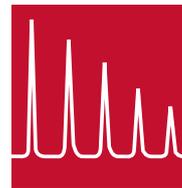


AGC

INSTRUMENTS

Gas Chromatography since 1965



TrendVision

ADVANCED CHROMATOGRAPHY SOFTWARE



Intelligent Platform for Consistent
Results and Monitoring

Gas Analysis since 1965

www.agc-instruments.com

TrendVision

About TrendVision

From AGC Instruments, TrendVision Gas Chromatography Software is the complete chromatography package specifically designed to address the needs of gas chromatograph users in various areas of Industry. Comprised of the TrendVision Interface and Software Program, it is the fourth generation offering built on the foundation of previous successful TrendVision products. With a large installation base worldwide, it is in continuous development with an intuitive and industry-proven operation.

TrendVision has been fully redesigned to meet the needs of modern operating systems and is tailored for industrial use, offering complete functionality that is easy to navigate and use.

Modular and Scalable

TrendVision hardware is completely modular and scalable. The hardware can be configured to accommodate anything from a simple, single channel GC system to a large multi-signal system with several continuous analyser inputs, process control outputs, sample handling and so forth. Modules for 4-20mA outputs, process alarms, continuous inputs, sample selection... etc. can be easily added to any system.



Feature Set

- Easy to Install and Use
- Fully Modular Hardware (hardware can be easily added)
- Large Number of signal inputs (4 x GC, 8 x mA, 8 x mV)
- Extensive Support for Continuous Inputs (e.g. THC, Moisture, Oxygen)
- Large number of process outputs (16 x 4-20mA, active or passive)
- Fieldbus Supports (ProfiBus, Modbus, RS-485)
- Support for multiple sample inputs (sample switching)
- Easy results interpretation (Numeric panels, Trend lines)
- Custom report generation using MS Excel (e.g. Quality Certificates)
- Configurable Alarm Outputs (High alarms, Low alarms)
- Robust Industrial Hardware (19" Rack/Benchtop painted steel enclosure)
- AUTO Validation Feature
- AUTO Sequencing Feature
- Sample Line Selection Automation
- Remote Support Software Included
- Batch Tracking Facility
- Unique Automated Filing System
- Linearisation Function
- Natural Gas Applications (e.g. Calorific Value, BTU, Wobbe Index & Specific Gravity)
- Pharmacopeia (e.g. N₂ Pharma) Validation

TrendVision is used worldwide by gas chromatographers and general operatives alike and is supported by AGC's network of global offices and highly-trained distributors. This Chromatography Data System is the perfect solution for any quality control setting using multiple instruments. From minor facilities with one or more chromatographs to large scale operations with multiple users and instruments, TrendVision offers security and flexibility for DCS reporting.

The user-friendly interface and all data are created in a common file format which makes data transfer to the rest of the operation straightforward. TrendVision is an intelligent platform with a user-friendly operation which makes it a wise investment in operational efficiency.

Easy to use

TrendVision offers an easy to learn user interface with complete functionality. Commonly used functions are immediately available using context sensitive menus. System configuration and calibration follows a logical, step by step approach and advanced functionality such as heartcut and backflush timing can be conveniently programmed.

All critical settings to describe an analysis are contained in a single, easy to understand method. Methods can be saved to external devices (e.g. USB memory keys) for additional security and all the information is conveniently accessible in one single view for those without special knowledge or training.

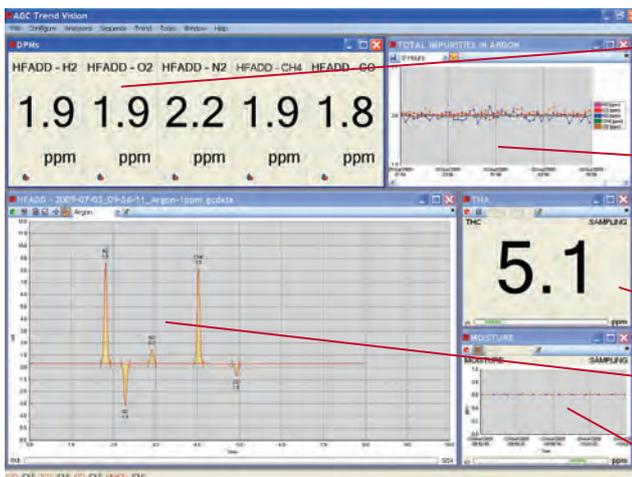


Figure 1: Digital Panel Meter (DPM) format

- 13 Panel Meters will show red if a measurement is in an alarm condition.
- 14 All alarms can be set to "auto-acknowledge" whereby alarms will reset if subsequent measurements return to an acceptable level.
- 15 All panels can carry high alarms, low alarms or both.
- 16 User selection of alarm contacts is convenient and intuitive.
- 17 Plotting, integration and reporting can be individually adjusted on every chromatogram displayed in the analysis program.
- 18 Unique file organization - data files are "self organising" - a new folder is automatically generated each month.
- 19 Unified chromatography method - all settings are contained in a single method, including event table calibration table, integration settings...etc.

