



RADIUS 635-25

Compact Solid-State Lasers

		Radius 635-25
Product Specifications	Wavelength	635 (+7 nm/-2 nm)
	Output Power	25 mW
	Rise Time	<5 msec
	Max. Modulation Frequency ¹	100 Hz
	Noise: RMS (20 Hz to 10 MHz)	<0.5%
	Pointing Stability	<6 μ rad/°C
	Power Stability (8 Hours)	<2%
	Beam Parameters	
	Beam Diameter @ 1/e ²	1 mm typical
	Spatial Mode (Far-Field)	TEM ₀₀
	Ellipticity	0.8 to 1.2
	Beam Divergence (Full Angle)	<1.25 mrad typical
	Static Alignment Tolerance ²	<15 mrad (angle)
	Polarization	>100:1, linear, horizontal
	Laser Head Specification	
	ESD Protection ³	Level 4
	Dimensions (Diameter x Length)	44.5 x 218 mm (1.75 x 8.6 in.)
	Control Box (L x W x H)	138 x 62 x 26 mm (5.4 x 2.4 x 1 in.)
	Laser Head + Control Box Weight	455 g (1 lb.)
Ambient Temperature Range for Operation ⁴	10°C to 40°C (50°F to 104°F)	
Storage Temperature	-20°C to 60°C (-4°F to 140°F)	
Maximum Heat Load from Laser Head	10W, typical 3W	
Power Supply Specifications		
Weight	570 g (1.25 lb.)	
Dimensions (L x W x H)	146 x 76 x 43 mm (5.8 x 3.0 x 1.7 in.)	
AC Input Requirements		
Input Voltage	100 to 240V, 47 to 63 Hz	
Input Power	<15W	
Part Numbers		
CDRH Conforming Class IIIb System	1051385	
OEM System ⁵	1008053 without control box	

¹ Modulation through side panel I/O port. Via TTL signal with 400K-ohm input impedance ($V_{IH} > 4V, V_{IL} < 3V$); TTL level needs to be applied for a minimum of 10 milliseconds.

² Static alignment tolerances are relative to the laser's outside diameter.

³ ESD Standard IEC 1000-4-2, 1995.

⁴ Non-condensing.

⁵ Coherent's OEM version does not comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health. Purchaser acknowledges that his/her products must comply with these regulations before they can be sold to a customer.

FEATURES

- **All-in-one package**
- **ESD protection to Level 4**
- **Patented AlignLock™ technology**
- **Circular beam**
- **Long lifetime**
- **Integral drive circuitry**
- **HeNe-style packaging**
- **Beam shutter**
- **CDRH compliant**

KEY APPLICATIONS

- **Flow cytometry**
- **High-throughput screening**
- **Confocal microscopy**
- **Particle sizing and counting**
- **Genomics and proteomics**



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Compact Solid-State Lasers



System Integration and Features

The Radius™ 635 laser is a complete system with laser head, control box and power supply. The system can be conveniently mounted in a HeNe laser holder. The Radius 635 delivers specifications equal to, or better than, a HeNe laser—in a smaller package, and at an attractive price.

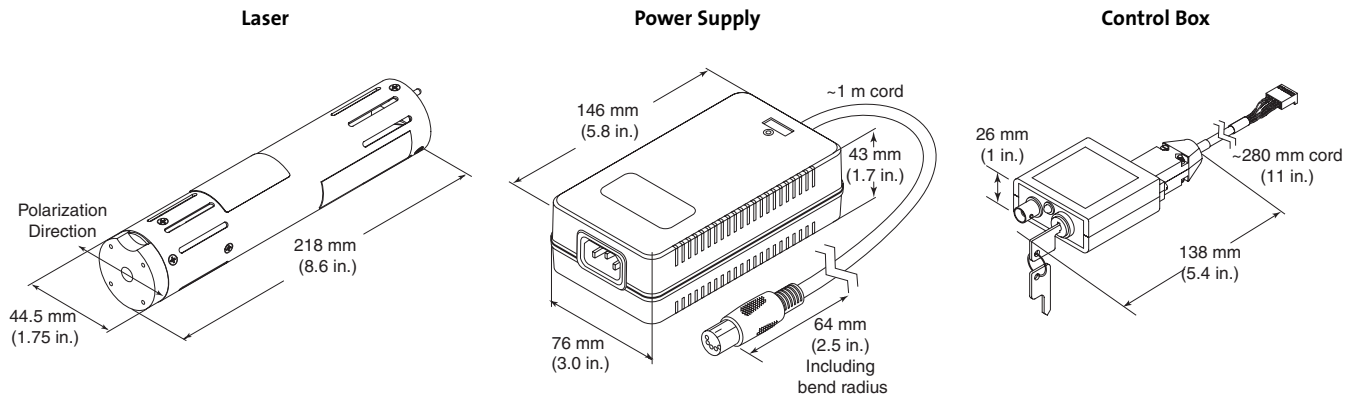
Patented micro-lens technology and aspherical optics circularize the output of the diode laser to better than 80% with a typical $M^2 < 1.2$.

