



# Verdi G-Series

## High-Power Pumps for Ti:Sapphire Lasers and Amplifiers

The Verdi G is a high performance CW laser providing up to 20 W at 532 nm, ideal for pumping Ti:Sapphire lasers and amplifiers, for applications including ultrafast spectroscopy, multiphoton microscopy, terahertz imaging, and optical coherence tomography (OCT).

Based on Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology, the Verdi G produces a diffraction limited, power-invariant beam with extremely low noise and high stability for optimal pumping performance.

High reliability and robustness is ensured by the use of ultra-long life AAA™ pump diodes and Coherent's patented PermAlign™ technology, providing optimal alignment and high quality solder-bonding of the optics.

### FEATURES & BENEFITS

- Up to 20 W output power at 532 nm
- Superior mode quality
- Power-invariant beam properties
- Extremely low noise
- PermAlign™ solder-bonded optics technology
- AAA™ ultra-long life pump diodes

### APPLICATIONS

- Ti:Sapphire Pumping



SPECIFICATIONS <sup>1</sup>	Verdi G2	Verdi G5/G7/G8	Verdi G10	Verdi G12/G15/G18/G20
Wavelength (nm)	532 ±2			
Pulse Format	CW			
Linewidth (FWHM) (GHz)	<30			
Spectral Purity (%)	>99			
Output Power (W)	2	5, 7, 8 <sup>2</sup>	10 <sup>2</sup>	12, 15, 18, 20 <sup>2</sup>
Power Tunability	50 mW to 100% full-rated power			
Spatial Mode	TEM <sub>00</sub>			
Beam Quality	<1.1			
Beam Circularity <sup>3</sup>	1.0 ±0.1			
Beam Waist Diameter (mm) (FW, 1/e <sup>2</sup> )	2.25 ±10%			
Beam Divergence (mrad) (FW, 1/e <sup>2</sup> )	<0.5			
Beam Waist Location <sup>4</sup> (m)	±0.5			
Beam Pointing Stability <sup>5</sup> (μrad/°C)	<5			
Horizontal Beam Position Tolerance <sup>6</sup> (mm)	±<1.0			
Vertical Beam Position Tolerance <sup>6</sup> (mm)	±<1.0			
Polarization Ratio	Linear, >100:1			
Polarization Direction	Vertical, ±5°			
Noise (% rms) (10 Hz to 100 MHz)	<0.03	<0.02	<0.02	<0.02
Power Stability <sup>7</sup> (%) (pk-pk)	±<1			
Warm-up Time (minutes)	<10			
CDRH Compliant	Yes			
UTILITY REQUIREMENTS				
Operating Voltage (VAC)	100 to 240			
Frequency (Hz)	50 to 60			
Power Consumption (W)	<600	<600	<600	<1800
Cooling Requirements	Heatsink Required: e.g. Genesis CX Water-Cooled Riser			Direct water-cooling of laser head required
ENVIRONMENTAL CONDITIONS				
Ambient Temperature (°C)	10 to 40, non-condensing			
Operating	10 to 40, non-condensing			
Non-Operating	-10 to 60			
Relative Humidity <sup>8</sup> (%)	5 to 95			
MECHANICAL SPECIFICATIONS				
CE Marking	IEC 61010-1/EN 61010-1			
Dimensions (L x W x H)				
Laser Head <sup>9</sup>	281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)			214 x 98 x 68 mm (8.43 x 3.86 x 2.68 in.)
Benchtop Power Supply	361 x 229 x 160 mm (14.22 x 9.01 x 6.29 in.)			406 x 236 x 171 mm (16.0 x 9.3 x 6.75 in.)
Cables (laser head to controller)	3 m (10 ft.)			3 m (10 ft.)
Weight				
Laser Head (including cables) Benchtop	7.1 kg (15.6 lbs)	7.1 kg (15.6 lbs)	8.6 kg (18.9 lbs)	6.0 kg (13.2 lbs)
Power Supply	6.0 kg (13.2 lbs.)	6.0 kg (13.2 lbs.)	6.0 kg (13.2 lbs.)	10.0 kg (22.0 lbs.)

<sup>1</sup> Optical parameters measured at the output plane of the laser head, unless noted all parameters valid at the nominal output power and for the lifetime of the unit.

<sup>2</sup> This product is offered in several output power versions: 2W and 5W. The output power can be adjusted from 250 mW to maximum power.

<sup>3</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>4</sup> Negative value corresponds to a location inside head.

