



**Thermo Scientific TRACE 1300 Series**  
Gas Chromatograph

**Evolve into GC 2.0**  
powerful breakthroughs

**Thermo**  
SCIENTIFIC

# Transcend the traditional

## and step into modern gas chromatography

Unique and innovative breakthroughs featured on the Thermo Scientific™ TRACE™ 1300 Series Gas Chromatograph elevate performance while empowering the user. Developed around key innovations driven by customer needs, including user-installable Thermo Scientific Instant Connect injectors and detectors, unique and patented solutions to conserve helium carrier gas while running analyses, and optimized and miniaturized electronic components, the TRACE 1300 Series GC is an extremely fast, easy to use, compact GC, delivering incredibly high lab productivity at a much reduced cost of ownership.



### Enable Quick Customization with GC Modularity

Interchangeable modules free your laboratory from the challenges and constraints of the past. Remove the complexity and eliminate the need for specialized service assistance or new system requirements with modular injectors and detectors. Transcending the traditional GC design model, the Instant Connect injector and detector modules are independent GC components which are fully self-sufficient sub-units of the instrument, incorporating all electronic circuits and pneumatic controls together with the injector body or detector cell and storing calibration information, for exceptional results consistency.

With the TRACE 1300 Series Gas Chromatograph, the GC configuration can be modified in just two minutes, which is the time required for the removal of three screws to allow for the replacement of the previous module with the new module—all without the need for service personnel.

### Simple and Flexible Configurations for Evolving Laboratory Needs

User-installable Instant Connect modules place the expertise and control in the hands of the operators without the requirement for special training, dedicated tools, or on-site service engineers. This unique modular design offers many advantages to the analytical laboratory when compared to traditional GC systems.

## Benefits of the TRACE 1300 Series Gas Chromatograph

### Ease of use and convenient scaling up of investments

*Lower electricity bills and carrier gas consumption and reduce the total number of GCs in the lab*

- Build the configuration you need now and add to it only when necessary
- Share injector and detector modules between multiple GCs
- Use spare modules to secure your most critical analyses, without expensive back-up channels

### Tailor configurations to application needs and workload requirements

*Ensure constant laboratory response time – even when work schedules change unexpectedly*

- Always choose the best configuration for any application
- Run up to four selective detectors simultaneously for rapid screening
- Quickly switch your GC-MS from an SSL to a PTV injector

### Adopt the evolving, future-proof GC platform

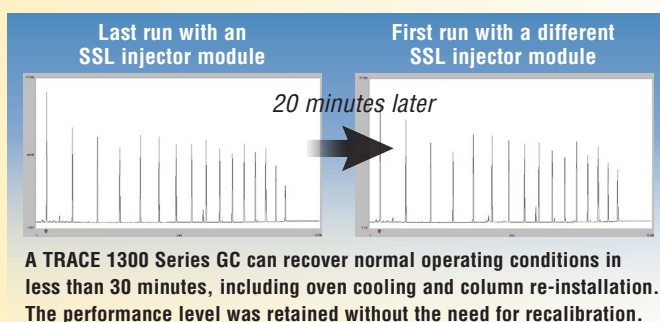
*Address changing priorities with ease – without the need to purchase additional instrumentation*

- Add newly developed modules to an existing TRACE 1300 Series GC at any time
- All modules traceable for GLP compliance upgrades are always possible and user-installable

### Maximize system uptime

*Remove dirty injectors or detectors, replace them with clean ones, and start running samples in a few minutes*

- Resume GC and GC-MS operations quickly
- Postpone maintenance when the laboratory schedule allows
- Make troubleshooting easy



# Innovative solutions

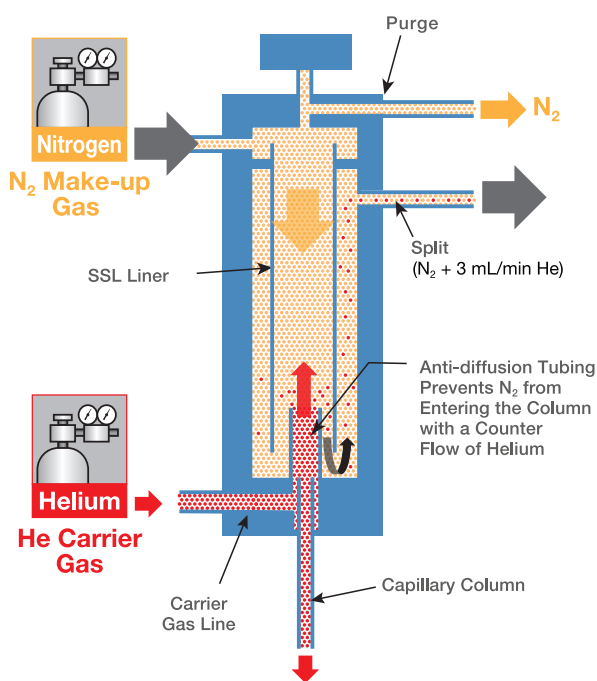
to optimize helium usage

## Ensure Uninterrupted Analyses while Saving Money

The helium shortage continues to inflict price pressure and supply uncertainty on laboratories that require these gas supplies to perform their research and analyses. Realizing the importance of finding a safe, cost-effective solution, breakthrough technology has been introduced to drastically reduce helium carrier gas consumption and extend helium cylinder lifetime up to 14 years per instrument, without any GC or GC-MS method modifications. Helium is continuously saved, both while the GC is in operation and while it is idle. Previously acquired retention times remain unchanged, and no method revalidation is required.

