



Air Quality Monitoring System

AQMS-1000

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Catalog

Air Quality Monitoring System

AQMS-1000

AQMS-100 Zero Air Generator	03 - 04
AQMS-200 Dynamic Calibrator	05 - 06
AQMS-300 Ozone Analyzer	07 - 08
AQMS-400 Carbon Monoxide Analyzer	09 - 10
AQMS-500 Sulfur Dioxide Analyzer	11 - 12
AQMS-550 Hydrogen Sulfide Analyzer	13 - 14
AQMS-600 Nitrogen Oxides Analyzer	15 - 16
AQMS-650 Ammonia Analyzer	17 - 18
BPM-200 Continuous Particulate Monitor	19 - 20
EXPEC-2000 BTEX Analyzer	21 - 22

AQMS-100 Zero Air Generator



Principle

The AQMS-100 generates clean and dry zero air by removing components which will cause interference on zero point calibration.

Water Removal System

The primary draining system apply condenser to remove the saturated liquid water in ambient air. The secondary draining systems are used to remove gaseous water in the ambient air by utilizing the regeneration scrubber. It is filled with two molecular sieves which have multiple holes and filters. One molecular sieve will work to remove the water in raw air while another is under regeneration by injecting compressed air to remove moisture.

HC/CO/NO Scrubber

To remove hydrocarbon, CO and NO, three scrubbers applying catalytic reaction are used, where HC and CO will be converted into CO₂ which does not interfere analyses and NO will be converted into NO₂. Then activated carbon applied to remove CO₂, NO₂, O₃, SO₂, H₂S and NH₃.

AQMS-100

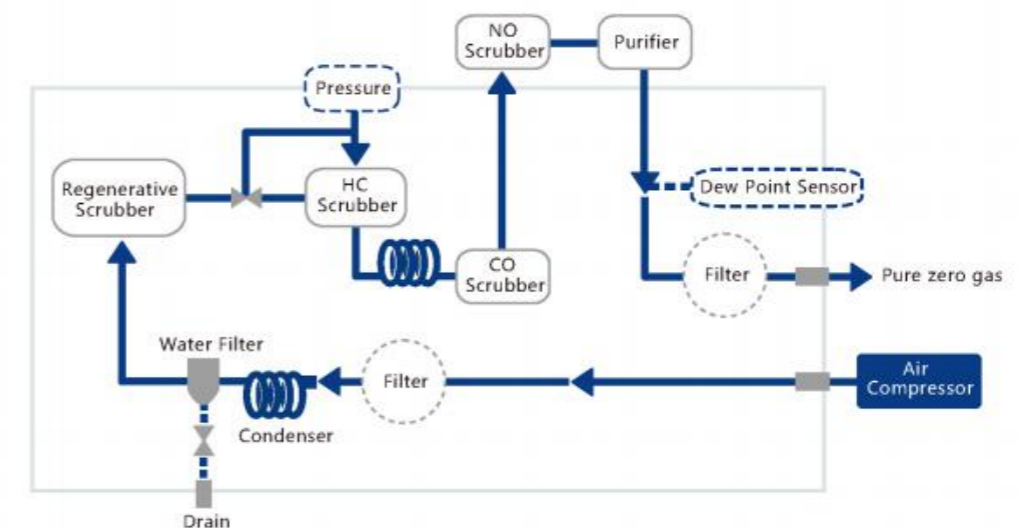
FPI AQMS-100 provides ultra pure pollutant-free zero air for calibrating zero point of ambient air quality monitor. It consists of air compressing and cooling system, water removal system, gaseous pollutant scrubber system, particle removal and zero gas output system.

Features

- Ultra high purity zero air output;
- Integrated dew point sensor;
- Regenerative dryer utilizing molecular sieve to perform maintenance free advantage;
- High performance scrubbers to remove hydrocarbon, CO, SO₂, NH₃, NO, NO₂, ozone and BTX;
- Remote display and configuration on key functions;

Technical Data

Output	20 SLPM at 30 psig
Dew Point	<-30°C (< 15L); <-20°C (> 15L)
Output Concentration	SO ₂ : <0.1ppb; NO: <0.1ppb; H ₂ S: <0.1ppb; NH ₃ : <0.1ppb NO ₂ : <0.1ppb; O ₃ : <0.4ppb; CO: <0.02ppb; BTEX: <0.1ppb Other HC: <0.25ppb; CH ₄ : <5ppb
Power Requirement	100~240VAC; 220V AV ±10%50Hz
Operating Temperature	-5~55°C
Dimensions (HxWxD)	221 x 482 x 554 mm



- *Molecular sieve are utilized in regenerative scrubber
- *Activated carbon are utilized in purifier

