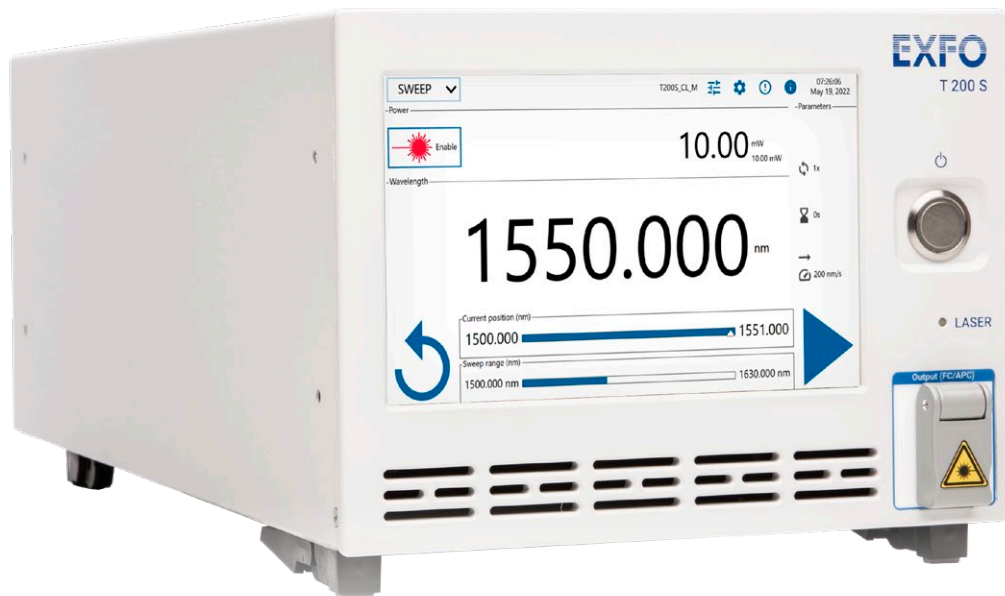


T200S

HIGH-POWER CONTINUOUSLY TUNABLE LASER

- High sweep-speed tunable laser, essential for R&D applications and for testing photonic integrated circuits and optical components.



KEY FEATURES

- Up to 200 nm/s scanning speed
- Nominal 10 dBm (10mW) over full tunable spectral range
- Ultra-low spontaneous emission and narrow linewidth
- Wavelength coverage: 1260 nm - 1360 nm or 1500 nm - 1630 nm
- Compact form factor
- Wavelength tuning and continuous sweep modes
- Active mode-hop-free operation

APPLICATIONS

- Passive optical components
- Photonic integrated circuits
- Multipurpose tunable laser for R&D

RELATED PRODUCTS



CTP10
component tester



CT440
component tester



T500S
tunable laser

ESSENTIAL FOR OPTICAL SPECTRAL CHARACTERIZATION

A continuously tunable laser is an essential instrument in R&D labs and on production floors. It covers a variety of applications where rapid, continuous wavelength tuning is required.

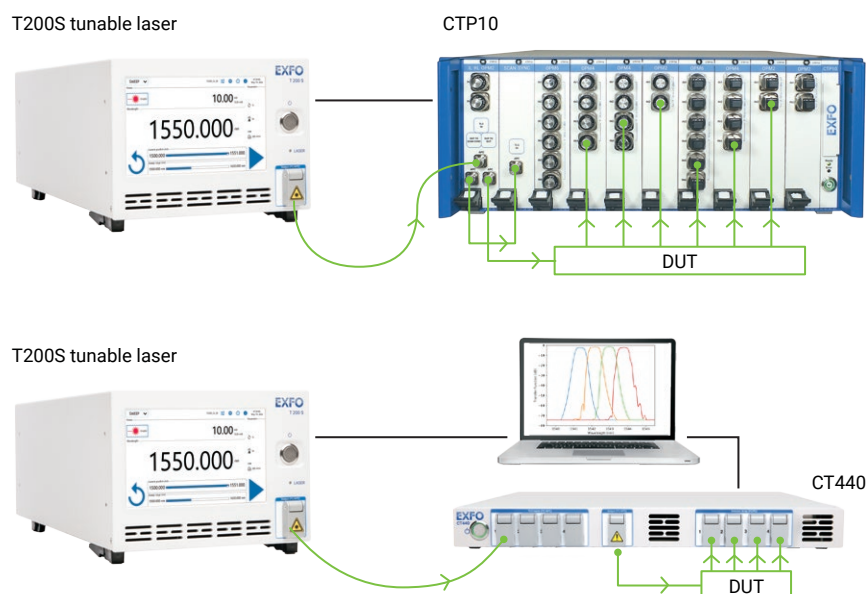
The T200S laser delivers speed and high power while sweeping in addition to narrow linewidth at fixed wavelengths.