## Instant Connect Helium Saver Module

This proprietary split/splitless injector module greatly reduces helium consumption, by only using the helium to supply carrier gas flow to the capillary column, while nitrogen is used for all other injection processes, including the spectrum purge, split, and sample vaporization. Since only helium flows through the column to the detector or the MS ionization source and analyzer, existing methods, sensitivity, and capabilities remain unaffected, and helium is conserved as much as functionally possible.



The Instant Connect Helium Saver Module allows for an automatic reduction in helium flow to enable sample transfer to the column.

## Extend Cylinder Lifetimes and Prevent Helium Supply Shortages

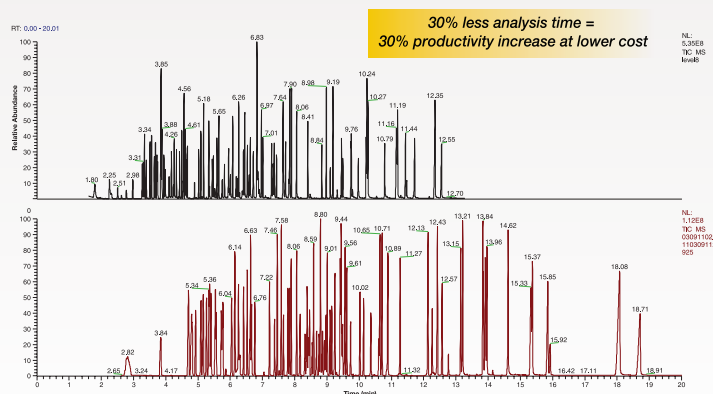
Save time and money and ensure continuous operations for years without concern over the need to change out helium tanks. The typical lifetime of a helium tank can be extended from several months to almost fifteen years under certain conditions.

GC and GC-MS Operating Conditions*	Estimated Cylinder Lifetime	
	Conventional Operation	With the Instant Connect Helium Saver Module
Around the Clock Analysis 24 hours a day, 7 days a week, 365 days a year	5 months	3.5 years
Daily Operations Leaving the GC idle at the end of workdays and on weekends	15 months	14.6 years

\* Conditions: Operating a TRACE 1300 Series GC with helium at 4 mL/min (sccm) using a typical helium cylinder of 48 L volume at 2250 psig.

## Hydrogen Carrier Gas Solutions

For laboratories adopting alternative carrier gases, the TRACE 1300 Series GC is also fully compatible with the use of hydrogen and nitrogen. When using hydrogen carrier gas, solutions are available that provide the same levels of safety and performance that are relied upon with the use of helium, like a hydrogen kit. The GC platform is tested and certified for operation with hydrogen gas to always ensure the utmost laboratory safety.



Chromatogram of a US EPA 8270 mixture, run with helium carrier gas (below) and hydrogen carrier gas (above).

# Functionality to suit your needs



The TRACE 1300 GC with a two-button user interface offers simplicity for laboratories where local instrument interaction is not necessary.

## Solutions for Your Lab Environment

The TRACE 1300 Series GC is available in two models designed to meet the specific needs of all laboratories. The **TRACE 1300 GC** system is the ideal budget-conscious investment for the basic routine laboratory when lower operator expertise requires ease of use with minimal instrument interaction. Its simplified user interface is also ideal for 24/7 operations, as needed in petrochemical plants or remote laboratories that require single-button start/stop/maintenance local interactions while maintaining full programmability through the networked control software.

Larger routine QA/QC laboratories will benefit from the **TRACE 1310 GC** which features a complete icon-based touch screen interface which is ideal for direct instrument control when method development is required. While retaining all of the capabilities and performance of the TRACE 1300 GC model, it also provides local status updates of the oven, injectors and detectors, maintenance commands, run log, multiple language capabilities and video tutorials to drive simple instrument interaction.

The TRACE 1300 Series GC is designed for compatibility with the majority of existing consumables required by injectors and detectors of other brands. This compatibility allows further operational cost savings without the need to buy additional sets of dedicated consumables.

The TRACE 1310 GC, shown here with the Thermo Scientific™ TriPlus™ RSH Autosampler, has an icon-based touch screen that is ideal for direct instrument control and for method development.



# Green by design

## Minimizing Environmental Impact

Thermo Scientific products responsibly contribute to the conscientious management of our environment and its resources. To minimize the environmental impact of using GC instrumentation, the TRACE 1300 Series GC has been designed to guarantee lower power consumption and the quickest start-up in gas chromatography instrumentation. Due to the reduced thermal mass design, heated zones reach their set-point from power-off conditions in only a few minutes, thus further reducing electricity consumption and limiting non-productive wait times.

