2017 Newsletters

solution science

Elliot Scientific

for research and industry

About us

Elliot Scientific serves Great Britain's academic, industrial and research communities as a major supplier of equipment dedicated to the science of light.

Speciality optical fibre and custom optics, lasers and LEDs, positioning systems and opto-mechanics, cryogenic and magnetic instruments, sensors and systems are just some of the technologies we source from leading manufacturers.

We also design and build our own ranges that are marketed globally under the Elliot│Martock and Elliot Scientific brands. These include award-winning Optical Tweezers, world-renowned flexure stages, micropositioners, fibre positioning components, automated alignment systems, waveguide manipulators and many others.

All of our customers - from academic institutions and government agencies through to commercial researchers and industry - are provided with the highest levels of service backed up by solid technical support from our knowledgeable team.

Solution Science for Research and Industry

We pride ourselves in offering *Solution Science for Research and Industry*. We employ the best-qualified staff to help you sift through the multitude of options available to get the equipment and systems that match your needs.

Elliot Scientific's experienced scientists and engineers will assist you with your product search or application, and offer accurate and balanced advice. Many of the team have been with us for over a decade, bringing with them a huge amount of real-world know-how for you to tap into. That's Solution Science.

Our accounting and administration staff are also recruited from the best, ensuring that you have a high quality of service at all levels of the company.

Quality

For more than 20 years Elliot Scientific has understood the need for continual improvement in services and traceability, both in distribution and manufacture. After achieving BS EN ISO 9002 certification in 1993, Elliot Scientific progressed to its replacement - ISO 9001:2000 - in 2003. In the summer of 2016, we gained ISO 9001:2015 certification. Our commitment to quality always ensures our standards are the highest in our industry.

Elliot Scientific Limited

3 Allied Business Centre, Coldharbour Lane, Harpenden, Hertfordshire AL5 4UT, United Kingdom

Eml: sales@elliotscientific.com Tel: +44 (0)1582 766300 Web: www.elliotscientific.com

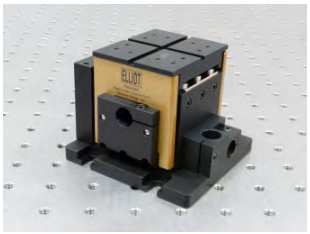
Registered in England № 2460146 VAT № GB 540 1277 78 WEEE № WEE/DF0052TQ

Elliot Scientific

solution science for research and industry

Photonics West Edition **January 2017**

Elliot|Martock Flexure Stages are of exceptional value to scientists and engineers



The **Elliot Gold™ Series Flexure Stage** product range is our most popular export. Thousands have been supplied to scientists and engineers around the globe; they recognise that these high-resolution XYZ systems are of exceptional value in terms of price *and* performance.

Features

- 20 nm resolution with 2 mm travel per axis
- Excellent operation and superb long term stability
- Great versatility from a compact and robust package

These precision engineered stages are configurable for use in a multitude of applications.

ELLIOT MARTOCK

Choose from systems preconfigured for **fibre launch**, such as free space light into photonic crystal fibres, or for alignment of other types of optical device. Note that we offer a number of right or left-handed configurations to suit your experimental set-up, or for dual-sided alignment.

The positioners can be purchased with standard adjusters, high precision adjusters, or piezo driven actuators in any combination.

An extensive range of accessories and attachments ensure that most applications can be satisfied. If not, **contact us for a custom solution**.

Fibercryst Amplifiers boost the power and energy output of an existing laser

The **Taranis Amplifier System** is a stand-alone add-on unit from **Fibercryst** (Booth #4134) that allows a developer to increase the power and energy output of an existing laser installation.

The amplifier design incorporates Fibercryst's unique **Taranis technology** - a single crystal fibre amplifier ideal for short pulse amplification that delivers a high intensity, linearly polarised laser beam with superb quality and adjustable repetition rate.

The amplifier accepts a wide range of fibre-coupled or free propagation mode seed lasers, boosting them to a higher average power, higher peak power (up to 30 MW) and higher pulse energy. Output is to free space.

- Flexible technology:
  - High avg. power
  - High peak power
- Seed laser choice:
  1030 nm or
  1064 nm
- Optimised for fs to ns pulsed lasers

fibercryst

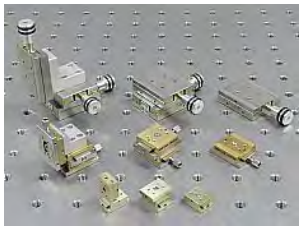
Input Laser
- M2 < 1.3
- 100 mW to 50 W
- 300 fs to CW
- 0.1 to 100 MHz

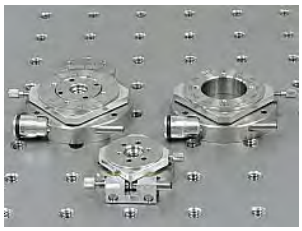
Pump Diode
- 808 or 940 nm
- NA up to 0.22
- 30 to 200 W
- Core dia. 100-200 µm

Amplifier output
- Up to 30 MW peak power
- Up to 100 W avg. power
- Pulse down to 500 fs
- M^2 < 1.3
- TEM_{00}

Contact us for more details.

Four decades of precision: Miniature slides from Elliot|Martock





Elliot|Martock high-resolution (<0.5 µm) **precision miniature dovetail slides** have been popular with scientists and OEMs for nearly 40 years.

With a useful selection of Small, Very Small and Ultra Small models (with travels of 10, 5 and 3 mm respectively), the range satisfies many requirements for a stable and compact precision stage in both research and industry.

These market-leading micro-positioners offer single, dual and three axis configurations with a variety of adjustment options such as simple screws to precision micrometers. Small or Very Small **rotary stages** with a variety of bore sizes complete the line-up.

Elliot Scientific also offers adaptors and accessories - such as the **MDE270 tilting stage** - to complement the series and further enhance flexibility of use. For more information, please **contact us**.

Gamma Scientific's RS-7 SpectralLED™ range expanded

Fibre-optic version

Integrating sphere model

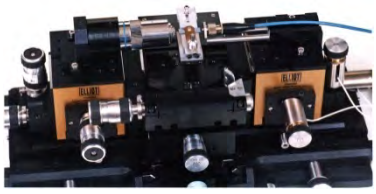
The recently introduced SpectralLED™ tunable light source from **Gamma Scientific** (Booth #2636) combines the light of dozens of discrete LEDs - each having a different centre wavelength - to produce output that can be programmed to closely match virtually any illuminant source or the spectrum of any illuminant reflected by a target.

Now **new SpectralLED™** models are available with either fibre-optic outputs for awkward to reach places requiring illumination, or as a 1 m integrating sphere system offering ultra-uniform output from a 300 mm diameter port.

Gamma Scientific's SpectralLED™ delivers significantly higher brightness than any competitive product, enabling measurements over a much larger dynamic range and with the capability to illuminate a detector from threshold to saturation. Please **contact us** for more information.

DAli 3 delivers fast auto-alignment with precision via piezo-driven stages

E2300 DAli 3



Piezo-driven alignment

The **Elliot Scientific DAli 3** is the latest version of our popular active automated photonic device alignment system for the following applications:

- Fibre-to-laser diode alignment
- Fibre-to-waveguide alignment
- Fibre-to-fibre coupling
- Fibre array-to-device alignment
- Compensation for epoxy drift during pigtailing
- Compensation for drift during long-term characterisation
- Simultaneous alignment of input/output fibres/arrays to waveguide devices

Although designed to complement the piezo-driven versions of the Elliot Gold™ Series range of flexure stages, such as the **MDE123** and **MDE125**, it is also suited to driving most third-party 150 V piezo actuators.

The software and hardware package includes many features to enhance use, while also providing the necessary flexibility to allow it to be incorporated into a wide range of photonic alignment tasks for development, test and production applications. For information on options and specifications, please **contact us**.

Later this month, meet Elliot Scientific and some of the companies we represent at...

SPIE. PHOTONICS WEST

Photonics West

31st January to 2nd February 2017
Booth #4554, Moscone Center, San Francisco

CODIXX	#2023	**HOLOEYE**	#1737	**Micro Laser Systems**	#805
Elliot Scientific	#4554	**IPG Photonics**	#1623	**NoIR LaserShields**	#3054
Energetiq	#4325	**Lambda Research Optics**	#1330	**Optisource**	#300
Fibercryst	#4134	**Mad City Labs**	#5033	**OZ Optics**	#4529
Gamma Scientific	#2636	**Nufern**	#4765	**Prizmatix**	#4154

Products 2016

Optical Tweezers 2016

Opto-Mechanics 2013

Previous Newsletter

2016 Newsletters

2015 Newsletters

Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

☎ +44 (0)1582 766300 | +44 (0)1582 766340 | ✉ sales@elliotscientific.com |

Elliot Scientific

solution science for research and industry

February 2017

New Near Eye Display measurement system from Gamma Scientific

GAMMA SCIENTIFIC
Light Measurement Solutions

The GS-1290 NED test rig

Gamma Scientific's Near Eye Display measurement system is designed to accurately capture spectral measurements of Virtual, Mixed, and Augmented Reality headsets plus helmet mounted displays as viewed by the human eye.

These types of display require precise measurement of light in the virtual image field of view, and the GS-1290 NED system is the culmination of decades of experience in developing **display and HUD test systems** for military aviation.

It combines Gamma Scientific's trusted GS-1290 spectroradiometer with optics compact enough to fit within a test rig based on the dimensions of a typical adult human head, thus enabling easy measurements of the left and right eye's view for:

- Luminance and colour uniformity
- Symbology luminance and colour
- Spectral transmittance
- Left/Right eye parallax
- Response time/flicker and MTF are also available as options

Please **contact us** for more details, or **download the brochure**.

