Delivering the Right Results for VOCs

Nutech 8910CF Preconcentrator

Cryogen-Free Preconcentration Solution for GC/MS

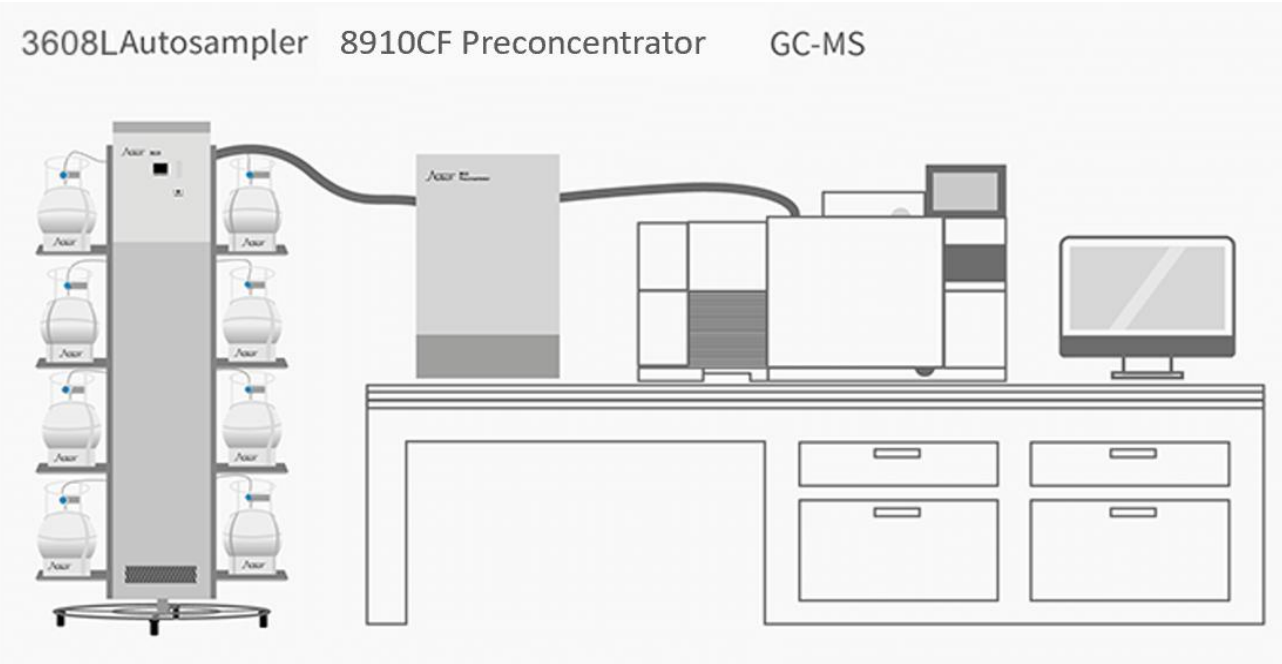
Overview

Nutech 8910CF Preconcentrator is a high-performance VOC preconcentration system designed for ultra-trace analysis of volatile organic compounds in air and gas samples. Utilizing advanced three-stage trap technology with integrated moisture and CO_2 management, the system delivers ppt-level sensitivity with detection limits as low as 0.01 ppbv and concentration ratios exceeding 1000:1.

Engineered for seamless integration with GC and GC-MS platforms, the 8910CF supports a wide range of standard methods including US EPA TO-14/14A, TO-15/15A, PAMS, China EPA HJ 759, HJ 1444 ect, enabling direct compliance without hardware modification. Its fully inert sample pathway, precise MFC-based volume control, and high-speed thermal desorption ensure excellent recovery, repeatability, and data accuracy even for reactive and polar compounds.

With flexible sampling volumes, broad compound coverage (from light VOCs to SVOCs), and compatibility with canisters, sampling bags, and autosamplers, the system is ideal for environmental monitoring, laboratory analysis, and industrial applications. Combined with intelligent automation features such as leak check, real-time monitoring, and TCP/IP control, the 8910CF delivers reliable, high-throughput operation with minimal maintenance.