<sup>5</sup> After 2-hour warm-up.

<sup>6</sup> Measured at the output window.

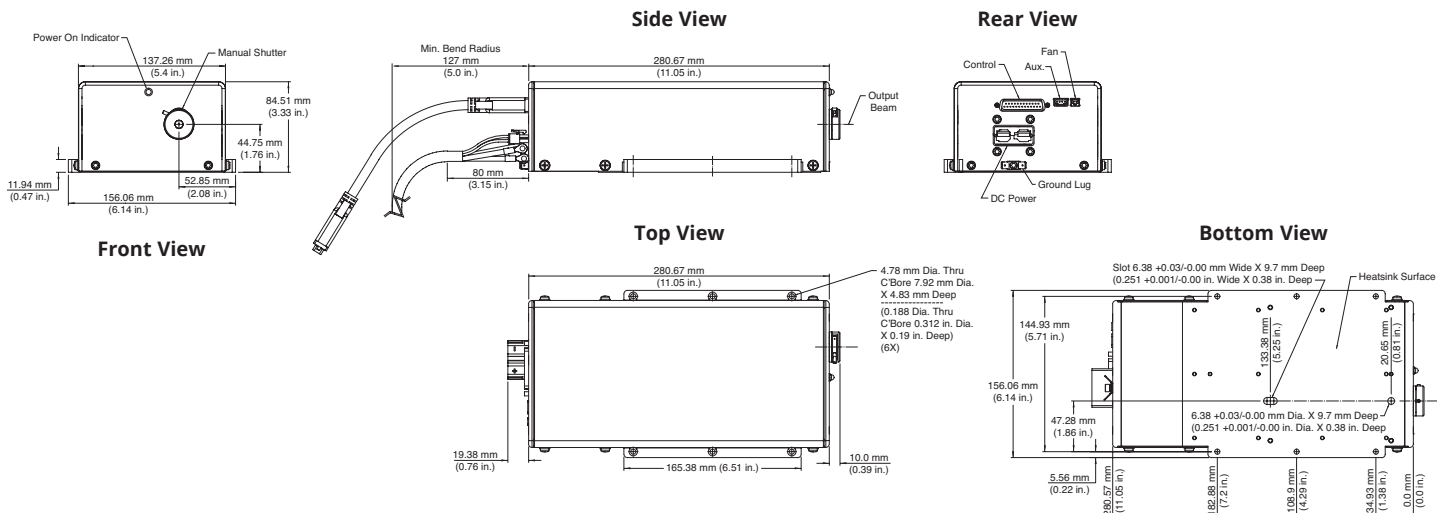
<sup>7</sup> Measured over 8 hrs.

<sup>8</sup> Non-condensing.

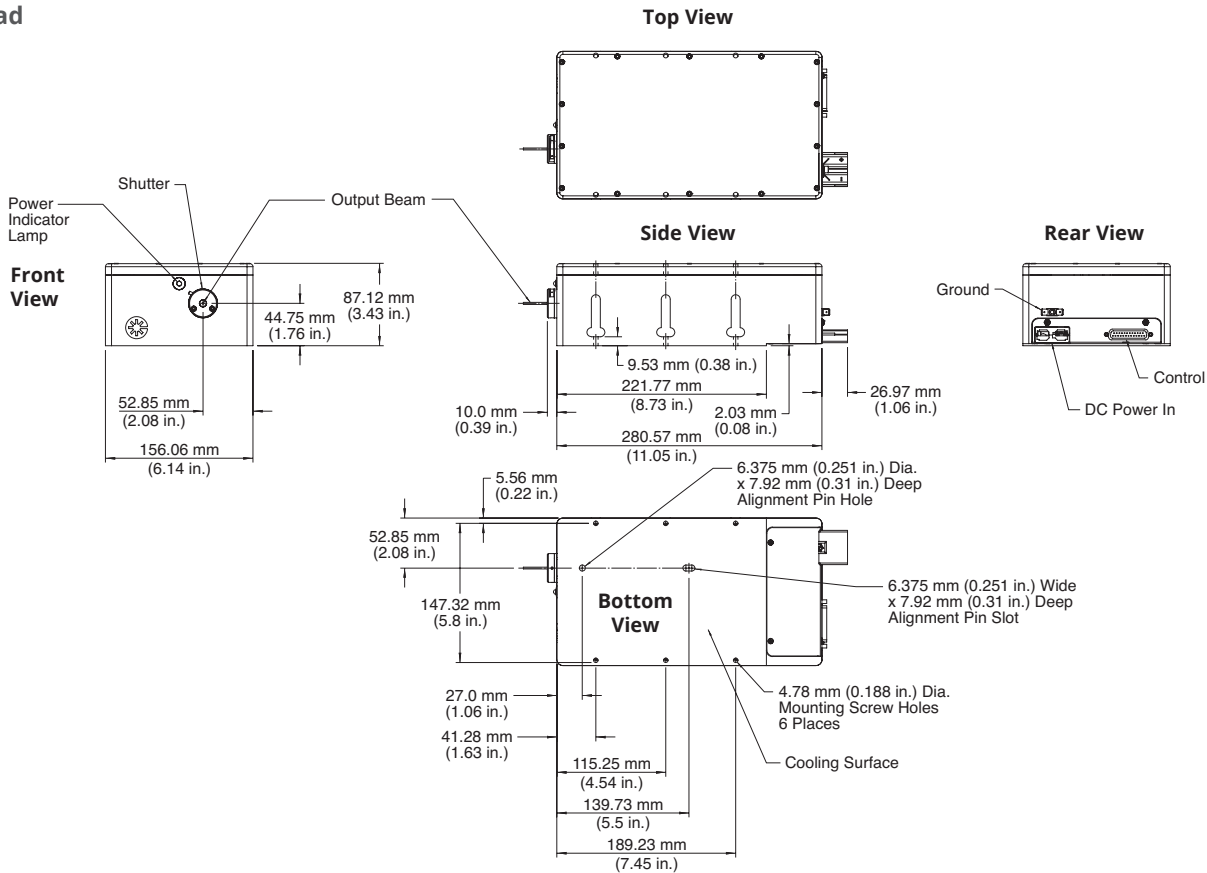
<sup>9</sup> Back connector not included in laser head length dimension.

