



GAS CHROMATOGRAPH ANALYZER SYSTEM

Your partner in process analytical solutions — Building the future with the proven

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SIEMENS

MAXUM process gas chromatograph solutions — building the future with the proven.

Siemens Analytical Products and Solutions has been a trusted supplier of process gas chromatograph solutions for over 50 years to users around the globe, covering industries such as Refining, Chemical, Petrochemical, Environmental and Pharmaceutical. The process industries have relied on the timely analysis data from on-line gas chromatographs to operate their processes more efficiently as well as minimizing their environmental impact. The MAXUM gas chromatograph (GC) has proven itself as the ideal solution with its wide range of application capabilities as well as flexibility in data communication. And through a continuous evolution of the MAXUM GC platform since its introduction over 10 years ago, the proven MAXUM GC is positioned to continue meeting customer's analytical needs well into the future.



Siemens Analytical Products and Solutions serving the process industries around the world for over 50 years

Siemens Analytical Products and Solutions realizes that a total measurement solution is more than just the analyzer itself. Sample conditioning, analyzer system integration, as well as communication networking, all play critical roles in the overall success of the project as well as operating at the lowest long-term cost-of ownership. Siemens Analytical Products and Solutions brings decades of experience in developing innovative solutions for our users.

And no matter where our users are located, we are there as well with sales and service centers located throughout the world. Whether the need is for field start-up and commissioning or front-end engineering and design services, Siemens Analytical Products and Solutions is ready to support our users over the entire project's lifecycle.



Leading the industry in innovation

Over the past 15 years, the MAXUM GC has led the industry by setting the standard for application excellence as well as minimizing the user's total cost-of-ownership. Innovations include the introduction of parallel chromatography to the industry for simple yet fast analysis times that were never possible before. Innovations in measurement technology include the ability to reliably perform measurements down to the parts-per-billion levels. And innovations in hardware communications link every aspect of the analyzer's operation together, greatly simplifying the effort needed to keep the analyzers operating at peak performance.

The MAXUM GC also protects your analytical investment for years to come by blending future innovations with the proven MAXUM platform. Even though the MAXUM GC was released over 15 years ago, its unique design enables the incorporation of leading-edge analytical technology without the fear of obsolescence. By leveraging emerging technology, the MAXUM GC is just as leading edge today as when it was introduced.

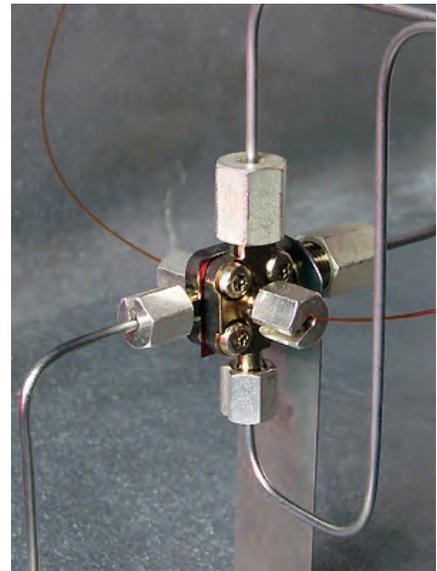
For example, a new color touch-screen maintenance panel was developed for the MAXUM GC that greatly simplifies the technician's operation of the analyzer. And this new display is fully backwards compatible with any MAXUM GC in the field. Another example is the integration of new analytical hardware options such as a modular oven that offers swappable analytical modules for fast repair, yet it uses the same interface and networking capability of existing MAXUM GCs.

Siemens MAXUM GC offers you the confidence knowing that your investment is protected. Concerns about the issues of product obsolescence and costs of migration to new GC platforms are a thing of the past.

