Ethylene Oxide Monitoring Systems

LD Series Single-Point EtO Monitor

5-Point EtO Monitoring System

As regulatory requirements and enforcement bear down on your facility, you need a reliable, accurate, and cost-effective way to monitor ethylene oxide. Why not partner with a world leader in toxic gas detection?

Only **INTERSCAN CORPORATION** offers a full range of monitoring instrumentation for ethylene oxide—from portable analyzers to multipoint systems—along with the industry's best data acquisition, archiving, and reporting system—Arc-Max®.

Field proven in thousands of installations, Interscan EtO monitors offer you...

- Excellent sensitivity, specificity, and accuracy
- Ease of use and reliability
- Unmatched performance and peace of mind

interscan corporation

You might already be using badges, but badges can't protect your area with an instantaneous alarm, and even though they can provide exposure data, it's incomplete. Badges give you only a "single number" of accumulated exposure, with no time history! What if your employees got a heavy exposure of EtO on certain days during a badge cycle, with no exposure on the rest of the days? The badge would still read "normal." Thus, with badges, you are unable to track the effects of a particular incident.

You might have an older EtO monitoring system installed, that needs to be updated, since it is prone to false alarms, or is simply not sensitive enough to meet today's standards.

You might have a perfectly fine EtO monitoring system installed, but you want the benefits of adding data acquisition, archiving, and reporting. High concentration alarms are only a part of the total picture! You should also keep track of long-term low level exposure – the basis of far too many lawsuits. Unless you have a documented record of employee exposure to EtO, if you're sued, you'll be scrambling for data, desperately trying to re-create the past. There's no better way to keep these records than with Interscan's Arc-Max®.

So, whatever your requirement might be, INTERSCAN is the only name you need to remember for ethylene oxide monitoring.

Getting Started

The most important precept in ANY toxic gas monitoring application is **protecting the employees.** All decisions to determine the number and location of sampling points must be made with this in mind. Therefore, as a first priority, you must monitor where people are working. Beyond that, consider...

- The sterilizers and aerators
- Drain areas
- Gas cylinder storage area
- Ventilation characteristics
- Any other leakage or exposure possibilities

After the number and location of sampling points has been determined, options can then be evaluated and specified. Based on a thorough review of your unique monitoring requirements, Interscan will propose a system that fits your budget and does the job.

As a general guideline, most systems contain 2-4 points of detection. A single point system would be deployed in either a very small Central Service department, or because of budgetary constraints, absolutely limiting the scope of the system to monitoring the work area only.

Interscan's website **www.gasdetection.com** contains a wealth of information on the basics of toxic gas detection. A special section is devoted to ethylene oxide issues: **http://www.gasdetection.com/TECH/ethyle.html**

Continuous Monitoring Systems

Single Point Applications

If you need to monitor EtO at only one point, check out Interscan's LD Series. (*see photo on front cover*)

Features/Standard Equipment

- NEMA Type 4X fiberglass reinforced polyester enclosure
- 3 1/2 digit LED display
- Integral diaphragm pump
- Analog output – 0-1V & 4-20mA
- Alarm signals – Audible (piezoelectric type) and Visual (strobe)
- Low and high alarm contacts, continuously adjustable through the full scale measuring range, activating dedicated relays
- Automatic pump shutdown, in the event of an overrange condition, to protect the sensor

Options

- Filter Clog (pump vacuum fault) indication
- Special measuring ranges
- Data acquisition/archiving

To Order

Order by description, as follows:

Measuring Range (ppm)	*Model No.*
0–1999	LD20-0
0–50.0	LD20-1
0–19.99	LD20-2

- Specify any options desired

Multipoint Applications

(*see photo opposite, and on front cover*)

Features/Standard Equipment

- Rugged, attractive packaging
- All control and display functions at easy-to-use operator interface
- One sensor, one rotameter, and one integral diaphragm pump for each monitoring location
- Two alarm set points (low and high) continuously adjustable through the full scale measuring range, activating dedicated relays for each monitoring location
- Separate alarm signals, activating on low and high alarm conditions, occurring at any monitoring location
- Alarm event and time tracking
- Last time calibrated tracking, specific for each sensor
- Pump vacuum fault detection and fault display
- Automatic pump shutdown, in the event of an overrange condition, to protect the sensor
- Analog output – 0-5V & 4-20mA

Options

- Special measuring ranges
- More than five monitoring locations
- Remote alarm signals

- Loss of flow alarm
- Loss of power alarm
- Auto zero
- Data acquisition/archiving
- Full SCADA (Supervisory Control and Data Acquisition) system configuration

To Order

Model No.	*Description*
LD-220	Two-Point EtO monitoring system
PLC-320	Three-Point EtO monitoring system
PLC-420	Four-Point EtO monitoring system
PLC-520	Five-Point EtO monitoring system

- Determine number of monitoring locations
- Specify model number
- Standard measuring ranges are:

	Add this suffix to Model No.
0–1999 ppm	-0
0–50 ppm	-1
0–19.99 ppm	-2

- Specify any options desired
- Special ranges available on request – The panel meter can be programmed to display any desired full scale range, within the measuring capability of the instrument.

2-Point EtO Monitoring System

Portable Analyzers

While most of the EtO instruments we supply are for continuous monitoring, you may also have a requirement for a portable, survey unit.

