

TELEDYNE ANALYTICAL INSTRUMENTS

Parts-Per-Billion Oxygen Analyzer



UltraTrace™

Single digit, ppb level accuracy
using a disposable Micro-fuel Cell

Teledyne's Micro-fuel Cell, the benchmark for trace and percent oxygen analysis for three decades, has been uniquely packaged to monitor UltraTrace™ oxygen down to single digit ppb levels. The UltraTrace 3000 is a decisive departure from the notion that Ultra Trace Oxygen Analysis = Ultra High Expense. With a disposable, maintenance free, individually qualified, reliable and field proven Micro-fuel Cell at the heart of the analysis, the UltraTrace 3000 offers the best value among all classes of trace oxygen analyzers available.

In addition to providing exceptional value as a stationary, on-line analyzer for ultra high purity carrier gases, the UltraTrace 3000 can also conveniently be utilized for mobile cart applications. Its small size makes it an ideal choice for qualifying the integrity of welds and connections made on gas distribution piping runs within a semiconductor wafer fabrication facility. The encapsulated design of the Micro-fuel Cell eliminates concerns operators may have in losing electrolyte (as in the wet cell design) when moving the cart from point to point.

FLEXIBILITY

Engineers are concerned with reducing costs while maintaining peak performance. The cost effective

UltraTrace executes accurate analysis in three dynamic, user-configurable ranges from 0-10 ppb up to 1000 ppm, and can be calibrated in any range. The instrument is linear on all three scales, eliminating the need to recalibrate while switching between ranges. When used in a manufacturing process, it assures product quality demanded by the end user.

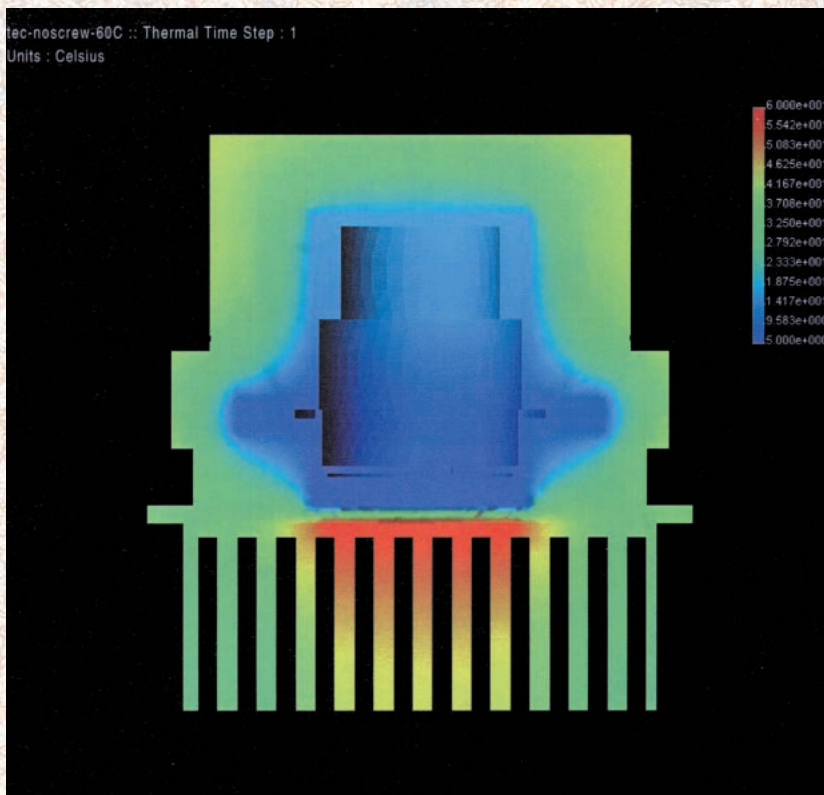
CONVENIENCE

The analyzer comes standard with two sets of analog outputs, 0-1 VDC and isolated 4-20 mA DC for oxygen concentration and range identification. A bi-directional RS-232C serial communication interface provides for remote monitoring and control of span and zero functions. The UltraTrace also offers Teledyne Remote Access Control Software (TRACS), allowing control and monitoring of the instrument across phone lines.

MAINTENANCE FREE SENSOR

What is the secret to achieving this level of performance from such a cost-effective sensor? Previously the only type of sensor capable of this level of monitoring was the large diameter, high output, "wet-cell" sensor requiring heavy maintenance cycles to obtain consistent performance.