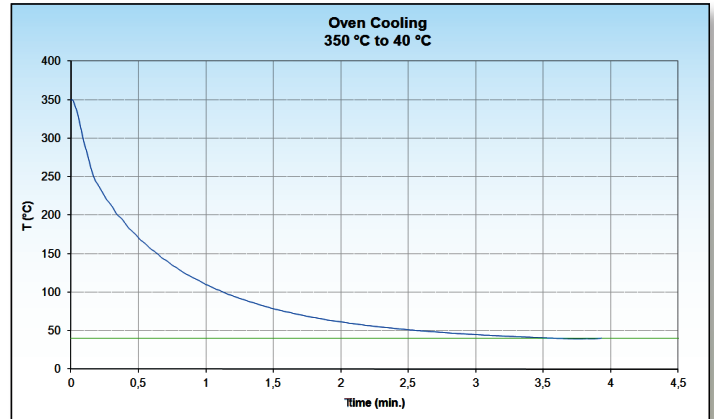
Shorter sample cycle time and exceptional throughput are achieved through the fast heating and cooling capabilities of the new proprietary oven. Enabling an astonishing thermal stability, this fast new oven is ideal for standard, as well as multi-columns applications. Even with a full-sized oven, the TRACE 1300 Series GC features one of the smallest footprints in the industry, thus reducing laboratory bench space requirements.

Fewer parts are required to manufacture the TRACE 1300 GC, and the reduced size and lower weight enable lighter transport. Combined with ongoing recycling initiatives, all of these factors contribute to a reduced carbon footprint that creates a positive impact on our environment.

The TRACE 1300 Series GC is also compliant in all its components with the latest Restriction of Hazardous Substances (RoHS) requirements for electrical and electronic equipment.

## Warm-up Times. From OFF Conditions to Readiness (minutes)

Oven at 50 °C	TRACE 1300 Series GC	Standard GC
Injector and Detectors at 250 °C	3.5	10.2



The TRACE 1300 Series GC quickly reaches near-ambient temperatures.

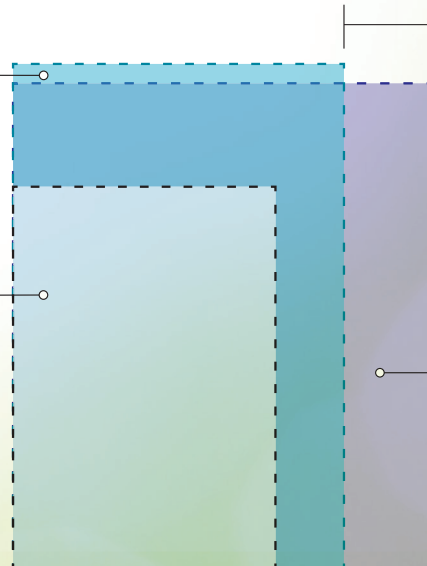
## Overhead View Instrument Comparison

The significant width difference between the TRACE 1300 Series GC and the other dual-column GCs saves precious bench-top space.

Thermo Scientific  
TRACE 1300 Series GC  
44 × 67 cm (w × d)

Typical Single Channel  
GC Dimensions  
≈35 × 51 cm (w × d)

Typical Dual-column  
GC Dimensions  
≈56 × 65 cm (w × d)



The TRACE 1310 GC local user interface can be easily translated into any language. Chinese and Brazilian Portuguese versions are shown as examples.

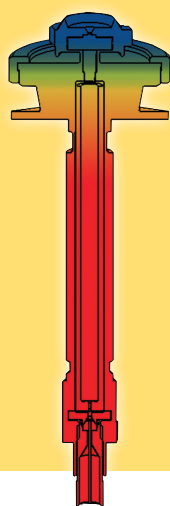
# Reliability, robustness and up time

## the advantages of Instant Connect injectors

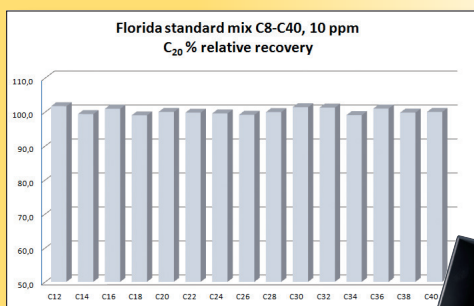
### The Highest Versatility through the Instant Connect Injector Modules

A full range of injection modes are available on the TRACE 1300 Series GC to cope with the most demanding sample analysis. Starting with an innovative, modular Gas Sampling Valve (GSV) for gaseous samples, to a high-performance, universal Split/Splitless (SSL) injector, also available as the innovative Helium Saver module, and extending through the Programmable Temperature Vaporizing (PTV) injector for wider boiling point sample ranges, up to on-column capability if a more gentle injection technique is needed, the flexibility of the Instant Connect injectors is maximized.

Further versatility is achieved by adding a concurrent backflush or large-volume capabilities to reduce sample clean-up or increase system sensitivity. All of these injection techniques are available as user-exchangeable plug-in modules, featuring compact, tool-free and tubing-free injector manifold design for easier preventive maintenance and fully integrated electronic carrier gas control. Maximum flexibility is guaranteed with the ability to switch the injector module quickly when a different injection technique is required.



