

NOVA CHROM 4000

Gas Chromatograph

% and ppm analysis using a Thermal Conductivity Detector



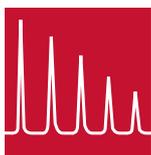
The new NovaCHROM 4000 GC is built on the platform of the successful AGC Series 100 TCD Gas Chromatograph. This versatile and robust detector design, of which AGC Instruments is a leading supplier worldwide, is ideal for permanent gas analysis and its universal applicability ensures that it is both cost effective and reliable. Utilising the latest advanced technologies, this GC provides customers with the precise results they require with the ease of use and support features expected.

The NovaCHROM 4000 GC uses an industry proven method of analysis for the quality control of gases: the Thermal Conductivity Detector (TCD). This detector is ideal for measuring impurities from % to ppm and minimal training is required. The interactive touch screen uses an easy-to-use user interface for guided functionality and this enables the operator to achieve guaranteed applications with ease. Therefore, the NovaCHROM 4000 GC provides a top class service to you at all times.

1/8" Stainless Steel Swagelok fittings are combined with Vici Valco high purity rotary valves to guarantee a contamination free environment that will provide excellent stability, sensitivity and a long working life. The AGC engineering design team will devise a solution specified to suit the application at hand. Furthermore, all systems can be designed for corrosive applications with corrosion resistant materials employed throughout.

AGC
INSTRUMENTS

Gas Chromatography since 1965



Features

- Thermal Conductivity Detector (TCD)
- Sensitivity to ppm levels
- Accuracy to <5ppm (application dependent)
- Fast Detector Response time of < 1 second (90%)
- Ideal for Permanent Gas Analysis
- Versatile & Robust Detector design
- Universal Detector
- Cost Effective and Reliable
- Large Colour 6.5" LCD Touch Screen
- Long Term Stability & Sensitivity
- Fully Automated Use
- Electropolished Stainless Steel Tubing
- Integrated Configurable Alarms System
- Packed, Micro-Packed & Capillary Columns for Maximum Sensitivity
- Independent Column Ovens with individual Temperature Control
- Integrated Diagnostics System
- Full Control by TrendVision PLUS Software
- Increased Connectivity with both USB, RS-232 and RS-485
- Drop Down Front Panel for easy access to electronics

