

HyperRapid 100 355-SW

High Power Industrial ps-Laser

The HyperRapid 100 355-SW is a powerful industrial grade picosecond laser tailored for process development or small series production environment requiring the highest level of flexibility.

It features 3 distinct wavelength outputs (1064 nm, 532 nm, 355 nm) with output powers up to 90W. You can automatically switch between wavelengths using software or sending Ethernet command. It also offers advanced controls like pulse-on-demand and burst mode operation for high quality micromachining at high throughput.

The HyperRapid 100 355-SW provides high pulse energies of typically 10 ps-pulses at high repetition rates up to 1 MHz. This allows the user to split the beam into 2 beams and simultaneously feed 2 work stations with one machine, further reducing the TCO for a production process in micromachining applications.

The HyperRapid 100 355-SW ps-laser offers the well-known features of the RAPID series: industrial stability and reliability, high pulse energy, high repetition rates, trigger on demand – optical pulses can be triggered individually by electrical TTL pulses from system control – and low jitter (<20 ns), basically instantaneous even for fast moving beam deflection systems like scanners and rotary polygons.

Burst mode can be selected in the software to directly determine how many 10 ps-pulses with 20 ns separation should be released in an envelope by the laser if triggered by one electrical trigger pulse. These 20 ns-bursts enhance the ablation rate in many materials and increase the process efficiency.

The HyperRapid 100 355-SW uses an AOM as its process shutter which allows both on/off control and energy attenuation for each individual pulse.



Superior Reliability & Performance

HyperRapid 100 355-SW Advantages:

- **1064 nm, 532 nm and 355 nm outputs**
- **High energy at high repetition rates up to 1 MHz**
- **Pulse on demand trigger with <20 ns jitter**
- **Pulse to pulse energy modulation**
- **20 ns-burst mode capability for increased ablation rate**
- **High throughput at significantly reduced TCO**

HyperRapid 100 355-SW Applications:

- **Cutting and drilling of strengthened glass, sapphire, ceramics and other tough materials, also composites**
- **Micromachining and structuring of large surfaces with line focusing or multiple beams**

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System Specifications

HyperRapid 100 355-SW			
Center Wavelength (nm)	1064	532	355
Maximum Average Power (W)	90	38	30
Output Repetition Rate (kHz)	0 to 1000		
Spatial Mode	TEM ₀₀ (M ² <1.4)		
Pulse Duration (ps)	<15		
Pulse-to-Pulse Energy Stability (% rms, at 500 kHz)	<1 at 1064 nm		
Average Power Stability over 8 hours (% rms, at 500 kHz)	<1 at 1064 nm		
Polarization Ratio	>>100:1		
Beam Diameter (μm)(typical)	2650	2100	2100
Beam Divergence, Full Angle (mrad)	<1		
Beam Circularity (%)	>85		
Beam Pointing Stability in Full PRF Range (μrad/°K)	<50		
Bore-sight Accuracy	±0.5 mm and <5 mrad		
Warm-up Time (minutes)	<40		
Electric Supply	230 VAC for 1.6 kW/50 to 60 Hz		
Head Weight	115 kg (253.5 lbs)		
Repetition Rate (kHz)	Average Power (W)		
	1064 nm	532 nm	355 nm
400	90	38	30
500	90	35	30
800	90	28	25
1000	90	23	20
Repetition Rate (kHz)	Pulse Energy (μJ)		
	1064 nm	532 nm	355 nm
400	225	95	75
500	180	70	60
800	112	35	31
1000	90	23	20

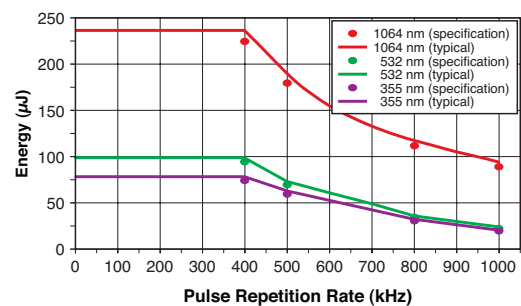
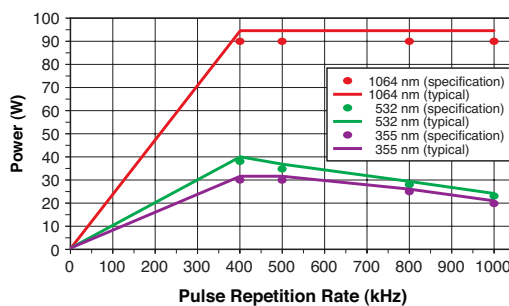
Operating Specifications

Temperature	+15°C to 27°C (59°F to 80°F)
Relative Humidity	<60%, non-condensing

Shipping Specifications

Temperature	+5°C to +50°C (41°F to 122°F)
Relative Humidity	10 to 90%, non-condensing

Typical Data



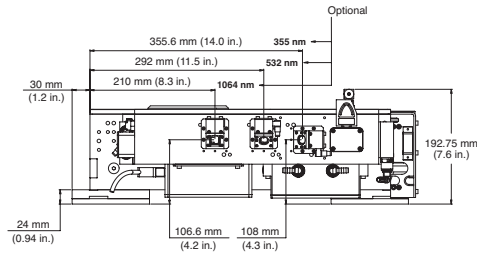
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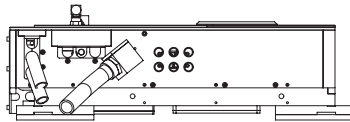
Mechanical Specifications

Laser Head

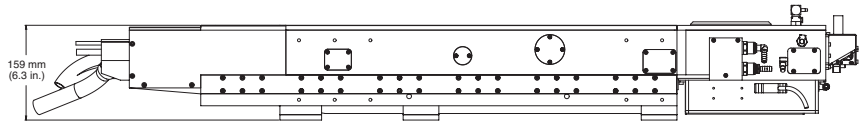
Front View



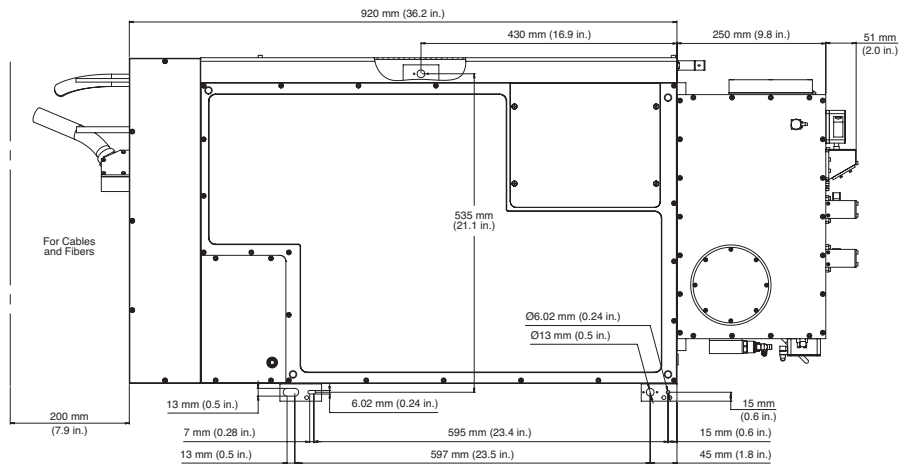
Rear View



Side 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 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.