To Order

Model No	*Range (ppm)*
4200-0	0–1999
4200-1	0–50.0
4200-2	0–19.99

Features

- An integral sample pump, powered by rechargeable Ni-Cd batteries (supplied), giving up to 10 hours of continuous service
- Panel meter indication of battery condition
- Adjustable audible and visual alarm
- Heavy duty Cordura® (Nylon) carrying case
- Analog output (0–100mV full scale)
- External battery charger

Options

- Special ranges
- UL Classified Intrinsically Safe, for use in hazardous locations, Class I, Groups A, B, C, and D (10X0)
- CENELEC Approved unit available

Dimensions	7 in. H x 4 in. W x 8 $^{7}/_{8}$ in. D (178 x 102 x 225 mm)
Weight	4 $^{1}/_{2}$ lb (2.0 kg)

Common Specifications

(Applicable to all instrument configurations)

Specification parameters are defined per ISA's S5.1 Committee and SAMA's RC-20-11-1964 standard. Performance of a particular model may vary from these specifications, and may also be influenced by environmental factors. For further data, please consult the factory.

Accuracy:	±2.0% of reading, ±1 least significant digit *(Limited to accuracy of calibration standard)*
Repeatability:	±0.5% of full scale
Minimum Detectability:	1.0% of full scale
Linearity:	±1.0% of full scale
Zero Drift:	±1.0% of full scale (24 hours)
Span Drift:	Less than ±2.0% of full scale (24 hours) The zero and span drift specifications assume that the analyzer is equilibrated, and is at constant temperature, with a properly maintained sensor. "Drift" is defined as an undesired change in output over a period of time, which change is unrelated to input, operating conditions, or load.
Lag Time:	Less than 1 second
Response Time To 1 ppm alarm (0-5 ppm scale):	10 seconds
Rise Time:	48 seconds to 50% of final value
Fall Time:	48 seconds to 50% of original value
Calibration:	Against standard gas mixture, or via INTERSCAN's Electronic Calibration Service

Data On Interfering Gases

No analytical method is completely specific. Gases present in the environment, other than the "target" gas of measurement, may affect instrument response. Interferences are not necessarily linear, and may also exhibit time dependent characteristics.

The chart that follows details the approximate concentration in parts per million of interfering gas required to cause a 1 ppm deflection in any Interscan EtO monitor, regardless of configuration.

For further information, please contact the factory.

Cl_2	25
CO	20
CO_2	$>10^5$ (no response)
Ethyl alcohol	380
Glutaraldehyde	5
Isopropyl alcohol	1.1 (nearly equivalent response)

Isopropyl alcohol represents the most significant interference on the ethylene oxide sensor, but in nearly all cases, potential problems can be overcome.
Typical remedial actions include:

A. Point shutdown/automatic restart, which allows the operator to temporarily interrupt monitoring at points that could be affected when isopropyl alcohol is used. Monitoring restarts automatically on a time-adjustable basis.

B. Selection of monitoring points away from those areas that may be unduly affected by isopropyl alcohol.

C. Using alternate germicides, which do not contain isopropyl alcohol.

N_2O	$>10^5$ (no response)
NH_3	300

Arc-Max®

Toxic gas detection and alarming have been an accepted part of any good occupational safety and health program for many years. Just as important, if not as well publicized though, is the need for appropriate data acquisition, archiving and reporting. That's where Arc-Max comes in.

What's so special about Arc-Max®?

Arc-Max has data integrity Because of the advanced program design, there is little chance of anyone "tweaking" the data after the fact. In addition, all sensitive functions, including setting alarm levels, establishing shift times, and exiting the program itself, are under password access.

Arc-Max is completely self-contained Unlike most competitive packages, Arc-Max produces the reports you need *directly from the program.* There is no reason to download files, unless you require further specialty analysis. And, all reports are generated without interrupting the current data collection.

Arc-Max is easy to use The system is supplied totally configured for your application, and is ready to run. All you do is connect your inputs.

Here are the reports that Arc-Max® gives you automatically. Other formats are available.

Shift Report
A shift report, whereby shift length and starting time are assigned by the user, can be set to print automatically at the end of each shift. This report shows the average value for each EtO monitoring location, the minimum and maximum instantaneous values, when the occurred, as well as the maximum rolling 15-minute average (STEL), and when it began. Up to four shifts per day are supported, and they can overlap.

Instantaneous Alarm Report
Changes in alarm status, for each EtO monitoring location, are printed as they occur.

Log Report
A time history report, selectable by starting and ending times, gives a complete listing of the 15-second averages for each EtO monitoring location.

Alarm History Report
This is a printout of changes in alarm status for any user-selectable period, defined by starting and ending time, for each EtO monitoring location. For screenshots, and more details, please visit:
http://www.gasdetection.com/PROD/arcmax.html

Your Next Step

In your evaluation of a supplier for your gas detection system, consider the advantages of Interscan.

- We are specialists in toxic gas detection, with over 25 years of experience, and thousands of installations. We are virtually the only independent company left in the industry, and gas detection is our only business, so we *have* to do a better job.
- We have always been committed to custom solutions for your monitoring problems. In gas detection, one size most definitely does *not* fit all. With Interscan as your partner, the most cost-effective system can be supplied to fit your needs exactly.
- No other manufacturer has Arc-Max®, the perfect data acquisition system for occupational safety and health applications.

We look forward to working with you on your ethylene oxide monitoring project.

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