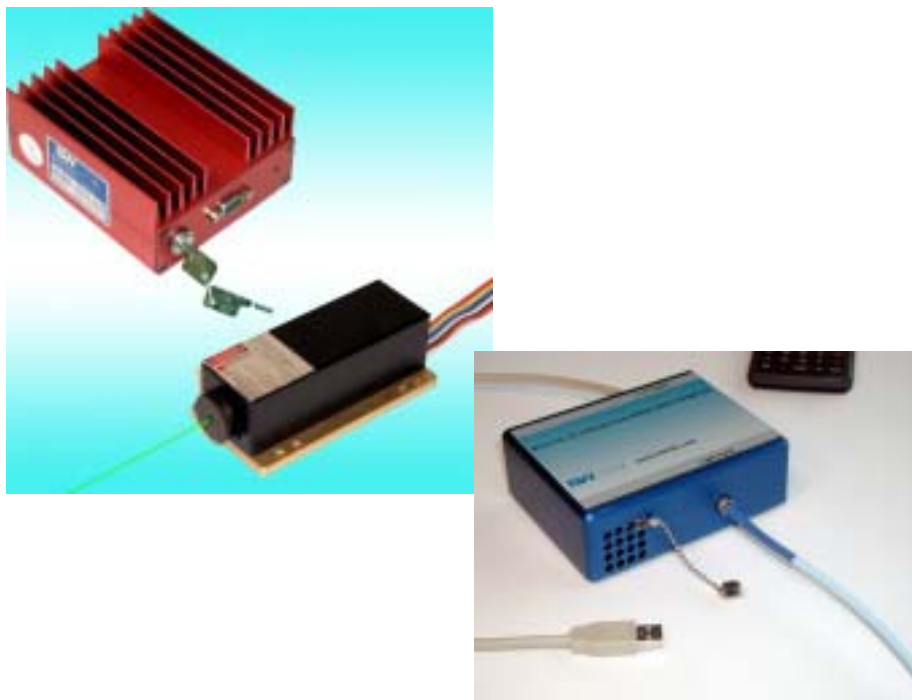


SHORT FORM CATALOG



Lasers and Spectrometers
for all your application needs

Table of Contents

BWC-ASE WHITE LIGHT TEST SOURCE	4
BWC-SLD BROADBAND TEST SOURCE	4
BWA FIBER COUPLED HIGH POWER LASER DIODE ARRAY	5
BWK - PIGTAILED HIGH POWER LASER DIODE	5
BWKM PIGTAILED LASER DIODE	5
BWC-M MULTICHANNEL LASER LIGHT SOURCE	6
BWC-CWDM MULTICHANNEL LASER TEST SOURCE	6
BWC-FL FIBER LASER AND RAMAN FIBER LASER	7
BWC-FL-OEM FIBER LASER AND RAMAN FIBER LASER MODULE	7
BWC-FLP PULSED FIBER LASER	7
BWC-EDFA-E BENCH TOP ERBIUM DOPED FIBER AMPLIFIER	8
BTC112E TE COOLED LINEAR CCD SPECTROMETER(USB 2.0/1.1)	9
BTC110E TE COOLED LINEAR CCD SPECTROMETER (RS232)	9
BTC110 OEM TE COOLED LINEAR CCD SPECTROMETER MODULE (RS232 OR USB)	9
BTC211E TE COOLED LINEAR INGAAS ARRAY SPECTROMETER (USB)	10
BTC31XE HIGH RESOLUTION TE COOLED LINEAR CCD SPECTROMETER	10
BTC500E TE COOLED LINEAR PBS ARRAY SPECTROMETER (USB)	10
BRC711E FIBER COUPLED NIR ENHANCED PDA ARRAY SPECTROMETER.....	11
BRM-785 NARROW LINEWIDTH FIBER COUPLED LASER.....	11
SYSTEM AND ACCESSORY OPTIONS	11
BPS100 PHOTO INTENSITY FEEDBACK CONTROLLED TUNGSTEN LIGHT SOURCE	12
BDS100 UV/VIS AND NIR DEUTERIUM/ TUNGSTEN LIGHT SOURCE	12
BDS130 UV/VIS AND NIR DEUTERIUM/ TUNGSTEN LIGHT SOURCE	12
BCH100/BFH105 FIBER COUPLED CUVETTE/FILTER SAMPLE HOLDER	13
BRP FIBER REFLECTANCE PROBE	13
FPC SERIES FIBER PATCH CORD	13
BRP FIBER OPTIC RAMAN PROBE	14
BWB SERIES LOW NOISE VIOLET/BLUE LASER	15
BWN SERIES LOW NOISE GREEN/RED/YELLOW LASER	15
BWR SERIES DIODE PUMPED SOLID STATE NIR LASER.....	15
BWF2 HIGH POWER PORTABLE BENCH TOP FIBER COUPLED LASER SYSTEM	16
BWF3 HIGH POWER RACK MOUNT FIBER COUPLED DIODE LASER SYSTEM	16
BWF5 MICROCOMPUTER AND TOUCH SCREEN CONTROLLED SYSTEM DIODE LASER	16
BWF-OEM COMPACT FIBER COUPLED DIODE LASER MODULE	17
BRM-785 NARROW LINEWIDTH FIBER COUPLED LASER	17
BWDT-2A-OEM COMPACT DIODE LASER DRIVER BOARD	18
BWDT-8-OEM MULTICHANNEL DIODE LASER DRIVER BOARD	18
TERMS AND CONDITIONS	19
PRICES AND QUOTATIONS	19

