NEW PRODUCTS

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

LAWRENCE G. RUBIN

FOCUS ON LASER/ELECTRO-OPTICS

248 nm Excimer Laser

Lambda Physik has introduced a new 248 nm excimer laser, the Novaline LITHO/S, designed to be used with deep-ultraviolet (DUV) microlithography steppers and scanners that use high numerical aperture projection lenses. With an extremely narrow linewidth of less than 0.6 pm (measured as full width at half-maximum), and 95% of the laser energy contained within a bandwidth of less than 2 pm, the NovaLine LITHO/S is said to have the highest spectral purity of any DUV excimer laser presently available. A key element in achieving this performance is the laser's polarization coupled resonator design, which improves both spectral purity and laser operating efficiency; increased efficiency extends optical component lifetimes and lengthens maintenance intervals.

NovaLine LITHO/S also features PowerLok, a real-time exposure control system that delivers an accuracy of $< \pm 0.5\%$, even at the highest scan speed. The laser is also available with HaloSafe, a built-in solid-state gas generator that produces halogen gas on demand from inert materials. *Lambda Physik, 3201 West Commercial Boulevard, Fort Lauderdale, Florida 33309*

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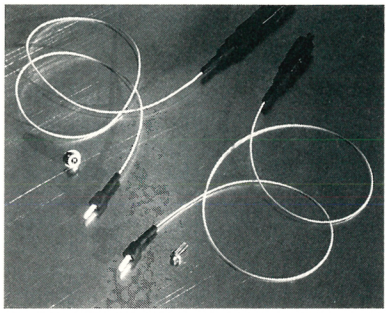
Mini Fiber-Coupled Diode Lasers

The new Melles Griot family of μTail miniature, fiber-coupled diode lasers delivers diffraction-limited, astigmatism-free, circular Gaussian beams. Each housed in a compact package, the μTail lasers produce output from 635 to 830 nm, with power outputs to 10 mW. The built-in automatic power circuit provides stable output over a 30 °C operating temperature range. A variety of output coupler lenses are available for use with the μTail. Options include multimode fiber, user-specified fiber length and FC, SMA and ST connectors. A version without drive electronics is also available. The lasers will find applications in particle characterization, surface profiling, robotic and machine vision, industrial alignment and long-range interrupt sensors. *Melles Griot, Electro-Optics and Instruments, 4601 Nautilus Court South, Boulder, Colorado 80301*



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Compact Laser for Particle Image Velocimetry

Continuum has announced a new laser for particle image velocimetry (PIV) applications. PIV is used to probe and monitor velocity distributions in complex media such as shear layers, exhaust plumes and vehicle airflow. The Minilite-PIV design is based on Continuum's pulsed Nd:YAG technology. This turnkey system incorporates two laser oscillators on a single platform, along with optics to combine the two beams through a single KDP doubling crystal. The Minilite-PIV produces two symmetrical 532 nm beams with excellent long-term energy and pointing

stability. Temporal separation of the two beams can be varied from 10 ns to more than 100 ms.

The system comes with two independent power supply/cooling units, one for each laser oscillator. The Minilite-PIV can be externally triggered via a TTL input or programmed to run from an internal trigger located in the power supply. Continuum's high-efficiency pump design is said to ensure longer lifetime for key components, such as flashlamps. *Continuum, 3150 Central Expressway, Santa Clara, California 95051*

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Diode-Pumped Rod Laser Systems

The Stiletto, a sealed, compact, 35 W diode-pumped Nd:YAG rod laser, is being introduced by Cutting Edge Optronics. The q-switched Stiletto is a turnkey laser system that includes the laser head, DC power supply, diode driver and a recirculating chiller. The laser's most significant feature is that the laser head is housed in a factory-sealed cylindrical tube that is the same size as a typical HeNe laser. This allows users to mount the laser with a wide variety of available HeNe mounts. Diode pumping the laser is said to virtually eliminate regular maintenance. The factory-sealed laser head prevents contamination of the laser cavity optics and allows users to install the laser in harsh operating environments.

One feature of the Stiletto is that it has an externally adjustable mode control (offered as an option), which can be used to switch the laser from a 35 W multimode laser to any one of three higher beam qualities, the highest being a TEM_{00} output; the selection can be made without opening the head. *Cutting Edge Optronics, 20 Point West Boulevard, St. Charles, Missouri 63301*

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Laser Diode Controllers

Optima's new line of controllers stabilizes the optical power and wavelength of laser diodes and other current- and temperature-sensitive devices. The LDC 200 series of controllers can drive any polarity laser diode with a low-noise output and high stability. They can operate in a constant current or constant power mode; maximum output currents range from ± 0.1 to ± 2 A for the different models. The controllers will also display the laser's optical power output on the 4½-digit display. Both the laser current and optical power of the laser diode may be modulated from DC to 100 kHz.

