



**ULTIMA X SERIES**  
GAS MONITORS

# MSA Proudly Introduces Ultima<sup>®</sup> X Series Gas Monitors



Ultima<sup>®</sup> XE  
Gas Monitor



Ultima<sup>®</sup> XIR  
Gas Monitor



Ultima<sup>®</sup> XA  
Gas Monitor

# X MODELS



- Ultima XE Gas Monitor
  - Explosion-Proof 316 stainless steel enclosure
  - Four entryways for wiring and sensor placement
- UL approval
- CSA approval (combustible performance testing pending)

# X MODELS



- Ultima X<sup>IR</sup> Combustible Gas Monitor
  - Point infrared detection
  - Explosion-Proof, 316 stainless steel enclosure
- Extreme speed of response ( $T_{90} < 2\text{sec}$ )
- UL approval

# X MODELS



- Ultima XA Gas Monitor
  - All-Purpose plastic enclosure
- General purpose - CE approval

# Ultima X Series Gas Monitors



- 4-20mA output sensor/transmitter
- New innovative design
- Two patents (pending)
- 2-Wire for Echems without LEDs or relays
- 3-Wire for combustibles and all LED and relay versions

# Ultima X Series Gas Monitors



- Available with all the Ultima Gas Monitor gases
  - Combustible
  - Toxic
  - Oxygen
- One sensor guard for all gas types

# X FACTORS



- Disconnect under power
- Interchangeable smart sensors
- State-of-the-art display
- World-class design
- Onboard LEDs and relays
- Field-selectable range

# Interchangeable Smart Sensors



- Pre-calibrated sensor modules - ready for use
- Sensors can be replaced in hazardous areas, with power applied, without the use of tools, and are self-aligning
- Factory default alarm and relay settings contained in sensor module

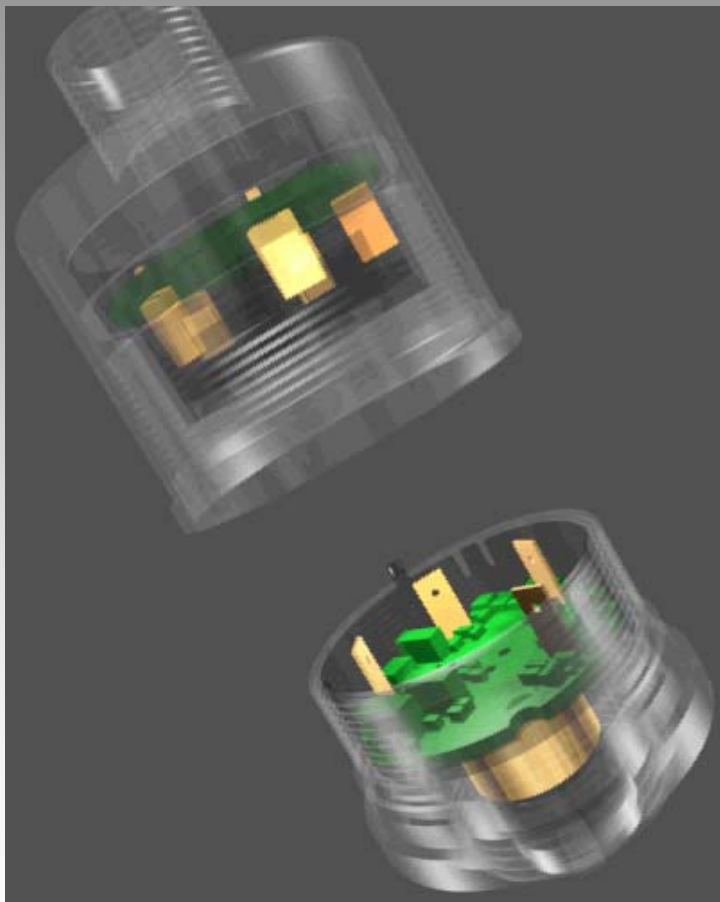
# Smart Sensor Rules

- Same sensor change - alarm and relay settings remain the same
- Sensor type change - alarm settings and upscale/downscale relay function reset to sensor defaults and other relay settings remain the same

	COMB	→	COMB
Alarm1	Enabled		Enabled
	15% LEL		10% LEL
	Upscale		Upscale
	Latched		Unlatched
	De-energized		Energized
Unit settings in red - no change			

	COMB	→	O2
Alarm1	Enabled		Disabled
	15% LEL		10% O2
	Upscale		Downscale
	Latched		Unlatched
	De-energized		Energized
New unit settings in red			

