




New MBC-DG-LAB Automatic Bias Controller

 LASER COMPONENTS introduces the new iXBlue MBC-DG-LAB automatic bias controllers to lock the operating point of LiNbO_3 Mach-Zehnder modulators and to ensure a stable operation over time and environmental conditions.

The MBC-DG-LAB controllers are dither signal based, so superimpose a low amplitude, low frequency tone on the modulation signal.

The resulting optical modulation is then detected and a digital signal processing technique, based on a FFT analysis principle, allows the operating point to be locked at the desired position.

The controllers are continuously tuneable, allowing operation of the modulator at any point of its transfer function, so can be used for a large variety of applications. The new MBC-DG-LAB controllers have improved sensitivity and stability.




The new controller is also easier to use, introducing an AUTOSET operation for the QUAD/MIN/MAX modes, a Graphical User Interface (GUI), storage and recovery of the user parameters and USB communication.

The bias controllers are available as bench top instruments and OEM boards. iXBlue MBC-DG series controllers are especially well suited for digital and pulse applications. A ditherless version (MBC-AN) is also available.

These controllers do not superimpose a tone signal on the optical modulated signal and are typically used for analogue applications.

Webcode: **UK57-0960**

Significant Voltage Amplifier Improvement

 FEMTO® Messtechnik GmbH has revised their DHPVA voltage amplifier series, resulting in two new models, the DHPVA-101 (DC - 100MHz) and DHPVA-201 (DC - 200MHz).



Input voltage drift and noise are improved to an extraordinarily low level, whilst maintaining a constant bandwidth at any gain setting.

Stable measurements with the highest precision are possible even at maximum amplification as they exhibit exceptionally low input voltage drift of only $0.3\mu\text{V}/^\circ\text{C}$ and the low input noise of $2.3\text{nV}/\sqrt{\text{Hz}}$. Flat frequency response without peaking was an important design requirement.


The maintained bandwidth with gain permits accurate high-speed acquisition whilst preserving the signal shape independent of gain setting.

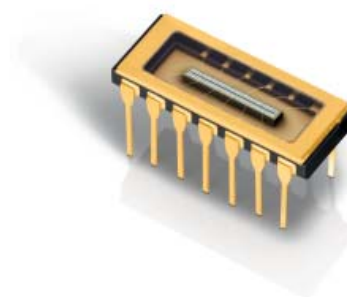
The gain can be selected from 10dB to 60dB in steps of 10dB, corresponding to voltage gain factors from 3.16 to 1000. Input coupling can be switched between AC and DC and the bandwidth can be set to 10/20MHz for reducing broadband noise.

All parameters can be selected manually or via the LUCI-10 digital interface. This unique combination of quality features makes the DHPVA series a truly universal laboratory amplifier facilitating near perfect signal processing.

Webcode: **UK57-0620**

Avalanche Photodiode Arrays

 We are excited to announce the arrival of our new Silicon APD arrays - the SAH1L12 series. The SAH1L12 is a linear APD array featuring 12 elements in a 14-pin dual-in-line (DIL) package. In addition to the low noise and high speed (typical rise times of 1ns), the detector arrays boast very narrow gaps of just $40\mu\text{m}$ to reduce dead space and high quantum efficiencies of $>88\%$ at 800nm. Crosstalk is kept low at just 50dB. These devices will find applications primarily as time-of-flight detectors used in range



finding, LiDAR and laser scanners. We would be delighted to discuss any custom features required for your specific application.

Webcode: **UK57-0350**

Dear colleagues

It was a pleasure to meet new and existing colleagues at Photonics West 2017 held in San Francisco and to see new products and innovation. We too announced our new 12 element APD array and iXBlue's new modulator bias controller, both covered in this edition of Photonics News.

In addition we are excited to announce the new improved voltage amplifiers from FEMTO Messtechnik, and our machine vision laser module with a fibre delivered detachable optical head. For this and more please see our website or call our office.

Chris Varney
Managing Director



LeanLine™ Line Generator for Narrow Line Beam Shaping

We are pleased to offer the LeanLine™ line generator from HOLO/OR. This innovative diffractive element is used to transform a round input beam into a narrow laser line. Suitable for high power applications, the LeanLine™ sees use in flat display production, laser ablation, solar cell processing and polymer welding.

