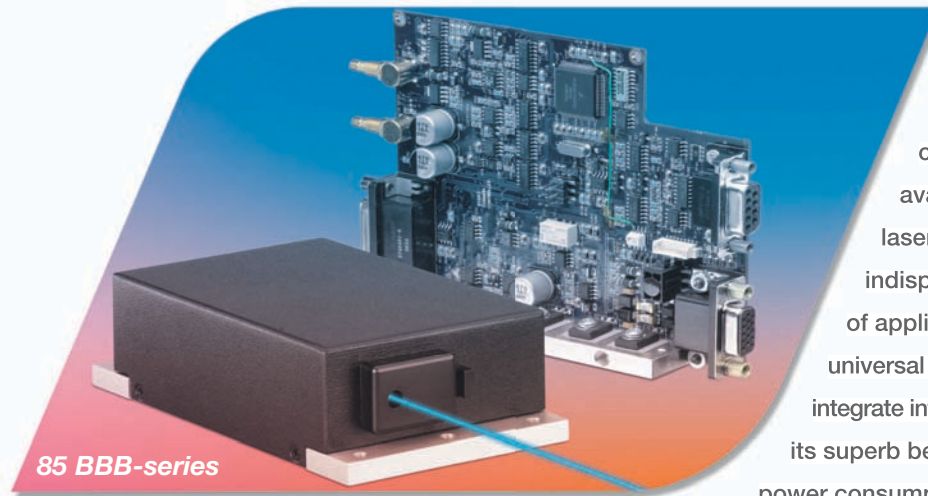


## Blue Solid-State Laser System 488 nm, 10 to 50 mW



The CVI Melles Griot 85 BBB-series, directly doubled diode laser, combines the highest efficiency available in a 488-nm solid-state laser with features that make it an indispensable tool for a wide range of applications. Its compact size and universal OEM controller make it easy to integrate into any system or instrument, and its superb beam quality and extremely low power consumption make it ideal for OEM use.

The 85 BBB is available with output power from 10 to 50 mW and features automatic power control (APC) for excellent power stability. Modulation option is available. The 85 BBB series can be used as a direct replacement for air-cooled argon-ion lasers in many bioanalytical and medical applications (e.g., flow cytometry, confocal microscopy, DNA analysis), thereby reducing power consumption from 1000 W to less than 15 W, vastly simplifying thermal management, and increasing system life.

Applications in metrology, defect inspection, and other fields are also possible.

### Key attributes

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- Up to 50 mW at 488 nm
- Automatic power control (APC)
- Excellent beam quality ( $M^2 < 1.2$ )
- Low-noise output:
  - rms: <0.5%, 20 Hz to 1 MHz (typical)
  - <0.75% (maximum)
  - peak-to-peak: <1%, 20 Hz to 20 kHz
- Power consumption <15 W
- Stable operation at baseplate temperatures from +10° to +55°C (45°C maximum for 50 mW)
- Solid-state reliability for long lifetime
- Minimal heat-sinking requirements

## Specifications

### Beam Characteristics:

Output Wavelength<sup>1</sup>:  $488 \pm 0.5$  nm  
 $M^2$ :  $<1.2$   
Transverse Mode: TEM<sub>00</sub>  
Beam Dimension ( $1/e^2$ ):  $0.70 \pm 0.05$  mm  
Beam Ellipticity: 1.1:1  
Far-Field Divergence ( $1/e^2$ ):  $<1.2$  mrad  
Polarization: Linear (Vertical  $\pm 5^\circ$ ),  $>100:1$

### Stability Characteristics:

Power Stability:  
 $\pm 2\%$  over 2 hours, ambient  $\pm 2^\circ\text{C}$   
Pointing Stability:  $<30$   $\mu\text{rad}$   
Amplitude Noise:  
Peak-to-Peak:  $<1\%$  (20 Hz to 20 kHz)  
rms:  $<0.75\%$  (20 Hz to 1 MHz),  
 $<0.5\%$  typical  
Static Alignment Tolerance<sup>3</sup>:  
Beam Position:  $\pm 0.25$  mm  
Beam Angle:  $\pm 2.5$  mrad

### Operating Characteristics:

Warm-up Time:  $<5$  minutes  
Maximum Heat Dissipation:  
Laser head: 7 W  
Controller: 8 W

### Environmental Requirements:

Operating Temperature:  $10^\circ\text{C}$  to  $40^\circ\text{C}$   
Nonoperating Temperature:  
 $-10^\circ\text{C}$  to  $+60^\circ\text{C}$   
Operating Humidity:  
0–95%, noncondensing  
Baseplate Temperature:  $10^\circ\text{C}$  to  $45^\circ\text{C}$   
Shock:  $<25$  g (11msec)  
Vibration: (5 to 500 Hz)  
Operating:  $<0.3$  g (sinusoidal)  
Nonoperating:  $<3.0$  g (sinusoidal)  
Controller Heat Spreader Temperature<sup>5</sup>:  
0 to  $+50^\circ\text{C}$

