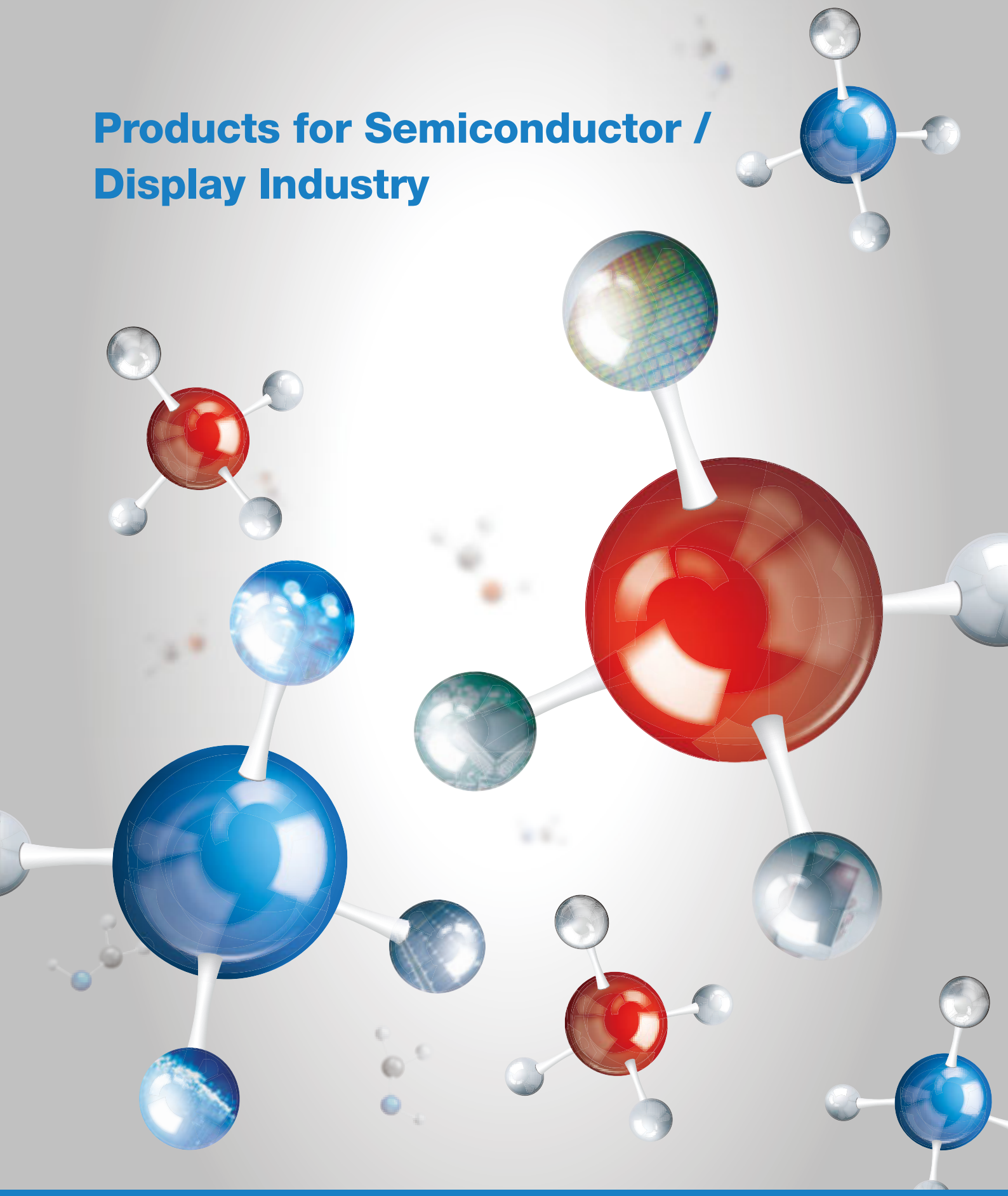
HORIBA
Semiconductor

Products for Semiconductor / Display Industry



Count on HORIBA

The HORIBA Group continues to provide leading technologies in response to the needs of the electronics industry.
We aim to be a partner you can count on with our unique control and measurement technologies and our technical strength cultivated through many years of experience.

