# SIEMENS

## SIEMENS INDUSTRY, INC.
7810 SHAFFER PARKWAY
SUITE 100
LITTLETON, COLORADO 80127
PHONE: (303) 279-8500 • FAX: (303) 568-7397

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**CU ANSCHUTZ MEDICAL CAMPUS**

# RESEARCH 1 AND 2 OA SENSOR ADD
44OP-259563

## SPECIFICATION SECTION
N/A

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# Quotation

**Offer To / Purchaser:**
Price/Availability (US)
DO NOT USE FOR ORDER PROCESSING
Street
Pittsburgh PA  15230

**Date:** 06 Feb 2019

**Quotation No.:** 20883224
**Customer No.:** 182120
**Valid from:** 06 Feb 2019
**Valid to:** 07 Apr 2019
**Customer Ref.:** QT

Your Contact Person: Thomas
Telephone No.:          Fax No.:

| Item | Qty | UM | Mat No. | Description | |
|------|-----|----|---------|-------------|--|
| 10 | 2 | EA | A-ULTIMAX-PL | GAS MONITOR, ULTIMA X, PLASTIC, CONFIG. | |

Country of Origin:    US
Commodity Code:     9027.10.2000
Export Control Code:  EAR99
A-ULTIMAX-PL:-A-11-0-3-S-1-0-0-0-1-1-0-
0
With the following configuration:

```
MODEL                         A  GP PLASTIC, W/ DISPLAY
GAS CODE                      11  CO - 0-100 ppm
CONFIGURATION - ENCLOSURE     0   STANDARD
SENSOR OUTPUT                 3   3-WIRE mA OUTPUT
SENSOR MOUNTING STYLES        S   SENS MOUNT ON CONTROL UNIT
RELAYS AND LEDS               1   LEDS, NO RELAYS
DISPLAY LANGUAGE/FEATURES     0   ENGLISH
OPTIONAL POWER SUPPLY         0   NONE
GAS SAMPLE SELECTION          0   NONE - STD DIFFUSION METHOD
```

# Quotation

| Item | Qty | UM | Mat No. | Description | |
|------|-----|-----|---------|-------------|---|
| | | | | INTEGRATED ACCESSORIES    1  PUSHBUTTON SWITCH | |
| | | | | INSTALLATION HARDWARE    1  MOUNTING BRACKET | |
| | | | | MANUALS    0  STANDARD | |
| | | | | CUSTOM FEATURES    0  NONE | |
| 30 | 2 | EA | A-ULTIMAX-PL | GAS MONITOR, ULTIMA X, PLASTIC, CONFIG. | |

```
30   2    EA      A-ULTIMAX-PL
                  GAS MONITOR, ULTIMA X, PLASTIC, CONFIG.
                  Country of Origin:   US
                  Commodity Code:     9027.10.2000
                  Export Control Code:  EAR99
                  A-ULTIMAX-PL:-A-72-0-3-S-1-0-0-0-1-1-0-
                  0
                  With the following configuration:
  MODEL                            A  GP PLASTIC, W/ DISPLAY
  GAS CODE                         72 NITROGEN DIOXIDE 0-10 ppm
  CONFIGURATION - ENCLOSURE        0  STANDARD
  SENSOR OUTPUT                    3   3-WIRE mA OUTPUT
  SENSOR MOUNTING STYLES           S  SENS MOUNT ON CONTROL UNIT
  RELAYS AND LEDS                  1   LEDS, NO RELAYS
  DISPLAY LANGUAGE/FEATURES        0  ENGLISH
  OPTIONAL POWER SUPPLY            0  NONE
  GAS SAMPLE SELECTION             0  NONE - STD DIFFUSION METHOD
  INTEGRATED ACCESSORIES           1  PUSHBUTTON SWITCH
  INSTALLATION HARDWARE            1  MOUNTING BRACKET
  MANUALS                          0  STANDARD
  CUSTOM FEATURES                  0  NONE
50   1    EA      A-CAL
                  CALIBRATION KIT, CONFIGURED
                  Country of Origin:   US
                  Commodity Code:     9028.10.0000
                  Export Control Code:  EAR99
                  A-CAL:-40-F-710882-00-0-710332-0
```