**MECHANICAL SPECIFICATIONS**

**Verdi G2/G5/G7/G8  
Laser Head**

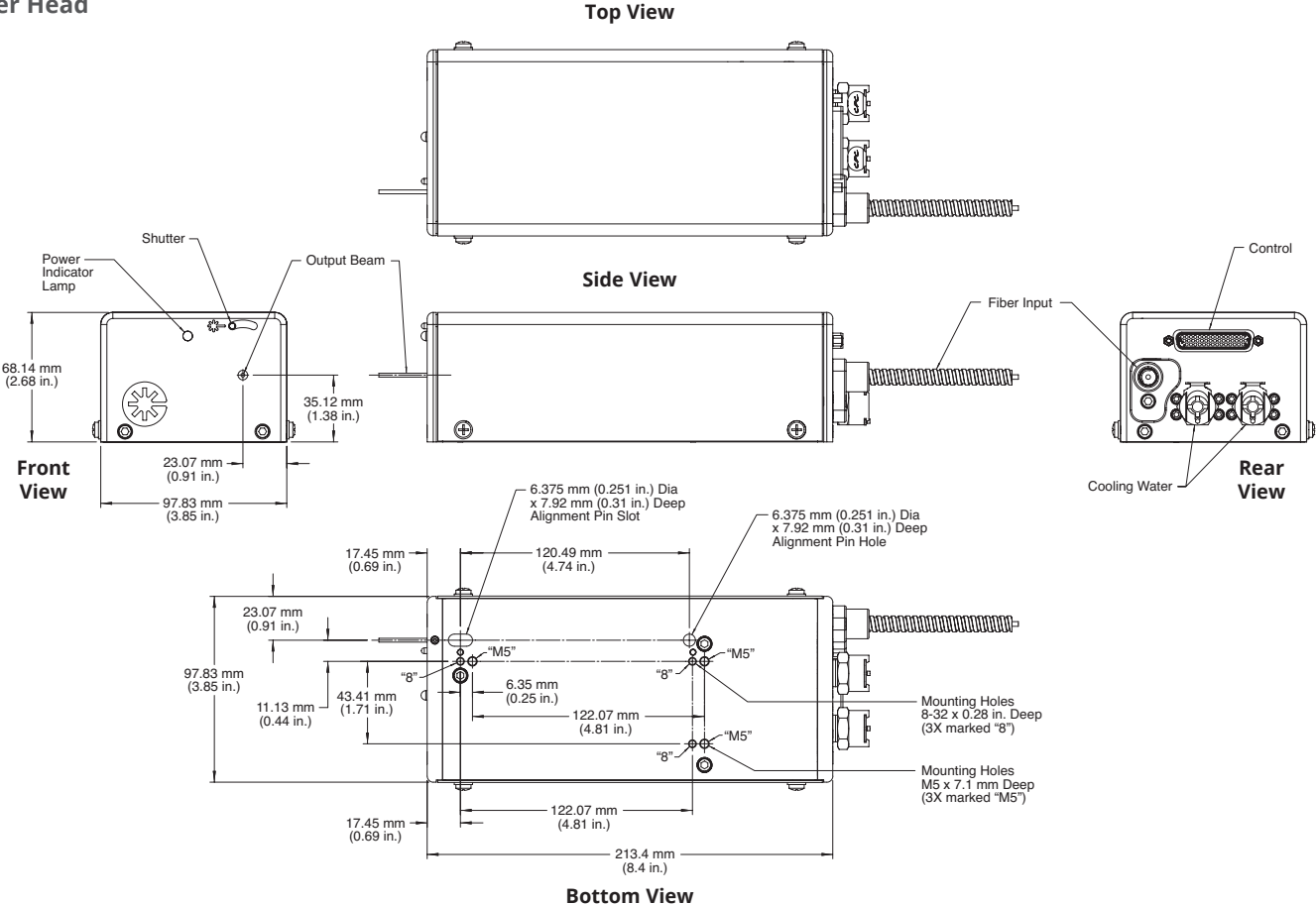


**Verdi G10  
Laser Head**

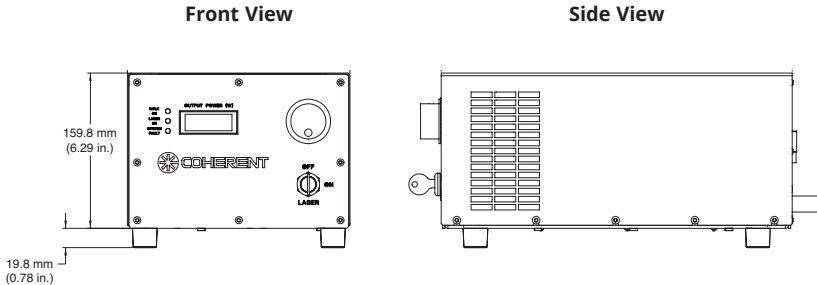


**MECHANICAL SPECIFICATIONS**

**Verdi G12/G15/G18/G20  
Laser Head**

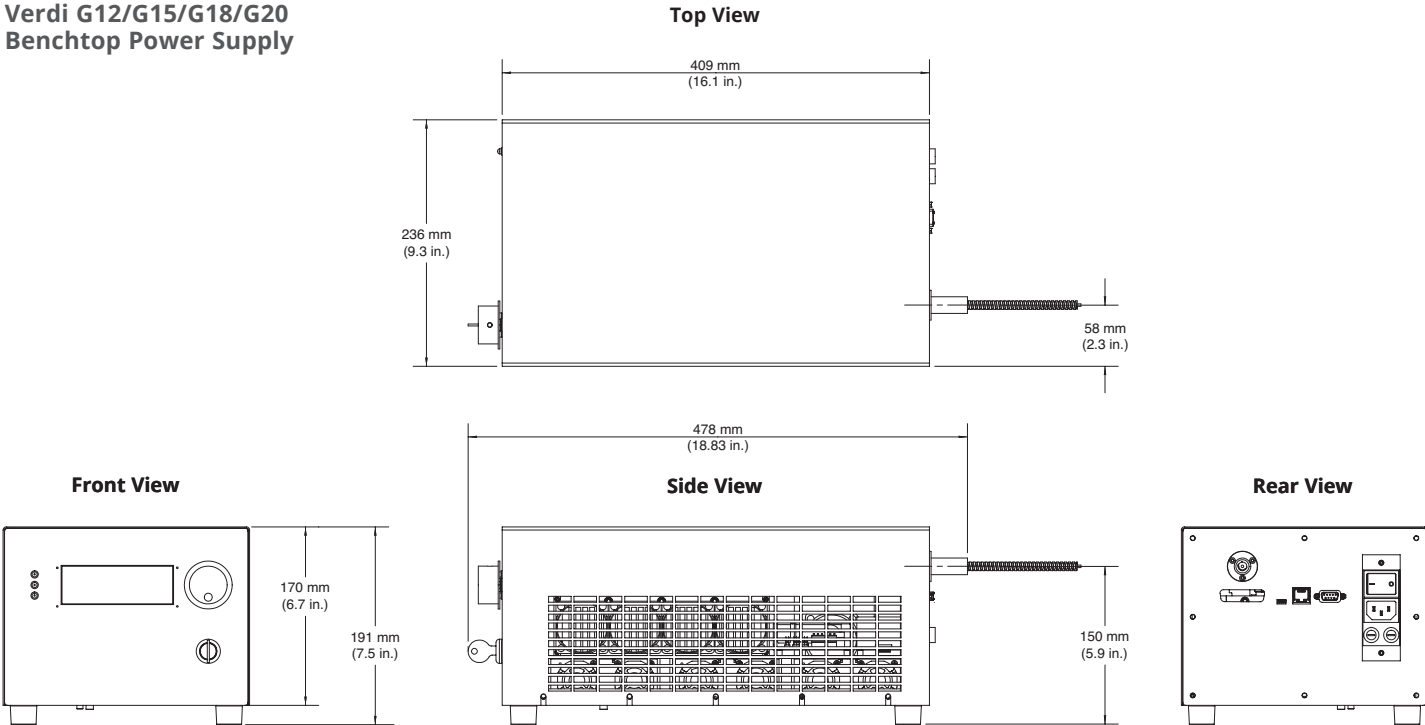


**Verdi G2/G5/G7/G8/G10  
Benchtop Power Supply**

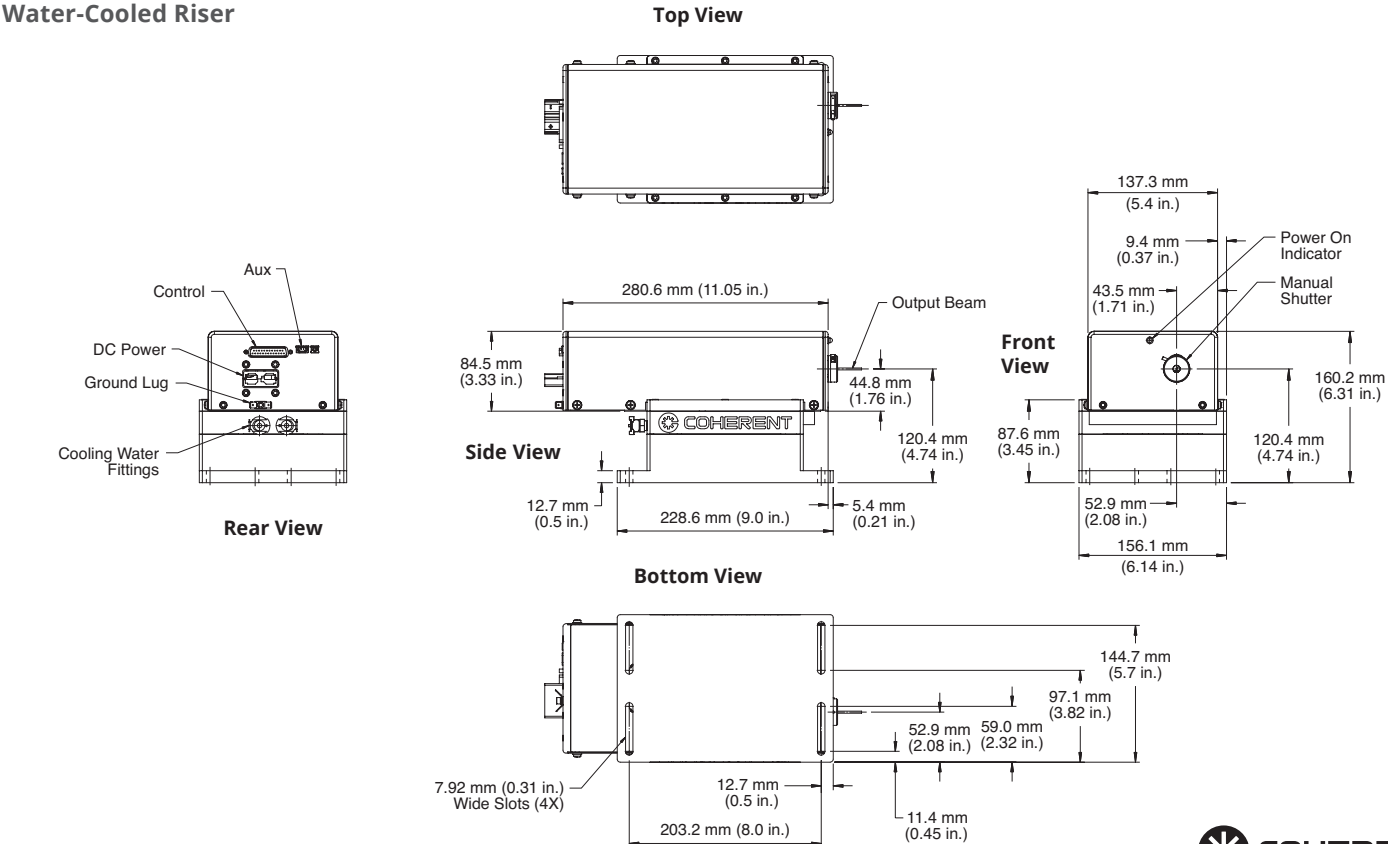