# Disconnect Under Power



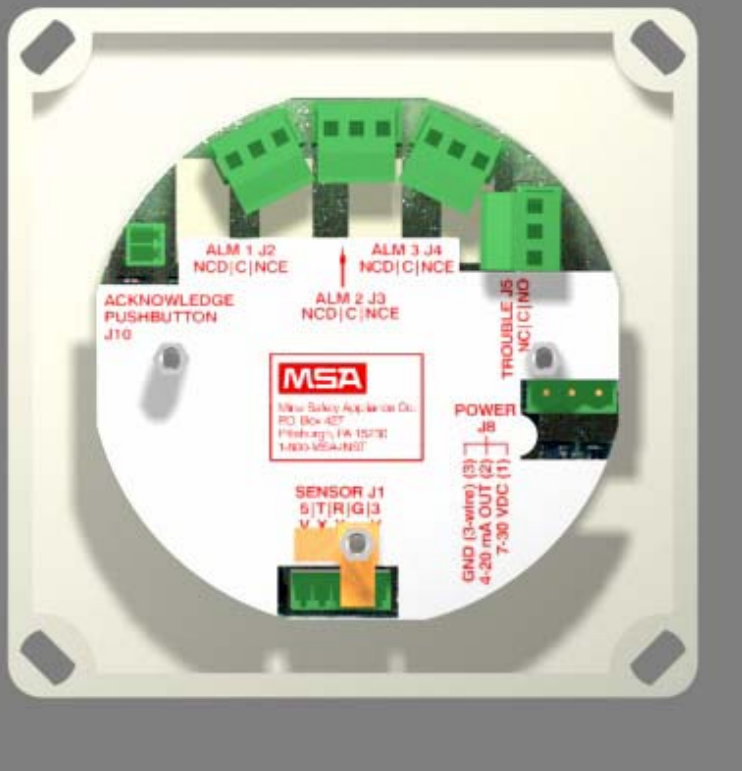
MSA patent-pending feature allows for sensor change-out in an explosion-proof housing without declassifying a hazardous area.

# World-Class Design



- One circuit board
  - Highest level of reliability
  - “Service” friendly
- Patent-pending electronics/display self-aligning feature
- Installing enclosure separate from electronics
- Multiple entries for sensor and wiring

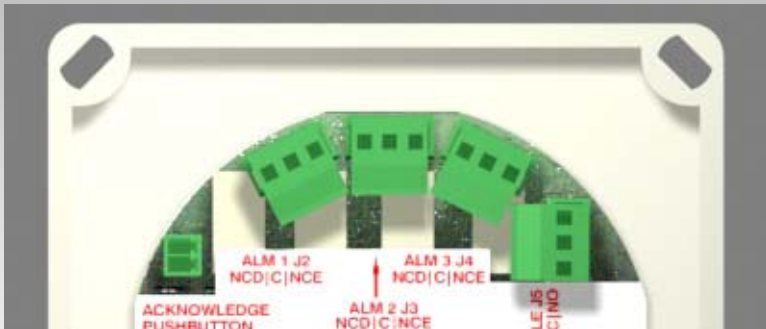
# Onboard Relays



- Optional relays
- Three alarm relays
- One fault relay
- 5A @ 220VAC
- 5A @ 30VDC

# Field-Programmable Relays

- Selectable through the Controller
  - Alarm level
  - Latching/non-latching
  - Upscale/downscale
  - Normally opened/normally closed
  - Energized/de-energized



# State-of-the-Art Display



- 3½ digit LCD
- Alternates between measure mode reading and gas type
- Indicates fault conditions through scrolling messages

# “Quick-check” LEDs



- Optional LEDs indicate monitor status
  - Green = Normal operation
  - Blinking Red = Alarm
  - Solid Red = Fault
- “Quick-check” monitor status from afar

# Field-Selectable Range



- Allows full scale range to be selected from Controller
- Sensor can be set for any value within pre-defined limits. Ex: 0-31 PPM H<sub>2</sub>S

# Ultima Gas Monitor Features



- Same user-friendly menu screens
- Identical calibration process with Calibrator or Controller
- Designed with no pots, jumpers or switches
- 7-30 VDC power requirements
- Available in remote version

# Ultima **XIR** Combustible Gas Monitor



- MSA-designed infrared gas monitor
- Utilizes the Ultima X Gas Monitor Series platform
- Field-selectable algorithms for a variety of hydrocarbon-based gases
- Designed without a flashback arrestor/frit for the harsh offshore market

# Ultima **XIR** Gas Monitor Benefits



- No-gas calibration
  - typically, a zero adjustment is all that is required
- Immune to poisoning
- Automatically compensates for humidity and temperature changes
- Operates in high-gas and low-oxygen environments

