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SSB 9200

High Density Source Bank

Specifications

WAVELENGTH

Number of Channels:	Up to 100
Wavelength	
ITU:	1475–1625 nm
Supervisory:	1310 ±5 nm
Spectral Width:	
Coherence Control OFF:	<30 MHz
Coherence Control ON:	1 GHz (typical)
Wavelength Accuracy:	±50 pm (±6 pm typical factory calibration)
Wavelength Tuning Range:	±0.85 nm
Wavelength Setting Resolution:	1 pm
Wavelength Stability[1]	
Short-term (15 minutes):	±3 pm
Long-term (24 hours):	±5 pm

OUTPUT POWER

Output Power:	up to 14.8 dBm
Power Setting Resolution:	0.01 dB
Output Power Stability[1]	
Short-term (15 minutes):	<0.005 dB rms
Long-term (24 hours):	±0.03 dB
Power Attenuation Range:	Full power to 0 dBm
Attenuation Accuracy:[2]	±0.1 dB
Optical Isolation:	>30 dB
RIN:[3]	–145 dB/Hz
Side Mode Suppression Ratio:	>40 dB (>45 dB typical)
Signal-to-Peak	
Background Ratio:[4]	>30 dB
Front Panel Output Power:	Depends on options

INTERNAL MODULATION

Small Signal

Waveform:	Square Wave, Sine Wave, Triangle Wave
Frequency:	200 Hz to 200 kHz
Duty Cycle:	50% ±1%
Modulation Depth:	Adjustable
Rise/Fall Time:	1 µs
Channel to Channel Synchronization:[5]	<100 ns

Large Signal

Level:	TTL
Frequency:	200 Hz to 200 kHz
Duty Cycle:[6]	50% ±1%
Polarity:	0 V = Laser Turned OFF 5 V = Laser Turned ON
Optical Delay:[7]	<1 µs
Channel to Channel Synchronization:[5]	<100 ns
Jitter:[8]	<50 ns
Connector:	BNC Female on rear panel

MODULATION IN

Small Signal

Level:	5 Vpp
Frequency:	200 Hz to 200 kHz

Large Signal

Level:	TTL
Frequency:	200 Hz to 200 kHz
Duty Cycle:[6]	50% ±1%
Polarity:	0 V = Laser turned OFF 5 V = Laser Turned ON
Optical Delay:[7]	<1 µs
Channel to Channel Synchronization:[5]	<100 ns
Jitter:[8]	<50 ns
Connector:	BNC Female on rear panel

MODULATION OUT

Large Signal

Level:	TTL
Polarity of OUT:	0 V = Laser Turned OFF 5 V = Laser Turned ON
Gate Delay:[9]	<60 ns/mainframe
Jitter:[8]	<50 ns
Connector:	BNC Female on rear panel

PM ALIGNMENT

Also available:	PM fiber aligned to slow axis

SSE50 OPTIONAL SPONTANEOUS EMISSION

Signal/Spontaneous Emission:	>50 dB
(within ±100 nm of center wavelength)	

OPTICAL ATTENUATION (USING VOA)

Resolution:	0.01 dB
Attenuation Range:	40 dB
Wavelength Dependence:	0.3 dB (@10 dB)
Repeatability:	±0.05 dB

SS-811 SOURCE SHUTTER

Transition Time	
Off to On:	30 ms
On to Off:	10 ms
Power Stability 24 hr. 25 ±1°C:	<0.07 dB
Power Stability 15 min. 25 ±1°C:	<0.005 rms
Repeatability:	±0.05 dB
Lifetime:	>10 million cycles

COMPUTER INTERFACE

GPIB/IEEE-488.2-1992	
Hardware:	ANSI/IEEE Std. 488.2-1992
Software:	ANSI/IEEE Std. 488.2-1992

GENERAL

Size (HxWxD):	53.3 cm x 45.1 cm x 64.1 cm 21" x 17.75" x 25.25"
Weight (100 modules):	61.22 kg (135 lbs)
(Module weight approx. 0.6 lbs each)	
Power Requirements:	100—120 VAC (50/60 Hz, 10 A) 200—240 VAC (50/60 Hz, 5 A)
Front Panel Display:	LCD TFT-VGA
Optical Connector:[10]	FC/APC standard
(other connector upon request)	
Operating Temperature:	15°C–35°C
Storage Temperature:	–25°C to +60°C
Humidity:	<90% RH, non-condensing
CE Compliant:	Yes

NOTES

1. At constant temperature with suitable warm-up time. Some modules may require longer than the typical one-hour warm-up time.
2. Defined as: $\Delta P_{meas} - \Delta P_{set}$ from maximum power to 5 dB down.
3. Measured at output connector. Use angled connector patch cords to minimize noise.
4. ±100 nm about center wavelength.
5. Channel to Channel Synchronization is the maximum variation in optical delay between modules in the same mainframe.
6. Input modulation duty cycles other than 50% ±1% will result in output power inaccuracies.
7. Optical Delay is the time between the rising edge of the input modulation signal and the rising edge of the modulated optical output.
8. Jitter is the variation in optical delay for any given module.
9. Gate delay is the time between the input modulation signal and the output modulation signal.
10. Other connector types available. Some specifications may be degraded.
11. 30 mW available from 1475—1610 nm.

