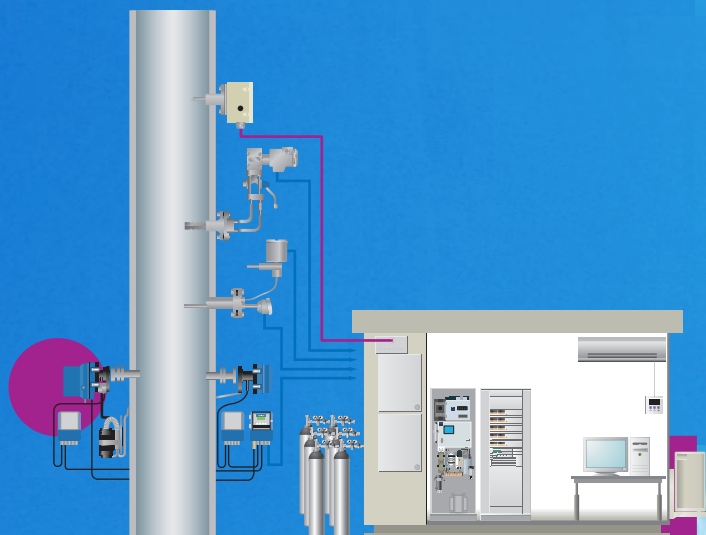
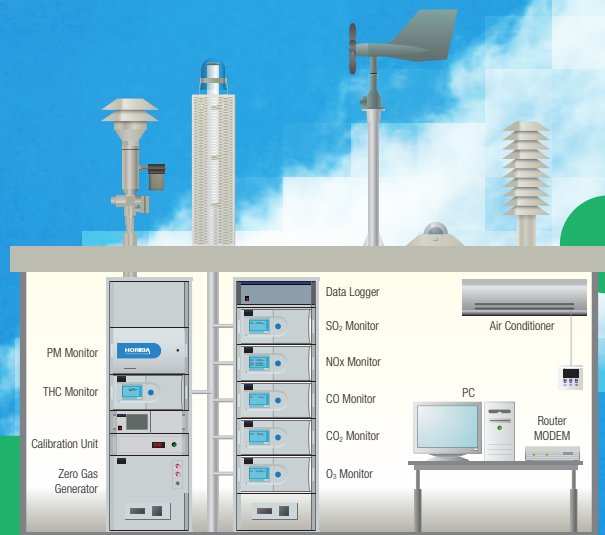


