

# Tunable Ion Lasers



532 MAP &  
AP Series

*Air-cooled, compact, and economical, Melles Griot 532 MAP and AP tunable-ion lasers are convenient sources of single and fixed multiple wavelength output. Their footprint and industry-standard mounting holes allow platform or breadboard installation, as well as easy integration into OEM systems. A selection of beam delivery systems is available.*

- ▶ Wavelengths from 457 to 529 nm
- ▶ Power to 60 mW
- ▶ Forced-air cooling
- ▶ Low optical noise
- ▶ CE versions available
- ▶ Custom wavelength selection
- ▶ Wide operating temperature range
- ▶ Light feedback regulated

**MELLES GRIOT**

**Specifications:**  
**532 MAP & AP Series**  
**Tunable Ion Laser**

Common to All Models

**Mode Spacing (c/2L):** 469 MHz

**Coherence Length (approx):** 10 cm

**Linear Polarization:** Vertical  $\pm 5^\circ$

**Extinction Ratio:** >250:1

**Warmup Time from Cold Start:** <15 minutes

**Recovery from Standby:** 1 second

**Beam Pointing Stability:** < 30  $\mu\text{rad}/^\circ\text{C}$

**Power Stability over 2 hours:**  $\pm 0.5\%$

Recommended Power Supply

**Model 170B-XXXY or 176B-XXXY**

(XXX = 100, 120, 208, 220, 230, 240)

(Y = B for Black, G for Grey)

Environmental Specifications

**Cooling:** Forced air

**Operating Temperature:** 5°C to 40°C

**Storage Temperature:** -30°C to 60°C

**Relative Humidity, Operating:**

0-90% noncondensing

**Laser Head Weight:** 15.5 lbs (7.0 kg)

Options

- Beam delivery systems
- Remote cooling
- Custom configurations
- RS-232 computer interface
- Remote controller



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

Tunable Ion Lasers –  
 Compact, Powerful, Economical

The 532 MAP and AP series of line-tunable laser systems are ideal sources for many applications, because they combine the availability of wavelengths across the blue-green spectrum with near-diffraction-limited output, high stability, low noise, long life, and unit-to unit repeatability. Due to their small footprint, forced-air cooling, and low cost, Melles Griot 532-series lasers are used in a wide variety of OEM applications in fields ranging from microscopy and process control to digital imaging. They are particularly suited to biotechnology and photoluminescence applications, because their output wavelengths closely match the absorption peaks of a wide range of dyes (see the table below for a partial list).

532 MAP and AP series lasers produce low-noise, TEM<sub>00</sub> output in discrete wavelengths that range from 454 nm to 514 nm. Configurations include single line (457 nm, 488 nm, and 514 nm) or all-line operation. The 532-AP line-tunable series incorporates a prism that allows the user to manually select individual wavelengths.

These lasers can be operated in either light-regulated or current-regulated mode. In light regulation, power drift is reduced to less than one percent over long periods of time; rms output noise is also significantly reduced. Current regulation can be used to increase plasma-tube life and to control the balance between laser lines in multiline operation.

The industry-standard packaging and mounting configurations permit easy integration into new and existing OEM designs. Custom configurations and a variety of beam delivery options (e.g., fiber optics and collimators) are also available.

**532 MAP and AP Series Tunable-Ion Lasers**

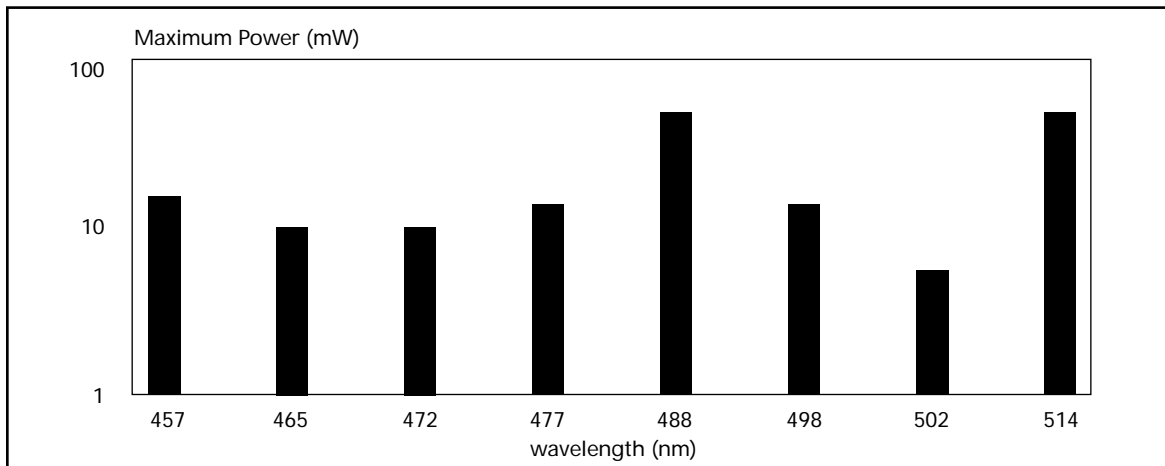
| Fluorochrome<br>(dye) | Peak Excitation Wavelength<br>(nm) | Laser Wavelength<br>(nm) | Laser Type |
|-----------------------|------------------------------------|--------------------------|------------|
| Calcium Green         | 505                                | 488 or 502               | 532 MAP/AP |
| Fluo 3                | 480                                | 488                      | 532 MAP/AP |
| FITC                  | 490                                | 488                      | 532 MAP/AP |
| Lucifer Yellow        | 428                                | 465                      | 532 MAP/AP |
| Rhodamine             | 560                                | 514                      | 532 MAP/AP |
| EGFP                  | 490                                | 488                      | 532 MAP/AP |
| EGFP                  | 513                                | 488 or 514               | 532 MAP/AP |
| EGFP                  | 453                                | 457                      | 532 MAP/AP |

