



## 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 autocalibration function the APA Analyser is capable to fulfill a fully automatic calibration by means of the integrated relays. The measuring unit is temperature controlled to +55°C. The operation and parameterisation is carried out by means of a userfriendly 4 keys and a 16-digit LCD display and also new by a RS232 interface (USB or D-sub9).

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.



\* Picture may vary

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



## **ANKERSMID** **Paramagnetic Oxygen Analyser**

## **Measuring principle**

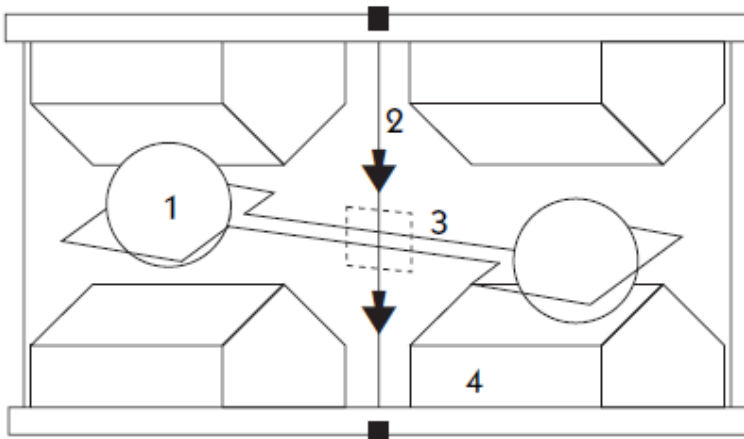
The APA analyser utilises the paramagnetic principle of operation to measure oxygen concentrations. The analyser measures the paramagnetic susceptibility of the oxygen in the sample gas by means of the patented magneto-dynamic measuring cell. The physical properties which distinguishes oxygen from other 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 inhomogenous 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.

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





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**Technical data**

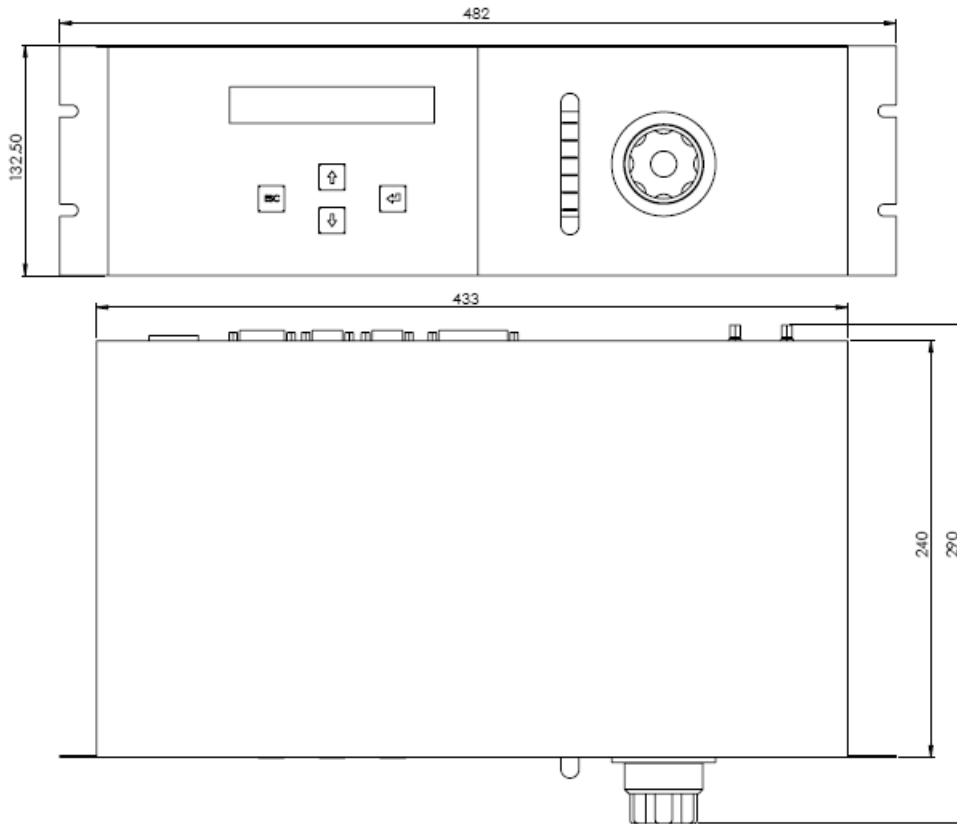
APA Oxygen analyser	APA 100	APA 200	APA 300
<b>Measurement range</b>	0-100%, freely settable by input of parameters		
<b>Response time 90% (T90)</b>	≤ 10 s (gas flow dependent)		
<b>Measured value characteristic</b>	linear		
<b>Repeatability</b>	≤ ± 0,03 % O <sub>2</sub>		
<b>Zero point drift</b>	≤ ±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



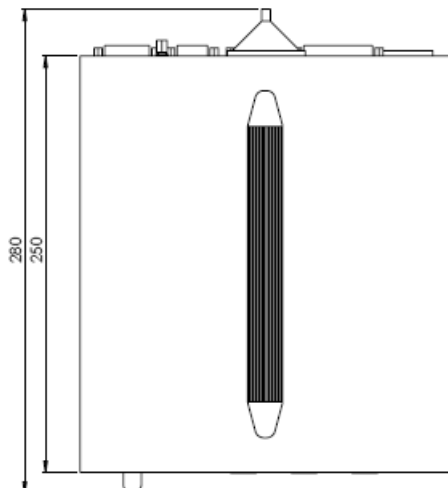
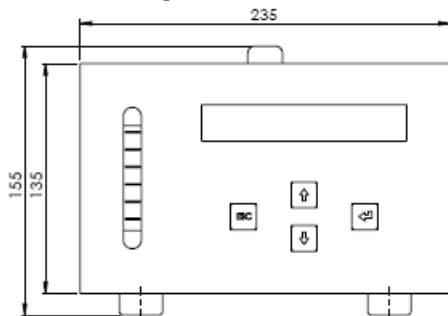
## ANKERSMID Paramagnetic Oxygen Analyser

## Dimensions

### APA 100 19"-rack version



### APA 200 portable version



### APA 300 wall-mount version

