

HyperRapid NXT 1064

Picosecond Lasers for Industrial Micromachining with Maximum Flexibility

HyperRapid NXT is a new 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 operational 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

- Single wavelength output at 1064 nm
- Unique combination of power and operational flexibility delivers significantly reduced cost-per-part for micromachining applications
- SmartPulse™ offers total pulse control to the user
- 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

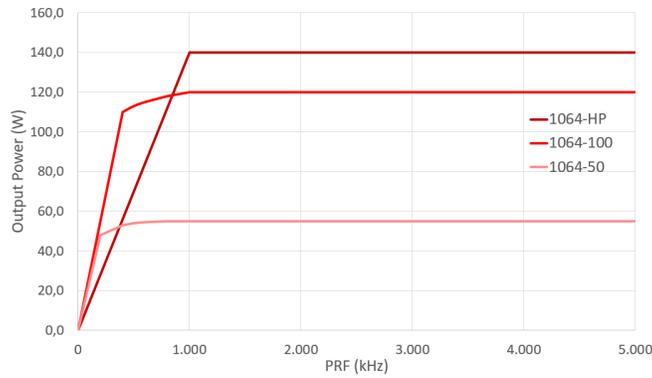
- Cutting and drilling of glass, sapphire, ceramics, and other brittle materials and composites at highest speeds
- Cutting, drilling, selective removal of complex composite structures from dissimilar materials, including oxides, plastics, and organics
- Micromachining and structuring of large surfaces with line focusing or multiple beams

Specifications ^{1,2,3,4}	HyperRapid NXT 1064-50	HyperRapid NXT 1064-100	HyperRapid NXT 1064-HP
Single Wavelength Output (nm)	1064		
Power ⁵ (W)	50	100	130
Pulse Repetition Rate Range (kHz)	Single-Shot to 4000		
Pulse Duration (ps)	<15		
Average Power Stability ⁶ (RMS 1 σ ,%)	≤1		
Maximum Pulse Energy (μJ)	220	250	130
Pulse-to-Pulse Energy Stability ⁸ (RMS 1 σ , %)	≤1		
PulseEQ Triggering (kHz)	Single-Shot to 1000		
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		
Bore Sight Accuracy, Angular (mrad) (beam to specified exit direction)	≤5		
Direction of Polarization (Vertical/Horizontal)	V		
Polarization Ratio	>100:1		
Warm-Up Time from Chiller Start (min.)	<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		
Laser Head - Dimensions	600 x 780 x 245 mm (23.6 x 30.7 x 9.6 in.)		
Laser Head - Weight	≤67 kg (147.7 lbs)		
Power Supply - Dimensions	3U 19" rack		
Power Supply - Weight	16 kg (35.3 lbs)		
SMC Chiller - Dimensions	500 x 317 x 615 mm (19.7 x 12.5 x 24.2 in.)		
SMC Chiller - Weight	43 kg (94.8 lbs)		
Burst Mode Operation			
Burst Mode Operation Range (kHz)	Single-Shot to 4000		
Total Energy in the Burst ⁷ (μJ)	1000		
Maximum Number of Pulses in Burst ⁸	10		
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		

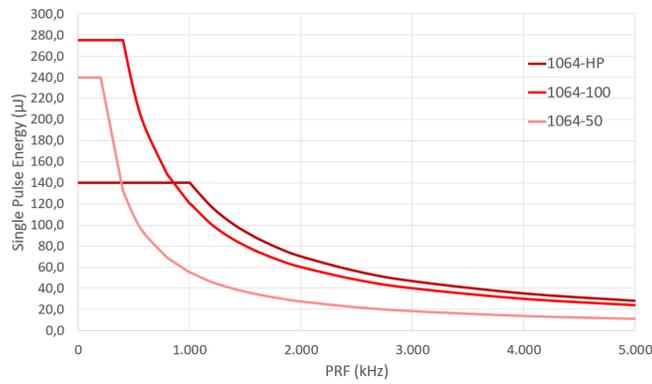
- Notes:
- Due to our continuous product improvement program, specifications may change without notice.
 - After warm-up time, chiller temperature = 23 ±0.1°C.
 - Steady-state (no pulse gating or change of pulse repetition rate).
 - Single-pulse operation (burst number = 1).
 - Maximum power with variable attenuator and process shutter at maximum transmission.
 - Over 8 hours, ±1 °C ambient temperature.
 - With 5 pulses in the burst, at the lowest burst mode operation range frequency.
 - (Pulse repetition rate) x (number of burst) cannot exceed 5 MHz.