Testing high-speed photonic integrated circuits (PICs)

Integrated photonics can include complex optical components with high-contrast spectrum. For instance, a ring resonator may have very sharp features making it difficult to characterize insertion loss. In addition to insertion loss, some devices require extended measurements of return loss or polarization dependent loss, with the same level of accuracy. Finally, simultaneous testing of a large number of devices or outputs from one single device is also required to speed up PIC characterization.

To test such devices, the T200S laser can be jointly operated with the CTP10, EXFO's component testing platform. With high-resolution and high-accuracy spectral measurement, the CTP10 is an integrated solution that leverages the full potential of the T200S for operations at 200 nm/s sweep speed. The T200S is also compatible with the CT440, EXFO's compact component tester operating at 100 nm/s.

For more details, please refer to the CTP10 or CT440 specification sheets.



Optical component testing

The T200S builds on previous innovations for tunable lasers such as ultra-low signal-to-source spontaneous emission ratio (SSSER), high-power cavity and mode-hop-free operation. These three parameters are key for high-quality optical component testing, either at specific fixed wavelengths or through a swept wavelength scan.

In labs or on production floors, the test instrument can be easily operated using the large touchscreen with an ergonomic graphical user interface and it can be fully automated using SCPI commands from the Ethernet port at the back of the unit.

Scientific R&D

In R&D environments, continuously tunable lasers are often used in swept wavelength applications but they can also be required to tune to a particular stable wavelength with narrow linewidth.

The T200S has a dedicated tuning mode that optimizes linewidth while maintaining high power stability.

INDUSTRY-LEADING FEATURES

10 dBm output power with high spectral purity

The T200S exhibits crystal-clear optical spectrum at a nominal optical output power of 10 dBm over the entire tuning range. Indeed, the optical cavity eliminates broadband source spontaneous emission (SSE) without any compromise on optical power, and can be set to an optimized linewidth (< 25 kHz).

High spectral purity is maintained throughout the laser sweep thanks to the active mode-hop control, ensuring reliable wavelength sweeps are achieved over and over again.

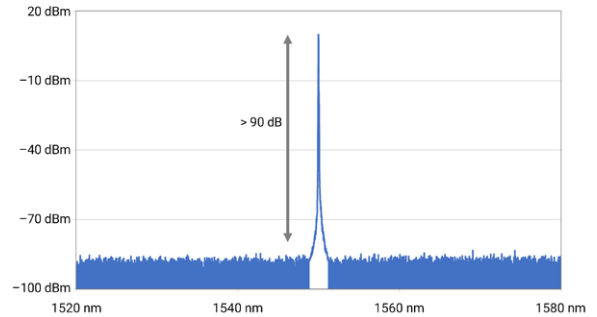


Figure 1. High power and high dynamic range.

High-speed tunability

The T200S can be configured with a scanning speed of 200 nm/s as an option. Where speed is critical, the T200S proves an essential addition to ensure repeatable yet fast measurements. Otherwise, the laser can be set to slower scanning speeds all the way down to 0.5 nm/s (e.g., for legacy detection systems).

Wavelength tuning or continuously swept wavelength scans

The T200S has two user modes: TUNE or SWEEP. Each is optimized for specific usage. TUNE mode optimizes the laser control to ensure narrow linewidth at any wavelength or provide rapid and accurate “go-to” wavelength tuning. SWEEP mode performs high-speed mode-hop-free scans over the selected wavelength range of the laser. During that sweep, the laser provides an electrical output trigger according to a set wavelength resolution down to 0.5 pm (even at 200 nm/s). The trigger can then be used with other measurement systems.

Automation for high-precision spectral measurements

The T200S is a key part of a spectral characterization system using EXFO’s component testing equipment (CTP10 or CT440), resulting in a spectral measurement benefiting from a wavelength uncertainty of ± 5 pm and excellent wavelength repeatability. Automation of the new laser source is taken care of by these component testing instruments with limited impact on existing automation programs. As a stand-alone laser, Ethernet control makes it possible to remotely drive the laser from any location.

Compact and easy to use

The half-rack configuration and limited footprint make the T200S an attractive device for lab applications. The screen can be adjusted to suit dark optical lab environments and display relevant information so that you can see it from the other side of the optical bench. With control buttons located at the corners of the screen, users can operate the laser while concentrating on the optical setup.

A rackmount accessory is available to mount one or two lasers inside a 19-in rack bench. An air filter is also available for dusty environments.

Part of the leading series of continuously tunable lasers

The T200S is part of EXFO’s series of continuously tunable lasers that also include the T500S offering adjustable high power, bidirectional sweep functionality and spectral coverage from O-band to U-band.