# Quotation

**Quotation No.:** 20883224

| Item | Qty | | UM | Mat No. | Description | |
|------|-----|---|-----|---------|-------------|---|

With the following configuration:
```
CALIBRATION KIT #1 SELECTION    40 DIFF.ULTIMAX(NON-CORROSIVE)
REGULATOR #1 SELECTION          F 1.50 LPM REGULATOR
CAL.GAS#1 SELECTION(TYPE "RP")  710882 CO In Air - 60 ppm
CALIBRATION KIT #2 SELECTION    NO CALIBRATION KIT #2 SELECTED
REGULATOR #2 SELECTION          NO REGULATOR #2 SELECTED
CAL.GAS#2 SELECTION(TYPE "RP")  710332 NO2 In Air - 5 ppm
CUSTOM SELECTIONS               0 NO CUSTOM SELECTIONS
```

| Item | Qty | UM | Mat No. | Description |
|------|-----|----|---------|-------------|
| 60 | 1 | EA | 10028028 | CYLINDER,20.8% OXYGEN IN NITROGEN |

Country of Origin:    US
Commodity Code:    3822.00.6000
Export Control Code:  EAR99

| Item | Qty | UM | Mat No. | Description |
|------|-----|----|---------|-------------|
| 70 | 1 | EA | 710332 | Gas, 58L, 5PPM, Nitrogen Dioxide in Air |

Country of Origin:    US
Commodity Code:    3822.00.6000
Export Control Code:  EAR99
*NOT RETURNABLE*

PLEASE SEND PURCHASE ORDERS TO perminstorder@msasafety.com

**Terms of Payment: NET 30 DAYS**

Payable net within 30 days unless
otherwise noted. No withholdings
will be allowed without prior written
consent of the seller.

**Terms of Shipment:** FOB DEST/PPD/A

**Territory: US2624**

![MSA The Safety Company]

# Ultima® X Series Gas Monitors – ATO Order Form

| A-ULTIMA X-PL | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫ | ⑬ |

**① Model**
A = General Purpose Plastic, with display
T = General Purpose Plastic, no display

**② Gas Code** – *See list for gas type*
NOTE: Gas Code = 00 will include Enclosure(s), Electronics, and sensor body. No sensor assembly included. (Can't choose IR Sensors)

**③ Configuration**
0 = North American
1 = European / International

**④ Sensor Output**
1 = 2-Wire mA output
2 = 2-Wire (mA + HART) output
3 = 3-Wire mA output
4 = 3-Wire (mA + HART) output

**⑤ Sensor Mounting Style**
S = Sensor mounted on control unit
D = Sensor mounted on general purpose remote housing

**⑥ Relays and LEDs**
0 = No relays and no LEDs
1 = LEDs, no relays *(Required if Model = T)*
2 = Relays and LEDs

**⑦ Display Language/Features**
0 = English
S = Spanish
H = English with custom horn software

**⑧ Optional Power Supply**
0 = None
1 = 12 VDC Internal
2 = 24 VDC Internal
3 = 12 VDC External (Bracket not included)
4 = 24 VDC External (Bracket not included)

**⑨ Gas Sample Selection**
0 = None – Standard diffusion method
1 = Flow cap assembly

**⑩ Integrated Accessories**
0 = None
1 = Reset/Cal switch
*NOTE: HART port is included if matrix code ④ = 2 or 4*

**⑪ Installation Hardware**
0 = None
1 = Mounting bracket
2 = Duct Mount Kit (includes installation kit)
3 = Brackets + Duct Mount Kit (includes installation kit)
4 = Nema 4X installation kit

**⑫ Manuals** – *alternate quantities can be ordered separately*
0 = Standard
1 = Hardcopy + CD

**⑬ Custom Features**
0 = None
C = Custom operation necessary
T = Custom Tagging
TC = Custom Tagging/Custom operations necessary
CC = Certificate of calibration request

![Ultima XA gas monitor]

