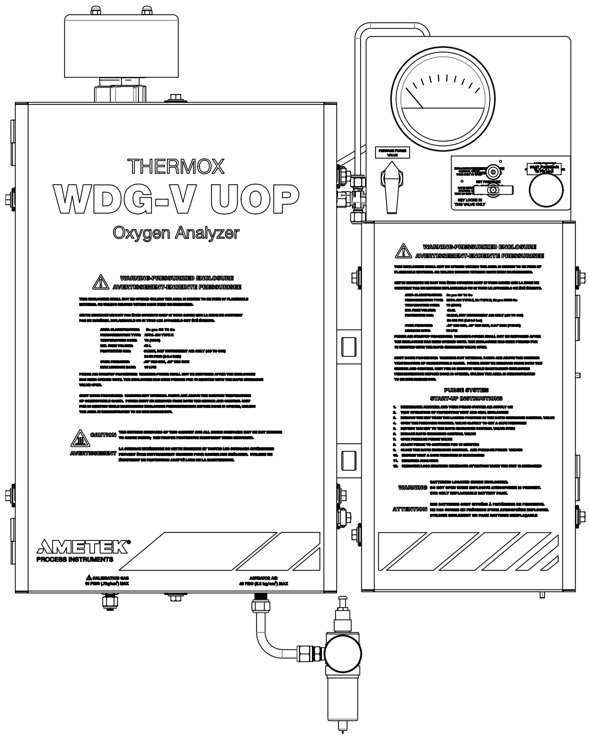
AMETEK®
PROCESS INSTRUMENTS

ESSENTIAL HEALTH and SAFETY

WDG-V UOP Analyzer
ATEX-IECEx



PN 9000-279-VE_RevD

To obtain a PDF of this manual, visit our Products page at www.ametekpi.com.

Contents

Overview

About This Document

This document describes the Essential Health and Safety requirements (EH&S) for the components that make up the WDG-V UOP ATEX/IECEx Analyzer intended for use in explosive atmosphere locations (Zone 1).

The procedures and information discussed in this document include only abbreviated steps to install, operate, and perform maintenance on the WDG-V UOP Analyzer. They do, however, include all relevant safety warnings and cautions to ensure the safety of personnel and the WDG-V UOP ATEX/IECEx Analyzer in explosive atmosphere locations.

NOTE

AMETEK takes great effort to ensure that its translations of documents into foreign languages are accurate and complete. However, in the case of any discrepancies between the English version and the translated version, the original English version shall take precedence. AMETEK will not assume liability for any such discrepancies, or issues arising from them.

Important Safety Information

Warnings, Cautions, Notes

WARNINGS, CAUTIONS, and NOTES contained in this manual emphasize critical instructions as follows:

An operating procedure which, if not strictly observed, may result in personal injury or environmental contamination.

An operating procedure which, if not strictly observed, may result in damage to the equipment.

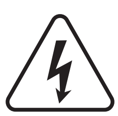
Important information that should not be overlooked.

Burn hazard. Hot surface. Do not touch, allow to cool before servicing.

Warning Labels

These symbols may appear on the instrument to alert you of existing conditions.

Protective Conductor Terminal
(BORNIER DE L'ECRAN DE PROTECTION)
Schutzerde



Caution – Risk of electric shock
(ATTENTION – RISQUE DE DÉCHARGE ÉLECTRIQUE)
Achtung – Hochspannung Lebensgefahr

Caution – Refer to accompanying documents
(ATTENTION – SE RÉFERER AUX DOCUMENTS JOINTS)
Achtung – Beachten Sie beiliegende Dokumente

CAUTION – Hot Surface
(ATTENTION – SURFACE CHAUDE)
Achtung – Heiße Oberfläche

Special Conditions for Safe Use

The WDG-V UOP is designed to be used in Category 3 hazardous locations where explosive gases may be present. Protection against explosion is provided via enclosure purging and pressurization. There are three rules that must always be followed:

1. Do not open the enclosure unless the power is removed from both analyzer and control unit for 90 minutes while maintaining pressurization, or the area is demonstrated to be non-hazardous.

2. Use only appropriate approved conduit fittings or cable glands for cable entry (IIC, IP40 minimum). No holes shall be left unplugged.

3. Internal temperature rises above the rated T-class. The end user must take immediate action on the loss of pressure to reinstate purge.

HAZARDOUS LOCATION LIMITATIONS

The WDG-V UOP is a Category 3 analyzer specifically designed and certified for use in ATEX II 3 G and IECEx Zone 2 hazardous locations. It can be safely operated in a location in which:

- The ambient temperature does not exceed 60 °C.

- Voltages are 104–127 VAC or 207–253 VAC, 740 VA.

CAUTION

Make sure the location in which the WDG-V UOP is installed meets all of the Hazardous Location Limitation criteria for a Category 3 analyzer described above.

Electrical Safety

Up to **5 kV** may be present in the analyzer housings. Always shut down power source(s) before performing maintenance or troubleshooting. Only a qualified electrician should make electrical connections and ground checks.

Any use of the equipment in a manner not specified by the manufacturer may impair the safety protection originally provided by the equipment.

Grounding

Instrument grounding is mandatory. Performance specifications and safety protection are void if instrument is operated from an improperly grounded power source.

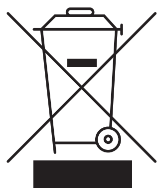
WARNING

Verify ground continuity of all equipment before applying power.

Environmental Information (WEEE)

This AMETEK product contains materials that can be reclaimed and recycled. In some cases the product may contain materials known to be hazardous to the environment or human health. In order to prevent the release of harmful substances into the environment and to conserve our natural resources, AMETEK recommends that you arrange to recycle this product when it reached its "end of life".

Waste Electrical and Electronic Equipment (WEEE) should never be disposed of in a municipal waste system (residential trash). The Wheelie Bin marking on this product is a reminder to dispose of the product properly after it has completed its useful life and been removed from service. Metals, plastics, and other components are recyclable and you can do your part by doing one of the following steps:



- When the equipment is ready to be disposed of, take it to your local or regional waste collection administration for recycling.
- In some cases, your "end of life" product may be traded in for credit towards the purchase of new AMETEK instruments. Contact your dealer to see if this program is available in your area.
- If you need further assistance in recycling your AMETEK product, contact our office listed in the front of the instruction manual.

Specifications

WDG-V UOP Analyzer Specifications

For the purpose of this document, specifications listed here apply primarily to the utilities required for the WDG-V UOP ATEX/IECEx Analyzer. For complete specifications, refer to the WDG-V UOP ATEX/IECEx Analyzer *User Manual*.

Output Range	From 0–1 % to 0–100 %
Accuracy	±0.75 % of measured value or ±0.05 % oxygen, whichever is greater
Response	90 % of a process step change <12 seconds
Drift	<0.1 % of Cell output per month (<0.00 5 % O_2 per month with 2 % O_2 applied)
Aspirator Air Requirements	4.72–9.4 L/min. (10–20 scfh) @ 1.05-7.04 kg/cm^3 (15–100 psig)
Sample Pressure	101.28 kPa–413.7 kPa (14.69 PSIG–60 PSIG)
Maximum Sample Dewpoint	200 °C (392 °F)
Environment	Ambient Temperature: -20 °C to 60 °C (-5 °F to 140 °F) Relative Humidity: 10 % to 90 %, non-condensing Maximum Altitude: 2000 meters
Power Requirements	115 VAC, ±10 %, 47–63 Hz, 740 VA max. 230 VAC, ±10 %, 47–63 Hz, 740 VA max.
Calibration Gas Requirements	Use calibration gases @ 3.0 SCFH (1.4 L/min.) O_2 Span Gas: Instrument Air, or from 1.0–100 % O_2, balance N_2 O_2 Zero Gas: 2 % O^2, or from 0.1–10 % O_2, balance N_2
Probe Type / Lengths	Hastelloy C 46 cm (18") 69 cm (27")
Enclosure	Hinged IP65

NOTES

1. All static performance characteristics are with operating variables constant.
2. System accuracy referenced to 0.1–10 % calibrated range.
3. Response is to calibration gas.

