

ePulse: Laser Measurement News

The true measurement of laser performance



ePulse: Laser Measurement News September 2026

Welcome to **ePulse: Laser Measurement News**, a review of new developments in laser beam measurement, beam diagnostics, beam profiling, optical elements, and imaging lenses. Each issue contains industry news, product information, and technical tips to help you solve challenging laser measurement and spectral analysis requirements. Please forward to interested colleagues or have them [subscribe](#).

Features

Celebrating 50 Years of Innovation: The Story Continues

For 50 years, MKS - through its Ophir® products - has helped shape the future of photonics through innovation, precision, and performance. Explore our story to discover the milestones and breakthroughs that brought us here, and the vision driving us forward.

[50 Years of Ophir Products: A Conversation with Co-Founder Ephraim Greenfield](#)

[What Shaped 50 Years of Ophir Products: Listening, Precision, and Trust](#)



Understanding Laser Power, Energy, and Why Measurement Matters

By Mark Slutzki, Sr. Product Marketing Specialist, Ophir Products

Laser measurement is not just a lab exercise. In many applications, it is the difference between a process that is controlled and repeatable and one that depends too much on assumptions. A laser data sheet may say that a source produces a specific power or pulse energy. That is useful but not the same as measuring the laser inside the system, under real operating conditions. In a medical system, manufacturing process, scientific setup, or industrial production line, the question is what the laser is actually delivering to the process. Understanding laser measurement terms helps users choose the right measurement method, avoid damaging sensors, and correctly interpret measurement results. [Laser Power & Energy Measurement](#).



How Thermal Sensors Measure Laser Power and Single-Shot Energy

Many laser power measurements are based on a surprisingly direct physical idea: absorb the laser light, turn it into heat, and measure the resulting thermal effect. This is the principle behind thermal power sensors, widely used for moderate to high laser powers because they can handle levels that would overwhelm more sensitive detectors. Their behavior is shaped by thermal design, absorber materials, cooling mechanism, and other factors. Understanding how they work makes it easier to understand both their strengths and their limitations – and that enables you to get the most out of them. [Thermal Power Sensors](#).



Videos of the Month

Customized Solutions

Every laser application has unique requirements. That's why MKS leverages its laser measurement technologies to develop customized solutions tailored to each customer's needs. From specialized sensors to fully integrated systems, our experts help transform complex challenges into precise, reliable, and trusted measurement results. [Customized Laser Measurement Solutions](#).



Laser Measurement with Virtual Meters

If all your laser measurement work involves a laptop or a PC, rather than a stand-alone meter, one of MKS' Ophir virtual meters could be an ideal solution. These are full-fledged Laser Power and Energy meters, but instead of including a built-in display, the PC becomes your display. Learn about the range of available virtual meters. [Virtual Meters](#).



70K-W Ultra High Power Sensor

Ultra-high power lasers are increasingly found in industrial and defense applications. Accurately measuring such beams is more critical than ever. Meet the MKS Ophir 70K-W power sensor, for measuring laser beam powers up to 70kW continuously and up to 100kW from a short exposure. [70K-W Ultra High Power Sensor](#).



SWIR 50-1000 mm f/5.5-9.5 mm Lens

Designed for 10 µm SXGA, 10 µm and 15 µm VGA SWIR detectors, the new MKS Ophir lens operates across the full 0.6–1.7 µm spectral range, delivering sharp, high contrast imagery in low-visibility conditions for long

Shrinking Pixels, Maintaining Performance in Infrared Imaging Systems

As pixel pitch decreases, the lens must resolve increasingly fine spatial detail, making optical MTF, f-number, and system-level performance critical to achieving the full potential of today's advanced IR detectors. In this technical note, explore the key optical challenges created by shrinking pixel architectures and the design considerations that can help maintain image quality, detection performance, and system efficiency. Gain practical insight into how detector and lens technologies must evolve together to meet the demands of next-generation IR imaging systems. [Infrared Imaging Systems](#).

Applications

Case Study: Solving Inconsistent Low-Power Laser Measurements from a Pulsing Beam

By Mark Slutzki, Sr Product Marketing Specialist, Ophir Products
Sometimes, a solution designed for one measurement challenge turns out to be useful in a completely different application. That was the case when a customer came to us with an issue in a low-power optical measurement setup. They were developing a proprietary system that included a small screen generating a video image. Their goal was to measure the total optical power emitted by the screen. But the readings didn't make sense. [Measuring Low Power Beams](#).