### Sensor Selection Table

| | |
|---|---|
| 0 | None |
| 11 | Carbon Monoxide 0-100 PPM |
| 12 | Carbon Monoxide 0-500 PPM |
| = 13 | Oxygen 0-10% |
| = 14 | Oxygen 0-25% |
| 15 | Hydrogen Sulfide 0-10 PPM |
| 16 | Hydrogen Sulfide 0-50 PPM |
| 17 | Hydrogen Sulfide 0-100 PPM |
| " ~ 18 | Chlorine 0-5 PPM |
| 20 | Nitric Oxide 0-100 PPM |
| 22 | Hydrogen Cyanide 0-50 PPM |
| " ~ 23 | Hydrogen Chloride 0-50 PPM |
| " ~ 24 | Chlorine Dioxide 0-3 PPM |
| 25 | Hydrogen Sulfide 0-500PPM |

" ~ 28  Chlorine 0-10 PPM
   31  Combustible gas 0-100% LEL - Natural Gas & H$_2$
   32  Combustible gas 0-100% LEL – Petroleum Vapors
   33  Combustible gas 0-100% LEL – Solvents
N}"^34  Acetylene IR (0-100% LEL) A07 – UL/ATEX ONLY
N } "35  Carbon Dioxide IR 0-0.5%
 } " 36  Carbon Dioxide IR 0-2%
N " 37  Carbon Dioxide IR 0-5%
N ** 38  IR combustible 0-100% LEL- Methane
  ** 39  IR combustible 0-100% LEL – Propane
   41  Phosphine 0-2 PPM
   42  Arsine 0-2 PPM
   43  Silane 0-25 PPM
" ~ 45  Diborane 0-50 PPM
" ~ 46  Bromine 0-5 PPM
" ~ 47  Fluorine 0-10 PPM
" ~ 48  Ammonia 0–100 PPM
   49  Hydrogen  0-1000 PPM
" ~ 50  Ethylene Oxide 0-10 PPM
   51  Comb. Gas 0-100% LEL - ATEX - 4.4% CH4
       Natural Gas and H2
   52  Comb. Gas 0-100% LEL - ATEX - 1.7% Propane
       Petroleum Vapors
   53  Comb. Gas 0-100% LEL - ATEX - 1.7% 1.7% Propane
       Solvents
"~ 54  Ammonia 0-1000 PPM
+ * } " x 55  Solvent Tolerant O2
   57  Carbon Monoxide 0-1000 PPM
N 58  Comb Gas IR – Methane 0-100% LEL –
      ATEX - 4.4% CH4
N 59  Comb Gas IR - Non Methane 0-100% LEL – ATEX
      1.7% Propane
"~ 61  Chlorine 0-20 PPM
} " x 62  Solvent & CO2 Tolerant Oxygen (0 -25%)
} " x 63  Low oxygen (0 -25%)
} " x 64  Low solvent tolerant oxygen (0 -25%)
+ * } " x 64  
  ~ 70  Sulfur Dioxide 0-25 PPM
  ~ 71  Sulfur Dioxide 0-100 PPM
  ~ 72  Nitrogen Dioxide 0-10 PPM

### Selection Guide for Ultima X Combustible (Catalytic)
#### CATEGORY 31: NATURAL GAS & H2
**Span is set at 25% LEL with 0.6% Propane**

| | | |
|---|---|---|
| Acetaldehyde | Ethylene | Methanol |
| Acetylene | Ethylene Dichloride | Methylene Chloride |
| Butadiene, 1, 3 | Hydrogen | Monomethyl Amine |
| Carbon Monoxide | MAPP Gas | Trigonox B |
| Ethane | Methane | |

