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Find the *Newport / New Focus TLB-6300-LN Velocity* at our website: *Click HERE*

TLB-6300 Velocity™ Widely Tunable Lasers

- *New low-noise controller*
- *New integrated isolator option*
- *New 900-nm and recently introduced 660, 685, 795, 820, 935 and 1775-nm wavelengths*
- *Improved power levels at 780, 980 and 1500 nm*

Our highly popular TLB-6300 Velocity lasers deliver continuous tuning over wide wavelength ranges with excellent resolution, narrow linewidths and low noise (40-dB side-mode-suppression ratio). As with all of our lasers, these lasers are mode-hop free over the entire specified tuning range and have easy-to-use interfaces including remote GPIB (IEEE-488) and RS-232 controls. Our fine-frequency piezo control allows you to set the laser's wavelength with a resolution of 0.2 pm. And unlike lasers driven by stepper motors, ours are truly continuous and monotonic. With a choice of wavelengths from 630 nm to 2 µm, these lasers are ideal for spectroscopy, metrology, sensing, telecommunications, and research applications.

The Velocity lasers are available with an integrated optical isolator for free-space output. A pre-aligned optical isolator option can protect your laser from potentially damaging feedback levels with 35 dB of isolation. This isolator will also protect your experimental results as non-damaging levels of feedback can cause anomalous behavior in any laser cavity. Mechanically coupled, the isolator comes pre-aligned and ready for use. Save time and effort. These systems are also available with a fiber-coupled output.

Custom wavelengths and power requirements are available. Please contact us for more information at sales@newfocus.com.

Highlights

Versatile tuning performance

- Sweep, step, and fine-tuning modes
- Fine-tuning with the PZT at 0.1-GHz resolution
- Coarse-tuning with the DC motor for up to 80-nm mode-hop-free tuning
- Smooth, linear, mode-hop-free sweeps

Low noise & narrow linewidths

- <300-kHz linewidths
- >40-dB side-mode suppression ratios

Flexible configurations

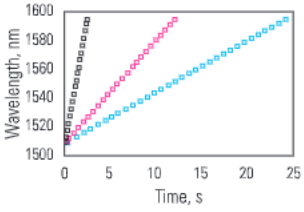
- Wavelengths from 630 nm to 2 µm
- Fiber-coupled and free-space outputs
- Current modulation, wavelength control and FM modulation
- Constant power and constant current modes

Plug & play

- Automated wavelength scans with wavelength and power readouts
- RS-232 and GPIB remote interfaces
- No beam walking

Applications

- Spectroscopy and sensing
- Swept-frequency metrology
- Laser and OPO seeding
- FM locking
- Non-linear optical generation
- Fiber-optics characterization



These curves demonstrate the monotonic and continuous tuning of a Model 6328 laser. They were taken using ■ maximum, ■ 20% of maximum, and ■ 10% of maximum tuning-speed settings.



More information about the laser controller for these lasers is on page 36.

U.S. Patent #5,319,668

TLB-6300 Velocity™ Tunable Lasers (cont.)

Tuning Range (mode-hop free)	632.5–637 nm	635–637 nm	652–660 nm	668–678 nm	680–690 nm	765–781 nm	776–781 nm
Typical Maximum Power	5 mW	7 mW	3 mW	4 mW	6 mW	15 mW	24 mW
Minimum Power	2 mW	5 mW	2 mW	2 mW	2 mW	7 mW	20 mW
Fine-Frequency Tuning Range	80 GHz (0.11 nm)	80 GHz (0.11 nm)	70 GHz (0.10 nm)	70 GHz (0.11 nm)	70 GHz (0.11 nm)	75 GHz (0.15 nm)	75 GHz (0.15 nm)
Linewidth†	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz
Maximum Coarse-Tuning Speed	6 nm/s	6 nm/s	6 nm/s	6 nm/s	6 nm/s	8 nm/s	8 nm/s
Coarse-Tuning Resolution	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm
Typical Wavelength Repeatability	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm
Fine-Frequency Modulation Bandwidth	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz
Current-Modulation Bandwidth	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz
Model #	**TLB-6304**	**TLB-6304-H**	**TLB-6305**	**TLB-6308**	**TLB-6309**	**TLB-6312**	**TLB-6312-H**
Price, Laser Head††*	$12,000	$12,000	$11,000	$11,000	$11,000	$12,500	$12,500
Price, Laser Controller††*	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500
NEW Price, Isolator†††*	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
Price, Isolator and Fiber Pigtail (1)*	$4,500	$4,500	$4,500	$4,500	$4,500	$4,500	$4,500

