PMA10

Oxygen Analyzer Series PMA®

Portable version PMA10
for mobile oxygen measurement

Special Features

- **Portable and rugged instrument, light-weight design**
- **Analog and digital display, linear measuring ranges**
- **Physical measuring principle**
- **Small dead volume, fast response time**
- **High accuracy and 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, the magneto-dynamic measuring cell, the small dead volume and the low cross-sensitivity to other measuring gas components, the portable M&C oxygen analyzer PMA10 has a wide range of applications.

It is an ideal and reliable instrument for oxygen measurement in flue gases, inerting plants, fruit storage facilities, protective gas packaging machines, fermentation processes, ambient air monitoring equipment, etc.

Description

The non-heated M&C oxygen analyzer PMA10 is suitable for discontinuous and continuous oxygen measurements in dry and particle-free gases.

The PMA10 is reliable, easy to use and immediately ready for operation. It has a compact design in a portable housing. The analog display with 30- and 100 vol%-scale indicates the 4 switchable measuring ranges, the 3 1/2-digit digital display always shows the measuring range from 0 to 100 vol% O_2. A signal output is available. Sample gas connections and signal output are located at the front of the analyzer, mains and optional alarm contact connection are at the rear. The sample gas enters the analyzer via the protective filter. The flow rate is adjusted at the front flow meter with a needle valve. Then, the sample gas flows through the M&C measuring cell to the gas outlet.

Optional features include O_2 alarm, battery for mains-independent operation and internal mini-pump.

The Measuring Principle of the M&C Oxygen Analyzer

The PMA10 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 oxygen, which almost exclusively possesses this feature.

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 measuring 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 O_2 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 a neutral position. The compensation current is proportional to the oxygen content of the sample gas, thus rendering the O_2 display absolutely linear.

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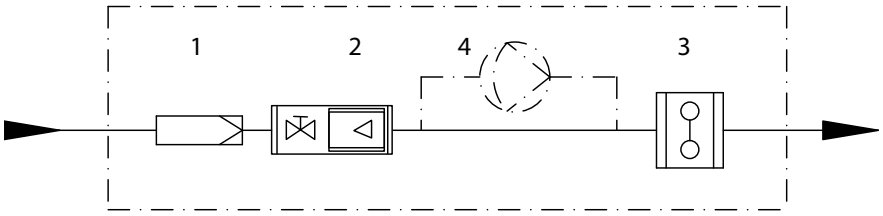
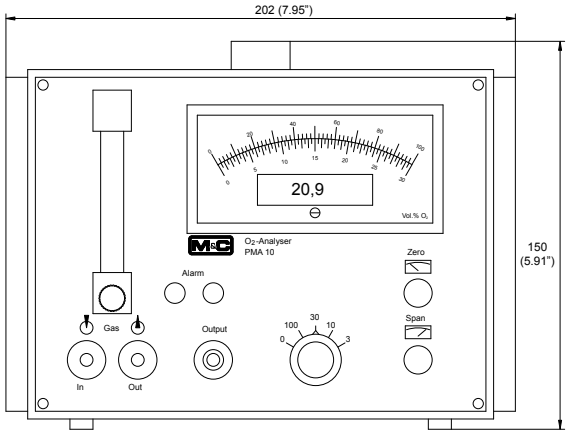
Gas flow diagram PMA10

1. Fine filter
2. Flow meter with needle valve
3. Oxygen measuring cell PMA
4. Option mini-pump

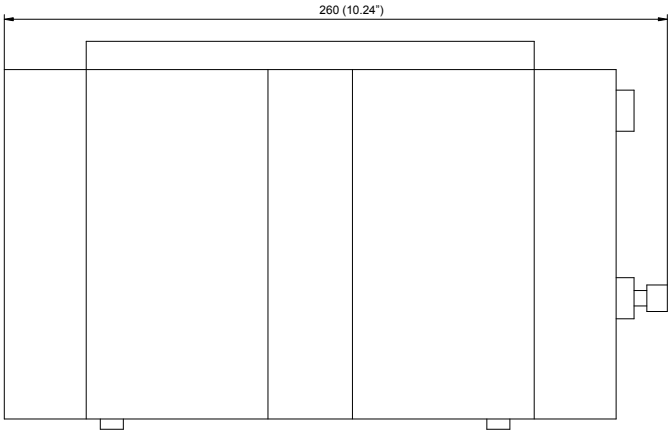


Dimensions

Front View



Side View



Dimensions in mm [inch]

