



TELEDYNE
ANALYTICAL INSTRUMENTS



TELEDYNE
ELECTRONIC TECHNOLOGIES
Analytical Instruments

Quality Policy

Teledyne Analytical Instruments is dedicated to a never ending commitment to improving the quality of our products and the satisfaction of our customers through:

- Products that consistently meet or exceed expectations for performance, reliability, and durability
- Service to our customers that is prompt and courteous
- Deliveries that are on time
- Involvement and accountability of our entire management team

Our employees pledge to meet this commitment through a quality process based upon a solid foundation of ethical principles, conscientious attention to detail, proven product engineering, and manufacturing practices.



Al Pichelli
Vice President & General Manager

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BDS Parts-Per-Billion Oxygen Analyzer

The BDS 3960 PPB oxygen analyzer offers unprecedented performance using Teledyne's patented, non-depleting, ultra high sensitivity bi-potentiostat driven sensor (BDS). The BDS is extremely stable, resistive to acid gas streams, and can be applied from 0-50 ppb to 0-10 ppm O₂. The sensor has an extremely low, native zero offset and offers sensitivity of 0.01ppb O₂. The bi-potentiostat sensor design provides reliable single digit ppb O₂ analysis in addition to quick recovery from process upset conditions. The BDS 3960 sets itself apart from the BDS 3000 (see pg. 5) by incorporating a number of desirable features including a PDA-based controller using Windows CE software, built-in zero scrubber and automatic calibration valving. The unit is available in a common 19" rack-mounting configuration.

Applications best suited for: Semiconductor grade UHP gases (stationary systems); semi-conductor mobile carts for leak free tubing certification.



Ultra Trace Parts-Per-Billion Oxygen Analyzer

Engineers concerned with reducing costs while maintaining peak performance will appreciate Teledyne's Ultra Trace 3000 parts-per-billion oxygen analyzer which serves as the highest performing O₂ unit equipped with disposable galvanic fuel cell sensor technology. The secret lies in the thermoelectric cooling of the sensor maximizing

offset-to-noise ratio and preventing acceleration of temperature dependent, parasitic electrochemical reactions within the cell – allowing for 0-50 ppb O₂ full-scale analysis. Features include three programmable ranges, auto calibration, auto ranging, self-diagnostics, and an RS-232C bi-directional communication link.

Applications best suited for: O₂ detection in semi-conductor grade UHP gases; air separation; R&D laboratories.

Model 3000TA-XL Trace Oxygen Analyzer

The Model 3000TA-XL High Sensitivity Trace Oxygen Analyzer is a cost-effective instrument for measuring oxygen in the 0-1 ppm region. This analyzer offers three dynamic, user-configurable ranges and can be calibrated in any range. It comes standard with two sets of analog outputs 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 heart of the 3000TA-XL is Teledyne's B-2CXL sensor which is specific to oxygen and can be used in a variety of background gases including hydrocarbons.



Applications best suited for: Air separation; petrochemical; chemical processes; furnace applications; semiconductor manufacturing



Insta Trans Oxygen Transmitter

Teledyne's Insta Trans is a two-wire, loop-powered 4-20 mA oxygen transmitter packaged within a weather proof NEMA 4 housing. Insta Trans can instantly transform from ppm to percent analysis by changing the sensor and resetting the range scale on the function keypad. The

operator can ensure changes have been made via the range indication continuously shown on the built-in meter. No other electrical or resistor changes are required. The Insta Trans has six user selectable ranges from 0-10 ppm to 0-25%. This unit is suitable for use in non-hazardous and Division 2 environments in its standard configuration or for Division 1 / Zone 0 areas with optional intrinsic safety barriers.

Applications best suited for: Petrochemical; natural gas transmission; any O₂ application where 24V loop power is desired.



The InstaTrans uses Teledyne's latest sensor innovation, **Insta Trace™**, which eliminates the greatest inconvenience associated with replacing electrochemical oxygen sensors at the trace level – the wait. This innovation can be applied to all 3000 trace series analyzers.