Remote Calibration Unit (RCU) Specifications

Enclosure	UL Type 4X (NEMA 4X (IP66), Division 2
Environment	Ambient Temperature: -18 °C to 60 °C (0 °F to 140 °F) Ambient Humidity: 0 % to 90 %, non-condensing Maximum Altitude: 2000 meters IEC Installation: Category II IEC Pollution Degree 2

Approvals and Certifications

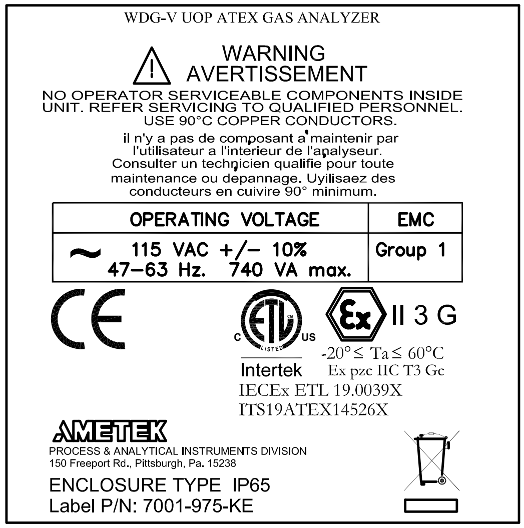
WDG-V UOP Analyzer Directives and Standards

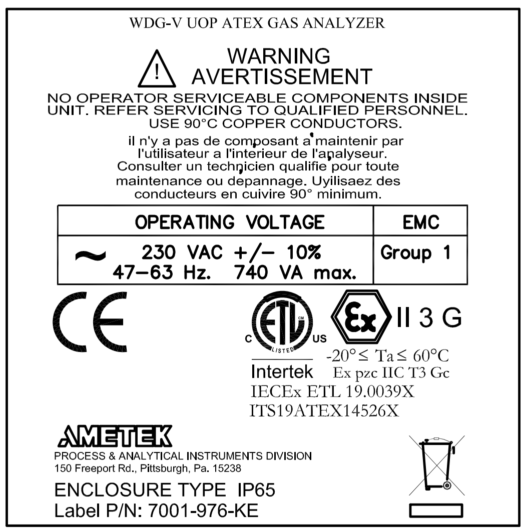
IECEx	IEC 60079-0: 2017, Edition 7.0 IEC 60079-2: 2014, 6th Edition
ATEX	Directive 2014/34/EU using the following standards: EN 60079-0: 2018 EN 60079-2: 2014
General Safety (LVD) **US/CAN**	Directive 2014/35/EU using the following standard: EN 61010-1: 2010 Edition 3.0 UL/CSA 61010-1: 2010 Edition 3.0 (cETLus)
EMC Compliance	Directive 2014/30/EU using the following standard: EN 61326-1: 2013 Edition 2.0

Remote Calibration Unit (RCU) Directives and Standards

EMC	Directive 2004/108/EC
Safety	Directive 73/23/EEC

WDG-V UOP Series Analyzer Rating Labels





WDG-V UOP Series Analyzer Marking

WARNING-PRESSURIZED ENCLOSURE
AVERTISSEMENT-ENCEINTE PRESSURISE

THIS ENCLOSURE SHALL NOT BE OPENED UNLESS THE AREA IS KNOWN TO BE FREE OF FLAMMABLE MATERIAL OR UNLESS DEVICES WITHIN HAVE BEEN DE-ENERGIZED.

CETTE ENCEINTE NE DOIT PAS ÊTRE OUVERTE SAUF SI VOUS SAVEZ QUE LA ZONE NE CONTIENT PAS DE MATÉRIEL INFLAMMABLE OU SI TOUS LES APPAREILS ONT ÉTÉ ÉTIENTES.

AREA CLASSIFICATION:	CLASS 1 DIVISION 2, GROUPS A, B, C AND D
PRESSURIZATION TYPE:	NFPA 496 TYPE Z, Ex TYPE Z, Ex pxc IICTS Gc
TEMPERATURE CODE:	T3 (180C)
INT. FREE VOLUME:	40.3L
PROTECTIVE GAS:	CLEAN, DRY INSTRUMENT AIR ONLY (-20 TO 60C) 80-120 PSI (5.5-8.3 bar)
OVER PRESSURE:	0.15" H2O MIN., 0.35" H2O MAX, 3.64" H20 MAX (PURGE)
MAX LEAKAGE RATES:	15 LPM

PURGE AIR STARTUP PROCEDURE: WARNING-POWER SHALL NOT BE RESTORED AFTER THE ENCLOSURE HAS BEEN OPENED UNTIL THE ENCLOSURE HAS BEEN PURGED FOR 10 MINUTES WITH THE RAPID EXCHANGE VALVE OPEN.

SHUT DOWN PROCEDURE: HOT INTERNAL PARTS ARE ABOVE IGNITION TEMPERATURE OF COMBUSTIBLE GASES. POWER MUST BE REMOVED FROM BOTH THE SENSOR AND CONTROL UNIT FOR 90 MINUTES WHILE MAINTAINING ENCLOSURE PRESSURIZATION BEFORE DOOR IS OPENED, UNLESS THE AREA IS DEMONSTRATED TO BE NON-HAZARDOUS.

CAUTION

THE OUTSIDE SURFACES OF THIS CABINET AND ALL INSIDE SURFACES MAY BE HOT ENOUGH TO CAUSE BURNS. USE PROPER PROTECTIVE EQUIPMENT WHEN SERVICING.

AVERTISSEMENT

LA SURFACE EXTÉRIEURE DE CETTE ENCEINTE ET TOUTES LES SURFACES INTÉRIEURES PEUVENT ÊTRE SUFFISAMMENT CHAUDES POUR CAUSER DES BRÛLURES. UTILIZEZ UN ÉQUIPEMENT DE PROTECTION ADAPTÉ LORS DE LA MAINTENANCE.

This page intentionally left blank.

Pre-Installation Requirements

WARNING

Reference pressure must be applied before the CCR (Continuous Catalyst Regeneration) is pressurized.

CAUTION

During process start-up and whenever power is removed from the analyzer, the aspirator should be turned off and nitrogen applied to the calibration gas port at 1.5–2 schf flow to ensure the process gas is purged from the analyzer. The 1.5–2 scfh nitrogen purge through the calibration port should be maintained until the analyzer is turned on and is hot – preferably 24 hours.

Do not turn on the aspirator until the analyzer has been turned on and is hot – preferably 24 hours. If you turn off the analyzer or the process is shut down, turn off the aspirator to avoid plugging problems.

Personnel Technical Level Required for Installation

NOTE

The operations in this section should be performed only by qualified service personnel experienced in electrical safety techniques. Never service the analyzer unless power has been removed from the analyzer, and the analyzer has been allowed to cool for at least one hour. Also, always use gloves when working on the analyzer.

Analyzer Site Preparation

Observe the following guidelines when selecting an analyzer installation location:

- Select a readily accessible position for the analyzer to allow for routine maintenance. Comfort levels for maintenance personnel should be considered in placement of the analyzer and AMEVision Display User Interface.

- The installation location should be free from excessive vibration and the ambient temperature is required to be within the limits listed in the specifications. If the ambient temperature is outside the specified limits or the vibration is excessive, please contact your AMETEK representative. We have special options to address ambient temperatures outside the listed specifications.

Unpacking and Inspecting the Equipment

Remove any packing material from the WDG-V UOP Analyzer. Check for damage. If equipment is damaged, notify the carrier and contact AMETEK Service (https://www.ametekpi.com/customersupport/requestsupport) immediately if parts are missing or damage is found, and to verify if damaged parts will require replacement prior to safely installing and operating the analyzer/equipment.

Mechanical Installation

- Sample Inlet Probe Installation
- Exhaust Tube Installation (optional)
- Analyzer Mounting
- Remote Calibration Unit Mounting and Plumbing (optional)

Installing the Sample Inlet Probe

NOTE

For some applications, you must first connect the sample inlet probe to the analyzer before mounting the analyzer. The same applies if you are installing the probe heater or exhaust tube. Therefore, these subjects are discussed before the sections on how to mount the analyzer to the process.

NOTE

Orient the probe so that the longer side faces the gas flow.

The sample inlet probe is how the sample gas gets to the analyzer. Aspirator air within the analyzer is used to pull process gas from the sample probe into the analyzer. The sample inlet probe is identified by the threads on both ends.

- Figure 1 shows how to install the standard 1/4" NPT probe and optional exhaust tube.
- Figure 2 shows port locations on the rear of the analyzer.

You must connect the probe to the analyzer before mounting the analyzer.

Installing the Standard 1/4" NPT Probe

- Screw the probe into the back of the sample probe port on the rear of the analyzer, then mount the analyzer – Figures 1.1 and 1.2.

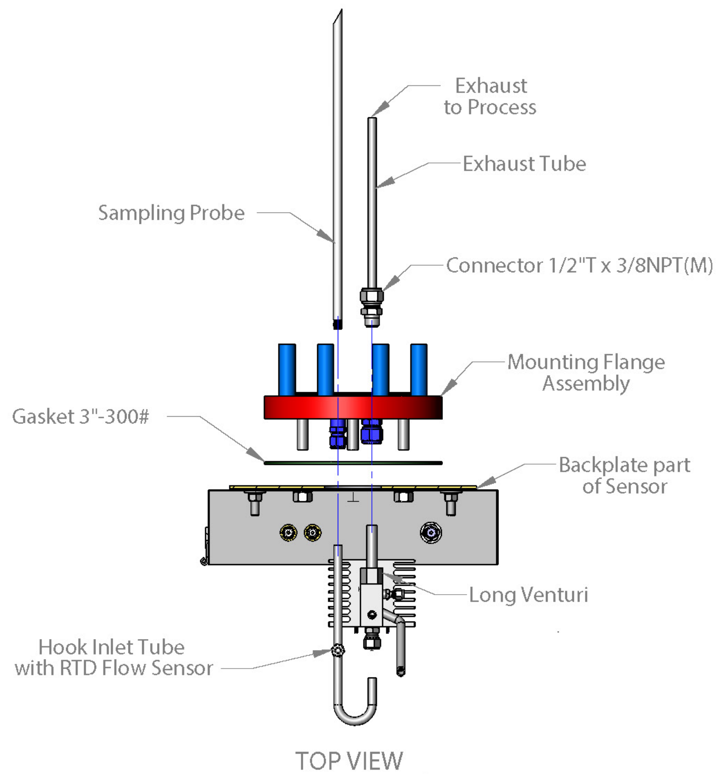


Figure 1.1.
WDG-V UOP Probe installation.

