

ETERNITY | CO₂ LASERS

Compact and High Performance



Compact Footprint

Easy integration and best application results



Unmatched Longevity

No laser gas degradation for exceptional power stability.



Superior Beam Quality

Consistent power stability for precise processing.

Exceptional CeramiCore® Performance

Powerful with a Small Footprint

The Eternity series represents our smallest laser tubes. Built with our **patented CERAMICORE® technology**, these CO₂ lasers are available as 25, 30, 40 and 50-Watt models.

They provide **superior performance**, particularly for compact platforms. Enhance your automated web systems, laser scanner modules, and small workstations with **excellent process repeatability**.

Benefits

Superior Stability and Precision

Iradian CERAMICORE® Laser tubes produce reliable and stable maximum rated power levels as well as minimum power levels for heat sensitive applications. Unlike conventional CO₂ lasers that lose stability under 10% power settings, the Eternity series operates down to 2% **without any loss of power stability**.

The Eternity series exhibits exceptional beam quality and **pointing stability** ensuring precise procession of materials. Compared to conventional glass or metal laser tubes, our patented CERAMICORE® technology provides exclusive processing benefits.

Applications

CO₂ Laser Tubes for Your Application Needs

- Cutting/perforating
- Marking/coding
- Engraving/etching
- Wire Stripping
- Fiber optic splicing
- Medical surgery

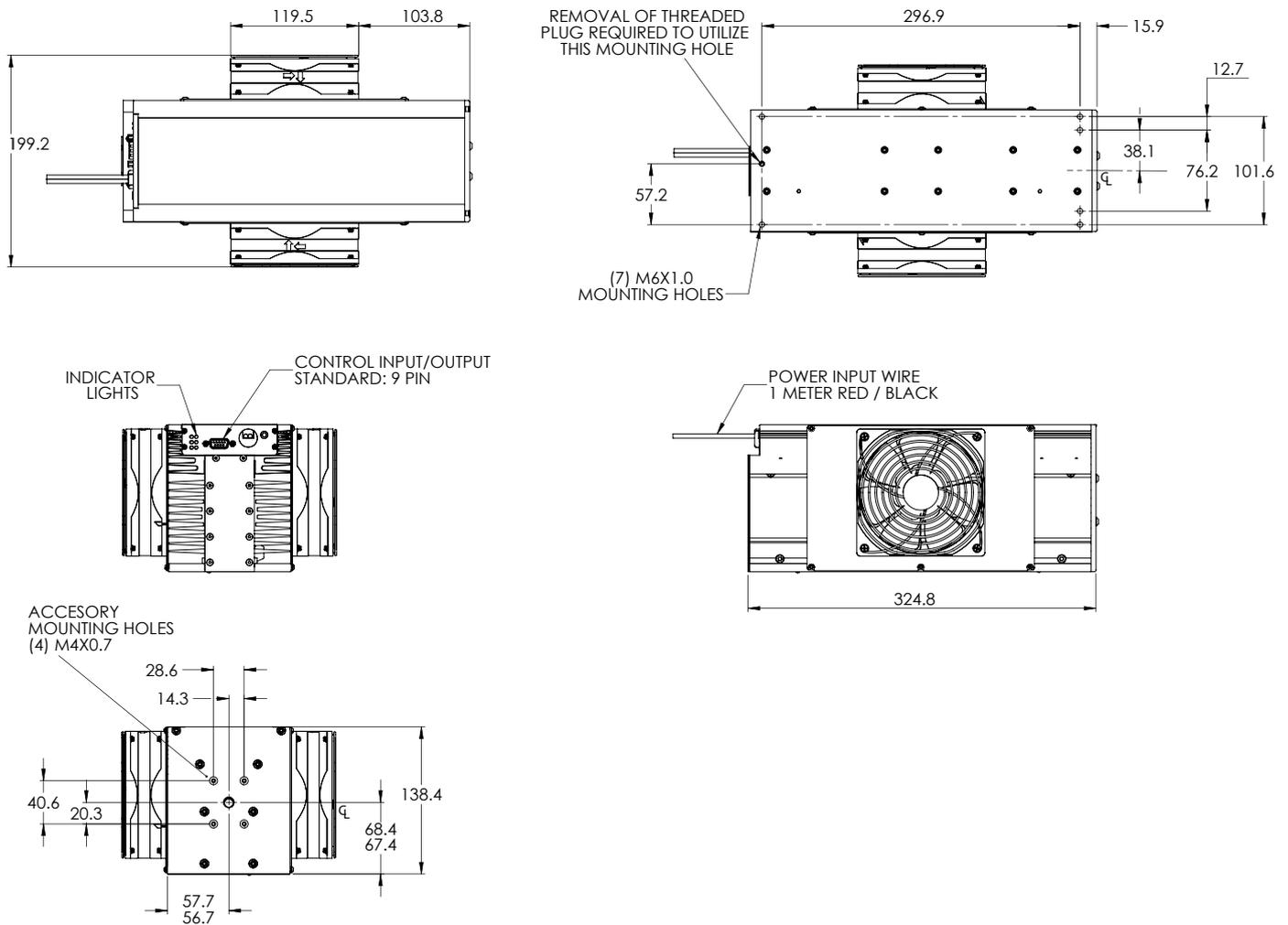
Advantages

Excellent Beam Stability

Get better process results with the Eternity series and enjoy the following advantages:

