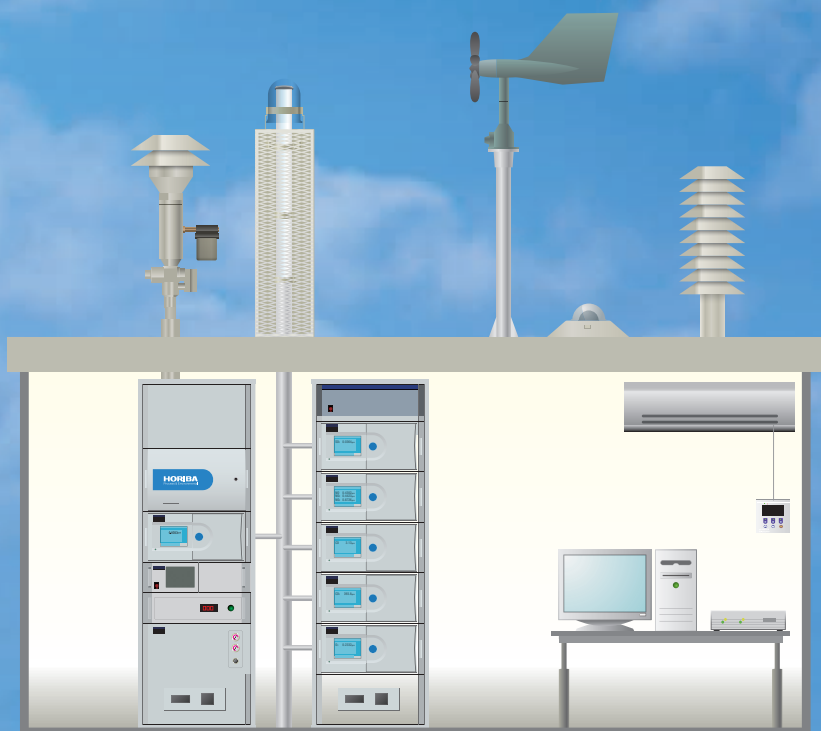


HORIBA

Air Pollution Monitor AP-370 Series



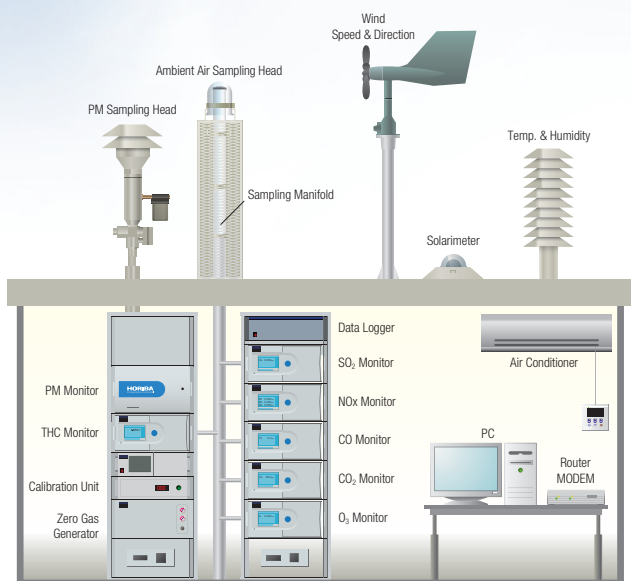
AQMS

Air Quality Monitoring System

Air Pollution Monitor AP-370 Series

Precise, Reliable, Easy maintainance

HORIBA has more than 50 years experience providing ambient monitoring solutions, recognized around the world. HORIBA has supplied over 15,000 units with the major share in many regions. The monitoring station is tailor-made according to the customer's request. HORIBA can provide several types of stations, cabinets, calibration equipment and more to meet your challenging monitoring requirements.



AQMS Air Quality Monitoring System



Gas and Particulate Monitor

CO	APMA-370	P.2
CO ₂	APCA-370	P.2
SO ₂	APSA-370	P.3
H ₂ S	APSA-370/CU-1	P.3
NO _x	APNA-370	P.4
NH ₃	APNA-370/CU-2	P.4
O ₃	APOA-370	P.5
THC	APHA-370	P.6
PM	APDA-371	P.7
	APDA-375A	P.7
	APDA-372	P.7
PM Element	PX-375	P.8

Peripheral Equipment for QA/QC

Ozone Gas Generator	
OZGU-370SE	P. 5
Hydrogen Generator	
OPGU series	P. 6
Multi Gas Generator	
APMC-370	P.10
SGGU-610/640	P.10
Zero Gas Calibrator	
ZNV-7	P.10

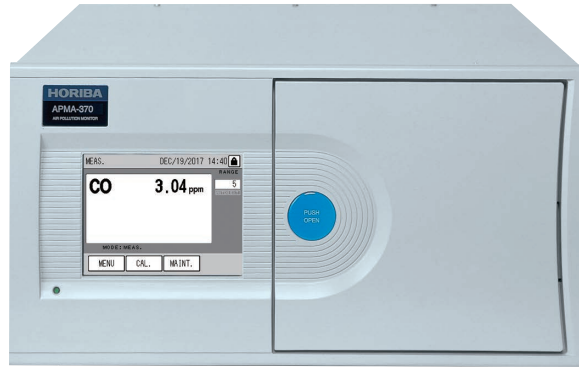
Data management

Data Logger	
(IOX-370: I/O Expander)	P.10
Data management and Reporting Software	
(ECO Web)	P. 9

Ambient CO Monitor

APMA-370

CE TÜV (EU) FCC U.S. EPA Japan China Korea
MCERTS (UK) GOST (Russia)



Measurement component

CO

Features

- Cross-flow non-dispersive infrared detector; Low range: 0-5 ppm F.S.
- AS type (anti-shock) interference-compensating detector and purifier for reference gas.
- Reference gas purifier oxidizes CO to CO₂ to eliminate interferences.
- Optics remain free of foreign matter with elimination of reflecting mirrors.

Principle

Cross-flow modulation non-dispersive infrared (NDIR) absorption technology

Conventional technology uses an optical chopper to obtain modulation signals. Instead, the APMA-370 uses solenoid valve cross flow modulation. Fixed amounts of the sample gas and the reference gas are injected alternately into the measurement cell. With the cross flow modulation method, if the same gas is used for both the sample gas and the reference gas (e.g., zero gas could be used for both), no modulation signal will be generated. This has the great advantage that, in principle, when analyzing minute amounts of gas there is no generation of zero-drift. An additional advantage is that the elimination of rotary sectors precludes the need for optical adjustment. These features assure greatly improved stability over long periods of measurement. A further improvement is that in the front chamber of the detector, the measurable components, including interference components, are detected; in the rear chamber, only interference components are detected. By means of subtraction processing, the actual signal obtained is one that has very little interference.

Specifications

Principle: Cross flow modulation, non-dispersive infrared (NDIR) absorption technology

Application: CO in ambient air

Range: Standard range: 0-10/20/50/100 ppm, 0-5/10/20/50 ppm

Optional range: 5 ranges selectable from 0-100 ppm range within 10 times range.

Range selection: Auto or manually ranges selectable. Can be switched by remote operation.

Lower detectable limit: 0.02 ppm (3σ)

Repeatability: ±1.0% of F.S.

Linearity: ±1.0% of F.S.

Zero drift: <LDL/day at lowest range <0.2 ppm/week at lowest range

Span drift: <LDL/day at lowest range ±1.0% F.S./week

Response time (T₉₀): Within 50 sec at lowest range

Sample gas flow rate: Approx. 1.5 L/min

Calibration gas: Span: CO, Zero: Zero gas

Indication: Measured value, range, alarm, maintenance screen

Alarms: During AIC, zero calibration error, span calibration error, temperature error in catalyzer, etc.

On-screen messages are available in four languages: English, German, French, and Japanese.

Input/output: • 0-1 V/0-10 V/4-20 mA, to be specified (2 systems: either (1) momentary value and integrated or (2) moving average value) • Contact input/output • RS-232C (option)

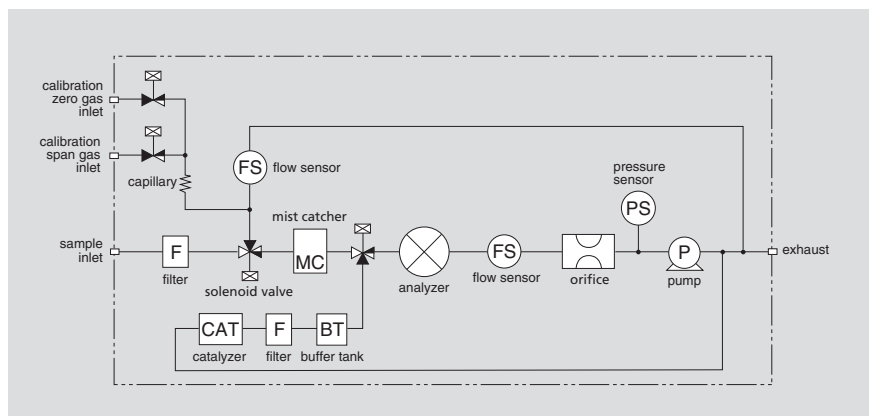
Ambient temperature: 5-40°C

Power: 100/110/115/120/220/230/240 VAC, 50/60 Hz (to be specified)

Dimensions: 430(W)×550(D)×221(H) mm

Mass: Approx. 16 kg

Flow sheet (Example)



Ambient CO₂ Monitor

APCA-370

CO₂

Measurement component :

Principle: Cross-flow modulation, infrared (NDIR) absorption technology

Specification:

Range: 0 ppm to 500/1000 ppm

Lower detectable limit: 0.5 ppm (2σ)

Repeatability: ±1.0% of F.S.

Linearity: ±2.0% of F.S.

Zero drift: ±1.0 ppm/day

±2.0 ppm/week (ambient temperature change: within 5°C)

Span drift: ±2.0% of F.S./day

±3.0% of F.S./week (ambient temperature change: within 5°C)

Response time (T₉₀): 60 sec or shorter

Sample gas flow rate: Approx. 0.7 L/min

Indication: Measured value, alarm, time, alarm history, calibration history, etc.

Alarms: Zero calibration, Span calibration, etc.

Ambient SO₂ Monitor

APSA-370

CE TÜV (EU) FCC U.S. EPA China Korea
MCERTS (UK) GOST (Russia)

Measurement component

SO₂



Features

- UV-fluorescent detector resistant to moisture interference; Low range: 0-0.05 ppm F.S.
- Alternately to FDP measurements, the detector design is highly SO₂ selective and requires no supplemental gas.
- Integral HC-cutter with a selective membrane eliminates interfering components.
- Incorporates a lamp intensity compensator.
- Uses a built-in inert PTFE sample inlet filter.

Principle

UV fluorescence

The UV fluorescence method operates on the principle that when the SO₂ molecules contained in the sample gas are excited by ultraviolet radiation they emit a characteristic fluorescence in the range of 220-420 nm. This fluorescence is measured and the SO₂ concentration is obtained from changes in the intensity of the fluorescence.

The reactive mechanism is

- (1) $\text{SO}_2 + h\nu_1 \rightarrow \text{SO}_2^*$ (2) $\text{SO}_2^* \rightarrow \text{SO}_2 + h\nu_2$
(3) $\text{SO}_2^* \rightarrow \text{SO} + (\text{O})$ (4) $\text{SO}_2^* + \text{M} \rightarrow \text{SO}_2 + \text{M}$

Here, (1) shows the excited state of the SO₂ molecules that have absorbed the amount of energy $h\nu_1$ by ultraviolet radiation. (2) shows the amount of energy, $h\nu_2$ emitted by the excited molecules as they return to the ground state. (3) shows the decomposition by the light emitted from the excited molecules. (4) shows the quenching, i.e., the energy lost by the excited molecules colliding with other molecules. The APSA-370 uses an Xe lamp as the light source, and the fluorescent chamber design minimizes scattered light. The optical system has been carefully designed with low background light, making it possible to take measurements with a highly stable zero point. In addition, a reference detector monitors any fluctuation in the intensity of the light source. This allows the unit to calibrate itself automatically for sensitivity, resulting in greater span stability.

