

Imacc StackGuard

A Continuous Emissions Monitor for Incinerators and Stacks



**FOR REAL-TIME MEASUREMENT OF UP TO 200 DIFFERENT
GASES INCLUDING ORGANICS, INORGANICS, ACIDS, AND
VOCs**

FEATURES

- Stable, rugged system for outdoor stack monitoring
- Monitors up to 50 compounds in real time over 200 compounds in total
- Accurate results even with interference from other gases
- Graphical user interface and display systems
- Full Alarming capability by compound
- Totally remote operation possible
- Simple, fully automatic operation
- Output by 4-20 ma, ModBus, or LAN link
- Low maintenance with no calibration gases Required



Industrial Monitor & Control Corporation

Description and Principle of Operation

The **StackGuard** is a rugged Fourier Transform Infrared monitor developed for incinerator and stack use. It provides real time, data on up to 50 compounds simultaneously, eliminating the need for multiple monitors.

StackGuard is inherently low maintenance and *does not require routine calibrations of any kind*. Calibration is provided by on-board infrared standards which are used to quantify every data point taken. Automatic daily background generation provides the only "calibration" required by some regulatory agencies.

StackGuard is offered in two versions one operating extractively by pulling a gas sample into the instrument for analysis, the second operating in cross-stack mode propagating the infrared beam across the stack to monitor actual in-stack gases.

Modes of operation:

In extractive mode samples are drawn through a heated line into a heated variable path-length absorption cell in the instrument. The lowest concentration range possible is dictated by the cell used. Several cells are available: 5 cm to 10 cm cells for %-level concentrations, a 1m to 10 m adjustable cell for concentrations down to 0.1 ppm, a 4 m to 32 m cell for concentrations to 30 ppb, a 10 m to 80 m cell for 5 to 10 ppb, and a 20 m to 150 m cell for single-digit ppb concentrations. The cell and its feed lines can be heated to 200 C so all measurements are made on a hot/wet basis without concerns of condensation.

In Cross-stack Mode the **StackGuard** propagates an infrared beam across the stack or duct to a corner-cube mirror array. This mirror array reflects the beam back to the FTIR where it is detected. Because the beam propagated across the duct is modulated by the FTIR before it is sent out, it can be differentiated from all external light sources. The detection limit in this mode of operation is dictated by the path length across the stack and back. Typically, detection levels in the 0.1 to 1.0 ppm range are possible with standard stacks.

Detection Limits

The Imacc **StackGuard** system is supplied with a customized analysis routine tailored to the specific source to be monitored. The detection limits depend on the target species, the path length used and the response time required. Detection limits will improve with longer path length and longer sampling time.

Representative Detection Limits*			
Species		Cross stack	Extractive
	Det. Limit (ppmv*m)**	10m path (ppmv)	32 m Cell** (ppmv)
Ammonia	0.3	0.03	0.009
Carbon Monoxide	0.38	0.038	0.012
Hydrogen Chloride	0.4	0.04	0.013
Hydrogen Fluoride	0.64	0.064	0.020
Nitric Oxide	1.92	0.192	0.060
Nitrogen Dioxide	4.8	0.480	0.150
Sulfur Dioxide	2.88	0.288	0.090
Carbon Tetrachloride	0.2	0.02	0.006
1,4 Dioxane	0.3	0.03	0.009
Formaldehyde	0.8	0.08	0.025
isobutylene	0.4	0.04	0.013
Isopropanol	1	0.1	0.031
Methylene Chloride	0.8	0.08	0.025
Ozone	0.5	0.05	0.016
Phosgene	0.2	0.02	0.006
Silane	0.1	0.01	0.003
Styrene	0.2	0.02	0.006
Trichloroethylene	0.3	0.03	0.009
1,1,1 Trichloroethane	1	0.1	0.031
Vinyl Chloride	0.5	0.05	0.016

* Assumes the use of optional cooled HgCdTe detector

** Detection limit may involve water drying of the sample

Software Packages

A complete Windows®-based control and display software package is provided with every instrument. This software allows non-technical people to operate the unit easily. The graphical display packages produce a variety of plots/displays in real-time including: gas concentrations as a function of time, bar charts of concentrations versus alarm levels, and correlation plots showing the relationship between various detected compounds. The reporting software allows for generation of custom tabular reports by the user.

Detection Limits:	low ppbv levels depending on path and averaging time	Base Unit	17" (l) x 20" (w) x 8" (h),. 65 pounds (29.5 kg)
Dynamic Range:	ppb-levels to high percent	Accessory	Cell and cross-stack accessories 20" (l) X 20" (w) X 8" (h),. 30 pounds (13.6 kg)
Response time:	Typically 10 sec. to 1 min.	Electronics:	interface electronics internal to base unit, computer internal or external
Calibration:	Not required but automatic background provided	Power:	120/240 VAC; 15 Amps without heated cells
Output:	Continuous 4-20 mA RS-232, RS 485, or LAN link	Options:	Custom cells, heated extraction lines, laptop computer for systems control, Special mirror coating for harsh flows.
Environment:	0°C - +40°C 0 - 98% RH		



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