Product Data Sheet
PDS 106-5500.A01
August, 2010

Model CCO 5500 Carbon Monoxide (CO) Analyzer

Emissions or Process Stack Gas Measurement

- Easy to operate control room electronics
  - Control room access to all analyzer functions
  - Programmable parameters for varying boiler operating conditions
  - Measurements may be displayed as ppm, mg/m3, mg/Nm3 (normalized)
  - Four rolling averages from 10 seconds to 30 days may be defined and interrogated
- Control room diagnostic capability
  - Sophisticated diagnostic routines alert operators to maintenance requirements
- Optional calibration standard available
  - Assures reliable process information; No calibration gas required
- In Situ analysis
  - Representative across-duct measurement, free from stratification errors
  - Eliminates sampling system maintenance
- Rugged lithium tantalate pyro-electric detector
  - Allows a highly sensitive and stable CO measurement

INTRODUCTION

The importance of controlling excess air levels in various combustion processes has been recognized for many years. Now, however, the high cost of fuel makes it an economic necessity to reduce excess air levels to minimize thermal stack losses. In addition to increasing fuel costs, tightening environmental restrictions also can impact the optimization of the combustion process. The reduction of NO_x through minimizing available oxygen can also lead to incomplete combustion. Efforts toward overall combustion efficiency must be aimed at reducing total energy loss.

This requires achieving minimum unburned combustibles, as well as thermal stack losses. More precise control of air/fuel ratio, optimized for minimum total energy loss, can yield significant gains in efficiency and result in substantial savings in reduced fuel consumption and improved environmental performance.

Flue gas concentration of CO is a reliable and accurate indication of burner flame stoichiometry and the completeness of combustion. It is the most sensitive indicator of unburned combustibles loss. Used as a primary combustion efficiency parameter, in conjunction with oxygen analysis, a CO measurement offers additional advantages in controlling combustion at optimum levels of excess air to a combustion control scheme using an oxygen measurement only. Controlling air/fuel ratio to an optimum level of CO assures minimum total energy loss and maximum efficiency, independent of variations in boiler load, fuel type and fuel quality. The measurement is relatively unaffected by air in-leakage and burner maintenance requirements are immediately identified.

Emerson Process Management's reliable CO measurement, coupled with small, lightweight packaging and ease of operation and maintenance, assures you of years of trouble-free service from the Model CCO 5500 Carbon Monoxide (CO) Analyzer.

ROSEMOUNT® Analytical

EMERSON™ Process Management

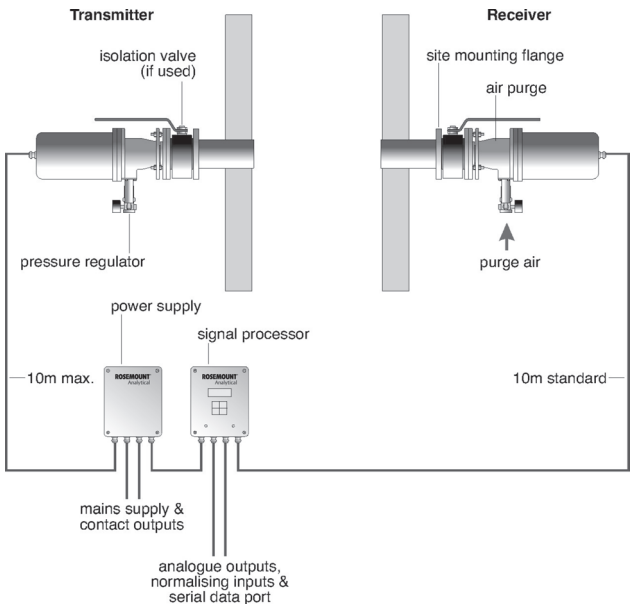


Figure 1

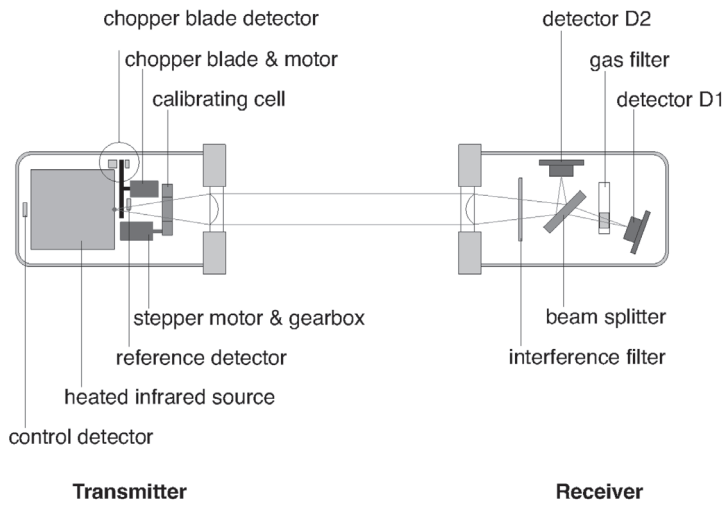
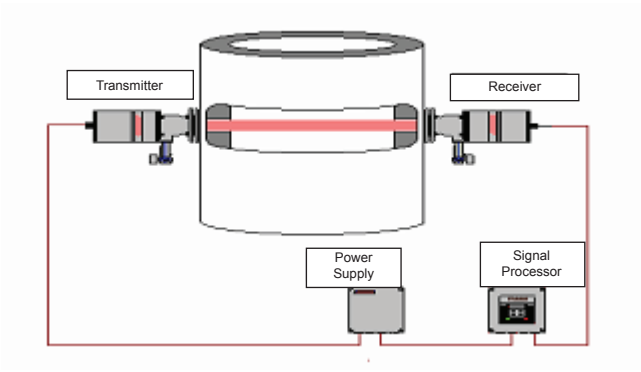


