56 Sparta Avenue • Newton, New Jersey 07860
(973) 300-3000 Sales • (973) 300-3600 Fax
www.thorlabs.com

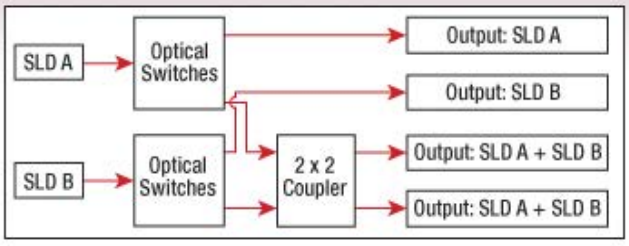
THORLABS

LS2000B - July 14, 2015

Item # LS2000B was discontinued on July 14, 2015. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

EXTENDED BROADBAND SLD LIGHT SOURCE

- **Dual SLD Light Source for Broadband Spectral Applications**
- **Ideal for High Resolution OCT Systems**
- **Four High-Power Fiber-Coupled Output Channels**



LS2000B
(Fiber Patch Cables Not Included)

Hide Overview

OVERVIEW

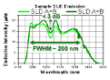
Features

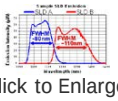
- Superluminescent Diode (SLD) Tuned for OCT Applications
- Dual SLD Light Sources for Broadband Spectral Output
- Four Channel Output
- 1300 nm Center Wavelength
- >10 mW Output per Channel
- FC/APC Connector
- Independent Operation for Each SLD
- Controls on Front Panel and via USB Interface

Thorlabs has partnered with Praevium Research to develop superluminescent diode (SLD) light sources for OCT applications. In OCT imaging systems, the optical bandwidth of the light source is inversely proportional to the axial resolution. To provide higher axial resolution than currently possible with a single SLD, the LS2000B features a dual SLD arrangement. This dual SLD feature produces an extended broadband SLD light source ideal for high resolution OCT imaging applications.

Item #	LS2000B			
Matched-Pair SLD Characteristics				
Channels	1	2	3	4
SLD Output	SLD A	SLD B	A + B	
Central Wavelength - Typical	1225 nm	1340 nm	1300 nm	
FWHM Bandwidth - Typical	80 nm	110 nm	200 nm	
10dB Bandwidth - Typical	100 nm	150 nm	235 nm	
Fiber-Coupled Power	>10 mW per channel			
Noise, Typical	<0.2% (Source Dependent)			
Controller Characteristics				
Adjustment Range	0 - Full Power			
Temperature Control	14.00 to 30.00 °C			
Operating Temperature	10 - 30 °C			
Fiber/Connector	SMF-28e, FC/APC			

The SLDs are designed so that their emission spectra are offset yet, when combined (matched-pair), the deviation from normal Gaussian distribution based on that offset is minimized to less than 3 dB (see typical spectrum below). The output of the two fiber-pigtailed SLDs are fiber coupled to provide a single extended bandwidth (200 nm, typical) light source.


Click to Enlarge


Click to Enlarge

The LS2000B extended broadband SLD light source packages the matched-pair SLDs into a single compact housing. Like our other 1300 nm SLD for OCT, these SLDs have an integrated isolator, thermistor, and TEC element for optimal performance. The LS2000B front panel provides independent control of the output of each SLD. In addition, each SLD has a front panel enable/disable output button as well as a reset to the factory configuration.

The LS2000B SLD light source can be completely controlled using the front panel interface, however the unit can also be controlled through a PC via the USB connection on the back of the unit. The LS2000B can be controlled through the provided software as well as through command line language via the USB port.

There are four FC/APC fiber connectors in the front panel of the LS2000B. The first two channels access to the output of the two independent SLDs. The remaining two channels provide extended bandwidth output by combining the output of the two SLDs. Each combo-channel will have a bandwidth greater than 170 nm and output power greater than 10 mW from each channel. The LS2000B can operate two channels, 1 and 2 or 3 and 4, simultaneously.

