

CEMS



AQMS

Analytical System Integration

PROCESS

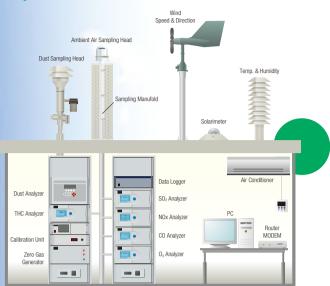


WQMS



Central Office

AQMS as the doctor for "Human Health"





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.

APDA-372

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, NOx, 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

PX-375

AP-370 series APDA-371

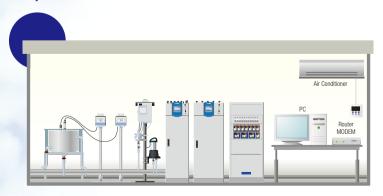
APMC-370

Water Quality Monitoring System



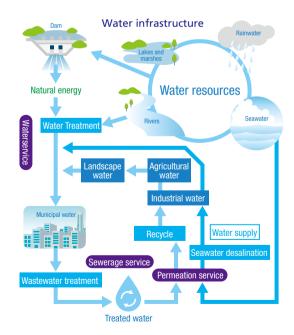
Understanding the life cycle of water is essential for us to live on the earth. Water will be consumed, polluted, treated, discharged, and then returned as our water resource again through various sources such as rain. It is especially critical to monitor the waste water discharge from a factory to protect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

WQMS as the gardian 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

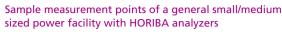
OPSA-150

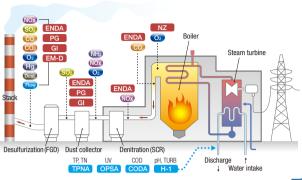
TPNA-500

48/96 series

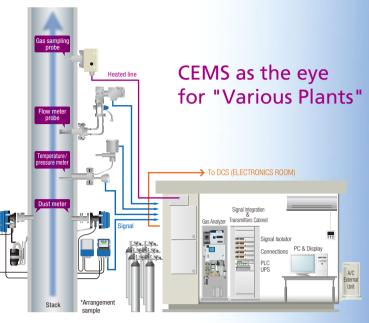
CODA-500

CEMS





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 NH $_3$, and De-SOx (FGD) process needs to monitor SO $_2$ to optimize the process operation.



Main Products

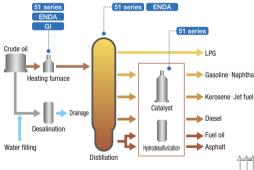
ENDA-5000 series GI-700 series PG-300 series
ENDA-7000 series ENDA-C9000 series EM-D/F5000

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-3000 series 51 series

GA-360E 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.

■ Air Pollution Analyzer

AP-370 series

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

NOx: 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: 0-2000ppm

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, KC, JAPAN etc



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



■ Beta-Ray Attenuation type Dust Analyzer

APDA-371

- PM2.5. PM10. TSP
- Standard: 0-1000µg/m³

 * Other ranges are also available. Please consult HORIBA
- Long term unattended remote operation of up to 60 days between site v - Hourly filter advances minimize effects of volatile compounds
- Integrated data logger allows the connection of up to six additional mete
- 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 1sec up to 24hr.
- 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 of
- Multipoint calibration: 8 individually adjustable cycles, each with up to 20
- Precision of span gas concentration: better than 1%, Linearity of span ga
- CE etc

Related Clean Room Ambie **Products** Data Acquisition & I

Particulate Matter (PM10/PM2.5/TSP)

Particulate mass concentration and element concentration

- and acquire data without going on site.



Certificates & Compliance

■ 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 14pH 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 ot20.00 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 2000mg/L

Fluoride ion: 0 to 10000mg/L NH₄-N: 0 to 1000mg/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 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.

