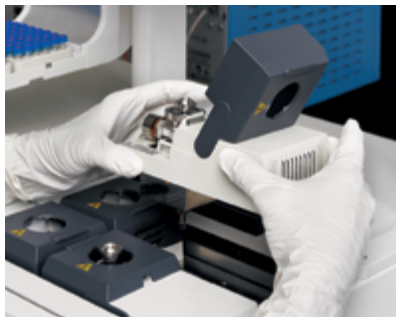
Thermo Scientific TRACE 1300 Series Gas Chromatograph

The Thermo Scientific™ TRACE™ 1300 Series Gas Chromatograph is the latest technology breakthrough conceived to substantially elevate performance in QA/QC and routine laboratories. Engineered around newly developed proprietary injectors and detectors, available as user-exchangeable, instant connect modules, these GC platforms offer greater flexibility over previous instrumentation and drastically reduce the cost of ownership.

Productivity Solution for your Needs

The TRACE 1300 Series GC consists of two models designed to meet the specific needs of all laboratories. The **TRACE 1310 GC** features a complete icon-driven touch-screen user interface ideal for direct instrument control in larger routine and method development laboratories. The **TRACE 1300 GC** is the budget-conscious investment for the basic routine laboratory looking for an intuitive single-button system, that provides ease of use with minimal instrument interaction and full data system control. Both instruments offer the same user-exchangeable, instant connect injector and detector modules and fast oven performance with exceptional retention time stability to reach an incredibly high lab productivity at reduced cost of ownership.



Instant Connect Injector and Detector Modules

User-installable miniaturized, plug-in injectors and detectors redefine usability in routine and high throughput laboratories. In two minutes, without special training or tools, the user can change the instrument configuration to respond to a specific work load by simply swapping injector and detector modules. This unique Instant Connect capability dramatically reduces any maintenance downtime by using back-up modules.

Instant Connect Helium Saver Module

Drastically reduce helium consumption and extend helium cylinder lifetime from 3 to 14 years per instrument, without any GC or GC-MS method modifications. Previously acquired retention times remain unchanged, and no method revalidation is required.

This proprietary patented split/splitless injector module greatly reduces helium carrier gas consumption, using it only to supply the capillary column, while nitrogen is used for all other injection processes: inlet purge and septum, split flow and sample vaporization.

TRACE 1300 GC

TRACE 1310 GC

Thermo SCIENTIFIC

Powerful Breakthroughs for Ultimate Productivity

Enjoy the benefits of a one-channel GC with industry-leading performance and increase productivity at any time by upgrading to a dual channel GC. Increased injector robustness enables the GC to handle dirtier matrices and reduce sample preparation, resulting in an increased savings of time and money.

A complete new range of micro volume GC detectors guarantees higher sensitivity to limit sample re-concentration requirements or reduce injected sample amount. Fast peak detection and wide response linearity complement sensitivity to further boost laboratory performance.

Performance Specifications

- Typical retention time repeatability: <0.0008 min
- Typical peak area repeatability: <0.5 % RSD

Oven Specifications

- Column oven (H × W × D): 27 × 27 × 17.7 cm; 12.9 L
- Operating temperature range: ambient +3 °C to 450 °C
- Cryogenic option minimum temperature: -100 °C with liquid nitrogen; -50 with liquid CO_2
- Temperature set point resolution: 0.1 °C
- Number of ramps/plateaus: 32/33
- Maximum heating rate: 125 °C/min
- Oven cool-down (22 °C ambient): 450 °C to 50 °C in less than 4 minutes
- Ambient rejection: < 0.01 °C per 1 °C

Maximum Heating Rate

T Range °C	Heating Rate °C/min	
	Model: 240 Volts	Model: 110 Volts
50 to 70	125	90
70 to 115	100	65
115 to 175	80	50
175 to 300	50	30
300 to 450	35	20

Injectors

- Maximum number injectors installed: 2
- Available as Instant Connect, user-exchangeable modules