#### CATEGORY 32: PETROLEUM VAPORS
**Span is set at 40% LEL with 0.6% Propane**

| | | |
|---|---|---|
| 1, 1, 1-Trichloroethane | Cyclohexane | Pentane (n) |
| Acetic Acid | Dimethoxyethane | Pentane (iso) |
| Acetone | Dioxane, 1, 4 | Pentene |
| Acrolein | Epichlorhydrin | Propane |
| Acrylonitrile | Ethanol | Propanol (n) |
| Allyl chloride | Ether, Diethyl | Propanol (iso) |
| Benzene | Ether, Dimethyl | Propylene |
| Butane (n) | Ethylene Oxide | Propylene Oxide |
| Butane (iso) | Freon 152° | Tetrahydrofuran |
| Butanol (iso) | Gasoline | Toluene |
| Butene – 1 | Hexane | Trichloroethylene |
| Butene - 2 | Isoprene | Triethylamine |

| | | |
|---|---|---|
| Butyl Acetate (n) | Methyl Acetate | Vinyl Acetate |
| Butylene | Methyl Chloride | Vinyl Chloride |
| Butyraldehyde | Methyl Propene (2) | |
| Chlorobenzene | Methyl t-Butyl Ether | |

#### CATEGORY 33: GENERAL SOLVENTS
**Span is set at 55% LEL with 0.6% Propane**

| | | |
|---|---|---|
| Amyl alcohol | Ethyl Acrylate | Mthyl. Iso. Ket. |
| Butanol (n) | Ethyl Benzene | Mthyl Methacrylate |
| Butyl Acrylate | Heptane | Naphtha, VM&P |
| Cellosolve | Hexene | Octane (iso) |
| Di isopropylamine | JP - 4 | Propyl Acetate |
| Diethylamine | Methyl Cellosolve | Styrene |
| Ethyl Acetate | Methyl Ethyl Ketone | Xylene |

If application includes gases in more than one category,
specify highest number category.

### SELECTION GUIDE FOR
### ULTIMA XIR COMBUSTIBLE

#### CATEGORY 38: Methane Calibration

| | Controller Code | Cal Cylinder | Cylinder P/N | Cal Span Value |
|---|---|---|---|---|
| Methane | 1 | 2.5% Methane | 10028032 | 50% LEL |

#### CATEGORY 39: Non-Methane Calibration

| Value | Controller Code | Cal Cylinder | Cylinder P/N | Cal Span |
|---|---|---|---|---|
| Propane | 2 | 0.6% Propane | 10028034 | 29% LEL |
| Ethane | 3 | 0.6% Propane | 10028034 | 25% LEL |
| Butane | 4 | 0.6% Propane | 10028034 | 28% LEL |
| Pentane | 5 | 0.6% Propane | 10028034 | 33% LEL |
| Hexane | 6 | 0.6% Propane | 10028034 | 41% LEL |
| Cyclopentane | 7 | 0.6% Propane | 10028034 | 30% LEL |
| Ethylene | 8 | 0.1% Propane | 711054 | 28% LEL |

For sensing multiple gases always calibrate for the least
  sensitive gas or vapor expected to be measured (highest
  response factor within  category).
All other combustible gas span values available upon request.

Key:
  +  UL approved, Class I, Div 1 & 2, Groups A, B, C, D;
     Class II, Div. 1, Groups E, F, G for IR, Groups F, G for
     E-chem and catalytic; Class III
  >  FM approved Class I, Div. 1 & 2, Groups A, B, C, D for
     oxygen, catalytic and IR
  *  CSA approved Class I, Div. 1, Groups A, B, C & D for
     E-chem and catalytic, Groups B, C & D for IR
  **  $530 for Ultima XL only
  ●  ATEX or IEC approved Ex d IIc T4, IP66
  ^  Available as custom product only
  x  XP Stainless Steel only
  --  X$^3$IR must have condulet
  ~  Available with intrinsically safe barrier and ATEX
     approval or UL Div.2 approval
  "  Not available as XL model
  }  Not available as XT model
  N  Not available on XPL
  =  Not to be used in Helium or Argon backgrounds.
     Use #62 in its place.

# Ultima® X Series **Gas Monitors**

For continuous monitoring of oxygen, toxics, and combustible gases



*Now with SIL 2 Certified Products*

MSA's Ultima X Series Gas Monitors are microprocessor-based transmitters engineered with the customer in mind. Utilizing DuraSource Technology for extended sensor life, the monitors are available in either stainless steel or polycarbonate enclosure housings.

