



The Microx is a compact and robust oxygen analyser that utilises zirconia or electrochemical technology to give a reliable measurement of oxygen concentration.

The zirconia sensor offers fast response time and a long service life with virtually no drift, whilst the electrochemical sensor allows measurement in background gases containing hydrocarbons.

The minimum output range of 0 to 10ppm is ideal for nitrogen generation or glove box monitoring. The Microx analyser can also be supplied with measuring ranges up to 0 to 96% O₂ for oxygen concentrators.

The flexibility is further enhanced by different mounting options and multiple sensor types.

Applications

- » Gas generation (oxygen / nitrogen)
- » Additive manufacturing
- » Glove box purge and leak detection
- » Industrial gas applications



Features

- » Zirconia or electrochemical sensor technology options
- » Measurement range:
0-1000ppm, 0-10,000ppm,
0 to 25%, 0 to 96% O₂
- » M16 Threaded connection,
flowthrough housing, flowthrough
with orifice, Drellum T-piece
connection options
- » Din rail / Panel / Wall mounting
options
- » 3 configurable alarm relays
- » RS 232 modbus protocol
- » LCD + 4 button HMI

Proven sensor technology

With a choice of either zirconia or electrochemical sensor technology the Microx offers reliability, accuracy and flexibility. Both technologies have a broad measurement capability allowing the user to measure from selected ranges from 1ppm to 96% oxygen.

Zirconia sensor

The Ntron zirconia oxygen sensor is a non-depleting zirconia solid electrolyte sensor. A small capillary on the sensor controls the diffusion of oxygen into the sensor. When heated to over 400°C oxygen is electronically reduced causing current flow through the zirconia electrolyte. Zirconium-oxide allows the movement of oxygen ions through the substrate from a high to a low concentration. The measurement of oxygen is determined by the current flowing through the electrodes. The zirconia sensor has an unlimited shelf life without the loss of calibration and has an expected life in excess of 5 years. The zirconia sensor is not position sensitive and has low cross sensitivity to other gases and does not dry out.

Low maintenance and cost of ownership

Due to the highly stable nature of the sensor, a calibration interval of once per year is required, allowing for significant cost savings. The construction of our zirconia oxygen sensor means that only 100 mL/min of sample gas is required, providing application flexibility and further potential cost savings.

Fast response time

Zirconia oxygen sensors respond very quickly to oxygen concentrations in both directions with a T90 of less than 10 seconds within a set range.

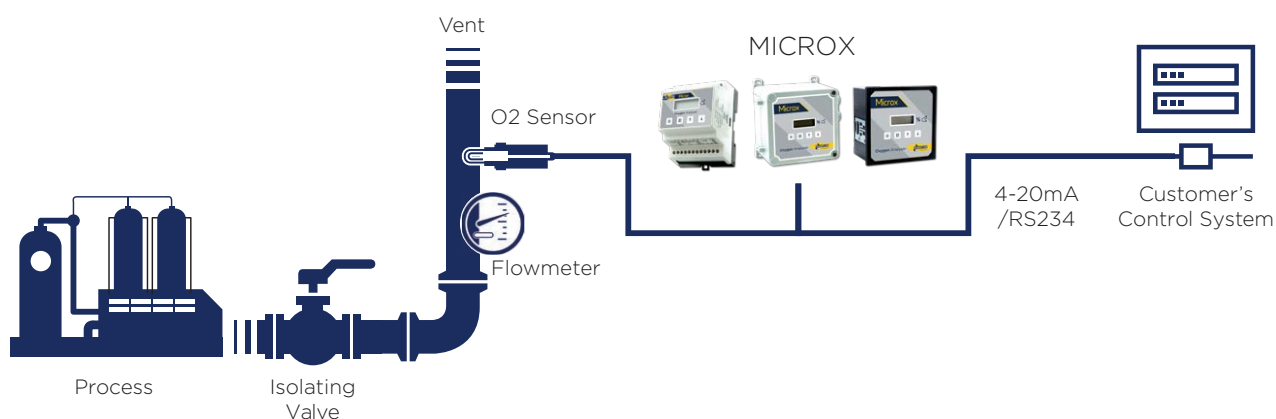
Electrochemical sensor

The key elements of the electrochemical sensors are a membrane, cathode, anode, electrolyte and measurement circuit. The sensing membrane (covering the cathode) is made of PTFE and is mounted over a metal perforated electrode. The space between the membrane and the electrode is filled either with an aqueous alkaline or an acid electrolyte. In normal operation, all portions of the anode and cathode are immersed in the electrolyte. As oxygen diffuses through the membrane into the electrolyte it causes a reaction between the cathode and anode generating an EMF. This current is proportional to the amount of oxygen present in the sample gas. In the absence of oxygen there is no output from the electrochemical sensor, meaning only one calibration is required.

