

## VISIBLE GAS-ION LASERS FOR SCIENCE AND INDUSTRY

Lexel 85 and 95 gas-ion lasers have a 25-year history of the highest quality and performance in the industry. The simple solid ceramic plasma tube design has proven its durability and stability in producing coherent laser light. This is the best value in a small frame (1-7 watt) gas-ion laser.

### Applications

These lasers are designed for long, stable life in a variety of scientific and industrial applications.

#### Scientific applications

- Spectroscopy
- Holography
- Laser Doppler velocimetry
- Ti:Sapphire/Dye laser pumping
- Cytofluorescence

#### Industrial applications

- Non-destructive testing
- Semiconductor processing
- Disc mastering
- OEM medical applications



The Lexel 85, 95 and 95L are rugged lasers, precision-engineered for scientific and industrial applications.

### General specifications

Lexel 85 and 95 lasers are available in three versions:

- **85:** Multiline 1 W argon or 1/4 W krypton; 220VAC/30A single-phase operation.
- **95:** Multiline 2-4 W argon or 3/4 W krypton; 208VAC/35A three-phase operation.
- **95L:** Longer version of the 95. Multiline 5-7 W argon or 1.5 W krypton; 208VAC/50A three-phase operation.

The condensed table below lists key specifications of these lasers. [A separate page has a complete table, with detailed specifications of the 85/95 series.](#)

**Important:** For all items below, the listed specifications represent the general performance of standard models. Individual specifications can often be optimized for specific applications. For example, custom laser wavelengths are available. Please contact Cambridge Lasers if you have any special requirements.

Info on this page:

[Applications](#)  
[General specifications](#)  
[Power supply, head and tube](#)  
[Standard features](#)  
[Optional features](#)  
[Accessories](#)  
[Pricing](#)

Info on other pages:  
[85/95 detailed specifications](#)

LEXEL 85/95 SERIES - WAVELENGTH AND POWER (selected lines only - <a href="#">click here</a> for more lines)										
	Argon Lasers							Krypton Lasers		
Version	85		95		95L (longer)			85	95	95L
Model	85-1	95-2	95-3	95-4	95-5	95-6	95-7	85-K	95-K	95-K
Multiline Operation, power in watts										
All lines	1	2	3	4	5	6	7	.225	.75	1.5
Single Line Operation, power in milliwatts										
676.4 nm								50	150	300
647.1 nm								100	500	1000
514.5 nm	400	800	1200	1700	2100	2400	2600			
488.0 nm	350	700	1000	1300	1600	1800	2000			

LEXEL 85/95 SERIES - BEAM PARAMETERS  
(selected parameters only - [click here](#) for details)

Version	85	95	95L
Beam diameter (@ 1/e <sup>2</sup> points)			
514.5 nm TEM <sub>00</sub> (Argon)	1.1 mm	≤ 1.3 mm	≤ 1.5 mm
647.1 nm TEM <sub>00</sub> (Krypton)	1.2 mm	≤ 1.3 mm	≤ 1.5 mm
Beam divergence <sup>3</sup> (full angle)			
514.5 nm TEM <sub>00</sub> (Argon)	0.7 mrad	0.6 mrad	
647.1 nm TEM <sub>00</sub> (Krypton)	0.9 mrad	0.9 mrad	
Amplitude power stability (1 hour period after 30 minute warm-up)			
Light Control	≤ ±0.2%	≤ ±0.2%	
Current Control	≤ ±2.0%	≤ ±3.0%	

LEXEL 85/95 SERIES - OPERATIONAL AND DIMENSIONAL (selected specs only - <a href="#">click here</a> for details)			
Version	85	95	95L
Optical resonator	Solid Invar <sup>®</sup> rod structure		
Electrical service requirements	220 VAC Single phase 50/60 Hz	208 VAC 3-phase Wye or Delta 50/60 Hz	
Maximum current draw	30A	35A	50A
Cooling water flow	1.5 gpm at 15 psi (5.6 liters/min at 1 Atm)	2.0 gpm at 20 psi (7.5 liters/min at 1.4 Atm)	
Laser head, length <a href="#">Click here for dimensional drawing</a>	34.3 in (87.2 cm)	41.5 in (105.4 cm)	50.0 in (127.0 cm)
Specifications as of 6/2003. Subject to change without notice.			

## Power supply, head and tube

Lexel 85 and 95 lasers are CDRH-certified with all safety features. They come with a two-year/2,000 hour warranty.

### Power supply

The [power supply](#) front panel contains all controls necessary to operate and fully monitor the laser system.

- Linear low noise power supply
- Current and light regulation
- 0-10V external modulation
- Panel mounted power meter
- Automatic starting
- Remote turn-on capability

### Laser head

Within the [laser head](#), an ultra-stable solid Invar<sup>®</sup> [optical resonator](#) holds the plasma tube and mirrors in precise alignment to produce coherent laser light.

