X-STREAM *Enhanced*

XEXF - Field Housing Gas Analyzer

- Up to five component gas analyzer featuring NDIR/UV/VIS photometer, paramagnetic and electrochemical O_2, thermal conductivity and moisture sensors
- Enhanced performance with IntrinzX technology
- Modern communication capabilities including web-browser accessibility
- Outstanding reliability with a three-year warranty

X-STREAM Enhanced XEXF - Field Housing Gas Analyzers

Features

The X-STREAM *Enhanced* field housing analyzer provides powerful analytical technology in a wall-mountable NEMA 4X/IP66 stainless steel housing. Special solutions for Zone 2 and Div. 2 hazardous areas are available with ATEX, CSA-C/US and IECEx approvals. The dual-compartment version with separated physics and electronics enables complete gas-tight separation.

Analytical Flexibility

The X-STREAM platform enables the combination of up to five channels of non-dispersive infrared, ultraviolet, visible photometers (NDIR/UV/VIS), thermal conductivity (TCD), trace moisture (tH_2O), paramagnetic and electrochemical oxygen (pO_2/eO_2) detectors.

Enhanced Performance

With the X-STREAM photometer technology, the analyzer provides a measuring accuracy that allows improving your process while also reducing the total cost of ownership by:

- Large dynamic ranges
- Very low temperature dependency
- Outstanding long-term stability
- Simplified calibration

Three-Year Warranty

All important parts and the complete analyzer are run through a variety of test procedures, including long-term stability and temperature behavior. This enables us to provide a three-year warranty for the analyzer, excluding sample-wetted parts and externally connected electronics.

Modern Communication

The X-STREAM *Enhanced* offers a unique web-browser interface that features:

- World wide access through the internet without installation of additional software
- E-mail notification on alarms and events or with daily report
- Complete remote configuration

X-STREAM *Enhanced* analyzers provide four status signal relay outputs (according to NAMUR NE 107), MODBUS TCP protocol over Ethernet and RTU over serial (RS232/485) communication. Onboard SD card and USB ports enable storage of:

- Data, calibration and event logger files
- Analyzer configuration file

A pre-engineered DeltaV module features easy integration into your DeltaV environment via ModbusRTU over serial interface. ProfibusDP is also supported by a ModbusRTU-ProfibusDP gateway.

Tools

The X-STREAM *Enhanced* analyzer software provides several tools that make complex process systems easier and avoide additional expenses for third-party equipment:

- Programmable Logic Controller (PLC) for control of sample handling and sample lines
- Calculator for virtual measurements
- Analog inputs for integrating external measurements into the powerful X-STREAM *Enhanced* environment

ROSEMOUNT® Analytical

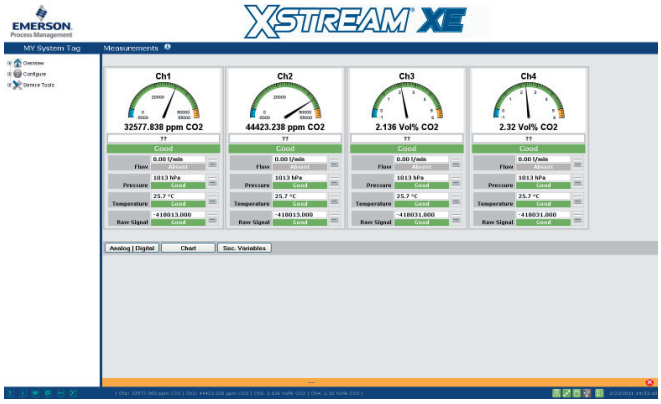
EMERSON™ Process Management

Ease of Use

The instrument has an graphic display and is operated manually by six keys. Clear text messages (available in several languages) and industry-standard symbols provide information about the measurement and the analyzer status.

Options in a Field Housing Enclosure

- Sample gas pump
- Flow measurement with alarm
- Valve block
- Pressure sensor
- Digital Input/Output cards
- Analog input card



Web browser showing measured concentrations and secondaries.

