Photonics Industries
International, Inc.

DX Air-Cooled Series Nanosecond Lasers

www.photonix.com

Photonics Industries' DX Air-Cooled Series nanosecond DPSS lasers, with a small, air-cooled form factor (275 in^3, ~15.5 lbs or ~7 kg), offer the highest powers air-cooled in the market, with up to 10 W UV and up to 20 W green. The extra small DX Air-Cooled Series (152.1 in^3, ~10 lbs or ~4.5 kg), outputs average powers of 1 W UV and up to 2 W green. The DX Air-Cooled Series combines capabilities in power, air-cooling, and a small mechanical footprint for optimal integration in industrial laser microprocessing systems. As an exceptionally small DPSS laser, the DX Air-Cooled Series nanosecond laser is the ideal laser source solution from micron-precision marking, to solar cell processing, and to many more industrial laser microprocessing applications.

Applications

- Cutting, drilling, welding, scribing, marking, intra-marking, patterning, dielectric grooving, annealing, repair
- Laser Marking on-the-fly (MOTF), Laser Etching, Laser Patterning, Short Pulse Marking, High Precision Marking, DPSS Laser Marking Systems
- Flat Panel Display Repair
- Solar Cell Laser Structuring, P1 & P3 Solar Cell Processing
- Stereolithography (SLA), Rapid Prototyping 3D Printing, UV Laser 3D Printing
- Mass Spectrometry Systems, MALDI
- LIDAR, Autonomous Systems, 3-D Scanning Systems
- Thin Display Cutting & Drilling, Thin Film Transistor (TFT) Drilling

Features

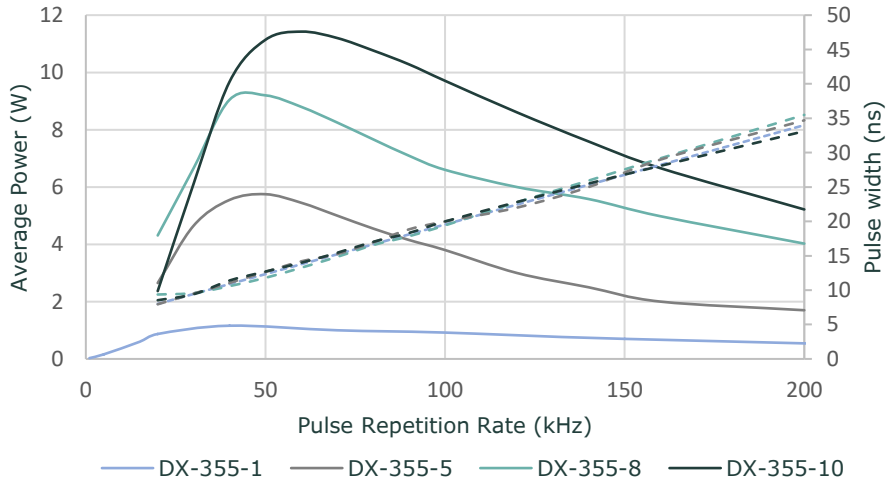
- Highest powers air-cooled in the market
  - Up to 10 W, UV, Air-Cooled
  - Up to 20 W, Green, Air-Cooled
- Short pulse widths:
  - ~15 ns at 50 kHz
  - ~20 ns at 100 kHz
- Wider repetition rate range than leading competitors, fulfilling higher throughput criteria:
  - Single shot up to 300 kHz, UV
  - Single shot up to 500 kHz, Green
- Reliable, low COO, non-consumable design
  - Patented intracavity harmonic UV & Green generation, no damaging indexing of the harmonic crystals
- Small, air-cooled form factor
  - Water-cooling option available
- Excellent TEM00 beam quality:
  - Typical $M^2 < 1.1$
- Total Pulse Control:
  - Duty Control to change output power while allowing for longer pulse widths than the standard operating values
  - PEC (Power or Pulse Energy Control)
- Power monitoring and calibration
  - Real-time power monitoring
  - Auto power calibration