AQMS-200 Dynamic Calibrator

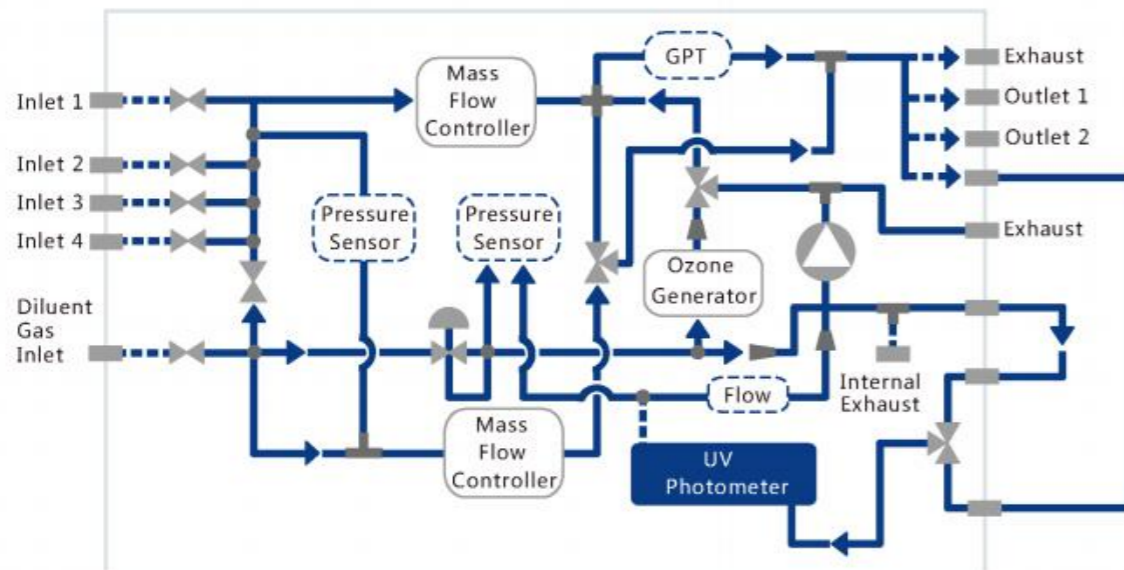


AQMS-200

FPI AQMS-200 dynamic dilution calibrator utilizes two mass flow controllers to perform standard zero and span calibration with up to 4 gas sources.

Features

- Stable trace level ozone output down to 0.1ppm;
- Optional ozone generator, gas phase titration and photometer for independent ozone calibration;
- User selectable output include RS232 and ethernet;
- High performance mass flow controller provides stable and linearized output;



Technical Data

Dilution System	
Dilution Gas Flow Range	0~10SLM,available 0~50sccm,0~200sccm
Standard Gas Flow Range	0~100sccm; available 0~50sccm 0~200sccm;
Flow Accuracy	±1% F.S.
Linearity	±(0.5~1)% F.S.
Repeatability	±0.2% F.S.
Calibration Gas Input	4
Diluent Gas Input Ports	1
Ozone Generator(Optional)	
Output	0.1~6pm (1SLM)
Stability	<1%/24h
Linearity	<1%F.S.
UV Photometer(Optional)	
Range	(0~0.5)ppm, (0~10)ppm
Precision	1.0 ppb
Linearity	1% F.S.
Rise/Fall Time	<30s
Response Time	180s (90%)
Zero Drift	<1.0ppb/24h
Range Drift	<1%F.S./24h
Physical and Communication	
Power Requirement	(220±22)VAC ,(50±1)HZ
Operating Temperature	-5~55°C
Operating Humidity	0~95%RH(No condensation)
Communication	RS232/RS485/Ethernet
Dimensions and Weight	178x432x609mm;<15kg;<20kg(Including ozone generator and ozone photometer)

AQMS-300 Ozone Analyzer



AQMS-300

FPI AQMS-300 Ozone analyzer measures ambient O₃ concentration in ppb level by utilizing UV photometric absorption technology.

Features

- Accurate direct UV absorption with reference comparison;
- Compliance with US EPA equivalent method;
- Various outputs include ethernet and RS232;
- User friendly interface with large screen;
- Continuous system diagnosis with alarm;
- Multi-tasking software allows viewing test variables while operating;
- Temperature and pressure compensation;
- Internal data logging with 1min to 365 day multiple averages;

Principle

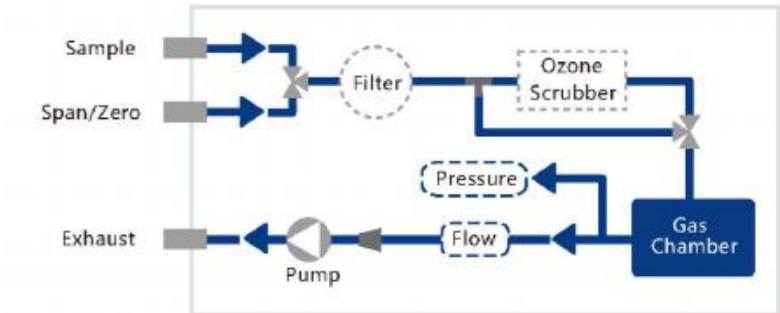
The instrument measures the concentration of ambient ozone on the basic principle of ozone adsorbing UV light in chamber with 42 cm optical length for light adsorption since there is a significant characteristic absorption for ozone on wavelength of 254nm. Periodical diversion on sample flow passing through the ozone scrubber will generate reference measurement, which is compared with sample measurement to provide stable and representative result.