NEW

Tuning Range (mode-hop free)	794–804 nm	815–825 nm	838–853 nm	848–853 nm	890–910 nm	930–945 nm	960–995 nm
Typical Maximum Power	8 mW	10 mW	10 mW	22 mW	10 mW	10 mW	10 mW
Minimum Power	4 mW	8 mW	5 mW	20 mW	5 mW	5 mW	6 mW
Fine-Frequency Tuning Range	75 GHz (0.16 nm)	60 GHz (0.14 nm)	60 GHz (0.15 nm)	60 GHz (0.15 nm)	50 GHz (0.15 nm)	50 GHz (0.15 nm)	50 GHz (0.16 nm)
Linewidth†	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz
Maximum Coarse-Tuning Speed	8 nm/s	8 nm/s	8 nm/s	8 nm/s	10 nm/s	12 nm/s	12 nm/s
Coarse-Tuning Resolution	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm
Typical Wavelength Repeatability	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm
Fine-Frequency Modulation Bandwidth	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz
Current-Modulation Bandwidth	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz
Model #	**TLB-6314**	**TLB-6315**	**TLB-6316**	**TLB-6316-H**	**TLB-6318**	**TLB-6319**	**TLB-6320**
Price, Laser Head††*	$13,500	$13,500	$13,500	$13,500	$17,500	$19,500	$19,500
Price, Laser Controller††*	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500
NEW Price, Isolator†††*	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
Price, Isolator and Fiber Pigtail (1)*	$4,500	$4,500	$4,500	$4,500	$4,500	$4,500	$4,500

† *See page 48 for definition of linewidth.*
†† *See page 36 for laser controller.*
††† *Isolator has 35 dB typical isolation. Add -OI to model number when ordering.*
(1) *Typical fiber-coupling efficiency is >30% for Models 6304, 6304-H, 6305, 6334, 6335, >40% for Models 6308, 6309, 6312, 6312-H, 6314, 6315, 6316, 6316-H, 6318, 6319, 6320, 6320-H, 6331, 6332, and >50% for all other models. Fiber used is polarization-maintaining (PM) PANDA fiber with FC/APC connector.*

Related Products: Velocity Tunable Laser Controller (page 36) ■ Photodetectors (pages 76–143) ■ Modulators (pages 52–75) ■ Power Meters (page 134)

Definitions of Characteristics (page 51)

**For international prices add 10%.*

Custom wavelengths and power levels are available. Please contact our sales department for information on the latest products at 1-866-NUFOCUS.

Tuning Range (mode-hop free)	975–985 nm	1050–1075 nm	1055–1070 nm	1220–1250 nm	1270–1330 nm	1415–1480 nm	1470–1545 nm
Typical Maximum Power	14 mW	6 mW	20 mW	7 mW	7 mW	8 mW	15 mW
Minimum Power	12 mW	4 mW	15 mW	5 mW	5 mW	3 mW	8 mW
Fine-Frequency Tuning Range	50 GHz (0.16 nm)	50 GHz (0.19 nm)	50 GHz (0.19 nm)	45 GHz (0.23 nm)	50 GHz (0.29 nm)	30 GHz (0.21 nm)	50 GHz (0.38 nm)
Linewidth†	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz
Maximum Coarse-Tuning Speed	12 nm/s	12 nm/s	12 nm/s	20 nm/s	15 nm/s	20 nm/s	20 nm/s
Coarse-Tuning Resolution	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm
Typical Wavelength Repeatability	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm
Fine-Frequency Modulation Bandwidth	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz
Current-Modulation Bandwidth	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz
Model #	**TLB-6320-H**	**TLB-6321**	**TLB-6321-H**	**TLB-6323**	**TLB-6324**	**TLB-6327**	**TLB-6326**
Price, Laser Head††*	$19,500	$17,500	$17,500	$17,500	$16,500	$16,500	$16,500
Price, Laser Controller††*	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500
Price, Isolator†††*	$2,000	$2,000	$2,000	$1,500	$1,500	$1,500	$1,500
Price, Isolator and Fiber Pigtail (1)*	$4,500	$4,500	$4,500	$3,500	$3,500	$3,500	$3,500

Tuning Range (mode-hop free)	1520–1570 nm	1550–1630 nm	1570–1620 nm	1650–1680 nm	1760–1790 nm	1940–1970 nm	1970–2000 nm
Typical Maximum Power	24 mW	10 mW	18 mW	3 mW	2.5 mW	2.5 mW	2.5 mW
Minimum Power	20 mW	6 mW	15 mW	2 mW	1.5 mW	1.5 mW	1.3 mW
Fine-Frequency Tuning Range	30 GHz (0.24 nm)	30 GHz (0.26 nm)	30 GHz (0.26 nm)	30 GHz (0.28 nm)	20 GHz (0.21 nm)	20 GHz (0.26 nm)	20 GHz (0.26 nm)
Linewidth†	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz	<300 kHz
Maximum Coarse-Tuning Speed	20 nm/s	25 nm/s	25 nm/s	20 nm/s	20 nm/s	20 nm/s	25 nm/s
Coarse-Tuning Resolution	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.02 nm
Typical Wavelength Repeatability	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm
Fine-Frequency Modulation Bandwidth	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz	2 kHz
Current-Modulation Bandwidth	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz	100 MHz
Model #	**TLB-6328**	**TLB-6330**	**TLB-6330-H**	**TLB-6331**	**TLB-6332**	**TLB-6334**	**TLB-6335**
Price, Laser Head††*	$16,500	$16,500	$16,500	$17,500	$22,500	$30,500	$30,500
Price, Laser Controller††*	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500
Price, Isolator†††*	$1,500	$1,500	$1,500	$2,000	Please contact us for information.		$5,000
Price, Isolator and Fiber Pigtail (1)*	$4,000	$4,000	$4,000	$4,500	$5,500	$5,500	$7,500