Specifications

Principle: UV fluorescence (UVF)

Application: SO₂ in ambient air

Range: Standard range: 0-0.05/0.1/0.2/0.5 ppm

Optional range: 5 ranges selectable from 0-10 ppm range within 10 times range.

Range selection: Auto or manually ranges selectable. Can be switched by remote operation.

Lower detectable limit: 0.5 ppb (3σ)

Repeatability: ±1.0% of F.S.

Linearity: ±1.0% of F.S.

Zero drift: <LDL/day at lowest range <LDL/week at lowest range

Span drift: <LDL/day at lowest range <LDL/week at lowest range

Response time (T₉₀): Within 120 sec at lowest range

Sample gas flow rate: Approx. 0.7 L/min

Calibration gas: Span: SO₂, Zero: Purified Air

Indication: Measured value, range, alarm, maintenance screen

Alarms: During AIC, zero calibration error, span calibration error, temperature error in catalyzer, etc.

On-screen messages are available in four languages: English, German, French, and Japanese

Input/output: • 0-1 V/0-10 V/4-20 mA, to be specified (2 systems: either (1) momentary value and integrated or (2) moving average value) • Contact input/output • RS-232C (option)

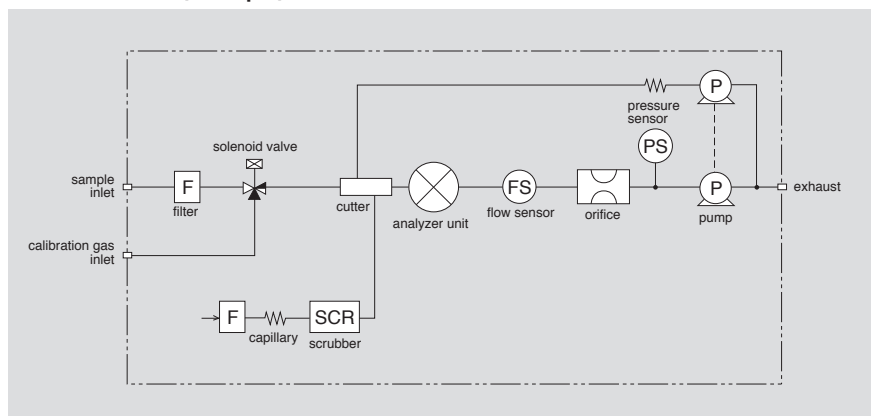
Ambient temperature: 5-40°C

Power: 100/110/115/120/220/230/240 VAC, 50/60 Hz (to be specified)

Dimensions: 430(W)×550(D)×221(H) mm

Mass: Approx. 19 kg

Flow sheet (Example)



Ambient Hydrogen sulfide (H₂S) Monitor

APSA-370/CU-1

Measurement component:

H₂S



Principle: Oxidation catalyst + Ultra Violet Fluorescence

Model: Converter Unit: CU-1
Ambient SO₂ Monitor: APSA-370

Range: 0-0.1/0.2/0.5/1.0 ppm (Standard)
0-0.05/0.1/0.2/0.5 ppm (High sensitivity)

Power: 100/110/115/120/220/230/240 VAC, 50/60 Hz

Dimension: CU-1: 430(W) × 550(D) × 221(H) mm
APSA-370: 430(W) × 550(D) × 221(H) mm

Mass: CU-1: Approx. 10 kg
APSA-370: Approx. 19 kg

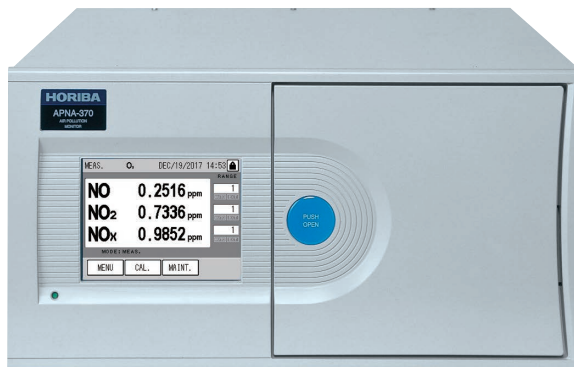
Ambient NO_x Monitor

APNA-370

CE TÜV (EU) FCC U.S. EPA China Korea
MCERTS (UK) GOST (Russia)

► Measurement component

NO_x



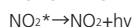
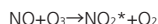
► Features

- Continuous NO_x, NO, NO₂ measurements using a dual cross-flow single chemiluminescence detector and referential calculation.
- HORIBA original detector (Silicon photodiode sensor) respond to gas concentration quickly.
- Stable, repeatable measurements; Low range: 0-0.1 ppm F.S.
- Includes auto-recycle internal drier to make dry air for generating ozone gas
- Base configuration includes: O₃ drier unit, O₃ decomposer, reference gas generator and sample pump.

► Principle

Cross flow modulation type, reduced pressure chemiluminescence (CLD)

The chemiluminescence method uses the reaction of NO with O₃



A portion of the NO₂ generated as the result of this reaction becomes NO₂*. As these excited molecules return to the ground state, chemiluminescence is generated in the range of 600 nm to 3,000 nm. The light intensity is in proportion to the concentration of NO molecules and by measuring it we obtain the NO concentration of the sample. A deoxidation converter changes the NO₂ to NO, which is measured. In other words, the NO₂ concentration can be obtained by the difference between (1) the NO_x concentration measured when the sample gas is directed through a converter and (2) the NO concentration measured when the gas is not run through the converter.

► Specifications

Principle: Cross flow modulation type, reduced pressure chemiluminescence (CLD)

Application: NO₂, NO and NO_x in ambient air

Range: Standard range: 0-0.1/0.2/0.5/1.0 ppm

Optional range: 5 ranges selectable from 0-10 ppm range within 10 times range.

Range selection: Auto or manually ranges selectable. Can be switched by remote operation.

Lower detectable limit: 0.5 ppb (3σ)

Repeatability: ±1.0% of F.S.

Linearity: ±1.0% of F.S.

Zero drift: <LDL/day, at lowest range ±1.0 ppb/week at lowest range

Span drift: <LDL/day at lowest range ±1.5% of F.S./week

Response time (T₉₀): Within 90 sec at lowest range

Sample gas flow rate: Approx. 0.8 L/min

Calibration gas: Span: NO, Zero: Purified Air

Indication: Measured value, range, alarm, maintenance screen

Alarms: During AIC, zero calibration error, span calibration error, temperature error in converter, etc.

On-screen messages are available in four languages: English, German, French, and Japanese

Input/output: • 0-1 V/0-10 V/4-20 mA, to be specified (2 systems: either (1) momentary value and integrated or (2) moving average value) • Contact input/output • RS-232C (option)

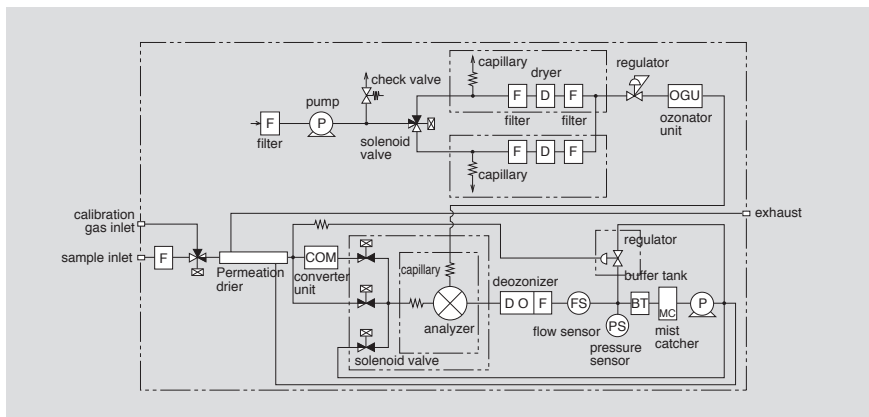
Ambient temperature: 5-40°C

Power: 100/110/115/120/220/230/240 VAC, 50/60 Hz (to be specified)

Dimensions: 430(W)×550(D)×221(H) mm

Mass: Approx. 21 kg

► Flow sheet (Example)



Ambient Ammonium (NH₃) Monitor

APNA-370/CU-2

Measurement component:

NH₃



Principle: Oxidation catalyst + Chemiluminescence

Model: Converter Unit: CU-2
Ambient NO_x Monitor: APNA-370

Range: 0-1.0/2.0/5.0/10 ppm (Standard)
0-0.1/0.2/0.5/1.0 ppm (High sensitivity)

Power: 100/110/115/120/220/230/240 VAC, 50/60 Hz

Dimension: APNA-370: 430(W) x 550(D) x 221(H) mm
CU-2: 430(W) x 450(D) x 310(H) mm

Mass: APNA-370: approx. 21 kg
CU-2: approx. 20 kg

Ambient O₃ Monitor

APOA-370

CE TÜV (EU) FCC U.S. EPA China Korea
MCERTS (UK) GOST (Russia)



Measurement component

O₃

Features

- Cross-flow modulated ultra-violet absorption detector; Low range: 0-0.1 ppm F.S.
- Heated de-ozonator removes any O₃ in the reference gas to:
 - Reduce interference
 - Eliminate moisture interference
 - Prolong life-cycle of the UV lamp
- Only inert materials (glass or PTFE) contact sample.

Principle

**Cross-flow modulation type,
Non dispersive ultra-violet absorption
method (NDUV)**

The ultra-violet absorption method works on the principle that ozone absorbs ultra-violet rays in the area of 254 nm. Measurements are taken from continuous, alternate injections of the sample gas and the reference gas into the measurement cell, controlled by a long-life solenoid valve. The cross flow modulation method is characteristically zero-drift free. A comparative calculation circuit automatically compensates for all fluctuations in the mercury vapor light source and in the detector. This means that, in principle, the APOA-370 makes it possible to carry out zero-span drift free, continuous measurements. In addition, HORIBA's unique de-ozonator for the comparison gas line is unaffected by interference elements or moisture retention, prolonged, stable measurement is possible.

Specifications

Principle: Cross flow modulation type, Ultra-violet-absorption method (NDUV)

Application: O₃ in ambient air

Range: Standard range: 0-0.1/0.2/0.5/1.0 ppm

Optional range: 5 ranges selectable from 0-10 ppm range within 10 times range.

Range selection: Auto or manually ranges selectable. Can be switched by remote operation.

Lower detectable limit: 0.5 ppb (3σ)

Repeatability: ±1.0% of F.S.

Linearity: ±1.0% of F.S.

Zero drift: <LDL/day at lowest range <LDL/week at lowest range

Span drift: <LDL/day at lowest range <LDL/week at lowest range

Response time (T₉₀): Within 75 sec at lowest range

Sample gas flow rate: Approx. 0.7 L/min

Calibration gas: Span: O₃, Zero: Purified Air

Indication: Measured value, range, alarm, maintenance screen

Alarms: During AIC, zero calibration error, span calibration error, temperature error in ozone separator, light intensity error, etc.

On-screen messages are available in four languages: English, German, French, and Japanese.

