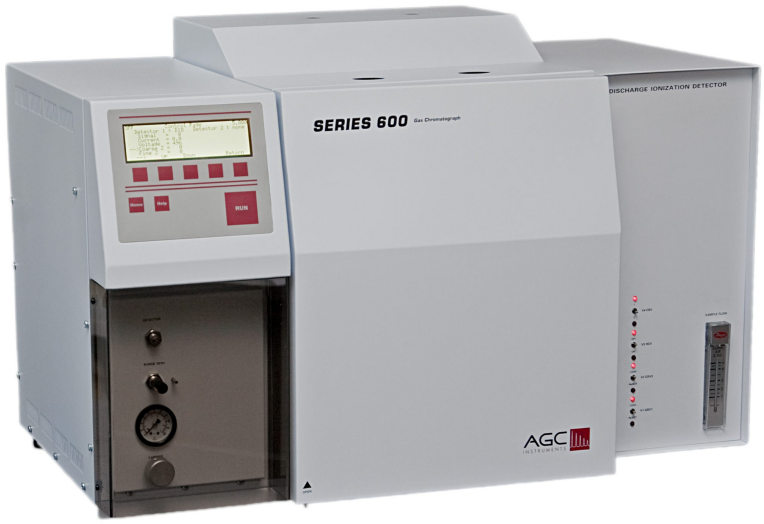
Series 600 Laboratory Gas Chromatograph

AGC INSTRUMENTS
Gas Chromatography since 1965



The AGC Series 600 Gas Chromatograph represents a true combination of analytical instrumentation and computer technology. It is the design and implementation of this technology that makes the Series 600 GC a unique instrument. With a computer interface and the ability to interface with upto eight detectors, the Series 600 GC has been engineered for efficiency with a modest footprint for use in an already busy laboratory.

Performance

The Series 600 Gas Chromatograph may be used in Isothermal or Temperature programmable modes. In either mode, instrument operation is fast and easy with the 8 line EZ-view LSD display and touch keypad. The keypad allows for easy movement through the program menus. At the touch of a button, one can bring up the instruments status, history of use, create and store methods or edit GC operating parameters. Each temperature programmable method accommodates up to 10 ramps and provides for the selection of column oven conditions: initial time and temperature, rate and initial time and temperature (450^{o}C maximum).

Temperature circuits are continuously monitored and recalibrated once every second. The history of the column oven and its use is recorded every hour and stored in a battery backed up memory. A separate engineers records provides recalibration and service functions. The GC accommodates electronics and gas controls for two complete chromatographic channels with simultaneous outputs.

Choice of Detectors

Thermal Conductivity Detector	(TCD)
Flame Ionisation Detector	(FID)
Discharge Ionisation Detector	(DID)
High Frequency Argon Discharge Detector	(HFADD)
Flame Photometric Detector	(FPD)
Electron Capture Detector	(ECD)
Photo Ionisation Detector	(PID)
Nitrogen Phosphorous Detector	(NPD)

Programming Rate
0.1^{o}C to 40^{o}C/min in 0.1^{o}C increments

Fast Oven Cooling
300^{o}C to 50^{o}C/min in 5 minutes

Method Storage
10 methods with individual security codes

Oven

The oven has a front opening door for easy access to columns. Dynamic air flow minimises temperature gradients across the oven. An overheat protection circuit prevents thermal runaways by spiking or surging line current.

Temperature Control

The Series 600 Gas Chromatograph can be operated at temperatures from ambient plus 5°C to 450°C. Operating temperatures are independently programmed and controlled at six locations: upto three injection ports, a maximum of two detectors and the column oven. The software allows for additional zones to be added for interfacing with additional aftermarket accessories.

Pneumatic Controls

Direct acting, precision, independent controls for carrier and detector gases are standard. All controllers are easily accessible. They are located on the front panel of the GC under a see through door to prevent accidental changes of preset values. Easy to read gauges allow for reproducing flow conditions.

The Display

The Series 600 Gas Chromatograph interfaces with the user through a simple keypad and a 256 x 128 element, EZ-view liquid crystal display. The display is backlit for ease of viewing at virtually any angle and can be adjusted for different lighting conditions. The keypad consists of a total of eight membrane keys. Three keys are dedicated to specific functions. Five soft keys are programmed with varying functions and are used to request the operation or section of the program required. Control of the GC is based on a menu system consisting of a series of pages. Each page in the menu is responsible for controlling a particular aspect of the chromatograph. The simple touch of a soft key brings the user into immediate control of the GC – real time chromatograms, editing features, method development and setup etc.

