

434-202-2391
inquiries@brightspec.com

Fourier Transform-Molecular Rotational Resonance (FT-MRR) Broadband Discovery Spectrometer

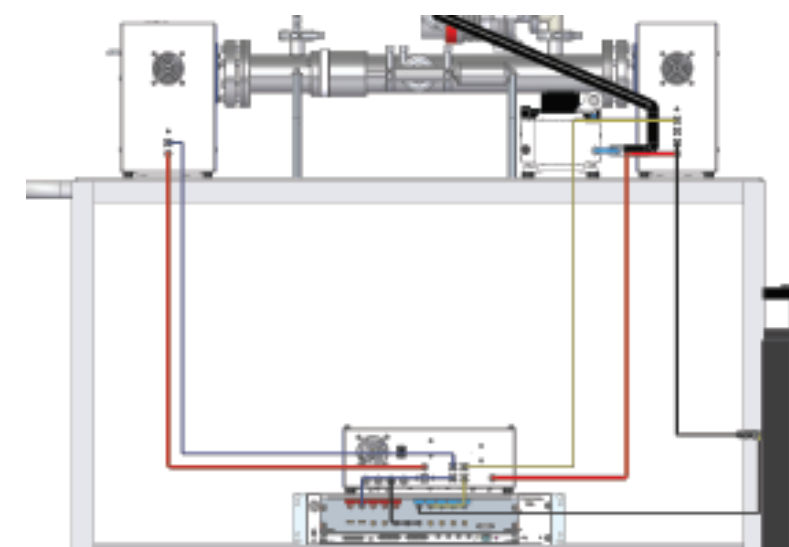


The BrightSpec Discovery 75-110 GHz FT-MRR spectrometer is designed for federal and academic research groups. It enables fast, direct, and quantitative insights on complex chemical mixtures. It is a standalone instrument that can also be combined and networked with other analytical systems.

- **For multi-species, gas-phase analysis**
- **260-290GHz and 520-580 Ghz bands available**
- **Room temperature, with no cryogenics or carrier gases required**
- **Easily reconfigured for different sample chamber designs**
- **Optional Broadband Monitor Port to incorporate user-provided oscilloscopes for higher instantaneous bandwidth**
- **Expandable spectral library—for experiment data and simulations**
- **Automated composition analysis software for quantitative mixture analysis**
- **Advanced analysis mode techniques for unknown characterizations**
- **Standard 110/220 Volt power**
- **CE marked**

Fourier Transform-Molecular Rotational Spectroscopy

Fourier Transform-Molecular Rotational Resonance (FT-MRR) Broadband Discovery Spectrometer



BrightSpec FT-MRR Discovery Series Spectrometer

Application	Complex mixture chemical dynamics analyzer
Measurement technique	FT-Molecular Rotational Resonance Spectroscopy
Frequency Range	75-110 GHz
Millimeter wave generation	Solid-state active multiplier chain (AMC)
Millimeter wave detection	Heterodyne subharmonic mixer
Instantaneous bandwidth	720 MHz (standard digitizer) 10.5 GHz with optional Broadband Monitor Port
Measurement time	2-10 minutes (broadband survey)
Digital generation source	12 GS/s, 2-channel AWG
Detection	4 GS/s Digitizer with real-time accumulation
Number of averages	Up to 16 million
Carrier gas or cryogenics	Not applicable
Sample Chamber	65cm, 2 liter stainless steel chamber for static and flow measurements. Swapable for user-designed chamber
Performance	
• Repeatability	<5% RSD
• Accuracy	<10% RSD
• Linearity	$R^2 > 0.999$ up to 5 orders of magnitude
• Measurement rate	Up to 250 kHz
Measurement modes	Fast Survey High Dynamic Range (HDR) Survey Nutation Curve Broadband Double Resonance

BrightSpec FT-MRR Discovery Series Spectrometer

	Targeted
	Single sweep broadband (with Broadband Monitor Port option)
Environmental	
• Operating temperature	Room temperature, sample cell typ. 40-100 °C
• Sample gas temperature range	0-100°
• Humidity range	20-80% relative humidity
• Protection class	Not rated
• Noise	70 dB(a) max
Inputs and Outputs	
• Broadband Monitor Output (optional)	
• External Trigger (optional)	
• 10MHz clock out	
• Digital signal out	
• Inlet gas port connector	
• Exhaust gas port connector	
Electrical Rating	
• Power supply	100/240 VAC, 50/60 Hz
Dimensions	
• Size	Approx 122 cm x 61 cm x 71 (in benchtop configuration)
• Weight	48.5kg
• Installation	Bench top or cabinet mounted