In keeping with our commitment to continuing improvement, ILX Lightwave reserves the right to change specifications without noticeand without liability for such changes.

ORDERING INFORMATION

SSB-9200	High Density Source Bank Mainframe (includes GPIB/IEEE-488.2 interface)
FOS-92005XYZZ	
X = 1	Single Channel DFB Module
X = 2	Dual Channel DFB Module
Y = 4	1475—1527.97 nm (S-band)
Y = 5	1527.98—1610 nm (C and L-band)
ZZ = 10	10 mW
ZZ = 20	20 mW
ZZ = 30	30 mW[11]
ZZ = SP	Special Order
ZZ = CS	Customer Supplied Lasers, non-standard product
FOS-9200VOA0	System VOA
SS-811	Source Shutter Option (not compatible w/ PM alignment)
SSE-50	50 dB Ratio of Signal to Spontaneous Emission Option
PM Alignment	Per Channel PM Alignment

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Photonic Test & Measurement Instrumentation
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International Inquiries: 406-586-1244
email: sales@ilxlightwave.com

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Rev. 3/04/02

Product Features

- Up to 100 channels per mainframe
- SCPI compliant GPIB interface
- Large TFT-VGA display
- Flexible internal and external modulation capability
- Integrated optical components such as a multiplexer and VOA
- Adjustable coherence control

NOW AVAILABLE
30 mW across the entire S, C, and L-bands



The SSB-9200 is the first member of a new family of products from ILX Lightwave—developed in response to the evolving demands of DWDM component, amplifier, and system testing. The SSB-9200 system accommodates up to 100 sources per mainframe, so it can easily handle today's large-channel-count test systems. With a large TFT-VGA display, easy-to-use menu-driven front panel, and a SCPI-compliant GPIB interface, the SSB-9200 is ready for all your manual and automated testing needs. With flexible internal and external modulation capability (including adjustable coherence control) as well as integrated optical components, the SSB-9200 will fit seamlessly into your testing environment.

The Highest-Density Solution for DWDM Testing

ILX Lightwave
Photonic Test & Measurement Instrumentation

SSB 9200

High Density Source Bank

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SSB 9200

High Density Source Bank

The Face of DWDM Testing Has Changed

Present solutions for DWDM testing are small, modular source banks providing up to 8 channels of test sources. Add many optical components and maybe you have all the equipment you need. As test systems expand to 40 or more channels, rack and tabletop space become precious.

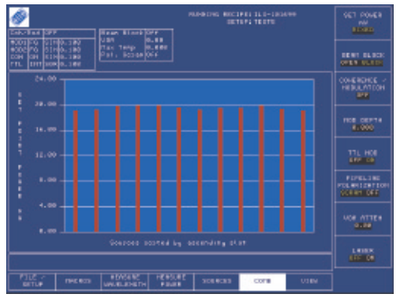
With the SSB-9200 the DWDM test environment takes on a new light. Placing 100 channels into a single box eliminates the unnecessary replication of equipment in your test system to get the required channel count. Now more test system components, like an optical multiplexer or a variable optical attenuator, can go inside the instrument. This saves you time in fiber management—not to mention rack space.

Performance You've Come to Expect

The SSB-9200 provides a variety of modulation capabilities. Choose internal modulation with sine, triangle, square, or digital waveforms with frequencies from 200 Hz to 200 kHz and modulation depths from 0–100%. Or, use your own signal in the external modulation port for customized modulation. Digital modulation uses TTL signals, and analog modulation uses input signals of ±2.4 V.

A Leap Forward in Front Panel User Interface

The front panel permits control of every module, or subsets of modules, through a menu-driven interface. The easy-to-use menus allow quick access to the desired commands. You'll never get lost with hard keys for the help menu, numerical and text entry, and on-screen navigation. In addition, a "back" button, similar to your web browser, resides on the SSB-9200 front panel.



SSB-9200 active matrix screen.

The active matrix screen on the SSB-9200 is a technological advancement for source banks. The screen's large size, color and sharpness make it easy to read test data either graphically or in spreadsheet form.

