

TOPTICA Launches TeraScan ultra: Redefining Terahertz Precision with 1 Hz Spectral Resolution

Designed for channel sounding, wafer inspection, and VNA up to 5 THz

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TOPTICA Photonics, a global leader in precision laser systems, proudly announces the launch of the TeraScan ultra – an ultra-high-precision continuous-wave (cw) terahertz platform featuring comb-locked stability and unmatched spectral resolution down to 1 Hz.



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The **TeraScan ultra** is designed to meet the most demanding requirements in THz communications research, channel sounding, wafer inspection, and high-resolution spectroscopy. With a bandwidth of up to 5 THz and ultra-low phase noise, it sets a new benchmark in the generation and control of tunable terahertz radiation.

At the heart of the system are two diode lasers – one tunable, one fixed – both locked to a single optical frequency comb. A photomixer emitter converts the optical beat signal into a tunable, monochromatic THz wave. TOPTICA's proprietary “endless frequency shifter” ensures seamless frequency tuning while maintaining absolute control over phase and frequency – a crucial requirement for applications like photonic vector network analysis.

The system uses state-of-the-art InGaAs photomixers: a photodiode emitter and a Rh:InGaAs photomixer receiver, both packaged into compact, fiber-coupled modules. Operation modes include fixed frequency, sweep, and triggered step scan – fully software-controlled.

TOPTICA's TeraScan ultra is ideal for researchers who demand ultimate frequency stability, scanning flexibility, and sub-Hz phase coherence across the full terahertz spectrum.

Request a demo or learn more at: www.toptica.com/resolution

About TOPTICA

TOPTICA has been developing, producing, and marketing high-end lasers and laser systems for science, research, and industry for over 25 years. The portfolio includes diode lasers, ultrafast fiber lasers, terahertz systems, and optical frequency combs. Worldwide, TOPTICA has 600 employees in seven business units with a consolidated group revenue of €140 million.

TOPTICA Photonics SE

Lochhamer Schlag 19
82166 Graefelfing
Germany
www.toptica.com

PR Contact

Mr. Jan Brubacher
+49 89 85837-123
jan.brubacher@toptica.com