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MIRa-Guide®

BRISTOL INSTRUMENTS

Bristol Instruments Scientific Line

Built-in PID controller for all 871 series (± 5 V Output)

Laser Wavelength Meters	671A	671B	871A	871B
Laser Type	CW and quasi-CW (repetition rate > 10 MHz)		Pulsed and CW	
Interferometer Type	Michelson		Fizeau	
Wavelength Range *__VIS__, __NIR__, __NIR2__ models: Fiber-coupled (APC or UPC) *__IR__ & __MIR__ models: Free space	**VIS:** 375 - 1100 nm **NIR:** 520 - 1700 nm **NIR2:** 1 - 2.6 µm **IR:** 1 - 5 µm ***MIR:** 1.5 - 12 µm (*Available only in 671B version*)		**VIS:** 375 - 1100 nm **NIR:** 630 - 1700 nm **Available in only FC/PC input connector*	**VIS:** 375 - 1100 nm **NIR:** 630 - 1700 nm **NIR2:** 1000 - 2500 nm **Available in only FC/PC input connector*
Accuracy	± 0.2 ppm	± 0.75 ppm (± 1 ppm for MIR)	± 0.2 ppm **Single mode fiber*	± 0.75 ppm **Single mode fiber*
Wavelength Repeatability *Standard Deviation	**VIS/NIR/NIR2**: 0.03 ppm (0.03 pm @ 1000 nm) **IR:** 0.06 ppm (0.2 pm @ 3 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
Wavelength Resolution	0.06 ppm (0.12 ppm for **IR**)	0.2 ppm	0.015 ppm	0.025 ppm
Maximum Bandwidth (FWHM)	1 GHz	10 GHz	1 GHz	10 GHz
Measurement Rate	4 Hz (VIS / NIR / NIR2) 2.5 Hz (IR)	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	

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 ≥ 10ns)
Interferometer Type	Michelson with Fast Fourier Transform		
Wavelength Range *__VIS__, __NIR__, __NIR2__ models: Fiber-coupled (APC or UPC) *__IR__ & __MIR__ models: Free space	**VIS:** 375 - 1100 nm **NIR:** 520 - 1700 nm **NIR2:** 1 - 2.6 µm **IR:** 1 - 5 µm **MIR:** 1 - 12 µm* *Can operate up to 14 µm, though specifications not guaranteed past 12µm.*		**MIR:** 1 - 12 µm* *Can operate up to 14 µm, though specifications not guaranteed past 12µm.*
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) **Spectral resolution as low as 2 GHz (4 GHz for IR) is possible in different window functions. Accuracy & ORR may be reduced*		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.**

Configuration Guide:

**only if offered*

WX – Y-Z*

- **Z:** Choose UPC (FC/UPC) or APC (FC/APC) - **Only applicable to VIS, NIR & NIR2 models. Leave blank for IR or MIR models.**
- **Y:** Choose range (VIS) or (NIR) or (NIR2) or (IR) or (MIR)
- **X:** Choose model (A) or (B)
- **W:** Choose series (671) or (871) or (771) or (772)

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Bristol Instruments 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. Can be used with Pulsed laser but it is susceptible to damage that is not easily repaired. Used in conjunction with our 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) **Same diameter for Fiber-optic connector.*
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 **With TEM00 collimated beam.* **Wavelength dependent.*	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 **Larger core diameter fiber may be used, but performance has not been characterized.* **Assumes fiber NA of 0.1.*	**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 *or* automatically.
Switch Types	**1 x 4** **1 x 8**
Wavelength Range	400-1700 nm
Internal Fiber Type	9 µm core diameter (Single-Mode over 1260 – 1625 nm)
Connector type	FC/UPC or FC/APC
Transmission **With 9µm core diameter external Fiber*	10-30% (400-600nm) 30-40% (600-1700nm)
Switching Frequency	≤ 30 Hz
Maximum Input Power	0.05 mW (400-500 nm) 10 mW (500-600 nm) 100 mW (600-1700 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 for all above mentioned accessories.

Configuration Guide:

LC-1 – X – Y
- **Y:** Choose UPC (FC/UPC) or APC (FC/APC)
- **X:** Choose UV (350-1100 nm), VIS (375-1100 nm) or NIR (520-1700 nm)

BC-1 – X – Y – Z
- **Z:** Choose UPC (FC/UPC) or APC (FC/APC)
- **Y:** Choose F (single-mode fiber) or D (multi-mode fiber)
- **X:** Choose VIS (375-1100 nm) or NIR (520-1700 nm)

FA-IRX – Y
- **Y:** Choose UPC (FC/UPC) or APC (FC/APC)
- **X:** Choose **1** (1-7 µm) or **2** (7-12 µm)

FOS-X – Y
- **Y:** Choose UPC (FC/UPC) or APC (FC/APC)
- **X:** Choose **4** (4 inputs) or **8** (8 inputs)

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