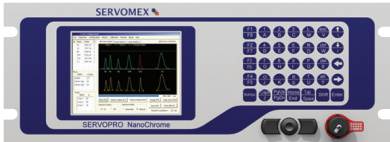# SERVOMEX

SERVOPRO
NanoChrome

ULTRA-TRACE MEASUREMENTS OF UHP GASES INCLUDING HYDROGEN, METHANE, CARBON MONOXIDE, CARBON DIOXIDE, ARGON, NITROGEN AND NON-METHANE HYDROCARBONS

SERVOPRO NanoChrome

The NanoChrome is a high performance analyzer specifically designed for the semiconductor manufacture industry, offering ultra-trace, highest reliability monitoring of H_2, CH_4, CO, CO_2, N_2, Ar and NMHC impurities in a wide range of common background gases including He, H_2, N_2, Ar and O_2.

Using advanced new Plasma Emission Detector (PED) sensing technology and sensitive ProPeak software, both specially developed by Servomex, the NanoChrone provides considerable advantages over traditional Flame Ionization Detector (FID) and Reduction Gas Detector (RGD) sensing technologies in terms of performance, stability, safety and ability to reduce on-going costs.

Servomex's advanced signal recovery uses patented ProPeak filtering methods to deliver a highly sensitive and selective measurement you can rely on. With no need for a methaniser or requirement flammable fuel gas, the NanoChrome also delivers appreciable cost benefits. When used with the Servomex DF-500 ultra-trace oxygen and DF-700 moisture series analyzers, the NanoChrome fulfils a unique total analysis solution for UHP gas monitoring.

FLEXIBLE

- Comprehensive solution for ultra-trace H_2, CH_4, CO, CO_2, N_2, Ar and NMHC in a wide range of common background gases including He, H_2, N_2, Ar and O_2

- A complete stand-alone UHP gas analysis solution when combined with DF-500 and DF-700 analyzers
- Digital communications for remote access: Internet/Ethernet and RS232

EASY TO USE

- Comprehensive report monitoring software for full access to chromatograms, process results, statistics and historical values

- Internal dilution system option
- No requirement for flammable fuel gas, improving safety and simplifying installation

LOW COST OF OWNERSHIP

- Non-depleting sensor and intelligent software extends calibration intervals

- No need for methaniser or consumable fuel gas
- Cost-effective and simplified ongoing maintenance

UNRIVALLED PERFORMANCE

- Innovative high-sensitivity Plasma Emission Detector (PED) enables ultra-trace measurements of Ar, N_2, H_2, CH_4, CO and CO_2, and NMHC

- ProPeak peak detection technique enables unprecedented measurement sensitivity
- Direct Analysis Methodology removes uncertainties of FID and RGD measurements

BENCHMARK COMPLIANCE

- In compliance with Low Voltage, EMC and applicable Directives

Learn more about the SERVOPRO NanoChrome
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SERVOMEX
ANALYZERS
HIGH-PERFORMANCE GAS ANALYSIS

THE DEFINITIVE SOLUTION FOR UHP GAS MONITORING APPLICATIONS

When monitoring UHP gases used in semiconductor wafer manufacture, the highest sensitivity and performance is essential. A suitable analytical solution must offer the flexibility to monitor all required gases in common background gases - and do so with complete selectivity and accuracy at ultra-trace levels. No matter your application needs, you'll want a solution that can reduce ongoing costs and help you leverage business efficiencies. We don't believe you should have to compromise.

A NO COMPROMISE SOLUTION

The NanoChrome is a game-changing analyzer that provides the highest level of performance accuracy and selectivity currently available. Using leading-edge, patented PED sensing technology, this device delivers notable advantages over comparable analysis techniques. Not only is it highly specific to the gases being measured in diverse gas streams, it also removes the need for flammable fuel gas - allowing the NanoChrome to deliver an enhanced-safety solution. When a complete, stand-alone solution is demanded, NanoChrome can be combined with the DF-500 (ultra-trace ppt O_2) and DF-700 (ultra-trace moisture) analyzer series.

SIMPLE MAINTENANCE AND REDUCED ONGOING COSTS

By combining Servomex's specially developed non-depleting PED technology with advanced new processing and operational software, NanoChrome allows calibration periods to be extended, helping to reduce on-going costs considerably over product life. The addition of intelligent signal processing ensures this device offers the highest grade of accuracy, maximizing process uptime. Comprehensive digital communications protocols and access via a network or internet browser facilitate flexible remote device interaction, while an intelligent software package provides the ability to generate comprehensive reporting and statistical analysis. This makes the NanoChrome the analyzer to which all other UHP gas monitoring analyzers will be compared.

ALTERNATIVE PRODUCTS

The DF-SERIES product ranges feature a number of options designed to meet your application needs.

DF-500 Series

When you want to evolve UHP analysis to include ppt O_2 monitoring, we suggest combining with the DF-500 Series analyzer range. These high specification devices deliver leading-edge performance and accuracy, helping you to create a complete UHP gas analytical solution.

DF-700 Series

When you want to evolve UHP analysis to include ppt moisture monitoring, we recommend combining with the DF-700 Series analyzer range. These high specification devices deliver exceptional accuracy and stability, helping you to create a complete UHP gas analytical solution.