Instant Connect-SSL injector temperature profile.



Instant Connect-SSL free from discrimination: Hydrocarbon Florida mix % recovery versus C<sub>20</sub>, average of 20 injections.



### Instant Connect-SSL Module

The Instant Connect-SSL injector features an optimized thermal profile developed to avoid sample discrimination in split and splitless mode, thus allowing the broadest range of analytes to be accurately injected. Its cool injector head guarantees minimum thermal stress to the septum, therefore reducing bleed and extending septa lifetime.

The flexible injector configuration enables a quick and easy implementation of existing and validated methods to become immediately productive. Its large compatibility with standard consumables allows the use of generic liners, septa and ferrules often available in the lab and used on different GC models and brands, therefore cutting operational costs.

This new proprietary injector design also ensures easy and immediate access to the septum and liner for simple and quick maintenance without tools or removing gas lines. Moreover, when difficult sticky samples require extra care, users can rapidly extract the injector body, thoroughly cleaning it and immediately restoring routine operations.

## Exceptional Retention Time Stability

Hydrocarbon	Mean RT Min.	Std. Dev. Min.	Hydrocarbon	Mean RT Min.	Std. Dev. Min.
C12	4.6200	0.0003	C28	12.4725	0.0005
C14	6.0192	0.0004	C30	13.1348	0.0006
C16	7.2268	0.0005	C32	13.7557	0.0006
C18	8.3051	0.0005	C34	14.3395	0.0007
C20	9.2825	0.0006	C36	14.8908	0.0005
C22	10.1767	0.0006	C38	15.4118	0.0007
C24	10.9997	0.0004	C40	15.9063	0.0006
C26	11.7629	0.0005			

Retention time stability on 10 consecutive runs of hydrocarbon mix. Retention time standard deviation is always below  $\leq 1/1000$  minute.

Outstanding retention time stability is achieved even in the most complex GC and GC-MS applications through the use of innovative and unique IEC (integrated electronic control) modules. This guarantees industry-leading 0.001 psi control through the entire working range.

These miniaturized gas controls, integrated within every injector or detector module for compact, self-sufficient fully-featured devices, deliver strictly controlled pressure or flow to columns and detectors.

Setting constant or ramped pressures and flows is easy through the software or the local user interface while the electronic control maintains the stability during every run for exceptional retention time accuracy and precision. To further enhance analytical performances, the IEC module also supports the automated leak check of the injector and column installed and column evaluation procedures.

## Instant Connect-PTV Module

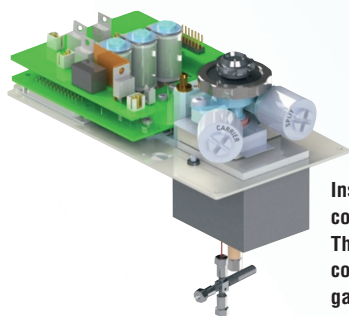
The Instant Connect-PTV injector combines the “discrimination-free” performances of a cold injector with the robustness of the vaporizing injectors. Merging together fast heating and cooling performance with the inertness of the injector chamber and large sample capacity, this injector is the ideal choice for trace analysis in dirty matrices and for thermally labile compounds. Its unique design and multi-mode operations enable the preservation of sample integrity in all situations.

Unlike other PTV injectors using liquid coolant, fast cooling is achieved by a compact and limited thermal-mass design, combined with an efficient forced air circulation system. When initial sub-ambient temperatures are required by the application, a convenient cryogenic option is available. Easy liner removal from the top and complete access to the injector chamber makes maintenance quick and trouble-free.

## Backflush and Large Volume Capabilities

The capabilities of the Instant Connect injector modules are further enhanced by the available concurrent backflush options. These solutions enable the user to reverse the flow inside the injector, eliminating heavy or “undesired” compounds concurrently during the analysis run, protecting the column and detector while cutting down non-productive times, thus increasing throughput.

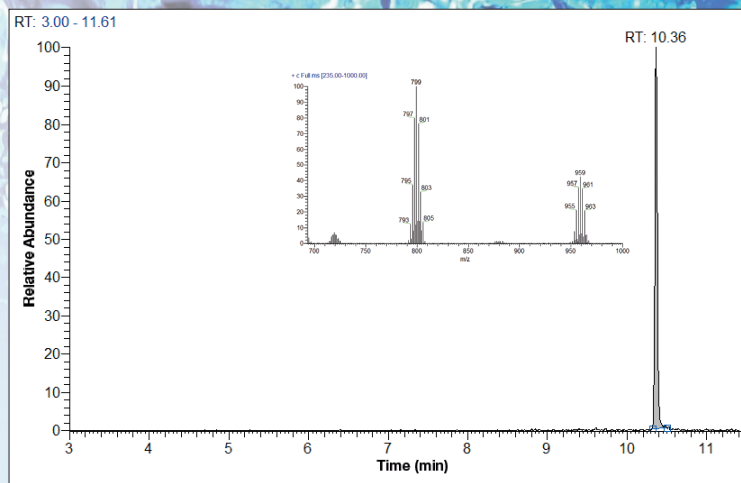
Additional enhancement on system performance is reached by the unique and patented large volume capabilities available on the Instant Connect-SSL (up to 50  $\mu\text{L}$ ) and with even larger extract volumes on the Instant Connect-PTV modules (up to 250  $\mu\text{L}$ ) in solvent split injection mode.