HORIBA

Process & Environmental



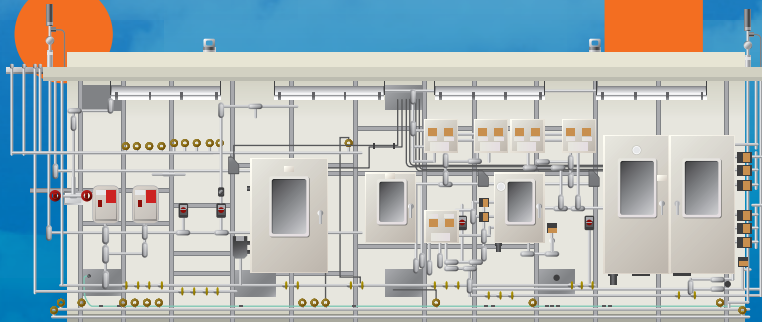
CEMS



AQMS

Analytical System Integration

PROCESS



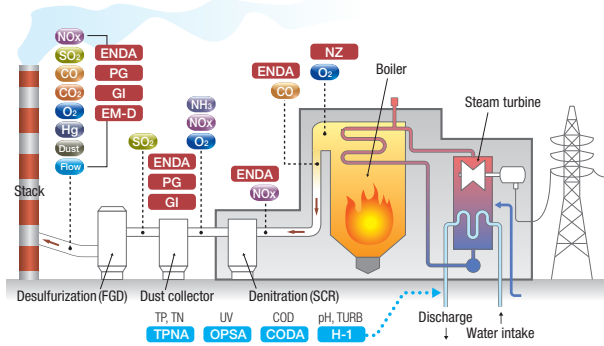
WQMS



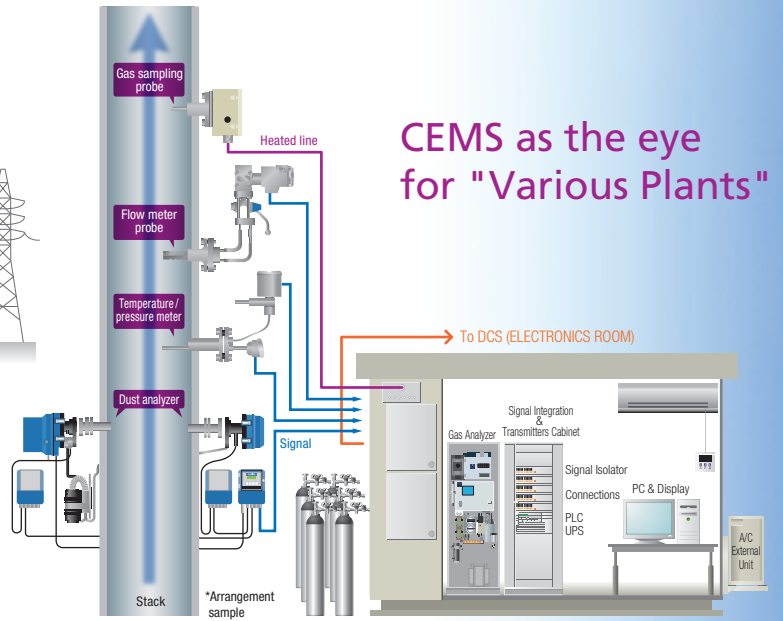
CEMS

Continuous Emission Monitoring System

Sample measurement points of a general small/medium sized power facility with HORIBA analyzers



Required parameters by law are measured continuously at a stack and reported to the government by the Continuous Emission Monitoring System (CEMS). De-NOx process (SCR) needs to monitor NOx and NH₃, and De-SOx (FGD) process needs to monitor SO₂ to optimize the process operation.



Main Products

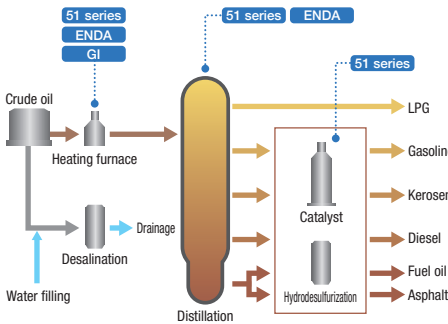
- ENDA-5000 series
- GI-700 series
- PG-300 series
- ENDA-7000 series
- ENDA-C9000 series

Overview

The Continuous Emission Monitoring System (CEMS) is a facility to measure flow, dust, concentration of air pollutants (such as SO₂, NOx, CO etc), and other parameters according to requirements. Required parameters depend on the type of stationary source.

PROCESS

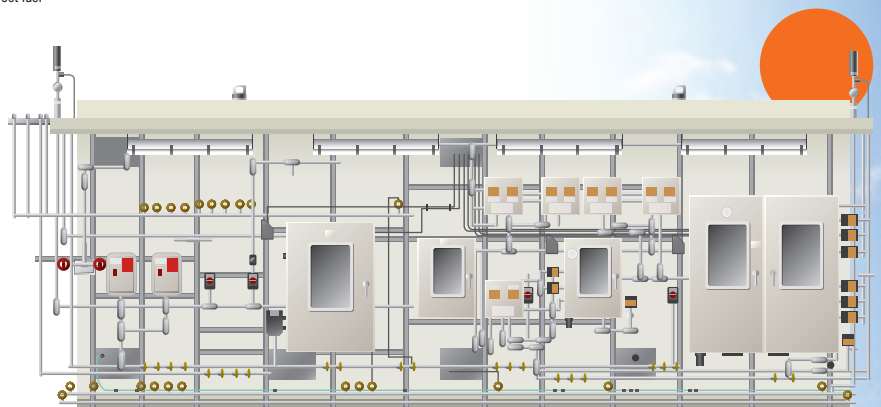
Process Analyzer System



The example of sample measurement point of refinery plant with HORIBA analyzers

In an oil refinery, the crude oil will be converted to final products (Gasoline, Naphtha, etc.) through several processes such as distilling, cracking etc. HORIBA analyzers are utilized to optimize the process and increase production efficiency.

