



PMA1000 V2.2 O₂ Analyzer

PMA1000(L)V2.2 O₂ Analyzer

Oxygen Analyzer from the M&C premium series GENTWO® in a modular concept

Special Features

- Visualization of measured values of one year directly on the analyzer
- Modular concept
- Multi-sensor capable
- Innovative operation via 7" touch color screen
- Pressure compensation 0.6 to 1.6 bar abs.
- Four O₂ measuring ranges: Two of those are user programmable
- Electrically isolated signal output 0-20 mA/4-20 mA
- Modbus TCP/IP and AK protocol TCP/IP
- Ethernet/USB interface
- Two user programmable operating parameter outputs
- Automated calibration with 24 V driver output (PMA1000 V2.2 only)

Application

The oxygen analyzer PMA1000(L) V2.2, a device of the GENTWO® series, is suitable for the continuous measurement of the oxygen content in gases. Directly streaming the measurement cell with a small gas volume of just 2 ml [$\approx 0.122 \text{ in}^3$] provides a very fast response time of the analyzer.

The M&C oxygen analyzer can be used for non-flammable sample gases and setups in non-hazardous areas like combustion control, process optimization, inertization monitoring, fermentation processes, environment monitoring or for laboratory applications.

Description

A modular concept and an innovative human machine interface (HMI) are outstanding features of the PMA1000. These enable an intuitive understanding of the operating concept and an adaptation to several applications.

It comes basically in a 19" built-in enclosure by using a FKM (Viton®) tubing. A wide-range power supply, a 7" colored touch screen and a thermostated paramagnetic transducer are included as well as the dedicated sensor electronics and signal output boards. In addition, a pressure sensor has been included for process pressure correction, a temperature monitor and a sample flow indicator.

The measured values are provided via a 0-20 mA/4-20 mA output signal. Further outputs for status alarm and for relay switching are available.

Two operating parameters, which drive a switching output each, can be programmed by the user.

The data logging functionality represents a special feature of the analyzer. The measured values, warning and alarm messages of an entire year can be stored in the analyzer's memory and displayed in a diagram chart precisely time-wise resolved. The setup of a second oxygen PMA transmitter is an option.

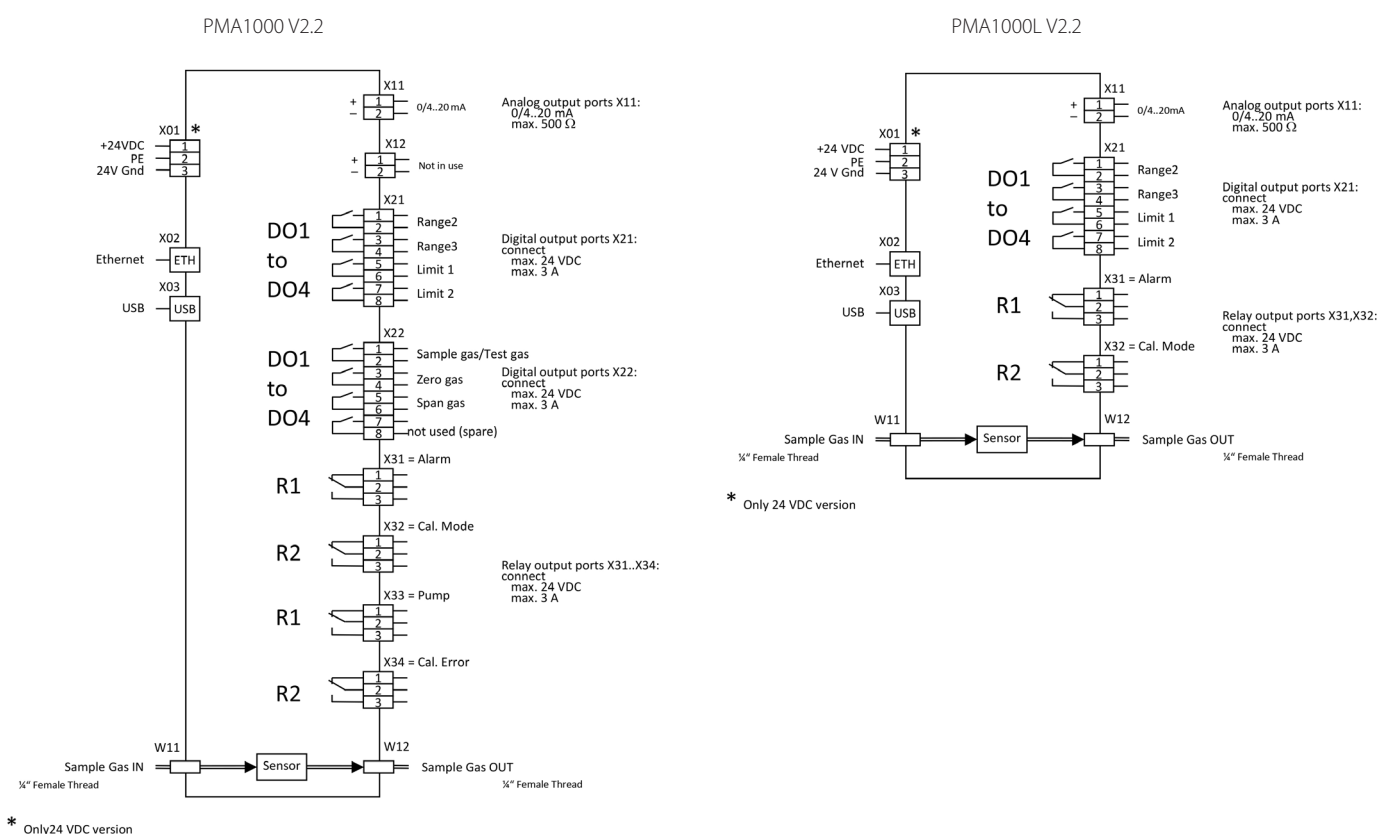
The PMA1000 V2.2 provides a state-of-the-art manual as well as automated calibration functionality for the zero point and span including outputs for controlling and switching the status alarm, a sample pump and four solenoid valves.

