

Clarus 600 Mass Spectrometers

The PerkinElmer® Clarus® 600 Mass Spectrometer (MS) is a detector that is interfaced to the Clarus 600 Gas Chromatograph (GC). The entire system is controlled through the PerkinElmer TurboMass™ GC/MS software. The following models are available:

Clarus 600 C MS – Electron ionization (EI) and chemical ionization (CI) with 255 L/sec turbomolecular pump.

Clarus 600 T MS – Electron ionization with 255 L/sec turbomolecular pump.

Clarus 600 S MS – Electron ionization with 75 L/sec turbomolecular pump.

Clarus 600 D MS – Electron ionization with air-cooled oil diffusion pump.

Hardware

Mass range	1.0-1200 u (amu)
Detector	Sealed long-life photomultiplier
Analyzer	Quadrupole with prefilter – 131 x 12 mm circular rods; 16 x 12 mm prefilter rods
Mass stability	±0.1 m/z mass accuracy over 48 hours
EI voltage	10-100 eV
Vacuum pumps	Clarus 600 C and T MS: 255 L/sec (nitrogen) air-cooled turbomolecular pump (230 L/sec best-in-class helium pumping capacity) Clarus 600 S MS: 75 L/sec (nitrogen) air-cooled turbomolecular pump (59 L/sec best-in-class helium pumping capacity) Clarus 600 D MS: air-cooled oil diffusion pump
Vacuum gauge	Standard, single wide-range gauge for all pumping options
Field upgrades	Positive/negative chemical ionization Pump upgrade from diffusion or 75 L/sec turbo to 255 L/sec turbo Water cooling (Clarus 600 C, T and S models)
Pump-down time	255 L/sec turbomolecular pump: < 3 min for air/water; < 90 min for quantitative stability
GC transfer line	Settable from 50 °C to 350 °C. Clarus 600 C and T models accommodate flow rates up to 5 mL/min (EI mode)
Source	Temperature settable from 50 °C to 350 °C; No wires – plug and play
Calibrant gas	PFTBA (FC-43), triazine for high mass calibration (optional), or user selectable
MSVent	Optional accessory for MS isolation
Filament	Long-life Marathon™ filaments (2 included standard)

Performance

Scan rate	Fully variable up to 12,500 amu/sec
Maximum acquisition rate	Up to 65 scans/second full scan, depending on mass range Up to 100 samples/second, selected ion monitoring (SIM)
Linear dynamic range	Electronic: 10 ⁶ -10 ⁷ depending on acquisition rate
Scan functions/run	32 sets (full scan/SIM) of 32 ions per function

Data system

Methods	Electronically transferable between Clarus, TurboMass Gold and TurboMass GC/MS systems
Acquisition	MS detector with two GC detectors (optional)
SIFI™	Simultaneous full-scan data acquisition with selected ion monitoring (SIM)
UltraTune™ autotune	User selectable: standard (BFB/DFTPP) or custom tuning
Reporting	Environmental: standard; Forensic: standard; Customizable: standard

Sensitivity

Clarus 600 C and T MS – 255 L/sec air-cooled turbomolecular pump:

<u>Test</u>	<u>Amount</u>	<u>Detection Limits (S/N)</u>
EI full scan	1 pg of octafluoronaphthalene	180:1 RMS
Positive CI full scan	100 pg of benzophenone	300:1 RMS
Negative CI full scan	1 pg octafluoronaphthalene	4500:1 RMS

Clarus 600 S MS – 75 L/sec air-cooled turbomolecular pump:

<u>Test</u>	<u>Amount</u>	<u>Detection Limits (S/N)</u>
EI full scan	1 pg of octafluoronaphthalene	150:1 RMS

Clarus 600 D MS – air-cooled oil diffusion pump:

<u>Test</u>	<u>Amount</u>	<u>Detection Limits (S/N)</u>
EI full scan	1 pg of octafluoronaphthalene	100:1 RMS

Optional libraries and software

Libraries	NIST Mass Spectral Library Wiley Mass Spectral Library Maurer/Pfleger/Weber Drugs, Pollutants, Pesticides and Metabolites Library
Software	Ion Signature Deconvolution MS Software

Physical

Power	120 VAC ±10% @ 50/60 Hz ±1% 1000VA; 230 VAC ±10% @ 50/60 Hz ±1% 1000VA
Operating temperature	10 °C to 30 °C (10 °C to 35 °C for Clarus 600 C, T and S models with optional water cooling)
Relative humidity	20-80%, non-condensing
Weight	Clarus 600 C and T MS: 49.9 kg (110 lbs); Clarus 600 S MS: 46.7 kg (103 lbs); Clarus 600 D MS: 46.3 kg (102 lbs); Forepump: 25.9 kg (57 lb)
Dimensions (HxWxD)	50 x 32 x 77 cm (20 x 13 x 30 in) With Clarus 600 GC and Autosampler: 83 x 98 x 82 cm (33 x 39 x 32 in)

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