pacer
advancing technology

Laser, Spectrometer AND OPTICAL SOLUTIONS

LASERS AND LIGHT SOURCES

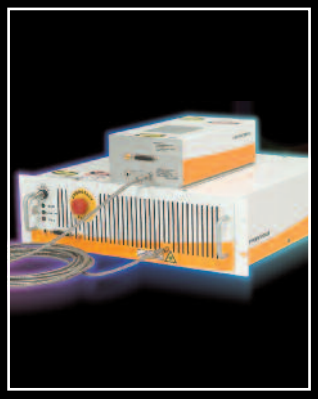
SPECTROMETERS

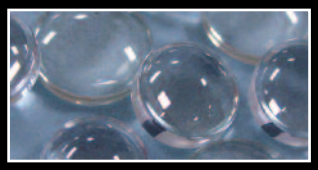
OPTICAL DETECTORS

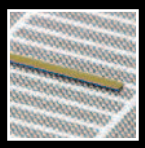
LENSES AND COLLIMATORS

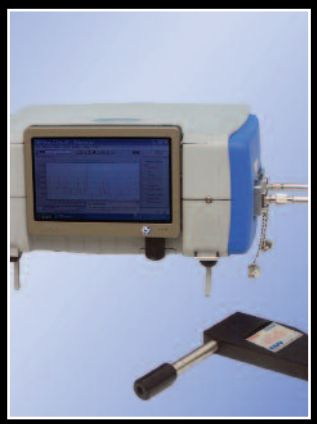
AOTF AND CUSTOM SOLUTIONS

MANUFACTURER INDEX









Pacer has provided laser systems, laser components and spectroscopy solutions for industrial and research applications for over 20 years. We have developed a comprehensive range of photonic products, and can offer a wealth of experience in selecting the best solution for your application.

Pacer also offers a number of products which are not featured in this brochure, including telecom products, optical fibres, contact image sensors, cameras and vision systems, LEDs, sensors and displays. Visit **www.pacer.co.uk** for more details

www.pacer.co.uk
Tel: +44 (0) 118 9845280

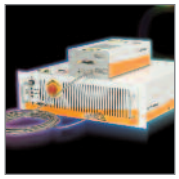
Lasers and Light Sources

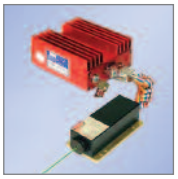
If you are integrating a laser or a light source into an industrial, medical or measurement system, choosing the right type of source is crucial. Our wide range of lasers, sources and components enables many applications to be optimised for specific requirements.

The continuous drive to increase the brightness of high power diode lasers is leading to their increasing use in many applications, in some cases replacing traditional lasers such as carbon dioxide and Nd:YAG. Diode lasers can enable easier management of power and thermal constraints. Low to mid power CO_2 lasers offer proven solutions for biological, medical and measurement applications.