Worldwide Approvals

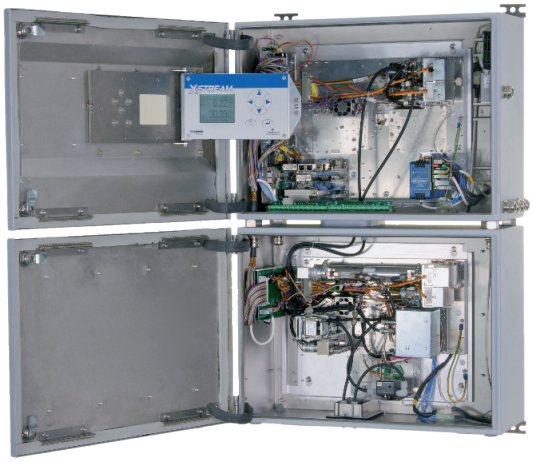
ATEX, CSA-C/US and IECEx type approvals allow global installation of X-STREAM field housing analyzers in Zone 2 and Division 2 hazardous areas.

Process-approved Sensors

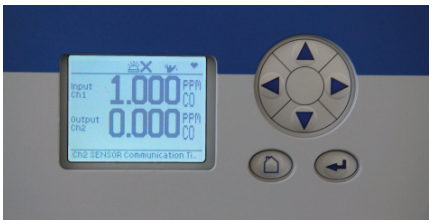
Solvent-resistant, corrosion-resistant, intrinsically safe, and infallible containment solutions are available.

Applications

- Refining, petrochemical, chemical process analysis and control
- Hydrogen, ammonia and fertilizer production
- Gas purity and air separation units
- Natural gas production and distribution
- Metallurgical manufacturing, hardening and heat treatment processes
- Biogas and landfill
- Safety measurements for flammable mixtures
- Hydrogen cooling of gas turbines
- Monitoring fermentation gases in biotechnology
- Quality control of natural gas production and distribution
- Exhaust gas measurements for burner efficiency control
- Flue gas analysis of boilers, power plants and incinerators
- Internal combustion engine emissions



Interior view, showing two NDIR benches in an unheated upper compartment, a heated box option in the lower compartment, I/O boards.



The enlarged graphic display of the X-STREAM Enhanced provides measurement and status information with plain text and symbols.

The user interface remains operable with door open (see left image).

Specifications

Lowest and Highest Ranges Available for Different Gases (Excerpt)

In total, the X-STREAM family of process gas analyzers can detect more than 60 gases. The following table is an example of the most commonly used gases. Contact your Emerson representative for information on configurations or gases that are not listed.

Table 1 Gas Components and Measuring Ranges, Examples

Gas component		Principle	Special Specs or Conditions	Standard Specs (Table 2 – 4)	Enhanced Specs (Table 2 & 4)	
			Lowest Range	Lowest Range	Lowest Range	Highest Range
Acetone [1]	CH_3COCH_3	UV		0–400 ppm	0–800 ppm	0–3 %
Acetone [1]	CH_3COCH_3	IR		0–500 ppm	0–1000 ppm	0–3 %
Acetylene	C_2H_2	IR		0–3 %	0–6 %	0–100 %
Ammonia	NH_3	IR		0–100 ppm	0–200 ppm	0–100 %
Argon	Ar	TCD		0–50 %	0–100 %	0–100 %
Carbon dioxide	CO_2	IR	0–5 ppm [5]	0–50 ppm	0–100 ppm	0–100 %
Carbon monoxide	CO	IR	0–10 ppm [5]	0–50 ppm	0–100 ppm	0–100 %
Chlorine	Cl_2	UV		0–300 ppm	0–600 ppm	0–100 %
Ethane	C_2H_6	IR		0–1000 ppm	0–2000 ppm	0–100 %
Ethanol [1]	C_2H_5OH	IR		0–1000 ppm	0–2000 ppm	0–10 %
Ethylene	C_2H_4	IR		0–400 ppm	0–800 ppm	0–100 %
Helium	He	TCD		0–10 %	0–20 %	0–100 %
Hexane [1]	C_6H_{14}	IR		0–100 ppm	0–200 ppm	0–10 %
Hydrogen [4]	H_2	TCD		0–1 %	0–2 %	0–100 %
Hydrogen Sulfide	H_2S	UV		0–2 %	0–4 %	0–10 %
Hydrogen Sulfide	H_2S	IR		0–10 %	0–20 %	0–100 %
Methane	CH_4	IR		0–100 ppm	0–200 ppm	0–100 %
Methanol [1]	CH_3OH	IR		0–1000 ppm	0–2000 ppm	0–10 %
n–Butane	C_4H_{10}	IR		0–800 ppm	0–1600 ppm	0–100 %
Nitrogen dioxide [1]	NO_2	UV	0–25 ppm [3]	0–100 ppm	0–200 ppm	0–10 %
Nitrogen monoxide	NO	IR	0–100 ppm [3]	0–250 ppm	0–500 ppm	0–100 %
Nitrous oxide	N_2O	IR		0–100 ppm	0–200 ppm	0–100 %
Oxygen	O_2	Electrochem.		0–5 %	–	0–25 % [2 6]
Oxygen	O_2	Paramagn.		0–1 %	0–2 %	0–100 %
Oxygen, Trace	O_2	Electrochem.		0–10 ppm	–	0–10 000 ppm [6]
Propane	C_3H_8	IR		0–1000 ppm	0–2000 ppm	0–100 %
Propylene	C_3H_6	IR		0–400 ppm	0–800 ppm	0–100 %
Sulfur dioxide	SO_2	UV	0–25 ppm [3]	0–130 ppm	0–200 ppm	0–1 %
Sulfur dioxide	SO_2	IR		0–1 %	0–2 %	0–100 %
Sulfur hexafluoride	SF_6	IR	0–5 ppm [3]	0–20 ppm	0–50 ppm	0–2 %
Toluene [1]	C_7H_8	UV		0–300 ppm	0–600 ppm	0–5 %
Vinyl chloride	C_2H_3Cl	IR		0–1000 ppm	0–2000 ppm	0–2 %
Water vapor [1]	H_2O	IR		0–1000 ppm	0–2000 ppm	0–8 %
Water vapor, Trace [1]	H_2O	Capacitive		0–100 ppm	–	0–3000 ppm [6]