New high power UV-Visible light for microscopy: Introducing Prizmatix's UHP-M DuaLED

Prizmatix's newly launched self-contained **UHP-M** is an ultra-high power UV-Visible light source designed to replace Metal-Halide and Mercury lamp systems in many microscopy applications.

Incorporating two independently controllable Prizmatix large-chip LEDs, the UHP-M delivers broadband white from a single 55 W LED, and high power UV from a single 10 W LED operating at 365, 385 or 405 nm depending on model ordered. Please **contact us** for more details.

The UHP-M offers:

- Optically isolated TTL & analogue inputs for each channel
- Fast TTL switching
- Low optical noise
- Long life (no lamp replacement)
- Fanless operation
- Remote control*
- USB interface*

Prizmatix

* The UHP-M requires no external control if operating at full power. However, if power levels need to be adjusted, the optional remote control or USB interface will be required.

New dielectric mirror SLMs from HOLOEYE deliver more than 90% reflectivity

HOLOEYE has introduced dielectric mirror coated Spatial Light Modulators (SLMs)to expand the **PLUTO** range of its popular 1920 x 1080 pixel (HDTV) reflective LCOS microdisplay panels.

These new coated SLMs offer in excess of 90% reflectivity and reduced absorbtion, making them ideal for use in high incident power applications such as with lasers.

Three models are currently available: the PLUTO-UV-043, PLUTO-VIS-056 and PLUTO-NIR-049 for use in the UV, visible and IR respectively. All PLUTO SLMs are plug & play, offer fast full digital addressing, and can be programmed with phase functions via a standard graphics card as an extended monitor device using the supplied software.

Datasheets are in preparation, so please **contact us** so we can send you more information when they are released.

New tunable broadband plasma light source from Energetiq

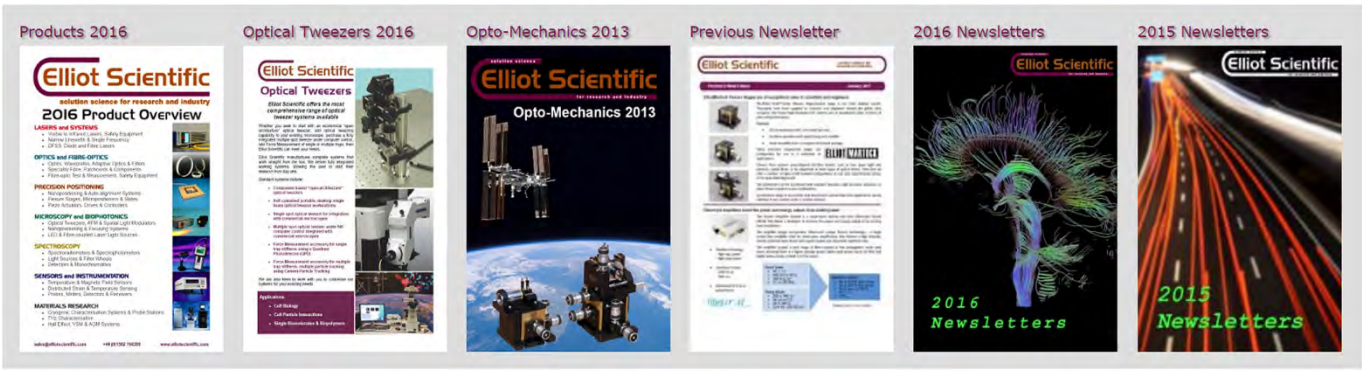
- Highest flux output
- Fast wavelength tuning: Up to 200 nm/s
- Etendue-matched monochromator
- High performance optical design
- Fibre-coupled output

Energetiq introduced the new Laser-Driven Tunable Light Source (LDTLS™) at the recent Photonics West conference and exhibition. The **LDTLS™** is a compact, fully integrated and highly stable tunable broadband light source utilising the proven EQ-77 LDLS™ source with an Etendue-matched monochromator. It features the highest brightness and output flux available in a tunable broadband product.

The water-cooled LDTLS™ offers an extremely long lifetime (approximately 9000 hours between bulb changes) for low cost of ownership. It has high stability, very low noise, and is coupled with a precision high-performance monochromator for accurate wavelength selection and repeatable light output across the range of 300 to 1100 nm.

The spectral resolution can be customised for application specific purposes and ranges in bandwidth from 1 to 10 nm. The fibre coupled output is both flexible and convenient for delivering wavelength selected light to precisely where it is needed.

OEMs requiring more information, such a detailed specifications and pricing, should **contact us** now.



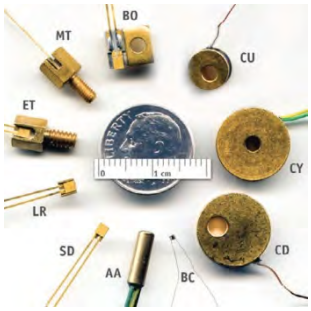
Blog LinkedIn Twitter Facebook Issuu YouTube Channel

Elliot Scientific

solution science for research and industry

March 2017

Lake Shore's Cryogenic Temperature Sensors get their own page on elliotscientific.com



Lake Shore also offer a wide range of temperature controllers and monitors

Lake Shore offer four types of sensor for cryogenic temperature measurement: diodes, resistors, capacitors and thermocouples. Each has its own particular features, and these can be easily seen *at-a-glance* via our new **Cryogenic Temperature Sensors page**.

For example: Of the three most common NTC resistor materials, sputter-deposited zirconium oxy-nitride aka **Cernox™** - the others being Germanium and Ruthenium Oxide (Rox™) - is the most versatile. Cernox™ thin film resistors are only manufactured by Lake Shore Cryotronics, and incorporated into robust sensor packages.

Cernox™ works over a broad temperature range, is not constrained by a standard curve response, has sensitivity below 1 K, and is highly resistant to ionising radiation and magnetic field-induced errors. These features can be instantly seen on the page via our colourful graphics:

0.1 to 420	✘	✔	✔	★★★ (1 K +)

In all, nine different temperature sensor materials are detailed and an informative datasheet is available to **download**. However, Elliot Scientific does still recommend **contacting us** for expert advice on sensor choice for your application.

Single Crystal Fiber Lasers are in the news: Taranis covered by *Laser Focus World*

- Pulse widths under 900 fs
- Tunable repetition rate from 0.1 to 2 MHz
- Excellent beam quality M2 < 1.3
- Peak power up to 100 MW

The **Fibercyst FEMTO** is a powerful industrial femtosecond pulse width laser for high quality micromachining, offering output powers up to 25 W for high throughput.

Typical applications include: cutting and drilling of hard materials, cold machining polymers or composites, and micromachining / structuring of surfaces, especially glass, ceramics and sapphire.

A key feature of this laser is the ability to easily and quickly change the repetition rate to favour the average power or the energy per pulse.

Taranis SCF Technology

Fibercryst's ultra-fast lasers utilise their revolutionary Taranis Single Crystal Fibre (SCF) amplifier modules to enable higher energy per pulse, higher average power, and easy to use flexibility between energy and repetition rate, and better beam qualities from small footprint devices.

In the February issue of ***Laser Focus World*** magazine, an informative article about Fibercryst's innovative Single Crystal Fiber amplification technology has been published. You can read ***Single crystal fibers amplify power in ultrashort-pulse lasers*** here.

Further details about this, Fibercryst's **Amplifier**, or their other products can be obtained by **contacting us**.

Flip frame eye protection delivers practical benefits for laser operators

NoIR LaserShields are now shipping the CE-certified Frame 40 spectacle. With its novel flip mechanism, which allows for a secondary filter to be brought into play in certain applications, users can benefit in situations where a modification of the passband of the fixed filter is required.

In this example, the fixed filter is clear FG1 mineral glass for IR sources above 900 nm, and the secondary filter is the pink AXX which blocks IR in between 700 and 900 nm. Please **contact us** for more details.

CRAIC Technologies' 508 PV™ adds advanced spectroscopy to your microscope

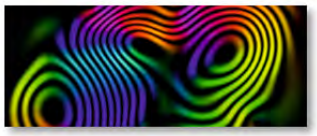
The **CRAIC Technologies' 508 PV™** UV-visible-NIR spectrophotometer is designed to be added to a microscope's open photoport or a probe station for high-resolution colour image capture and non-destructive analysis of the spectra of many types of microscopic samples.

The 508 PV™ features CRAIC's cutting edge Lightblades™ spectrophotometers which can acquire spectra from microscopic sample areas by absorbance, reflectance, polarisation, luminescence and fluorescence. Typical applications include:

- MEMS devices
- Material characterisation
- FPD colour masks, OLEDs and LEDs
- Surface plasmon resonance
- Mineralogy and vitrinite coal reflectometry
- Photoreceptors and semiconductors
- Optical thin film thickness
- Process contamination analysis

Please **contact us** for more details about this or any other **CRAIC Technologies** products.

Next month, meet Elliot Scientific at...



Magnetism 2017
3rd and 4th April 2017
University of York

SU2P
5th and 6th April 2017
Heriot Watt University, Edinburgh

OPIE'17: OPTICS & PHOTONICS International Exhibition
19th to 21st April 2017
Yokohama, Japan

We can be found in the Autex booth

INTERMAG 2017
24th to 28th April 2017
Dublin, Ireland

We can be found on the Lake Shore Cryotronics stand

Products 2016

Optical Tweezers 2016

Opto-Mechanics 2013

Previous Newsletter

2016 Newsletters

2015 Newsletters

Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

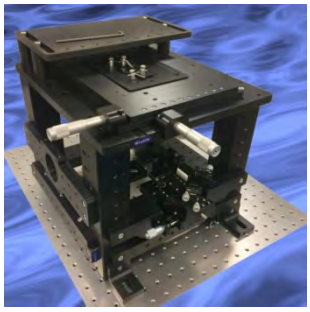
☎ +44 (0)1582 766300 | +44 (0)1582 766340 | ✉ sales@elliotscientific.com |

Elliot Scientific

solution science for research and industry

April 2017

The RM21™ Microscope Platform by Mad City Labs: Get the bigger picture



As Elliot Scientific has just completed another custom RM21™ microscope platform installation, we thought you might like to see the **hi-res photo** of it.

