Shepherd FTIR

Portable FTIR Multi-gas Analyzer

Laboratory Quality Results

- Acids
- VOCs, SVOCs
- Fluorocarbons, CFCs
- Solvents
- Hydrocarbons
- Combustion Gases
- Organics
- Fully Portable

Continuous, real time portable monitoring of 385 individual species of gas: 100+ HAPs.

...In Real Time

CONTACT:

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www.cerexms.com

Unmatched Sensitivity:

Industry Leading Performance only a Cerex System can deliver...

The Shepherd FTIR utilizes an ultra-sensitive cryo-cooled MCT detector system for sensing minute changes in IR absorption due to the presence of trace concentrations of individual gases. The result of coupling our proven detection system with a 20 meter internal optical sample path and CMS real time analytic software is an industry leading FTIR multi-gas analyzer. Offering true ppb detection limits in a simple to operate portable package, in practice, only the Cerex cryo-cooled system can reliably deliver unattended, continuous real time monitoring of ultra low ppb concentrations of individual gas species with absorption features spanning the IR spectrum from 2 to 14 microns. There are no additional costs for sample handling, wet chemistry, carrier gas , sorbent filters or tedious ongoing calibrations. There are none of the constant maintenance costs or extra work associated with the handling of, or regulatory compliance issues arising from the use of liquid nitrogen coolant. Results are immediate, and the raw data containing all the information necessary for gas identification and quantification is always saved. Low cost of ownership is achieved through a three year routine maintenance cycle.

Shepherd FTIR Features:

Features Defined by Years of Operator Feedback...

For twenty years Cerex has manufactured the premier open path FTIR analyzer: Our AirSentry FTIR. With so many installations among diverse users worldwide, Cerex has received high quality feedback from Industry, Government, Engineers, Operators, Systems Integrators and Scientists operating our FTIR analyzers. We listened—The Shepherd FTIR offers features and a variety of configurations for flexible operations. An internal cell, long life consumables, a simple user interface, simplified networking and unknown gas analysis software.

The touchscreen interface, intuitive controls, large buttons, multiple analysis routines, advanced signal smoothing and low ppb detection limits make the Shepherd FTIR ready to meet a broad spectrum of monitoring requirements, with the flexibility to meet the needs of field technicians as well scientists.

- **Integrated Computer with Windows®**
- **Full functionality of a PC**
- **Touchscreen Interface**
- **Integrated WiFi and Ethernet Networking**
- **.CSV data file output**
- **Raw data files are always saved**
- **Software for reference file creation**
- **Simultaneous multi-component detection**
- **Inherent calibration**
- **Internal cell for QA, or user specific calibration**
- **Easily configured for your application**
- **User configurable acquisition cycles, alarms**
- **Audible, Visual and Email alarm functionality**
- **Software for unidentified gas analysis**

The Shepherd FTIR is designed to minimize operational costs and maximize uptime.

Only two consumable items: The IR Source and the Cryo-cooler Compressor

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Cerex CMS Software:

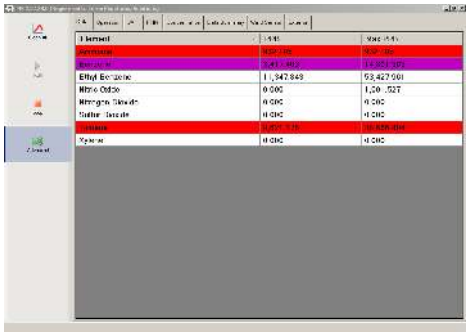
Control is in your hands...

All Cerex analyzers use Continuous Monitoring Software. CMS provides user interface, data-logging and analytic gas detection and quantification functionality. CMS puts control where it belongs,. In your hands. Target gas concentrations and alarm parameters are reported each user configured acquisition cycle. Alarms , acquisition time, background acquisition, detectable gases, and detection limits are all user configurable. Raw single beam files are always saved, providing permanency and third party of monitoring verification.

