

GC-MS 10

PORTABLE GC-MS SYSTEM



01

FIELD-PORTABLE

<20 kg. Vehicle-mounted, handheld, or shoulder-carried.

02

PROVEN SENSITIVITY

1 pg OFN. 1 ppb toluene. Exceptional trace detection.

03

6 SAMPLING MODES

Gas-tight, liquid, SPME, gas handle, headspace, thermal.

04

DESKTOP-GRADE MS

Hyperbolic quadrupole. Lab-grade qual/quant performance.


KEY ADVANTAGES

- Hyperbolic quadrupole, 2-550 u, 1 pg OFN
- Full Scan, SIM, Scan&SIM, Enhanced Full Scan
- Oil-free turbomolecular pump, ≥60 L/s
- High-temp ceramic ion source, dual filament
- Low-thermal-mass capillary column
- Quick-detach GC & MS modules
- Valve-switching injection, software controlled
- Built-in adsorption concentration & quant loop
- Real-time qual/quant analysis software
- NIST + NIOSH + TICs/CWAs spectral database
- EPA TO-14 & TO-15 compliant
- 1 ppb toluene, RSD ≤1% RT, ≤5% area
- IP43 protection, 0-45°C, battery ≥3 hrs
- Weight <20 kg with battery & carrier gas

SIX CORE TECHNOLOGIES




01 QUICK-DETACH GC & MS MODULES
Modular design with independent GC and MS units. Quick-disconnect transfer line for rapid module swap and flexible column configuration in the field.



02 SPLIT/SPLITLESS INLET
Standard inlet supporting multiple injection modes. Maximum temperature $\geq 280^{\circ}\text{C}$, split ratio $\geq 100:1$ for concentration flexibility.



03 HIGH-TEMP CERAMIC ION SOURCE
Inert ceramic ion source with dual filaments and self-cleaning capability. Efficient ionization with reduced field maintenance requirements.



04 VALVE SWITCHING INJECTION SYSTEM
Built-in adsorption concentration and quantitative loop modules. Software-controlled valve switching for fully automated sample preparation.

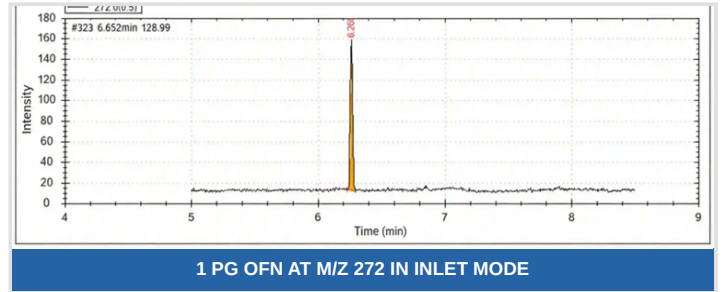
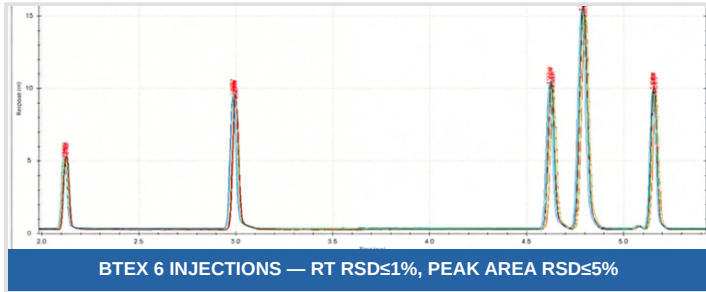


05 HIGH-SPEED TURBO MOLECULAR PUMP
Oil-free non-consumable vacuum system with ≥ 60 L/s pumping speed. Supports 1.0 mL/min carrier gas direct to MS module continuously.



06 LOW THERMAL MASS COLUMN
Compact capillary column with high separation efficiency and low power consumption. Replaces traditional heated column design.

PERFORMANCE EVIDENCE



APPLICATION EXAMPLES



VOCS & SVOCS
Rapid detection of volatile and semi-volatile organic compounds

CHEMICAL WEAPONS
CWAs and toxic industrial chemicals identification

HAZMAT & EXPLOSIVES
Hazardous chemicals and explosives detection

EPA MONITORING
TO-14 and TO-15 compliant air monitoring

INDUSTRIAL SAFETY
Workplace exposure and hygiene compliance

SIX SAMPLING FIXTURES

STANDARD SPLIT/SPLITLESS INLET SYSTEM

Built-in adsorption concentration and quantitative loop modules. Independently supports liquid syringe injection, SPME needle injection, gas-tight syringe injection, and gas sampling handle injection. Compatible with portable headspace sampler and portable thermal desorption sampler for multiple sampling modes.