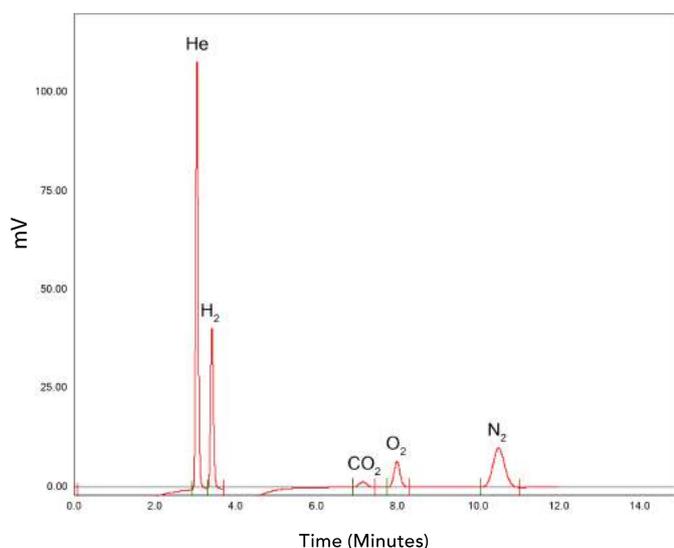
www.agc-instruments.com

Principle Of Operation

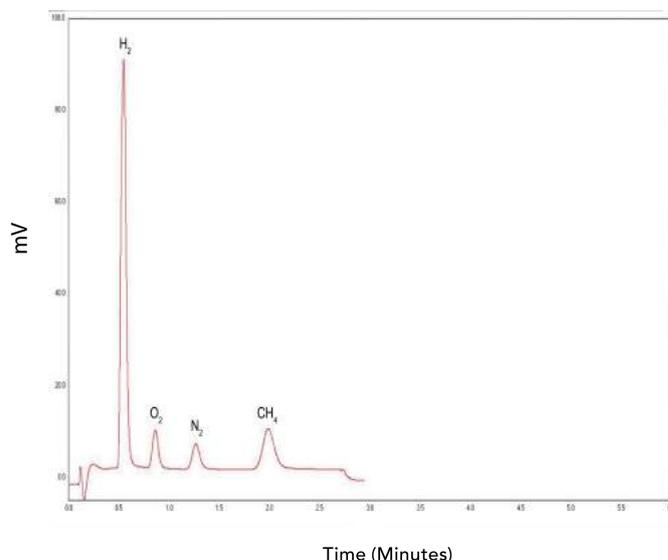
The AGC NovaCHROM 4000, using the Thermal Conductivity Detector (TCD), is typically used for the precise analysis of the components in multiple gas mixtures at percentage and ppm levels. The TCD has four sensing elements which are connected to form an electrical Wheatstone bridge circuit. These elements are typically miniature rhenium-tungsten filaments which are mounted in a metallic cell block. A flow through type thermal conductivity cell is normally used in this analyser. This cell contains a sample and reference gas flow geometry and two elements are installed in each flow system. An electrical current from a regulated power source heats the elements. Changes in thermal conductivity of the sample gas result in an output voltage change which can be measured on a data capture system, such as the AGC TrendVision PLUS Chromatography Software.

With a quick start up time and fast detector response, operation of the NovaCHROM 4000 is swift, precise and straightforward. Moreover, the packed columns with their independent column ovens and individual temperature controllers also maintain exceptional stability, accuracy and repeatability. Servicing and maintenance is trouble-free with a drop-down front panel for easy access to the electronic components and our unique column infrastructure, which can regenerate in-situ, providing you with seamless operations. The minimal gas consumption provides an economical platform with a low cost of ownership and long life span.

Sample Chromatogram - % He - H₂ - CO₂ + Air



Sample Chromatogram - ppm Impurities in He



Markets & Typical Applications:

- Air Separation Units
 - He in Ne
 - Ar + N₂ in O₂
 - ppm impurities in Ar
 - N₂ Pharmacopeia
- Corrosive Gases / Electronic Gases
 - % analysis of diluted matrix gas or gas mixtures
 - Customised Solutions for Corrosive Gas Analysis
- Food & Beverage
 - Binary or multi-component gas mixtures with a single NovaCHROM unit
- Halocarbons
 - Purity of Refrigerants
- Industrial Gas Production
- Purity of Gases
- Petrochemical
- Refineries
- Natural Gas Analysis
- Power Generation
- Ethylene Plants
- Pharmacopeia Applications (Medical, Food, Diving, Laser, Excimer)

TrendVision PLUS Software

TrendVision PLUS is the latest release of the well recognised Chromatography Data Capture Software from AGC Instruments. Rugged industrial level modular and scalable hardware is used with an Embedded Windows Operating System. TrendVision PLUS provides a unified chromatography method whereby all settings are contained in a single method, including event tables, calibration tables and integration settings. In addition, this software enables AGC GC systems to run in a fully unattended mode. It can also take control of GC systems and automatically perform the required analysis using the pre-programmed methods. This is coupled with the ability to send results back to a DCS or control room using fieldbus protocols or traditional 4-20 mA signalling. If On-Line operation is not required then the software runs equally well in its Stand-Alone mode with the same functionality and ease of use. Please consult with our specific brochure for this Software.

Specification	
Detector	Thermal Conductivity Detector (TCD)
Repeatability	Excellent Repeatability with auto-calibration function in TrendVision PLUS
Drift	1ppm over 48 hours (ppm application)
Linearity	10 ⁴
Sensitivity	< 5ppm
Accuracy	±0.5% full scale
Temperature Range	Operating: 30-45°C Ambient: +10°C to +30°C
Range	< 5 ppm to 100% [Application Dependent]
Detector Response Time	< 0.5 seconds (90%)
Noise	10 µV maximum, depending on operating parameters
Warm up Time	1 Hour (Typical)
Power	230 V AC / 50 Hz or 115V AC / 60Hz, 300W
Configurations	19" Rack, Bench Top or Wall Mount
Dimensions	Rack/Bench: 19" (483mm) (W) x 5U (219mm) (H) x 22" (564mm) (D)
Weight	25 kg
Interface	6.5" LCD Colour Display with LED backlight and resistive touch screen
Carrier Gas	Helium (He), Argon (Ar), Hydrogen (H ₂) or Nitrogen (N ₂)
Electronic Gas Management*	5-10 Bar input: Controls Carrier Gas Output from 0-5 bar
Sample Gas	10 - 500 mL/min flow (200ml/min flow recommended)
Actuator Gas	Clean Dry Air @ 3 Bar (300 KPa) pressure
Valves	Vici Valco high purity rotary valves
Standard Fittings	1/8" Stainless Steel with Swagelok fittings
Output Signal**	4 - 20 mV (± 1 V)
Columns	Packed, Micro-Packed and Capillary columns available
Ovens	Independent Column Ovens with individual temperature control (Regeneration in-situ)
Alarms	Detector, System, Flow, Maintenance, Temperature, Pressure
Outputs	TrendVision PLUS provides mA or Profibus/Modbus and RS - 485 connectivity