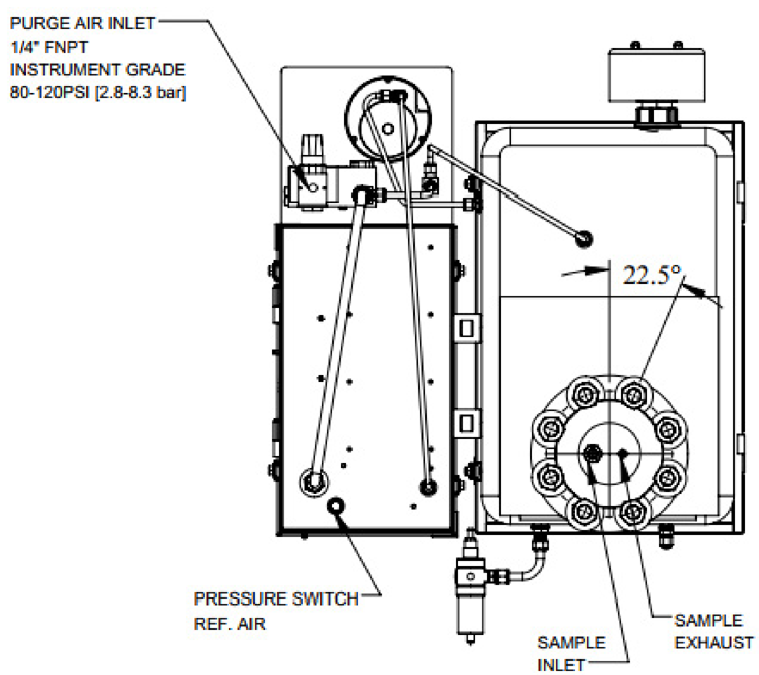


Figure 1.2.
Rear view, analyzer.

Installing the Exhaust Tube

NOTE

When installing the exhaust tube, connect it to the analyzer before mounting the analyzer to the process.

The hastelloy exhaust tube allows you to extend the aspirator exhaust. The exhaust tube has a thread on only one end of the tube.

To install the exhaust tube, thread the its into the exhaust port on the rear of the analyzer as shown in Figure 2.

Installing the WDG-V UOP Analyzer

- The analyzer ambient temperature range is -20 °C to 60 °C.
- When installing the exhaust tube, attach it to the back of the analyzer before mounting the analyzer to the process.
- Mounting dimensions are provided in Figure 3.

CAUTION

Do not open a Z-purge, hinged-analyzer enclosure door until you first verify that the area has been classified as non-hazardous.

NOTE

The factory-supplied mounting flange comes attached to the WDG-V UOP Analyzer. Mount the supplied flange to your flange as described below.

1. Thread the 1/4 -18 NPT sample inlet probe into the mounting flange. Orient the probe so the longer side faces towards the flow of gases; this prevents large particles from entering the analyzer. This inlet pipe does not need to be leak tight.

NOTE

When mounting the analyzer to your process flange (see Step 2), the mounting flange must also be sealed to your process flange using the factory-supplied Inconel compressible gasket. Center this gasket on the raised flange faces to ensure a leak-tight seal. You can use a thin piece of sheet metal to help you install this gasket.

2. Mount the factory-provided 3" 300# mounting flange to your process flange. Tighten the nuts onto the mounting studs in a cross pattern to create an even seal (orient the flange so the analyzer is in an upright position). This flange has eight 3/4" - 10 studs, 3-1/2" long that conform to ASTM A193 B8M. Heavy hex nuts (ASTM A194 8M), 3/4" - 10 threads, and associated washers are also included.

   Mounting dimensions for the hinged style enclosure, including the Z-purge option, are provided in Figures 2 and 4.

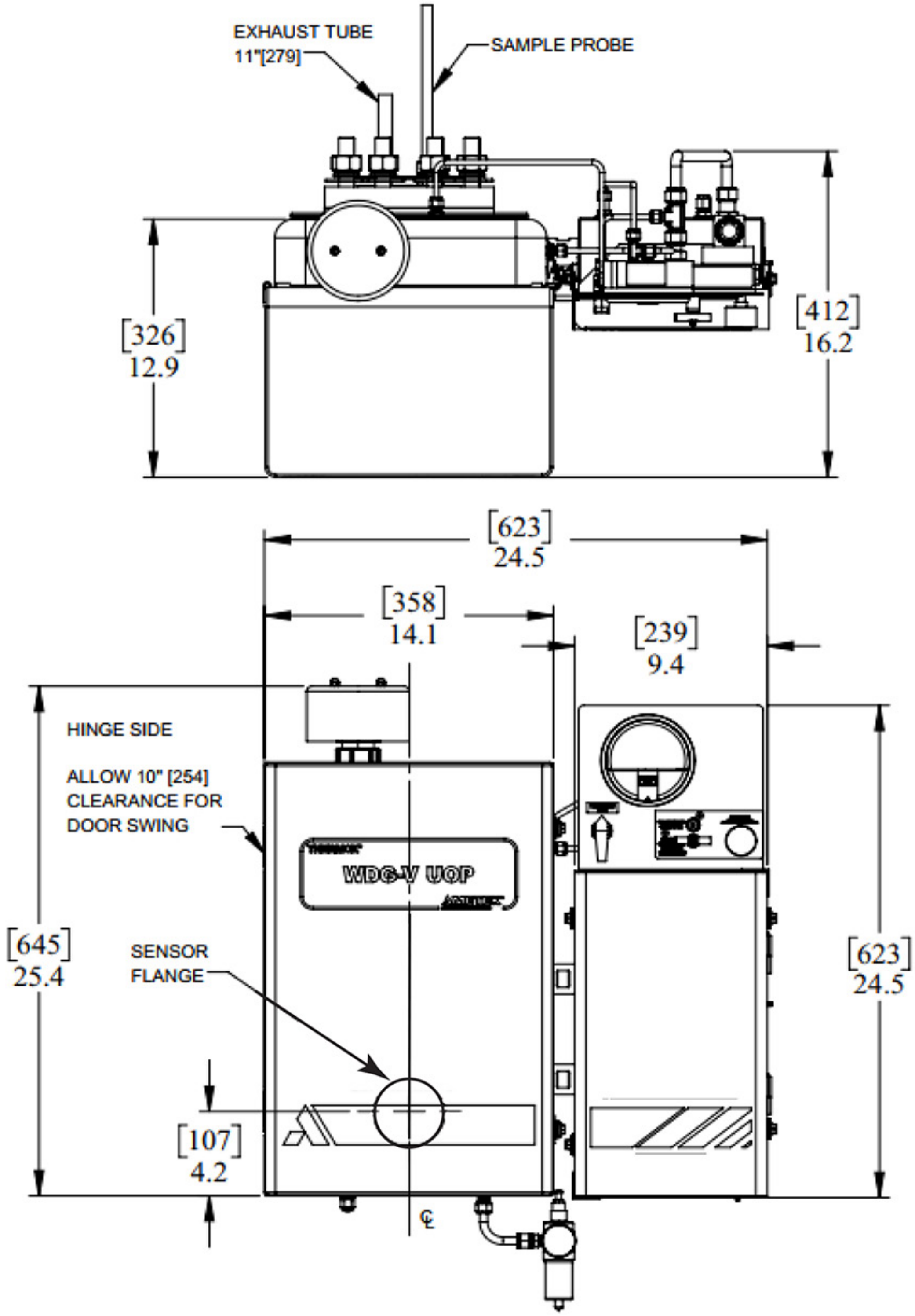


Figure 2.
Mounting dimensions.

NOTE

A 7/16" wrench is required to open both doors to the WDG-V UOP Analyzer.

Calibration/Aspirator Air

Required Calibration Gases and Tubing

NOTE

See Specifications for information on calibration gases. The span gas is the high gas; the zero gas is the low gas.

The span gas must be 10 times greater than the zero gas. For example, if the zero gas is 1 % O_2, the span gas must be 10 % O_2 or higher.

- O_2 Span Gas
  Instrument air (20.9 %) or from 1.0–100 % O_2.

- O_2 Zero Gas
  From 0.1–0 % O_2, balance N_2.

For example, if using an operating range of 0–2000 ppm combustibles, use 1200 ppm CO, 1–2 % O_2, balance N_2.

Rapid Exchange Purge System

Connections

Connect instrument air to the analyzer purge inlet. Maintain the pressure and flow as directed on the purge warning label.

NOTE

The purge apparatus provided by AMETEK meets requirements for hazardous locations under certain conditions.

