Analytical Industries Inc

Oxygen Analyzers for Industrial Gases

GPR-1600, GPR-2600, GPR-3100

High-accuracy oxygen analyzers for monitoring gas in industrial processes where trace oxygen from low parts per million to pure O_2 has to be precisely measured. Utilizing AII's high performance galvanic oxygen sensors these advanced instruments are simple to use with a common, across-the-range chassis, HMI and menu structure, so an operator only needs to learn operation of just one instrument for multiple gas analysis applications at various oxygen levels. Available as bench-, 19" rack-, panel- and wall-mounted for flexible installation.

Highlights

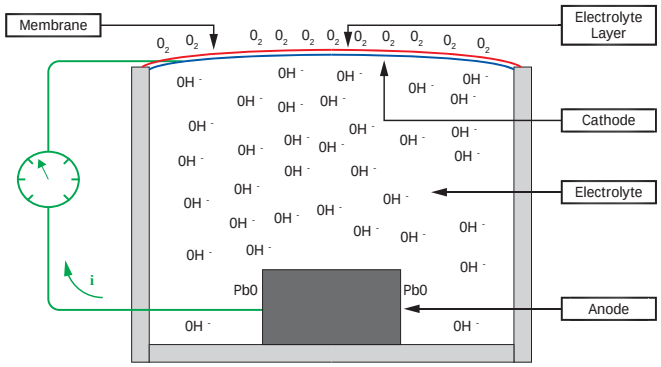
- High accuracy (±0.02ppm in lowest range)
- Four measurement ranges with manual or auto-ranging
- 24 month sensor life with normal usage
- Sample in CO_2 backgrounds with XLT sensor
- Bench, rack or wall mounting options
- Two Alarms
- Integrated bypass valve (for GPR-1600)
- Easy access and sensor replacement
- Easy to use HMI

Applications

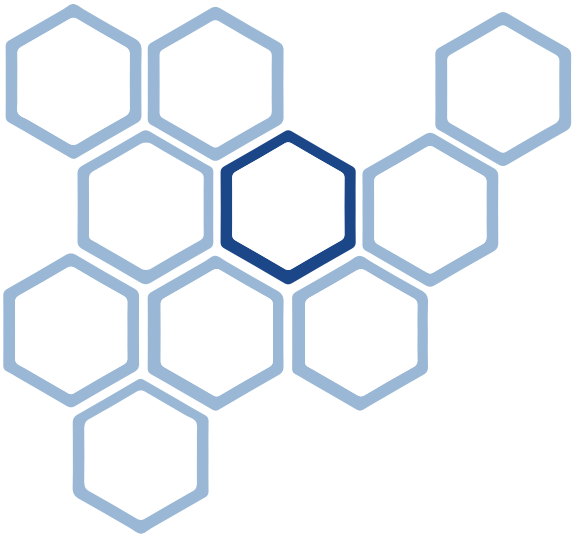
- Purity of product in industrial gas manufacture
- Trace oxygen in hydrogen generation by electrolysis
- Monitoring oxygen generators
- Measuring oxygen in metallurgical processes-heat treatment and annealing
- Gas measurement in poultry stunners
- Analysis of gas in double glazing manufacture

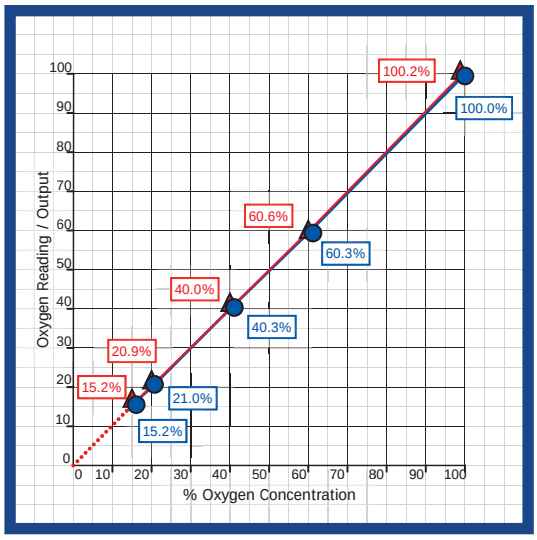
Sensor Technology

The sensors from AII have been designed to avoid potential weaknesses common in typical galvanic cell design. Our materials, construction and assembly methods have been continuously refined over decades. Each sensor type has been specifically engineered to provide the optimum balance between performance and longevity for individual applications. The result is confidence in the measurement and low maintenance. In the absence of oxygen, the sensor will produce zero output and the sensor is linear up to 100%, therefore only a span calibration is required in most cases (see graph).