[1] Dew point below ambient temperature

[2] Higher concentrations decrease sensor lifetime

[3] Daily zero calibration: Required for ranges below lowest standard specs range

[4] Special "refinery" application with 0–1 % H_2 in N_2 available

[5] see Table 5

[6] Standard specs only

Standard and Enhanced Performance Specifications

Table 2 IR/UV/VIS, TCD – Standard and Enhanced Measurement Performance Specifications

	NDIR/UV/VIS		Thermal Conductivity (TCD)	
	Standard Spec	**Enhanced Spec**	**Standard Spec**	**Enhanced Spec**
Detection limit (4 σ) [1 4]	≤ 1 %	≤ 0.5 %	≤ 1 %	≤ 0.5 %
Linearity [1 4]	≤ 1 %		≤ 1 %	
Zero-point drift [1 4]	≤ 2 % per week	≤ 1 % per week	≤ 2 % per week	≤ 1 % per week
Span (sensitivity) drift [1 4]	≤ 0.5 % per week	≤ 1 % per month	≤ 1 % per week	
Repeatability [1 4]	≤ 0.5 %		≤ 0.5 %	
Response time (t_{90}) [3]	4 s ≤ t_{90} ≤ 7 s [5]		15 s ≤ t_{90} ≤ 30 s [6]	
Permissible gas flow	0.2–1.5 l/min.		0.2–1.5 l/min. [11]	
Influence of gas flow [1 4]	≤ 0.5 %		≤ 1 % [11]	
Maximum gas pressure [8]	≤ 1500 hPa abs. (≤ 7 psig)		≤ 1500 hPa abs. (≤ 7 psig)	
Influence of pressure [2]				
– At constant temperature	≤ 0.10 % per hPa		≤ 0.10 % per hPa	
– With pressure compensation [7]	≤ 0.01 % per hPa		≤ 0.01 % per hPa	
Permissible ambient temperature [9]	0 (-20) to +50 °C (32 (-4) to 122 °F)		0 (-20) to +50 °C (32 (-4) to 122 °F)	
Influence of temperature [1 13] (at constant pressure)				
– On zero point	≤ 1 % per 10 K	≤ 0.5 % per 10 K	≤ 1 % per 10 K	≤ 0.5 % per 10 K
– On span (sensitivity)	≤ 5 % (0 to +50 °C / 32 to 122 °F)		≤ 1 % per 10 K	
Thermostat control [6 12]	none / 60 °C (140 °F) [5]		none / 60 °C (140 °F) [10]	
Warm-up time [6]	15 to 50 minutes [5]		approx. 50 minutes	