- Do not exceed the maximum temperature rating listed in the Specifications section of this manual.

  The WDG-V UOP Analyzer contains a flame arrestor to prevent it from being an ignition source to the process for short periods of high combustible levels (25 % of LEL – lower explosive limit) in the process. The flame arrestor is not, however, intended to protect the process where the combustibles levels are always high.

Purging Operation

"Safe" pressure, for purposes of this manual, is defined as a minimum 0.15–0.35 inch of water column. Do not exceed "Safe" pressure with the Enclosure Pressure Control Valve purge.

The regulator may be in the locked position upon arrival. To adjust the regulator, pull the handle to the outward position.

Practice locking and unlocking key in the RECV valve stem. Become familiar with this process to ease operation of the system.

Operators must follow the step-by-step sequence in the Start-Up instructions found on the electronics enclosure door.

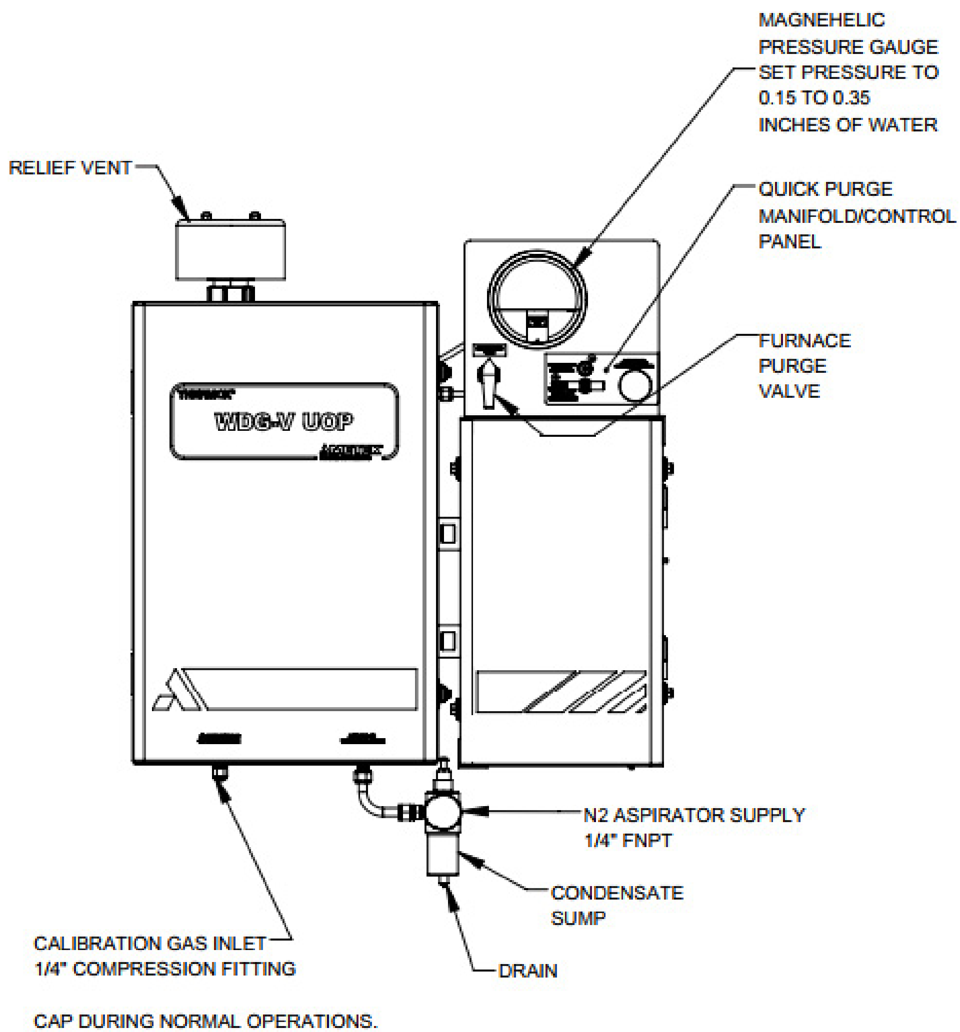


Figure 3.1.
UOP Rapid Exchange Purge System, front view.

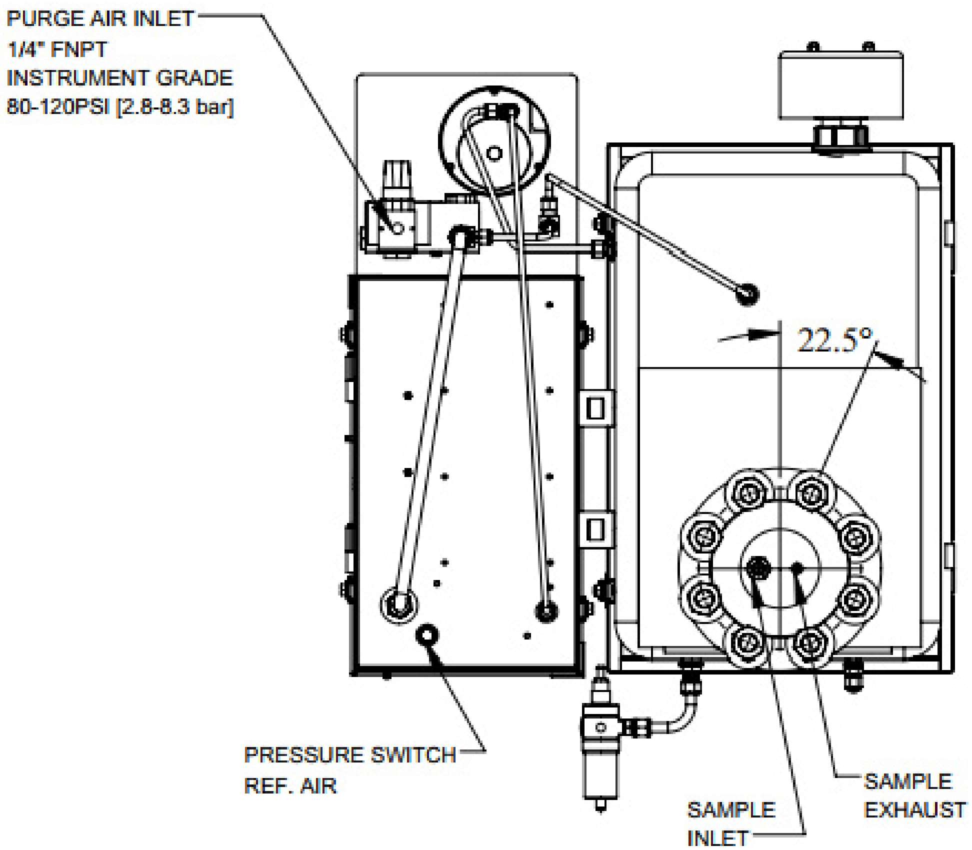


Figure 3.2.
UOP Rapid Exchange Purge System, rear view.

Purging Instructions

Ensure that the protective gas supply is connected, the enclosure power is de-energized and the alarm system energized (if being used).

1. Carefully read the Start-Up Instruction on the unit.
2. Check the operation of the **Enclosure Protection Vent** by gently prodding the vent flapper open with a soft pointed object, like the eraser end of a pencil, to ensure that the vent valve works freely. On vertically configured vents, this can be done from within the analyzer enclosure.
3. Seal the protected enclosure(s).
4. Unlock the **T-Bar Valve Key** from the **Rapid Exchange Control Valve** (RECV) stem and place in the **Enclosure Pressure Control Valve** (EPCV) stem. Turn the key counter-clockwise to open the EPCV stem and set the **Enclosure Pressure Gauge** at "Safe" pressure. The Pressure Loss Alarm Switch (if being used) should then activate to silence the alarm system.
5. Carefully remove the T-bar Valve Key from **Enclosure Pressure Control Valve** stem. Ensure **Enclosure Pressure Gauge** "Safe" pressure setting is stable.
6. Use the T-Bar Valve Key to open the **Rapid Exchange Control Valve** turning a full 90° counter-clockwise to ensure that the Enclosure Protection Vent opens.

NOTE

The Enclosure Pressure Gauge should move quickly off scale to the right, this is normal for all Rapid Exchange purging systems.

7. Open the **Furnace Purge Valve** by turning the valve counter-clock wise. The exchange time is ten (10) minutes minimum.
8. Close both the **Rapid Exchange Control Valve** and **Furnace Purge Valve** fully and ensure T-bar Valve Key is firmly locked in the Rapid Exchange Control Valve Stem.
9. Wait for the Enclosure Pressure Gauge to return to a "Safe" pressure and energize the protected enclosure(s) power using the local disconnect switch.
10. Ensure the Enclosure Pressure Indicator maintains a "Safe" pressure before leaving the system unattended.

Aspirator and Manual Calibration Connections

The UOP processes run at either atmospheric pressure, 35 psi or 110 psi.

Aspirator, calibration, and reference gas pressures must be set relative to the process pressure.

NOTE

Reference gas pressure is required for High Pressure (110 psi) only.