Teledyne's Micro-fuel Cell Can Now



PPB analysis is accomplished through thermoelectric cooling of the sensor maximizing the offset-to-noise ratio and preventing the acceleration of temperature dependent, parasitic electrochemical reactions within the cell.

The secret lies in the thermoelectric cooling of the sensor which maximizes the offset-to-noise ratio and prevents the acceleration of temperature dependent, parasitic electrochemical reactions within the cell. The heart of the analyzer is Teledyne's B-2CXL Micro-fuel Cell specifically designed and parametrically tested to assure repeatable and accurate measurements in the single digit, ppb range. The cell is specific to oxygen and can be used in a variety of gases including hydrocarbons. These attributes combined with 100% testing of all sensors on gas for outstanding performance deliver a parts-per-billion analyzer of unequaled performance at an attractive price.

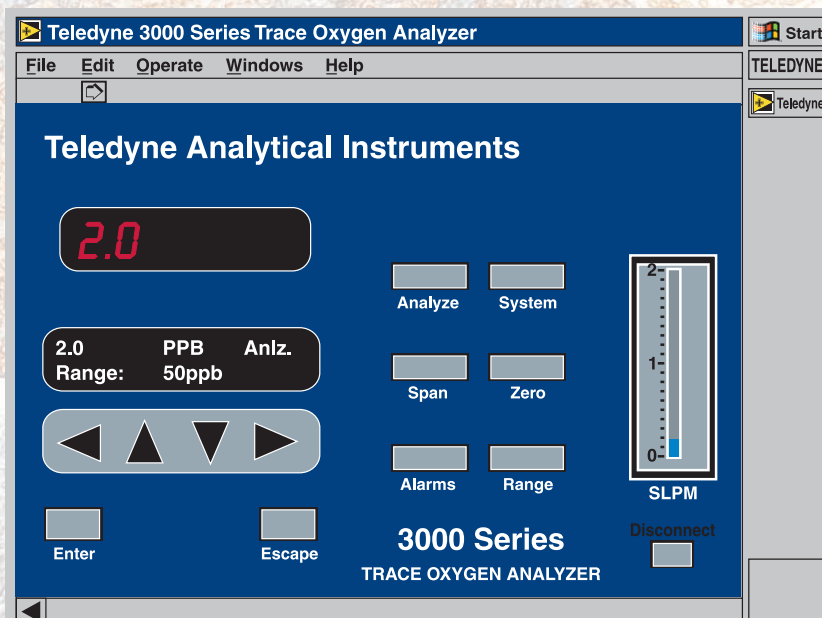
APPLICATIONS

- Semiconductor manufacturing
 - gas purification analysis
 - mobile cart analysis
- Air liquefaction and separation
- Pure, gaseous hydrocarbon stream monitoring
- Process monitoring of gaseous monomers
- Gas purity certification

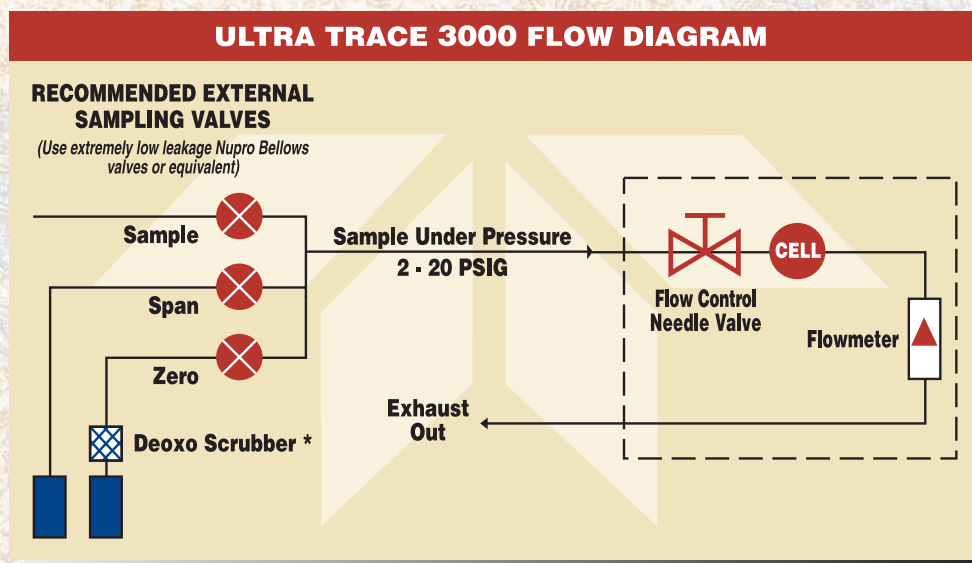
ADVANTAGES

- PPB level resolution and accuracy
- Programmable ranges and signal averaging
- Linearity of analysis across three user-selectable ranges
- Remote access to auto span and auto zero functions (external valves required)
- Autoranging to follow process upsets
- Maintenance-free sensor

Teledyne oxygen analyzers can be monitored and controlled over phone lines and networks with TRACS (Teledyne Remote Analyzer Controls Software).