Typical Performance Data

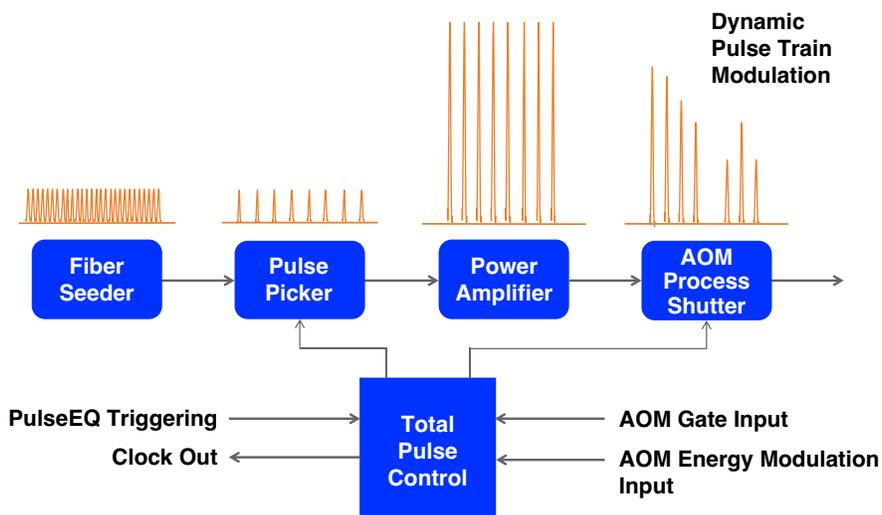
HyperRapid NXT 1064
Typical Output Power



HyperRapid NXT 1064
Typical Single Pulse Energy



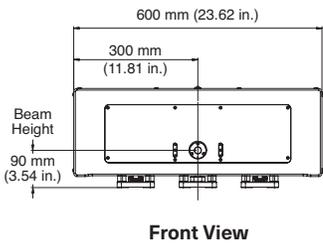
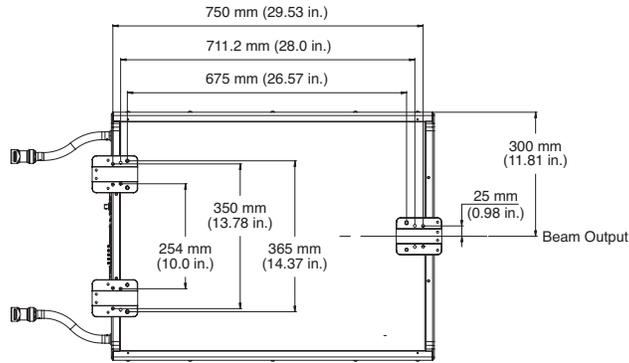
SmartPulse™ Offers Maximum Flexibility



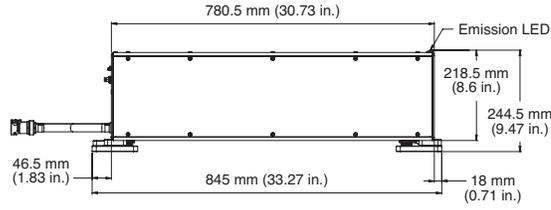
Mechanical Specifications

HyperRapid NXT 1064

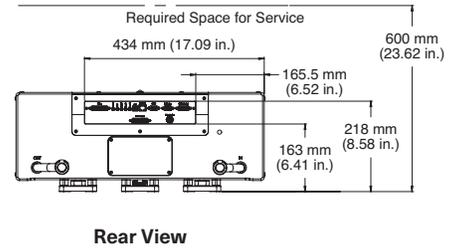
Bottom View



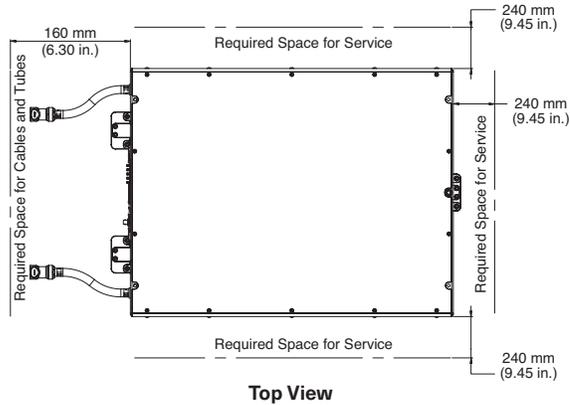
Front View



Side View



Rear View



Top View