MRU AIR fair 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

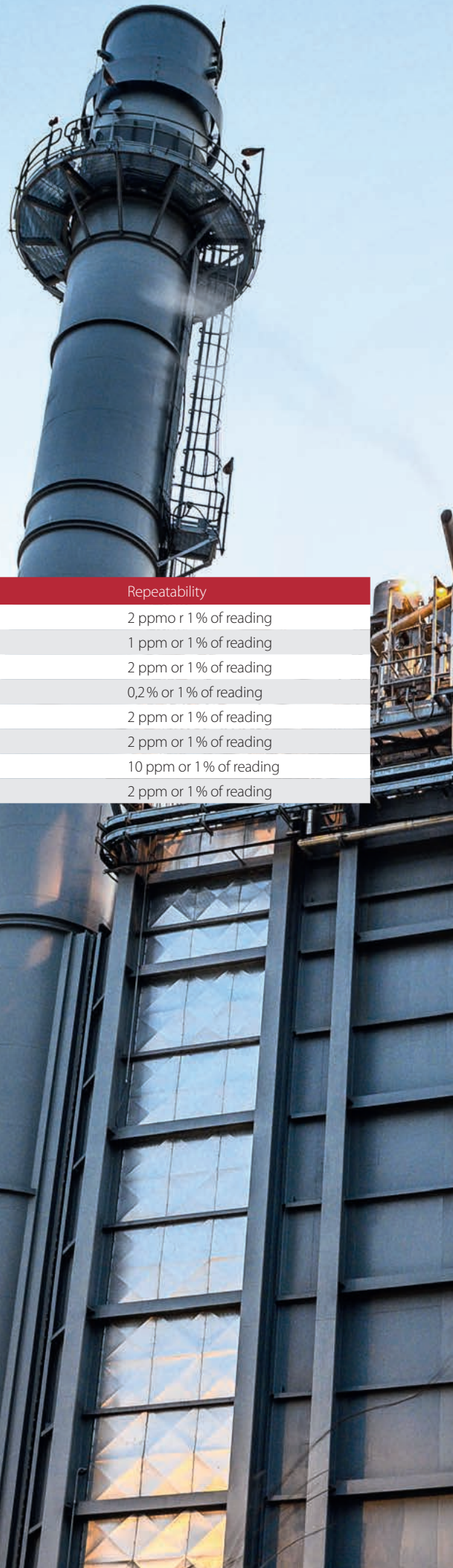
SWG 300

Continuous Emission Monitoring System.

Stationary Flue Gas Emission Analyzer

SWG 300 IND/OTD/Ex

Reliable 24/7 monitoring



With the SWG 300 we offer you a reliable Emission-Monitoring System, even for dirty acid mist applications

Suitable for various industrial branches:
Coal power stations, municipal and other waste incinerator, cement outlet stacks, glass melting industry, solid fuels and heavy oil combustion sites, bagasse and biomass steam boilers

The **SWG 300** provides up to 8 simultaneous infrared measurements

Gas measurements (NDIR)	Range min./max.	Resolution	Repeatability
Nitric monoxide (NO)	0 ... 200/4.000 ppm	0,1 ppm	2 ppmo r 1 % of reading
Nitric dioxide (NO_2)	0 ... 150/1.000 ppm	0,1 ppm	1 ppm or 1 % of reading
Sulphur dioxide (SO_2)	0 ... 150/4.000 ppm	0,1 ppm	2 ppm or 1 % of reading
Carbon dioxide (CO_2)	0 ... 40 %	0,01 Vol%	0,2 % or 1 % of reading
Carbon monoxide (CO)	0 ... 175/10.000 ppm	0,1 ppm	2 ppm or 1 % of reading
Nitrous oxide (N_2O)	0 ... 100/500 ppm	0,1 ppm	2 ppm or 1 % of reading
Methane (CH_4)	0 ... 500/10.000 ppm	0,1 ppm	10 ppm or 1 % of reading
Propane (C_3H_8)	0 ... 200/5.000 ppm	0,1 ppm	2 ppm or 1 % of reading