The system as the facilitator to optimize "Industrial Process"



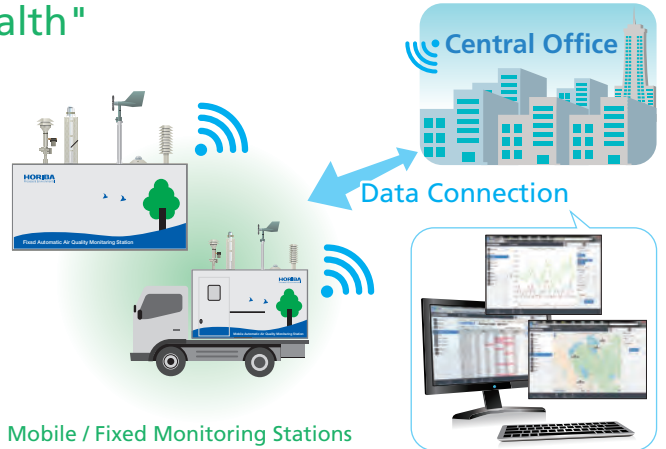
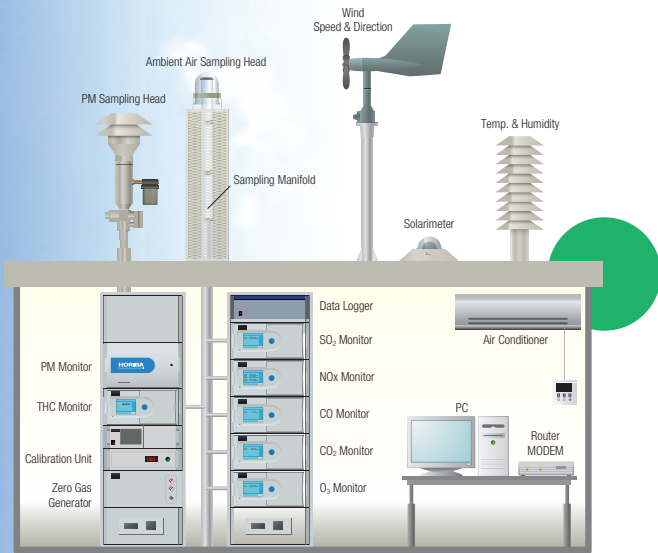
Main Products

- VA-5000 series
- 51 series
- TX-100
- GA-370
- NZ-5000

Overview

Process Analyzer System is a facility to measure necessary parameters such as hydrocarbons to help optimize the manufacturing process. The analyzer is chosen that best meets the customer requirements.

AQMS as the doctor for "Human Health"



Mobile / Fixed Monitoring Stations

The measured data can be remotely monitored and exported in various formats to the local/central authorities. The data can be published via the Internet for easy public access to raise awareness on current air pollution levels. This way, the public can prevent outdoor activities and reduce health impacts during heavy polluted days.

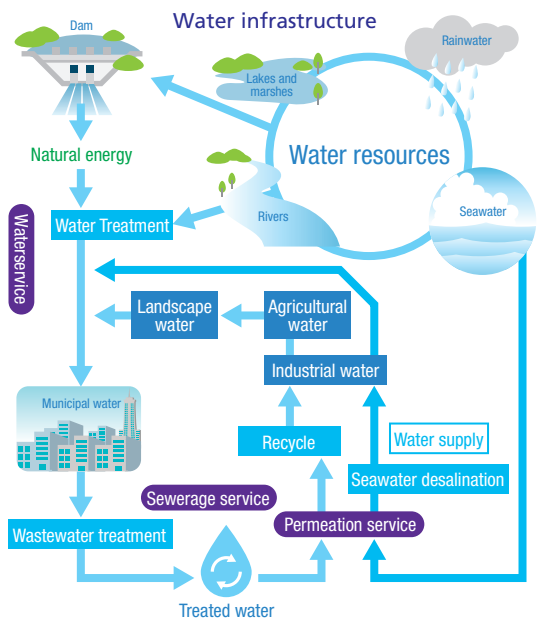
Overview The Air Quality Monitoring System (AQMS) is a facility to measure wind speed, direction, other weather parameters, concentration of air pollutants (such as SO₂, NO_x, CO, O₃, THC etc), and particulate matters continuously all year round. Mobile AQMS can also be customized to monitor multiple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

Main Products

- AP-370 series
- APDA-371
- APMC-370
- PX-375
- APDA-372

Understanding the life cycle of water is essential for us to live on the earth. Water will be consumed, polluted, treated, discharged, and then returned as our water resource again through various sources such as rain. It is especially critical to monitor the waste water discharge from a factory to protect our water resources.

WQMS as the guardian to protect nature life source "Water"



Overview Water Quality Monitoring System (WQMS) is a facility to measure pollutants such as Chemical Oxygen Demand (COD), Total Phosphates (TP), Total Nitrogen (TN), etc. The required parameters are customized according to the type of factory and discharge regulations.

