

PMA 20

Oxygen Analyser Series PMA®

Thermostated version PMA 20
in a wall mounting housing

Special Features

- Thermostated, in a wall mounting housing
- Small space requirement
- Accurate and reliable
- Analogue indicator, linear measuring ranges
- Physical measuring principle
- Small stagnant volume, fast response time
- Safety in operation
- Approved according to DIN EN 14181 resp. to 13th and 17th BImSchV and TÜV certificate TA-Luft as option

Application

Due to the extremely fast response time of the patented M&C magneto-dynamic measuring cell with no stagnant volume as well as the negligible cross sensitivity from other sample gas components, the M&C oxygen analyser PMA 20 has a wide variety of applications.

The analyser is a suitable and reliable instrument for monitoring oxygen concentrations in various gas analytical control applications including flue gas-, inert gas-, ambient air-, fermentation processes- and process or laboratory control measurements.

Description

The M&C oxygen analyser PMA 20 is a temperature controlled instrument which has been designed for continuous measurements of oxygen concentrations in particle-free and dry sample gas.

The PMA 20 is a reliable and easy-to-operate instrument. It is built into a compact wall mounting housing. The transducer unit maintains a constant operating temperature of 50 °C and a flashing LED on the control panel indicates the proper operating temperature of the analyser. The four measuring ranges are displayed on the analogue meter with 30/100% scale. Two output signals are available.

Sample gas connections as well as connectors for incoming power supply and output signals are located inside the terminal box of the housing. The sample gas enters the analyser via an external protective fine-filter. The required flow rate can be adjusted at the flowmeter with needle valve, mounted on the front panel upstream the M&C measuring cell. The internal tubing is made of FPM and PP.

Option: "TÜV certificate" or chlorine resistant version.

Measuring principle of M&C oxygen analyser

The PMA 20 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 M&C magneto-dynamic measuring cell. The physical property 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.%.

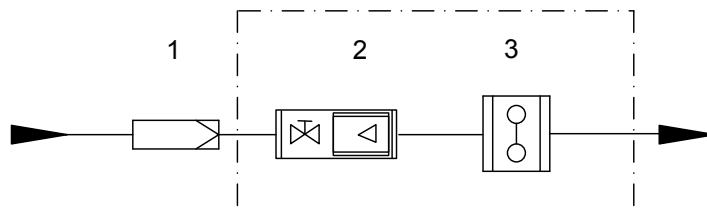
The robust M&C cross-flow cell has no stagnant volume. Advantages are the fast response time, the flow rate up to 60 l/hr, the small volume of 2 ml, the extremely low drift, the absolute linearity and the negligible cross sensitivity against other sample gas components. With a proper sample conditioning and pressure, the M&C cell will never need replacing. The dumbbell with a small mirror at its centre is mounted in a strong inhomogenous magnetic field. The paramagnetic oxygen strengthens the forces on the diamagnetic dumbbell and causes a shifting 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.

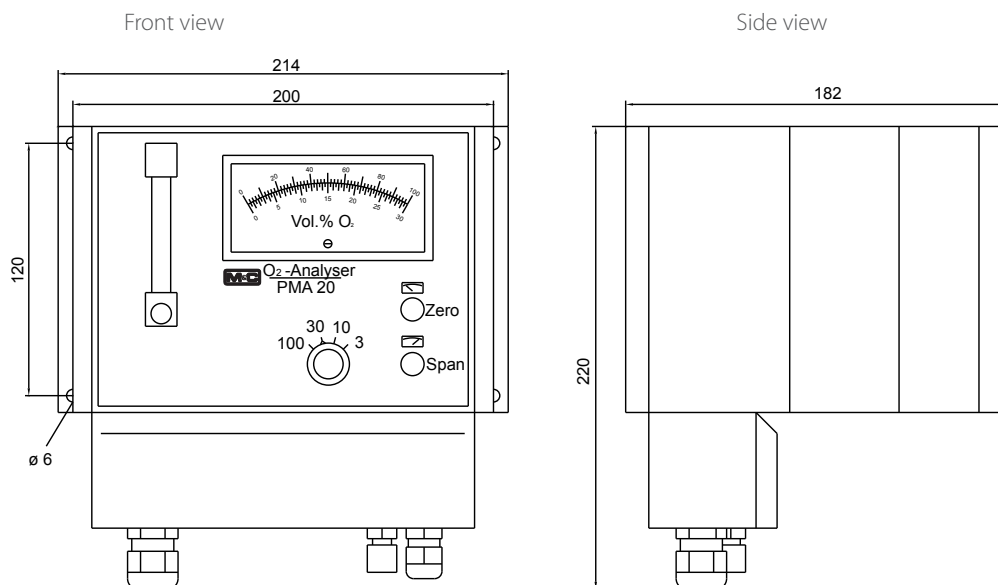
The required current is linearly proportional to the oxygen concentration.

