

APPLICATION

The MGA 23 gas analyser can measure up to 4 gas components at once: A maximum of three infrared sensitive gases such as CO, CO₂, NO, SO₂, CH₄, R22 (Freon CHClF₂) and O₂ with an electrochemical oxygen measuring cell.

MGA 23 basic versions for:

- 1 infrared gas component with/without oxygen measurement
- 2 infrared gas components with/without oxygen measurement
- 3 infrared gas components with/without oxygen measurement

The MGA 23 gas analyser can be used in emission measuring systems and for process and safety monitoring.

TÜV-approved versions of the MGA 23 are available for measurement of CO, NO, SO₂ and O₂ according to 13th BImSchV and TI-Air (German Environmental Regulations).

Smallest TÜV-approved and permitted measuring ranges:

- 1- and 2-component analyser
 - CO: 0 to 150 mg/m³
 - NO: 0 to 250 mg/m³
 - SO : 0 to 400 mg/m³
- 3-component analyser
 - CO: 0 to 250 mg/m³
 - NO: 0 to 400 mg/m³
 - SO : 0 to 400 mg/m³

All larger measuring ranges are also permitted.

For use in non-potentially explosive atmospheres.

SPECIFIC APPLICATIONS

The MGA 23 with 2 IR components without pump and with or without oxygen measurement is also available with two separate gas paths. This allows the measurement of two measuring points as used for e.g. the NO_x measurement before and after the NO_x converter.



APPLICATION EXAMPLES

- Optimisation of small firing systems
- Monitoring of exhaust gas concentration from firing systems with different types of fuel (oil, gas and coal) as well as operational measurements in thermal incineration plants
- Room air monitoring
- Monitoring of air in fruit stores, greenhouses, fermenting cellars and warehouses
- Monitoring of process control functions
- Monitoring of atmosphere during heat treatment of steel

SPECIAL CHARACTERISTICS

- Stable 19" sheet-steel enclosure for mounting in hinged bay or on slide rails; Option: bench-top version with handles as well as condensation trap and coarse filter
- Operation based on NAMUR recommendation
- Simple, fast programming and commissioning of analyser
- Virtually maintenance-free as a result of AUTOCAL with ambient air (or with N₂ for analysers without oxygen sensor); both the zero and the span are calibrated in the process
- Calibration with calibration gas is only necessary every six to 12 months, depending on application

SPECIAL CHARACTERISTICS (CONTINUED)

- Large, backlit LCD for measured values; menu-based inputs for programming, test functions and calibration
- Two measuring ranges can be set per component within defined limits; All measuring ranges linearised; Autoranging with range identification
- Automatic correction of variations in atmospheric pressure
- Gas flow monitoring; Low-flow alarm at < 1 l/min
- Maintenance request alert
- Two limits can be freely configured for each component, for upward or downward violation
- Three binary inputs for sample gas pump on/off, triggering of AUTOCAL and synchronization of several devices
- Eight relay outputs can be freely configured for fault, maintenance request, maintenance switch, limits, range identification, external solenoid valves
- Four electrically isolated analog outputs; RS 485 present in basic device; Option: converter to RS 232
- Incorporation in networks via PROFIBUS-DP/-PA interface
- SIPROM GA software as service and maintenance tool
- Eight additional relay outputs as an option
- Eight additional binary outputs as an option

General Technical Data

Measured components gases and oxygen	Max. 4, of which up to 3 infraredsensitive
Analog outputs	Max. 4, floating, 0/2/4 to 20 mA, linearised
Load	≤ 750
Display	LCD with LED backlighting and contrast control, function keys, 80 characters (4 lines/20 characters)
EMC interference immunity (ElectroMagnetic Compatibility)	According to standard requirements of NAMUR NE21 (05/93) or EN 50081-1, EN 50082-2
Position of use	Front panel vertical
Characteristics	Linearised
Relay outputs	8, e.g. for fault, maintenance request, limit, function check, max. load AC/DC 24 V / 1 A ¹⁾ , 8 additional outputs as an option
Binary inputs	3, floating for pump on/off, trigger AUTOCAL and synchronisation of several devices, 8 additional inputs as an option
Serial interface	RS 485
Warming-up time	Approx. 5 min ²⁾
AUTOCAL function	Automatic analyser calibration by ambient air, cycle time adjustable from 0(1) to 24 hours
Dimensions (H x W x D)	177 mm x 483 mm x 339 mm
Portable analyser (H x W x D)	170 mm x 465 mm x 392 mm
Frame	19", 4 standard height units = 177 mm x 483 mm
Weight	Approx. 10 kg
Degree of protection to 19" rack and portable unit	EN 60529 IP 21