Input/output: • 0-1 V/0-10 V/4-20 mA, to be specified (2 systems: either (1) momentary value and integrated or (2) moving average value) • Contact input/output • RS-232C (option)

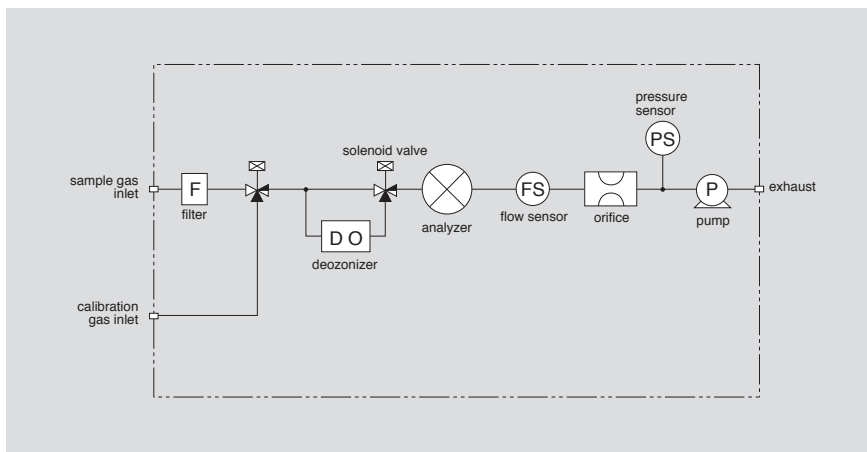
Ambient temperature: 5-40°C

Power: 100/110/115/120/220/230/240 VAC, 50/60 Hz (to be specified)

Dimensions: 430(W)×550(D)×221(H) mm

Mass: Approx. 15 kg

Flow sheet (Example)



Ozone Gas Generator

OZGU-370SE

Calibration Unit for APOA-370



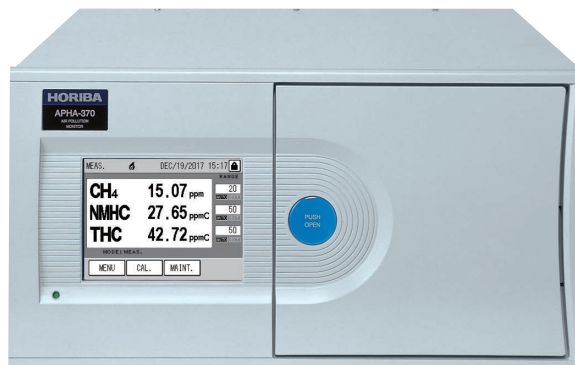
Ambient THC Monitor

APHA-370

CE FCC China Korea GOST (Russia)

Measurement component

THC



Features

- Flame ionization detector with selective combustion simultaneously measures THC, NMHC, and CH₄.
- Single detector eliminates zero drift; Low range: 0-5 ppmC F.S.
- Integrates relative sensitivity correction for CH₄ and NMHC.
- Integrates a reference and combustion air generator, NMHC cutter and sample pump.
- Requires H₂ as fuel gas for the FID.

Principle

Flame ionization detection method (FID) with selective-combustion

The flame ionization detection method (FID) — used in combination with the selective-combustion system — utilizes the ionization that occurs as the result of the high-temperature energy from combustion at the tip of the burner jet when organic carbon compounds are introduced into the hydrogen flame. The hydrogen flame is located between two electrodes. When an electrical voltage is applied across these electrodes a minute ion current proportional to the hydrocarbon concentration is produced. This current is monitored by a low leakage amplifier, giving a voltage readout for THC. To measure CH₄ the sample gas is passed through the selective catalytic combustion unit (the NMHC cutter), which oxidizes NMHC without oxidizing CH₄. This is shown as *A* below. *B* represents the THC concentration measured without passing the gas through the NMHC cutter. Thus *B* - *A* will give the concentration of NMHC. The final concentration value is calculated using a relative-sensitivity correction coefficient, *k*, as shown below.

CH₄ Concentration *A*
 NMHC Concentration *k* (*B* - *A*)
 THC Concentration *A* + *k* (*B* - *A*)

Specifications

Principle: Flame ionization detection (FID) with selective combustion

Application: THC, NMHC, and CH₄ in ambient air

Range: Standard range: 0-5/10/20/50 ppmC

Optional range: 5 ranges selectable from 0-100 ppmC range within 10 times range.

Range selection: Auto or manually ranges selectable. Can be switched by remote operation.

Lower detectable limit: 0.022 ppmC (3σ)

Repeatability: ±1.0% of F.S.

Linearity: ±1.0% of F.S.

Zero drift: <LDL/day at lowest range ±0.05 ppmC/week at lowest range

Span drift: <LDL/day at lowest range ±0.5% F.S./week

Response time (T₉₀): Within 60 sec at lowest range

Sample gas flow rate: Approx. 0.9 L/min

Calibration gas: Span: CH₄, Zero: Purified Air

Indication: Measured value, range, alarm, maintenance screen

Alarms: During AIC, zero calibration error, span calibration error, temperature error in zero gas purifier, ignition failure error, etc.

On-screen messages are available in four languages: English, German, French, and Japanese.

Input/output: • 0-1 V/0-10 V/4-20 mA, to be specified (2 systems: either (1) momentary value and integrated or (2) moving average value) • Contact input/output • RS-232C (option)

Ambient temperature: 5-40°C

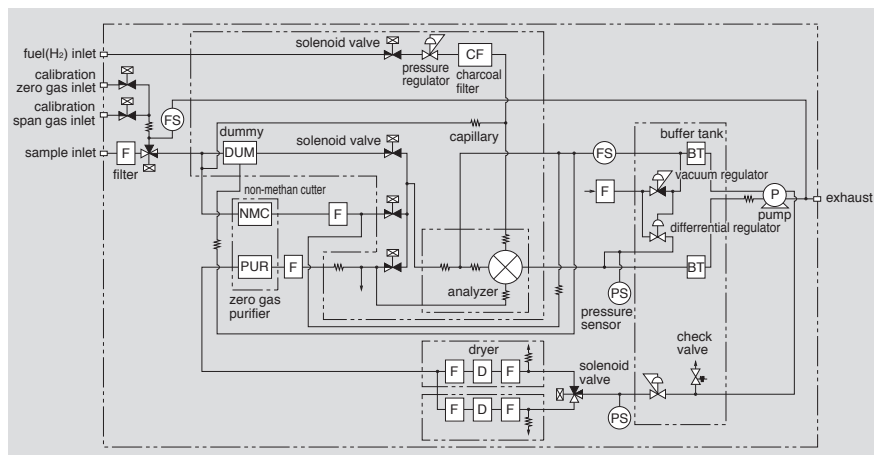
Power: 100/110/115/120/220/230/240 VAC, 50/60 Hz (to be specified)

Dimensions: 430(W)×550(D)×221(H) mm

Mass: Approx. 33 kg

Notes: ppmC is shown as symbol, not as unit.

Flow sheet (Example)



Hydrogen generator OPGU series

Hydrogen generator for FID



Beta-Ray Attenuation type Dust Analyzer

APDA-371

CE TÜV (EU) U.S. EPA

Measurement component

PM

Principle

Beta-ray attenuation



Features

- Long term unattended remote operation of up to 60 days between site visits
- Hourly filter advances minimize effects of volatile compounds
- Integrated data logger allows the connection of up to six additional

Specifications

Principle: Beta Ray attenuation

Application: PM2.5, PM10, TSP

Standard Range: 0-1.000 mg/m³ (0-1000 µg/m³)

Optional Ranges : 0-0.100, 0.200, 0.250, 0.500, 2.000, 5.000, 10.000 mg/m³
(special applications)

Repeatability: ±2.0% of F.S. at 1000/5000/10000 µg/m³ range

Linearity: ±3.0% of F.S. at 1000/5000/10000 µg/m³ range

Zero drift: ±20 µg/m³/day at 200/500/1000/5000/10000 µg/m³

Span drift: ±30 µg/m³/day at 200/500 µg/m³ range

±3.0% of F.S. at 1000/5000/10000 µg/m³ range

Sample gas flow rate: Approx. 16.7 L/min

Alarms: Tape failure, Flow rate failure, etc.

Input/output: 0-1 V, pulse signal, Contact Input/Output(Range, Power failure, alarm, etc.)

Option: RS-232C, LAN connecting terminal(TCP/IP)

Operating temperature: 0-50°C

Power: 100-230 VAC, 50/60 Hz

Dimensions: 430(W)×400(D)×310(H) mm

Mass: Approx. 24.5 kg without external accessories

Ambient Particulate Monitor

APDA-375A

China

Measurement
component :

PM

Principle: Beta-ray attenuation

Application: PM2.5, PM10, TSP



*Please contact to HORIBA
for the detail

Light Scattering type Dust Analyzer

APDA-372

CE TÜV (EU)

Measurement component

PM

Principle

Optical light scattering



Features

- Continuous real-time measurement of PM values simultaneously with additional information through particle number concentration
- Time resolution adjustable from 1sec up to 24hr
- LED light source with high stability, long lifetime and durability

Specifications

Principle: Optical light scattering

Application: PM1, PM2.5, PM10, TSP

Range(Particle size): PMtot (0.18-18 µm)

Range(Number): 0-20,000 particle/cm³

Range(Mass): 0-1,500 µg/m³

Time resolution: 1s-24h (or on demand)

Flow rate: 5.0 L/min

Working temperature: 0-35°C

Power: 115-230 VAC, 50-60 Hz

Power consumption: 140 W

Dimensions: 450(W)×320(D)×190 or 185(H) mm

Mass: Approx. 9.3 kg

Interface: Touch display 800×480 pixels

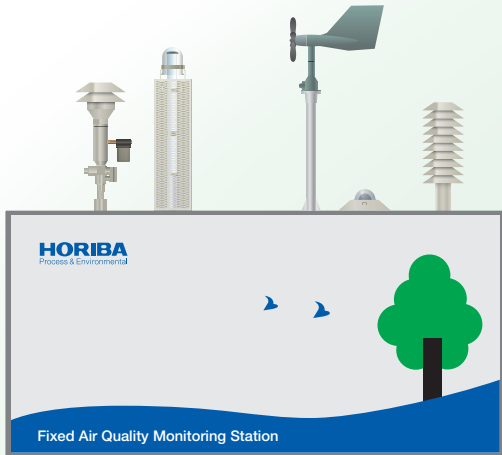
Data logger (Inclusive): 4 GB Compact Flash

External connection: LAN, WiFi, RS-232/485, USB,
Optional external GRPS/UMTS modem

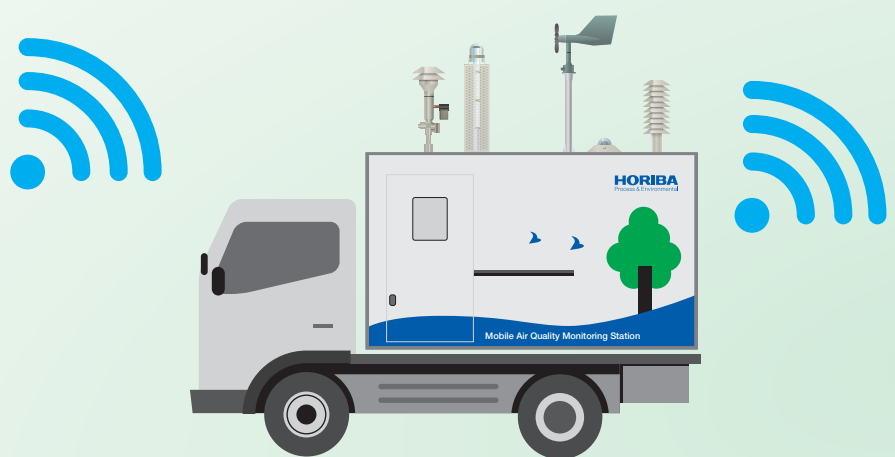
AQMS Air Quality Monitoring System

The Air Quality Monitoring System (AQMS) is a facility to measure wind speed, direction, other weather parameters, concentration of air pollutants (such as SO₂, NO_x, CO, O₃, THC etc), and particulate matters continuously all year round. Mobile AQMS can also be customized to monitor multiple sites via one system.

