



# laserline

Verdi™ V-18
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LaserCam HR USB Camera
New CSBU products
Coherent Paladin
20 W Q-switched UV

## LASER 2005 World of Photonics

At LASER 2005 – Europe's most important laser exhibition – **Coherent and Lambda Physik** will be presenting on one large booth

**Our strong presence at LASER 2005 underlines the broad range of lasers, optics and instrumentation technologies Coherent and Lambda Physik bring to a diverse set of Scientific and Industrial Markets.**

Given the enlarged product portfolio we want to invite both existing laser users and visitors with new laser applications. The **Coherent/Lambda Physik booth** will be centred by a Laser Solution Center. Around 25 sales and application experts will be available to discuss your needs.

The following pages will give you a preview about product news at LASER 2005.

The four corners of the booth will represent applications and products for the following markets:

- Scientific & Research
- Instrumentation  
Digital Imaging
- Material Processing  
Semiconductor & Microelectronics
- Instruments & Components

VISIT US AT LASER 2005  
JUNE 13TH – 16TH, MUNICH FAIR  
YOU WILL FIND US IN  
HALL B3, BOOTH B3.239



## Verdi™ V-18: The World's Highest-Power TEM<sub>00</sub> Diode-Pumped CW Green Laser

**Delivering > 18 W of single-frequency output at 532 nm, the Verdi V-18 is the latest addition to our highly successful Verdi product family.**

Providing the same compact package, low noise, high reliability, and superb beam pointing stability as other Verdi models, the unique power and performance of the V-18 offers unique opportunities.

Whether you are pumping a Ti:Sapphire (Ti:S) or dye-based laser system harder to extend its capabilities, pumping multiple systems simultaneously to save running costs, or pushing your application to the next level, the V-18 gives you all the power you need:

- \* Pump up to three Mira™ Ti:S ultrafast oscillators with one V-18 for simpler, cheaper pump-probe or multi-color experiments
- \* Pump two Miras simultaneously, phase-locked with a Synchrolock™-AP, to create a simplified, robust CARS excitation source
- \* Increase Mira output power for enhanced OPO pumping, harmonic generation or micro-machining
- \* Replace power-hungry large-frame ion lasers
- \* Pump a Mira/RegA™ 250 kHz ultrafast amplifier system and have power to spare
- \* Enhance holographic, light show or materials processing applications

## Coherent PP Ring OPO, the new tool for hands free ultrafast research

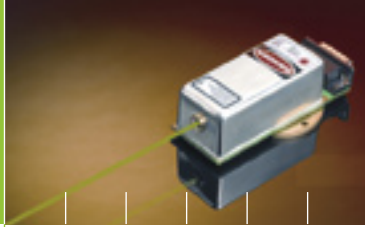
**With the PP Automatic Ring OPO, pumped by the Chameleon XR, Coherent is offering for the first time a fs-Laser, that is automatically tunable from 505–1600 nm.**

With the integrated Verdi pump laser, the Chameleon XR is the most powerful, fully computer controlled fs-oscillator on the market. Hermetically sealed, using Coherent's unique PermAlign™ technology, it is perfectly suited for applications like MPE or other ultrafast research. The PP Ring OPO is a synchronously pumped Optical Parametric Oscillator system, designed for operation with modelocked Ti:Sapphire lasers such as Mira or Chameleon. It is based on periodically poled crystals, offering high conversion efficiency and wide tuning ranges with fixed pump wavelength. Wavelength tuning is achieved by changing the length of the OPO cavity only.

The extensive tuning range of 1000 to 1600 nm (IR) and 505 to 750 nm (VIS-SHG) is covered using a single set of mirrors. An integrated spectrometer and the electronic wavelength tuning mechanism allow complete computer controlled operation of the PP Ring OPO. It can be operated in fs- and ps mode and is available in different versions, which are all convertible and upgradeable. Pumped by the Verdi V18/Mira combination, an output power in excess of 500 mW in the visible can be achieved.

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and win an iPod, a Noise Canceling Head Phone or an USB Stick



## Compass 115 Solid State Laser: Green Light for Lower Cost

**At LASER 2005 Coherent presents the Compass 115 M as a new member of the Compass family.**

With output powers of 5 mW and 10 mW at 532 nm the 115 M lasers will be a natural extension of the Compass series to lower power – and lower cost. Compass 115 M lasers are easy to integrate and provide excellent beam profile, power stability, low noise and onboard analog or digital control.

The Compass 115 M, 215 M and 315 M family of diode pumped solid state lasers feature Coherent's exceptional reliability, thanks to our contamination-free, robotic-assisted cleanroom manufacturing facilities, and our patented Permalign™ technology, which allows us to build a highly stable, low-noise, hermetically-sealed laser head with no moving parts.

