

Rosemount™ CT5800

Flameproof Process Gas Analyzer



The Rosemount CT5800 Flameproof Process Gas Analyzer is the first Quantum Cascade Laser (QCL) analyzer designed for industrial process applications requiring Class I, Division 2 hazardous area certification.

Built within a flameproof enclosure, the CT5800's unique cell design enables high accuracy measurement of concentrations of impurities down to low ppm levels in the gas streams, and is ideal for hydrogen purity, nitrogen purity, and ethylene purity applications. With up to six laser modules housed inside the same enclosure, the CT5800 Analyzer can measure up to ten components simultaneously, greatly reducing the need for multiple analyzers.

Features and Benefits

Multi-component QCL analyzer

- Measures up to ten gases simultaneously
- Accurate and sensitive gas measurements
- Excellent linearity of response and repeatability
- Low long term drift minimizes calibration intervals
- Low maintenance and low lifetime costs
- Continuous health diagnostic reporting
- Embedded ARM processor for fully autonomous operation
- Intuitive simple front panel user interface allows access to all instrument functions

Field serviceable and field configurable

- Interchangeable modular configuration for up to six lasers

Hazardous certification

- Europe: ATEX II 2G Ex d IIB+H2 T4
IECEX: IECEX SIR 17.0026X ATEX: Sira 17ATEX1094X
- North America: Class I, Division 2, groups B, C, D

Engineered sample handling systems

A process gas analyzer is only as good as the quality of the sample it measures, which is why Emerson™ provides custom-engineered sample handling systems designed to meet the application’s specifications and rigorously tested before they ship to the customer.

Applications

Process gas stream purity applications including:

- Hydrogen purity
- Nitrogen purity
- Ethylene purity
- Natural gas purity

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Specifications

Performance	
Repeatability	±1 % of measurement or Limit of Detection (LOD), whichever is greater
Linearity	$R^2 > 0.999$
Measurement rate	1 Hz
Environmental	
Ambient temperature	- 4 to 131 °F (- 20 to 55 °C)
Sample gas temperature range	+ 39 to 140 °F (+ 4 to 60 °C)
Humidity range	10–95%, non condensing
Protection class	IP66/NEMA® 4X
Hazardous area classification	Europe: ATEX II 2G Ex d IIB H ₂ T4 North America: Class I, Division 2, Groups B, C, D, T4
Certification number	IECEX: IECEX SIR 17.0026X ATEX: SIra 17ATEX1094X
Communications	
Analog signal out	4–20 mA ⁽¹⁾
Digital signal out	Modbus® over TCP/IP
Health monitoring	Digital healthline (one per measurement) or NAMUR status report
Inlet gas port connector	¼ in. (6 mm) Swagelok® type (specify on order)
Outlet gas port connector	¼ in. (6 mm) Swagelok type (specify on order)
Electrical rating	
Power supply	120 Vac 60 Hz/ 240 Vac 50 Hz 200 V/A
Mechanical	
External dimensions (closed)	27.34 x 11.5 x 20.28 in. (nominal dimensions) 694.5 x 292 x 515 mm
External dimensions (open)	27.34 x 11.5 x 41.24 in. (nominal dimensions, front panel at lowest point) 694.5 x 292 x 1047.5 mm
Front panel swept radius	21.46 in (nominal dimensions, 180° arc) 545 mm
Weight	80 kg 176.37 lb (approximate weight)
Installation	Wall mount

(1) One per measurement.

Table 1: Measurement performance - ethylene production purity

	Component	Range ⁽¹⁾	LOD ⁽²⁾	Unit of measurement
Process control	Methane	0 – 1000	5	ppmv
	Acetylene	0–20	0.2	ppmv
	Ethane	0–500	5	ppmv
	CO	0–5	0.05	ppmv
	CO ₂	0–10	0.05	ppmv

Table 1: Measurement performance - ethylene production purity (continued)

	Component	Range ⁽¹⁾	LOD ⁽²⁾	Unit of measurement
Adders for product certification	Ammonia	0–20	0.05	ppmv
	Water	0–10	2	ppmv
	Methanol	0–100	1	ppmv

(1) Components and ranges are indicative. Analyzer requirements will depend on complete gas list. Detailed specifications will be provided during the ordering process.

(2) Repeatability is ±1 % of reading or the Limit of Detection (LOD), whichever is greater.

Table 2: Measurement performance - hydrogen/nitrogen purity

Component		Measurement range		
Name	Symbol	Range	LOD ⁽¹⁾	Unit of measurement
Carbon monoxide	CO	0 – 5	0.05	ppm
Carbon dioxide	CO ₂	0 – 5	0.02	ppm
Water	H ₂ O	0 – 10	0.1	ppm
Methane	CH ₄	0 – 50	0.5	ppm
Ammonia	NH ₃	0 – 10	0.1	ppm

(1) Repeatability is ±1 % of reading or the Limit of Detection (LOD), whichever is greater.

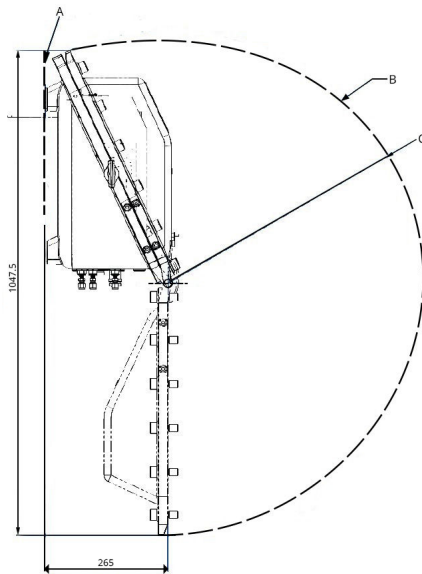
Other gases and ranges are available on request. The ranges and detection limits provided indicate typical analyzer performance but may change depending on your application. Please contact Emerson for more information.