PURCHASE ORDERS AND PAYMENT METHODS	19
DELIVERY AND SHIPPING	19
RETURNS AND CANCELLATION FEE	19
INTERNATIONAL CUSTOMERS	19
WARRANTY TERMS AND CONDITIONS	19
WARRANTY RETURN PROCEDURE	20
SAFETY WARNINGS	20

BWC-ASE White Light Test Source



BWC-ASE series are turnkey white light test sources. They produce amplified spontaneous emission ranging from 1520 to 1570nm, 1520 to 1620nm, and 1700 to 2000nm with high spectral power density. The white light sources are constructed by use of special EDFA fibers, resulting wavelength and power stability.

Highlights

- Covering C+L band: 1520-1620nm
- Custom wavelength band 1700 - 2000 nm
- Highly stabilized optical output power
- Compact and rugged design
- Various fiber optic connector styles
- Best performance/cost ratio

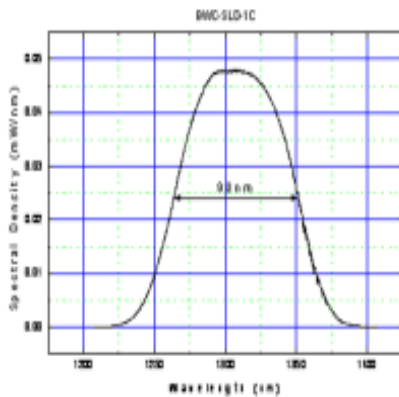
BWC-SLD Broadband Test Source



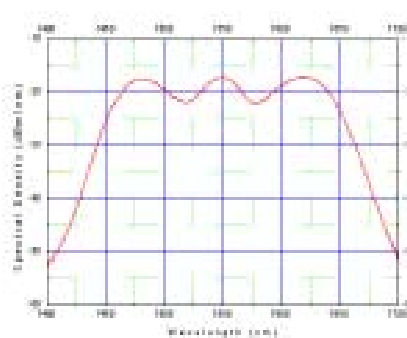
BWC-SLD provides a stable source of light over bands of >hundreds of nm @30dBm/nm. Available wavelengths are from 670 - 1650 nm. It comes complete with a high precision controller for high output levels and stability of operations. Also available are high power (>50mW) and custom bandwidth versions. New SLD-1C is centered at 1310nm with 90nm FWHM @5mW.

Highlights

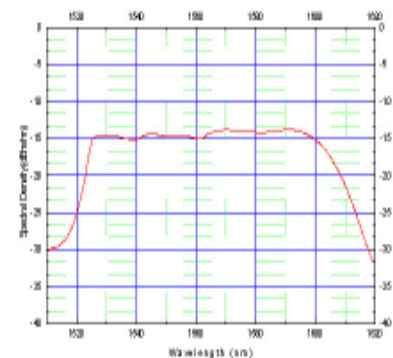
- One source for broad or custom bands
- Highly stable optical output power
- Available in 1, 2 or multiple channel configurations
- Various fiber optic connector options
- Best performance to cost ratio



SLD1C Spectrum



SLD9 Spectrum



ASE4-GF Spectrum

FIBER PIGTAILED LASER DIODES

BWA Fiber Coupled High Power Laser Diode Array

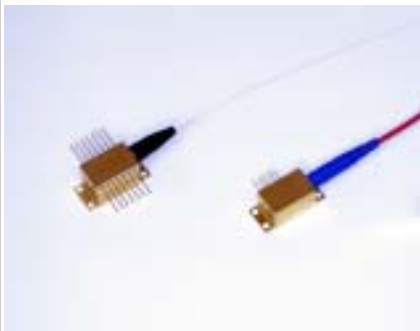


BWA series laser diode arrays offer superior performance to cost. Rugged packaging, ultra-stable fiber attachment and a uniquely efficient fiber coupling design provide an intense low divergence and a circular symmetric beam from the output end of the fiber pigtail. The package has convenient mounting plates and customer selectable fiber terminations.

Highlights

- *Ultrahigh brightness*
- *Over $1.2\text{mW cm}^{-2}\text{sr}^{-1}$*
- *14W @ 0.22 NA @ 100 μm*
- *30W @ 0.4 NA @ 400 μm*
- *810, 940 or 980nm*
- *Other custom wavelengths*
- *High Reliability*
- *High Efficiency*

BWK - Pigtailed High Power Laser Diode



BWK-Pigtailed high power laser diodes are ideal for thermal printing, military, aerospace and other applications that require high brightness and long life. The BWK-980-2.5-pig (BWK-810-2.5-pig) provides 2.5W out of a 100 μm @ 0.22 NA Fiber, while the BWK-810-1.2-pig (BWK-980-1.2-pig) provides 1.2W out of a 50 μm @ 0.22 NA fiber. Termination options include: bare fiber, ST connector and SMA-905 connector.

