



PMA20

Oxygen Analyzer Series PMA®

Heated version PMA20
in a wall-mount housing

Special Features

- **Thermostated, in a wall-mounting housing**
- **Small space requirements**
- **Accurate and reliable**
- **Analog indicator, linear measuring ranges**
- **Physical measuring principle**
- **Small dead volume, fast response time**
- **Maximum operating reliability**
- **Approved according to DIN EN 14181 as well as to 13th and 17th BImSchV and TA-Luft certificate optionally**

Application

Due to the very fast response time of the M&C magneto-dynamic measuring cell, the small dead volume and the low cross-sensitivity to other sample gas components, the M&C oxygen analyzer PMA20 is used in a wide variety of applications.

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

Description

The heated M&C oxygen analyzer PMA20 is suitable for continuous oxygen measurements in dry and particle-free gases.

The PMA20 is reliable and easy to use. It is compactly designed in a wall-mounted housing with lockable door. The transducer unit maintains a constant temperature of 50 °C [122 °F] which is indicated by a flashing LED at the front. The analog meter with 30- and 100-vol%-scale shows the 4 switchable measuring ranges. Two signal outputs are also available. Sample gas connections and terminals for mains connection and signal outputs are in the lower connection section of the housing.

The sample gas enters the analyzer via the external ultra-fine filter. The required flow rate is adjusted at the flow meter with a needle valve at the front. Then, the sample gas flows through the M&C measuring cell to the gas outlet.

Optionally available: certificate according to DIN EN 14181 or 13th and 17th BImSchV as well as TA-Luft or chlorine-resistant version.

The Measuring Principle of the M&C Oxygen Analyzer

The PMA20 applies a physical measuring principle to measure the oxygen content and uses the magneto-dynamic M&C measuring cell. The measuring method is based on the very high paramagnetic susceptibility of the oxygen, which has this property almost exclusively.

The cross-flow measuring cell is characterized by robustness, extremely low drift, only 2 ml dead volume, fast response time and low cross-sensitivity to other gases. The measurement method is one of the most accurate quantitative determination methods for oxygen in the range from 0 to 100 vol%.

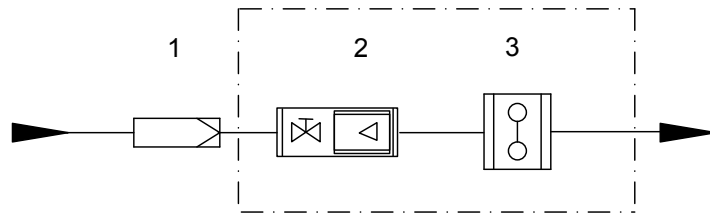
When used correctly, the M&C measuring cell has a very long service life. A diamagnetic dumbbell with a mirror at its pivot point is attached to band clamps and mounted in an inhomogeneous magnetic field. Due to its paramagnetism, the oxygen strives into the inhomogeneous magnetic field of the measuring cell. The O₂ molecules exert a torque on the dumbbell and deflect it. The optical scanning electronically induces a current which flows through a feedback coil on the dumbbell and resets it to the neutral position.

The compensation current is proportional to the oxygen content of the sample gas, rendering the O₂ display absolutely linear.