Advancing analytical technology

For over half a century, Siemens has been a leader in bringing innovation in the fundamentals of chromatography hardware. Examples of this innovation can be seen in the selection of column valves available such as the diaphragm-plunger Model 50 valve. It is rated for over 10 million operations before maintenance is required and even then, it is often just a simple matter of swapping out the diaphragm. Another example of innovation to minimize analyzer maintenance is the Intercolumn Thermal Conductivity (ITC) detector. The ITC dramatically shortens the time needed to set column switching times by showing the components as they elute from one column to another. Yet another detector innovation developed for the MAXUM GC was an 8-cell Thermal Conductivity Detector (TCD) that made parallel chromatography possible. This new chromatography technique dramatically reduced the analysis time for many applications while simultaneously greatly simplifying the chromatography complexity.

Whether the application requires short analysis time, has stringent safety requirements, or the need for complete redundancy, the MAXUM GC has the analytical hardware options to fulfill these requirements.



Decades of analytical innovation includes the Model 50 diaphragm valve, the multi-port Thermal Conductivity Detector (TCD) and valveless "live" switching technology.

Refined user interface design — your easy-to-understand gateway into the MAXUM GC system



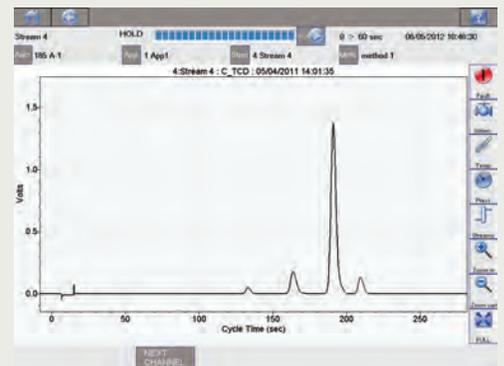
Operation at the touch of the screen

Whether you are a new analyzer technician or a GC veteran, the touch-screen user interface of the MAXUM is ideal. All the standard gas chromatograph operation and maintenance functions are accessible with a simple touch of the 10-inch color display.

Further simplifying access to the MAXUM GC, the touch-screen is certified for direct use in hazardous Div. I and Zone 1 areas.

Accessing analytical parameters, displaying chromatograms and controlling the GC's operation is intuitive and simple. The interface consists of both a menu structure for those users that prefer the format originally used by the MAXUM while also offering icons on the screen for direct access to common operation functions. The display can also be used to interrogate any other MAXUM on the network if desired. So rather than walking from one analyzer shelter to another, the technician can easily interact with any MAXUM as if he was standing in front of it.

For existing MAXUM GC users with the original black and white LCD display, they can easily upgrade to the new color touch screen display by simply swapping out the door of the electronics compartment. This is all part of the MAXUM GC design philosophy to protect existing customer's investment in their analytical system even as new features become available.



Simple and intuitive screens make maintenance of the MAXUM GC as simple as the touch of the screen. Each screen of the MAXUM GC brings key operational information and maintenance controls for keeping the GCs operating a peak performance.