Highlights

- *Up to 1.2W @ 0.22 NA @ 50 μm*
- *1.5W @ 0.12 NA @ 100 μm*
- *4.0W @ 0.22 NA @ 100 μm*
- *635 - 1900nm in Wavelength*
- *50 or 100 μm Fiber*
- *High Reliability*
- *High Efficiency*

BWKM Pigtailed Laser Diode



The **fiber pigtailed BWKM series laser diodes** come with pigtailed 14 pin DIP package. They are hermetically sealed and available for wavelengths of 980, 1310, 1480, 1550 & 1610nm, or at other customized wavelengths between 650 and 1700nm. BWKM modules provide an output power of greater than 1mW out of a Corning SMF-28 fiber.

Highlights

- *Standard 14-Pin DIP Package*
- *Single Mode Fiber Output*
- *Center Wavelength Available 650 - 1650nm*
- *Laser Welded and Hermetically Sealed*
- *TE cooled with Monitoring PD*
- *F-P Structure Multi-Longitudinal Mode*

BWC-M Multichannel Laser Light Source



BWC-M multichannel laser source employs stabilized Fabry-Perot laser diodes. Available wavelengths are from 960nm to 1650nm or custom. This product provides highly stable optical output power, built-in 200Hz modulation control and optional external synchronization control.

The BWC-M can be configured for custom number of channels.

Highlights

- Available wavelengths of: 960-1650nm
- Standard (<5nm) and narrow (<0.5nm) spectral linewidth versions
- Highly stable optical output power
- Built-in modulation of 200Hz
- External sync. control option
- Various fiber optic connector styles
- Isolator and DFB LD options available

BWC-CWDM Multichannel Laser Test Source



BWC-CWDM multi-channel laser source employs stabilized Fabry-Perot laser diodes. The standard configuration comes with eight CWDM wavelength channels in two units, from 1470 to 1530nm (unit A) and 1550 to 1610nm (unit B). It provides highly stabilized optical output power, external synchronization capability and internal modulation of 200Hz. Analog control ports are available for customized monitoring and control applications.

Highlights

- Available wavelengths of: 1470 - 1610nm
- Standard (<5nm) and narrow (<0.5nm) spectral linewidth versions
- Highly stable optical output power
- Internal modulation of 200Hz
- External sync. control option
- Various fiber optic connector styles
- Isolator and DFB LD options available

BWC-FL Fiber Laser and Raman Fiber Laser

BWC-FL is a compact, turnkey system. It provides up to 20W of laser output in a standard SM fiber. The BWC-FL systems employ high brightness double-clad fibers, pumped by high power laser diode modules. High power outputs at longer wavelengths are achieved by use of additional high efficiency cascaded Raman resonators attached to the BWC-FL-1115. Standard and custom wavelengths are available covering a wide range of spectrum.

Highlights

- Available wavelengths of 1064 to 1500nm
- Up to 20W output power
- Standard single mode fiber pigtail
- High conversion efficiency
- High suppression ratio for side modes
- Compact with forced air-cooling
- Turn-key operation

BWC-FL-OEM Fiber Laser and Raman Fiber Laser Module

BWC-FL-OEM comes in Type I (TE cooled) and Type II (non-cooled) packages. Both are compact modules designed for OEM applications. Up to 20W laser output in a standard SM fiber can be achieved. The BWC-FL-OEM modules employ high brightness double-clad fibers, pumped by high power laser diode modules. High power outputs are available in the wavelength range of 1064 - 1500nm.

Highlights

- Available wavelengths of 1064 to 1500nm
- Up to 20W output power
- Standard single mode fiber pigtail
- High conversion efficiency
- High suppression ratio for side modes
- Compact in size

BWC-FLP Pulsed Fiber Laser

The **BWC-FLP** is a compact fiber laser system which was initially developed for eye safe radar and range finder applications. It is based on EDFA and Raman optical amplifier technology. BWC-FLP can generate a high peak power of 60 - 100W with tunable pulse width of up to 40ns and repetition rate of 0-10 kHz.

Applications

- Fiber Optic Testing
- Eye Safe Lidar
- Eye Safe Range Finder
- Metrology
- Printing
- Micro-material Processing
- Medical Imaging Research
- Signal Transmission

BWC-EDFA-E Bench Top Erbium Doped Fiber Amplifier



The **BWC-EDFA-E** is a turnkey bench top amplifier/broad-band source, which operates over a wide temperature range and exhibits extremely low power dissipation. **BWC-EDFA-E** comes with microcontroller based alarm and control option. Optimum performance and system stability are supported through the use of optical isolation at the input and output.

Highlights

- *Gain-flattened spectral response option*
- *Dynamic gain equalization*
- *Broad bandwidth*
- *Low noise*
- *Isolated input and output*
- *Optical input and output taps option*
- *Wide operating temperature range*
- *Standard serial communication interface option*
- *Low power consumption*

BTC112E TE Cooled Linear CCD Spectrometer (USB 2.0/1.1)



BTC112 are low cost and high performance TE cooled linear CCD spectrometers with USB interface. They are equipped with 2048 elements thermoelectric cooled (TEC) linear CCD arrays, built-in 16 bit digitizers with high speed plug and play USB 2.0/1.1 interfaces and optimized high throughput spectrographs. **BTC112** spectrometers are ideal for low light level detection and long term monitoring applications. Resolution of 0.3nm or better can be supplied.