One Common Software Platform - Five Different Gas Sensing Technologies

Fuel Cell, BDS, Paramagnetic, TCD & NDIR

By developing one common software platform that can interface with five different sensing technologies within four common mounting configurations, Teledyne Analytical Instruments has simplified the process of providing customers with rugged and reliable analyzers to meet stringent requirements across many industries. Our on-line instruments include:



general purpose design adaptable to fit in a 19" relay rack for non-hazardous areas



bulkhead mount version FM approved for Division 2 areas with no purge requirements

**FM Approved
Div. 2
No Purge**



split architecture version with a general purpose or bulkhead mount control unit for use in non-hazardous areas, and an explosion proof analysis unit NEMA 4/7 rated, U/L and CSA listed for Class I, Division 1, Groups B, C, & D



fully explosion proof design with explosion proof analysis unit NEMA 4/7 rated, FM and CSA approved for Class I, Division 1, Groups B, C, & D

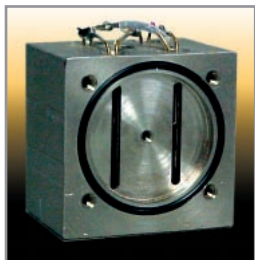
**FM / CSA Approved
Class I, Div. 1,
Groups B, C, D**

The standard features shared in each of the above configurations for all 5 sensing methods include:

- Three user programmable ranges
- RS-232C bi-directional serial interface
- 0-1 VDC and 4-20 mADC outputs
- Auto-ranging
- Range ID contacts
- Auto calibration

Series 2000 Thermal Conductivity Analyzers

Our 2000 Series of microprocessor based thermal conductivity analyzers measures the concentration or purity of the desired gas in a mixture of background gases. Thermal conductivity is a property of gases relating to their ability to conduct heat. The detector used in our Series 2000 responds to changes in the component of interest by comparing the sample gas with a reference gas (sealed or flowing) of a known thermal conductivity. The Series 2000 comes standard with over 110 pre-programmed combinations of gases, built-in digital linearization and the flexibility to analyze one gas over three user programmable ranges. The unit can also easily be reprogrammed in the field, using the existing E-PROM to tailor it



to a completely different application – requiring a change only in the calibration gases.

Applications best suited for:

Air separation; turbine generators; H₂ purity in hydrocarbon recycle streams; steel plants.

Series 3000M Paramagnetic Percent Oxygen Analyzer

The 3000M Series of Paramagnetic Oxygen Analyzers offers superior performance for percent oxygen analysis due to its advanced, maintenance free, paramagnetic sensor design. The 3000M provides the operator with a long-life, fast response oxygen sensing capability in both inert and corrosive CO₂ gas streams. Properly maintained paramagnetic sensors last for years with little or no attention making them ideal for critical measurements.



Applications best suited for:

Challenging petrochemical, steel and cement applications; O₂ purity analysis and emissions monitoring

Series 3000T & P Electrochemical PPM & Percent Oxygen

Our complete 3000T & 3000P series of microprocessor based trace and percent oxygen analyzers utilize Teledyne's advanced Micro-fuel Cell (MFC) electrochemical O₂ sensors. Teledyne's MFC's provide users with an easy-to-use, disposable, no maintenance sensor design that can be freely applied in inert gas streams as well as in pure or gas mixtures containing H₂, hydrocarbons and CO₂ for accurate O₂ detection from 0-1 ppm up to 0-100%. Teledyne invented the Micro-fuel Cell O₂ sensor and with 40 years of experience with this technology, knows where it can best be applied.

Applications best suited for: *Air separation; petrochemical; steel and heat treating; glove boxes; N₂ blanketing, and more.*

Series BDS 3000 PPB / PPM Oxygen Analyzer

The BDS Series of ppb and ppm oxygen analyzers offers unprecedented performance using Teledyne's patented, non-depleting, ultra high sensitivity bi-potentiostat driven sensor. The BDS is extremely stable, resistive to acid gas streams, and can be applied from 0-50 ppb to 0-500 ppm O₂. The sensor has an extremely low, native zero offset and offers the user a sensitivity of 0.01 ppb O₂. The bi-potentiostat sensor design provides reliable single digit ppb O₂ analysis capability in addition to quick recovery from process upset conditions.

Applications best suited for:

Semiconductor grade UHP gases; high purity hydrocarbon streams; air separation; solder re-flow furnaces; carts.

