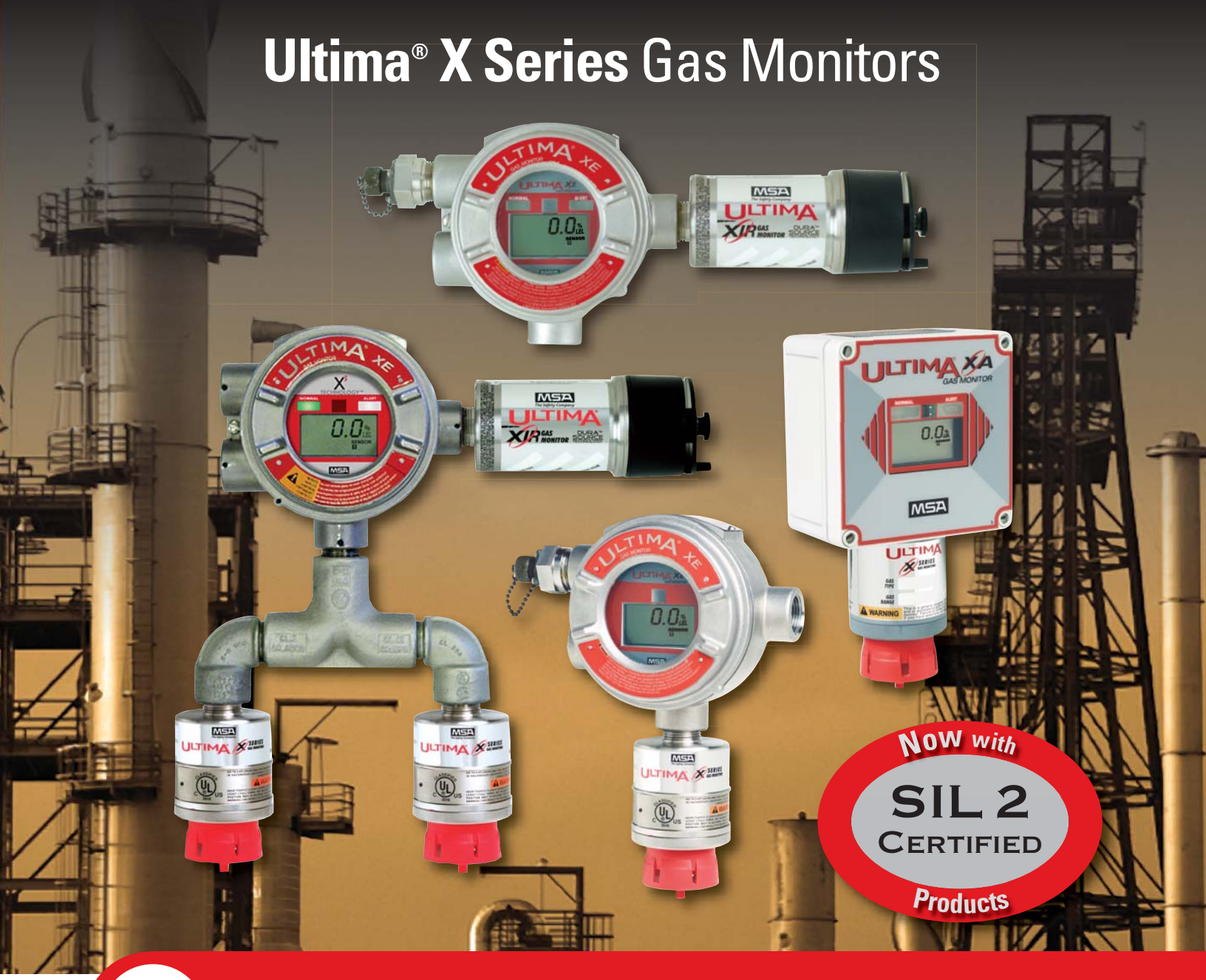
Ultima® X Series Gas Monitors



Versatile fixed instruments provide continuous monitoring of many hazardous gases using catalytic, electrochemical, and infrared gas detection methods.

New features & EXtreme design, now with HART Protocol and DuraSource™ Technology.