Highlights

- OEM and end user versions
- Wide wavelength ranges
- TE cooled high stability and low dark counts
- Built-in 16 bit digitizer
- 0.3 to 20nm resolution
- Plug and play high speed USB 2.0/1.1 interface
- Up to over 180 complete spectra/s transferring speed
- 5- 65535ms integration time
- TCP/IP Interface available

BTC110E TE Cooled Linear CCD Spectrometer (RS232)

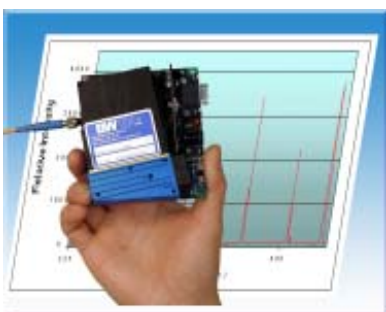


BTC110E spectrometers are equipped with 2048 elements thermoelectrically cooled (TEC) linear CCD arrays, optimized high throughput spectrographs, Windows based operating software and fiber coupled input capability. The **BTC110E** spectrometers offer high S/N ratio, low dark counts and long term operation stability, and are ideal for low light level detections and long term monitoring applications. Resolution of 0.3nm or better can be supplied.

Highlights

- 16 bit digitizer with RS232 (or USB adapter) interface
- TE cooled high stability and low dark counts
- High signal/noise ratio > 1000
- 0.3 to 20nm resolution versions available
- Ideal for low light level applications
- Configurable in wavelength range of 200 - 1100nm
- 1-16 multiplier integration

BTC110-OEM TE Cooled Linear CCD Spectrometer Module (RS232 or USB 2.0)



BTC110-OEM are OEM CCD spectrometers equipped with 2048 elements thermoelectrically cooled (TEC) linear CCD arrays, optimized high throughput spectrographs and fiber coupled input capability. The **BTC110-OEM** spectrometers offer high S/N ratio, low dark counts and long term operation stability, and are ideal for low light level detections and long term monitoring applications. Resolution of 0.3nm or better can be supplied.

Highlights

- TE cooled high stability and low dark counts
- High signal/noise ratio > 1000
- 0.3 to 20nm resolution versions available
- Ideal for low light level applications
- Custom configurations and application support
- Configurable in wavelength range of 200 - 1100nm
- 16 bit digitizer with RS232 or USB 2.0

BTC211E TE Cooled Linear InGaAs Array Spectrometer (USB 2.0/1.1)



BTC211E spectrometers are equipped with 512 elements thermoelectrically cooled (TEC) linear InGaAs arrays, optimized high throughput spectrographs, Windows based operating software and fiber coupled input capability. The BTC211E spectrometers offer high S/N ratio, low dark counts and long term operation stability, and are ideal for low light level detections and long term monitoring applications. Resolution of 0.7nm or better can be supplied.

Highlights

- 16 bit digitizer with USB 2.0/1.1 interface
- TE cooled high stability and low dark counts
- High signal/noise ratio >1000
- 0.75 to 20nm resolution versions available
- Configurable in wavelength range of 800 - 1700nm
- Custom configurations and application support

BTC31XE High Resolution TE Cooled Linear CCD Spectrometer



BTC31X are low cost and high resolution TE cooled linear CCD spectrometers. It is equipped with a 2048 elements thermoelectric cooled (TEC) linear CCD array, optimized high throughput spectrograph, Windows based operating software, and fiber coupled input capability. They come in standard wavelength ranges of UV, Vis, NIR or custom specified. Pixel resolution of 0.035nm or better can be supplied.

Highlights

- TE cooled high stability and low dark counts
- High signal/noise ratio >1000
- 0.035nm maximum pixel resolution versions available
- Ideal for low light level applications
- Custom configurations and application support
- Configurable in wavelength range of 200 - 1100nm
- 16 bit digitizer with USB 2.0/1.1 interface

BTC500E TE Cooled Linear PbS Array Spectrometer (USB)



BTC500E spectrometers are equipped with 256 elements thermoelectrically cooled (TEC) linear PbS arrays, optimized high throughput spectrographs, Windows based operating software and fiber coupled input capability. The BTC500E spectrometers are suitable for long wave NIR applications. Resolution of 1.0nm or better can be supplied.

Highlights

- 14 bit digitizer with USB 2.0 compatible interface
- TE cooled high stability and low dark counts
- 1.0 to 50nm resolution versions available
- Configurable in wavelength range of 1100 - 2900nm
- Custom configurations and application support

SPECTROMETERS/ACCESSORIES

BRC711E Fiber Coupled NIR Enhanced PDA Array Spectrometer



BRC711E is a low cost and high performance linear PDA spectrometer with high speed plug and play USB 2.0 or 1.1 interface. It is equipped with a 512 or 1024 elements linear PDA array, optimized high throughput spectrograph, 16 bit built-in digitizer, Windows based operating software, and fiber coupled input capability. BRC711E spectrometers come in standard wavelength ranges of UV, Vis, NIR or custom specified. Pixel resolution of 0.3nm or higher can be supplied.