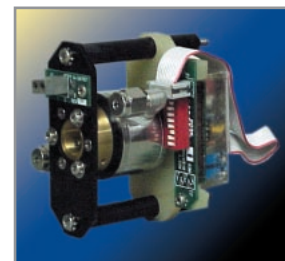


Series 7300 Non-Dispersive Infrared (NDIR) Analyzers

Our 7300 Series of microprocessor based NDIR analyzers provide a cost-effective means of continuously detecting gases such as CO, CO₂ and CH₄ from 0-1% to 0-100%. Using the field proven single source, multi-wavelength thermopile optical design, Teledyne can tailor the 7300 to meet a wide variety of applications. The rugged optical design is inherently stable over temperature and requires no special alignment. Teledyne is also able to modify the wetted parts of the sample cell (SS, Monel, or Kynar) to meet the stringent demands of corrosive gas streams for applications in phosgene, such as TDI or MDI processes.

Applications best suited for:

Petrochemical; steel and heat treating; air separation.



Portable Oxygen Analyzers



Portable Oxygen Analyzers

Teledyne's complete line of portable oxygen analyzers offers a number of light weight, rugged units with complete features. The 311 and 311XL series provides high accuracy and fast response, and are FM approved intrinsically safe for use in Class I, Division 1, Groups B, C, and D. The 311 offers four switch selectable ranges as low as 0-10 ppm. The 311XL and 311TCXL (BASEEFA certified) provide analysis in decade steps ranging from 0-2 to 0-10,000 ppm full scale. The 311PC (BASEEFA certified) Percent O₂ Analyzer from 0-1 to 0-25% is also available. The TurbO₂, which provides economical O₂ analysis on the parts-per-million level, uses the S-2 Micro-fuel Cell which rapidly recovers from process upset conditions. Power is supplied by rechargeable NiCad batteries, and an optional internal pump (TurbO₂P) is available. The 320P portable flue gas analyzer series is ideal for spot checking the oxygen content of flue gas from a boiler, firebox, furnace, or other combustion process. Three ranges are provided and calibration is accomplished with ambient air.

Applications best suited for: Cryogenic gas delivery certification; spot checking storage tanks; welding; diving; weather balloons; combustion efficiency monitoring.



SnackO₂ & 9070 Food Package Analyzers

The SnackO₂ offers quick, accurate measurement of oxygen for the Modified Atmosphere Packaging (MAP) industry. The unit utilizes a fast, long lasting sensor providing a response time of less than three seconds. The SnackO₂ weighs 25 ounces and calibration is completed in ambient air. No warm up time is required, and the internal, rechargeable battery lasts for two hours of continuous duty. An optional carrying case makes it ideal for use in wet environments, and an additional lead battery adds another 10 hours of life to the instrument. The unit can run off AC power while simultaneously charging.

The 9070 is a convenient, reliable food package tester offering precise measurements in seconds. The unit draws a suitable sample and checks the lowest reading of oxygen and highest reading of carbon dioxide. The 9070 uses a zirconium oxide sensor which provides accurate, drift free reading from 1 ppm to 100% for years without calibration.

The 9070 is ideal for spot checking or can be installed in a packaging machine for continuous measurement of the gas flushing process.

Applications best suited for: Quality control of food and beverage packaging.



CENELEC Oxygen Analyzers



CENELEC Approved Oxygen Analyzers

Teledyne's CENELEC approved, intrinsically safe trace (3010TAC) and percent (3010PAC) oxygen analyzer series offers versatile, microprocessor based instruments for detecting 0-1 ppm to 100% oxygen in a variety of gases. The units are designed as "split architecture" instruments, meaning a general purpose control unit for non-hazardous areas controls a specially designed analysis unit or remote probe that is CENELEC approved intrinsically safe for use in area classification EEXiaIICT6, Zone 0.

Applications best suited for: Air separation; petrochemical; chemical processes; furnace applications.



Available probes



3350 Control Room Monitor

Personnel safety is a concern in every industry, and no factor is more important than assuring an appropriate level of oxygen in an enclosed working area. The 335 or microprocessor based 3350 control room monitor measures the concentration of oxygen in control rooms, closed atmospheres, critical breathing circuits, and other applications that require fail-safe

monitoring of breathable, ambient air. Simple to use and maintain, the 3350 offers real-time measurement of the oxygen content of the atmosphere. Designed in consideration of OSHA specifications, the standard instrument is configured to run from an AC power source and is available with an optional DC battery backup.