Typical Configuration



Features

Advanced Three-Stage Trapping for Ultimate Sensitivity

The 8910CF utilizes an integrated three-stage trapping system with electronic cooling and advanced CO_2/H_2O management, enabling reliable ppt-level VOC analysis. With temperatures down to −30 °C and rapid heating up to 120 °C/s, the system ensures efficient trapping and fast desorption for superior analytical performance.

Pre-configured methods including US EPA TO-14, TO-15, TO-15A, PAMS, China EPA HJ 759 ect, allow immediate compliance without hardware modification. The system supports a wide range of compounds—from light VOCs to reactive species and SVOCs—across flexible sampling volumes from 4 to 2000 mL (expandable to 0.1 mL).

Ultra-Low Detection Limits with High Precision

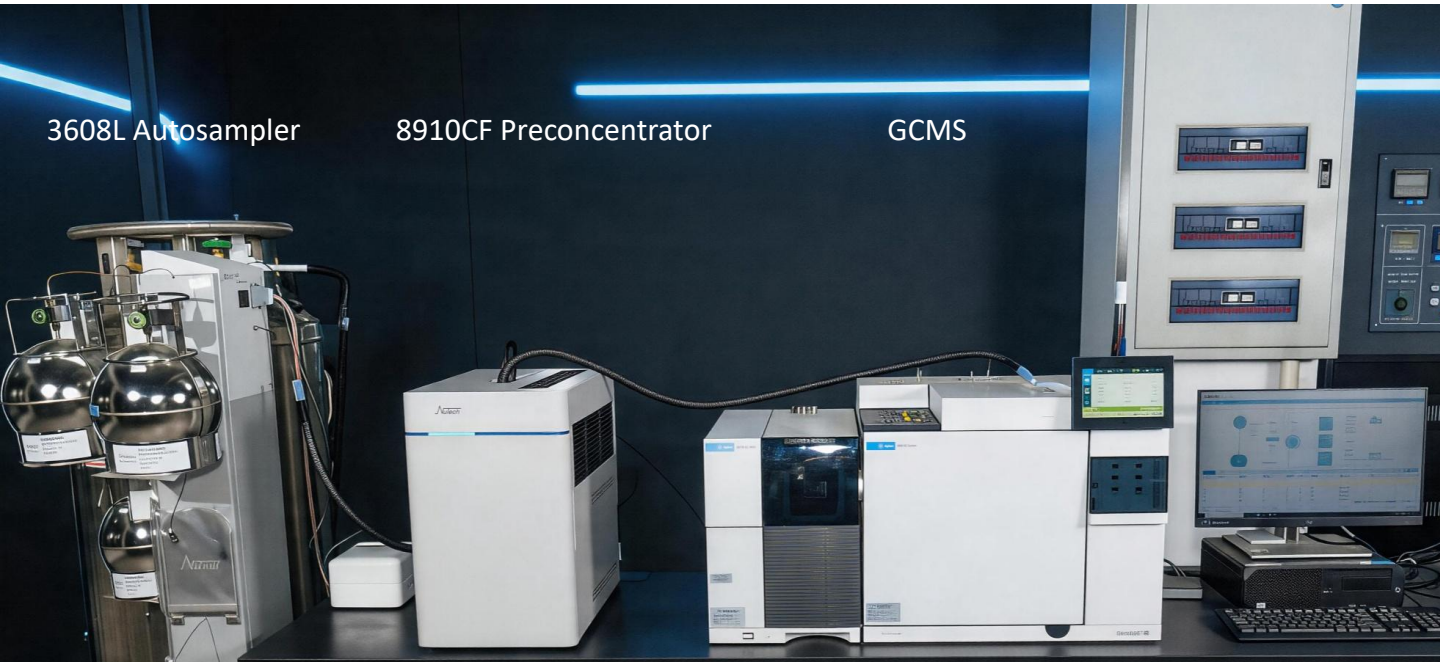
With a concentration ratio exceeding 1000×, the 8910CF delivers detection limits down to 0.01 ppbv and excellent repeatability.

