MICHELL Instruments

Analytical Industries Inc

NTRON Gas Measurement

LDetek

Analyzers for ultra-high purity gas quality control

for semiconductor manufacture

ANALYZERS FOR ULTRA-HIGH PURITY GAS QUALITY FOR SEMICONDUCTOR MANUFACTURE

To ensure product quality and prevent loss of yield, semiconductor component fabrication processes must be monitored for moisture ingress, as well as O2 and other gases down to parts per trillion. Four well-known Process Sensing Technologies (PST) companies, Analytical Industries Inc, Michell Instruments, LDetek and Ntron offer a broad range of moisture, oxygen and speciality gas analyzers that ensure the quality of ultra-high purity gases used in semiconductor manufacture. PST brings together years of experience in serving this highly specialised and demanding application, making it easier for you to find the exact product, or mix of products to meet your needs at the critical measurement points throughout your process.

Applications

- Pipeline commissioning
- Verification of gas quality on entry and prior to use
- Inerting in solder reflow ovens and wafer fabrication
- Silicon precursors analysis for production of electrical insulators in microelectronics transistors
- Plasma etching of silicon wafers for LCD production
- Germane purity for epitaxial Ge-on-Si

Measurement Types

- Trace impurity detection - quality of UHP gases
- Oxygen purity – for quality of oxygen
- Trace oxygen – ensure purity of gases and leak detection
- Trace moisture – quality assurance for UHP gases and process integrity

Benefits

- Choose the best fit for your process
- Wide range of analyzers and transmitters
- Easy to maintain with service exchange and extended warranty agreements
- Single supplier for all process requirements make purchase and installation easy
- Sub ppb detection of impurities

TRACE IMPURITIES

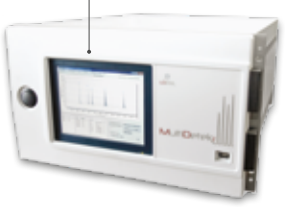
A good analytical tool is essential to ensure the quality of the UHP gases used in semi-conductor manufacture. LDetek's ranges of gas chromatograph analyzers allow impurity detection down to sub-ppb levels.

Multidetek 2 – Compact Gas Chromatograph

Based on LDetek's Patented Plasma Emission Detector technology, this stand-alone gas analyzer is the ideal flexible and customizable solution.

- Sub ppb trace measurements
- A single analyzer for trace measurement of multiple impurities
- Plug & Play, user friendly configuration
- Ethernet connectivity for remote control

Compact and robust industrial rackmount 6U chassis



LD8000 Plus – Online ppb Trace Nitrogen in Argon/Helium Analyzer

The LD8000 Plus is designed for ultra-pure Argon or Helium gas analysis. It is an online analyzer, providing a continuous monitoring. A maintenace-free solution inside a compact 3U rack.

- Unique Plasma Emission Detector design based on a duty cycle controlled system
- PPB sub-system integrated
- Range identification relay
- Bypass sample flow control to ensure high purity

Low sample consumption

TRACE IMPURITIES CONTINUED

LDGSS – High Purity Gas Stream Selector

Based on high purity connections with a unique diaphragm valve and no dead volume, its unique design brings an easy way to provide clean gas to any process GC and on-line process analyzers.

- Compact design (3U) with 2 to 9 streams configurable
- Connectable to MultiDetek2 for remote control switching and sequence programming
- Options available for high purity or corrosive and toxic gases

LDGDS – Dilution Gas System

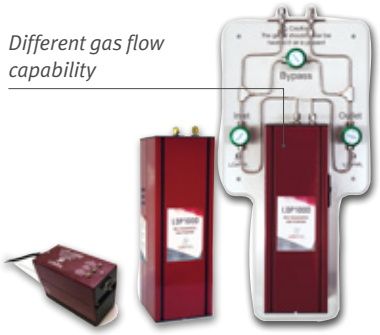
A user friendly gas dilution system that offers all the flexibility to manually or automatically generate the desired gas mixtures. The Windows user interface gives the ability to control and monitor the mixtures, flows, pressures and the concentrations.

- Automatic calculation of dilution concentrations
- Broad range of dilution ratios (up to 1000 to 1)
- Integrated heated gas purifier to generate ultra high-purity zero gas reference (optional)

LD1000 Series

The LDP1000 & Compact-LDP1000 series is a sub ppb purifier ideal for calibration gas for on-line analyzers as well as carrier gas for chromatograph.

- Purification of noble gases, nitrogen and hydrogen
- Enhanced 2 beds of purification
- Cost effective, interchangeable getter
- Real end-of-life monitoring in combination with MultiDetek2



LDRACK – (System integration into 19" NEMA cabinets)

- Welded equipment and VCR fittings/valves/regulators to ensure optimal performance for ppbv measurements
- Unique slide out design to offer easy access for maintenance without removing unit from gas sources
- Installation of third-party analyzers when required

TRACE OXYGEN

A range of galvanic electrochemical or zirconium oxide sensors packaged in a choice of transmitters and analyzers ensures the most appropriate choice per application.

PI2-UHP 50/100 – Oxygen Analyzer for Ultra-high Purity Gases

Accurate and stable measurements of oxygen down to low parts per billion – with an LDL of less than 100 ppt.