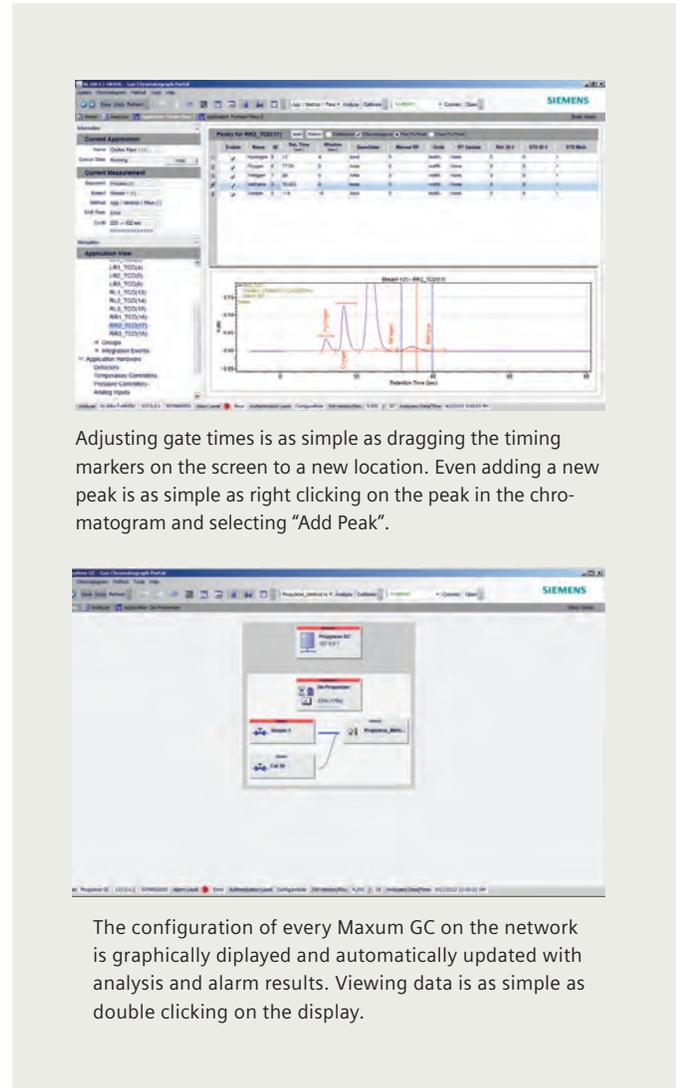
The Gas Chromatograph Portal software is the operation and maintenance window into the entire MAXUM GC network. And the Portal software works directly with every MAXUM GC ever delivered — without requiring costly changes to older units.

Window into the analyzer network

The Gas Chromatograph Portal software resides on a PC workstation and gives users the real-time status of all the MAXUM gas chromatographs on the network. In the event of an alarm, interrogating the analyzer is as simple as clicking on the analyzer's icon, which automatically calls up intuitive screens with all the analyzer's key performance parameters displayed.

With the Gas Chromatograph Portal, every GC on the network is continually updated to reflect the current analysis and operating status. Analysis results, chromatograms and alarm logs are just a simple click away. Furthermore, automatic data logging and reporting functions are completely supported in the Gas Chromatograph Portal.

Each display of the Gas Chromatograph Portal takes full advantage of the latest user interface features. For example, changing peak integration windows on a chromatogram is as simple as clicking on the current gate markers and dragging them to a new setting. Even adding a new peak can be accomplished by simply right-clicking on the peak on the chromatogram and selecting "Add Peak" from the pop-up menu.



Adjusting gate times is as simple as dragging the timing markers on the screen to a new location. Even adding a new peak is as simple as right clicking on the peak in the chromatogram and selecting "Add Peak".

The configuration of every Maxum GC on the network is graphically displayed and automatically updated with analysis and alarm results. Viewing data is as simple as double clicking on the display.

Reliable and secure analytical data — everywhere you need it seamlessly

Industry-standard data communication

MAXUM GCs are fully compatible with modern Ethernet networks providing access to all measurement results, diagnostic data and key performance indicators. Each MAXUM GC has multiple auto-sensing Ethernet connections with one of the ports configurable for fiber optic cables if desired. Analyzers can be easily configured for fully-redundant and secure communication networks as well as easily accommodating the connection to a technician's laptop. The MAXUM's Ethernet board is also a data switch so multiple MAXUM GCs can be connected together without the need for an external router mounted in the shelter.



Native support for Modbus TCP/IP data transfer dramatically simplifies communication to plant control systems while also eliminating the need for data gateway.

Data integration is simplified by the MAXUM GC's native support of the Modbus TCP/IP data protocol, permitting direct and secure communication to a plant's control system. And with no practical limitation on the number of MAXUMs on a common network, system expansion is seamless as the plant's analytical needs grow over time. Furthermore, the MAXUM network is configurable for completely redundant networking and connectivity for applications requiring the ultimate in data security.

