

Bristol Instruments Scientific Products



High Resolution & Exceptional Stability

Laser Wavelength Meters	671A	671B	871A	871B	872A *NEW*
Laser Type	CW and Quasi-CW (repetition rate > 10 MHz)		Pulsed and CW		
Interferometer Type	Michelson		Fizeau		
Wavelength Range <small>*VIS, NIR, NIR2 models: Fiber-coupled (APC or UPC) *IR & MIR models: Free space</small>	VIS: 375 - 1100 nm NIR: 520 - 1700 nm NIR2: 1 - 2.6 μm IR: 1 - 5 μm MIR: 1.5 - 12 μm		VIS: 375 - 1100 nm NIR: 630 - 1700 nm <small>*Available in only FC/PC input connector</small>	VIS: 375 - 1100 nm NIR: 630 - 1700 nm NIR2: 1000 - 2500 nm <small>*Available in only FC/PC input connector</small>	VIS: 375 - 1100 nm NIR: 630 - 1700 nm <small>*Available in only FC/PC input connector</small>
Accuracy	± 0.2 ppm (± 1 ppm for λ > 5 μm)	± 0.75 ppm (± 1 ppm for λ > 5 μm)	± 0.2 ppm <small>*Single mode fiber only</small>	± 0.75 ppm <small>*Single mode fiber</small> ± 1 ppm <small>*MMF ≤ 62.5 μm core diameter</small>	± 0.2 ppm <small>*Single mode fiber only</small>
Wavelength Measurement Resolution <small>*Standard Deviation</small>	VIS/NIR/NIR2: 0.03 ppm (0.03 pm @ 1000 nm) IR: 0.06 ppm (0.2 pm @ 3 μm) MIR: 0.1 ppm (1pm @ 10 μm)	0.1 ppm (0.1 pm @ 1000 nm)	0.0075 ppm 0.0075 pm @ 1000 nm 2.25 MHz @ 300,000 GHz	0.0125 ppm 0.0125 pm @ 1000 nm 3.75 MHz @ 300,000 GHz	0.001ppm 0.001ppm @ 1000 nm 300 kHz @ 300,000 GHz
Maximum Bandwidth (FWHM)	1 GHz	10 GHz	1 GHz	10 GHz	1 GHz
Measurement Rate	4 Hz (VIS / NIR / NIR2) 2.5 Hz (IR & MIR)	10 Hz (VIS / NIR / NIR2) 2.5 Hz (IR / MIR)	1 kHz (VIS / NIR) 1.5 kHz (NIR2)		
Calibration	Continuous - built-in stabilized single-frequency HeNe laser	Continuous - built-in standard HeNe laser	Automatic with built-in wavelength standard (VIS: Stabilized Single-frequency HeNe Laser) (NIR & NIR2 – Laser diode locked to acetylene absorption)		
PID Controller	Optional Standalone PID controller for laser stabilization (+5 Volts Output)		Built-in PID Controller for laser stabilization included on all instruments (± 5 V Output)		