The diode laser and optics mounted on a TEC remain at a constant temperature of 22°C. A heat sink with an internal fan removes the heat. The closed-loop constant temperature keeps the wavelength constant, minimizes mode-hops and maintains power stability.

A side port allows users to vary the temperature in order to change the center wavelength by ± 1 nm. The side port allows for the connection of a control box, which offers an on-off key-switch, a remote interlock, an emission indicator, and a 5-second delay. The interlock I/O can be used to modulate the laser on-and-off as fast as 100 Hz. The modulation can be used to extend the lifetime of the diode by enabling the laser to be on only when needed—while the thermal system remains constant for improved stability.

Radius 635 delivers high power in a small package, provides more efficient use of your space, and saves on both electrical system and heat-dissipation costs. Whether you're involved in bio-instrumentation, particle counting, confocal microscopy, high-throughput screening, or general laboratory work, the Radius 635 can revolutionize the way you use red laser light.

The Radius 635 is available in smaller OEM-style packages for specific applications and for orders in OEM quantities.



Note: Front plate has four 4-40 threaded holes for c-mount adaptor (sold separately, part #31-2538-000).

Product named Redflame prior to May 2003.



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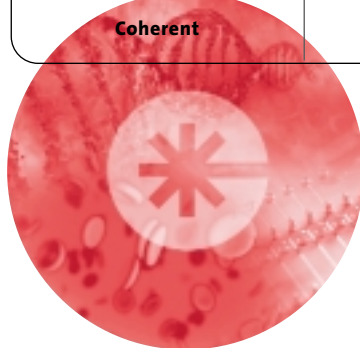
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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

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

Coherent offers a limited warranty for all Radius 635 systems. For full details of this warranty coverage, please refer to the Service and Support section at www.Coherent.com or contact your local Sales and Service Representative.



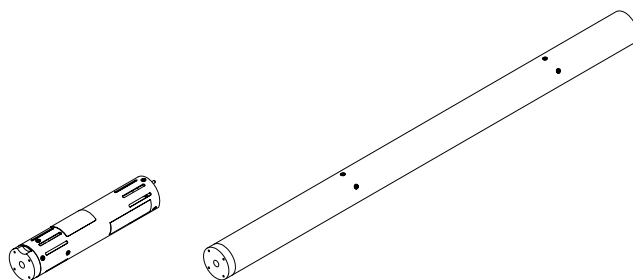
RADIUS 635-25

Competitive Comparison

Familiar Packaging, Superior Performance

For decades, the HeNe has been the workhorse of numerous applications in analytical instrumentation, alignment, medicine, education and basic research. Now, for the first time, there's an alternative to the HeNe that's not only compatible with existing HeNe mounting hardware, but also elevates performance to an exciting new level.

In just one-third the space required for a 17 mW HeNe, RADIUS™ 635 provides greater than 50% more output. In addition, it is demonstrably superior to the HeNe for beam-pointing stability, output stability, and longevity.

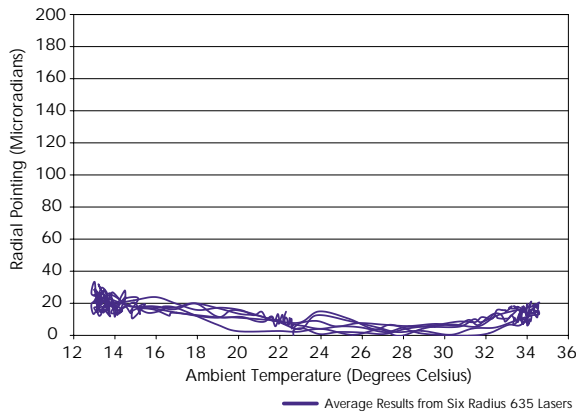


Size Comparison

Radius 635-25 Compared with 17 mW HeNe.

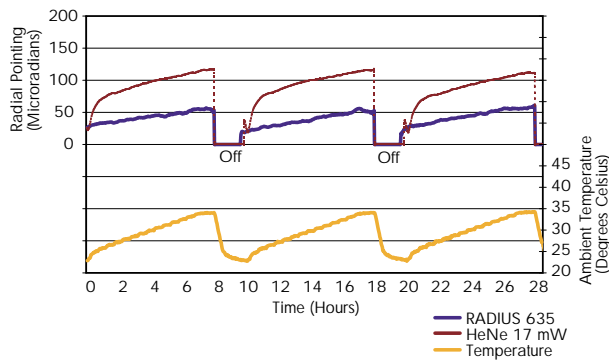
Superior Beam Pointing

RADIUS' user-transparent active temperature stabilization minimizes ambient effects. Alignment-sensitive applications are improved—immediately.