Note! 1 psi = 68.95 hPa

[1] Related to full scale
[2] Related to measuring value
[3] From gas analyzer inlet at gas flow of 1.0 l/min (electronic damping = 0 s)
[4] Constant pressure and temperature
[5] Dependent on integrated photometer bench
[6] Depending on measuring range
[7] Pressure sensor is required
[8] Limited to atmospheric if internal sample pump
[9] Temperatures below 0 °C (-4 °F) with thermostat control only
[10] Thermost. controlled sensor: 75 °C (167 °F)
[11] Flow variation within ± 0.1 l/min
[12] Optional thermostat controlled box with temperature 60 °C (140 °F)
[13] Temperature variation: ≤ 10 K per hour

Table 3 Trace Moisture – Standard Measurement Performance Specifications

	Trace Moisture (tH_2O)
Measurement range	-100 to -10 °C dew point (0–100...3000 ppm)
Measurement accuracy	±2 °C dew point
Repeatability	0.5 °C dew point
Response time (t_{95})	5 min (dry to wet)
Operating humidity	0 to 100 % r.h.
Sensor operating temperature	-40 to +60 °C
Temperature coefficient	Temperature compensated across operating temperature range
Operating pressure	Depending on sequential measurement system, see analyzer specification [1] max. 1500 hPa abs / 7 psig
Flow rate	Depending on sequential measurement system, see analyzer specification [1] 0.2 to 1.5 l/min

Note! 1 psi = 68.95 hPa

[1] If installed in series to another measurement system, e. g. IR channel

Table 4 Oxygen – Standard and Enhanced Measurement Performance Specifications

	Oxygen Sensors			
	Paramagnetic (pO_2)		Electrochemical (eO_2)	Trace (tO_2)
	Standard Spec	Enhanced Spec		
Detection limit (4 σ) [1] [4]	≤ 1 %	≤ 0.5 %	≤ 1 %	≤ 1 %
Linearity [1] [4]	≤ 1 %		≤ 1 %	≤ 1 %
Zero-point drift [1] [4]	≤ 2 % per week	≤ 1 % per week	≤ 2 % per week	≤ 1 % per week
Span (sensitivity) drift [1] [4]	≤ 1 % per week	≤ 0.5 % per week	≤ 1 % per week	≤ 1 % per week
Repeatability [1] [4]	≤ 0.5 %		≤ 1 %	≤ 1 %
Response time (t_{90}) [3]	< 5 s		approx. 12 s	20 to 80 s
Permissible gas flow	0.2–1.5 l/min		0.2–1.5 l/min.	0.2–1.5 l/min.
Influence of gas flow [1] [4]	≤ 2 % [10]		≤ 2 %	≤ 2 %
Maximum gas pressure [7]	≤ 1500 hPa abs. (≤ 7 psig) [13]		≤ 1500 hPa abs. (≤ 7 psig)	≤ 1500 hPa abs. (≤ 7 psig)
Influence of pressure [2]				
– At constant temperature	≤ 0.10 % per hPa		≤ 0.10 % per hPa	≤ 0.10 % per hPa
– With pressure compensation [6]	≤ 0.01 % per hPa		≤ 0.01 % per hPa	≤ 0.01 % per hPa
Permissible ambient temperature [8]	0(-20) to +50 °C (32 (4) to 122 °F)		5 to +45 °C (41 to 113 °F)	5 to +45 °C (41 to 113 °F)
Influence of temperature [1] [12] (at constant pressure)				
– On zero point	≤ 1 % per 10 K	≤ 0.5 % per 10 K	≤ 1 % per 10 K	≤ 1 % per 10 K [5]
– On span (sensitivity)	≤ 1 % per 10 K		≤ 1 % per 10 K	≤ 1 % per 10 K [5]
Thermostat control	60 °C (140 °F) [11]		none	none [9]
Warm-up time	Approx. 50 minutes		-	Approx. 50 minutes

Note! 1 psi = 68.95 hPa

[1] Related to full scale
[2] Related to measuring value
[3] From gas analyzer inlet at gas flow of 1.0 l/min (electronic damping = 0 s)
[4] Constant pressure and temperature
[5] Range 0–10...200 ppm: ≤ 5 % (5 to 45 °C / 41 to 113 °F)
[6] Pressure sensor is required
[7] Limited to atmospheric if internal sample pump
[8] Temperatures below 0 °C (-4 °F) with thermostat control only
[9] Thermost. controlled sensor: 35 °C (95 °F)
[10] For ranges 0–5...100 % and flow 0.5...1.5 l/min
[11] Optional thermostat controlled sensor with temperature 60 °C (140 °F)
[12] Temperature variation: ≤ 10 K per hour
[13] No sudden pressure surge allowed

Note 1!