Applications best suited for:

Control room monitoring; any enclosed area classified to meet OSHA certification requirements; MRI.



Model 3220 Multichannel Percent Oxygen Monitoring System

The Model 3220 Multichannel Percent Oxygen Monitoring System monitors oxygen levels at one or more locations. The system is designed to easily add channels for in-field upgrades, and is field-programmable to meet the needs of specific applications. Oxygen probes with maintenance free sensors can be

mounted up to a mile away from the control unit. No zero or span gases are required. Numerous remote sensor probe configurations are available including designs suitable for hazardous areas.

Applications best suited for:

Process monitoring; life support; area monitoring; controlled environments; and inert gas blanketing



1220 Flammable Gas & Vapor Detection System

The 1220 is designed to monitor large industrial plants for flammable gases and vapors to detect and warn of leaks before explosive concentrations of materials can accumulate, providing personnel and equipment safety. In addition, the 1220 can activate a ventilation or sprinkler system or shut down process equipment. The system is composed of a central control station plus remote detectors. The microprocessor-based module is programmable by the user to customize the system's functions and provides one man calibration capability. It is also easy to add channels for in-

field upgrades. As few as one or as many as 128 detectors located over a mile away can be connected to one system.



Model 1223A Gas Detector

The Model 1223A Gas Detector monitors industrial locations for flammable gases and vapors to detect and warn of leaks before explosive concentrations of materials can accumulate, providing personnel and equipment safety. In addition, the 1223A can activate a ventilation or sprinkler system or shut down process equipment. The instrument is composed of up to three totally independent

control units with up to six remote sensors. The microprocessor-based module is programmable by the user to customize the system's functions. The catalytic bead diffusion type detectors can be mounted up to one mile from the control unit.

Applications best suited for: *Chemical processes*



3190 & 3290 Cost Effective Oxygen Analysis

The Model 3190 Trace and 3290 Percent Oxygen Analyzers are microprocessor based units offering high accuracy, ease of use, and a full feature set in a compact design. In addition to providing full features in a small footprint, these analyzers are extremely cost-effective. Two ranges are standard on the 3190 from 0-10 to 0-1000 ppm with optional ranges available. The 3290 uses an E-2 electrochemical O₂ sensor with an expected life of four years and offers ranges configurable between 1% to 100%. Two standard programmable alarms (one high and one low setpoint) satisfy most requirements. These units can be sold either as stand-alone Teledyne units or on a high volume OEM, private label basis.

Applications best suited for: *Nitrogen generators; nitrogen blanketing / pneumatic conveyors (with additional Teledyne sample system and enclosure).*



5000 Series Near Infrared (NIR) Photometer

The Series 5000 NIR Photometer utilizes a chopper stabilized single sample cell, dual wavelength design to continuously monitor water and organic compounds (in the liquid phase) that have distinct absorbance peaks within the NIR region of the light spectrum. In addition to providing inherent stability, this design provides automatic compensation for the background components with an absorbance, which overlaps that of the component of interest. The Series 5000 NIR is set apart from other commercially available NIR analyzers via its unique sample cell pre-heater design that ensures stable performance over a wide temperature range. The Series 5000 is available in either general purpose or hazardous configurations.

Applications best suited for: PPM or percent level detection of H₂O in organics / solvents in petrochemical plants (EDC/VCN, HOAC, MCB, etc.)

6000 Ultraviolet Photometer Series

The 6000 Series of microprocessor controlled ultraviolet photometers provides continuous on-line detection of selected gases or liquids that absorb in the UV / VIS region. The field proven single source, dual wavelength optical design allows for compensation of turbidity, source lamp aging or window coatings, thereby producing a high degree of stability. General purpose, non-hazardous configurations as well as totally explosion proof versions (6020) for use in Class I, Division 1, Groups B, C, & D are available. The 6000 Series is normally applied to detect H₂S, SO₂, CL₂ as well as phenol in water and the color of refinery oils on a Saybolt, ASTM or APHA basis.

Applications best suited for: Petrochemical; refining; emissions; pulp and paper; food and beverage; electrostatic precipitators.