Do Single Digit PPB Oxygen Analysis



* Oxygen scrubber recommended for applications below 0-100 ppb O₂

STANDARD FEATURES

- Class B-2CXL Micro-fuel Cell sensor
- Three user-selectable ranges plus cal range
- Signal output: 0-1 VDC & isolated 4-20 mA DC
- Programmable autoranging with Range ID contacts
- Two fully adjustable concentration alarm set points with programmable relay functions, Form C contacts, 3A resistive
- Calibration contact span/zero, Form A normally open contact, 3A resistive
- Remotely initiated span/zero via customer supplied 24 VDC signals, 3A resistive
- Self diagnostics with Form C failure alarm contact
- Full duplex RS-232C communication link
- Five digit oxygen concentration LED display
- 2x20 alphanumeric vacuum fluorescent display for set up and diagnostics
- Sample flow indicator and control valve
- Universal power supply: 85-230 VAC / 50-60 Hz



Ultra-Clean Sample System Prevents Contamination

The ultra-clean sample system has been constructed using techniques and components that meet the quality requirements for high-purity gas monitoring in the semiconductor industry. Electropolished 316L stainless steel tubing; VCR fittings; leakproof, bead-and-crevice-free orbital welds with minimal dead space; eliminating the possibility of gas absorption, trapping and dead legs. Sample system integrity is ensured by helium leak testing to 10⁻⁹ atm cc/sec.

UltraTrace Specifications

SPECIFICATIONS

Ranges: 3 user-configurable ranges
(Minimum 0-50 ppb FS)

Default ranges: 0-250 ppb, 0-1 ppm, 0-10 ppm O₂

Fixed over range 0-1000 ppm O₂

Accuracy: ±5 ppb O₂

Sensitivity: 0.5% of FS at 250 ppb FS (1.25 ppb)

Response time: 90% of FS at 77°F (25°C)

PPB range – programmable from 2 minutes to 1 hour

< 30 seconds for 0-10 ppm or higher ranges

< 50 seconds for 0-1 ppm range

Operating temp: 59 to 95°F (15 to 35°C)

For highest accuracy and stability, operate at fixed ambient temp.

Signal output: 0-1 vDC percent of range
4-20 mADC isolated percent of range

Range ID contacts: Form A normally open contacts,
3A resistive (quantity 4)

Analysis display: 5 digit red LED, 3/5" high numerals

Menu display: 20 character, 2 line vacuum fluorescent

Digital output / input: Bi-directional RS-232C serial interface,
(ModBus RTU optional, contact factory)

Power requirements: Universal AC input ranges,
85 to 250 VAC, 47 - 63 Hz

Sensor: Micro-fuel cell, Class B-2CXL

Sample gas inlet pressure: Min. 1 psig

Sample system: All wetted parts, 316 stainless steel

Sample connections: 1/4" VCR male

Mounting: Flush panel mount

Dimensions: Case: 8.7" W x 7.1" H x 12.7" D
(221mm x 180mm x 322.6mm)

Front panel: 10.79" W x 7.46" H
(274mm x 189mm)

Optional Auto-calibration Module:
Teledyne can provide an auto-cal module fitted with a De-Oxo scrubber that can be mounted side by side to the UT-3000 in a single 19" rack panel design.

 **TELEDYNE**
ANALYTICAL INSTRUMENTS
A Teledyne Technologies Company
16830 Chestnut Street
City of Industry, California 91748, USA

TEL: 626-934-1500 FAX: 626-934-1651
TOLL FREE: 888-789-8168

Visit Our Web Site at:
www.teledyne-ai.com

Warranty

Instrument is warranted for 1 year against defects in material or workmanship

NOTE: Specifications and features will vary with application. The above are established and validated during design, but are not to be construed as test criteria for every product. All specifications and features are subject to change without notice.

