

Innova 70C

Technical Data



Innova 70

Key Features

- **Innova Series V™ Plasma Tube**—for longest tube lifetime and lowest operating cost.
- **Aluminum Resonator**—excellent beam-pointing stability plus rapid and uniform warm-up characteristics.
- **Intracavity Aperture**—easy and precise spatial-mode control.
- **Linear Passbank Power Supply**—low-noise operation.
- **Remote-Control Module**—easy system operation.
- **Coherent Service and Support**—full technical support over the phone, plus parts and tube shipments within 48 hours, if needed.

The Innova 70C Ion Laser—

Workhorse of the Industry

Introduced in 1983, the Coherent Innova® 70C Ion Laser System has earned its reputation as a workhorse. The Innova 70C provides a unique combination of high performance and affordability for applications such as Raman spectroscopy, fluorescence spectroscopy, laser pumping, and laser doppler velocimetry. The Innova 70C is available in argon, krypton, and mixed-gas configurations, with output wavelengths spanning the spectrum from the ultraviolet to the infrared.

Innova Series V Plasma Tube Design

The plasma tube is the heart of every ion laser and represents the largest cost component for a user. The Innova Series V metal/ceramic plasma tube incorporates many improvements in tube design, as well as tube processing techniques, which have evolved since Coherent's introduction of the metal/ceramic tube in 1981. These improvements make the new Series V tubes the most reliable and highest performance ion laser tubes available today.

Series V Plasma Tube Developments

- **1975** Crystalline quartz replaces fused silica as Brewster window material. Crystalline quartz prevents color-center formation due to VUV radiation from the plasma discharge. Increases available UV output power.
- **1981** Innova (metal/ceramic) plasma tube technology introduced. Substantial improvements in lifetime.
- **1984** Hard-seal tubes introduced. Hard-sealing eliminates a source of contamination.

- **1985** Coated Brewster windows introduced. Further reduces color-center formation, increases UV powers and improves lifetimes of UV tubes to more than 1,000 hours.
- **1988** Gas pressure modifications increase cathode lifetime and decrease bore erosion.
- **1989** Sealed-mirror tubes with no anode window introduced. Elimination of anode window increases lifetimes by additional 500 to 1,000 hours depending on the type of tube. UV plasma tube lifetimes also increase to more than 2,000 hours.
- **1991** New higher-strength ceramic introduced. Improves tube resistivity to thermal stress. Reduces sources of catastrophic failure.
- **1994** New braze alloy, with better thermal uniformity and joint strength, introduced. Further reduces sources of catastrophic failure due to thermal stress.
- **1995** Series V tubes with internal re-engineered gas pathways improve cathode performance over a wide range of operating currents. Cathode lifetime substantially improved and cathode no longer considered a primary failure mechanism. UV plasma tube lifetimes also increase to more than 3,500 hours.

Since 1987, average tube lifetimes have increased from 1,515 hours— for all-lines visible operation— to more than 5,000 hours for all-lines visible operation. Similar lifetime improvements also have been made for other modes of operation.

INNOVA 70C

C Ion Laser

Innova 70C Ion Laser Series

Power Specifications¹

Model	70C-3	70C-4	70C-5	70C-K	70C-Spectrum
Wavelength (nm)					
Multiline Blue/Green	3.00	4.00	5.00	—	—
Multimode Blue/Green	4.50	5.50	6.00	—	—
Multiline Red	—	—	—	0.75	—
Multiline 'Whitelight'	—	—	—	—	2.50
752.5	—	—	—	—	0.03
676.4	—	—	—	0.12	—
647.1	—	—	—	0.50	0.25
568.2	—	—	—	—	0.15
530.9	—	—	—	—	0.13
528.7	0.25	0.30	0.30	—	—
520.8	—	—	—	—	0.13
514.5	1.20	1.70	2.00	—	0.25
501.7	0.20	0.30	0.35	—	—
496.5	0.40	0.50	0.60	—	—
488.0	1.00	1.30	1.50	—	0.25
476.5	0.40	0.50	0.60	—	0.10
472.2	0.06	0.10	0.10	—	—
465.8	0.05	0.07	0.07	—	—
457.9	0.20	0.30	0.30	—	0.03
Multiline UV	—	—	0.05	—	0.05