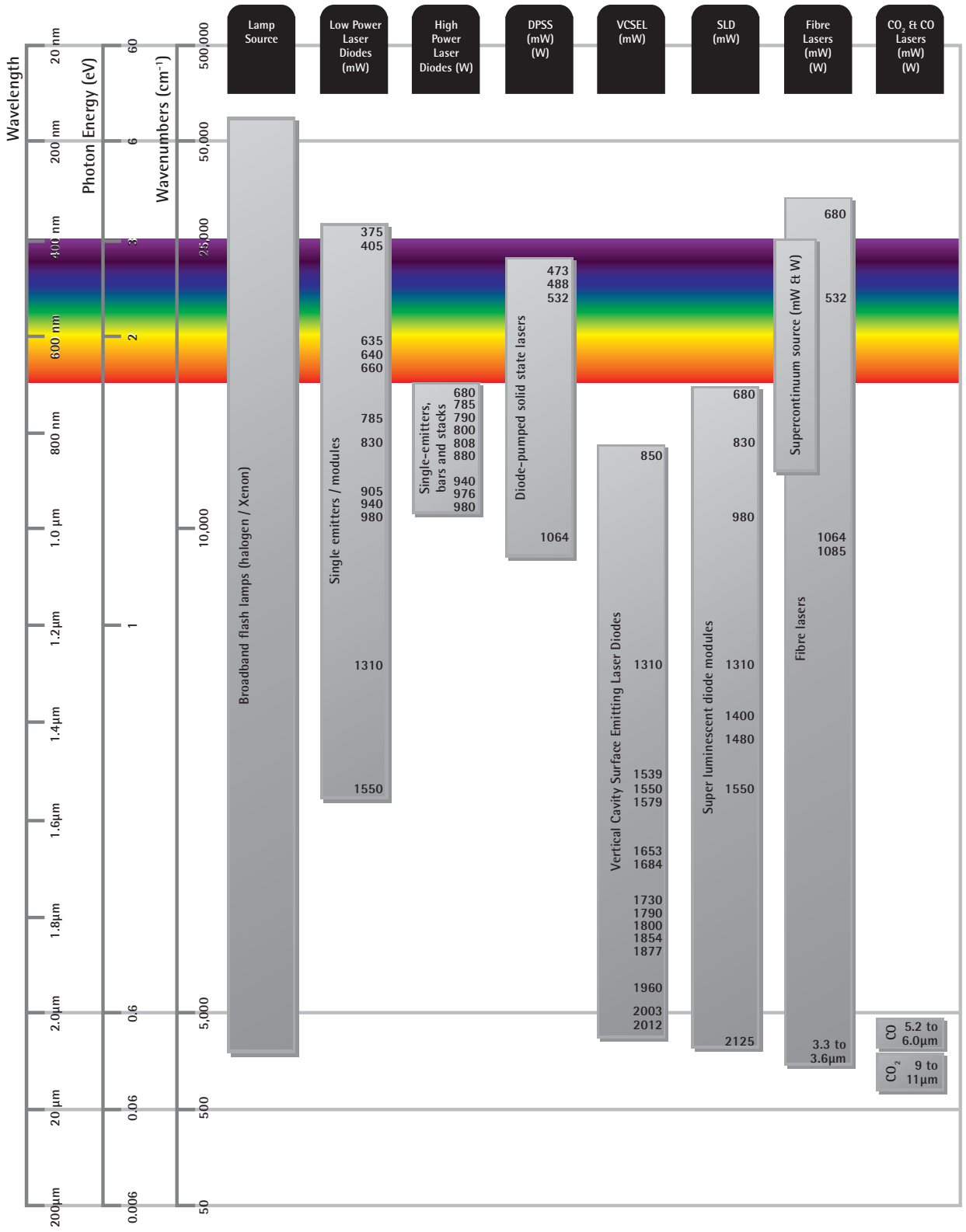
The latest fibre laser technology enables short pulses with controllable parameters (width, shape, and number) - flexibility which allows the laser to be tailored to specific applications. Supercontinuum sources and tuneable filters are also giving enhanced flexibility to many applications.

Our range of laser systems, components and light sources is shown opposite. Advances in new technology are continuously changing the availability and range of these products - please contact us to see if we have a product to suit your requirements.





Lasers and Light Sources

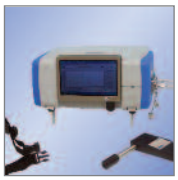


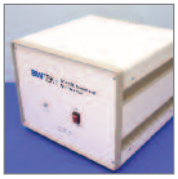
Spectrometers

Pacer offers standalone spectroscopy solutions, ready to use with software included. Alternatively, select from a range of modular spectrometers, laser modules and light sources to build your own system.

We offer a range of spectrometers with UV, visible, NIR and IR response detectors. These can be configured for transmission, reflection, absorption and emission collection regimes. The high sensitivity of these devices has also enabled low cost, portable Raman spectroscopy systems that can be used for molecular characterisation and identification in areas such as pharmaceuticals, chemical engineering, forensics, materials characterisation, biomaterials, polymers, gemmology and process monitoring.

