

500B Series Laser Diode Drivers



- Low noise current sources with better than 50 ppm long-term stability
- User interface software and drivers are compatible with Windows XP and Windows 7, 32 bit and 64 bit machines
- Full package of operational features and time-tested laser diode safety features
- Three models are available to cover laser current levels from below 50 mA up to 6 A
- Standard USB 2.0 interface for remote control

The 500B Series Laser Diode Drivers offer all the performance of the most advanced drivers for a fraction of the price. All models are quiet and stable enough for use in the most demanding applications such as spectroscopy and fiber optic communications.

Intuitive front panel controls make these instruments extremely simple to use. There are two operating modes: constant current or constant power. Dual current-level selection lets you optimize current resolution settings by precisely varying the output to the laser diode. Comprehensive laser diode safety features are built into every 500B Series Laser Diode Driver. Redundant FET and relay shorting circuits protect the laser diode at the beginning of the slow turn-on sequence. After a short delay, the output current slowly ramps to your preset operating level. The current limit setting is fully independent.

External analog modulation allows you to voltage control or modulate the output. In the high bandwidth mode, you can modulate the laser up to 800 kHz. For precision laser output power control, or wavelength tuning with external control circuitry, you can slowly modulate the laser output in the low bandwidth mode and maintain low noise operation.

Note that Models 501B and 525B are phased out and replaced by 505B and 560B, respectively.

Specifications

Power Requirements	90–264 VAC, 50–60 Hz
Chassis Ground	4 mm banana jack
Size (H x W x D) [in. (mm)]	3.5 (88) x 8.5 (215) x 12.6 (320)
Weight [lb (kg)]	8.9 (4.05)
Operating Temperature	0°C to 40°C (<90% humidity non-condensing)
Storage Temperature Range	-40°C to +70°C (<90% humidity non-condensing)
Laser Safety Features	Output On/Off keyswitch, interlock, output delay (meets CDRH US21 CFR 1040.10)
Output Connectors Interlock/Photodiode	9-pin female D-sub
Output Connectors External Photodiode	BNC
Output Connectors Modulation	BNC
USB Interface Connection	USB 2.0 Connector

Additional Benefits

- A monitor photodiode can be reverse-biased from 0–5 V with no external power supply
- Preset output current or laser power level
- USB 2.0 interface for remote control
- Fully independent current limit

Specifications

	501B (Obsolete)		505B		525B (Obsolete)		560B	
Output Current								
Output Current Range (mA)	0-50	0-100	0-200	0-500	0-1000	0-2500	0-3000	0-6000
Output Current Resolution (mA)	0.001	0.002	0.004	0.01	0.02	0.05	0.06	0.12
Output Current Accuracy (% FS)	±0.03		±0.05		±0.07		±0.09	
Laser Output Compliance Voltage (V)	7		7		7		5	
Temperature Coefficient (ppm FS/°C)	<50		<50		<50		<80	
Current Output Short-Term Stability (1 h) (ppm FS)	<10		<10		<10		<20	
Current Output Long-Term Stability (24 h) (ppm FS)	<50		<50		<50		<50	
Noise/Ripple (rms) (µA) ⁽¹⁾								
Laser Output Noise/Ripple (rms) Hi BW	<0.7	<1	<1	<1.5	<6	<10	<10.9	<13.8
Laser Output Noise/Ripple (rms) Lo BW	<0.1	<0.3	<0.4	<1.1	<2	<4	<7.3	<12
Current Limit								
Range (mA)	0-50.50	0-101.0	0-202.0	0-505.0	0-1,010	0-2,525	0-3,030	0-6,060
Resolution (mA)	0.001	0.002	0.004	0.01	0.02	0.05	0.06	0.12
Accuracy (%FS)	±0.03		±0.05		±0.07		±0.09	
External Analog Modulation								
Input Range	0-10 V, 10 kΩ		0-10 V, 10 kΩ		0-10 V, 10 kΩ		0-10 V, 10 kΩ	
Transfer Function (mA/V)	5	10	20	50	100	250	300	600
Bandwidth (kHz)								
External Modulation Bandwidth Hi BW	DC to 1000	DC to 600	DC to 660	DC to 500	DC to 400	DC to 200	DC to 300	DC to 100
External Modulation Bandwidth Lo BW	DC to 10	DC to 10	DC to 12	DC to 12	DC to 10	DC to 10	DC to 10	DC to 10
Photodiode Input								
Monitor Current Range (mA)	0-5		0-5		0-50		0-50	
Monitor Current Stability (24 h) (% FS)	±0.02		±0.02		±0.02		±0.02	
Monitor Current Accuracy (% FS)	±0.05		±0.05		±0.05		±0.05	
Photodiode Bias Voltage (V)	0 to -5		0 to -5		0 to -5		0 to -5	
Measurement Display								
MD Output Current Range (mA)	0-50.00	0-100.0	0-200.0	0-500.00	0-999.9	0-2500	0-3000	0-6000
Output Current Resolution (mA)	0.01	0.01	0.1	0.1	0.1	1.0	1.0	1.0
Output Current Accuracy (% FS)	±0.03		±0.05		±0.07		±0.09	
Photodiode Current Range	0-5000 µA		0-5000 µA		0-50.00 mA		0-50.00 mA	
Photodiode Current Resolution (µA)	1.0		1.0		10		10	
Photodiode Current Accuracy (% FS)	±0.05		±0.05		±0.05		±0.05	

⁽¹⁾Measured on a resistive load and normalized to 100kHz bandwidth.

Call Newport's Application Sales Engineers to help you determine which laser diode driver model best meets your specific application.

Ordering Information

Model	Description
505B	Laser Diode Driver, 200/500 mA, 7 VDC Compliance, USB
560B	560B Laser Diode Driver, 3000/6000 mA, 5 VDC Compliance, USB

Accessories

Model	Description
500-02 ⁽¹⁾	Laser Diode Driver Cable, DB9 Male to Bare Wire
500-04 ⁽¹⁾	Laser Diode Driver Cable, DB9 Male to DB9 Female
35-RACK	Rack Mount Kit, 19 inch, Model 300B, 500B, 5000 (obsolete) or 3040 (obsolete)

Our Model 300B Temperature Controllers and our complete line of Temperature Controlled Mounts and Telecom Mounts for laser diodes complement Newport 500B Series Drivers in performance and value.