## Specifications for 532 MAP & AP Series Tunable Ion Laser

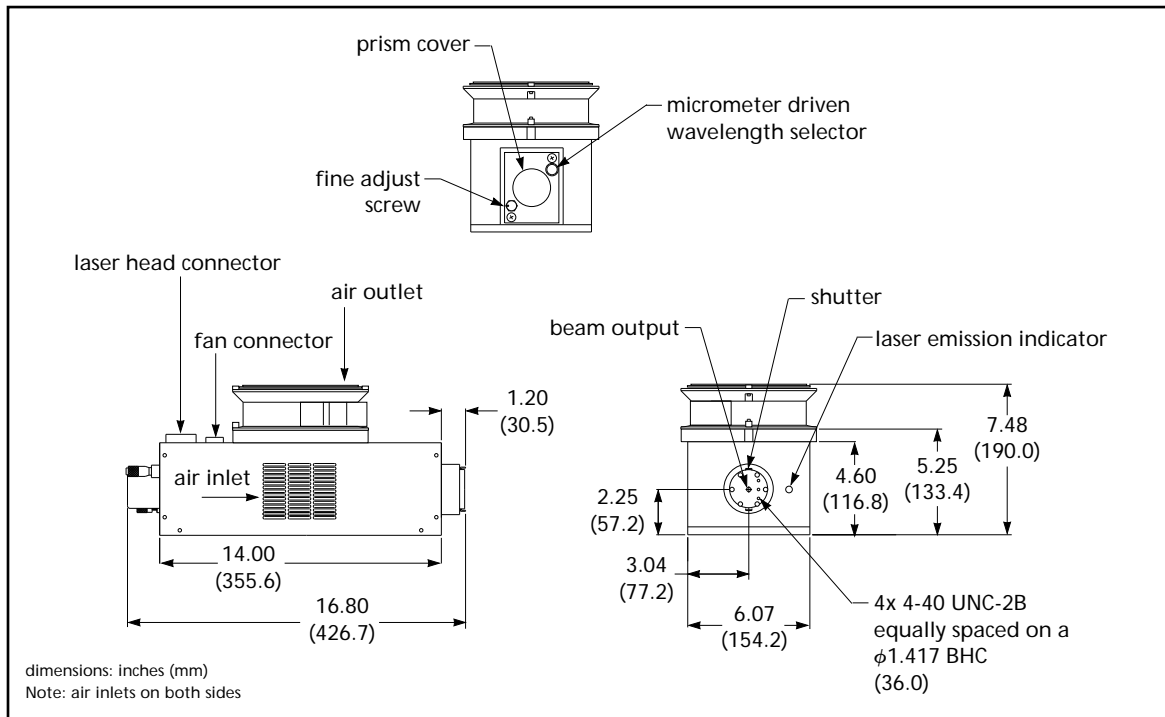
| Model       | Wavelength (nm) | Power min. (mW) | Beam Diameter (mm) | Beam Divergence (mrad) | M <sup>2</sup> (max) | Noise <100 kHz/<1 MHz (max % p-p) |
|-------------|-----------------|-----------------|--------------------|------------------------|----------------------|-----------------------------------|
| 532-AP-A01  | 457             | 5               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | 465             | 4               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | 472             | 3               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | 477             | 7               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | <b>488</b>      | <b>20</b>       | <b>0.66 ± 5%</b>   | <b>1.1 ± 5%</b>        | <b>1.2</b>           | <b>4/6</b>                        |
|             | 496             | 6               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | 502             | 1               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | <b>514</b>      | <b>20</b>       | <b>0.66 ± 5%</b>   | <b>1.1 ± 5%</b>        | <b>1.2</b>           | <b>4/6</b>                        |
|             | 529             | *               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
| 532-AP-A02  | 457             | 10              | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | 465             | 9               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | 472             | 8               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | 477             | 15              | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | <b>488</b>      | <b>40</b>       | <b>0.66 ± 5%</b>   | <b>1.1 ± 5%</b>        | <b>1.2</b>           | <b>4/6</b>                        |
|             | 496             | 14              | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | <b>502</b>      | <b>4</b>        | <b>0.66 ± 5%</b>   | <b>1.1 ± 5%</b>        | <b>1.2</b>           | <b>4/6</b>                        |
|             | <b>514</b>      | <b>40</b>       | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
|             | 529             | *               | 0.66 ± 5%          | 1.1 ± 5%               | 1.2                  | 4/6                               |
| 532-MAP-A01 | 457             | 8               | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | 465             | 6               | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | 472             | 5               | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | 477             | 11              | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | <b>488</b>      | <b>30</b>       | <b>0.90 ± 5%</b>   | <b>2.0 ± 5%</b>        | <b>multimode</b>     | <b>3/4</b>                        |
|             | 496             | 9               | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | 502             | 2               | <b>0.90 ± 5%</b>   | <b>2.0 ± 5%</b>        | multimode            | 3/4                               |
|             | <b>514</b>      | <b>30</b>       | 0.90 ± 5%          | 2.0 ± 5%               | <b>multimode</b>     | <b>3/4</b>                        |
|             | 529             | *               | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
| 532-MAP-A02 | 457             | 15              | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | 465             | 14              | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | 472             | 12              | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | 477             | 23              | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | <b>488</b>      | <b>60</b>       | <b>0.90 ± 5%</b>   | <b>2.0 ± 5%</b>        | <b>multimode</b>     | <b>3/4</b>                        |
|             | 496             | 21              | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | 502             | 6               | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |
|             | <b>514</b>      | <b>60</b>       | <b>0.90 ± 5%</b>   | <b>2.0 ± 5%</b>        | <b>multimode</b>     | <b>3/4</b>                        |
|             | 529             | *               | 0.90 ± 5%          | 2.0 ± 5%               | multimode            | 3/4                               |

