PHOTONICS NEWS

Company Newsletter of LASER COMPONENTS (UK) LTD

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Issue 53

Fibre Lasers and Amplifiers from Keopsys and Lea Photonics

LASER COMPONENTS is pleased to introduce new distribution rights to Keopsys and Lea Photonics. The two companies design and manufacture high power fibre laser and amplifier solutions from 0.35µm to 2µm wavelength.

Keopsys specialises in solutions for scientific, defence and Lidar industries, whilst LEA Photonics addresses the medical, industrial and telecom markets. This includes pulsed

and CW sources with peak powers up to 100kW and high CW power (40W). These fibre lasers have narrow linewidths and very low phase noise and RIN.

The amplifier range is available in both polarisation-maintaining and random polarisation versions delivering up to 42dBm of saturated output power with ranges specifically designed for amplification of short pulses. The amplifiers have a low noise figure and are available with high gain (up to 50dB) and a variety of configurations to suit your application.

Both user-friendly benchtop platforms and modules are available and have exceptional build quality and reliability. With all engineering and manufacturing on-site in Lannion, France, custom solutions can be provided.

KEOPSYS THE LIGHT TOUCH

LEA PHOTONICS LIGHT FOR EVERY APPLICATION

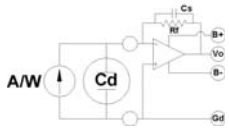
Webcode: UK53-0110

Pyroelectric Detectors - Current Mode

The LASER COMPONENTS Pyro Group (LCPG) has experienced high demand for their in-house production of pyroelectric detectors, and a greater preference for current mode (CM) operation over voltage mode (VM). Most popular are lithium tantalite (LTO) dual channel pyros used in gas sensing by combining one active (chosen gas, e.g. CO_2) and one reference (to normalise signals) in a single TO-package.

CM operation provides a higher responsivity, over voltage mode, with a low offset with a low temperature dependence. An op-amp is used in conjunction with a negative feedback loop. CM operation also provides a low electrical time constant and faster recovery times allowing one to use CM devices at much higher frequencies than VM devices with less signal loss.

Typical CM Circuit



Dual channel pyros in a TO-39 housing offer up to two sensors with an active area of up to 3.0 x 3.0 mm². They are available both with and without an additional blind element, which permits temperature fluctuation compensation (TFC), as well as higher internal amplification. Wherever reasonably possible, integrated microphonic reduction is included within the detector. A wide range of narrow band pass optical filters makes it possible to configure a suitable detector for nearly any application. CM pyrodetectors

are particularly easy to integrate into systems. In fact it is almost identical to Plug&Play integration. The following product lines are available:

- Two-channel detectors with filters - L12 and L22 series
- Three-channel detectors with filters - L13 and L23 series
- Four-channel detectors with filters - L14 and L24 series

Webcode: UK53-0330

Dear colleagues

In our fast action world, in particular with technology, Q1 this year has required many of us to step up a gear.

The first major event was Photonics West 2016 held in San Francisco - so many new products and technologies to immerse oneself in, not least of all our own additions this year aiding all design engineers with their new instruments.

We are particularly excited about our latest partnership with Keopsys-Lea Photonics, and look forward to meeting you at Photonex London ICL next month.

In addition, our IR COMPONENTS have proved very popular, which include pyroelectric detectors, lead salt detectors, thermopile detectors and a range of NIR PIN photodiodes. Do let us know if you require some special customisation - I am sure we can help.

Chris Varney
Managing Director

Low Cost Laser Diode Modules

We are expanding our popular range of low cost small form factor laser modules with some new additions; a reliable green laser module, a low cost module designed to operate in high temperatures, and a focusable crosshair (and line generator) module.

The LC-LMD-525-120-01-A is our new low cost laser module which produces a bright, crisp, <1mW green laser spot. These low power modules are operated between 3-6 volts.