Features include low stray light/ high dynamic range, TE-cooling, high stability, low dark counts and multiple detector technologies. OEM custom configurations are available on request.

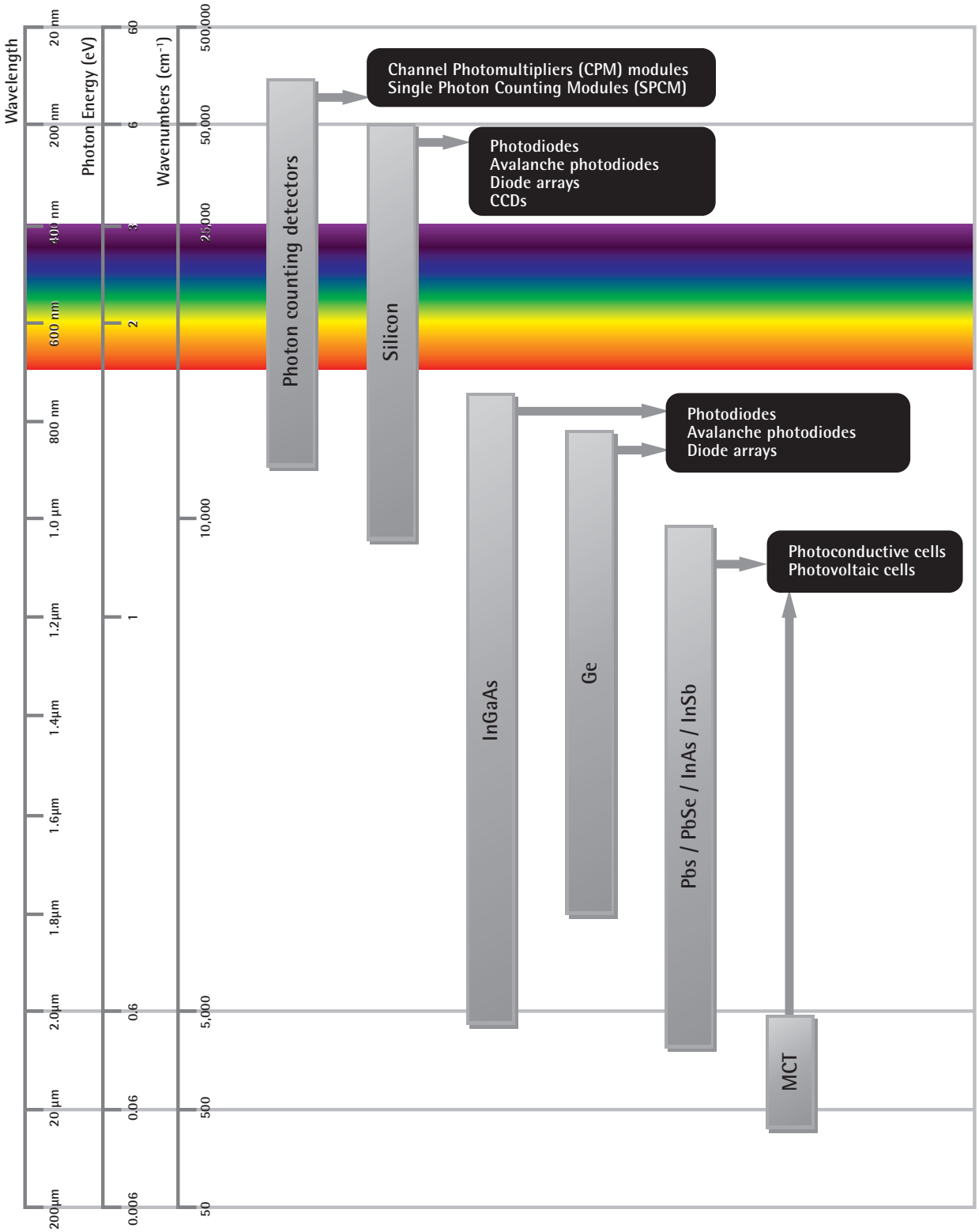






Product	Description	Key Features	Part Number
MiniRam™	Miniature Portable Raman Spectrometer System	175-3200cm^{-1} Raman shift range; 10cm^{-1} resolution; 532nm and 785nm excitation wavelength options	BTR111/112
MiniRam II ™	Miniature Field Portable Raman Spectrometer System	175-3200cm^{-1} Raman shift range; 10cm^{-1} resolution; 532nm and 785nm excitation wavelength options	BTR113
i-Raman™	Portable Desktop Raman Spectrometer System	175-3200cm^{-1} Raman shift range; 5cm^{-1} resolution; 532nm, 785nm and other excitation wavelength options	BWS415
i-Spec™	Portable Broadband Spectrophotometer	190-2200nm	BWS003/004 BWS005/010
i-Trometer™	Back-thinned CCD Spectrometer	High UV/Vis/NIR response	BRC641E
BRC	CCD Array Spectrometers	Configurations in 200-1050nm	BRC110E/112E
BRC	PDA Spectrometers	UV, Vis, NIR	BRC711E/741E
BTC	TE Cooled CCD Spectrometers	UV, Vis, NIR and custom	BTC112E/150E/161E
BTC	TE Cooled CCD Array Spectrometers	UV, Vis, NIR and custom	BTC311E/611E
BTC	TE Cooled InGaAs/PbS Array Spectrometers	NIR 920-2900nm	BTC261E/262E/500E
MiniFluo	Compact Array Spectrofluorometer	250-850nm	BTF113

Optical Detectors

Pacer offers a wide range of optical detectors that cover the deep UV, visible, NIR and IR range. Various technologies and packaging formats are available to suit many of today's requirements.



Lenses and Collimators

Lenses

For today's sophisticated and compact laser systems, aspheres are the most powerful lenses for managing laser light and counteracting the effects of spherical aberration. Breakthrough precision glass molding technology from LightPath enables cost-effective production of aspheric optics.

