



NO_x | NO | NO₂ | CO | CO₂ | SO₂ | N₂O | CH₄ | HC as C₃H₈ | O₂

SWG 200 CEM

Stationary
gas analysis system.



For continuous flue gas
and emission monitoring.



SWG 200 CEM

Optimal gas analysis around the clock

With **SWG 200 CEM (Continuous Emission Monitoring)** we offer you a cost-effective, reliable system for emission and combustion monitoring.

Suitable for various industrial sectors:

Diesel engines, methane/natural gas boilers, landfill gas/biogas CHPs, bagasse and biomass boilers and others

With **SWG 200 CEM**, simultaneous infrared analysis of up to 8 flue gas components is possible:

Gas measurement (NDIR)	Measuring range min./max.	Resolution	Repeatability
Nitric monoxide (NO)	0 ... 200/4,000 ppm	0.1 ppm	2 ppm or 1 % reading
Nitric dioxide (NO ₂)	0 ... 150/500 ppm	0.1 ppm	1 ppm or 1 % reading
Sulphur dioxide (SO ₂)	0 ... 200/4,000 ppm	0.1 ppm	2 ppm or 1 % reading
Carbon dioxide (CO ₂)	0 ... 40 %	0.01 Vol%	0.2% or 1 % reading
Carbon monoxide (CO)	0 ... 200/10,000 ppm	0.1 ppm	2 ppm or 1 % reading
Nitrous oxide (N ₂ O)	0 ... 100/500 ppm	0.1 ppm	2 ppm or 1 % reading
Methane (CH ₄)	0 ... 500/10,000 ppm	0.1 ppm	10 ppm or 1 % reading
Propane (C ₃ H ₈)	0 ... 200/5,000 ppm	0.1 ppm	2 ppm or 1 % reading

We offer you these special advantages:

- Use of optimized NDIR technology with improved accuracy and without zero offset
- O₂ measurement with an electrochemical or a paramagnetic sensor
- Automatic zero point using clean ambient air
- Automatic calibration for up to 4 gas cylinders
- Double stage Peltier gas cooler with 2 automatic condensate pumps
- Cold/dry gas sampling with low sample flow volume of only 1 l/min.



The device in detail

An overview of the special features



Cabinet

- Stainless steel cabinet for industrial environment
- 3.5" TFT color display, incl. keypad and standard RS 485 interface (Modbus RTU)
- Indoor installation, preferably air-conditioned
- Outdoor installation with sun and rain protection and low dust site



Gas conditioning

- Different probes, depending on the condition the gases to be analyzed (lowdust, highdust and compact probe with heating hose)
- Heated (and unheated) gas sampling lines up to 80 m length for up to 2 measuring points
- Efficient gas filtration by sintered PTFE particle filters
- Int. flow monitoring with alarm indication on the display
- Filtering of the gas to protect the internal flow sensor



Measurement technology

- Choice of 4-gas, 6-gas or 8-gas infrared (NDIR) measurement modules
- Electrochemical or paramagnetic O₂ sensor
- Direct and continuous measurement with pressure and temperature compensation
- Electrochemical H₂ and H₂S measurement
- Controlled dosage and injection of 10% phosphoric acid for reliable, precise measurement of SO₂ and NO₂



Data communication

- I/O module with 4-channel analog output 4 ... 20 mA and 2 relays (NO contacts) incl. external control via 4 contacts and 4-channel analog input 4 ... 20 mA
- Profibus, Ethernet, USB, SD card
- PC software "MRU4Win": visualize measurement data, manage, export and print

SWG 200 CEM

Technical data

Gas measurement (NDIR)	Measuring range min./max.	Resolution	Repeatability*	8h-Drift*	Linearity
Nitric monoxide (NO)	0 ... 200/4,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Nitric dioxide (NO ₂)	0 ... 150/500 ppm	0.1 ppm	1 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Sulphur dioxide (SO ₂)	0 ... 150/4,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Carbon dioxide (CO ₂)	0 ... 40 %	0.01 Vol%	0.2 % or 1 % reading	0.2 % or 1 % reading	1 % m. r.
Carbon monoxide (CO)	0 ... 175/10,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Nitrous oxide (N ₂ O)	0 ... 100/500 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Methane (CH ₄)	0 ... 500/10,000 ppm	0.1 ppm	10 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Propane (C ₃ H ₈)	0 ... 200/5,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.

Gas measurement (EC/PM)	Method ¹	Measuring range min./max.	Resolution	Accuracy*
Oxygen (O ₂) (long life)	EC	0 ... 25 %	0.01 %	± 0.25 % abs.
Oxygen (O ₂)	PM	0 ... 25 %	0.01 %	0.1 % abs.

General technical data	
Zero offset	negligible due to automatic zeroing
Span offset	less than 0.2 % of the measuring range per month
Calculated components	NO _x : NO + NO ₂ , calculated ppm or mg/m ³ , user-selectable O ₂ reference combustion calculations (efficiency, heat loss) on special request
Operation/interfaces	<ul style="list-style-type: none"> ■ Backlit 3.5" TFT color display ■ Backlit keyboard, password-protected operation ■ 4 analog outputs 4 ... 20 mA, galvanically isolated, max. load: 500 R ■ 2 alarm relays, potential-free contacts: 24 Vdc, 5 A ■ Data storage and data logger on SD card ■ RS 485 digital interface (Modbus RTU) ■ DIN rail RS 485, to ProfiBus converter or to Ethernet converter
Gas conditioning	<ul style="list-style-type: none"> ■ HD gas sampling probe, heated ceramic filter with backpurge, or gas sampling probe HD-GW, heated glass wool filter, or LD gas sampling probe, unheated with in-situ sintered metal filter, heated or unheated gas sampling line, PTFE DN 4/6 mm ■ Thermoelectric gas cooler (Peltier) with constant +4 °C dew point ■ Teflon particle filter, internal Viton tubing ■ Monitored and regulated gas sampling pump ■ Constant gas flow of 50 l/h ■ Gas inlet pressure: -100 ... +200 mbar (hPa) ■ Sample gas outlet: atmospheric pressure
Housing	Stainless steel cabinet, continuously monitored cabinet ventilation with alarm, Antifreeze heater 200 W (option)
Operating conditions	+5 ... +45 °C or -10 ... +45 °C with cabinet heating
Power supply	Universal: 90 ... 240 Vac, 47 ... 63 Hz, 120 W (420 W with heating)
Protection class	IP54
Dimensions (W x H x D)	700 x 600 x 210 mm, suitable for wall mounting
Weight	50 kg

MRU – Competence in gas analysis. Since 1984.

MRU · Messgeraete fuer Rauchgase und Umweltschutz GmbH

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