The new LC-LMD-650-02-T60 laser module is designed to operate in temperatures up to 60°C, compared to other modules which start to sweat at 20°C! With a module size of ø6.2x11.5mm the laser can be easily integrated into hand-held products and systems where space is at a premium. In addition to these great features, the laser produces a beam with an optical power of <1mW, and as such is a class 1 laser!

The LC-LMP series has always been a popular choice for alignment applications where budgets are tight. We have built a low cost laser module which can be focussed to produce a crisp, thin, cross or line pattern. The laser output is 3mW ensuring the pattern is clearly visible for your application.

Webcode: UK53-0740

Short Pulse and High Power Laser Diode Drivers

LASER COMPONENTS is proud to supply an extensive range of PicoLAS laser diode drivers capable of delivering extremely short pulse durations of less than 1ns, extending up to CW.

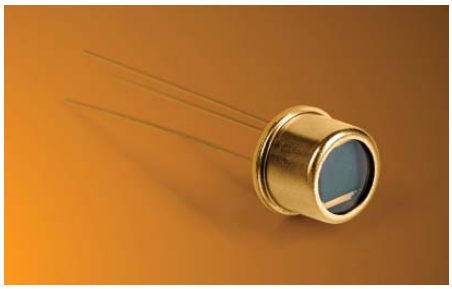
The drivers can support operating currents from <1A up to 300A and supply voltages of up to 120V making them extremely versatile for many applications including laser soldering and welding, medical application and pumping of solid-state lasers.

Options for drivers capable of delivering variable and fixed duration pulses as well as dedicated CW current generators are available in small-footprint, OEM modules or in compact housing assemblies, ideal for integration into your system.

Webcode: UK53-0550

Lead Salt Uncooled Detectors - the Economic Choice

PbS detectors are photoconductive infrared detectors with an excellent spectral response from 1 to 3µm. Whilst cooled PbS provide greater signal using one



stage, two stage or even three stage thermo electric coolers (TECs), ambient versions also provide good useable signals for many applications. Possibly the best application is in fire and smoke detection.

Controlling PbS detector's spectral response with the use of infrared narrow band pass optical filters over the active PbS chip permits additional differentiation of the environment such as gas detection and pollution monitoring.

Compared to other IR detectors, low cost ambient PbS detectors most likely offer the highest signal per unit cost allowing the most economic flame detectors to be manufactured. Contact us with your requirements to obtain a quote.

Webcode: UK53-0311

Modulator Drivers and Bias Controllers

To complement our range of phase and intensity modulators we offer drivers and bias controllers. Our phase and intensity modulators can be operated over a broad range of wavelengths from 780nm to 2.2µm, and at low speed up to 40GHz.

To boost the signal voltage to the levels suitable for the modulator we offer a range of RF drivers. These are available in a range of speeds and types according to the input signal. Selecting the correct driver ensures the input signal is faithfully reproduced, with no ringing or distortion.

Examples include the digital, analogue and pulsed drivers. The digital amplifiers are designed for various speeds of data transmission up to 40GHz for both NRZ and RZ formats. The analogue drivers give linear amplification with low noise for applications such as radio over fibre. A separate driver is required for pulses because of their wider frequency content. These drivers generate clean optical pulses with sharp edges and no overshoot.

We also offer a range of bias controllers for use with intensity modulators. Factors such as temperature fluctuations can cause variations between the two arms that form the interferometer of an intensity modulator, which is known as drift. For long term stability we offer bias controllers that use feedback to compensate for the drift. These are based on dithered and dither-free solutions as benchtop or OEM boards.

Webcode: UK53-0960

OT-4040 RS45 Target

To complement On-Trak's range of alignment lasers, the OT-4040 RS45 target can detect the position of a laser in the X and Y planes across an area of 45x45mm with a resolution of ~0.1mm.

The OT-4040 RS45 target is fitted with an RS232 port for easy integration and communication with AD boxes, PCs with serial ports, and other data acquisition systems. When paired with the OT-4040 CPU, the system provides a clear readout of X and Y displacement on the display. The CPU can also zero a set spot position, detect continuous wave or pulsed sources, and output data in ASCII characters which can be logged by a PC or data logger.

