



EMISSION MONITORING SYSTEMS

We *care* about the environment

PROFESSIONAL CONTINUOUS MONITORING OF PROCESS GASES



Gas analysis at combustion process and special gases



SWG 200-1

MODULAR ANALYSIS SYSTEM WITH 19" RACK TECHNOLOGY

INNOVATIVE · ECONOMICAL

- O2
- CO
- CO2
- NO
- CxHy
- CH4
- H2
- H2S

SWG 200-1

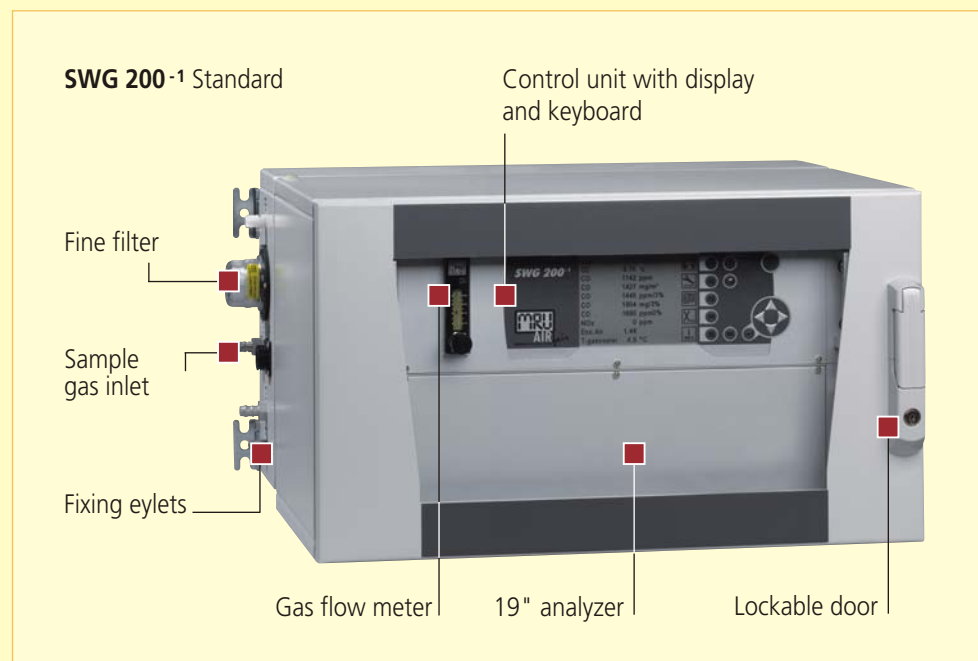
Process gas analyzer

Cost-effective analysis technology
in compact design.
Economical and efficient.



Infrared modules and electro-chemical sensors commonly operate in the **SWG 200-1**

The multi-component analyzer is used everywhere where efficient solutions are required. Within small unit size, IR-active modules and electrochemical sensors, measure continuous, selectively and precisely gases in ppm and %-range.



Standard hardware

Standardised 19" racks are mounted in a steel metal enclosure with fixing eylets for wall mounting. The enclosure is equipped with lockable, transparent door, a main control unit with backlit grafical LCD and keyboard.

The complete flue gas conditioning by means of electrical gas cooler with automatic condensate draining pump, with sample gas filtration with sample flow monitoring and alarm, with auto-zero calibration are processor-controlled and continuously monitored, as well as RS 485 for data communication and 8 channel analog outputs 4 ... 20 mA.

SWG 200-1 analyzer... easy to service!

The SWG 200-1 is easy to swing-open. All important parts are easily accessible and therfor ideal to service.



Individual applications

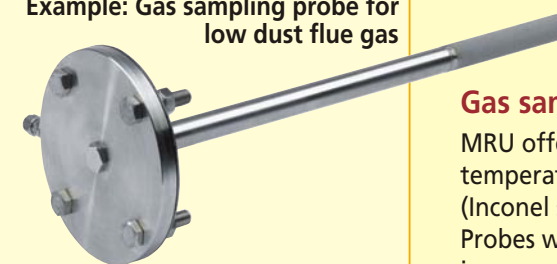
- Ex-zone2 (special model)
- Up to simultaneous 7 gas components
- Weather proof enclosure
- Complete- / partial air conditioning
- Automatic calibration with test gases
- Sample gas conditioning, also direct at the sampling point
- Easy to service and maintain
- Customized solutions on request

Measuring components

O ₂	0 ... 25 %	electrochemical / zirconium/ paramagnetic sensor
CO	0 ... 1.000 ppm / 4.000 ppm	electrochemical sensor
NO	0 ... 200 ppm / 1.000 ppm	electrochemical sensor
NO ₂	0 ... 100 ppm / 200 ppm	electrochemical sensor
SO ₂	0 ... 500 ppm / 2.000 ppm	electrochemical sensor
H ₂ S	0 ... 50 ppm / 500 ppm	electrochemical sensor
CO ₂	0 ... 10 % / 100 %	NDIR-single-gas bench
NO	0 ... 1.000 ppm	NDIR-single-gas bench
CO	0 ... 500 ppm	NDIR-single-gas bench
CO	0 ... 1.000 ppm / 100 %	NDIR-multi-gas bench
CO ₂	0 ... 10 % / 100 %	
C _x H _y	0 ... 1.000 ppm / 100 %	
H ₂	0 ... 1 % / 100 %	thermal conductivity detector

Further measuring range and applications on request

Example: Gas sampling probe for low dust flue gas



Stainless steel probe up to 900 °C with flange DN 65 PN 6 with sintered metal filter 3 µ

Gas sampling probes and -lines

MRU offers industrial probes for high and low dust content, for gas temperatures for up to 650 °C (stainless steel), for up to 1.100 °C (Inconel steel) and for up to 1.700 °C (ceramic). Probes with and without heated filter element and probe tubes in several lengths.