Aspirator N_2 Connections

CAUTION

During process start-up and whenever power is removed from the analyzer, the aspirator should be turned off and nitrogen applied to the calibration gas port at 1.5–2 schf flow to ensure the process gas is purged from the analyzer. The 1.5–2 scfh nitrogen purge through the calibration port should be maintained until the analyzer is turned on and is hot – preferably 24 hours.

Do not turn on the aspirator until the analyzer has been turned on and is hot – preferably 24 hours. If you turn off the analyzer or the process is shut down, turn off the aspirator to avoid plugging problems! Practice locking and unlocking key in the RECV valve stem. Become familiar with this process to ease operation of the system.

Connect N_2 aspirator supply to the aspirator inlet on the analyzer (see Figure 4). Adjust the aspirator regulator to the minimum pressure required to get a response from the analyzer (typically 3–5 psi above the process pressure). Do not turn on the aspirator until the analyzer has been turned on and is hot – preferably 24 hours.

NOTE

If you have a remote calibration unit (RCU), skip the Manual Calibration section and proceed to the "Standard RCU Mechanical Installation" section.

Manual Calibration

A calibration gas inlet port (shown in Figure 3.1) is provided to allow you to calibrate the system. During calibration, turn off the aspirator supply and inject calibration gases into the calibration gas inlet port on the analyzer. During normal operations, plug this calibration gas inlet port. The zero and span calibration gases should be set to 1.5–2 scfh and will require about 10 psig relative to the process pressure. If the process is running 110 psi, the gas pressure needs to be 120 psi.

Installing the Standard RCU

CAUTION

Do not turn on the aspirator until the analyzer has been turned on and is hot – preferably 24 hours. ***Also, if you turn off the analyzer or the process is shut down, turn off the aspirator air to avoid plugging problems.***

Figure 4 shows mounting dimensions for a standard RCU. Use two #10 screws to mount the RCU. Note that only the top left and lower right holes are used; the other holes hold the RCU to its mounting plate. The ambient temperature range for the RCU is -20 °C to 70 °C. Mount the RCU as close to the analyzer as possible. Shorter calibration plumbing improves response times, reduces calibration gas expense, and reduces the chance of contaminants in the calibration gas plumbing.

1. Connect the O_2 span gas, if other than instrument air, to the alternate O_2 span gas inlet.

2. Connect the O_2 zero calibration gas to the O_2 zero gas inlet connection on the RCU.

3. Connect the combustibles span calibration gas to the combustibles span gas inlet on the RCU. For a WDG-V UOP analyzer with RTD-type combustibles detector, the combustibles span calibration gas would also include the methane span calibration concentration.

4. Using appropriate tubing, connect the calibration gas outlet on the right side of the RCU to the calibration gas inlet on the analyzer – see Figure 4 for analyzer calibration gas inlet connection.

5. Using appropriate tubing, connect the aspirator air outlet on the right side of the RCU to the aspirator air inlet connection on the analyzer.

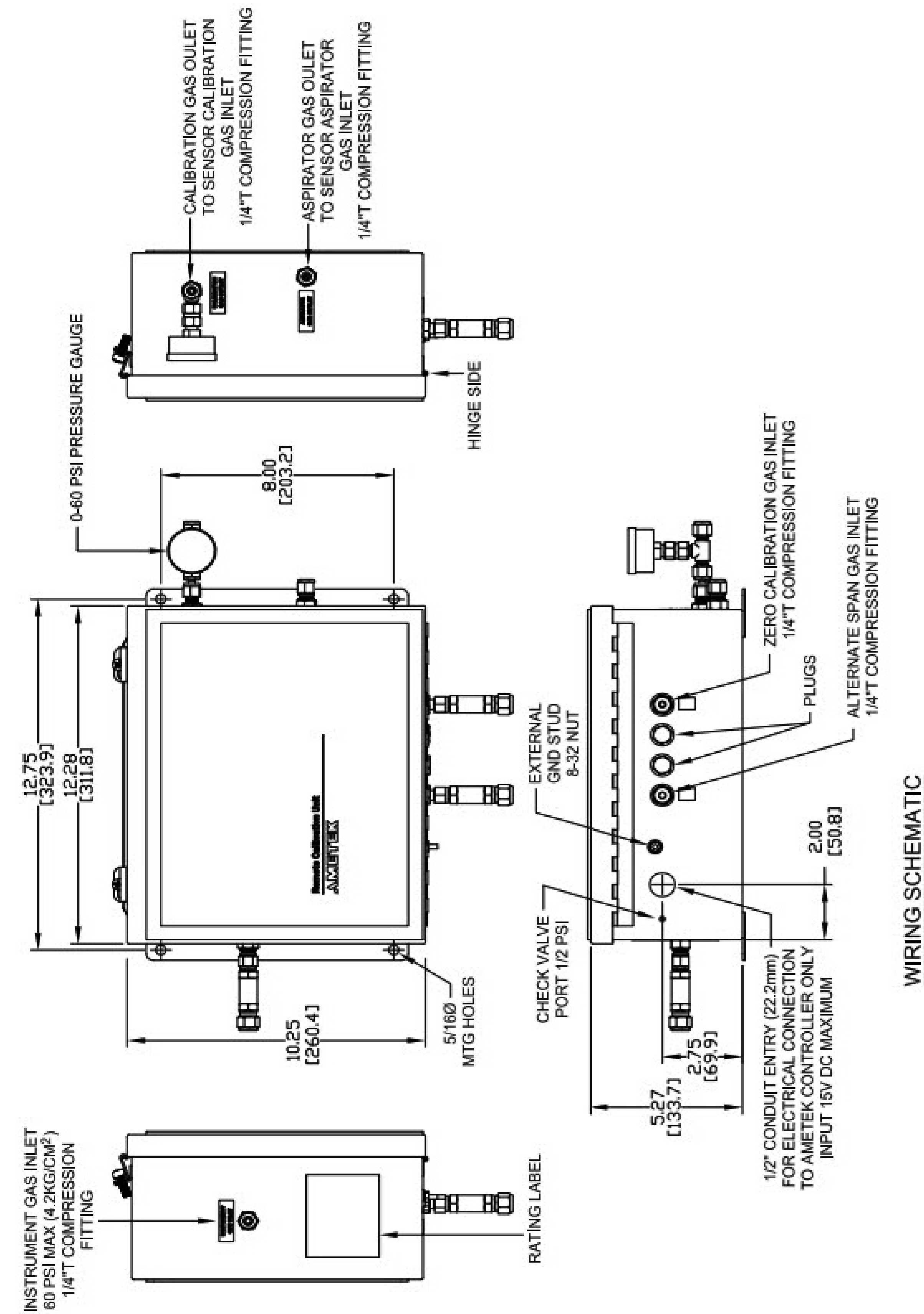


Figure 4.
RCU mounting dimensions.

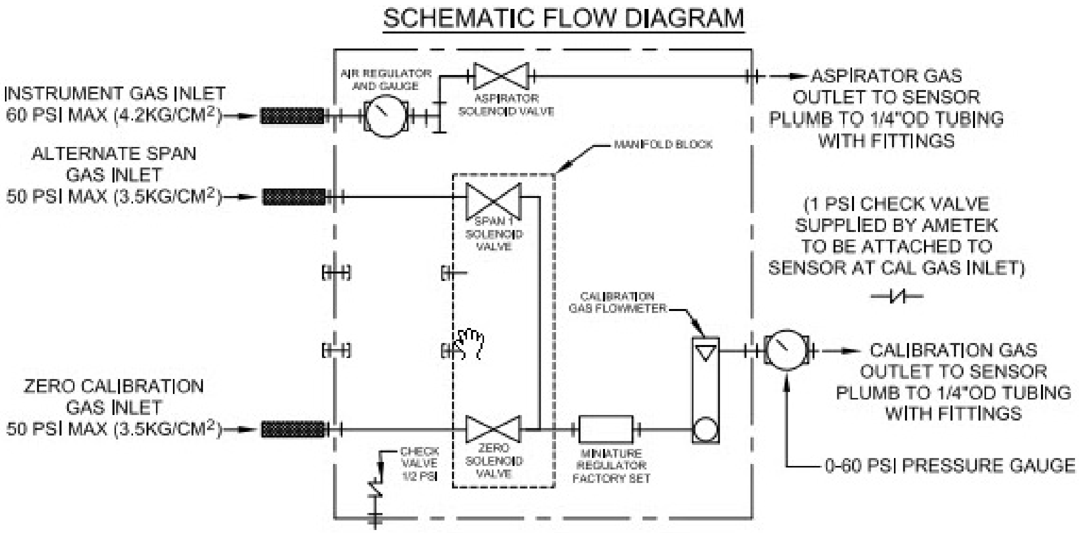


Figure 5.
RCU Schematic flow diagram.

Installing the AMEVision Control Unit

The AMEVision Control Unit can be mounted to either a panel or a wall.