**MECHANICAL SPECIFICATIONS**

**Verdi G12/G15/G18/G20  
Benchtop Power Supply**



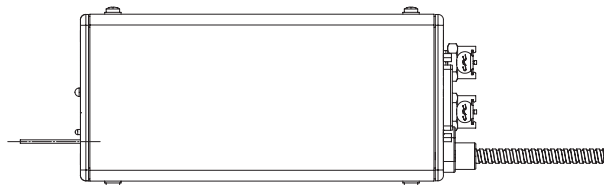
**Verdi G2/G5/G7/G8/G10  
Water-Cooled Riser**



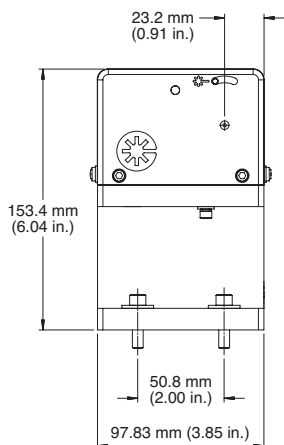
**MECHANICAL SPECIFICATIONS**

**Verdi G12/G15/G18/G20  
Water-Cooled Riser**

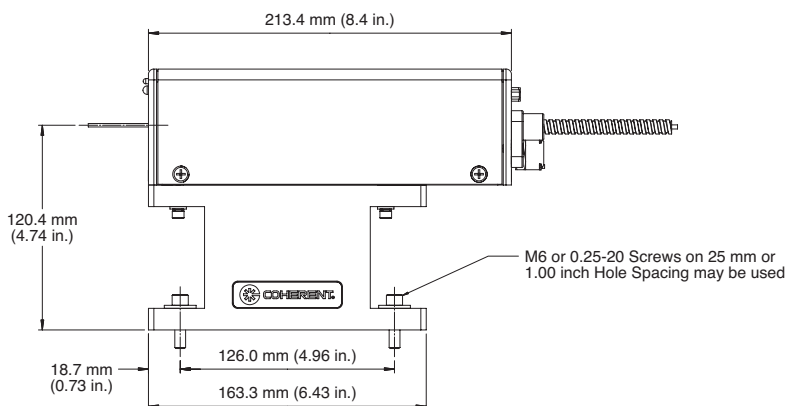
**Top View**



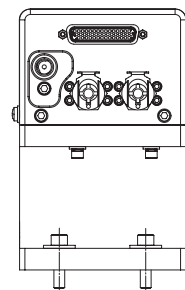
**Front View**



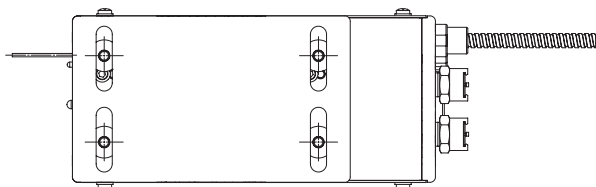
**Side View**



**Rear View**



**Bottom View**



Coherent, Inc.,  
5100 Patrick Henry Drive Santa Clara, CA 95054  
p. (800) 527-3786 | (408) 764-4983  
f. (408) 764-4646

[tech.sales@coherent.com](mailto:tech.sales@coherent.com) [www.coherent.com](http://www.coherent.com)

U.S. Patent No. 5,991,318  
U.S. Patent No. 6,167,068  
U.S. Patent No. 6,285,702  
U.S. Patent No. 6,438,153  
U.S. Patent No. 6,683,901  
U.S. Patent No. 7,180,928



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 Verdi G Lasers. For full details of this warranty coverage, please refer to the Service section at [www.coherent.com](http://www.coherent.com) or contact your local Sales or Service Representative. MC-010-12-0M0220Rev.C Copyright ©2020 Coherent, Inc.

