



MSA TriGard® Gas Monitor Diffusion Applications Specification

- 1.0 The gas monitor shall continuously measure and display the concentrations of up to three (3) sensors; toxic, oxygen and/or combustible sensors can be specified.
- 2.0 The TriGard Gas Monitor consists of a single-point up to a three-point monitor. The TriGard Gas Monitor is contained in a plastic, general-purpose enclosure designed to meet NEMA 4X Standards.
- 3.0 Monitor Requirements
 - 3.1 Monitor Operating Requirements
 - 3.1.1 Operating Voltage - The monitor shall operate between 7-30 VDC and an internal 110 VAC power supply shall be provided.
 - 3.1.2 The monitor shall have a reset connector and button for resetting latched alarms.
 - 3.1.3 Monitor set-up and start-up shall not require that the enclosure be opened during this process.
 - 3.1.4 The monitor shall be factory-calibrated and ready for out-of-box use. Only a gas check is required to ensure proper operation.
 - 3.1.5 The monitor output signal capacity shall provide the following outputs:
 - 3.1.5.1 Modbus RTU output, industry standard Modbus RTU format, and Prosoft third-party tested and compliant.
 - 3.1.5.2 Single-point monitors shall also offer 4/20mA output.
 - 3.2 Monitor Display
 - 3.2.1 A local scrolling display will indicate the gas type being monitored and the concentration of gas present. The display will alternate between the sensors.
 - 3.2.2 The monitor display shall indicate all diagnostic check/fault conditions with a scrolling message detailing the condition. Error codes shall not be used.
 - 3.2.3 The monitor will display three levels of alarm. Alarm levels will be adjustable by means of a hand-held infrared controller. The display will be present at all times, will not be required to be turned on or off, and will be visible from a distance of five feet. This readout will be a three and one-half inch (3-1/2") digit Liquid Crystal Display (LCD).
 - 3.3 Smart Sensor Technology
 - 3.3.1 Sensors shall be contained in sensor modules externally mounted to the main enclosure. All toxic and oxygen sensor modules shall be replaceable without the need for tools and while the unit is under power (hazardous areas).
 - 3.3.2 Sensor modules shall contain all relevant sensor information, including the sensor manufacturer part number within the module.
 - 3.3.3 The sensor module shall store all calibration data, enabling offsite calibration and field-installation without requiring re-calibration. The sensor module shall not require a battery or power source to store this data.
 - 3.3.4 The electrochemical sensors shall not require the periodic addition of reagents.
 - 3.4 Multi-Sensing Capabilities
 - 3.4.1 The monitor shall operate up to three sensors at one time.
 - 3.4.2 Combinations of electrochemical, catalytic and infrared sensing technologies shall be available.
 - 3.4.3 The sensor units can be remotely located from a monitor/readout unit by up to 100 feet. The sensors will be able to be mounted up to 3000 feet from the monitor enclosure with optional remote power supplies.

- 3.4.4 Remote toxic or oxygen sensors shall be provided with either 25, 50, or 100 feet of pre-wired shield cable.
Remote Plastic enclosures shall be provided for all gases, including Combustible gases.
Remote Explosion Proof enclosures shall be provided for all gases, including Combustible gases.
Refer to a installation outline drawing for area classification.
- 3.4.5 Each remote sensor enclosure type shall be operable with 110/220VAC or 12/24VDC power.
- 3.5 Sensing Element Warranty
 - 3.5.1 All sensors will have a minimum useful life of one year.
The supplier shall provide replacement sensors at no charge for any sensor that does not meet the minimum requirement.
- 3.6 Non-Intrusive Calibration Capability
 - 3.6.1 All monitors can be calibrated without opening any enclosures. Do not specify the use of flashlight-type devices, magnets or clamp-on devices to achieve calibration. The acceptable method uses a handheld device.
 - 3.6.2 There will be an option to calibrate the sensor through a push-button actuator, which allows for zero, span and iCAL capabilities.
- 3.7 LED/Relay
 - 3.7.1 The monitor shall have LEDs viewable from 50 feet, minimum.
 - 3.7.2 The monitor shall have three common adjustable relays. Relays shall be rated at five amps @ 30VDC, five amps @ 220VAC, single-pole, double-throw and consist of three relays for alarm levels and one relay for fault.
- 4.0 Power Supply Requirements
 - 4.1 The Internal Power Supply Monitor shall be integrally powered by a built-in supply of 85-256 VAC / 24 VDC.
- 5.0 Options:
 - Battery Backup
An internal battery backup shall provide a minimum of 12 hours operation for up to three sensors under no alarm conditions.
 - Stobes
Red and/or Amber top-mounted strobes shall be provided.
 - Sun Shield
A Sun shield shall be provided.
- 6.0 Manufacturer Capability Requirements - As a minimum, the gas monitoring equipment manufacturer must meet the following requirements:
 - 6.1 The manufacturer must be capable of supplying all equipment used to check or calibrate the monitor units.
 - 6.2 The manufacturer must be capable of providing on-site service with factory-trained personnel.
 - 6.3 The manufacturer must be capable of providing on-site training for owner/operator.
 - 6.4 The manufacturer must be capable of providing replacement parts within 24 hours.
- 7.0 The monitor shall be an MSA TriGard Monitor.