Gas flow diagram PMA 20

1. External fine filter
2. Flowmeter with needle valve
3. Oxygen measuring cell PMA



Dimensions



Dimensions in mm

Technical Data

Version PMA 20 thermostated oxygen analyser in a wall mounting housing	
Part No.	02A1000 : PMA 20, power supply 230V 50Hz, signal 0-1V + 0-20mA; 02A1000a=115V 60Hz
Measuring ranges	selectable for 0-3, 0-10, 0-30 and 0-100 vol.% O ₂ , linear
Indication	analogue meter with a scale of 0-30 and 0-100% for each selected range option: combined analogue / digital meter: analogue meter with a scale of 0-30 and 0-100% for each selected range, digital meter, 3 1/2 digit 9 mm high LCD-indicator for 0-100%O ₂ reading, selectivity 0,1vol.% O ₂ or digital meter 3 1/2 digit 18 mm high LCD for 0-100% O ₂ reading, selectivity 0,1 vol.% O ₂ , Part No.: 02A9000
Output signals	0-1V DC non-isolated, load > 100 KΩ, for the range of 100 vol.%, and 0-20mA or 4-20mA* for the chosen range, non-isolated, max. load 300Ω
Response time for 90% FSD	< 3 seconds at 60 NI/hr air
Accuracy after calibration	deviation: analogue = ± 1% of span / digital = ± 0,1 vol.% O ₂
Reproducibility	deviation: analogue = < 1% of span / digital = ± 0,1 vol.% O ₂
Influence of ambient temperature	no influence up to 45 °C
Influence of barometric pressure	The oxygen reading varies in direct proportion to changes of the barometric pressure.
Influence of sample gas flow	variation in gas flow between 0-60 NI/hr air will cause a difference of < 0,1 vol.% O ₂
Sample gas inlet pressure	0,01 up to 1 bar g, (PMA 20 required admission pressure for competent flow rate, no pump inside)
Sample gas outlet pressure	outlet of analyser must discharge freely into atmosphere
Flow rate of sample gas	max. 60 NI/hr air, adjustable with needle valve on the flowmeter 7-70 NI/hr
Temperature of sample gas	-10 °C up to +40 °C dry gas
O ₂ -transducer temperature	fixed at +50 °C
Ambient temperature	-10 °C up to +45 °C
Storage temperature	-20 °C up to +60 °C, relative humidity 0-90% RH
Power supply	internal power unit for 230V _{AC} standard or 115V _{AC} available (a)* +/-10%, 40-60Hz, 26,5VA
Electrical connections	terminals 2,5 mm; 1x PG11, 1x PG13,5 cable gland
Materials in contact with sample gas	Platinum, Glass, Polypropylene, Stainless Steel 316Ti, FPM, Epoxy resin
Sample gas connection	PP hose connectors DN 4/6 for 4 mm i.d. and 6 mm o.d. tube
Protection / electrical standard	IP 53 EN 60529 / EN 61010
Housing / front colour	plastic wall mounting housing / blue/grey
Dimension / weight	height 220 mm, width 214 mm, length 182 mm / approx. 3 kg
Certificate	option: approved according to DIN EN 14181 resp. to 13th and 17th BImSchV and TA-Luft, Part no. 02A9010

* Please specify with order.

WARNING! IMPORTANT

An external fine filter must always be used at the gas inlet of the analyser. Depending on the composition of the sample gas, it may be necessary to use a sample conditioning system. Without precautions, the analyser is only suitable for measuring of non-hazardous gases or gasmixtures in non-hazardous areas.