Instant Connect Split/Splitless Injector

- Suitable for all capillary columns (50 µm to 530 µm i.d.)
- Supports CSR large volume injection (concurrent solvent recondensation)
- Compatible with 1/8" and 1/16" packed column using adapters
- Supports P&T/TD/HS by special adapter.
- Compatible with Merlin Microseal™ septum
- Maximum temperature: 400 °C
- Dedicated Split/Splitless injector with integrated concurrent backflush capabilities, offering the same specifications, is also available

Instant Connect Programmable Temperature Vaporizer Injector

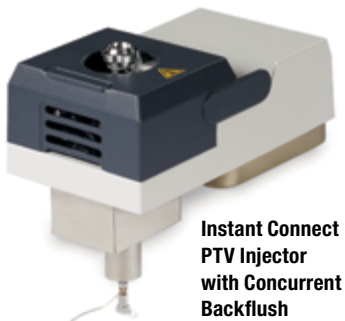
- Supports hot/cold split and splitless modes as well as large volume injections (solvent split) and On Column (TPOC).
- Compatible with Merlin Microseal septum.
- Temperature range with air cooling: Ambient +5 °C up to 450 °C
- Cryogenic option minimum temperature: -100 °C with liquid nitrogen; -50 °C with CO_2
- Temperature programming of up to 3 ramps at up to 870 °C/min
- Dedicated PTV injector with integrated concurrent backflush capabilities, offering the same specifications, is also available

Instant Connect Helium Saver Split/Splitless Injector

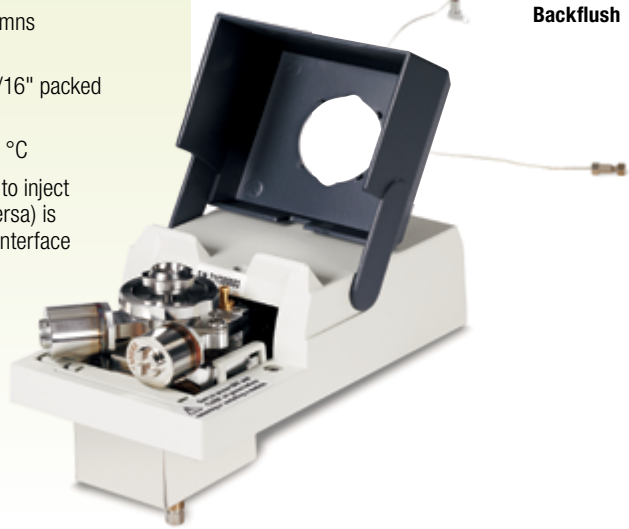
- Maximum helium consumption: Column flow +5 mL/min
- Using Nitrogen for split flow and septum purge
- Suitable for capillary columns with internal diameter between 100 and 320 µm
- Supports P&T/TD/HS by special adapter
- Compatible with Merlin Microseal septum
- Maximum temperature: 400 °C

Instant Connect Gas Sampling Valve

- Sampling loops: 20 µL, 50 µL, 100 µL, 250 µL (as standard), 500 µL and 1 mL
- Suitable for all capillary columns (50 µm to 530 µm i.d.)
- Compatible with 1/8" and 1/16" packed column using adapters
- Maximum temperature: 150 °C
- Switching from load sample to inject sample position (and vice-versa) is controlled through the user interface



Instant Connect PTV Injector with Concurrent Backflush



Instant Connect SSL Module

IEC (Integrated Electronic Control) Gas Specification

- Up to 18 channels of integrated electronic gas control
- Pressure set points minimum increments: 0.01 kPa-0.001 psi in all ranges

Carrier Gas Control Common to all Injectors

- Split ratio: Up to 12500:1
- Pressure range: 0–1000 kPa (0–145 psi)
- Modes: Constant and programmed pressures and flows with gas saver and septum purge
- Total flow setting:
  - *Control of split flow in 0.1 mL/min increments; split flow OFF or from 5 to 1250 mL/min*
  - *Purge flow: OFF or from 0.5 to 50 mL/min in 0.1 mL/min increments*

Optional Instant Connect Auxiliary Gas Module

- Maximum number installed: 2
- Allows for the control of three additional gas channels