KEY APPLICATIONS

- Semiconductor Production - Quality Control Measurements

- Semiconductor Production - Stationary Analytical Systems

SERVOMEX TECHNOLOGIES

ZIRCONIA   GAS FILTER CORRELATION   CALORIMETRY   THERMAL CONDUCTIVITY   PARAMAGNETIC   INFRARED

OPTIONS	DESCRIPTION	SPECIFICATION
Analog outputs	1 x 4-20mA (High Resolution Chromatogram 1 x 4-20mA per impurity (up to 8)	Supplied as standard
Alarms	3 x volt free single pole relays	Alarms for: dry contacts, system status and 2 additional alarms
Digital communications	RS232 Ethernet (RJ45)	Remote interaction: status and commands Remote interaction via internet
Digital input	Permits remote system start-up	One Digital Isolated Input/24V DC, 1A
Digital output	Range ID per impurity	Up to 8 digital outputs/24V DC, 1A
Sample dilution	Options for an internal, integrated system	Enables calibration with 5ppm Cal Gas
PC software	Adds additional dimensions of reporting and analysis	Facilitates full device access including chromatograms and process results obtained via Ethernet or Internet. Can also be used to generate statistics and historical values

ACCESSORIES	ACCESSORIES AVAILABLE FOR SPECIFIC APPLICATIONS – CONTACT YOUR LOCAL SERVOMEX BUSINESS CENTER

MONITORING PERFORMANCE

Background Gases	He, H_2, N_2, Ar and O_2						
Impurities	H_2	CO	CH_4	CO_2	NMHC	N_2	Ar
Technology	Plasma Emission Detector (PED)						
Range	0-250ppb	0-250ppb	0-250ppb	0-250ppb	0-250ppb	0-250ppb	0-250ppb
Limit of Detection (LOD) ppb [†]	0.5*	0.5	0.5*	0.5*	0.5*	0.3	0.5
Accuracy (intrinsic error) FS	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD
Repeatability	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD	±2% of reading or LOD

[†] LOD: 3 sigma 95% confidence limit
* Background O_2: LOD = 0.8ppb

SAMPLE FOR MEASUREMENTS

Sample for measurement	Sample must be oil free, non-corrosive, non-condensing
Sample pressure	30psig (application dependent)
Flow rate	50-300ml/min. (application dependent)

TUNABLE DIODE LASER   FLAME IONISATION DETECTOR   GAS CHROMATOGRAPHY   PLASMA   LASER MOISTURE   COULOMETRIC   SPECTROSCOPIC

DEVICE SPECIFICATION

Size:

- 482mm (18.9") Wide x 117mm (4.6") High x 600mm (23.6") Deep

Weight:

- 11-27kg (25-60lb) applications dependent

Operating temperature:
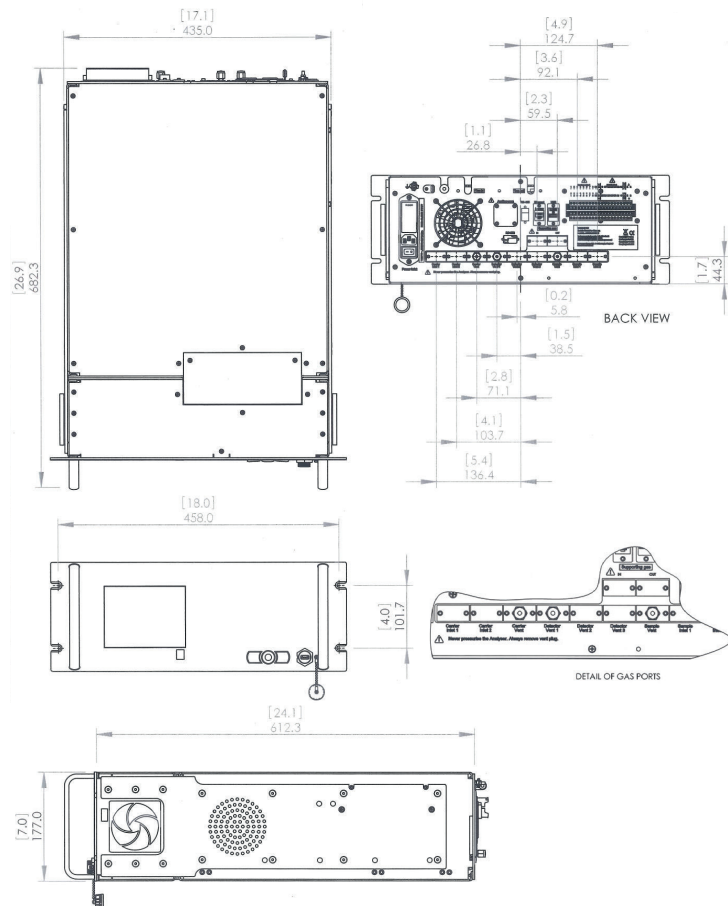
- 5°C - 40°C/41°F - 104°F

Certifications:

- In compliance with EMC Directives, rated for Overvoltage Category II and Pollution Degree 2

Notes:

1. He carrier gas must be free of Ar (<1ppb)

2. Carrier gas inlet pressure
   For O_2 background gas = 85psig
   All other background gases = 80psig

DEVICE SCHEMATIC

Notes: *1. Dimensions in square brackets are in inches (Master Chassis)*

Please note: *This document was updated in August 2014. While every effort has been made to ensure accuracy, no responsibility can be accepted for errors or omissions. Data may change, as well as legislation, and you are strongly advised to obtain copies of the most recently issued regulations, standards and guidelines. This document is not intended to form the basis of a contract.*

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