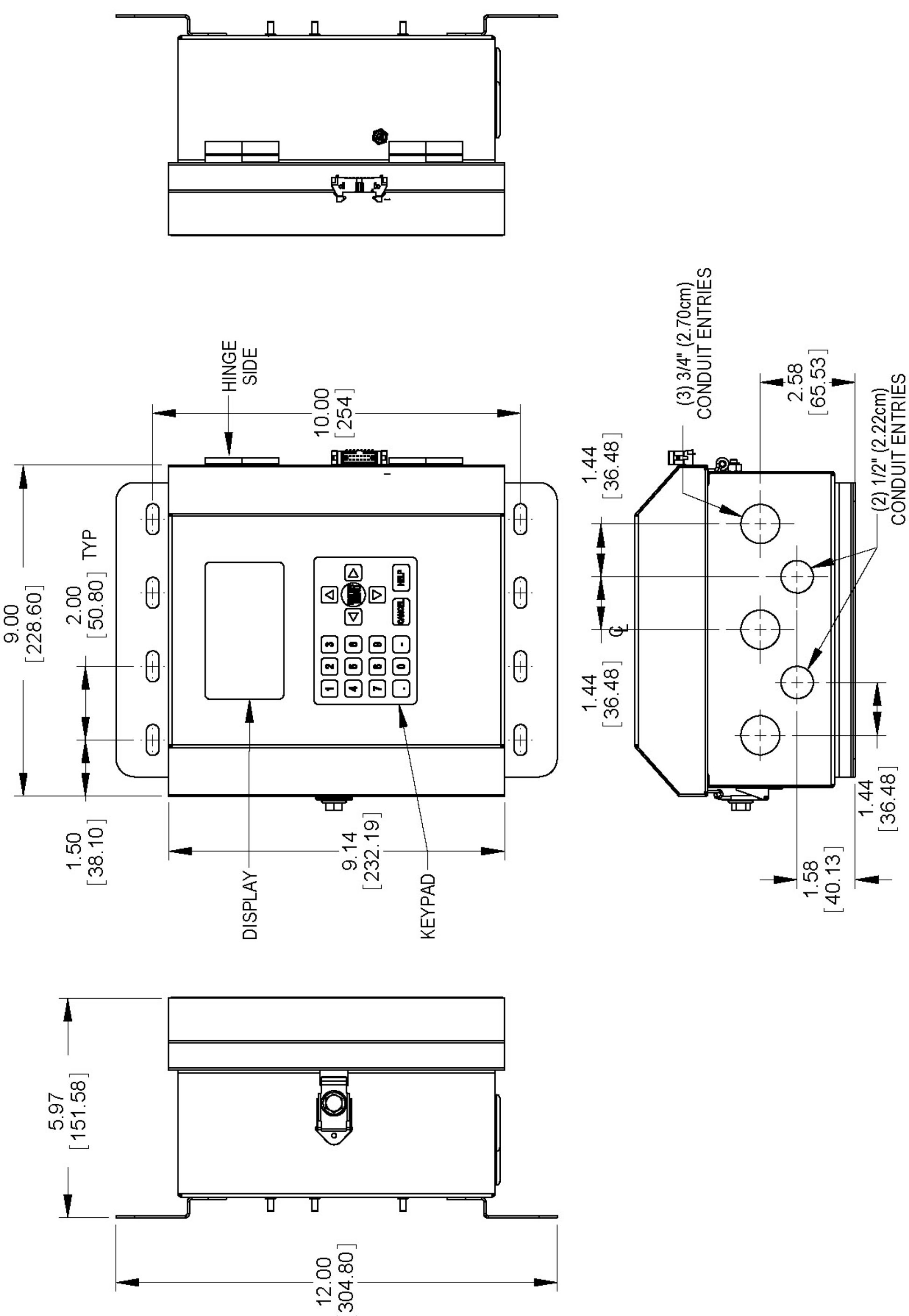


Figure 6.
AMEVision mounting dimensions.

AC Power and Signal Connections

WARNING

Remove AC mains power from the AMEVision before beginning wiring.

Connections to the analyzer are made through the Wiring card. The Wiring card is located on the right side of the analyzer.

NOTE

Any screw terminals on the Wiring card not described in this section are reserved for future use.

General Wiring and Conduit Requirements

This section provides mandatory EMC grounding, shielding, and noise protection requirements.

- Analyzer wiring conductors must be rated at a minimum of 80 °C. All other wiring conductor ratings should be for the minimum temperature required for the equipment being connected to the analyzer, but not less than 60 °C.
- Use only the applicable NEMA-approved conduit fittings or cable fittings to maintain the NEMA rating for the analyzer enclosure or WDG-V UOP. If not using a conduit entry, leave the factory NEMA-approved plugs intact. Never leave any holes unplugged.
- Follow all applicable electrical codes for your location.
- Follow proper grounding, shielding and noise protection practices as described in this section.
- For all analyzer and signal wiring use twisted-pair cable, 0.82 mm2 to 0.33 mm2 (18 to 22 AWG), with an overall braided shield, or twisted-pair cable in rigid metal conduit.
- For AC mains supply wiring, use metric between 3.3 mm2 and 2.1 mm2 or equivalent between 12 and 14 American Wire Gauge (AWG).
- Use the conduit entry point closest to the connections you are making. **Do not add any additional conduit entry holes.**

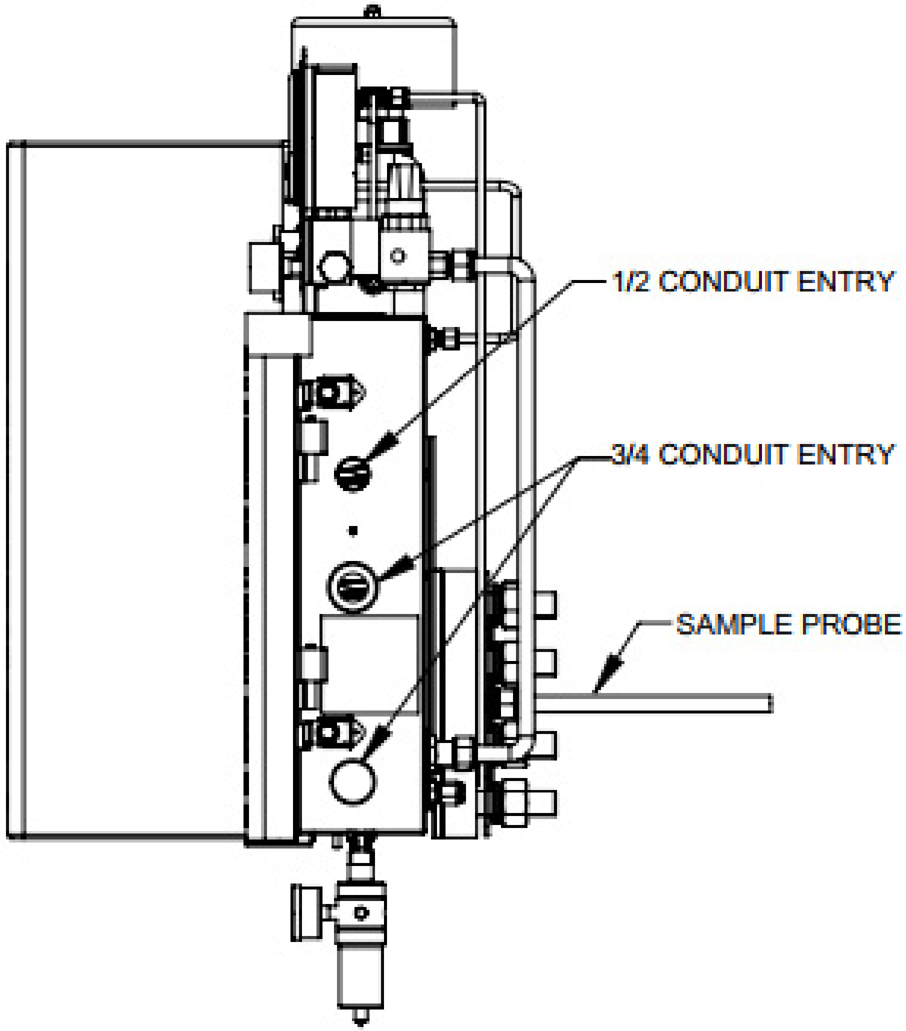


Figure 7.
Conduit Entries.

WDG-V UOP Mains Supply Connections

CAUTION

Do not run control unit AC mains supply wiring in the same conduit with other AC line power wires. By keeping this wiring separated, you prevent transient signals from reaching the control unit.

The WDG-V UOP can operate using between 115 VAC, ± 10 % or 230 VAC, ±10 %. There is no power switch or circuit breaker on the analyzer, and it must be protected by installing it on a circuit-protected line, maximum 15 amperes, with a switch or circuit breaker in close proximity to the control unit and within easy reach of an operator. Mark the switch or circuit breaker as the control unit disconnecting device.

Mains supply connections to the control unit are:

- L – Line connection
- N – Neutral connection (USA)
- Chassis Stud – Equipment ground (protective conductor)

Use the 1/2" conduit entry hole in the WDG-V UOP for AC mains supply wiring. Use the chassis stud next to the 1/2" conduit entry hole for equipment ground (protective conductor).

