



Advanced Solutions for Optical Measurements

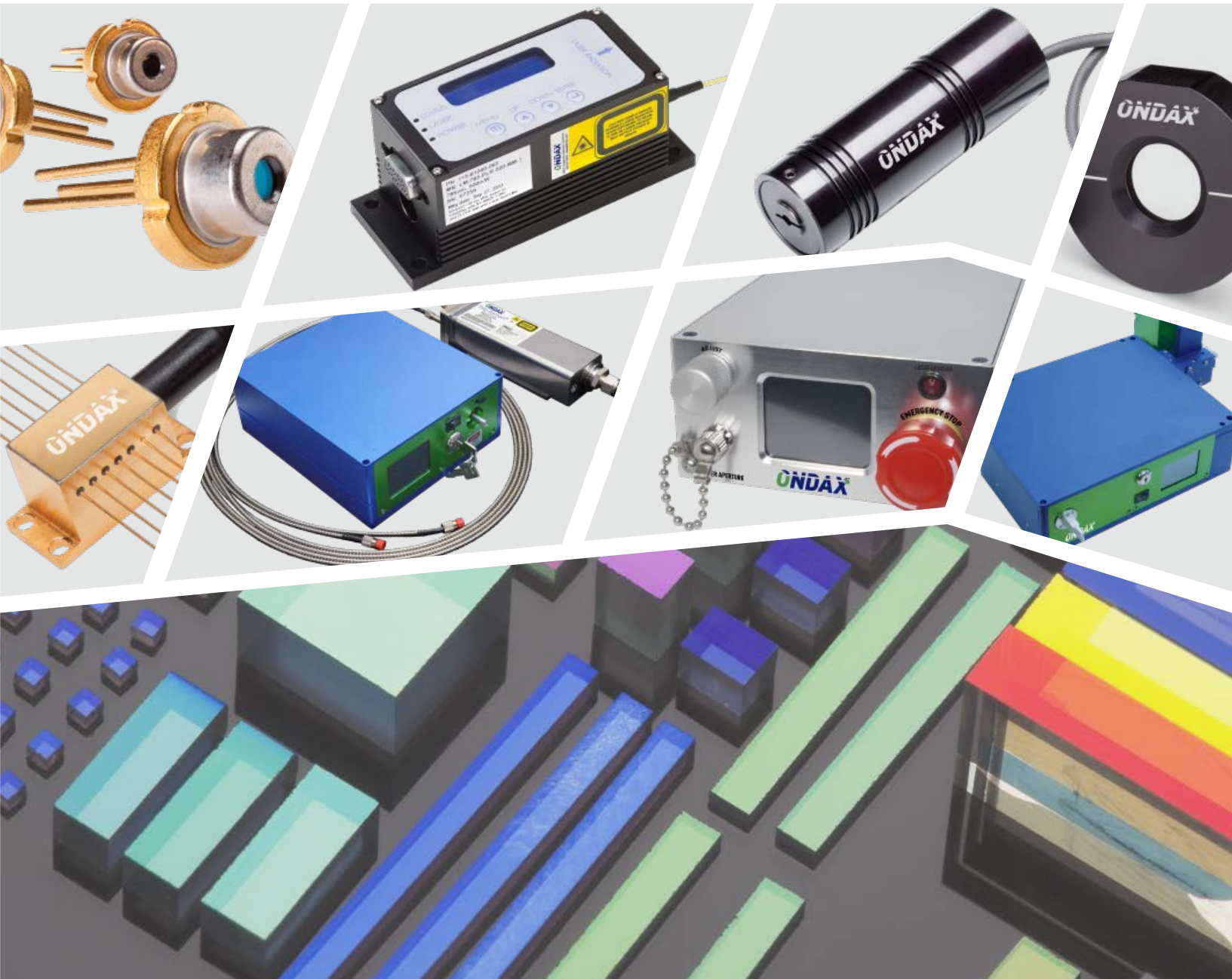
PRODUCT SELECTOR GUIDE

Volume Holographic Gratings
Wavelength Stabilized Lasers

Low Frequency/THz-Raman®
Spectroscopy Systems
Notch Filters and Systems

ASE Suppression Filters
Pulse Compression Filters
VHG Wavelength Combiners

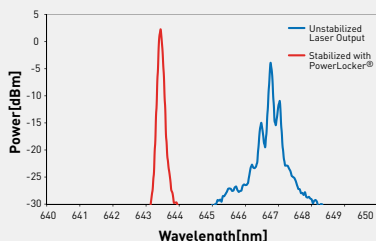
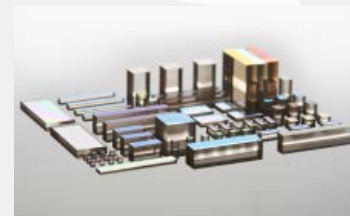
SureLock™ **VHG™** **PowerLocker™** **PicoPulse™** **SureBlock™** **NoiseBlock™**



Ondax, Inc. is the market leader in the design, manufacture and marketing of high-performance holographic optical filters, wavelength-stabilized laser sources, and high-performance THz-Raman[®] spectroscopy systems for a wide range of industrial, scientific, defense and consumer applications. Our core technology is state-of-the-art **Volume Holographic Gratings (VHG)**, also known as **Volume Bragg Gratings (VBGs)** – specialized optical filters fabricated from proprietary photosensitive glass that provide wavelength stabilization, spectral and temporal control for lasers and laser-based systems, and enhanced optical performance and resolution of spectroscopy systems. Our products enable our customers to make their lasers and optical systems smaller, more portable, more efficient, less expensive and more environmentally stable and robust.



Ondax VHG are bulk “solid-state” diffractive holographic filters, which unlike thin films or gels, can deliver ultra-stable, degradation-free performance for the lifetime of the filter. Capable of very tight wavelength, efficiency, bandwidth, and diffraction angle control, Ondax VHG can be precisely and reproducibly engineered to demanding spectral and temporal specifications.



PowerLocker[®]

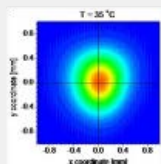
Wavelength Stabilization Gratings