### Electrical Characteristics:

Input Voltage<sup>4</sup>:  $5.0 \pm 0.25$  vdc  
Computer Interface: RS–232  
Power Consumption:  $<15$  W

### Weight:

Laser Head: 0.5 kg (1.1 lb)  
Controller: 0.39 kg (0.87 lb)  
Mounting Surface Requirements:  
Laser Head: flatness  $<0.003$  inches

### Output Power<sup>2</sup> :

85 BBB 010-XXX: 10 mW  
85 BBB 020-XXX: 20 mW  
85 BBB 030-XXX: 30 mW  
85 BBB 050-XXX: 50 mW

### Power Cords:

XXX = 000 for OEM format (no powercord,  
no dc supply, no user's manual)

### Options:

ac/dc converters  
Power Cords

*85 BBB series lasers use a completely new platform with fewer parts than conventional diode-pumped solid-state lasers, thereby increasing stability, performance, and reliability while reducing manufacturing costs.*

*1 Laser-to-laser tolerance.*

*2 Output power is adjustable via RS-232 or analog interface from 10% to 110%. Specifications are valid at 100% of specified power. Recommended power range is 70-110% power.*

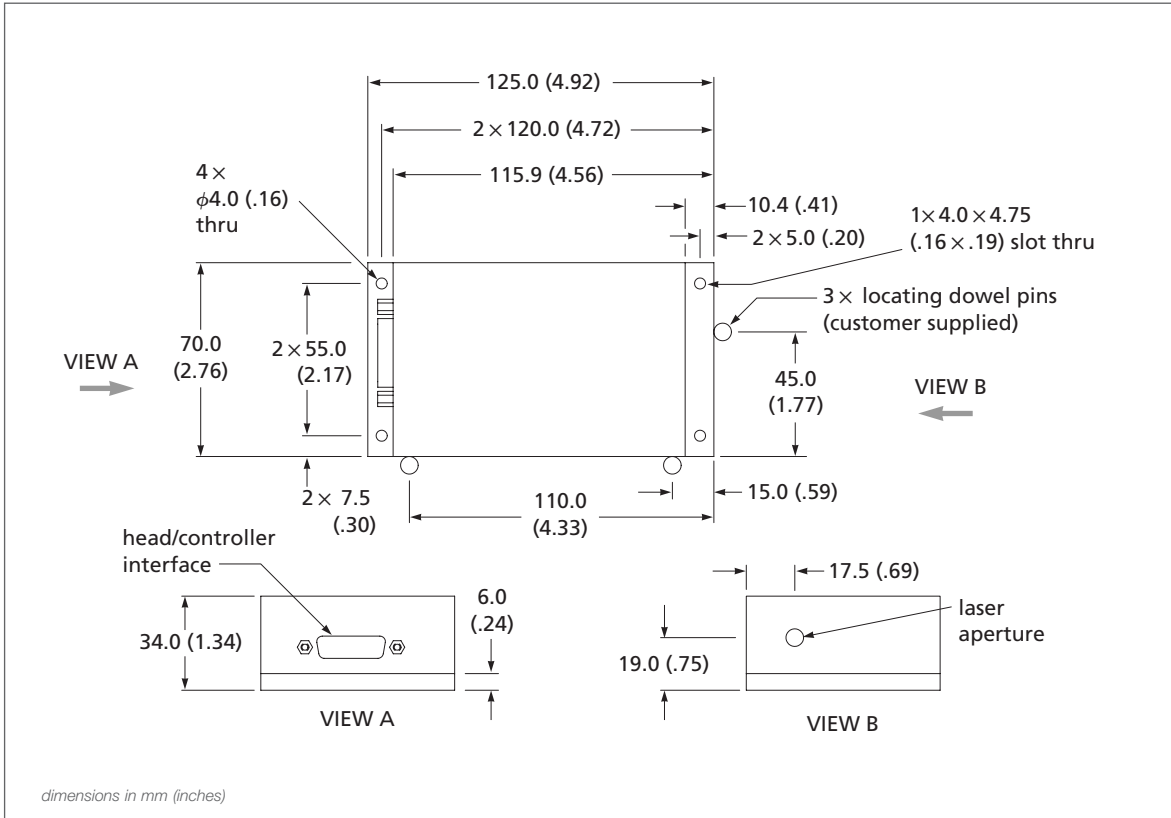
*3 Static alignment tolerances are relative to the right bottom edge (see laser head drawing).*

*4 dc power must meet the following requirements:  
Power  $>20$  W; ripple  $<5\%$  peak-to-peak; line regulation  $<0.5\%$ .*

*5 Mounted on adequate heat-sinking surface meeting mounting surface requirements.*



