



novaCHROM 5000

Gas Chromatograph

ppm to low ppb SULPHUR analysis
using a Flame Photometric Detector



The new NovaCHROM 5000 GC contains the latest GC technology based around the industry proven double Flame Photometric Detector (FPD). This sulphur selective detector, of which AGC Instruments has extensive experience, is ideal for characterising and quantifying a wide range of low level sulphur species in gaseous streams. 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 5000 detects and identifies individual sulphur species as opposed to total sulphur values and there is no interference from matrix gases which occurs in spectrometry analysers. Multiple column ovens, with heated valves to eliminate cold spots, are combined with passivated tubing to maximise sensitivity and achieve ultra low ppb levels. As a result, quick analysis times are achieved of between one to five minutes typically.

AGC Instruments will custom design an analytical solution to meet your application. All systems are constructed using pipework not exceeding 1/8" in diameter and using only Swagelok® stainless steel fittings. The flow paths are contamination free and allow a fresh sample to reach the detector with speed. This is coupled with the ability to purge the valves and column ovens with an inert gas. Teflon tubing and heated lines are employed where necessary as well as flame-off and flow restrictor safety features. Furthermore, the NovaCHROM 5000 can be used with Natural Gas and ATEX versions are available upon demand.

Measurements are achieved with ease and with minimal training required using the new interactive touch screen. The new Electronic Pressure & Flow Management System has ensured all functionality is easy and accessible also. The constant monitoring of critical status information such as flows, pressures and temperatures is readily available to the operator and is backed up with the Alarm activation function. This allows feedback locally to other locations such as the Control Room or DCS. As a result, this robust system ensures a consistent performance with excellent stability, sensitivity and a long working life.



Features

- Double Flame Photometric Detector (FPD)
- Ideal for the analysis of Sulphurous species such as H_2S , COS , CS_2 , Mercaptans and Sulfides
- Sensitivity to low ppb levels
- Accuracy Example: 0.01 ppm of 2.55ppm H_2S in Natural Gas
- Fast Detector Response: < 0.5 seconds (90%)
- Versatile & Robust Detector design
- Cost Effective and Reliable
- Electropolished Stainless Steel Tubing passivated for Sulphur
- Teflon Tubing & Heated Lines depending on application
- Packed, Micro-Packed & Capillary Columns for Maximum Sensitivity
- Multiple Column Ovens with individual temperature control, heated gas sampling & column switching valves to eliminate cold spots
- Electronic Pressure & Flow Management System
- Long Term Stability & Sensitivity
- Automated use with large colour 6.5" LCD Touch Screen
- Integrated Configurable Alarms System
- 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 during maintenance
- Built-in Safety Features such as Flame-Off Protection...etc.



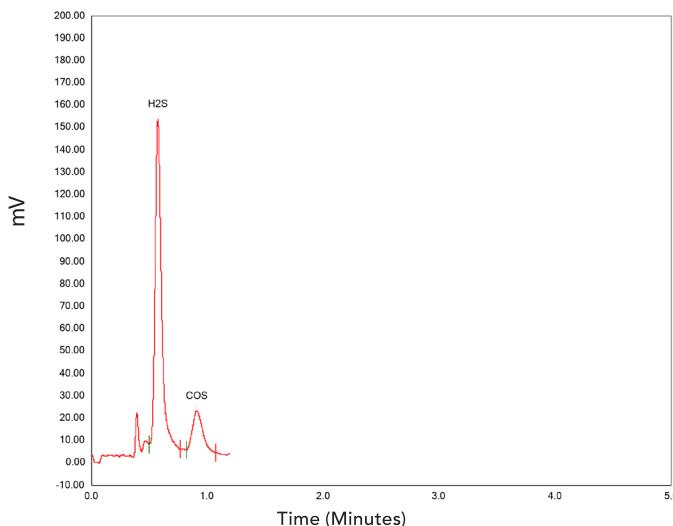
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Principle Of Operation

The AGC NovaCHROM 5000, uses a double Flame Photometric Detector (FPD) which is designed to give a selective response to sulphur (or phosphorous) compounds. When an excitation energy is applied to the atoms of an element, a photometric emission spectrum is obtained whose wavelength is characteristic of the element. The intensity of the emitted light is proportional to the number of excited atoms. Within the flame photometric detector, the excitation energy is derived from the dual-heat zone combustion of the sample in a hydrogen-rich flame. This double flame technology reduces the well-known cross-interference caused by the matrix gas and provides a fast analysis time of between one and five minutes typically. Furthermore, precise quantitative results are supported by the linearisation function provided by TrendVision PLUS.

With a quick start up time and fast detector response, operation of the NovaCHROM 5000 is swift, precise and straightforward. Moreover, the analytical columns with their independent column ovens and individual temperature controllers combined with passivated tubing and heated valves maintain exceptional stability, accuracy and repeatability. As an option, permeation and/or dilution calibration devices which are based on the gas cylinders can also be used in conjunction with the NovaCHROM 5000 GC. 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 - 5.6 ppm H₂S and 6.6ppm COS in Natural Gas



Customised Applications for Specific Quantitative Analysis of:

- H₂S / COS / CS₂ / SO₂
- Mercaptans
- Sulphides / Disulphides

Typical Markets:

- Food & Beverage (ISBT, EIGA & CGA)
 - Applicable for all types of CO₂ Sources
- Energy
 - Natural Gas / LPG (Distribution & Storage)
 - Fermentation Process / Biogas
 - Fuel Cell
- Process Control
 - Paper Production
 - Chemical Production
 - Catalyst Protection
- Special Gas Industry
 - UHP Gases
 - Calibration Gases Certification
- Industrial Hygiene
 - TLV Monitoring in work areas
- Environment
 - Ambient Air Monitoring
 - Continuous Monitoring of Environments

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	Double Flame Photometric Detector (FPD)
Sensitivity	< 20pg S/sec for Thiophene (Sulphur Mode)
Linearity	10 ³ (Sulphur Mode)
Accuracy Examples	0.01 ppm Standard Deviation on 2.55 ppm H ₂ S in Natural Gas 0.02 ppm Standard Deviation on 1.62 ppm COS in Natural Gas
Minimum Detectable Level	< 10 ppb
Range	ppb to low ppm [Application Dependent]
Detector Response Time	< 0.5 seconds (90%)
Warm up Time	1 Hour (Typical)
Temperature Range	Operating: 30°C to 45°C Ambient: +10°C to +30°C
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	Nitrogen (N ₂), Helium (He), Argon (Ar) : <5ppm H ₂ O free from CnHm 20-40mL/min
Support Gases	H ₂ N5.0 or N6.0 (Application dependent) Synthetic Air or Purified Air ("THC free")
Sample Gas	500 mL/min flow (200ml/min flow recommended)
Actuator Gas	Clean Dry Air @ 4.5 Bar (450 KPa) pressure
Electronic Gas Management*	5-10 Bar input: Controls Carrier Gas Output from 0-5 bar
Valves	Vici Valco® high purity rotary valves or AFP™ Diaphragm valves (Sulphur Inert Types)
Standard Fittings	1/8" Stainless Steel with Swagelok® fittings
Output Signal**	0 - 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.



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Aftersales 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

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