

UV MICRO HOUND



Ability to effectively analyze separate gases in mixtures such as BTEX.



Real-time results with battery powered portability.

The Cerex Monitoring Solution Micro Hound is a point analyzer designed to detect part per billion (ppb) to percent level concentrations of multiple gases within a mixture.

The Micro Hound measures gas concentrations using ultraviolet light absorption. Individual gas fingerprints are compared against calibrated library spectra for an accurate detection and quantification of each gas within a mixture. UV, absorption utilizes similar principles as infrared, but offers greater detection sensitivity for many chemicals and no effect by humidity.

The touchscreen interface reports reliable concentration data up to once per second and stores all spectral data for later post processing or archiving. The CMS software allows for easy data collection with instant trend-charting of concentrations.

The Micro Hound is also completely portable with the use of internal battery power. This allows analysis of previously unmonitored areas. Detachable sample tube enables monitoring of confined area spaces, tanks, drums, and restricted areas that are otherwise inaccessible.



Easy Operation

The Hound series are handheld devices ready for gas detection and analysis with the flip of a switch. Within seconds the sampling system is operating and reporting data on the built in touch-screen. Despite the advanced detection system employed in the Hound series, accurate results can be achieved out of the box.

Detection Method

The Hound detects gas concentrations by measuring UV absorption – the unique drop in the UV intensity within a particular wavelength region where the gas of interest absorbs. The sample gas is actively gathered for analysis via a fan blower for ambient analysis, or via optional sample pump and probe for confined space entry or precise leak detection. The Hound uses a miniature spectrometer coupled to an optical sample cell to acquire and measure the spectral finger print of each gas within a mixture for accurate quantitative and quantifiable analysis.

Identification and Quantification

The sampled gases create a unique absorption pattern in the UV spectrum when referenced to a UV spectrum without the gases. The absorption pattern, spectra, is compared with calibrated software libraries to analyze the match, or fit, of the sampled gas spectra. The concentration is determined by taking the amount of UV absorption of the sample and comparing it to the concentration of the calibrated library spectra. The degree of fit is reported with an R² value for qualification along with the computed concentration in ppb.

Remote Internet Access

Cerex analyzers have the ability to be accessed from any pc worldwide, via the internet. A local internet line is required for the analyzer. If a local DSL/Cable line is not available, the system can utilize a cellular modem to allow internet connectivity. Gas alarms are sent to email, Blackberry, PDA, etc.

Laboratory quality results in an easy to use handheld analyzer!

Model Information

The Hound is available in a variety of models based on lower detection capabilities. All models come standard with a touch-screen interface, wireless connectivity, programmable audible alarm, software based library references, and one year warranty. Available options include a sample pump and probe, wireless serial transmission, 4-20mA outputs, and relay controlled outputs. The UV Micro Hound allows for all the same features of a full sized UV Hound in a much smaller package with minimal tradeoff in detection capabilities.

Specifications

Parameter	
Input Voltage (Charger)	100VAC to 240VAC , Single Phase 47-63Hz
Input Current	4A Max
Operating Ambient Temperature	0 to +45°C
Storage Temperature	-10 to 60 °C
Operating and Storage Humidity	Below 80% (Non-condensing)
Dimensions	19.78" x 15.77" x 7.41" (50.2 x 40 x 18.8 cm)
Lamp Life*	2000 Hours Minimum
Battery Life	4.5 Hours
Path Length	2 meters
Spectral Range	185nm to 400nm
Spectral Resolution	0.05nm or 0.20nm
Intake Particulate Filter	< 25 Micron
Sample Intake Rate	15 CFM
Sample Pump Rate ²	6 LPM
Sample Pump Life ²	20,000 Hours
Sample Cell Material ²	Aluminum, 316SS, PVDF, or PTFE

* 4000hr lamp available. ¹4.5hr battery available. ²Included with optional sample pump.



Ruggedized for harsh field conditions.

Data Quality Assurance

Our advanced software utilizes a proprietary photometric Differential Optical Absorption Spectroscopy (DOAS) algorithm, which eliminates the need to take clean air backgrounds. All the calculations are performed on an onboard PC which runs user-familiar Windows 7. The system can be span checked at any time, however, the measurement and analysis method employed in this system has the true calibration inherent in the fixed library reference. Unless there is a system fault, calibration is never needed. The system is self-compensating for all normal sources of drift found in analyzers including temperature, aging of the lamp, degradation of the optics, etc.

Data Output

The Hound reports real-time data on the front panel display, or remotely through Virtual Network Computing, VNC, using wired Ethernet or Wi-Fi, or optional onboard server software. Additionally, concentration data is available through wired or wireless serial transmission, 4-20mA output, and 0-5VDC analog voltage. All spectral data is also stored locally on the internal solid state disk which can be copied onto a standard USB key.

Software Features

All Cerex analyzers come with proprietary Continuous Monitoring Software, CMS, for data collection, analysis, and charting. CMS provides operators with stand alone process monitoring and control with sample specific integrated programmable relays and analog outputs. For quality assurance, control, and calibration checks, the user friendly interface features real-time charting of all analyzer functions and stores all raw sensor data for records or post processing analysis.