Integrating technologies from each company in our group allows us to provide a wide variety of solutions and contribute to the evolution of semiconductors.

Overall analysis technology specialist

HORIBA

HORIBA proprietary analysis technology is fully demonstrated in a wide range of fields - semiconductors, medicine, environment, science, and engine measurements. In semiconductors, HORIBA provides an extensive selection of process monitors for integration into manufacturing lines that aid the safe production of higher performance semiconductors.

Fluid control technology specialist

HORIBA STEC

A core company in the HORIBA Group's semiconductor business, HORIBA STEC boasts a world-leading share in industry-standard mass flow controllers and liquid source vaporization control systems*, important devices that are vital in semiconductor manufacturing lines.
*From HORIBA STEC'S 2015 research.

Water measurement technology specialist

HORIBA Advanced Techno

HORIBA Advanced Techno manufactures leading edge products for the fields of environment, water quality, and semiconductor cleaning. In semiconductors, its main products include equipment for measuring the concentration of Hydrofluoric Acid required in wafer etching, and various other liquids and equipment for measuring the purity of ultra-pure water that is vital in wafer cleaning processes.

Optical analysis technology specialist

HORIBA JOBIN YVON

Based in France, this company is the leading manufacturer of spectroscopic ellipsometers and was welcomed into the HORIBA Group in 1997. Fusing proprietary HORIBA technology with spectroscopy that covers the infra-red to visible light ranges has established an analysis technology that covers the entire wavelength range.

Chemical Solution Concentration Control
Particle Inspection
Fluid Control / Measurement
Core Technologies from the HORIBA Group in the Semiconductor Field
Gas Concentration Control
Thin Film Measurement
Vacuum Measurement

We provide a wide range of an
to meet the requirements

Semiconductor Process

Manufacturing Process	Major Products
Cleaning	RCA Chemical Solution Concentration Monitor CS-100/CS-600F Series P.02 DIW Carbon Sensor Conductivity Meter HE-960RW-GC P.02
Oxidation/Diffusion	Thermal Method Digital Mass Flow Module SEC-Z700X Series P.01 Digital Mass Flow Controller SEC-Z500X Series P.01
Deposition	Liquid Source Vaporization System LSC Series P.01 Liquid Source Vaporization System MV Series P.01 Gas Monitor IR-400 Series P.01
Lithography	TMAH Concentration Monitor HE-960H-TM-S P.02
Inspection/Measurement	TMAH Chemical Solution Concentration Monitor CS-100/CS-600F Series P.02 Reticle/Mask Particle Detection System PR-PD Series P.03
Etching	Low-concentration HF/HCl/NH_3 Monitor HF-960M P.02 HF Concentration Monitor HF-960EM P.02 Etching/removing polymer Chemical Solution Concentration Monitor CS-100/CS-600F/CS-700 Series P.02 Pressure-insensitive Digital Mass Flow Module CRITERION P.01 Backside Wafer Cooling System GR-300 Series P.01
Ion Implantation	H_2O_2 in slurry Chemical Solution Concentration Monitor CS-700/CS-600F Series P.02 Micro-volume pH Monitor UP-100 P.02
CMP	Carbon Sensor Conductivity Meter HE-960HC/HE-960LC P.02

Dis

Manufacturing Process
Cleaning
Transparent Electrode Formation
Deposition/Surface Treatment
Etching
Spacer/Seal Formation
Panel Alignment
Liquid Crystal Filling
Sealing
Polarizer Sticking

alysis and control technologies of cutting-edge processes.