Ozone scrubber

The ozone scrubber is filled with MnO₂ as catalyst, which will convert O₃ to O₂ to perform reference measurement. Meanwhile, the presence of other components remains the same.

Ozone photometer

In ozone photometer, a mercury lamp is used as light source, from which light beam travels through two window glasses and, a gas chamber, to reach a sensor to convert the light into electric signal. Temperature control circuit, heating device and thermistor are used to control the temperature of lamp holder and ensure stability of temperature.



Data storage and analysis

Stored data are easily retrievable through the serial or ethernet port via PC client software, allowing operators to perform predictive diagnostics and enhanced data analysis by tracking parameter trends.

Technical Data

Principle	UV Photometric
Standard Range	USEPA Specification 0-500 ppb
Zero Noise	0.4 ppb (RMS)
Span Noise	0.5%F.S.
Display	digital
Lower Detectable Limit	0.8 ppb (RMS)
Zero Drift	<0.5%F.S./month
Span Drift	<1%F.S./month
Linearity	<1%F.S.
Precision	<1%
Response Time	T90<30s
Sample Flow Rate	(800±80)scm
Calibration	Multi-point Calibrator
Data Transmission	2 channel analog (4~20) mA; 2 analog (0~5) V;
Communication	12 digital input/output; 4-way relay output;
Operating Temperature	RS232/RS485/Ethernet
Operating Humidity	USEPA Specification 20-30 °C; Actual applicable: -5-55°C
Power Requirement	0~95%RH (No condensation)
Dimensions and Weight	100~240 VAC, Converter applicable
	178(H) x 432(w) x 604(D)mm, 15kg

AQMS-400 Carbon Monoxide Analyzer



AQMS-400

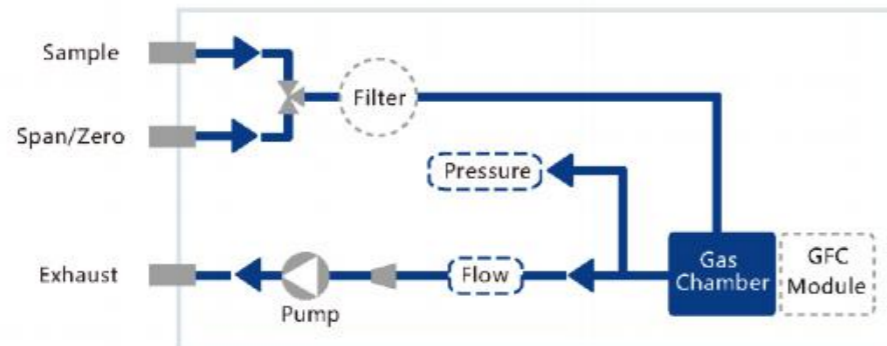
FPI AQMS-400 carbon monoxide (CO) analyzer measures ambient CO concentration by employing nondispersive infrared with gas filter correlation method technology.

Features

- 14 meters optical path to perform high reliability;
- Multi-tasking software allows viewing test variables while operating;
- Compliance with US EPA reference method;
- Various outputs include ethernet and RS232;
- User friendly interface with large screen;
- Continuous system diagnosis with alarm;
- Five years guarantee on GFC wheel;
- Temperature and pressure compensation;
- Internal data logging with 1 min to 365 day multiple averages;

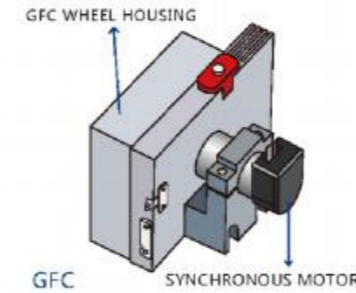
Principle

Infrared energy emitted by light source is passed through gas chamber containing the air sample, and the quantitative absorption of energy by CO in the sample cell is measured by corresponding detector.



Data storage and analysis

Stored data are easily retrievable through the serial or ethernet port via PC client software, allowing operators to perform predictive diagnostics and enhanced data analysis by tracking parameter trends.



GFC

The Gas Filter Correlation (GFC) adopts Non-dispersive infrared technology and includes two units, one for reference and the other for measurement.

