Product Data Sheet
PDS 103-912GC.A01
April, 2008

X-STREAM General Purpose Compact Gas Analyzer

APPLICATIONS

- Trace monitoring for gas purity and air separation measurements
- Monitoring fermentation gases in biotechnology
- Quality control of natural gas production and distribution
- Exhaust gas measurement for burner efficiency control
- Flue gas analysis of boilers, power plants and incinerators
- Internal combustion engine emissions
- Monitoring biogas for landfill applications

FEATURES

- Analyzes up to three components
- New patent-pending IntrinzX™ photometric technology with intrinsic linearity provides high sensitivity, large dynamic ranges and long-term span stability with extended calibration intervals
- User-friendly operator interface
- Easy to install, low maintenance and field repairable
- Supports NDIR, UV, VIS, paramagnetic and electrochemical O_2, and thermal conductivity detectors
- NDIR: Robust microflow detectors
- NDUV/VIS: Vacuum diode detector for stability and long life
- O_2: Fast response paramagnetic and electrochemical oxygen sensor with long-term stability
- TC: Quartz-coated stainless steel thermal conductivity cells
- Solvent-resistant, corrosion-resistant, intrinsically safe and "infallible containment" solutions are available
- Analog and relay outputs, digital inputs and Ethernet or serial interface with Modbus communication
- Autocalibration via internal or external valves
- Optional barometric pressure compensation and flow sensor

DESCRIPTION

The X-STREAM® series of gas analyzers features multi-channel analysis utilizing infrared, ultraviolet and visible (NDIR/UV/VIS) photometry, paramagnetic and electro-chemical oxygen, and thermal conductivity sensor technologies.

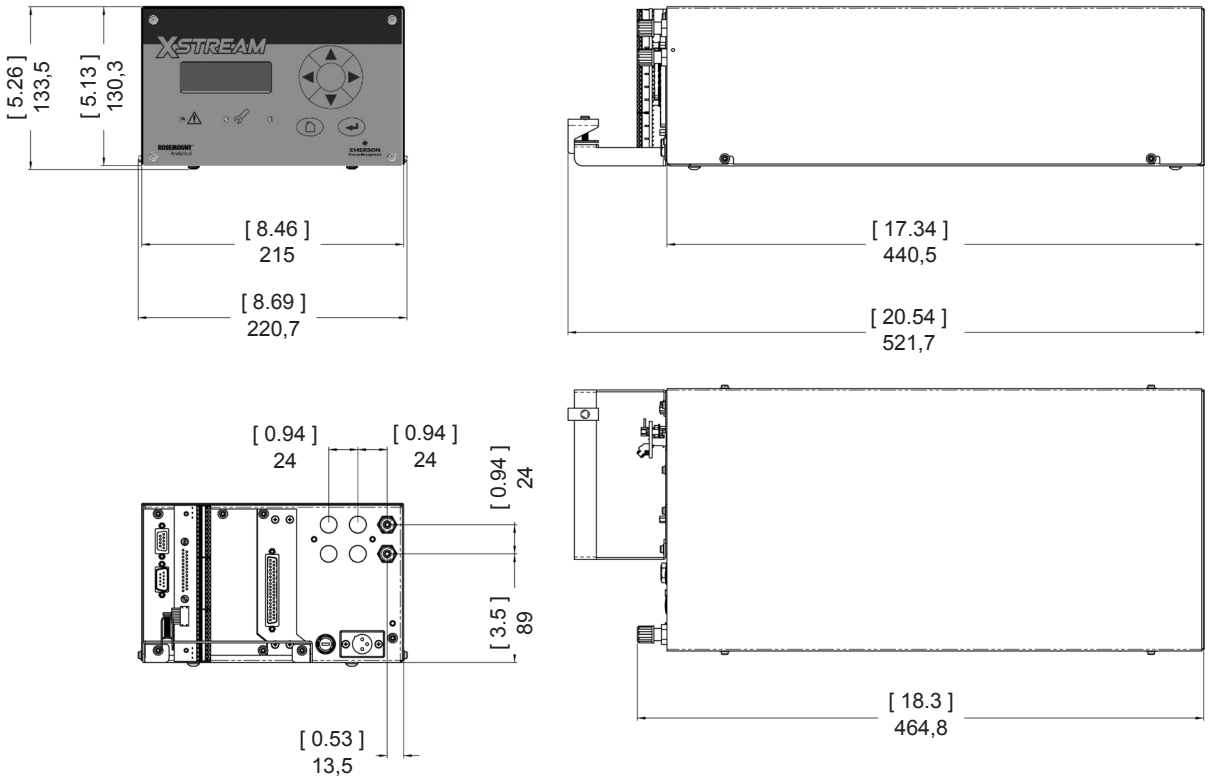
X-STREAM analyzers can measure up to 3 components and the measuring principles may be ordered in various combinations.

The instrument has an alphanumeric LCD which is operated by 6 keys. Clear text messages (available in 5 languages) and front panel LEDs provide information about the measurement and analyzer status. The analyzer is supplied as a tabletop version, but an accessory kit is available to modify the analyzer to a rack mount version.

X-STREAM compact analyzers, equipped with an external power supply, offer analog outputs, 4 status signal relay outputs (according to NAMUR NE 107) and Modbus communication over an Ethernet or serial interface. Digital inputs and relay outputs are optionally available. The analyzers can be ordered with either screw terminals or connectors for electrical connections.

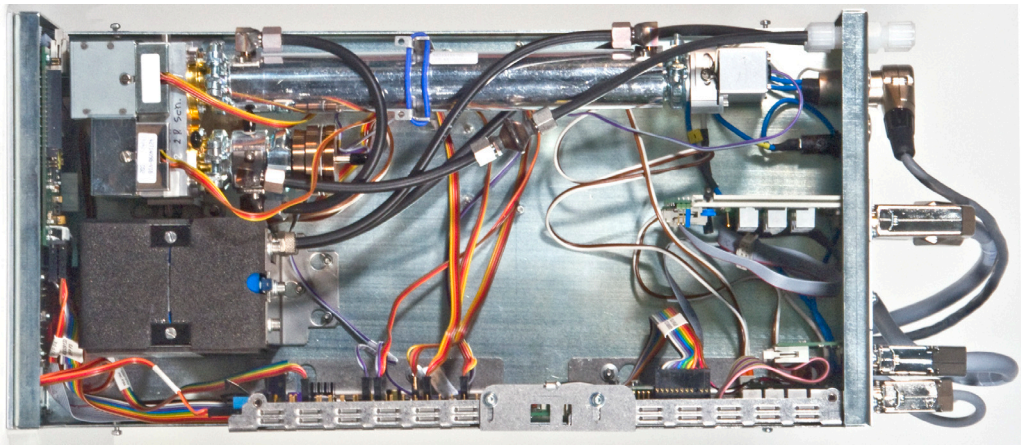
Standard 19” general purpose, IP66/NEMA 4X wall mountable field housing (with optional pressurization systems) and flameproof variations are also available; see product data sheets 103-912GP.A01, 103-912F.A01 and 103-912FD.A01 for detailed information.

DIMENSIONS



All dimensions in mm
[inches in brackets]

Dimensional drawings show tabletop version with strain-relief for screw terminals.



Interior view, showing 2 NDIR benches, 1 paramagnetic O_2 cell, analog and relay outputs, digital inputs, and serial interface.

SAMPLE GAS COMPONENTS AND MEASURING RANGES (standard configurations [1])

Gas component [1]		Lowest measuring range	Highest measuring range
Ammonia	NH_3	0 - 300 ppm	0 - 100%
Argon	Ar	0 - 50%	0 - 100%
Carbon dioxide	CO_2	0 - 10 ppm [4]	0 - 100%
Carbon monoxide	CO	0 - 20 ppm [4]	0 - 100%
Ethane	C_2H_6	0 - 1,000 ppm	0 - 100%
Ethylene	C_2H_4	0 - 400 ppm	0 - 100%
Helium	He	0 - 10%	0 - 100%
Hexane	C_6H_{14}	0 - 300 ppm	0 - 10%
Hydrogen	H_2	0 - 2%	0 - 100%
Methane	CH_4	0 - 300 ppm	0 - 100%
n - Butane	C_4H_{10}	0 - 800 ppm	0 - 100%
Nitrogen dioxide	NO_2	0 - 250 ppm	0 - 1%
Nitrogen monoxide	NO	0 - 250 ppm	0 - 100%
Nitrous oxide	N_2O	0 - 200 ppm	0 - 100%
Oxygen (electrochemical)	O_2	0 - 5%	0 - 25% [3]
Oxygen (paramagnetic)	O_2	0 - 1% [4]	0 - 100%
Propane	C_3H_8	0 - 1,000 ppm	0 - 100%
Propylene	C_3H_6	0 - 10%	0 - 100%
Sulfur dioxide	SO_2	0 - 130 ppm	0 - 100%
Sulfur hexafluoride	SF_6	0 - 20 ppm	0 - 2%
Water vapor [2]	H_2O	0 - 1,000 ppm	0 - 3%

[1] More than 60 gases are detectable; other components and configurations on request
[2] Dew point below ambient temperature
[3] Higher concentrations decrease sensor lifetime
[4] Non-standard specifications for lowest range

ELECTRICAL SPECIFICATIONS

DC Supply Input	3 pole XLR connector
DC Rated Voltage	24 V
DC Input Voltage	10 - 30 V
DC Input Current	2.5 A max

Suitable AC power supply units with wide range input for worldwide installation are available.