play

Major Products

DIW **Carbon Sensor Conductivity Meter** HE-960RW-GC P.02

Etching **Chemical Solution Concentration Monitor** CS-600F/CS-700 Series P.02

Oxalic Acid Conductivity Meter HE-960HC-ITO Series P.02

Digital Mass Flow Controller SEC-N100 Series P.01

Compact Process Gas Monitor MICROPOLE System P.01

Liquid Source Vaporization System VC Series P.01

Fully Automated Ellipsometer UVISEL2 P.03

Fast Automatic Ellipsometer Auto SE P.03

Compound Semiconductor

Manufacturing Process	Major Products
Deposition (MOCVD)	**Digital Mass Flow Controller** SEC-Z500X Series P.01 **Digital Automatic Pressure Regulator** UR-Z700 Series P.01 **Vapor Concentration Monitor** IR-300 Series P.01
Etching	**Low-concentration HF/HCl/NH_3 Monitor** HF-960M P.02 **HF Concentration Monitor** HF-960EM P.02 RCA **Chemical Solution Concentration Monitor** CS-100/CS-600F Series P.02 **Plasma Diagnosis Endpoint Monitor** EV-140C P.01 **Backside Wafer Cooling System** GR-300 Series P.01
Impurity Diffusion	
Electrode Formation	
Electrode Formation	**Cathode Luminescence Measurement Equipment** MP Series P.03
Inspection	

- Products of HORIBA
- Products of HORIBA STEC
- Products of HORIBA Advanced Techno
- Products of HORIBA JOBIN YVON

■ Products of HORIBA ■ Products of HORIBA STEC ■ Products of HORIBA Advanced Techno ■ Products of HORIBA JOBIN YVON

Gas

Fluid Control

Pressure-insensitive Digital Mass Flow Module

CRITERION

Mass Flow Module with Pressure-insensitive Method. The Gas Law check of Integrated Flow restrictor Equation (G-LIFE) function contributes to stable process operation.

Thermal Method Digital Mass Flow Module

SEC-Z700X Series

This mass flow module with thermal sensor detection has a multi-display and pressure-insensitive function to make simple and lightweight gas lines.

Multi-range/Multi-gas Digital Mass Flow Controller

SEC-Z500X Series

Bestselling model for a wide ranges of applications. Multi-gas and multi-range functionality can be used to decrease spares / inventory requirements.

Digital Mass Flow Controller

SEC-N100 Series

A variety of communication, fitting-to-fitting dimensions, and flow control ranges to suit the customer's needs.

Concentration Measurement

Vapor Concentration Monitor

IR-300 Series

This monitor contributes to a stable deposition process by measuring the concentration of chemical vapors in real time.

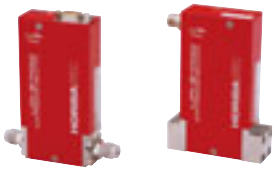
Gas Monitor

IR-400 Series

This monitor is installed in the process equipment and monitors exhaust gas in real time. It contributes to easy optimization for chamber cleaning and endpoint monitoring.

Pressure Control

Digital Automatic Pressure Regulator



UR-Z700 Series

This new model of an automatic pressure regulator adds a digital control unit to the digital high-performance pressure sensor and piezo-valve for improved performance.

Backside Wafer Cooling System

GR-300 Series

Using this system for backside wafer cooling realizes accurate pressure control of the gas for both the wafer center and wafer edge. The gas flow can be accurately monitored with the integrated mass flow sensor.

Vacuum Measurement

Compact Process Gas Monitor

MICROPOLE System

This system is among the world's smallest* quadrupole mass spectrometers. It can quickly analyze quantities of impurities and gas components remaining in the process chamber to ensure quality and productivity.

*From HORIBA's research as of December 2015

Capacitance Manometer

VG-200

This is a compact, all-metal, self-temperature-adjusting-type capacitance manometer.

Plasma Emission Controller

RU-1000

This controller contributes to fast and highly reliable feedback control and stable deposition by monitoring the intensity of plasma emission.