- Compact footprint, easy to integrate
- Patented CERAMICORE® design ensures longevity
- Inert CERAMICORE® prevents laser gas contamination, power loss
- Low thermal expansion CERAMICORE® for high stability
- Extended power stability from 2% to maximum power
- Short rise and fall times; good pulsing characteristics
- Advanced RF driver electronics: reliable, efficient and state-of-the-art
- 30% fewer laser components; highest reliability

Technical Drawings



Customizations & Options

Flexibility for Your Applications with Eternity Laser Tubes

Customize your Eternity CERAMICORE® laser for your applications with power, wavelength and other options:

- Power levels: 25 W, 30 W, 40 W, 50 W
- Wavelength options: 9.3 μm , 10.2 μm , 10.6 μm , 11.2 μm
- Cooling options: fan-cooled or air-cooled
- Beam expansion or collimation: 2.5x, 3x, 4x, 5x, 6x
- Power supply models and sources
- Laser controls
- Customized final testing
- Operation and training programs
- Rapid response service program
- Laser gas degradation insurance

Specifications

Eternity

Model	E25	E30	E40
Nominal Power	25 W	30 W	40 W
Beam Quality	$M^2 \leq 1.2$	$M^2 \leq 1.2$	$M^2 \leq 1.2$
Beam Ellipticity	< 1.2:1	< 1.2:1	< 1.2:1
Beam Diameter (mm), 1/e2 @ 0m	2.5 ± 0.5	2.5 ± 0.5	2.5 ± 0.5
Beam Divergence (full angle)	8 ± 1 mrad	8 ± 1 mrad	8 ± 1 mrad
Wavelength	9.3 μm	10.2 μm, 10.6 μm	10.2 μm, 10.6 μm, 11.2 μm
Fall Time	< 90 μs	< 90 μs	< 90 μs
Power Stability, Fan	< ± 5%	< ± 5%	< ± 5%
Polarization	Random	Random	Random
Cooling	Fan/Water	Fan/Water	Fan/Water
Input power / Heat Load	720 W	580 W	720 W
Input Voltage, Current	48 V / 15 A	48 V / 12 A	48 V / 15 A
Frequency Range	0.1 - 140 kHz	0.1 - 140 kHz	0.1 - 140 kHz
Operating Temperature	5 °C - 35 °C / 40 °F - 95 °F	5 °C - 40 °C / 40 °F - 104 °F	5 °C - 40 °C / 40 °F - 104 °F
Operating Humidity	Non-Condensing	Non-Condensing	Non-Condensing
Shipping Temperature	-10 °C - 60 °C / 14 °F - 140 °F	-10 °C - 60 °C / 14 °F - 140 °F	-10 °C - 60 °C / 14 °F - 140 °F
Weight	9 kg / 20 lbs.	9 kg / 20 lbs.	9 kg / 20 lbs.
Dimensions (L x W x H)	324.8 mm x 199.2 mm x 138.4 mm (water-cooled width: 116.46 mm)	324.8 mm x 199.2 mm x 138.4 mm (water-cooled width: 116.46 mm)	324.8 mm x 199.2 mm x 138.4 mm (water-cooled width: 116.46 mm)

Nominal Power: Power Measured at 25°C and may derate up to 1% per 1°C for higher laser head temperatures.

Power Stability: Stability test was conducted at rated voltage and rated power, $\pm (P_{max}-P_{min})/(P_{max}+P_{min})$ after the laser warm up period of (5 minutes).

Iradion follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 2.2, 12/2025.

Specifications

Eternity

Model	E50	E60	E70
Nominal Power	50 W	60 W	70 W
Beam Quality	$M^2 \leq 1.2$	$M^2 \leq 1.2$	$M^2 \leq 1.2$
Beam Ellipticity	< 1.2:1	< 1.2:1	< 1.2:1
Beam Diameter (mm), 1/e2 @ 0m	2.5 ± 0.5	2.5 ± 0.5	2.5 ± 0.5
Beam Divergence (full angle)	8 ± 1 mrad	8 ± 1 mrad	8 ± 1 mrad
Wavelength	10.2 μm, 10.6 μm	10.6 μm	10.6 μm
Fall Time	< 90 μs	< 90 μs	< 90 μs
Power Stability, Fan	< ± 5%	< ± 5%	< ± 5%
Polarization	Random	Random	Random
Cooling	Fan/Water	Fan/Water	Water
Input power / Heat Load	870 W	915 W	915 W
Input Voltage, Current	48 V / 18 A	48 V / 19 A	48 V / 19 A
Frequency Range	0.1 - 140 kHz	0.1 - 140 kHz	0.1 - 140 kHz
Operating Temperature	5 °C - 40 °C / 40 °F - 104 °F	5 °C - 40 °C / 40 °F - 104 °F	5 °C - 40 °C / 40 °F - 104 °F
Operating Humidity	Non-Condensing	Non-Condensing	Non-Condensing
Shipping Temperature	-10 °C - 60 °C / 14 °F - 140 °F	-10 °C - 60 °C / 14 °F - 140 °F	-10 °C - 60 °C / 14 °F - 140 °F
Weight	9 kg / 20 lbs.	9 kg / 20 lbs.	5.5 kg / 12 lbs
Dimensions (L x W x H)	324.8 mm x 199.2 mm x 138.4 mm (water-cooled width: 116.46 mm)	324.8 mm x 199.2 mm x 138.4 mm (water-cooled width: 116.46 mm)	324.8 mm x 116.46 mm x 138.4 mm

Nominal Power: Power Measured at 25°C and may derate up to 1% per 1°C for higher laser head temperatures.

Power Stability: Stability test was conducted at rated voltage and rated power, ± (Pmax-Pmin)/(Pmax+Pmin) after the laser warm up period of (5 minutes).

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