Fully SCPI-Compliant GPIB Interface

We've designed the remote control of the SSB-9200 to be fully SCPI-compliant, eliminating complicated testing routines and the bulky software controlling them. The communication bus is designed so that the biggest delay in testing is taking the measurements, not transferring commands from the computer to the SSB-9200.

Reliability Built on Industry-leading Experience

For over ten years, ILX Lightwave has worked closely with laser diode manufacturers to develop instrumentation and provide measurement solutions. Our sources were originally introduced in 1996, and have been built on our laser diode control experience. In fact, ILX Lightwave developed the first modular source system for DWDM component, amplifier, and system test applications.

Trust the manufacturer who has delivered more modular laser sources for DWDM test applications than anyone else.

High density source bank that changes with the demands of your application.

The FOS-525 source modules capitalize on our proven FOS-79800 module design and bring unparalleled reliability to your test system.

FOS-525 DFB Laser Source Module

The FOS-525 module is ILX Lightwave's next-generation laser source module. Built on proven laser diode control technology, the FOS-525 module was completely redesigned for this family of products. Combined with the SSB-9200, the FOS-525 source module is an unbeatable combination of function and flexibility. This module is available in all bands from 1475–1625 nm. If your wavelength requirements fall outside of this range, other wavelengths are also available.

Dual stage temperature control is a standard feature. It has been redesigned to give excellent wavelength stability and rapid settling times after power or wavelength changes.

With an improved calibration process, the FOS-525 delivers more power and wavelength stability and accuracy.

Sophisticated Module Control

Each FOS-525 source module can be manipulated independently, while control functions make it easy to simultaneously change the parameters of the entire source bank. Easy-to-understand commands give full control of wavelength, output power, calibration and modulation functions. For remote control, a fully SCPI-compliant GPIB interface is standard.

An optional source shutter adds control of each light source. When measuring the power and wavelength of individual channels, the SSB-9200 can "shutter" all of the other channels, instead of turning off the drive current. This feature saves valuable time that would otherwise be spent waiting for lasers to settle again.

Coherence Control For a Stable Test System

As the total power in fiber optic testing increases, the effect of reflections and nonlinear processes, such as stimulated Brillouin scattering and stimulated Raman scattering, become more of a challenge. The FOS-525 improves upon ILX Lightwave's previous coherence control by offering factory calibrated linewidths of 1 GHz, as well as adjustable frequency and depth of modulation. The added control allows you to adjust these parameters to suit your needs.

We Understand That Component Testing Throughput is Critical

If you have special requirements such as higher power, special selected wavelengths, or customization with your lasers—call us.

Our technically qualified sales engineers can help you define the custom fiber optic source configuration optimized for your testing needs.

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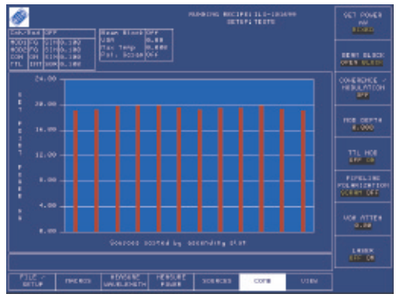
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Performance You've Come to Expect

The SSB-9200 provides a variety of modulation capabilities. Choose internal modulation with sine, triangle, square, or digital waveforms with frequencies from 200 Hz to 200 kHz and modulation depths from 0–100%. Or, use your own signal in the external modulation port for customized modulation. Digital modulation uses TTL signals, and analog modulation uses input signals of ±2.4 V.

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Dual stage temperature control is a standard feature. It has been redesigned to give excellent wavelength stability and rapid settling times after power or wavelength changes.

With an improved calibration process, the FOS-525 delivers more power and wavelength stability and accuracy.

Sophisticated Module Control

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An optional source shutter adds control of each light source. When measuring the power and wavelength of individual channels, the SSB-9200 can "shutter" all of the other channels, instead of turning off the drive current. This feature saves valuable time that would otherwise be spent waiting for lasers to settle again.

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High Density Source Bank

Specifications

WAVELENGTH

Number of Channels:	Up to 100
Wavelength	
ITU:	1475–1625 nm
Supervisory:	1310 ±5 nm
Spectral Width:	
Coherence Control OFF:	<30 MHz
Coherence Control ON:	1 GHz (typical)
Wavelength Accuracy:	±50 pm (±6 pm typical factory calibration)
Wavelength Tuning Range:	±0.85 nm
Wavelength Setting Resolution:	1 pm
Wavelength Stability[1]	
Short-term (15 minutes):	±3 pm
Long-term (24 hours):	±5 pm