Laser Spectrum Analyzers	771A	771B	772B
Laser Type	CW, Quasi-CW (repetition rate > 10 MHz), and Pulsed (repetition rate > 50 kHz, pulse length > 50 ns)		CW and Pulsed (repetition rate > 50 Hz, Pulse length ≥ 20 ns)
Interferometer Type	Michelson with Fast Fourier Transform		
Wavelength Range <small>*VIS, NIR, NIR2 models: Fiber-coupled (APC or UPC) *IR & MIR models: Free space</small>	VIS: 375 - 1100 nm NIR: 520 - 1700 nm NIR2: 1 - 2.6 μm IR: 1 - 5 μm MIR: 1 - 12 μm* <i>Can operate up to 14 μm, though specifications not guaranteed past 12μm.</i>		MIR: 1 - 12 μm* <i>Can operate up to 14 μm, though specifications not guaranteed past 12μm.</i>
Accuracy	± 0.2 ppm (± 1 ppm for λ > 5 μm)	± 0.75 ppm (± 1 ppm for λ > 5 μm)	± 10 parts per million
Spectral Resolution (FWHM)	4 GHz (for VIS, NIR, NIR2, MIR) 8 GHz (for IR) <small>*Spectral resolution as low as 2 GHz (4 GHz for IR) is possible in different window functions. Accuracy & ORR may be reduced</small>		4 GHz
Optical Rejection Ratio	> 40 dB (> 30 dB for MIR)		10 - 20 dB (dependent on number of pulses acquired)
Measurement Time	< 2 s (1 s with smaller measurement ranges)		Approximately 2x time required to collect chosen number of pulses, but not less than about 10 seconds
Calibration	Continuous - built-in stabilized single-frequency HeNe laser		Continuous - built-in standard HeNe laser
	Note: 772B-MIR Operation & Specifications are identical to 771B-MIR in only CW mode.		

***Bristol offers an Industry leading 5-year warranty (parts & labor) for every model listed above.**



Accessory Guide



	LC-1 series Fiber Optic Input Coupler	BC-1 series Fiber-Optic Input Coupler
Application	Means to launch a free-space CW laser beam into an Optical Fiber. Used in conjunction with our Michelson based 671 & 771 fiber coupled instruments (VIS & NIR). Fiber is permanently attached to the coupler.	Means to launch a free-space CW or Pulsed laser beam into an Optical Fiber. Used in conjunction with our Fiber-coupled instruments (VIS & NIR). Fiber is not provided, only the coupler.
Wavelength Range	UV: 350 – 1100 nm VIS: 400 - 1100 nm NIR: 520 - 1700 nm	VIS: 375 - 1100 nm NIR: 520 - 1700 nm
Aperture	2.5 mm	2.5 mm
Mounting Disk Diameter	1" (25.4mm)	1" (25.4mm) <i>*Same diameter for Fiber-optic connector.</i>
Optical Fiber	3 meters (2 meters of UV) 9 μm core diameter	Not included
Connector type	FC/UPC or FC/APC	FC/UPC or FC/APC
Coupling Efficiency <i>*With TEM00 collimated beam. *Wavelength dependent.</i>	5-35%	F-version: 5 – 35% (9 μm core diameter single-mode fiber) 50% (62.5 μm core diameter multi-mode fiber) D-version: 50% (62.5 μm core diameter multi-mode fiber)
Maximum Input Energy	5 μJ	F-version: 5 μJ D-version: 200 μJ

	FA series IR Fiber-Optic Adapter
Application	Enables Fiber-Optic input with our IR or MIR (Free-space) version instruments. Not compatible with our VIS, NIR or NIR2 versions. Installed and aligned at our factory. Adapter is removable.
Wavelength Range	IR1: 1-7 μm IR2: 7-12 μm
Connector type	FC/UPC or FC/APC
Fiber Core Diameter	≤ 50 μm
Throughput <i>*Larger core diameter fiber may be used, but performance has not been characterized. *Assumes fiber NA of 0.1.</i>	IR1: > 40% IR2: > 80%
Wavelength Accuracy	± 3 Parts Per Million (ppm)