DPM view for each peak in the analysis including continuous analyser results

Historical trend view of system results showing datapoints from chromatograms and continuous inputs.

Total Hydrocarbons measurement shown as a realtime numeric value

Traditional chromatogram view

Realtime measurement from Moisture Meter shown as a trendline directly in the analyser interface

Results and Reporting

- 1 Major flexibility in the presentation of results.
- 2 Each result can be displayed in a numeric panel (Digital Panel Meter format) - maximum sixteen panels.
- 3 Each panel reading can be attached to a trend line.
- 4 Trend Lines are scalable, with user selectable axis and line colour.
- 5 Trend Lines retain a link to the source chromatogram - clicking on a trend point will directly open the source chromatogram.
- 6 Average Value and Standard Deviation is automatically calculated for each trend line in the system.
- 7 Individual trend lines can be exported in CSV format.
- 8 Saved chromatograms can be viewed on screen in 'stack' mode or in 'overlay' mode.
- 9 Stored chromatograms can be batch reprocessed from disk if necessary.
- 10 Four separate Trend Windows are available for easy result presentation in multi-channel systems.
- 11 Panel Meters are 'system wide' - results can be captured from any analyser in the system including GC and Continuous Analyser.
12. Panel Meters carry an "activity" timer which will change the colour of the panel if the measurement has not been updated within a defined time.

- 20 Method file has a large free format area for the inclusion of user instructions or any additional textual data.
- 21 All data and all methods are contained in a single, easy to find, folder on the system. This folder can be local or remote (e.g. located on a file server).

Custom Reports

TrendVision allows the user to easily generate custom reports whereby Microsoft Excel® is used as the report generation tool. Peak measurement results are exported directly to a user defined spreadsheet. This spreadsheet can be configured to meet the specific requirements of the user regarding a particular report type (e.g. cylinder QC certificates). The report is completely free format allowing the user to add logos, customer specific text, local language and product codes, to name but a few.

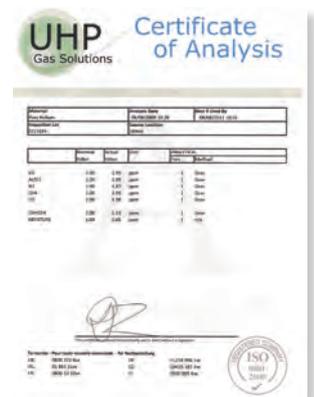


Figure 2: Custom Report

Process Trends & Digital Panel Meters

TrendVision decouples the user from the need to interpret chromatograms. Results can be conveniently displayed as Digital Panel Meters (DPM) and / or Process Trend Lines. Users can refer directly to these results while the source chromatograms are running unseen in the background. Process outputs (4-20mA current loops or fieldbus links) can be easily attached to these numeric panels. This allows a simple, tried and trusted method for transferring results to control room DCS/PLC.

Special Features

- Multi-Layer Chromatograms (e.g. comparison of calibration gas with real sample)
- Multi-Scaling (for improved large and small peaks)
- Integration of negative peaks (e.g. TCD/ ADD)
- Linearisation of non-linear calibration curve (e.g. ADD / FPD)
- Batch Reprocessing of previous chromatograms
- Password Protected

Calibration

The Calibration process in TrendVision has been simplified into 3 steps:

- Calibrate
- Confirm Calibration Gas Concentration
- Release Calibration Report.

Whilst this process is driven by straightforward functionality, there are a host of features which underpin this function such as:

- Calibration Plot for each component
- Linear Algorithm
- Non-Linear Algorithm
- Auto-Calibration