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 also allows for existing component install and wiring to be used, reducing installation costs.

*Because every life has a **purpose...***

*Ultima X Series Gas Monitors are well-suited to indoor and outdoor applications in virtually any industry including offshore, refineries, chemical and petrochemical facilities, steel mills, water and wastewater plants, mining, and general industry.*

- Continuous hazardous gas monitoring using catalytic, electrochemical, and infrared gas detection methods.
- DuraSource Technology provides 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

**Ultima X Series installation and operation are both simple and flexible:**

- Operates in diffusion mode, with factory-calibrated sensors ready to perform immediately after installation
- Offers HART upgrade of existing units via replacement PCBA
- Available for remote sensing applications, where installations require sensor to be separated from electronics
- Can operate completely stand-alone with large LCD display, optional quick-check LEDs, and 4 relay outputs (3 alarm and 1 fault), or connected with standard 4-20mA output to a control system (PLC, DCS, etc)
- Adjustable full-scale range
- Easy installation with 2-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

## Gases

| | | | |
|---|---|---|---|
| Acetylene IR- 0-2.5% | Chlorine- 0-5 PPM | Combustible gas- 0-100% solvents | Hydrogen sulfide- 0-500 PPM |
| Ammonia- 0-50% LEL | Chlorine- 0-10 PPM | Diborane- 0-50 PPM | Nitric oxide- 0-100 PPM |
| Ammonia- 0-100 PPM | Chlorine- 0-20 PPM | Ethylene oxide- 0-10 PPM | Nitrogen dioxide- 0-10 PPM |
| Ammonia- 0-1000 PPM | Chlorine dioxide- 0-3 PPM | Fluorine- 0-5 PPM | Oxygen- 0-10% - compensated |
| Arsine- 0-2 PPM | IR combustible gas - Methane- 0-100% LEL | Hydrogen fluoride- 0-10 PPM | Oxygen- 0-25% - compensated |
| Bromine- 0-5 PPM | | Hydrogen- 0-1000 PPM | Oxygen - CO2 tolerant- 0-25% |
| Carbon dioxide IR- 0-0.5% | IR combustible gas - Non-methane- 0-100% LEL | Hydrogen chloride- 0-50 PPM | Oxygen - solvent tolerant- 0-25% |
| Carbon dioxide IR- 0-2% | Combustible gas- 0-100% LEL natural gas and H2 | Hydrogen cyanide- 0-50 PPM | Phosphine- 0-2 PPM |
| Carbon dioxide IR- 0-5% | | Hydrogen sulfide- 0-10 PPM | Silane- 0-25 PPM |
| Carbon monoxide- 0-100 PPM | Combustible gas- 0-100% LEL petroleum vapors | Hydrogen sulfide- 0-50 PPM | Sulfur dioxide- 0-25 PPM |
| Carbon monoxide- 0-500 PPM | | Hydrogen sulfide- 0-100 PPM | Sulfur dioxide- 0-100 PPM |
| Carbon monoxide- 0-1000 PPM | | | |