Main Products

- H-1 series
- OPSA-150
- TPNA-500
- 48/96 series
- CODA-500

Air Pollution Analyzer

AP-370 series

NO_x, SO₂, CO, CO₂, O₃, H₂S, NH₃, THC, NMTHC, CH₄, NMVOC

NO_x: 0-0.1/0.2/0.5/1.0 ppm
 SO₂: 0-0.05/0.1/0.2/0.5 ppm
 CO: 0-5/10/20/50 ppm
 CO₂: 0-500/1000 ppm
 O₃: 0-0.1/0.2/0.5/1.0 ppm
 H₂S: 0-0.05/0.1/0.2/0.5 ppm
 NH₃: 0-0.1/0.2/0.5/1.0 ppm
 THC, NMTHC, CH₄: 0-5/10/20/50 ppmC
 NMVOC: 0-2000 ppm

* Other ranges are also available. Please consult HORIBA.

- Long term stable drift by Cross Flow Modulation technology.
- Automatic calibration function enables setting of start time and the interval to reduce operation.
- Multi-range function automatically switches the range to the best suited, depending on measured gas concentration.

CE, TÜV, FCC, MCERTs, GOST, CPA, KC, JAPAN etc



Continuous Particulate Monitor with X-ray Fluorescence

PX-375

Particulate Matter (PM10/PM2.5/TSP)
 Particulate mass concentration and element concentration

0-200/500/1000 µg/m³

* Other ranges are also available. Please consult HORIBA.

- Continuous hourly analysis of PM mass and the elemental concentration by a single unit directly in the field.
- Adoption of world proven technologies: X-ray fluorescence & Beta-ray attenuation, advanced analysis for prevention of air pollution.
- Remote Operation via internet connection enables user to check status and acquire data without going on site.

CE, FCC, KC etc



■ Measurement items
■ Range
■ Features
■ Certificates & Compliance

Beta-Ray Attenuation type Dust Analyzer

APDA-371

PM2.5, PM10, TSP

Standard: 0-1000 µg/m³

* Other ranges are also available. Please consult HORIBA.

- 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 meters

CE, TÜV, US EPA etc

Light Scattering type Dust Analyzer

APDA-372

PM1, PM2.5, PM10, TSP

Particle size: 0.18 - 100 µm

Number: 1 - 20000 particle/cm³

Mass: <0 - 1500 µg/m³

* Other ranges are also available. Please consult HORIBA.

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

CE, TÜV etc



Multi Gas Calibrator

APMC-370

NO, SO₂, CO, CO₂, O₃, H₂S, NH₃

* Other parameters are also available. Please consult HORIBA.

- Dynamic generation of span gas by dilution system. Integrated zero gas
- Multipoint calibration: 8 individually adjustable cycles, each with up to 20
- Precision of span gas concentration: better than 1%, Linearity of span gas

CE etc

Related Products	AMC(Airborne Mole)
	Data Acquisition & M

On-line Industrial Water Quality Analyzer

H-1 series

pH, ORP, Conductivity, Resistivity, Residual chlorine, Dissolved oxygen, Turbidity, MLSS, Fluoride ion, NH₄-N

pH: 0 to 14 pH ORP: -2000 to 2000 mV

Conductivity: 0.0 to 200.0 mS/cm 0.00 to 20.00, 0 to 2000 µS/cm

Resistivity: 0.000 to 2.000 MΩ·cm 0.00 to 20.00 kΩ·m Residual chlorine: 0 to 3 mg/L

Dissolved oxygen: 0 to 20 mg/L

Turbidity: 0 to 2 degree (min.), 0 to 4000 degree (max)

MLSS: 0 to 2000 mg/L

Fluoride ion: 0 to 10000 mg/L

NH₄-N: 0 to 1000 mg/L

* Other ranges are also available. Please consult HORIBA.

- H-1 series comprehensively suits all kinds of water applications, ranging from purified water monitoring to waste water monitoring.
- Lineup with focus on robustness, functionality and maintainability that responds to harsh conditions at the installation sites.
- Essential functions for water analyzer management such as noise resistance, auto calibration, self-diagnosis, and full interface.

CE, FCC, KC etc



Automatic COD Monitor

CODA-500

COD concentration in water

0-20 mg/L

0-30, 40, 50, 100, 200, 500, 1000 mg/L

* Other ranges are also available. Please consult HORIBA.

- Small amount of reagent cost
- innovative reagent delivery system
- running cost.
- 2 measurement methods for
- Direct heating method requir

CE, FCC, KC etc

Automatic Total Nitrogen

TPNA-500

Total Nitrogen and phosphorus

Total nitrogen: 0-2, 5, 10, 20, 50 mg/L

Total phosphorus: 0-0.5, 1, 2, 5 mg/L

* Other ranges are also available. Please consult HORIBA.