As the target area is large a removable light tube is included to shield the detector from ambient light. To ensure accurate mounting the target features a precision dowel pin indicating the centre of the target.

Webcode: UK53-0770

Custom Large Area Laser Containment Solutions

We understand that many high power laser applications require a containment solution specific to a particular area or setup. That's why we are

happy to assist you in creating the perfect custom solution. Three protection levels and almost unlimited mounting configurations are offered.

Kentek Corporation also offers a range of accessories in order to make your laser containment system as safe and user-friendly as possible. One example of this is the Entry-Guard™ range of interlock systems. Secure and non-secure access systems are offered including keypad and push-button access respectively, with magnetic locks for both single and double doors and even options for sliding doors. Risk of accidental personal injury due to exposure to laser radiation for those outside of the enclosure is significantly reduced when using such systems, but for those inside and out, emergency stop, power off and remote start switches are offered.

Many of our large area laser containment products allow for the option of integrated laser safe acrylic viewing windows, so that procedures may be safely observed by those outside of the enclosure.

Webcode: UK53-0540

Beam Dumps

For anyone using lasers, no matter what the application, laser safety must always be of highest priority. For high power applications the first line of defence before laser safety curtains or eyewear is a beam dump.

We are pleased to offer a range of beam dumps suitable for different power levels: convection cooled aluminium beam dumps are rated up to 50W and are available in 0.75" and 2" aperture options, suitable for low to medium power applications. For higher power lasers there are water cooled dumps, rated up to 1000W with the option of a 2" or 4" aperture. Our beam dumps utilise a dual cone design, coupled with a special non-reflective coating, designed to eliminate back reflection. Furthermore they are designed to not reflect the beam outward, even if the non-reflective finish has been eroded by exposure, for safety and added peace of mind.

Beam dumps are available with or without a stand, which can easily be mounted to either a wall or optical table.

Webcode: UK53-1540

Metal Mirrors

For applications which do not require the high reflectivity of a dielectric coating, metal mirrors serve as an inexpensive solution used for a wide wavelength range, independent of the angle of incidence. These mirrors may be used with femtosecond pulsed lasers or CW lasers.

We offer polished aluminium mirrors, perfect for use as scanning mirrors in situations where weight is critical, as well as copper mirrors, used in industrial CO_2 laser applications. Aluminium, silver and gold coatings with a protective layer are also available, using an electroplating method, which completely eliminates delamination issues associated with their vacuum deposited counterparts. New to this range is a specially developed gold coating for carefully roughened metal substrates to be used as diffuse reflectors. For this purpose, the surface roughness must be random and high enough that it may serve as an isotropic diffuse reflector for IR wavelengths. This coating is also available on customer supplied substrates.

Webcode: UK53-0010

Power Stabilised UV Series Diode Modules

LASER COMPONENTS is excited to present the latest addition to the power-stabilised family of laser diode modules; the silver box UV stabilised series from PD-LD Inc.

Well suited to applications in semicon metrology, printing, microscopy and forensics, these modules feature a centre wavelength of 375nm and boast superior optical power stability.

This is <0.4% peak-to-peak over eight hours of continuous operation with 0.2% rms noise from 10Hz to 100MHz for the multimode laser (100-200mW) and <1% peak-to-peak over eight hours of continuous operation with 0.2% rms noise from 10Hz to 100MHz for the single mode laser (25-50mW).

Both the MM and SM silver box UV stabilised modules are available with either fibre attachment or as a free-space assembly in a unit that shares a common footprint with the other modules in the series for ease of use and a common user interface.

Webcode: UK53-0420

High power Pulsed Laser Diodes (PLDs) 905-Series

We specialise in high power pulsed laser diodes at 905nm produced in its dedicated Canadian production facility. These are available as single chips and stacked arrays with a power output of up to 130 Watts.

The high reliability and temperature stability of these devices is due to the AlGaAs structure. Due to their high quality beam characteristics these diodes are used in range finding, surveying equipment, laser radar, speed monitoring, security barrier and optical applications.