PowerLocker[®] wavelength stabilization gratings are designed to reflect a specified wavelength at a given reflectivity, locking the emission wavelength, increasing spectral brightness, and improving environmental performance of laser diodes. The short external cavity enabled by the PowerLocker[®] provides better mode selection than systems based on Littrow or Littman cavities at a much lower cost. Available in wavelengths from 375nm to 2.5µm, efficiencies from 5% to >99%, and bandwidths from 0.03 to 1nm to match any application requirement.

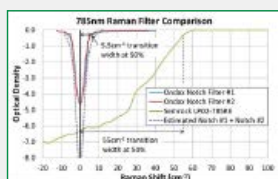
PicoPulse[™]

Pulse Compression Gratings

Ondax PicoPulse[™] pulse stretcher/compressor filters enable high peak power in femtosecond pulsed laser systems, with a distortion free round output beam. PicoPulse[™] filters allow larger input beams to be used with many orders of magnitude higher power than chirped Fiber Bragg Gratings (FBGs). Ondax's proprietary packaging is designed to minimize the spatial chirp commonly found in chirped volume holographic gratings (CVHGs). This robust, compact format is less complex than equivalent dispersive diffraction grating pairs, which require multiple components with precise alignment adjustment. The output is stable over a wide range of temperatures, with nearly diffraction limited beam quality.



Spatial mode measured after 1.5m of free-space propagation

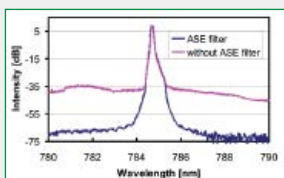


SureBlock wavelength selectivity compared to a thin-film edge filter shows 10x improvement in resolution

SureBlock[™]

Ultra Narrow-band Notch Filters

Ondax SureBlock[™] ultra narrow-band notch filters boost the performance of single-stage Raman spectrometers to triple-stage levels, enabling capture of low-frequency signals down to 5cm⁻¹. Each filter has > OD 4 rejection with <10 cm⁻¹ bandwidth. High transmittance away from the notch enables simultaneous Stokes and anti-Stokes measurements. Available in standard 1" optical mounts, a prealigned, or integrated into a light-tight **XLF Notch Filter System** or **THz-Raman[®] Spectroscopy Module** with a compatible laser. Standard wavelengths include: 488nm, 514nm, 532nm, 633nm, 785nm, 808nm, 850nm, 976nm and 1064 nm.