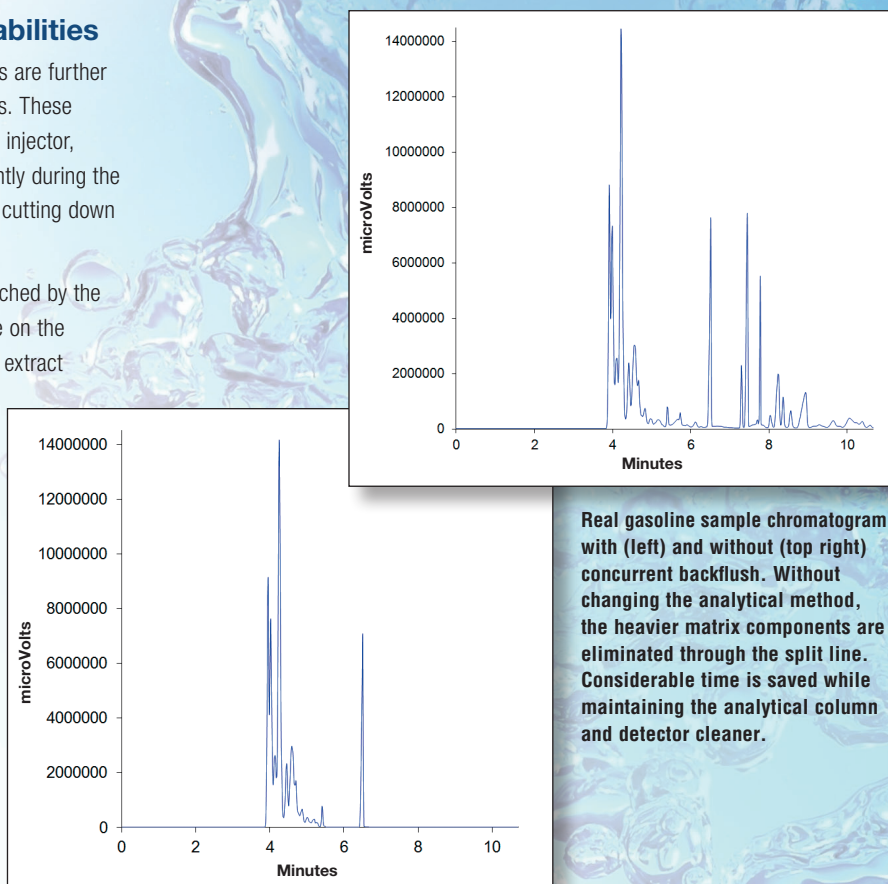
**Instant Connect-SSL concurrent backflush. The T-piece for column connections and its carrier gas control are integrated within the module.**

## Instant Connect Gas Sampling Valve (GSV) Module

Walk away from complicated GC configurations and rapidly introduce precise amounts of gas samples directly into capillary or packed columns. The simple operations of the unique Instant Connect GSV module include a heated 6-port diaphragm valve and can mount different size sampling loops to operate in split or splitless mode with the possibility of using the embedded backflush capabilities. The on-board digital pneumatics enable constant or programmed gas flows or pressures. Every operation is controlled through the user interface for the highest ease-of-use.



**Instant Connect-PTV: On-column chromatogram of the thermolabile decabromodiphenyl ether (MW = 959  $m/z$ ). Its full elution shows the lack of decomposition and discrimination even for very high molecular-weight components.**



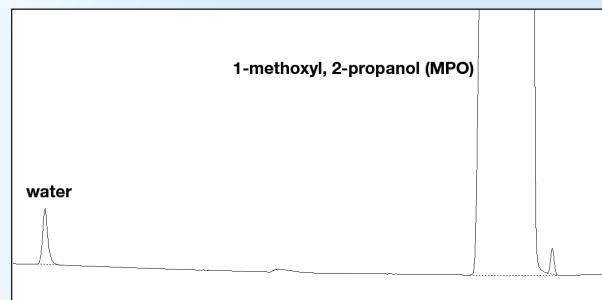
**Real gasoline sample chromatogram with (left) and without (top right) concurrent backflush. Without changing the analytical method, the heavier matrix components are eliminated through the split line. Considerable time is saved while maintaining the analytical column and detector cleaner.**

# Exceptionally sensitive and stable response in trace analysis

## Maximize GC Productivity with Multiple Instant Connect Detectors

Swapping Instant Connect detectors or upgrading from single to multi-detector acquisitions takes only a few minutes to quickly configure a GC to address evolving laboratory needs and increased sample requirements. Running up to four conventional detectors simultaneously with a mass spectrometer expands the usability of the TRACE 1300 Series GC platform.

