atmosFIR[w]

Wall-mounted multigas analyser for ambient air and process monitoring

AtmosFIR is the latest generation of gas analyser technology from Protea. The atmosFIR system improves upon previous FTIR technology and represents one of the most cost-effective and flexible analytical products on the market today.

atmosFIR[w] has been designed to give a complete measurement sysyem with embedded touchscreen controller. At the heart of atmosFIR[w] is a high-resolution, robust and proven FTIR spectrometer offering high signal throughput, low-noise and long lifetime of components. atmosFIR[w] has been developed to incorporate the latest improvements and advantages in technology, including:

- Low cost of ownership and maintenance
- Robust and light, including the latest in fabrication materials
- AtmosFIR combines an FTIR analyser with an in-built sampling system and embedded PC controller for a complete system.

These advantages come with the benefit of improved performance over existing products, due to the new small, robust, high resolution interferometer with low noise measurement. AtmosFIR is fitted with a sensitive DTGS detector, operating at ambient temperature without need for liquid nitrogen or other cooling. Protea continues to offer our powerful in-house software suite, training and support, so that the user is able to achieve the best performance out of the product. PLS algorithms offer great advantages over more traditional chemometrics.

Multi-component, multi-range FTIR gas analyser with embedded touchscreen controller

Measure 1000's of gases with single unit

No-limit on number of gas measurements at once, using powerful PLS algorithms

Data can be downloaded and re-analysed offline for new gases

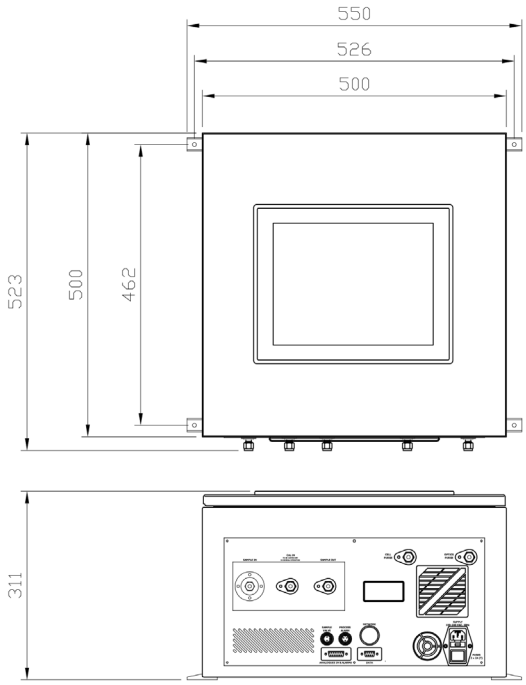
Specific Applications for atmosFIR[w]:

- Ambient Air Testing
- Workplace Exposure Limit Measurement
- Hospital and Medical Department air testing
- Online Process Measurement
- Siloxane Measurements
- EX installation for Flammable Gas monitoring

Hardware Specifications

Double-pivot interferometer with increased robustness. Permanently aligned optics, giving repeatable measurements and high light throughput.		
Resolution	1cm^{-1}, 2cm^{-1}, 4cm^{-1}, 8cm^{-1} typical resolutions, variable on application : 0.5cm^{-1} available as special	
Optics:	Zinc Selenide beam splitter (non-hygroscopic)	
Spectral Range:	485 - 8500cm^{-1}	
Reference laser:	Solid state laser (no scheduled maintenance required). Long lifespan (10 years) compared with HeNe laser	
Source:	Mid-IR source, with electronic stabilization for long lifespan	
Detector:	DTGS with signal sampling at 24-bit ADC	
Sample Cell:	Materials: Ni-coated Al cell. Proprietary alloy mirror substrate with multi-layer coating. Volume: 300ml Pathlength: 4.2m standard pathlength. 6m available as special Temperature: 40°C standard for ambient air. 60°C standard for process applications	
On-board Sampling system:	Pre-cell filter for extra protection against dust Automated Zero Purge valve, with flow control No need for separate pre-analyser sample conditioning box	Alarm relays Sample Signal Output 4-20mA outputs (optional)
Weight	24kg	
Dimensions	500 x 500 x 300	
Supply	100 - 250 V / 50-60 Hz	
Consumption	250W	

Protea Limited. 101 The Courtyard, Radway Green Venture Park, Radway Green, Crewe, Cheshire, CW2 5PR.



atmosFIR analysers are available as stand-alone gas monitoring units or can be customised for specific applications as portable or fixed systems. They are flexible and can be set-up according to the needs of the user; from fully automated systems through to a feature rich analyser for the expert user. As always, the user is fully supported by Protea's in-house technical support team.

atmosFIR is the successor to Protea's previous gas monitoring FTIR systems, keeping all the features that users found valuable in achieving their measurement results, but offering the benefits of the new atmosFIR platform with increased portability, lower ownership costs and increased measurement performance.

With long-lifetime VCSEL reference laser diode, unique cell design, and air cooled DTGS detector with 24-bit ADC, atmosFIR is a step-change in value and service lifetime for FTIR emission gas analysis.

Typical Measurements for atmosFIR

atmosFIR[w] runs a pre-loaded analysis method with fixed acquisition parameters and chemometric analysis for each application. This makes it incredibly simple to use for turn-key applications. Further analysis methods can be uploaded by the trained user or remotely by Protea.

Typical detection limit	<0.1ppm (gas dependent)		
Response Time	10 secs (T90, gas and resolution dependent)		
Linearity	<2% range	Repeatability (σ)	<1% range

Typical Applications: Hardcoded analysis, no complex set-up required. Switch on ➔ Zero ➔ Measure ➔ Report

Hospital and Medical Department Ambient Air		Bulk Industrial Gas Impurity from Air Separation	
Gas	**Optimal Detection Limit / ppm**	**Gas**	**Optimal Detection Limit / ppm**
Formaldehyde	0.01	CO	0.1
Phenol	0.2	CH_4	0.02
Ethylene Oxide	0.02	C_2H_6	0.05
Acetaldehyde	0.2	C_3H_8	0.1
Halothane	0.1	C_2H_4	0.05
Isoflurane	0.1	C_3H_6	0.1
Sevoflurane	0.1	Acetylene	0.1
Desflurane	0.1	HF	0.1
Enflurane	0.1	H2S	25.0
N_2O	0.02	Acetaldehyde	0.1
		SO_2	0.15
		NO	0.4
		NO_2	0.1
		N_2O	0.02

Unlimited measurements	Gases and Ranges are not fixed Any number of additional gases can be added to the calibration remotely. No hardware changes are required. Please contact Protea for specific gas requirements.
Measurement Units	Concentration: ppb, ppm, mg/m^3, %Vol
Data Output	Download via USB Data Output via – OPC Server, Modbus TCP/IP, Modbus Serial, 4-20mA Analogue