



firestar
V series

30 & 40W 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.

Synrad developed the *firestar v-series* with a goal of producing the highest quality, low power CO₂ lasers in the most compact package possible. Available in 30 and 40W models, the *v-series* lasers are ideal for integration into desktop engravers and compact marking and coding systems. The *v30*, available only as an OEM model, was designed specifically for these manufacturers.

Firestar v-series models are available in the following configurations:

firestar v30:

- OEM, air-cooled (SA*)
- OEM, fan-cooled (SF)
- OEM, water-cooled (SW)

firestar v40:

- OEM, air-cooled (SA*)
- OEM, fan-cooled (SF)
- OEM, water-cooled (SW)
- Keyswitch, fan-cooled (KF)
- Keyswitch, water-cooled (KW)

* Air-cooled SA model lasers require the addition of customer-supplied cooling fans.

- 30 & 40W models
- Integrated RF Supply
- Superior Near-Field Beam Quality
- Excellent Power Stability
- Fast Rise/Fall Time
- Rugged, 3-point Mounting (available in Metric & English units)
- RoHS Compliant
- Easily integrated with our FH Series Marking Head



Outstanding performance, combined with compact size and air-cooled operation, make the *firestar v-series* lasers perfect for incorporation into high-performance laser engravers and high speed marking systems.

Based on a waveguide design, Synrad's *v-series* resonator technology guarantees a circular beam (typical $M^2 = 1.1$) in both the near and far field. This near-perfect beam can be focused to the smallest achievable spot size, thereby creating the maximum possible power density on a work surface. This results in faster processing speeds and higher resolution for cutting or engraving applications.

The resonator design features a small diameter bore and high gas fill pressure for fast rise/fall times (typically 80-90 μ sec), while the large gas ballast ensures the long operating lifetimes expected of all Synrad lasers. Long term power stability of better than $\pm 3\%$ is typical.

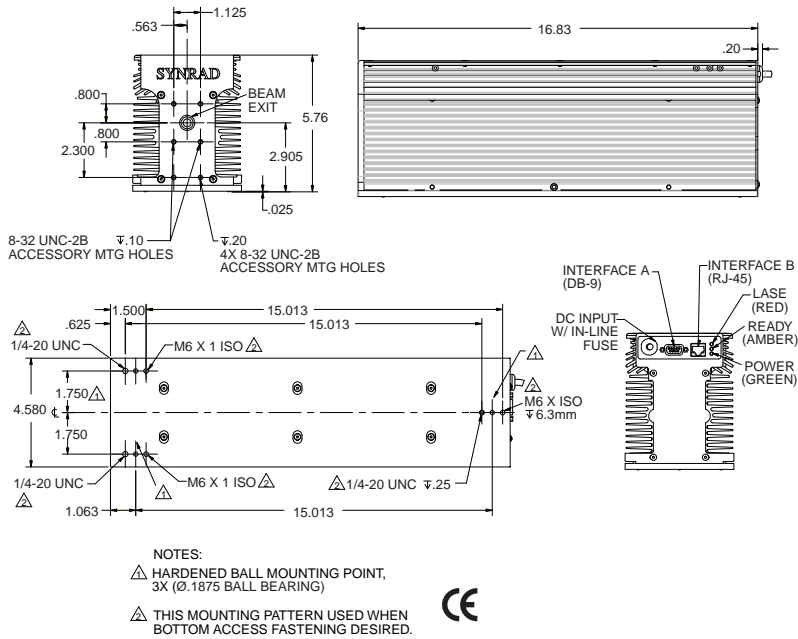
As with all Synrad lasers, the *v-series* can be operated up to 100% duty cycle, with laser power adjusted using a pulse width modulation (PWM) control. Both *v-series* models incorporate an internal RF supply, and are driven by standard 30VDC power supplies.

Designed for ease-of-integration, the *firestar v30* and *v40* lasers incorporate a unique 3-point mounting system for easy removal and replacement. The *firestar v-series* and *t-series* lasers share common beam exits, ensuring virtual drop-in replaceability up to 100 watts.

