



## TriGas Ultima X3 Sampling System Modbus RTU Output

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- 1.0 The gas detection system shall continuously measure and display the concentrations of up to three (3) different gases, as follows:
  - Oxygen; 0 – 25% by volume
  - Hydrogen Sulfide; 0 – 50 ppm
    - (Field adjustable to 0-500 PPM)
  - Combustible Gases; 0 – 100% LEL Infrared Type sensor
- 1.1 The gas detection system shall be a self-contained unit within a single, NEMA 4X Fiberglass enclosure.  
Approximately: 22" H x 16" W x 9" D  
Optional: Nema 4X 304 Stainless Steel  
Approx.: 24"H x 24"W x 9" D
- 1.2 The scrolling display shall be visible through the front of the enclosure and indicate gas type, gas concentration and normal (Green) and alarm/fault (Red) conditions with LED's.
- 1.3 The gas detection system shall come fully assembled with minimum installation and field configuration required.
- 1.4 System shall be design suitable for sample extraction from a NFPA 820 / NFPA 70 defined classified location to an unclassified monitor location with adequate ventilation. System shall have a Dual Process Seal to minimize risk of process fluid migration from the designed sample containment into the unclassified electronics containment area. (Subject to acceptance of Authority having Jurisdiction)
- 1.5 The gas detection system shall have an operating temperature range of -20° F to 120° F
- 2.0 Feature – The standard gas detection system shall include the following features:
  - Internal DC sample pump - 1 Sample Zone
    - Optional: Two(2) Sample Zones
  - Three (3) common Alarm relays SPST and one Trouble relay SPDT - Relays rated at 5 amps @ 120 VAC/30 VDC non-inductive.
    - Optional: Discrete relays
  - All Printed circuit boards must be common to all sensors.

- 120 VAC to DC power supply rated at 25 watt
- Front mounted Horn Silence/Acknowledgment/calibration Nema 4X push button
- Flashback arrestor for LEL sensor
- Piezo Buzzer rated at 80-95 dB @ 2 feet (Alarm #1) with horn silence capability
  - Optional: Federal Horn rated at 94-100dB @ 10 feet
- Top Mounted Nema 4X Red Strobe
  - Optional: Additional Amber Strobe
- ModBus RTU output
  - Per sensor display shall include:
    - Gas Level
    - Gas Type
    - Full Scale Range
    - Date of Mfg
    - Last Calibration date
    - Alarm & Fault Status
    - Alarm Set Points
    - Temperature
- Optional 4-20 mA output
- All Fault conditions must be messages in plain English
  - No error codes

2.1 The standard sensor/transmitter features shall include:

- Smart Sensor Technology
- Over LEL protection
- Over range protection
- Local LCD display
- Automatic adjustments for calibration
- Date of last calibration
- 10 year warranty on IR source for LEL sensor

2.2 The integral sample pump features shall include:

- Built-in flow switch which results in a low flow fault condition.
- LED Fault indicator
- Fault Relay - SPDT rated at 0.6 Amps, 125 Volts AC or 110 Volts DC
- at 2.0 Amps, 30 Volts DC
- Sample draw capability up to 100 feet of ¼" OD tubing with one zone.
  - Combined 100 feet of ¼" OD tubing with two zones.
- Hydrophobic end of line filter

3.0 Calibration – Calibration of the gas detection system shall be accomplished by applying a known concentration of gas to the sensors via a three-way pushbutton located on the outside of the enclosure. Calibration of the sensors shall be initiated using an intrinsically safe infrared calibration unit transmitting a calibration signal through the face of the gas detection system enclosure or with the external push button.

4.0 **Optional:**

- Heater 100 watt (only available with Stainless Steel enclosure)
- Heat Trace sample lines when required by installation

5.0 Manufacturer Capability Requirements - As a minimum, the Gas Monitoring Equipment manufacturer must meet the following requirements:

5.1 The manufacturer must be capable of supplying all equipment used to check or calibrate the gas detection system.

5.2 The manufacturer must be capable of providing on-site service with factory trained personnel.

5.3 The manufacturer must be capable of providing on-site training for Owner/operator.

5.4 The manufacture must have at least 10 years of experience is designing and manufacturing sample draw type systems.

6.0 The gas detection system shall be a MSA TriGas Ultima X3 Series Gas Monitor System or approved equal.

Note: Text in **GREEN** is optional and should be added or removed as necessary to meet the application.