Service & Calibration

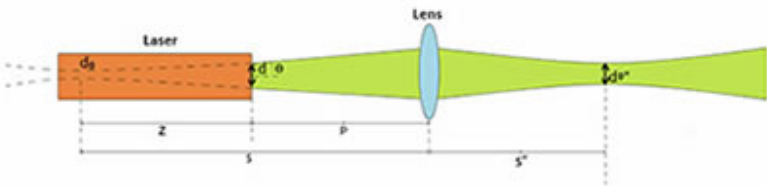
How to Calibrate or Repair Your MKS Laser Measurement Device

By Max Jacobson, Customer Service, Repair & Recalibration, Ophir Products
Your MKS laser measurement device is designed to deliver accurate, reliable results based on your application requirements. To maintain that accuracy over time, the device should be calibrated annually, similar to how precision equipment needs routine service or fine tuning. Here's what you need to know. [Calibration & Repair](#).

Calculators & Tools

Focal Spot Size Calculator

For a collimated beam, the diffraction-limited focal spot size of a laser beam depends on its wavelength, the size of the beam at the lens, and its M² value. Use this calculator to get the size and location of your Gaussian laser beam waist at focus, as well as the Rayleigh range. [Focal Spot Size Calculator](#).



What's New

Laser Power Sensor for Ultrashort Pulse Lasers

Laser micro-machining continues to push the boundaries of precision, quality, and productivity. As ultrafast laser systems become more powerful and ultrashort pulse applications move further into mainstream manufacturing, accurate laser power measurement is more important than ever. To meet these evolving demands, MKS introduces the Ophir F100(150)A-SV-17 fan-cooled thermal laser power sensor designed for measuring ultrashort pulse lasers in pico- and femtosecond applications. [F100\(150\)A-SV-17 Thermal Laser Power Sensor](#).



Long-Range MWIR SXGA Thermal Camera Series Optimized for Surveillance and Security

The Ophir KAMU long-range MWIR f/4 SXGA thermal imaging camera series is a fully integrated solution to accelerate deployment in such applications as surveillance and Counter-Unmanned Aircraft Systems (C-UAS). Each camera combines MKS' best-in-class continuous-zoom MWIR f/4 optics with



range ISR missions and laser detection tasks across air, land, and maritime platforms. [SWIR 50-1000 mm f/5.5-9.5mm Lens](#).



Blog Posts

Power from Pulse™: A New Standard for Measuring Short-Burst High-Power Lasers

High-power, water-cooled laser power meters are designed to operate continuously and reliably over extended periods of time. However, in some applications, a shorter measurement is preferable. The Power from Pulse™ measurement technique enables users to turn on the laser for only a few seconds, or even less, while still obtaining an accurate power measurement. [Power from Pulse](#).

Laser Sensor Damage Threshold: Why Staying Within Spec Isn't Always Enough

One of the most frustrating situations when working with laser power or energy measurement is discovering that a sensor has been damaged even though the laser appeared to be operating within the sensor's published specifications. What happened? Well, damage threshold is not determined by laser power alone. Factors such as power density, energy density, wavelength, exposure time, beam characteristics, and operating power can all affect how much laser radiation a sensor can safely handle. [Laser Sensor Damage Threshold](#).

Catalogs: Power Meters, Beam Profiling, IR Optics

The [MKS Ophir Photonics 2026 Laser Measurement Catalogs](#) include tutorials and product specifications for laser power meters and beam profiling systems.

The [MKS Ophir IR Optics Thermal Imaging Lenses Catalog](#) includes a wide range of LWIR, MWIR, and SWIR continuous zoom lenses compatible with 5 μm, 10 μm SXGA, & 15 μm VGA detectors. Also features a wide selection of 1-FOV and multiple FOV IR lenses. Includes new product specs, extended range of lens DRIs, and detailed H-FOVs charts per detector.

MKS Newsletters

[Focus on Photonics Newsletter](#) for innovations in lasers, opto-mechanical components, vibration and motion control, and laser characterization from MKS Newport.

[IR Optics Newsletter](#) for the latest developments in thermal imaging optics.

[Center Stage: MKS Newport Motion Newsletter](#) for quarterly

a high-resolution SXGA cooled detector (1280×1024 pixels, 10 μm), advanced video-processing, and an integration-ready architecture to accelerate deployment while delivering long-range, high-performance imaging. The Ophir KAMU camera series spans focal-lengths from 300 mm to 1200 mm. [KAMU Long-Range MWIR f/4 SXGA Thermal Cameras](#).

Low-Germanium 15-75 mm f/1.2 LWIR Zoom Lens

The Ophir LightIR 15-75 mm f/1.2 LWIR motorized continuous zoom lens is a re-engineered low-germanium optical solution developed to address growing industry concerns surrounding germanium material availability, supply-chain stability, and long-term program risk. Designed for VGA 10-12 μm uncooled LWIR detectors, this lens delivers high-performance thermal imaging across a wide range of defense, homeland security, surveillance, and industrial applications — while significantly reducing dependence on germanium-based optical materials. [Low-Germanium LWIR Zoom Lens](#).