Synrad's *v40*, available in both keyswitch or OEM configurations, features an onboard tickle generator, an industry standard 5-24VDC I/O port and 15-pin D-Sub connector for remote control and status lines. The *v40* is available in either air (SA*), fan (SF/KF), or water-cooled (SW/KW) configurations.

The *v30*, available strictly as an OEM laser, does not incorporate a built-in tickle generator, and features simplified LEDs and an I/O interface using DB-9 and RJ-45 connectors. The OEM *v30* laser is available in your choice of models: air-cooled (SA*), fan-cooled (SF), or water-cooled (SW).

Built for OEMs - the *firestar v30*



All dimensions are in inches

OEM air-cooled model shown
 For more drawings, visit www.synrad.com/vseries



firestar v30

The 30 watt *firestar v30* is designed primarily for OEM usage. Available in air, fan and water-cooled models with a simple base plate-mounting scheme, the *v30* provides a simple interface based on TTL level input and I/O signals via a DB-9 or RJ45 connector. Built to withstand the hottest environments, the excellent performance of this laser, combined with its compact size and air-cooling, make it a perfect fit for OEM marking and engraving systems.

- 30W • Air, Fan or Water-Cooled • Compact Footprint OEM Model Only

Near-perfect beam quality in a 40W laser

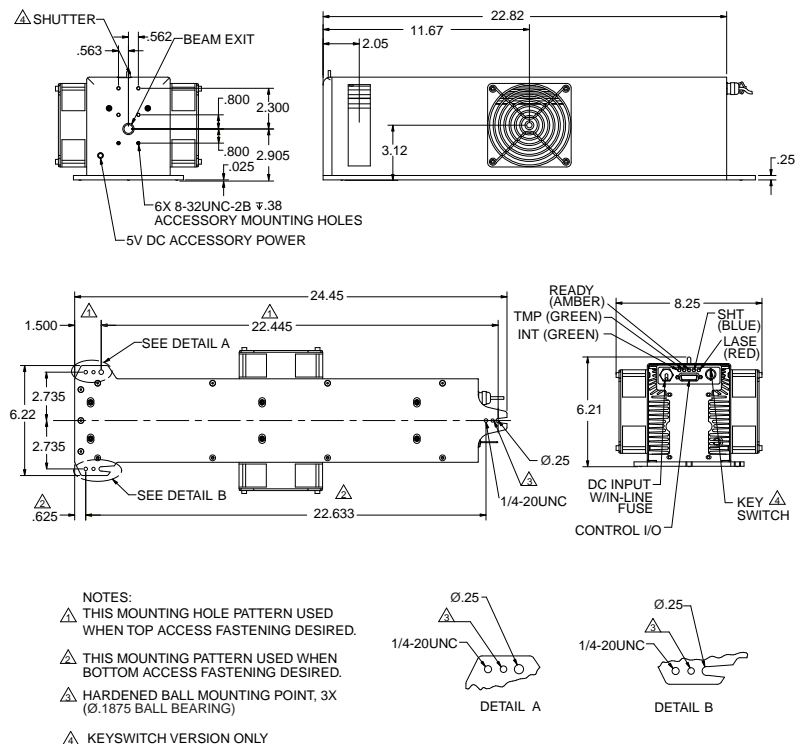


firestar v40

For applications with higher power requirements, Synrad offers the *firestar v40*.

The *v40* comes in both OEM and keyswitch versions, and can be either air- or water-cooled. Air-cooled models can be supplied with or without fans. The *v40*'s powerful control panel includes a 5-24V I/O port and 15-pin D-Sub connector, plus LED indicator lights to make testing of laser functions quick and easy. Common mounting and beam exits with our *firestar t-series* lasers ensure an upgrade path for the future.

The high power output of the *v40* with a near-perfect beam provides the ideal source for laser engravers and small-area cutting systems.



