

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.

This new measurement platform is ideal for environmental monitoring applications with the capability to detect NO_x, SO₂, CO, CO₂, CH₄, NH₃, O₂, HCl 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.

Features and Benefits

- Multi-component QCL/TDL analyzer
- Measures up to twelve 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 %



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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

Specifications	
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 (identical to IEC 60825-1 2007)
Performance	
Repeatability	±1 % of measurement or limit of detection (LOD) whichever is greater
Linearity	R ² > 0.999
Measurement rate	1 Hz (up to 10 Hz on request)
Environmental	
Ambient Temperature	0 °C to 45 °C (32 °F to 113 °F)
Sample gas temperature range	+20 to 190 °C (68 to 374 °F) 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 (1 per measurement) (maximum 12)
Analog signal in	4–20 mA signal input (option)
Digital signal out	Modbus over TCP/IP or RS-232
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 (specify on order)
Outlet gas port connector	6 mm or ¼ inch Swagelok type (specify on order)
Electrical Rating	
Power supply	110 VAC 60 Hz / 240 VAC 50 Hz
Mechanical	
Size	482.6 mm x 672.4 mm x 221.5 mm (19 in. x 26.47 in. x 8.72 in.)
Weight	31 kg (68.34 lbs)
Installation	19 in. Rack mount

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

Component		Measurement Specification				
Name	Symbol	Range	LOD	Range	LOD	Repeatability ⁽¹⁾
Nitric oxide	NO	0–200 ppmv	0.2 ppmv	0–250 mg/Nm ³	0.3 mg/Nm ³	±1 %
Nitrogen dioxide	NO ₂	0–100 ppmv	0.05 ppmv	0–200 mg/Nm ³	0.1 mg/Nm ³	±1 %
Nitrous oxide	N ₂ O	0–200 ppmv	0.2 ppmv	0–400 mg/Nm ³	0.4 mg/Nm ³	±1 %
Ammonia	NH ₃	0–100 ppmv	0.1 ppmv	0–75 mg/Nm ³	0.1 mg/Nm ³	±1 %

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

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

Component		Measurement Specification				
Name	Symbol	Range	LOD	Range	LOD	Repeatability ⁽¹⁾
Nitric oxide	NO	0–10 ppmv	0.1 ppmv	0–15 mg/Nm ³	0.2 mg/Nm ³	±1 %
Nitrogen dioxide	NO ₂	0–10 ppmv	0.04 ppmv	0–20 mg/Nm ³	0.1 mg/Nm ³	±1 %
Oxygen	O ₂	0–25 %	0.03 %	0–25 %	0.03 %	±1 %
Carbon monoxide	CO	0–50 ppmv	0.04 ppmv	0–60 mg/Nm ³	0.05 mg/Nm ³	±1 %
Carbon dioxide	CO ₂	0–12 %	0.01 %	0–12 %	0.01 %	±1 %
Sulphur dioxide	SO ₂	0–200 ppmv	0.2 ppmv	0–600 mg/Nm ³	0.6 mg/Nm ³	±1 %

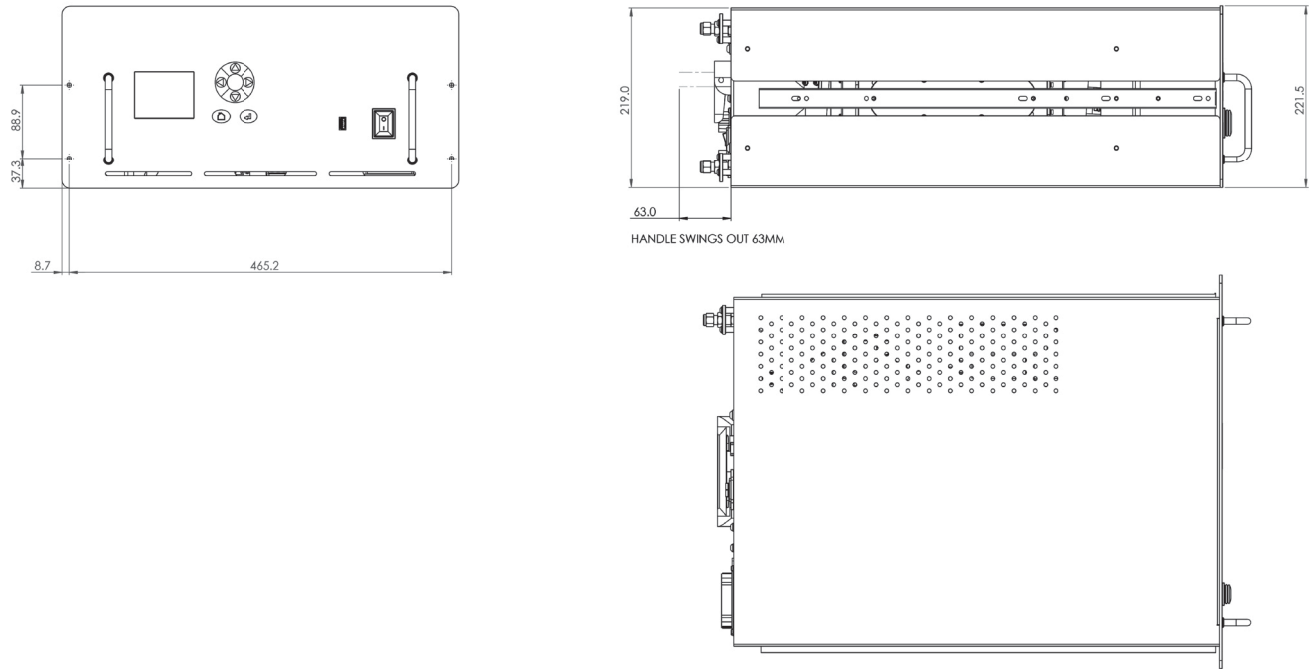
(*) Repeatability is ±1 % of reading or the Limit of Detection (LOD), whichever is greater.

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 Rosemount for more information.

Recommended Installation

The drawings below represent the minimum recommended installation guidelines for the Rosemount™ CT5400 Continuous Gas Analyzer. Please consult Rosemount for detailed installation recommendation of your application.

Figure 1 - Rosemount™ CT5400 Process Gas Analyzer



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