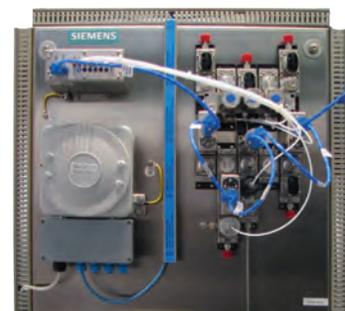
Smart Sample System Interface — simplicity in connectivity

Reliable sample conditioning system performance is critical for process analyzer operation as the analyzer

must have a clean, timely and properly conditioned process sample in order to do the measurement. Unfortunately, due to the challenge of extracting and delivering the sample from the process to the analyzer, maintenance of the sample conditioning system is often much higher than the analyzer itself. This results in the need for technicians to manually inspect the sample system's pressure and temperature readings as well as monitoring for the plugging of filters and leaking of valves.

To minimize the demands on the analyzer technician's time, Siemens has developed a Smart Sample System Interface (SSSI) that automatically collects the key operating information of the sample system and transmits that information to remote maintenance workstations. The SSSI continuously gathers the "live" status of the sample system by interrogating "smart" temperature, pressure and flow sensors. The SSSI transmits this information to the electronics of the MAXUM GC using a single cable connection that can be intrinsically safe if required.

The ability to have the sample system condition inspected remotely improves the utilization of a plant's analyzer technician resources. The data from the SSSI can even be integrated into the MAXUM network software, Analyzer System Manager (ASM), for automatic statistical monitoring of the information for higher analyzer on-line time with lower overall maintenance requirements.



The condition of the analyzer's sample system is continuously monitored via the Smart Sample System Interface reducing the need for a technician to manually perform routine checks.



Analyzer performance and reliability reporting is automatically generated to assist in keeping every analyzer at peak performance.

Analyzer oversight and optimization

Siemens Analyzer System Manager (ASM) is a software-based tool that automatically monitors and reports the performance of all types of process analytical instrumentation used in a plant. Initially developed for the Siemens' line of process Gas Chromatographs, the ASM architecture allows for inclusion of any analyzer via industry standard communication protocols.

The ASM software gathers the operational data of the process analyzers and reports relevant analyzer performance information, including availability, reliability, validation and calibration results. Providing consistent information on analyzer performance allows the quick identification of operational problems often before they impact the analyzer's measurement performance.

A "dashboard" overview of the plant's analytical system uses a Green/Yellow/Red alarming scheme to alerts the user to the current condition of the analyzers. The user can then use the drill-down

navigation graphical interface to quickly access each level of grouping or to a single analyzer for a more detailed inspection. Each overall view shows relevant current and historical operating information in easy-to-understand graphic displays.

One of the core functions of the ASM is checking the reliability of the measured values. Two different methods are available for recording the measurement values, the "reference sample" method and the "line sample" method. The resulting values can then be checked using different evaluation protocols based on ASTM D3764 (or deviation). These automated cross-checks in the validity of the analytical data confirm the plant is genuinely receiving the reliable data needed to operate safely and efficiently.

The ASM is easy to expand as the plant's usage of analyzers grow. Built-in editing tools allow flexible modifications to overview screens, shelter layout screens, etc. And standardized analyzer screens can be set up quickly by simply entering the analyzer specific information.

Siemens Analytical Products and Solutions — your complete solution provider

Long-term reliability and lowest cost-of-ownership involves a tight integration of all the elements of a process analyzer design. From the sample extraction and conditioning design to the engineering of the analyzer shelter and definition of how the data is sent to plant control and maintenance systems, each of these play a critical role. Siemens Analytical Products and Solutions has the decades of experience available for all of these key elements available to you.

Siemens offers a full line of front-end engineering services to assist you in the evaluation of analyzer projects including the preparation of specifications and design of the analytical communications network. Decades of expertise allows users to develop the competitive specifications that result in the efficient project execution. These engineering services are ideal for both existing analyzer installations as well as new plant construction.



Complete analyzer system integration services are available to ensure the reliable operation of your analytical solution. From custom engineered sample conditioning systems to complete analyzer shelters, Siemens Analytical Products and Solutions is uniquely qualified to supply these services.

Installation, start-up, spare parts and training services are available for all Siemens Analytical Products and Solutions products. Service hot-lines are manned 24-hours a day as well as call out service for when unplanned maintenance situations occur. Maintenance contracts can also be customized for the exact level of support your plant requires including in-plant staffing.



