

Trace Oxygen Analyser AMS 3110



The application:

The Trace Oxygen Analyser AMS 3110 is a portable, easy to operate system for the measurement of oxygen traces in Ex-applications Zone 2. Typical applications are the measurement of trace oxygen in noble gases, protective gases and gases with oxidising components.

The measuring principle:

The electrochemical sensors for the measurement of trace oxygen are mainly consisting of five components:

- Oxygen sensitive cathode
- Anode
- Electrolyte
- Diffusion membrane
- Housing with electrical connections

The measuring gas diffuses through a membrane to a thin layer of electrolyte. At the cathode the oxygen reduces. The free flowing electrons are drifting to the Anode. This generates a electrical current which is direct proportional to the oxygen concentration of the measuring gas. The use of electrochemical sensors allows in standard applications the measurement of trace oxygen in a number of complex and aggressive gas mixtures. The fitting sensor for a specific application has to be selected considering the different available electrolytes and electrodes. It is therefore essential to know the physical and chemical application parameters such as temperature, gas pressure, humidity content and the consistency of a specific measuring gas.

The Trace Oxygen Analysers Model AMS 3110, AMS 3126, AMS 3160, AMS 3175 and AMS 3186 are operating on electrochemical sensors which are adapted to a specific customer application. The sensors are mounted into specially developed measuring chambers. To compensate temperature fluctuations during a measurement the sensor signal is temperature monitored. The entire sensor assembly is potted gas tight to avoid leakage.

The operational life time of an electrochemical sensor is determined from the PPM-hours a sensor exposed to oxygen. Therefore the sensors have a shorter life expectancy in air than in low PPM-Oxygen concentrations. The life time in air is usually only a few months, but 3 years or longer in PPM-Oxygen concentrations.

The measuring system:

The Trace Oxygen Analyser AMS 3110 is consisting of the analyser electronics, the pneumatic components for gas extraction and flow control, a pressure reducer for a max. gas pressure of 10 bar (abs) and a purge valve to protect the trace oxygen sensor against high pressure and high oxygen concentrations.

Technical Data

| | |
|-----------------------------------|---|
| Analyser | AMS 3110 Ex |
| Ex-classification | ATEX II 3G for Zone 2 |
| Measuring principle | Electrochemical oxygen sensor |
| Application | Monitoring the purity of technical gases |
| Measuring range | 0 ... 10, 0 ... 100, 0 ... 1000, 0 ... 10000 ppmv |
| Analogue Signal port | 0 ... 1 V |
| Reproducibility | +/- 2 % of the measuring value |
| Resolution | 0,01 ppm – C(O ₂) – 0,01 % depending on O ₂ concentration and application |
| T90-Time | ca. 40 seconds |
| Display | 4 ½ digit digital display |
| Gas connection | inlet quick connect coupling outlet 6 mm compression fittings |
| Gas sampling | built-in inlet /outlet valve flow meter, pressure reducer |
| Sample flow | min. 10 NI/h, max. 60 NI/h |
| Sample pressure (inlet) | min. 1,01 bar abs., max. 10 bar abs. |
| Sample pressure (sensor) | internal pressure regulator at 50 mbar(g), the sample gas has to be vented at atmospheric pressure |
| Ambient operating temp. | - 5 °C up to + 45 °C |
| Relative humidity of the gas | 0 ... 99 % not condensing |
| Power supply | Rechargeable lead acid battery, epoxy encapsulated |
| Protection / Housing / dimensions | portable housing / 362 x 156 x 320 mm (wxhxd) |
| Weight | 7,5 kg |
| Accessories : | Protective carrying case |
| Version: AMS 3110 E V-2013-07 | |

Specifications subject to change