- Solid Invar<sup>®</sup> resonator
- Temperature-compensated prism wavelength selector
- Fine tuning capability
- Multiline mirror holder for all lines operation

### Laser tube

A simple and reliable [plasma tube](#) design. Lexel's solid ceramic plasma tube design has been proven since 1972, while other ion laser manufacturers have tried and abandoned several designs in an attempt to match Lexel's stability and performance. In fact, a majority of the more than 18,000 Lexel plasma tubes still operate today, some with 20,000 hours of use.

- Sealed intracavity spaces
- Free-flow gas supply
- High-efficiency solid ceramic plasma tube

## Standard features

### Current and light regulation

The Lexel 85 and 95 lasers can be operated in current or light control:

- n *Current regulation* allows direct control of the current through the plasma tube via an external source.
- n *Light regulation* provides the ultimate in laser output stabilization. A small portion of the light is sampled within the laser and compared to a reference signal in a differential circuit that automatically adjust the laser current to maintain a constant output.  
This feature also allows for the light level to be modulated externally with a  $\pm 10$  volt signal.

### Model 500 Temperature-Compensated Prism Wavelength Selector

Stable single line operation is achieved by Lexel ion lasers with the Model 500 prism wavelength selector. A full Brewster prism is utilized to achieve good separation of even the most closely spaced lines.

### Model 502 Multiline Mirror Holder

This assembly holds the high reflector mirror for Multiline operation. This feature may be substituted for the Model 500 wavelength selector.

### Fine tuning

The laser is aligned accurately with the use of fine tuning knobs.

### Remote turn on

This feature permits the laser power supply to be turned on and off and the plasma tube to be started remotely.

### Automatic starting

This circuit automatically starts the plasma tube approximately 20 seconds after the power supply is turned on.

### Panel-mounted power meter

This multirange power meter continuously displays the output power of the laser.

## Optional features

### Model 503 Temperature-Controlled Etalon Assembly

The extremely stable etalon assembly allows single longitudinal mode operation, for applications requiring long coherence length and very narrow line width. The output power is typically in the range of 50% of the original output.

## Accessories

### Model 510 Laser Power Meter

The easy-to-use power meter can be used with argon, krypton, mixed-gas and dye laser systems.

### Model 507 Adapter

An adapter threads into the 3/4"-32 optical thread at the output aperture of the laser converting it to a 1-32 female thread for mounting optical accessories with this larger size thread.

### Model 508 Remote Power Monitor

A power monitor operates in conjunction with the option 7507 panel mounted power meter to allow continuous monitoring of the laser power at locations away from the power supply.

### Model 7504 Rack-Mounted Power Supply

All Lexel 85/95 power supplies can be equipped with a rack mounting panel for mounting in a standard 19"(438mm) equipment cabinet.

### Other Optical Accessories

Accessories such as beam expanders, spatial filters, cavity-dumpers, mode-lockers or dye lasers are commonly used with Lexel lasers. Please contact Cambridge Lasers if these or any other special accessories are required.

### Intracavity Workspace

Any Lexel model can be supplied with an extended resonator which has a longer intracavity space at the output end of the laser. This extra space may be used for various intracavity experiments or for mounting acousto-optic devices such as cavity dumpers.

## Pricing

For pricing and availability, call Cambridge Lasers Laboratories.

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**WEBSITE PAGES**

[HOME PAGE](#)

**LASERS**

**Visible gas-ion lasers**

-- [For science and industry: Lexel 85/95 series  
85/95 detailed specifications](#)

-- [For laser displays: Lexel ColorPro/BeamPro series](#)

**Deep UV gas-ion laser**

-- [For science and industry: Lexel 95-SHG](#)

**TUBES**

[Ceramic replacement tube for Lexel lasers](#)

**Ceramic replacement tubes for other lasers**

-- [Lexel Beta-I tube for Coherent brand lasers](#)

-- [Lexel Beta-I tube for Spectra-Physics brand lasers](#)

**SUPPORT**

**Service/support**

-- [Set up new service request](#)

-- [Check progress of existing service request](#)

[Service history of your Lexel laser](#)

[Service contract options](#)

[Manuals and documentation](#)

**TECH INFO**

**General topics**

-- [How gas-ion lasers work](#)

-- [Laser wavelength charts](#)

**Features of Lexel lasers**

-- [Laser head](#)

-- [Plasma tube](#)

-- [Optical resonator](#)

-- [Power supply](#)

- [Power supply interior](#)

-- [Single-frequency operation](#)

- [Model 503 Etalon](#)

- [Typical frequency stability](#)

**COMPANY**

[Quality: Why choose Lexel](#)

[Lexel company profile](#)

[Careers](#)

**ORDERING/CONTACT**

[Headquarters office](#)

[International distributors](#)