6600 Oil in Water Analyzer System

Model 6600 microprocessor based oil-in-water analyzer system utilizes the ultraviolet absorption principle to detect and measure oil concentration in water from 0-10 ppm to 0-200 ppm. Typical applications include monitoring of boiler return condensate, recycled cooling tower water, refinery and offshore drilling effluents, and on-shore deballasting discharges. The system incorporates conditioning components that prepare the sample so both dissolved and undissolved oils are measured. A completely automatic zeroing feature is standard, permitting continuous, reliable analysis. The compact, modular design can be configured to meet a wide variety of applications (clean or turbid samples) suitable for both general purpose and hazardous areas.

Applications best suited for: Boiler return condensate; offshore platforms; refinery effluent; recycled cooling tower water.

6200A Total Sulfides Analyzer

The need to continuously detect sulfides in carbon dioxide is vital within the food and beverage market. Gas suppliers must ensure the CO₂ they provide for use in the preservation of food and drink related products meet today's exacting standards. The 6200A Total Sulfides Analyzer combines the time-proven UV fluorescence principle with state of the art microprocessor technology to provide accurate and dependable measurement of trace levels of total sulfides. Features include selectable ranges from 0-50 ppb to 0-20 ppm, built-in data acquisition capability using the analyzer's own RAM, high-end self diagnostic capability, bi-directional RS-232C for remote operation, a high temperature TRS converter, digital status outputs, and an easy to read display. An optional Precision Calibrator Module or built-in NIST certified permeation device with internal zero and span valves can be provided to generate reliable calibration standards in the ppb region.

Applications best suited for: Food and beverage producers; carbon dioxide suppliers; air separation.





GFC-7000 Infrared Series

The GFC-7000 Gas Filter Correlation Analyzer measures ultra-low ranges of CO and CO₂ from 0-100 ppb to 0-100 ppm. The sensitivity is accomplished via a multiple optical pass

sample (white) cell. The optical design produces excellent zero and span stability and a high signal to noise ratio allowing extreme sensitivity. The advanced electronics provide extensive self-diagnostics capabilities in addition to including built-in data acquisition means by which to log multiple calibration and operational parameters. The modular construction makes service, when required, a simple operation.

Applications best suited for: Air separation; medical grade air and O₂.



7110 CO₂ Purity Analyzer

Model 7110 CO₂ Quality Assurance Analyzer is a microprocessor based, on-line monitor enabling real time CO₂ purity analysis between 98 and 100%. This instrument eliminates

time consuming, manual operator sampling with the Zahm Nagel method, and bypasses errors caused by individual interpretations when visually reading volumetric glass dials. Features include continuous readout with concentration and system failure alarms, extensive self-diagnostics, calibration range for convenient zeroing or spanning, and auto ranging. The analyzer communicates the CO₂ concentration data digitally via an RS-232 serial port or as a 4-20 mA DC current or 0-1 VDC voltage signal to a reporting device such as a recorder or customer data acquisition system.

Applications best suited for:

Beverage; gas supply / manufacturing industry.



IR7000 Non-dispersive Infrared (NDIR) Series

The IR7000 Series of non-dispersive infrared gas analyzers is one of the most highly sensitive and stable NDIR analyzers commercially available. The patented, field proven micro-flow sensor design allows for the detection of CO₂ as low as 0-2 ppm. The analyzer is also extremely flexible allowing for two optical benches to be integrated into a single unit with the addition of an optional O₂ sensor in either 19" rack or wall mount configurations. Standard features include automatic calibration, single dynamic range, closed sample path preventing ambient CO₂ or H₂O interference, four selectable chart recorder ranges, adjustable alarms and no moving parts (vis-à-vis a pulsed source lamp). Split architecture (for explosion proof applications), portable, wall mount NEMA 4, 19" rack, dual bench, and x-purged versions are available.

Applications best suited for: Air separation; medical grade air / O₂; petrochemical; emissions monitoring; steel; cement.

Trace Moisture & Trace Total Hydrocarbons



8800 Series of Single Point Trace Moisture Analyzers

The microprocessor based 8800, available in four designs, has the ability to detect moisture from -100° C to ambient dewpoint levels of +20° C on either a continuous or spot checking basis.