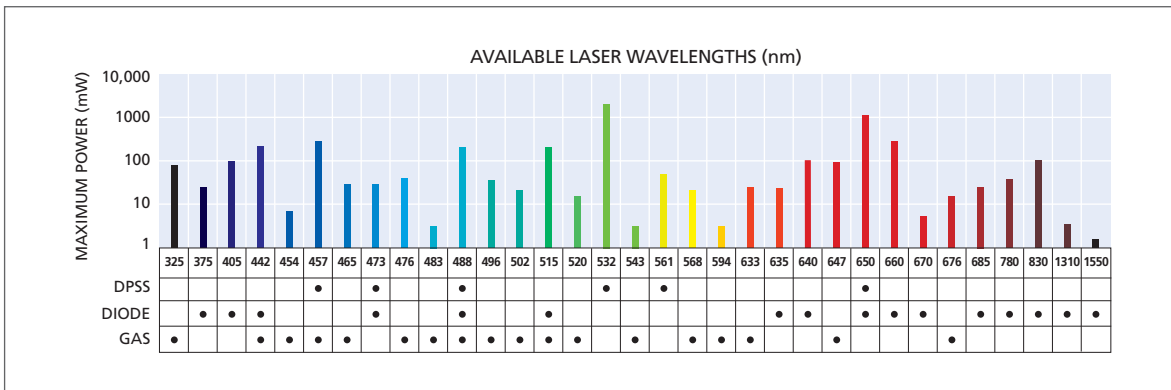
Most CVI Melles Griot lasers and instruments are designed, tested, and manufactured for compliance with applicable international electrical and laser safety standards.



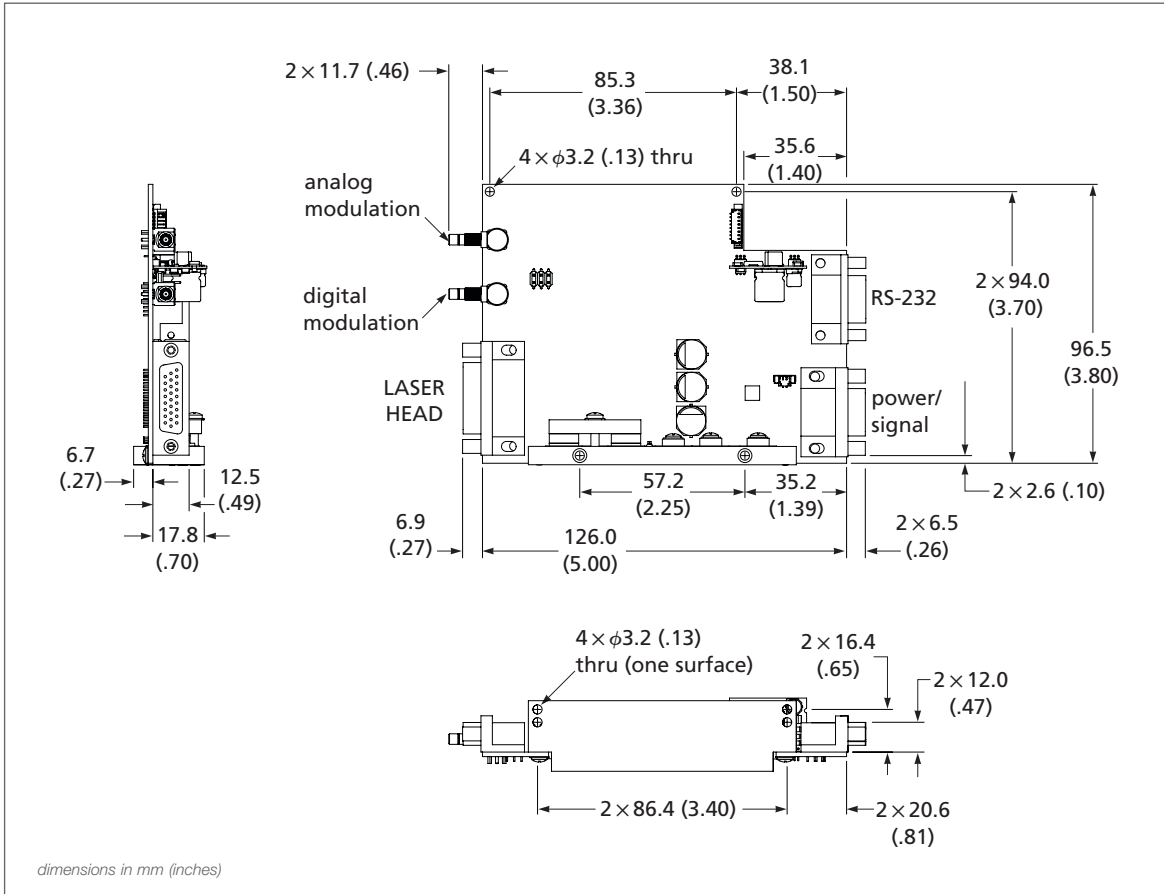
85 BBB-series laser controller

### Select from more than 36 wavelengths

CVI Melles Griot manufactures a comprehensive line of lasers and laser systems for laboratory and OEM applications. Standard products include helium neon and helium cadmium lasers, diode-pumped solid-state lasers, argon, krypton, and mixed gas ion lasers, and semiconductor laser assemblies. Available wavelengths range from 325 nm in the ultraviolet to 1.55  $\mu\text{m}$  in the near infrared, with powers ranging from a few milliwatts to several watts, as shown in the chart below.



Spectral output available from CVI Melles Griot lasers



85 BBB-series laser controller