AC (L) and (N) markings are provided by the terminal block for connection of AC power. These markings are for reference purposes only, such as for use on system wiring diagrams, etc. The system/product has or needs no specific LINE or NEUTRAL connection for any function, safety or otherwise. The (N) terminal is not internally grounded, nor needs to be. The system will operate normally regardless of what AC input terminal (L or N) the AC Line or Neutral is connected to, or if there is a Neutral used at all (i.e., 208 VAC US power connection).

EMC Grounding, Shielding, and Noise Protection

For EMC purposes, under no circumstances should you leave cable shields disconnected at one end or both ends of the cable (analyzer or control unit or other device).

You must use twisted-pair cable in rigid metal conduit or use twisted pair cable with an overall braided shield. All cable shields or conduits connecting to the analyzer must be chassis grounded.

EMC Grounding Method

- **Shield Ring Method**
  Connect all shields for that conduit entry (other than power) to a supplied shield terminal ring (see Figure 8). This shield ring is a stainless steel ring with a metal tab. Place the shield ring under the conduit nut. Crimp the shields from all cables for that conduit entry to a 1/4" female quick disconnect, then push it onto the tab that sticks out of the conduit shield ring. Keep shields as short as possible.

- **Ground Stud Method**
  Connect all cable shields for that conduit entry to the grounding stud closest to that conduit entry hole.

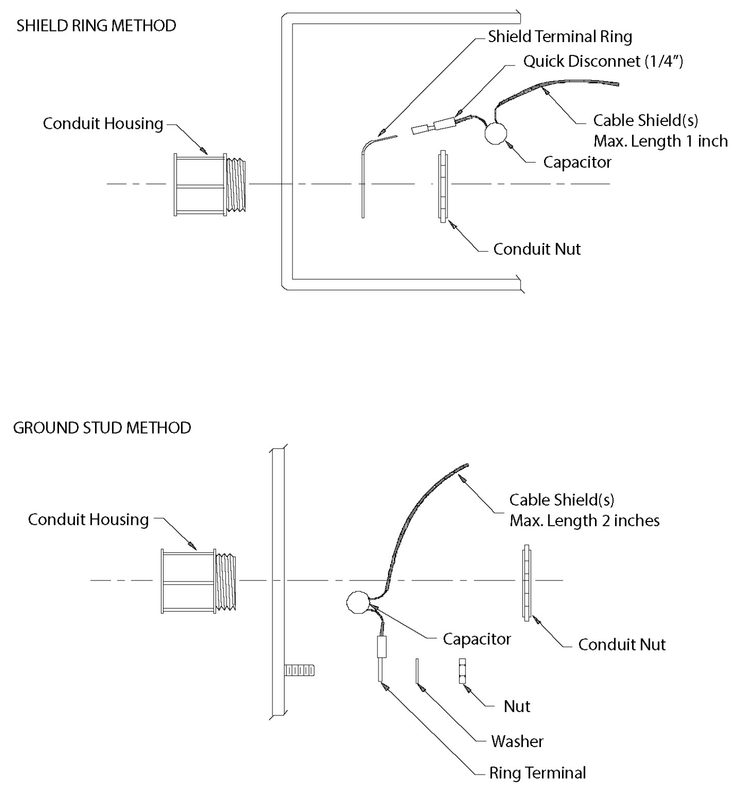


Figure 8.
Direct shield grounding methods.

Transient and RFI Interference

This section describes transient and RFI interference precautions:

- Although there are transient and noise protectors on all analyzer I/O connections (communications, current outputs, analyzer, etc.), this protection is intended to act as a last line of defense against unwanted transient and RFI interference.

- Proper installation practices to prevent the introduction of transients and noise into the system must be followed. Inductive loads connected to the analyzer must have transient suppressors installed at the inductive loads. Be sure to place the transient suppressor as close to the load as possible. Examples of transient suppressors include MOVs, TRANSORBs, and RC snubbers.

- AC mains supply wiring should not be run in the same conduit with mains supply wiring that feeds heavy inductive loads.

- Avoid running signal wiring in the same cable or conduit with wires that power inductive loads unless all the cables within the conduit are shielded, the inductive loads are small, and transient suppressors are used at the loads.

- Do not run signal lines in the same cable or conduit with high voltage lines.

- For optimum noise protection, AMEVision Display User Interface mains supply wiring should be connected to a circuit separate from any circuit that could introduce transients into the system. As an example, do not run motors, blowers, or air conditioners using the same mains supply circuit or conduit as the analyzer mains supply circuit or conduit.

Current Output Connections

Standard Current Outputs

There are three current outputs on the WDG-V UOP Analyzer. The current output connections are labeled as follows on the analyzer board terminals:

Analog Output #1 => +I1-
Analog Output #2 => +I2-
Analog Output #3 => +I3-

The current outputs are referenced as Analog Outputs 1, 2, and 3 in the AMEVision Display User Interface and PC software. Be sure to observe the polarity when connecting current output devices to these terminals.

Each of the current outputs are capable of driving up to 1000 ohm loads.

The current outputs can be selected for the following ranges:

0–20 mA
4–20 mA
NAMUR

The NAMUR outputs are implemented as follows:

4–20 mA signal	**Analyzer Condition**
0 mA	Analyzer unpowered, or completely failed.
3.5 mA	Critical Alarm – analyzer reading unusable (factory default).
3.8 mA	Reading Under Range (Example: user sets range to 2–10 %.) Current reading is 1.9 %
4–20 mA	Normal Operation.
20.5 mA	Reading Over Range (Example: range is 0–10 %.) Current reading is 12 %.

Alarm Contact Connections

Standard Alarm Connections

The WDG-V UOP Analyzer provides five sets of normally open alarm contacts as follows:

Terminal Block ID		Description
FTL	–	Service Alarm
LD	–	Data Valid Alarm
ALM3	–	Process Alarm 1 (Configurable)
ALM4	–	Process Alarm 2 (Configurable)
ALM5	–	Process Alarm 3 (Configurable)

The process alarms are referenced as Relay 3, Relay 4, and Relay 5 in the AMEVision.

Relay 3	–	ALM 3
Relay 4	–	ALM 4
Relay 5	–	ALM 5

Service Alarm
The service alarm indicates that a critical alarm exists and the analyzer needs repair. Readings are not valid when this alarm is active. The relay contacts are normally open and are OPEN (de-energized) when a critical alarm exists.

Data Valid
The data valid alarm indicates if the concentration readings are representative of the process. When this alarm is active, concentration readings may not be representative of the process and should not be used for control/safety. Examples of this alarm include: **Warm-up mode**, **in calibration**, and **diagnostics mode**. This alarm differs from the service alarm in that there is not necessarily a problem with the analyzer when this alarm is active. The relay contacts are normally open and are OPEN (de-energized) when the concentration readings are not valid.

