

# HyperRapid NX 355-30 HRR

## UV Picosecond Lasers for High-End Electronics Manufacturing

HyperRapid NX 355-30 HRR represents the industry standard for 30 W UV output power with a pulse repetition rate range extending up to 2 MHz.

Processing at high repetition rates above 1 MHz provides a multifold increase in terms of throughput and quality on heat-sensitive substrates like OLED displays, flexible PCBs or, in general, materials featuring a low laser ablation threshold.

HyperRapid NX 355-30 HRR is built on the same platform as the other models of the HyperRapid NX line-up, making its integration absolutely seamless.



### FEATURES & BENEFITS

- Single wavelength output: 355 nm
- Unique combination of power and high repetition rate to improve both throughput and quality for sensitive material processing applications
- SmartPulse™ for total pulse control
- Compact and lightweight
- Common interfacing and operation for all models
- Many product support options to optimize uptime and cost-of-ownership

### APPLICATIONS

- Fine cutting and drilling of OLED displays
- High speed cutting and drilling of advanced microelectronics substrates, such as Flex-PCBs (FPC) or Substrates-Like-Packages (SLP)
- High speed and high quality processing of thin-films and multilayered substrates or more generally, materials with a low laser ablation threshold

OPTICAL SPECIFICATIONS <sup>1,2,3,4,5</sup>	HyperRapid NX 355-30	HyperRapid NX 355-30 HRR
Single Wavelength Output (nm)	355	
Amplifier Single Pulse Repetition Rate (kHz)	400 to 1000	800 to 2000
Output Pulse Repetition Rate Range <sup>6</sup> (kHz)	0 to 1000	0 to 2000
Pulse Duration (ps)	<15	
Average Power (W)	30	
Average Power Stability <sup>7</sup> (RMS 1 $\sigma$ ,%)	≤1	
Pulse Energy (μJ)	75	37
Pulse-to-Pulse Energy Stability <sup>8</sup> (RMS 1 $\sigma$ , %)	≤2	
Beam Quality Parameter (M <sup>2</sup> )	≤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 (Vertical/Horizontal)	Horizontal	
Polarization Ratio	>100:1	
Warm-up Time from Chiller Start (minutes)	<45	
Electrical Supply	100 to 230V AC/50 to 60 Hz/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.)	
OPERATING SPECIFICATIONS		
Allowed Temperature Range During Operation	+15°C to +30°C (free of condensation)	
Humidity (%)	0 to 90 RH, non-condensing, Dew-point <22°C	

1 At lowest amplifier pulse repetition rate, unless stated otherwise.

2 At maximum specified output power.

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

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

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

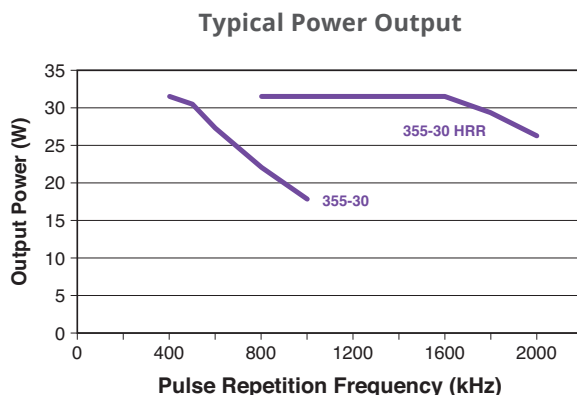
6 Single pulse picking from 0 to 1600 kHz.

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

8 Over 1000 pulses.

### TYPICAL PERFORMANCE CHARTS

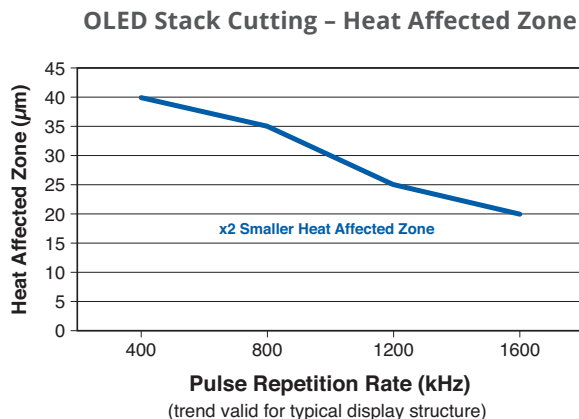
Comparison of HRNX 355-30 and HRNX 355-30 HRR typical power curves.  
 HRNX 355-30 HRR excels at high-end consumer electronics manufacturing applications such as fine-cutting of OLED displays).