* Subject to system design/configuration

** Can be adjusted to the input specification of the customer's recorder/integrator/data handling system. For Automatic operation, AGC Instruments recommends the TrendVision PLUS Chromatography Software System.

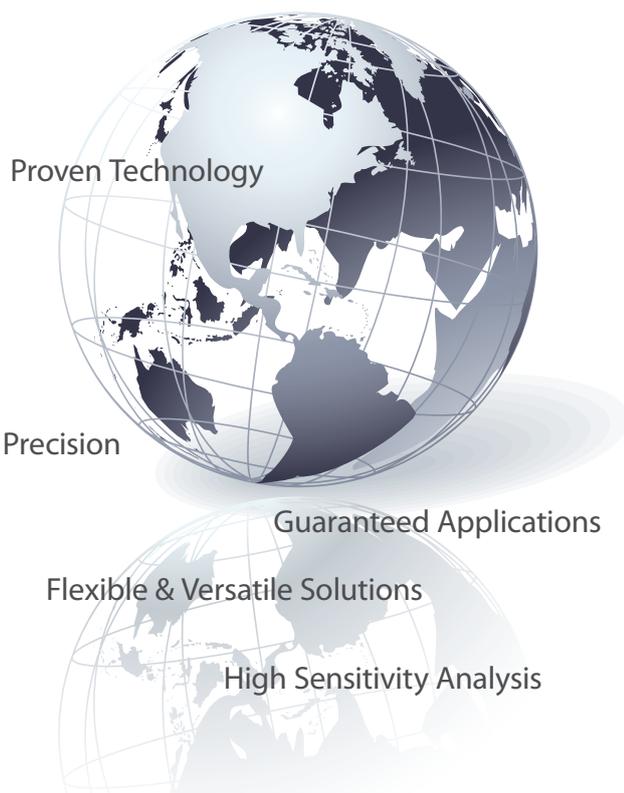


Company Profile

AGC Instruments

AGC Instruments is a leading manufacturer of Gas Analysis Solutions to all users requiring a Quality Control or identification of their gas stream. We have over 50 years experience in providing our customers with their "Total Gas Analysis Solutions". We work closely with all customers to ensure they obtain the analytical solution that meets their needs and a system that is easy to use and understand. All AGC distributors are extremely experienced and factory trained to the highest standards, offering you a complete after sales support service.

The wide range of Detectors available can be customised to measure unique gas streams and we place an emphasis on the continuous development of our analytical solutions. Our worldwide reach with strategic partners ensures that you have peace of mind and after sales care that are important to your operations.

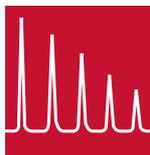


© 2016 by AGC Instruments Ltd.

All rights reserved. No part of this document may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of AGC Instruments Ltd. Due to our company policy of continual development all specifications are subject to change without notice.

AGC
INSTRUMENTS

Gas Chromatography since 1965



After-sales Care

AGC Instruments are committed to providing and maintaining quality systems from customer liaison to technical knowledge through to System Design and Delivery. We believe that our After Sales Support to the customer is one of the most important services we can offer. Each Distributor has been carefully selected and trained to ensure our customers receive the best possible service. Furthermore, online customer support and direct support are available to deliver a comprehensive support package.

Range of Detectors

Discharge Ionisation Detector	DID	1000
Argon Discharge Detector	ADD	2000
Flame Ionisation Detector	FID	3000
Thermal Conductivity Detector	TCD	4000
Flame Photometric Detector	FPD	5000
Photometric Ionisation Detector	PID	6000
Electron Capture Detector	ECD	7000

For further information please contact:

AGC Headquarters

Unit 2, Shannon Free Zone West,
Shannon, Co. Clare, V14 PX03, Ireland
T: +353 61 471632 F: +353 61 471042
E: sales@agc-instruments.com

www.agc-instruments.com