LightPath's range includes exclusive high numerical aperture, large beam diameter lenses plus lenses designed specifically to collimate light from MWIR and LWIR lasers, such as Quantum Cascade Lasers (QCL).

Aspheric Lens Selection Guide

Numerical Aperture (NA)	Focal Length (mm) 0-2	2-4	4-6	6-10	10-20
0.10-0.19			350430 370940	350430	350260 350280 350560
0.20-0.29					352220
0.30-0.39	370890			350170 352A375	352A397
0.40-0.49			350350 350022		352110
0.50-0.59	350710 350140 350620	350150 350160 350080	350230 350782 352105 352A390	352115 352240	352125
0.60-0.69	370060 370880 370930	350660 350570 350390 350330	350610 352671 350340		
0.70-0.79					
0.80-0.89	370840 370920				

Collimators

LightPath collimators are a fundamental element of any optical network where high coupling efficiency is required in and out of an optical fibre. The more energy the collimator can launch into or out of the fibre end, the stronger the signal strength and the higher the system efficiency. LightPath's fused fibre technology and use of aspheric lenses has maximised the performance of these collimators. The LightPath collimator range is shown below.

Collimator Range	Description	Wavelengths
High Power Fusion™ Fibre Collimators	Patented fibre fusion technology enables use at very high power, designed for single mode applications up to 100W, utilises Gradium ® lens technology	1550nm, 1064nm
Isobeam Fusion™ Fibre Collimators	Integrated isolator for protection of marking fibre lasers, high power qualified (up to 30W)	1064nm
Connectorised Aspheric Fibre Optic Collimators	Fibre connector interface for quick assembly, threaded exterior for easy mounting	543nm, 780nm, 1310nm, 1550nm
Small Beam Collimators	Aspheric lens profile, fibre laser fused directly to lens, small form factor	1310nm, 1550nm

AOTF and Custom Solutions

Acousto Optic Tuneable Filters (AOTF)

Pacer offers the Brimrose range of UV-VIS-IR filters and deflectors to suit various requirements of high speed, high bandwidth, high resolution or multichannel devices.