The precision manufactured RM21™ from **Mad City Labs** offers maximum user accessibility and more opportunities to develop configurable instruments with ease. Consequently, scientists in the global microscopy community have recognised its invaluable contribution towards their research.

The **RM21™** is the ideal platform for a range of microscopy applications such as super resolution (SR) microscopy, fluorescence microscopy and TIRF. Easy alignment of microscopy and optical components is achieved within its three dimensional space as all posts and fixturing points are referenced to a known datum.

The standard RM21™ includes a precision platform and an axial, motorised Z-axis for objective positioning. The Z-axis has a travel range of 50 mm (2") with a 95 nm step size. Other options are also available so, for more information, do **contact us**.

New LTB-8 Platform from EXFO receives praise from industry judging panel

EXFO has released their next-generation modular test system in the form of the **LTB-8 Rackmount Platform** (with video), a versatile solution that addresses the many testing requirements found within today's data networks.

The LTB-8's small format, ultra-powerful processor and highly intuitive interface gives the lab user an optimised instrument to run dedicated test applications simply and efficiently for technologies such as Ethernet, OTN, Fibre Channel, SONET/SDH and more.

- In-rack or tabletop
- 8 hot-swappable modules
- RAID data storage
- USB, LAN, Sync and AMT ports
- High performance on-board computer
- Multi-user and remote access capability

It impressed the judges at this year's *Lightwave Innovation Reviews* by being an "excellent product with technical features and performance that provide clear and substantial benefits" in the Lab/Production Test Equipment category.

An upgrade path for existing users of the **IQS-600 modular test platform** has been mapped out by EXFO, enabling migration from the old to the new. For details and trade-in offers, please **contact us**.

Lake Shore introduces new Model 155 Precision I/V Source

Lake Shore have announced the new **Model 155 MeasureReady™** precision I/V source. Ideal for demanding scientific applications requiring a precise low-noise supply of current or voltage, for example electronic material characterisation, the Model 155 will be shipping later this year.

Supplying 1 W maximum from DC to 100 kHz over a broad output range, these power supplies deliver a solid foundation for I/V curve, Hall effect, and other fundamental measurements.

The clutter-free touch display with a unique TiltView™ screen presents a natural and engaging user interface. No confusing buttons or long learning curves make the Model 155 as easy to use as a smartphone. With similar connectivity - Bluetooth, Wi-Fi, USB, plus LAN - it offers convenient remote operation via LabVIEW™, a custom PC interface, or mobile app.

Please **contact us** for more information, or **download the datasheet**.

Green Lasers from IPG Photonics aid science and medical research

IPG Photonics makes a number of fibre laser systems available specifically to the research community.

CW Green Fibre Lasers

A variety of science and medical research applications can benefit from a green laser and IPG's GLR series of single-mode, single-frequency, linearly polarised continuous wave (CW) 532 nm fibre lasers with output powers up to 30 W are ideal for these purposes.

- Diagnostics or particle imaging
- Holography & interferometry
- Laser trapping & pumping
- Velocimetry & flow visualisation

These highly efficient and reliable lasers feature a super-compact lightweight optical head connected to an air-cooled rack-mounted main laser console. The all-fibre construction allows for full range adjustment of output power without changes in power stability or beam mode parameters.

For more information about these or other lasers IPG offers through Elliot Scientific, please **contact us**.

Elliot Scientific will be exhibiting at the following events over the next few weeks...

OPIE'17: OPTICS & PHOTONICS International Exhibition

19th to 21st April 2017
Yokohama, Japan

We can be found in the Autex booth

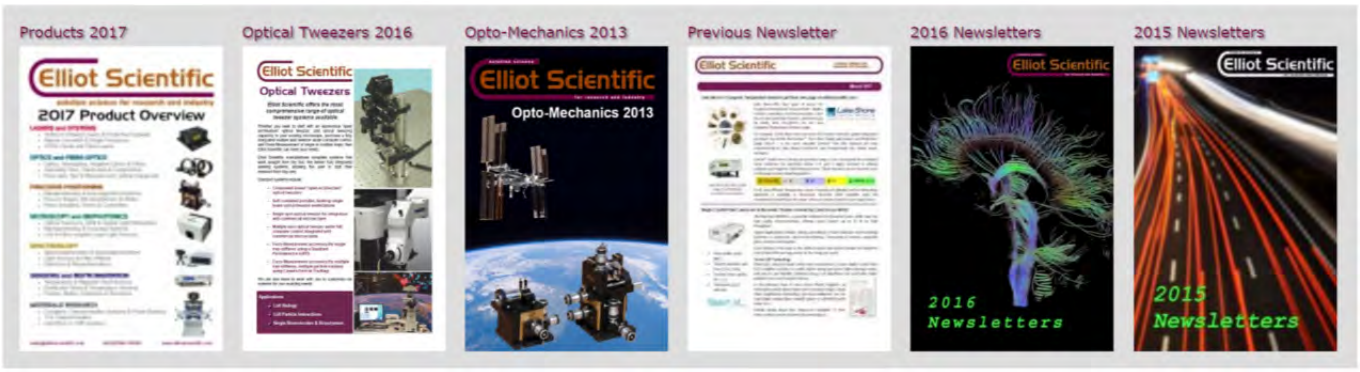
INTERMAG 2017

24th to 28th April 2017
Dublin, Ireland

We can be found on the Lake Shore Cryotronics stand

Scottish Universities Physics Alliance 2017

10th May 2017
Royal College of Physicians, Edinburgh



Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

Elliot Scientific

solution science for research and industry

May 2017

Miniature spectrometers from Spectral Products are packed with great features

Spectral Products is a leading designer and manufacturer of sophisticated instruments such as spectrometers, monochromators, light sources and related equipment.

Their **SM miniature spectrometers** deliver numerous features and high performance within a small footprint. The series is based on a crossed Czerny-Turner configuration and also uses unique linear variable long pass filters to give broadband simultaneous wavelength coverage that is free of higher order interference.

A wide selection of UV/VIS/NIR (regular and back-thinned/TE-cooled CCD) and NIR/MIR (InGaAs, PbS, and PbSe) detectors enable Spectral Products to offer more than a dozen models to suit applications found in science and industry. For example:

- Raman spectroscopy
- Colour/LED measurement
- Luminescence spectroscopy
- Laser breakdown spectroscopy
- Arc, spark & plasma spectroscopy
- Picosecond laser analysis & ratiometry
- Spectrophotometry & spectroradiometry
- Process control, diagnostics & calibration
- Emission & excitation fluorescence spectroscopy

All detectors are thermo-electrically cooled for optimal operational stability, and ruled or holographic gratings are fitted depending on the chosen wavelength range. In addition, different slit sizes are available to alter the spectrometer's resolution. Please **contact us** for further details.

Need a really low-noise diode laser controller? Meet the D2-105 from Vescent Photonics

Vescent Photonics offer a superbly specified diode-laser current source based on the well-documented **Libbrecht-Hall (PDF)** circuit. With a current noise density of under 100 pA/√Hz, Vescent's D2-105 outputs less noise than any other commercially available laser controller.

Combined with two-stages of temperature control, to provide sub-mK stability, the **D2-105**'s ultra-low current noise, servo controlled (> 10 MHz) frequency stability and lack of mains' induced harmonics is ideally suited for precision spectroscopy and metrology applications.

In addition, a connection to the laser current output SMA enables direct writing of sidebands by means of extremely high speed modulation of the injection current. This eliminates the need for expensive AOMs, EOMs, and lock-in amplifiers.

An example of how a D2-105 benefitted an experiment has been detailed in this recent paper from Laboratoire ARTEMIS *et al*: ***Efficient diode laser line narrowing using dual, feed-forward + feed-back laser frequency control***

For more information about this or other electronics and lasers Vescent manufacture, please **contact us**.

Latest Elliot Scientific brochure now in print and online

The 16-page brochure has been updated to include all the latest products we offer

Our new **Product Overview for 2017** is now available. This latest brochure from Elliot Scientific details the broad range of products and equipment we offer from leading companies around the globe, and our own ranges designed and manufactured in-house.

- **Lasers, LED light sources & other illumination systems**
- **Optics, spatial light modulators, fibre-optics & components**
- **Precision micro and nanopositioning devices & alignment systems**
- **Microscopy, optogenetics & equipment for biophotonics**
- **Spectroscopy, microspectrophotometry & Raman**
- **Sensors/Instrumentation for measuring temperature & magnetism**
- **Materials research test equipment & cryogenic probe stations**

Download the **brochure here**, or request a printed copy by **contacting us**. Alternatively, pick one up at any UK conference or exhibition we are attending.

CODIXX colorPol® polarisers are sturdy filters

The CODIXX range of tough, dichroic glass-based colorPol® polarisers pass or stop polarised light, modulate or reduce brightness, diminish noise and lots more. With over two dozen standard colorPol® versions available for use throughout the UV, Vis, NIR and mid-IR wavelength ranges, CODIXX have released two catalogues to help you choose the right polariser for your application.

CODIXX colorPol® polarisers deliver:

- High contrast ratios
- High transmittance values
- Large acceptance angles
- Resistance to UV radiation and chemicals
- Resistance to temperatures up to +400 °C

The **colorPol® catalogue** is complemented by a **High Transmission Brochure** especially for the telecoms industry. Do **contact us** for details about both standard and custom filters.

Superior pitch adjuster screw sets from Kozak Micro are perfectly matched

KOZAK MICRO ADJUSTERS

Kozak Micro manufactures super-smooth adjustment screw sets with threads as fine as **508 TPI (0.05 mm pitch)**. Available through Elliot Scientific in the UK and Ireland, these adjusters can be purchased in single or OEM quantities.

Up to 508 TPI

Proprietary manufacturing on a variety of customised machine tools enables Kozak Micro to produce adjusters in a range of pitches that are superior to industry standards.

Elliot Scientific offers 6 imperial and 4 metric thread pitch ranges of matched-set micropositioning adjustment screws and unbraked bushings that deliver the highest precision and smoothest movement by far for the most demanding of applications. Please **contact us** for more information.

Elliot Scientific will be exhibiting at the following events next month...

Photonex SCOTLAND
Photonics Technology Roadshow

Photonex Scotland Roadshow

14th June 2017
University of Strathclyde

LASER World of PHOTONICS

LASER World of Photonics

26th to 29th June 2017
Munich

Products 2017

Optical Tweezers 2016

Opto-Mechanics 2013

Previous Newsletter

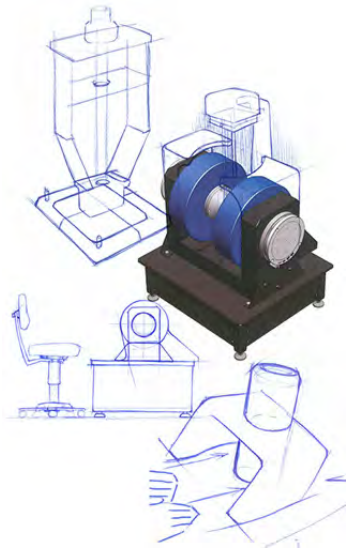
2016 Newsletters

2015 Newsletters

Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

☎ +44 (0)1582 766300 | +44 (0)1582 766340 | ✉ sales@elliotscientific.com |

Latest Model 8600 Vibrating Sample Magnetometer is the best yet from Lake Shore



The production 8600 Series VSMs from **Lake Shore Cryotronics** further raise the bar for magnetometer performance with a significant reduction in the instrument's noise floor - down from 0.33 x 10^{-7} emu to 0.25 x 10^{-7} emu - when compared to the prototype unit demonstrated late last year. In addition, the field ramp rate has been doubled to 10 kOe/s. These improvements deliver even higher sensitivity, and more rapid measurement speeds.

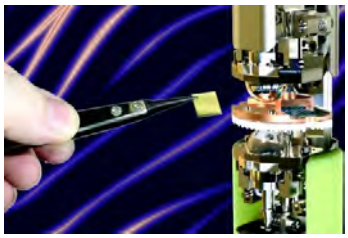
Options include a cryostat, high-temperature oven, and single stage variable temperature insert. The combined temperature range of the options is 4.2 to 1273 K, and all three options quickly slide into place and are auto-detected by the system's software.

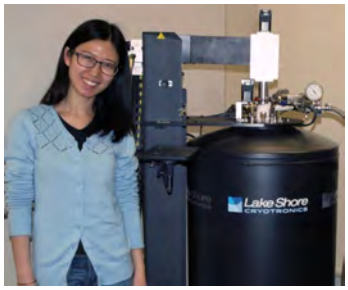
8600 Series Features

- 0.25 x 10^{-7} emu noise floor at 10 sec/point
- 10 ms/pt data acquisition rate
- Up to 10,000 Oe/s field ramp rate
- High stability of ±0.05% per day
- Fields to 3.26 T
- Widest temperature range: 4.2 K to 1273 K
- Rapid, repeatable temperature option exchange

The entire **8600 Series** system was conceived with a focus on a clean, ergonomic design that simplifies the researcher's interaction with the system. For example, a motor brings the head to a comfortable height for easy one-handed exchange of the sample, and magnet poles are also easily adjusted with a specially designed indexed positioning system. This allows the pole gap to be set at one of six repeatable positions, eliminating the need to recalibrate after each change.

Please **contact us** for more details.





THz system user Yue Huang at Brown University
Photo by Richard Higgins

8500 Series THz System Measurement Programme

Scientists around the globe are being invited to send samples for measurement on Lake Shore's THz materials characterisation system in order to demonstrate the capabilities of the instrument.

The aim of the project is to help identify applications where the THz technique may be particularly beneficial to the researcher. Details can be found **here**.

Lake Shore User Forum

Lake Shore has also created a forum to help build an online knowledge base, encourage a community among all Lake Shore product users, and to better communicate with that community.

Customers are encouraged to post tips, advice and application examples of their own to add to the discussion, and to share their technical experiences with others.

The forum is accessible from Lake Shore's homepage or directly **here**.

SLICE-QT temperature controller launched at CLEO by Vescent

After several years in development, the first in a new range of **Slimline ICE** (SLICE) models was launched by **Vescent Photonics** at CLEO'17.

The SLICE-QT is a four-channel temperature controller for thermally stabilising a laser, photonic device, or non-linear crystal. It is compatible with both TECs and resistive heaters, and features auto tuning along with 40 watts of user-allocatable control power.

For more information about this or other electronics, optical modules and lasers that Vescent manufacture for cold atom science, please **contact us**.

Image sensor tests to benefit from Gamma Scientific's new drop-in tuneable LED source

A new turnkey, drop-in calibrated light source for custom and commercially available wafer level testing of CCD and CMOS sensors has been developed by **Gamma Scientific** from their existing digitally programmable, colour tuneable, **RS-7 LED light source**.

The new RS-7-4 can deliver virtually any arbitrary spectral power distribution of visible light over a wide range of output luminance. This makes it ideal for accurately characterising a detector's dynamic range, uniformity, linearity and spectral responsivity.

The RS-7-4 outperforms rival systems due to highly stable DC drive current circuitry that varies the output luminance of manifold discrete LED channels, rather than using pulse width modulation (PWM). This is critical when testing high speed silicon detectors, which can easily time resolve PWM signals and thus give measurement errors.

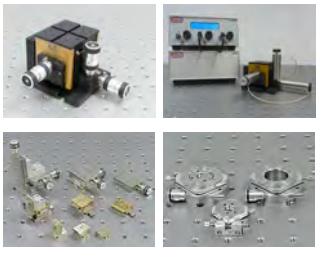
For more information about this or other light sources and instrumentation Gamma Scientific manufacture, please **contact us**.

Experience our product range at LASER World of Photonics in Munich

The biennial **LASER World of Photonics** Exhibition and Conference begins Monday, June 26th, and Elliot Scientific will be there in **Hall B3, Booth 232**.

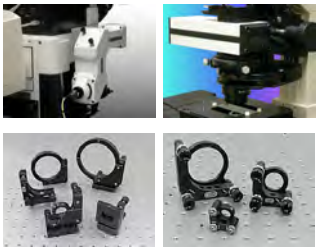
We will be showing our world-class systems and precision accessories that we are renowned for, giving visitors the chance to see and experience the quality of our products first hand.

Below we describe just some of the models from our broad portfolio...



Elliot|Martock *Gold Series* Flexure Stages - The *gold standard* in precision stages and forming the basis of many of our custom alignment rigs controlled by the **DALi 3**, these **piezo-driven** or manually adjusted systems offer unprecedented stability and flexibility in multiple axes, with some models offering positioning with 10 nm resolution.

Elliot|Martock high-resolution precision miniature slides - These will be on show so visitors can experience how these smooth small stages can improve their applications. With travels of 3, 5, and 10 mm, the positioners are available in a variety of axis configurations with numerous adjustment and accessory options.



Elliot Scientific Optical Tweezers are installed in universities and research institutions worldwide. Our E3500 system will be at the Show, which we will be **demonstrating live**. Most high quality commercial microscopes can be upgraded with an Elliot Scientific single or multiple beam trapping package, or we can supply a complete *out of the box* working system using a microscope of your choice.

Elliot Scientific high precision kinematic mounts are a superior range of mechanisms that bring much to the optical table. Available in left or right hand configurations, they are both imperial and metric compatible.

If you are not going to be in Munich from the 26th to the 29th but would like to know more about any of the products or services we offer, please **contact us**.

Elliot Scientific will be exhibiting at the following events later this month...

Photonex Scotland Roadshow

14th June 2017
University of Strathclyde

LASER World of Photonics

26th to 29th June 2017
Munich

Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

☎ +44 (0)1582 766300 | +44 (0)1582 766340 | ✉ sales@elliotscientific.com |

Elliot Scientific

solution science for research and industry

July 2017

Display colour, intensity and flicker measured with new instruments from Gamma Scientific

Gamma Scientific has just introduced two new instruments for display measurements. Both offer colour, intensity and flicker testing of all types of LED, LCD, OLED and Quantum Dot screens.

The GS-1160 is the touchscreen-equipped handheld version, while the GS-1160B is designed for the bench and operates in conjunction with PC-based analysis software. The GS-1160 can also be used as a desktop system as it is supported by the same software.

These **spectroradiometers**, to give them their proper name, deliver faster results with repeatability superior to filter-based instruments. Additional measurement capabilities include gamma, white balance and uniformity.

Data is output on both via USB, or can also be stored on an SD card in the GS-1160 portable model. The GS-1160B can be programmed for custom testing as it has an Application Programming Interface (API). Commands can be sent via RS-232 or the USB.

For detailed specifications and more information about these or other products Gamma Scientific manufacture, please **contact us**.

HOLOEYE's new PLUTO-2 can be a stand-alone system

HOLOEYE revealed a new enhanced electronics driver module for existing and forthcoming Spatial Light Modulator (SLM) panels at LASER World of Photonics.

The **PLUTO-2** features an HDMI interface for addressing phase functions, a USB connection for advanced calibrations, and a trigger sync output for synchronising with external devices - such as colour-switchable lasers. The driver's faster addressing speed allows for a colour-field-sequential (CFS) mode at 180 Hz input frame rate with the matching new PLUTO-2 SLMs and, as a bonus, also offers a more stable phase response.

The PLUTO-2 driver is equipped with a dual-core processor and on-chip memory, enabling user-programmed (Ubuntu™) additional functionality. For example, a slideshow of images can played back from a USB stick or internal memory without the need for a PC.

For more information about PLUTO-2 or other systems from HOLOEYE, please **contact us**.

Introducing FEMTO-30: a high pulse energy ultrafast laser with flexible repetition rates

FEMTO-30 in Munich

Fibercryst is the only manufacturer of short pulse lasers and amplifiers that utilise the innovative Single Crystal Fibre technology (SCF) - a technology that offers significant performance advantages over existing technologies.

The **FEMTO-30** is Fibercryst's latest and more powerful laser system. This 30 W laser can deliver pulse energies of 160 µJ (@ 100 kHz) in pulse widths of less than 800 fs, with repetition rates selectable between 100 kHz and 1 MHz.

A significant feature of this laser is the ability to easily and quickly change the repetition rate to favour the average power or the energy per pulse. This makes it ideal for:

- Cutting and drilling of hard materials
- Cold machining of polymers and composites
- Micromachining and structuring of surfaces, for example medical devices and semiconductors

For more information about this or other lasers and amplifiers from Fibercryst, please **contact us**.

NoIR adds new frame styles to the 40 series

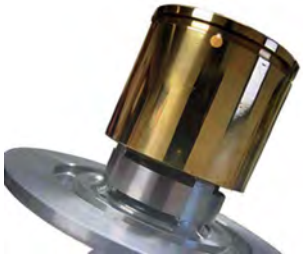
NoIR LaserShields has added 3 medium, 2 large, and 1 petite style to its already broad range. The new **frames** numbered from 41 to 45 accept all NoIR's polymer filters, while frame 46 can also be fitted with filters manufactured from glass.

NoIR have been manufacturing high-quality internationally-certified safety eyewear for the protection of laser users in a broad range of fields and applications for many years now. Their filters offer protection from:

- UV, Vis and IR lasers and other ultra-bright light sources
- Multiple waveband devices
- Therapeutic and cosmetic treatments
- Laser pens (For pilots and the emergency services)

Elliot Scientific is able to offer expert advice on selecting the best in cost-effective laser safety. So, if you are an academic, beautician or clinician, we can protect your eyes. **Contact us** with details of your laser or ultra-bright light source application and we will be happy to help.

Cryospectra add new 1 kW cooling capacity system to their cryorefrigerator range



CryoSpectra deliver the simplest way to bring cryogenic temperatures into a vacuum chamber through their uniquely designed cryorefrigeration systems. The high cooling capacity recirculating systems have been bolstered recently with the addition of many new models. The most recent being a 1 kW cooling capacity unit announced at LASER World of Photonics last month.

The CryoSpectra K Series of low acoustic noise cryorefrigerators are especially designed for work in the lab. The closed-loop cooling system ensures maintenance-free operation, while the super-compact cold head guarantees an ultra-low vibration (0.5 nm peak to peak) chilled surface for inside the vacuum chambers of high power lasers or similar systems.

Features

- High cooling capacity: Up to 1 kW
- Cool-down time: 20 to 30 minutes
- Compact cold head
- Practically vibration-free
- Low maintenance
- Quiet operation

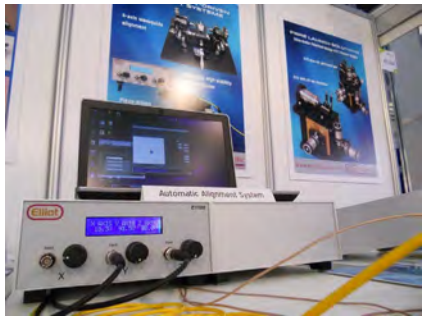
Applications

- Laser crystal cooling
- High power laser amplifiers
- CEP stabilised laser systems
- Ti:Sapphire amplifier systems
- Quantum Cascade Lasers
- Cryopumping

More than two dozen models deliver between 75 and 170 Kelvin, with each cryorefrigerator offering a particular cooling capacity dependent on compressor size and whether it is air or water-cooled. All types can be water-cooled, but only those operating at the higher temperatures of 130 and 170 K can be purchased as air-cooled units. For more information, please **contact us**.

LASER World of Photonics photos

The biennial **LASER World of Photonics** Exhibition and Conference took place at the end of June and Elliot Scientific was there along with over 1,200 other exhibitors and more than 32,000 visitors. In other words, there was an awful lot of laser and optics people in Munich!

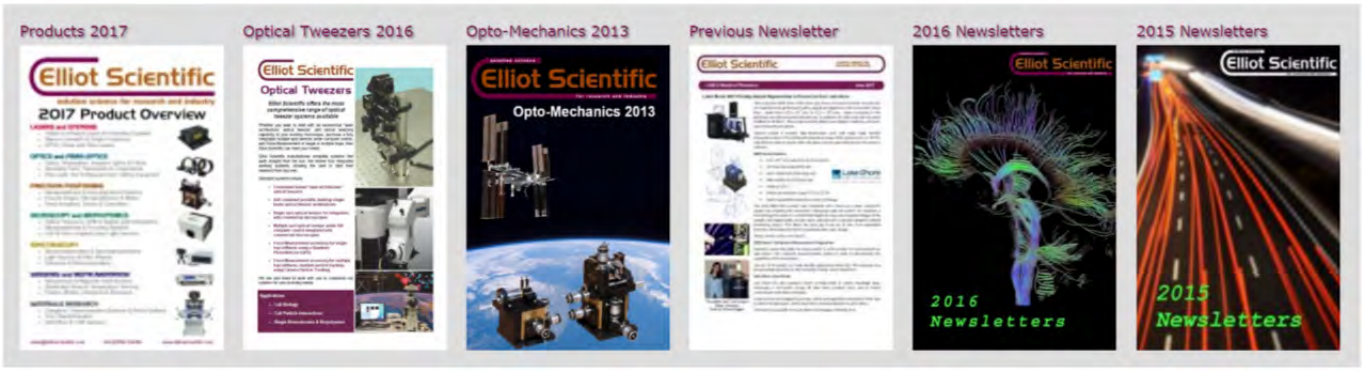


Elliot Scientific will be exhibiting at the following event next week...

19th IUPAB and 11th EBSA Congress

16th to 18th July 2017

Edinburgh International Conference Centre



Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

☎ +44 (0)1582 766300 | +44 (0)1582 766340 | ✉ sales@elliotscientific.com |

Elliot Scientific

solution science for research and industry

August 2017

HOLOEYE add new dieletric SLM, completing high power-handling UV, Vis, NIR line-up

HOLOEYE's **PLUTO** phase only Spatial Light Modulators (SLMs) are based on reflective LCOS microdisplays delivering 1920 x 1080 pixel resolution with an 8 µm pixel pitch. Newly developed dielectric mirror versions enable use with higher incident power lasers due to the coating's reduction of absorption. These are:

PLUTO-UV-043: 350 to 420 nm in the UV part of the spectrum with 90% reflectivity and >2.3π; phase retardation up to 405 nm

PLUTO-VIS-056: 450 to 650 nm with 93% reflectivity and 2.5π phase retardation at 530 nm, 2.1 at 633 nm

PLUTO-NIR-049: 1000 to 1100 nm with 93% reflectivity and 2π phase retardation up to 1064 nm

PLUTO is plug & play, offering fast full digital addressing, and can be programmed with phase functions via a standard graphics card as an extended monitor device using the supplied software. For more information about them or other **HOLOEYE products**, please **contact us**.

Top class vibration isolation and optical tables from Kinetic Systems, Inc.

Kinetic Systems has been in the vibration isolation and optical table market for nearly 50 years and is regarded as a world leader in the development and application of advanced low frequency vibration control systems that provide vibration-free work environments for sensitive equipment.

The company is a trusted and valued supplier to academic, industrial, OEM and government facilities worldwide.

- Optical tables & accessories
- Workstations
- Isolation legs
- Breadboards & Platforms
- Custom & OEM products

Elliot Scientific is able to offer expert advice on selecting the best in vibration control, so please **contact us** with details of your application and we will be happy to help.

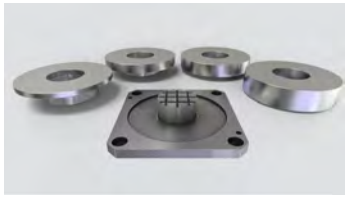
More modules for EXFO's LTB-8 Test Platform

EXFO has expanded the number of plug-in modules for their next-generation test platform, the **LTB-8**. This compact unit, equipped with an ultra-powerful processor and highly intuitive interface, gives the lab user an optimised instrument to run dedicated test applications simply and efficiently for technologies such as Ethernet, OTN, Fibre Channel, SONET/SDH and more. The current module range comprises:

- FTBx-1750 Power Meter Module
- FTBx-5245 Optical Spectrum Analyser
- FTBx-88x0 10G Multiservice module
- FTBx-88200 100G Multiservice module
- FTBx-9150 Optical Switch
- FTBx-9160 MEMS Optical Switch
- FTBx-9600 Utility Module

An upgrade path for existing users of the **IQS-600 modular test platform** has been mapped out by EXFO, enabling migration from the old to the new. For details and trade-in offers, please **contact us**.

Lake Shore Cryotronics unveils new Probe Station option kits



PS-RING-MAG-KIT

Lake Shore has introduced a novel sample holder that accepts special ring magnets to create four different vertical B field conditions at a sample's surface.

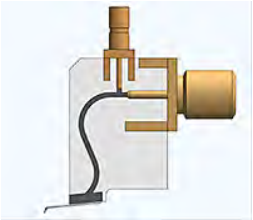
Compatible with the TTPX, CPX, CRX-4K and CRX-6.5 K **Probe Stations**†, the surface of each magnet sits 1 mm above the sample holder to provide nominal fields of 1900 G, 1770 G, 1440 G, and 850 G. Note that the space available for sample mounting is limited to a circle of 17.2 mm diameter.