\*May be present, power unspecified. Note: Performance characteristics obtained by using Melles Griot 170B-XXXB supply.

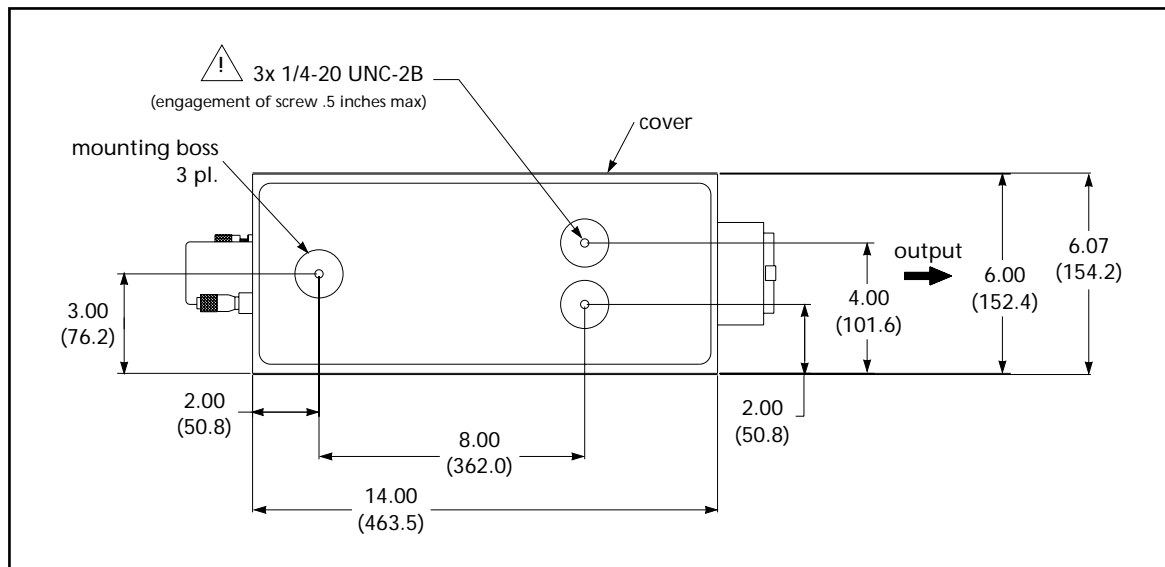
\*Guaranteed output power specified in bold type. Other output indications for reference purpose only.



Available output power of laser lines for 532 MAP & AP tunable ion lasers



532 MAP & AP series tunable ion laser head



532 MAP & AP series tunable ion laser head mounting plate (bottom view)

**MELLES GRIOT**

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