

## Product Brochure

### GCEM 40 Series Extractive Gas Analyser

CO<sub>2</sub>, H<sub>2</sub>O, O<sub>2</sub>, CO, NO, NO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, HCl, CH<sub>4</sub>



### Single or Multi-species Infrared Absorption Analyser

The GCEM40E hot extractive multi-channel gas analyser is CODEL's industry-proven continuous emissions monitor for difficult applications.

ISO 9001:2015

Quality Certification

ISO 14001:2015

Environmental Certification

Monitoring Solutions

SmartCem

[www.codel.co.uk](http://www.codel.co.uk)

The GCEM40E 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.

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 GCEM40E 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.

## Features and Benefits

- ▶ Single or Multi-gas infrared analyser
- ▶ Analogue outputs, relay outputs and RS485 serial output
- ▶ Automatic normalisation to STP using integral sensors
- ▶ Optional Oxygen sensor for normalisation to mg/Nm<sup>3</sup>
- ▶ Automatic verification using bottled audit gases
- ▶ Suitable for small or large ducts

## Typical Applications

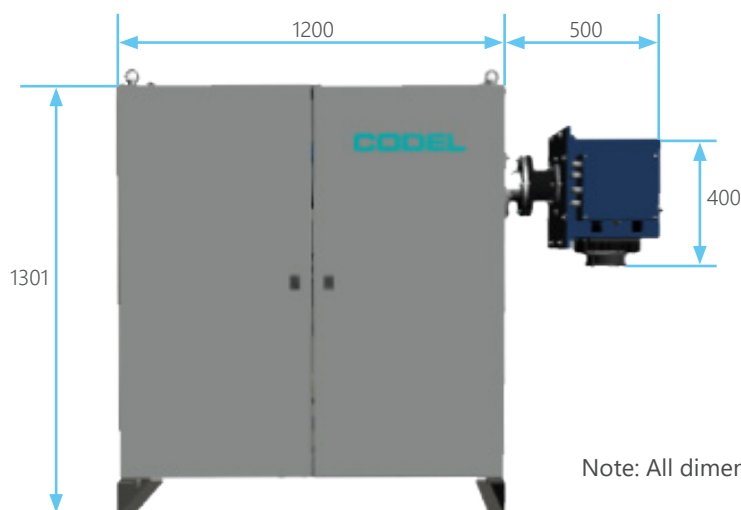
- ▶ Emission Monitoring
- ▶ Combustion Processes
- ▶ Gas Turbines
- ▶ Crematoria
- ▶ Steam Boilers to 50MW
- ▶ Thermal Oxidisers
- ▶ Animal Carcass Incineration
- ▶ Biomass Boilers
- ▶ Diesel Engine Sets
- ▶ Small Diameter Stacks
- ▶ High Temp Applications
- ▶ Silo Monitoring

## Heated measurement chamber (PTFE coated 316L SS) with precise temperature control over 5 zones and integral pressure measurement

Environmental agencies demand that continuous emission analysers have the facility to prove their performance using known concentration audit gasses. The GCEM40E 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 GCEM40E analyser is capable of measuring a range of CO, NO, NO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, CH<sub>4</sub>, HCl, CO<sub>2</sub>, H<sub>2</sub>O and O<sub>2</sub> and with integral temperature and pressure sensors can compute fully normalised data directly in mg/Nm<sup>3</sup>.

## Overall Dimensions



Note: All dimensions are in mm



## Technical Specification

### Sensor Unit

Gas Species Options	CO <sub>2</sub> , H <sub>2</sub> O & O <sub>2</sub> as standard plus up to maximum 4 gases from: CO, NO, NO <sub>2</sub> , NO <sub>x</sub> , SO <sub>2</sub> , HCl, CH <sub>4</sub>		
Measuring units	ppm, mg/Nm <sup>3</sup> , mg/m <sup>3</sup> , %		
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 <sub>2</sub> , NO <sub>x</sub> , SO <sub>2</sub> , HCl, CH <sub>4</sub>	O <sub>2</sub>	CO <sub>2</sub> , H <sub>2</sub> O
Max Measuring Range	0 - 6000 ppm or 0 - 6000 mg/Nm <sub>3</sub> , higher ranges available on request	0.1 - 25%	0 - 25%
Accuracy	+/- 2ppm or 2% of span	0.5% O <sub>2</sub>	0.5% or 2% of span
Resolution	+/- 1ppm	0.1% O <sub>2</sub>	0.1%
Zero & span drift	+/- 2ppm or 2% of span per month	N/A	0.5% or 2% of span
Linearity	+/- 2% of span	N/A	2% of span
Repeatability	+/- 5ppm or 1% of span	0.5% O <sub>2</sub>	0.3% or 1% of span
Ambient Temperature	-20°C to +50°C		
Optical Path Length	2 Meters		
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	4-20mA current outputs for each gas channel supplied, isolated, 500Ω load max, fully configurable from software
Logic Outputs	up to 8 x volt-free SPCO contacts, 50V, 1A max, configurable as alarm and system status 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 2500W (With optional sample line add 66W/m + sample probe power consumption)
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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#### Heated Sample Line

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

#### Stack Gas Temperature

Type K Thermocouple	0 - 300°C / 0 - 600°C / 0 - 900°C Options Available
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#### Data Presentation (optional)

CODEL SmartCEM Software	Via integrated 15" Touch Screen Panel PC or external PC
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The GCEM40E can be GSM enabled allowing online remote diagnostic information for technical support.

# CODEL

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Distributor

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