### Applications

Since their introduction Compass lasers have gained an unmatched reputation for performance and reliability and became the industry standard in many fields of applications:

- \* DNA Sequencing
- \* Pharma Screening
- \* Reprographics/Digital Imaging
- \* Life Sciences/Confocal Microscopy
- \* Flow Cytometry
- \* Wafer Inspection
- \* Metrology



## CUBE Diode Lasers offer more Wavelengths and USB Operation

**At the beginning of 2005 Coherent introduced the revolutionary CUBE™ family of lasers, which are compact, fully featured diode laser systems combining high performance with simple operation and integration, including USB control.**

CUBE lasers can be operated from CW up to a pulse repetition rate of 150 MHz and are available at five different wavelengths from the ultraviolet through the near infrared: **375 nm, 405 nm, 440 nm, 635 nm, and 785 nm.**

### Applications

CUBE lasers are ideal for commercial, industrial and research use in a wide range of applications, such as

- \* Pharma Screening
- \* Reprographics/Digital Imaging
- \* Life Sciences/Confocal Microscopy
- \* Flow Cytometry
- \* Metrology
- \* Display

In life sciences, their high power enables faster image acquisition in confocal microscopy, and higher sensitivity for flow cytometry. These lasers also provide new wavelengths for genomic and proteomic applications.



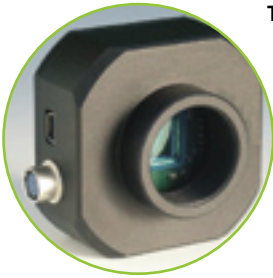
**LAMBDA PHYSIK®**

Subsidiary of **COHERENT®**

Lambda Physik  
is now part of Coherent

Visit us at LASER 2005 – Hall B3, Booth B3.239

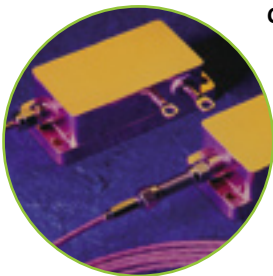
## Coherent presents the LaserCam HR USB Camera – Plug & Play Beam diagnostics on your PC without additional Power Supply or Adapter



**This high-resolution camera features a USB 2.0 interface for easy connection to most computers. The single cable makes installation simple. Thus the system just needs to be combined with a PC running the USB 2.0 compatible Windows XP operating system.**

The LaserCam HR is supplied with a compatible version of the well known BeamView Analyzer PC laser beam diagnostics software package, which contains a wide variation of analysis features. With a size of only 68 mm x 68 mm x 34 mm and a weight of 110 g the LaserCam HR is a highly flexible tool which allows measurements in tight areas. The 2/3" diameter CMOS Sensor, which contains 1.3 megapixel enables measurements of spot sizes as small as 250  $\mu\text{m}$  up to diameters of 6.5 mm. The C-Mount lens mount offers an interface to Coherent's line of laser beam samplers and attenuators such as the BeamCube and C-VARM.

## New CSBU products for LASER 2005 in Munich



**Coherent will expand its product portfolio with new Fiber Array Packages (FAP™). These products deliver the highest efficiency in the industry today.**

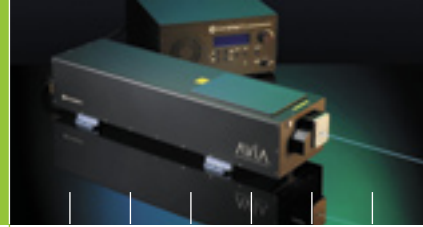
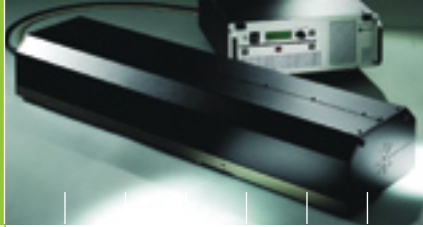
**Now available at 940 nm and 980 nm these new generation FAPs produce 40 W of CW optical output power through an 800 $\mu\text{m}$  fibre bundle with a numerical aperture of < 0.11.**

These lasers are conduction cooled and produce a wall-plug efficiency (WPE) of > 50 %, which is significantly higher than the 35 % efficiency of earlier generation FAPs. These new products are the most recent addition to the FAP family that has an installed base in excess of ten thousand lasers and proven product performance over more than five years.

This FAP is first in a series of high-brightness products being developed that utilize high-efficiency epitaxy bars. High efficiency offers the customer several important benefits. First, it lowers the power supply requirements of the FAP itself, resulting in reduced system cost, size and weight. Second, high efficiency reduces the amount of dissipated heat, minimizing the number and/or power of thermo-electric coolers (TECs) required in the system, again reducing the overall system power requirements and cost. A third benefit of the new FAP's high efficiency is increased lifetime, due to decreased junction temperature rise of the device.

The new generation 940 nm and 980 nm FAP products are primarily targeted at medical applications and fibre-laser pumping. Medical uses include therapeutic applications in dermatology and surgery, where these FAPs enable new developments in laser-enabled cardiac surgery. As pump lasers, these new lasers are also ideal for both erbium- and ytterbium-doped fibre lasers.

As well as showing these new FAPs, at Laser 2005 Coherent will be releasing a corresponding family of high efficiency Conduction Cooled Package (CCP) free-space laser diode bars offering new levels of performance for pumping and medical applications.



## Coherent Paladin Industry proven performance and reliability

Since its introduction in 2003 the Paladin laser series has become the only industry proven source for high power mode-locked UV light. Today the Paladin is available in two quasi-CW versions with repetition rates of 80 MHz delivering 4 and 8 Watts at 355 nm – the highest power available in the market place.

The majority of the Paladin lasers delivered to the field go into demanding commercial applications such as imaging of PC boards or printing plates and semiconductor inspection, where it has gained a dominant market position, because of its outstanding performance and reliability. Scientific customers also value the robustness and hands free operation of the Paladin.

The Paladin has enabled a whole set of new applications ranging from micro materials processing to bio-instrumentation as it has made high power quasi-CW UV laser light available in an industrially designed, easy-to-use package. These new applications are now being brought into the commercial arena with the Paladin designed in as the new industry standard.

Visit our website or call our sales subsidiaries to find out how the Paladin can help your application.

**Coherent – Competence in UV**

## New pulsed UV Laser enables higher Through- put via Drilling

**The new AVIA™ Thor™ from Coherent is an all-solid-state, Q-switched, UV laser that enables more rapid micromachining than any previous laser or mechanical method.**

This superior micromachining capability is a result of the Thor's unique combination of high pulse energy (> 500 microjoules) and high repetition rate (30 kHz), which corresponds to over 15 W of average power. Thor's average power is more than 50 % greater than any other industrial laser with 355 nm output.

Together with the Thor's exceptional lifetime and durability, the average power output makes this unique laser an ideal tool for high-throughput via hole drilling in PC boards, fuel injector nozzle drilling, surface cleaning and IC singulation. It can also be used for drilling, cutting and trenching of numerous hard materials, such as stainless steel, silicon, ceramics, diamond and sapphire.

Thor builds upon the proven technology and construction used in Coherent's other AVIA industrial lasers to enable long operational lifetime and minimum downtime under continuous-use conditions in harsh industrial environments. For example, PermAlign™ mounting eliminates the need for periodic optical alignment, and Coherent's proprietary HGX™ UV harmonic generation system routinely delivers more than 15,000 hours of third-harmonic crystal lifetime.

Bring this card to our booth at LASER 2005 and win an iPod, a Noise Canceling Head Phone or an USB Stick.

Just write down your best reason for buying a Coherent Laser. **Good luck!**

My address

My best reason for buying a  
Coherent/Lambda Physik Laser

## Lambda Physik excimer lasers are now shipping with "Pro".

**Substantial design improvements have been incorporated to all our excimer laser products to further improve the user friendly, hands-off operation of the lasers in scientific-, medical- and demanding industrial applications.**

Unique features, such as the ceramic-preionization and the new highly efficient gas cleaning system are now standard in all excimer laser products from the small OPTexPro, the compact COMPexPro to the powerful rugged LPXPro lasers. The "Pro" comes with improved energy stability and beam uniformity that leads to better results in your application. The extended gas- and optics lifetime saves cost and reduces maintenance substantially. During LASER 2005 we will also showcase the new member of the COMPexPro series that will drive various micro-machining applications to very cost-effective levels.

**Stop by and ask us about the "Pro" of Excimer laser.**

## Coherent Customer Support in Europe



**Since 2000 Dr Roger Beaman has managed Coherent's European Customer Support group. Roger joined Coherent in 1987 and has worked in both Sales and Service roles, both in the USA and Europe.**

The Service team in Europe totals 28 engineers and managers, who between them have an extensive range of experience supporting a wide range of laser systems. Recent initiatives have included expanding ultrafast laser support and the creation of a European repair facility for

RF-excited CO<sub>2</sub> lasers. At the same time Coherent holds a multi-million Euro service parts inventory in Europe, allowing customers to access a very wide range of parts with minimal delay and providing support of its many laser models.

Says Roger 'No user can afford to purchase poorly supported laser equipment. We are highly committed to support our numerous customers throughout Europe and continue to develop that support. Based on the positive customer feedback we regularly receive I believe that we are meeting customer needs, but will continue to develop our capabilities'.

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### See you at LASER 2005!

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