† *See page 48 for definition of linewidth.*
†† *See page 36 for laser controller.*
††† *Isolator has 35 dB typical isolation. Add -OI to model number when ordering.*
(1) *Typical fiber-coupling efficiency is >30% for Models 6304, 6304-H, 6305, 6334, 6335, >40% for Models 6308, 6309, 6312, 6312-H, 6314, 6315, 6316, 6316-H, 6318, 6319, 6320, 6320-H, 6331, 6332, and >50% for all other models. Fiber used is polarization-maintaining (PM) PANDA fiber with FC/APC connector.*

Related Products: Velocity™ Tunable Laser Controller (page 36) ■ Photodetectors (pages 76–143) Modulators (pages 52–75) ■ Power Meters (page 134)

Definitions of Characteristics (page 51)

**For international prices add 10%.*



TLB-6300-LN Velocity™ Tunable Laser Controllers



- *Modern, low-noise design*
- *Half the size and weight of previous controller*
- *Easy-to-use controls and GPIB/RS-232 interfaces*
- *Backward compatible with Velocity lasers in the field*

Our new low-noise Velocity tunable laser controllers are the state-of-the-art laser controllers for our most versatile laser series. And, with a modern, compact and lightweight design, these controllers save space and your strength. Our plug-&-play controls allow you to easily sweep, step, fine-tune and modulate either by the press of a button or, via the GPIB or RS-232 interface and your PC.

Features:

Automated Wavelength Scans

Easily perform wavelength scans over part of or the entire tuning range of the laser. Just set the start and stop wavelengths and scanning speed and press the scan button.

High-Speed Current Modulation

Modulate the laser amplitude with a 3-dB bandwidth of 1 MHz through the controller's current-modulation input.

Easy Wavelength Modulation

Convenient wavelength modulation for spectroscopy or stabilization experiments is provided by a PZT actuator on the tuning element. Driving the PZT through the input on the back panel of the controller allows you to directly modulate the laser wavelength with a small-signal 3-dB bandwidth of 2 kHz. Full 30-GHz frequency modulation can be performed at rates up to 200 Hz.

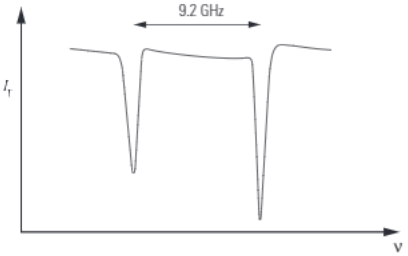
Complete Computer Control and LabVIEW™ Programs

Anything you can adjust from the front panel can be controlled through RS-232 or GPIB (IEEE-488) interfaces. In remote mode, you still have access to the frequency-modulation input, allowing you to dither the frequency as you perform automated wavelength scans.

LabVIEW™ drivers for controlling the laser operation are available for download on the New Focus™ website, www.newfocus.com.

Detector Input

The general-purpose detector input on the back panel allows you to implement digital control algorithms and is particularly useful for stable-power wavelength scans, background correction in applied spectroscopy experiments, and wavelength stabilization.



Cesium (D_2) non-saturated absorption spectroscopy measurement using a Velocity tunable laser with the TLB-6300-LN controller showing clean, low-noise spectrum.

Dimensions†	8.5" x 4.0" x 16"
Weight (approx.)	13.0 lbs (5.9 kg)
Model #	**TLB-6300-LN**
Price*	$7,500

† *Dimensions include all protrusions including connectors, knob, key and feet.*

Related Products: Velocity Tunable Lasers (page 32)

**For international prices add 10%.*

Laser Power: *Turns on the current to the laser diode.*

Wavelength and Scan Speed Display: *Indicates operating wavelength, scan speed, and start and stop wavelengths.*

Parameters Display: *Indicates diode current, measured laser output power, PZT voltage (fine-frequency tuning), and diode temperature.*



Wavelength and Scan Speed Adjust: *Used in conjunction with the setpoint buttons, adjusts wavelength, scan speed, and tuning range.*

Parameter Adjust: *Sets diode current, laser output power, and PZT voltage (fine-frequency tuning).*

All front-panel functions can be controlled remotely through back-panel inputs.

Frequency-Modulation Input: *Allows remote control of fine-frequency adjustments.*

Auxiliary Input: *Gives you a general-purpose analog input for control applications.*

Wavelength Input: *Allows remote control of coarse-wavelength adjustments.*



Remote Interfaces: *Lets you use either an IEEE-488 (GPIB) or an RS-232 computer interface to control the system.*

Current-Modulation Input: *Lets you modulate the output power of the laser. It has a 1-MHz bandwidth. The SMA input on the laser head has a >100-MHz bandwidth.*

Wavelength Output: *A linear signal that is proportional to the real-time wavelength of the laser.*



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