X Factors

- DuraSource Technology providing extended infrared sensor life
- HART field communications protocol option for improved asset management.
- Patented sensor disconnect-under-power allows sensor change-out without declassifying a hazardous area
- Interchangeable smart sensors: pre-calibrated, installation-ready sensor modules, field-replaceable without tools
- New sensor type quick recognition and reconfiguration of alarm and relay settings
- LCD conveniently alternates between sensor reading and gas type plus scrolling messaging for ongoing diagnostic checks
- Single-board design for ultimate reliability and serviceability

MSA
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Ultima® X Series Gas Monitors

Ultimate Features. . . EXtreme Design

Ultima XE Gas Monitor – Explosion-Proof, Stainless Steel Gas Detector with Display

The Ultima XE Gas Monitor offers:

- Explosion-proof 316 stainless steel
- Multiple-entry mounting enclosure
- Type 4X, IP66

Ultima XA Gas Monitor – Water- and Corrosion-Resistant, All-Purpose, Polycarbonate Gas Detector with Display

The Ultima XA Gas Monitor offers:

- Nema 4X rating
- Light weight (only 1.5 lbs)

Ultima XIR Gas Monitor – Explosion-Proof, Stainless Steel, Infrared Gas Detector with Display

The Ultima XIR Gas Monitor offers:

- DuraSource Technology for improved IR sensor life
- 316 Stainless steel
- Multiple-entry mounting enclosure
- Fast response time
- Operation based on dual-wavelength, heated-optics technology, providing definitive compensation for temperature, humidity and aging effects
- IR technology which offers excellent long-term stability, eliminating the need for frequent calibrations
- A sintered-disk-free design for optimum performance in harsh environments
- No-gas calibration. Only a zero adjustment is required for full calibration.
- Type 4X, IP66

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Ultima® X Series Gas Monitors

With a number of new and exciting features, **Ultima X Series Gas Monitors** are suitable for indoor and outdoor applications in virtually any type of industry including offshore, refineries, chemical and petrochemical facilities, steel mills, water and wastewater plants, mining, and general industry.

MSA's Ultima X Series Gas Monitors are microprocessor-based transmitters, engineered with the customer in mind.

Ultima X Series Gas Monitors, available in either stainless steel or polycarbonate enclosure housings, provide continuous monitoring of combustible and toxic gases, and oxygen deficiency. Installation is both simple and flexible. Ultima X Series Gas Monitors are suitable for indoor and outdoor applications in virtually any type of industry including offshore, refineries, chemical and petrochemical facilities, steel mills, water and wastewater plants, mining, and general industry.

MSA's Ultima X Series Gas Monitors, engineered using microprocessor-based technology and designed for varied gas detection needs, provide HART protocol. Ultima XIR and XI Gas Monitors offer DuraSource Technology, a new and improved light source providing extended sensor life.

HART Field Communications Protocol provides increased sensor data, part of cost-effective asset management. HART also provides convenient setup, calibration, and diagnostics. Calibrate, set up or perform diagnostics with HART from any point along the 4-20mA line. HART allows for existing component install and wiring to be used, reducing installation costs.

Installation and Operation

Installation is both simple and flexible. Ultima X Series Gas Monitors:

- Operate in diffusion mode, with factory-calibrated sensors ready to perform immediately after installation
- Offer HART upgrade of existing units via replacement PCBA
- Are available for remote sensing applications, where installations require the sensor to be separated from electronics
- Can operate completely stand-alone with a large LCD display, optional quick-check LEDs and four relay outputs (three alarm and one fault), or connected with a standard 4-20mA output to a control system (PLC, DCS, etc)
- Have an adjustable full-scale range
- Provide for easy installation with the two-piece, field-wiring connectors

