



series48

10, 25 & 50W CO₂ Lasers



Whether your application calls for a perfect beam for marking a tiny 2D bar code, the most compact laser for integrating into a tabletop engraver, or a laser with a proven track record of reliability to withstand a harsh industrial environment - one of our lasers will meet your requirements.

Our original 48-Series Laser technology opened the door for sealed CO₂ lasers in many industrial applications. More than 20 years later, it remains the industry standard for performance, reliability, long lifetime, and low cost.

With output powers of 10, 25, or 50W, and available in either OEM or keyswitch configurations, Synrad's 48-series lasers are ideal for incorporation into marking, engraving, and small cutting systems, where performance, low price and high reliability are essential.

Synrad's 48-series lasers feature:

- 10, 25 & 50W models
- Rugged & reliable design
- Low cost
- OEM & Keyswitch versions
- Easy integration with our *FH Series Marking Head*

Introducing Synrad's 48-series technology

The only sealed CO₂ lasers with an installed base dating over 20 years, Synrad's original 48-series is the industry's gold standard for long operating lifetimes and high reliability.

The laser tube is a rigid box structure design that provides an ultra-stable platform for the laser resonator. Synrad's 48-series tubes are mounted into an H-shaped heat sink extrusion that also serves as the chassis for the drive electronics. This guarantees that the laser will withstand the harsh requirements of industrial environments.

The all-metal sealed tube design and proprietary manufacturing process ensure high gas purity, essential for long operating lifetimes. 48-series lasers on lifetest at Synrad have run continuously for 45,000 hours - and even longer - before experiencing any degradation in power.

Synrad lasers can be operated up to 100% duty cycle, with laser power adjusted using a pulse width modulation (PWM) control. The laser is controlled directly with a TTL signal (rear-mounted BNC connector). Alternatively, a DB-9 connector provides remote access to all laser functions, including laser control, fault conditions monitoring, remote interlock, and failure shutdown options.

Fully RoHS and CE compliant, all 48-series lasers include an internal RF power supply and can be either fan-cooled (48-1 and 48-2 models) or water-cooled. Customers provide a standard 30VDC power supply and forced air or water-cooling. A tickle signal is also required for laser operation, and is easily supplied by Synrad's UC-2000 Universal Laser Controller.

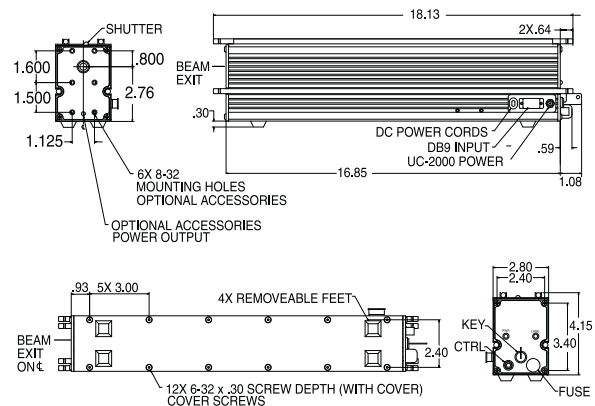
The original industrial laser workhorse, 48-1



48-1

Built for 24/7 operation, Synrad's original 48-1, 10W laser, is the workhorse of our product line. Whether operating on a production line, integrated into a compact system, or paired to our *FH Series Marking Head*, the rugged 48-1 continues to perform.

Available in air- or water-cooled, OEM and keyswitch configurations, the 48-1 includes power for additional accessories, such as our UC-2000, Visible Diode Pointer, and Closed Loop Kits. A 3-year warranty comes standard with each unit.



All dimensions are in inches

- 10W • Low-Cost Design
- Air- or Water-Cooled • Linear Polarization
- Rugged & Reliable • 3-Year Warranty

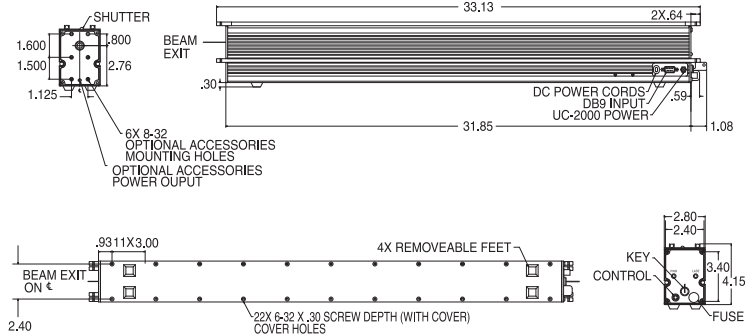
The industry's most reliable 25W CO₂ laser, 48-2

48-2



Synrad extended its “all-metal” tube technology to a 25W laser to produce the 48-2. Like the 48-1, it is available in OEM and keyswitch versions and may be air- or water-cooled. Found in laser engravers and marking systems worldwide, it is the top choice for affordability and high reliability in the 25W power range.