- Adoption of meniscus measurement
- automatic washing functions
- lengthening the maintenance
- Reduction in power consumption
- water usage and waste water
- HORIBA's state-of-the-art technology
- methods delivers high reliability

CE, FCC, KC etc

Panel Types Water Quality Measuring Instruments

48/96 series

pH/ORP/Conductivity/Resistivity/Dissolved Oxygen/Residual Chlorine

Please consult HORIBA.

- Well-developed status indicator icons.

- Setting with the front-panel keys.

- Utilization of lead-free solder.

CE, FCC, KC etc



Organic Pollutant Monitor

OPSA-150

UV absorbance, VIS absorbance, Converted COD level, Converted BOD level, Converted TURB level

UV absorbance, VIS absorbance

0-0.1 Abs to 0-5.0 Abs (Can be set 0.1 Abs increments)

- HORIBA's unique rotary cell length modulation sensor ensures no zero-drift as well as covers a wide measurement range from as low as 0 to 0.1 Abs, up to 0 to 5.0 Abs, while providing a minimum resolution of 0.0001 Abs.

- Sample error alarm comes as a standard feature.

- OPSA-150 offers data storage to save up to one year of data and continuous cell wiper system which greatly reduces maintenance.

CE, FCC, KC etc



■ Measurement items
■ Range
■ Features
■ Certificates & Compliance

Related Products	Automatic Calibr
	Continuous Oil F

AQMS

Air Quality Monitoring System

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.

visits.
 orological sensors.



generator or external zero gas generator (ZNV-7) is also available.
 0 calibration points and each calibration cycle runs also automatically.
 s concentration: better than 1%.

cular Contamination) Analysis : **AP-370 series**
 Management Software : **IDA-2000, IDA-ZRW**

onitor



000, 2000 mg/L (1-dilution type)
 se consult HORIBA.
 sumption (0.5-2 ml/measurement) and
 ervice provides easy handling and low
 different sample types and applications.
 es no cooling water.

Nitrogen/Phosphorus Monitoring System

s
 50, 100, 200, 500, 1000 mgN/L
 5, 10, 20, 50, 100, 250 mgP/L
 se consult HORIBA.
 rement method and enhanced
 (option) contributes to the
 e cycle.
 tion by approx. 30%, with pure
 generated reduced to 1/2.
 hnology and measurement
 ity.



ration/Cleaning Industrial pH Analyzer : **AH-151**
 ilm Analyzer : **LO-300**

Water Quality Monitoring System

WQMS

HORIBA produced the first national pH meter in 1950 in Japan. Since then, we have been producing a variety of water quality analyzers and systems which are designed according to the customer's request. HORIBA has unrivaled knowledge and expertise to provide a suitable system to meet your regulation requirement. To date, approximately 200 WQMS have been installed in Korea alone.



HORIBA

CEMS

Continuous Emission Monitoring System

HORIBA has been supplying stack gas analyzers for more than 50 years and have invented several analyzer technologies and sampling systems. HORIBA has supplied more than 100,000 units so far around the world and has the largest market share in Japan for power plant applications*. We can supply systems that comply with regulations in various regions such as Europe, US, China and Korea with our wealth of knowledge and experience.

*As of 2014, based on our company's research



Stack Gas Analyzer ENDA-5000 series

- NO_x, SO₂, CO₂, CO, O₂
- NO_x: 0-200 to 5000 ppm CO: 0-200 to 5000 ppm
- SO₂: 0-200 to 5000 ppm O₂: 0-10 to 25 vol%
- CO₂: 0-5 to 25 vol%
- * It can be set to dual ranges. Range ratio shall be within factor 10 as standard.
- * Other ranges are also available. Please consult HORIBA.
- Cross Flow Modulation type NDIR stabilizes operation with no optical adjustment and zero drift to give longer life time.
- Integrated analyzer with promised performance sampling unit established from more than 50 years experience in this field.
- Special magneto-pneumatic O₂ detector providing non carrier gas and non direct contact with sample gas provides less running cost and longer life time.
- CE, TÜV, FCC, CPA, CEP (China), KC, JAPAN etc

Stack Gas Analyzer ENDA-7000 series

- NO_x, SO₂, CO, CO₂, O₂, NH₃
- NO_x: 0-10 to 5000 ppm CO₂: 0-5 to 50 vol%
- SO₂: 0-10 to 5000 ppm O₂: 0-5 to 25 vol%
- CO: 0-50 to 5000 ppm NH₃: 0- 10 to 100 ppm
- * It can be set to dual ranges. Range ratio shall be within factor 10 as standard.
- * Other ranges are also available. Please consult HORIBA.
- Reliable, accurate and sensitive range measurement with accepted methods including Cross Flow Modulation type - NDIR, Chemiluminescence, Ultraviolet, and Magneto-pneumatic technology.
- 6 components can be measured simultaneously with multiple detector in a single analyzer.
- Easy to operate the test for US EPA such as CGA, Linearity, RATA etc with the integrated software's.
- CE, FCC, US EPA etc