Technical Data

Standard Range	USEPA Specification 0~100ppm
Principle	NDIR
Zero Noise	≤0.1 ppm (RMS)
Span Noise	0.5% F.S
Lower Detectable Limit	0.2ppm
Display	digital
Zero Drift	<0.1ppm/24h
Span Drift	<1%F.S./24h
Linearity	<1%F.S.
Precision	<1%
Response Time	T90<60s
Sample Flow Rate	800±80 sccm
Data Transmission	2 channel analog (4~20) mA; 2 analog (0~5) V; 12 digital input/output; 4-way relay output;
Communication	RS232/RS485/Ethernet
Operating Temperature	USEPA Specification 20-30 °C; Actual applicable: -5-55°C
Operating Humidity	0~95%RH (No condensation)
Calibration	Multi-point calibrator
Power Requirement	(220±22)VAC , (50±1)HZ
Dimensions and Weight	178(H) x 432(w) x 604(D)mm, 28kg

AQMS-500

Sulfur Dioxide Analyzer

Features

- Compliance with US EPA reference method;
- Various outputs include ethernet and RS232;
- User friendly interface with large screen;
- Multi-tasking software allows viewing test variables while operating;
- Continuous system diagnosis with alarm;
- Temperature and pressure compensation;
- Internal data logging with 1 min to 365 day multiple averages;
- Critical orifices provide flow stability;

Data storage and analysis

Stored data are easily retrievable through the serial or ethernet port via PC client software, allowing operators to perform predictive diagnostics and enhanced data analysis by tracking parameter trends.

UV Source

The pulsing of the UV source lamp serves to increase the optical intensity whereby a greater UV energy throughput and lower detectable concentration are realized.

Removal of interferences

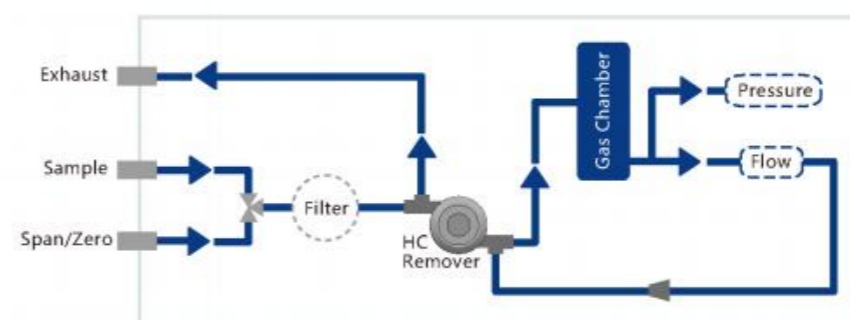
The permeation scrubber acting as hydrocarbon kicker removes aromatic hydrocarbon such as xylene and naphthalene which causes interference. Optical filtering are employed to improve the rejection of interference from high nitrogen oxides.

PMT System

The characteristic fluorescence of SO₂ is received by the photomultiplier tube and converted into an electrical signal. The number of electrons is increased by the photomultiplier system and the current or voltage is collected by the anode.

Principle

AQMS-500 measures the intensity of the characteristic fluorescence released by SO₂ in an ambient air sample contained in the gas chamber when the air sample is irradiated by ultraviolet light passed through the chamber.



Technical Data

Principle	UV Fluorescence
Standard Range	USEPA Specification: 0-500 ppb
Zero Noise	≤0.5ppb (RMS)
Span Noise	<0.5% (≥50ppb)
Display	digital
Lower Detectable Limit	0.5ppb
Zero Drift	<1ppb/24h
Span Drift	<1%
Linearity	<1%F.S.
Precision	<1%
Response Time	T90<120s
Sample Flow Rate	(650±65)sccm
Data Transmission	2 channel analog (4~20) mA; 2 analog (0~5) V; 12 digital input/output; 4-way relay output;
Calibration	Multi-point calibrator
Communication	RS232/RS485/Ethernet
Operating Temperature	USEPA Specification 20-30 °C; Actual applicable: -5-55°C
Operating Humidity	0~95%RH (No: condensation)
Power Requirement	(220±22)VAC, (50±1)HZ
Dimensions and Weight	178(H) x 432(w) x 604(D)mm, 22kg

AQMS-500

FPI AQMS-500 sulfur dioxide (SO₂) analyzer applies UV fluorescence technology with photomultiplier tube (PMT) to measure SO₂.