Injection Methods

The Series 600 GC supports upto three independently controlled injection modules to maximise efficiency, accuracy and reproducibility. Injection methods supported include:

Direct Capillary:

- Accommodates columns with 0.32 , 0.45 , 0.53 or 0.75mm i.d. and lengths upto 100 metres

Split Splitless:

- Enhanced design with graphite ferrule seals and low flow septum purge reduces background noise and solvent peak tailing while minimizing sample contact with metal surfaces which lessens the possibility of thermal breakdown.
- Built-in Septum purge with needle valve control for variable split ratio setting
- Operates in either Split/Splitless or Direct On-Column injection modes
- Accommodates capillary columns from 0.20mm i.d. to 0.75mm i.d.

Packed Column Injection:

- Ideal for routine analysis
- Dual or Single column system, though three columns may by installed simultaneously
- Select either 1/8” (standard) or 1/4” metal, or 2-3mm i.d. glass columns
- Direct sample injection to wide-bore capillary columns

Gas Valves & Liquid Sample Valves

AGC Instruments Engineering department has the expertise and experience to design a customer flow system for the Series 600 using a choice of 4 , 6 , 8 and 10 Port valves. All valves are manufactured to the highest quality and standards. The GC can accommodate virtually any configuration for optimum separation and precise quantification. Valves can be either heated or unheated, located in purged housings, made of corrosion resistant materials, manual or pneumatic actuated.

Data Capture Systems

Using AGC Instruments, powerful TrendVision Chromatography software, and using in conjunction with a Windows based PC system, the researcher can create methods, design custom reports, view calibration curves, acquire and process data and create and run batch sequences from a single window. The GC provides one RS-232 serial port, one RS-485 serial port and one USB hub for interfacing with various devices. The GC is also compatible with many other Chromatography Software packages, plus integrators and strip chart recorders.

Detectors

The Series 600 GC can handle the application. Whether it is in the field of Pharmaceutical to Petrochemical to Air Separation to Industrial, AGC Instruments has a detector to meet your stringent needs. The GC can accommodate upto two independently temperature controlled detectors that can be operated either singly, in series or in parallel modes.

Detector	Average Detection Limit	Carrier Gas	Selective for
TCD	20ppm	Nitrogen , Helium , Hydrogen , Argon	All gaseous and volatile compounds, non destructive
FID	30ppb	Hydrogen , Nitrogen, Argon	Organic Analysis
DID	<5ppb	Helium N6.0	Universal response, non radioactive
HFADD	<100ppb	Argon, N6.0	Ideal for trace analysis in Argon Matrix Gas
ECD	10ppb	Nitrogen	Halogens, Nitro compounds, unsaturated compounds, highly oxygenated compounds
FPD	50ppb	Helium , Hydrogen , Nitrogen	Sulphur & Phosphorous compounds
PID	1ppb	Helium	Aromatics, Arsenic, Sulphur Phosphorous
NPD	10ppb	Helium	Sulphur, Phosphorous, Nitrogen, Arsenic

Thermal Conductivity Detector

Types:	
Capillary:	20µl internal volume
Packed or wide bore capillary:	140 µl internal volume
Gas Density:	780µl internal volume
Design:	Flow Through
Single Helix: tungsten (W), rhenium-tungsten (WX), gold sheathed tungsten (AuW), nickel (Ni)	
Operating Temperature:	50°C to 450°C
Response Time:	<0.5 seconds
Sensitivity:	2 X 10^{-9}g/ml for hydrocarbons
Linear Range:	>10^4
Drift:	40 µV/hr maximum
Noise:	10 µV maximum within operating parameters

Flame Ionisation Detector

Operating Temperature:	100°C to 300°C
Sensitivity:	<20ppb of CH_4
Linear Range:	1 X 10^6

Discharge Ionisation Detector

Sensitivity:	<1ppb of CH_4
Linear Range:	1 X 10^8

High Frequency Argon Discharge Detector

Operating Temperature:	Ambient
Sensitivity:	H_2 <20ppb ; O_2 <100ppb ; N_2 <100ppb ; CH_4 <50ppb CO <500ppb ; CO_2 <500ppb
Linear Range:	1 X 10^3

Flame Photometric Detector

Operation:	Single or Double Flame	
Operating Temperature:	Ambient to 300°C	
	Sulphur Mode	Phosphorous Mode
Sensitivity:	20 pg S/sec for thiophene	0.9pg P/sec for DDVP
Linear Range:	10^3	10^3
Selectivity:	10^5 gS/gC	10^6 gP/gC

Electron Capture Detector

Type:	Central electrode, sealed cylindrical chamber with Nickel 63 source (15mCi 555MBq)
Operating Temperature:	Ambient to 320°C
Sensitivity:	0.1pg/sec lindane
Linear Range:	5 X 10^4 (with N_2 carrier)