Customised screens for in-depth analysis
Easy comparison of chromatograms

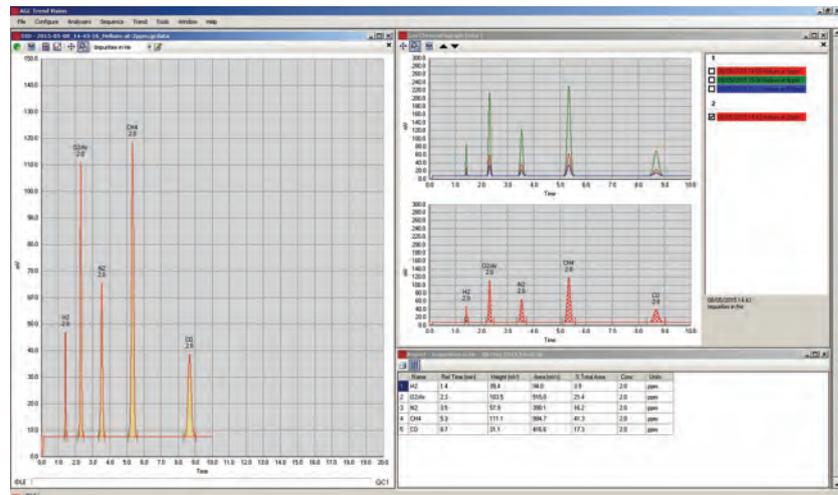


Figure 3: Screenshot of Multi-Layer Chromatograms



Figure 4: Screenshot of DPM

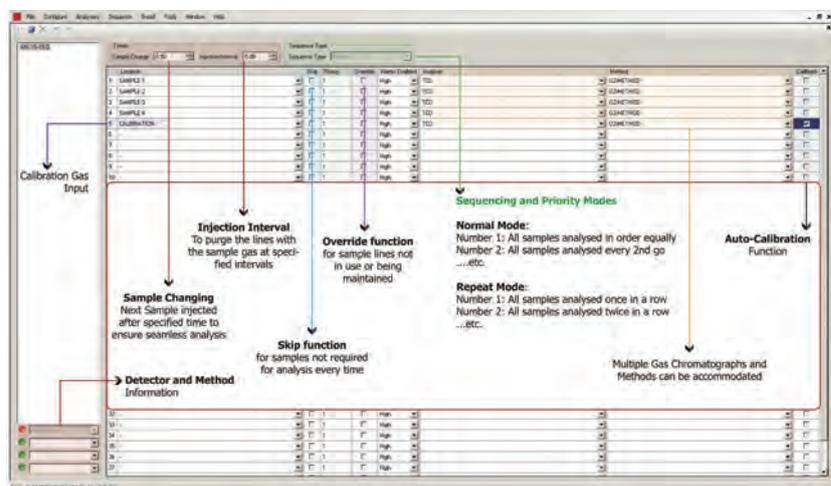


Figure 5: Screenshot of Sample Selection

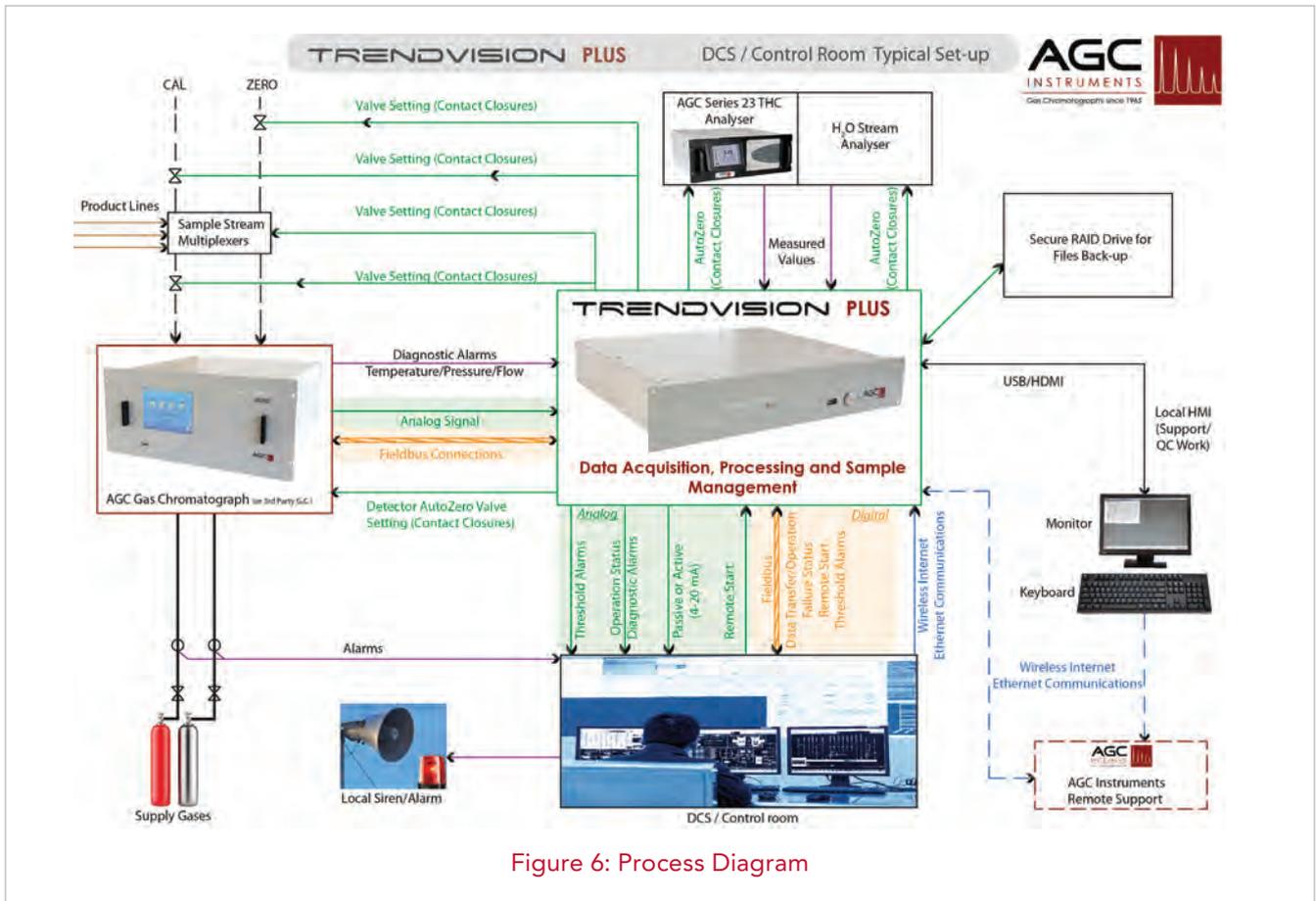


Figure 6: Process Diagram

Sample Selection

Complex sample sequences are supported and each system can support four independent sample selection methods which in turn can support up to twenty solenoids. Each step (i.e. sample) in a sample sequence can be programmed for SKIP, OVER-RIDE and PRIORITY which gives the user total control over the process at hand.

- Straightforward Sample Management (e.g. 3 Sample Lines and 1 Calibration Gas Line)
- Multi-Method use (e.g. analysis method and regeneration method)
- Traceable Results through filename tags
- Easy combination with Auto-Calibration and/or Auto-Validation

System Integration

TrendVision is perfected for Gas Laboratory Monitoring and can be integrated with various technologies such as the AGC Instruments range of analytical solutions and those from other Instrument Manufacturers. Furthermore, a wide range of analytical platforms such as Moisture or Oxygen Analysers or Total Hydrocarbon Analysers, such as the AGC Series 23 THC, can be integrated with TrendVision. This provides the user with a custom solution to their particular analytical set-up and requirements. Old Data Acquisition Software packages can be replaced seamlessly with TrendVision and all aspects of the analysis can be accommodated from sample handling and selection through to analysis and reporting.

AGC's analytical systems, which work seamlessly with TrendVision, are available in a wide variety of housings including rack, bench and wall mounted enclosures, up to and including explosion proof enclosures for Zone 1 and Zone 2 areas. All methods required are pre-set when used in conjunction with one of AGC's Gas Analysis Systems and is completely