- see separate probe brochure



Application:
Biomass gasification
Measured flue gas components:
O₂ · CO · CO₂ · CH₄ · H₂



Application:
Oil refinery
Measured flue gas components:
O₂ · CO · CO₂ · CH₄



Application:
Combustion of solid fuels
Measured flue gas components:
O₂ · CO



Application:
Steel heat treatment
Measured flue gas components:
O₂ · CO · CO₂ · CH₄ · H₂

Technical specification

Measured components	measuring range	accuracy	measuring cell
Oxygen O ₂	0... 25 %	±0,2 Vol.-% abs.	paramagnetic
Oxygen O ₂	0... 25 %	±0,2 Vol.-% abs.	Circonium oxide
Oxygen O ₂	0... 21 %	±0,2 Vol.-% abs.	electrochemical
Carbon monoxide CO	0... 4.000 ppm (*)	±20 ppm or 5 % reading	electrochemical
Nitric monoxide NO	0... 1.000 ppm (*)	± 5 ppm or 5 % reading	electrochemical
Nitric dioxide NO ₂	0... 200 ppm (*)	± 5 ppm or 5 % reading	electrochemical
Sulfur dioxide SO ₂	0... 2.000 ppm (*)	±10 ppm or 5 % reading	electrochemical
Hydrogen sulfide H ₂ S	0... 500 ppm (*)	± 5 ppm or 5 % reading	electrochemical
*) with high measuring range a discontinuous measurement is recommended.			
1-gas infrared bench	min. measuring range	max. measuring range	linearity error
Carbon monoxide CO	0... 100 ppm	0... 1.000 ppm	2 % of full scale
Nitric monoxide NO	0... 200 ppm	0... 1.000 ppm	2 % of full scale
3-gas infrared bench	min. measuring range	max. measuring range	linearity error
Carbon monoxide CO	0... 1.000 ppm	0... 100 %	3 % of full scale
Carbon dioxide CO ₂	0... 3 %	0... 100 %	3 % of full scale
Hydrocarbons (as Methane CH ₄)	0... 1.000 ppm	0... 100 %	3 % of full scale
THERMAL CONDUCTIVITY DETECTOR	min. measuring range	max. measuring range	linearity error
Hydrogen H ₂	0... 1 %	0... 100 %	2 % of full scale
Calculated values	mg/Nm ³ , reference to O ₂		
Repeatability	1 % of smallest measuring range		
Response time T90	approx. 30 seconds of the analyzer sample gas inlet port		
Detection limit	1% of current measuring range		
Zero drift	with AUTOZERO: neglectable		
Span drift	without AUTOCAL (option): <2% of measuring range / 2 weeks		
Temperature influence	max 2% of measuring range per 10°K		
Measured value stability	The aforementioned data are valid on condition that ambient conditions (e.g. sample flow, air temperature and pressure) are constant.		
General specification			
Warm-up time	1h minimum		
Sample gas conditioning	integrated gas cooler with dew point = +5 °C		
Sample gas filtration	filtering particle size <2µ		
Sample gas monitoring	flow regulation and supervision, 30 ... 50 l/h		
Calibration	By software, calibration gases for every gas required, instrument air or clean ambient air for auto-zero		
Operating temperature	+5 °C ... +40 °C, max. 90 % rh, non condensing		
Storage temperature	-20 °C ... +50 °C		
Ambient conditions	no use in aggressive, corrosive or very high dust ambience hazardous area use only with special equipment (on request).		
Display	full graphic LCD display with backlit		
Resolution	depends on range selection, ppm or %		
Data transfer	8 channel analog output 4 ... 20 mA, RS 485 digital (modbus RTU)		
Alarm relays	3x potential free NO contacts		
Power supply	110 ... 230 Vac / 50 ... 60 Hz / 100 ... 500 W, with heated hose control (option) add 100 W/ meter		
Internal main fuse	10 A standard (other for long heated sampling line)		
Protection class	IP 52 (P 65 / enclosures for outdoor mounting)		
Weight	approx. 20 ... 50 kg, depending on system configuration and construction		
Dimensions	(W x H x D) 345 x 600 x 575 mm = steel enclosure for indoor mounting (6 U) (W x H x D) 480 x 600 x 575 mm = steel enclosure for indoor mounting (9 U) (W x H x D) 800 x 1.000 x 600 mm = fiber glass enclosure für outdoor mounting		

Data subject to change without notice.

Dealer:



MRU · Measuring instruments for flue gases
and environmental protection GmbH
Fuchshalde 8 · 74172 Neckarsulm-Oberseesheim
Phone +49 71 32-99620 · Fax +49 71 32-996220
info@mru.de · www.mru.eu