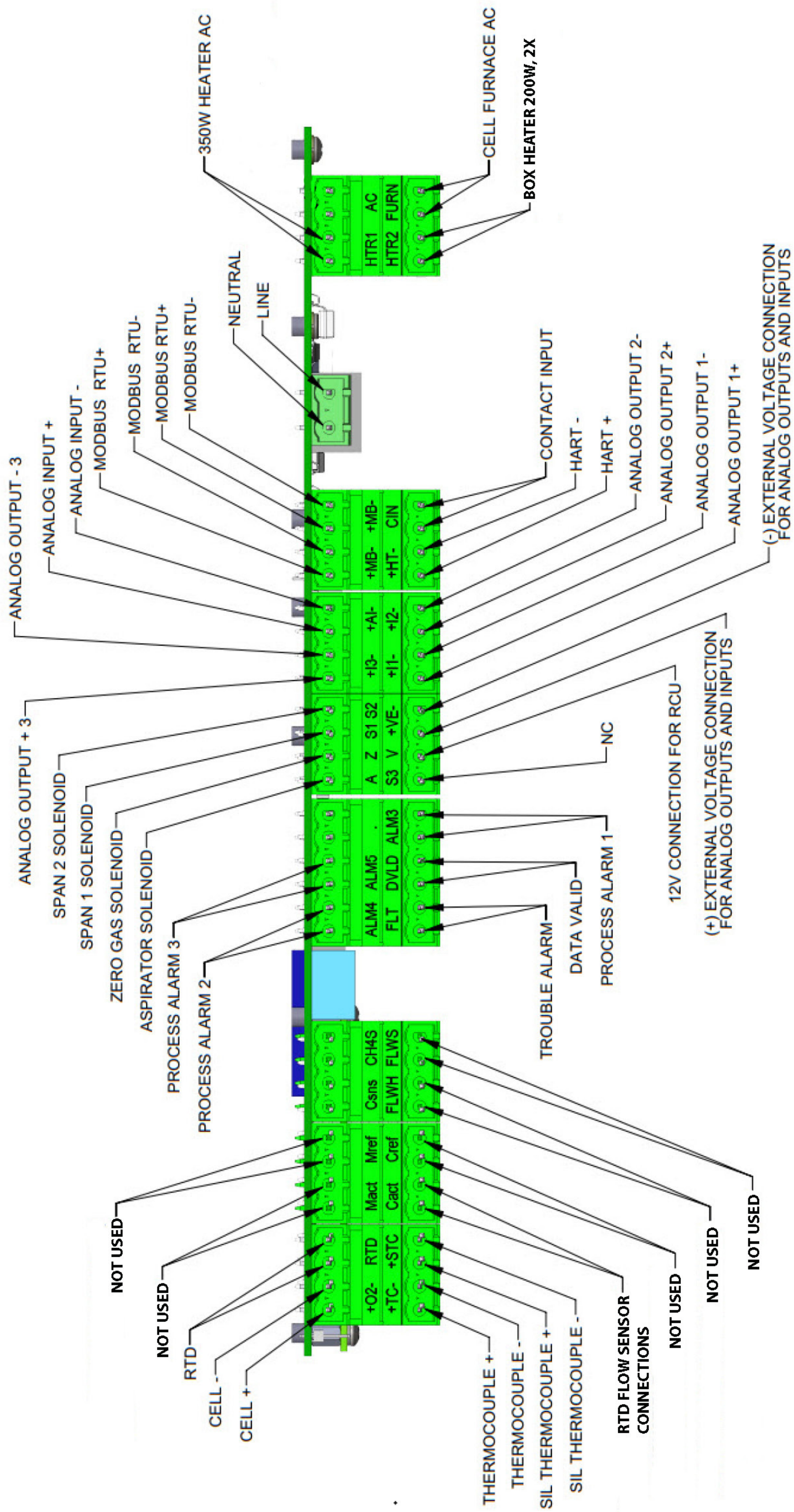


Figure 9.
Wiring.

Remote Calibration Unit Connections

Oxygen-Only Remote Calibration Unit Connections

Oxygen-Only Remote Calibration Unit (RCU) connections on the WDG-V UOP Wiring card, and their RCU connections, are as follows:

- ZERO GAS	WDG-V **Terminal Z** to **Pin 13** on RCU
- ASPIRATOR	WDG-V **Terminal A** to **Pin 14** on RCU
- O_2 SPAN	WDG-V **Terminal S1** to **Pin 15** on RCU
- VALVE COMMON	WDG-V **Terminal V** to **Pin 16** on RCU

Digital Input to Initiate Remote Calibration Unit

The digital input connections on the Wiring card allow you to initiate a remote calibration from a remote location. For this option to work, you must have a remote calibration unit. The system monitors the digital input, and when the switch closes, it sends the system into an automatic calibration. The switch you connect to this digital input must be a normally open switch.

Digital input connections are labeled as follows on the Wiring card:

- **CIN**

Notes About Ducting

Ducting Between Pressurized Enclosure and Inlet

The intake ducting to a compressor should not normally pass through a hazardous area. If the compressor intake line passes through a hazardous area, it should be constructed of non-combustible material and protected against mechanical damage and corrosion. Adequate precautions should be taken to ensure that the ducting is free from leaks in case the internal pressure is below that of the external atmosphere (see Annex C). Additional protective measures, for example, combustible gas detectors, should be considered to ensure that the ducting is free of flammable concentrations of gas vapor.

Additional Purge Time to Account for Ducting

The purge duration should be increased by the time necessary to purge the free volume of those associated ducts which are not part of the equipment by at least five times their volume at the minimum flow rate specified by the manufacturer.

Power for Protective Gas Supply

The electrical power for the protective gas supply (blower, compressor, etc.) should be either taken from a separate power source or taken from the supply side of the electrical isolator for the pressurized enclosure.

Enclosure Maximum Overpressure

The user should limit the pressure as specified by the manufacturer.

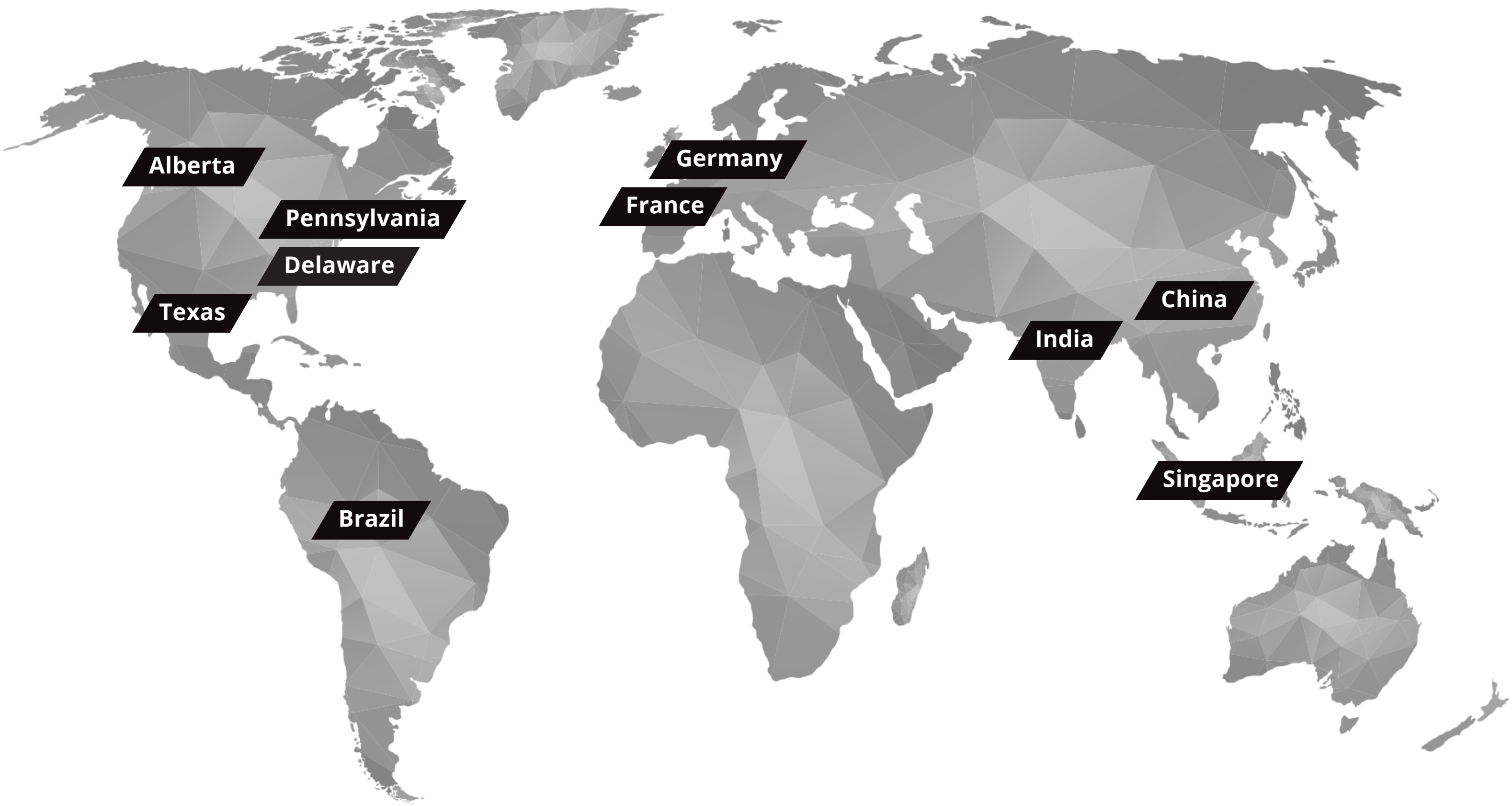
This page intentionally left blank.

AMETEK Process Instruments *delivers worldwide sales and service support through a network of direct and factory-trained global distribution channels.*

AMETEK Service Assistance Program plans offer coverage up to 24 hours a day, 365 days of the year.

As worldwide experts in the manufacture of process analyzers and instrumentation, we have supplied solutions to industry since 1962, providing the widest range of analysis technology available.

Through process application consulting, we create custom-designed solutions that meet the needs of your specific application or process.



SALES, SERVICE & MANUFACTURING

USA - Pennsylvania
150 Freeport Road
Pittsburgh PA 15238
Tel: +1 412 828 9040
Fax: +1 412 826 0399

USA - Delaware
455 Corporate Blvd.
Newark DE 19702
Tel: +1 302 456 4400
Fax: +1 302 456 4444

Canada - Alberta
2876 Sunridge Way NE
Calgary AB T1Y 7H9
Tel: +1 403 235 8400
Fax: +1 403 248 3550

WORLDWIDE SALES AND SERVICE LOCATIONS

USA
Tel: +1 713 466 4900
Fax: +1 713 849 1924

Brazil
Tel: +55 19 2107 4100

France
Tel: +33 1 30 68 89 20
Fax: +33 1 30 68 89 99

Germany
Tel: +49 2159 9136 0
Fax: +49 2159 9136 39

India
Tel: +91 80 6782 3200
Fax: +91 80 6780 3232

Singapore
Tel: +65 6484 2388
Fax: +65 6481 6588

China
Beijing
Tel: +86 10 8526 2111
Fax: +86 10 8526 2141
Chengdu
Tel: +86 28 8675 8111
Fax: +86 28 8675 8141
Shanghai
Tel: +86 21 5868 5111
Fax: +86 21 5866 0969

AMETEK® PROCESS INSTRUMENTS

ametekpi.com