Not all data listed are applicable to all analyzer versions (e.g. 60 °C thermostat controlled box is not available for electrochemical and trace oxygen).

Note 2!

For NDIR/UV/VIS measurements, take into account that sample gas may diffuse or be released by leakages into the analyzer enclosure. If existent in the analyzer surroundings, the component to be measured may enter the enclosure. Concentrations then may increase inside the enclosure. High concentrations of the component to be measured inside the enclosure may influence the measurement by unintended absorption, which could cause drift of the measurement. A remedy for this issue is to purge the housing with gas not containing the component of interest.

Note 3!

Measurement principles or composition of sample gas may limit the available options for a specific analyzer configuration concerning e. g. sample handling options or tubing materials.

Special Performance Specifications for Gas Purity Measurements (ULCO & $ULCO_2$)

Table 5 Special Performance Specifications for Gas Purity Measurements

	0–10...< 50 ppm CO 0–5...< 50 ppm CO_2	
Detection limit (4 σ) [1] [2]	< 2 %	
Linearity [1] [2]	< 1 %	
Zero-point drift [1] [2] [3]	< 2 % *resp. < 0.2 ppm* [9]	
Span (sensitivity) drift [1] [2] [4]	< 2 % *resp. < 0.2 ppm* [9]	
Repeatability [1] [2]	< 2 % *resp. < 0.2 ppm* [9]	
Response time (t_{90}) [7]	< 10 s	
Permissible gas flow	0.2–1.5 l/min.	
Influence of gas flow [1] [2]	< 2 %	
Maximum gas pressure [10]	≤ 1500 hPa abs. (≤ 7 psig)	
Influence of pressure [5]		
– At constant temperature	≤ 0.1 % per hPa	
– With pressure compensation [8]	≤ 0.01 % per hPa	
Permissible ambient temperature	+15 to +35 °C (59 to 95 °F)	+5 to +40 °C (41 to 104 °F)
Influence of temperature [6] (at constant pressure)		
– On zero point	< 2 % per 10 K *resp. < 0.2 ppm per 10 K* [9]	
– On span (sensitivity)	< 2 % per 10 K *resp. < 0.2 ppm per 10 K* [9]	
Thermostat control	none	60 °C (140 °F)

Note! 1 psi = 68.95 hPa

[1] Related to full scale
[2] Constant pressure and temperature
[3] Within 24 h; daily zero calibration requested
[4] Within 24 h; daily span calibration recommended
[5] Related to measuring value
[6] Temperature variation: ≤ 10 K per hour
[7] From gas analyzer inlet at gas flow of 1.0 l/min
[8] Barometric pressure sensor is required
[9] Whichever value is higher
[10] Limited to atmospheric if internal sample pump