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Technical Data

	Version PMA10 Portable Oxygen Analyzer
Part No.	01A1000: PMA10, power supply 230 V/50 Hz, output signal 0-1 V; 01A1000a = 115 V/60 Hz
Measuring ranges	Selectable for 0-3, 0-10, 0-30 and 0-100 vol% O_2, linear
Indication	Analog/digital meter: Analog meter selectable for each range with a scale of 0-30 and 0-100 vol% digital meter, $3^1/_2$-digit 9 mm [≈ 0.4"] high LCD for 0-100 vol% O_2 reading, selectivity 0.1 vol% O_2
Output signal	0-1 V DC, non-isolated, load > 100 kΩ, for each selected range; option: 0-20 mA* or 4-20 mA* for each selected range, non-isolated, max. load 300 Ω, Part No. 01A9000
Response time for 90 % FSD	< 3 seconds at 60 Nl/h air
Accuracy after calibration	Analog = ±1 % of span/digital = ±0.1 vol% O_2 deviation
Reproducibility	Analog = < 1 % of span/digital = ± 0.1 vol% O_2 deviation
Influence of ambient temperature	Zero point ±0.02 vol% O_2/°C; sensitivity ±0.1 vol% O_2/°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 Nl/h air will cause a difference of < 0.1 vol% O_2.
Sample gas inlet pressure	0.01 up to 1 bar g, (PMA10 required admission pressure for adequate flow rate, no pump inside) option: PMA10 with internal pump, capacity 0.9 Nl/min. without pressure, Part No.: 01A9102
Sample gas outlet pressure	Outlet of analyzer must discharge freely into atmosphere.
Flow rate of sample gas	Max. 60 Nl/h air, adjustable with needle valve on the flow meter 7-70 Nl/h
Temperature of sample gas	-10 up to +40 °C [14 to 104 °F], dry gas
Analyzer temperature	According to ambient temperature, non-heated version
Ambient temperature	-10 up to +55 °C [14 up to 131 °F]
Storage temperature	-20 up to +60 °C [-4 up to 140 °F], relative humidity 0 to 90 % RH
Power supply	Internal power unit for 230 VAC standard or 115 VAC available (a)* +/-10 %, 40-60 Hz, 8 VA option: rechargeable battery, recharged by the internal power unit, Part No. 01A9050 battery capacity 10 h, recharge time of battery 14 h with instrument off
Electrical connections	Power supply: 3-pole chassis plug with 2 m cable; signal: 3-pole plug
Materials in contact with sample gas	Platinum, glass, polypropylene, stainless steel 316, FPM, epoxy resin
Sample gas connection	PP hose nipple for DN 11-4 mm tube
Protection/electrical standard	IP41 EN 60529/EN 61010
Housing/color	Portable plastic housing out of Makrolon®/gray
Dimension (H x W x D)	150 x 202 x 260 mm [≈ 5.9 x 8.0 x 10.2"]
Weight	Approx. 3 kg [≈ 6.6 lbs]
Alarms	Option: O_2 alarm low* or high* adjustable 0 to100 vol% O_2, relay contact NC/NO, Part No. 01A9150 additional with acoustic signal and auto-reset after 30 sec., Part No.: 01A9155 additional with acoustic signal and manual reset, Part No.: 01A9156
Certificate	Option: approved according to DIN EN 14181 as well as the 13th and 17th BImSchV and TA-Luft, Part No.: **01A9160**

* Please specify with order.
The simultaneous installation of pump and alarm module is only possible in conjunction with a rechargeable battery.
The option "acoustic alarm" is only possible with the option "O_2 alarm".
Option "TÜV-approved" includes 0*/4*-20 mA signal output; in this case, only rechargeable battery and internal pump are available as options.
Please note: Nl/h and Nl/min refer to the German standard DIN 1343 and are based on these standard conditions: 0 °C [32 °F], 1013 mbar.
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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.

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