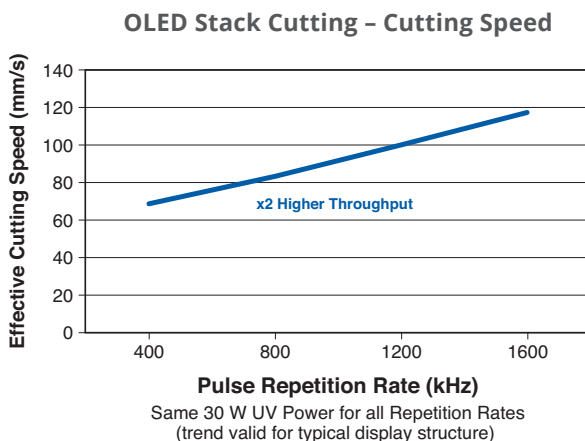
### APPLICATION RESULTS

Example: Fine cutting of OLED displays with 30 W UV picosecond laser.  
 Ask your local Coherent Sales how to double your micromachining process throughput and quality while preserving your cost structure).

**Cut quality increases with increasing repetition rate**



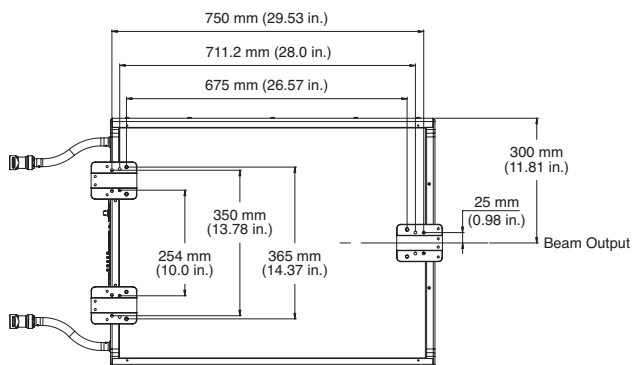
**Throughput also increases with increasing repetition rate**



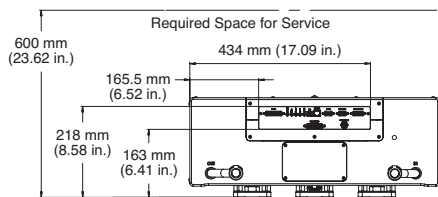
**MECHANICAL SPECIFICATIONS**

**HyperRapid NX 355-30 HRR**

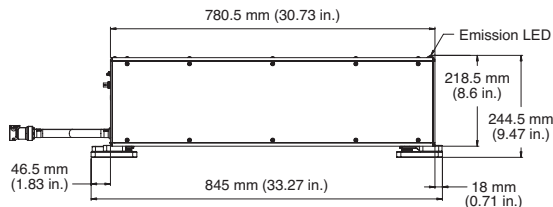
**Bottom View**



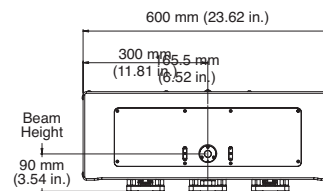
**Front View**



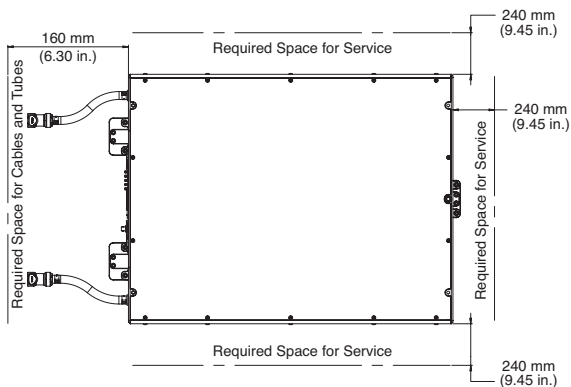
**Side View**



**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 HyperRapid NX Lasers. For full details of this warranty coverage, please refer to the Service section at [www.coherent.com](http://www.coherent.com) or contact your local Sales or Service Representative. MC-028-18-0M1118 Copyright ©2018 Coherent, Inc.