NoiseBlock[™] preserves > 90% of the single frequency line while removing ~ 40dB of ASE

NoiseBlock[™] CleanLine[™]

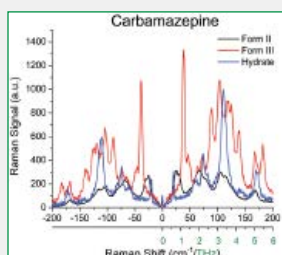
ASE Filters and Beamsplitters

The NoiseBlock[™] ASE (Amplified Spontaneous Emission) filters and CleanLine[™] filter assemblies reduce ASE emission by reflecting only the desired single frequency line, suppressing the broadband ASE spectral background of a single frequency laser by >40dB resulting in a clean, ASE-free beam. NoiseBlock filters ensure the pure spectral excitation beam required for ultra-low frequency THz-Raman spectroscopy and other demanding applications. They are designed to match the ultra-narrow spectral profile of our SureBlock[™] Notch Filters, and are incorporated into all Ondax XLF Series and THz-Raman[™] Systems. They can also be used as spectrally selective 90/10 Beamsplitters, providing up to a 4x throughput improvement in Raman spectroscopy applications. Available from 400nm to 2000+nm, in free-space, fiber-coupled, and pre-assembled CleanLine[™] configurations.

THz-Raman[®]

Low Frequency Raman Spectroscopy Systems

Incorporating our exclusive SureBlock[™], NoiseBlock[™] and CleanLine[™] technologies, Ondax patented **THz-Raman[®] Spectroscopy Systems** extend the range of traditional Raman spectroscopy into the terahertz/low-frequency regime, exploring the same range of energy transitions as terahertz spectroscopy – without limiting the ability to measure the fingerprint region. The THz-Raman spectral region covers both Stokes and anti-Stokes signals from ±5 cm⁻¹ to 200 cm⁻¹, (or 150 GHz to 6 THz), which contain important information about the molecular structure and degree of crystallinity. This region reveals a new “Structural Fingerprint” to complement the traditional “Chemical Fingerprint” of Raman, enabling simultaneous analysis of both molecular structure and chemical composition in one instrument for advanced materials characterization.



THz-Raman spectra of Carbamazepine shows clearly differentiated polymorphic and hydrated forms

SureLock™

Wavelength Stabilized Lasers

All SureLock™ Wavelength Stabilized Laser Diodes and Laser Modules incorporate the Ondax PowerLocker® VHG filter to provide single-frequency or narrowed linewidth spectral performance, stabilized temperature operating characteristics, and low power consumption – delivering affordable, portable, instrument-quality performance for a diversity of applications. Available in a wide range of wavelengths, power levels, and form factors, Ondax can also custom-configure a wavelength-stabilized solution to meet your exact application requirements.

TO Can Lasers

Our **TO Series** lasers deliver stabilized, single-frequency performance in the industry's most compact and affordable package. Ideal for OEM applications, our TO lasers can be easily integrated into OEM platforms for Raman spectroscopy, holography, metrology, sensing, or bio-instrumentation applications. Ondax TO lasers incorporate PowerLocker® VHGs directly inside the can. Available in wavelengths from 638nm to 826nm.

Collimated TO Can Lasers

The **CP Series** Collimated TO packages incorporate both a PowerLocker® and collimating lens to roughly collimate the output beam, simplifying integration into compact optical systems. Available in both single frequency (with optional ASE clean-up filters) and multimode, spectrally narrowed configurations, ranging from 405nm to 1064nm.

Fiber Coupled Butterfly Lasers

Ondax offers two fiber-coupled, high-power, multimode stabilized laser platforms for flexible integration, and both come with a 100 micron MM fiber output and FC/PC connectors. The **BF Series** is a traditional 14-pin butterfly laser that incorporates a TEC, and the **BF-OEM Series** is an affordable, ultra-compact OEM board incorporating temperature and current control, ideal for tight packaging requirements. Both solutions are ideal for Raman spectroscopy applications. Available in 785nm, 830nm, 976nm and 1064nm wavelengths.