Measuring principle of the M&C O₂ analyzers

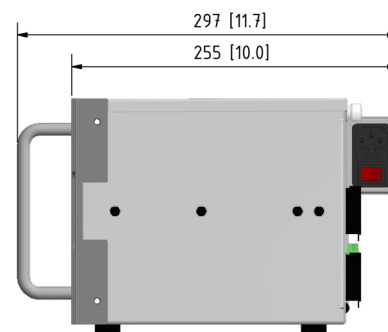
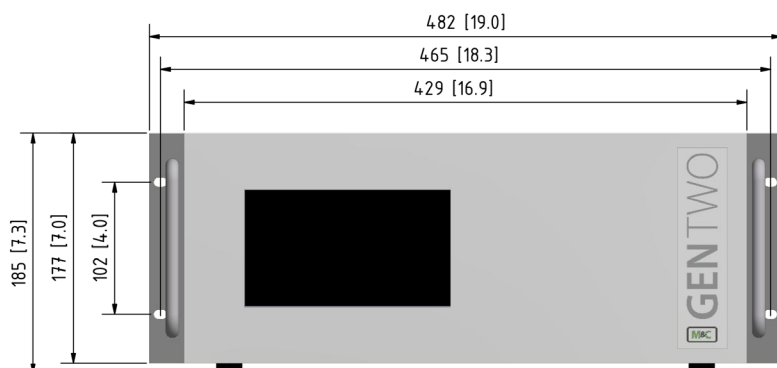
The O₂ analyzer PMA1000(L)V2.2 of the GENTWO® series utilizes the paramagnetic dumb-bell principle of operation to measure the oxygen concentration. This physical measuring principle is characterized by its accuracy, absolute linearity and low-drift, long-term stable measurement in the range of 0 to 100 vol% oxygen without consuming sensor material or auxiliary materials. The paramagnetic function of the temperature-stabilized measuring cell uses the paramagnetic susceptibility of oxygen and is therefore very selective and is almost free of cross-sensitivity.

The analyzer has a long service life if used as intended, and if suitable gas sampling and conditioning components are provided.

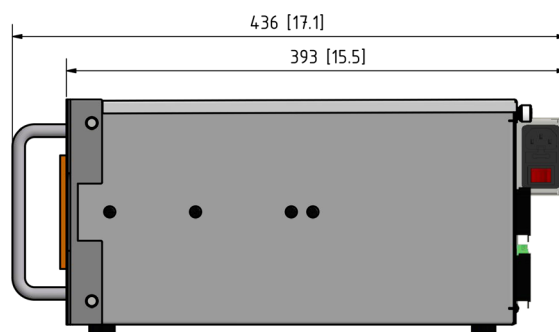
Gas connections and pin assignment diagram PMA1000 V2.2 and PMA1000L V2.2



Dimensions



Short enclosure side view with power supply



Long enclosure side view with power supply

Dimensions in mm [Inches]

