Agilent 5975T LTM GC/MSD System
Data Sheet

LTM GC/MSD

The Agilent 5975T LTM GC/MSD is the first commercial transportable GC/MS system that delivers laboratory quality analysis.

The 5975T takes advantage of Agilent’s proprietary LTM technology, which eliminates the conventional GC oven by wrapping the GC column with a heating element and temperature sensor. These column modules provide rapid heating (the maximum ramp rate can reach 1200 °C/min) and cooling of the column for higher throughput. The LTM GC system requires less power compared to a conventional GC, reducing the required power supply from the mobile lab. The Agilent fifth generation EPC and digital circuit ensure retention time precision, and allow easy operation, which makes it suitable and ideal for onsite, fast analysis.

The 5975T inherited the outstanding performance and high reliability design of the Agilent 5975C. It is seamlessly integrated with LTM GC technology to be a fast, high performance, high reliability, transportable GC/MSD system.

The Agilent 5975T LTM GC/MSD with the Triple-Axis HED EM Detector provides the flexibility, capabilities, and performance demanded by modern applications in all industries. The mass selective detector (MSD) is configured for electron ionization.

The autosampler systems can be selected to meet different requirements. Injection systems can range from an injector tower to a flexible CTC-PAL autosampling system. Other sampling devices are available from Agilent and third parties.

The 5975T LTM GC/MSD provides high performance and high productivity with features that improve analyses for both transportable and laboratory usage.

Trace Ion Detection technology helps to detect low-level compounds in complex matrices. In combination with the Deconvolution Reporting Software add-on, it is possible to detect lower level compounds that coelute, which is a difficult analysis without Trace Ion Detection technology.

The programmable 350 °C source increases the signal intensity for later eluting compounds. This improvement in signal is compound dependent. The Gain Normalization Autotune sets the MSD in the best operating conditions, consistently across instruments. The 5975T electronics allow a combination of both SIM and scan acquisitions, even for sub-one-second chromatographic peaks. The SIM ions and switching times can be automatically set up with the MSD ChemStation software, making this capability practical.
Retention time locking (RTL) maintains the retention times so that method maintenance is minimized when columns are clipped or the methods are transferred to other instruments. Method transfers are further simplified with eMethod capabilities. Multisite laboratories can easily transfer and run the same methods with the same retention times.

The MSD ChemStation software provides an extensive set of tools for different applications. It can estimate concentrations of noncalibrated compounds based upon calibrated compounds (SemiQuant). For complex samples, Deconvolution Reporting Software (DRS) combined with the unique Agilent RTL libraries provide quick screening capabilities for classes of compounds. An extensive macro language is provided along with a flexible report writer for custom operations. Agilent GC/MSDs are known for their reliability, ruggedness, and long life. The Agilent ten-year use guarantee provides greater assurance for a low cost-of-ownership throughout its life.

The Agilent 5975T LTM GC/MSD System features:
- Agilent proprietary LTM technology
- Proven ruggedness and reliability
- eMethods for simple method transfer
- SemiQuant for estimating concentrations of noncalibrated compounds
- Inert electron ionization (EI) source for better performance on active compounds
- Higher sensitivity with the Triple-Axis HED-EM Detector
- Mass range up to 1050 u
- High performance SIM/scan with automated SIM setup
- Mass stability with better than 0.10 u over 48 hours
- Performance electronics for 12,500 u/s scan speed (8,000 u/s write-to-disk)
- DRS and RTL ready
- Inlet turntop for quick and easy inlet maintenance
- Proprietary hyperbolic gold coated quadrupole
- Heatable quadrupole to 200 °C
- Easy access to full ion optics
- Compatibility with many third party sampling devices
- Oil-free mechanical pumps (Oil pump as option)
- Ten-year use guarantee