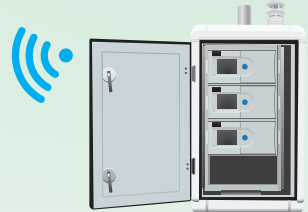
Fixed Station



Mobile Station



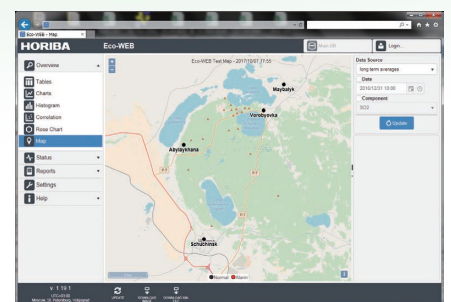
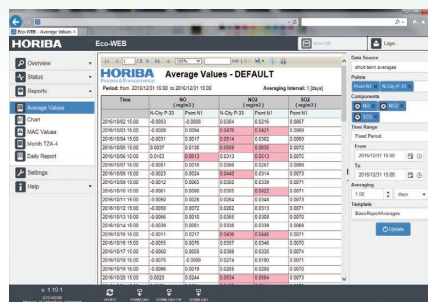
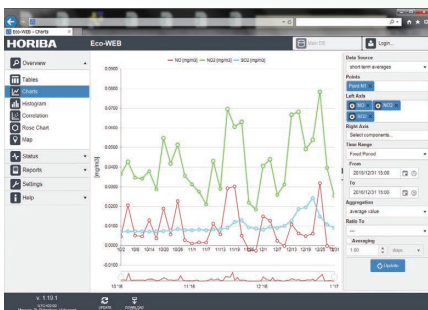
Mini Station



Data Management and Reporting Software

ECO Web

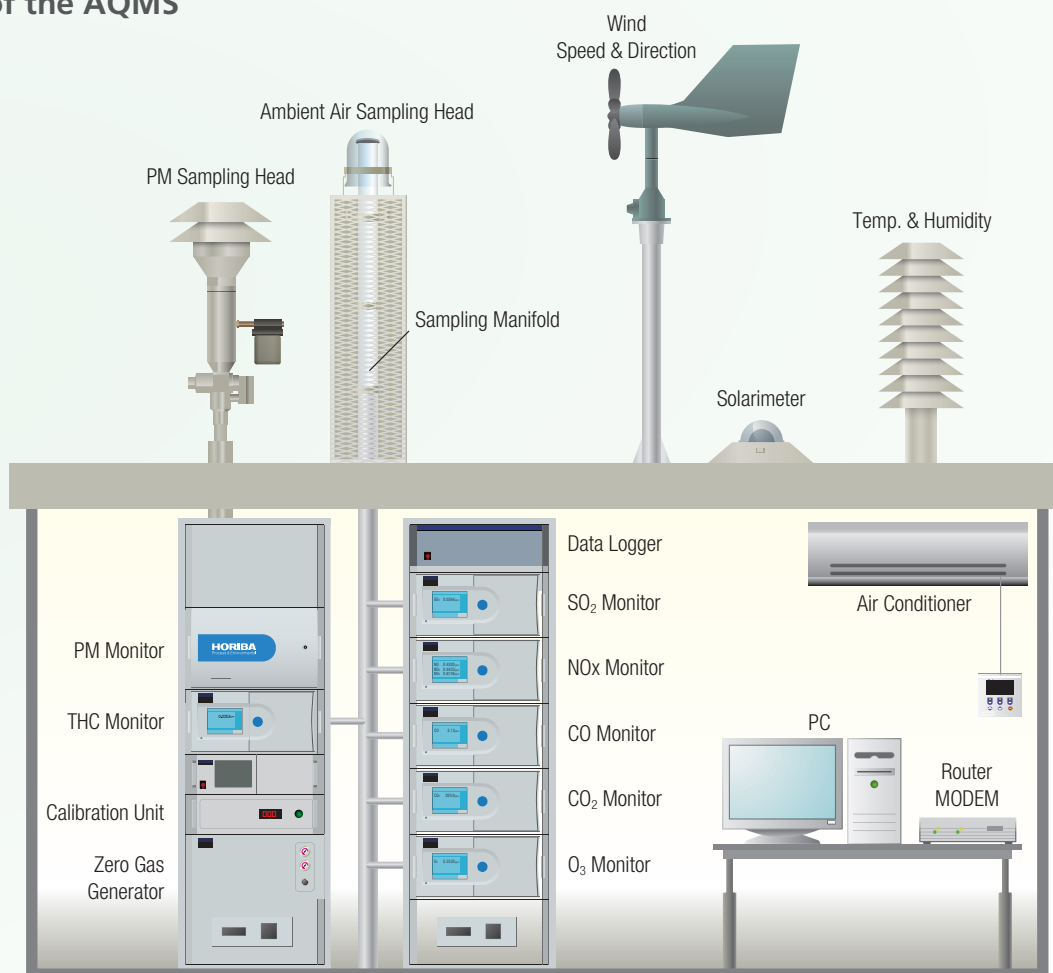
- Collect data from Ambient Air Monitoring Stations
- Manage and store collected data
- Provide reports based on stored data



Inside of AQMS (Examples)



Inside of the AQMS



Multi Gas Calibrator

APMC-370

NO, SO₂, CO, CO₂, O₃, H₂S, NH₃
(Other parameters are also available)



SGGU-610/640

NO, SO₂, Zero gas



Zero Gas Generator

ZNV-7

Zero gas



Data Logger

IOX-370: I/O Expander

Collection, average calculation,
storage and transfer to a central
location of environmental data



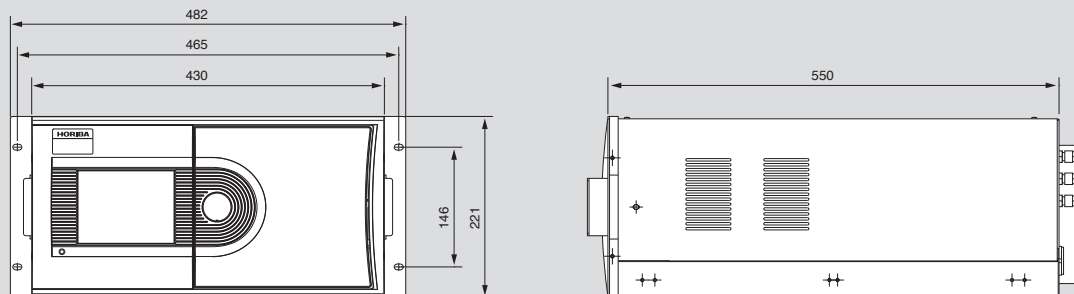
*HORIBA provides local solutions for air quality monitoring such as data management software and calibrator etc.
Please contact to HORIBA for the detail.

➤ Standard 19-inch Packages

Each HORIBA AP-370 Series Monitor is packaged in a light metal enclosure with sliding chassis suitable for either a table-top set-up in a research laboratory or mounting on a standard 19-inch rack for permanent installation. All the controls and serviceable components are accessible from the front for easy maintenance while the plumbing and cable connections are neatly arranged at the back.

Dimensional Outline Unit: mm

APMA-370 / APSA-370 / APNA-370 / APHA-370 / APOA-370



These icons represent following measurement act in each country.

Japan Measurement Act in Japan

China PATTERN APPROVAL CERTIFICATE OF THE MEASURING INSTRUMENTS OF THE PEOPLE'S REPUBLIC OF CHINA

Korea Type Approval Certificate of Environmental Instrument

*The specifications described in this catalog depend on usage environment.



The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System ISO45001. We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.



Please read the operation manual before using this product to assure safe and proper handling of the product.

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HORIBA

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<https://www.horiba.com/int/>



Worldwide locations of HORIBA

Multi-Component Gas Analyzer

VA-5000/VA-5000WM Series

Sample Gas Conditioning System

VS-5000 Series



VA-5000WM Series
(Wall Mount Type)

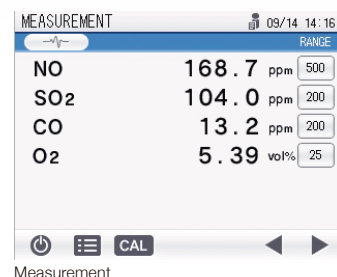


VA-5000 + VS-5000 Series
(Panel Mount Type)

Simple, Flexible, and Reliable! Multi-Component Gas Analyzer VA-5000/

Flexibility for Various Applications

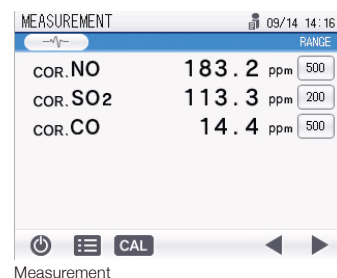
- Provides wide selection of measurement range; from parts per million (ppm) to percent concentration.
- Capability to simultaneously measure up to four gas components.
 - * Refer to the specifications table on page 3 for possible combination of modules.
- Automatic internal correction of measurements, such as oxygen (O₂) corrected value. No need for additional external programmable logic controller (PLC).
- Thermostat for optical unit allows use in tougher sample gas conditions.



User-Friendly Features

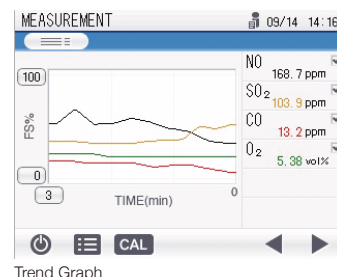
- The 5.7-inch touchscreen LCD with real-time trend graph analysis provides easy recognition of measurement value stabilization.
- Compact size: Enable easy replacement and installation within tight spaces
VA-5000 (19-inch panel mount type): 430 mm (W) × 380 mm (D) × 132 mm (H)
VA-5000WM (Wall mount type): 424 mm (W) × 206 mm (D) × 484 mm (H)
- Operates in standard Modbus™ TCP communication with optional analog and digital I/O.
- Continuous data for up to 15 days can be stored via 1 GB USB.

* Modbus is a trademark of Schneider Electric Inc.



Plug and Play Functions

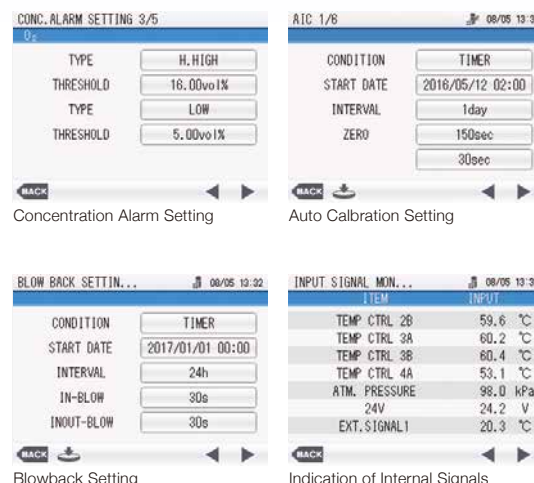
- Modular design enables quick replacement of analyzer bench, which reduces downtime.
- No need to prepare any time-consuming adjustments at site.
- Just easily plug the connection lines and upload the settings data via USB.



VA-5000WM Series

Other Features

- Auto-calibration function together with the VS-5000 sampling unit, or with external solenoid valves.
- Blowback control function enabling measurement of sample gases with high dust concentration. VA-5000 series can control blowback via digital output with an internal sequencer.
*Please consult HORIBA for further details.
- Multiple analog outputs feature, maximum of eight (8) channels, even for the same parameter.
*Please consult HORIBA for further details.
- Self-diagnosis function enables high/low concentration alarms, calibration error alarm, etc.
- Internal signal data view and logging capabilities for quick system diagnostics, such as "internal temperature control data", "detector voltage signal", etc. Data transfer to users' data logger can be done via Modbus™ TCP.



Sample Gas Conditioning System VS-5000 Series

- Compact, can be easily mounted to a 19-inch rack.
- All sample conditioning components (pumps, coolers, filters, flow controls, NO_x converter, etc.) are integrated into a single case.
- Depending on the application, one (1) unit of VS-5000 may support up to two (2) VA-5000 units.
*Please consult HORIBA for further details.



