Redefining Trace Oxygen Measurement.

NON-DEPLETING COULOMETRIC OXYGEN SENSING TECHNOLOGY FOR TRACE (PPB) AND ULTRA-TRACE (PPT) GAS ANALYSIS

ASDevices

In this brochure

KA34X SERIES TRACE OXYGEN ANALYZERS

Redefining Trace Oxygen Measurement.

Our ultra-trace oxygen analyzer delivers exceptional **stability, accuracy, and uptime at the lowest detection levels**, while minimizing maintenance and operator intervention. **Automated electrolyte replenishment** enables reliable ppb-level measurements over extended periods, keeping continuous processes running without interruption. This performance is driven by a patent-pending, purged cathode, non-depleting coulometric sensor. To ensure complete confidence in every reading, an optional embedded sonic-orifice dilution system provides true trace-level calibration, eliminating ppm-level extrapolation errors and delivering accurate calibration directly at just a few ppb.

Key Features & Innovations

Ultra-trace precision

- **True zero stability** with our purged-cathode design (patent pending) that blocks ambient O_2 ingress.
- **Purged gas can be generated internally** from sample gas or from external source.
- **Uncompromising measurement accuracy** with built-in optional sonic-orifice calibration system for true ppb calibration and a purged electronics flow controller.
- **UHP sample integrity guaranteed** with a leak-free stream-selection system using CVProducts (an ASDevices division) patented purged PLSV valve.

Low maintenance

- **No weekly checks, no top-ups:** a built-in deionized water (DI) reservoir with automatic level control enables year-long, worry-free operation.
- **Non-depleting sensor technology** for long life and stable performance.
- **Auto-calibration** maintains accuracy while minimizing operator intervention.

Ease of use

- **Clean, spill-free electrolyte changes** thanks to a dual-valve design that keeps the sensor untouched.

Key applications

- Quality control for electronics grade gases
- Quality control for UHP grade gases
- Air separation
- Hydrogen purity
- Helium purity
- Bottling centre

Featured Highlights

Purged cathode and electrolyte reservoir

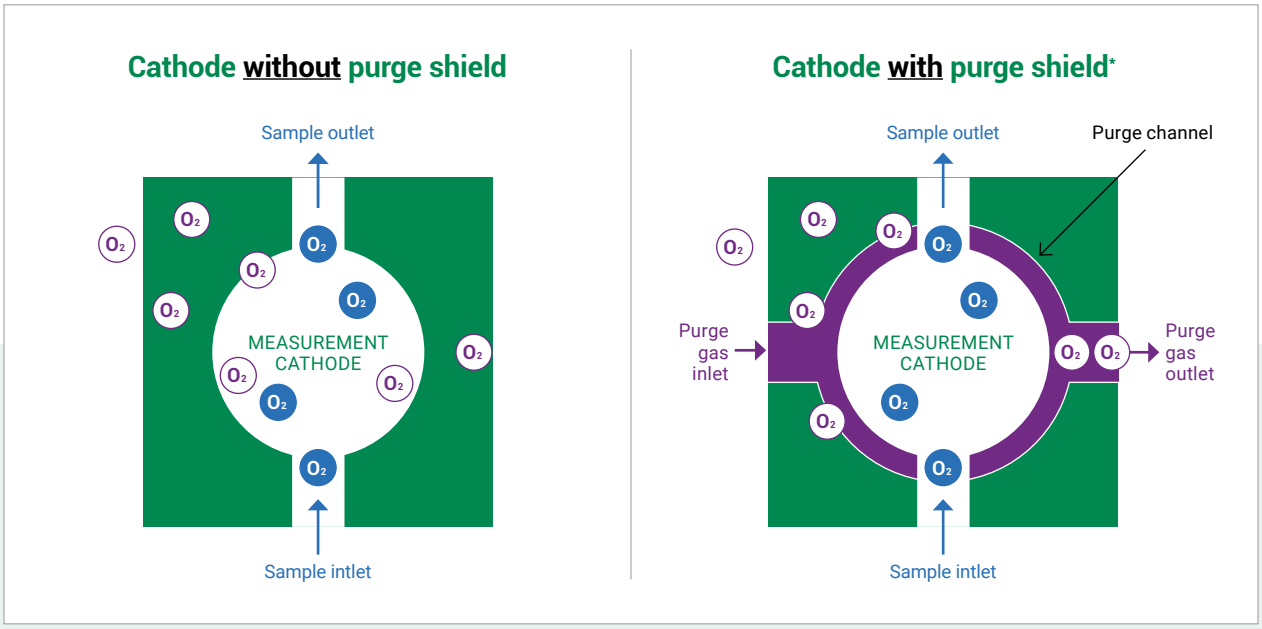
O_2 Shielding for Unmatched Signal Integrity

Our dual-purge approach ensures unmatched signal stability, especially at ppb and ppt levels, and extends the lifetime of both the sensor and electrolyte.

Microscopic air leaks around the cathode housing can cause offsets, drifts, or unexplained signal spikes—problems that plague conventional designs. Our design eliminates this vulnerability with a fully purged cathode shield, creating a controlled barrier that blocks ambient oxygen from reaching the sensing elements.

