



LASER DIODE SOURCE

part of the Laser Lab Source Group

LaserDiodeSource.com | LaserLabSource.com | LaserDiodeControl.com

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Precision-Engineered Laser Diode Module for Scientific R&D Applications

The Lambda-Beam series laser diode module is a research-grade, turn-key solution for R&D testing and system integration applications. These modules combine an integrated laser diode, a low-noise laser diode driver, a TEC temperature controller and control software with GUI. The integrated laser diode is mounted to a Peltier cooled surface in the module, which is precisely temperature controlled for optimal wavelength and power stability. The included control electronics unit has been designed to bias the laser ensure the highest possible beam quality.

Laser Controller Unit with USB Interface and Control Software Included

These turn-key modules include a control electronics unit which connects directly into the back of the laser module head through a d-Sub connector. The connecting cable is included. All operating parameters of the integrated laser can be set, monitored and controlled from your PC using the Ltune control software. A simple to use interface virtual front panel allows you to adjust the laser power and all configuration parameters. Alternatively, the laser can easily be controlled from your own application software. LabView drivers and Python library are available. Please request the Operating Manual for a detailed description of the communication protocols.



FIBER-COUPLED OR FREE SPACE OUTPUT

All Lambda-Beam series laser modules can be configured as free space collimated beam output or fiber-coupled output.



COMPACT LASER MODULES WITHOUT COMPROMISES
FOR INDUSTRIAL INTEGRATION AND SCIENTIFIC APPLICATION

KEY FEATURES:

- * Output powers up to 1W
- * High beam quality and stability
- * Broad selection of wavelengths; fine-tuneable
- * Modulation up to 1.5 MHz
- * Temperature-stabilized
- * Wavelength-stabilized systems available
- * Control Software Ltunes included
- * Fiber coupler & fibers available



Beam specifications

	Diode lasers	DPSS lasers
Beam diameter	1.1 x 2.2 to 1.2 x 4.3 mm	Round beam 1.2 mm
Divergence	< 1.2 mrad	
Beam mode	TEM00 (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 μ rad/K	
Noise	< 2 % RMS	
Power stability	< 1 % (10h)	< 3 % (8h)
Temp. accuracy	< 10 mK	
Warm-up time	Ready for use after 5s, calibrated operation after 5 min	
Drive mode	Active current control	Active power control
Modulation	Adjustable constant power; analog or 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, optical 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

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

*1 Multi-mode

*2 Water cooler recommended

*3 Acusto-optical modulator recommended for stable and faster modulation

Type	Wavelength	Maximum output power mW
Diode	375 nm	20, 70, 200 ^{*1}
Diode	395 nm	50, 120
Diode	405 nm	40, 75, 125, 175, 200, 300 ^{*2} , 500 ^{*1*2} , 1000 ^{*1*2}
Diode	415 nm	50, 120
Diode	420 nm	50
Diode	422 nm	120
Diode	425 nm	50
Diode	430 nm	50
Diode	435 nm	50
Diode	440 nm	50
Diode	445 nm	50, 100, 500 ^{*1*2} , 1000 ^{*1*2}
Diode	450 nm	75, 1000 ^{*1*2}
Diode	455 nm	50, 100
Diode	460 nm	50
Diode	465 nm	50
Diode	470 nm	50
Diode	473 nm	100
Diode	488 nm	50, 200
Diode	505 nm	75
Diode	510 nm	75
Diode	515 nm	25, 75
Diode	520 nm	50, 80, 120, 500 ^{*1*2}
DPSS	532 nm	75, 100, 125, 175, 200
DPSS	532 nm	125, 175, 200 narrow line NL
Diode	633 nm	75
Diode	635 nm	75, 125
Diode	638 nm	75, 125, 175, 250 ^{*1*2} , 500 ^{*1*2}
Diode	642 nm	75, 150
Diode	650 nm	150 ^{*1}
Diode	660 nm	75, 120, 200
Diode	670 nm	15, 250 ^{*1*2}
Diode	675 nm	200
Diode	685 nm	40
Diode	690 nm	30
Diode	705 nm	40
Diode	730 nm	40
Diode	760 nm	10
Diode	780 nm	50
Diode	785 nm	100, 200, 300 ^{*2} , 400 ^{*2}
Diode	805 nm	500 ^{*1*2}
Diode	808 nm	75, 150, 1000 ^{*1*2}
Diode	820 nm	100
Diode	825 nm	200
Diode	830 nm	45, 75, 125, 225, 1000 ^{*1*2}
Diode	840 nm	50, 175
Diode	852 nm	75, 125
Diode	880 nm	10
Diode	905 nm	10, 175
Diode	915 nm	75, 125, 175, 250 ^{*2} , 1000 ^{*1*2}
Diode	940 nm	75, 125, 175, 200 ^{*1} , 250 ^{*2}
Diode	980 nm	75, 125, 175, 250, 1000 ^{*1*2}
Diode	1064 nm	125, 175, 300 ^{*2} , 450 ^{*2} , 1000 ^{*1*2}

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.

Power Controller



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 2A (depending on laser output power)
AC adapter (included)	100 - 240 V AC, 50 - 60 Hz
Dimensions	85.0 x 85.0 x 32.5 mm (technical drawing available)
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 2A (depending on laser output power)
Dimensions	39.0 x 39.0 x 32.5 mm (technical drawing available)
Weight	69 g

For more details, please see the PowerBox data sheet

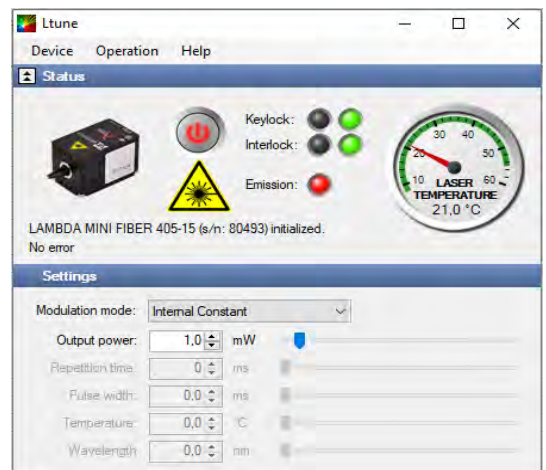
*1 Digital connection is not required for operation

Options and accessories

- Opto-mechanical shutter
- Diode wavelength selection
- Water cooling base plate
- Heatsink labor kit
- Cooling Ice kit
- RS-232 interface
- Fiber coupler
- fibers

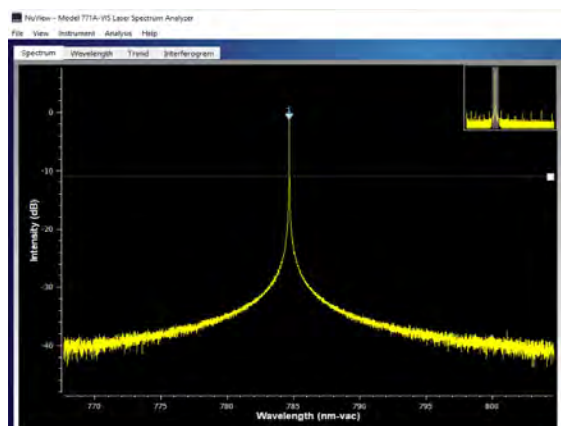


Ltune control software



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. You can find downloads on our website

Typical emission spectrum



Ask us for further technical specifications and test reports

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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