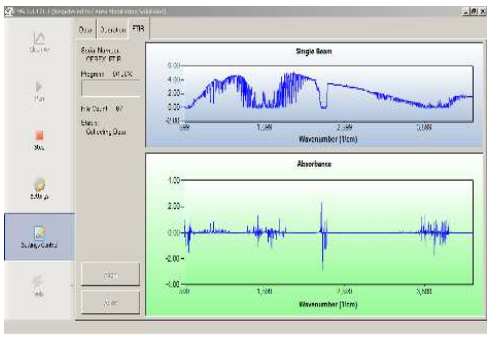
...from anywhere

Deploying the Shepherd FTIR with internet access, or adding a cellular USB modem adds powerful real-time remote control and data access functionality. Alarms may be automatically emailed to any email address when gas concentrations exceed user-configurable alarm thresholds, and data may be automatically emailed daily. The analyzer may be controlled and monitored from any pc or smartphone with Internet access.

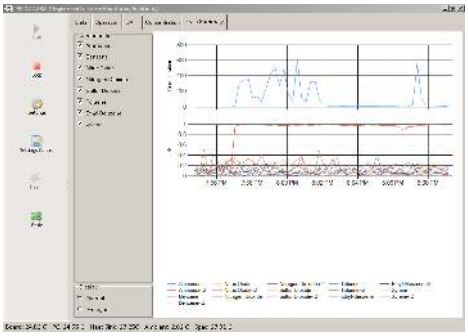
The CMS Data tab displays per acquisition gas concentration, data validity and visual alarms.