Figure 2

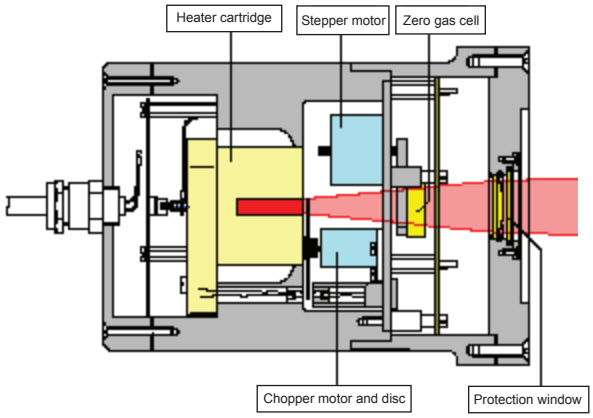
PRINCIPLE OF OPERATION

The Model CCO 5500 Carbon Monoxide (CO) Analyzer uses infrared absorption spectroscopy to continuously measure CO concentration in combustion flue gases. The infrared source is mounted directly on the flue gas duct or stack on the side opposite from the receiver as shown in Figure 1. Infrared energy is radiated by the source, through a chopper across the duct to the receiver. The receiver employs gas filter correlation and narrow band-pass optical filtration with two solid state detectors to determine the absorption of radiation by CO in the flue gas.

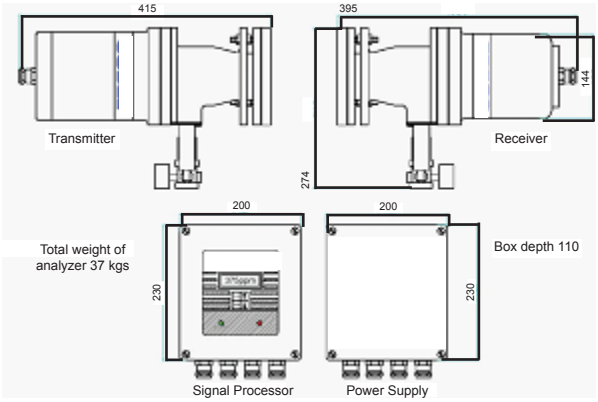
These principles are illustrated in block diagram form in Figure 2. Infrared energy, radiated by the source, passes through the flue gas, where a portion of the energy is absorbed by any CO present. The remaining energy passes through the receiver window, focusing lens and is split by a beam splitter. The split beam is directed to two separate detectors, the process measurement detector and the reference detector. The process detector reads the infrared signal coming from the CO in the combustion flue gases. The rest of the beam is redirected to the reference detector where it is filtered through a known concentration of CO. The two energy levels are sensed by the detectors and the signals are sent to the electronics. The resulting signals are ratioed and compared with the ratioed signals developed under CO calibration conditions.



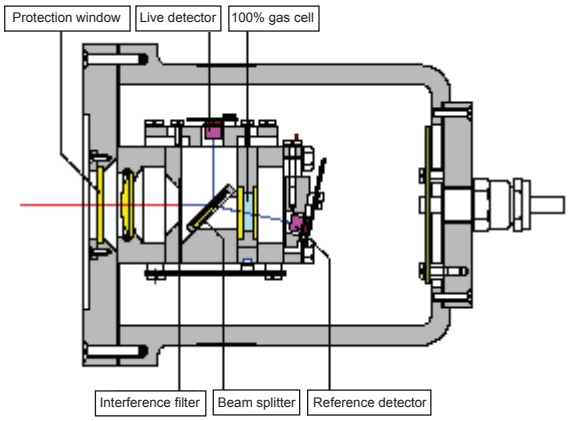
Open Path Cross-Duct Analysis



Model 5500 Analyzer Transmitter



Model 5500 Component Dimensions



Model 5500 Analyzer Receiver

SPECIFICATIONS:

Range:	Selectable 0-100, to 0-9,999 ppm Max. range 6,000 ppm.m
Accuracy:	< 5% of measurement 10 ppm.m
Analog Output:	0 or 4-20 mA selectable (500 ohm max.)
Alarm Output:	0.5A, 120 VAC relay
Serial Port:	RS232 Data bus I/P and O/P
Display:	32 character back-lit LCD
Display LEDs:	Data valid and alarm
Configuration:	Integral key pad or serial port
Purge air:	0.5 CFM consumption, if required
Ambient Temperature:	0° to 160°F
Gas Temperature:	600°C (1112°F)
Detectors:	Lithium tantalate
Display Units:	ppm, mg/m3, mg/Nm3
Construction:	Cast aluminum, NEMA 4
Power:	110/240/VAC, 50/60/HZ, 20 VA.
Dimensions:	Transmitter: 13” x 8” diameter Receiver: 12’ x 8” diameter Signal Processor/ Power Supply: 7.8” x 9.1” x 4.5”
Mounting Flange:	ANSI 4” 150 lbs.

MODEL CCO 5500 ORDERING INFORMATION

Model	Description
CCO5500	**Carbon Monoxide Analyzer – Across-the-Stack**

Level 1	Power Requirements	
	01	110/220 VAC, 50/60 Hz

Level 2	Control Module Display/Keypad	
	01	English

Level 3	Calibration Options	
	00	None
	01	Calibration Check Cell and Holder

To find the local Rosemount Analytical specialist near you, go to:
http://www.emersonprocess.com/raihome/sp/contact_us.asp.

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