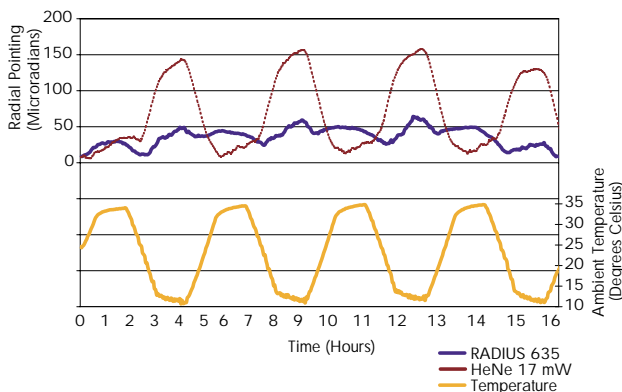
Radius 635 Beam Pointing vs. Temperature

Complete angular beam movement as the temperature is changed from 13°C to 35°C. Temperature is cycled three times to show stability from cycle to cycle.



Pointing Stability Over Time with On-Off-On Cycles

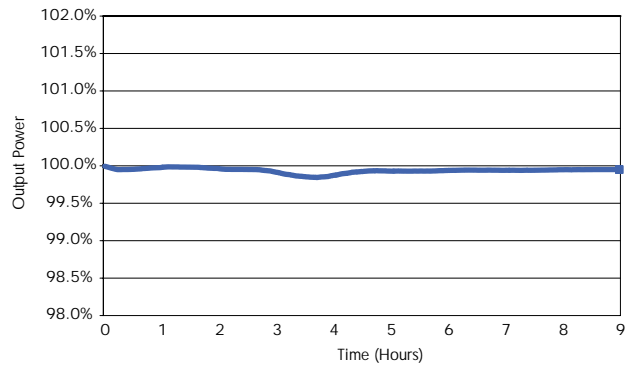
This side-by-side stability test was carried out with a temperature ramp and an on-off cycle to simulate three workdays. RADIUS 635 has better pointing stability and stays on target day after day.



Pointing Stability Over Temperature Comparison

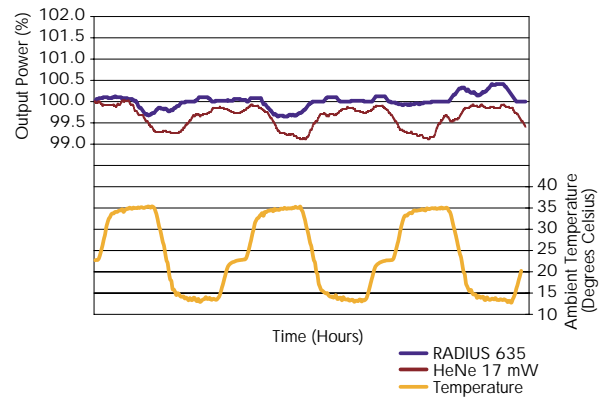
The ambient temperature is changed from 11°C to 35°C in this extreme side-by-side temperature test. RADIUS 635 is three times more stable than the HeNe.

Reliable Output Stability



Radius 635 Power Stability Over Time

At a constant room temperature, the RADIUS 635 delivers rock-solid output power.

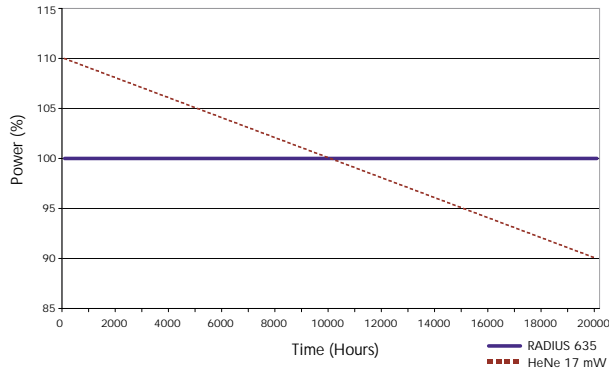


Output Power Over Temperature

The ambient temperature is changed from 13°C to 35°C in this extreme side-by-side temperature test. RADIUS 635 has better power stability than the HeNe.

Consistent Performance in Your Application

Unlike the HeNe laser, whose output gradually decreases over time, RADIUS 635 incorporates an active output stabilization circuit to maintain specified power. This means that your application will perform consistently day-to-day, month-to-month, year-to-year. And with RADIUS' additional output, your application gains 50% more power.