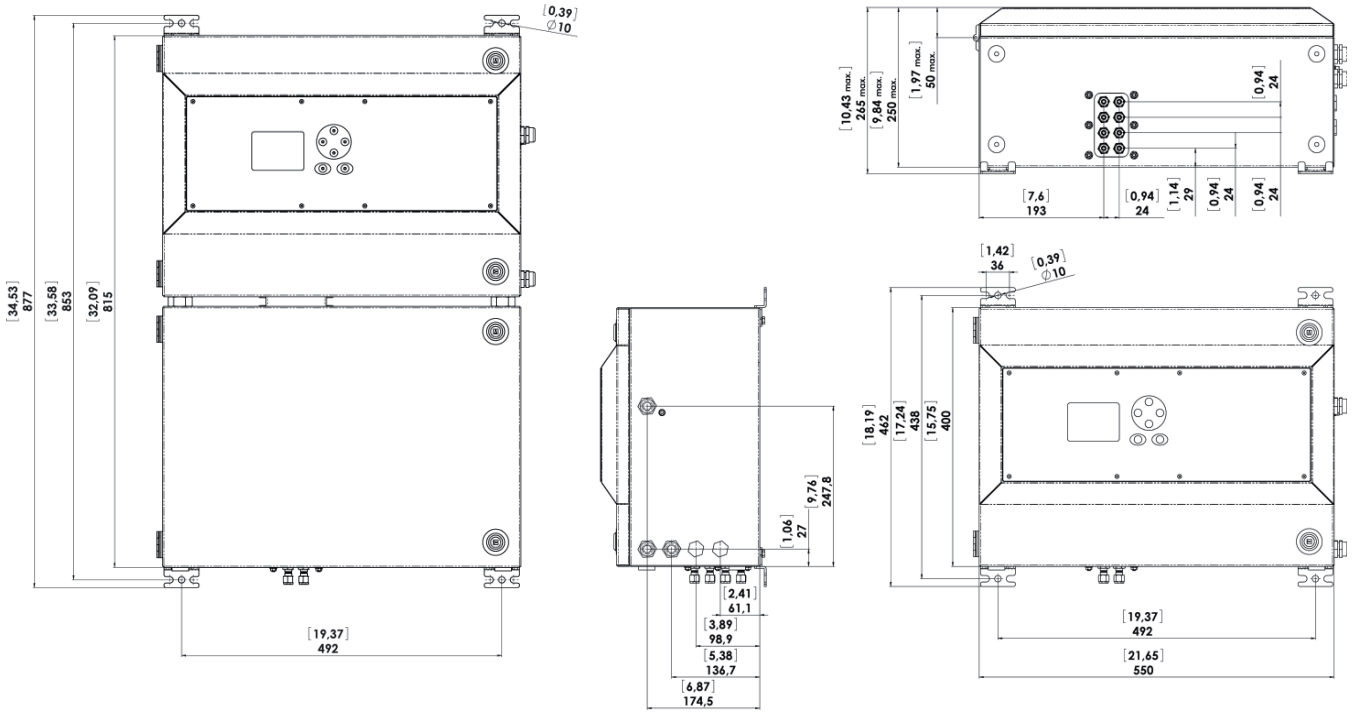
General Specifications

Compliances	CE	ATEX, IECEx II 3 G Ex nA nC IIC T4 Gc IECEx EPS 12.0002	CSA-C/US Class I, Div. 2 Grp. ABCD T4 Class I, Zone 2 AEx nAC IIC T4 Ex nAC IIC T4	C-TICK N96	NAMUR
Gas Connections	PVDF: 6/4 mm; Stainless steel: 6/4 mm or 1/4"; for more options c.f.				
Rated voltage	100–240 V~, 50/60 Hz				
Rated input current	3–1.5 A (5.5–3 A for dual compartment)				
Power input	Internal screw terminals				
Signal Connections	Screw terminals; RJ45, USB				
Enclosure Protection	Type 4X, IP 66 acc. EN 60529 for outdoor installation, protected against direct sunlight				
Humidity (non-condensing)	< 90 % r.h. @ 20 °C (68 °F) < 70 % r.h. @ 40 °C (104 °F)				
Weight	Up to 25 kg (55.1 lbs) (up to 45 kg (99.2 lbs) for dual compartment) depending on configuration				
Options	Integrated flow measurement(s) with alarm(s), barometric pressure sensor, thermostatically controlled box for physical components (60 °C / 140 °F), case purge, sampling pump(s) and/or solenoid valve block(s) for autocalibration				

Signal In- & Outputs, Interfaces

Analog signal outputs:	1–5, individually optically isolated 4(0)–20 mA (R_B ≤ 500 Ω)
Relay outputs:	4 status relays acc. NAMUR NE 107 or e.g. concentration thresholds, valve status notification dry contacts: 1 A, 30 V
Communication interface:	Ethernet with Modbus TCP RS 485 / 232C with Modbus RTU 2 USB ports
Digital I/O (optional):	7/14 digital inputs (for remote control); max. 30 VDC, 2.3 mA, common ground 9/18 additional relay outputs (e.g. concentration thresholds, valve status notification, flow alarm, range ID) dry contacts: 1 A, 30 V
Analog signal inputs (optional):	2 analog inputs 0–1(10) V (R_{in} = 100 kΩ) or 4(0)–20 mA (R_{in} = 50 Ω)

Dimensions



All dimensions in mm
[inches in brackets]

Basic dimensions applicable to all variations

Protection Requirements for Hazardous Areas (EX Zone 2 and Division 2)

Zone 2 / Division 2 classification is characterized by the fact that explosive atmosphere is not likely to exist under normal operating conditions. For equipment to be installed in Zone 2 / Division 2, it is sufficient to ensure that the equipment is not a source of ignition under **normal operating** conditions. Equipment with higher protection levels (e. g. with concepts for Zone 1 / Division 1) are permitted to be installed in such areas as well, but are more cost-intensive. An example for such an equipment is a flameproof enclosure (Ex d), also available within the X-STREAM gas analyzer series.