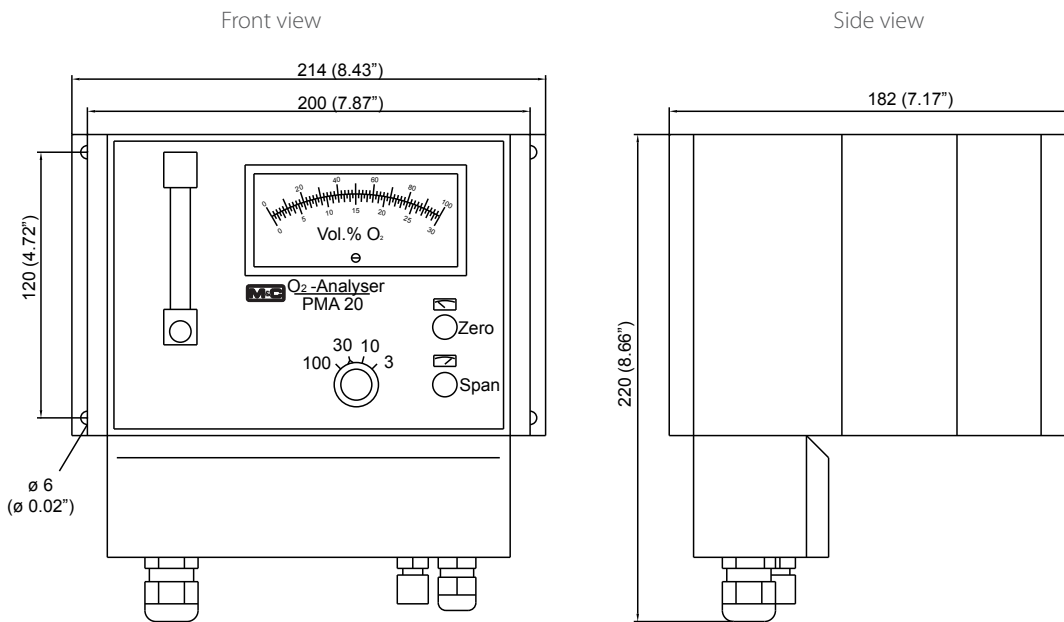
Gas Flow Diagram PMA20



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



Dimensions



Dimensions in mm [inch]

Version PMA20 Heated Oxygen Analyzer in a Wall-Mounting Housing	
Part No.	02A1000: PMA20, power supply 230 V/50 Hz, signal 0-1 V + 0-20 mA; 02A1000a = 115 V/60 Hz
Measuring ranges	Selectable for 0-3, 0-10, 0-30 and 0-100 vol% O ₂ , linear
Indication	Analog meter with a scale of 0-30 and 0-100 vol% for each selected range option: combined analog/digital meter: analog meter with a scale of 0-30 and 0-100 vol% for each selected range, digital meter, 3 1/2-digit 9 mm high LCD-indicator for 0-100 vol% O ₂ reading, selectivity 0.1 vol% O ₂ or digital meter 3 1/2-digit 18 mm high LCD for 0-100 vol% O ₂ reading, selectivity 0.1 vol% O ₂ , Part No.: 02A9000
Output signals	0-1 V DC non-isolated, load > 100 kΩ, for the range of 100 vol%, and 0-20 mA or 4-20 mA* for the chosen range, non-isolated, max. load 300 Ω
Response time for 90 % FSD	< 3 seconds at 60 NI/h air
Accuracy after calibration	Deviation: analog = ±1 % of span/digital = ±0.1 vol% O ₂
Reproducibility	Deviation: analog = < 1 % of span/digital = ±0.1 vol% O ₂
Influence of ambient temperature	No influence up to 45 °C [113 °F]
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/h air will cause a difference of < 0.1 vol% O ₂
Sample gas inlet pressure	0.01 up to 1 bar g, (PMA20 required admission pressure for adequate flow rate, no pump inside)
Sample gas outlet pressure	Outlet of analyzer must discharge freely into atmosphere
Flow rate of sample gas	Max. 60 NI/h air, adjustable with needle valve on the flow meter 7-70 NI/h
Temperature of sample gas	-10 up to +40 °C [14 to 104 °F] dry gas
O ₂ transducer temperature	Set to +50 °C [122 °F] at the factory
Ambient temperature	-10 up to +45 °C [14 °F up to 113 °F]
Storage temperature	-20 up to +60 °C [-4 °F up to 140 °F], relative humidity 0 to 90 % RH
Power supply	Internal power unit for 230 V _{AC} standard or 115 V _{AC} available (a)* +/-10 %, 40-60 Hz, 26.5 VA
Electrical connections	Terminals 2.5 mm ² ; 1 x PG11, 1 x 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	IP53 EN 60529/EN 61010
Housing/front color	Plastic wall-mounting housing out of Makrolon®/blue-grey
Dimensions (H x W x L)	220 x 214 x 182 mm [≈ 8.7 x 8.4 x 7.2"]
Weight	Approx. 3 kg [≈ 6.6 lbs]
Certificate	Option: approved according to DIN EN 14181 resp. to 13th and 17th BImSchV and TA-Luft, Part No.: 02A9010

* Please specify with order.

Please note: NI/h and NI/min refer to the German standard DIN 1343 and are based on these standard conditions: 0 °C [32 °F], 1013 mbar. Makrolon® is a registered trademark for polycarbonates produced by Bayer AG, Germany.

WARNING! IMPORTANT!

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