Webinars

Measuring Beam Quality: Why M², Spot Analysis, and Focus Shift are Key to Superior Laser Processing

On Demand

Speaker: John McCauley, Principal Sales Territory Manager and High Power Laser Applications Specialist, Ophir Products

In today's competitive manufacturing environment, precision and consistency in laser materials processing are non-negotiable. The secret to achieving these lies in understanding your beam. This webinar shows why measuring M², analyzing spot size at focus, and monitoring focus shift are essential for optimizing cutting, welding, and additive manufacturing. Discover how advanced beam analysis solutions help you detect issues before they impact quality and reduce downtime, so you can unlock the full potential of your laser systems. [Measuring Beam Quality](#).

Understanding and Managing Damage Threshold

On Demand

Speaker: Mark Slutzki, Sr. Product Marketing Specialist, Ophir Products
Damage threshold is not determined by laser power alone. Depending on the sensor and application, factors such as power density, energy density, wavelength, exposure time, beam characteristics, and operating power can all affect how much laser radiation a sensor can safely handle. Understanding these factors is essential for selecting the right sensor and protecting your measurement equipment. [Damage Threshold](#).

Research News

Thermal Effects on Filamentation and Supercontinuum Generation in Bulk Materials

The generation of supercontinuum (SC) in bulk materials represents an experimentally simple and robust technique for the generation of coherent radiation with an octave-spanning frequency spectrum. This study looks at the impact of beam focusing geometry-related heat accumulation on supercontinuum spectra in YAG crystal pumped with 210 fs, 1030 nm pulses by varying pulse repetition rates. It is shown that in the case of converging pump beam, the long-wavelength portion of SC spectrum shrinks considerably with the increase of pulse repetition rate, almost completely vanishing at 2 MHz repetition rate, and such spectral shrinking takes place on a very fast, microsecond time-scale. In contrast, in the case of diverging pump beam, stable and broad supercontinuum spectrum is generated regardless of pulse repetition rate. Nonlinear losses were evaluated from the measurements of transmitted energy, by collecting the output radiation onto an MKS Ophir thermopile power meter and taking into account Fresnel reflection losses. [Supercontinuum Generation](#).

Distinguishing Intrinsic and Interfacial Pyroelectric Effects

Pyroelectric devices hold promise for thermal energy harvesting and sensing. By leveraging the reversibility of the intrinsic effect and the irreversibility of the interfacial effect, the authors propose a method that uses polarization reversal measurements to distinguish between them. By calculating the contributions of the two effects for different ferroelectric films, it is observed that the intrinsic and interfacial pyroelectric effects dominate in PbTiO₃ and BaTiO₃ films with Schottky contacts, respectively, modifying the energy Figure of Merit. A machine learning

spotlights on motion innovation.

[TECHinnovations Newsletter](#) for the latest on vacuum, power solutions, gas delivery and analysis, plasma generation, and ozone solutions for semiconductor and advanced markets from MKS Instruments.

Trade Shows

[LANE 2026: 14th CIRP Conference on Photonic Technologies](#)

21-25 September 2026
Erlangen, Germany

[Micronora: International Microtechnology Trade Fair](#)
29 September – 2 October 2026
Besancon, France

[Kyushu Semiconductor Industry Exhibition](#)
30 September – 1 October 2026
Fukuoka, Japan

[FABTECH](#)
21-23 October 2026
Las Vegas, NV, USA

[EuroBLECH 2026](#)
20-23 October 2026
Hanover, Germany

[Photonics Innovation 2026](#)
10-12 November 2026
Yokohama, Japan

[Power Laser Plus 2026](#)
10-12 November 2026
Yokohama, Japan

[Analytica China & Labtech China Congress](#)
16-18 November 2026
Shanghai, China

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model is employed to predict the proportion of intrinsic and interfacial effects, offering strategies for material screening. The light power density was determined using a calibrated MKS Ophir Starlite power meter.
[Pyroelectric Effects](#).

About Ophir Products

Ophir is a brand within the MKS Inc. Photonics Solutions Division. The Ophir product portfolio consists of laser and LED measurement products, including laser power and energy meters, laser beam profilers measuring femto-watt to hundred-kilowatt lasers, high-performance IR and visible optical elements, IR thermal imaging lenses and zoom lenses for defense and commercial applications, OEM and replacement high-quality optics and sub-assemblies for CO₂ and high-power fiber laser material processing applications. Ophir products enhance our customers' capabilities and productivity in the semiconductor, advanced electronics, and specialty industrial markets. For more information, visit www.ophiropt.com.

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