

novaSTREAM 6000

Gas Analyser

TCD

% and ppm analysis using
Thermal Conductivity Detector

The new NovaSTREAM 6000-TCD Gas Analyser is based around the unrivalled Thermal Conductivity Detector (TCD) of which AGC Instruments is a leading supplier worldwide. This versatile and robust detector design is ideal for permanent gas analysis and its universal applicability ensures that it is both cost effective and reliable. Using hotwire or thermistor elements, it achieves high accuracy and sensitivity with a response time of < 30 seconds (T_{90}). The temperature regulated TCD allows continuous monitoring of the gas stream and stability is guaranteed with $< 1\%$ drift over a 24 hour period. Through the additional use of solenoid valves, drift can be eliminated as a constant reference to Zero gas is utilised for greater accuracy. For example, one of the primary applications using the TCD Cell Model Number 10-454-2 is for measuring N_2 in H_2 with results less than 10 ppm achieved.

Using the large colour interactive touch screen, this analyser is straightforward to use and set-up with all functionality easily accessible and navigable with minimal training required. With the integration of Flow Sensors and 7 voltage free alarm relay contacts, including one for the sample flow, all critical monitoring is automated and provides peace of mind to the operator. Further verification is provided by voltage free contacts for switching in calibration gas inputs externally to support the auto-calibration routine. Both Calibration and Alarm records are maintained. Therefore, the NovaSTREAM 6000-TCD provides peace of mind and an exceptional performance at all times.

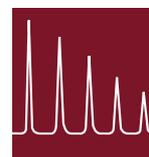
The precise results obtained from this analyser can be transmitted via an array of communication modules such as: 4-20mA (2 off), mV Signal, USB (2 off) and VGA outputs. Active 4-20mA, Ethernet, RS-232 and RS-485 outputs are also available as optional extras. This allows the analyser to be integrated seamlessly into all analytical infrastructures worldwide.

The modular design with a drop-down front panel for easy access to the electronics allows for trouble-free maintenance and servicing. It is both cost effective and reliable with a low cost of ownership due to the low gas and power consumption. The AGC Engineering Team will custom design and test an analytical solution to meet your application and all systems are designed with volume optimised pipe work using only 1/8" Swagelok® fittings. Therefore, this robust system ensures an excellent stability, sensitivity and a long working life.

Features

- Thermal Conductivity Detector
- Detector variations designed and built to spec
- Ideal for Binary Gas Mixtures or Pure Gases
- Fast Detector Response: < 30 seconds (T_{90})
- Long Term Stability & Sensitivity
- Large Colour 6.5" LCD Touch Screen
- Fully Automated use with intuitive GUI
- Integrated Configurable Alarms System with Alarm Record
- Added Sample Flow Alarm
- Integrated Diagnostics System
- Flow Sensors
- Voltage free contacts for switching in calibration gas inputs externally
- Auto-Calibration Routine with Calibration Record
- Internal storage of results up to 24 months and data trending via PC
- 2 x 4-20mA, 1 x mV Signal, VGA & USB Outputs
- Active 4-20 mA option
- Increased Connectivity with Ethernet, RS-232 and RS-485 options
- Modular System Design & Drop-Down Front Panel for easy maintenance and servicing
- Cost Effective and Reliable
- Economical Power Usage & Gas Consumption
- Restore Factory Settings function for peace of mind

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Principle Of Operation

The AGC NovaSTREAM 6000-TCD, 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 diffusion type thermal conductivity cell is normally used in this analyser and 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 and changes in thermal conductivity of the sample gas result in an output voltage change which can then be measured.

With a quick start up time and fast detector response, operation of the NovaSTREAM 6000-TCD is swift, precise and straightforward. Servicing and maintenance is trouble-free with a drop-down front panel for easy access to the electronic components, thereby providing you with seamless operations. The minimal gas consumption provides an economical platform with a low cost of ownership and long life span.

Typical Industries

- Hydrogen Plants
- Air Liquefaction plants
- Chemical Plants
- Refrigeration Plants
- Iron and Steel Industry
- Air Separation Units
- Gas Blending Equipment
- Refineries
- Ammonia Plants
- Industrial Gas Production Units
- Power Generation Plants

Configurations

MODEL	RANGE	EXAMPLE
6000-53	% Analyser	N ₂ in He Resolution: 0.1% Accuracy: 0.1%
6000-54	500 ppm to low % Analyser	N ₂ in He Resolution: 0.01% Accuracy: 0.05%
6000-55	2 - 500 ppm Analyser	N ₂ in H ₂ Resolution: 1 ppm Accuracy: 10 ppm



This analyser system is also available for use in Hazardous Areas Zone 1 or Zone 2. Please contact AGC Instruments for further information.