A complete set of newly designed, miniaturized Instant Connect detectors available with the TRACE 1300 Series GC guarantees fast peak detection and maximum sensitivity. Miniaturized cell volumes, rapid acquisition response, standard at 300 Hertz, and wider dynamic ranges make these detectors ideal for standard and fast chromatography applications, ready to boost laboratory productivity at any time. The highest sensitivity levels are easily achieved even in the most demanding trace analyses in dirty matrix applications, such as the determination of halogenated or nitrogen/phosphorous-containing pesticides in food or environmental samples.



TCD determination of water in industrial solvents.

The quantification of trace contaminants and highly-concentrated analytes in a single run is possible without the need for cumbersome method settings, extensive method development, multiple standards injections or sample dilutions.

## Mass Spectrometer and FT-IR Solutions

The TRACE 1300 Series GC is fully compatible with any Thermo Scientific mass spectrometer representing the ideal front end for every GC-MS need, while still allowing the simultaneous use of conventional detectors.

Ranging from ion traps to single and triple quadrupoles to high-resolution instrumentation, Thermo Scientific mass spectrometers deliver increasingly higher mass resolving capabilities, selectivity and sensitivity offering unsurpassed analytical performance even for the most difficult matrix challenges.

The TRACE 1300 Series GC also connects to the Thermo Scientific™ Nicolet™ iS™50 FT-IR spectrometer, for example, to easily determine two different isomers of xylene in a mixture of aromatics.

## Instant Connect Detectors

### Instant Connect-FID

The **Instant Connect-FID (Flame Ionization Detector)** offers the highest sensitivity and a wide dynamic range with rapid acquisition speed, making it ideal for extremely fast GC applications.

### Instant Connect-TCD

The newly-designed micro-volume **Instant Connect-TCD (Thermal Conductivity Detector)** is used in a wide variety of capillary and packed column applications. Due to its exceptional thermal stability and fast response, this non-destructive detector provides exceptional sensitivity over the widest range of applications.

### Instant Connect-ECD

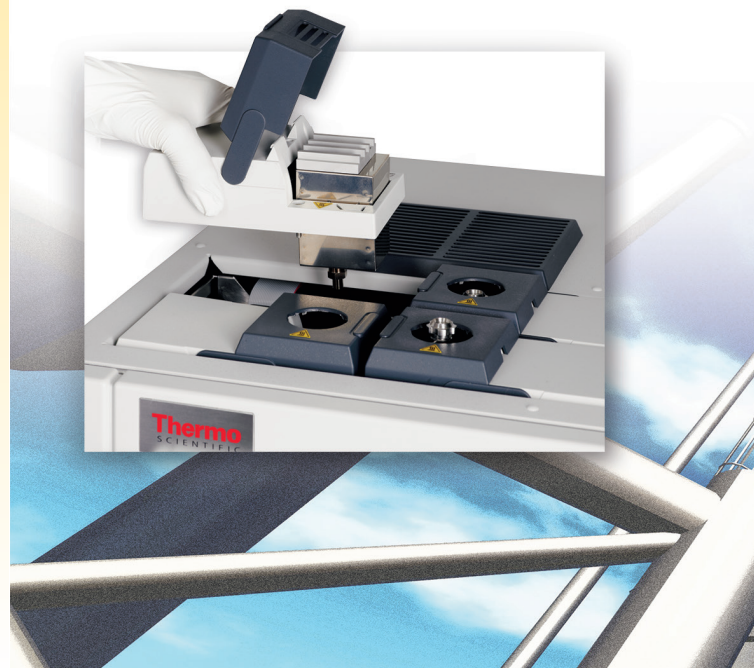
The new **Instant Connect-ECD (Electron Capture Detector)** is excellently optimized for trace analysis in challenging samples. Its miniaturized cell, equipped with a purged, removable anode, has been designed to guarantee the utmost sensitivity while maximizing robustness towards the matrix effect.

### Instant Connect-NPD

Built upon the proven sensitivity of the Thermo Scientific Nitrogen Phosphorous Detectors (NPD), the new **Instant Connect-NPD** brings exceptional flexibility to the determination of specific components with the adoption of multiple dedicated ion sources.

### Instant Connect-FPD

The **Instant Connect-FPD (Flame Photometric Detector)** provides excellent sensitivity and response stability for the most demanding sulphur applications, as well as phosphorous or tin determinations. Its extended operating temperature range and dual wavelength capability further expand its applicability.



# Expand your productivity and connectivity

## Enhance Capabilities with Multi-Detector and Multi-Column Options

The new TRACE 1310 Auxiliary Oven is an additional module of the TRACE 1300 Series GC. Mounted on the right side of the GC with the possibility for a mass spectrometer connection on the other side, it further expands your GC capabilities. Capable of reaching 300 °C, it covers any possible multi-column applications and standard methodologies and is compatible with up to eight diaphragm valves or six rotary valves.

The optional possibility of mounting two additional Instant Connect detectors can enable, for example, the hosting of two two-channel analyses into a single system or the addition of sulfur species determination to common refinery gas analyses (RGA).

Multiple sample sources can be connected to the TRACE 1310 GC, both heated and unheated, including the direct delivery of samples into the auxiliary oven chamber via a large heated transfer line.

