

Gasmeter™ CEMS

The Gasmeter CEMS FTIR measuring system is designed for continuous emissions monitoring measurements (CEM). Typical application is H₂O, CO₂, CO, N₂O, NO, NO₂, SO₂, HCl, HF, NH₃, CH₄, C₂H₆, C₃H₈, and C₂H₄ monitoring from waste incinerator or large combustion plants. Measured components and calibration ranges can be changed according to application.

The Gasmeter CEMS is an ideal tool to use for measuring trace concentrations of pollutants in wet, corrosive gas streams. All parts of the Gasmeter CEMS are heated up to 180 °C. It can be used for undiluted gases and the sample gases do not need drying beforehand.

The Gasmeter CEMS consists of Gasmeter FTIR gas analyzer, Gasmeter industrial computer, and Gasmeter sampling system. As an option the system can be equipped with Gasmeter tunable diode laser (TDL) or ZrO₂ oxygen analyzer and/or with total hydrocarbon analyzer (FID). All parts of the system are 19" rack mounted and are installed on the pull-out shelves. The Gasmeter CEMS includes all power connections and temperature controllers for heated lines and heated sample probe. The operation of the system is fully automatic and controlled by the Calcmet software. Additionally all functions of CEMS can be controlled manually.

Comprehensive I/O functions make possible to connect CEMS into all kind of automation or reporting systems. Measuring data and alarms can be transferred from Gasmeter CEMS to other systems with analog or digital format. Gasmeter CEMS is also equipped with analog / digital inputs for external data (other analyzers or process).

Gasmeter CEMS provides different alarm functions such as *System alarm*, *Service request*, *Maintenance on progress* (can be set also manually), *Concentration alarm*, and *Result valid*. Combination for each alarm can be set on Calcmet. If any of the critical alarm is activated, instrument air starts to flow automatically into the system to prevent condensation.

As standard CEMS is equipped with a two solenoid valve to allow automated span/zero checks as required by the new legislation.

Gasmeter CEMS is air conditioned with a compressor-cooling unit on top of the cabinet. Cabinet includes ready made through-leading rubbers on each side and top of the cabinet for all cables and lines. Gasmeter CEMS is also supported by full remote control.

The Gasmeter CEMS has a very low cost of ownership; the equipment is extremely well designed, and requires very little maintenance. The system also has a number of in-built failsafe devices to protect the instrument from potential damage.



General parameters

Measuring principle:	FTIR (Fourier Transform Infrared)
Performance:	Simultaneous analysis of up to 50 gas components
Operating temperature:	20 ± 20 °C, non-condensing,
Storage temperature:	-20 - +60 °C
Response time, T₉₀:	< 180 s, 20m heated line
Gas cell temperature:	180 °C
Sample gas:	Non-condensing, particle free
Flow rate:	~ 4 liters per minute
Sample gas pressure:	Ambient
Installation place:	Dust free and clean ambient air, without external vibrations

Measuring parameters

Zero point calibration:	24 hours, calibration with nitrogen (5.0 or higher N ₂ recommended).
Zero point drift:	< 2 % of measuring range per zero point calibration interval.
Sensitivity drift:	none
Linearity deviation:	< 2 % of measuring range
Temperature drifts:	< 2 % of measuring range per 10 K temperature change
Pressure influence:	1 % change of measuring value for 1 % sample pressure change. Ambient pressure changes measured and compensated.

Signals (standard)

Analog output:

- **Output range:** 4 - 20 mA, isolated
- **Channels:** 16 freely programmable

Analog input:

- **Input range:** 4 - 20 mA, isolated
- **Channels:** 8 freely programmable

Digital output:

- **Output range:** 24 VDC
- **Channels:** 16 freely programmable
- *System alarm, Service Request, Maintenance, Concentration alarm, Results valid.*

Digital input:

- **Control:** By potential free contacts
- **Channels:** 16 freely programmable
- *Probe temp alarm, Zero gas pressure alarm, Cabinet temp alarm, Cabinet cooler alarm, Activate System Standby, Activate span test.*

Signals (optional)

Up to 255 terminals can be connected

Analog output:

- **Output range:** 4 - 20 mA, isolated
- **Channels:** 4 or 8 channels / terminal

Analog input:

- **Input range:** 4 - 20 mA, isolated
- **Channels:** 1, 4, or 8 channels / terminal
- **Input range:** 0 – 10 V, isolated
- **Channels:** 8 channels / terminal

Digital output:

- **Output range:** 24 VDC, isolated
- **Channels:** 8 channels / terminal

Digital input:

- **Control:** By potential free contacts
- **Channels:** 4 or 8 channels / terminal

Interfaces (optional)

Fieldbus output:

Output format:	ModBus, ModBus TCP/IP, Profibus, ASCII, DDE link, RS 232 or RS422/485
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Industrial computer

See *Gasmeter Industrial Computer Technical Data Sheet*

Air conditioning

Cooling capacity:	A35°C / A35°C 1500 W A50°C / A35°C 1100 W
Internal circulation:	500 m ³ /h

Electrical connections

Main supply:	3 x 16 A, 3 x L+N+PE
Power consumption:	The full Gasmeter CEMS II including sample probe and heated lines (21 m) is ~7.5 kW

Instrument Air

Instrument air inlet:	6 mm tube
Instrument air quality:	Dry, oil & particle free
Consumption:	1 l/min, Continuous instrument purge 15 l/min, Safety flushing (error mode) 50 l/min, Waste gas dilution (optional)

Enclosure

Material:	Bake painted steel
Dimensions (mm):	Layout 1 2120 x 600 x 600 mm (A/C unit on top) Layout 2 2100 x 600 x 800+250 mm (+250 mm is A/C unit on backdoor) Dimensions H x W x D in mm
Weight:	~ 500 kg (full system)
Protection:	IP 54