Protection methods that can be used for Zone 2 / Division 2 installations include simplified pressurization (Ex pz) and non-incendive (Ex n).

Non-Incendive Version for Hazardous Areas (EX Zone 2 and Division 2)

CE Ex II 3 G
Ex nA nC IIC T4

CSA C US 1714037
Class I, Div. 2,
Grp. ABCD T4
Class I, Zone 2,
AEx nAC IIC T4
Ex nAC IIC T4

These models are third-party agency approved to carry ATEX, CSA-C/US and IECEx markings, based on European EN standards, North American CSA and UL standards, as well as to international IEC standards.

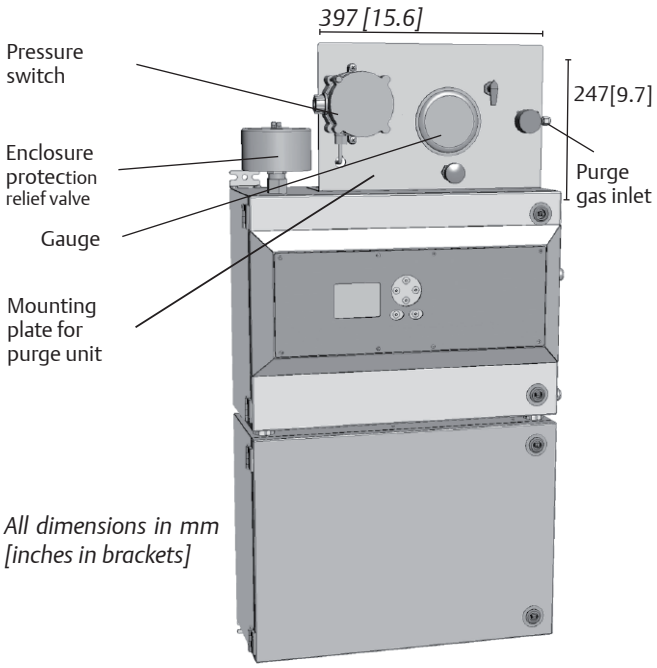
The non-incendive design (Ex nA nC IIC T4) enables installation without the need for purge gas supply, saving infrastructure costs, as well as follow-up costs for purge gas. Compared to a flameproof enclosure, the painted stainless steel housing is much easier to install and does not require an as stable foundation, also saving costs.

The enclosure provides IP66 / Type 4X protection against dust and heavy seas, making it the first choice for outdoor installations.

Flammable gases cannot be measured with a standard non-incendive analyzer, because internal leakage could lead to a potentially explosive atmosphere within the analyzer. Due to its high IP / Type rating, this mixture could not dilute or disappear, turning the internal volume into a Zone 1 or Zone 0 and such voiding the analyzer Zone 2 certification.

To solve this situation, a special version is available which enables measuring flammable gases with a non-incendive analyzer, utilizing an infallible thermal conductivity (TCD) containment. See page 11 for more details about this solution.

Purged Versions For North American Hazardous Areas (Division 2)



All dimensions in mm [inches in brackets]

Supplied with a CSA-C/US approved Z purge pressurization system X-STREAM analyzers can be installed in Div. 2 hazardous areas. Non-flammable gases can be measured with the purge system configured to use air or inert gas in leakage compensation mode. Flammable gases need more differentiation:

- the purge system **can** be configured with leakage compensation if **inert gas** is used.
- the purge system **must** be configured with continuous dilution mode if **air** is used.

For analyzers utilizing a thermal conductivity detector (TCD), an infallible containment is available, combining the advantages of leakage compensation (low purge medium consumption) and air as purge medium (low cost). See page 11 for more details about this solution.

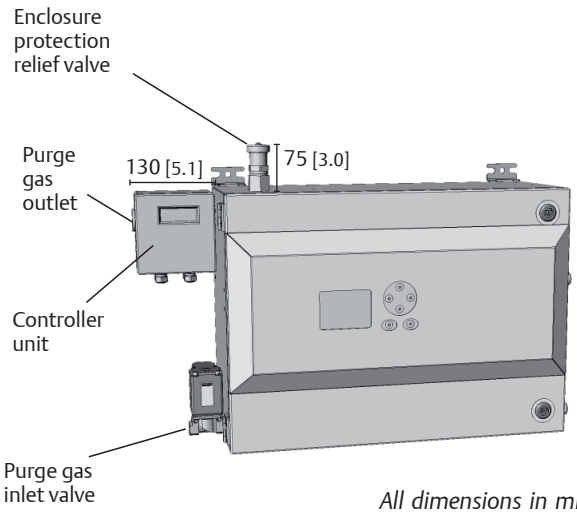
A pressure switch may be used to give an alarm in case of pressure loss inside the analyzer enclosure (limit set to 0.15").