RO Series Laser Modules

The **RO Series** Laser Module integrates any of our TO or CP wavelength-stabilized lasers with collimating optics, active TEC cooling and precision current control circuitry into a compact, cylindrical package with USB control. Designed for easy mounting and integration, this rugged self-contained module is ideal for OEM instrumentation or for laboratory applications. Available in wavelengths from 633nm to 830nm (single frequency) and higher-power 785nm to 1064nm (multimode). High power versions come with a heat-sink mount.

LM Series Compact Laser Module

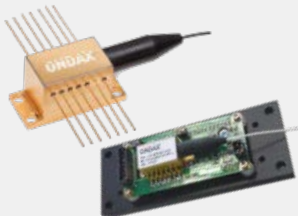
The **LM Series** incorporates any of our TO or CP stabilized laser diodes into a user-friendly, ultra-compact footprint. Offering both computer and integrated user keypad controls, the LM Series includes precision temperature and current controls to deliver greater than 1m coherence length (single frequency), with excellent power stability with less than 1 minute warm-up. This tightly integrated package makes it the ideal choice for both OEM instrumentation and laboratory applications. Available in wavelengths from 405nm to 826nm (single frequency) and from 405nm to 1064nm (narrowband multi-transverse mode).

LMFC Series Compact Laser Module

The **LMFC Series** Fiber Coupled Laser Module shares the compact footprint and integrated controls of the LM Series, while offering the convenience and exceptional mode quality of a fiber-coupled output. The LMFC is available in single-frequency versions from 405nm to 826nm, as well as higher power, narrowband multimode models from 404nm to 1064nm. Ideal for lab use or easy integration into Raman or analytical instrumentation applications.

Benchtop Laser Module

Ondax's new **Mini-Benchtop** Lasers are ultra-compact and an easy-to-use, rugged solution for the lab. Incorporating an Ondax SureLock™ VHG-stabilized laser diode, the Mini-Benchtop Laser delivers steady, high-power, spectrum-narrowed performance. With both easy-to-adjust manual power controls and a digital touchscreen interface, the Mini-Benchtop Laser provides better than 1% power stability and less than 1 minute warm-up. Delivering extreme temperature insensitivity, these lasers are perfect for the lab user or OEM doing Raman spectroscopy. Comes with an FC/PC front panel connector and optional 105 mm 3-meter fiber cable with FC/PC or SMA end connector.



Ondax is the world's largest manufacturer of high-performance Volume Holographic Bragg Grating (VHG or VBG) filters, wavelength-stabilized laser sources, and high-performance Raman filter systems for industrial, defense, instrumentation and scientific applications. Since our founding in 2000, Ondax has been enabling advancements in high-power diode-pumped, ultrafast, and direct-diode laser performance for customers across the globe. Our proprietary high volume manufacturing processes and fully automated, wafer-level testing ensure 100% specification conformance across the full aperture of the grating, along with 100% product traceability. And our record of innovative design, collaborative development, rapid prototyping, component quality and reproducibility, and rapidly scalable, high-volume supply has earned us the position of supplier of choice for the world's largest industrial and defense laser companies worldwide.

18 YEARS & OF EXCELLENCE & INNOVATION

Our state-of-the-art VHGs improve laser diode performance by increasing spectral brightness, locking the emission wavelength, increasing environmental stability, and improving manufacturing yields. For Raman spectroscopists, our patented ultra-low-frequency **THz- Raman**[®] filter systems enable capture of Raman spectra in the Terahertz spectroscopy regime (5 cm⁻¹ to 200 cm⁻¹, or 150 GHz to 6 THz), enabling simultaneous, real-time measurements of both chemical composition and molecular structure. For ultra-fast lasers, chirped VHGs reduce the form factor of conventional pulse stretchers/compressors while enabling higher laser powers. And for research and instrumentation, Ondax VHG-stabilized diode lasers cover wavelengths from 405nm to 1064nm for applications in Raman spectroscopy, biomedical and analytical instrumentation, environmental sensing, metrology, and scientific research.

OPTIMIZED DESIGN

WORLD-CLASS QUALITY

HIGH-VOLUME MANUFACTURING



ONDAX Online Store

Visit the Ondax Online Store to find off-the-shelf samples of hundreds of products, available for immediate delivery.

ONDAX[®]

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For more information about Ondax products and the name of a local representative or distributor, visit www.ondax.com, email sales@ondax.com, or call 626.357.9600

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