We take protection even further by purging the electrolyte reservoir itself, preventing oxygen and CO_2 from diffusing into the electrolyte over time—a common issue in designs that leave the reservoir open to atmosphere.

O_2 From sample O_2 From ambient air



* patented or patent pending

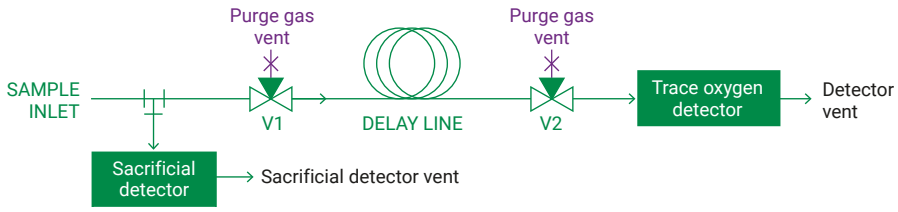
Spill free electrolyte refilling system

Protect your ultra-trace measurements from unexpected oxygen upsets

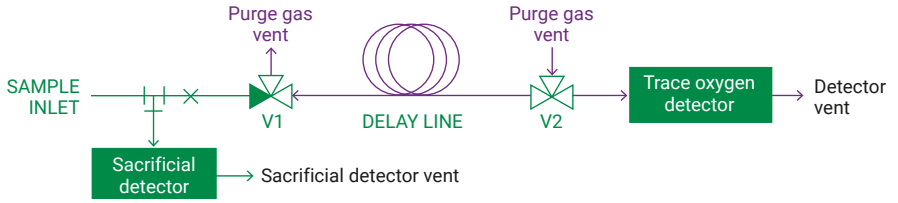
The optional sacrificial oxygen cell* acts as a first line of defence, safeguarding the ultra-trace sensor and maximizing measurement uptime in demanding environments.

When elevated oxygen levels are detected, the system automatically isolates the ultra-trace sensor and keeps it under a clean, oxygen-free purge. Once conditions return to normal, the analyzer seamlessly reconnects the trace sensor—without operator intervention. The result is longer sensor life, faster recovery and uninterrupted confidence in your lowest-level measurements.

Normal mode:
Trace and sacrificial detectors are monitoring the sample gas.



Isolation mode:
Trace detector is purged and sacrificial detector is monitoring sample upset conditions.



Smart Electrolyte Control

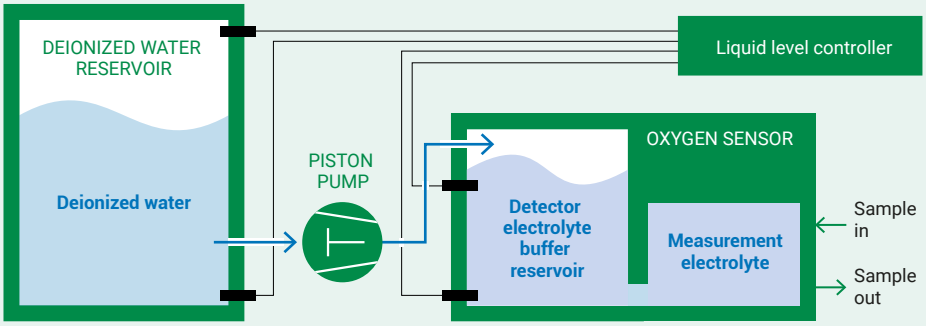
One Fill. One Year. Zero Worry.

The KA34X series is designed to eliminate routine electrolyte maintenance and the risks that come with it. Unlike conventional analyzers that require frequent manual checks and refills, the KA34X series automatically maintains optimal electrolyte levels using an integrated pump and onboard deionized water reservoir. This enables up to one year of unattended operation, reducing maintenance while ensuring stable, reliable measurements.

When electrolyte replacement is required, service is fast and safe. A closed, valve-based drain and fill system allows clean replacement without removing or exposing the sensor—eliminating spills, contamination, and downtime. The result is a smarter, safer, and lower-maintenance analyzer that protects both your process and your data.

Electrolyte level control

Liquid level sensor



* patented or patent pending

Sonic-Orifice Dilution

Trace-Level Calibration Redefined

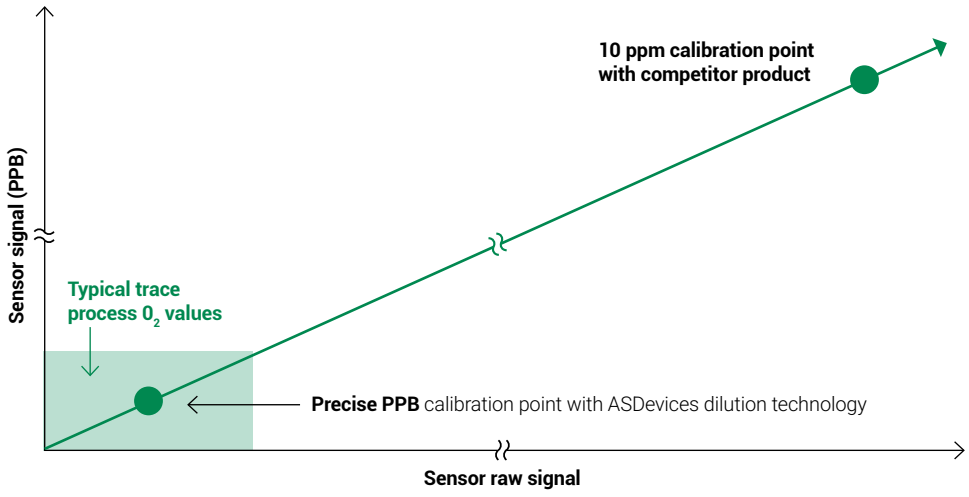
At ultra-trace levels, **precision can't rely on extrapolation**. Traditional ppm-based calibration introduces uncertainty where it matters most. Our trace oxygen analyzer delivers **true ppb-level calibration**, ensuring measurements accurately reflect real process conditions.

An integrated dilution system converts a stable ppm reference gas into **ultra-precise sub-50 ppb calibration points** using a heated, laser-calibrated sonic orifice, delivering higher accuracy and total confidence in every reading.

Embedded dilution system specifications

Technology	Sonic orifice technology
Achievable dilution ratio	• Option 1: 1:20 dilution ratio • Option 2: 1:200 dilution ratio • Other ratios available (1:2 to 1:3500)
Precision	<0.5%
Maximum flow path temperature	200 ºC

Oxygen analyzer calibration



Automatic Calibration

Deliver **cleaner switching, higher measurement integrity, and total confidence in calibration**—even at ultra-trace oxygen levels. Our embedded sampling system ensures reliable, repeatable selection between **zero, span and process gases** without leaks, air ingress or cross-contamination.

This performance is enabled by **CVProducts (an ASDevices division) patented PLSV valve technology***, combining a **leak-free design**, **exceptional service life**, and **near-zero dead volume**

Together, these features deliver faster stabilization, eliminate cross-port contamination, and ensure reliable calibration—even at the lowest detection limits.

Unmatched Leak Integrity

Verified with the Industry's Most Sensitive System

Every ASDevices analyzer undergoes rigorous leak testing using our **patented ultra-sensitive leak detection technology**, ensuring airtight integrity at levels unmatched in the industry. This proprietary system—also trusted in our CVP product line—detects micro-leaks that traditional methods miss, guaranteeing reliable performance even in ultra-trace environments. Precision starts with a sealed system—and we seal it better than anyone.

Read our application note TN01- Leak detection system and method.

Exceptional Stability and Accuracy.
Low Maintenance.

True Zero Stability

Purged Electronics Pressure Controller

Our flow control system is fully purged to maintain sample integrity.

Purged Cathode*

O_2 Shielding for Unmatched Signal Integrity

In ultra-trace oxygen analysis, even microscopic air leaks around the cathode housing can cause offsets, drifts, or unexplained signal. Our design eliminates this vulnerability with a fully purged cathode shield, creating a controlled barrier that blocks ambient oxygen from reaching the sensing elements.

Heated Sensor Enclosure

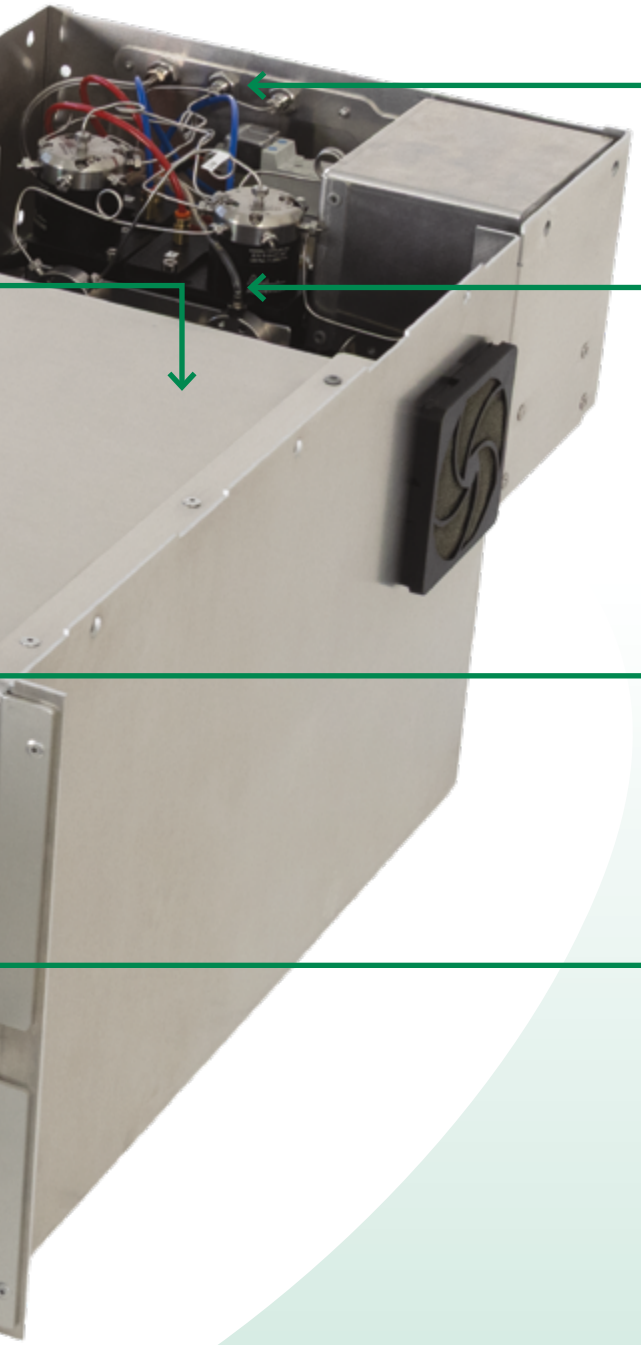
Sensors and wetted parts are located inside a heated enclosure for long-term measurement stability.

Ease of Use

Intuitive and Reliable Software

The analyzer platform is a critical part of any process and must operate 24/7 with robust software architecture. Our ASDSense CGA software was designed using a real-time industrial operating system that employs system redundancy for reliability. This principle makes it nearly impossible for the software to crash, ensuring your analyzer is always operational.

* patented or patent pending



Uncompromised Measurement Accuracy

Built-in Sonic Orifice Calibration System

This system generates ultra-accurate trace-level calibration mixtures down to a few ppb—directly matching real-world process concentrations. The result? True-to-condition calibration that boosts trust, accuracy, and confidence in every measurement.

Leak-Tight Sampling System

Using PLSV valve technology from CVProducts, our system guarantees sample integrity and measurement accuracy.

Low Maintenance

Safe and Simple Electrolyte and DI Water* Replenishment

Electrolyte replacement is a reality in trace oxygen analyzers, but how it's done makes all the difference. We have designed a safe electrolyte replacement system using two integrated valves: one for clean draining and another for controlled filling. There is no need to touch the sensor: no disassembly, no exposure and no risk of contaminating critical components.

One Fill. One Year. Zero Worry

Using automation, we have removed the need for frequent electrolyte manual checks and tricky DI water top-ups. Using an integrated pump and an onboard deionized water reservoir, it maintains optimal electrolyte levels without any operator intervention.

Industry-best 10-ppt LOD

Multi–Sub-Cell Sensor Architecture*

Multiple parallel oxygen measurement sub-cells work together to suppress random noise and spikes, dramatically improving signal-to-noise ratio and enabling industry-leading stability at the lowest detection levels. Ideal for the most demanding purity applications.

* patented or patent pending

Specifications

Gas measured	O_2
Technology	Non depleting, purged cathode, coulometric sensor (patented or patent pending)

Operating environment

Temperature	Operating: 0 °C to 45 °C / +32 °F to 113 °F
Relative humidity	0 to 95% RH non-condensing
Warm up time	60 min with fresh electrolyte
Max altitude	2,000 m above sea level

Physical specifications

	Without optional dilution system	With optional dilution system
Size	• Widht: 330 mm (13”) • Height: 265 mm (10.4”) • Depth: 512 mm (20.1”)	• Widht: 330 mm (13”) • Height: 265 mm (10.4”) • Depth: 661 mm (26.0”)
Weight	13.6 kg (30 lb)	18.1 kg (40 lb)
Supply voltage	120 VAC or 220 VAC	

Standard Features

Gas connections	1/8” LipLOK™ (backward compatible with double ferrule industrial standard)*
Analog outputs	Isolated 4-20 mA output
Digital outputs	• RS-485 • Ethernet • 1x dry contact status relay • 2x alarm dry contacts
Software and user interface	• Industrial touch screen display • Industrial operating system • 1 month data logging • Data export feature • All firmware upgradable • Remote control

* patented

Optional Features

- Sampling system
- Calibration system
- Zero gas purifier
- Sacrificial cell
- Modbus TCP/IP
- Automatic calibration

Analytical specification

	KA341	KA342	KA343	KA344	KA345	KA346
Measurement range	0-10000 ppm	0-1000 ppm	0-100 ppm	0-100 ppm	0-20 ppm	0-20 ppm
Intrinsic error (accuracy) FS	±3% of reading / 3% of range or ±0.1 ppb (whichever is greater)					
Response time (T_{90})	30 to 45 sec					
Zero drift/month	Negligible					
Limit of Detection (LOD)	2.5 ppm	250 ppb	50 ppb	3 ppb	200 ppt	45 ppt

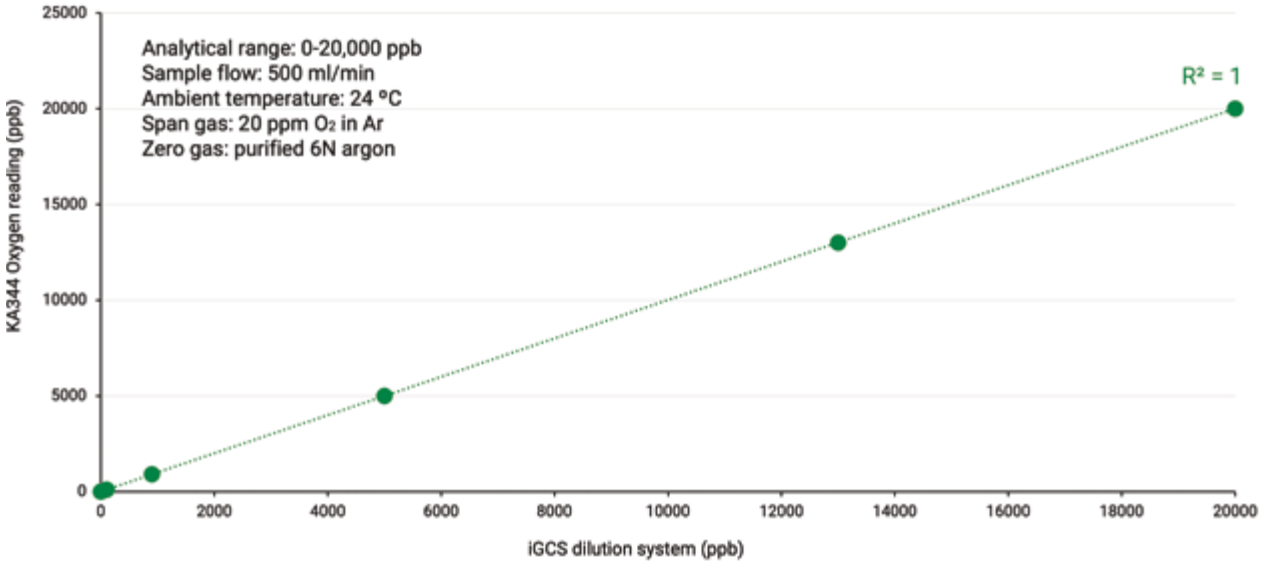
Sample gas specification

Sample gas compatibility	H_2, He, N_2, Ar, CH_4
Gas	Sample must be oil free, non-corrosive and non-condensing
Temperature	0 °C to +50 °C (+32 °F to +122 °F)
Particulate size	Filtered to 2 um
Maximum dew point	+5 °C / +9 °F below minimum ambient
Zero gas	Purified 6N grade or less than LOD O_2 level
Span gas	• 40% to 80% of measurement range, or • 1 to 10 ppm O_2 in N_2 for embedded dilution system
Sample pressure	• Standard: 15 to 25 PSIG (2.03 to 2.72 Bar) • Low pressure: 1 to 3 PSIG (0.07 to 0.21 Bar)
Vent	To atmosphere
Flow rate	• 250 ml/min to 1,000 ml/min • Nominal 700 ml/min

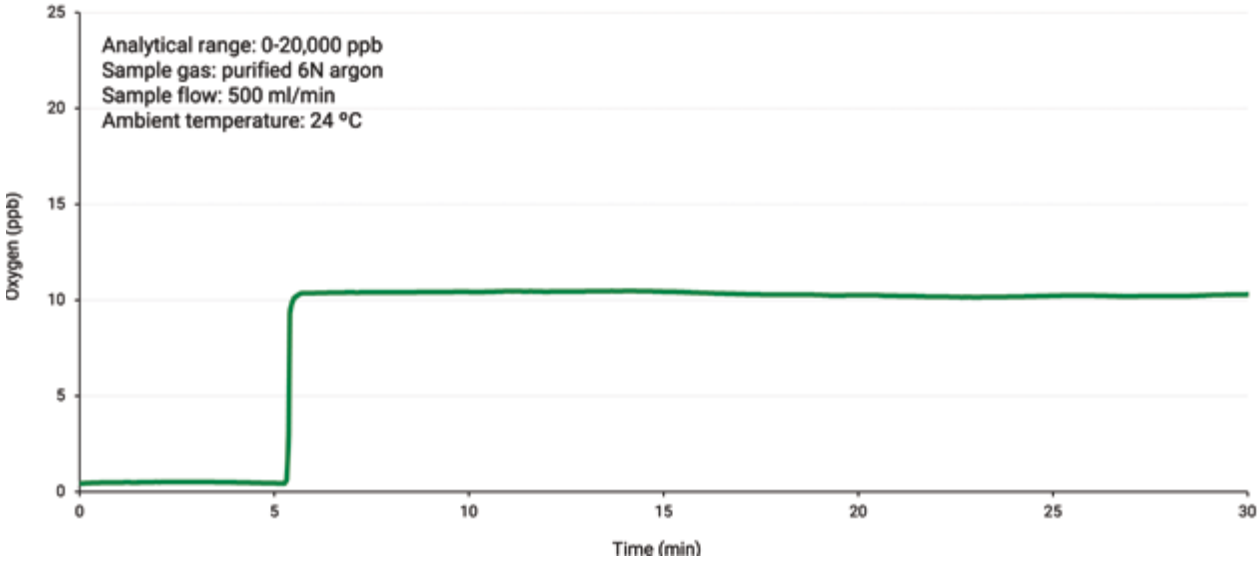
KA344

Performance Optimized for High Purity Applications

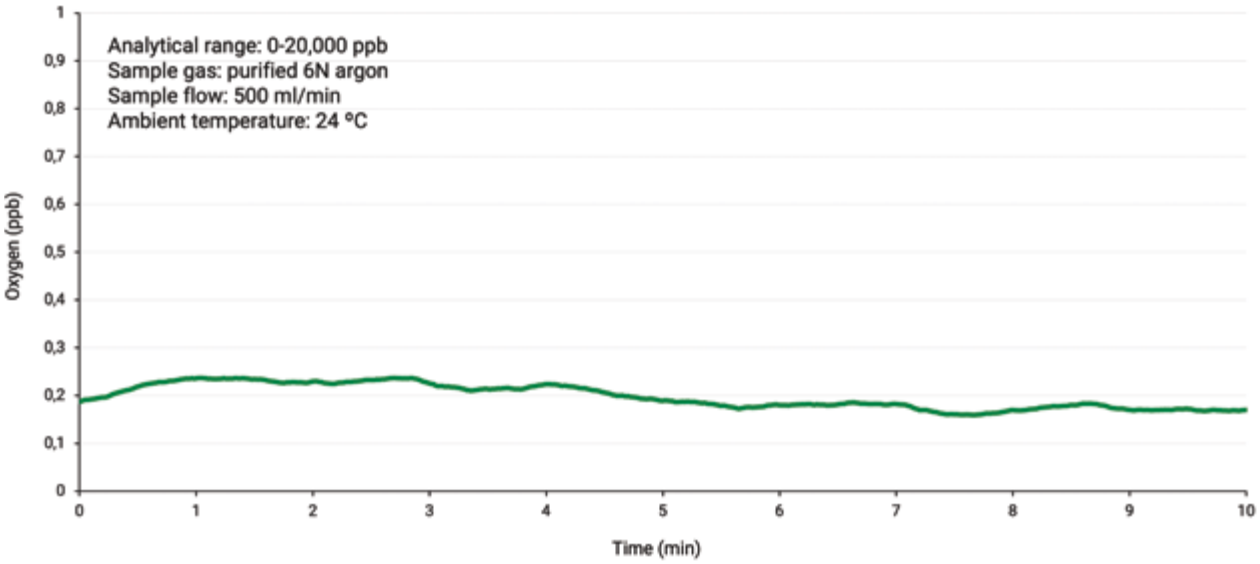
Linearity test



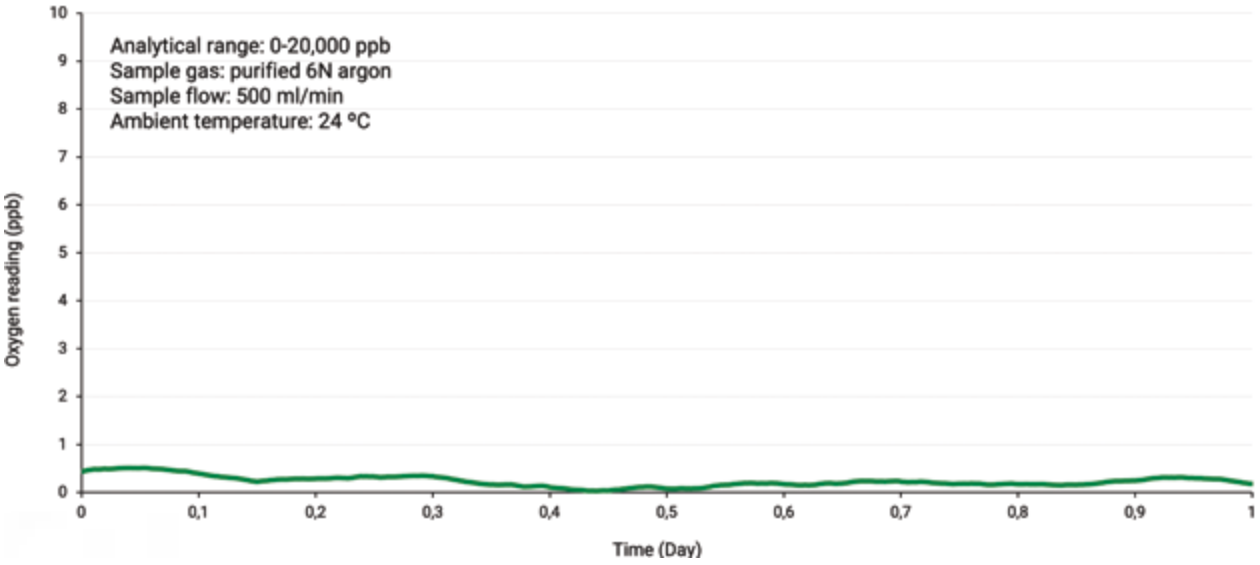
Step response



Short-term noise