Highlights

- Enhanced QE in NIR
- High UV response
- High dynamic range
- Plug and play USB 2.0/1.1 interface
- 16 bit digitizer
- No moving parts
- 512 or 1024 elements PDAs
- Portable and light weight

NEW CLEANLAZE™ FOR RAMAN SPECTROSCOPY

BRM-785 Narrow Linewidth Fiber Coupled Laser



The BRM fiber coupled High-power laser module is an integrated package of laser driver, TE cooler, and controller as well as high-brightness fiber coupled laser at 785nm @ >1.5W. It is specifically designed for Raman spectroscopy. Both OEM and portable bench top versions are available. The OEM module is powered by 5V DC. It also provides a TTL modulation port, which can accept a modulation control input of up to 100kHz.

Highlights

- 785nm @ >1.5W
- 100um @ 0.22NA fiber
- Narrow spectral width (0.2nm)
- Compact and rugged package
- Convenient 5V DC input (OEM)
- Ideal for Raman excitation
- Medical and sensor instrument
- Other industrial Applications

System and Accessory Options

LVF- Linear variable order sorting filters for UV/Vis, Vis/NIR and UV/Vis/NIR configurations

FLA-100- Focusing lens assembly sensitivity enhancement option for installation inside array spectrometers

BIS-1.5- 1.5 inch integrating sphere or cosine corrector with SMA905 fiber coupler

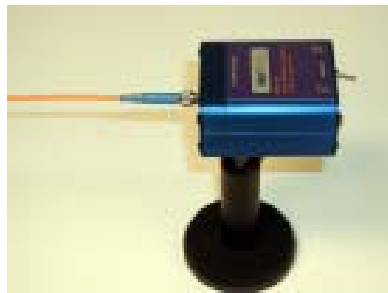
SCL-12- Portable spectral calibration source power supply assembly, including a 12V DC power adapter, requires a calibration lamp assembly for operation

SCL-Hg- Mercury calibration lamp assembly with SMA905 fiber coupler, to be used with SCL-12

SCL-Ar- Argon calibration lamp assembly with SMA905 fiber coupler, to be used with SCL-12

SCL-Ne- Neon calibration lamp assembly with SMA905 fiber coupler, to be used with SCL-12

BPS100 Photo Intensity Feedback Controlled Tungsten Light Source



The **BPS100** series is a line of low cost and high performance constant photo intensity tungsten light source products. By use of photo intensity feedback control, the **BPS100** demonstrates up to one order of magnitude improvement in output power stability compared with conventional sources when operated under constant current mode.

BPS100 is ideal for spectroscopic applications in visible and near IR.

Highlights

- Constant photo intensity control
- Built-in filter holder
- Fiber coupling capability
- Compact in size
- Ideal for spectroscopy
- Spectral output 380 - 2700nm

BDS100 UV/Vis and NIR Deuterium/Tungsten Light Source



BDS100 is a turnkey fiber coupled UV/Vis/NIR light source, It provides a spectral output of 200 -1100nm. The UV lamp is based on RF technology providing the advantage of low heat generation and power consumption. The light source comes complete with DC power supply. Safety shutter, individual on/off controls for the deuterium and tungsten lamps are provided.

Highlights

- Individual lamp and shutter control
- High output power stability
- Fiber coupling capability
- Compact in size
- Ideal for spectroscopy
- Spectral output 200 - 1100nm

BDS130 UV/Vis and NIR Deuterium/Tungsten Light Source



BDS130 is a turnkey fiber coupled UV/Vis/NIR light source. It provides a spectral output of 200 -1100nm. The microcontroller controlled D2 and tungsten lamp operation provides long term output power stability. The light source comes complete with power supply, safety shutter, as well as individual on/off controls for the deuterium and tungsten lamps.

Highlights

- Individual wavelength band and shutter control
- High output power stability
- Fiber coupling capability
- Compact in size
- Ideal for spectroscopy
- Spectral output 200 - 1100nm

SPECTROMETERS/ACCESSORIES

BCH100/BFH105 Fiber Coupled Cuvette/Filter Sample Holder



BCH100/BFH105 series cuvette/filter sample holders are designed for fiber optic illumination/detection coupling, and ease of sample handling. It holds a standard 10 x 10mm cuvette or a 10mm thick filter for analytical applications. The cuvette sample holder provides SMA 905 fiber coupling and is ideal for use with BTC series spectrometers and BDS/BPS series light sources.

Highlights

- Holds standard 10 x 10mm cuvette or 10mm thick filters
- SMA 905 fiber coupling
- Spring loaded sample holder for loading precision
- UV, Vis and NIR versions available
- Custom sample holders available

BRP Fiber Reflectance Probe



BRP series fiber reflectance probes are constructed by use of high quality optical fibers and couplers. The standard assembly consists of six delivery and one return strands. The compact and flexible design of the probes make it ideal for reflectance measurement applications. Available fibers range from a core diameter of 100 up to 400um at numerical aperture of 0.22. Fiber material options include UV, Vis, NIR, and mid IR.