We offer you these special advantages:

- Low sample flow extraction of only 50 l/h, to enhance the operation of sample gas preparation
- Use of optimized NDIR technology with improved accuracy and without zero offset
- O_2 measurement with a long-life electrochemical or a paramagnetic sensor
- True NO_x and SO_2 measurements through use of heated gas sampling probe and gas sampling line
- Heated and temperature regulated acid mist catch & drain system for raw flue gas measurements with high acid aerosols
- Complete heavy duty sample conditioning system for extractive cold and dry system
- Ready to log, display and transfer data from dust concentration monitor DM 401 and flow rate monitor DF 252.

SWG 300 IND
for indoor use

The standard main features:

- IP54 steel cabinet 630 x 1.012 x 612 mm (W x H x D), with grey powder coating laquer, for wall mounting
- With lockable acrylic front door and fan ventilation through the cabinet for use in clean ambient air
- M&C Peltier gas cooler with dual heat exchanger with double automatic condensate draining pumps
- Efficient sample gas filtration using PTFE sintered particulate filter
- Condensate monitoring and alarm on display and gas sampling stop in case of alarm
- Prepared for 10 % H_3PO_4 dosage in case of auto-cal or low SO_2/NO_2 measurements
- Strong sample gas pump with sample gas flow monitoring and alarm
- Filtration of acid gases to protect the internal sample gas flow sensor
- Solenoid valve for auto-zero with clean ambient air
- Solenoid valve for calibration gas, with aluminum fine pressure regulator at cal. gas inlet port
- Main control unit 19" – 4U with human machine interface, prepared for measurement modules
- Human machine interface with color TFT display, keyboard and standard RS485 interface (Modbus RTU)
- Intuitive software guided menu, with diagnosis software and real-time data transfer
- Power supply to analyser with 230 Vac / 47–63 Hz /200 W (add electric power for probe and heated sampling line)
- Clean indoor mounting place, preferably air conditioned, cabinet has fan ventilation
- Outdoor mounting in clean, +5 °C to 45 °C ambient, with mandatory sun & rain protection (user scope)

SWG 300 OTD
for outdoor use

The standard main features – deviating from IND-Version:

- IP65 glass fiber reinforced polyester cabinet 1.290 x 1.520 x 637 mm (W x H x D), with grey metal laquer
- Using IP54 air conditioner 1000 W for high ambient temperature up to +55°C
- Optional Vortec cooler for very dusty ambient with high ambient air temperatures
- Optional arctic configuration with integrated 2 x 500 W cabinet heaters and heated vent/port, for up to –40 °C
- Outdoor mounting place in clean, +5°C to 55°C ambient, or from –40 °C with arctic option
- Complete sample conditioning system, similar to SWG300IND model with the same technical specification of gas analysis

SWG 300 Ex

for use in hazardous area-Zone 2 (II 3G Ex pz II T6)

The standard main features – deviating from IND-Version:

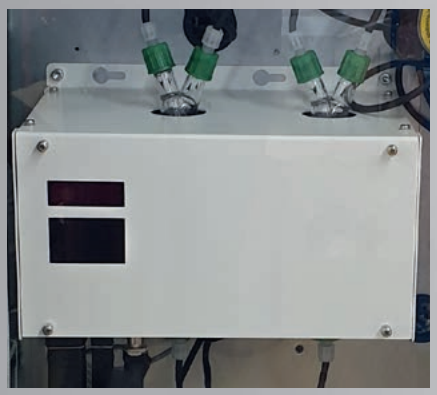
- IP56 glass fiber cabinet 1.290 x 1.520 x 637 mm (W x H x D) with anti-static metal lacquer
- Compressed air purging system for pressurizing the cabinet for use in hazardous zone 2 protection Ex-pz
- Service by-pass key for the pz-controller, to avoid system power shutdown in case of servicing the analyser
- Ex zone 2 certified IP66 air conditioner 1000 W, for high ambient temperature up to +55°C
- Automatic, protective power supply cut-off for the air conditioner below 0°C ambient air temperature
- Optional arctic configuration with integrated 2x500 W cabinet heaters and heated vent/port, for up to –40 °C
- Complete sample conditioning system, similar to SWG300IND model with the same technical specification of gas analysis
- Using special ATEX certified gas sampling probes and heated sampling lines