### Agilent 5975T LTM GC/MSD System Specifications

#### Mass Spectrometer

<table>
<thead>
<tr>
<th>Mode</th>
<th>EI (Electron Impact Ionization)</th>
</tr>
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<tbody>
<tr>
<td>Ion source type</td>
<td>Noncoated inert EI source</td>
</tr>
<tr>
<td>Ionization energy</td>
<td>5–241.5 eV</td>
</tr>
<tr>
<td>Ionization current</td>
<td>0–315 µA</td>
</tr>
<tr>
<td>Transfer line temperature</td>
<td>100–350 °C</td>
</tr>
<tr>
<td>Ion source temperature</td>
<td>150–350 °C</td>
</tr>
<tr>
<td>Quadrupole temperature</td>
<td>106–200 °C</td>
</tr>
<tr>
<td>Filaments</td>
<td>Dual for EI</td>
</tr>
<tr>
<td>Mass filter</td>
<td>Monolithic hyperbolic quadrupole</td>
</tr>
<tr>
<td>Mass filter protection</td>
<td>Entrance lens</td>
</tr>
<tr>
<td>Maximum mass</td>
<td>1050 u</td>
</tr>
<tr>
<td>Mass resolution</td>
<td>Unit mass adjustable by tune</td>
</tr>
<tr>
<td>Mass axis stability</td>
<td>Better than 0.10 u/48 h</td>
</tr>
<tr>
<td>Detector</td>
<td>Triple-Axis Detector with long life EM</td>
</tr>
<tr>
<td>Dynamic range (electronic)</td>
<td>10^6</td>
</tr>
<tr>
<td>Scan rate (electronic)</td>
<td>Up to 12,500 u/s</td>
</tr>
<tr>
<td>Write-to-disk</td>
<td>Up to 8,000 u/s</td>
</tr>
<tr>
<td>SIM</td>
<td>60 ions × 100 groups</td>
</tr>
<tr>
<td>Pumping system</td>
<td>70 L/s turbomolecular pump with 3.6 m³/hr standard dry pump</td>
</tr>
<tr>
<td>Total flow</td>
<td>2 mL/min (standard turbo)</td>
</tr>
<tr>
<td>Instrument control</td>
<td>MSD ChemStation Data system, local user interface</td>
</tr>
<tr>
<td>Maintenance access</td>
<td>Source, filaments, lenses, mass filter, and detector on removable plate</td>
</tr>
<tr>
<td>Maintenance scheduling</td>
<td>Early maintenance feedback</td>
</tr>
<tr>
<td>EI scan sensitivity</td>
<td>1-µL injection of a 1-pg/µL OFN standard scanning from 50–300 u will give 400:1 at nominal m/z 272 ion (He)</td>
</tr>
<tr>
<td></td>
<td>1-µL injection of a 1-pg/µL OFN standard scanning from 50 to 300 u will give 100:1 at nominal m/z 272 ion (H₂)</td>
</tr>
</tbody>
</table>
**LTM Gas Chromatograph**

- **Column type**: LTM capillary column
- **Column temperature control**: LTM technology
- **Column temperature range**: Ambient +8 °C-350 °C
- **Column temperature ramps/plateaus**: 20/21 with negative ramps allowed
- **Max heating rate**: 1200 °C/min (depends on column length and temperature)
- **Autosampler**: Agilent 7693A (G4513A only), CombiPAL, Headspace, Purge & Trap
- **Liner replacement**: Turntop system
- **Inlet**: Split/splitless (standard)
- **Inlet max temperature**: 350 °C
- **Carrier gases**: Helium or hydrogen
- **Electronic pneumatic control (EPC)**: Auto pressure regulation for split/splitless, septum purge
- **Carrier gas control modes**: Constant pressure and flow modes; pressure and flow programmable
- **Pressure range**: 0–100 psi (standard) with 0.001 psi resolution
- **Retention time locking**: RTL ready
- **Instrument control**: MSD ChemStation Data system, LTM GC remote control panel software

**MSD ChemStation software**

- **SIM/Scan**: Automated SIM setup and synchrous SIM/scan operation
- **Application reports**: Environmental, drugs of abuse, aromatics in gasoline
- **File import/export**: Sequence file/quant and custom report
- **Customization**: Macro language, report writer
- **Spectral libraries**: NIST
- **Spectral DRS and RTL**: Pesticides and endocrine disrupter databases, volatiles, PCBs, toxicology, FAMEs, flavors, organotin compounds, hazardous chemicals, indoor air toxics, Japan Positive List, forensic toxicology, and environment semi-volatiles

**Automation Features**

- The system can automatically tune.
- The system can automatically create a SIM method from a scan data file of an injected standard.
- The system can automatically screen for compounds in the DRS and RTL libraries database based on spectra and RTs.
- With the DRS, the system can produce a combined report showing library search results based on deconvoluted spectra along with quantitative results.

**Ease-of-Maintenance**

- The LTM GC S/SL inlet liner can be replaced in less than 1 minute with a turntop inlet.
- A glass window simplifies column positioning, and provides easy observation of filament operation and electrical connections.
- The source, filaments, lenses, quadrupole, and EM can be removed from the instrument as one unit in less than 1 minute after venting.

**Safety, Regulatory Compliance, and Operational Conditions**

The instrument is designed and manufactured under a quality system registered to ISO 9001. The instrument complies with international regulatory, safety, and electromagnetic compatibility requirements. In addition, further testing was done under Agilent standards to ensure operation after delivery and longterm usage.

**Antivibration**

MIL-STD-810F:514.5C-3 method

**Safety**

Canadian Standards Association (CSA): CAN/CSA-C22.2 No.61010-1-04
Electrotechnical Commission (IEC): 61010-1
EuroNorm (EN): 61010-1
Electromagnetic compatibility
CISPR11/EN55011: Group 1, Class A
Sound emission EN 27779:1991 sound pressure Lp <70 db

**Power**

Max power consumption <1.45 kW
120 VAC(-10%/+10%); 50/60 Hz+5%
230 VAC(-10%/+10%); 50/60 Hz+5%
200 VAC(-10%/+10%); 50/60 Hz+5%

**Operating environment**

-10 °C–40 °C with 40%–80% relative humidity noncondensing (operational)
-20–70 °C, 0–90% relative humidity – noncondensing (storage)
Physical Requirements

Dimensions  
65 cm (L) × 60.8 cm (W) × 49.1 cm (H),
Additional space should be added for the data system and printer.

Weight  
56.5 kg (without dry pump),
67.5 kg (with dry pump)

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