Optional Instant Connect Auxiliary Temperature Module

- Maximum number installed: 2
- Controls up to 2 additional temperature zones (e.g. cryo options or heated)

Detectors

- Detectors available: Flame Ionization Detector, Thermal Conductivity Detector, Electron Capture Detector, Nitrogen Phosphorus Detector, Flame Photometric Detector; Full range of Thermo Scientific mass spectrometers
- Available as Instant Connect, user-exchangeable modules
- Maximum number installed: 3 including a mass spectrometers on the same oven, or 4 plus an MS when using the TRACE 1310 Auxiliary Oven
- Fast data acquisition rate: up to 300 Hz for FID, TCD, ECD, NPD and FPD
- Connects to Thermo Scientific™ Nicolet™ iS™50 FT-IR spectrometer
- Connects to Thermo Scientific™ iCAP™ Q ICP-MS

Instant Connect Flame Ionization Detector

- Capillary column optimized compatible with 1/8" and 1/16" packed column
- Flameout detection and automatic re-ignition
- Minimum Detectable Level (MDL): <1.4 pg C/s
- Sensitivity: >0.03 Coulombs/gC
- Linear dynamic range: $>10^7$ (±10%)
- Maximum temperature: 450 °C in steps of 0.1 °C
- IEC:
  - *Air: 0–500 mL/min in 0.1 steps*
  - *H_2: 0–100 mL/min in 0.1 steps*
  - *Makeup gas (N_2 or He) 0–50 mL/min in 0.1 steps*

Instant Connect Thermal Conductivity Detector

- Capillary column optimized (micro TCD) compatible with 1/8" and 1/16" packed column
- Maximum temperature: 400 °C in steps of 0.1 °C
- MDL: <400 pg tridecane/mL with He carrier or <20 pg tridecane/s with a total flow through the cell of 3 mL/min
- Linear dynamic range: 10^5

Instant Connect Electron Capture Detector

- Radioactive source: 370 MBq equal to 10 mCi, ^{63}Ni
- MDL: <4.5 fg/s lindane
- Linear dynamic range: $>10^4$ with lindane
- Maximum temperature: 400 °C in 0.1 °C steps
- IEC: 0 to 500 mL/min makeup in 0.1 steps
- Make-up gas: Nitrogen or 95% argon/5% methane

Instant Connect Nitrogen Phosphorus Detector

- NPD available with ceramic beads and compatible with element-specific sources
- MDL: <20 fg P/s and <100 fg N/s with standard ceramic bead
- Selectivity: gP/gC = 200,000; gN/gC = 80,000
- Linear dynamic range: 10^4
- Maximum temperature: 450 °C in steps of 0.1 °C
- IEC:
  - *Air: 0–500 mL/min in 0.1 steps*
  - *H_2: 0–10 mL/min in 0.1 steps*
  - *Makeup gas (Nitrogen): 0–50 mL/min in 0.1 steps*

Instant Connect Flame Photometric Detector

- Minimum detectable amount: 100 fg P/s and 5 pg S/s (Methyl Parathion)
- Dynamic range: 10^4 (P), $>10^3$ (S)
- Selectivity: P/C = 10^6:1, and S/C=10^6:1
- Maximum temperature: 450 °C base temperature, 200 °C cell temperature; in steps of 0.1 °C
- Also available in dual wavelength version

General Specifications

- Heated zones: Up to 7 with 1300/1310 GC, or up to 9 with the TRACE 1310 Auxiliary Oven
- Time events: 63 user-selectable events. Support up to 8 valves, or 16 with the TRACE 1310 Auxiliary Oven.
- Operating altitude: Up to 3500 m above sea level
- GC Connectivity: One Ethernet LAN connection with fixed and dynamic DHCP assignment for PC based applications; Two RS-232-C ports for auto-sampler control; Handshaking h/w signal for external devices
- Dimensions (H × W × D): 45 × 44 × 67 cm
- Weight: 35 kg main unit plus 0.8 kg each Instant Connect injector or detector module

Thermo Scientific™ TriPlus™ RSH Autosampler installed onto a TRACE 1310 GC and Thermo Scientific™ TSQ™ 8000 Triple Quadrupole GC-MS/MS

TRACE 1310 Auxiliary Oven

Additional module coupled with TRACE 1300/1310 GC, right hand side mounting.

