

ePulse: Laser Measurement News

The true measurement of laser performance



ePulse: Laser Measurement News November 2010

Welcome to **ePulse: Laser Measurement News**, a review of new developments in laser beam measurements, beam diagnostics, and beam profiling. 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.

Tutorials

How to Select a Power and Energy Meter

Power and energy meters are important devices for those who need to measure the power or energy of an optical source. They are a necessity in a wide variety of applications in the lab or in the field, from measuring the power of low-light sources such as fluorescence, to measuring the higher energy of pulsed lasers. Measuring optical power and energy depends on an understanding of the types of sensors available, and on requirements such as your desired wavelength response, dynamic range, and damage threshold. [Read the article.](#)

Common Reasons for Out of Tolerance Conditions

Ophir power and energy sensors can be used for many years without any repairs when used with the proper laser optical setup. Many customers are using original absorbers that are over 10 years of age. These white papers, one each for thermal, pyroelectric, and photodiode sensors, will help your equipment enjoy a longer life and produce more reliable results. [Read the article.](#)

Applications

Measuring Lasers Used in Photovoltaic Solar Panel Manufacturing

One of the recent developments in the photonics industry has been the rapid increase in automated solar panel production facilities. Many of these end-to-end production lines use laser-based methods to manufacture the thin film silicon photovoltaic modules. [Find out how they measure the profile of the high power density beams.](#)

The Telescope Array Project

This project is an experiment to study ultra-high energy cosmic rays located near Delta, Utah. The cosmic rays are ultra-high energy particles that hit the upper atmosphere. The original particle creates a cascade of millions of daughter particles that eventually reach the ground. At ground level we have an array of

Video of the Month

Choosing a Laser Beam Profiling System

Listen to our sales engineers as they provide inside advice on what you need to consider when configuring the best beam profiling system for your application. [Learn more by watching the video.](#)



Laser Puzzle

[Try your hand at this issue's Laser Puzzle.](#) All entries will receive a 2GB pen drive. The grand prize winner will receive an iPad 16GB WiFi. E-mail answers to sales@ophir-spiricon.com. Need a hint? E-mail kevin.kirkham@ophir-spiricon.com.

Here are the [answers to the last issue's puzzle](#). The winner was **Ben McCall, Assistant Professor, University of Illinois at Urbana-Champaign**. "Our research group performs high-sensitivity, high-resolution spectroscopy of gas phase molecules and molecular ions using cavity-enhanced absorption techniques." - Ben McCall

Free Laser Measurement Equipment

That's right. If you're an end user of our laser equipment, let's hear about it and how you use it in your application. You can write the whole article or you can collaborate with our talented writers. In exchange, we can negotiate you receiving

over 500 particle detector stations covering an area roughly 30 km by 30 km. [Find out how they accurately measure the amount of light produced by a cosmic ray.](#)

Adjusting Laser Beam Parameters

Many applications of lasers require that the laser beam be adjusted to meet some parameter, such as the beam size at the point of work, maintaining a collimated beam over a range of operation, or precisely aligning a beam on a target. [Find out how NanoScan makes these adjustments quickly and easily.](#)

From Our Readers

"Wow was I surprised! I've already fielded telephone calls from readers asking for more information as to how and what we do. Callers were from law enforcement agencies so I guess there are other geeks with guns out there, after all!" – Dick McCreary, Ohio Calibration Laboratories, (614) 840-8500.