01

GAS-TIGHT SYRINGE

Direct injection of gaseous samples with precision gas-tight sealing for accurate volumetric delivery.



02

LIQUID SYRINGE

Standard liquid injection for dissolved samples. Split/splitless compatible for flexible concentration.



03

SPME NEEDLE

Solvent-free microextraction for trace VOC and SVOC analysis in water and air samples.



04

GAS SAMPLING HANDLE

Handheld digital probe with programmable method selection for rapid ambient air screening.



05

PORTABLE HEADSPACE SAMPLER

Equilibrium headspace extraction for volatiles in solid and liquid matrices with multiple positions.



06

PORTABLE THERMAL DESORPTION

Passive diffusion and active sampling. RT+10°C to 250°C desorption. <1 ppb toluene detection.

OPTIONAL ACCESSORIES

3. PORTABLE HEADSPACE SAMPLER (OPTIONAL)

Temperature Range	0°C - 45°C
Power Supply	Independent power or GC/MS powered
Heating Positions	≥4 headspace heating positions
Heating Temperature	30°C - 80°C
Weight (with battery)	≤6 kg

4. PORTABLE THERMAL DESORPTION (OPTIONAL)

Sampling Modes	Passive diffusion & active sampling
Transfer Line	+10°C - 100°C
Carrier Gas Support	External & internal carrier gas
Desorption Temperature	RT+10°C - 250°C
Detection Limit	<1 ppb (Toluene)
Max Purge Flow	≥150 mL/min
Battery Life	≥3 hours
Weight	≤6 kg

5. PORTABLE SPME DEVICE (OPTIONAL)

Weight (with battery & gas)	≤8 kg
Power Supply	220V AC / Internal / External battery
Sample Chambers	≥2 independent sample chambers
Chamber Temperature	40°C - 90°C
Stirring Speed	300 - 2000 rpm
Aging Chamber	50°C - 280°C
Display	≥5-inch LCD

MAIN SYSTEM

Mass Analyzer	Hyperbolic Quadrupole
Mass Range	2 u - 550 u
Scan Modes	Full Scan, SIM, Scan&SIM, Enhanced Full Scan
Vacuum System	Oil-free turbomolecular pump
Pumping Speed	≥60 L/s
Carrier Gas Flow	≥1.0 mL/min (direct to MS)
Ion Source	High-temperature inert ceramic, dual filament
Module Design	Independent quick-detach GC/MS modules
Injection System	Valve-switching, software controlled
Column	Low-thermal-mass capillary column
Total Weight	<20 kg (with battery, carrier gas)
Operating Temperature	0°C - 45°C
Protection Grade	≥IP43

GC SPECIFICATIONS

Inlet Type	Standard split/splitless
Inlet Max Temperature	≥280°C
Max Split Ratio	≥100:1
Gas Sample Modes	Adsorption TD / Quantitative loop (software)

SAMPLE HANDLING

Liquid Injection	Standard liquid injector
SPME	Solid-phase microextraction
Gas-Tight Syringe	Gas-tight syringe injection
Gas Sampling	Gas sampling probe
Headspace	Portable headspace sampler
Thermal Desorption	Portable TD module (optional)

PERFORMANCE HIGHLIGHTS

1 pg OFN

Detection limit at m/z 272 (inlet mode)

1 ppb Toluene

Detection via adsorption concentration

RSD ≤1%

Retention time repeatability (6 injections)

RSD ≤5%

Peak area repeatability (6 injections)

<20 kg

Total weight, fully field deployable

SOFTWARE & DATA

Analysis Mode	Real-time qual/quant
Spectral Library	NIST + NIOSH + TICs/CWAs
Quantification	Internal standard method
Reporting	Automated report generation
Compliance	EPA TO-14, TO-15

ELECTRICAL & ENVIRONMENT

Power Supply	220V AC / Internal / External battery
Battery Life	≥3 hours continuous
Operating Temp	0°C - 45°C
Storage Temp	-20°C - 60°C
Humidity	≤85% RH (non-condensing)