Related Products	Dilution CEMS : AP-370 series
	Multi-Component Gas Analyzer : V

RIBA

PROCESS

Process Analyzer System

HORIBA's facility in Texas, United States has an advantage of process analysis. We obtained the system integration facility in Houston USA which was previously well known as PAAI. We can offer a total package such as system design, engineering, application development, and on-site maintenance services. We are able to provide process analytical systems which not only use HORIBA's analyzers but also other brand's analyzers as per the customer's requirements.



Multi-Component Gas Analyzer VA-5000 series

- CO, CO₂, NO_x, SO₂, CH₄, N₂O, NH₃, O₂
- CO: 0-50 to 100 vol%
- CO₂: 0-50 to 100 vol%
- NO_x: 0-20 to 0-5000 ppm
- SO₂: 0-100 to 10 vol%
- CH₄: 0-200 to 100 vol%
- N₂O: 0-100 to 5000 ppm
- NH₃: 0-100 to 0-1000 ppm
- O₂: 0-5 to 100 vol% (MPA and Paramagnetic which is only available in Europe)
- 0-5 to 25 vol% (Galvanic and Zirconia)
- * It can be set 5 ranges. Range ratio shall be within factor 10 as standard.
- * Other ranges are also available. Please consult HORIBA.
- A single analyzer can contain three small sensor modules out of more than seven different gases to provide many combinations of measurement.
- Multiple gas components with wide selection of ranges (from ppm to %) assure high precision and flexibility for many applications.
- Capability of combining with other system utilizes any measurement in variety of industries.
- CE, FCC, US EPA, CPA, KC, JAPAN etc



Related Products	Process Gas Chromatograph : Oth
	Any process analyzer can be integr



Stack Gas Analyzer (Special model with CFM technology for System Integrator)

GI-700 series

NO_x, SO₂, CO, CO₂, O₂, NH₃

NO_x: 0-10 to 5000 ppm CO₂: 0-5 to 25 vol%
 SO₂: 0-10 to 5000 ppm O₂: 0-10 to 25 vol%
 CO: 0-50 to 5000 ppm NH₃: 0- 10 to 100 ppm

* It can be set to dual ranges. Range ratio shall be within factor 10 as standard.
 * Other ranges are also available. Please consult HORIBA.

- Reliable, accurate and sensitive range measurement with accepted methods including Cross Flow Modulation type - NDIR, Chemiluminescence, Ultraviolet, and Magneto-pneumatic technology.
- 6 components can be measured simultaneously with multiple detectors in a single analyzer.
- Capability of combining with other system utilizes combustion measurement in variety of industries.

CE, FCC, US EPA etc



Stack Gas Dust & Flow Analyzer

Dust, Opacity, Gas velocity, Volume flow

Dust: 0- 0.5 to 10,000 mg/m³

Opacity: 0-100%

Velocity: 0- 3 to 50 m/s

Volume flow: 0-3000000 Nm³/h

* Other ranges are also available. Please consult HORIBA.

- Automatic calibration function to reduce operation work load
- Certified performance analyzer in the world.
- Volume flow measurement is available with combination of pressure and temperature monitors.

CE, TÜV, US EPA etc



De-NO_x Process Gas Analyzer

ENDA-C9000

NH₃, NO_x, O₂

NH₃: 0-20 to 100 ppm

NO_x: 0-20 to 100 ppm

O₂: 0-5 to 25 vol%

* It can be set to dual ranges. Range ratio shall be within factor 10 as standard.

* Other ranges are also available. Please consult HORIBA.

- Accurate measurement with sensitive range for NH₃.
- Zero drift free Chemiluminescence detector (NH₃/NO_x) and Magneto-pneumatic detector (O₂)
- Various useful functions such as hour meter, data logger, or trend graphs enhance maintenance performance

JAPAN etc



■ Measurement items
■ Range
■ Features
■ Certificates & Compliance

GA-5000 series

Trace Gas Analyzer

GA-370

CO, CO₂, CH₄, N₂O

0-1/2/5/10 ppm

* It can be set 4 ranges. Range ratio shall be within factor 10 as standard.