Beam Specifications²

	Argon	Krypton
Beam Diameter (@ 1/e ² points) ³	1.5 mm	1.5 mm
Beam Divergence (full angle)	0.5 mrad	0.8 mrad
Long-Term Power Stability ⁴		
Light Regulation	±0.5%	±0.5%
Current Regulation	±3.0%	±3.0%
Optical Noise (rms) ⁵		
Light Regulation	0.5%	0.5%
Current Regulation	0.5%	0.5%

¹ All powers are listed in watts. Guaranteed power specifications for standard systems are indicated in bold print. All power specifications, except multiline visible and IR, are TEM₀₀.

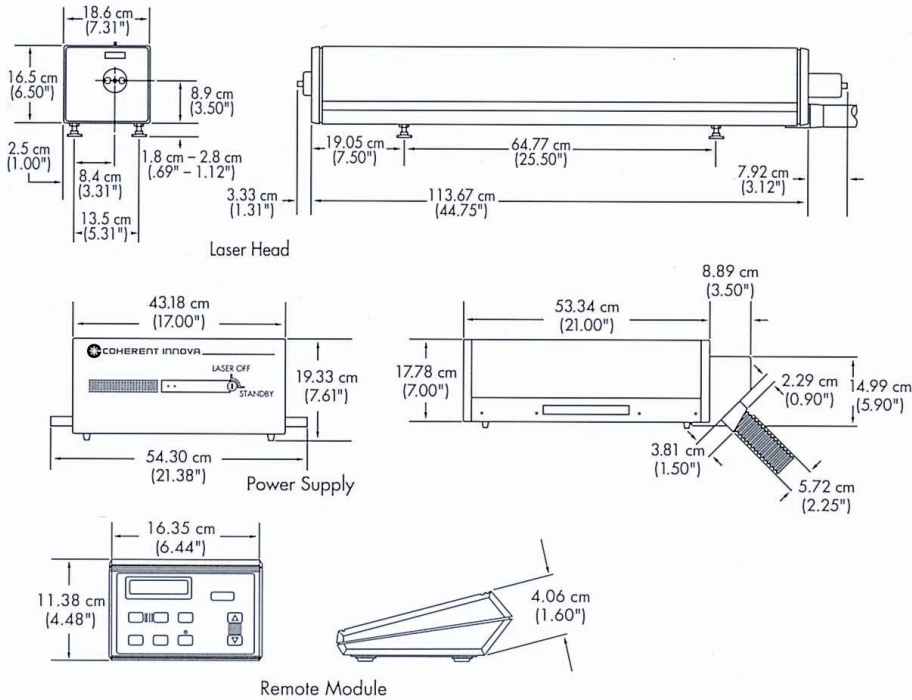
² All beam specifications are measured at specified output powers at 514.5 nm for argon lasers and 647.1 nm for krypton lasers.

³ Beam diameter is measured at the output-coupler mirror.

⁴ Maximum peak variation over any 30-minute period after a 2-hour warm-up.

⁵ Measured with a 10 Hz to 2 MHz photodiode driving a resistive load at 514.5 nm for argon systems and 647.1 nm for krypton systems.

Dimensions



System Weight

	Crated	Uncrated
Head	83 kg (182 lb)	43 kg (95 lb)
Power Supply	67 kg (147 lb)	39 kg (86 lb)

Utility Requirements

Input Power	3-phase with ground
Voltage	208 vac ±10%, 50 or 60 Hz
Current (maximum)	40 amps/phase @ 208 vac
Cooling Water	
Flow Rate/Minute	8.5 liters (2.2 U.S. gallons)
Pressure	1.8 - 4.23 kg/cm ² (25 - 60 psi)
Inlet Temp ¹	10 - 35°C (50 - 95°F)

¹ Incoming water temperature must be above the dew point of the ambient air in order to avoid danger of condensation on high-voltage electronic circuitry.

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

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.



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Innova 70C Warranty

Coherent offers a limited warranty that covers parts and labor for the entire Innova 70C system. Please refer to the latest version of the Coherent, Inc., Laser Group, North American Price List for full details of this warranty coverage.

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