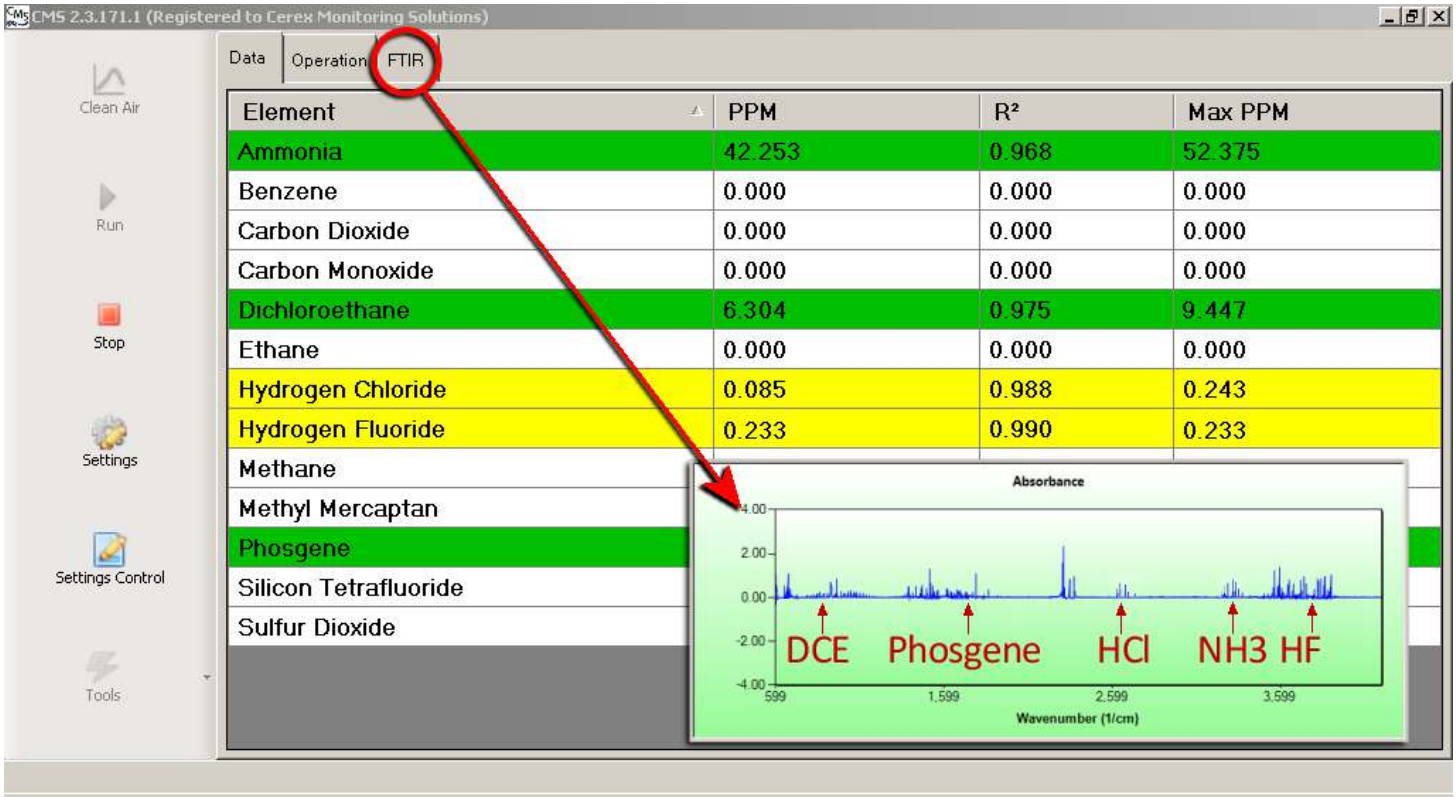


Single beam and absorption plots are readily viewed in real time. Raw single beam data is always saved.



Trended concentration data is available at a glance on the CMS Data Summary tab.





Detection Capabilities

FTIR Principle of Operation...

The Shepherd FTIR operates by sending a beam of infrared light through a twenty meter sealed sample cell within the instrument. The IR beam is directed by a series of optics to an ultra-sensitive MCT detector where the absorption due to target gases is measured and recorded. A classical least squares regression analysis compares the measured absorption spectrum to calibrated reference absorption spectra files. Beer's law is then used to determine gas concentrations.

Unrivaled Detection Capabilities of Individual Gases...

The Cerex detectable gas library consists of 385 compounds, including many of the most scrutinized hazardous air pollutants. The wide measurement spectrum makes detection of individual species simple. You can know the concentrations of the species you are required to monitor, without erroneous concentrations due to cross interference.

Shepherd FTIR Minimum Detection Limits of Commonly Requested Single Gases: Parts per Billion

Acetaldehyde	30.5	Cyclohexene	35.5	Hydrogen Sulfide	22500	Octane	12.5
Acetic Acid, monomer	70	Cyclopentene	65	Isobutane	37	Ozone	32.5
Acetone	145	Cyclopropane	100	Isobutanol	17	n-Pentane	42.5
Acetonotrile	650	1,2 Dibromoethane	115	Isobutylene	20.5	1-Pentene	50
Acetl Chloride	33.5	m-Dichlorobenzene	60	Isoctane	29.5	2-Pentene	75
Acetylene	38.5	o-Dichlorobenzene	47	Isoprene	22.5	trans-3-Pentene nitrile	29.5
Acrolein	42.5	Dichlorodifluoromethane	10	Isopropanol	55	Phosgene	10
Acrylic Acid	23	1,1 Dichloroethane	55	Mesitylene	46	Phosphine	135
Acrylonitrile	75	1,2 Dichloroethane	365	Methane	175	Propane	95
Ammonia	10	1,1 Dichloroethene	34	Methanol	20.5	Propionaldehyde	24.5
Aniline	195	1,2 Dichloroethene	100	Methyl Acetate	40	Propionic Acid	110
Arsine	85	Dichloromethane	65	Methyl Acrylate	33	Propylene	70
Benzene	170	1,2 Dichlorotetrafluorethane	10	Methylamine	145	Propylene Oxide	110
Bis-dichloroethylether	35	Diethyl Ether	13	2-Methyl 2-Butene	235	Silicon Tetrafluoride	10
Boron Trichloride	10	Dimethylamine	36.5	3-Methyl 1-Butene	80	Styrene	60
Bromomethane	410	Dimethyl Ether	45.5	Methyl Formate	75	Sulfur Dioxide	225
Butadiene	46.5	1,1 Dimethyl Hydrazine	17.5	Methyl Methacrylate	32.5	Sulfur Hexafluoride	10
n-Butane	105	Dimethyl Sulfide	15	Methyl Nitrite	33	1,1,1,2 Tetrachloroethane	19
2-Butanone	105	Ethane	80	2-Methyl Pentane	55	1,1,1,2 Tetrachloroethane	2000
Carbon Dioxide	655	Ethanol	44.5	3-Methyl Pentane	30	Tetrachloroethene	10
Carbon Disulfide	170	Ethyl Benzene	170	2-Methyl 1-Pentene	85	Tetrahydrothiophene	44.5
Carbon Monoxide	65	Ethylene	32	2-Methyl 2-Pentene	45	Toluene	170
Carbon Tetrachloride	11.5	Ethylene Oxide	55	4-Methyl 2-Pentene	60	1,1,1 Trichloroethane	27.5
Carbon Tetrafluoride	10	Ethyl Vinyl Ether	60	Methyl Vinyl Ether	70	1,1,2 Trichloroethane	70
Carbonyl Sulfide	24	Fluorobenzene	85	Methyl Vinyl Ketone	95	Trichloroethene	11.5
Chlorobenzene	75	Formaldehyde	22.5	Nitric Acid	31.5	Trichlorofluormethane	10
Chlorodifluoromethane	10.5	Formic Acid, Monomer	39	Nitric Acid	1150	Trochlorotrifluoroethane	10
Crotonaldehyde	38	Furan	55	Nitro Benzene	65	Vinyl Acetate	37.5
Chloroethane	100	n-Hexane	22.5	Nitro Ethane	150	Vinyl Chloride	80
Chloroform	12.5	Hydrogen Bromide	60	Nitrogen Dioxide	145	Vinylidene Chloride	34.5
Chloromethane	470	Hydrogen Chloride	30.5	Nitro Methane	405	m-Xylene	75
Chlorotrifluoromethane	30	Hydrogen Cyanide	340	Nitrous Acid	11	o-Xylene	135
Cyclohexane	10	Hydrogen Fluoride	10	Nitrous Oxide	95	p-Xylene	70

