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| Version | Date | Description of Revisions |
| 1 | November 1, 2011 | Standard Specification Release |
| 2 | April 20, 2015 | General formatting |
| 3 | June 13, 2022 | 1.3, 1.4 Tagging requirements revised (BM) |
|  |  |  |

NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**For each project the Consultant is responsible for the correct application of the specifications and for updating and modifying all highlighted items, as well as updating and modifying those sections that are directly applicable to the project. All updates and modifications to this standard document are to be highlighted to the Region for review and acceptance on each project.**

**Notice:** This Document hardcopy must be used for reference purpose only.

**The on-line copy is the current version of the document.**

# GENERAL

## General

### The specifications in this section define additional requirements to those set forth in Section 13105 – Process Control: General Instrumentation Requirements. Where a conflict exists, the more stringent requirement is to be provided.

### The Contractor is to clearly identify on the shop drawings any deviation from the specification.

### Contractor required to provide the following O&M documentation: manufacturers’ printed O&M documentation; installation instructions; specifications; operation manuals, including electrical drawings, and plumbing diagrams; sales literature; materials; and training materials as applicable.

### Contractor is to furnish copies of the manufacturer’s warranties.

### Contractor is to provide, through the Instrumentation Supplier, gas detectors, complete and operable, in accordance with the Contract Documents.

## Measurement and Payment

### The work outlined in this section shall be included in the lump sum price for Section 13215 – Chlorine Gas Detectors as indicated in the Bid Form.

## Sensors

### Electrochemical Gas Sensor

#### Sensor Operating Life: 2 years minimum usable life from time of successful commissioning.

#### Sensor Storage Life: 1 year.

#### Equipment tag wired to sensor/transmitter in accordance with Section 01080 – Process Equipment Location Tagging.

## Monitor

### Suitable for single or multi sensing gas detection systems.

### Two (2) gas alarm setpoints selectable levels of alarms.

#### Warning Level: Adjustable 5% – 100% range.

#### Alarm Level: Adjustable 5% – 100% range.

### Minimum two (2) configurable and assignable gas alarm relays.

### One 4-20mA @ 600 Ω analog output.

### NEMA 4X enclosure with polycarbonate viewing window and mounting hardware.

### Non-intrusive set-up and calibration from user programmable and/or predetermined choices, accessible from menu prompts.

### Equipment tag wired to receiver in accordance with Section 01080 – Process Equipment Location Tagging.

# INSTALLATION

## General

### The following installation requirements are in addition to or deviations from the requirements set forth for instrumentation in Section 13105 – Process Control: General Instrumentation Standard.

#### Each point of detection requires the installation of one sensor. Multiple sensors may be integrated with a single monitor as per manufacturer’s specifications.

#### Sensor is installed in the area to be monitored and monitor can be located up to 300m away.

#### Locate the sample point to minimize unnecessary delay time in the gas detection measurement. Take care to ensure the sample is representative of the surrounding atmosphere, and not in dead air.

#### Mount sensors for each application as per manufacturers installation recommendations and accessible for routine maintenance and calibration.

#### Mount the monitor 1.8m off the floor in a readily accessible location for ease of reading and to facilitate maintenance and calibration in unclassified room.

#### Mount sensors on 8 meter diameter centers. Manufacturer mounting brackets to be used for installation. Standard mounting bracket to be used except for in air ducts where Duct mount kit to be used for installation.

#### Provide alarm outputs to be wired fail safe as identified below. Additional external relays to be provided as necessary. Refer to Drawing 13215B for control wiring details.

##### Alarm 1: To PAC.

##### Alarm 2: To Scrubber/Alarm lamp outside building/room.

##### Alarm 3: To facility alarm dialer.

##### Sensor Fault: To PAC.

#### Chlorine gas detector to be installed in area to be monitored. Monitor/Transmitter to be installed in unclassified room separate from area being monitored.

#### Provide a sealed external push-button alarm reset and audio alarm silencing. To be determined by the operational requirements.

#### Do not paint or silicone the sensors.

#### Provide the interconnecting wiring between the sensors and monitor units in rigid conduit.

#### Ensure that the system is on-line 24 hours before start up and calibration for adequate warm up.

#### Provide a one (1) year supply of consumables and spare parts.

#### Sensors are not to be ordered until prior to proposed site start up Sensor and consumables must be supplied with 12 months of operating life after substantial completion. Sensors/consumables with less than 12 months operating life will be replaced by the Contractor at no expense to the Region.

#### Instrument supplier is to supply their own calibration gas and calibrators for instrument start up.

#### Transmitter/Electronics not mounted/installed indoors must be installed within fiberglass enclosure with viewing window, thermostat and heater. Panel heater to be powered from separate lighting panel circuit than instrument.

# ACCEPTABLE MANUFACTURERS

### Acceptable manufacturers are listed in the following table in order of preference. The design has been completed around the first named supplier. The contractor is responsible for all costs associated with any changes required to the design to accommodate one of the other manufacturers.

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| --- | --- | --- |
| Preference | Manufacturer | Model |
| 1 | MSA | UltimaX |
| 2 | Scott Instruments | GasPlus 4600 |
| 3 |  |  |

### 

### The Contractor is to select the model number and options to suit the application and the requirements of the specification.

### The Contractor is to select the appropriate options to suit the application and the requirements of the specification.

### Where second and third named manufacturers are provided, they are to meet the performance specifications of the first named manufacturer.

## Chlorine Gas Detection

First Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Electrochemical |
| **Process:** |  |
| Tag Name: | xxx-xxx |
| Installation DWG. | 13215xx |
| Gas: | Chlorine |
| Temp min/max: | -40 to 90 º C |
| Humidity: | 0 - 100% |
| Class/Div/Grp: | Class 1 Division 1 Group D |
| **Device Data:** |  |
| Model: | Explosion Proof with Display |
| Gas Code: | Chlorine 0-5 ppm |
| Configuration: | North American |
| Sensor Output: | 3 Wire mA Output |
| Sensor Mounting Style: | Sensor Mounted on General Purpose Remote Housing |
| Relays and LEDs: | Relays and LEDs |
| Display Language/Features: | English |
| Optional Power Supply: | None |
| Gas Sample Selection: | None – Standard Diffusion Method |
| Integrated Accessories | None |
| Installation Hardware: | Duct Mount Kit |
| Manuals: | Standard |
| Custom Features: | None |
| Manufacturer: | MSA |
| Part Number: | A-ULTIMAX-PL-A-18-0-3-D-2-0-0-0-0-2-0-0 |

Second Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Electrochemical |
| **Process:** |  |
| Tag Name: | xxx-xxx |
| Installation DWG. | 13215xx |
| Gas: | Chlorine |
| Temp min/max: | -40 to 90 º C |
| Humidity: | 0 - 100% |
| Class/Div/Grp: | Class 1 Division 1 Group D |
| **Device Data:** |  |
| Gas: | Chlorine |
| Ranges Selection: | 0-5 ppm |
| Sensor Connection/Housing: | Separated Sensor with Junction Box and 50’ Cable |
| Transmitter Output: | Standard (4-20 mAdc) |
| Adaptors: | ¼ Turn Rainshield/Splash Guard |
| Sensor Self-Test: | No SST |
| Manufacturer: | Scott Instruments |
| Part Number: | 4624-20-2-1-2-1 |
| **Accessories**: |  |
| Duct Mount Adaptor (Flat): | 096-2118-F |

**END OF SECTION**