Specifications – **DX Air-Cooled Series Nanosecond Lasers**, UV Models

	DX-355-1	DX-355-5	DX-355-8	DX-355-10
Beam and output specifications				
Wavelength	355 nm			
Average power	0.8 W at 20 kHz 1 W at 50 kHz	5 W at 50 kHz 4 W at 100 kHz	8 W at 50 kHz 7 W at 100 kHz	10 W at 50 kHz 8 W at 100 kHz
Pulse energy	~20 µJ	~100 µJ	~150 µJ	~200 µJ
Pulse width	< 15 ns at 50 kHz 20 ns at 100 kHz			
Pulse repetition rate	Single shot to 200 kHz (option up to 300 kHz)			
Pulse-to-pulse stability[1]	< 2% rms			
Long term power stability[2]	< 2% rms			
Beam spatial mode	TEM_{00} M^2 < 1.1			
Beam pointing stability	< 20 µrad			
Beam divergence	< 2.5 mrad			
Beam roundness	~90%			
Beam diameter, at exit	~0.3 mm	~0.45 mm		
Polarization ratio	Horizontal; 100:1			
Operational specifications and system characteristics				
Interface	RS232, Ethernet, Software GUI, External TTL Triggering			
Warm-up time	< 5 minutes from standby, < 10 minutes from cold start			
Electrical requirement	100-240 V AC; or 32 V DC, 15 A			
Line frequency	50-60 Hz			
Ambient temperature[3]	Ambient 10°C to 30°C (50°F to 86°F) Operating Range, Relative Humidity 90% Max., non-condensing			
Storage conditions	-10°C to 40°C; Sea Level to 12,000 m; 0% to 90% Relative Humidity, non-condensing			
Power consumption	~50 W	~130 W		
Dimensions (LxWxH)	9 x 5 x 3.38 in	11 x 5 x 5 in		
Weight	~10 lbs (~4.5 kg)	~15.5 lbs (~7 kg)		
Cooling system[4]	Air-cooled			

1. Measured at ambient temperature ± 2°C
2. Measured over 8 hours ± 1°C
3. For operation of the laser outside of the specified temperature range, contact us
4. For water-cooled heatsink option, contact us

DX-355, Average power (W) and pulse width (ns) as a function of pulse repetition rate (kHz)



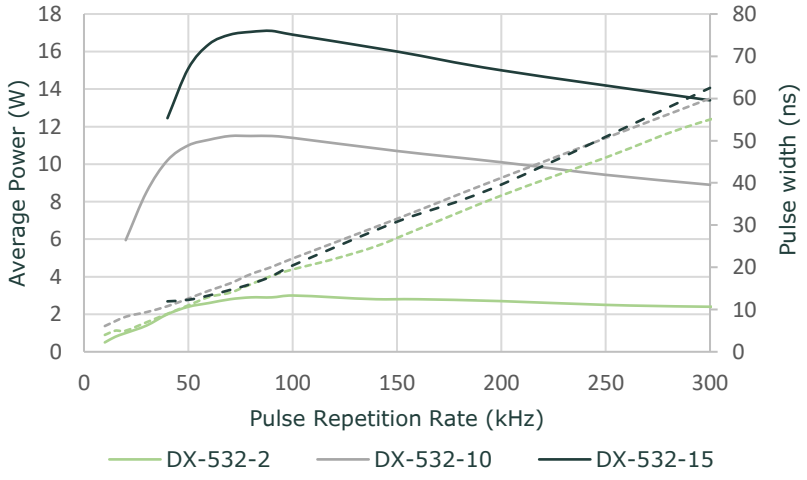
Photonics Industries International, Inc.

Specifications – **DX Air-Cooled Series Nanosecond Lasers**, GRN Models

	DX-532-2	DX-532-10	DX-532-15	DX-532-20
Beam and output specifications				
Wavelength	532 nm			
Average power	2 W at 50 kHz 2 W at 100 kHz	10 W at 50 kHz 10 W at 100 kHz	15 W at 50 kHz 15 W at 100 kHz	20 W at 50 kHz 20 W at 100 kHz
Pulse energy	~40 µJ	~200 µJ	~300 µJ	~400 µJ
Pulse width	~15 ns at 50 kHz ~20 ns at 100 kHz			
Pulse repetition rate	Single shot to 300 kHz (option up to 500 kHz)			
Pulse-to-pulse stability[1]	< 2% rms			
Long term power stability[2]	< 2% rms			
Beam spatial mode	TEM_{00} M^2 < 1.1			
Beam pointing stability	< 20 µrad			
Beam divergence	< 2.5 mrad			
Beam roundness	~90%			
Beam diameter, at exit	~0.3 mm	~0.45 mm		
Polarization ratio	Vertical; 100:1			
Operational specifications and system characteristics				
Interface	RS232, Ethernet, Software GUI, External TTL Triggering			
Warm-up time	< 5 minutes from standby, < 10 minutes from cold start			
Electrical requirement	100-240 V AC; or 32 V DC, 15 A			
Line frequency	50-60 Hz			
Ambient temperature[3]	Ambient 10°C to 30°C (50°F to 86°F) Operating Range, Relative Humidity 90% Max., non-condensing			
Storage conditions	-10°C to 40°C; Sea Level to 12,000 m; 0% to 90% Relative Humidity, non-condensing			
Power consumption	~50 W	~130 W		
Dimensions (LxWxH)	9 x 5 x 3.38 in	11 x 5 x 5 in		
Weight	~10 lbs (~4.5 kg)	~15.5 lbs (~7 kg)		
Cooling system[4]	Air-cooled			