Thin Film Measurement

Plasma Diagnosis Endpoint Monitor

EV-140C

Thanks to the newly developed software algorithm "Rupture Intensity", endpoints can be accurately detected from faint signal changes.

Temperature Measurement

Infrared Thermometer

IT-470H

High absolute measurement accuracy and superior repeatability of temperature measurement should improve process stabilization.

Liquid

Liquid Materials

Supply System

Liquid Auto Refill System

LU-A1000 Series

Lineup with a wide range of liquid sources and prices. This system automatically provides a liquid source safely and stably.

Vaporization System

Liquid Source Vaporization System

LSC Series

This is our bestselling model of a liquid source vaporization system. It is suitable for a variety of production sites, such as for semiconductors and optical fibers.

MV/VC Series

Vaporizer with Injection Method. The tornado flow method ensures that stable and high-efficiency vaporization is achieved, even at low temperatures, for improved productivity (MV-2000).

Digital Liquid Mass Flow Meter

XF-100 Series

High-speed response and high efficiency are achieved by using the differential-pressure measurement method. This reduces the usage of liquid materials.

Digital Liquid Mass Flow Meters/ Controllers

LF-F/LV-F Series

Featuring a sensor with a unique cooling method to realize precision flow control of liquid materials with a low boiling point.

Liquid

Chemical Concentration

Fiber Optic Type Chemical Solution Concentration Monitor

CS-600F

This monitor has a compact body to enable direct measurement of high-temperature chemicals (20–80°C) with a substantial reduction in the need to perform background correction.

CS-100F1 Series

This monitor allows real-time, in-line measurement of chemical solution concentrations with the measurement cell incorporated directly into the cleaning equipment's piping and uses optical fibers to transmit the optical signals to the monitor's electronics.

Chemical Solution Concentration Monitor

CS-700

This monitor enables high-precision measurement of individual constituents of complex chemistries (measures up to 8 constituents).

CS-100 Series

This monitor provides real-time concentration measurement of various chemical solutions used in cleaning and etching processes.

SC-1 Monitor
CS-131

SC-2 Monitor
CS-152

SPM Monitor
CS-150

BHF Monitor
CS-137

FPM Monitor
CS-153

HF/HNO_3 Monitor
CS-153N

TMAH/H_2O_2 Monitor
CS-139E

Micro-volume pH Monitor

UP-100

This monitor affords measurements of just 500 µL to enable continuous pH monitoring for a variety of critical manufacturing processes.

Specific Component Concentration

From FEOL to BEOL, these meters enable the support of wet processes

Dissolved Oxygen in HF Meter

HD-960L

Measures dissolved O_2 in chemicals with ppb - ppm level resolution. Range switching function automatically selects high or low range to match the sample being measured.

Low Concentration HF/HCL/NH_3 Monitor

HF-960M

This monitor uses sensors that offer outstanding corrosion resistance for high-precision and high-speed measurement of low concentrations of hydrofluoric acid, hydrochloric acid, and ammonia.

Hydrofluoric Acid Monitor

HF-960EM/CM-520

This compact sensor can be installed in a small space. The automatic range-setting function selects the most appropriate range for high or low concentration samples.

Dissolved Ozone/Peroxide Monitor

HZ-960/HZ-960HPO-M

In-line detector for measuring dissolved O_3 or H_2O_2 concentrations in liquids.

TMAH Concentration Monitor

HE-960H-TM-S/HE-960H-TM

Highly chemically resistant sensor provides precise contamination-free measurement of TMAH concentration.

Citric Acid Concentration Monitor

HE-960-CA

Phosphoric Acid Concentration Monitor

HE-960H-PA

KOH Concentration Monitor

HE-960H-KOH

HF Concentration Monitor for Diluted Sulfuric Acid/Hydrogen Peroxide

HF-700

This monitor obtains consistent, ppm level measurements of the HF concentration in diluted sulfuric acid/hydrogen peroxide solutions.