- 8800A - Flush mount DIN enclosure with connections made via a pluggable screw terminal block
- 8800B - Wall mount N4X (IP65) enclosure with connections made via 3 bottom watertight fittings
- 8800P - Portable battery operated design available in the Standard Version, I/O Version, and I/S Version (I/S version suitable for hazardous areas)
- 8800T - Low-cost, loop powered 4-20 mA transmitter design with built-in LCD display

The user can select the moisture analysis readout to be displayed as Deg C, Deg F, ppm and for natural gas applications in lbs of H₂O/million cft or g/m³. The moisture sensor employs unique Hyper

Thin Film (HTF)TM technology which offers three major structural improvements in Al₂O₃ sensor design. These structural changes provide increased sensitivity, greater stability, and a quicker response time when compared to other conventional aluminum oxide sensors.

Applications best suited for: Air separation; glove boxes; heat treating furnaces; dryers; polyethylene plants.



402REU Hydrocarbon Analyzer

The 402REU utilizes a flame ionization detector (FID) for continuous measurement of total hydrocarbons at trace levels within a gas stream. The principle of operation is based on measuring the ion current generated when hydrocarbon compounds are cracked in a hydrogen flame. Full scale monitoring is as low as 0-1 ppm (optional). The 402REU is ideal for regulating hydrocarbon contamination in high purity gases such as nitrogen, argon, oxygen, carbon dioxide and hydrogen. Industrial applications include monitoring the purity of gases in the manufacture of microcircuits, minimizing contamination in air liquefaction and other gas certification processes, and providing gas purity certification. The unit can be

supplied for petrochemical installations in X-purged configurations. The 402REU can also be coupled with a stripper system for use on cooling tower water where total hydrocarbons (i.e. aliphatic, straight-chain hydrocarbons + aromatics) must be continuously detected.

Applications best suited for: Air separation; emissions monitoring; petrochemical plants (X-purged); HC in water.



9060 Zirconium Oxide Flue Gas Oxygen Analyzer

The 9060 provides reliable in-situ oxygen monitoring by combining our proven zirconium oxide sensor technology with a microprocessor based controller incorporated in a compact NEMA 4 housing. The 9060 sensor uses a “composite” ZrO₂ sensor design more resistant to thermal and mechanical stress than

conventional “stabilized” ZrO₂ sensors. The 9060 controller can accept signals from up to two ZrO₂ probes to provide a better profile of the stack where stratification may be a concern. Both heated and unheated probe designs are available allowing in-situ analysis up to 1400° C. Teledyne can provide the ZrO₂ probe head in an explosion proof configuration (Class I, Division 1, Groups B, C & D) as well as the control unit for Division 1 or 2 configurations. **A specially designed configuration for UOP’s CCR process can also be made available.**

Applications best suited for: Boiler / combustion efficiency; stack gas / emissions monitoring; process heater furnaces (ethylene plants).



Series 9000 Flue Gas Analysis System

The Series 9000 is a flexible flue gas analysis system configured for single component or multi-component gas analysis applications. The field proven water wash sample preconditioning system allows plant operators to take on challenging corrosive, particulate-laden sample streams that conventional dry-type sample systems cannot withstand.

Teledyne has successfully supplied Series 9000 systems for O₂, CO, CO₂, combustibles and NO_x analysis (combinations thereof) for use on a wide variety of applications. Systems are available in either general purpose or hazardous configurations and are designed to meet specific user application and configuration needs.

Applications best suited for: Cement / lime kilns; emissions monitoring; incinerators; catalyst regeneration (FCCU’s); black liquor recovery in pulp and paper; combustion control at coal fired power plants; co-generation plants.



Series 9110 Chemiluminescence NO_x Analyzer

The Series 9110 utilizes the chemiluminescence method for the continuous detection of NO_x for either a 0-50 ppb to 0-20 ppm (Model 9110A) or 0-5 ppm

to 0-5000 ppm (Model 9110AH) range. Features include user selectable ranges, built-in data acquisition capability using the analyzer’s own RAM, high-end self diagnostic capability, bi-directional RS-232C for remote operation, digital status outputs, and an easy to read two line alphanumeric display. A choice of NO₂ to NO converters handles tough applications such as thermal DeNO_x and stack testing. The modular design offers top-mounted access to all components, while hinged front and rear panels simplify module replacement. The unique modular sealed ozone generator provides improved voltage coefficient, safety and reliability. In addition, the excess ozone generated is removed by catalytic reaction, eliminating the need for frequent charcoal scrubber replacement.

