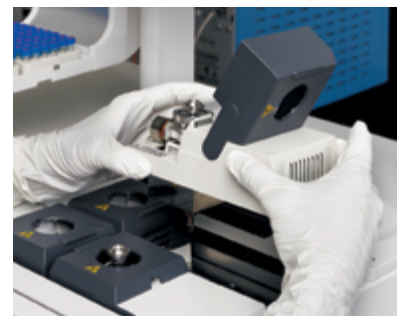


# Thermo Scientific TRACE 1300 Series Gas Chromatograph

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

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## 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 x W x D): 27 x 27 x 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<sub>2</sub>
- 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<sub>2</sub>
- 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

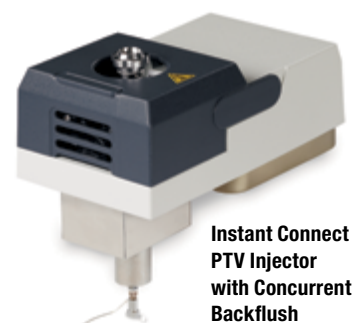
### Instant Connect Helium Saver Split/Splitless Injector

- 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

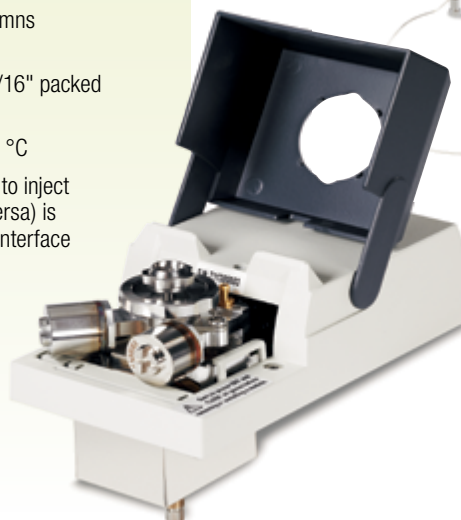
### Instant Connect Gas Sampling Valve

- 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 SSL Module



Instant Connect PTV Injector with Concurrent Backflush



## 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<sup>7</sup> (±10%)
- Maximum temperature: 450 °C in steps of 0.1 °C
- IEC:
  - Air: 0–500 mL/min in 0.1 steps
  - H<sub>2</sub>: 0–100 mL/min in 0.1 steps
  - Makeup gas (N<sub>2</sub> 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<sup>5</sup>

## Instant Connect Electron Capture Detector

- Radioactive source: 370 MBq equal to 10 mCi, <sup>63</sup>Ni
- MDL: <4.5 fg/s lindane
- Linear dynamic range: >10<sup>4</sup> 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<sup>4</sup>
- Maximum temperature: 450 °C in steps of 0.1 °C
- IEC:
  - Air: 0–500 mL/min in 0.1 steps
  - H<sub>2</sub>: 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<sup>4</sup> (P), >10<sup>3</sup> (S)
- Selectivity: P/C = 10<sup>6</sup>:1, and S/C=10<sup>6</sup>: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 SiFlow™ 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

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