The TEC 200, a thermoelectric temperature controller, precisely maintains the ambient temperature of laser diodes and photodetectors with an adjustable three-mode function (proportional–integral–derivative) for optimizing different thermal loads. It accepts thermistors or IC-type sensors as temperature sensors. The LDM 9056 laser diode mount completes the system by providing a temperature-stabilized platform for operating the popular 5.6 mm and 9 mm diodes. *Optima Precision, 775 SW Long Farm Road, West Linn, Oregon 97068*

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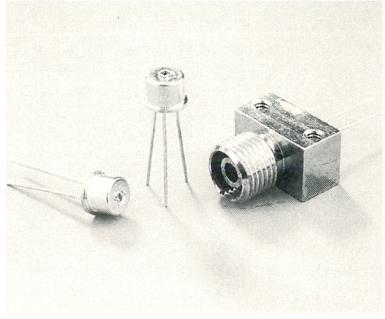
Photovoltaic Power Converters

Photonic Power Systems has developed photovoltaic power converters with voltages ranging from 2 to 16 V. These devices are available for illumination between 750 and 980 nm and are capable of delivering up to 1 W of electrical power. The power converters are based on power-through-fiber technology. Whenever electrically isolated



power is desired, power-through-fiber is said to be superior to other techniques such as isolation transformers, electromechanical transfer or pneumatics. The use of fiber protects both power and signals from electromagnetic and radio frequency interference. The clean nature of the power makes it ideal for driving measurement equipment at high voltage potential, electro-optical modulators, actuators, transducers and data links.

Photonic offers photovoltaic power converters at standard values of 6, 12 and 16 V. Numerous laser diode light sources with a wide range of wave-

lengths can be used with the converters. *Photonic Power Systems, 1945 Landings Drive, Mountain View, California 94043*

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Photodiode Arrays

Hamamatsu Corp has introduced the S6493 and S6494 series of photodiode arrays, which combine a silicon photodiode and signal processing circuit. The photodiode in the S6493 can be configured as multiple arrays and it is available with a phosphor screen for x-ray detection. The S6494 has a longer sensitive area, with a 1.6 mm pitch and 64 channels or 0.8 mm pitch and 128 channels.

The signal-processing circuit of the arrays is contained on a single logic chip and includes a shift register, clamp circuit, hold circuit and charge-amplifier array. The photocurrent from the photodiode array is fed to the charge amplifier connected to each element and then converted into a voltage. The voltage is sent to the clamp-and-hold circuits and read out from the shift register as a sequential video signal that has a low-noise boxcar waveform. Since signal readout is performed by charge storage, the output is proportional to the amount of light exposure. Readout gain is selectable between two levels. *Hamamatsu Corp, 360 Foothill Road, P.O. Box 6910, Bridgewater, New Jersey 08807*

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Photon Detection Module

With the model TBX-4, IBH announces the Toolbox series of photon detection electronic modules. The TBX-4 is not much bigger than a deck of cards, yet contains an integrated single-photon counting detector, including a photomultiplier, preamplifier, high-speed constant fraction discriminator and high-voltage supply in a Microbench-compatible housing. The device features an overall timing walk of less than 270 ps, almost as fast as a microchannel plate–photomultiplier system. The spectral response is 185 to 650 nm. Each module is individually calibrated and gold-plated for optimum radio frequency immunity, and requires no user adjustment. If necessary, the high voltage can be controlled externally by a 0–10 V input—for example, to protect the photomultiplier if it is likely to be exposed to ambient light. Fast-NIM and TTL-compatible outputs are provided. The power supply requirement is 15 V. *IBH, The Clydeway Centre, 45 Finnieston Street, Glasgow G3 8JU, United Kingdom*

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Large-Area Camera for Laser Beam Analysis

Spiricon's Silicon Pyrocam PY-128X128-100Si is a camera that incorporates a 124×124 matrix of silicon sensors on 100 μm spacing. The camera's overall area of 12.4×12.4 mm enables laser beams twice the size of the 6 mm charge-coupled device (CCD) sensors to be analyzed directly. The Silicon Pyrocam has a sensitivity 10 000 times less than that of CCD cameras, so that less attenuation is required on the laser beam to be able to operate within the dynamic range of the camera; its dynamic range is said to be about ten times greater than that of a CCD camera.

The Silicon Pyrocam's internal microprocessor allows it to display beam profiles directly on a monitor in either two or three dimensions without an additional beam analyzer or computer. Basic beam profile calculations, such as diameter, position and intensity, can be performed and displayed. *Spiricon, 2600 North Main, Logan, Utah 84341*

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Small, Pulsed Solid-State Laser

New Wave Research offers the MiniLase III, a small, pulsed Nd:YAG laser made for micromachining, spectroscopy, Raman and ultraviolet fluorescence studies, semiconductor failure analysis and other commercial and scientific applications. The MiniLase III is also an efficient pump source for optical parametric oscillators and dye lasers. Featuring excellent output stability and beam quality, this 1064 nm laser system produces 90 mJ pulses with a repetition rate of 10 Hz. MiniLase III is easy to set up and can be operated via intuitive controls located on the remote control panel; it incorporates internal closed-loop cooling. Options include a motorized optical attenuator, RS232 control and a dual-head configuration for particle image velocimetry. *New Wave Research, 495 Mercury Drive, Sunnyvale, California 94086* ■

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