The device in detail

An overview of the special features

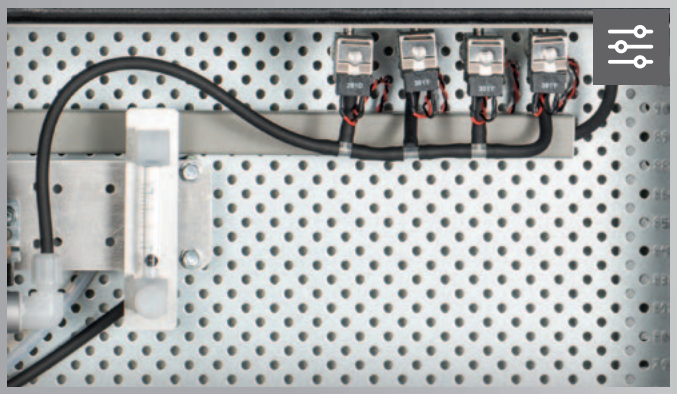
Human machine interface and measuring technique

- 19"-cabinet with 3,5" TFT color display, incl. key pad and standard RS 485 interface (Modbus RTU)
- Choice of 6-gas- or 8-gas-NDIR-measuring modules
- Paramagnetic O_2-sensor
- Electrochemical O_2-sensor, long-life
- Direct and continuos measurement with pressure- and temperature compensation



Heat exchanger and acid mist drainage

- Robust gas cooler with 2 glas-heat exchangers and constant 4 °C dewpoint at sample gas outlet
- Separate, digital display of both heat exchangers
- Heated, temperature regulated acid mist drainage
- With automatic acid condensate drainage for the acid-mist-separator



Automatic Calibration

- Connections for up to 6 calibration gas bottles
- Automatic selection of calibration gases by means of solenoid valves
- User adjustable automatic calibration interval

Gas conditioning

- efficient sample gas filtration using PTFE sintered particulate filter
- internal sample flow monitoring and alarm indication on display
- filtration of acid gases to protect the internal sample gas flow sensor
- Easy filter replacement by customer
- Activated carbon filter for automatic zeroing with ambient air

The device in detail

An overview of the special features

Filter cage and ceramic filter

Gas sampling probe HD

- For flue gas with flying ash dust, with back-purgeable ceramic filter, +160 °C heated
- Other probes, depending on composition of gases to be analysed (Lowdust-, Highdust and compact probe with heated sampling line)

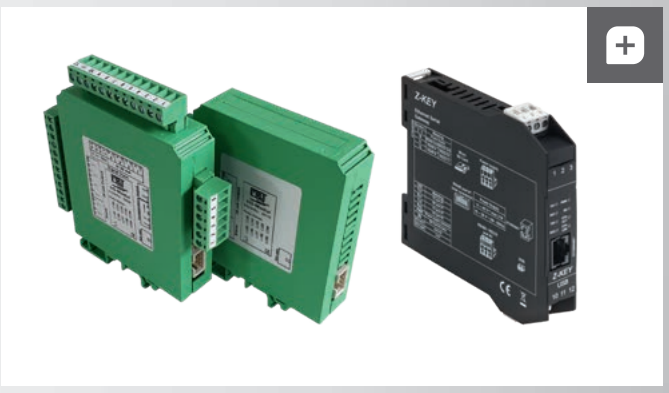
Filter cage and quartz wool

Gas sampling probe HD-GW

- For flue gas with soot, oily, acid mist heated +160 °C with quartz wool filter
- Heated (and unheated) gas sampling lines up to 50 m length for up to 2 sampling points