Highlights

- High transmission
- SMA 905, FC, ST, and custom terminations
- Six illumination and detection configurations
- Fiber diameter from 10 to 400um
- Available NA from 0.12 to 0.37
- Custom fiber bundles and fiber probes

FPC Series Fiber Patch Cord



FPC series fiber patch cords are constructed by use of high quality optical fibers and couplers. Available fibers range from a core diameter of 50 up to >1000 um at numerical apertures from 0.22 (or custom.) Fiber material options include UV, Vis, NIR, and mid IR. Custom fiber bundles and fiber probes are also available.

Highlights

- High transmission
- SMA 905, FC, ST, and custom terminations
- Fiber diameter from 50 to > 1000 um
- Available NA from 0.12 to 0.37
- Custom fiber bundles and fiber probes

BRP Fiber Optic Raman Probe



BRP series products are compact fiber coupled Raman probes. The probe comes with focusing element for efficient sampling through glass and plastic, as well as other samples. Excitation wavelength options available for the **BRP** probes in visible and NIR. The probe design also allows for long fiber cables to be used due to the elimination of Raman scattering from fibers. The unique design offers high Rayleigh rejection.

Highlights

- Flexible fiber coupling
- 473, 488, 514, 532, 785nm and other wavelength options*
- >OD 6 Rayleigh rejections*
- Process probes available
- Fiber background eliminated for

***See laser sections for excitation laser sources**

We recommend BWB and BWN (page 16) for fluorescence and Raman excitation applications; BRM-785 narrow linewidth laser source (page 18) for Raman applications; BWF-OEM low cost fiber coupled laser modules (page 17) for Raman and other applications.

BLUE/ GREEN/ YELLOW/ RED/ NIR LASER

BWB Series Low Noise Violet/Blue Laser



The **BWB series** are very compact, self-contained, TE cooled, solid-state Violet/Blue (375 - 475nm) lasers. They can be operated over 10 to 35°C with a stable and quiet laser output power. The excellent quality of the beam mode and its low divergence make the lasers suitable for beam focusing and long distance beam positioning. The compact power supply has all the applicable safety features, such as key-lock switch, emission indicator and remote connector.

Applications

- Metrology
- Wafer Inspection
- Printing
- Micro-material Processing
- Medicine
- Particle counting
- Photoluminescence
- Signal transmission

* End user and OEM power supply versions are available

BWN Series Low Noise Green/Red/Yellow Laser



The **BWN series** are compact, self-contained, double thermoelectric (TE)-cooled, solid-state Green/Red/Yellow (532 - 635nm) lasers. They produce a stable and quiet laser output power over 10 to 35°C. The excellent quality of the beam mode and its low divergence make the lasers suitable for beam focusing and long distance beam positioning. The compact power supply has all the applicable safety features, such as key-lock switch, emission indicator and remote connector.

Applications

- Spectroscopy
- Wafer Inspection
- Micro-material Processing
- Particle Counting
- Signal Transmission
- Metrology
- Printing
- Medicine
- Photoluminescence
- Pointing

* End user and OEM power supply versions are available

BWR Series Diode Pumped Solid State NIR Laser



The BWR series are self-contained, TE cooled, diode-pumped, near Infrared (1064nm) Nd:YVO4 lasers. They produce a stable laser output power (20 - 1500mW) over 0 to 40°C. These are CDRH compliant laser systems. The excellent quality of the beam mode and its low divergence make the lasers suitable for beam focusing and long distance beam positioning. The power also provides optional TTL (or Analog) modulation input for up to 25 kHz.

Applications

- Optical Trapping
- Wafer Inspection
- Material Processing
- Particle Counting
- Metrology
- Printing
- Medicine
- Illumination
- Pointing
- Photoluminescence

*End user and OEM power supply versions are available

BWF2 High Power Portable Bench Top Fiber Coupled Laser System



BWF2 Series are compact turnkey fiber-coupled laser systems providing up to 30W of continuous power. The unique design of BWF2 includes features such as optional visible (red or green) aiming beam, multifunctional relay controller for versatile laser operation, and a remote port for external modulation and control purpose. Available options include lens assembly with SMA 905 connector, and interface TTL or analog ports for main and aiming beam controls.

Highlights

- Power delivered by high-brightness fiber of up to 45W
- Stand alone self-contained system
- Compact, TEC with forced air cooling
- 630-1600nm wavelengths available
- OEM system option available

BWF3 High Power Rack Mount Fiber Coupled Diode Laser System



The **BWF3 Series** are rack mount turnkey fiber-coupled laser systems providing up to 150W of continuous power. The unique design of BWF3 includes optional features as visible (red or green) aiming beam, multifunction relay controller for versatile laser operations, and a remote port for external modulation and control purpose. Available options include lens assemblies with SMA 905 connector, and interface TTL or analog ports for main and aiming beam controls.

Highlights

- Power delivered by high-brightness fiber of up to 150W
- Stand-alone self-contained system
- Compact, TEC with forced air cooling
- 630-1600nm wavelengths available
- OEM system option available

BWF5 Microcomputer and Touch Screen Controlled Laser Diode System



The **BWF5** group are compact high power diode lasers designed for OEM medical applications. By using color LCD touch screen and microcontroller based design they provide intelligent safety features, ease of operation, and programmable operation settings. Features also include innovative fiber calibration port to accommodate a variety of fibers while providing well regulated and optimum output power. It also provides means of alerting operators about degraded or defective fibers.