Application Examples

- The VA-5000 series provides wide range of measurement capabilities for research and development (R&D), for quality control (QC), and/or as continuous emission monitoring system (CEMS).
- CEMS
- Emission monitoring of N₂O for sludge waste incinerator
- Selective catalytic reduction (SCR) research
- Fuel cell research
- Green house gases (GHG) research
- Animal farming's metabolism research
- Calibration gas quality control
- Combustion appliance quality control
- Small boilers' combustion efficiency control
- Monitoring of biogas, e.g. biogas during fermentation of biodegradable materials
- Steel production plants' process control, like direct-reduced iron (DRI) manufacture monitoring
- Water treatment plants' aeration tank's O₂ monitoring
- Shape memory shirts' production process control
- Combustion furnace process control for ceramic production (porcelain, sanitary ware, advanced materials, etc.)

Customized combination of modules and sampling units satisfies diverse measurement needs.

			NDIR1	NDIR2	NDIR3	CLA	MPA	Galvanic	Dumb Bell	Sampling Unit			
Module	Analyzer		CO•CO ₂ •CH ₄ •N ₂ O•NO•SO ₂ •NH ₃			NO/NO _x	O ₂			VS-5001	VS-5002	VS-5003	VS-5004
1	VA-5001	VA-5001WM	•							•			
	VA-5002	VA-5002WM				•						•	
	VA-5003	VA-5003WM					•				•		
	VA-5004	VA-5004WM						•		•			
	VA-5006	VA-5006WM							•	•			
2	VA-5011	VA-5011WM	•	•						•			
	VA-5012	VA-5012WM	•			•						•	
	VA-5013	VA-5013WM	•				•				•		
	VA-5014	VA-5014WM	•					•		•			
	VA-5016	VA-5016WM	•						•	•			
	VA-5023	VA-5023WM				•	•						•
	VA-5024	VA-5024WM				•		•				•	
3	VA-5111	VA-5111WM	•	•	•					•			
	VA-5112	VA-5112WM	•	•		•						•	
	VA-5113	VA-5113WM	•	•			•				•		
	VA-5114	VA-5114WM	•	•				•		•			
	VA-5116	VA-5116WM	•	•					•	•			
	VA-5123	VA-5123WM	•			•	•						•
	VA-5124	VA-5124WM	•			•		•				•	
	VA-5126	VA-5126WM	•			•			•			•	
4	VA-5111G	VA-5111GWM	•	•	•			•		•			
	VA-5112G	VA-5112GWM	•	•		•		•				•	

*Please consult us about Sampling Unit for VA-5000WM and further information.

Wide selection for the multiple measurement ranges included in each module

Measuring principle	Component	Option range	Standard range		Zero drift		Span drift*1		Repeatability
		High Sensitive Min. range	Min. range	Max. range	Standard range	High Sensitive	Standard range	High Sensitive	
NDIR ²	CO	0-50 ppm	0-200 ppm	0-100 vol%	±2.0%/week of F.S.	±2.0%/day (CO : 0-50-99 ppm range, CO ₂ : 0-50-99 ppm range, SO ₂ : 0-100-199 ppm range)	±2.0%/week of F.S.	±2.0%/day (CO : 0-50-99 ppm range, CO ₂ : 0-50-99 ppm range, SO ₂ : 0-100-199 ppm range)	±0.5% of F.S.
	CO ₂	0-50 ppm	0-100 ppm	0-100 vol%					
	CH ₄	0-100 ppm	0-200 ppm	0-100 vol%					
	N ₂ O	NA	0-100 ppm	0-5000 ppm					
	NO	NA	0-500 ppm	0-1 vol%					
	SO ₂	0-100 ppm	0-200 ppm	0-10 vol%					
	NH ₃	NA	0-100 ppm	0-1000 ppm					
CLA	NO/NO _x	NA	0-20 ppm	0-5000 ppm	±2.0%/week of F.S.				±0.5% of F.S. (Range is more than 0 ppm to 100 ppm) ±1.0% of F.S. (Range is less than 0 ppm to 100 ppm)
MPA	O ₂	NA	0-5 vol%	0-100 vol%	±2.0%/week of F.S.		±2.0%/week of F.S.		±0.5% of F.S.
Galvanic		NA	0-5 vol%	0-25 vol%	±1.0%/day of F.S.		±1.0%/day of F.S.		±0.5% of F.S.
Dumb-Bell		NA	0-5 vol%	0-100 vol%	±2.0%/week of F.S.		±2.0%/week of F.S.		±0.5% of F.S.

Note 1: Select multiple measurement ranges within the above minimum and maximum range table in accordance to the following conditions.

[NDIR] Five (5) ranges; the highest range must be within the maximum limit ratio of 10x the lowest range.

Maximum limit of 20x the lowest range is also an available option, which may be limited by the cell length.

[CLA] Eight (8) ranges; the highest range must be within the maximum limit ratio of 100x the lowest range.

If the maximum range exceeds 2000 ppm, the minimum range should be at least 50 ppm or more.

[MPA] Five (5) ranges; the highest range must be within the maximum limit ratio of 10x the lowest range.

[Galvanic] Five (5) ranges; the highest range must be within the maximum limit ratio of 5x the lowest range.

[Dumb-Bell] Three (3) ranges; the highest range must be within the maximum limit ratio of 10x the lowest range.

Note 2: Please consult us for measurement of special gases or ranges.

*1: 1% of span drift for NDIR is achievable with special adjustment at factory. Please consult us for further information.

*2: Siloxane and TS (total sulfur) measurements are also available. Please consult us for further information.

Various combinations of sensor modules provide excellent flexibility

The free combination of measurement modules, which utilizes different technologies to measure various gases, makes the VA-5000 series truly applicable to the diverse needs of gas analysis for process control, environmental monitoring, research and development (R&D) testing, etc. The sensors lineup includes: the dual-beam non-dispersive infrared (NDIR) absorption method, which measures seven (7) different gases in wide ranges; the chemiluminescence (CLA) method, which allows measurement of mono-nitrogen oxides (NO_x) in low concentrations; and three (3) types of oxygen (O₂) detectors that users may select from to meet measurement requirements.

SO₂, CO, CO₂, CH₄, N₂O, NO, NH₃

NDIR

Dual-beam Non-Dispersive Infrared Absorption Method

As sample gas flow through the measurement cell, a beam of infrared energy (at a wavelength appropriate for the gas being measured) travels through the sample gas and strikes the infrared (IR) detector. The gas being measured absorbs infrared energy and reduces the energy reaching the IR detector. As a result, the pressure of the gas in the first chamber of the detector is reduced, causing gas to flow from the first chamber to the other. This gas flow passes over the precise temperature sensor between the chambers and reduces the resistance value of the sensor element. Since the resistance value was previously calibrated relative to a specific gas concentration, the measured resistance value can be displayed as a gas concentration reading for the sample gas. HORIBA's Micro Electro Mechanical Systems (MEMS) technology allows the manufacture of IR temperature sensor that is very small yet very sensitive, highly reliable, and vibration-resistant.

*When using the NDIR carbon dioxide (CO₂) analyzer, ensure that the background concentration of CO₂ in the operating environment is stable.

*CO interference for N₂O measurement is eliminated by improved NDIR detector.

NO/NO_x

CLA

Chemiluminescence Method

The mono-nitrogen oxides (NO_x) analysis module uses the sensitive chemiluminescence (CLA) method, which permits NO_x measurements for range as low as 0-20 ppm. The chemiluminescence analyzer has virtually zero interference. HORIBA's special technology and experience has effectively eliminated CO₂ quenching and water vapor interference.

O₂

Choose from three analysis methods for the oxygen (O₂) analyzer module.
Select the sensor module based on specific requirements and sample gas conditions.

MPA

Magneto-Pneumatic

Highly accurate and stable measurement unaffected by coexisting gases or external vibration.

Galvanic Cell

Galvanic cell

Stable measurement with a compact and lightweight sensor.
(Battery life improved from 1 year to 3 years)

Dumb Bell

Dumb-Bell

High accuracy, fast response time, and absolute linearity measurement advantages. No carrier gas required.

Characteristics of O₂ analyzers

		MPA	Galvanic	Dumb-Bell
Performance	Stability of design	●		●
	Warm-up and start-up performance		●	
Sample gas condition	Flammable gas is present	●		●
	High-concentration acidic gas is present	●		
	Sample flow rate should be minimized	●		●
Installation environment	Carrier gas is not available		●	●
	VS-5000 sampling system is not used		●	●
	Installation environmental is vibrating		●	
Cost and other factors	Operation costs should be minimized			●
	Maintenance should be minimized	●		●

Specifications

VA-5000 / VA-5000WM Analyzer

Measurement principle			NDIR	CLA	MPA	Galvanic cell	Dumb-Bell
Performance	Linearity	Standard	±1.0% F.S.				
		Option	±2.0% F.S.(range ratio 1:20)	-	-	-	-
	Response time		≤30 s (T90)*1				
	Warm-up time		60 min (90 min for SO2)	60 min	60 min	40 min	120 min
Flow rate	Standard		0.5 L/min	0.3 L/min	0.5 L/min	0.5 L/min	0.5 L/min
	Option		1.0 L/min*2	-			1.0 L/min*2
Data storage	Option		USB memory				
Input/Output (option)	Analog	Input	Maximum 4 ch, 0-16 mA / 4-20 mA / 0-20 mA or 0-1 V isolated				
		Output	Maximum 8 ch, 0-16 mA / 4-20 mA / 0-20 mA or 0-1 V isolated, Current output: load resistance < 750 Ω, Voltage output: input impedance > 100 kΩ				
	Digital	Input	Maximum 16 ch isolated, Open voltage: 24 V, Short-circuit current 10 mA Maximum load resistance < 50 Ω, Minimum pulse width: 0.5 sec				
		Output	Maximum 16 ch isolated, Maximum voltage DC 30 V, Maximum current 1 A Minimum voltage DC 0.1 V, Minimum current 0.1 mA				
Communication			Ethernet (Modbus™/TCP)				
Sample gas conditions			Ambient temperature, dust free, H2O less than 5°C saturation, Pressure 0 to 490 Pa Other: Shall contain no corrosive gas, combustible gas, and explosive gas.				
Gas connections			Inlet and outlet - 6 mm/4 mm PTFE: a single gas inlet is provided standard; the gas flows sequentially from one module to the next; as an option separate gas inlets can be provided for each module.				
Gas tubing			PTFE; stainless steel optional				
Joint			Sample Inlet: Rc 1/8(φ6/φ4 mm PTFE joint), Exhaust: φ6/φ4 mm PTFE joint Air Inlet: Rc 1/8(φ6/φ4 mm PTFE joint); installed CLA. CLA: Exhaust: φ6/φ4 mm PTFE joint; installed CLA, MPA Outlet: φ6/φ4 mm PTFE joint; installed MPA, Zero gas Outlet: φ6/φ4 mm PTFE joint; installed MPA				
Installation conditions			Temperature 0-45°C, Humidity 90% (No condensation), Altitude Max 3000 m (combination with only NDIR), (combination with Zirconia, Galvani, MPA, and CLA: max 2000 m), No fluctuation of backpressure				
Protection degree			Equivalent to IP20				
Power			AC 100-240 V (±10%, maximum voltage AC 250 V), 50/60 Hz (±1.0%), Consumption: 100 to 350 VA				
Display			5.7-inch touch screen				
Case			VA-5000: 19-inch panel mount / VA-5000WM: Mounted on wall				
Dimensions			VA-5000: 430 (W) × 380 (D) × 132 (H) mm / Approx. 17 (W) × 15 (D) × 5.2 (H) in Deozone unit for CLA: 111 (W) × 95 (D) × 100 (H) mm / Approx. 4.4 (W) × 3.7 (D) × 3.9 (H) in *protrusions excluded VA-5000WM: 424 (W) × 206 (D) × 484 (H) mm / Approx. 17 (W) × 8 (D) × 19 (H) in *protrusions excluded				
Weight			VA-5000: 7-18 kg, Approx. 15-40 lb / VA-5000WM: 14-24 kg, Approx. 31-53 lb				

