For current pricing, please see our website.

DWDM Laser Sources for TXP5000 – LS5000 Series (Page 1 of 2)

ITU Coverage: We are committed to providing quick delivery of any of the 100 lasers (on a 100 GHz grid) that comprise the DWDM C- and L-bands.* When ordering, please refer to the tables presented on pages 1272 - 1273, which are organized based on 100 GHz channel spacings. Pricing and ordering codes can also be found there. Our order codes are a combination of the band designator (C or L), the 100 GHz channel number (01 through 50), and an additional character (A, B, C, or D) that indicates the frequency offset from the base channel.

*Subject to Laser Diode Availability, 50 GHz and 25 GHz grid upon request.

Introduction – LS5000 DWDM Laser Modules
The LS5000 DWDM laser modules for the TXP5000 Series Test and Measurement Platform offer precise tunability as well as long-term wavelength and power stability. Adjustable coherence control makes them ideal for both active and passive DWDM component testing as well as multi-wavelength transmission experiments.

The WDM laser modules are ideally suited for all DWDM applications, including test systems for fiber optic DWDM components, EDFA production, and multi-laser optical sources for DWDM transmission experiments.

Stability, Accuracy, and Dependability
This DWDM laser platform is the ideal choice for demanding DWDM test and measurement applications with laser linewidths of less than 10 MHz, center wavelength stability of better than 0.005 nm per 24 hours, and wavelength accuracy of better than ±0.025 nm. We use only telecom-rated, butterfly-packaged DFB lasers with integrated TEC elements, optical isolators, and low back-reflection fiber pigtails. When combined with our sophisticated drive circuits, the result is an extremely stable, low-noise laser source that exhibits optical power stability that is better than 0.005 dB per 60 minutes and a relative intensity noise RIN figure of 145 dB/Hz (Typical). All Thorlabs' instruments are backed by an extensive two-year warranty on materials and workmanship.

Extensive Inventories
Thorlabs' DWDM sources cover the ITU grid containing wavelengths (100 GHz channels) spanning the C- and L-Bands. Wavelengths on the 50 GHz and 25 GHz grid are available upon request.

For manufacturers of laser diodes, Thorlabs also offers the service of incorporating user-supplied lasers into our modules. Please contact technical support for details.

The LS5000 Sources for the TXP Test and Measurement Platform offer more general test and measurement applications than the WDM8 sources. The TXP platform consists of a combined laser diode current and TEC controller to drive the LS5000 sources and modules for polarization analysis and control (see pages 1177 - 1191). It offers TCP/IP or USB interfaces to allow for flexible setups.

Features
- 100 Wavelengths on 100 GHz ITU Grid*
- Wavelengths in C- and L-Bands*
- Wavelength Stability <0.005 nm (24 Hours)
- Output Power Stability <0.01 dB (24 Hours)
- Precise Wavelength Tuning Over ±0.85 nm
- Direct Display of Wavelength During Tuning
- Precise Power Tuning Over >6 dB (10 dB Typ.)
- Variable Coherence Control, Linewidths up to 1 GHz
- Instrument Drivers for LabVIEW™ and LabWindows™/CVI Included
- FC/APC Connector

*Subject to Laser Diode Availability, 50 GHz and 25 GHz Grid Upon Request.

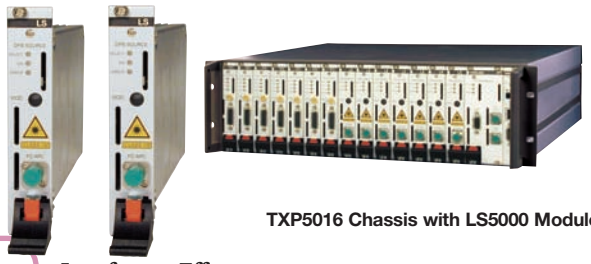
See pages 1171 - 1191 for more details on the TXP5000 Series Test and Measurement Platform

TXP5000 SERIES SPECIFICATIONS			
	TXP5016	**TXP5004**	**TXP5001AD**
Number of Slots	16 Slots	4 Slots	1 Slot
Maximum Power Consumption Per Slot	40 W	25 W	36 W
Maximum Power Consumption	320 W	100 W	36 W
Operation	Graphical User Interface on Rem PC		
Remote Interface	Ethernet 10Base-T	USB 2.0	USB 2.0
Remote Drivers	Driver DLL with support for NI LabView™, NI LabWindows/CVI™, MS Visual C++™, Borland C++™		
Chassis	19", 3 U	1/3, 19", 3 U	No Chassis
Line Voltage	100 to 240 VAC ±10%		
Line Frequency	50 to 60 Hz ± 5%		
Operating Temperature	0 to 40 °C		
Storage Temperature	-40 to 70 °C		
Dimensions	449 mm x 148 mm x 435 mm	168 mm x 148 mm x 315 mm	124 mm x 23 mm x 112 mm
Weight (w/o Modules)	7 kg (15.41 lbs)	3 kg (6.61 lbs)	0.2 kg (0.44 lbs)

DWDM Laser Sources for TXP5000 – LS5000 Series (Page 2 of 2)

Coherence Control

All the DWDM series laser modules provide an adjustable coherence length control. For high-precision power measurement, the narrow linewidth of a DFB laser can lead to coherent interference effects due to reflections from the multiple surfaces that are present in most optical systems.



