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

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.
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
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]

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 conduit

- **ModBUS RTU output**
  - Industry-standard format
  - RS-485 half-duplex communication interface
  - PLC/DCS systems integration

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.
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.
Gases
Acetylene IR - 0-2.5%
Ammonia- 0-50 PPM
Ammonia- 0-100 PPM
Ammonia- 0-1000 PPM
Arsine- 0-2 PPM
Bromo- 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 H2
Combustible Gas- 0-100% LEL Petroleum Vapors
Combustible Gas- 0-100% Solvents
Diborane- 0-50 PPM
Ethylene Oxide- 0-5 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- 0-5 PPM
Nitrogen Dioxide- 0-10 PPM
Oxygen- 0-10% - compensated
Oxygen- 0-25% - compensated
Oxygen - CO 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
<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td>Combustibles, oxygen and toxics</td>
</tr>
<tr>
<td>XIR</td>
<td>Combustibles; 0-100% LEL</td>
</tr>
</tbody>
</table>

Temperature Range
-40°C to +80°C ((-40°F to +140°F))
(Typical-range for some gases may differ)

Drift
<table>
<thead>
<tr>
<th>Type</th>
<th>Zero Drift</th>
<th>Span Drift</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td>&lt;5%/year</td>
<td>&lt;10%/year</td>
</tr>
<tr>
<td>XIR</td>
<td>&lt;2%/year</td>
<td>&lt;10%/year</td>
</tr>
</tbody>
</table>

Noise
-1% Full Scale

Accuracy
<table>
<thead>
<tr>
<th>Type</th>
<th>Repeatability</th>
<th>Linearity</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td>±1% Full Scale or 2ppm, typical</td>
<td></td>
</tr>
<tr>
<td>XIR</td>
<td>±1% Full Scale or 2ppm, (O2, CO)</td>
<td></td>
</tr>
</tbody>
</table>

Response Times
<table>
<thead>
<tr>
<th>Type</th>
<th>T20</th>
<th>T50</th>
<th>T90</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XIR</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Humidity
<table>
<thead>
<tr>
<th>Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td>15%-95% RH, non-condensing</td>
</tr>
<tr>
<td>XIR</td>
<td>0%-95% RH, non-condensing</td>
</tr>
</tbody>
</table>

Sensor Life
<table>
<thead>
<tr>
<th>Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td>2 yrs.</td>
</tr>
<tr>
<td>XIR</td>
<td>10 yrs.</td>
</tr>
</tbody>
</table>

Power Input
<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td>7-30VDC @ 450mA maximum (combustibles)</td>
</tr>
<tr>
<td>XIR</td>
<td>7-30VDC @ 750mA maximum (combustibles)</td>
</tr>
</tbody>
</table>

Wiring Requirements
<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td>7-30VDC @ 450mA maximum (combustibles)</td>
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</table>

Housing Entries
<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE</td>
<td>Four conduit entries, 3/4” NPT or 25mm</td>
</tr>
<tr>
<td>XIR</td>
<td>One entry</td>
</tr>
</tbody>
</table>

Physical
<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE</td>
<td>361 Stainless Steel; 10.4lbs (4.7kg)</td>
</tr>
<tr>
<td>XA</td>
<td>6.3” W x 3.9” D x 10.3” L (160 x 99 x 261mm)</td>
</tr>
<tr>
<td>XIR</td>
<td>Polycarbonate; 1.5lbs (0.68kg)</td>
</tr>
<tr>
<td></td>
<td>5.1” W x 2.9” D x 9.4” L (130 x 76 x 239mm)</td>
</tr>
<tr>
<td></td>
<td>316 Stainless Steel; 10.8lbs (4.9kg)</td>
</tr>
<tr>
<td></td>
<td>12.6” W x 3.9” D x 5.7” L (320 x 99 x 144mm)</td>
</tr>
</tbody>
</table>

Approvals
<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>XE, XA</td>
<td>cFMus, cULus, CSA</td>
</tr>
<tr>
<td></td>
<td>Class I, Div. 1 and 2, Groups A, B, C, D</td>
</tr>
<tr>
<td></td>
<td>Class II, Div. 1, Groups F &amp; G, Class III</td>
</tr>
<tr>
<td></td>
<td>Type 4X, IP56</td>
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<tr>
<td></td>
<td>ANSI/ISA 12.13.01</td>
</tr>
<tr>
<td></td>
<td>CSA C22.2 No.152</td>
</tr>
<tr>
<td></td>
<td>Class I, Div. 1, Groups A,B,C,D</td>
</tr>
<tr>
<td></td>
<td>CSA C22.2 No. 152</td>
</tr>
<tr>
<td></td>
<td>Class I, Div. 1, Groups B,C,D (XIR)</td>
</tr>
<tr>
<td>XA</td>
<td>Nema 4X rating</td>
</tr>
</tbody>
</table>

Certification
- UL, CSA, CE, ATEX, EN 60079-1
- Ex II 1G Ex d IIA T4

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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.