

NOTICE LASER SPECTRA-PHYSICS MODÈLE 185

FICHE N° 4079

PRÉSERVER
SAUVEGARDER
VALORISER

Période de fabrication : 1975-1999

Fabricant : fabricant non renseigné

Domaines : Physique

Sous-domaines : Optique

Organisme : Université de Rennes

Ville : Rennes

Modèle : 185

Matériaux :

Description

La notice technique du laser Hélium-Cadmium Spectra-physics modèle 185 développe en deux pages la description complète de l'objet. La première page présente une photographie de l'objet, les caractéristiques, les applications, les caractéristiques de conception mécaniques, l'alimentation. La seconde page (au verso) est une liste d'ensemble des caractéristiques techniques comme par exemple les longueurs d'onde, etc. Cette notice fait partie d'un catalogue complet sur les lasers Spectra-physics.

Utilisation

Notice utilisés avec l'appareil





185

Helium-Cadmium
Laser

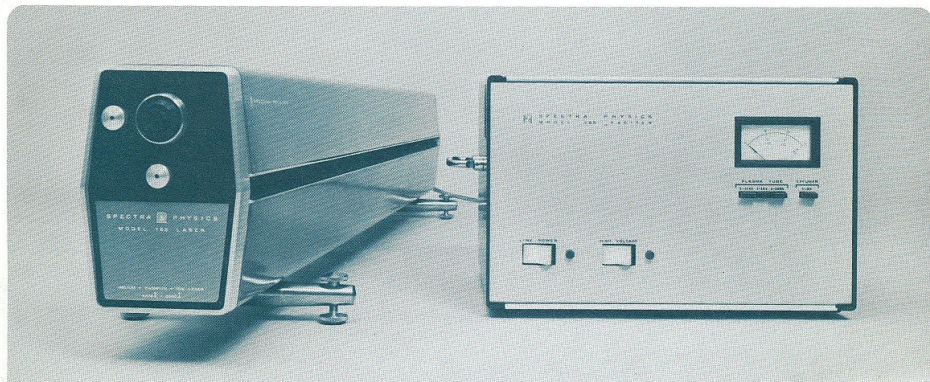
Spectra-Physics



1250 West Middlefield Road

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Features

- 75 mW CW blue @ 4416 Å
- 15 mW CW ultraviolet @ 3250 Å
- Easy to use
- Low input power requirement
- Natural convection air cooled
- One year warranty

The Spectra-Physics Model 185 Helium-Cadmium Laser is the first reliable, low-threshold source of continuous coherent light in the deep blue (4416 Å) and the ultraviolet (3250 Å). Model 185 emits more than 75 mW at 4416 Å and more than 15 mW at 3250 Å. The output at 3250 Å is the shortest CW laser line observed to date and is easily obtained by changing the mirrors of the laser. Operation of the laser is conveniently achieved in either laboratory or industrial system applications since the 185 is convection cooled and operates from standard 115 V/60 Hz or 230 V/50 Hz power sources.

Applications

Availability of these new wavelengths from an inherently simple air cooled CW laser, marks the beginning of practical blue and UV applications. It opens new possibilities both in the laboratory and in the field. For example:

Data recording and display: Wider

use of silver halide systems and other standard recording materials that see 4416 Å blue better than other laser lines

- Full color displays by fluorescence using a single 4416 Å beam to excite red, blue and green fluorescence.

Far field: More efficient far field illumination . . . smaller spot, less divergence, greater power density at target (here a 1 mW 3250 Å laser roughly equals a 1 watt CO₂ laser).

Scattering: Two to 14 times greater efficiency than other lasers for Raman, Rayleigh and Brillouin scattering, where scattered intensity is proportional to the 4th power of the incident light wave number.

Spectroscopy: New experiments in the fluorescence of microscopically small samples • New studies of excitation and de-excitation processes of triplet states in organic molecules.

Photochemistry: New research based on the 3.81 eV photon energy of the 3250 Å line which is greater than the covalent bond energy of NH (3.8 eV) and CH (3.47 eV).