AQMS-550 H₂S Analyzer



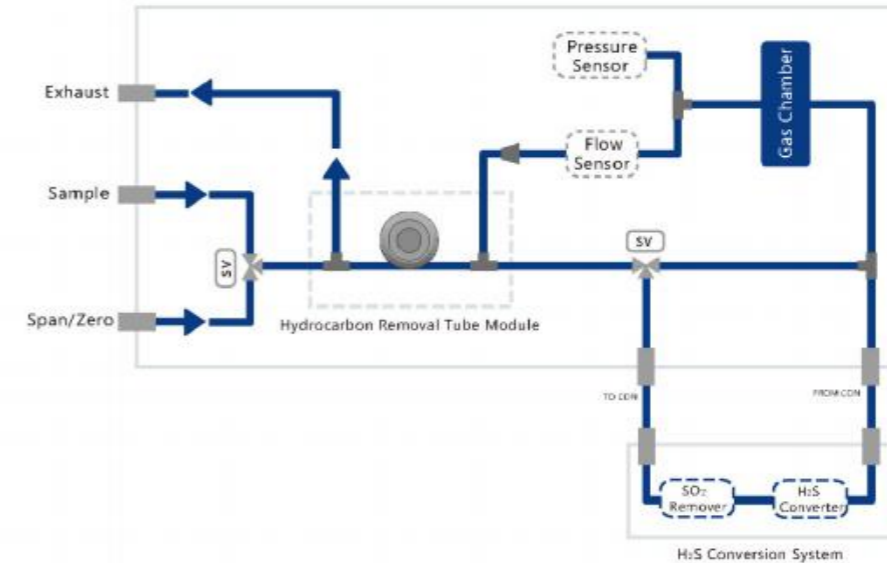
AQMS-550

AQMS-550 H₂S analyzer adopts UV fluorescence principle with an internal thermal catalytic converter to measure H₂S in ambient air at levels commonly required.

AQMS-550 is equipped with an internally mounted catalytic converter set at 315°C to convert H₂S to SO₂. By passing the sample through a SO₂ scrubber which removes any SO₂, the H₂S is converted to SO₂ using this internal H₂S converter and measured using the pulsed fluorescence technique.

Features

- Independent ranges and auto ranging;
- Vivid color graphics display with touch screen interface;
- Various outputs include RS232, RS485 and USB comports;
- Continuous system diagnosis with alarm;
- Temperature & pressure compensation;
- Less spare costs, accessories and maintenance requirement;
- Large data storage capacity;
- Low power demand of Lasted model cause less power consumption;



Technical Data

Principle	UV Fluorescence
Measured Gas	H ₂ S in ambient
Range	0-10000 ppb
Measurement Units	ppb, ppm, µg/m ³ , mg/m ³ (selectable)
Lower Detectable Limit	<0.4 ppb or 0.5 % of reading
Zero Noise	<0.2ppb
Span Noise	<0.5%F.S.
Zero Drift	<1ppb/24 hours; <5ppb/7days;
Span Drift	<1%F.S.
H ₂ S Converter	315 DEGREE
Sample Flow Rate	650 cc/min ±10%
Linearity	<1%F.S.
Response Time	<150 second
Rise/Fall Time	<30 Second
Analog Output	2 channel analog (4~20) mA; 2 analog (0~5) V;
Digital Output	12 digital input/output; 4-way relay output;
Operating Temperature	2 x RS232; RS485/Ethernet;
Power Requirement	-5-55°C
Dimension	(230±10) VAC , (50±10%)HZ
Weight	178(H) x 432(W) x 604(D)mm
	18-19kg

AQMS-600 Nitrogen Oxides Analyzer



AQMS-600

Features

- Permeation dryer on Ozone generator;
- Catalytic Ozone scrubber;
- Independent ranges for NO, NO₂ and NO_x;
- Compliance with US EPA reference method;
- Various outputs include ethernet and RS232;
- User friendly interface with large screen;
- Continuous system diagnosis with alarm;
- Multi-tasking software allows viewing test variables while operating;
- Temperature and pressure compensation;
- Internal data logging with 1 min to 365 day multiple averages;

Principle

Nitrogen oxides in ambient are measured indirectly by photometrically measures the light intensity, resulting from the chemiluminescent reaction of nitric oxide (NO) with ozone (O₃). NO₂ is first quantitatively reduced to NO by means of a converter. NO, which commonly exists in ambient air together with NO₂, passes through the converter unchanged causing a resultant total NO_x concentration equal to NO+NO₂.

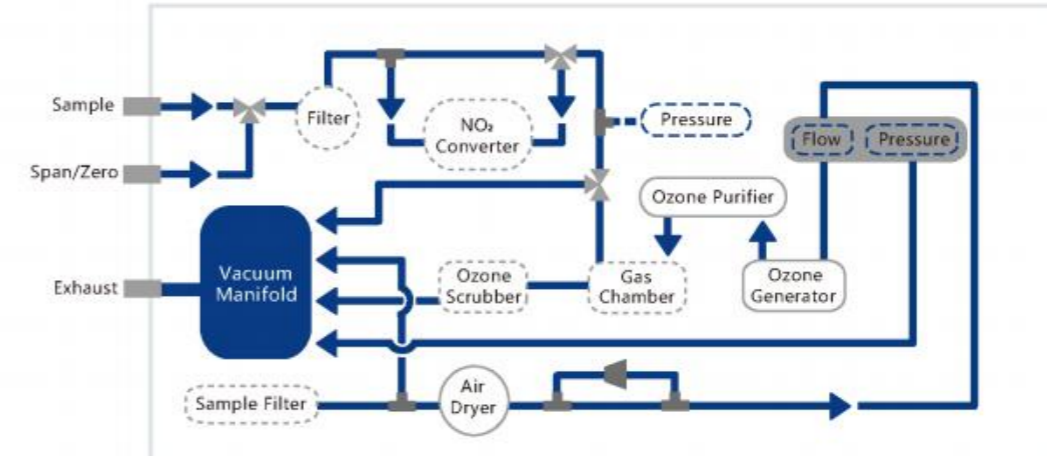
FPI AQMS-600 nitrogen oxides (NO-NO₂-NO_x) analyzer utilizes chemiluminescence technology indicated by US EPA as federal reference method for monitoring on multiple forms of nitrogen oxides.

