Product Data Sheet
MS-00813-0100-5450, Rev AA
October 2024

Rosemount™ CT5400

Continuous Gas Analyzer

The Rosemount CT5400 is a multi-component QCL/TDL analyzer designed for gas processing applications. Extremely versatile and configurable, it can hold up to six laser modules and measure up to twelve components simultaneously with an enhanced dynamic range from sub ppm to % levels.

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Introduction

This new measurement platform is ideal for environmental monitoring applications with the capability to detect NO_x, SO_2, CO, CO_2, CH_4, NH_3, O_2, HCi and in the near future, HF, and other combustion gases identified as pollutants, ozone depleting, or responsible for global warming.

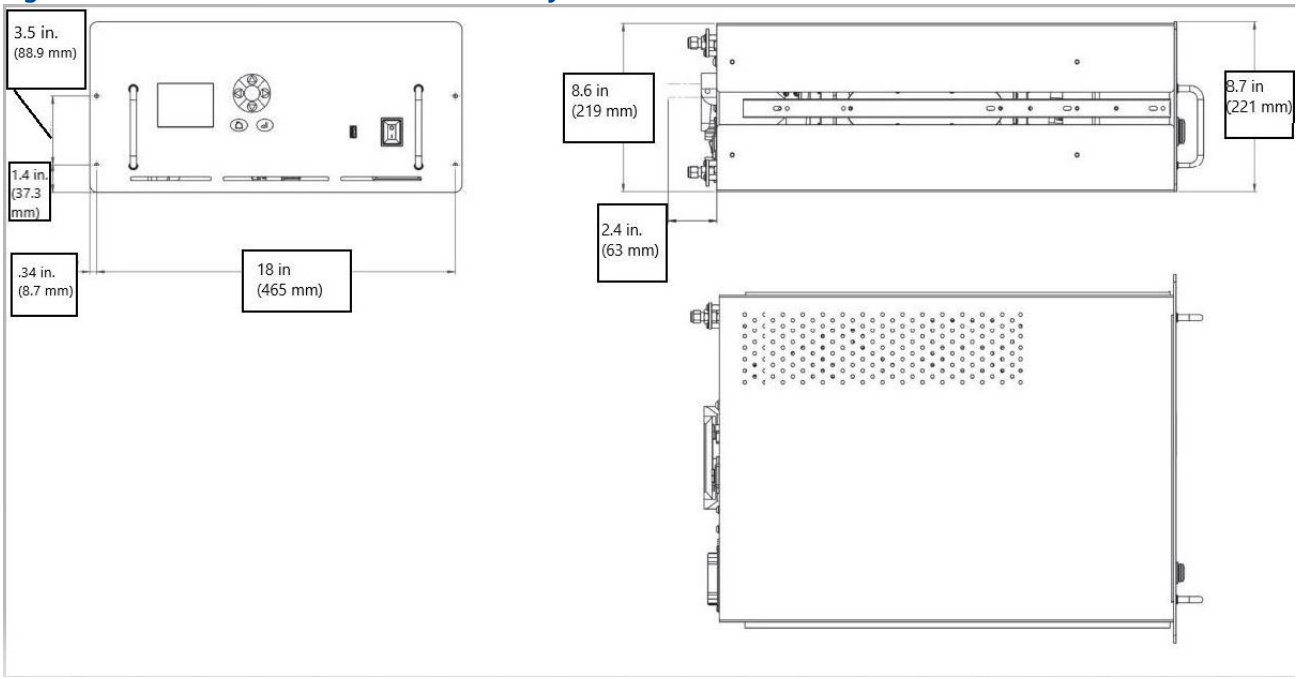
With increasing legislation from the EPA and EU, as well as other international regulatory agencies, large industrial facilities, incinerators, combustion plants, and other industrial gas emitting facilities will have to more actively monitor their emissions. The CT5400 can handle a myriad of applications, including process analysis monitoring, Continuous Emissions Monitoring Systems (CEMS), Continuous Ambient Monitoring Systems (CAMS), $DeNO_x$ /SCR, and ammonium nitrate precursor analysis. With a large suite of analysis capabilities, the CT5400 has cross-platform applications including propulsion emissions and industrial process monitoring.

Contents

Installation

The drawings below represent the minimum recommended installation guidelines for the Rosemount CT5400 Continuous Gas Analyzer.

Figure 1: Rosemount CT5400 Process Gas Analyzer



Note
Dimensions are in inches (mm).