Electrical Specifications (for pressurized analyzers only)

Input	Cable glands, internal terminals
Rated voltage	120 or 240 V~, 50/60 Hz

Input voltage	Rated voltage ± 10 %, 47–63 Hz
Input current	max. 3 or 1.5 A (5.5 or 3 A for dual compartment)

Purged Versions For European Hazardous Areas (EX Zone 2)



All dimensions in mm [inches in brackets]

An ATEX-certified pressurization system enables measuring non-flammable gases in Zone 2 hazardous areas.

The pressurization system consists of a microprocessor unit monitoring the enclosure pressure, providing two programmable alarm contacts and controlling a separate solenoid gas inlet valve. This Zone 2 system requires separate power supplies for control unit and analyzer.

Non-flammable gases can be measured with the purge system configured to use air or inert gas in leakage compensation mode .

Flammable gases need more differentiation:

- the purge system **can** be configured with leakage compensation if **inert gas** is used.
- the purge system **must** be configured with continuous dilution mode if **air** is used.

For analyzers utilizing a thermal conductivity detector (TCD), an infallible containment is available, combining the advantages of leakage compensation (low purge medium consumption) and air as purge medium (low cost). See page 11 for more details about this solution.

Electrical Specifications (for pressurized analyzers only)

Input	Cable glands, internal terminals
Rated voltage	120 or 240 V~, 50/60 Hz

Input voltage	Rated voltage ± 10 %, 47–63 Hz
Input current	max. 3 or 1.5 A (5.5 or 3 A for dual compartment)

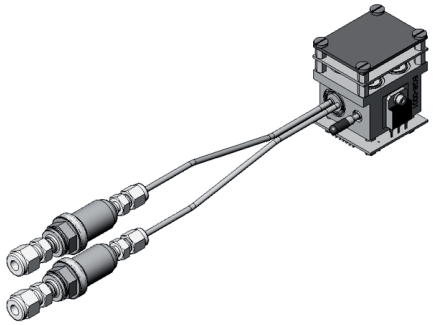
Infallible Containment

Flammable gases cannot be measured with a standard Zone 2 / Division 2 X-STREAM gas analyzer, because internal leakage could lead to a potentially explosive atmosphere within the analyzer. Due to its high IP / Type rating, this mixture could not dilute or disappear, turning the internal volume into a Zone 1 or Zone 0 and such voiding the analyzer Zone 2 certification.

An infallible thermal conductivity detector (TCD) containment, designed to meet the requirements of the pressurization standard EN IEC 60079-2, protects against intentional leakage into the analyzer housing. This enables to treat the flammable gas as non-flammable, resulting in a simpler protection concept for the analyzer:

- non-incendive analyzers can measure flammable gases (see page 8 for details)
- purged analyzers can measure flammable gases with purge medium air in leakage compensation mode (see pages 9 and 10 for details)

A containment system is considered infallible, if it comprises pipes, tubes, or vessels made of metal, ceramic, or glass, which have no moving joints. Joints shall be made by welding, brazing, glass to metal sealing or eutectic methods. Clamping joints are acceptable, too.



Such a containment has successfully been tested by a third-party agency. To ensure the high level of protection, each containment is undergoing documented and traceable routine tests for overpressure and free-of-leakage production.

Intrinsically Safe Oxygen Sensor

Intrinsically safe paramagnetic detectors are mandatory when measuring explosive gas mixtures in both hazardous and non-hazardous areas. Here a powered component (wire) is inside the gas path, which in case of a failure could act as a source of ignition. Such failures, resulting in either sparcs or an overheated wire, could be:

- broken wire
- defective electronic boards, connected to the wire
- defective analyzer power supply.

Intrinsically safe detectors feature special electronics, limiting the power supplied to the wire to values, not high enough to ignite explosive mixtures.

www.RosemountAnalytical.com

www.analyticexpert.com

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