PMT System

The characteristic fluorescence of unstable excited-state NO₂ is received by the photomultiplier tube and converted into an electrical signal. The number of electrons is increased by the photomultiplier system and the current or voltage is collected by the anode.

Ozone Generation

Permeation dryer are introduced in ozone generation to provide long system durability without any replacement. A catalytic ozone scrubber is installed for maximize pump life and exhaustion safety purpose.



Technical Data

Principle	Chemiluminescence
Standard Range	USEPA Specification: 0-2000 ppb
Zero Noise	≤0.4ppb (RMS)
Span Noise	<0.5% (≥50ppb)
Display	digital
Lower Detectable Limit	0.8ppb
Zero Drift	<0.5ppb/24h
Span Drift	<2%F.S./15days
Linearity	<1%F.S.
Precision	<1%
Response Time	T90<60s
Sample Flow Rate	(500±50)sccm
Data Transmission	2 channel analog (4~20) mA; 2 analog (0~5) V; 12 digital input/output; 4-way relay output;
Calibration	Multi-point calibrator
Communication	RS232/RS485/Ethernet
Operating Temperature	USEPA Specification 20-30 °C; Actual applicable: -5-55°C
Operating Humidity	0~95%RH (No condensation)
Power Requirement	(220±22)VAC, (50±1)HZ
Dimensions and Weight	178(H) x 432(w) x 604(D)mm, 22kg

AQMS-650 NH₃ Analyzer



AQMS-650

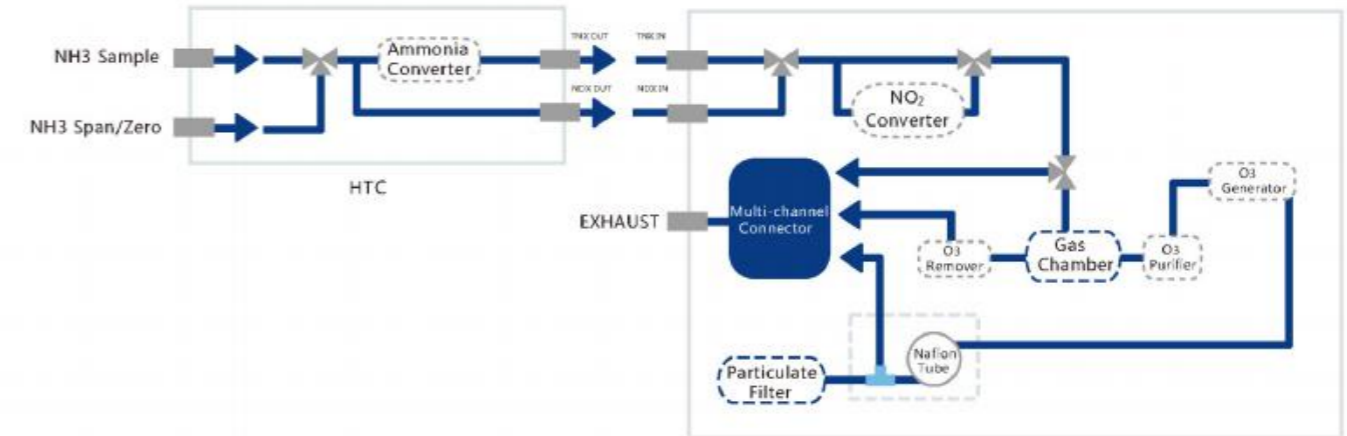
FPI AQMS-650 also comes with its own developed Software. The Remote PC Software allows for a remote connection with virtual interface and data downloading capability to analyzers operating Software.

Features

- Independent measurement of NO_x and NH₃;
- Less spare costs, accessories and maintenance requirement;
- Various outputs include ethernet and RS232;
- Continuous system diagnosis with alarm;
- User friendly interface with large screen;
- High efficiency External converter;
- Large data storage capacity;
- Low power demand of Lasted model cause less power consumption;

Principle

FPI AQMS-650 measures NH₃ in the ambient air, which delivers a stable and precise value. It adopts chemiluminescence technology with an external converter which can combine its use with AQMS-600 measuring NO_x as well; during the measurement, NH₃ will be converted into NO by oxidation.



