



cem solutions
CONTINUOUS EMISSIONS MONITORING

MGA 12

Multi Gas Analyser



Product Information

The multi gas analyser MGA 12 provides the continuous measurement of pollutants in flue gas (e.g. CO, CO₂, SO₂, NO) and the measurement of O₂ as well as continuous process control.

The analyser device is suitability tested according to DIN EN 15267-3 and certified in compliance with QAL 1. As a part of the analyser system MGA 12 it is suitability tested and certified for systems after "TA Luft", 13th and 27th BImSchV according to DIN EN 15267-3.

APPLICATION

The MGA 12 provides both hot and cold extractive multi gas analysers, utilising infrared absorption technologies. These are suitable as single stand-alone systems, twin-stream systems or can be integrated with additional measurements such as dust and flow to provide a complete continuous emissions package.



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APPLICATION EXAMPLES:

- Power plants
- Industrial boilers
- Thermal oxidisers
- CHP plants
- Regulatory emissions
- Combustion optimisation
- Process control
- Process safety

TECHNOLOGY

The MGA 12 uses a combination of technologies to provide the best possible measurement for each component: infrared absorption, electrochemical cell and a paramagnetic measuring method.

Infrared absorption is a spectroscopic method based on the absorption of non-dispersive infrared radiation. The reduction in infrared radiation, specific to each component measured, is used to calculate the measurement readings. The MGA 12 also incorporates an oxygen measuring cell. The oxygen sensor operates according to the principle of a fuel cell. The oxygen is converted at the boundary layer between the cathode and electrolyte. The resulting current is proportional to the oxygen concentration.



MGA 12

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TECHNICAL DATA

Analyser:	Robust housing with compact 19" insertion 3U; 483 mm x 133 mm x 350 mm (w x h x d), weight approx. 4.6 kg
Infrared photometer:	Thermostatted
Analyser cabinet:	1100x600x600mm, 120kg
Ambient temperature:	5 ... 30 °C (with air conditioner 5 ... 45°C)
Measuring methods:	- Electrochemical cell (O_2, $H_2S^{(1)}$) - Infrared photometer (CO, CO_2, SO_2, NO, $NO_2^{(1)}$, $CH_4^{(1)}$, $H_2O^{(1)}$) - Paramagnetic measuring method $^{(1)}(O_2)$
Display/operating:	Graphic display (LCD), 240 x 128 Pixel, background-lighted; menu-driven operating; display possibility in mg/m ³ , ppm and vol. %; languages: German, English; membrane keyboard
Accuracy:	< 2% of the respective measuring range
Zero point correction:	Automatic
Sensitivity correction:	Manual, with test gas; optional: automatic
Air pressure correction:	Internal
Response time:	$T_{90} < 180$ s (depending on plant and chosen component)
Digital inputs:	8 inputs (opto-coupled)
Digital outputs:	16 outputs, potential-free, 24 V DC with max. 0.4 A (max. 10 W); amongst others: - Output signals for failure, maintenance, maintenance request, limit values, measuring range change-over, Autocal - Control of automatic probe back purging - Internal condensate annunciator for function "pump off" - Dosing control of phosphoric acid (H_3PO_4)
Analogue outputs:	5 active analogue outputs, 4 ... 20 mA, potential-free, burden max. 500 Ohm
Service interface RS232:	For remote software, compatible for all Windows operating systems (XP or higher version): - Visualisation of all data by intuitive user surface - Data storage on PC in TXT format - Loading/saving of all relevant configuration data
Power supply:	110 V AC, 230 V AC / 50-60 Hz, 40 W
Suitability test:	DIN EN 15267, QAL 1, ID: 0000039321; DIN EN 15267-3, TA Luft, 13 th and 27 th BlmSchV (as system part)
Optional:	- Two separated gas paths - Analyser-specific PC user software for visualisation, (remote) control and recording of data via RS232 interface

⁽¹⁾ not part of the suitability test

Special models are possible on request.



Multi gas analyser



- suitability tested
- EN 15267-3
- QAL1 certified
- regular surveillance
- TÜV approved
- ID 0000039321
- TÜV-approved CEMS for combustion plants (as system part)



- certified in compliance with MCERTS Performance Standards
- certificate no.: CSA MC180342/02



- certification of Republic of Kazakhstan
- certificate no.: KZ.02.01.02192-2023

Cold gas measuring system for continuous emission measurement of pollutants in flue gas and for process control

APPLICATION

In the MGA 12 four independent, selectively working measuring methods apply: infrared absorption (NDIR), electrochemical cell and paramagnetic measuring method as well as thermal conductivity sensor.

