

AQM-5 Automatic Monitoring of Air Quality

—Solution



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Overview

The GCOM-3 Analyzer is a kind of VOCs monitoring product based on GC-FID Method. Equipped with FID detector and high-performance chromatographic separation column, it can detect organic pollutants including methane, total hydrocarbon and NMHC, low-carbon aldehyde ketone, BTEX (benzene, toluene, methylbenzene, xylene, ethylbenzene, cumene, etc.) VCM (vinyl chloride monomer) as well as part of haloalkane. It has designed internal heating box specialized for analysis gas path, which employs air-bath method to make chromatographic column as well as analysis gas path in the front or back of column stay at high-temperature state. During sampling and detection process of specific pollution source (high-temperature organic waste gas, such as emission of marine & diesel, emission from petrochemical refining flue, etc.), high-temperature tracing for sampling/analysis gas path can effectively prevent adsorption of sample gas with high boiling point and low vapour pressure on pipe wall, which solve the problem that measured result will be low under specific high-temperature working condition.



Technical Principle

GCOM-3 Analyzer utilizes difference of boiling point and polarity of different gas components. Under conditions of proper column length, column temperature and stationary phase, it takes advantage of carrier gas for transmission and the gas mixture will be finally separated effectively when leaving chromatographic column.

FID Detection Technology is an effective method to measure organic gases. Organic gas will be sent into FID detector after GC separation by carrier gas. Chemical bond of organic molecules will be opened to release free ions and electrons under chemical ionization of hydrogen flame. The electrons released in high-voltage electric field of FID detector move to electrode on one end of electric field, thus they will be collected by the electrode and generate measuring current. The size of measuring current is related to the concentration of organic gas that enters the detector in unit time. The intensity of signals collected in analysis process reflects the content of organic gas.

Features

- After each sample injection, analyzer will automatically purge towards quantitative loop and back blow chromatographic column to quickly discharge unnecessary components out of system to greatly shorten analysis period.
- Whole-process heat tracing during collection, transmission and detection process of sample gas via air bath and electric heating materials ensures there is no loss caused by condensation and adsorption for sample gas with high boiling point in analysis process.
- Pipeline of gas path is with Silcosteel® treatment, greatly reducing sample gas absorption and residual on pipe wall
- With reset function: analyzer can restore to previous working condition automatically if power restoration
- Full MFC control module
- Micro current digital signal output detector, PA signal can be amplified to mV; linearity range of 10^7
- Intelligent FID detector will alarm if hydrogen flame self-ignites after flameout for effective and safe control of hydrogen flame gas path
- Support configuration of multiple detectors and continuous analysis of sample gas, improving analysis capability for complex samples
- Support remote control via TCP/IP network, or operate directly by touch LCD at site
- Built-in IPC and touch operation screen for all the software operations, including parameter setting, data processing, maintenance, diagnosis and external communication, etc.

Technical Specifications

Index	Specification	Index	Specification
Principle	GC-FID	Temp stability of column box	≤0.5%
Measuring Components	THC, VCM, NHMC, benzene series including benzene, toluene, methylbenzene, xylene and other customized factors	Measuring range	0~50ppb/0~50ppm/500ppm/5000ppm (customized)
Baseline noise	≤0.5pA	Dimension(W×H×D)	482×221×559 (mm) (W×H×D)
Baseline drift	≤5pA (30min)	Display	Touch screen
Qualitative repeatability	RSD7≤1.0%	Communication protocol	Modbus-RTU, or local protocol
Quantitative repeatability	RSD7≤2.0%	Power	< 3000W, 220V/50Hz
Span drift	≤3.0% (4h)	Linearity	R≥0.99
LOD	≤0.1ppm	Temp accuracy of column box	±0.1 °C