

Ultra-High-Speed Scanner Enabling New Applications

Manufacturer: Raylase.

Product: Ultra-high-speed scanner "UHSS" with unprecedented scanning speeds up to 200 m/s. This makes it faster many times over than conventional galvanometers. Thus, scribing, perforating and cutting can all be achieved at previously undreamt-of speeds.

Features: With an F-theta lens with a focal length of $f = 254$ mm, a field of 160×160 mm can be scanned at ultra-high speeds and with a high degree of precision. For example, it only takes between 0.3 and 0.6 seconds to open the passivation layer of a solar wafer, compared with 2 to 4 seconds with conventional scanners. Thus, production times are slashed and huge savings on costs enabled, in particular in applications requiring a high degree of filling. The new



scanner also opens up brand new applications in conjunction with USP lasers.

The high deflection speeds are made possible thanks to the combination of a high-precision polygon scanner and two galvanometer scanners with extremely low drift. The polygon scanner

guarantees ultra-high speeds in its scan path. One galvanometer scanner serves to make adjustments to the polygon scanner's scan path, while the other galvanometer scanner realizes the second scan path, simultaneously correcting field distortions. Based on a $160 \text{ mm} \times 160 \text{ mm}$ field, the scanner can be operated at four speeds, i.e. 70, 100, 147 and 200 m/s. With an input aperture of 15 mm, it achieves spot sizes of approx. $30 \mu\text{m}$ at a wavelength of 532 nm. The scan head and laser are controlled digitally using a special control unit.

Raylase AG

Argelsrieder Feld 2 + 4
82234 Wessling, Germany
Phone: +49 (0)8153 8898-0
Fax: +49 (0)8153 8898-10
E-mail: info@raylase.de
Website: www.raylase.de

New Aspherical Glass Lens For Laser Diode Collimation



Manufacturer: HOYA. Distributor: IMM Photonics.

Product: Additional aspherical lens "A123" which perfectly fits for collimating laser diodes.

Features: With its focal length of 5 mm and a NA of 0.38, the lens needs a diameter of 5 mm only and is suited for systems with low space requirements perfectly therefore. The lens will be delivered with a broad band anti reflection coating which reaches from 600 nm to 1000 nm. Together with the new "A123",

aspherical glass lenses from HOYA are available with a focal length between 5 mm and 15 mm.

IMM Photonics GmbH

Ohmstr. 4
85716 Unterschleißheim, Germany
Phone: +49 (0)89 321412-0
Fax: +49 (0)89 321412-11
E-mail: sales@imm-photonics.de
Website: www.imm-photonics.de

PRODUCTRONICA, HALL B3, BOOTH 450

New Multi-Kilowatt Fiber Laser Platform

Manufacturer: Coherent.

Product: New fiber laser platform capable of delivering output powers to 4 kW and beyond. The new "Highlight FL" series employs Coherent's unique modular architecture, which allows OEM customers and system integrators alike the choice of systems with turn-key operation, or modules to build their own custom fiber laser systems.

Features: The modular architecture combined with Coherent's factory service training and qualification program enables OEM customers the ability to benefit from Coherent's worldwide support infrastructure and the option to directly provide service to their end customers. "HighLight FL" lasers at all

power levels are available with a range of output delivery fiber options optimized for cutting and welding of a broad spectrum of metals and alloys.

Applications: The reliable and cost-effective fiber lasers are designed for metal cutting and welding, especially of reflective materials.

Coherent (Deutschland) GmbH

Dieselstr. 5b
64807 Dieburg, Germany
Phone: +49 (0)6071 968-0
Fax: +49 (0)6071 968-499
E-mail: sales.germany@coherent.com
Website: www.coherent.de
www.coherent.com

BLECHEXPO, HALL 3, BOOTH 3218



Compact and Efficient Chillers

Manufacturer: KKT Chillers.

Product: New "Compact-Line" of chillers in the performance range of 30 to 200 kW in cooling capacity. With a range of twelve units, "cBoxX 30 – 200", in four different housing sizes, the "Compact"-Line sets new standards in efficiency, compact design, and innovation in chiller technology.