Lake Shore has also introduced two parametric probe kits comprising special dual-connector probes and cables for C-V and Quasi-Kelvin measurements.

C-V Kit

The PS-PARAMETRIC-KIT-CV contains four ZN50R parametric probes each with dual connectors and specified probe tips*, one C-V cable, and two triaxial-BNC adaptors for repeatable wafer-level C-V and other impedance measurements.

C-V measurements can often be challenging due to the existing cable capacitance and errors resulting from *placement-dependent variation* in the measurement. In other words, moving the probe changes the connecting cable's impedance leading to a different measurement. These new probes alleviate this problem.



Quasi-Kelvin Kit

The PS-PARAMETRIC-KIT-QUASI-K option is optimised for low-resistance device measurements, in a similar fashion to a standard 4-wire measurement but accomplished using just two probes.

It also contains four ZN50R parametric probes, each with dual connectors and specified probe tips*, two Q-K cables, and two triaxial feedthroughs, but requires use of two probe arms to implement the 4-wire connection.

* Available probe tips are 10 µm or 25 µm tip radius in tungsten, and 5 µm in gold-coated tungsten. Replacement probes are available.

† The PS-RING-MAG-KIT is not compatible with the sub-4 K low temperature option.

For more information about these kits, please **contact us**.

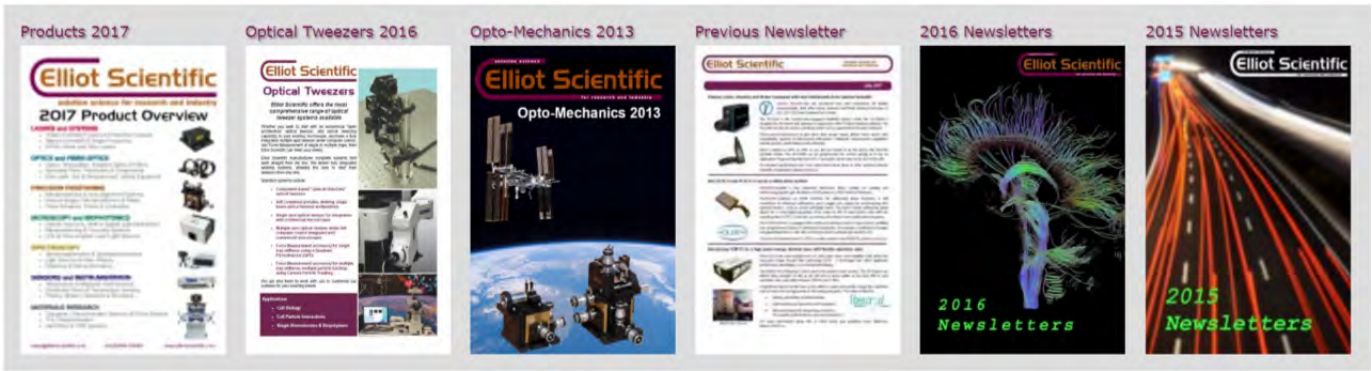
Elliot Scientific will be exhibiting at the following events next month...

QuAMP 2017

Hilton Glasgow Grosvenor Hotel: 5th and 6th September 2017

Photonics Ireland 2017

Radisson Blu Hotel, Galway: 13th to 15th September 2017



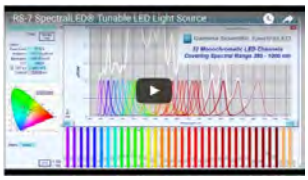
Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

Elliot Scientific

solution science for research and industry

September 2017

Gamma Scientific's tunable LED light source in webinar demo on September 12th



Video of software capabilities

Fibre-optic option

Gamma Scientific's **RS-7 SpectralLED™ Tunable LED Light Source** delivers superior spectral resolution and accuracy with higher brightness and a broader colour gamut than any other currently available halogen or LED-based source for camera and image sensor calibration.

The RS-7 features 35 discrete LED channels, each having 16-bit resolution in intensity settings enabling it to be programmed to produce a uniform output that closely matches virtually any illuminant source in a single compact and versatile instrument.

Gamma Scientific, in conjunction with ***Laser Focus World*** magazine, are delivering an exciting **Webinar** presentation **tomorrow** that will provide in-depth product information, typical applications, and visual demonstrations of the flexible software and production interface capabilities that give the SpectralLED so many advantages over traditional halogen and other LED light sources.

SpectralLED™ can sweep through wavelengths to simulate a scanning monochromator, but with the advantage of no moving parts. In addition to superior spectral resolution and accuracy, the SpectralLED™ also offers about 10x higher brightness than any competitive product. This allows measurements over a much larger, linear dynamic range, and is sufficient to illuminate virtually any detector at levels up to saturation.

Typical programmed SpectralLED™ output profiles:

- Blackbody
- Daylight
- Fluorescent
- LED & CIE

GAMMA SCIENTIFIC
Light Measurement Solutions

Register for the Webinar **here** or, for more information, **contact us**.

A-H enable precision metrology via capacitance measurement in a multitude of applications

Andeen-Hagerling has been manufacturing class-leading capacitance and capacitance/loss bridge test equipment for over thirty years. Their equipment is used in laboratories worldwide, in a wide variety of research and industrial applications. These include:

- Atomic Layer Deposition (ALD)
- Dielectric characterisation
- Glasses
- Spectroscopy
- Gravity
- Liquid crystals
- Magnetometry
- Low temperature physics
- Nano-force metrology
- Quantum Dots
- Tunneling
- Dilatometry:
  - Thermal expansion
  - Magnetostriction
- Biophysics
- Carbon nanotubes & nanowires
- Electrical/Capacitance metrology
- Ferroelectrics
- Semiconductor testing
- Precision positioning
- Pressure/Capacitive Bolometry
- Scanning Capacitance Microscopy (SCM)
- Scanning Tunneling Microscopy (STM)
- Single Electron Tunneling (SET)
- Structure & Phase transitions
- Superconductivity & Superfluids
- Magneto-capacitance, -resistance & -dielectric effects

Elliot Scientific is able to offer expert advice on selecting the right Andeen-Hagerling instrument for your project, so please **contact us** with details of the application and we will be happy to help.

Lake Shore's temperature sensor data is now online

Lake Shore is now offering all their temperature sensor information in one convenient online page. The new **Sensors' page** contains links to:

- Datasheets
- Installation instructions
- Application notes
- Catalogue pages
- Standard curve data
- Performance data
- Certifications
- **Calibration files**

Over the coming months, Lake Shore will migrate away from shipping calibration data CDs with calibrated sensors and will instead only offer this data via a portal accessible from the new page.

Lake Shore CRYOTRONICS ADVANCING SCIENCE

Data is currently available online for sensors shipped since the beginning of 2016, so if an existing CD is lost or damaged, the calibration data can be quickly downloaded providing you have the serial number of the relevant sensor on hand. Alternatively, contact Lake Shore Service for archived curves.

A diffraction limited circular beam is a µLS priority

µLS Micro Laser Systems

Micro Laser Systems (µLS) manufacture diode laser modules and instruments with an emphasis on optical packaging to provide diffraction limited, circular beams with low wavefront error and low divergence. Options allow for large collimated beams or sub-micron focused spots.

Among the products µLS offer are:

- Fibre-coupled lasers
- Wavelengths up to 1600 nm
- High performance diode lasers
- Fibre collimators & focusers
- Multimode fibre Receiver/Collector
- Free space lasers

Micro Laser Systems also produce diode laser drivers and TEC controllers in both bench-top and OEM versions so do please **contact us** for more details.

Elliot Scientific will be exhibiting at the following forthcoming events ...

PHOTONICS IRELAND

Photonics Ireland 2017

Radisson Blu Hotel, Galway: 13th to 15th September 2017

PHOTONEX UK'S PREMIER PHOTONICS EVENT

Photonex 2017

Ricoh Stadium, Coventry: 11th and 12th October 2017

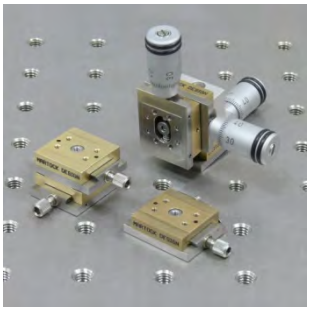
Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

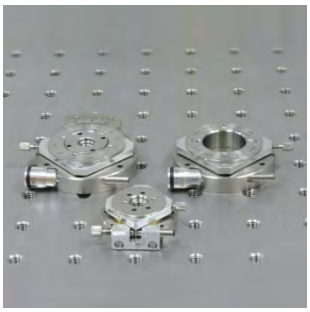
Elliot Scientific

solution science for research and industry

October 2017

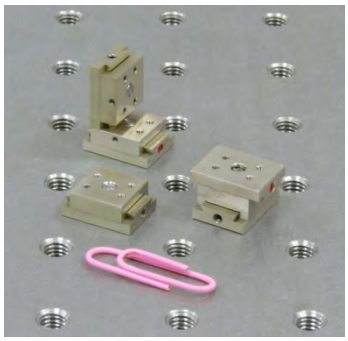
Elliot|Martock stages celebrate over 30 years of service to science





Elliot|Martock high-resolution (<0.5 µm) **precision miniature dovetail slides** have been popular with scientists and OEMs for nearly 40 years.

With a useful selection of Small, Very Small and Ultra Small models (with travels of 10, 5 and 3 mm respectively), the range satisfies many requirements for a stable and compact precision stage in both research and industry.



These market-leading micro-positioners offer single, dual and three axis configurations with a variety of adjustment options such as simple screws to precision micrometers.

Small or Very Small **rotary stages** with a variety of bore sizes complete the line-up.