SPECIFIC DATA

Compliances	CSA-C/US, EN 61010-1, EN 61326, NAMUR
Gas Connections	PVDF: 6/4 mm; Stainless steel: 6/4 mm or 1/4"; for more options c.f.
Signal Connections	Submin connectors or screw terminals; RJ45
Enclosure Protection	IP 20 acc. EN 60529 for indoor installation, protected against direct sunlight
Humidity (non-condensing)	< 90% r.h. @ 20°C (68°F) < 70% r.h. @ 40°C (104°F)
Weight	Approx. 8 - 12 kg (17.6 – 26.5 lbs) depending on configuration
Options	Integrated flow alarm or flow measurement with alarm, barometric pressure sensor and/or solenoid valve block for autocalibration

SIGNAL OUTPUTS, INTERFACES

Analog signal outputs:
- 1-4 individually optically isolated
- 4 (0) - 20 mA ($R_B \leq 500\ \Omega$)

Relay outputs:
- Status relays acc. NAMUR NE 107 or e.g. concentration thresholds, valve status notification
- 4 dry contacts: 1 A, 30 V

Communication interface:
- Ethernet with Modbus TCP or
- RS 485 / 232C with Modbus RTU

Digital I/O (optional):
- 7 digital inputs (for remote control); max. 30 VDC, 2.3 mA, common ground
- 9 additional relay outputs (e.g. concentration thresholds, valve status notification, flow alarm, range ID); dry contacts: 1 A, 30 V

PERFORMANCE SPECIFICATIONS

	NDIR/UV/VIS	Oxygen Sensor (PO_2 and EO_2)	Thermal Conductivity
Detection limit	≤ 1% [1 4]	≤ 1% [1 4]	≤ 2% [1 4]
Linearity	≤ 1% [1 4]	≤ 1% [1 4]	≤ 1% [1 4]
Zero-point drift	≤ 2% per week [1 4]	≤ 2% per week [1 4]	≤ 2% per week [1 4]
Span (sensitivity) drift	≤ 0.5% per week [1 4]	≤ 1% per week [1]	≤ 1% per week [1 4]
Repeatability	≤ 1% [1 4]	≤ 1% [1 4]	≤ 1% [1 4]
Response time (t_{90})	4 s ≤ t_{90} ≤ 7 s [3 5]	< 5 s [3 6] / approx. 12 s [3 9]	5 s ≤ t_{90} ≤ 20 s [3 7]
Permissible gas flow	0.2 - 1.5 l/min.	0.2 - 1.0 l/min [6] / 0.2 - 1.5 l/min. [9]	0.2 - 1.5 l/min. (± 0.1 l/min)
Influence of gas flow	≤ 0.5% [1 4]	≤ 2% [1 4]	≤ 1% [1 4 13]
Maximum gas pressure	≤ 1,500 hPa abs. (≤ 7 psig)	≤ 1,500 hPa abs. (≤ 7 psig) [15]	≤ 1,500 hPa abs. (≤ 7 psig)
Influence of pressure			
– At constant temperature	≤ 0.10% per hPa [2]	≤ 0.10% per hPa [2]	≤ 0.10% per hPa [2]
– With pressure compensation [8]	≤ 0.01% per hPa [2]	≤ 0.01% per hPa [2]	≤ 0.01% per hPa [2]
Permissible ambient temperature	0 to +50°C (32 to 122°F)	0 to +50°C (32 to 122°F) [10]	0 to +50°C (32 to 122°F)
Influence of temperature (at constant pressure)			
– On zero point	≤ 1% per 10 K [1]	≤ 1% per 10 K [1]	≤ 1% per 10 K [1 14]
– On span (sensitivity)	≤ 5% (0 to +50°C) [1 11 14]	≤ 1% per 10 K [1 14]	≤ 1% per 10 K [1 14]
Thermostat control	None	55°C (131°F) [6 12] / None [9]	75°C (167°F) [12]
Warm-up time	15 to 50 minutes [5 7]	Approx. 50 minutes [6]	15 to 50 minutes [7]

[1] Related to full scale
[2] Related to measuring value; 1 psi = 68.95 hPa
[3] From gas analyzer inlet at 1.0 l/min gas flow (electronic damping = 2 s)
[4] Constant pressure and temperature
[5] Dependent on integrated photometer bench
[6] Paramagnetic oxygen measurement (PO_2)
[7] Depending on measuring range
[8] Pressure sensor is required
[9] Electrochemical oxygen measurement (EO_2), not for use with sample gas containing FCHC´s
[10] Electrochemical oxygen measurement (EO_2): +5 to +40°C (41 to 104°F)
[11] Starting from +20°C (68°F) to 0°C (32°F) to +50°C (122°F) to +20°C (68°F)
[12] Sensor / cell only
[13] Flow variation within ± 0.1 l/min
[14] Temperature variation: 10 K in 1 hour
[15] No sudden pressure surge for PO_2 allowed

All data provided above is verified during the manufacturing process for each unit by the following tests:

- Linearization and sensitivity test
- Long term drift stability test
- Climate chamber test
- Cross interference test (if applicable)

WORLD HEADQUARTERS AND AMERICAS

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