The robust 2-module system converts a low coherence round input beam into a thin laser line of user specified length between 100mm and 750mm. The system uses a first module for M² transformation and line beam shaping, and a second for line length control and focussing in the narrow axis. This proprietary diffractive solution may be tailored to any wavelength from 193nm deep UV to 1600nm IR lasers. The LeanLine™ is aberration free and features easy alignment and installation, extremely high precision for M² transformation quality, and simple modification to produce different line lengths and widths.

Webcode: **UK57-0031**

Collimated Beam Shaper

LASER COMPONENTS is able to provide a flat top beam shaper element, which creates a uniform-intensity beam at a specified working distance. However, for applications that require a wide working distance range or an extended depth of focus, over a long distance, even a very uniform shaped beam can become less uniform and change size or shape slightly. This is why we can now provide a collimated beam shaper module, the natural complement to the standard flat top beam shaper element, which can solve this problem.

With our collimated beam shaper module, the uniform-intensity beam is maintained with high fidelity, power uniformity and constant size/shape over an extended working distance range. The shape remains well-defined with sharp edges and with the option of being round, square, rectangular, elliptical, line or any other shape that the user requires. This is ideal for industrial surface treatment where the working surface can be located at a wide variety of distances from the laser delivery system. Using this element can make the processing even, smooth and with a clean edge at any working distance in the specified range.

Webcode: **UK57-1031**

Laser Safety Curtain Enclosures

With high power laser systems becoming more accessible to the UK industrial base, the requirement for appropriate laser safety has never been more important. With some of these laser systems exceeding the maximum eyewear protection levels, a permanent, higher safety rating installation is required.

We are pleased to promote our range of Kentek laser safety enclosures; permanent structures which support either a fabric or concertinaed metal curtain designed to block high power laser radiation, enclose laser machines and even whole rooms, and allow other site workers to operate without the need for laser safety eyewear. Having the ability to enclose the laser system instead of providing an entire site with laser safety eyewear provides the largest benefit as other important work is no longer interrupted by poor vision through high specification filters.

To ensure the correct curtain material is used our dedicated laser safety team can calculate which option is most suitable. Each

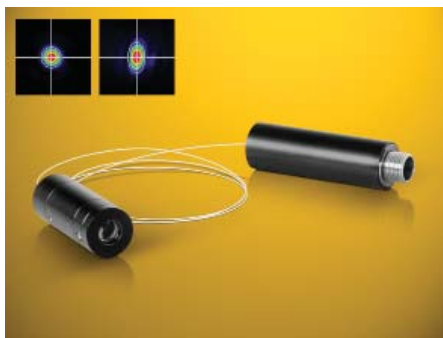


enclosure contains the required curtains, rails, and mounting brackets for a floor, wall, ceiling, or combination installation.

Webcode: **UK57-0540**

FLEXPOINT® MVfiber - FCL Laser Source and FLH Optic Head

Laser modules are now a common sight in products and industrial applications, especially where camera systems are being used for quality checks and surface geometry monitoring. Now that lasers play a crucial role in many applications the demand for better performance and reduced size is the next challenge for module manufacturers to meet.



For this we have designed the MVfiber; a fibre delivered laser with a detachable optical head. The FP-FLH optical head can be available with optics for projecting dots, Gaussian and homogeneous lines, and over 60 different DOE patterns such as parallel lines, dot matrices, circles.

Separating the active laser from the optical components allows users to mount the compact optical head in smaller enclosures reducing the overall footprint of the system.

Meanwhile the active laser can be positioned in a not so critical location, allowing for easy electrical connection and heat sinking if required.

This separation provides technical advantages such as the almost complete elimination of thermal drift in the laser beam, and the single-mode fibre reduces light scattering and side modes, enhancing overall beam quality.

The FP-FCL laser source and FP-FLH optical head can be ordered separately, ensuring maximum flexibility in selecting the right system. Both components feature FC/PC fibre connectors for ease of use and compatibility with larger systems.

With this new introduction the MVfiber series will be available at 450nm and 660nm with an optical power of up to 50mW. Other wavelengths and optical powers are available upon request. The laser is driven by our new microprocessor-controlled electronics, where a serial interface is used to program and attain readouts from the laser.