An optional smaller oven chamber, placed inside the TRACE 1310 Auxiliary Oven, is available and can be used to protect delicate column phases in a dedicated heated zone, while the sensitivity in the determination of permanent gases like CO and CO<sub>2</sub> through a flame ionization detector, is greatly increased with the optional methanizer using a high-conversion rate nickel catalyst.

	Concentration (ppm, V/V)	RSD(%)		Concentration (ppm, V/V)	RSD(%)
C6+	20.2	0.62	i-Pentane	21.8	1.85
Methane	1198	1.44	n-Pentane	28.4	1.27
Ethane	1026	1.35	1,3-Butadiene	306	1.30
Ethylene	598	1.50	Propyne	94.8	1.55
Propane	1586	1.38	t-2-Pentene	39.4	0.96
Cyclopropane	102	1.28	2-Methyl-2-Butene	29.4	1.44
Propylene	602	1.70	1-Pentene	19.2	19.2
i-Butane	544	1.41	c-2-Pentene	28.2	1.99
n-Butane	414	1.23	Carbon Dioxide	3	0.57
Propadiene	190	1.45	Oxygen	0.53	0.60
Acetylene	24	1.62	Nitrogen	Matrix	1.31
t-2-Butene	308	1.22	Carbon Monoxide	1.50	1.80
1-Butene	200	1.36	Hydrogen	14.93	0.79
i-Butylene	159.6	1.39			
c-2-Butene	245.6	1.12			

**Repeatability results of an RGA, with a total run time of less than 7 minutes. n = 10.**



Inside view of the TRACE 1310 Auxiliary Oven



TRACE 1310 GC and the TRACE 1310 Auxiliary Oven



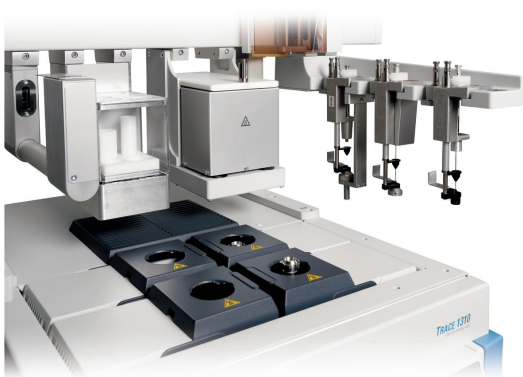
# Expand throughput

with liquid, solid and gas sampling devices

## Autosampling and Autoinjection Solutions

For maximum ease of use when executing liquid injections, the **Thermo Scientific AI 1310 Autoinjector** and the **Thermo Scientific AS 1310 Autosampler** guarantee the desired flexibility, throughput and robustness. The AI 1310 Autoinjector is an eight-position sampling module. It combines the high precision of an automatic injection system with the ease of use of the plug and play concept and represents the ideal answer to those labs requiring highly reliable results for small batches of samples.

A tool-free upgrade is available to extend its sample capacity to the 155 positions found on the AS 1310 Autosampler. Both of these samplers feature removable trays and can serve any type of GC injectors guaranteeing the utmost robustness. When dual column confirmation or double productivity is required, two AS 1310 Autosamplers are easily installed, allowing simultaneous injections on two ports, for higher analysis capacity of up to 310 samples.



## Robotic Sample Handling Solutions

For additional productivity requirements, including liquid, headspace or Solid Phase Micro Extraction (SPME) injections or when unattended automated sample and standard preparation is needed, the **TriPlus Robotic Sample Handling (RSH) Autosampler** offers the most innovative solution.

This modern sampling system is able to automatically switch between injection modes during a single sequence to analyze, for example, liquid samples, followed by headspace analyses, then SPME. The autosampler enables the simultaneous automation of two adjacent Thermo Scientific GC or GC-MS systems increasing laboratory productivity and can execute standard or sample dilutions for calibrations, internal standard addition and derivatization in an unattended fashion.

The **Thermo Scientific TriPlus 100 LS Liquid Autosampler** is a high capacity autosampler, dedicated to liquid analysis for simple and unstoppable productivity. This reliable and robust platform is ideal for the high throughput, liquid-only injection sequences and is fully compatible with the TriPlus RSH autosampler accessories.



## Headspace Sampling Solutions

For any high-throughput environment interested in the analysis of volatiles, static headspace-gas chromatography with its simplicity and broad applicability is one of the most reliable and robust techniques. The **Thermo Scientific TriPlus 300 Headspace Valve-and-Loop Autosampler** offers the largest capacity of the sample tray and incubation oven enabling users to quickly analyze a larger number of samples and achieve unparalleled productivity. The superior sample integrity and traceability, thorough sample path inertness, seamless integration into multiple chromatography data systems, and the immediate local user interface further expand the reliability, flexibility and applicability of the autosampler.

# Chromeleon CDS software

from samples to results quickly and easily, boosting your productivity

The TRACE 1300 Series GC is fully controlled by the Thermo Scientific™ Dionex™ Chromeleon™ Chromatography Data System (CDS).

The Chromeleon Chromatography Data System is ideal for the control of your TRACE 1300 Series GC. When all instruments in a laboratory run on Chromeleon CDS, lab efficiency increases up to 30%.

