MISTRAL-MIR Spectrometer Technical Specifications

MODEL MISTRAL-MIR

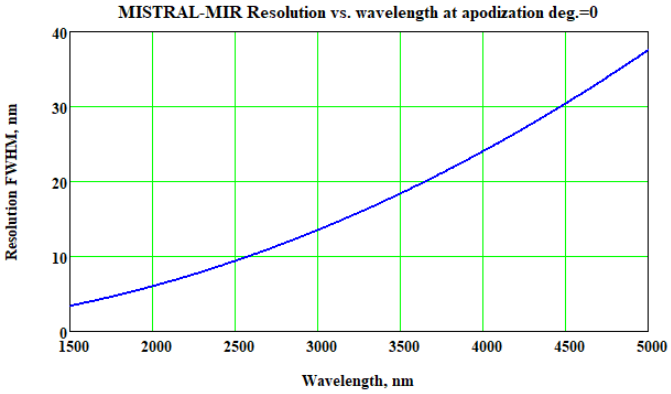
MISTRAL-MIR is a Mid-Infrared Fourier Transform Spectrometer based on Arion Optics birefringent interferometer technology. MISTRAL-MIR delivers cost efficiency and design simplicity with no compromise on performance and quality.

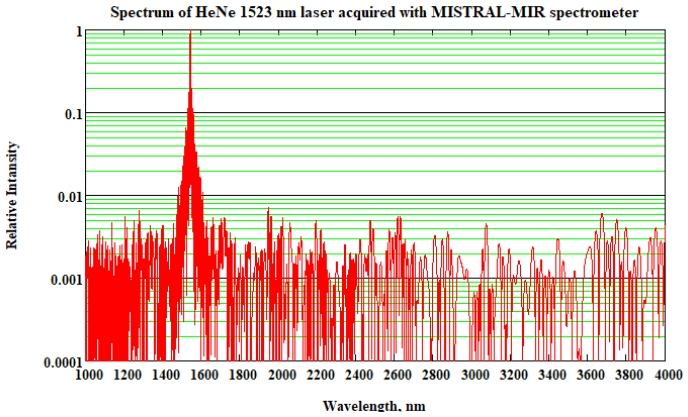
FEATURES AND BENEFITS

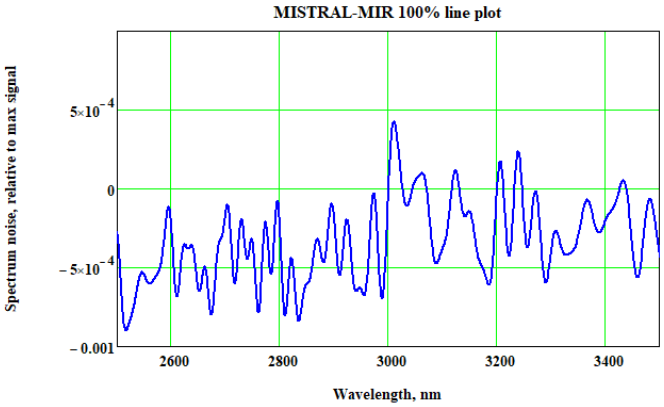
- 1700 - 4000 nm spectral range with no order overlap (optional 1700 - 5000 nm range)
- 16 cm-1 resolution (4.5 nm at 1700 nm)
- 1500 SNR at 5 seconds scan time
- 5 seconds minimum scan time
- Thermoelectrically cooled PbSe detector
- NIST-traceable factory wavelength calibration
- Wavelength stability guaranteed by internal reference laser
- Fiber or space coupled optical input
- Compact size 6" x 5" x 3.5"
- External TTL or switch trigger input, light source ON/OFF control output
- Single element photodetector, therefore no defective pixels, no gain variation between pixels, no dark current baseline drift over time and temperature
- ArionView software included

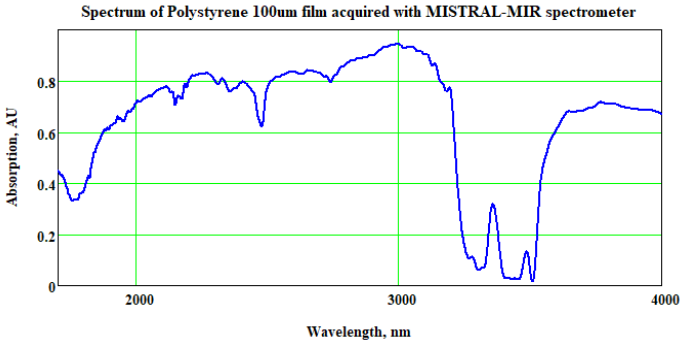
Parameter	Test Conditions	Value			Unit
		Min	Typ	Max	
System parameters					
Spectral range	PSD > 0.05*(max. PSD) with Soleil light source illumination		1700 – 4000 (1700 – 5000 optional)		nm
Resolution, in wavenumbers			16		cm^{-1}
Resolution, in wavelengths[1]	At 1700 nm		4.5		nm
	At 3000 nm		14		nm
Wavelength accuracy [2]	At T_A = +5C-+45C		4		nm
	At T_A=20^{0}C		2.5		nm
Wavelength repeatability [3]			0.2		nm
Single scan time			5		sec
Total integration time		5 sec		40 min	
Spectral channel-to-channel leakage	For channel-to-channel spectral distance > 100 nm		0.2		%
SNR [4]	5 sec integration time		1500		
	1 min integration time		5000		
Spectral measurement noise [4]	5 sec integration time		300		µAU
	1 min integration time		90		
Optical parameters					
Input numerical aperture			0.5		
Optical fiber connector			SMA905		
Electrical parameters					
Control interface			USB 2.0		
Power supply			5.0V/1A		
Power consumption			5		W
ADC resolution			24		bit
External trigger input	Trigger ON, voltage mode	0		0.5	V
	Trigger OFF, voltage mode	1.0		5.0	V
Mechanical parameters					
Dimensions (W x D x H)			6” x 5” x 3.5”		inch
Weight			1.1		kg
Maximum ratings					
Operating temperature	No dew condensation		+5 to +40		^{0}C
Storage temperature	No dew condensation		-20 to +60		^{0}C

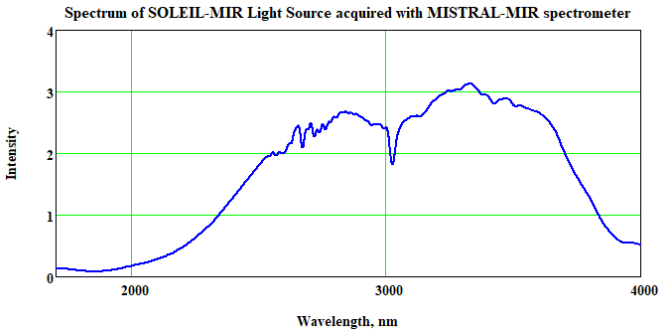
General conditions: T_A = +5C - +40C, 4 seconds single scan, unless otherwise specified.
[1] Resolution of Fourier-Transform spectrometers is constant in the wavenumbers domain and proportional to λ^2 in the wavelengths domain. Resolution numbers are given as FWHM for apodization degree = 0 (boxcar)
[2] Wavelength accuracy is a maximum difference between measured and tabulated wavelength values of the Polystyrene standard absorption peaks.
[3] Wavelength repeatability is an RMS variation of the measured wavelength between consecutive scans at constant illumination conditions
[4] SNR and Spectral measurement noise are RMS variations of spectra of 20 consecutive scans with respect to their averaged spectrum, spectrometer is illuminated with Soleil QHL light source with fiber cable coupling, apodization degree = 5.











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