

Technical Overview



Paramagnetic Oxygen Analyser

GasAn-PM

The paramagnetic analyser GasAn-PM continuously measures the concentration of oxygen in process gases used in industrial and laboratory settings. It is housed in a compact, portable unit that includes all necessary evaluation electronics. The device can be equipped with additional features such as temperature compensation, range suppression, a pump, and an optional battery, depending on the configuration.

The analyser supports various paramagnetic measurement methods. By default, it uses a paramagnetic dumb-bell cell, but it can also operate with a ring-type paramagnetic sensor that has no moving parts.

In both cases, the measurement principle relies on the paramagnetic properties of oxygen



Application

With its ultra-fast response time, extremely low dead volume, directly streamed measuring cell, and minimal cross-sensitivity to other gases, the GasAn-PM oxygen analyzer is well-suited for a wide range of applications.

It delivers reliable and precise oxygen level measurements in various settings, such as flue gas analysis, inerting systems, fermentation monitoring, industrial process control, and laboratory testing.

Standard Dumb-bell Measuring Principle of the GasAn-PM

The GasAn-PM uses a physical measuring method to measure the oxygen content based on a dumbbell cell. This method uses the almost unique paramagnetic characteristic of oxygen. The measuring cell is exposed to the sample gas stream and is designed to be robust, with a small dead volume and zero drift, very fast measurement times, and low cross sensitivities. This makes the paramagnetic dumb-bell method to one of the most reliable for measuring oxygen in the percentage range

The measuring cell is subjected to a magnetic field and centered around a string-tensioned dumb-bell, with an optical reflector at the midpoint. Due to the paramagnetic characteristic of oxygen, the O₂ accumulates in the magnetic field and tries to push the dumbbell out of it.

An optical sensor detects the deviating reflection and adjusts a compensating current through a coil wrapped around the dumb-bell. This current holds the dumb-bell in its position in the center of the magnetic field.

The strength of the compensation current is directly proportional to the oxygen concentration in the gas sample, ensuring a linear and highly accurate measurement output.



General:

Parameter	Specification
Measuring range	0 ... 100% (depending on application) Other measuring ranges and purity measurements (e.g., 95 ... 100%) available
Sample gas flow rate	10 to 60 l/h
Operating pressure	0 to 1 bar
Sample gas temperature	10 to 40°C
Ambient temperature	10 to 45°C
Transmitter temperature	50°C (factory setting)
Storage conditions	20 to 60°C, 0 to 90% relative humidity
Process pressure compensation	0.4 to 1.6 bar absolute
Measurement tolerance	0.1 vol. % O ₂
Wetted materials	PTFE, PVDF, FPM, epoxy, glass, platinum, stainless steel (1.4571)
User interface	Membrane keypad with 4 soft keys and 2 fixed keys LCD graphic display (backlit)
Languages	German, English, French, ...

Electronic Data:

Parameter	Specification
Power supply	Plug-in power supply – 24 V / DC
Power consumption	< 50 VA



Data Output:

Parameter	Specification
Analog output	0/4 ... 20 mA
Limit values	1 x limit switch – freely configurable
Interfaces	RS 232

Optional Inputs:

- External RS232
- External barcode scanner
- ...

Other interfaces available upon request