TXP5016 Chassis with LS5000 Modules

Specifications

Wavelength

- **Options:** 100 Wavelengths on the 100 GHz ITU Grid (C- and L-Bands)*
- **Tuning Range:** ±0.85 nm
- **Accuracy:** ± 0.025 nm, < ±0.01 nm (Typical)
- **Stability:** < 0.005 nm over 24 Hours (Typical)
- **Resolution:** 1 pm
- **Laser Linewidth:** < 10 MHz

Output Power

- **Optical Power:** 20 mW
- **Accuracy (Abs/Rel):** 0.6 dB/0.4 dB
- **Stability:** < 0.002 dB over 15 s, < 0.005 dB Over 1 hr, < 0.01 dB over 24 hrs
- **Attenuation:** >6 dB, 10 dB (Typical) (Continuously Variable)
- **Resolution:** 0.01 dB
- **Side Mode Suppression Ratio:** >40 dB (Typical), >36 dB Min (at Max Power)
- **Relative Intensity Noise (RIN):** -145 dB/Hz (Typical)
- **Optical Isolation:** >35 dB

Coherence Control (Standard Feature, All Models)

- **Linewidth:** up to 1 GHz (Adjustable)
- **Shape:** Sine, Square, and Triangle
- **Frequency:** 0.02 up to 20 kHz
- **Modulation Depth:** 0.1 to 100%

Modulation

- **Analog Modulation (Must order a -LF Source):** DC - 50 kHz (Optional via SMA Input)

General Data

- **Optical Output:** FC/APC Connector**
- **Fiber:** PMF (Connector Key Aligned to Slow Axis upon Request)
- **Operating temperature:** 0 to 35 °C Non Condensing
- **Storing temperature:** -40 to 60 °C
- **Warm-up Time:** 15 min for Rated Accuracy
- **Laser Module Width:** 1 Slot
- **Laser Safety Class:** 1M

*Subject to Laser Diode Availability, 50 GHz and 25 GHz grid upon request.

**Other Connector Styles, (i.e., SC, E2000) and Non-Angled (PC) Ferrule upon request.

Interference Effects

For high-precision power measurements, the narrow linewidth of a DFB laser can lead to interference effects caused by reflections from the multiple surfaces that are present in most optical systems. These multiple reflections, while extremely small, can accumulate due to the long coherence length. Brillouin scattering is another effect that can lead to significant errors when making optical power measurements in fiber-based systems. The magnitude of these effects can be significantly reduced by increasing the linewidths of the source. Therefore, all the LS5000 series laser sources provide a control to adjust the coherence length; a small signal modulation on the laser current is used to broaden the DFB laser linewidth from a few MHz up to more than 1 GHz. The LS5000 modules provide continuous adjustment of the linewidth over this entire range. An internal freely running sine/square/triangle wave generator is used to modulate the laser current. The modulation frequency range of the function generator is 20 Hz to 50 kHz with up to 100% modulation depths. Using these features, an ideal non-discrete, Gaussian or a discrete spectral distribution is generated.

External Analog Low Frequency (LF) Modulation DC to 50 kHz (Only Make-to-Order LS5 Sources with Item #s ending in -LF)

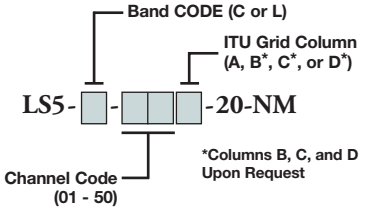
For applications where a precise LF modulation up to 50 kHz is required, the LS5000 modules are available with an LF modulation option. With this option, the output power can be modulated via an optional SMA input. The laser remains fully protected due to a precise limit circuit located inside the module.

Precision Wavelength Tuning

The wavelength is displayed with a resolution of 0.001 nm. By precisely controlling the temperature of the laser chip, the emitted wavelength can be tuned over a range of ±0.85 nm (approximately ±100 GHz). This range allows the central wavelength of the source to be shifted from one transmission channel to the adjacent channels in dense WDM systems with 100 GHz channel spacing and allows tuning over up to 8 channels in systems with 25 GHz channel spacing. This feature is useful for simulating crosstalk between channels and can also be used to measure the profile of narrow band DWDM filters.

Ordering Information

The item name for the order of your laser source can be obtained from the ITU Grid on page 1273 in the same way as for the WDM8 sources. Just replace WDM8 by LS5.



ITEM #	$	£	€	RMB	DESCRIPTION
LS5-X-XXX-20-NM*	$ 2,754.00	£ 1,982.88	€ 2.395,98	¥ 21,949.38	Single TXP WDM Laser Source, 20 mW, No LF Modulation
TXP5004	$ 1,233.00	£ 887.76	€ 1.072,71	¥ 9,827.01	TXP Test and Measurement, 4 Slot with USB Control
TXP5016	$ 3,560.00	£ 2,563.20	€ 3.097,20	¥ 28,373.20	TXP Test and Measurement, 16 Slot with Ethernet Control

*For a low frequency modulation input please contact Thorlabs to order a LS5-X-XXX-20-LF Laser Source