## 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.
• Lightweight (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 for excellent long-term stability, eliminating the need for frequent calibrations.
• Sintered disk-free design for optimum performance in harsh environments.
• No-gas calibration; only zero adjustment is required for full calibration.
• Type 4X, IP66 rating.
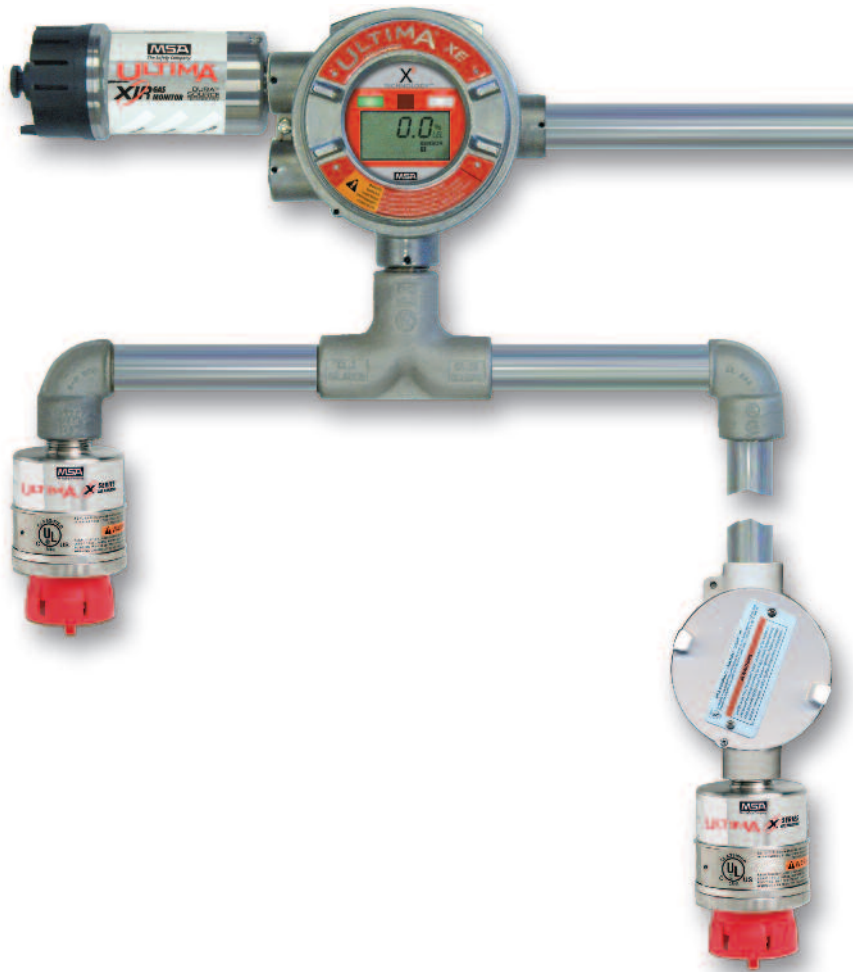
**PLC/DCS
[ProSoft-Tested]**

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

Up to 3000 ft.

## 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 3000 ft from the monitor
- Universal 85-256 VAC or 8-30 VDC power supply available at remote condulet

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

## Power Supply

Ultima X Series Monitors external power supply can power sensors remotely; one remote power supply module can power:
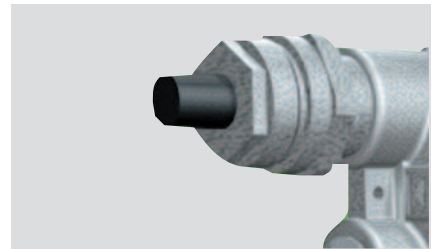
- up to 5 electrochemical or oxygen sensors.
- up to 3 combustible sensors.
- internal power supply option also available.
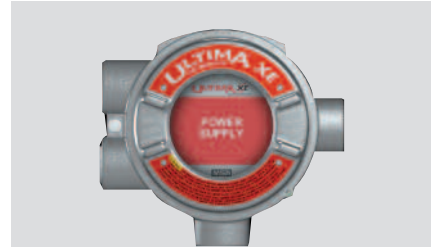
## Pushbutton

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 users 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.
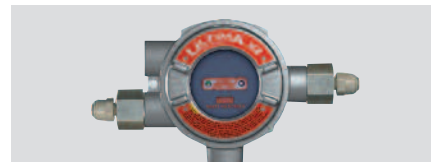
## Calibrator

