

Use of CalGard Remote Calibration Adapter with Ultima® X5000 and S5000 Gas Monitors



The CalGard allows remote verification ("bump test") or instrument calibration of gases listed below and oxygen via a tubing connection in the presence of wind speeds up to 6 m/s (13 mph). In normal measurement operation, the ambient air passes through the air vents into the remote calibrator directly to the sensor (diffusion operation). During a bump test or instrument calibration, the test gas is supplied to the sensor via the tubing connection at the bottom of the CalGard. An integrated mechanism prevents the dilution and dispersion of test gas otherwise caused by external influences, such as wind. This allows a fast response from the sensor to the applied test gas. Once calibration is complete, the air inlet reopens to allow the monitoring of ambient air for gas without the need for further user intervention.

WARNING!

- Read this manual carefully. The device will perform as designed only if it is used, installed, and maintained in accordance with the manufacturer's instructions. Otherwise, it could fail to perform as designed and persons who rely on this device for their safety could sustain serious personal injury or loss of life.
- DO NOT use silicone-type lubricants in assembling the device and do not allow silicone vapors to be drawn into the flow system while in operation. Silicone can desensitize the combustible gas sensor, thereby giving erroneously low readings.
- DO NOT paint the device. Avoid painting in areas where the CalGard remote calibration adapter is located. If painting is required in an area where a CalGard remote calibration adapter has been installed, exercise caution to ensure paint is not deposited on the air vents.
- When calibrating for combustible gases with the CalGard remote calibration adapter, a calibration factor must be applied according to the instructions in this manual. Failure to apply the calibration factor can result in erroneously low readings.
- Visual inspection of the CalGard remote calibration adapter is the only way to check for a clear gas path through the air vents. Sensors with diffusion supervision will not identify blockage of the CalGard remote calibration adapter air vents. Bump testing and calibration will not identify blockage of the CalGard remote calibration adapter air vents.
- Visually inspect the CalGard remote calibration adapter to ensure a clear gas path through the air vents and to the sensor. Conditions that may lead to blockage include, but are not limited to, snow, ice, water, dust, dirt or insects. Such conditions necessitate more frequent inspections and removal of the CalGard to visually inspect for a clear gas path to the sensor.
- The use of the CalGard remote calibration adapter is not included in the scope of the Ultima X5000 or S5000 Hazardous Location and gas performance certifications. Review national, local and building codes prior to installing the CalGard remote calibration adapter in a Hazardous Location.

Failure to follow these warnings can result in serious personal injury or death.

1 Installation

Prior to installation, visually inspect the sensor for a clear gas path. For correct operation, the Ultima X5000/S5000 sensor and CalGard must be used in a vertical position (tubing connection pointing downwards). The CalGard remote calibration adapter can be attached to the sensor by screwing on the thread of the sensor. Because of this orientation requirement, the CalGard remote calibration adapter cannot be used with Ultima XIR Plus sensors.



The tube connector is adapted for tubes with an inner diameter of 5 mm or 3/16".

The length of tubing to the sensor should not exceed 30 meters (100 ft) in length and should be as short as possible to:

- Minimize the gas volume needed to flush the tubing
- Reduce external influences (e.g. temperature shift, pressure, etc.)
- Minimize the gas transport time through the tubing

Tubing material should be adapted to the applied test gas, have no absorptive or adsorptive properties, and should be made from inert material, such as PTFE, polyethylene, or stainless steel.

The free end of the test gas tube must be closed if no test gas is being applied. This is to prevent gas or air passing through the tube to the sensor, distorting the measurement, or in reverse pressure conditions the ambient atmosphere may escape from the sensor at the free end of the tube.

For proper function, the CalGard remote calibration adapter must be kept dry and free of any contaminants that may cause blockage of the air vents. Regular visual checks are necessary. Conditions that may lead to blockage include, but are not limited to: snow, ice, water, dust, dirt, or insects. Such conditions necessitate more frequent inspections and removal of the CalGard to visually inspect for a clear gas path to the sensor. Any contaminants must be removed from the CalGard by blowing them off with clean, oil-free compressed air or with a dry brush. Follow the instruction manual for the detector for cleaning off the path to the sensor. Ensure that the air vents are kept free from any coating, e.g. paint, grease or similar. Blockage of the air vents can result in erroneously low readings.

NOTE: Sensors with diffusion supervision will not identify blockage of the air vents. Calibration and bump testing will not identify blockage of the air vents.

2 Operation

Calibration procedure can be carried out as described in Chapter 5 of the Ultima X5000 Operating Manual or Chapter 5 of the General Monitors S5000 Operating Manual.

Use a gas regulator that provides 1.0 L / min flow rate. To compensate for possible deviations during measurement of combustible gases, a calibration factor of 1.20 has to be applied.



Example: Calibration for methane.

Apply 50% LEL methane and adjust to $1.20 \times 50 = 60\%$ LEL

When using the CalGard for a remote calibration, the response time of the system will increase depending on the length of the test gas tubing used.

3 Technical Specifications

Material: Stainless Steel Type 316

Dimensions (mm): 60 x 122 (diameter x height)

Weight: 0.6 kg

Working temperature: -30 °C to +70 °C

Storage temperature: -30 °C to +70 °C

Max. wind speed: up to 6 m/s

Applicable test gases: H₂, CH₄, C₃H₈, CO and H₂S in air, O₂ in N₂ (approval of other gases by MSA on request)

Recommended flow rate: 1.0 L / min

Minimum flow rate: 0.9 L / min

Maximum flow rate: 1.1 L / min