

DIAMOND E-400

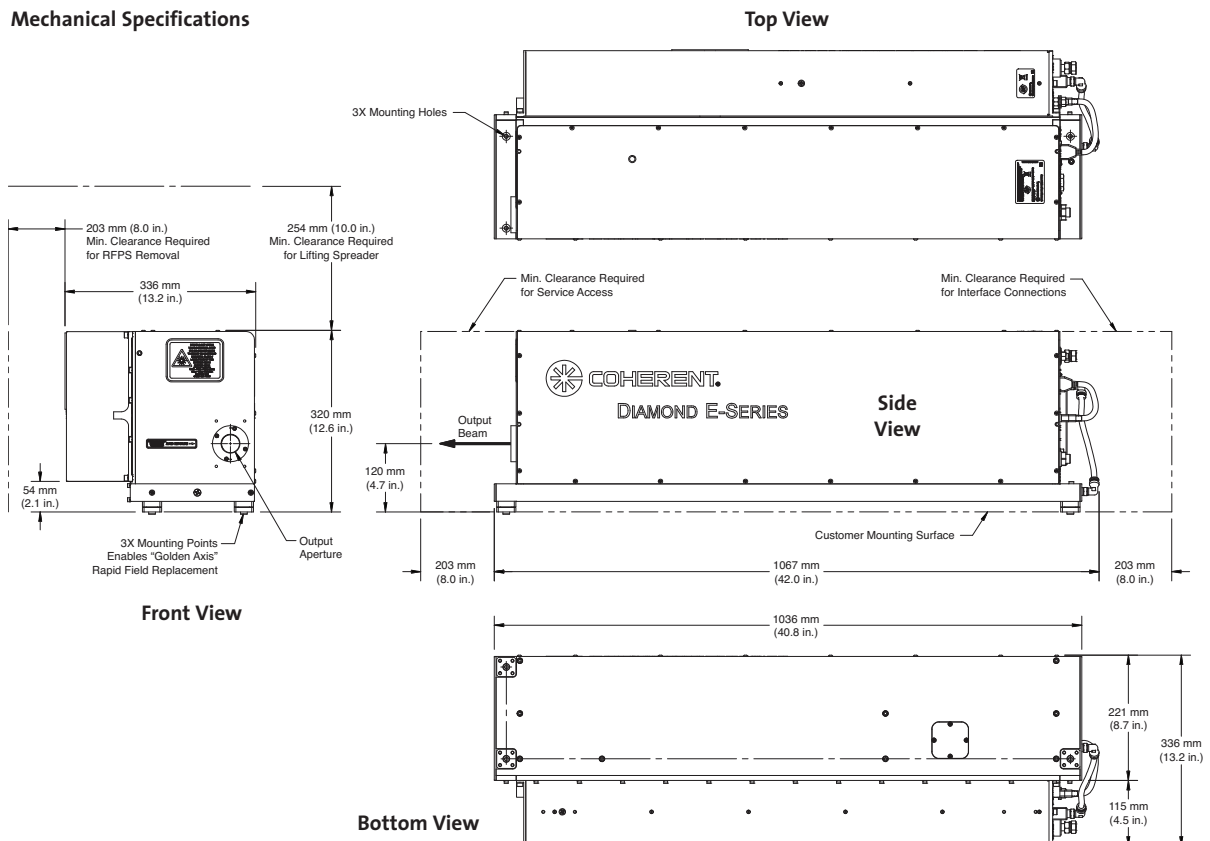
Liquid-Cooled, RF-Excited OEM Industrial CO₂ Laser

Features

- Wide operating power range
- Peak power >1 kW
- Pulse frequency from single shot to 200 kHz
- Fast rise-and-fall time
- Outstanding beam quality
- Excellent power stability
- Low-cost OEM configuration
- Integrated but detachable RF power supply
- Compact design
- Equipped with on-board internet-accessible diagnostics and control