Features: Each assembly group can be customized to fully meet the specific purpose of the customer application; depending on customer's requirements, this can be done at the plant or during operations via the user-friendly control surface. All the crucial parameters such as temperature, pressure, tank filling level as well as all status notifications are displayed in plain text and, thanks to the controller board developed in-house, can be managed at any time right at the unit or via one of the available communication interfaces; linking options include all the important fieldbus and industrial Ethernet networks such as CANopen, DeviceNet, Modbus, Profibus, etc. Remote maintenance and updates via the Internet and the app or

USB are also possible. Operating costs are minimized thanks to a 20% reduction in electric power consumption; this is achieved by the application of highly efficient scroll compressor technology, which is harmonized perfectly with the refrigerating agent R410A as well as variable-frequency EC ventilators. Another efficiency benefit is entailed in the introduction of the electronic expansion valve with complete closure characteristics, which allows an optimization of the partial load behavior via an infinitely variable control system. Thanks to innovative heat exchange technologies, such as microchannel and the asymmetrical plate heat exchanger, the refrigerant filling level can be reduced by up to 75%. This brings about great benefits as far as logistics and maintenance are concerned.

ait-deutschland GmbH

Industriestraße 3
95359 Kasendorf, Germany
Phone: +49 (0)9228 9977 0
Fax: +49 (0)9228 9977 149
E-mail: info@kkt-chillers.com
Website: www.kkt-chillers.com

Fiber Positioning in Space With Nanometer Precision

Manufacturer: OWIS.

Product: Fiber positioners "FAPO 40", "FAPO 50", and "FAPO 65" that allow sensitive adjustment in the nanometer range. They are the perfect choice for a reliable light or fiber alignment, for example, in microscopy and fiber optics. The "FAPO" positioners are available in three sizes since June 2015.

Features: All the three fiber positioners enable positioning fibers with nanometer precision in all dimensions. For fastening fibers, they are available with either FC or SMA adapter. Equipped with the high-precision micrometers "MS 10", a setting sensitivity of 20 nm is reached. The "FAPO 40" and "FAPO 65" are additionally available with the fine-thread screws "FGS 15" providing a spindle pitch of 0.15 mm. Furthermore, they are especially suitable for applications limited in space and offer an excellent price-performance ratio.

The fiber positioner "FAPO 50" enables to adjust three axes with high

precision. The "FAPO 40" and "FAPO 65" are designed for up to four axes. Of course, they are compatible with the optical beam handling systems "SYS 40" and "SYS 65" and thus allow flexible working.

OWIS GmbH

Im Gaisgraben 7
79219 Staufen, Germany
Phone: +49 (0)7633 9504-0
Fax: +49 (0)7633 9504-440
E-mail: info@owis.eu
Website: www.owis.eu

PRODUCTRONICA, HALL B3, BOOTH 321

New Laser Light Source With High Power and Stability

Manufacturer: IMM Photonics.

Product: New lasersource "ilumLAS HP" which, due to an integrated thermo electric cooler, combines high optical output power with high stability in terms of optical output power and wavelength stability.

Features: The laser source is available with a large variety of wavelengths between 445 nm and 1850 nm with up to 6.6 W optical output power. The compact housing of 100 mm × 40 mm × 40 mm and the external driver electronics



allow an easy integration in customer specific systems. The module provides a

collimated beam. Especially for imaging and machine vision a line optic can be adapted in front with an adapter plate.

IMM Photonics GmbH

Ohmstr. 4
85716 Unterschleißheim, Germany
Phone: +49 (0)89 321412-0
Fax: +49 (0)89 321412-11
E-mail: sales@imm-photonics.de
Website: www.imm-photonics.de

PRODUCTRONICA, HALL B3, BOOTH 450

Solid-State Silicon Photomultipliers

Manufacturer: First Sensor.

Product: Optical sensors with innovative solid-state silicon photomultipliers (SiPMs) for the detection of ultra-low light levels down to single photons. Compared to conventional photomultiplier tubes, SiPMs offer significant advantages such as low operating volt-

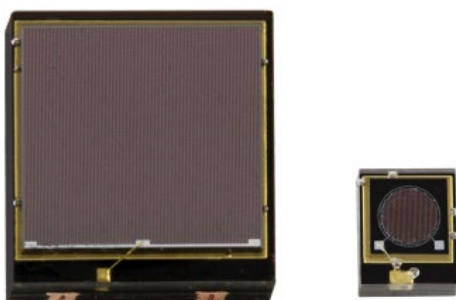
age, excellent temperature stability, immunity to magnetic fields and a much smaller size for easy system integration. The detectors are optimized for near ultraviolet ("SiPM-NUV" series) or red, green and blue ("SiPM-RGB" series) light detection with peak sensitivities at 420 nm or 550 nm.

Features: The silicon photomultipliers consist of a matrix of multiple avalanche photodiode (APD) micro-cells operated above their breakdown voltage (Geiger mode). They feature extremely low temperature coefficients of the breakdown voltage and gain, which allows highly accurate and stable measurements. Enhanced materials and semiconductor technology enable low-noise devices with reduced dark count

rate, crosstalk and very low afterpulsing probability (typ. <4 %). The precision SiPM detectors are designed to achieve very high gain ($>10^6$) and high photon detection efficiencies. The edgeless SiPM dies ensure high cell fill-factors and maximized active areas for array configurations. The Chip-Scale-Package (CSP) provides a cost-effective and RoHS compliant solution suitable for reflow soldering.