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

5

# Specifications for Ultima XE, Ultima XA and Ultima XIR

| | | | |
|---|---|---|---|
| **GAS TYPES** | | XE,XA<br>XIR | Combustibles, oxygen, and toxics<br>Combustibles; 0-100% LEL |
| **TEMPERATURE RANGE** | | | -40°C to +60°C (-40°F to +140°F)<br>(Typical range for some gases may differ) |
| **DRIFT** | Zero Drift<br><br>Span Drift | XE, XA<br>XIR<br>XE, XA | <5%/year, typical<br>±2%/year, typical<br><10%/year, typical |
| **NOISE** | | | <1% full scale |
| **ACCURACY** | Repeatability<br>Linearity | XE, XA, XIR<br>XE, XA<br>XIR<br>XE, XA<br>XE, XA, XIR<br>XE, XA | ±1% full scale or 2ppm, typical<br>±2% full scale or 2ppm, (O2, CO)<br>±2% full scale (≤50% LEL)<br>±3% full scale (<50% LEL combustibles)<br>±5% full scale (>50% LEL combustibles)<br>±10% full scale or 2ppm, (non-CO toxics) |
| **RESPONSE TIMES** | T20 O$_2$ & toxics<br>T50 O$_2$ & toxics<br>T50 combustible<br>T90 combustible<br>T90 combustible | XE, XA<br>XE, XA<br>XE, XA<br>XE, XA<br>XIR | <12 seconds (typically 6 seconds)<br><30 seconds (typically 12 seconds)<br><8 seconds<br><30 seconds<br><2 seconds |
| **HUMIDITY** | | XE, XA<br>XIR | 15%-95% RH, non-condensing<br>0%-95% RH, non-condensing |
| **SENSOR LIFE** | Oxygen & toxics<br>Combustible<br>Combustible<br>Warranty | XE, XA<br>XE, XA<br>XIR | 2 years typical<br>3 years typical<br>10 years typical<br>1 year XE, XA; 2 years XIR; 10 years XIR, XI (IR source only) |
| **POWER INPUT** | | XE, XA<br>XE, XA<br>XIR | 7-30VDC (oxygen and toxics) 2.4 W max<br>7-30VDC (combustibles) 5.0 W max<br>7-30VDC 7.0 W max |
| **WIRING REQUIREMENTS** | Combustible<br>Oxygen & toxics<br>Oxygen & toxics | XE, XA, XIR<br>XE, XA<br>XE, XA | 3-wire<br>2-wire; no LEDs or relays<br>3-wire; LEDs and/or relays |
| **SIGNAL OUTPUT** | | XE, XA<br>XE, XA, XIR<br>XE, XA, XIR | 4-20mA 2-wire current sink<br>4-20mA 3-wire current source<br>HART Output |
| **RELAY CONTACT RATING** | | | 5amp @ 220 VAC; 5amp @ 30 VDC |
| **HOUSING ENTRIES** | | XE, XIR<br>XA | Four conduit entries, 3/4" NPT or 25mm<br>One entry |
| **PHYSICAL** | | XE<br><br>XA<br><br>XIR | 316 stainless steel; 10.4 lbs (4.7kg)<br>6.3"W x 3.9"D x 10.3"L (160 x 99 x 261mm)<br>Polycarbonate; 1.5 lbs (0.68kg)<br>5.1"W x 2.9"D x 9.4"L (130 x 76 x 239mm)<br>316 stainless steel; 10.8 lbs (4.9kg)<br>12.6"W x 3.9"D x 5.7"L (320 x 99 x 144mm) |
| **APPROVAL RATINGS** | | Ultima X Series Monitors<br><br><br><br><br><br><br>XA<br>Ultima X Series Monitors<br><br>Ultima X Series Monitors<br>(not including X3 Technology or Hart) | **USA/Canada**<br>cFMus, cULus, CSA<br>Class I, Div. 1 and 2, Groups A, B, C, D<br>Class II, Div. 1, Groups F & G, Class III<br>Type 4X, IP66<br>ANSI/ISA 12.13.01<br>CSA C22.2 No.152, Class I, Div. 1, Groups A,B,C,D<br>CSA C22.2 No. 152, Class I, Div. 1, Groups B,C,D (XIR)<br>NEMA 4X rating<br>**Europe**<br>CE Low Voltage/EMC/ATEX, EN 60079-1 11 2G (Ex) d 11C T4<br>IP 66<br>**SIL Certification**<br>SIL 2 @ HFT=0 (oxygen, catalytic combustible, and IR)<br>SIL 1 @ HFT = 0: SIL 2 @ HFT = 1 (toxic) |

**ID 07-2051-MC / Jan 2013**
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