* Other ranges are also available. Please consult HORIBA.

- Measures impurities in bulk gas used in semiconductor and other high-purity gases used in clean rooms, medical facilities and manufacturing processes.
- Assured minimum detection sensitivity 10 ppb provides high precise measurement values.
- All metal tubing employed internally to prevent dirt and to enhance safety in handling H₂ and O₂ gas.

CE, FCC, KC



Tunable Laser Hydrogen Chloride Analyzer

TX-100

HCl, H₂O

HCl: 0-50 to 500 ppm

H₂O: 0-50 vol%

- Laser analyzer requires non-sampling which enables direct measurement and quick response.
- Probe type optical system saves installation cost and maintenance cost.
- HORIBA's original calibration mechanism allows analyzer to calibrate without any disruption to the facility's operations.

CE, FCC, KC



Explosion-proof Gas Analyzer

51 series (EIA-51d/p, TIA-51d/p, TCA-51d/p, MPA-51d/p, PMA-51d)

CO, CO₂, CH₄ etc (EIA, TIA)

H₂ (TCA)

O₂ (MPA, PMA)

EIA: 0-0.11 to 100 vol%

TIA: 0-50 to 2000 ppm

TCA: 0-10 to 100 vol%

MPA/PMA: 0-5 to 25 vol%

* It can be set to multiple ranges. Range ratio shall be within factor 10 as standard.

* Other ranges are also available. Please consult HORIBA.

- Hydrogen explosion proof (IIB+H₂), IEC60079 compatible.

- Self diagnosis and daily management function.

- Design features high visible LED light indicating operation status for instant recognition.

CE, FCC, ExNEPSI (China), JAPAN (Explosion proof) etc



In Situ Oxygen Monitor

NZ-5000

O₂

0-ppm to 100%

- Continuous measurement of O₂ in stack gas with deviation of only 0.2% from the measured value.

- Electronically monitored pneumatic unit for reference air and calibration gas. (optional)

- Explosion-proof type is also available.

CE, TÜV etc



Horiba brand

integrated in the system

■ Measurement items
■ Range
■ Features
■ Certificates & Compliance

Other analyzers



Infrared Thermometer IT-480 series

Temperature

This infrared thermometer with industry leading* accuracy can be used for the temperature control of production lines, devices and plants in various factories. It can also be used for a wide range of other purposes, including research and development and experiments, by connecting to a Windows® personal computer.

*Internal investigation in 2019



Gloss Checker IG series

Gloss

This gloss checker provides easy measurement of surface gloss levels, by quantifying the surface appearance visual inspection. Ideal for automotive coating inspections, floor waxing coating inspections, etc.



Environmental Radiation Monitor PA series

γ (gamma) rays

This is a portable monitor that allows easy and accurate measurement of gamma rays. It is equipped with data communication function, enabling automatic recording of measured data and dose mapping, in linkage with a smartphone or computer.



Oil Content Analyzer OCMA-500 series

Oil content

This analyzer measures oil content in water or seawater, residual oil on machine parts, and oil content in soil, etc. Easy to operate, this analyzer delivers speedy measurements.



Multi Parameter Water Quality Checker U-50 series

pH / Dissolved oxygen / Electrical conductivity / Turbidity / Oxidation-reduction potential / Salt content / Specific gravity of seawater / Total dissolved solid quantity / Water temperature / Water depth / GPS

Many items can be measured simultaneously with one probe. This portable checker is best for outdoor use, such as measurements of river water, lake water, well water, and ground water.

■ Measurement items
■ Features



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 OHSAS18001. We have now integrated Business Continuity Management System IS022301 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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<http://www.horiba.com>

HORIBA, Ltd. **Japan**
Head Office
2 Miyahigashi-cho, Kisshoin, Minami-ku, Kyoto, Japan
Phone: 81 (75) 313-8121 Fax: 81 (75) 321-5725

HORIBA (China) Trading Co., Ltd. **China**
Unit D, 1F, Building A, Synnex International Park, 1068 West Tianshan Road, Shanghai, 200335, China
Phone: 86 (21) 6289-6060 Fax: 86 (21) 6289-5553
Beijing Branch
12F, Metropolis Tower, No.2, Haidian Dong 3 Street, Beijing, 100080, China
Phone: 86 (10) 8567-9966 Fax: 86 (10) 8567-9066
Guangzhou Branch
Rm 1612, Golden Digital Network Center, 138 East Tiyu Road, Guangzhou, 510620, China
Phone: 86 (20) 3878-1883 Fax: 86 (20) 3878-1810