Applications best suited for: Continuous emissions monitoring (CEM’s); selective catalytic reduction of NO_x; air separation (medical grade gases).



9950 Pollution Emissions Monitor

The 9950 offers convenient portability while providing complete combustion efficiency and pollution emissions capabilities. Weighing only 27 pounds, the 9950 analyzes O₂, CO, SO₂, NO, and NO₂, temperature and calculates CO₂ and efficiency for 15 different fuels. The 9950 provides an emissions analysis and hard copy printout of all parameters. The monitor automatically

calculates net combustion efficiency, and the readout can be configured to EPA reporting standards. The keypad remains functional during setup for changes in parameters and selection of the tested fuel. Calibration settings are stored in memory, even when the unit is turned off, and the monitor can retain information on 99 separate tests. Stored data can be easily downloaded to a computer via the RS-232C serial link. The 9950 is provided with a sample insertion probe, interconnecting hose, thermocouple and preconditioning system, all in a rugged carrying case.

Applications best suited for: Power plants; petrochemical plants; co-generation plants; back-up to CEM’s.



Max 5 Combustion Efficiency Analyzer

The Max 5 is the quick and easy way to fine tune boilers, furnaces, fire boxes, and any commercial or industrial combustion process. This unit calculates efficiency and displays the results of burner adjustments without the need for charts or tables. The Max 5 analyzes O₂, CO, combustibles, temperature and calculates both CO₂ and net combustion efficiency. The unit utilizes maintenance free sensors as well as an RS-232C serial port to provide a continuous output of all parameters. The unit includes a standard sample probe and sample pre-conditioning system. A carrying case is optional.

Application best suited for: Power plants; steel plants; petrochemical plants; co-generation plants.



Insta Trans O₂ Transmitter for trace O₂ detection in petrochemical applications

Teledyne provides turn-key solutions for a wide variety of complex, custom process monitoring applications. For over 50 years the company has assisted customers with special monitoring needs. Drawing on our expertise with materials and components, our team of seasoned experts creates systems that offer reliability and performance customers can rely on.

The development of a custom system involves evaluating chemical samples, process conditions, environmental requirements, and hazardous classifications. In addition, systems must often meet international standards that require special knowledge. This work is done at no charge to the customer.

Teledyne also participates in joint cooperative efforts with end users, manufacturers and agencies to provide solutions to problems that no individual company can solve. Many Teledyne developments are shared with the scientific community to propel the analytical industry forward and better serve the scientific community. Whatever the application, Teledyne will endeavor to create a custom system specific to the application.



Carbon Dioxide Quality Control (CDQC) System for detecting total sulphides, total hydrocarbons and trace moisture in pure CO₂ for beverage industry



Model 6600 Oil in Water Analysis System for 0-10 ppm oil in boiler return steam condensate



Micro-Fuel Cells

Teledyne has a deserved reputation for designing and producing high quality electrochemical oxygen sensors. A complete line of Micro-fuel Cells spans all application requirements from high sensitivity to fast response. Serving as the heart of our oxygen analyzers, Teledyne's sensors are also available for our OEM customers in a wide variety of standard and custom configurations. Industries served include:

- Automotive – emissions analyzers
- Medical – anesthesia, ventilator and incubator monitoring
- Safety – personnel monitoring
- Diving – rebreathing systems, gas mixers, descent vehicles, and deck chambers

Industries Served By
TELEDYNE
ANALYTICAL INSTRUMENTS

Petroleum
Chemical
Power generation
Semiconductor
Steel
Cement

**Air liquefaction/
separation**
Pharmaceutical
Pulp and paper
Oil and gas
Fertilizers and pesticides
Coal products
**Stone, clay, glass and
ceramics**
**Metals and
metal processing**
Waste treatment
Transportation

**Instrumentation
and control**
Emissions control
Government
Rubber and plastic
Food and beverage
**Heater and boiler
servicing**
Heat treating
**Gas and water
utilities**
Mining
Aerospace
Electronics
Medical
Automotive
Military
Nuclear
Diving

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