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Options for Manufacturing, Engineering, Security and HAZMAT

Powerful Communication Features

Internal and external USB ports make the addition of optional USB peripherals such as GPS, Cellular Modem or even a Streaming Webcam possible. This flexibility adds powerful real time monitoring, automated data reporting and automated alarm reporting functionality. The Shepherd FTIR may be deployed and environmental conditions monitored by onsite personnel as well as remote decision makers via any PC or smartphone with an internet connection.

Simplified Process Control Integration, Industrial Communication, Control Outputs, Data Acquisition Inputs

The Shepherd FTIR is available with user specific control outputs , as well as MODBUS, Serial and analog outputs to allow simple and direct integration with existing data acquisition and control systems.

Core Data Acquisition and Integrated Meteorological Monitoring

With optional inputs the Shepherd FTIR is easily configured as a data acquisition system to allow logging and communication capabilities to be extended to particulate analyzers, ancillary sensors, external analyzers, and more. Definitive source support is available by ordering a Shepherd FTIR analyzer with integrated temperature and 3-D ultrasonic wind modeling hardware. All data parameters are integrated into CMS data tables, and the anemometer is tripod mounted for rapid deployment.

External Battery Systems

The Shepherd FTIR smart charger will charge and maintain the internal lithium polymer battery while simultaneously supplying power for continuous monitoring. Ready to go at a moments notice, a variety of optional external batteries are available to extend continuous monitoring capability in the absence of power.

Shepherd FTIR Multi-Gas Analyzer Specifications

Cerex Shepherd FTIR General Specifications	
General parameters	
Measuring principle	FTIR
Performance	Simultaneous analysis of up to 50 gas compounds
Response time, T90	Typically < 120s, depending on the gas flow and measurement time.
Operating temperature	Short term 0-40°C, long term 5-30°C, non-condensing
Storage temperature	-20°C-60°C non-condensing
Power supply	100 to 240 VAC/50-60Hz
Run Time	3 Hour Battery, Continuous AC
Power consumption	Average 120W; Max 300W
Spectrometer	
Resolution	User configurable: 1cm^{-1}, 4cm^{-1}, 8cm^{-1}, 16cm^{-1}, 32cm^{-1}, 64cm^{-1}
Scan frequency	6 scans/s
Detector	Standard: Sterling Cooled MCT, (Optional Application Dependent: 2 stage Peltier cooled MCT)
Source	SiC, 1550K
Beamsplitter	ZnSe
Window material	ZnSe
Wave number range	600-4200 cm^{-1}

Cerex manufactures a full line of UVDOAS and FTIR Multi-gas Analyzer products for CEMs, Process Monitoring, PAAM, Leak detection, Zone Monitoring, IAQ, Ambient Monitoring and HAZMAT Response as well as custom analyzers for specific monitoring needs.

Contact us for a demonstration of our technology: +1 678-570-6662

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Common Applications

Chemical Manufacturing AQ

Refinery Air Quality

Fertilizer Manufacturing AQ

Container Inspection

Leak Detection

Ambient Air Quality

Indoor Air Quality

HAZMAT Response

Border Patrol Inspection

Chemical Warfare Agent Detection

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