Webcode: **UK57-0740**

Stand Alone Laser Alignment Systems

Laser alignment systems are becoming more and more common in production facilities, manufacturing houses and are even used by installation teams on customer sites. The reason for this growth is the accuracy and time-saving features laser alignment systems have to offer. Whereas before a laser alignment system required lengthy calibration and installation, we have now simplified our design to accommodate



accurate, simple, on the fly measurements, which can be calculated by a user without the need for training.

Our STRAIGHTliner series is pre-calibrated and delivered with the laser and electronic target needed to perform a positioning or monitoring task. The STRAIGHTliner ECO features seven LEDs on each axis representing distance from the target's centre, which can clearly be seen over distances up to 10m. The STRAIGHTliner ECO target features an accuracy of 0.1mm over a 10mm² target area.

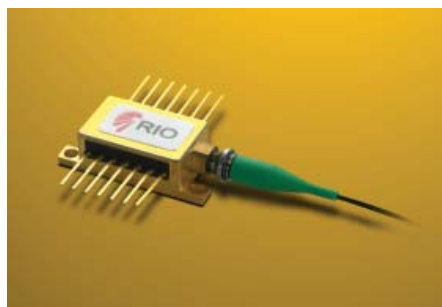
The STRAIGHTliner PRO implements a two-dimensional Position Sensing Detector (PSD) to achieve a positional accuracy of 0.001mm over a 10mm² target area and can be connected to a windows based PC via the provided Bluetooth dongle. The wireless link communicates with the STRAIGHTliner software that displays a graphical representation of the laser position as well as providing a data recording facility for record keeping.

Webcode: [UK57-0770](#)

PLANEX™ 1064nm Narrow Linewidth External Cavity Laser

LASER COMPONENTS offers the PLANEX™ 1064nm narrow linewidth external cavity laser. The design is based on RIO's proprietary planar technology and consists of a gain chip and a planar lightwave circuit including waveguides with Bragg gratings, forming a laser cavity. This gives significant advantages by combining high performance, comparable with long cavity fibre lasers, with the low cost, simplicity, small size and reliability of semiconductor lasers.

The PLANEX™ laser is an ideal source for seeding of high power fibre and solid state lasers, second harmonic generation and optical parametric oscillators, spectroscopy and other industrial and scientific applications, coherent Doppler LiDAR,

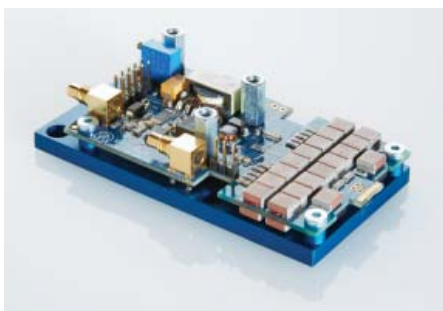


metrology and optical sensing. The lasers are available around 1550nm with various output power options and as modules, with integrated drive electronics, or benchtop units.

Webcode: [UK57-0830](#)

Ultra Compact Short Pulse Drivers - The LDP-V series

For applications in which high power pulsed laser diodes are utilised in a compact environment, we are proud to supply an extensive range of PicoLAS driver modules.



Depending on the pulsing requirement and operating conditions of the pulsed laser diode itself, we provide drivers from the 'LDP-V' series with pulse widths as low as 1ns. Different models can accommodate peak output powers as high as 24kW with the more powerful units exhibiting footprints of less than 9x5cm and the smallest units coming in at an incredibly small 4x2cm - perfect as OEM solutions where the space available is tight. High power modules incorporate built-in base plate heat sinks as standard and all drivers are compatible with most typical package types associated with common pulsed laser diodes.

Webcode: [UK57-0550](#)

FLEXPOINT® MVstereo

Laser based image processing is the new and exciting technique of quality control and item recognition, and thanks to advances in camera and laser based technology is also affordable for a large variety of applications from small inspection systems to fully automated quality check and correction product lines.

Camera and laser technology is also implemented in entertainment systems for gesture control and depth measurements, another market that is rapidly expanding.

To meet the requirements of these fields we have now produced the MVstereo; a Pseudo Random Pattern Generator capable of projecting randomly arranged clouds of 33,000 divergent dots.

The MVstereo is available as a 660nm (visible) or 830nm (infrared) module with the power control and pattern generator integrated into the laser body. The advanced microprocessor can also be programmed to operate according to your requirements as well as provide a data readout via the RS-232 interface.