For more details, please refer to the [T500S specification sheet](#).

SPECIFICATIONS – OPTICAL CHARACTERISTICS

	T200S-O	T200S-CL	
Wavelength	Wavelength range (nm)	1260 - 1360	1500 - 1630
	Wavelength uncertainty ^a (pm)		±5 (typical) ±20
	Wavelength repeatability ^b (pm)		±5 (typical)
	Wavelength stability ^c (pm)		±5
	Wavelength resolution setting (pm)		1
Sweep control	Maximum speed (nm/s)	100 (200 optional)	
	Adjustable speed (nm/s)	0.5, 1, 2, 5, 10, 20, 50, 100 (200 optional)	
	Mode-hop-free operation	Active mode-hop cancellation	
	Minimum wavelength sweep trigger resolution (pm) ^l	0.5	
Optical power	Nominal output power over full wavelength range (dBm)	10	
	Power stability ^c (dB)	±0.01 (typical)	
Spectral characteristics	Linewidth ^d (10 μs integration time) (kHz)	< 25 (typical)	
	Linewidth ^d (100 μs integration time) (kHz)	< 250 (typical)	
	Side mode suppression ratio ^e (SMSR) (dB)	> 50 (typical)	
	Signal-to-source spontaneous emission ratio ^f (SSSER) (dB)	90 (typical)	
	Signal-to-total-source spontaneous emission ratio ^g (STSSER) (dB)	75 (typical)	
	Relative intensity noise ^h (RIN) (dB/Hz)	-150 (typical)	
Optical output	Optical fiber type ⁱ	PM optical fiber, FC/APC connector	
	PER (dB)	17 (typical)	

All specifications given at constant temperature ± 1 °C, after wavelength full reference, between 18 °C and 28 °C (unless otherwise stated), after a 60-minute warm-up and for wavelength not equal to water peak.

a. TUNE mode, high accuracy setting.

b. TUNE mode, high accuracy setting and for wavelength tuning from low to high wavelengths.

c. Over one hour and at a temperature of 21 °C ± 1 °C. Measured at 10 dBm. Stability expressed as \pm half difference between max and min values measured within 60-minute window.

d. In TUNE mode, optimized linewidth setting, at 10 dBm and at a temperature of 21 °C ± 1 °C.

e. At 10 dBm, at 21 °C ± 1 °C. For T200S-O: 1270 nm to 1360 nm.

f. Measured over a bandwidth of 0.1 nm, at 10 dBm, for the center wavelength.

g. Measured over a span of 100 nm with an exclusion zone of ± 0.6 nm around the signal. Laser at center wavelength.

h. RIN within 100 MHz - 3 GHz range with RBW = 30 kHz. For T200S-O: 1270 nm to 1360 nm.

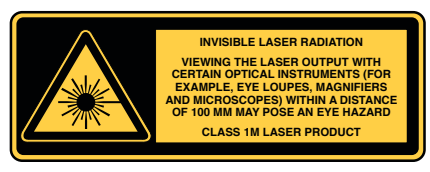
i. Fiber's slow axis and polarization aligned with key connector.

j. With output trigger PULSE activated, available for all scanning speeds. Triggers generated at regular wavelength intervals during the sweep; some restrictions apply to wavelength scanning span of the laser according to speed and resolution; not compatible with bidirectional scanning.

SPECIFICATIONS – HARDWARE

Environmental conditions	Operating temperature	15 °C to 35 °C (59 °F to 95 °F)
	Operating humidity	< 80% (non-condensing)
	Warm-up time (hour)	1
Physical footprint	Size (L x H x D)	217 mm x 173 mm x 441 mm (8 ⁹ / ₁₆ in x 6 ¹³ / ₁₆ in x 17 ³ / ₈ in)
	Weight	9 kg (20 lb)
Connectivity	Monitor	7 in capacitive touchscreen
	Remote communication	Ethernet RJ45 LAN 10/100/1000 Mbit/s
	Electrical BNC ports	1x trigger IN, 1x trigger OUT, power monitoring and wavelength monitoring
	USB ports	USB 3.0 (1), USB 2.0 (2)
Security	Laser safety	Class 1M
	Power supply	100 - 240 V AC; 50/60 Hz; 0.65 - 0.3 A
Accessories (sold separately)	Rackmount	4U tablet accommodating 2 units

LASER SAFETY



ORDERING INFORMATION

T200S-XX-M-XX-58

Wavelength range

O = 1260 nm - 1360 nm
 CL = 1500 nm - 1630 nm

Output fiber type

M = Polarization maintaining fiber

Connector

58 = FC/APC

Scanning speed

100 = 100 nm/s max sweep speed
 200 = 200 nm/s max sweep speed

Example: T200S-CL-M-200-58

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