Technical Data

Principle

Measured Gas
 Measurement Units
 Range
 Lower detectable limit
 Zero Noise
 Span Noise
 Zero Drift
 Span Drift
 NH₃/NO Converter
 Sample Flow Rate
 Linearity
 Response Time
 Analog Output
 Digital Output
 Operating Temperature
 Power Requirement
 Dimension
 Weight

Chemiluminescence

NH₃ in ambient
 ppb, ppm, µg/m³, mg/m³
 0-1000ppb
 <0.4 ppb or 0.5 % of reading
 <0.2ppb
 <0.2%F.S.
 <1ppb/24 hours; <5ppb/7days;
 <1%F.S.
 Quartz at 825 °C
 1000 cm³/min ±10%
 <1%F.S.
 ≤400 second
 2channel analog (4~20) mA; 2 analog (0~5) V;
 12 digital input/output; 4-way relay output;
 2 x RS232; RS485/Ethernet;
 -5-55°C
 (230±10)VAC, (50±10%)HZ
 178(H) x 432(W) x 604(D)mm
 Analyzer : 20kg
 Converter : 10-12kg

BPM-200 Continuous Particulate Monitor



Principle

Particulate matter sample is pulled by a vacuum pump and concentrated on filter tape spot, the concentrated sample is advanced to measuring position where between beta ray source and detector. An attenuation signal of beta ray is detected which represents the mass of sample particulate. Particulate concentration can be determined by dividing mass to volume which has been strictly controlled during sampling with fixed flow rate.

Features

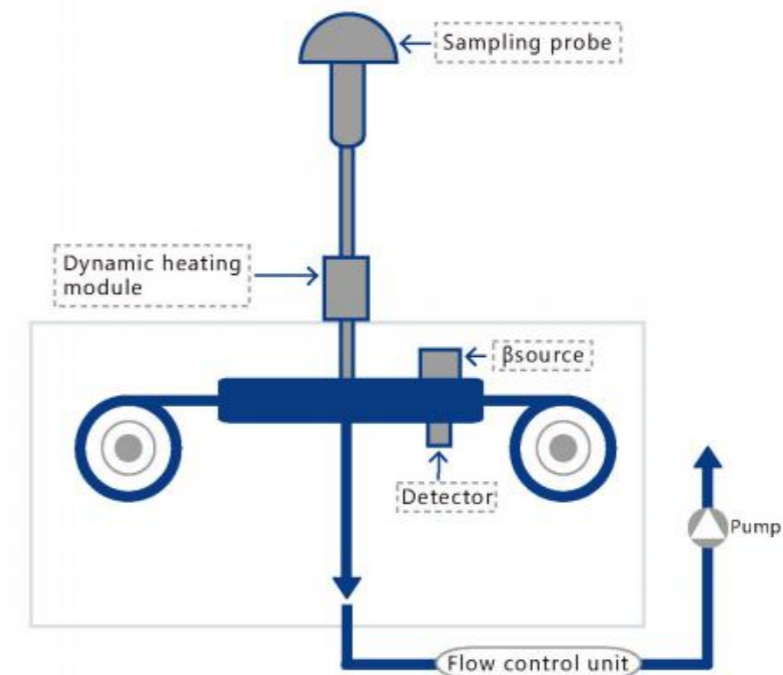
- Compliance with US EPA equivalent method;
- Automatic continuous operation up to 60 days;
- Reference film calibration;
- Low maintenance and operation requirement;
- User selectable measurement cycle;
- Various output with serial printer and GPRS as optional;
- Stable and long life time radiation source;

BPM-200

The BPM-200 measures ambient particulate by using well applied beta ray attenuation technology. PM2.5 measurement can also be achieved by introducing corresponding cyclone.

Technical Data

Principle	Beta ray attenuation
Resolution	0.1 $\mu\text{g}/\text{m}^3$
Lower Detectable Limit	0.004mg/ m^3 (PM10) 0.002 mg/ m^3 (PM2.5)
Accuracy	$\leq 2\%$
Range	(0~1)mg/ m^3 , (0~2)mg/ m^3 , (0~5)mg/ m^3 , (0~10)mg/ m^3 (Selectable)
Sample Flow Rate	16.7 L / m i n
Display	LCD
Flow Accuracy	$\pm 1\%$ F . S
Flow Stability	$\leq \pm 2\%$ /24h (Operation)
Calibration Film Reproducibility	$\leq \pm 2\%$
Sample Cycle	60min (Optional)
Source	C14 source, active 10 μCi , exemption source
Filter Paper Tape	Glass fiber
Roll Length	>20 meters
Detector	PMT
Communication	RS232/RS485/Ethernet; 2 analog (0~5) V; 2 channel analog (4~20) mA; 12 digital input/output; 4-way relay output;
Data Transmission	(220 \pm 22)VAC, (50 \pm 1)HZ (-5~55) $^{\circ}\text{C}$ 0~95%RH (No condensation) (8.6 ~ 116) k P a (310x430x400)mm (HxWxD) Round 25kg, without accessories
Power Supply	
Operating Temperature	
Ambient Humidity	
Ambient Pressure	
Dimensions	
Weight	



EXPEC-2000 BTEX Analyzer

The EXPEC-2000 series VOC analyzer adopts three-valve four-column FID technology, which can measure methane, non-methane and BTEX simultaneously. This VOC instrument can be applied both in industrial emission and ambient air network round urban area.

