

CODEL

Monitoring Solutions

GCEM 4000 Extractive Gas Analyser



The GCEM4000E hot extractive multi-channel gas analyser is CODEL's industry-proven continuous emissions monitor for difficult applications.

Designed exclusively for use on a wide range of applications where the flue gas temperature is abnormally high, low or saturated.

Single or Multi-species infrared absorption analyser

Gas temperature and pressure sensors

Analogue and serial outputs

Extractive System

ISO 9001:2008

Quality Certification

Monitoring Solutions

SmartCem

www.codel.co.uk

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Three decades of development, knowledge and practical experience have been utilised to produce this advanced technology gas analyser which gives complete flexibility of use on process or emissions applications whilst delivering superb accuracy and repeatability at a competitive price.

Many conventional extractive systems require the sampled gas to be cleaned and dried to a very high standard prior to analysis, invariably resulting in a high maintenance demand. Such elaborate pre-conditioning is not required; the GCEM4000E creates 'perfect' duct conditions in a temperature controlled chamber within a separate free-standing cabinet.

Process conditions are extracted using a heated probe system which has an option of compressed air blow-back for excessively dusty applications. Once the sample has been drawn it is simply cooled (or heated) then transferred along a heated sample line, without further conditioning, to be measured using a CODEL multi-channel analyser housed in the cabinet.

Typical Applications

Emission Monitoring
 Combustion Processes
 Gas Turbines
 Crematoria
 Steam Boilers to 50MW
 Thermal Oxidisers
 Animal Carcass Incineration
 Biomass Boilers
 Diesel Engine Sets
 Small Diameter Stacks
 High Temp Applications
 Silo Monitoring
 Road Stone Coating
 Cement Processing
 Blast Furnace Off Gas
 Land Fill Monitoring

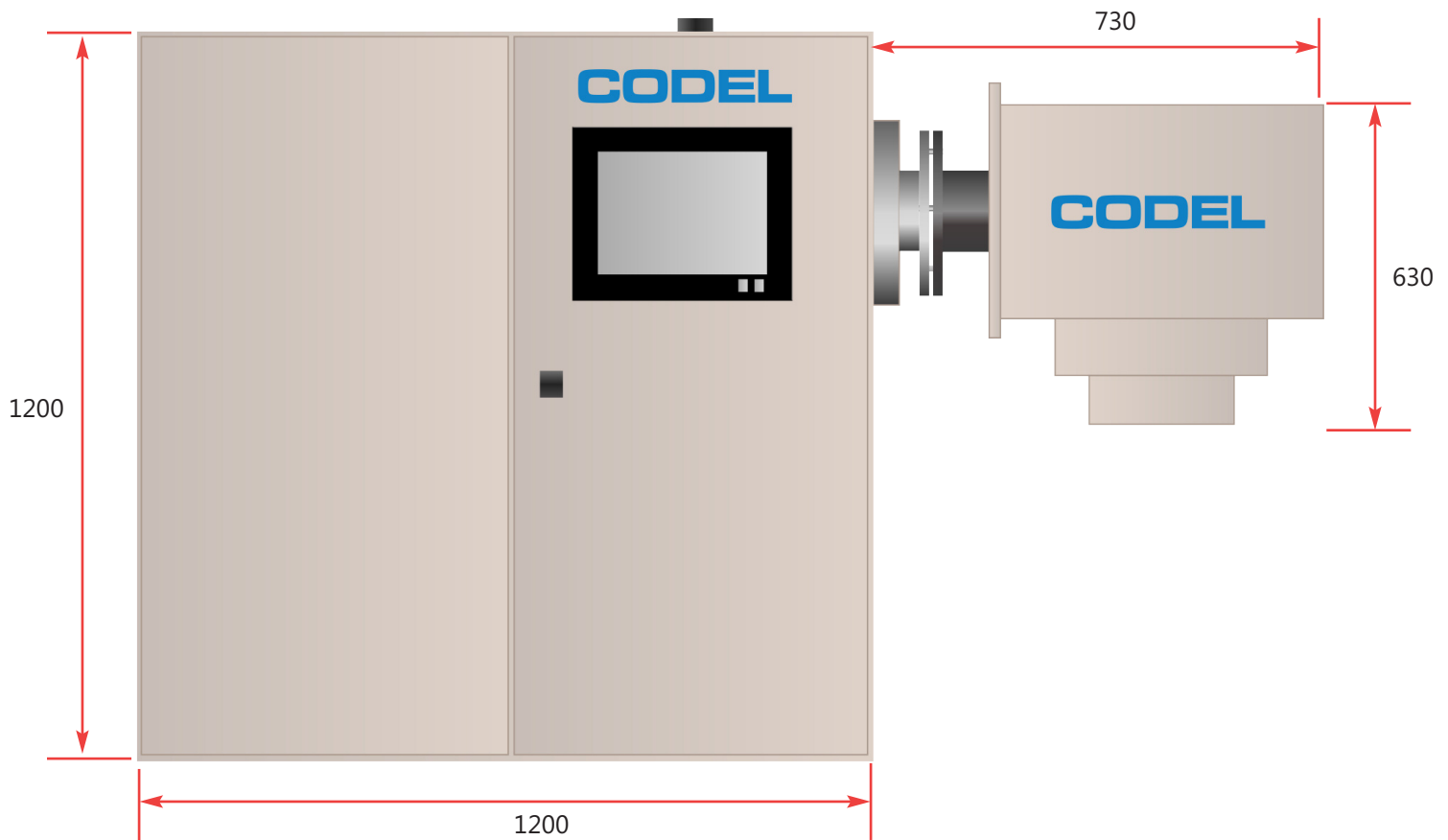
- ✓ Single or Multi-gas infrared analyser
- ✓ Analogue output, relay outputs and RS485 serial output
- ✓ Automatic normalisation to STP using integral sensors
- ✓ Optional Oxygen sensor for normalisation to mg/Nm³
- ✓ Automatic verification using bottled audit gases
- ✓ Suitable for small or large ducts
- ✓ High temperature applications
- ✓ Optional integral monitor for local display
- ✓ Powerful data presentation software
- ✓ Variety of extractive probes for all applications
- ✓ EN14181 QAL3 reporting
- ✓ Simple installations

