

HyperRapid NXT 355

UV Picosecond Lasers for Industrial Micromachining with Maximum Flexibility

HyperRapid NXT is Coherent's high power industrial picosecond laser platform, and the benchmark for industrial micromachining applications.

HyperRapid NXT features a compact and modular design with an identical footprint and electronic interfacing for all power levels and wavelengths.

Its unique combination of highest laser power and superior flexibility enables optimum process performance under all circumstances: High average power levels deliver high throughput and minimize cost-per-part while flexibility in repetition rate and pulse energy result in excellent quality.

The HyperRapid NXT product is backed up with worldwide service support to match the most demanding uptime and cost-of-ownership requirements.



FEATURES & BENEFITS

- Single wavelength output: 355 nm (see separate data sheet for 1064 and 532 nm)
- Unique combination of power and operational flexibility delivers significantly reduced cost-per-part for micromachining applications
- PulseEQ provides equal, perfectly stabilized pulse energy down to single shots with maximum timing accuracy
- Compact and light weight, common interfacing for all models
- Many product support options to optimize uptime and cost-of-ownership

APPLICATIONS

- Cutting, drilling, selective removal of complex composite structures from dissimilar materials, including oxides, plastics and organics
- Ideally suited for applications in flat panel display and microelectronics processing
- Micromachining and structuring of large surfaces with line focusing or multiple beams

OPTICAL SPECIFICATIONS ^{1,2}	355-15	355-30	355-30 HRR	355-50
Single Wavelength Output ³ (nm)	355			
Power ⁴ (W)	15	30		50
Pulse Repetition Rate Range (kHz)	Single Shot to 4000			Single Shot to 5000
Pulse Duration ⁵ (ps)	<10			
Average Power Stability ⁶ (RMS 1 σ , %)	≤1			
Maximum Pulse Energy ⁷ (μJ)	75	37		75 ¹⁰
Pulse-to-Pulse Energy Stability ⁸ (RMS 1 σ , %)	≤2			
PulseEQ Triggering (kHz)	Single Shot to 1600			
Beam Quality Parameter (M ²)	≤1.3			
Beam Diameter, 1 m in front of laser (mm)	5.0 ±0.5			
Beam Divergence, full angle (mrad)	≤1			
Beam Circularity, 1 m in front of laser (%)	≥85			
Beam-Pointing Stability (μrad/°C)	≤50 (peak-to-peak)			
Bore Sight Accuracy				
Lateral (mm) (beam to specified exit location)	≤1			
Angular (mrad) (beam to specified exit direction)	≤5			
Direction of Polarization	Horizontal			
Polarization Ratio	>100:1			
Warm-up Time from Chiller Start (min.)	<45			
Electrical Supply	100 to 230V AC/50 to 60Hz/2.5 kW			
Mounting Orientation	Horizontal			
Chiller	Water-to-Air or Water-to-Water			
Dimensions				
Laser Head	600 x 780 x 245 mm (23.6 x 30.7 x 9.6 in.)			
Power Supply	3U 19" rack			
SMC Chiller	500 x 317 x 615 mm (19.7 x 12.5 x 24.2 in.)			
Weight				
Laser Head	≤67 kg (147.7 lbs.)			
Power Supply	16 kg (35.3 lbs.)			
SMC Chiller	43 kg (94.8 lbs.)			
BURST MODE OPERATION				
Burst Mode Operation Range ⁹ (kHz)	Single Shot to 2500			
Maximum Number of Pulses in Burst ⁹	10			
OPERATING SPECIFICATIONS				
Allowed Temperature Range During Operation	+15°C to +30°C (free of condensation)			
Humidity	[0-90]% RH, non-condensing, Dew-point <22 °C			