- Cost-effective and reliable electrochemical sensors with 12 months life
- Heated sample system for measurement integrity – negating the diurnal temperature effect
- Auto-calibration system with true zero feature via O_2 scrubber

No electrolyte to regularly top up or replace

PI2-MS 500/1000 – Oxygen Analyzer for Ultra-high purity gases

Accurate and stable measurements of oxygen down to parts per billion.

- Cost-effective and reliable electrochemical sensors with 12 - 24 months life
- Easy to maintain, simple to operate
- Optional auto calibration system with true zero feature via O_2 scrubber

LDL of less than 2.5 ppb

GPR-1600 – Electrochemical Oxygen Analyzer

For monitoring trace oxygen in low parts per million.

- Low measurement range 0-10 ppm
- Long sensor life up to 24 months in ‹1,000 ppm O_2

Accuracy ±‹2 % of range

XZR400 Series – trace oxygen analyzers

Zirconia-based oxygen analyzer designed to measure oxygen as an impurity in pure inert gases.

- Measurement range 0.1 ppm up to 25% O_2
- High accuracy with built-in pressure compensation
- Calibration intervals of up to 6 months
- Integrated moisture sensor for -100 °C to +20 °C dew point

Low maintenance and cost of ownership

SIL O2 – fail-safe oxygen Analyzer

This SIL2 rated oxygen analyzer has been developed specifically for the measurement and control of oxygen for process safety critical applications.

- Safety Integrity Level (SIL2) in accordance with IEC61508/ IEC61511
- Zirconia sensor developed to withstand harsh environments
- 3 configurable alarm outputs
- 4-20 mA and RS485 Modbus communication

Meets the requirements of SILO2

TRACE OXYGEN CONTINUED

SenzTX

Utilizes Zirconia technology to give a reliable and fast response time, long life and virtually no sensor drift.

- Measures from 1 ppm - 96% oxygen
- 4-20 mA and RS485 Modbus communication
- Integrates easily with OEM equipment
- Fast response time from ambient air

Accuracy +/- 2% of range

Microx – Oxygen Analyzer

Microx oxygen Analyzers comprise of a range of low-cost OEM solutions for the ppm or % oxygen measurement which utilizes zirconia technology.

- Flexible panel, wall or din rail configurations
- 4-20 mA and RS232 Modbus communication
- LCD display and 3 alarm contacts

Cost-effective OEM solution

TRACE MOISTURE

Trace moisture measurements are essential for quality assurance in semi-conductor manufacture.

S8000 RS

The S8000 RS chilled mirror sensor directly measures the formation of condensation, giving long-term and unmatched, drift-free readings of dew-point and relative humidity.

- Precision measurement to -90°C dew point (100ppb) with no need for additional cooling
- Sensor head optimised for fast response to low moisture levels
- Ethernet or USB connections with SD card data logging

Accuracy of ±0.1 °C

QMA401 – Trace Moisture Analyzer

Quartz crystal microbalance sensing technology provides reliable, fast and highly accurate measurements of trace moisture.

- Precision measurement from 0.1 to 2000 ppm_V
- Low maintenance

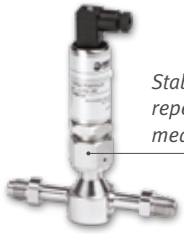
Intuitive user interface

Pura – Pure Gas Trace Moisture Transmitter

Rugged, self-contained hygrometer to measure trace moisture content in ultra-high-purity gases.

- Precision measurement from 0.1 to 2000 ppm_V
- Low maintenance

Stable and repeatable measurement



Easidew – Industrial dew-point transmitters

Simple to install and maintain, the Easidew range of dew-point transmitters measures dew point or ppmV to ensure quality of inert gases.

- Measurement ranges from -110 up to +20 °C dew point
- Wide range of process connectors

Accuracy ±2 °C dew point

PROCESS SENSING TECHNOLOGIES

The PST Group consists of a group of manufacturers who together provide an unmatched suite of instruments, analyzers and sensors for precision measurements in industrial process control, environmental monitoring, natural gas and petrochemical processing as well as applications in food and medicine.

Using our products, customers save millions of dollars each year through increased energy efficiency in their processes and reduced process disruptions. The quality of food, medicines, semi-conductors and thousands of manufactured goods depends on reliable measurements of critical parameters such as humidity, O_2, CO, N_2, H_2, Hydrocarbons, pressure or CO_2 during production, storage and transport. Our products directly improve the profitability of our customers and help them to stay compliant with stringent industry regulations.

We own and manufacture the sensing technologies used in the majority of our products. This allows us to remain in a strong leadership position and pass on the benefits of our innovation to our customers.

Companies

Analytical Industries – Pomona, CA, USA
Michell Instruments – Ely, UK
Rotronic – Bassersdorf, CH
LDetek – Quebec, CA
Dynament – Mansfield, UK
Ntron – Navan, IE

Market Leader

In oxygen sensors and gas analysis instrumentation, humidity and trace moisture instrumentation, impurities in gases analysis and flammable gas sensors.

Group Facts

- OEM for leading AM technology manufacturers
- 15 Service and sales subsidiaries
- Global support network with 50+ authorized distributors
- 7 global manufacturing locations

Humidity *Temperature* *Dew Point* *Water Activity* *Differential Pressure* *Oxygen* *Flow* *CO_2* *Impurities* *Flammable Gases*

Global PST Sales, Manufacturing and Distribution Locations

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