

ANKERSMID Paramagnetic Oxygen Analyser

APA x00 Series

Application

The Ankersmid APA Series is a precise oxygen gauge for continuous monitoring purposes. The instrument is microprocessor controlled with self-diagnosis capability. With the programmable auto-calibration function the APA Analyser is capable to fulfil a fully automatic calibration by means of the integrated relays. The measuring unit is temperature controlled to +55°C. The operation and parameterisation are carried out by means of a user-friendly 4 keys and a 16-digit LCD display and also new by a RS232 interface (USB or D-Sub 9-pole).

The analyser is available in 3 versions:

- 19" rack-mount
- Portable
- Wall-mount

Description

The APA analysers are suitable and reliable instruments for monitoring oxygen concentrations in various gas analytical control applications including flue gas-, inert gas-, fermentation processes- and process or laboratory control measurements.

All analysers are temperature-controlled instruments which have been designed for continuous measurements of oxygen concentrations in particle-free and dry sample gas.

The analysers are reliable and easy-to-operate instruments.

The measuring value and the sample flow through the measuring cell are displayed on the digital display.

2 alarm relays and 1 malfunction relay are available. Sample gas connections as well as connectors for incoming power supply, output signals are located at the rear panel of the analyser.

The sample gas enters the analyser passing a protective fine-filter which is installed in the front-panel (not for APA 200).

An atmospheric pressure sensor is implemented so that the actual absolute barometric pressure can be sent via RS232 and used for calculation or analysis purposes.



* Pictures may vary



- **Maintenance-free and self-monitoring**
- **Modular housing system**
- **Modern micro-controller technology**
- **For process and ambient air Measurements**
- **calibration and parameter setting via RS 232**
- **Thermostated at +55°C**
- **Accurate and reliable**
- **16-Digit LCD-display with optional flow indication**
- **linear measuring ranges**
- **Physical measuring principle**
- **Small stagnant volume for fast response time**
- **Atmospheric pressure sensor**



ANKERSMID **Paramagnetic Oxygen Analyser**

Measuring principle

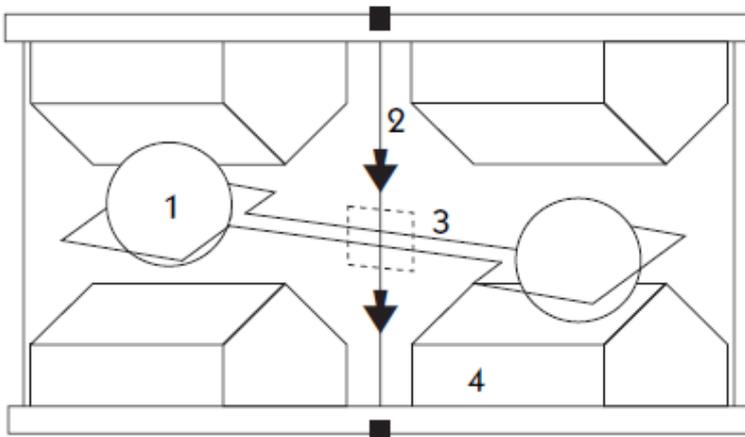
The APA analyser utilises the paramagnetic principle of operation to measure oxygen concentrations. The analyser measures the paramagnetic susceptibility of the oxygen in the sample gas by means of the patented magneto-dynamic measuring cell. The physical properties which distinguish oxygen from other gases is its paramagnetism. It is significantly higher comparing to other common gases. This operation principle is one of the most accurate and reliable procedures to determine the oxygen concentration in a gas mixture from 0 to 100 Vol.%.

The robust cell has a small stagnant volume. Advantages are the fast response time, a low drift, the absolute linearity and the negligible cross sensitivity against other sample gas components. With a proper sample conditioning and pressure, the cell will never need replacing. The nitrogen-filled dumbbell with a small mirror at its centre is mounted in a strong inhomogeneous magnetic field causes a shifting of the dumbbell which is detected by a system consisting of light beam, mirror and a photo cell.

A compensation current is induced via the feedback coil on the dumbbell and leads to a reset of the dumbbell into its zero-position. The required current is linearly proportional to the oxygen concentration.

When the surrounding gas contains oxygen, the dumb bell spheres are pushed out of the magnetic field. The torque acting on the dumb bell will be proportional to the para magnetism of the surrounding gas and consequently it can be used as a measure of the oxygen concentration.