OCT Scan of an Onion Skin

This extended light source can be used in OCT imaging systems to produce images with a resolution of ~3 µm in biological (n = 1.33) samples. The images below demonstrate the increased resolution obtained when the light source is switched from a 90 nm Bandwidth single SLD source to a 200 nm Extended Bandwidth SLD source.

Image Taken Using a 90 nm Bandwidth SLD

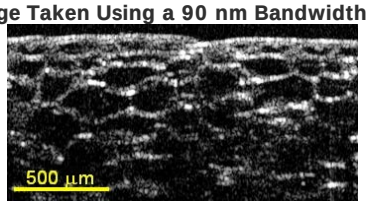
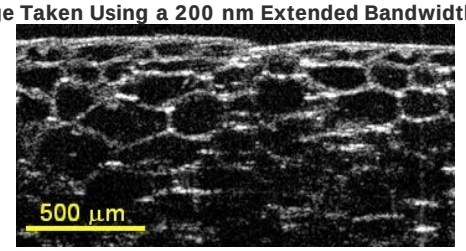


Image Taken Using a 200 nm Extended Bandwidth SLD



OCT Imaging with a 90 nm bandwidth (FWHM) source provides ~9 µm of axial resolution, as demonstrated in the top image of an onion skin. Incorporating an Extended Broadband SLD, based on matched-pair SLD light sources that together provide a bandwidth of 200 nm (Typical, FWHM), enables imaging at axial resolutions less than 4 µm, as demonstrated above. The higher resolution provided by the Extended Broadband SLD enables visualization of distinct layers in the onion skin.

Hide Specs

SPECS

Item #	LS2000B			
Optical Performance Specifications				
Channels	1	2	3	4
SLD Output	SLD A	SLD B	SLD A + SLD B	
Central Wavelength - Typical	1225 nm	1340 nm	1300 nm	
FWHM Bandwidth - Typical (Minimum Bandwidth)	80 nm	110 nm	200 nm (170 nm)	
10 dB Bandwidth - Typical	100 nm	150 nm	235 nm	
Fiber-Coupled Power	>10 mW per channel			
Noise, Typical	<0.2% (Source Dependent)			
Electrical Performance Specifications				
Current Set point Resolution	0.1 mA			
Temperature Adjust Range	14.00 to 30.00 °C			
Temp Set point Resolution	±0.01 °C			
General Specifications				
AC Input	100 - 240 VAC, 50 - 60 Hz			
Input Power	65 VA max.			
Fuse Ratings	500 mA			
Fuse Type	IEC60127-2/III (250 V, Slow Blow Type 'T')			

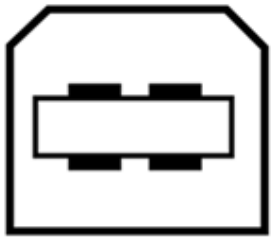
Fuse Size	5 mm x 20 mm
Dimensions (W x H x D)	12.6” x 2.5” x 10.6” (320 mm x 64 mm x 269 mm)
Weight	7.3 lbs
Operating Temperature	10 to 30 °C
Storage Temperature	0 to 50 °C
Connections and Controls	
Interface Control	Optical Encoder with Pushbutton
Enable and Laser Select	Keypad Switch Enable with LED indication
Power On	Key Switch
Fiber Ports	FC/APC
Display	LCD, 16 x 2 alphanumeric characters
Input Power Connection	IEC Connector
Interlock	2.5 mm Mono Phono Jack
Communications	
Communications Port	USB 2.0
Com Connection	USB Type B connector
Cable, Included	2 m USB Type A to Type B Cable (Replacement Part Number USB-A-79)

Hide Connections

CONNECTIONS

Computer Interface

USB Type B



USB Type B to Type A Cable Included

Hide Part Numbers

Part Number	Description	Price	Availability
LS2000B	**Extended Bandwidth SLD Source, 1325 nm, BW >170 nm**	**$13,040.00**	**Lead Time**

Visit the *Extended Broadband SLD Light Source* page for pricing and availability information:
https://www.thorlabs.com/newgrouppage9.cfm?objectgroup_id=1760