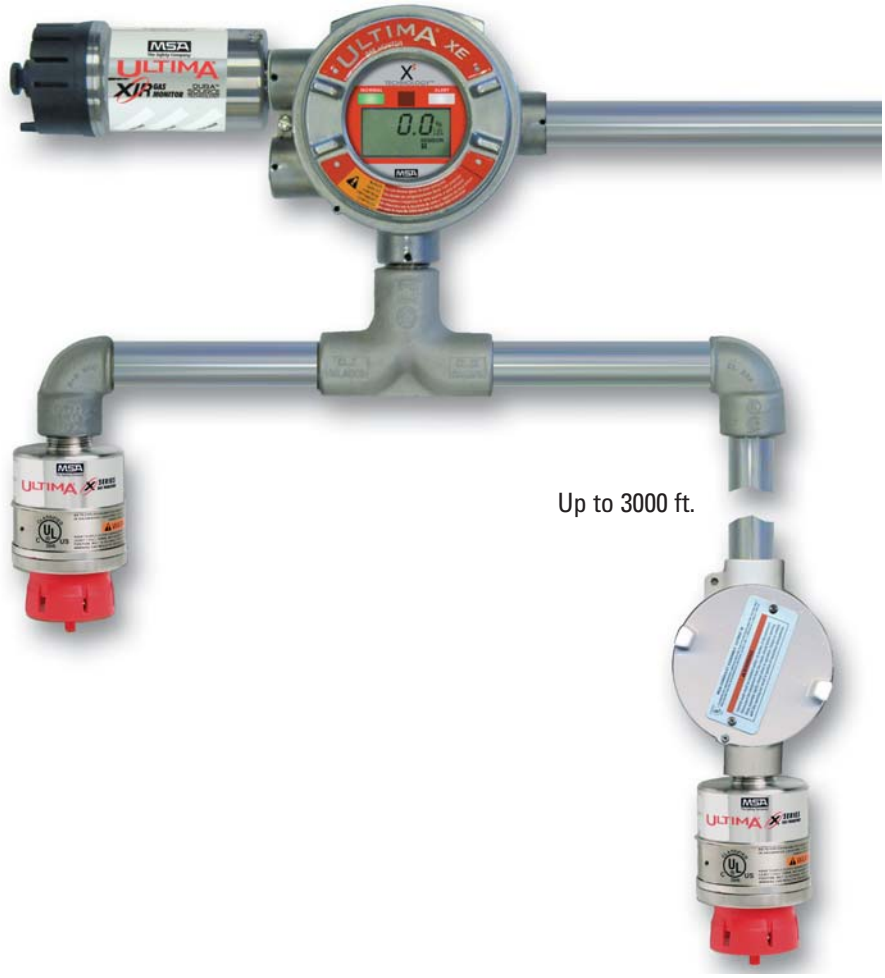
Calibration

As with all gas monitors, Ultima X Series Gas Monitors must be calibrated periodically with the gas of interest to ensure proper operation. The calibration process offers:

- Automatic adjustments
- Date stamping
- Calibration instructions displayed on monitor
- Selectable lockout of output signal during calibration
- Ability to calibrate at the installation location or remotely without systems interruption
- Accessory calibrator, controller, or pushbutton for calibration initiation

Ultima X³® Technology

[X to the Power of 3]



PLC/DCS [ProSoft-Tested]

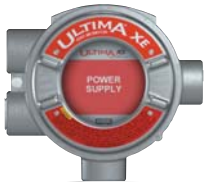
Connect the X³ unit to PLC/DCS control systems. X³ technology is ProSoft-certified. It has been tested and found to be compatible with Allen-Bradley PLC/ModBUS connectivity by ProSoft Technology, Inc.

Ultima X³ Technology for Ultima X Series Gas Monitors features:

- **Multi-sensing**
  - Up to 31 monitors with up to 3 sensors inputted per monitor for 93-sensor total
  - Combination of electrochemical-, catalytic-, and infrared-type sensors is available
  - Scrolling display – monitor scrolls through type and reading for all attached sensors
  - Operation of monitor as network slave device
- **Signal boost**
  - Each sensor is remotely observable up-to 3000ft. from the monitor
  - Universal 85-256VAC or 8-30VDC power supply available at remote condulet
- **ModBUS RTU output**
  - Industry-standard format
  - RS-485 half-duplex communication interface
  - PLC/DCS systems integration

Accessories

Power Supply



Ultima X Series external power supply can power sensors remotely; one remote power supply module can power:

- up to 5 electrochemical or oxygen sensors
- up to 3 combustible sensors
- internal power supply option also available

Pushbutton

Pushbutton feature lets users view various functions without calibrator:

- alarm acknowledge
- zero calibration initialization
- SPAN calibration initialization
- iCAL calibration initialization
- calibration abort

Duct-Mount Kit

Duct-mount Kit allows the user to monitor air within ductwork using the Ultima XE, XA or XIR sensor. Quick-disconnect fitting enables calibration gas to reach sensors without duct-mounted sensor removal.

Pump

Sampling pumps bring remote samples to sensors. Sampling modules are available in GP and XP versions of aspirated and pumped modules.

Calibrator

Ultima Monitor Calibrator offers the industry's simplest calibration method, a three-button device allowing Ultima X Series calibration and address changes.

Controller

Ultima Monitor Controller provides complete access to all features through its full-function keypad: alarm level set, span gas value changes, and last calibration date display.

HART Port

Intrinsically safe connection for a HART communicator.

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Gases

Acetylene IR- 0-2.5%
Ammonia- 0-50 PPM
Ammonia- 0-100 PPM
Ammonia- 0-1000 PPM
Arsine- 0-2 PPM
Bromine- 0-5 PPM
Carbon Dioxide IR- 0-0.5%
Carbon Dioxide IR- 0-2%
Carbon Dioxide IR- 0-5%
Carbon Monoxide- 0-100 PPM
Carbon Monoxide- 0-500 PPM
Carbon Monoxide- 0-1000 PPM
Chlorine- 0-5 PPM
Chlorine- 0-10 PPM
Chlorine- 0-20 PPM
Chlorine Dioxide- 0-3 PPM
IR Combustible Gas - Methane- 0-100% LEL
IR Combustible Gas - Non-Methane- 0-100% LEL
Combustible Gas- 0-100% LEL Natural Gas and H_2
Combustible Gas- 0-100% LEL Petroleum Vapors
Combustible Gas- 0-100% Solvents
Diborane- 0-50 PPM
Ethylene Oxide- 0-10 PPM
Fluorine- 0-5 PPM
Hydrogen Fluoride- 0-10 PPM
Hydrogen- 0-1000 PPM
Hydrogen Chloride- 0-50 PPM
Hydrogen Cyanide- 0-50 PPM
Hydrogen Sulfide- 0-10 PPM
Hydrogen Sulfide- 0-50 PPM
Hydrogen Sulfide- 0-100 PPM
Hydrogen Sulfide- 0-500 PPM
Nitric Oxide- 0-100 PPM
Nitrogen Dioxide- 0-10 PPM
Oxygen- 0-10% - compensated
Oxygen- 0-25% - compensated
Oxygen - CO_2 Tolerant- 0-25%
Oxygen - Solvent Tolerant- 0-25%
Phosgene- 0-1%
Phosphine- 0-2 PPM
Silane- 0-25 PPM
Sulfur Dioxide- 0-25 PPM
Sulfur Dioxide- 0-100 PPM