These devices are capable of delivering output power of up to 130W. For example our stacked chip devices can deliver output power as high as 130W from an active area of 400 x 340μm. These 905nm PLDs are available in a TO-18, 5.6mm, 9mm, or 8-32 Coax housing as well as a chip on a ceramic submount.

Webcode: UK53-0410

ConnectFiber: Input Couplers for SM, PM, and MM Fibres

Coupling the light of free-space lasers into an optical fibre presents a challenge, and is particularly difficult with a small core diameter; as found in single-mode and PM fibres. High precision with very narrow tolerances are required to ensure optimal coupling efficiency.

To make this easier we offer the ConnectFiber fibre coupler for precisely these applications.

The easy-to-operate coupling optics feature excellent long-term stability and a coupling efficiency of up to 90%, dependent on the laser parameters. A suitable focusing lens is selected to achieve optimal transmission properties from the wavelength (350nm to 3000nm), laser beam diameter and fibre mode field diameter.

The fibre couplers are available as standard with an FC/PC or FC/APC connection (other connection systems are available upon request). Using a mounting flange they can be connected to the laser. The ConnectFiber is particularly compact with a 40mm x 40mm x 41.5mm housing and can be adjusted along six independent axes.

Webcode: UK53-1110

Standard and Custom Fluorescence Filters from Alluxa

Fluorescence based systems have become common for applications requiring the visualisation of organic materials and biomolecules. Traditionally, such systems are liable to background fluorescence, bleed-through and a poor signal to noise ratio. One solution to such issues is to use high quality thin-film optical filters tailored for fluorescence applications. Backscatter and poor signal quality are virtually eliminated due to wide and deep blocking, resulting in bright, high-contrast images of your specimen.

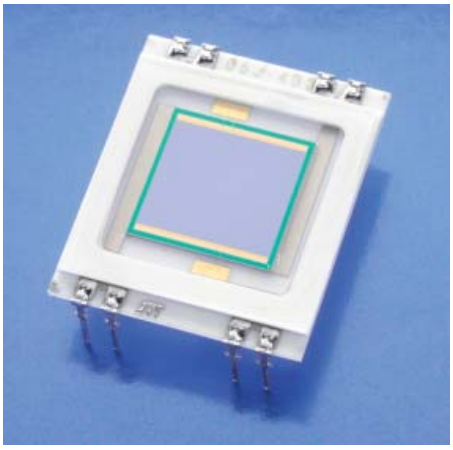
We are proud to offer standard and custom fluorescence filters from partners Alluxa. Production capacity has recently increased by 50%, with a total of 10 identical plasma

deposition chambers, all of which are designed and built in house by Alluxa's experienced team of engineers, to provide the highest standard of optical filter coatings.

Webcode: UK53-0850

Position Sensing Detectors from SiTek - Optimised for UV detection

Our range of Position Sensing Detectors (PSDs) from SiTek Electro Optics AB are commonly used for visible-IR sensing applications (400-1100nm). To complement these detectors and expand their application range we can optimise the active area for UV sources in the range of 200-400nm!



With this optimisation you can use PSDs as you would with a visible or IR laser source for position detection of UV lasers and other UV light sources. Any of our PSDs can be optimised for UV detection, allowing you to use any size from 2.5mm to 60mm (1 dimensional device) and 2mm^2 to 45mm^2 to suit your application.

PSDs are analogue devices which operate according to the Lateral Effect Photodiode principle, displaying excellent position resolution (which is determined by the system signal-to-noise ratio).

Webcode: UK53-0230

See us at
Photonex London Roadshow
April, 11, 2016
Imperial College London
Booth S8

Photonex LONDON
Photonics Technology Roadshow
11th April 2016 · Imperial College London

LASER COMPONENTS

www.lasercomponents.co.uk

LASER COMPONENTS (UK) LTD
Goldlay House
114 Parkway
Chelmsford
Essex CM2 7PR

Tel: 01245 491499
Fax: 01245 491801

Managing Director: Chris Varney
Registered Company 2835714

Editor: Kay Cable