All dimensions are in inches

Keyswitch fan-cooled model shown
 For more drawings, visit www.synrad.com/vseries

- 40W • Air & Water-Cooled models • Compact Footprint OEM and Keyswitch Models

Specifications

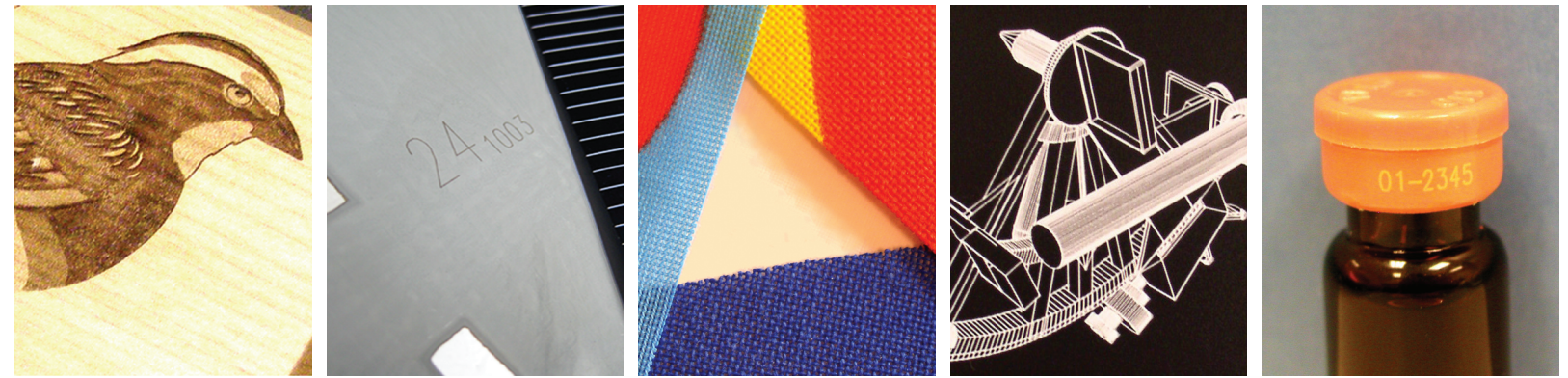
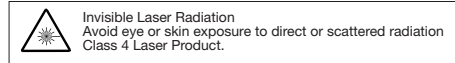
Model	v30	v30W	v40	v40W
Output Power	30W		40W	
Mode Quality	$M^2 \leq 1.2$		$M^2 \leq 1.2$	
Ellipticity	<1.2		<1.2	
Rise Time	<100µsec		<100µsec	
Beam Diameter	2.5±0.5 mm		2.5±0.5 mm	
Beam Divergence (full angle)	<7.0mR		<7.0mR	
Wavelength	10.57-10.63µm*		10.57-10.63µm*	
Power Stability, from cold start (guaranteed)	±5%		±5%	
after 2 minutes (typical)	±3%		±3%	
Polarization	Linear (Horizontal)		Linear (Horizontal)	
Cooling	Air	Water	Air	Water
Heat Load (max)	450W		540W	
Flow Rate, Air	140 CFM x 2	N/A	140 CFM x 2	N/A
Flow Rate, Water (18-22°C)	N/A	1.0 GPM, <60 PSI	N/A	1.0 GPM, <60 PSI
Input Voltage / Current	Air-Cooled - 30 VDC / 15A (24A peak for 0.5ms min.) Fan-Cooled - 30 VDC / 16A (24A peak for 0.5ms min.)		30 VDC / 18A	
Dimensions** (in)	16.8 x 4.6 x 5.8		22.8 x 4.6 x 5.8	
(mm)	428 x 117 x 146		579 x 117 x 146	
Weight	18 lbs / 8.2 kg	19 lbs / 8.7 kg	23 lbs / 10.4 kg	24 lbs / 10.9 kg

Beam specifications measured at 1/e².

*Typical. Actual wavelength may vary from 10.2-10.8µm

**Air-cooled models are measured without optional fans.

Specifications subject to change without notice.



Synrad, Inc.

4600 Campus Place • Mukilteo, WA 98275 USA

tel 1.425.349.3500 • toll-free 1.800.SYNRAD1 • fax 1.425.349.3667

email synrad@synrad.com • www.synrad.com