Siemens Analytical Products and Solutions Product Portfolio

Siemens Analytical Products and Solutions encompasses a wide range of process analytic measurement technologies for customized solutions using the optimum measurement technique for reliability and measurement performance. From emission monitoring in waste incinerators and power plants to gas analysis in the chemical industry to rotary kiln monitoring in cement plants, Siemens offers a diverse and innovative portfolio designed to meet the user's requirements.



ULTRAMAT 6
Rack-mount Configuration



ULTRAMAT 23
Rack-mount Configuration



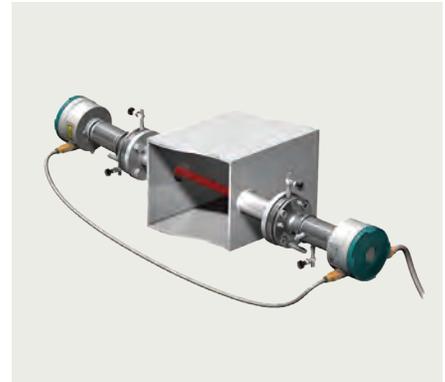
OXYMAT 6
Field-mount Configuration



CALOMAT 6
Field-mount Configuration



FIDAMAT 6
Field-mount Configuration



SITRANS SL
Tunable Diode Laser Analyzer



LDS 6
Tunable Diode Laser Analyzer



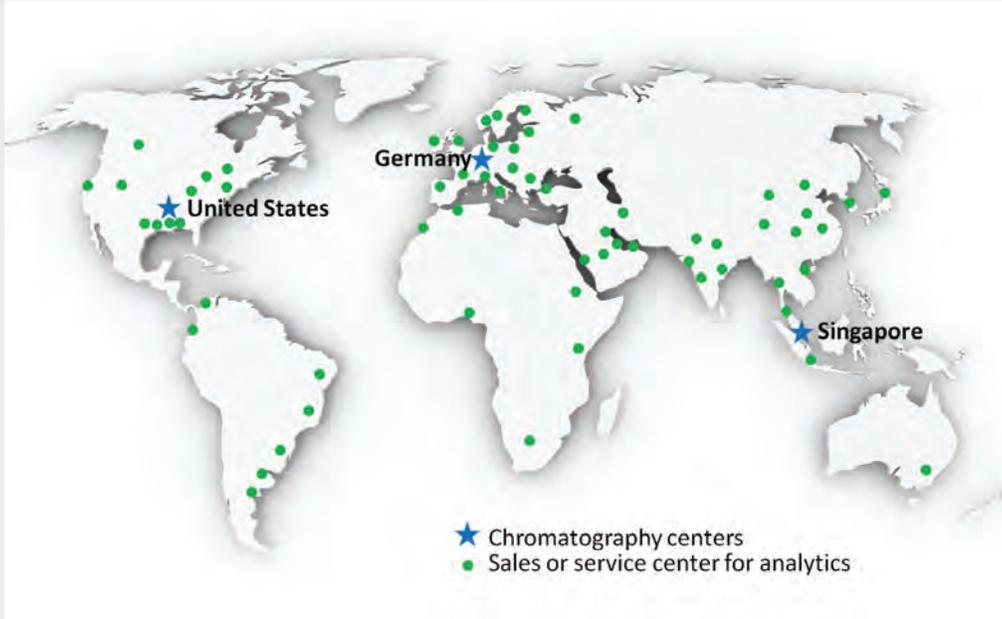
CEMS
Solution Set



Biogas Industry
Solution Set

Siemens—your global process chromatography partner

Siemens Analytical Products and Solutions is your global partner with three gas chromatograph engineering centers for regional support. Sales offices are also conveniently located around the globe with a complete understanding of local requirements to assist you in defining the ideal analytical solution for your project. Service centers are staffed with experienced technicians to provide assistance during commissioning with analytical technical support close at hand. Siemens Analytical Products and Solutions is your trusted partner during the entire life-cycle of your process analyzer project.



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