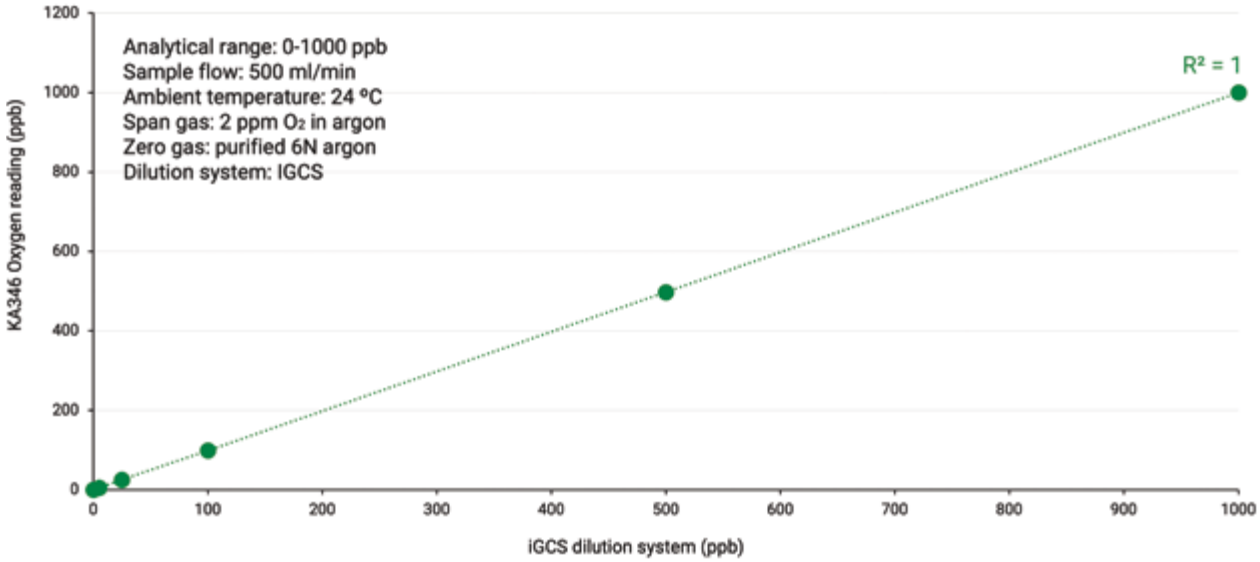
1 day stability



KA346

Performance Optimized for Ultra-High Purity Applications

Linearity test



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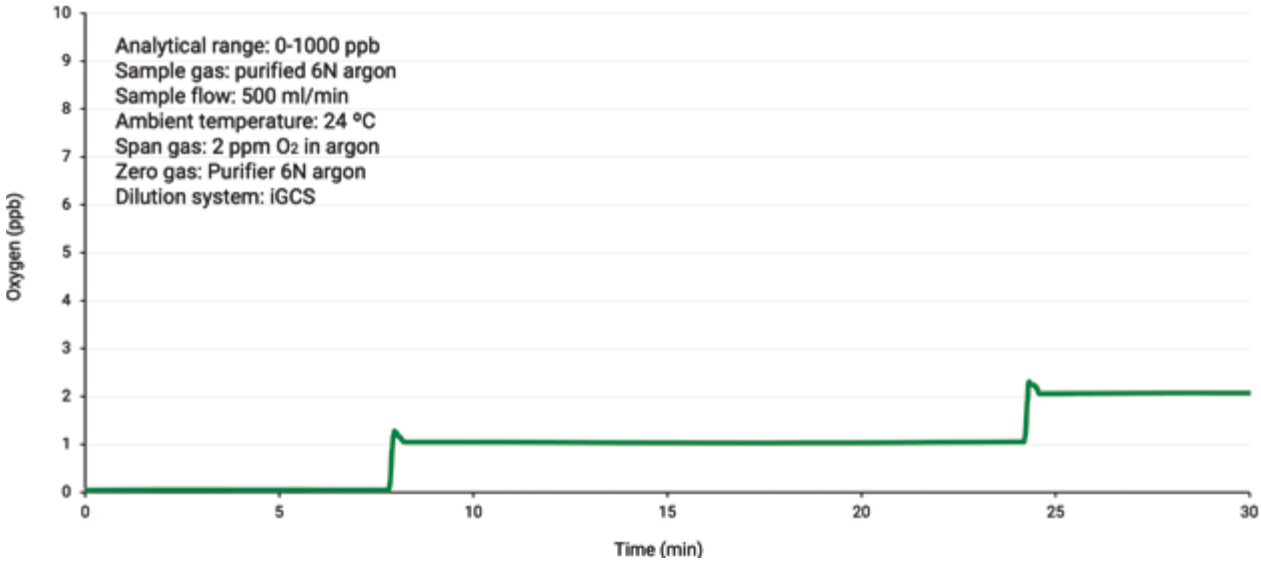