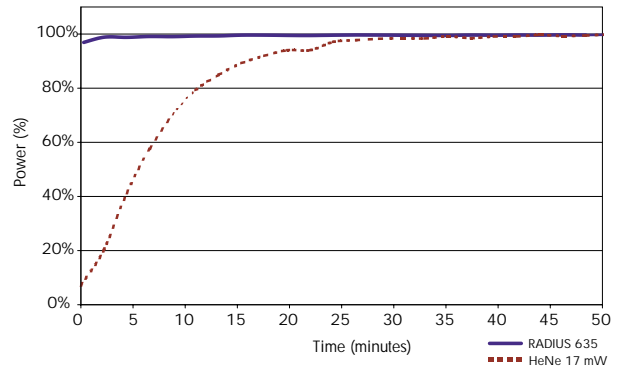


Power Over Lifetime Approximation

Because of its integrated light feedback loop, every RADIUS 635 delivers constant power over its entire product life. Because the HeNe does not have a light feedback loop, its power degrades over its lifetime.

On-Demand Performance Enables Even Greater Longevity

RADIUS provides stable operation just minutes after start up—up to ten times faster than the HeNe. Not only does this have an obvious benefit to your application in terms of cold-start operation, but also in terms of potential lifetime. For many applications, it is now practical to duty-cycle operate the laser, thus extending laser life even further. The Radius 635 can be shut down and turned on, over and over, without any detrimental effects. This is not the case with the HeNe. Radius provides more useful lifetime in an integrated application such as instrumentation.

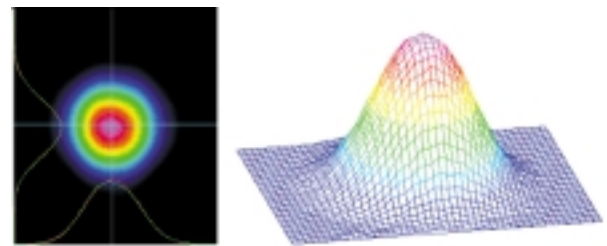


Warm-Up Time

The RADIUS 635 has a warm-up of just a few minutes and an almost instant turn-on to full output power. The HeNe warms up slowly and takes as long as 30 minutes to reach stable output.

High Quality Beam

The Radius 635, with patented circularization optics, produces a gaussian beam that is >80% circular.



Typical Image of Beam at 2 Meters Distance

Value

The Radius 635 offers incredible value with a smaller package and equivalent or better performance in almost every area. See for yourself. We challenge you to compare the Radius 635 with any 17 mW or 25 mW HeNe.

Powerful, stable, reliable, compact. RADIUS 635 is the HeNe you always wished for—without the drawbacks.

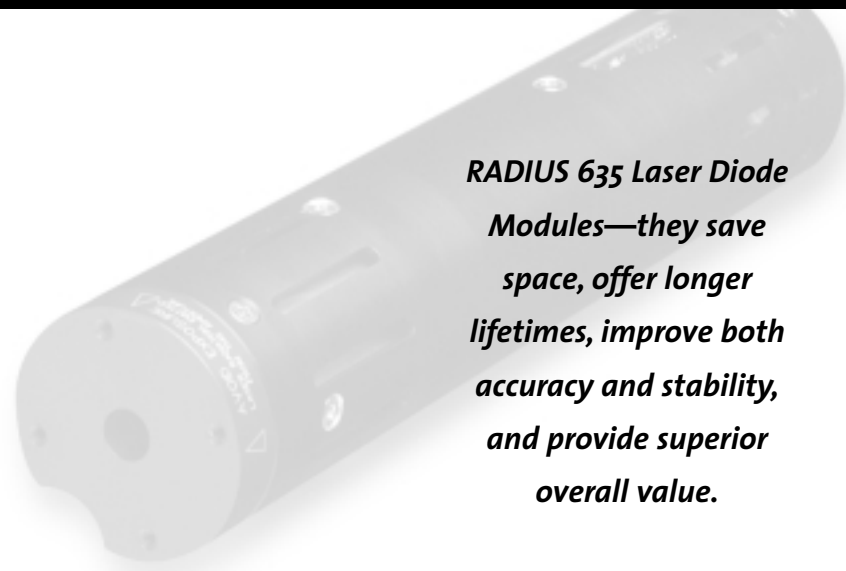
Coherent as your partner.

To compete and succeed in today's fast-paced research and OEM environments you need a laser partner who understands your needs. A partner who can provide a wide range of laser technology solutions, and the global support that goes with them.

Since 1966, Coherent has provided complete laser-based solutions for a wide range of applications.

With a heritage of innovation and an uncompromising dedication to quality, Coherent is the most forward-thinking and diversified manufacturer of solid-state, gas and semiconductor lasers in the industry.

For more information about Coherent's laser solutions for research, visit www.CoherentInc.com. Or call 1-800-527-3786.



***RADIUS 635 Laser Diode
Modules—they save
space, offer longer
lifetimes, improve both
accuracy and stability,
and provide superior
overall value.***

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