Pumps

- Strong sample gas pump with regulated sample flow
- Low sample flow of only 50 l/h is enhancing the
- Probe filtration
- Condensate draining pump
- Regulated 10 % H_3PO_4 dosage for auto-cal or low SO_2/NO_2 measurements



Data communication

- 2 pcs. I/O modules with 4-chanel-analog output 4 ... 20 mA and 2 Relais (NO-contacts) and 4-chanel-analog input 4 ... 20 mA
- Profibus, Ethernet, USB, SD-card
- PC-software „MRU4Win“: visualising measuring data, administrating, exporting and printing

SWG 300 IND/OTD/Ex

Technical Specifications

Gas measurements (NDIR)	Range min./max.	Resolution	Repeatability*	8h-drift*	Linearity
Nitric monoxide (NO)	0 ... 200/4.000 ppm	0,1 ppm	2 ppm or 1 % of reading.	2 ppm or 1 % of reading	1 % range
Nitric dioxide (NO_2)	0 ... 150/1.000 ppm	0,1 ppm	1 ppm or 1 % of reading	2 ppm or 1 % of reading	1 % range
Sulphur dioxide (SO_2)	0 ... 150/4.000 ppm	0,1 ppm	2 ppm or 1 % of reading	2 ppm or 1 % of reading	1 % range
Carbon dioxide (CO_2)	0 ... 40 %	0,01 Vol%	0,2 % or 1 % of reading	0,2 % or 1 % of reading	1 % range
Carbon monoxide (CO)	0 ... 175/10.000 ppm	0,1 ppm	2 ppm or 1 % of reading	2 ppm or 1 % of reading	1 % range
Nitrous oxide (N_2O)	0 ... 100/500 ppm	0,1 ppm	2 ppm or 1 % of reading	2 ppm or 1 % of reading	1 % range
Methane (CH_4)	0 ... 500/10.000 ppm	0,1 ppm	10 ppm or 1 % of reading	2 ppm or 1 % of reading	1 % range
Propane (C_3H_8)	0 ... 200/5.000 ppm	0,1 ppm	2 ppm or 1 % of reading	2 ppm or 1 % of reading	1 % range

Gas measurements (EC/PM)	Method	Range min./max.	Resolution	Accuracy*
Oxygen (O_2) (long life)	EC (Long-life)	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 % of reading
Hydrogen (H_2)	EC	0 ... 1.000/2.000 ppm	1 ppm	± 5 ppm or 5 % of 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
Operation/interfaces	■ Backlit 3.5" TFT color display ■ Keyboard, password-protected operation ■ 8 analog outputs 4 ... 20 mA, galvanically isolated, max. load: 500 R ■ 4 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 ■ 10 % H_3PO_4 dosage at low NO_x and low SO_2 ■ Heated acid separator with acid condensate pump ■ Heated gas sampling line, PTFE DN 4/6 mm, up to 50 m length ■ Thermoelectrical gas cooler, with dual heat exchanger and constant +4 °C dewpoint ■ Teflon-particle filter, internal Viton-tubing ■ Monitored and regulated gas sampling pump ■ Constant gas flow of 50 l/h ■ Gas inlet pressure: –200 ... +50 mbar (hPa) ■ Sample gas outlet: atmospheric pressure
Housing	See product-specific pages
Operating conditions	+5 ... +45 °C or –10 ... +45 °C with cabinet heating
Power supply	Universal: 90 ... 240 Vac, 47 ... 63 Hz, 200 W (700 W with heating)
Protection class	See product-specific pages
Dimensions (W x H x D)	See product-specific pages

MRU – Competence in gas analysis. Since 1984.

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