Mechanical Specifications



Superior Reliability & Performance

DIAMOND™ E-400

Liquid-Cooled, RF-Excited OEM Industrial CO₂ Laser

System Specifications¹

Wavelength (µm)	10.2 to 10.8
Output Power (W)	400
Power Range ² (W)	40 to 400
Peak Effective Power ³ (W)	>1000
Power Stability (%)	±6
Mode Quality (M ²)	<1.2
Beam Waist Diameter ⁴ at 1/e ² (mm)	12 ±1.5
Full-Angle Beam Divergence (mrad)	<1.5
Polarization (perpendicular to baseplate)	Linear >100:1
Beam Ellipticity	>0.83, <1.20
Pulse Frequency (kHz)	Single shot to 200
RF Excitation Pulse Width Range (µsec)	2 to 1000
Duty Cycle Limit (%)	≤60
Fall Time (µs)	<55
Weight	75 kg (165 lbs.)
Dimensions (L x W x H)	1067 x 336 x 320 mm (42 x 13.25 x 12.62 in.)

Electrical Power Requirements

DC Input Voltage (VDC)	48 ±1.0%
Continuous DC Current (A)	≤170
Peak Current (A)	<240 for a minimum of 1 ms

Coolant

Heat Load (kW)	<8.5
Dynamic Coolant Flow Rate (l/min.)	>9.5 (2.5 gpm)
Coolant Temperature Stability (max.)	±1.0°C (±1.8°F)
Coolant Setpoint Temperature Range	21 to 25°C (69.8 to 77°F)
Coolant ⁵	Anti-corrosion treated water
Coolant Differential Pressure ⁶ (kPa)	344 (50 psi) @ 9.5 l/min. (2.5 gpm)
Coolant Maximum Static Pressure (kPa)	827 (120 psi)

Environmental Conditions

Ambient Temperature	5 to 45°C (41 to 113°F)
Relative Humidity ⁷ (%)	<95 (non-condensing)
Altitude	<2000 m (<6500 ft.)

¹ All specifications apply when the product is operated in accordance with the guidelines defined in the operators manual.

² Output stability specification may not be met at lowest power or at acoustic resonances.

³ Measured at 10% duty cycle and 1 kHz prf.

⁴ Beam diameter is measured at the waist location, located ~0.5 m from the laser output.

⁵ See manual for details.

⁶ This differential pressure is from system input to output and does not include the pressure drop from chiller fittings and the supply and return hose.

⁷ Do not operate at or below dew point.

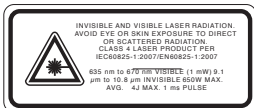
All specifications subject to change without notice. Coherent, Inc. warrants to the original purchaser for a period of two years from the date of shipment that the DIAMOND E-400 is free from defects in material and workmanship. The warranty does not apply to any unit damaged by accident, abuse or operation in a manner inconsistent with the procedures and specifications outlined in the manual supplied with the laser.

The DIAMOND E-400 is a laser component that does not include all safety features as required by the FDA and the Center for Devices and Radiological Health (CDRH). It is sold solely to qualified manufacturers who in their end product will supply all interlocks and indicators, and will comply fully with CDRH regulations and/or local regulatory agencies.



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Coherent, Inc.

5100 Patrick Henry Drive
Santa Clara, CA 95054
phone (800) 527-3786
(408) 764-4983
fax (800) 362-1170
(408) 988-6838
e-mail tech.sales@Coherent.com

Benelux +31 (30) 280 6060
China +86 (10) 6280 0209
France +33 (0)1 6985 5145
Germany +49 (6071) 968 333
Italy +39 (02) 34 530 214
Japan +81 (3) 5635 8700
Korea +82 (2) 460 7900
UK +44 (1353) 658 833

NAMSON ENGINEERING CO., LTD



Add: 51 - 53 Pho Quang Str, Ward 2, Tan Binh Dist,
Ho Chi Minh City

Tel +84 8 3997.4421 - Fax: +84 8 3997.4423

E-mail: info@namson.com.vn

Website: www.namson.com.vn

BRAND

Add: No.3B, Lance 43, Giang Vo Str, Cat Linh
Ward, Dong Da Dist, Ha Noi City

Tel: +84 4 37 36 83 77