- Primary Oven Chamber
  - *Minimum temperature: 30 °C, with ambient temperature of 22 °C*
  - *Maximum temperature 300 °C, isothermal*
  - *Up to 8 diaphragm valves or up to 6 rotary valves can be installed*
  - *Internal dimensions: 328 mm × 200 mm × 205 mm*
- Secondary Column Oven (optional and alternative to methanizer) to keep columns at lower temperature when using high temperature valves
  - *Minimum temperature: 30 °C, with Auxiliary Oven temperature of 30 °C and ambient temperature of 22 °C*
  - *Maximum temperature 250 °C, isothermal*
  - *Internal dimensions: 80 mm × 80 mm × 20 mm*
- Methanizer (optional and alternative to secondary oven)
  - *Maximum temperature 400 °C*
  - *Nickel catalyst reactor*
- 2 additional Instant Connect detectors can be installed, with 10 Hz acquisition speed
- External Connections for Sampling (Front)
  - *Possibility to connect up to 8 needle valves or other heated accessories, directly inside the primary oven*
  - *Addition 6 holes for un-heated connections*
- External Connections for Sampling (Back)
  - *Possibility to connect up to 6 needle valves or other heated accessories, directly inside the primary oven*
  - *Possibility to connect one heated transfer line, 50 mm external diameter, inside the primary oven*
- Dimensions: (H × W × D): 45 × 31 × 67 cm
- Weight: 27 kg, without columns, valves or optional modules
- User interface: 1 power LED
- Power: 110/240V (autoranging)

TRACE 1310 GC connected to the TRACE 1310 Auxiliary Oven

Instant Connect NoVent Microfluidics Module

- Easy column replacement without venting the mass spectrometer or adjusting additional carrier flows
- Consists of a low-volume, highly inert SilFlow™ disc with finger-tight connectors and a 300 mm × 75 µm i.d. fused silica MS transfer line capillary
- Compatible with the full range of Thermo Scientific mass spectrometers

Certifications

- Conforms to the following safety standards:
  - *International Electrotechnical Commission (IEC): 61010-1:2001 - 61010-2-010:2003 - 61010-2-081:2001 + A1:(2003)*
  - *CAN/CSA C22.2 No. 61010-1 and UL 61010-1*
  - *EuroNorm (EN): 61010-1:2001 - 61010-2-010:2004 - 61010-2-081:2002*
- Conforms to the following regulations on Electromagnetic Compatibility (EMC) and Radio Frequency Interference (RFI):
  - *CISPR 11/EN 55011: Group 1 Class A*
  - *IEC/EN 61326-1:2006*

www.thermoscientific.com

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =
Thermo Fisher Scientific S.p.A. Milan, Italy is ISO 9001:2008 Certified.

Africa +43 1 333 50 34 0
Australia +61 3 9757 4300
Austria +43 810 282 206
Belgium +32 53 73 42 41
Canada +1 800 530 8447
China 800 810 5118 (free call domestic)
400 650 5118
Denmark +45 70 23 62 60
Europe-Other +43 1 333 50 34 0
Finland +358 9 3291 0200
France +33 1 60 92 48 00
Germany +49 6103 408 1014
India +91 22 6742 9494
Italy +39 02 950 591
Japan +81 45 453 9100
Latin America +1 561 688 8700
Middle East +43 1 333 50 34 0
Netherlands +31 76 579 55 55
New Zealand +64 9 980 6700
Norway +46 8 556 468 00
Russia/CIS +43 1 333 50 34 0
Singapore +65 6289 1190
Spain +34 914 845 965
Sweden +46 8 556 468 00
Switzerland +41 61 716 77 00
UK +44 1442 233555
USA +1 800 532 4752

Thermo SCIENTIFIC
Part of Thermo Fisher Scientific

PS52260_E 0914S