HORIBA Taiwan, Inc. **Taiwan**
8F.-8, No.38, Taiyuan St. Zhubei City, Hsinchu County 30265, Taiwan (R.O.C.)
Phone: 886 (3) 560-0606 Fax: 886 (3) 560-0550

HORIBA KOREA Ltd. **Korea**
25, 94-Gil, Ijikk-Ro, Manan-Gu, Anyang-Si, Gyeonggi-Do, 13901, Korea
Phone: 82 (31) 296-7911 Fax: 82 (31) 296-7913

HORIBA Instruments (Singapore) Pte Ltd. **Singapore**
3 Changi Business Park Vista #01-01 Akzonobel House, Singapore 486051
Phone: 65 (6) 745-8300 Fax: 65 (6) 745-8155

HORIBA Vietnam Co., Ltd. **Vietnam**
Unit 3, 16 Floor, Detech Tower II, 107 Nguyen Phong Sac Street, Dich Vong Hau Ward, Cau Giay District, Hanoi, Vietnam
Phone: 84 (24) 3795-8552 Fax: 84 (24) 3795-8553

HORIBA (Thailand) Limited **Thailand**
East Office
850 / 7 Soi Lat Krabang 30 / 5, Lat Krabang Road, Lat Krabang, Bangkok 10520, Thailand
Phone: 66 (0) 2734 4434 Fax: 66 (0) 2734 4438

PT HORIBA Indonesia **Indonesia**
Jl. Jalur Sutera Blok 20A, No.16-17, Kel. Kunciran, Kec. Pinang Tangerang-15144, Indonesia
Phone: 62 (21) 3044-8525 Fax: 62 (21) 3044-8521

HORIBA India Private Limited **India**
246, Okhla Industrial Estate, Phase 3 New Delhi-110020, India
Phone: 91 (11) 4646-5000 Fax: 91 (11) 4646-5020
Technical Center
D-255, Chakan MIDC Phase-II, Bhamboil Village, Pune-410501, India
Phone: 91 (21) 3567-6000
Bangalore Office
No.55, 12th Main, Behind BDA Complex, 6th sector, HSR Layout, Bangalore South, Bangalore-560102, India
Phone: 91 (80) 4127-3637

HORIBA Instruments Incorporated **USA**
9755 Research Drive, Irvine, CA 92618, U.S.A.
Phone: 1 (949) 250-4811 Fax: 1 (949) 250-0924
Houston Office
5390 Bay Oaks Drive, Pasadena, TX 77505
Phone: 1 (281) 482-4334 Fax: 1 (281) 674-6058

HORIBA Instruments Brasil, Ltda. **Brasil**
Rua Presbitero Plinio Alves de Souza, 645, Parte A, Loteamento Multivias, Jardim Ermida II - Jundiai Sao Paulo - CEP 13.212-181 Brazil
Phone: 55 (11) 2923-5400 Fax: 55 (11) 2923-5490

HORIBA UK Limited **UK**
Kyoto Close Moulton Park, Northampton NN3 6FL, UK
Phone: 44 (1604) 542-500 Fax: 44 (1604) 542-699

HORIBA Europe GmbH **Germany**
Hans-Mess-Str.6 D-61440 Oberursel Germany
Phone: 49 (6172) 1396-0 Fax: 49 (6172) 1373-85
Leichlingen Office
Julius-kronenberg Str.9 D-42799 Leichlingen Germany
Phone: 49 (2175) 8978-0 Fax: 49 (2175) 8978-50

HORIBA Europe Research Center **France**
Avenue de la Vauve - Passage Jobin Yvon CS 45002 - 91120 Palaiseau - France
Phone: 33 (1) 69-74-72-00 Fax: 33 (1) 69-31-32-20

HORIBA Europe GmbH **Sweden**
Sweden Branch (Gothenburg)
Grimboasen 10 A, S-417 49 Gothenburg, Sweden
Phone: (46) 10-161-1500 Fax: (46) 10-161-1503

HORIBA Czech **Czech**
Prague Office
Prumyslova 1306 / 7, CZ-10200, Praha 10, Czech Republic
Phone: 420 (2) 460-392-65

HORIBA (Austria) GmbH **Austria**
Kaplanstrasse 5 A-3430 Tulln, Austria
Phone: 43 (2272) 65225 Fax: 43 (2272) 65230

HORIBA (Austria) GmbH **Romania**
Romania Branch
B-dul.Republicii, nr. 164, Etaj Parter, Birourile nr. 3 si 4 Pitesitjudetul Arges 110177 Romania
Phone: 40 (348) 807117 Fax: 40 (348) 807118

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