# Ultima **XIR** Gas Monitor

## No-gas calibration



- Typically, a zero adjustment is all that is required for a full calibration
- Degradation of the sensor's performance is associated with slight drifts in the zero response which, in turn, adversely affects the span response
- Restoring the sensor's zero response also restores its span response
- A span check should be performed after completion of the zero adjustment
- A full calibration (zero & span) can always be performed

# Ultima **XIR** Gas Monitor Specifications



- Combustible gases  
0-100%LEL
- Extreme speed of response  
T90 < 2secs
- Temperature range  
-40°C - 60°C
- Linearity  
< 2%LEL (<50%LEL)  
< 5%LEL (>50%LEL)

# Ultima XIR Gas Monitor Options

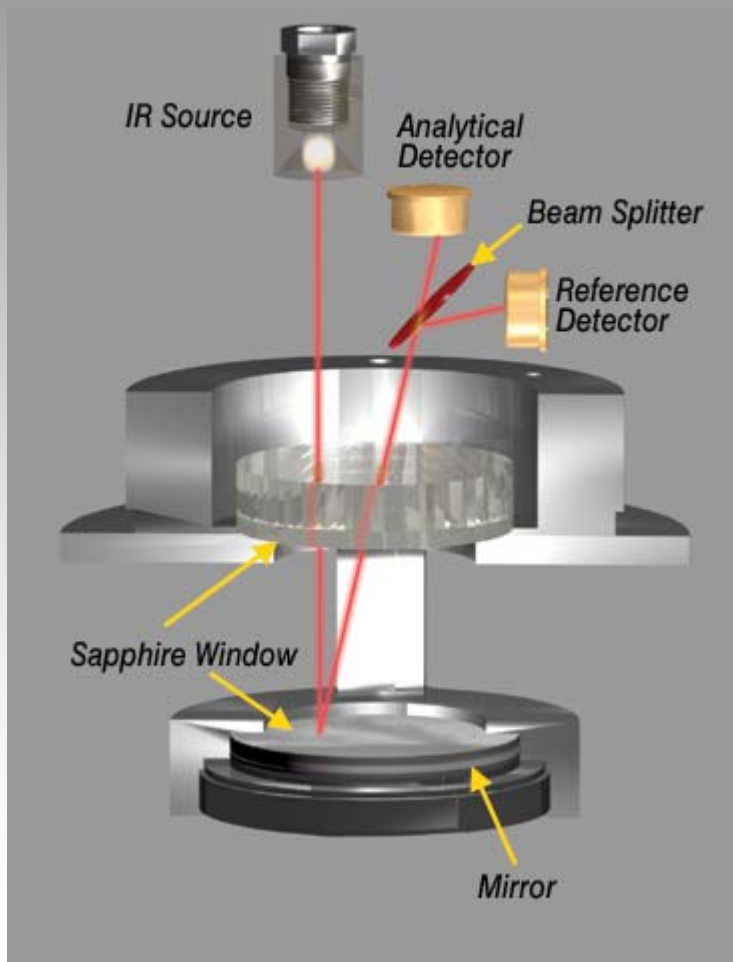


- Sensor guard protects the sensor from dirt, water, etc., while allowing gas to penetrate into the unit



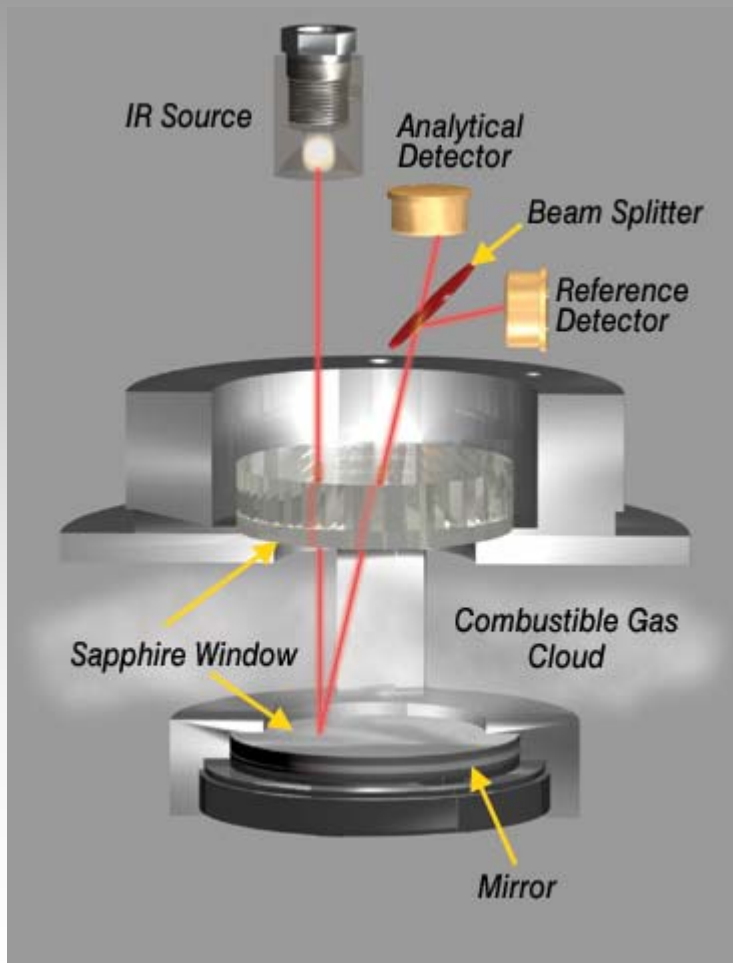
- Flow cap is used when there is a requirement to pump or pull a sample through the sensing module