Technical Tips

Measuring Peak Power

A customer has a laser that is only on for about 0.3s and then off for 2s, repetitively. They want to measure the peak power using a thermal sensor. OSI's fastest thermal sensor has a response time of about 0.8s so this is not fast enough for the reading to stabilize and get a reliable reading. [Read the analysis.](#)

Frequency Measurement

When measuring pulsed beams with the NanoScan, it is important to input the correct pulse rate into the software. Often this is not the value that the laser manufacturer reports or that the user remembers. For this reason the NanoScan will actually measure and report the pulse repetition rate. [Use this number in the software acquisition set up, and the results will be much better.](#)

FAQs

Power/Energy Meters

How do you remove the removable filter from a PD300-series sensor? [Read the FAQ.](#)

What are the top three or four key specifications to understand when selecting a sensor and meter? Can you list some of the trade-offs between specifications? [Read the FAQ.](#)

When logging data to a file for a specific period using StarLab, the displayed statistics (avg., std dev., etc) continue to update with new, added data, even after the logging period is over. This makes it difficult to write down the correct numbers for the specified time period before they've changed and leaves me needing to run a script of the data file to get the numbers right. Is there a way to make the display stop updating at the end of the logging period? [Read the FAQ.](#)

Beam Profiling

We frequently get asked about image quality as it relates to dead or bad pixels in the imager array. These three questions most generally fall into one or more of these categories.

- Will my camera have any bad pixels?
- Do bad pixels affect my laser profile measurement?

one our latest innovative instruments, detectors, or profiling cameras and software to use in your lab. For power/energy meters, e-mail Burt.Mooney@Ophir-Spiricon.com and for beam profilers, e-mail Kevin.Kirkham@Ophir-Spiricon.com. In a few nanoseconds, you'll be telling the laser world about your application using our equipment and a femtosecond or two later you'll be logging your data on our equipment like the Nova II, Vega, Quasar or BeamGage.

2010 Power Meter & Beam Profiling Catalogs

Download the new 2010 Ophir-Spiricon Laser Measurement Catalogs today. Tutorials and products in [Power Meters](#) and [Beam Profiling](#).

Fast Ship Program

Ophir-Spiricon's new [Fast Ship program](#) provides one-day shipment of the most popular power/energy, beam profiling, and M2 laser measurement equipment.

About Ophir-Spiricon, LLC

Ophir-Spiricon is part of the Ophir Optronics Laser Measurement Group. With over 30 years of experience, the Laser Measurement Group provides a complete line of instrumentation including power and energy meters, beam profilers, spectrum analyzers, and goniometric radiometers. Dedicated to continuous innovation in laser measurement, the company holds a number of patents, including Ultracal™, the baseline correction algorithm that helped establish the ISO 11146-3 standard for beam measurement accuracy. The company's modular, customizable solutions serve manufacturing, medical, military, and research industries throughout the world.

An ISO 9001:2008 Registered Company.

- Can bad pixels be corrected?
- If I have some bad pixels what can I do about it?
- Will my camera performance change over time?

All and more of these concerns are explained in our [Camera Defects Policy document](#).

Can the SP620 camera work in a vacuum? [Read the FAQ](#).

Can the NanoScan measure pulsed beams? [Read the FAQ](#).

Why are there two types of pulsed operation with the NanoScan? [Read the FAQ](#).

What's New

Fast Photodiode Detector for Pulsed Lasers

The **FPS-1 Fast Photodiode** is designed to measure the temporal pulse shape of lasers or other light sources. It's a high speed photodiode sensor with wide spectral response. The sensor provides a fast 1ns response time and handles wavelengths from 190nm to 1100nm. [Find out more](#).

Social Media Sites for Laser Measurement and Applications

The Ophir Laser Measurement Group has launched a blog, as well as Facebook, Twitter, and LinkedIn accounts to cover the latest in the laser measurement industry. Join in the discussions now at:

Social Media: [LinkedIn](#) | [Facebook](#) | [Twitter](#)

Blog: [The Ophir Laser Measurement Group](#)

About Photon Inc.

Photon Inc. is pleased to be part of the Ophir Laser Measurement Group. Since 1984, Photon has manufactured instruments that measure the spatial properties of light from virtually any light source-lasers, LDs, LEDs, optical fiber, waveguides, VCSELS, and quantum dots-with exceptional accuracy, repeatability, and reliability. Photon offers unique solutions to difficult optical challenges, and our inclusion in the Ophir-Spiricon products provides an unprecedented level of synergy for the Ophir Laser Measurement Group.

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