	FOS Fiber-Optic Switch	
Application	Connect up to eight lasers to a single fiber-coupled Instrument. Compatible with Bristol Wavelength Meters and Spectrum Analyzers. Switching is controlled using provided PC application. Switching can be done manually <i>or</i> automatically.	
Switch Types	1 x 4 1 x 8	
Wavelength Range	VIS/NIR: 400-1700 nm	NIR2: 1000-2600 nm
Internal Fiber Type	9 μm core diameter <small>(Single-Mode over 1260 – 1625 nm)</small>	7 μm core diameter <small>(single-mode over 1850 – 2200 nm)</small>
Connector type	FC/UPC or FC/APC	
Transmission	10-30% (400-600nm) 30-40% (600-1700nm)	20-40% (1000-1600nm) 10-20% (1600-2600nm)
Switching Frequency	≤ 30 Hz	
Maximum Input Power	0.05 mW (400-500 nm) 10 mW (500-600 nm) 100 mW (600-1700 nm)	100 mW (1000-2600 nm)
Switching Time	≤ 5 ms	
Repeatability	≥ 0.01 dB	
Polarization Dependent Loss	≥ 0.1 dB	
Return Loss	≥ 40 dB	
Crosstalk	≤ - 50 dB	
Instrument Interface	Windows-based application via USB 2.0 or greater	

***1-year manufacture warranty on all above-mentioned accessories.**

Fiber-Optic Patch Cables

Single-mode, multi-mode and photonic crystal fiber patch cables are available for a variety of applications. For each single-mode fiber listed, the 'Ø µm core' equals the smallest value of the fiber's Mode Field Diameter range.

SMF-320/430-PC - single-mode fiber over 320-430 nm, Ø 2.0 µm core, FC/PC termination, 2 m length

SMF-320/430-APC - single-mode fiber over 320-430 nm, Ø 2.0 µm core, FC/APC termination, 1 m length

SMF-405/532-PC - single-mode fiber over 405-532 nm, Ø 2.5 µm core, FC/PC termination, 2 m length

SMF-405/532-APC - single-mode fiber over 405-532 nm, Ø 2.5 µm core, FC/APC termination, 2 m length

SMF-488/633-PC - single-mode fiber over 488-633 nm, Ø 2.8 µm core, FC/PC termination, 2 m length

SMF-488/633-APC - single-mode fiber over 488-633 nm, Ø 2.8 µm core, FC/APC termination, 2 m length

SMF-633/780-PC - single-mode fiber over 633-780 nm, Ø 3.6 µm core, FC/PC termination, 2 m length

SMF-633/780-APC - single-mode fiber over 633-780 nm, Ø 3.6 µm core, FC/APC termination, 2 m length

SMF-780/970-PC - single-mode fiber over 780-970 nm, Ø 5.0 µm core, FC/PC termination, 2 m length

SMF-780/970-APC - single-mode fiber over 780-970 nm, Ø 5.0 µm core, FC/APC termination, 2 m length

SMF-830/980-PC - single-mode fiber over 830-980 nm, Ø 4.7 µm core, FC/PC termination, 2 m length

SMF-830/980-APC - single-mode fiber over 830-980 nm, Ø 4.7 µm core, FC/APC termination, 2 m length

SMF-980/1550-PC - single-mode fiber over 980-1550 nm, Ø 5.3 µm core, FC/PC termination, 2 m length

SMF-980/1550-APC - single-mode fiber over 980-1550 nm, Ø 5.3 µm core, FC/APC termination, 2 m length

SMF-1260/1625-PC - single-mode fiber over 1260-1625 nm, Ø 9.2 µm core, FC/PC termination, 2 m length

SMF-1260/1625-APC - single-mode fiber over 1260-1625 nm, Ø 9.2 µm core, FC/APC termination, 2m length

SMF-1850/2200-PC - single-mode fiber over 1850-2200 nm, Ø 8.0 µm core, FC/PC termination, 2 m length

SMF-1850/2200-APC - single-mode fiber over 1850-2200 nm, Ø 8.0 µm core, FC/APC termination, 2 m length

MMF-62.5-UPC - multi-mode graded index fiber, Ø 62.5 µm core, FC/PC termination, 2 m length

MMF-62.5-APC - multi-mode graded index fiber, Ø 62.5 µm core, FC/APC termination, 2 m length

PCF-400/1700-UPC - Photonic Crystal Fiber endlessly single-mode, low loss 400 – 1700 nm, Ø 8.6 µm core, FC/UPC, 1 m length