Highlights

- High power available for demanding applications
- Up to 45W power delivered by flexible fibers
- Easy OEM integration
- Compact, microcomputer controlled
- 405-1600nm wavelengths available
- Touch screen LCD for easy operation

FIBER COUPLED DIODE LASER

BWF-OEM Compact Fiber Coupled Diode Laser Module



The BWF-OEM fiber coupled high-power OEM diode laser modules are compact integrated packages of laser driver, TE cooler, TEC controller and high-brightness fiber pigtailed LDs at various wavelengths (630 - 1900nm) and power output of up to 2W. All components are enclosed in an airtight, extru aluminum housing. The module is powered by 5V DC and has a TTL modulation port, which can be operated at up to 100kHz.

Highlights

- 2.0W @100um @0.22 NA
- 1.2W @ 50/100um @ 0.22/0.12NA
- 630 – 2000nm wavelength
- Narrow spectral width (<3nm)
- Compact and rugged package
- Convenient 5V DC input
- Modulation control of up to 100kHz

NEW CLEANLAZE™ FOR RAMAN SPECTROSCOPY

BRM-785 Narrow Linewidth Fiber Coupled Laser



The BRM fiber coupled High-power laser module is an integrated package of laser driver, TE cooler, and controller as well as high-brightness fiber coupled laser at 785nm @ >1.5W. It is specifically designed for Raman spectroscopy. Both OEM and portable bench top versions are available. The OEM module is powered by 5V DC. It also provides a TTL modulation port, which can accept a modulation control input of up to 100kHz.

Highlights

- 785nm @ >1.5W
- 100um @ 0.22NA fiber
- Narrow spectral width (0.2nm)
- Compact and rugged package
- Convenient 5V DC input (OEM)
- Ideal for Raman excitation
- Medical and sensor instrument
- Other industrial Applications



The BWDT-2A-OEM and BWDT-2A-OEM-S diode laser driver boards are compact designs for driving B&W TEK's DPSS lasers, high power LDs as well as other compatible LDs. Options include TEC drivers, monitoring ports and TTL or analog modulation input ports. The TEC controller in the 2A-OEM-S provides cooling capability while the 2A-OEM supports bidirectional (cooling + heating) operations of the TEC. They support constant current or constant power operation.

Highlights

- *Built in Diode Laser Protection*
- *Constant Current or Power Mode*
- *TTL/ Analog Modulation Capability*
- *Optional Bidirectional TEC controls*
- *Single 5V DC operation*



The BWDT-8 diode laser driver boards are compact designs for driving B&W TEK's DPSS lasers, high power LDs as well as other compatible LDs. An analog interface monitoring port is provided via a D-SUB connector for control and monitoring of operation parameters. The board drives up to 8 channels of laser diodes simultaneously at up to 2A operating current per channel.

Highlights

- *Driving up to 8 diode lasers*
- *Control of 8 TE Coolers*
- *48V DC power supply*
- *Driving current control port*
- *Average driving current monitoring*
- *Individual channel on/off control lines*
- *MM LD output power monitor*
- *Case temperature monitor*

TERMS AND CONDITIONS

Prices and Quotations

All quotations written or verbal are valid for 30 days from the date of quotation unless stated otherwise. Prices are based on your requested specifications and quantities, and are subject to change if any changes are made from the original request.

Prices quoted by B&W TEK are for F.O.B. factory. Special items will be individually priced per provided specifications. All published prices are subject to change without notice. An extra 20% handling fee on each item is applied to international orders.

Purchase Orders and Payment Methods

Purchase orders are accepted by mail, e-mail or fax. Hard copies of the purchase orders are required. To minimize errors, please reference the B&W TEK quotation numbers. Provide also item description, purchase order number, ship-to and bill-to address and shipping method desired.

Open accounts of net 30 with approval of credit limit. Contact B&W TEK for further information.

Orders placed with MasterCard or VISA may be accepted for US government customers only. Please provide account number, card holder, billing address, and expiration date that are associated with the card to be used.

Orders may be shipped via UPS or Federal Express on a COD basis. Cash, a money order or a bank or company check is required at the time of delivery.

Prepayment is required for international orders. Money order, wire transfers, bank check, company check or personal check may be accepted. In case a letter of credit (L/C) is required. The customer will be responsible for the charges incurred by the L/C.

Delivery and Shipping

Rush orders placed by phone (for items in stock at time of order) will be shipped within 2 working days. Most

other standard items can be shipped within 6 weeks. Delivery times for special orders will be established per quotation.

FedEx is our default shipping carrier although UPS and airfreight are available. If not specified clearly on the purchase order at the time of ordering Airborne express will be used by B&W TEK at the time of shipping. Upon request, the tracking numbers will be provided.

Returns and Cancellation Fee

A Return Material Authorization number (RMA) is required for any returned goods. Original purchase order number, date of shipment and serial number must be provided before the RMA can be issued. All the returns should be shipped with the **original packaging materials** with the assigned RMA number(s) clearly marked. The restocking fee will be determined after the items are inspected at B&W TEK. No product(s) will be accepted for restocking after 45 days. A cost estimate will be provided by B&W TEK for out of warranty items. Specially designed products damaged by the customer may not be returned.