*1 When single component: flow rate is 0.5L/min (CLA: 0.3L/min)

*2 Available when all components are NDIR and PMA

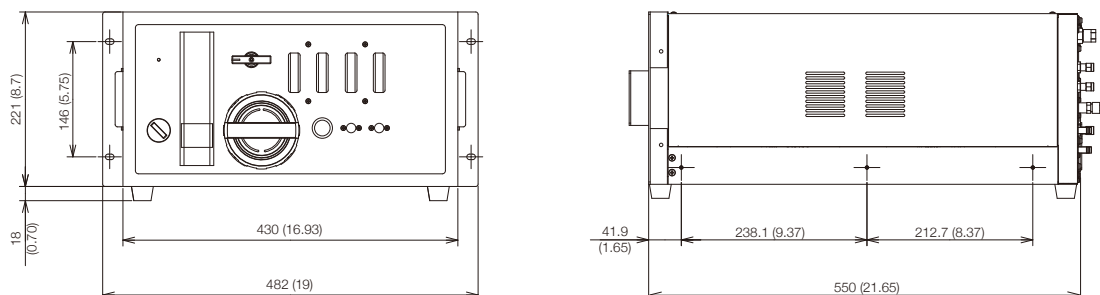
VS-5000 Sampling Unit

Model	VS-5001	VS-5002	VS-5003	VS-5004
Applicable principles	NDIR, Galvanic cell, Dumb-Bell	NDIR, Galvanic cell, MPA	NDIR, Galvanic cell, CLA, Dumb-Bell	NDIR, MPA, CLA
Form	19 inch panel mount			
Sampling method	5°C dry sampling			
Materials	SUS, PP, PVC, PVDF, PTFE, FKM, CR, Glass			
Flow rate	1.5 - 5.0 L/min			
Sample supply	0.5 L/min x 2 systems*1		0.3 L/min x 1 system	
Power	AC 100-240 V (±10%, maximum voltage AC 250 V), 50/60 Hz (±1%)			
Power consumption	150 VA		200 VA	
Joint	Sample inlet: φ8/φ6 mm PTFE joint, Sample outlet: φ6/φ4 mm PTFE joint Air outlet: φ6/φ4 mm PTFE joint, MPA inlet: φ6/φ4 mm PTFE joint Regulator: φ6/φ4 mm PTFE joint, Calibration inlet: RC1/8(φ6/φ4 mm PTFE joint) Bypass outlet/Exhaust/Drain outlet: φ8 mm hose end			
Sample gas conditions	Ambient temperature, Dust: less than 0.1 mg/m³, H₂O: less than 60°C saturation with drain pot (Approx. 25% H₂O), Pressure: ±980 Pa, SO₃: less than 50 ppm, NO₂: less than 6 ppm*², (Corrosive gas, flammable gas and explosive gas are not included)			
Dimensions	430 (W) x 550 (D) x 221 (H) mm / Approx. 17 (W) x 22 (D) x 8.7 (H) in (protrusions excluded)			
Weight	14 kg / 31 lb	16 kg / 35 lb	19 kg / 42 lb	20 kg / 44 lb

*1 Environmental temperature needs to be less than 35°C. If it's over 35°C, please consult HORIBA.

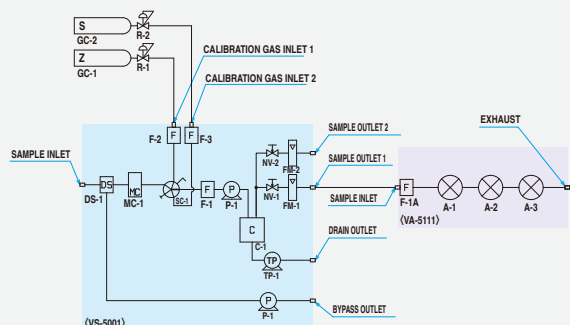
*2 When the sample gas includes more than 6 ppm NO₂, it needs to use optional NO_x converter.

Dimensional Outline for VS-5000 Sampling Unit Unit: mm (in)

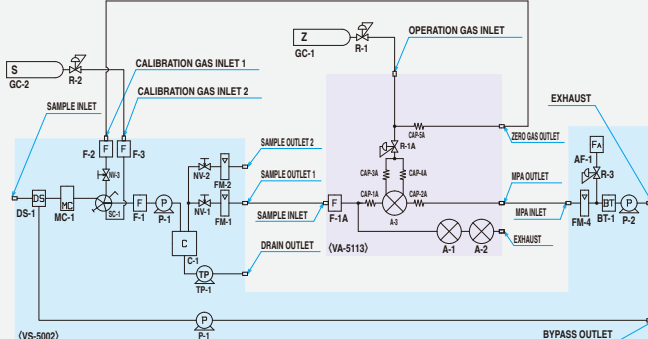


Flow sheet

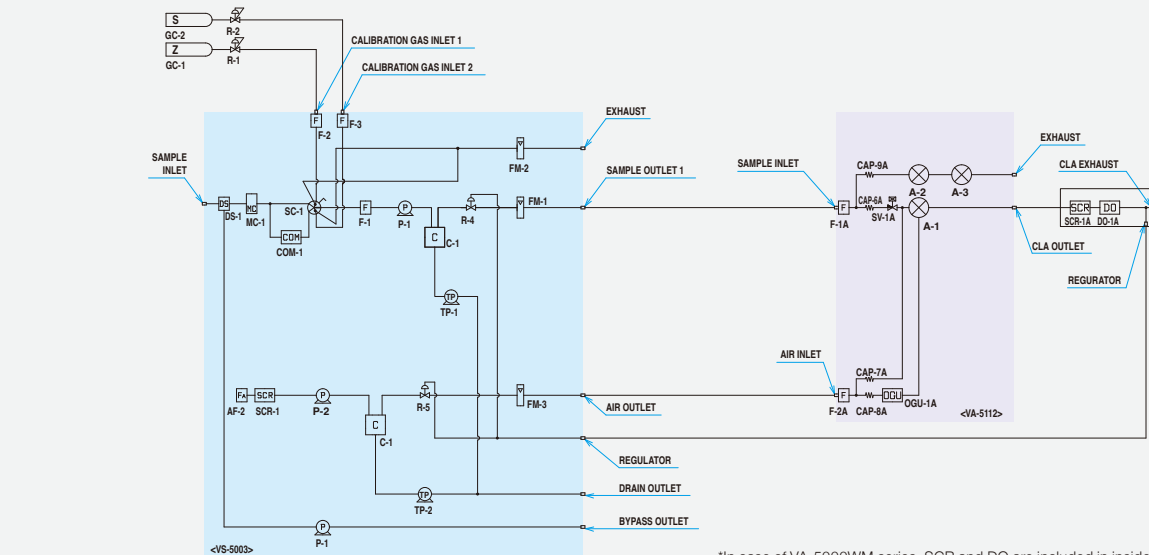
VA-5111+VS-5001



VA-5113+VS-5002

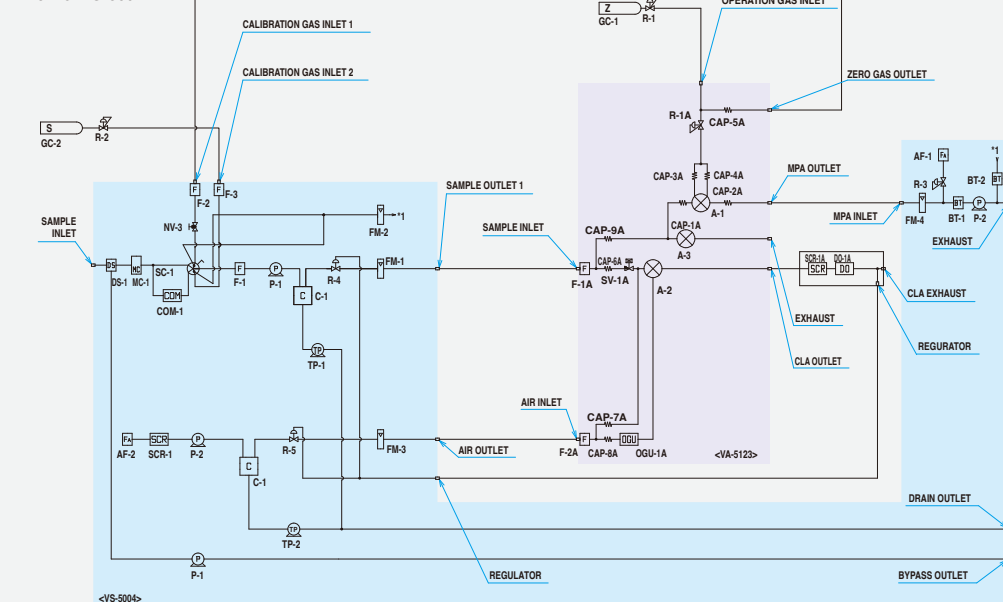


VA-5112+VS-5003



*In case of VA-5000WM series, SCR and DO are included inside of the analyzer.

VA-5123+VS-5004



*In case of VA-5000WM series, SCR and DO are included inside of the analyzer.

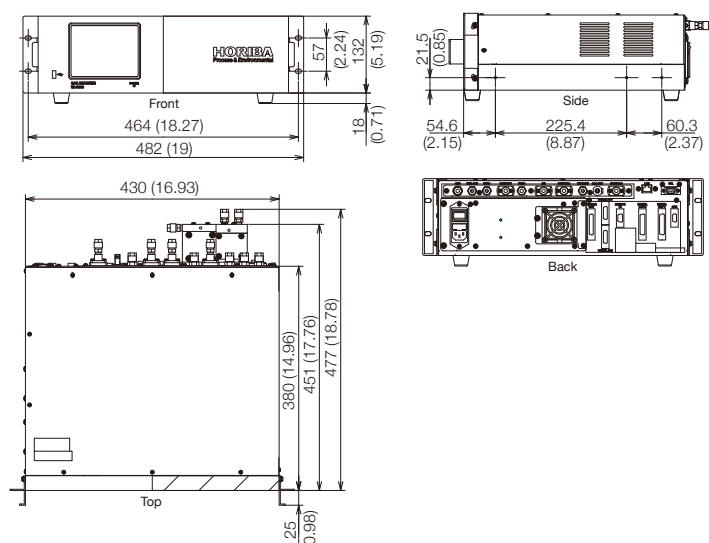
Legend

- A : Analyzer Unit
- AF : Air Filter
- BT : Buffer Tank
- C : Thermo-electric Dehumidifier
- CAP : Capillary
- COM : Converter
- DO : Deozone
- DS : Drain Separator
- F : Filter
- FM : Flowmeter
- GC : Gas Cylinder
- MC : Mist Catcher
- NV : Needle Valve
- OGU : Ozonizer
- P : Pump
- R : Pressure Regulator
- SC : Selector Valve
- SCR : Scrubber
- SV : Solenoid Valve
- TP : Tubing Pump

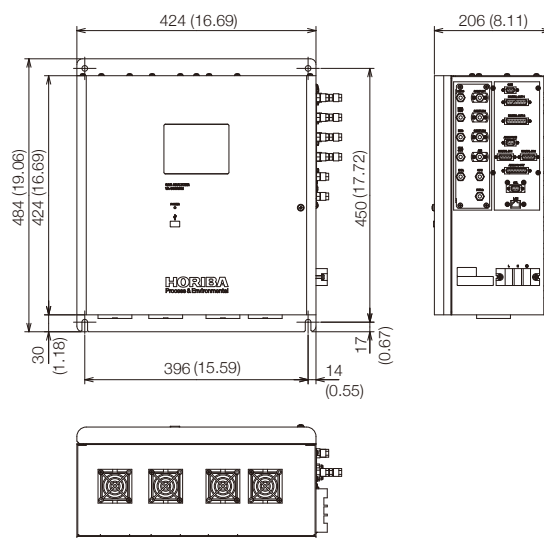
Dimensional Outlines Unit: mm (in)

Rubber feet, deozonator unit and mounting brackets (e.g. slide rails, and rack mounting plates) are optional.