■ 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 0.0001Abs.
- 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
- CE, FCC, CPA, KC etc



■ Automatic COD Mo **CODA-500**

COD concentration in water

0-20 mg/L

0-30, 40, 50, 100, 200, 500,

* Other ranges are also available. Plea Small amount of reagent cor

- innovative reagent delivery se running cost. 2 measurement methods for
- Direct heating method require
- CE, FCC, KC etc

■ Automatic Total Nit

TPNA-500

■ Total Nitrogen and phosphoru Total nitrogen: 0-2, 5, 10, 20,

Total phosphorus: 0-0.5, 1, 2, * Other ranges are also available. Plea

- Adoption of meniscus measu automatic washing functions lengthening the maintenance
- Reduction in power consump water usage and waste water HORIBA's state-of-the-art ted methods delivers high reliabi
- CE. FCC. KC etc



Related Automatic Calib **Products** Continuous Oil F





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

t Air Analyzer : AP-365 series

Management Software: IDA-2000, IDA-ZRW





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.







nitor

000, 2000 mg/L (1-dilution type)

sumption (0.5-2ml/measurement) and vice provides easy handling and low

different sample types and applications. es no cooling water.



ogen/Phosphorus Monitoring System

50, 100, 200, 500, 1000 mgN/L 5, 10 20, 50, 100, 250 mgP/L e consult HORIBA.

ement method and enhanced (option) contributes to the cycle.

ion by approx. 30%, with pure generated reduced to 1/2. Inology and measurement



ation/Cleaning Industrial pH Analyzer: AH-151

lm Analyzer : **LO-300**

Water Quality Monitoring System

WQMS

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.







HOF

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 car 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

NOx, SO2, CO2, CO, O2

NOx: 0-200 to 5000ppm SO₂: 0-200 to 5000ppm CO2: 0-5 to 25vol%

CO: 0-200 to 5000ppm O2: 0-10 to 25vol%

- * 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, US EPA, FCC, KC, JAPAN etc

■ Stack Gas Analyzer

ENDA-7000 series

NOx, SO₂, CO, CO₂, O₂, NH₃

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

- 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 - NDIF 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

RIBA

PROCESS

Process Analyzer System







■ Multi-Component Gas Analyzer

VA-3000 series

CO, CO₂, NO_x, SO₂, CH₄, N₂O, O₂ and others

CO: 0-200 to 100vol%

CO₂: 0-100 to 100vol%

NOx: 0-20 to 0-5000ppm

SO₂: 0-200 to 10vol%

CH₄: 0-200 to 100vol%

N₂O: 0-100 to 5000ppm

O₂: 0-5 100vol%(MPA)

0-5 to 25vol% (Galvanic, Zilconia, and Paramagnetic which only available in Europe)

- It can be set to 4 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, KC, JAPAN etc



Related **Products** Process Gas Chromatograph: Ot

Any process analyzer can be integ



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

GI-700 series

NOx, SO2, CO, CO2, O2, NH3

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

- 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
- CF. FCC etc



■ De-NOx Process Gas Analyzer

ENDA-C9000

NH₃, NO_x, O₂

NH₃: 0-20 to 100ppm NOx: 0-20 to 100ppm 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



Measument items

Range

■ Features

Certificates & Compliance

/A-3000 series

■ Trace Gas Analyzer

GA-360E

CO, CO2, CH4, N2O

0-1/2/5/10 ppm

- * It can be set to 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 etc

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 to100vol%

MPA/PMA: 0-5 to 25vol%

- * 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, JAPAN (Explosion proof) etc

■ Measument items er brand

ated in the system

Range Certificates & Compliance

■ Stack Gas Dust & Flow Analyzer EM-D/F 5000 series

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, KC, TÜV, US EPA etc



■ Transportable Gas Analyzer

PG-300 series

■ NOx, SO₂, CO, CO₂, O₂, CH₄

NOx: 0-25/50/100/250/500/1000/2500ppm SO₇: 0-200/500/1000ppm

CO: 0-200/500/1000/2000/5000ppm

CO2: 0-5/10/20vol%

O2: 0-5/10/25vol% (Zirconia or Galvanic), 0-10/25 vol% (Paramagnetic) CH₄: 0-2000/5000ppm or 0-50/100%

- There are several combinations and ranges available. Please consult HORIBA for more information.
- Capable of up to 5 component measurement simultaneously with built-in sampling unit.
- Max 5 days continuous measurement is available and necessary data and trend graph can be stored in an integrated data logging function.
- User-friendly functions such as an integrated instruction manual can be accessed from the LCD display
- CE, TÜV , FCC, MCERTS, GOST, CPA, KC, JAPAN 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



■ FTIR Gas Analyzer

FG-100A

CF₄, SF₆, C₂F₆, HF, C₃F₈, SiF₄, C₄F₈, NH₃, CHF₃, NO₂, NF₃, CO etc

- Please consult HORIBA
- A lineup of five cell optical path lengths for optimal matching to your gas density sampling situation.
- A lineup of more than 260 types of spectra is available.
- Precision measurement to sub-ppm level by utilizing a cell with a long optical path length.
- FCC, FDA, KC etc



Other analyzers



Non-Contact Infrared Thermometer

IT-545

■ Temperature

This is an easy-to-use portable thermometer with the highest level of accuracy in the industry* Useful for various experiments and maintenance, food temperature management, etc.