Power supply

Power supply	AC 100 V, +10%/-15%, 50 Hz AC 120 V, +10%/-15%, 50 Hz AC 200 V, +10%/-15%, 50 Hz AC 230 V, +10%/-15%, 50 Hz AC 100 V, +10%/-15%, 60 Hz AC 120 V, +10%/-15%, 60 Hz AC 230 V, +10%/-15%, 60 Hz
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Power consumption	Approx. 60 VA
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Gas input conditions

Sample gas pressure	0.5 to 1.5 bar absolute ³⁾
Sample gas flow	66 to 120 l/h (1.2 to 2 l/min)
Sample gas temperature	0 to 50 °C
Sample gas humidity	< 90% RH ⁴⁾ , no condensation

Ambient conditions

Perm. ambient temperature for operation	+ 5 to +45 °C
for storage and transport	- 20 to +60 °C
Permissible ambient humidity	< 90% RH ⁴⁾ for storage and transport

Permissible pressure variations	700 to 1200 mbar
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- 1) Safety extra-low voltage (SELV) with safe isolation
- 2) Maximum accuracy is achieved after approx. 45 minutes
- 3) Factory-adjusted with 2 m pipe, span calibration may be required for other conditions
- 4) RH: relative humidity

Technical Data of infrared measurement

Measuring ranges	See ordering data
Smallest measuring range	See ordering data
Largest measuring range	See ordering data
<i>Influencing variables</i>	
• Drift with AUTOCAL	Negligible
• Drift without AUTOCAL	< 2 % of smallest meas. range/week
• Temperature	Max. 2% of smallest meas. range according to rating plate per 10 K with an AUTOCAL cycle time of 3 h
• Atmospheric pressure	< 0.2% of measured range per 1% change in pressure, corrected by internal pressure sensor
• Power supply	< 0.1% of output signal span with a variation of ±10%
• Power frequency	± 2% of full-scale value with a frequency variation of ± 5%
Electromagnetic field 10 V/m, 80% amplitude modulation, 10 kHz to 500 Mhz	≤ 1% of smallest measuring range
500 MHz to 1 GHz	≤ 2 % of smallest measuring range
Display delay	Dependent on dead time and selectable (90% time) damping
Damping (electric time constant)	Selectable from 0 to 99.9 s
Noise of output signal	< 1% of smallest measuring range (see rating plate)
Display resolution	Dependent on selected measuring range; the number of digits after the decimal point can be selected
Resolution of output signal	< 0.1% of output signal span
Characteristic	Linearised
Linearity error	In the largest measuring range: < 1% of full-scale value In the smallest measuring range: < 2% of full-scale value
Reproducibility	≤ 1% of smallest measuring range

Technical data of oxygen measurement

Measuring ranges	0 to 5% or 0 to 25% O ₂ , parameter can be set
<i>Influencing values</i>	
• Drift with AUTOCAL	Negligible
• Drift without AUTOCAL	1% O ₂ /year in air, typical
• Temperature	< 0,5 % O ₂ per 20 K, referred to a measured value at 20 °C
• Atmospheric pressure	< 0,2 % of measured value per 1% pressure variation
• Auxiliary gas	NH ₃ in % range reduces the lifetime
• Typical combustion exhaust gas	Influence < 0,05 % O ₂
Noise of output signal	< 0.5% of full-scale value
Display delay (90% time)	Dependent on dead time and selectable damping, but not < 30 s with a sample gas flow of approx. 1 l/min
Display resolution	< 0.2% of full-scale value
Resolution of output signal	< 0.2% of output signal span
Lifetime	Approx. 2 years with 21% O ₂
Reproducibility	≤ 0.05 % O ₂