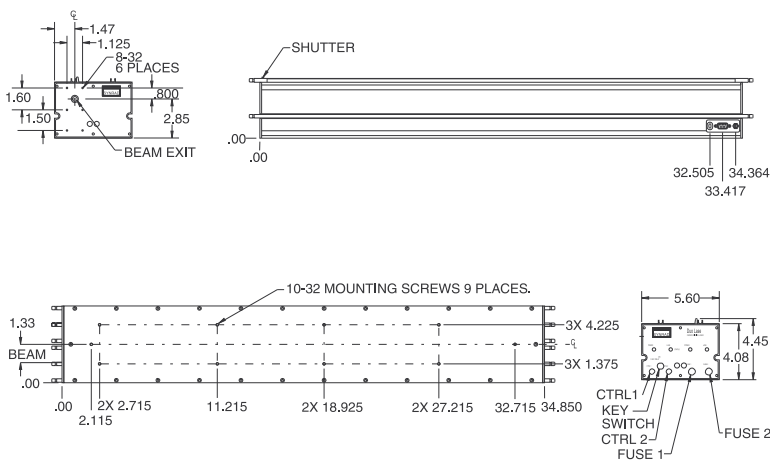
- 25W • Low-Cost Design • Air- or Water-Cooled
- Linear Polarization • Rugged & Reliable



All dimensions are in inches

Duo-Lase[®] technology produces over 50W from the 48-5

48-5



All dimensions are in inches

Synrad's 48-5, utilizing our patented *Duo-Lase* technology, optically combines two 25W sealed CO₂ laser tubes, thereby providing a single, diffraction-limited beam at 50W. The technique capitalizes on the long production history of Synrad's 48-series and assures the user of a mature product with proven reliability. The 48-5's randomly polarized beam makes it well suited to complex cutting operations where consistent kerf control is critical. Water-cooling provides uniform cooling of both tubes.

- 50W • Duo-Lase Technology • Water-Cooled
- Random Polarization • Low-Cost Design

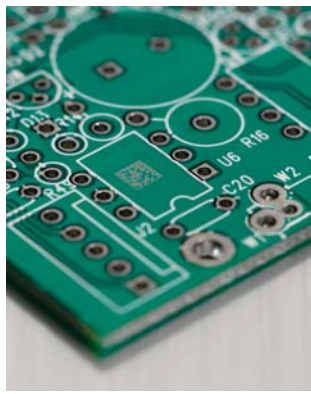
Specifications

Model	48-1	48-1(W)	48-2	48-2(W)	48-5W
Output Power	10W		25W		50W
Mode Quality	$M^2 \leq 1.2$		$M^2 \leq 1.2$		$M^2 \leq 1.2$
Ellipticity	<1.2		<1.2		<1.2
Rise Time	<150µsec		<150µsec		<150µsec
Beam Diameter	3.5mm		3.5mm		3.5mm
Beam Divergence (full angle)	4.0mR		4.0mR		4.0mR
Wavelength	10.57-10.63µm*		10.57-10.63µm*		10.57-10.63µm*
Power Stability, from cold start (guaranteed)	±10%		±5%		±5%
Polarization	Linear (Vertical)		Linear (Vertical)		Random
Cooling	Air	Water	Air	Water	Water
Heat Load (max)	300W		500W		800W
Flow Rate, Air	250 CFM x 2	N/A	250 CFM x 4	N/A	N/A
Flow Rate, Water (18-22°C)	N/A	0.5 GPM	N/A	0.8 GPM	1.5 GPM
Input Voltage / Current	30 VDC / 7A		30 VDC / 14A		30 VDC / 28A
Dimensions (in)	16.9 x 2.8 x 4.2		31.9 x 2.8 x 4.2		34.9 x 5.3 x 4.5
(mm)	429 x 71 x 107		810 x 71 x 107		886 x 135 x 114
Weight	9 lbs / 4.1 kg		18 lbs / 8.2 kg		44 lbs / 20 kg

Beam specifications measured at 1/e².
 *Typical. Actual wavelength may vary from 10.2-10.8µm
 Specifications subject to change without notice.



 Invisible Laser Radiation
 Avoid eye or skin exposure to direct or scattered radiation
 Class 4 Laser Product.



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