configurable to the customer's requirements. As well as new instruments, TrendVision can retrofit with legacy instrumentation from any manufacturer through one software system. Using a standard analog input, the TrendVision software can be connected to any Gas Chromatograph or Gas Analyser that can provide an mV output.

Unattended Operation

TrendVision can be configured with minimal effort for continuous, unattended and cyclic operation. The system can be easily programmed to select, inject and analyse a sample at a predetermined frequency. Results can be printed, stored locally or remotely or transferred to a remote computer for further interpretation. This functionality is controlled by a single unified method. Connectivity to the DCS for Process Integration is available by means of a variety of protocols such as Server Technology and Analog up to modern BUS inputs and Ethernet. Using TrendVision, systems can be operated in one shot mode (single injection), multi-mode (e.g. ten injections) or continuous mode (continuous injections at a fixed frequency).

TrendVision PLUS

TrendVision PLUS is the latest edition of the TrendVision Chromatography Data Capture System. Specifically designed for the market, it has been developed following careful consultation with our customers so that it is easy to use and set up.

Whereas the original TrendVision package uses an external PC unit, TrendVision PLUS combines rugged industrial level modular and scalable hardware with an Embedded Windows Operating System. Once the system is installed, usage in the daily environment is effortless with minimal training required. It encompasses all the important functions required in the demanding gas analysis environment, enabling many standard features to be easily applied with the end products of excellent chromatography results and straightforward reporting. Furthermore, the ability to integrate outputs from third party gas analysers is a strong feature and offers considerable flexibility for reporting.