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Product Quality Assurance

Cerex places customer service and support as its highest priority. We encourage the customer to be informed upfront of the pros and cons of each system and competing technologies. Cerex is committed to long standing relationships with their customers that do not end after the sale of an analyzer. This commitment to customer satisfaction combined with our rugged and reliable analyzers is unmatched. Additionally, due to the high level of skilled handwork in the production of our analyzers, Cerex offers our customers custom designed and built analyzers at no additional charge. Combined with our manufacturing efficiency, Cerex provides ideal analyzers for your application quickly and at a reasonable cost.

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Minimum Detection Capabilities

Currently there are a number of definitions of “detection limits” used to characterize the performance of air monitoring systems. A common definition of is the magnitude of the absorbance spectra that is twice the system noise. The Environmental Protection Agency’s “Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air - Second Edition Compendium Method TO-16 Long-Path Open-Path Fourier Transform Infrared Monitoring Of Atmospheric Gases” defines detection limits as the following:

The detection limit of the UV Hound systems is a dynamic quantity that will change as the atmospheric conditions change. The variability of the target gas, and all of the other interfering species concentrations contributes to the variability of this measurement. The detection limit as determined in this procedure is the result of a calculation using a set of 15 individual absorption spectra. The 16 individual single beam spectra used for this determination are acquired in 5-min intervals and no time is allowed to elapse between them. The absorption spectra are then created by using the first and the second single beam spectra, the second and the third, and the third and the fourth, and so on until the 15 absorption spectra are obtained. These absorption spectra are analyzed in exactly the same way that all field spectra are to be analyzed and over the same wave number region. The analysis should result in a set of numbers that are very close to zero because most of the effects of the gas variability have been removed. The numerical results should be both positive and negative and for a very large set of data should average to zero. Three times the standard deviation of this calculated set of concentrations is defined to be the detection limit.

Although Method TO-16 was written for open path FTIR, the Cerex UV Hound system is unique among UV systems in that the raw data is essentially identical to an FTIR “Single beam” file. Hence the direct correlation drawn to TO-16. Using the detection limit definition described in TO-16, CEREX developed the detection limits that are listed above. However it should be noted that the actual detection limits achieved in the field will vary. This is primarily due to the fact that variations in interfering species will result in variability in detection limits. Cerex considers the detection limits listed to be a very conservative estimate. The end-user of the equipment will likely achieve much better results in the field. Cerex believes it is a good policy to not oversell a capability to our potential customers.

Example MDLs

Under optimum conditions, the following LDL's can be achieved. (More compounds are included standard)

Parameter	HOUND-FR	MINI HOUND-FR	MICRO HOUND	Units
Ammonia (NH ₃) MDL	12	24	100	ppb
1,3 Butadiene MDL	12	24	100	ppb
Benzene MDL	16	31	134	ppb
Carbon Disulfide MDL	12	24	100	ppb
Chlorine (Cl ₂) MDL	294	588	2500	ppb
Ethyl Benzene MDL	18	35	150	ppb
Formaldehyde MDL	188	376	1600	ppb
Hydrogen Sulfide (H ₂ S) MDL	29	59	250	ppb
Mercury (Hg) MDL	6	12	50	ppb
Napthalene MDL	12	24	100	ppb
Nitrogen Oxide (NO) MDL	17	34	146	ppb
Nitrogen Dioxide (NO ₂) MDL	238	475	2020	ppb
Ozone (O ₃) MDL	118	235	1000	ppb
o-xylene MDL	222	444	1885	ppb
m-xylene MDL	21	41	175	ppb
p-xylene MDL	14	28	119	ppb
Sulfur Dioxide (SO ₂) MDL	19	38	160	ppb
Toluene MDL	49	99	419	ppb
Accuracy	±1	±1	±1	%
Path Length	17.00	8.50	2.0	Meters

UV Absorbing Compounds

1,3 Butadiene	C ₄ H ₆	Nitric oxide	NO	Isoprene	C ₅ H ₈
Acetaldehyde	C ₂ H ₄ O	Nitrogen dioxide	NO ₂	Naphthalene	C ₁₀ H ₈
Ammonia	NH ₃	Nitrous acid	HNO ₂	Phenol	C ₆ H ₅ OH
Acrolein	C ₃ H ₄ O	Nitric acid	HONO ₂	Styrene	C ₆ H ₅ C ₂ H ₃
Benzene	C ₆ H ₆	Nitrous oxide	N ₂ O	Trimethylbenzene	C ₆ H ₃ (CH ₃) ₃
Bromine	Br ₂	Oxygen	O ₂	Acetone	C ₃ H ₆ O
Carbon disulfide	CS ₂	Ozone	O ₃		
Chlorine	Cl ₂	Phosgene	COCl ₂		
Chlorine dioxide	ClO ₂	Sulfur dioxide	SO ₂		
Ethyl Benzene	C ₈ H ₁₀	Sulfur trioxide	SO ₃		
Formaldehyde	CH ₂ O	Toluene	C ₇ H ₈		
Hydrogen Sulfide	H ₂ S				
Mercury	Hg				

More available upon request