Other detectors available from AGC Instruments include: Nitrogen Phosphorous Detector and Photo ionisation Detector. Please contact us directly on sales@agc-instruments.com or +353 61 471632

User Interface & Microprocessor	
Touch Keypad	
Liquid Crystal Display (LCD)	
Viewing area	132.0mm W x 39.0mm H
Viewing Angle	60 ^{o}
Backlight	Cold Cathode Fluorescent Lamp (CFL) x 1
Microprocessor	CPU: 33 MHz 80386SX
Processing Ability	32-bit
Serial Ports	One serial RS-232 port, one serial RS-485 port. Ports can be configured as COM1 , COM2 or disabled individually
Parallel Ports	1

Column Oven	
Temperature Range	Ambient plus 5^{o}C to 450^{o}C
Temperature Readout	Digital, LCD
Temperature Control	
Accuracy	±1% of rated set temperature
Stability	<±0.05^{o}C/hr after 30 minute warm-up
Overheat Protection	Preset 30^{o}C above maximum column setting
Column Compatibility	
Capillary	0.20 – 0.75mm i.d. and lengths up to 100 metres
Metal	2mm , 3mm , 1/8" & 1/4" o.d. and lengths up to 16 metres
Glass	6mm o.d. and lengths up to 6 metres
Dimensions	219mm W x 286mm H x 311mm D

Temperature Programming	
Temperature Setting	1^{o}C steps
Programming Rate	0.1 ^{o}C to 40^{o}C/min in 0.1^{o}C increments
Linear Temperature Profile	40^{o}C / min up to 200 ^{o}C 15^{o}C / min from 200^{o}C to 300^{o}C 7^{o}C / min from 350^{o}C to 450^{o}C
Oven Cooling Time	300^{o}C to 50^{o}C in 5 minutes
Maximum Run Time	655 minutes
Number of Ramps	10 with initial time, programming rate and final time
Method Storage	10 methods with security PIN codes

Injection Ports	
Mainframe will accommodate up to two independently temperature controlled injection modules. An extended option is available for three.	
Direct Packed/Capillary	Operating Temperature: Ambient plus 5^{o}C to 450^{o}C in 1^{o}C increments. Accepts 1/8" , 1/4" o.d. or capillary columns with 0.20 – 0.75mm i.d. Dual carrier gas inlets with septum purge injection
Split/Splitless Capillary	Operating Temperature: ambient plus 5^{o}C to 450^{o}C in 1^{o}C increments. Modes: Split/Splitless, direct on-column Built in septum purge with needle valve control Graphite ferrule seal with low flow septum purge

Flow Control	
Differential Flow Controllers	
Column Inlet Pressure Range	0-100psi (0-7 bar)
Flow Control Repeatability	0.3% of set pressure

External Event and Heated Zones	
Number of Events	6
Number of Zones	5

General Specifications	
Power Requirements	115/220V, 50/60Hz, 20/10amps, 2300 Watts
Weight	30kgs (depending on configuration)
Dimensions	572mm W x 508mm H x 559mm D

About AGC Instruments

Following a successful Management Buyout in September 2006, GOW-MAC Instrument Co. (Ireland) Ltd has changed it's name to AGC Instruments Ltd to remain a leading manufacturer of Gas Chromatographs, Gas Analysers and speciality gas handling systems since 1965. 1n 2009, a new regional office was established in Beijing China.

Customised Manufacturing

AGC Instruments will work closely with the Customer and design a Chromatography system that is best suited to their application. Hence each system is built to the customer's specification and need. A lot of GC manufacturer's source their detectors from 3rd Party Companies, our strength is that all it's detectors are made entirely within the Company. All items, that are not manufactured within the Company, are sourced from suppliers who adhere to our strict quality policy to use only the best materials available.

After Sales Support

While being able to sell Quality Instrumentation to our Customers, our business model has evolved to provide what is a more important product, After Sales Service. All Agents and Sales Representatives are carefully selected to ensure that they have the necessary skills to provide a good back up to the customer when our Instruments arrive on site. From unpacking to Installation to Commission through to ongoing Maintenance service. The After Sales Engineers are all Factory Trained and on a regular basis. Our Representatives are native speakers for their Country but also have an excellent command of the English language.

We have recently opened a Representative Office in China where AGC Instruments is now in a position to offer a complete Sales and After Sales Support to our many customers. Located centrally in Beijing, our fully trained engineers are available to supply you with any details or support that you require.

Training

Ongoing training is a requirement from our Customers. This is a service that can be sourced through our Representative's Network or direct from AGC Instruments Ltd.

Software Development

A highly skilled department located with AGC Instruments, in order to meet our "Total Solution" policy, our flexibility in the AGC Instruments designed Trend Vision Chromatography Software package allows our Customer's to have a system that is flexible, most suitable to their needs and easy to use.

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