Related information

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Features and Benefits

- Multi-component QCL/TDL analyzer
- Measures up to ten components simultaneously
- Field serviceable modular configurations for up to six lasers
- Embedded ARM processor for fully autonomous intelligent operation
- Enhanced dynamic range from sub ppm to %

Applications

Sample cell and sample handling configurable to suit your application needs

- Process monitoring
- Continuous Emissions Monitoring Systems (CEMS)

- Continuous Ambient Monitoring Systems (CAMS)
- DeNox/SCR
- Ammonium nitrate precursors
- Other applications available on request

Specifications

Table 1: Rosemount CT5400 Continuous Gas Analyzer

Value	
Application	Continuous Gas Analyzer
Measurement technique	IR Absorption Spectroscopy
IR source	QCL / TDL up to six
Laser classification	Class 1 BS EN 60825-1:2007 Safety of laser products Equipment classification and requirements (1)
Performance	
Repeatability	±1 % of measurement or Limit of Detection (LOD), whichever is greater
Linearity	$R^2 > 0.999$
Measurement rate	1 Hz
Utilities	
Air supply	25 L/min, 8-10 bar
System operating voltage	110 - 240 Vac 50 - 60 Hz (2)
System power consumption	1 kW maximum power requirement
Environmental	
Ambient Temperature	32 °F to 113 °F (0 °C to 45 °C)
Sample gas temperature range	68 to 374 °F (+20 to 190 °C) factory set
Humidity range	Maximum 95 % RH
Protection class	N/A
Hazardous area classification	Safe area / general purpose analyzer
Communications	
Analog signal out	4–20 mA (3)
Analog signal in	4–20 mA signal input (option)
Digital signal out	Modbus over TCP/IP
Communication interface	Modbus over TCP, RTU [option], 10/100 Base T Ethernet, Fiber [option]
Inlet gas port connector	6 mm or ¼ inch Swagelok type (2)
Outlet gas port connector	6 mm or ¼ inch Swagelok type (2)
Electrical Rating	
Power supply	110 VAC 60 Hz / 240 VAC 50 Hz
Mechanical	
Size	19 in. x 26.47 in. x 8.72 in. (482.6 mm x 672.4 mm x 221.5 mm)

Table 1: Rosemount CT5400 Continuous Gas Analyzer *(continued)*

Weight	68.34 lb. (31 kg)
Installation	19 in. (482 mm) rack mount

(1) *Identical to IEC 60825-1 2007.*
(2) *Specify on order.*
(3) *1 per measurement; maximum 12.*

Table 2: Measurement Performance - Continuous Emissions Monitoring (Other measurement ranges available on request)

Component		**Measurement Specification**			
Name	**Symbol**	**Range**	**LOD**	**Range**	**LOD**
Nitric oxide	NO	0–200 ppmv	0.2 ppmv	0–250 mg/Nm^3	0.3 mg/Nm^3
Nitrogen dioxide	NO_2	0–100 ppmv	0.05 ppmv	0–200 mg/Nm^3	0.1 mg/Nm^3
Nitrous oxide	N_2O	0–200 ppmv	0.2 ppmv	0–400 mg/Nm^3	0.4 mg/Nm^3
Ammonia	NH_3	0–100 ppmv	0.1 ppmv	0–75 mg/Nm^3	0.1 mg/Nm^3

Table 3: Measurement Performance - Fertilizer / Ammonia Slip (Other measurement ranges available on request)

Component		**Measurement Specification**			
Name	**Symbol**	**Range**	**LOD**	**Range**	**LOD**
Nitric oxide	NO	0–10 ppmv	0.1 ppmv	0–15 mg/Nm^3	0.2 mg/Nm^3
Nitrogen dioxide	NO_2	0–10 ppmv	0.04 ppmv	0–20 mg/Nm^3	0.1 mg/Nm^3
Oxygen	O_2	0-25%	0.04%	0-25%	0.04%[3]
Carbon monoxide	CO	0–50 ppmv	0.04% ppmv	0–60 mg/Nm3	0.05 mg/Nm3
Carbon dioxide	CO_2	0-12%	0.1%	0–12%	0.1%
Sulphur dioxide	SO_2	0–200 ppmv	0.2 ppmv	0–600 mg/Nm^3	0.6 mg/Nm^3

Note
Repeatability is ±1 % of reading or the 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.

Related information

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For more information: **Emerson.com/global**

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