Fully inert-treated flow paths eliminate adsorption and carryover, ensuring high recovery and data integrity. The combination of vacuum sampling and MFC-based control enables accurate pressure measurement and true quantitative sampling.

Flexible Integration and System Compatibility

The 8910CF is fully compatible with mainstream GC and GC-MS systems, as well as canisters and sampling bags.

It can operate as a standalone unit or be integrated with autosamplers for high-throughput analysis. TCP/IP communication ensures stable connectivity and eliminates common USB communication issues.



Features

Intelligent Automation and User-Friendly Software

The system is designed for automated, unattended operation with:

- Automatic leak check and reporting
- Real-time monitoring and data logging
- Intelligent error alarms
- Intuitive PC-based control interface

This minimizes operator intervention while ensuring consistent analytical performance.

Reliable Performance for Long-Term Operation

A modular internal design isolates sensitive components from temperature fluctuations and condensation, reducing failure rates and extending instrument lifetime. This ensures consistent performance even under demanding, high-throughput conditions.

Low Operating Cost and Easy Maintenance

The optimized trap design and temperature control system allow for quick replacement, simplified maintenance, and reduced downtime—helping laboratories maintain efficiency while controlling operating costs.

Software Home Interface

Performance Specifications

Parameter	Specification
Detection Limit	As low as 0.01 ppbv, method-dependent
Concentration Capacity	Supports high-volume sample enrichment, up to 2000 mL
Reproducibility	≤ 3% RSD
Sample Introduction Volume	4–2000 mL
Injection Time	Shortest 70 s, method-dependent
Trap Temperature	-30 °C to 280 °C
Power Supply	110 V / 220 V ±10%, 50/60 Hz
Dimensions	302 × 500 × 580 mm

Operation and Maintenance Advantages

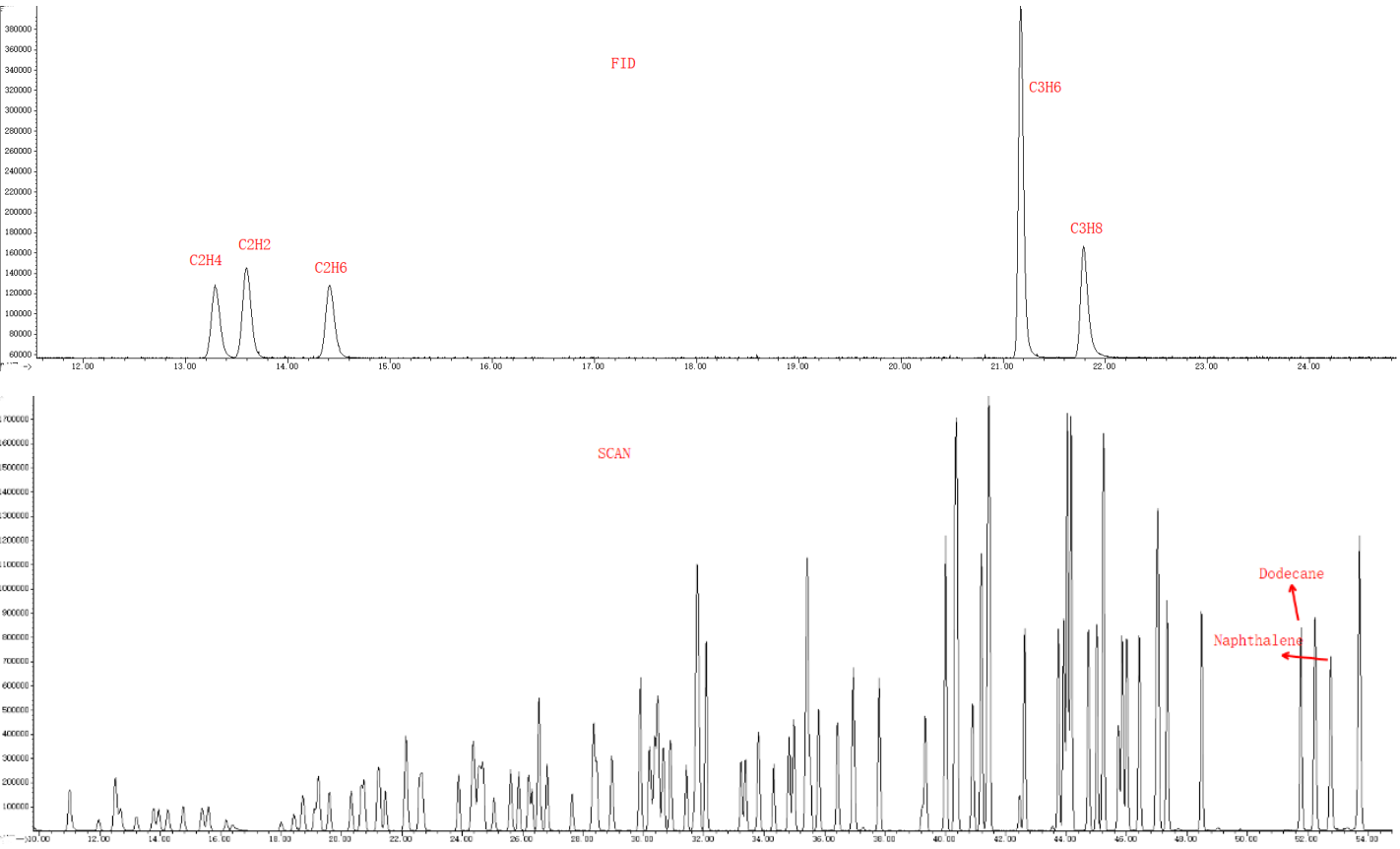
- No liquid nitrogen supply required, reducing operating cost and safety risk.
- Modular design for convenient maintenance.
- Separation of heated zones and electronic components improves system stability.
- Built-in sampling pump and integrated structure support multi-scenario deployment.

Application Scenarios

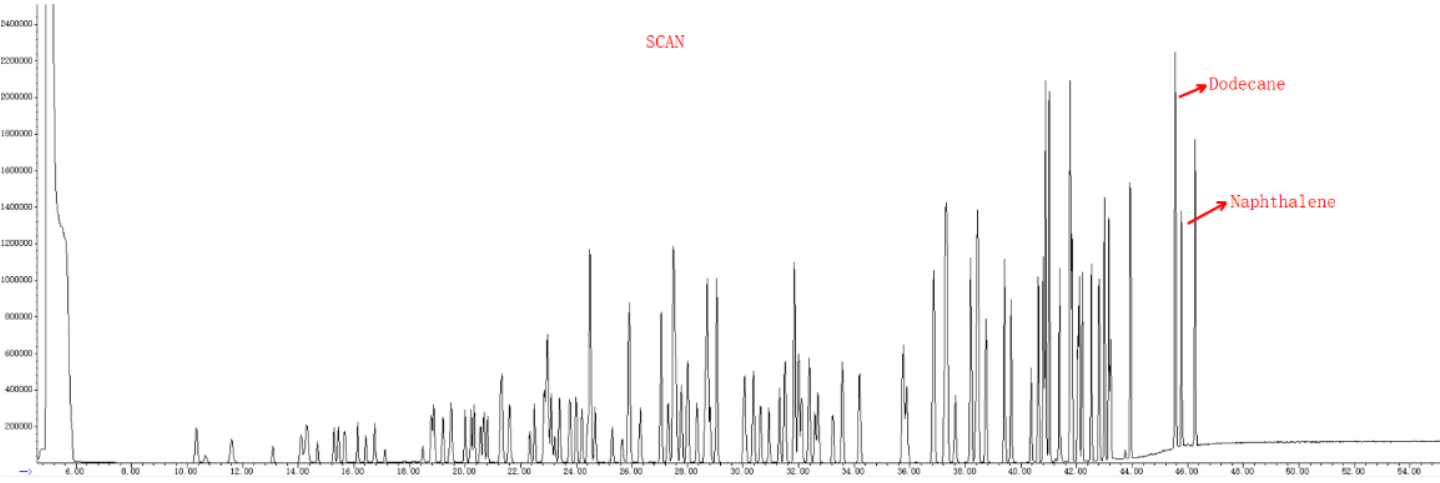
- Ambient air monitoring (TO-15 / PAMS / HJ 759 / HJ 1444 / 117 VOCs).
- Third-party testing laboratories.
- VOC research in academic and research institutions.
- Hydrogen energy and fuel cell gas analysis.
- Analysis of special pollutants, including sulfur-containing and oxygenated VOCs.
- Rapid collaborative development of new or unknown analytical methods

Chromatograms for 117 VOCs

Dean Switch with FID and MS Detector

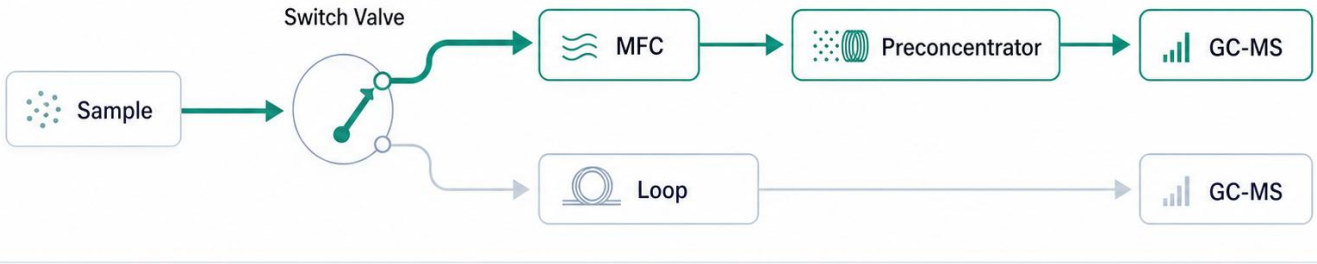


Column Oven with Liquid Nitrogen Cooling. No Dean Switch.

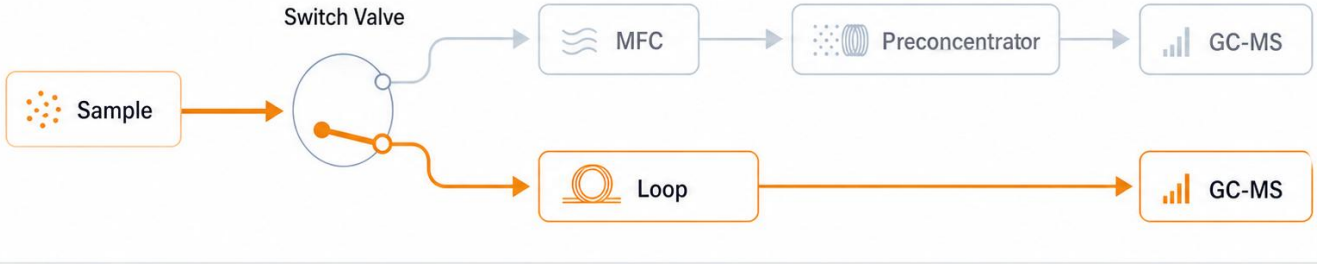


Coupled with 3608H Autosampler for Both High Conc. & Low Conc. Analysis

Low Conc. Mode



High Conc. Mode



8910 Preconcentrator Family

8910

Classic LN2-based Model

8910CF

Cryogen Free

8910PFAS

Designed for PFAS based on EPA OTM-50

Applicable Standards and Methods

- US EPA Method TO-14A/15/15A
- US EPA Method 327
- US EPA Method OTM-50
- NIOSH Method 3900
- ASTM D5466-21
- GAW (Global Atmosphere Watch) Report 204
- China HJ 759
- China HJ 1444
- Japan National VOCs Analysis Standard (7 Compound with TO-17 and 14 Compound with TO-15)
- Taiwan NIEA A715.16B
- Taiwan NIEA A741.12B