- 1 Quartssphere dumb bell
- 2 Platinum wire
- 3 Mirror
- 4 Magnetic pole pieces





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Technical data

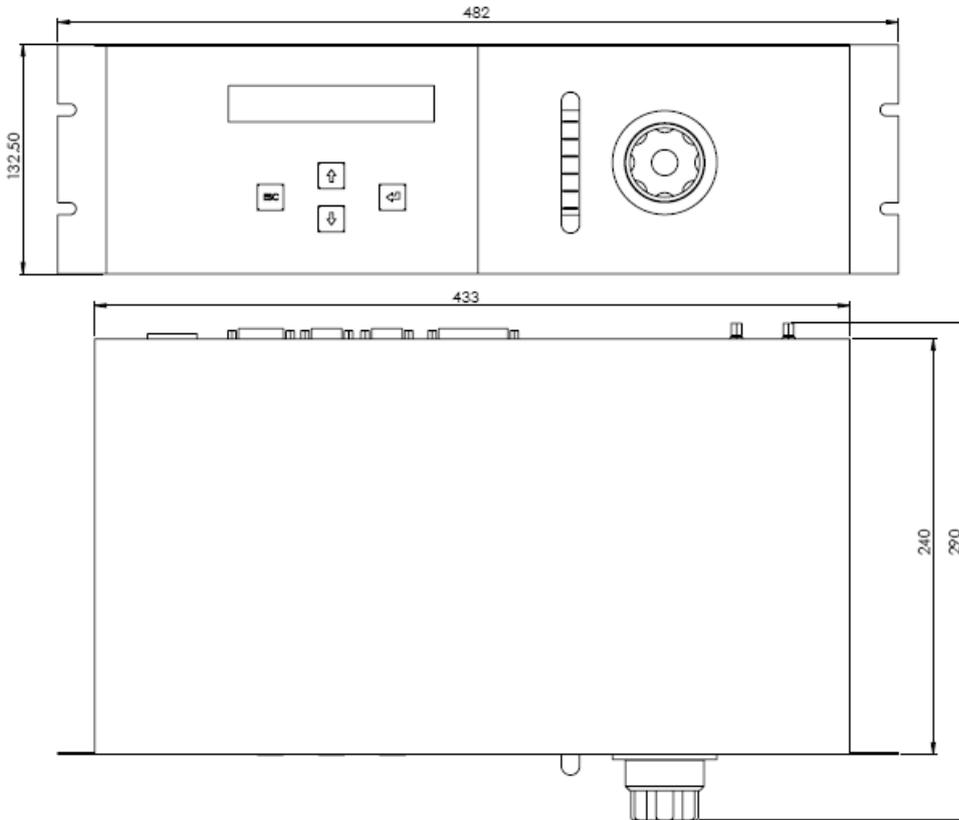
APA Oxygen analyser	APA 100	APA 200	APA 300
Measurement range	0-100%, freely settable by input of parameters		
Response time 90% (T90)	≤ 10 s (gas flow dependent)		
Measured value characteristic	linear		
Repeatability	≤ ± 0,03 % O ₂		
Zero-point drift	≤ ± 0,05% O ₂ / week (offset)		
Sensitivity drift	< 0,5% of measured value per week		
Temperature influence	zero point < ± 0,01% O ₂ /°C Sensitivity < ± 0,025% of measured value /°C		
Detection limit	0,01% O ₂		
Air pressure effect	1% air pressure change causes 1% change in reading		
Background gas influence	slight (for guideline data see operating instructions)		
Display			
LCD digital multi-display	Indication of measured value: 999.9 %O ₂ ; Flow 99l/h Alarms, malfunction, parameters, total 16 digits		
Measured value, outputs			
Measurement signal	Selectable signal range 0 – 20mA or 4 – 20mA 500Ω max.		
Status output	2 alarm relays, 1 malfunction relay		
Output connection	Pump relay, maintenance, sample gas relay, zero gas relay, test gas relay		
Sample gas inlet conditions			
Gas temperature	+5°C to +45°C		
Gas pressure	max. 1000 hPa		
Gas flow	10 - 90 l/h (cell flow ca. 100 ml/min.)		
Gas pre-conditioning	necessary for humid and/or corrosive gases, pre-filter required		
Calibration			
2-point calibration	with gases as desired, menu-controlled, Time-controlled and fully automatic or manually		
Design			
Housing	19"-rack version	Portable version	Wall-mount version
Dimensions	19" 3HU	1/2 19" 3HU	380 x 380 x 210mm
Sample gas inlet	PVDF bulkhead tube connection DN4/6mm		
Sample gas outlet	PVDF bulkhead tube connection DN4/6mm		
Materials of gas wetted parts	PVDF, glass, SS316, gold, Viton®, platinum-iridium, epoxy resin, nickel		
Ambient conditions			
Ambient temperature	+5°C to +45°C		
Transport and storage temp.	-25°C to +65°C		
Relative humidity	≤ 75% of annual average		
Power supply			
Voltage	100 - 240VAC		
Optionals			
Features	pressure compensation, test gas pump, flow alarm unit		



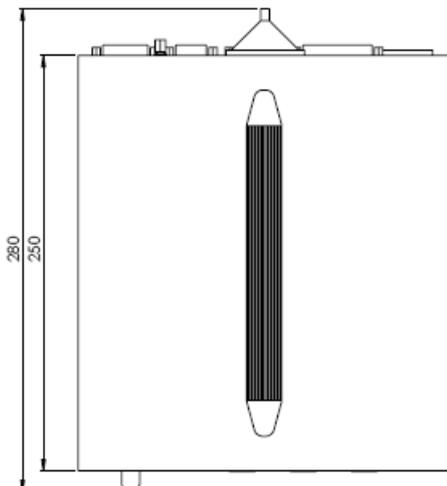
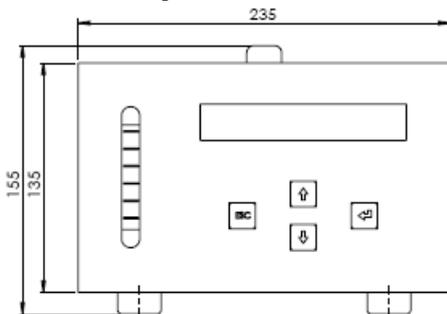
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Dimensions

APA 100 19"-rack version



APA 200 portable version



APA 300 wall-mount version