Specifications (for Ultima XE, Ultima XA and Ultima XIR)

Gas Types	XE, XA	Combustibles, oxygen and toxics
	XIR	Combustibles; 0-100%LEL
Temperature Range		-40°C to +60°C (-40°F to +140°F) (Typical-range for some gases may differ)
Drift		
Zero Drift	XE, XA	<5%/year, typical
	XIR	±2%/year, typical
Span Drift	XE, XA	<10%/year, typical
Noise		<1% Full Scale
Accuracy		
Repeatability	XE, XA, XIR	±1%Full Scale or 2ppm, typical
Linearity	XE, XA	±2%Full Scale or 2ppm, (O_2, CO)
	XIR	±2%Full Scale (≤50% LEL)
	XE, XA	±3%Full Scale (<50% LEL combustibles)
	XE, XA, XIR	±5%Full Scale (>50% LEL combustibles)
	XE, XA	±10%Full Scale or 2ppm, (non-CO toxics)
Response Times		
T20 O_2 & toxics	XE, XA	<12 seconds (typically 6 seconds)
T50 O_2 & toxics	XE, XA	<30 seconds (typically 12 seconds)
T50 combust.	XE, XA	<8 seconds
T90 combust.	XE, XA	<30 seconds
T90 combust.	XIR	<2 seconds
Humidity	XE, XA	15%-95% RH, non-condensing
	XIR	0%-95% RH, non-condensing
Sensor Life		
Oxygen & Toxics	XE, XA	2 years typical
Combust.	XE, XA	3 years typical
Combust.	XIR	10 years typical
Warranty		1 year XE, XA; 2 years XIR; 10 years XIR, XI (IR source only)
Power Input	XE, XA	7-30VDC (oxygen and toxics)
	XE, XA	7-30VDC @ 450mA maximum (combustibles)
	XIR	7-30VDC @ 750mA maximum (combustibles)
Wiring Requirements		
Combust.	XE, XA, XIR	3-wire
Oxygen & Toxics	XE, XA	2-wire; no LEDs or relays
Oxygen & Toxics	XE, XA	3-wire; LEDs and/or relays
Signal Output	XE, XA	4-20mA 2-wire current sink
	XE, XA, XIR	4-20mA 3-wire current source
Relay Contact Rating		5amp @ 220 VAC; 5amp @ 30 VDC
Housing Entries	XE, XIR	Four conduit entries, 3/4" NPT or 25mm
	XA	One entry
Physical	XE	316 Stainless Steel; 10.4lbs (4.7kg) 6.3"W x 3.9"D x 10.3"L (160 x 99 x 261mm)
	XA	Polycarbonate; 1.5lbs (0.68kg) 5.1"W x 2.9"D x 9.4"L (130 x 76 x 239mm)
	XIR	316 Stainless Steel; 10.8lbs (4.9kg) 12.6"W x 3.9"D x 5.7"L (320 x 99 x 144mm)
Approval Ratings	Ultima X Series	**USA/Canada** $_cFM_{us}$, $_cUL_{us}$, CSA Class I, Div. 1 and 2, Groups A, B, C, D Class II, Div. 1, Groups F & G, Class III Type 4X, IP66 ANSI/ISA 12.13.01 CSA C22.2 No.152 Class I, Div. 1, Groups A,B,C,D CSA C22.2 No. 152 Class I, Div. 1, Groups B,C,D (XIR)
	XA	Nema 4X rating
	Ultima X Series	**Europe** CE Low Voltage/EMC/ATEX, EN 60079-1 ⟨Ex⟩ 11 2G Ex d 11C T4 IP 66
	Ultima X Series (not including X3 Technology or Hart)	**SIL Certification** SIL 2 @ HFT=0 (Oxygen, catalytic combustible and IR) SIL 1 @ HFT = 0: SIL 2 @ HFT = 1 (Toxic)

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.

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