OUTPUT POWER

Output Power:	up to 14.8 dBm
Power Setting Resolution:	0.01 dB
Output Power Stability[1]	
Short-term (15 minutes):	<0.005 dB rms
Long-term (24 hours):	±0.03 dB
Power Attenuation Range:	Full power to 0 dBm
Attenuation Accuracy:[2]	±0.1 dB
Optical Isolation:	>30 dB
RIN:[3]	–145 dB/Hz
Side Mode Suppression Ratio:	>40 dB (>45 dB typical)
Signal-to-Peak	
Background Ratio:[4]	>30 dB
Front Panel Output Power:	Depends on options

INTERNAL MODULATION

Small Signal

Waveform:	Square Wave, Sine Wave, Triangle Wave
Frequency:	200 Hz to 200 kHz
Duty Cycle:	50% ±1%
Modulation Depth:	Adjustable
Rise/Fall Time:	1 µs
Channel to Channel Synchronization:[5]	<100 ns

Large Signal

Level:	TTL
Frequency:	200 Hz to 200 kHz
Duty Cycle:[6]	50% ±1%
Polarity:	0 V = Laser Turned OFF 5 V = Laser Turned ON
Optical Delay:[7]	<1 µs
Channel to Channel Synchronization:[5]	<100 ns
Jitter:[8]	<50 ns
Connector:	BNC Female on rear panel

MODULATION IN

Small Signal

Level:	5 Vpp
Frequency:	200 Hz to 200 kHz

Large Signal

Level:	TTL
Frequency:	200 Hz to 200 kHz
Duty Cycle:[6]	50% ±1%
Polarity:	0 V = Laser turned OFF 5 V = Laser Turned ON
Optical Delay:[7]	<1 µs
Channel to Channel Synchronization:[5]	<100 ns
Jitter:[8]	<50 ns
Connector:	BNC Female on rear panel

MODULATION OUT

Large Signal

Level:	TTL
Polarity of OUT:	0 V = Laser Turned OFF 5 V = Laser Turned ON
Gate Delay:[9]	<60 ns/mainframe
Jitter:[8]	<50 ns
Connector:	BNC Female on rear panel

PM ALIGNMENT

Also available:	PM fiber aligned to slow axis

SSE50 OPTIONAL SPONTANEOUS EMISSION

Signal/Spontaneous Emission:	>50 dB
(within ±100 nm of center wavelength)	

OPTICAL ATTENUATION (USING VOA)

Resolution:	0.01 dB
Attenuation Range:	40 dB
Wavelength Dependence:	0.3 dB (@10 dB)
Repeatability:	±0.05 dB

SS-811 SOURCE SHUTTER

Transition Time	
Off to On:	30 ms
On to Off:	10 ms
Power Stability 24 hr. 25 ±1°C:	<0.07 dB
Power Stability 15 min. 25 ±1°C:	<0.005 rms
Repeatability:	±0.05 dB
Lifetime:	>10 million cycles

COMPUTER INTERFACE

GPIB/IEEE-488.2-1992	
Hardware:	ANSI/IEEE Std. 488.2-1992
Software:	ANSI/IEEE Std. 488.2-1992

GENERAL

Size (HxWxD):	53.3 cm x 45.1 cm x 64.1 cm 21" x 17.75" x 25.25"
Weight (100 modules):	61.22 kg (135 lbs)
(Module weight approx. 0.6 lbs each)	
Power Requirements:	100—120 VAC (50/60 Hz, 10 A) 200—240 VAC (50/60 Hz, 5 A)
Front Panel Display:	LCD TFT-VGA
Optical Connector:[10]	FC/APC standard
(other connector upon request)	
Operating Temperature:	15°C–35°C
Storage Temperature:	–25°C to +60°C
Humidity:	<90% RH, non-condensing
CE Compliant:	Yes

NOTES

1. At constant temperature with suitable warm-up time. Some modules may require longer than the typical one-hour warm-up time.
2. Defined as: $\Delta P_{meas} - \Delta P_{set}$ from maximum power to 5 dB down.
3. Measured at output connector. Use angled connector patch cords to minimize noise.
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SSB-9200	High Density Source Bank Mainframe (includes GPIB/IEEE-488.2 interface)
FOS-92005XYZZ	
X = 1	Single Channel DFB Module
X = 2	Dual Channel DFB Module
Y = 4	1475—1527.97 nm (S-band)
Y = 5	1527.98—1610 nm (C and L-band)
ZZ = 10	10 mW
ZZ = 20	20 mW
ZZ = 30	30 mW[11]
ZZ = SP	Special Order
ZZ = CS	Customer Supplied Lasers, non-standard product
FOS-9200VOA0	System VOA
SS-811	Source Shutter Option (not compatible w/ PM alignment)
SSE-50	50 dB Ratio of Signal to Spontaneous Emission Option
PM Alignment	Per Channel PM Alignment

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Product Features

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30 mW across the entire S, C, and L-bands



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Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

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