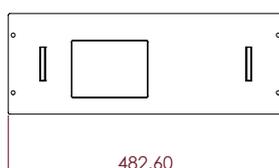
Applications

The table below lists some of the applications (% and ppm) pertaining to the NovaSTREAM 6000-TCD analyser. We will customise each analyser based on your requirements, focussing on the Speed of Response, Resolution and Accuracy levels required for each individual application. Please contact AGC Instruments for the Minimum Detectable Level (MDL) figures and for information relating to any other binary gas mixtures not listed.

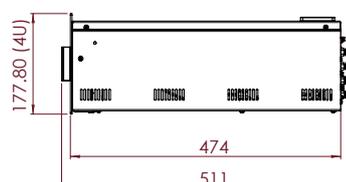
Ar in Air	CH ₄ in Air	CO ₂ in Air	He in Air	H ₂ in Air	Impurities in Air
Air in Ar	He in Ar	H ₂ in Ar	N ₂ in Ar	O ₂ in Ar	Impurities in Ar
Air in CO ₂	He in CO ₂	H ₂ in CO ₂	N ₂ in CO ₂	O ₂ in CO ₂	Impurities in CO ₂
Air in He	Ar in He	N ₂ in He	O ₂ in He		Impurities in He
Air in H ₂	Ar in H ₂	N ₂ in H ₂	O ₂ in H ₂		Impurities in H ₂
Ar in N ₂	CO ₂ in N ₂	He in N ₂	H ₂ in N ₂	O ₂ in N ₂	Impurities in N ₂
Ar in O ₂	CO ₂ in O ₂	He in O ₂	H ₂ in O ₂	N ₂ in O ₂	Impurities in O ₂

Specification	
Detector	Thermal Conductivity Detector (TCD)
Typical Ranges	0.01 - 100% / 0.001 - 10% / 0 - 1000 ppm
Analyser Configurations	6000-53 (%) 6000-54 (500 ppm to low %) 6000-55 (2 - 500 ppm)
Limit of Detection (LOD)	Application Dependent: equal to 1 ppm of Air in He
Maximum Resolution	1 ppm
Zero Drift	± 5 ppm when used with Auto-Zero Function (0 - 1000 ppm range)
Response Time	< 1 second to 90 seconds (Application Dependent)
Warm up Time	1 minute to several hours (Application Dependent)
Interface	6.5" Industrial Grade Colour Touch Screen Control
Outputs / Communication Modules	2 x 4-20mA outputs (Isolated) [configurable for high and low resolution readings] 1 x mV Signal output 1 x RS-232 2 x USB VGA RS-485 (Modbus/Profibus)* Ethernet* 1 x 4-20mA output (Active)*
Alarms	7 x Voltage Free Alarm Relay Contacts (including one for sample flow) Alarm Record
Calibration	Auto-Calibration Routine (with internal validation) Voltage Free contacts for switching in the calibration gas inputs externally Calibration/Validation Record
Data / Results	Data Trending via PC connection and 24 months internal storage
Gas Connections	1/8" Swagelok® fittings
Zero Air	300 mL/min
Zero Gas Requirements	20 - 200 mL/min (Application Dependent)
Maximum Inlet Pressure	200 kPa (2 Bar)
Minimum Inlet Pressure	1.5 kPa (0.015 Bar) (Application Dependent)
Operating Temperature	5° to 40° Celsius
Power Supply	100 - 120 VAC or 220 - 240 VAC, 50/60 Hz
Max Power Consumption	≤ 300 Watts (Application Dependent)
Dimensions	482 (W) x 511 (D) x 177 (H) - 4U 19" Rack

FRONT VIEW



SIDE VIEW



* Optional Extras
- Subject to system design/configuration

Company Profile

AGC Instruments Ltd.

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.

Proven Technology

Precision

Guaranteed Applications

Flexible & Versatile Solutions

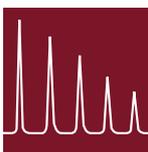
High Sensitivity Analysis

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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.

NovaSTREAM Applications

Total Hydrocarbons Analysis

% Ar in O₂ Analysis

Trace N₂ in Ar/He Analysis

% O₂ Analysis

ppm H₂O Analysis

ppm O₂ Analysis

ppm CO₂ & N₂O Analysis

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