

Multi gas analyser for O₂ measurement



Extractive gas analyser for continuous measurement of oxygen in flue gases and process gases

APPLICATION

The multi gas analyser MGA 12 can be applied as single oxygen measuring device being rather independent from process condition.

For oxygen measurement two different measuring methods are applicable. These are carried out by electrochemical cell respectively by paramagnetic sensor.

POSSIBLE MEASURING RANGES

O ₂ (E):	0...5 vol. %	0...25 vol. %	-
O ₂ (P):	0...5 vol. %	0...25 vol. %	0...100 vol. %

*E = by measurement of electrochemical cell
 P = by measurement of paramagnetic sensor*

YOUR BENEFITS AT A GLANCE

- limit value signalling and measuring range change-over
- two separated gas paths possible
- local diagnosis of the system state
- display of bar diagram
- flow control as well as display of flow rate
- control of a back-purging probe (interval and pulse time)
- control of zero point drift
- low maintenance requirement

PRECONDITIONS ON SITE

- ambient temperature: 5...45 °C
- installation place indoors and dust-free
- protection against wetness
- protection against percussions/vibrations
- appropriate gas sampling and conditioning

ELECTROCHEMICAL CELL

The electrochemical cell consists of a non porous fluoro-resin membrane and a solid integrated gold electrode. By the reduction at the gold electrode, current is generated and converted to voltage by a thermistor. Thereby the measured voltage is proportional to the concentration of the measuring gas component.

PARAMAGNETIC SENSOR

The measuring cell consists of a non-homogeneous magnetic field with a diamagnetic, nitrogen-filled glass bar-bell. Therein the paramagnetic oxygen molecules of the measuring gas react. By the therefrom motivated rotation of the glass bar-bell the emitted light of the light source is led via the mirror to the photo detector in the respective interval, whereupon the incoming light signal is proportional to the oxygen concentration in the measuring gas.

TECHNICAL DATA	
Housing:	robust housing with compact 19" format 3RU, IP40; 483 mm x 133 mm x 350 mm (w x h x d), approx. 5 kg
Measuring methods:	<ul style="list-style-type: none"> • electrochemical cell • paramagnetic measuring method
Electrochemical cell:	measuring range: 0...25 vol. %, further on request
Paramagnetic sensor:	<ul style="list-style-type: none"> • measuring range: 0...5 vol. %, 0...25 vol. %, 0...100 vol. %, further on request • response time: $T_{90} < 3$ s with 1 l/min (150 ml/min, bypass) flow and gas change from nitrogen to air • repeatability: max. ± 0.03 % (time base for gas switch min. 5 min) • zero point drift: max. ± 0.1 % per week • influence at zero point: max. ± 0.05 per °C; no pressure influence • influence at span point: max. 0.2% of measured value per °C; backpressure regulator, no pressure influence • flow error: max. 0.1% with in-build fix bypass • position-dependent zero point deviation: max. 0.02 vol. % per 1° deviation from horizontal position
Ambient conditions:	5...45 °C; relative humidity: max. 90% (non-condensing)
Sensitivity correction:	manual, with test gas (e.g. ambient air); optional: automatic
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:	max. 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: <ul style="list-style-type: none"> • output signals for failure, maintenance, maintenance request, limit values, measuring range change-over, Autocal • control of automatic probe back-purging
Service interface RS232:	for remote software, compatible for all Windows operating systems (XP or higher version): <ul style="list-style-type: none"> • 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, 10 W (electrochemical cell) / 20 W (paramagnetic sensor)
Other functions:	<ul style="list-style-type: none"> • standard: automatic zero point correction • optional: two separated gas paths; internal pump; analyser-specific PC user software for visualisation, (remote) control and recording of data via RS232 interface
<i>Special models are possible on request.</i>	