# Ultima XIR Gas Monitor Technology



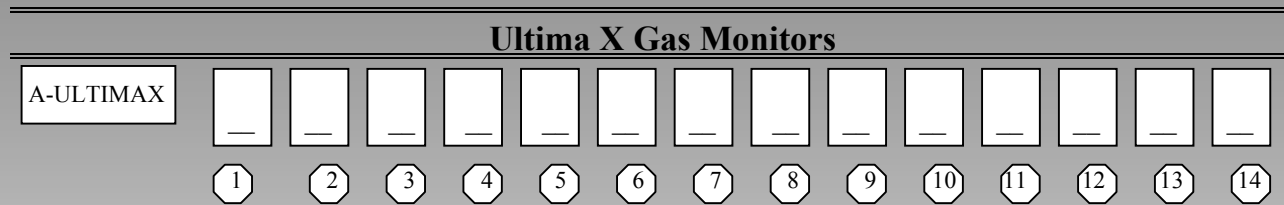
- The Ultima XIR Gas Monitor uses
  - an electronically modulated source of infrared energy
  - two detectors that convert the energy into electrical signals
- Each detector is sensitive to a different range of wavelengths in the infrared portion of the spectrum

# Ultima **XIR** Gas Monitor Technology



- As combustible gas enters the open volume, the intensity of the source emission:
  - reaching the analytical detector is reduced
  - reaching the reference detector remains the same
- The microprocessor measures the ratio difference and correlates to a %LEL reading

# ATO Code



- Similar to Ultima Gas Monitor ATO code
- First selection is model identifier (A, E, etc.)
- Sequencing after that is similar to Ultima Gas Monitor: gas type, sensor output, enclosure type, mounting style, and gas sampling
- New features follow

# Ultima X Gas Monitor Shipments

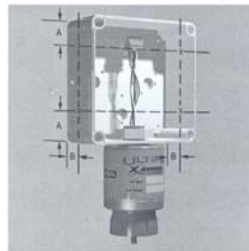
## MSA Ultima® XA Gas Monitor Quick Start-Up Guide

### WARNING

This Guide is not a substitute for the manual contained in the Product Literature CD. The Ultima X Series Gas Monitor Manual must be carefully read by all individuals who have or will have the responsibility for using or servicing the product. Failure to follow this warning can result in serious personal injury or death.

This Gas Monitor is rated for non-hazardous applications only. Do not permit this monitor to sample combustible gas concentrations at or above the lower explosive limit (LEL).

1. Remove the lid and drill the enclosure for power, signal and optional relay cable entry (FIGURE 1). Care must be taken if non-recommended cable entry locations are required to prevent mounting interference.
2. Mount the enclosure in the desired location and run wiring to the enclosure.
3. Connect 7 to 30 VDC power lead to J8-1 (FIGURE 2).
4. If the identification label, located on the bottom of the lid, contains "output: 2 wire mA", do not connect the ground wire to J8-3; otherwise, connect the signal ground wire to J8-3 (3 wire mA).
5. Connect J8-2 to the 4 - 20 mA input on remote system.
6. Connect the sensor module to J-1 on the main pc board.
7. Wire for optional relays and/or acknowledge push-button (FIGURE 3).
8. Assemble lid on the enclosure.
9. Apply power and observe the LCD as all segments light, software version displays, and a 30-second (self-check) countdown occurs.
10. After 30-second countdown, observe that the gas type and gas concentration alternately display. (For three-wire units with LEDs, green LED is ON and red LED IS OFF).
11. Perform a gas check to ensure proper operation.



A = 1-1/4 inch, B = 1-1/8 inch  
Figure 1



Figure 2



Figure 3

- Factory calibrated and ready for power-up
- Quick Start-Up Guide
- CD with Ultima X Gas Monitor Series
  - Manual
  - Installation Outline Diagrams
  - Installation and Operation Video