Elliot Scientific also offers various adaptors and accessories - such as the **MDE270 tilting stage**- to complement the series and further enhance flexibility of use.

For more information, **contact us** or download the ***Small Stages Mini-catalogue***.

Elliot|Martock's **XYZ Flexure Stages** have been delivering high precision manipulation for over three decades. Applications range from fibre launch systems for single-mode, multimode and polarisation maintaining fibres as well as waveguide alignment, through to the manipulation of microstructures in bioscience and colloid studies.

One of the main reasons this range of stages has remained popular is that the arcuate displacement - the vertical movement due to longitudinal flexure motion - is many times better than competing products.

With a broad choice of interchangeable adjusters, some offering nanometre resolutions, the versatile Elliot|Martock XYZ Flexure Stage has proven to be the one of choice for many researchers around the globe. Thousands have been manufactured by Elliot Scientific over the years and, such is their reputation for their solid and reliable action, labs hang on to them as one would a treasured heirloom.

For more information, **contact us**, have a look at our **Flexure Stages Mini-catalogue**, or visit the **product pages**.

Elliot Scientific will be exhibiting this week at...

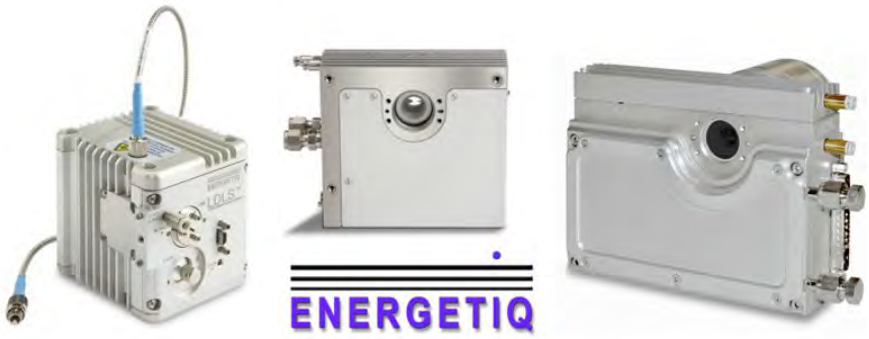
Photonex

Ricoh Stadium, Coventry
11th and 12th October 2017
Stand B10

As usual, our team of engineers and scientists will be on hand to discuss our ***Solution Science*** capabilities: We have decades of experience between us and will assist you with any application-specific requirements. So visit **Stand B10** at Photonex in Coventry this week and discover how the equipment, systems, and instruments we offer – some of which feature below - support the UK and Ireland's scientific, research and industrial communities.

Energetiq Technologies make the revolutionary **Laser Driven Light Source**.

These single lamp LDLS™ systems enable extreme high brightness over a broad spectral range - from 170 nm through to visible and beyond - and deliver lifetimes much longer than typical multi-lamp set-ups.



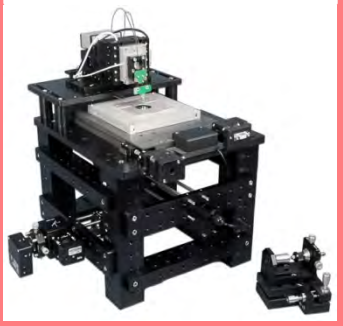
Vescent Photonics offer technologies for research into coherent atom sources, gravitometry and magnetometry sensors, the laser-cooling of atoms - Magneto-Optical Traps (MOTs), focused ion beams, ultrasensitive trace-isotope analysis, and quantum computing and cryptography.

For more information about any of these products, please **contact us** or visit us at Photonex.

HOLOEYE Photonics develops active Spatial Light Modulators [SLMs] and microdisplays for scientific and industrial applications.

HOLOEYE SLMs are offered for a number of different spectral bands in the UV, visible and NIR, and in resolutions up to Ultra HDTV 4k.

Mad City Labs is a leading manufacturer of multi-axis nanopositioning stage systems based on a flexure design that is capable of sub-nm positioning resolution for high speed microscopy imaging.



Prizmatix specialises in ultra high-power LED illumination systems for for fluorescence and optogenetics studies, microscopy, and other bioscience, neuroscience, chemistry, physics, neurobiology or biochemistry applications.

Prizmatix LED illumination systems are also ideal for use in industry. For example semiconductor inspection, UV curing, or materials analysis are all areas that would benefit from these solid-state light sources.

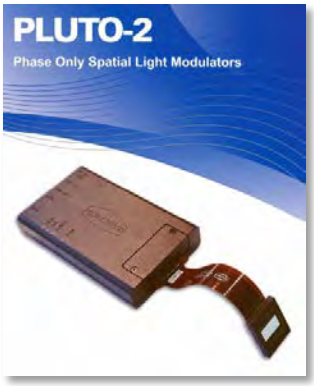
Blog LinkedIn Twitter Facebook Issuu YouTube Channel

Elliot Scientific

solution science for research and industry

November 2017

HOLOEYE's new SLM driver now standard across the PLUTO and other ranges



Selected panels feature

- Dielectric mirror coating
- High Retardance (HR)
- Fast response times
- Low phase flicker
- High phase shift

HOLOEYE

HOLOEYE's new enhanced electronics driver module is now being supplied with all PLUTO Spatial Light Modulator (SLM) panels and other models such as **LETO**.

Version	Wavelength (nm)	Refl. (%)	Phase Shift (Max @ nm)	Notes
-UV-043	350-420	90	2.8π @ 355	Dielectric Mirror
-VIS-014	420-650	65	3.9π @ 530	Fast Response
-VIS-016	420-650	67	6.7π @ 530	HR/Low Phase Flicker
-VIS-020	530-640	75-80	8.2π @ 530	High Phase Shift
-VIS-056	450-650	93-95	2.5π @ 530	Dielectric Mirror
-NIR-011	420-1100	65-75	4.5π @ 530	Broadband/Fast Response
-NIR-015	650-1100	65-73	4.4π @ 850	HR/Low Phase Flicker
-NIR-002	1000-1100	62	2π @ 1064	
-NIR-049	1000-1100	93	2π @ 1064	Dielectric Mirror
-NIRO-023	1000-1400	74	4.1π @ 1400	
-TELCO-013	1400-1700	80	3.5π @ 1550	

The **PLUTO-2** is equipped with a dual-core processor, on-chip memory and features an HDMI interface for addressing phase functions, a USB connection for advanced calibrations, and a trigger sync output for synchronising with external devices - such as colour-switchable lasers. The driver's faster addressing speed allows for a colour-field-sequential (CFS) mode at 180 Hz input frame rate with the matching new PLUTO-2 SLMs and, as a bonus, also offers a more stable phase response.

For more info regarding PLUTO-2 or other systems from HOLOEYE, please **contact us**.

For high-quality affordable fibre optic components, choose OZ Optics

OZ Optics is a leading fibre optic supplier with an outstanding reputation as a manufacturer of affordable high-quality components for use in telecoms, industry, medicine and the lab. How?

OZ Optics patented a technology for aligning fibres to better than 0.1 µm resolution without using expensive high precision machining.

Typical products Elliot Scientific supplies include:

- Focusers
- Combiners
- Connectors
- Patchcords
- Collimators
- Attenuators
- Beamsplitters
- Fused splitters
- Vacuum feedthroughs
- Inline Optical Taps
- Polarisation rotators
- Polarisation maintaining connectors

OZ Optics

Contact us for details

EXFO reveals new benchtop T&M instruments for the optical communications lab

EXFO offer a comprehensive range of benchtop and portable test instruments, delivering top performance and pinpoint accuracy for the optical communications laboratory. The range has recently been expanded with the addition of several new instruments:

OSA High Performance Optical Spectrum Analyser

- Wavelength range of 1250-1700 nm
- Resolution: 20 pm (native) & adjustable over 50-2000 pm
- Sweep speed up to 2000 nm/s
- Accuracy: ±10 pm over 1500-1640 nm & ±25 pm over 1250-1700 nm
- Power level accuracy of ±0.4 dB
- Built-in calibration source
- Intuitive user interface with 12" touchscreen
- 8 application-oriented analysis modes and a full suite of analysis tools

OSA

XT Series Automatic/Manual Tuneable Filters with Fixed or Adjustable Bandwidth

XTA-50 / XFA

XTM-50

- Adjustable bandwidth flat-top filter
- Ultra-sharp filter edges
- High isolation
- 200 nm wavelength range
- High accuracy and repeatability
- Narrowest filter - highest selectivity
- Three models: Standard, Ultrafine & Wide
- Manual (XTM-50) & Fixed Bandwidth (XFA) versions also available

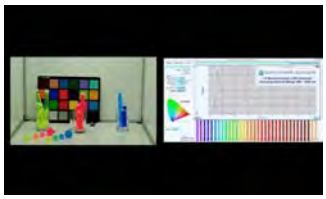
T100S-HP High Power Tuneable Laser Source

- Power > +10 dBm for Essential & > +8 dBm for Extended Range models
- Dynamic range of 100 dB & tuning range of up to 200 nm
- 6 models cover 1240 to 1680 nm
- Wavelength accuracy < ± 20 pm
- Sweeping & Stepping operations

T100S-HP

For more information about **these** or other **EXFO** products we offer, please **contact us**.

Gamma Scientific's latest SpectralLED® demo video now on YouTube



Gamma Scientific have uploaded a short video to YouTube that shows how the SpectralLED® renders colour in real time by using a side-by-side screenshot of its software and the results on a light booth set-up

The **video** shows how the **SpectralLED®** can sweep through wavelengths to simulate a scanning monochromator courtesy of 32 discrete LEDs to produce a subtle or bright output that can closely match virtually any illuminant source.

For more information about the SpectralLED® or other light sources from Gamma Scientific, please **contact us**.

Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

Elliot Scientific

solution science for research and industry

December 2017

Economic laser trapping with Elliot Scientific Optical Tweezers

Optical Tweezers have been around for a long time. Over 40 years have passed since Arthur Ashkin and his colleagues described the single-beam gradient force trap and sparked a realisation in many scientists that this novel instrument would be a powerful tool for use in the course of their research. However, the costs and complexities of building Optical Tweezers were often prohibitive.

With the development of easy to use 'straight out of the box' systems by Elliot Scientific, Optical Tweezers have come down from the heights of esoteric research and can be found in many labs around the world. Real experiments carried out in one such lab can be found **here**.

Download our **Optical Tweezers Brochure**. It describes all the systems we offer; from open architecture kits to complete computer-controlled multiple spot trapping systems with force detection and more, or **contact us** to discuss details.

The NOMAD-Touch temperature measurement system is a hot performer from Neoptix

NOMAD-Touch: A single-channel fibre-optic thermometer offers impressive versatility from a rechargeable touchscreen device.

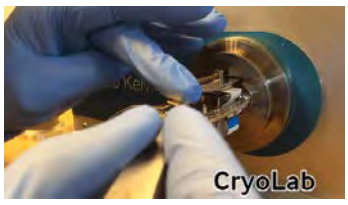
This single-channel fibre-optic thermometer allows you to freely move from one area to another to measure temperatures between -80 and 250 °C.

Critical sensing points in medical, microwave, radio frequency, high voltage, aerospace and military applications can benefit from the 0.1 °C resolution the NOMAD-Touch offers.

NOMAD-Touch™ is perfect wherever you need immunity to electromagnetic fields, where conventional metallic sensors cannot be used. Please **contact us** for more information.

neoptix
FIBER OPTIC TEMPERATURE SENSORS

Using CryoLab to measure Seebeck coefficients: Video from DEMCON kryoz explains



DEMCON | kryoz

The Seebeck effect is the direct conversion of temperature differences to electric voltage and vice versa. A thermoelectric device creates voltage when there is a different temperature on each side. Conversely, when a voltage is applied to it, it creates a temperature difference.

By using the **CryoLab from DEMCON kryoz**, it is possible to measure the Seebeck coefficient of a material sample, wire or thin film from 373 Kelvin down to cryogenic temperatures. In this informative **video**, DEMCON kryoz demonstrate how such measurements are made using their equipment. For more information, please **contact us**

Superior pitch adjuster screw sets from Kozak Micro are perfectly matched

KMA KOZAK MICRO ADJUSTERS

Kozak Micro manufactures super-smooth adjustment screw sets with threads as fine as **508 TPI (0.05 mm pitch)**. Available through Elliot Scientific in the UK and Ireland, these adjusters can be purchased in single or OEM quantities.

Proprietary manufacturing on a variety of customised machine tools enables Kozak Micro to produce adjusters in a range of pitches that are superior to industry standards.

Elliot Scientific offers 6 imperial and 4 metric thread pitch ranges of matched-set micropositioning adjustment screws and unbraked bushings that deliver the highest precision and smoothest movement by far for the most demanding of applications. Please **contact us** for more information.

Winter Holiday Schedule

Elliot Scientific's offices will be closed from end of business on:

❄ **Friday, December 22nd. 2017**

We re-open at 08:30 GMT on:

❄ **Tuesday, January 2nd. 2018**

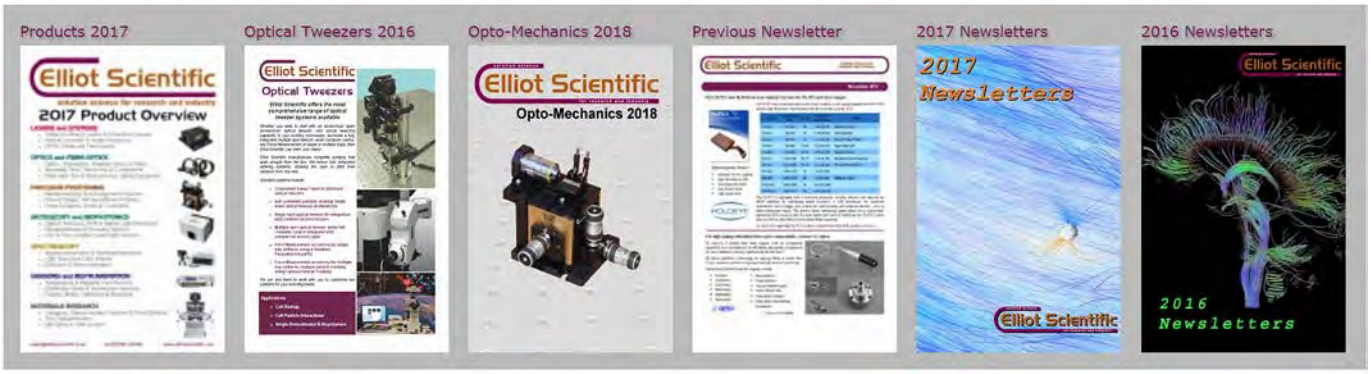
Photo courtesy of Jill Wellington

Next month, meet Elliot Scientific at...

SPIE. PHOTONICS WEST

Photonics West

30th January to 1st February 2018
Booth #4953, Moscone Center, San Francisco



Blog | LinkedIn | Twitter | Facebook | Issuu | YouTube Channel

☎ +44 (0)1582 766300 | +44 (0)1582 766340 | ✉ sales@elliotscientific.com |

International Distributors

Europe & Middle East

France

Optoprim
21-23 rue Aristide Briand
92170 Vanves

Tel: +33 (0)141 90 61 80
Fax: +33 (0)141 90 61 89
Web: www.optoprim.com
Email: info@optoprim.com

Opton Laser International
Parc Club Orsay Université
29, rue Jean Rostand
91893 Orsay Cedex

Tel: +33 (0)169 41 04 05
Fax: +33 (0)169 41 32 90
Web: www.optonlaser.com
Email: ventes@optonlaser.com

Germany

Mountain Photonics GmbH
Albert-Einstein-Str. 18
D-86899 Landsberg am Lech

Tel: +49 0 8191 985199 0
Fax: +49 0 8191 985199 99
Web: www.mphotonics.de
Email: info@mphotonics.de

Israel

Rosh Electroptics
P.O.B 2667
Netanya 4212601

Tel: +972 9862 7401
Fax: +972 9861 6185
Web: www.roshelop.co.il
Email: info@roshelop.co.il

Italy

dB Electronic Instruments S.r.l.
Via Teano, 2
20161 Milano

Tel: +39 02 64 69 341
Fax: +39 02 64 56 632
Web: www.db-electronic.it
Email: sales@dblaser.it

Scandinavia / Nordic

AMS Technologies Nordic (Azpect Photonics AB)
Aminogatan 34
SE43153 Mölndal
Sweden

Tel: + 46 (0)8 55 44 24 80
Fax: + 46 (0)8 55 44 24 99
Web: www.amstechnologies.com/azpect
Email: info@amstechnologies.com

Spain

Laser Technology S.L
Calle Mestral, 1 - 13, Local 8
08340 Vilassar de Mar
Barcelona

Tel: +34 93 750 0121
Tel: +34 93 750 0323
Web: www.laser-technology.com
Email: info@laser-technology.com

Switzerland

GMP SA Laser and Photonics
Av. des Baumettes 17
CH 1020 Renens/Lausanne

Tel: +41 21 633 21 21
Fax: +41 21 633 21 29
Web: www.gmp.ch
Email: info@gmp.ch

North America

USA

Lightspeed Technologies Inc.
P.O. Box 110161
Campbell
CA 95011-0161

Tel: +1 408 761 0062
Fax: +1 408 378 3629
Web: www.light-speed-tech.com
Email: sales@light-speed-tech.com

Asia

China — *Standard Components*

ETSC Technologies
14 / F, Block B4, Overseas Talent Building
Wuhan Science and Technology City
999, High-tech Avenue, Donghu Development Zone
Wuhan City
Hubei

Tel: +86 27 87807177
Fax: +86 27 87807133
Web: www.etsc-tech.com
Email: huiwinw@etsc-tech.com

China — *Optical Tweezers*

Worldwide Technology (S.H) Co.,Ltd.
WAD (H.K) Co.,Ltd.
Room 1026, Area B, Wisdom Bay Creative Garden
No.6, Chuan Chuan Road
Baoshan District
Shanghai

Tel: +86 21 66621556/7/8/9
Fax: +86 21 66621556/7/8/9*8048
Web: www.worldwide-china.com
Email: sales@worldwide-china.com

India

Aimil Ltd.
Naimex House
A-8, Mohan Cooperative Industrial Estate
Mathura Road
New Delhi - 110 044

Tel: +91 11 30810200
Fax: +91 11 26950011
Web: www.aimil.com
Email: info@aimil.com

Japan

Autex Inc.
Takasago Bld 4F
16-5 Tomihisa-Cho
Shinjuku-Ku
Tokyo
162-0067

Tel: +81 3 3226 6321
Fax: +81 3 3226 6290
Web: www.autex-inc.co.jp
Email: sales31@autex-inc.co.jp

Korea

MMT Co., Ltd (Micro Motion Technology)
173-282, Gajwa-Dong
Seo-Gu
Incheon
404-250

Tel: +82 32 710 8800
Fax: +82 32 710 8810
Web: www.micromt.com
Email: mmt@micromt.com

Singapore

Precision Technologies Pte Ltd
211 Henderson Road
#13-02 Henderson Industrial Park
159552

Tel: +65 6273 4573
Fax: +65 6273 8898
Web: www.pretech.com.sg
Email: comms2@pretech.com.sg

Taiwan

Unice E-O Service Inc.
No.5, Andong Road
Chung Li Industrial Park
Chung Li City
Taoyuan County 32063

Tel: +886 3 462 6569
Fax: +886 3 462 5586
Web: www.unice.com.tw
Email: unicehq@unice.com.tw

Issued: October 2017