

# Gasmeter™ CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) II

The Gasmeter CEMS II FTIR measuring system is designed for continuous emissions monitoring measurements (CEM). Typical application is H<sub>2</sub>O, CO<sub>2</sub>, CO, N<sub>2</sub>O, NO, NO<sub>2</sub>, SO<sub>2</sub>, HCl, HF, NH<sub>3</sub>, CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, C<sub>3</sub>H<sub>8</sub>, and C<sub>2</sub>H<sub>4</sub> monitoring from waste incinerator or large combustion plants. Measured components and calibration ranges can be changed according to application.

The Gasmeter CEMS II is an ideal tool to use for measuring trace concentrations of pollutants in wet, corrosive gas streams. All parts of the Gasmeter CEMS II 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 II 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 ZrO<sub>2</sub> 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 II 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 II can be controlled manually.

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

Gasmeter CEMS II 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.

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

Gasmeter CEMS II 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 II is also supported by full remote control.

The Gasmeter CEMS II FTIR 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

<b>Measuring principle:</b>	FTIR (Fourier Transform Infrared)
<b>Performance:</b>	Simultaneous analysis of up to 50 gas components
<b>Operating temperature:</b>	20 ± 20 °C, non-condensing,
<b>Storage temperature:</b>	-20 - +60 °C
<b>Response time, T<sub>90</sub>:</b>	< 180 s, 20 m heated line
<b>Gas cell temperature:</b>	180 °C
<b>Sample gas:</b>	Non-condensing, particle free
<b>Flow rate:</b>	~ 4 liters per minute
<b>Sample gas pressure:</b>	Ambient
<b>Installation place:</b>	Dust free and clean ambient air, without external vibrations

### Measuring parameters

<b>Zero point calibration:</b>	24 hours, calibration with nitrogen (5.0 or higher N <sub>2</sub> recommended).
<b>Zero point drift:</b>	< 2 % of measuring range per zero point calibration interval.
<b>Sensitivity drift:</b>	none
<b>Linearity deviation:</b>	< 2 % of measuring range
<b>Temperature drifts:</b>	< 2 % of measuring range per 10 K temperature change
<b>Pressure influence:</b>	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

### Signals (optional) (continues)

#### 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

### 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<sup>3</sup>/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 approximately 7.5 kW

### Instrument air

**Instrument air inlet:** 6 mm tube

**Instrument air quality:** Dry, oil and particle free

**Consumption:** 1 l/min with continuous instrument purge  
15 l/min with safety flushing (error mode)  
50 l/min with waste gas dilution (optional)

### Enclosure

**Material:** Bake painted steel

**Dimensions (mm):** **CEMS II A**  
212 x 61 x 70 cm  
(A/C unit on the cabin roof)

**CEMS II B**  
210 x 61 x 113 cm  
(A/C unit at the back of the cabin)  
Dimensions H x W x D

**Weight:** ~ 500 kg (full system)

**Protection:** IP 54