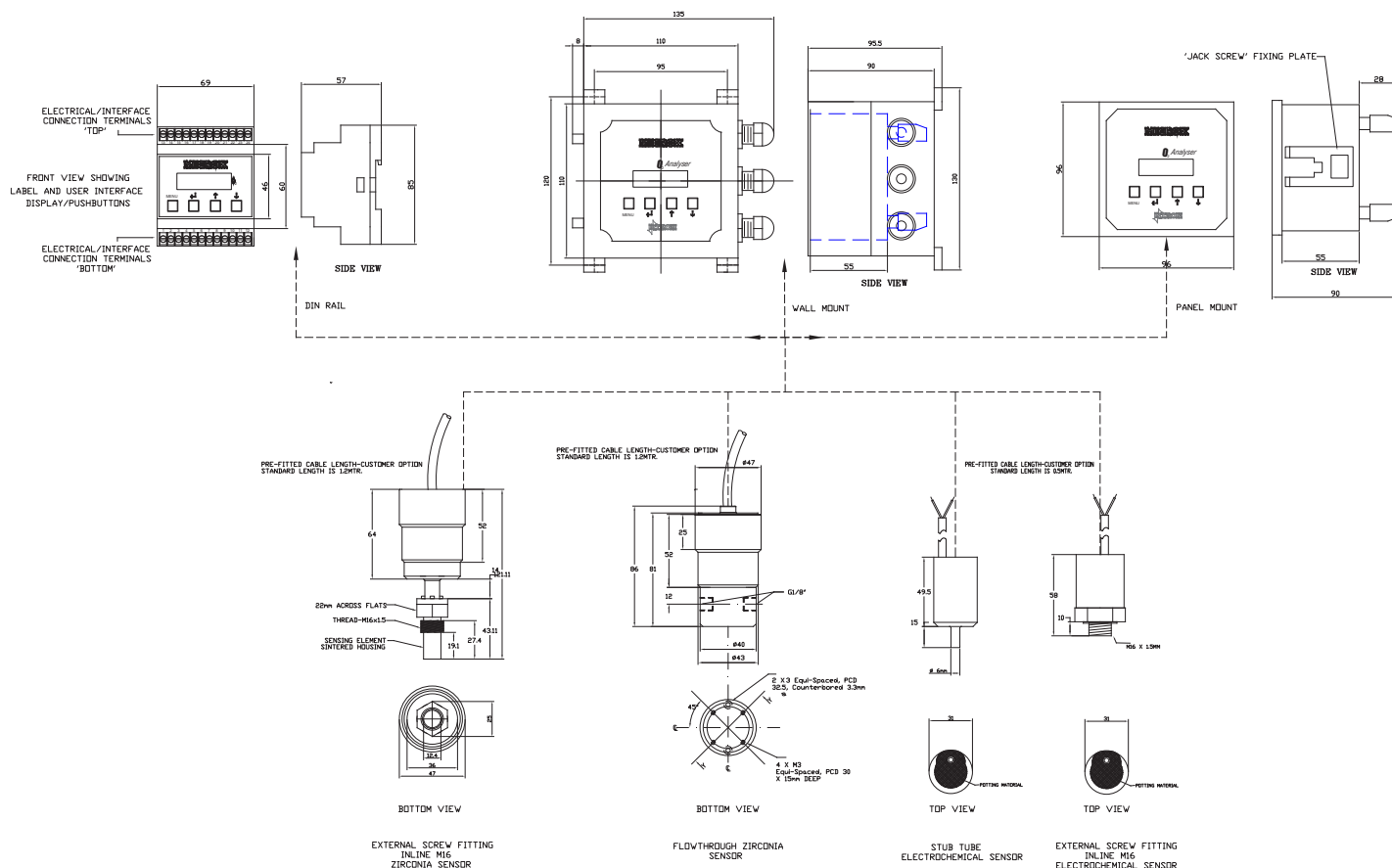
Sensor construction

The main body of the sensor is fabricated from high density PVDF. The supporting ring at the face of the sensor is constructed of stainless steel. This results in an oxygen sensor that is chemically resistant to most sampling atmospheres and can be used with trace solvents and hydrocarbons present in the sample gas, unlike zirconia (due to the high temperature of the sensor).

Application Setup



Performance		
Transmitter Model	Microx	
Measurement technology	Zirconia (ZR)	Electrochemical (EC)
Measurement range	0 to 1,000ppm / 0 to 10,000ppm / 0 to 25% / 0 to 96%	0 to 1,000ppm / 0 to 25% / 0 to 96%
Output resolution (for %)	0.01%	
Output resolution (for ppm)	1ppm	
Accuracy	+/-2% of reading (or 2ppm O2) @ calibrated temperature and pressure	
Response time (T90)	<10 seconds @ 25°C (within selected range)	
LDL (Sensitivity)	0.01% (when measuring %) / 1ppm (when measuring ppm)	
Temperature range	-20°C to +50°C	0°C to +45°C
Pressure range	900 to 1100 mBar _{abs}	
Linearity	1% of range	
Life expectation	3-5 years	1 year
Humidity	0-95% RH non-condensing	
Shelf life	No shelf life	Up to 6 months
Electrical Input / Output		
Power supply	24VDC ±10% / (230VAC Panel & Wall mounted options only)	
Power consumption	Maximum 160mA @ 24VDC	
Signal output	4-20mA Output Linear & Logarithmic (User Configurable)	
Digital communications	RS232 bi-directional Modbus protocol.	
Digital output options	3 off relay, dry contact 5 Amp rated	
Display format	% O ₂ / ppm O ₂	
Display	100 x 33 dot graphics display module	
Mechanical Specifications		
Dimensions	Din Rail: 86mm (h) x 69mm (w) x 58mm (d) Wall Mount: 45mm (h) x 110mm (w) x 93mm (d) Panel mount: 96mm (h) x 96mm (w) x 83mm (d)	
Weight	<0.180kg	
Wetted materials	Aluminium, PTFE, Viton	
Process connection	M16 Threaded connection / Flowthrough Housing / Flowthrough with orifice / Drellum T Piece	
Mounting	Din Rail (M36) / Panel / Wall	
Ingress protection	IP20	
Housing material	ABS	
Certification		
Complies with EMC Directive 2004 / 108 / EC. UL/ETL Certification Number: UL-61010-1		



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PROCESS SENSING

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