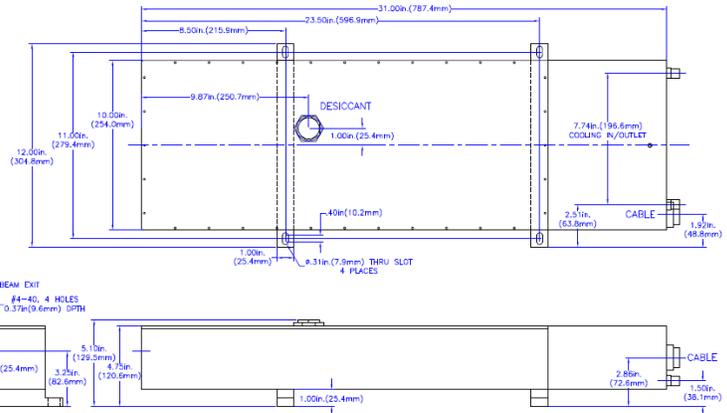
<sup>1</sup> M<sup>2</sup> value is specified from 100 kHz to 1 MHz

<sup>2</sup> M<sup>2</sup> value is specified from 200 kHz to 1 MHz

<sup>3</sup> Extension may be required for harmonics

## Option:

Internal AOM for external gating, FPS and PEC (20% specified power reduction)



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

Photonic Industries conforms to provisions of US 21 CFR 1040.10 & 1040.11 and is made under one or more US patents listed below:  
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; 6,584,487; 6,366,596;  
6,327,281; 6,356,578; 6,246,707; 6,229,839; 6,108,356; 6,061,370; 6,028,620; 5,936,938; 5,898,717 and Pending Patents

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