Should it become necessary to cancel or modify orders prior to shipment, a restocking fee of 15 to 50% of the total order amount will be charged by B&W TEK for returns to stock. Specially designed products damaged by the customer may not be returned.

International Customers

Please make payment in United States dollars to be drawn on a United States Bank. Certain items may be subject to export control and require a validated export license.

Warranty Terms and Conditions

B & W TEK's end user products, OEM modules, and components are warranted to be free from defects in materials and workmanship for a period of 12 months, 6 months, and 90 days, respectively, from the date of initial shipment. This warranty does not extend to incidental or consequential damages and to damage caused by negligent or improper handling in use, storage, nor for products for which the original identification markings or labels have been removed, defaced or altered.

Special contracts or contracts for nonstandard products may have modified terms of warranty and, in such cases, the terms as stated in the individual contract must be signed by the duly authorized officer of B & W TEK and will supersede the standard terms.

B & W TEK will make final determination as to cause or existence of defect and, at its option repair or replace the products, which prove to be defective during the warranty period. Products replaced under warranty will be warranted only for the balance of the warranty period from the original supplied equipment.

This warranty extends only to the original purchaser of the equipment from B & W TEK. The purchaser must notify B & W TEK within 15 days of first noticing the defect and promptly return the defective product upon receipt of RMA number(s) before expiration of the warranty period.

Products believed by purchaser to be defective shall be returned to B & W TEK transportation and insurance prepaid by purchaser. Repaired or replaced products will be returned to purchaser by B & W TEK, FOB city destination within the Continental United States, Transportation beyond these limits will be charged to purchaser.

Warranty Return Procedure

Review terms of purchase and date of shipment to determine validity of warranty claim. Warranty claim should only be made for products within terms of warranty policy.

Contact B & W TEK and obtain authorization to return the item(s) in the form of an RMA (Return material authorization) number. For customers in the USA and countries where distributorship and/or representation is not available, all claims should be addressed to:

Customer Service
B & W TEK INC.
825 Dawson Dr., Suite 1
Delaware Industrial Park
Newark, DE 19713

Be prepared to furnish:

- a. Product Model number and serial number
- b. Date of shipment/purchase
- c. Brief description of the problems encountered

- d. Name of contact person and phone number(s) at your organization for further communication.

Obtain B & W TEK's instructions for transportation and packaging and ship the product (freight and insurance prepaid) with the proper documentation containing the RMA number and the information specified above.

B & W TEK will advise the purchaser of its determination of warranty at the earliest possible time. Providing complete information as requested will expedite the procedure.

Safety Warnings

The laser products described in this catalog emit visible or invisible radiation power. They are safe to operate only when the users follow all safety measures:

- a) Post warnings in the area where the laser beam passes to alert those present.
- b) Keep all unauthorized personnel out of the area where the laser is operated.
- c) Whenever the laser is running and the beam is not in use, it is a good practice to mechanically block the radiation path.
- d) Never look directly into the laser beam path or scattered laser light from any reflective surfaces,
- e) Never look directly into the laser source.
- f) Maintain experimental setup at lower level to prevent inadvertent beam-eye contact.
- g) As a precaution against accidental exposures to the laser beam or its reflection, operators should wear laser safety glasses with sufficient attenuation at the laser emission wavelength .

CDRH Compliant System

The BWB, BWN, BWT, and BWR series laser systems, which are certified to be in compliance with Class IIIa, IIIb, or IV, are equipped with key lock switch, remote control connector, laser radiation emission detector, emission time delay (in the laser driver), a beam attenuator (shutter), emergence switch (Class IV only) and appropriate warning labels. The following is a consolidate label which is located on the laser head. It includes aperture label, warning logotype label and certification/identification label designed to warn the user of potential hazard. There are three blanks will be filled with a specific laser wavelengths (350nm – 1650nm), power level (1mW – 5W) and proper laser class (IIIA, IIIB and IV).



Non-CDRH Compliant OEM modules

The BWB, BWN, BWT, BWT, and BWR series laser are also provided to customers as an OEM component to be incorporated into a system. The modules will be provided to customer either laser head only, or with a B&W TEK’s OEM driver or to be incorporated with the drivers provided by customers. In the above mentioned “OEM modules”:

1) OEM versions are non-CDRH compliant devices. These modules are sold as a component into other equipment.

2) An OEM label is attached to the modules and states “This product is sold as a component for incorporation into other equipment. The purchaser assumes responsibility to comply with US 21 CFR 1040 with regard to the use of this laser and its introduction into commerce.”

3) B&W TEK will provide all the necessary assistances to help customers achieve the required CDRH compliance.

4) There are built-in safety features in OEM laser driver. Such as the emission delay, emission indicator and interlock which will enable purchaser to easily reconfigure the system to be in compliance with CDRH requirements.

For Further Information

Contact following organizations for further information regarding laser safety issues.

Center for Device and Radiological Health
Office of Compliance
2098 Gaither Rd.
Rockville, MD 20850
Tel: 301-594-4654
Fax:301-594-4672

Laser Institute of America
12424 Research Parkway, Suite 125
Orlando, FL 32826
Tel: 407-380-1553