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# λbeam

COMPACT LASER MODULE WITHOUT COMPROMISES
FOR INDUSTRIAL INTEGRATION AND SCIENTIFIC APPLICATIONS


**KEY FEATURES:**

- Output powers up to 1 W
- High beam quality and stability
- Broad selection of wavelengths, fine-tunable
- Modulation up to 1.5 MHz
- Temperature-stabilized
- Long lifetime

| Type | Wavelength | Maximum output power |
|---|---|---|
| Diode | 375 nm | 20, 70, 200*1 mW |
| Diode | 395 nm | 120 mW |
| Diode | 405 nm | 75, 125, 175, 200, 300*2, 500*1*2, 1000*1*2 mW |
| Diode | 415 nm | 120 mW |
| Diode | 420 nm | 50 mW |
| Diode | 422 nm | 120 mW |
| Diode | 430 nm | 50 mW |
| Diode | 445 nm | 50, 75, 100, 250*1*2, 500*1*2, 1000*1*2 mW |
| Diode | 450 nm | 75, 1000*1*2 mW |
| Diode | 455 nm | 50, 100 mW |
| Diode | 473 nm | 100 mW |
| Diode | 488 nm | 20, 60, 200 mW |
| Diode | 505 nm | 75 mW |
| Diode | 510 nm | 50 mW |
| Diode | 515 nm | 25, 75 mW |
| Diode | 520 nm | 50 , 120, 500*1*2 mW |
| DPSS | 532 nm | 75, 100, 125, 175, 200 mW |
| DPSS | 532 nm | 125, 175, 200 mW narrow line |
| Diode | 633 nm | 75 mW |
| Diode | 635 nm | 75, 125 mW |
| Diode | 638 nm | 75, 125, 175, 250*1, 500*1 mW |
| Diode | 642 nm | 75, 125, 175 mW |
| Diode | 650 nm | 150*1 mW |
| Diode | 660 nm | 75, 120, 175, 250*1 mW |
| Diode | 670 nm | 15, 250*1*2 mW |
| Diode | 685 nm | 40 mW |
| Diode | 705 nm | 40 mW |
| Diode | 730 nm | 40 mW |
| Diode | 785 nm | 75, 125, 200 mW |
| Diode | 805 nm | 500*1*2 mW |
| Diode | 808 nm | 75, 125, 175, 1000*1*2 mW |
| Diode | 830 nm | 45, 75, 125, 1000*1 mW |
| Diode | 852 nm | 75, 125 mW |
| Diode | 905 nm | 100 mW |
| Diode | 915 nm | 75, 125, 175, 250, 1000*1*2 mW |
| Diode | 940 nm | 75, 125, 175, 200*1*2 mW |
| Diode | 980 nm | 75, 125, 175, 250, 1000*1*2 mW |
| Diode | 1064 nm | 125, 175, 300*2, 500*2, 1000*1*2 mW |

| Beam specifications | | |
|---|---|---|
| | **Diode lasers** | **DPSS lasers** |
| Beam diameter | 1.1 × 2.2 to 1.2 × 4.3 mm | Round beam 1.2 mm |
| Divergence | < 1.2 mrad | |
| Beam mode | $TEM_{00}$ (except multi-mode lasers) | |
| Polarization | Linear, > 100:1 | Linear, > 10:1 |
| Beam alignment | < 5 mrad and < 0.1 mm (compared to base mount) | |
| Pointing stability | < 5 µrad/K | |
| Noise | < 2 % RMS | |
| Power stability | < 1 % (10 h) | < 3 % (8 h) |
| Temp. accuracy | < 10 mK | |
| Warm-up time | Ready for use after 5 s, calibrated operation after 5 min | |
| Drive mode | Active current control | Active power control |
| Modulation | Adjustable constant power, analog & digital external modulation up to 1.5 MHz | Constant nominal power, switchable up to 1 kHz *3 |
| Control modes | Power, temperature and modulation mode via USB, optional remote control available | Power and modulation mode via USB |

The actual emission wavelength may deviate from the specified wavelength by up to ± 5 nm (± 1 nm on request). It depends on the actual output power and can be fine-tuned by adjusting the temperature (except DPSS lasers).