Extractive low cost, low maintenance device for continuous process and emissions monitoring

Environmental agencies demand that continuous emission analysers have the facility to prove their performance using known concentration audit gasses. The GCEM4000E provides the facility to automatically check and control zero calibration point using clean, dry compressed air or nitrogen. Where independent span checks are required, bottled gases of known concentration can be injected directly into the measurement chamber.

The GCEM4000E analyser is capable of measuring a range of CO, NO, NO₂, NO_x, SO₂, CH₄, HCl, N₂O, CO₂, H₂O and O₂ simultaneously and with integral temperature and pressure sensors can compute fully normalised data directly in mg/Nm³.

The analyser can be easily incorporated into the CODEL SmartCEM system along with dust, flow and oxygen signals to deliver a complete emission monitoring solution capable of meeting today's tough legislative demands.



Note: 100mm Mounting Brackets underneath panel

Note: All dimensions are in mm

Technical Specification

Sensor Unit

Gas Species Options	Single or multi-gas measurements available: CO ₂ , H ₂ O & O ₂ as standard plus up to max 5 gases from: CO, NO, NO ₂ , NO _x , SO ₂ , HCl, CH ₄	
Measuring units	ppm, mg/Nm ³ , mg/m ³ , %	
Response Time	Less than 200 Seconds (T90)	
Gas Temperature	Below dewpoint to 1300°C	
Calibration	Automatic and manual zero/span verification	
Gas Species	CO, NO, NO ₂ , NO _x , SO ₂ , HCl, CH ₄	CO ₂ , H ₂ O
Max Measuring Range	0 - 6000 ppm, higher ranges available on request	0 - 25%
Accuracy	+/- 2ppm or 2% of span	0.5% or 2% of span
Resolution	+/- 1ppm	0.1%
Zero & span drift	+/- 2ppm or 2% of span per month	0.5% or 2% of span
Linearity	+/- 2% of span	2% of span
Repeatability	+/- 5ppm or 1% of span	0.3% or 1% of span
Ambient Temperature)	-20°C to +50°C	
Construction	Corrosion resistant epoxy coated aluminium housing sealed to IP66	

Compliances

EMC	89/336/EEC directive compliant
Low Voltage	73/23/EEC directive compliant)

Analyser Cabinet

Analogue Outputs	8 x 4-20mA current outputs for each gas channel supplied, isolated, 500Ω load max, fully
Logic Outputs	up to 8 x volt-free SPCO contacts, 50V, 1A max, configurable as alarm contacts
Inputs	4 x 4-20mA as standard (upto 8 total optional)
Serial Data	RS232 / RS485 (modbus protocol)
Construction	Mild steel construction powder coated to IP55
Ambient Temperature	-20°C to +50°C
Power Supply	220 - 240VAC @ Min 3000W (With optional sample line add 66W/m)
Air Dryer	Minimum 20L/min @ 6 Bar

Options

Heated Sample Line

Dual Core	Sample + span gas lines, self regulating heating up to 180°C. Mains supply for sample probe.
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Probe

Standard Probe	SP180-H, <2g/m ³ dust load, no back purge (Optional filters for higher dust loads)
Standard Probe with Back Purge	SP2200-H, <2g/m ³ dust load, back purge (Optional filters for higher dust loads)

Stack Gas Temperature

Type K Thermocouple	0 - 300°C / 0 - 600°C Options Availbale
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Data Presentation

CODEL SmartCEM Software	Via integrated 15" Touch Screen Panel PC or external PC
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