Measurement Range

Hundreds of VOCs including total hydrocarbon, non-methane hydrocarbon, BTEX and ordour.

High Integration

The FID flame will light automatically after warm-up time. It is continuous online analysis, automatic cycle operation at startup.

Automatic Operation

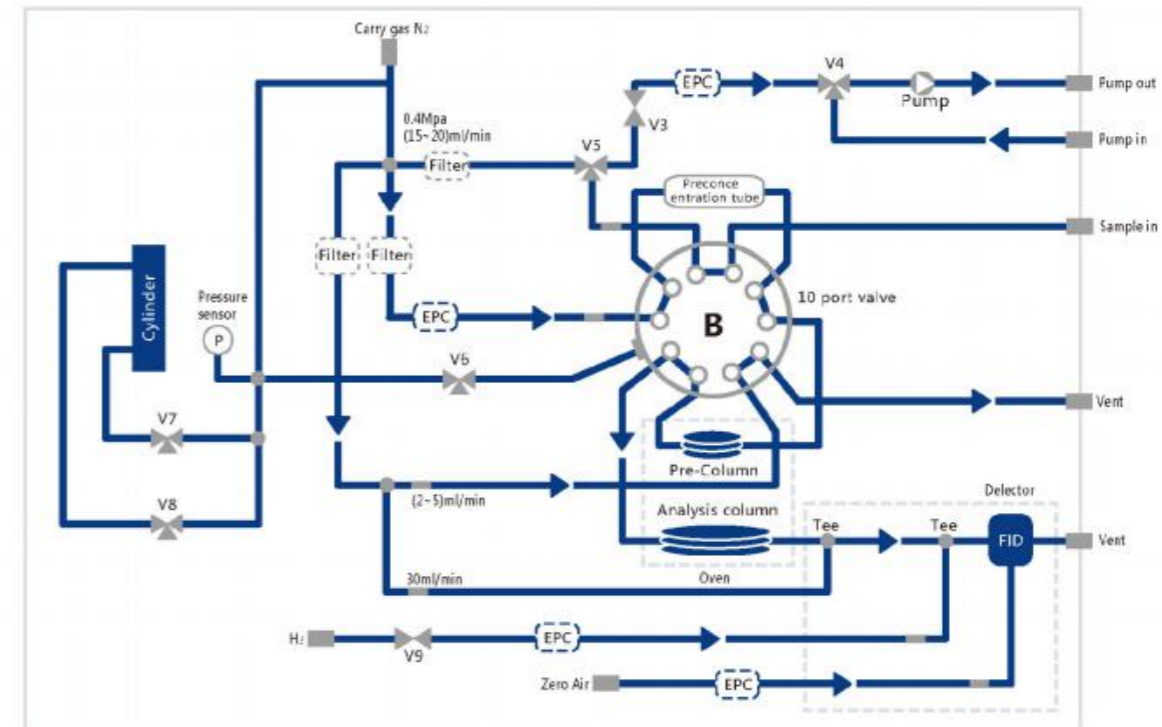
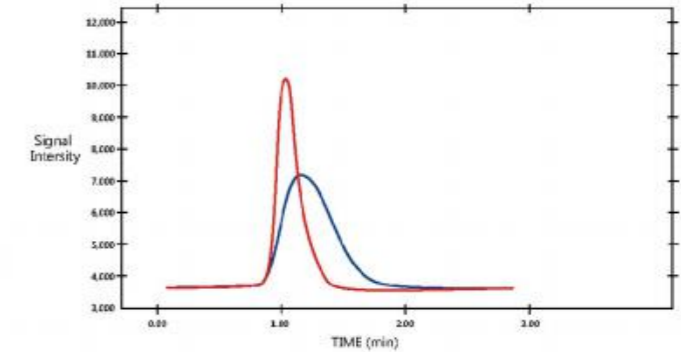
Analysis cycle less than 10 minutes
Operation continuously with free maintenance.

Full Heated Design

The whole process heat tracing FID detection avoids high-boiling VOC attached, promoting the accuracy. No steam condensation, avoiding corrosion of components.

Principle

Sample gas will be stored in the loop first, then release them into PQ columns by switching the ten-way valve to the A state. Different components can be separated in the PQ columes and transported to FID detector to measure respectly.



Specification

Measurement Components
Principles
Range
Detection Limit
Repeatability
Response Time

Gas Source Requirement

Digital Communication
Power Supply
Condition Temperature

Methane NMHC THC
Flame Ionization Detector(FID)
Methane: 0.1~1000pm; NMHC: 0.05~100(or 1~10000ppm)
0.05ppm
RSD≤2%
≤60s
Carrier gas: high purity nitrogen or zero-level air;
Gas: high purity hydrogen;
Combusion-supporting gas: zero-level air;
4~20mA, RS485, RS232, modbus
<800 VA, 220V AC/50Hz
(5~35)°C