1. Measured at ambient temperature ± 2°C
2. Measured over 8 hours ± 1°C
3. For operation of the laser outside of the specified temperature range, contact us
4. For water-cooled heatsink option, contact us

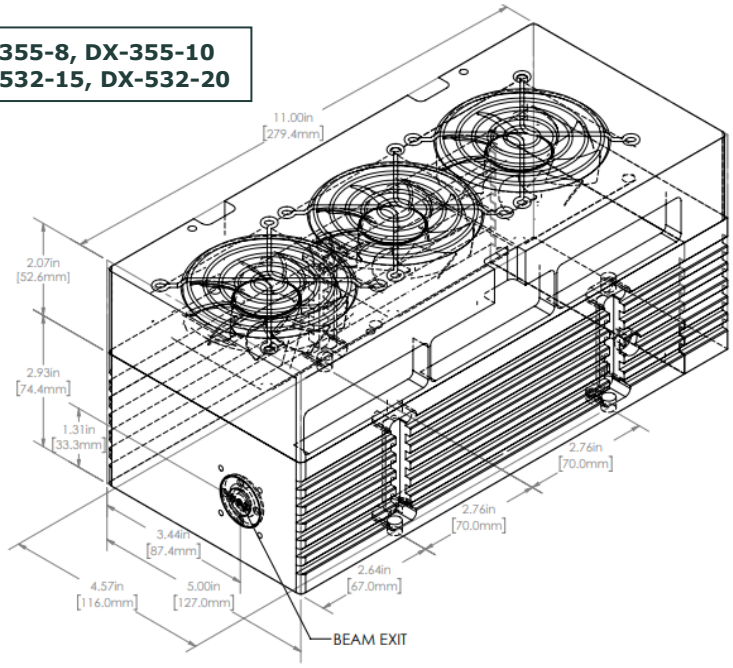
DX-532, Average power (W) and pulse width (ns) as a function of pulse repetition rate (kHz)



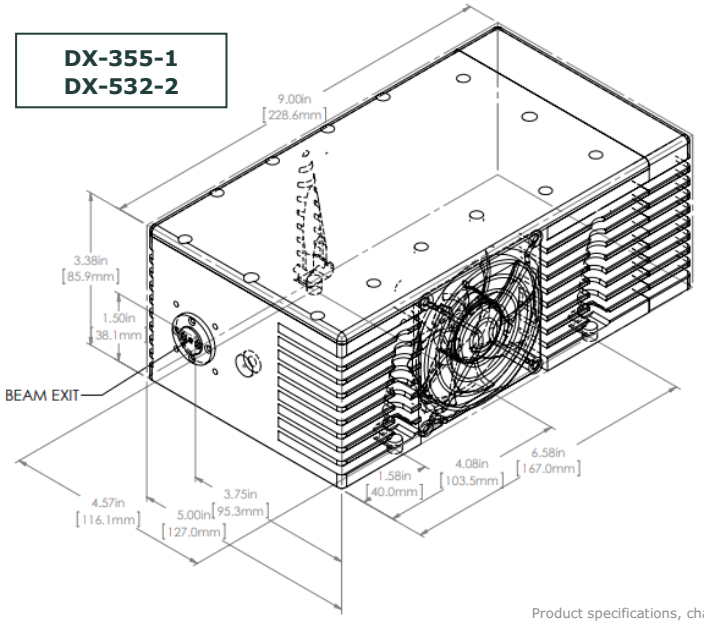
Photonics Industries International, Inc.

Dimensional Drawings

DX-355-5, DX-355-8, DX-355-10
DX-532-10, DX-532-15, DX-532-20



DX-355-1
DX-532-2



Product specifications, characteristics, and dimensional 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

Main Headquarters: 1800 Ocean Ave, Ronkonkoma, New York 11779, United States

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.

LASER RADIATION

Photonics Industries International, Inc.