VA-5000



VA-5000WM



Combined with complimentary HORIBA products, VA-5000 / VA-5000WM series offers wide range of solutions and applications to various fields and industries.

With consistent expertise in gas analysis, HORIBA provides analyzers for wide array of gases. The combination of VA-5000 series with complimentary HORIBA analyzers provides custom-made system solutions, which answers the diverse needs of different customers.



Portable Gas Analyzer PG-300 Series

Capable of measuring five (5) different gas components using a single lightweight, portable, and robust unit. Used for emission monitoring, R&D (fuel cell), stack cross-checking, etc.

NOx SO₂ CO CO₂ O₂ CH₄ N₂O



Magneto-Pneumatic Oxygen Analyzer MPA-5000

Sampling pump is installed inside the analyzer. Measurement can be started without an external sampling unit.*¹ Air carrier type: No need to prepare N₂ gas cylinder for carrier gas, which reduces running cost. N₂ carrier type: With N₂ carrier gas, 0-1 vol% measurement for O₂ is available.

*¹ Sampling unit can be required depending on sample gas condition.

O₂



Hydrogen Gas Analyzer TCA-5000

Designed to be used for a variety of applications including research and development, electrolytic cell for water electrolysis, small to medium size stationary fuel cells and other industrial applications.

H₂



The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System ISO45001. We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.



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Worldwide locations of HORIBA

Portable Gas Analyzer PG-300 Series

NO_x - SO₂ - CO - CO₂ - O₂ - CH₄

Precision analyses, anywhere.



Measurement So Easy It's Almost Instinctive

Portable and lightweight with laboratory-level precision.

The New Possibilities of Gas Analysis Begin with "Precision Mobility"

For situations when you can only take measurements in the field, but you want the same precision that you get in the laboratory: HORIBA presents the PG-300 Portable Gas Analyzer. The PG-300 offers the same accuracy and reliability of laboratory measurements in a portable and durable unit that is 20% lighter with a faster response time than previous models. With less warm up time required, high visibility touch screen, accuracy in measuring five crucial components in the field and the durability to facilitate mobile measurement, the PG-300 is the analyzer of the future.

Portable Gas Analyzer

PG-300 Series

NO_x-SO₂-CO-CO₂-O₂-CH₄



Field × Lab

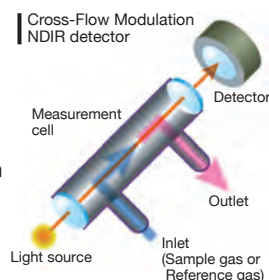
Functions

Advanced measurement needs met with advanced functions.

- **Cross-Flow Modulation type detector**
- **Capable of measuring methane (CH₄)**
- **Less warm-up time**
- **Timer Function**

■ Cross-Flow Modulation advanced efficiency of NDIR analysis

In PG-300, Cross-Flow Modulation is newly applied to SO₂, CO, and new CH₄ analyzers. With Cross-Flow Modulation NDIR method, sample gas and reference gas flow into a single measurement cell switching one by one, and it brings about advantages that no optical adjustment is required, the zero point is kept stable, and the sample cell remains clean and it reduces span drift. The equipments will be kept safe for a long time as well. Cross-Flow Modulation Chemiluminescence detection method is already introduced for NOx analyzer in previous model and has the same effects as aforesaid analyzers.



■ Capable of measuring methane (CH₄) for expanded options

Improving on previous models, the new PG-300 is equipped with a methane (CH₄) analyzer that is ideally suited for many current and emerging applications such as biomass combustion.



■ Ethernet communication facilitates data management*1

Standard Ethernet interface for connection to LAN environment enables real-time data import.

■ Collecting data over LAN network*1

Following network connectivity on the PG-300, data uploads and status checking can be performed remotely over the network.

*1 Requires separate software.



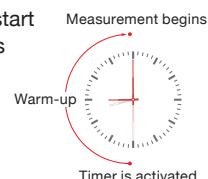
- **Data management with Ethernet and LAN**
- **SO₂ reduced response time**
- **Multi languages and Certificates**
- **Upgrade to IP42 (Ingress protection) version (option).**

■ Warm-up time has been significantly reduced

Reducing from 1 hour to 30 minute warm-up time, the PG-300 increases its readiness time for measurement.

■ Timer function enables automatic instrument start and sleep modes

For example, setting the PG-300's automatic start time 30 minutes ahead of when measurements are needed eliminates your need to wait for the instrument to warm up; it will be ready when you are. There is also a sleep mode that reduces power use when the unit is idle.



■ Reduced response time for SO₂ analyzer

The response time of the SO₂ analyzer is faster than on previous models, increasing the overall measurement performance.

■ Multi languages and Global certificates

<Languages>

English, Chinese, Korean, German, French, Russian, and Japanese

<Certificates>

TÜV(EU), China, Korea, Japan, MCERTS(UK), GOST(Russia)

■ Upgrade to IP42 version (Optionally available)

A special rear cover is attached to prevent intrusion of water droplets and solid matter, and it is resistant to light rain.

IP=Ingress protection

IP42 means protection against solid objects of 1 mm diameter and greater, and vertically falling water drops when enclosure is tilted up to 15 degrees. Wiping off water drops on the measuring spots are necessary in order to obtain accurate value.



Rugged Lightweight Design

20% lighter than previous models, the PG-300 is your choice for portability. Side guards are available to prevent unexpected impacts during transport. PG-300 provides full support for your field measurements and analyses.

Lightweight makes it easy to transport.



Easy Operation

Simple and intuitive, making it easy to operate in the lab or out in the field.

- SD™ memory card slot
- Screen capture function
- On screen guidance
- Color trend graph

Equipped with an SD™ memory card slot to enable data to be saved immediately

SD™ memory card slot accessed from the front of the instrument enables necessary data to be saved on the spot in the universal CSV format.

The SD™ card slot is located on the front of the unit for easy access.



Screen capture function enables data to be saved immediately as a bitmap image onto the SD memory card.

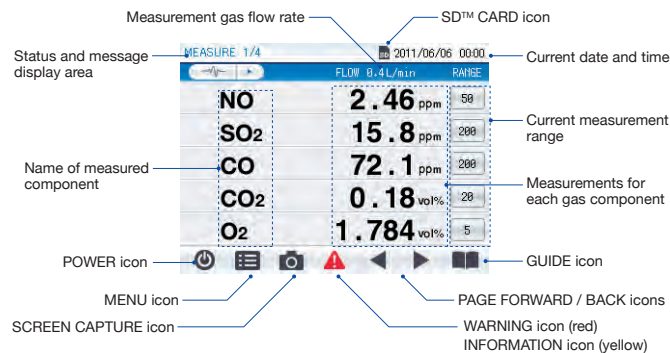
No paper or pen required - simply touch the SCREEN CAPTURE icon and a screen shot is stored in memory.

On screen guidance function allows you to confirm review operating procedures instantly

The simple guidance function provides assistance when you forget how to perform an operation. You can review regular operational procedures or important points right on the screen.

LCD touch screen improves ease of operation

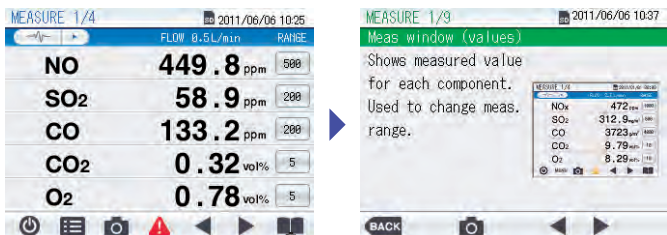
All operations, including calibration, measurement and saving on-screen data, can be performed on the touch screen. The high visibility color display makes it easy to check the status.



Easy real time analysis using the color trend graph

A convenient color trend graph function enables gas component trends as a function of time to be confirmed at a glance.

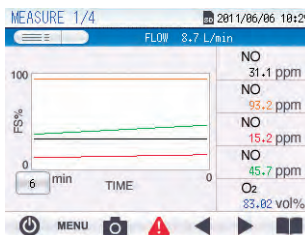
[Sample display screens]



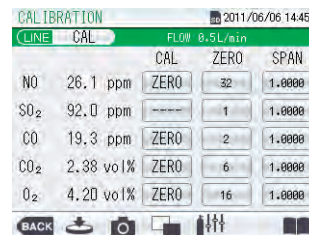
When you press the GUIDE button...

...and then the screen shows information that you can handle at the current operation.

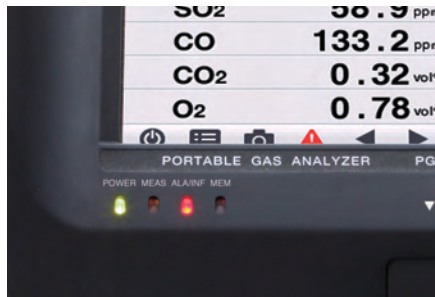
[Color trend graph]



[Calibration screen]



Note: Calibration requires separately purchased calibration gas and pressure regulator.



● Front panel LED's clearly display unit status.



● Easy-to-operate unit yields precision analysis results.



● Color LCD touch screen with high visibility display.

● SD is a trade mark for SD-3C, LLC.

Analyzer Specifications

Type of Analyzers	2 component Analyzer		3 component Analyzer			4 component Analyzer	5 component Analyzer	2 component Analyzer	4 component Analyzer
Model	PG-320	PG-325	PG-330	PG-335	PG-337	PG-340	PG-350	PG-324	PG-344
Components Measured	CO/CO ₂	NOx/O ₂	CO/CO ₂ /O ₂	NOx/CO/O ₂	NOx/SO ₂ /O ₂	NOx/CO/CO ₂ /O ₂	NOx/SO ₂ /CO/CO ₂ /O ₂	CH ₄ /CO ₂	CH ₄ /CO/CO ₂ /O ₂
Analysis Principle	NOx: Cross-Flow Modulation Chemiluminescence Detection Method SO ₂ ,CO,CH ₄ : Cross-Flow Modulation Non-Dispersive Infrared Absorption Method CO ₂ : Non-Dispersive Infrared Absorption Method O ₂ : Galvanic Method, Zirconia Method, or Paramagnetic Method								
Ranges	NOx : 0-25/50/100/250/500/1000/2500 ppm SO ₂ : 0-200/500/1000/3000 ppm CO : 0-200/500/1000/2000/5000 ppm CO ₂ : 0-10/20/30 vol% O ₂ : 0-5/10/25 vol%*							CH ₄ : 0-2000/5000 ppm CO : 0-2000/5000 ppm CO ₂ : 0-5/10/20 vol% O ₂ : 0-5/10/25 vol%*	
Repeatability	±0.5% of Full scale (NOx : ≥ 100 ppm range / CO : ≥ 1000 ppm range) ±1.0% of Full scale (Except above)							±1.0% of Full scale	
Linearity	±2.0% of Full scale								
Drift	±1.0% of Full scale / day (For SO ₂ analyzer only : ±2.0% of Full scale / day)							±1.0% of Full scale / day	
Response Time (Td+T ₉₀)	Analyzers except SO ₂ analyzer : 45 sec. or less (From sample inlet) SO ₂ analyzer : 180 sec. or less (From sample inlet)								
Sample Gas Flow Rate	Approx. 0.5 L/min.								
Display	Measurement (3 or 4 digit display), range, flow rate, etc.								
Output	DC 4-20 mA (non-insulated) or 0-1 V (non-insulated) [optional] / Ethernet								
Warm-up Time	With 30 min. warm-up, ±2.0% of Full scale / 2 hours								
Data Saving	SD™/SDHC™ memory card								
Ambient Temperature	0 to 40 / 32°F to 104°F								
Ambient Humidity	Maximum relative humidity 80% (For temperatures up to 31 decreasing linearly to 50% at 40)								
Power	AC 100 V - 240 V ±10% (maximum 250 V), 50/60 Hz								
Power Consumption	Approx. 160 VA in a steady state, maximum 220 VA								
Outline	260 (W) x 520 (D) x 260 (H) mm 10.2" (W) x 20.5" (D) x 10.2" (H) (without side guards) 300 (W) x 520 (D) x 260 (H) mm 11.8" (W) x 20.5" (D) x 10.2" (H) (with side guards) (projections excluded)								
Mass	Approx. 13 kg to 15 kg / Approx. 29 lb to 33 lb								
Environmental rating	IP42(Optionally available)								
Sample Gas Conditions	Temperature : Ambient temperature, Moisture : Below the ambient temperature saturation, Dust : 0.1 g/Nm³ or less, Pressure : ±0.98 kPa Non-existence of any gas that reacts with corrosive gas or measured gas.								