Measurement items



Gloss Checker

IG series

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

y (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

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 **Ouality 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



The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System IS09001, Environmental Management System IS014001, and Occupational Health and Safety Management System OHSAS18001. 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.

- The specifications, appearance or other aspects of products in this catalog are subject to change without notice.
- Please contact us with enquiries concerning further details on the products in this catalog.
- The color of the actual products may differ from the color pictured in this catalog due to printing limitations.
- •It is strictly forbidden to copy the content of this catalog in part or in full.
- The screen displays shown on products in this catalog have been inserted into the photographs through compositing.
- •All brand names, product names and service names in this catalog are trademarks or registered trademarks of their respective companies.

http://www.horiba.com e-mail: info@horiba.co.jp

HORIBA, Ltd. Japan Head Office 2 Miyanohigashi, 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

12F, Metropolis Tower, No.2, Haidian Dong 3 Street, Beijing, 100080, China

Phone: 86 (10) 8567-9966 Fax: 86 (10) 8567-9066

HORIBA Korea Ltd. Korea

10, Dogok-Ro, 6-Gil, Gangnam-Gu, Seoul-Si, 06259, Korea Phone: 82 (2) 753-7911 Fax: 82 (2) 756-4972

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 6, 10 Floor, CMC Tower, Duy Tan Street, Dich Vong Hau Ward, Cau Giay District, Hanoi, Vietnam Phone: 84 (4) 3795-8552 Fax: 84 (4) 3795-8553

Explore the future

HORIBA (Thailand) Ltd.

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

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

246, Okhla Industrial Estate, Phase 3 New Delhi-110020, India Phone: 91 (11) 4646-5000 Fax: 91 (11) 4646-5020

502, 5th Floor, Purushottam Plaza, Baner Road, Baner, Pune-411045 India

Phone: 91 (20) 4076-6000 Fax: 91 (20) 4076-6010

Bangalore

No.55, 12th Main, Behind BDA Complex, 6th sector, HSR Layout, Bangalore South, Bangalore-560102, India Phone: 91 (80) 4127-3637

HORIBA Instruments Inc.

Head Office

9755 Research Drive, Irvine, CA 92618, U.S.A. Phone: 1 (949) 250-4811 Fax: 1 (949) 250-0924

5318 W.FM 517 Rd, Alvin, TX 77511, U.S.A Phone: 1 (281) 482-4334 Fax: 1 (281) 614-0303

HORIBA Instruments Brazil, Ltda.

Brazil

Head Office

Thailand

USA

Bua:Presbitero Plinio Alves de Souza, 645, Loteamento Polo Multivias Barirro Medeiros-Jundiai Sao Paulo CEP 13 212-181 Brazil

Phone: 55 (11) 2923-5400 Fax: 55 (11) 2923-5490

HORIBA France Sarl

France

12. Av des Tropiques Hightec Sud, F-91955 Les Ulis, France Phone: 33 (1) 69-29-96-23 Fax: 33 (1) 69-29-95-77

HORIBA UK Limited

UK

Germany

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

HORIBA Europe GmbH

Head Office

Hans-Mess-Str.6 D-61440 Oberursel Germany Phone: 49 (6172) 1396-0 Fax: 49 (6172) 1373-85 Leichlingen

Julius-kronenberg Str.9 D-42799 Leichlingen Germany Phone: 49 (2175) 8978-0 Fax: 49 (2175) 8978-50

HORIBA Czech

Czech

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

HORIBA (Austria) GmbH

Austria

Kaplanstrasse 5 A-3430 Tulin, Austria Phone: 43 (2272) 65225 Fax: 43 (2272) 65230

Bulletin: HRE-1942A

Printed in Japan 1606SK33