TrendVision 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 the GC systems to run in a fully unattended mode. It can also take control of the 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.

TrendVision PLUS Additional Features

1. Critical components - small form factor PC specified for industrial use (0° to 60° Celsius)
2. Critical components - solid state hard drive specified for industrial use (0° to 70° Celsius)
3. No mechanical drives are necessary (robust system)
4. Embedded Windows Operating System
5. All software, drivers...etc. are factory installed for a true plug and play system
6. Bare metal recovery partition - system can be recovered to factory setting - including methods, chromatograms...etc.
7. Minimal system space required - 19" x 2U form factor – including small form factor PC, HDD unit and ADC (external LCD, keyboard and mouse added by user)
8. Ethernet connectivity - for LAN connection / connection to LAN hosted drives
9. USB Connectivity - for external USB drives
10. Analog VGA and digital HDMI for LCD connection
11. Windows Embedded Operating System (Windows Embedded Standard 7)
12. Large capacity for data storage (chromatograms)
13. Dual disk drive system - support for two HDD units (optional)



Figure 7: Typical AGC Analytical Rack Setup with TrendVision PLUS



Hardware Specifications

Enclosure	<ul style="list-style-type: none"> • Weight 7kg (TrendVision PLUS), 6kg (TrendVision Classic) • Dimensions: 410 (L) x 485 (W) x 900 (H) mm • 19" x 2U rack mount (Bench Mount Version available) • Industrial Grade screw terminals for all I/O • External, grounded PSU (12V at 300W)
Multi-Channel Chromatography Grade ADC	<ul style="list-style-type: none"> • 24 bit resolution • Differential Inputs • Range: $\pm 1V$ input • Linearity: $\pm 0.002\%$ of full scale • Maximum 4 GC Channels
Multi-Channel "Secondary" ADC for Current Inputs (0-20mA); Typically for Continuous Analysers	<ul style="list-style-type: none"> • 16 bit resolution • Differential Inputs • Range: 0mA to 20mA • Accuracy: $\pm 0.1\%$ of full scale • Maximum: 8
Large Number of Relays for Event Management	<ul style="list-style-type: none"> • Voltage Free Dry Contacts • Rating: 0.5A at 24V DC • Isolated • Maximum: 50
Large number of Relays for Alarm Management (Low and High Alarm Contacts)	<ul style="list-style-type: none"> • Voltage Free Dry Contacts • Rating: 0.5A at 24V DC • Isolated • Maximum: 50
Sequence Management Relays for Sample Selection (Via Solenoid Valves)	<ul style="list-style-type: none"> • Voltage free dry contacts • Rating: 0.5A at 24V DC • Isolated • Maximum: 50
4-20mA Loops	<ul style="list-style-type: none"> • Isolated • Active or Passive Operation • Maximum: 16
Remote Start Inputs	<ul style="list-style-type: none"> • 1 per GC channel • Voltage Free Contact Closure • Maximum: 4
Industrial Protocols	<ul style="list-style-type: none"> • Profibus-DP (digital transfer of measured results including sample location, alarms, time stamp, etc.) • MODBUS (digital transfer of measured results including sample location, alarms, time stamp, etc.) • Other standards available at the request of the customer
Extension Bus	<ul style="list-style-type: none"> • RS485 standard • Available for future expansion
Operating System	<ul style="list-style-type: none"> • Windows XP ® • Windows Vista ® • Windows 7 ® • Windows 8 ® • Windows 10 ®



Company Profile



AGC Instruments is a leading European manufacturer and recognised expert in Gas Chromatographs and Gas Analysers for detection ranging from % to ppm to ppb levels for both Process and Laboratory environments. The wide range of Detectors available can be customised for the identification of unique gas streams and are utilised in the key AGC Instruments product ranges such as the NovaCHROM GC and NovaPRO PGC.

With over 50 years experience in providing customers with "Total Gas Analysis Solutions", customised and proven system designs are made to meet exacting needs with guaranteed results, whether located in Safe or Hazardous zones. AGC Instruments works closely with all customers to ensure they obtain the analytical solution that meets their needs with a system that is easy to use and understand.

The AGC Global Network provides worldwide reach with strategic partners and ensures peace of mind through the after sales care which is vital to the operations of an organisation. All distributors are extremely experienced and factory-trained to the highest standards, offering a complete after sales support service.

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.

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