

# HOUND



Accurate, precise, and portable  
ambient gas point analyzer



The Cerex HOUND is a point analyzer designed to detect part per billion (ppb) to percent level concentrations of multiple gases within a mixture. The HOUND measures gas concentrations utilizing light absorption from a long path beam of UV radiation. A broadband miniature spectrometer collects the gas fingerprint data and the advanced software compares the results to a calibrated reference, or “library spectra”. Ultraviolet spectroscopy principles are similar to common infrared methods, but offer lower detection capability for many chemicals associated with impact on Human Health. The onboard PC reports reliable real-time concentration data up to once per second and stores all spectral data for later post processing or archiving.



# Forget waiting on lab results. Precise gas identification and reporting in real-time.

## Easy Operation

The HOUND series are portable 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. No "Lab Experts" required here. The hard work is performed automatically inside the HOUND so you don't have to.

## 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 target gas 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 long-path sample cell to acquire and measure the spectral finger print of each gas within a mixture for accurate qualitative 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. Using a proprietary algorithm, the absorption pattern, spectra, is compared with calibrated reference 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  $R^2$  value for qualification along with the computed concentration in ppb.

## Model Information

The HOUND is available in a variety models based on detection level capabilities. All models come standard with a touch-screen interface, wireless connectivity, programmable audible and visual alarms, 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 FR models feature longer batter life, a high resolution spectrometer, integrated sample probe with 15CFM flow rate, sub-micron intake smoke filter, and 15 simultaneous gas analyses.

## Specifications

Parameter	
Input Voltage	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)
Dimensions (17m Models)	35.75" x 13.50" x 5.25" (90.8 x 34.3 x 13.3 cm)
Lamp Life*	2000 Hours Minimum
Battery Life <sup>1</sup>	2 Hours
Battery Life (FR models)	4.5 Hours
Spectral Range	185nm to 400nm
Spectral Resolution	0.20nm
Spectral Resolution (FR models)	0.05nm
Intake Particulate Filter	< 25 Micron
Sample Intake Rate	15 CFM
Probe Length <sup>2</sup>	2m
Sample Pump Rate <sup>2</sup>	6 LPM
Sample Pump Life <sup>2</sup>	20000 Hours
Sample Cell Material <sup>2</sup>	Aluminum, 316SS, PVDF, or PTFE

\*4000hr lamp available. <sup>1</sup>4.5hr battery available. <sup>2</sup>Included with optional sample pump.



## 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 XP. 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 references. 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.

Laboratory quality results in an easy to use portable analyzer!



## 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 custom designed and built analyzers to its customers at no additional charge. Combined with our manufacturing efficiency, Cerex provides ideal analyzers for your application quickly and at reasonable cost.



## Detection Capabilities

Parameter	HOUND	HOUND-MINI	HOUND-1000	HOUND-750	HOUND-500	HOUND-250	HOUND-FR	HOUND-MINI-FR	Units
Ammonia (NH <sub>3</sub> ) MDL	0.015	0.030	0.255	0.340	0.510	1.020	0.015	0.030	ppm
1,3 Butadiene MDL	0.003	0.005	0.043	0.057	0.085	0.170	0.003	0.005	ppm
Benzene MDL	0.015	0.030	0.255	0.340	0.510	1.020	0.015	0.030	ppm
Carbon Disulfide MDL	0.094	0.187	1.590	2.120	3.180	6.360	0.094	0.187	ppm
Chlorine (Cl <sub>2</sub> ) MDL	0.294	0.588	5.000	6.667	10.000	20.000	0.294	0.588	ppm
Ethyl Benzene MDL	0.016	0.031	0.267	0.356	0.534	1.068	0.016	0.031	ppm
Formaldehyde MDL	0.500	1.000	8.500	11.333	17.000	34.000	0.500	1.000	ppm
Hydrogen Sulfide (H <sub>2</sub> S) MDL	0.030	0.060	0.510	0.680	1.020	2.040	0.030	0.060	ppm
Naphthalene MDL	0.010	0.020	0.170	0.227	0.340	0.680	0.010	0.020	ppm
Nitrogen Oxide (NO) MDL	0.020	0.040	0.340	0.453	0.680	1.360	0.020	0.040	ppm
Nitrogen Dioxide (NO <sub>2</sub> ) MDL	0.120	0.240	2.040	2.720	4.080	8.160	0.120	0.240	ppm
Ozone (O <sub>3</sub> ) MDL	0.012	0.024	0.200	0.267	0.400	0.800	0.012	0.024	ppm
O-Xylene MDL	0.017	0.034	0.292	0.389	0.584	1.168	0.017	0.034	ppm
M-Xylene MDL	0.238	0.475	4.040	5.387	8.080	16.160	0.238	0.475	ppm
P-Xylene MDL	0.118	0.235	2.000	2.667	4.000	8.000	0.118	0.235	ppm
Sulfur Dioxide (SO <sub>2</sub> ) MDL	0.020	0.040	0.340	0.453	0.680	1.360	0.020	0.040	ppm
Toluene MDL	0.040	0.080	0.680	0.907	1.360	2.720	0.040	0.080	ppm
Overall VOC	0.001	0.002	0.017	0.023	0.034	0.068	0.001	0.002	ppm
Accuracy	±1	±1	±1	±1	±1	±1	±1	±1	%
Path Length	17.00	8.50	1.00	0.75	0.50	0.25	17.00	8.50	Meters



## UV Absorbing Compounds

1,3 Butadiene	C <sub>4</sub> H <sub>6</sub>	Nitric oxide	NO	Ethane	C <sub>2</sub> H <sub>6</sub>
Acetaldehyde	C <sub>2</sub> H <sub>4</sub> O	Nitrogen dioxide	NO <sub>2</sub>	Ethanol	C <sub>2</sub> H <sub>6</sub> O
Ammonia	NH <sub>3</sub>	Nitrous acid	HNO <sub>2</sub>	Ethene	C <sub>2</sub> H <sub>4</sub>
Acetone	CH <sub>3</sub> COCH <sub>3</sub>	Nitric acid	HONO <sub>2</sub>	Isoprene	C <sub>5</sub> H <sub>8</sub>
Acrolein	C <sub>3</sub> H <sub>4</sub> O	Nitrous oxide	N <sub>2</sub> O	Naphthalene	C <sub>10</sub> H <sub>8</sub>
Benzene	C <sub>6</sub> H <sub>6</sub>	Oxygen	O <sub>2</sub>	Phenol	C <sub>6</sub> H <sub>5</sub> OH
Bromine	Br <sub>2</sub>	Ozone	O <sub>3</sub>	Styrene	C <sub>6</sub> H <sub>5</sub> C <sub>2</sub> H <sub>3</sub>
Carbon disulfide	CS <sub>2</sub>	Phosgene	COCl <sub>2</sub>	Trimethylbenzene	C <sub>6</sub> H <sub>3</sub> (CH <sub>3</sub> ) <sub>3</sub>
Chlorine	Cl <sub>2</sub>	Sulfur dioxide	SO <sub>2</sub>	And many more!	
Chlorine dioxide	ClO	Sulfur trioxide	SO <sub>3</sub>		
Ethyl Benzene	C <sub>8</sub> H <sub>10</sub>	Toluene	C <sub>7</sub> H <sub>8</sub>		
Formaldehyde	CH <sub>2</sub> O	O-Xylene	C <sub>8</sub> H <sub>10</sub>		
Hydrogen Sulfide	H <sub>2</sub> S	M-Xylene	C <sub>8</sub> H <sub>10</sub>		
Mercury	Hg	P-Xylene	C <sub>8</sub> H <sub>10</sub>		