| General specifications | |
|---|---|
| CDRH classification | 3b, 4 (for laser output > 500 mW) |
| Dimensions | 63.5 × 31.0 × 32.5 mm (technical drawing available on our website) |
| Weight | 94 g (laser head) |
| Operating temperature | 0 °C to 45 °C (non-condensing) |
| Storage temperature | -25 °C to 70 °C |

*1 multi-mode *2 Water cooler recommended
*3 Acusto-optical modulator recommended for stable and faster modulation

## Laser Controller

The Lambda Beam laser head requires a laser controller to provide power and control all operating parameters. For scientific applications and prototyping we recommend using our PowerController. For industrial integration we also offer the highly compact PowerBox to be directly attached to the laser head or connected via a customized cable. The 532 nm DPSS laser is only available with the PowerBox.

## PowerController


| | |
|---|---|
| Modulation input | analog and digital 0 – 5 V DC |
| Modulation | up to 0.5 MHz |
| Digital interface | USB*1 (RS-232 optional) |
| Further control inputs | Interlock, key switch, modulation mode switch |
| Cable length | 80 cm (default) |
| Power consumption | 12 V DC, up to 2 A (depending on laser output power) |
| AC adapter (included) | 100 – 240 V AC, 50 – 60 Hz |
| Dimensions | 85.0 × 85.0 × 32.5 mm (technical drawing available on our website) |
| Weight | 416 g |

## PowerBox

| | |
|---|---|
| Modulation input | analog and digital 0 – 5 V DC |
| Modulation | up to 1.5 MHz |
| Digital interface | USB*1 (RS-232 optional) |
| Further control inputs | Interlock |
| Power consumption | 12 – 36 V DC, up to 2 A (depending on laser output power) |
| Dimensions | 39.0 × 31.0 × 32.5 mm (technical drawing available on our website) |
| Weight | 69 g |

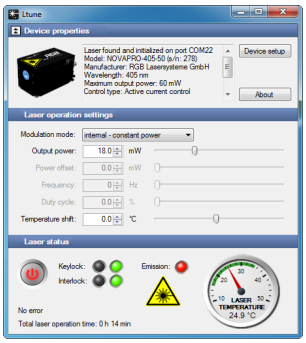
For more details, please see the PowerBox data sheet.

## Options and accessories

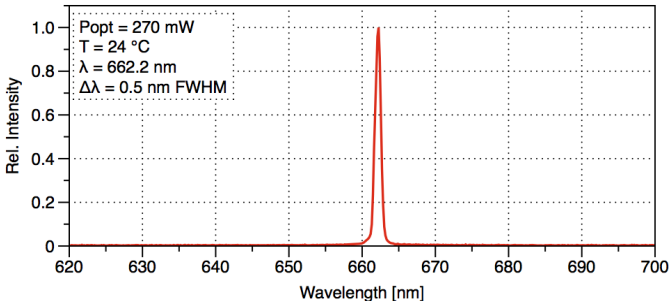
- Polarization > 10 000 : 1
- Opto-mechanical shutter
- Diode wavelength selection
- Water cooling base plate
- RS-232 interface
- Fiber coupler*2

## Ltune control software

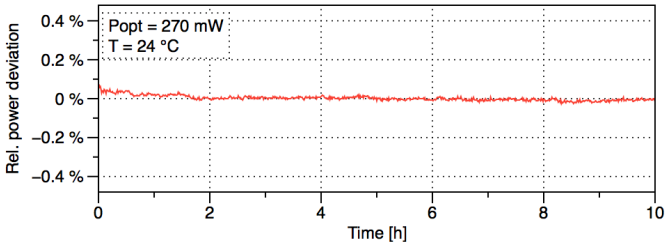
All operating parameters can be monitored and controlled from a PC using the Ltune laser control software for Windows. Alternatively, the laser can easily be controlled from your own application software. Please refer to the user manual for a detailed description of the communication protocol.




## Typical emission spectrum




## Typical power stability




*1 Digital connection is not required for operation.
*2 See separate data sheet for details.

Please contact us if your requirements are not matched by these specifications. Custom modifications are available for any quantities. All specifications are subject to change without notice. The latest versions can be found on our website.

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