Sensor Construction





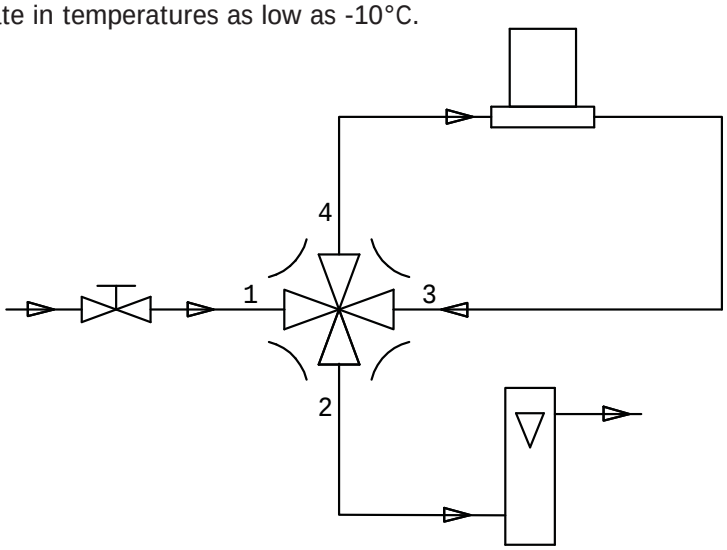
Typical sensor output

The Analytical Industries' XLT sensor

For applications with a background gas containing more than 0.5% CO_2, the specially designed XLT sensor should be selected. With most standard electrochemical sensors an alkaline electrolyte is used and this is neutralised over time when exposed to acidic gases, such as CO_2. To combat this, AII developed the XLT sensor with a special electrolyte formula and has the added benefit of being able to operate in temperatures as low as -10°C.

Bypass sample system

To protect the sensor when switching sample lines or during no-flow situations, there is an integral 4-way valve. This both extends the life of the trace oxygen sensor and reduces the time to reach process measurements as samples with low ppm O_2 can be trapped in the cell until the pipework is flushed.



Common features:

- Barometric pressure & temperature compensation
- Stainless steel wetted parts
- 4 measurement ranges (manual or auto-selected)
- Range Identification output
- 4-20mA, 0-1V and 0-5V outputs
- 2 off user configurable alarm relays
- Universal mains powered

Options:

- Auto-Zero & auto-calibrations facilities
- Digital communication options
- Relay contacts for range ID

GPR-1600

As standard the GPR-1600 has an integral bypass sample system. The analyzer can be temporarily exposed to ambient air to perform a span calibration (20.9% O_2).

Options: External bypass system
Heated sample system

Measurement ranges: 0-10 ppm, up to 0-1% O_2 (0-25% for calibration only).

GPR-2600

The GPR-2600 is an ideal instrument to monitor oxygen in applications which involve purging from ambient air to low percentage levels of oxygen with a variety of gases.

Options: Heated sample system

Measurement ranges: 0-1% up to 0-25% O_2

GPR-3100

The GPR-3100 is fitted with a temperature controlled sample handing system to provide an isothermal environment for the sample for increased accuracy.

Measurement ranges: 0-100% up to 90-100% O_2

Installation Options

There are 4 mounting options available for the range (HxWxD):

- Bench mounting (dimensions: 35.3 x 25.1 x 34cm)
- Panel mounting (dimensions: 19 x 27.4 x 28.6cm)
- 19” rack mounting with optional bezel (dimensions: 19 x 48 x 72cm)
- Wall mounting (dimensions: 34.6 x 26.7 x 17.8cm)
- Wall mounting W (dimensions 34.6 x 31.8 x 19.7cm)
- Wall mounting W306 (dimensions 46.4 x 40.7 x 17.2cm)

Technical Specifications

	GPR-1600	GPR-2600	GPR-3100
Measurement range	0-10, 0-100, 0-1000 ppm, 0-1% (0-25% calibration only)	0-1%, 0-5%, 0-10%, 0-25%	0-100%, plus suppressed zero ranges. 50, 80, or 90-100%
Accuracy	< ±2% of selected range ±0.1% at constant conditions after calibration with 95-100% oxygen (GPR-3100)		
Response time	T90 < 10 seconds		T90 < 13 seconds
Recovery time	60 sec in air to < 10 ppm in < 1 hour on N_2 purge	Not applicable	Not applicable
Sensitivity (LDL)	50 ppb	50 ppm	0.1% oxygen
Linearity	< 0.5% of scale		
Sensor model	GPR-12-333	GPR-11-32-4	GPR-11-120-OP
	XLT-12-333 for gas mixture with > 0.5% CO_2	XLT-11-24-4 for gas mixture with > 0.5% CO_2	
Sensor life at 25°C and 1 atm	24 months in < 1000 ppm O_2	GPR-11-32-4 32 months; XLT-11-24-4 24 months	24 months in 100% oxygen
Calibration interval	Typically: 1-3 months		
Inlet pressure	0.34 – 2 barg (5-30 psig) with atmospheric vent		248 bar g (3600psig)
Flow rate (constant)	0.5 - 1.0 Nl/min (1-2 SCFH)		
Gas connections	1/4" compression tube fittings		
Display	Graphical LCD 12.7 x 7cm (5 x 2.75"); resolution 0.01		
Enclosure	Painted aluminum See individual mounting options for dimensions		
Compensation	Barometric pressure and temperature; Temperature controlled sample system and sensor (GPR-3100 only)		
Analog output	4-20 mA isolated, 0-1V, and 0-5V		
Range ID	1-5 V or 4-20mA, optional relay contacts		
Communications	Choose from RS485, RS232 or USB		
Alarms	Two user-adjustable alarm relays		
Operating temperature	GPR sensor: 5°C to 45ºC (41°F to 113°F) XLT sensor: -10°C to 45°C (14°F to 113°F)		
Power	Universal 100-240 V AC		

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