

Trace Oxygen Dewpoint-Analyser AMS 3186 DP



available options:

manual bypass- and purge valve
electronic flow control
electrical/pneumatic gas pump
auto-calibration,
pressure reducer
different housings

The Application:

The Trace Oxygen Analyser AMS 3186 DP operates on base of an electrochemical sensor. The Trace Oxygen Analyser AMS 3186 DP is a micro-processor controlled analyser for the highly accurate measurement of lowest oxygen traces. Changes in concentrations of $< 0,1$ ppm of oxygen with a resolution of 0,01 ppm can be measured. The available housings are designed for use in General Applications. The lowest oxygen measuring range is 0 ... 1 ppm. For determine the dewpoint of the sample gas the analyser could be equipped with a dewpoint measurement in addition to the oxygen measurement.

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 an 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 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 principle of the dew point sensor:

The measuring principle is based on a metal oxide dewpoint sensor with a multiple structure. The function is based on the adsorption of steam in a porously dielectrical coat. This adsorption coat is situated between two conducting layers on stable polymere substrate. Due to the very high dielectric constant of water it is possible to reliably register the smallest storage of water. The design of the sensor is very low therefore the sensor responds to the slightest changes in the applied moisture.

The Measuring system:

The Trace Oxygen Analyser AMS 3186 DP consists of an electronic, the pneumatic components for the gas supply and flow control, installed in an electronic housing 84 TE / 3 HE. To protect the analyser against high gas pressure and high oxygen concentrations, the analyser can be equipped with a pressure reducer for gas pressure up to 10 bar (abs) and a manual purge valve. The Trace Oxygen Analyser AMS 3186 DP is the ideal system for automated process control. A micro processor controls the electronics and the display. Calibration and service are menu-driven. Automated components allow remote control of the Trace Oxygen Analyser AMS 3186 DP from the control room. For use of the Trace Oxygen Analyser AMS 3186 DP in hazardous areas classified as Zone 2 the system gas can be equipped with an inert gas purging system. Automatic calibration and purging of the electrochemical sensor are available options.

Technical Data

Analyser	AMS 3186 DP
Measuring principle	Electrochemical oxygen sensor Dewpoint: ceramic or polymer sensor
Application	Gases Industries, Chemical Industries, Process Measurement
Measuring range	
Oxygen	4, automatic selection, adjustable 0...10, 100, 1.000, 10.000 ppm
Dewpoint / Moisture	-100...+20°C or -80 ... +20°C / 0...3.000 ppm Other on Request
Analogue signal port	
Oxygen	0 (4) ... 20mA, galvanically separated, with measuring range changeover and digital identification
Dewpoint	0 (4) ... 20mA, galvanically separated
Reproducibility	+/- 2 % of the measuring value
Resolution	0,01 ppm - C(O ₂ /Moisture) -1 ppm, depends on concentration C(Dew) – 1°C
T90-Time	appr.30...40 seconds O ₂ , appr. 360 seconds Dewpoint (Polymer Sensor)
Display	2* 16 digit, illuminated LCD display
Messages	Status, calibration and service request, each 1 message for O ₂ / Dewpoint
Gas connection	inlet / outlet 3 / 6 mm ferrule pack
Gas sampling	built-in inlet / outlet valve, flowmeter
Sample flow	min. 20 NI/h, max. 40 NI/h
Sample pressure (inlet)	min. 1,01 bar abs., max. 2 bar abs.
Sample pressure (measuring cell)	max. 50 mbar pressure
digital communication	serial interface RS 232
Ambient operating temp.	- 5 °C up to + 45 °C
Relative humidity of the gas	0 ... 99 % not condensing
Power supply	230 VAC, 24 VDC
Protection / Housing / Dimension	IP 20 / 19", 3 HE, electronic housing IP 20 / ½ 19", 3HE, 250 mm deep, electronic cassette IP 20 / 63 TE, 3 HE, 300 mm deep portable housing Other on Request
Ex-classification	in IP 55 wall mounting housing with inert gas purge also qualified for applications in Ex-Zone 2
Weight	5 – 7 kg
Options	bypass- and purge valve, manual Electronic flow control sample gas pump auto-calibration pressure reducer max. 10 bar, out 50 mbar
Version: AMS 3186 DP E V-2021-07	

Specification subject to change.