- **Scalability and multi-vendor control:** Connect legacy GCs with the TRACE 1300 Series GC and operate from a single user interface with one set of methods and reports for the entire lab, department or even site
- **Intuitive operation:** ePanel provides intuitive access to all instrument control options
- **Quick access to key information:** Patented mini-plots provide an immediate results overview
- **eWorkflows:** Accelerate chromatography analysis minimizing operator tasks
- **Dynamic data processing:** Save precious time during result review by updating results on the fly – no need to reprocess
- **More right, first-time analysis:** Intelligent in-run and in-sequence automation ensure that quality control checks are passed before acquisition continues



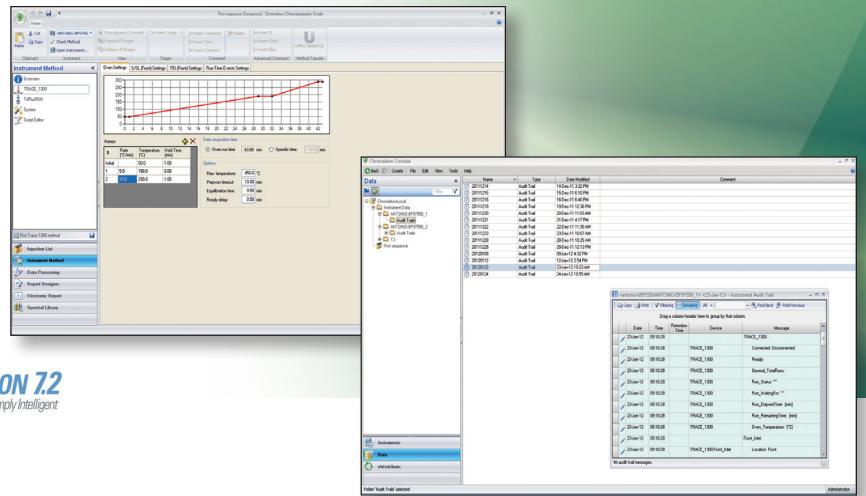
## Additional Software Platforms

The TRACE 1300 Series GC is also controlled by other software platforms, including Thermo Scientific™ Xcalibur™ data system, ChromQuest™ software, and Chrom-Card™ data system. The Xcalibur data system is the common platform for all Thermo Scientific mass spectrometry systems. It provides confident control of the TRACE 1300 Series GC from method development to reporting and is used to provide tools for generating and maintaining your own spectral libraries.

ChromQuest software is a multi-technique chromatography software platform easily scalable from a single system to an enterprise-wide network where any instrument configured as part of the enterprise can be monitored and controlled by any authenticated client.

Chrom-Card software is a cost-effective software solution for rapid instrument control and localized data acquisition and handling.

Instrument drivers for the TRACE 1300 Series GC are available for other common CDS platforms.



## Thermo Scientific columns and consumables

Thermo Scientific GC columns and consumables are designed to offer application-focused solutions to customers in the food and beverage, environmental and petrochemical industries:

- TraceGOLD GC columns – low bleed, high reproducibility
- Consumables tested and certified on the TRACE 1300 Series GC
- Vials guaranteed for Thermo Scientific autosampler systems



# Thermo Scientific solutions

for your GC-MS needs

## Thermo Scientific ISQ Series Single Quadrupole GC-MS

The ISQ™ Series GC-MS system offers rugged and reliable performance and nonstop productivity. The ISQ GC-MS features a new source design ideal for continuous high-throughput operation. The vacuum interlock enables source removal without venting the system, for unstoppable productivity.



## Thermo Scientific ITQ Series Ion Trap GC-MS

The ITQ™ Series GC-Ion Trap MS offers outstanding full-scan electron ionization sensitivity and upgradeability. From a small-footprint entry-level QA/QC instrument to a fully-featured, research-grade system with advanced MS<sup>n</sup> functionality, the ITQ Series GC-MS system offers a broad range of standard features along with an impressive list of options.



## Thermo Scientific TSQ 8000 Triple Quadrupole GC-MS/MS



The TSQ™ 8000 triple quadrupole GC-MS /MS system is a reliable, easy-to-use system that enables faster, more precise, error-free analyses, saving time and reducing laboratory costs especially for dirty matrix samples.

## Thermo Scientific TSQ Quantum XLS Series Triple Quadrupole GC-MS/MS

The TSQ™ Quantum XLS Ultra is the “Gold Standard” in GC-MS/MS. Thermo Scientific™ HyperQuad™ technology delivers highly increased mass resolving quadrupoles for ultra-selective SRM, with best-in-class sensitivity, and allows unsurpassed analytical performance for the most difficult matrix challenges.



## Thermo Scientific DFS High Resolution GC-MS

The DFS™ high resolution GC-MS system is the most advanced magnetic sector, high-resolution mass spectrometer ever built for target compound analysis and for solving general organic analytical questions. Its revolutionary ion optics and intuitive user interface make operation of the DFS GC-MS easy and straightforward.

[www.thermoscientific.com](http://www.thermoscientific.com)

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