The TRACE GC Ultra™ is the new multi-channel gas chromatograph platform, developed as the solution to the GC market's evolving requirements!

Besides offering the most complete range of proprietary inlets, sensitive detection systems, smart accessories, and ancillary devices, the Ultra platform is the FIRST commercially available instrument featuring two new technologies able to raise the standard of Speed and Sensitivity in Gas Chromatography!

**TRACE GC Ultra**
Productivity beyond limits

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**Unique Techniques**

**Ultra Fast**
20 times faster analyses
The Ultra Fast GC column module featuring heat-up rates up to 1200 °C/min can dramatically shorten analysis cycles without compromising analytical resolution, precision, or reliability. Column modules are available for virtually any stationary phase.

**Large Volume Splitless**
50 times more sensitive
Large Volume injection capability up to 50 µL, available for the first time on your standard TRACE GC Ultra SSL injector, greatly extends sensitivity of conventional GC methods in a simple and effective fashion. 250 µL capability offered through the On-column and PTV options complete the offering by meeting all requirements for trace analysis.

**Ultra in Flexibility**
In addition to a comprehensive range of injectors, the availability of a universal base body allows swift detector interchangeability and configurations with up to three detectors operating simultaneously, thus providing added value on your investment.

**Ultra in Solutions**
Combined with the Valve Oven, the TRACE GC Ultra delivers unmatched turn-key solutions even for the most demanding applications requiring multidimensional column switching techniques. Multiple packed or capillary columns, sampling and switching systems, and pressure regulators can all be effectively installed in an additional heated and readily accessible housing.

**Ultra in Performance**
The simple, integrated Automatic Column Characterization available with the electronic gas flow controller grants utmost stability in both retention time repeatability and reproducibility.

**Ultra in Automation**
A vast array of automatic sampling systems (for liquid and headspace) makes this GC able to withstand even the highest workload requirements, operating unattended around-the-clock. Instrument control and acquisition, enabled by Thermo proprietary or third party data systems, are further exploited by the NEW internal LAN interfacing capability.
**TRACE GC Ultra**

**Features and Technical Specifications**

### Column Oven

**Programmability:** 7 Ramps/8 Plateaus. Temperature range: few degrees above ambient to 450 °C. Maximum Temperature ramp: 120 °C/min. Typical heat-up from 50 °C to 450 °C in 420 seconds. Typical cool down: 450 °C to 50 °C in 250 seconds. Sub-ambient: -99 °C with liquid N₂, -55 °C with CO₂ options.

### Injectors

**Vaporizing Inlets**

SSL, Packed, Purged Packed B.E.S.T. PTV

Temperature range: 50-400 °C


**Non-Vaporizing Inlets**

Cold On-column

Septumless injector. No heating of the injector is required. Suitable for manual and automated operations. Cryogenic coolant not required.

### Large Volume Options

**Large Volume Cold On-column**


**Large Volume B.E.S.T. PTV**

Heated Solvent Split valve. Compatible with optional Backflush kit for PTV. Suitable for large volatility range samples in dirty matrices.

**Large Volume Splitless**

Patented technology. Up to 50 µL injection volume. Compatible with manual or automated injections. Suitable for samples amenable to split-splitless injector.

### Inlet Pneumatics

**Digital (250 and 1,000 kPa)**


**Manual (600 kPa)**

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### Detectors

<table>
<thead>
<tr>
<th>Detector Type</th>
<th>MDA</th>
<th>Linearity</th>
<th>Selectivity or additional features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flame Ionization Detector</td>
<td>2 x 10⁻¹² gC/sec</td>
<td>Better than 10⁵</td>
<td>Flameout detection and timed programming capability. Acquisition rate 300 Hz</td>
</tr>
<tr>
<td>Thermal Conductivity Detector</td>
<td>600 pg Ethane/mL He</td>
<td>10⁶</td>
<td>Automated software switch function</td>
</tr>
<tr>
<td>Electron Capture Detector</td>
<td>&lt; 10 fg of Lindane</td>
<td>Better than 10⁵</td>
<td>²³⁴Ni source, micro cell volume design</td>
</tr>
<tr>
<td>Nitrogen Phosphorus Detector</td>
<td>5 x 10⁻¹⁶ gN/s and 2 x 10⁻¹⁶ gP/s</td>
<td>Better than 10⁵</td>
<td>N/C = 10⁻¹; P/C = 2 x 10⁻¹</td>
</tr>
<tr>
<td>Flame Photometric Detector</td>
<td>1 x 10⁻¹⁵ gP/s and 10¹ (P), 5 x 10⁻¹⁶ gS/s (Malathion)</td>
<td>10¹ (S) after linearization with suitable s/w</td>
<td>P/C=10⁻¹; 5/C=10⁻¹ Dual flame photometric capability</td>
</tr>
<tr>
<td>Photo Ionization Detector</td>
<td>1 x 10⁻¹⁰ g of Benzene, 1.3 x 10⁻¹⁰ g of Toluene</td>
<td>Better than 10⁵</td>
<td>Patented lamp cooling system for temperatures up to 400 °C</td>
</tr>
<tr>
<td>Pulsed Discharge Detector</td>
<td>Low pg range</td>
<td>10²</td>
<td>Non radioactive source</td>
</tr>
</tbody>
</table>

### Valve Oven

Independently heated valve housing able to accommodate up to 4 heated/2 unheated gas valves, 8 pressure regulators, 8 needle valves, In/out ports, packed and capillary columns. Maximum Temperature isothermal 175 °C.

### Ultra Fast GC


### System Automation

**Liquid sampling**

AI 3000

Compatible with SSL, B.E.S.T. PTV, PKD and PPKD Injectors. Maximum injectable volume 5 µL. Minimum 20 nanoliters with 0.5 µL syringe, “plunger-in-needle”. Up to 8 sample vial capacity. Upgradable to AS 3000.

AS 3000

Same as AI 3000 but with up to 105 sample vial capacity.

TriPlus™ AS

Compatible with all injectors. 2x150 positions sample trays. Offers automated Large Volume injection capability up to 450 µL. solvent flush and internal standard injection modes. Available in “clone mode”, with one sampling unit automating 2 adjacent GC or GC-MS. Upgradable to TriPlus Duo.

**Headspace Sampling**

TriPlus HS

2x54 positions sample trays. Heated syringe (Maximum Temperature: 150 °C), 6 position Incubation Oven with shaker and heating. Multiple Headspace Extraction (MHE) device available. Upgradable to TriPlus Duo.

**Liquid and Headspace Sampling**

TriPlus Duo

Same as TriPlus AS and HS, offering both liquid and headspace sampling capability through 2 dedicated “snap-on” interchangeable turrets.