MEASURING RANGES

	Meas. range 1	Meas. range 2
CO:	0...125 mg/m ³ (0...100 ppm)	0...1000 mg/m ³ (0...800 ppm)
CO ₂ :	0...20 vol. %	-
NO:	0...300 mg/m ³ (0...225 ppm)	0...1000 mg/m ³ (0...750 ppm)
NO ₂ ^[1] :	0...200 mg/m ³ (0...95 ppm)	0...1000 mg/m ³ (0...485 ppm)
N ₂ O ^[1] :	0...300 mg/m ³ (0...155 ppm)	0...1000 mg/m ³ (0...510 ppm)
SO ₂ :	0...200 mg/m ³ (0...70 ppm)	0...1000 mg/m ³ (0...350 ppm)
CH ₄ ^[1] :	0...300 mg/m ³ (0...420 ppm)	0...1000 mg/m ³ (0...1400 ppm)
H ₂ ^{[1] [2]} :	0...5 vol. %	0...100 vol. %
H ₂ S ^{[1] [3]} :	0...75 mg/m ³ (0...50 ppm)	-
O ₂ ^{[3] [4]} :	0...25 vol. %	-
^[1] not part of the suitability test ^[2] measurement via thermal conductivity sensor ^[1] ^[3] measurement via electrochemical cell ^[4] measurement via paramagnetic sensor ^[1] Other components and measuring ranges on request.		

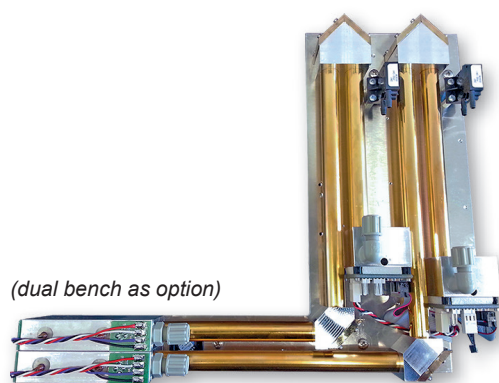
YOUR BENEFITS AT A GLANCE

- simultaneous measurement of up to eight gas components with limit value signalling and measuring range change-over
- two separated gas paths possible
- local diagnosis of the system state
- display of bar diagram for every component
- flow control as well as display of flow rate
- reduced cross-sensitivities by internal spectral filter
- internal monitoring for condensate ingress with switch contact for pump switch-off
- control of a back-purging probe (interval and pulse time)
- control of zero point drift
- low maintenance requirement

PRECONDITIONS ON SITE

- ambient temperature: 5...30 °C (with air conditioner 5...45°C)
- installation place indoors and dust-free
- protection against wetness
- protection against percussions/vibrations

OPTICAL BENCH



PHOTOMETER

- consisting of: emitting module, measuring cells, reflector modules, 4-channel pyrodetector with pre-amplifier electronics, detector module
- free-selectable length of the measuring path with direction changes: 50 mm to 700 mm
- spectral range: 1 μm to 9 μm
- no mechanically moved parts
- power supply: 5 V DC
- power consumption in operation: approx. 20 W (at ambient temperature of 30 °C)

TECHNICAL DATA

Analyser:	robust housing with compact 19" format 3RU, IP40; 483 mm x 133 mm x 350 mm (w x h x d), approx. 11 kg
Analyser cabinet:	800 mm x 2100 mm x 600 mm (w x h x d), approx. 170 kg
Measuring methods:	• infrared absorption (CO, CO_2, SO_2, NO, NO_2 ^[1], CH_4 ^[1], H_2O ^[1]) • electrochemical cell (O_2, H_2S ^[1]) • paramagnetic measuring method ^[1] (optional for O_2) • thermal conductivity sensor ^[1] (H_2)
Accuracy:	< 2% of the respective measuring range
Sensitivity correction:	manual, with test gas; optional: automatic
Response time:	$T_{90} < 180 \text{ s}$ (depending on plant and chosen component)
Ambient conditions:	5...30 °C (with air conditioning unit 5...45 °C); relative humidity: max. 90% (non-condensing)
Display / Operating:	graphic display (LCD), 240 x 128 Pixel, background-lighted; menu-driven operating; display possibility in mg/m^3 , ppm and vol. %; languages (factory-set): German, English, French, Polish; membrane keyboard
Analogue outputs:	5 active analogue outputs, 4...20 mA, potential-free, burden max. 500 Ohm
Digital inputs:	8 inputs (optocoupler; e.g. for sample probe, measuring gas pipe, gas cooling unit)
Digital outputs:	16 outputs, potential-free, 24 V DC with max. 0.4 A (max. 10 W); amongst others: • output signals for failure, maintenance, maintenance request, limit values, measuring range change-over, Autocal • control of automatic probe back-purging • internal humidity monitor for function „Pump off“ • control of metering of phosphoric acid (H_3PO_4)
Service interface RS232:	for remote software, compatible for all Windows operating systems (XP or higher version): • visualisation of all data by intuitive user surface • data storage on PC in TXT format • loading/saving of all relevant configuration data
Power supply:	110 V AC, 230 V AC / 50-60 Hz, 40 W
Other functions:	• standard: thermostatted infrared photometer; automatic zero point correction with ambient air; internal air pressure correction • optional: two separated gas paths; analyser-specific PC user software for visualisation, (remote) control and recording of data via interface RS232
^[1] not part of the suitability test Special models are possible on request.	