

Fast Scanning FTIR

Protea's atmosFIR FTIR analyser range is now available with fast scanning operation

With a maximum resolution of better than 0.7cm^{-1} (unapodized), and standardised resolutions of 1cm^{-1} , 4cm^{-1} and 8cm^{-1} , the atmosFIR FTIR gas analyser has always been a flexible analytical tool. Now a range of scanning speeds can be added to standard configurations. Changes in speed and resolution do not require any hardware changes and all the user needs do is load one of a standard set of configuration files. This further extends the atmosFIR FTIR use to applications requiring very quick response.

Protea can provide fixed process or research systems using fast scanning FTIR and custom sampling system to achieve quickest response times



Applications

Portable and Fixed Cabinet Systems

- * Exhaust emissions testing
- * Fire Testing
- * Quick response warning applications
- * Gas Turbine testing

Multistream, Multi-speed

- * FTIR can measure over 30 "streams"
- * Each stream with unique configuration
- * Single analyser to measure fast streams and slower, but with increased detection limits

Protea's FTIR software platform PAS-Pro allows for multiple FTIR configurations to be set across multiple measurement streams. This allows, for example, one measurement stream to be monitored with slower, high resolution settings. This will give very low detection levels (parts per billion, ppb) for that stream. Then, with a simple push of a button, another measurement stream can be monitored with very fast detection speeds, giving a quickest scan speed of 5Hz (5 scans per second) and quickest possible response time.

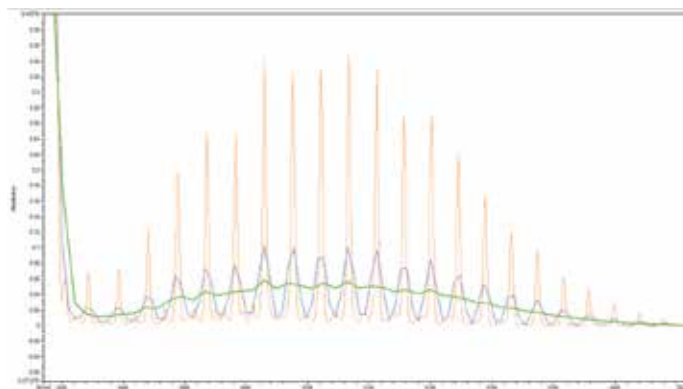


atmosFIRt portable FTIR can be used in automotive and field applications with quick measurement time

Resolution Choice

Protea prefer to not run at 8cm^{-1} for any application requiring accurate and low detection measurements. In general, the choice is between 1cm^{-1} and 4cm^{-1} for optimum gas sensing capabilities. For any application requiring regulatory reporting to the highest performance, a FTIR with resolution 1cm^{-1} is needed.

$<0.7\text{cm}^{-1}$ (unapodized)	1cm^{-1}	4cm^{-1}	8cm^{-1}
Idealised resolution from atmosFIR	Best resolution for gas analysis with FTIR, matching our high-res calibration library	Middle-ground between speed and analytical capability	Fastest response Not ideal for investigation work but OK if sample composition is known



Comparison of various resolutions of Methane from FTIR. High resolution at 1cm^{-1} gives much improved signal over lower resolutions of 4cm^{-1} and 8cm^{-1} . 8cm^{-1} cannot be used unless the gas matrix is well understood.

Scanning Speed capabilities

The atmosFIR scan speed is changed via a simple software setting or loading a pre-defined configuration file. The following tables gives examples of the available changes in speed, and details how the fastest speed of <0.2sec reading (5Hz operation) can be met.

Scanning arm speed / cms-1	Scans / min	Single sweep (best) / sec	Sweeps / Hz
0.20	21	1.43	0.70
0.25	26	1.15	0.87
0.33	35	0.86	1.17
0.40**	41	0.73	1.37
0.50	50	0.60	1.67
0.67	65	0.46	2.17
1.00	92	0.33	3.07
2.00	156	0.19	5.20*

*<0.2sec per reading meets the 5Hz scan time requirement of applications such as automotive testing.

**0.4cms-1 is standard speed used for regulatory emissions monitoring applications with 1 minute measurement time and gives best SNR and detection limits for environmental pollutants

atmosFIR FTIR set for quick scanning has a wide range of applications, including automotive emissions and in-cabin testing – car, coach and ambulance shown



Quick scanning with FTIR allows for very quick response times with measurement update times of the order 0.2sec (5Hz)



Setting speed in software is a simple option. Or the configuration can be saved for easy quicker implementation or in fixed process applications



This Datasheet is a guide to the product and Protea Ltd reserve the right to modify the product without notification.