First Sensor AG

Peter-Behrens-Straße 15
12459 Berlin
Tel.: +49 (0)30 639923-99
Fax: +49 (0)30 639923-33
E-Mail: contact@first-sensor.com
Website: www.first-sensor.com



Offset-free Frequency Comb

Manufacturer: TOPTICA.

Product: Difference frequency comb "DFC" operating with "CERO" technology ("zero- v_{CEO} ") which obtains a phase-stable laser output with an inherently vanishing frequency offset.

Features: Femtosecond laser pulses centered at 1560 nm are generated with a mode-locked Er^{3+} -doped fiber-oscillator. Subsequent amplification and coherent spectral broadening of the pulses in a nonlinear fiber creates a broad supercontinuum. Difference frequency generation (DFG) between the lower and upper spectral parts of the supercontinuum produces a fre-

quency comb output centered at 1560 nm. Since the two spectral parts have identical carrier-envelope frequencies, the resulting comb is offset-free due to common-mode suppression in the DFG process. Thus the carrier-envelope frequency is automatically fixed at zero and no active stabilization of the phase is necessary. This passive approach results in improved phase-stability and higher reliability compared to conventional active stabilization techniques. The absence of an electronic feedback-loop for phase stabilization leads to a reduced complexity of the system and circumvents electronic noise

limitations. The system comes with an integrated radio frequency reference and locking electronics to synchronize the repetition rate. Optionally it can be locked to an optical reference.

TOPTICA Photonics AG

Lochhamer Schlag 19
82166 Gräfelfing, Germany
Phone: +49 (0)89 85837-0
Fax: +49 (0)89 85837-200
E-mail: info@toptica.com
Website: www.toptica.com

Laser Workstation With Integrated CO₂ Q-Switched Short Pulse Laser

Manufacturer: FEHA LaserTec.

Product: Laser workstation with "MICROSTORM" – a Q-switched short pulse high power high performance CO₂ laser. An alternative laser source is "HYPERICO2" – the new generation of dc excited CO₂ lasers.

Features: Various materials can be precisely processed on the laser workstation, for example metal, glass, polymers, CFRP, or GFRP. Using scanners will enable cutting tasks, structuring of component surfaces as well as heating, melting or welding of glass. The system is characterized by its simple construction and handling, its low space requirement (3m²) and its universal use. The laser workplace can be used ergonomically as a seated workstation or also as an integration solution in series systems. The laser "MICROSTORM" offers enormous pulse peak power (up to 50 kW), pulse width (typ. 250 ns) and a pulse frequency in a wide range from cw up to

150 kHz. The average power reaches 300 W depending on the operational mode. All parameters are adjustable in a wide range and are characterized by the high stability of all optical parameters. Thus the system enables a new dimension in process speed, quality and stability at very interesting cost of ownership.

The new "HYPERICO2" laser family replaces the proven "SMxxxE" laser series from now on. These CO₂ lasers offer the by far lowest operating costs of their class, worldwide, and the best cost of ownership.

FEHA LaserTec GmbH

Guardianstraße 16
06766 Thalheim
Tel.: +49 (0)3494 79849-0
Fax: +49 (0)3494 79849-99
E-Mail: info@feha-laser.de
Website: www.feha-laser.de

Fraunhofer ILT at LASER World of Photonics

The Aachen Fraunhofer Institute for Laser Technology (ILT) presented itself at the LASER World of Photonics in two distinct ways: it addressed both a focus upon lightweight construction as well as one on new systems for generating laser light. Furthermore, the institute showed a large number of new ideas for industrial laser technology at the world's largest photonics exhibition.

Fraunhofer ILT develops processes and systems for the applications of laser technology in industry and research. These include special beam sources for materials processing, medical technology or for space-based applications. In addition, the institute's experts accompany their industrial partners in the development of new processes, such as in additive processes for production of metallic parts with lasers, or laser welding of new combinations of materials – such as those used in lightweight construction.

The institute showed different metallic components used in the automo-

tive industry, the aerospace industry, medical technology and tool construction, all of which were produced by Selective Laser Melting SLM, a process patented by Fraunhofer ILT. Particularly in lightweight construction, SLM-manufactured components are being increasingly used because their weight can be reduced when they are provided with a hollow interior structure. Depending on requirements, the components can have a fill factor ranging from 10 to 100%.

Fraunhofer Institute for Laser Technology ILT

Steinbachstr. 15
52074 Aachen, Germany
Phone: +49 (0)241 8906-0
Fax: +49 (0)241 8906-121
E-mail: axel.bauer@ilt.fraunhofer.de
Website: www.ilt.fraunhofer.de