Recommended installation

The drawings below represent the minimum recommended installation guidelines for the Rosemount CT5800 Flameproof Process Gas Analyzer. Dimensions are in millimeters (mm).

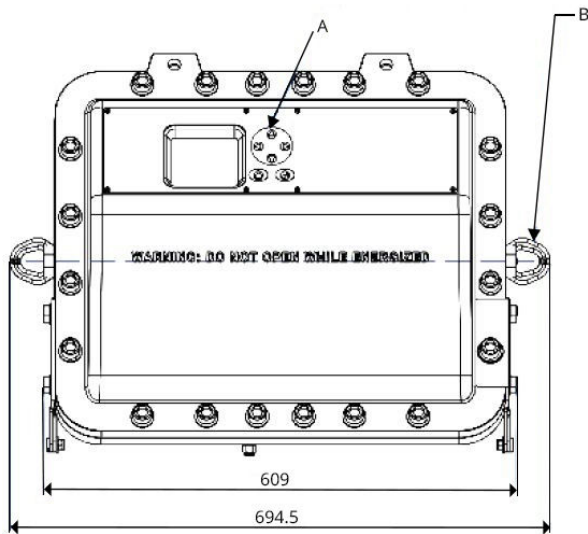
Please consult Emerson for detailed installation recommendation of your application.

Figure 1:



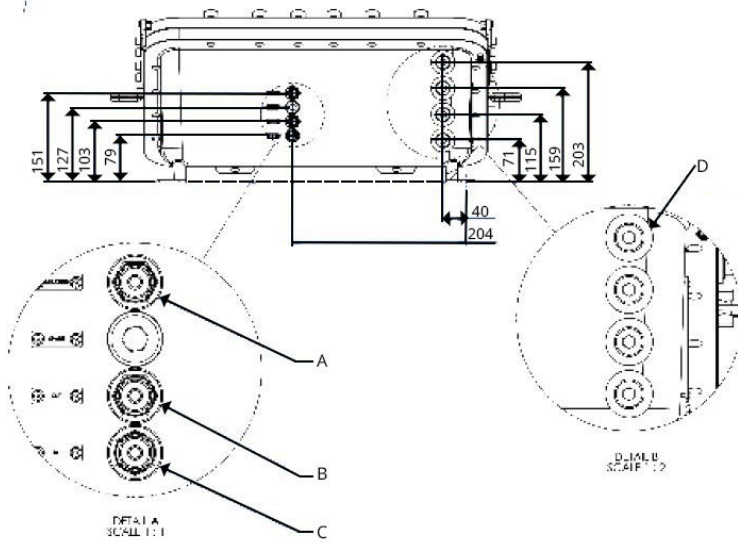
- A. Wall fixing line
- B. Opening arc
- C. R545

Figure 2:



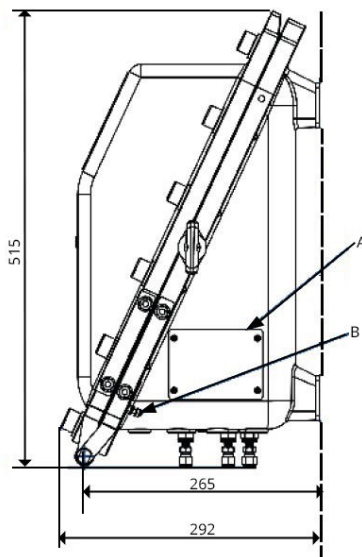
- A. User interface
- B. 2 Off lifting eyelets

Figure 3:



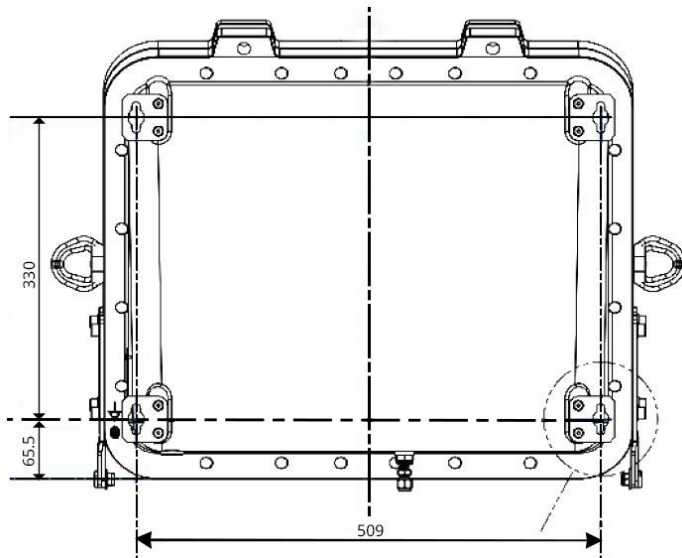
- A. Breather
- B. Sample outlet
- C. Sample inlet
- D. 4 electrical entries
Exd Cable glands (Customer scope of supply)

Figure 4:



- A. Rating plate
- B. External earth point

Figure 5: Wall mounting pattern



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