* For Paramagnetic Method, please contact HORIBA representative in your area for the details.

- SD is a trade mark for SD-3C, LLC.
- TAKE GREAT CARE WHEN HANDLING SAMPLE GASES CONTAINING TOXIC OR FLAMMABLE GASES. TAKE MEASURES SUCH AS PROVIDING ADEQUATE VENTILATION, INSTALLING GAS DETECTORS, AND REMOVING IGNITION SOURCES IN THE WORKING AREA.
- THE PG-300 SERIES IS NOT EXPLOSION-PROOF. DO NOT USE THIS PRODUCT IN A HAZARDOUS LOCATION OR FOR MEASUREMENT OF SAMPLE GASES IN EXPLOSIVE ATMOSPHERES (MIXTURE OF A COMBUSTIBLE GAS AND AIR WITHIN THE FLAMMABILITY LIMITS). HORIBA, LTD. AND ITS AFFILIATES ARE NOT LIABLE FOR EMERGENCIES CAUSED BY LEAKAGE OR MISHANDLING OF SUCH GASES.

Standard Accessories

Part Name	Specifications	Quantity
Filter element	For reference line	24
Signal cable	For analog output (2 m) with connector	1
Power cord	2.5 m	1
Tube	φ6/φ4PTFE tube 0.12 m (for mist catcher short)	1
Tube	φ6/φ4PTFE tube 5 m (for sample)	1
Tube	φ9/φ5 Imron tube 5 m (for exhaust)	1
Tube	φ9/φ5 Imron tube 1 m (for drain discharge)	1
Joint	φ6 straight (for sample tube)	1
Cover	Dust cover (for storage)	1
SD™ memory card	512 MB	1
Galvanic O ₂ cell	R22-A	1*

* Separate tubing and joint are required if a pretreatment unit is added.

* Differs depending on model.

Replacement parts

Replacement part intervals assume 8 hours of operation per day. Replacement interval may be more frequent depending on measurement gas conditions and use conditions.

[Consumable Items]

Name	Replace Every (general guideline)	Notes
Mist catcher	3 months	MC-025
Scrubber	3 months	For reference line
Air filter element	2 weeks	For reference line

[Replacement Parts]

Name	Replace Every (general guideline)	Notes
Pump	1 year	Replace when broken
NOx converter catalyst	1 year	For NOx analyzer*
Zero gas purifier unit catalyst	1 year	*
Ozone generator	1 year	For NOx analyzer*
Deozoneizer	1 year	For NOx analyzer*
CR2032 battery	5 years	For clock backup
Galvanic O ₂ cell	1 year	Replace when broken*

* Differs depending on model

Options

Additional optional components expand the PG-300 portable analyzer capabilities.



Drain separator



Drain pot

■ Drain separator unit ■ Drain pot unit

When the gas sample includes moisture ranging from ambient temperature saturation to 40 °C saturation, a Drain Separator and Drain Pot are installed at the stage before the analyzer unit.

■ Drain separator unit / Drain pot unit specifications

Model	DS-300 (drain separator)	DP-300 (drain pot)
Temperature	0 to 40 / 32°F to 104°F	
Sample conditions (at feed port)	Moisture	Ambient temperature saturation ~ 40 / 104°F saturation
	Dust	0.1 g/m ³ or less
	Pressure	±0.98 kPa ±4.9 kPa

■ Electronic cooler unit

When the gas sample includes moisture exceeding 40 °C saturation, or when conducting continuous measurement (for five days or less), a thermoelectric cooler is installed at the stage before the analyzer unit. The electronic cooler unit can also accommodate low-temperature SO₂ measurements.



■ Electronic Cooler unit specifications

Model	PS-300
Material in contact with gas	Ti, SUS, PVC, PTFE, FKM, PVDF, PP, Glass
Inlet sample	Approx. 2 L/min.
Dehumidify	15 / 59°F saturated
Usable temperature	0 to 40 / 32°F to 104°F
Usable humidity	85% or less
Power	100/110/115/120/220/230/240 V AC, 50 Hz/60 Hz (depend on specifications)
Outline	260(W) x 375(D) x 235(H) mm / 10.2"(W) x 14.7"(D) x 9.2"(H) (except for protrusion)
Mass	Approx. 12kg / 26.46 lb
Sample gas condition	Temperature: Ambient temperature, Dust: 0.1 g/m ³ or less, Moisture: H ₂ O ≤ 20 vol%, Pressure: ±4.9 kPa

[Halogen scrubber] (optional)

The Halogen scrubber can be built into the electronic cooling unit as an option. It is used to prevent corrosion of the cells, tubes and other internal components when the gas analyzer is operated at waste incineration facilities or in other situations where the gas sample includes Cl₂.

■ Primary side filter probe

Either of two types may be selected depending on use.



Flue probe



Simple probe

■ Primary side filter probe specifications

Model	Simple probe	SE3 (flue probe)
Probe length (standard)	10 cm / 3.937"	1 m / 3'28"
Temperature	0 to 50 / 32°F to 122°F*	0 to 120 / 32°F to 248°F
Sample conditions (at feed port)	Moisture	40 vol% or less
	Dust	0.1 g/m ³ or less
	Pressure	±2.94 kPa

*At flange inlet

Note:

- Please contact HORIBA if the analyzer will be used in environments in which the temperature exceeds 120 °C.
- Please contact HORIBA in case of use under the environmental that the pressure condition is other than ±2.94 kPa.



■ PG-300 Carrying Case

■ Specifications

Model	PG-300 Carrying Case
Outline	630 (W) x 492 (D) x 352 (H) mm 24.8" (W) x 19.3" (D) x 13.8" (H)
Mass	12kg / 26.4lb
Materials	Case: Polypropylene Interior: Ethylene foam
Equipments	Carry handle, casters, handles, etc.



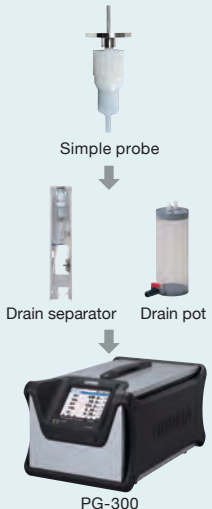
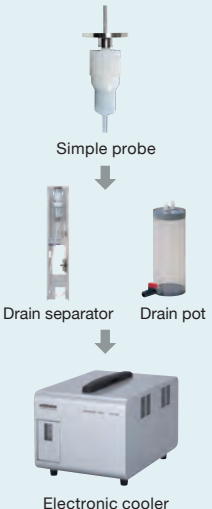
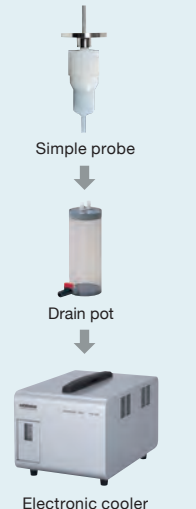
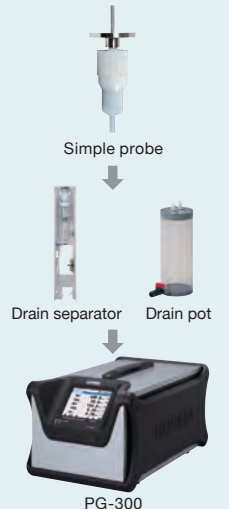
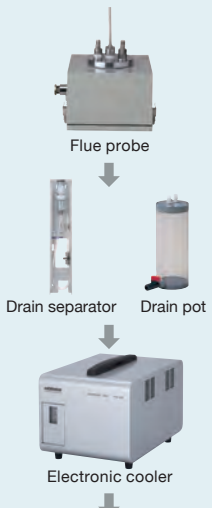
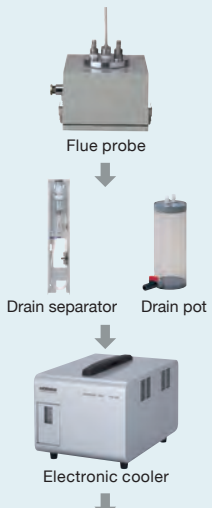
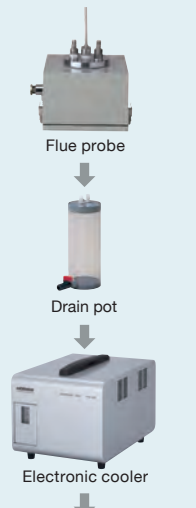
■ Upgrade to IP42 (ingress protection) version

A special rear cover is attached to prevent intrusion of water droplets and solid matter, and it is resistant to light rain.

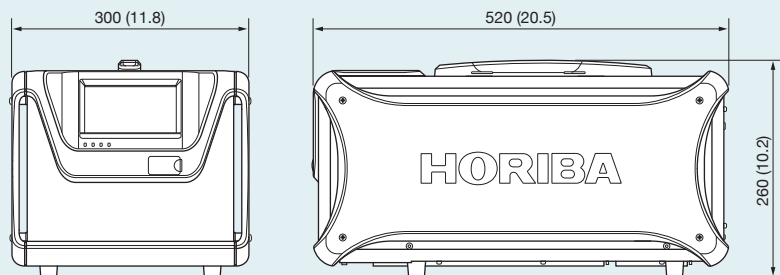
*Upgrade to IP42 (Ingress protection) version (option).

Please select the ideal combination according to your needs.

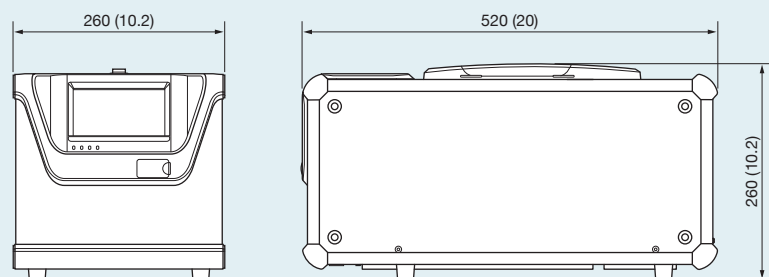
Sample Preprocessing Unit (optional) Uses

Applications	Boiler gas turbines	Stack gas	Waste incineration	Combustion gas appliances	Steelmaking
Intermittent Measurement (8 hours or less)	 Simple probe Drain separator Drain pot PG-300	 Simple probe Drain separator Drain pot Electronic cooler PG-300	 Simple probe Drain pot Electronic cooler PG-300	 Simple probe Drain separator Drain pot PG-300	
Continuous Measurement (5 days or less)*	 Flue probe Drain separator Drain pot Electronic cooler PG-300	 Flue probe Drain separator Drain pot Electronic cooler PG-300	 Flue probe Drain pot Electronic cooler PG-300	Note: Consult HORIBA regarding probe material and other matters relating to applications. * For measurements exceeding 5 days, please contact HORIBA.	

●PG-300 Series Analyzer Unit



●PG-300 Series Analyzer Unit (Side guards excluded)



The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System ISO45001. We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.



Please read the operation manual before using this product to assure safe and proper handling of the product.

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