Biochemistry: Use of the 3250 Å beam to irradiate and selectively damage parts of cells . . . perhaps even individual chromosomes.

The Spectra-Physics Helium-Cadmium Laser makes many other applications possible and practical.

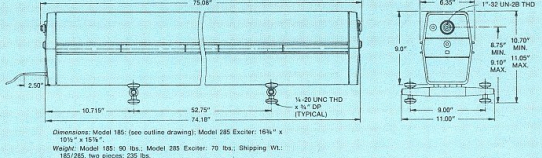
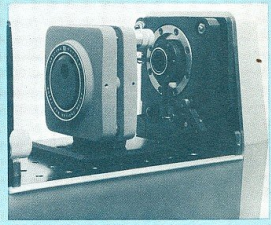
Mechanical Design Features

The 185 laser incorporates several mechanical features (initially introduced in Spectra-Physics Model 125 Helium-Neon Gas Laser) that assure stable performance when subjected to mechanical shock, torque, vibration, and temperature. The resonator is kinematically mounted on a 3-point spherical bearing configuration. This mechanical design effectively isolates the resonator from externally applied forces to the covers or feet. Thermal stability is provided by isolating all heat generating components from the resonator structure. In addition to mechanical and thermal stability, the 185 mirror mounts are designed to allow convenient mirror changes for cleaning or for operation at the other wavelength. Adjustments on each mirror mount allow fine adjustments to be made. Each adjustment control can be locked in place to assure resonator alignment.

Power Supply

The Model 285 DC Power Supply has been conservatively designed to reliably provide continuous operation of the 185 laser. The high voltage output (6 kV, 100 milliamperes) is regulated to ensure high laser stability. All solid state components are used to maximize reliability.

Model 185 Specifications

Output power and wavelength	> 75 mW TEM ₀₀ @ 4416 Å > 15 mW TEM ₀₀ @ 3250 Å
Beam diameter at aperture	1.5 mm @ 4416 Å (1/e ²) 1.3 mm @ 3250 Å (1/e ²)
Beam divergence	0.5 milliradians
Polarization	Linear > 1000/1, oriented vertically within 5°
Longitudinal mode spacing $\left(\frac{c}{2L}\right)$	85 MHz
Lasing bandwidth (% amplitude)	Approx. 1.5 GHz
Noise	< 6% rms (10 Hz to 1 MHz), Approx. 1/f frequency spectrum
Stability, long term	< 10% Drift over 24 hours
Warm-up	50% Power within 4 minutes 90% Power within 15 minutes
Input power	115/230 VAC ±10%, 50/60 Hz, 1200 VA
Cooling	Natural air convection
Dimensions and weight	 Dimensions: Model 185 (see outline drawing); Model 285 Exciter: 15 1/4" x 10 1/4" x 15 1/4" Weight: Model 185: 90 lbs.; Model 285 Exciter: 70 lbs.; Shipping Wt.: 185/285, two pieces: 230 lbs.
Options	04—Mirrors for 4416 Å, > 75 mW 05—Mirrors for 3250 Å, > 15 mW
Accessories	Model 327 Cavity Extension Model 588 Coherence Extender Shown at the right is the Model 327 Cavity Extension for the Model 185 Laser. The 327 is designed for easy intracavity alignment of samples or other optics. The Model 588 Coherence Extender, shown in the Cavity Extension, provides single frequency operation. The 588 consists of a Precision Optical Mount and a 30 mm etalon. 
Warranty	All mechanical, electronic and optical parts and assemblies, including the plasma tube, are unconditionally warranted to be free from defects in workmanship and material for the first full year following delivery.



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Pour nous citer :

Base de la Mission nationale de sauvegarde et de valorisation du patrimoine scientifique et technique contemporain, PATSTEC, Notice laser spectra-physics modèle 185 (fabricant non renseigné), <https://www.patstec.fr/ressources/objets/detail?id=16097>, consulté le 2026-07-29