MRU AIRfair since 1984 ®
EMISSION MONITORING SYSTEMS

NO_x | NO | NO_2 | CO | CO_2 | SO_2 | N_2O | CH_4 | HC as C_3H_8 | O_2

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_2O)	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_3H_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
- O_2 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 O_2 sensor
- Direct and continuous measurement with pressure and temperature compensation
- Electrochemical H_2 and H_2S measurement
- Controlled dosage and injection of 10 % phosphoric acid for reliable, precise measurement of SO_2 and NO_2

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 ... 150/1,000 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_2O)	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_3H_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 %
Oxygen (O_2)	PM	0 ... 25 %	0.01 %	0.1 %
Hydrogen sulphide (H_2S)	EC	0 ... 2,000/5,000 ppm	1 ppm	± 5 ppm or 5 % reading
Hydrogen (H_2)	EC	0 ... 1,000/2,000 ppm	1 ppm	± 5 ppm or 5 % reading

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/m³, user-selectable O_2 reference combustion calculations (efficiency, heat loss) on special request
Operation/interfaces	■ 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	■ 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: –200 ... +20 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

Data subject to change without notice. | [1] EC = elektrochemical sensor, PM = paramagnetic sensor, NDIR = non-dispersive infrared spectroscopy | * which ever is larger | N-12746EN-K1-0,5M-821

MRU – Competence in gas analysis. For over 35 years.

MRU · Messgeraete fuer Rauchgase und Umweltschutz GmbH
Fuchshalde 8 + 12
74172 Neckarsulm-Obereisesheim
Phone +49 7132 99620 · Fax +49 7132 996220
info@mru.de · www.mru.eu

MRU representative: