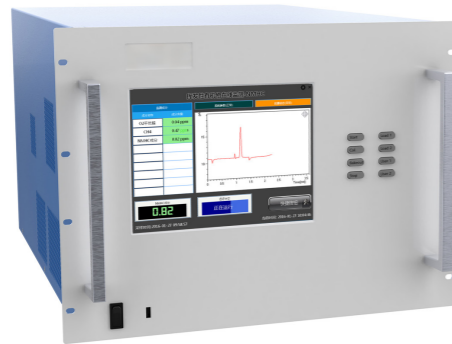


P5 Rack GC for continuous VOCs monitoring

The P5 has been developed for the continuous monitoring of emission and trace levels of organic pollutants in ambient air in the range of C2-C12. The instrument is characterized by its compact design and its outstanding detection sensitivity in the ppt range. Specially, it makes customer to monitor certain group of VOCs with one single instrument.

In particular, this analyser complies with following guidelines and procedures:

- EU guideline 2002/3/EC of February 12th 2002, the VDI guideline 2100
- EPA/600-R-98/161 of the American environmental Sept. 30th 1998
- HJ 1010-2018 of China Ministry of Ecological Environment, Specifications and Test Procedures for Ambient Air Quality



Equipped with Asicotech D2200 sample dilution system, UniStation can switch the inlet between the ambient air sample and calibration gas automatically. The dilution system could provide calibration gas with 0.1ppb from calibration gas cylinder with 1ppm components. The built-in high accuracy mass flow controller could ensure the linearity for all span.

■ Cutting Age Sample Enrichment Technology

For ppt level VOCs in ambient air, they have to be enriched before sampling into the GC system. The standard P5100 analyzer features a dual-stage enrichment module for pre-concentration of all those compounds. In the first stage, the volatile organic compounds will be collected using special adsorption materials. Subsequently the analytes are released by means of thermal desorption technique. In the following second stage the released components will be focused on a trap prior to final sample introduction.

This dual-stage sample enrichment modules allows for adequately high quantities of suitable adsorption materials in order to retain even extremely volatile organic compounds, such as ethene or ethane, without any compromise in regard to the air sampling volume. Meanwhile, user could program the sample volume and speed according their needs. The built in MFC(Mass Flow Controller) and sampling pump would do the pre-concentration automatically.

When the focusing trap is fired for sample introduction, the analytes will be transferred to the analytical column in a small and concentrated plug of vapor. Subsequent focusing of the released organic compounds therefore provides for distinct and well separated peaks in the chromatogram.

■ Compact GC oven and EPC system

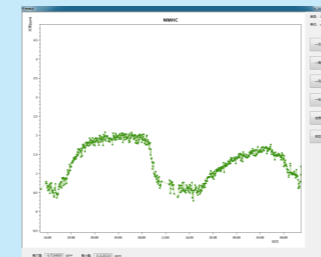
The P5 compact column oven is temperature programmable from ambient to 400°C, with unlimited ramps and holds, plus fast cool-down. It will accommodate capillary or packed 4-inch diameter columns. Up to three detectors can be mounted simultaneously.

All gases are controlled by electronic pressure controllers (EPC), and the carrier pressure is programmable. This feature could allow user to have more flexibility to adjust the parameters remotely and easy to do the troubleshooting. All those advanced modules make P5100 to be a powerful platform which combine process GC and laboratory GC advantages.

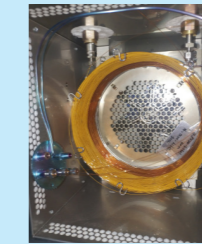
■ Integrated Data Processing System

An industrial PC with 12.1" touch screen is built in and workstation is pre-installed. P5100 was designed to satisfy the needs of air monitoring stations who demand the utmost in high performance, automation, small size, and robust. Beside programming of gas sampling valve, thermal desorption, and FID detector signal processing, the powerful software can do all the automatic sample dilution, system calibration, and illustrate chart with trend of each components.

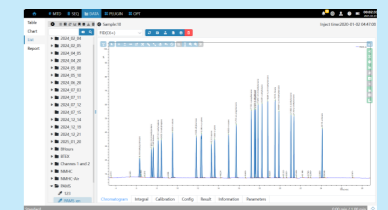
The software support most standard protocols in industry, including 4-20mA, Modbus (via RS232, RS485, TCP/IP), etc. Also customer could select the output format of analyse per their own demands. The available format include Excel, pdf, TXT etc. The built-in excel software can support customer to do the calculation per their customized request.



Customized Trends



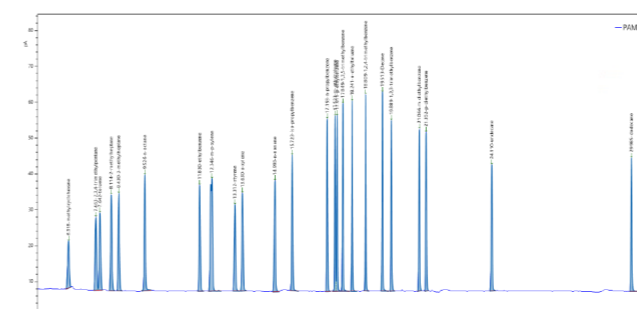
Compact Oven with 4" Cage Column with Deanswitch System



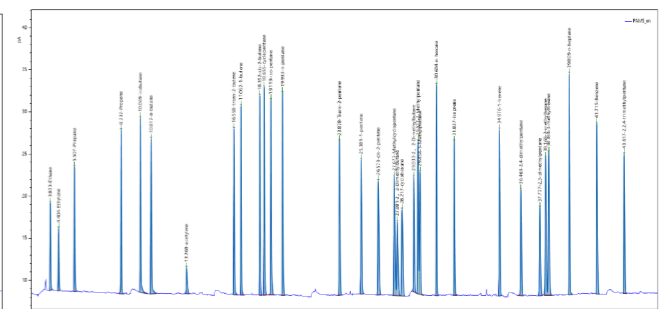
WorkStation

■ Range of applications:

- Ambient air monitoring, emissions and emissions control
- Aliphatic hydrocarbons from C2 (ethane, ethene, ethane, propane, propene, 1,3-butadiene, ...)
- Chlorinated hydrocarbons from C1 (chloromethane, chloroethane, dichloromethane, vinyl chloride, ...)
- NMHC, BTEX, etc.



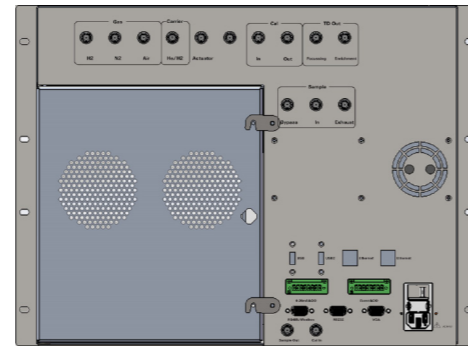
PAMS C6-C12 chromatograph



PAMS C2-C5 chromatograph



P5 Instrument



Back Panel

General	
Height and Depth	8U, 670mm (compatible with standard 19" cabinet)
Weight	appr. 55KG
Power Supply	100-240VAC, 50-60Hz
Operation Temperature	0°C to 40°C
Power Consumption	Max. 900W
Tubing Connector	1/8" Ferrule

Built-in Industrial PC and Software	
Software	UniExpress
Calibration	Support 7x24 automatic running and calibration or bake-out
Protocol	MODBUS as standard, Profibus or other customized protocol upon request
Remote Access	Via Web browser(IOT)
VPN	Support
Shortcut Key	Stop/start/bake-out/etc.
Result Output	EXCEL, pdf, TXT, Other format upon request
Raw Data Encrypted	Yes
Chromatograph Overlay	Support
Data Communication	RS485,RS232,Ethernetx2,USBx3
Touch Screen	10.8" / 12.1"
Event	STOP/START
4-20mA Output	Max number:255
I/O Output	Ready, alarm, error(Configurable)
GPS Information	Available upon request

Gas Chromatography	
Sample Analysis Range	C ₂ -C ₁₂ ⁺ VOCs Compounds (customer specified compounds as option) NMHC, THC
Pre-concentration	Thermal Desorption
Column	Fused silica capillary column with low-mass deanswitch system 2 for PAMS(C2-C6, C2-C12) 1 for BTEX 2 for NMHC
Build-in Oven	Yes
Oven Temperature Range	40°C-350°C
Carrier Gas	H ₂ /N ₂ , default:H ₂ @5 bar, GC grade
Heating Rate	1°C/min to 40°C/min adjust 0.1°C/min
Sampling Valve	Gas driven Valco rotary valve
Carrier Gas Control	Electrical Penumatic Control(EPC)
EPC Resolution	0.001psi
Detector	FID – Flame Ionization Detector
LDL	All PAMS C ₂ -C ₁₂ compounds <0.1ppb NMHC<50ppb
Linearity	>10 ⁷ (+/-10%)
Detector Protection	H ₂ automatic shut off once flame is off
Repeatability(Area)	<1.5% (benzene tested at concentration of 1 ppb)
Repeatability(RT)	<0.1%(24hr, benzene)
Sample Enrichment	Dual-stage enrichment module for sample pre-concentration and thermal desorption of organic components from C ₂ to C ₁₂₊
Sampling	Built-in Diaphragm pump
Sampling Flow Control	MFC
Sampling Flow Rate/Time	2-120ml/min / 0-150min(adjustable)
Enrichment Temperature	Typical 0-10°C (programmable)
Desorption Temperature	Max. 380°C (programmable)
Heating-up Rate	Max. 120°C/s
Typical Sampling Volume	200-1400ml
Cooling Type	Peltier
Sample Split Before Injection to Column	Yes, programmable (by low mass system)
Water Removal	1. Built-in patented cooling technic 2. Nafion tube(sample in)