Webcode: [UK57-1740](#)

Pulsed Laser Diodes with Homogenised Beam Profiles

Through the use of a square optical fibre, we are proud to manufacture pulsed laser diodes with homogenised beam profiles at 905nm and, as a new release, also at 1550nm.

With output powers exceeding 25W, the SQF series offer a versatile and stable output from a very compact housing of 9mm diameter and just 19mm in length. Emitting area is 140µm x 140µm.

Near field homogeneity is typically associated with much longer fibre lengths but the square fibre design allows for a much reduced form factor.

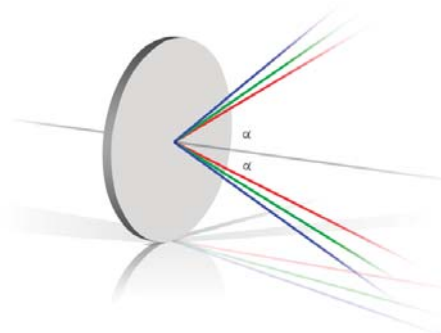
Typical applications for the SQF series include; range finding, surveying equipment, "Friend or Foe" identification and weapons simulation.

Webcode: [UK57-0410](#)



High Power Triple Laser Mirrors

Laser optics are commonly optimised for a single wavelength. When using frequency multiplying lasers, however, laser optics must be optimised for each



of the wavelengths produced. So-called triple mirrors are used for this purpose, for example in Nd:YAG laser systems that emit at the fundamental wavelength 1064nm and have harmonics at 532nm and 355nm, a

high degree of reflectivity at each of these wavelengths is required.

Traditionally these coatings were applied in two separate runs, for example a coating for 1064nm and 532nm was first applied, followed by a coating for 355nm. Consequently, production of triple mirrors was time consuming and costly.

We have developed a new coating method, allowing for production of triple mirrors in a single coating run. Not only does this reduce production time, and thus the unit cost, but also yields a higher spectral performance than previous production techniques. This method allows for triple mirrors with custom wavelength combinations to suit any application.

Webcode: **UK57-0010**

Ultra-Wide Broadband Dielectric Mirrors

To complement our wide range of high performance optical coatings, we are pleased to be working alongside Omega Optical to provide ultra-wide broadband dielectric mirrors. With a >99.5% average reflectivity over the spectral range 350nm to 1800nm, the ultra-wide series offers the best performance on the market with a uniformly high reflectivity over angles of incidence of 0-30° and 30-50°.

These mirrors are produced using a plasma-assisted reactive magnetron sputtering process, giving a high physical durability and temperature and humidity stability. Custom coating and substrate designs are available, allowing for optimisation within a specific range or coating on convex or concave substrates.



Ultra-wide, broadband dielectric mirrors have many advantages in applications such as astronomy, beam steering, solar collectors, low-light applications and any other optical systems requiring high efficiency across a broad spectral range.

Webcode: **UK57-1010**

See us at

Photonex Scotland Roadshow
June 14, 2017
University of Strathclyde
Booth S2



780/785nm Multi-Mode Laser Diodes

Offering a high brightness, high quality and high reliability solution for applications in Raman spectroscopy, laser pumping and laser therapy, LASER COMPONENTS is proud to supply a range of multi-mode laser diodes at 785nm with continuous output powers up to 2W from a single emitter chip. The diodes can also feature VBG stabilising elements to permit wavelength tolerances as low as $\pm 0.5\text{nm}$.

Packaging options include 9mm TO cans, C-Mount, B-Mount and QA-mounts with more product areas being available on request.

Webcode: **UK57-0490**

PEFA-EOLA Series of Erbium Doped Fibre Amplifiers

We now offer the PEFA-LP-C series (PEFA-EOLA) of Erbium doped fibre amplifiers which are eye-safe amplifiers designed for long pulse operation like LiDAR, wind sensing and aerosol detection. Thanks to a unique architecture the Keopsys device delivers high energy per pulse, up to 110μJ. The output is linearly polarised



with a diffraction-limited beam (output fibre with $M^2 < 1.5$ for energy above 15μJ), and is available as a benchtop unit with user friendly interface or modules. The modules are compact, robust devices that are maintenance free with high reliability, so are ideal for integration into a complete optical system.

Webcode: **UK57-0190**



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