CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) II *e*

The Gasmet CEMS II *e* FTIR measuring system is designed for continuous emissions monitoring measurements (CEM). Typical application is H_2O, CO_2, CO, N_2O, NO, NO_2, SO_2, HCl, HF, NH_3, CH_4, C_2H_6, C_3H_8, C_2H_4 and CH_2O monitoring from waste incinerator or large combustion plants. Measured components and calibration ranges can be changed according to application.

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

The Gasmet CEMS II *e* consists of Gasmet FTIR gas analyzer, Gasmet industrial computer, and Gasmet sampling system. As an option the system can be equipped with ZrO_2 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 Gasmet CEMS II *e* 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 *e* can be controlled manually.

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

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

Gasmet CEMS II *e* 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. Gasmet CEMS *e* II is also supported by full remote control.

The Gasmet CEMS II *e* 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

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, T_{90}:	< 180 s, 20 m 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

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 *Gasmet 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 Gasmet CEMS II *e* 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 *e* A** 212 x 61 x 70 cm (A/C unit on the cabin roof) **CEMS II *e* 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