1 Due to our continuous product improvement program, specifications may change without notice.

2 All specifications at respective optimized repetition rate.

3 After warm-up time, chiller temperature = 23 ±0.1°C.

4 Maximum power with variable attenuator and process shutter at maximum transmission.

5 UV Autocorrelation at 1 MHz operation.

6 Over 8 hours, ± 1°C ambient temperature.

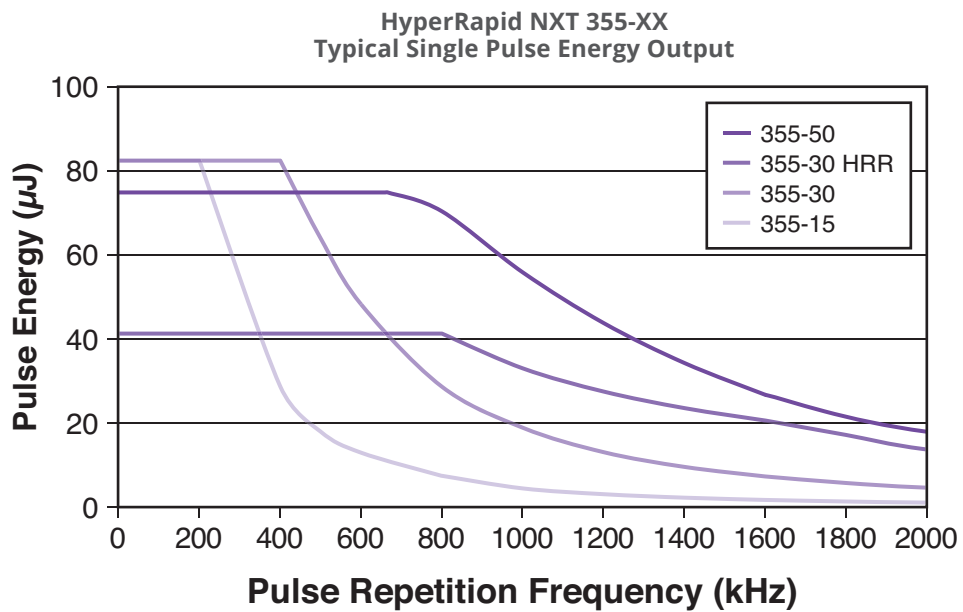
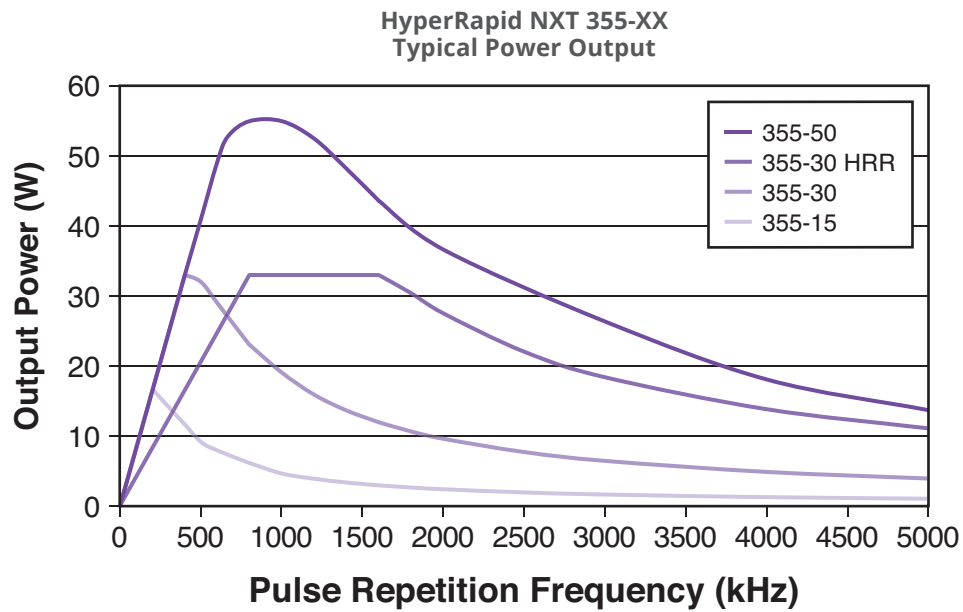
7 Single-pulse operation (burst number = 1).

8 Steady-state (no pulse gating or change of pulse repetition rate).

9 (Pulse repetition rate) x (number of burst) cannot exceed 5 MHz.

10 Represents typical value at minimal repetition rate based on a specified single pulse energy of 50 μJ at 1.000 kHz.

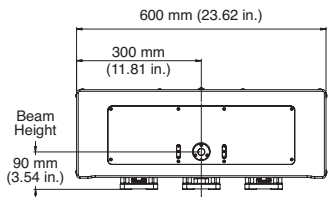
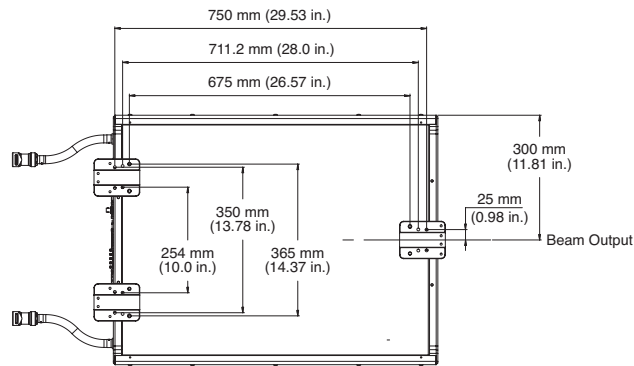
TYPICAL PERFORMANCE DATA



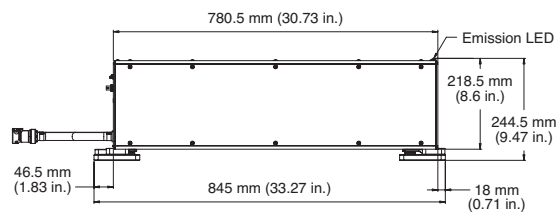
MECHANICAL SPECIFICATIONS

HyperRapid NXT SmartCleave

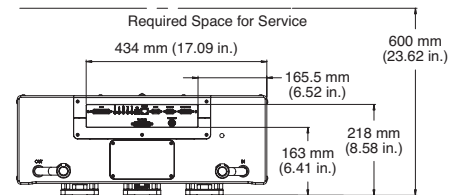
Bottom View



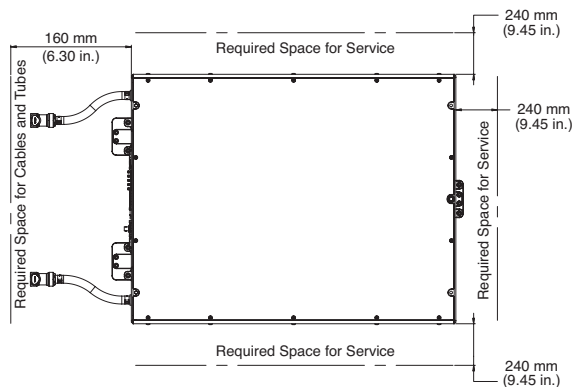
Front View



Side View



Rear View



Top View



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent offers a limited warranty for all HRNXT 355 Lasers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.
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