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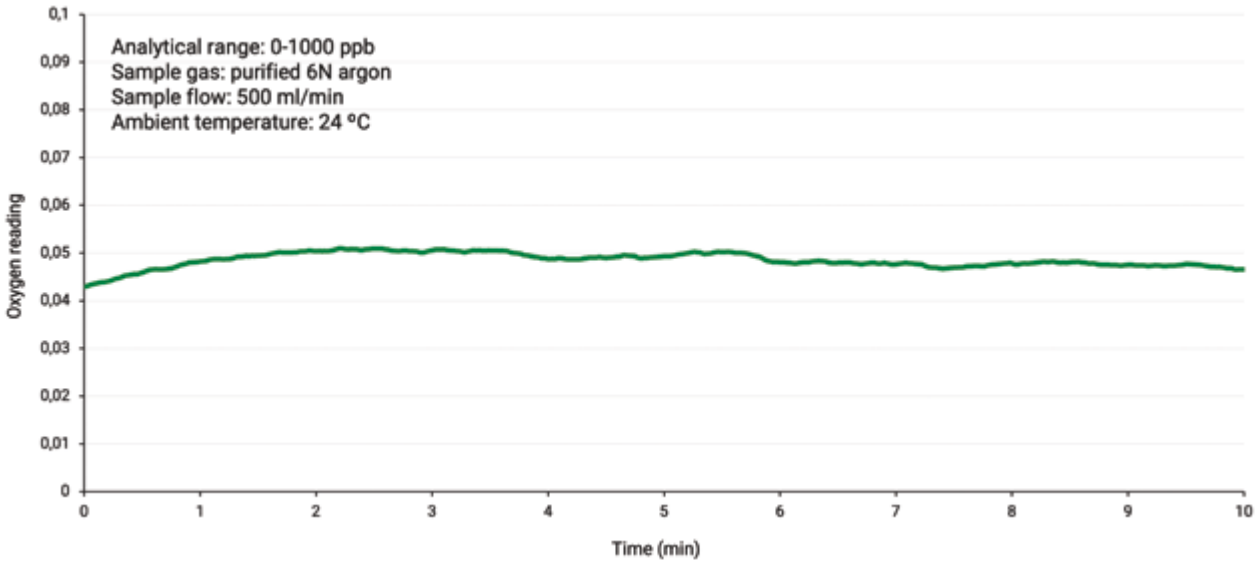

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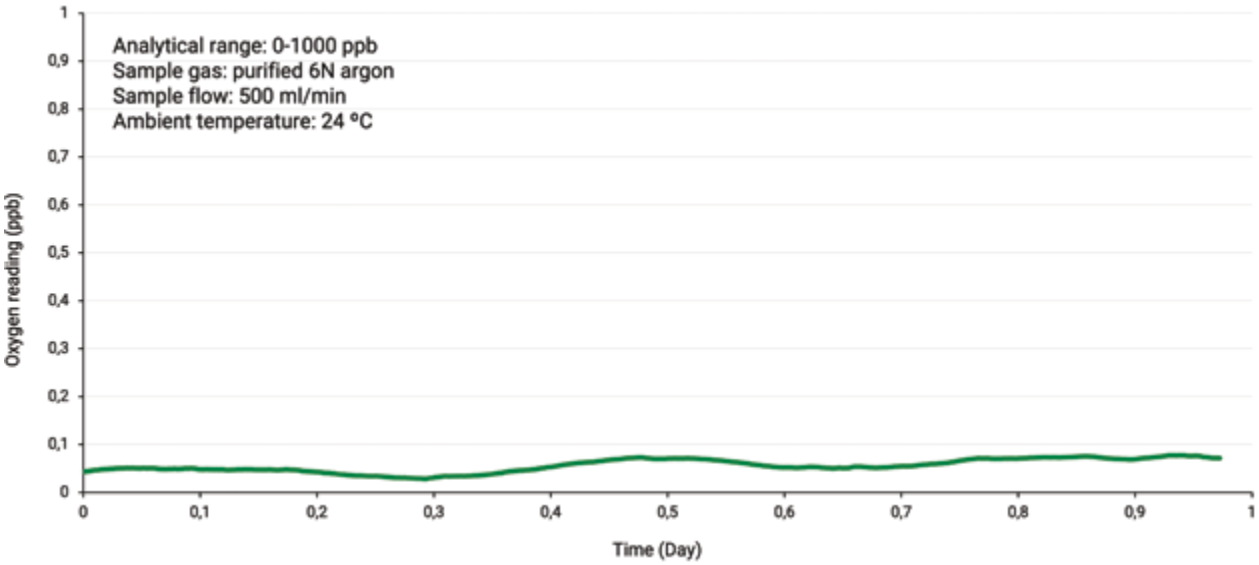
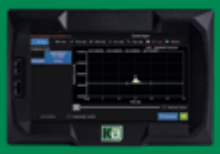


A complete line of products **for trace gas analysis**

Trace-Level Gas Chromatograph Analyzers

KA8000Plus

KA6000Plus



KA5000Plus

Continuous Gas Analyzers

N_2Sense
Trace N_2 Plasma technology

O_2Sense
Oxygen, Paramagnetic or Zirconia

HCSense
Trace Hydrocarbons FID technology

Accessories

iGCS
Trace Level Calibration System

iS4
Trace Level Sample Stream Selection System

ASDPure
Noble Gas Purifier

Our products have been designed to offer unique **advantages in many markets.**

- Air separation
- Environmental and greenhouse gases
- Food and beverage
- Hydrocarbon processing and petrochemicals
- Iron and steel
- Hydrogen and Energy
- Laboratory and lifesciences
- Semiconductor, LCD and LED
- Specialty gases and bottling plants

Contact us today!

Interested in our products? Our global team of experts and local partners around the world are at your disposal to answer your questions and evaluate your needs.

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