Technical Data

O ₂ Analyzer - GENTWO series	PMA1000 V2.2	PMA1000L V2.2
Long enclosure Part No.	08A2000	08A2005
Short enclosure Part No.	08A2010	08A2015
Sample gas	O ₂	
Measuring ranges	4 linear measuring ranges, 2 of those freely selectable, lowest span 1 %, factory default 0-1, 0-10, 0-30 and 0-100 vol% O ₂ , zero suppression applicable	
Limit of detection (LOD)**	0.02 vol%	
Response time* for 90 % FSD	< 3 seconds at 60 NI/h air	
Zero-point offset (drift)**	< 0.06 vol% O ₂ in 72 hours	
Linearity error	< ±0.1 vol% O ₂	
Accuracy after calibration**	Deviation ±1 % of full scale or 0.02 vol% O ₂ , whichever value is greater.	
Reproducibility**	< ±0.01 vol%	
Flow rate of sample gas	25 to 60 NI/h air	
Influence of sample gas flow	Variation in gas flow between 25 - 60 NI/h air will cause a deviation of < 0.1 vol% O ₂	
Sample gas inlet pressure	0.6 - 1.6 bar	
Sample gas outlet pressure	Recommendation: discharge freely into atmosphere (requires higher pressure at the analyzer inlet compared to the outlet)	
Influence of sample gas pressure	< 1 % of full scale within the range of 0.6 to 1.6 bar abs. with activated pressure compensation	
Sample gas temperature and characteristics	0 to 50 °C [32 to 122 °F]; dry, oil- and dust free gas, avoid temperature dropping below dew point	
O ₂ transducer temperature	Fixed at 55 °C [131 °F]	
Ambient temperature	0 to 50 °C [32 to 122 °F], avoid temperature dropping below dew point	
Influence of ambient temperature	< 1 % of full scale	
Display	7" resistive touchscreen	
Output signals	Adjustable 0-20 mA / 4-20 mA, max. 500 Ohms burden, short-circuit proof, electrically isolated, Modbus TCP/IP, AK protocol TCP/IP	
Relay outputs	4 x relay output (1 x status, 1 x Cal-mode, 1 x pump control, 1 x Cal-error), contacts: 24 V DC/ 3 A, 1 x change-over contact, potential-free	2 x relay output (1 x status, 1 x Cal-mode), contacts: 24 V DC/ 3 A, 1 x change-over contact, potential-free
Digital outputs (DO)	8 x DO 24 V DC, max. 3 A (2 x operating parameters, 2 x measuring range feedback, 4 x valve control)	4 x DO 24 V DC, max. 3 A (2 x operating parameters, 2 x measuring range feedback)
AutoCal-Function	Yes	No
Interfaces	Ethernet / USB	
Communication protocol	Modbus TCP/IP, AK protocol TCP/IP	
Storage temperature	-20 to +60 °C [-4 to +140 °F], avoid temperature dropping below dew point	
Power supply	115 to 230 V AC, 50 to 60 Hz power supply or 24 V DC connector plug	
Power consumption	Max. 150 VA	Max. 100 VA
Wetted materials	Platinum, Epoxy resin, glass, FKM (Viton®), Stainless Steel 316Ti, PVDF, PPS	
Sample gas connection	Screw-on bulkhead fitting with 1/4" internal thread, PVDF	
Case protection	IP40, EN 60529	
Electrical standard	EN 61010	
Housing/front color	19 inch rack mounting (4RU)/white RAL 9003	
Maximum installation altitude	2000 m [≈ 6561.7 ft]	
Dimensions long enclosure (W x H x D)	Long enclosure with 230 V power supply (dimensions include front handles and power supply): 482 x 185 x 436 mm [≈ 19" x 7.3" x 17.1"] + approx. 60 mm [≈ 2.4"] connection depth	
Dimensions short enclosure (W x H x D)	Short enclosure with power supply (dimensions include front handles and power supply): 482 x 185 x 297 mm [≈ 19" x 7.3" x 11.7"] + approx. 60 mm [≈ 2.4"] connection depth	
Weight long enclosure	Approx. 13 kg [≈ 29 lbs]	
Weight short enclosure	Approx. 11 kg [≈ 24 lbs]	

* Depends on sample gas input pressure, density and flow rate at the analyzer input.

** At constant pressure, temperature and sample gas flow rate.

Viton® is a registered trademark for fluoropolymer elastomer by DuPont Performance Elastomers, USA.

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.