Acousto optic devices are used in laser equipment for electronic control of the intensity and position of the laser beam or wavelength selectivity for filter applications.

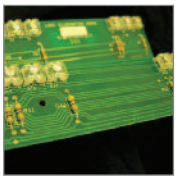
Product Range	Description
AO Tuneable Filters	Solid-state electronically tunable spectral bandpass filter, no moving parts, capable of accessing thousands of precise wavelengths in <1s
AO Modulators	Focusing lens, A-O device positioners and a recollimating lens in an optical module
AO Frequency Shifters	The diffracted beam of the AOM and AOD is also shifted in frequency (wavelength) by the acoustic beam
AO Mode Lockers	Use mode-locking or phase-locking process to connect the longitudinal modes by fixing the relative phase differences
AO Q-Switches	Variable cavity loss laser providing very intense pulse – highest conversion efficiency of RF energy into acoustic energy
AO Deflectors	Changes the angle of direction of a laser beam
AO Cavity Dumpers	Dumps laser energy from resonant cavity in form of single optical pulse

Custom Solutions

Sometimes there are no standard components or systems available which meet all of your design needs - you may want to add optical elements, lenses or apertures, or you may need a completely self-contained subsystem. In-house implementation of such projects may be expensive and not central to your key business.

Outsourcing to Pacer can free you from this diversion. We can add additional optical, mechanical or electronic architecture to standard components or systems.

Pacer's dedicated design centre enables us to provide modifications, higher level developments or complete custom solutions to your specification. This can be as simple as providing components in an alternative package, as extensive as providing production quantities of a complete box build ready for sale to your customer, or somewhere in between depending on your exact requirements. Contact us to explore how we can help with your projects.



Manufacturer Matrix

	Displays	Optics and Acousto Optics	Optical Fibre Products	Telecom Products	Lasers	LEDs	Flashlamps	Detectors	Sensors	Cameras and Vision Systems	Spectrometers	Photonic Instruments and Speciality Products
Access Laser					■							
AFE			■									
Alfalight					■							
Auxora				■								
B&WTek					■						■	
Brimrose		■										
Coherent					■							
CorActive			■									
Corelase					■							
DMC	■											
EDT	■											
Enfis						■						
Epitex						■						
FiberTech			■									
Hanvision										■		
ITF Laboratories			■									
Judson								■		■		
Knowledge on						■						
Kodenshi						■		■	■			
LightPath		■	■									
Mitsubishi Electric				■	■							
Next Window	■											
Orient Display	■											
PACER	■											
PerkinElmer					■	■	■	■	■	■	■	■
Planar	■											
Pyrophotonics					■							
Qioptiq		■										
RMD								■				
Rohm					■	■						
RPMC					■							
Samsung	■											
Sanyo	■											
TAOS								■	■			
Tichawa										■		
TT Optek				■	■	■		■	■			
Varitronix	■											
Vertilas					■							
Winmate	■											
Zytronic	■											

Pacer International is a specialist supplier of optoelectronic, display and laser solutions. We offer a wide range of opto components, sensors, detectors, laser components and systems, information displays, optics and acousto optics, cameras and spectrometers. As well as sourcing standard components, we offer custom displays and assemblies, and design and build services if you are seeking a complete outsourced solution.

Pacer has headquarters in Newbury, Berkshire, plus additional UK sites at Pangbourne and Crawley. The Pacer Design Centre is located in Weymouth. The headquarters of Pacer USA LLC is in North Palm Beach, Florida, and Pacer has a worldwide network of manufacturing partners.

Pacer International Ltd, 19-20 Kingfisher Court, Newbury, Berkshire RG14 5SJ
UK Tel: +44 (0) 118 9845280 Email: info@pacer.co.uk Fax: +44 (0) 118 9845425
USA Tel: 866 375 6652 Email: usa.sales@pacer-usa.com Fax: 215 689 3440

pacer advancing technology

www.pacer.co.uk

Revision 1, August 2008