Conductivity

Carbon Sensor Conductivity Meter

Low Concentration Type
HE-480C-GC/HE-960LC

This chemical-resistant sensor measures the conductivity of chemicals. It is ideal for in-process concentration, dilution control, and monitoring for ultrapure water recycling.

High Concentration Type
HE-960HC

This meter has dual calculation circuits and software. The concentration conversion function enables it to be used as a chemical concentration meter.

Resistivity

Resistivity Meter

HE-480R

This meter measures ultrapure water with high precision during processes that require a high level of purity.

Carbon Sensor
HE-960R-GC

Resistivity meter with chemically resistant glassy carbon sensor. Produces no contamination from metal elution and is resistant to wafer cleaning chemicals.

2 channel / Carbon Sensor
HE-960RW-GC

Two-channel, resistivity meter with dual, chemically resistant sensors for simultaneous measurement from 2 measurement points.

For Ultrapure Water
HE-960RW

High precision, high stability resistivity measurement with advanced temperature compensation function.

Silica

High Sensitivity Silica Monitor

SLIA-300

The monitor measures silica concentrations in ultrapure water on the order of 1 µg/L (1 ppb).

Silica Analyzer

SLIA-2000

This analyzer measures the concentration of silica dissolved in ultrapure water for prompt detection of performance degradation by the ion exchange resin.

Dissolved Oxygen

Dissolved Oxygen Monitor

SD-300

This portable DO monitor provides high-precision measurement of minute quantities of dissolved oxygen in ultrapure water.

CMP Slurry Evaluation

Laser/Scattering Particle Size Distribution Analyzer

LA-960

Nanometer-to-millimeter particle size and distribution measurement system. An extremely wide dynamic measurement range of 10 nm–5000 µm.

Nano Particle Analyzer

SZ-100

The photon correlation method and the development of a special correlator and optical system enable this analyzer to measure a wide range of particle sizes (0.3 nm–8 µm).

Liquid

Drain Water Analysis

Fluoride Ion Monitor

FLIA-101

This monitor automatically measures the concentration of fluoride in wastewater. The optimal range can be selected from low to high concentrations.

Total Nitrogen/Total Phosphorus Measurement System

TPNA-300

The system provides continuous, simultaneous, and automatic monitoring. It also reduces the amount of reagents used and the total volume of waste fluids.

Free Fluoride Ion Meter

HC-200F

This monitor continuously measures the concentration of free fluoride ions in wastewater.

Industrial pH Meter

HP-480

The meter uses a lead-free pH electrode out of consideration for the environment. Ease of maintenance is improved through the use of shock-resistant and heavy-duty electrodes.

Solids

Particle Inspection

Blank Mask Particle Detection System

PR-PD2BLI

Provides high sensitivity measurement of blank masks with high throughput (0.1 µm – 5.5 min; 0,15 µm – 2.75 min; 0.2 µm – 22 sec When measuring 142mm).

Reticle/Mask Particle Detection System

PR-PD2

Detects particles with a minimum size of 0.35 µm on reticles and masks by combining HORIBA's laser scattering technology and an innovative detection system.

PR-PD2 HR

This system offers a threefold improvement in the S/N ratio over PR-PD2 for significantly increased operational sensitivity.

PR-PD3

With the ability to detect particles of just 0.5 µm, this system delivers high throughput particle measurement for both reticle/mask and glass/pellicle surfaces.

PR-PD5

As well as inheriting the PR-PD series' high efficiency, this system offers outstanding cost performance thanks to its space-saving design.

Particle Removal

Reticle/Mask Particle Remover

RP-1

This automatic particle blower removes particles from reticle/mask glass surfaces or pellicle surfaces with air (or N_2) blowing with simultaneous vacuum suction.

Material Analysis

PL Measurement Equipment

Photoluminor-D

This equipment analyzes silicon impurities (P, B, Al, As) by using the photoluminescence method.

Cathode Luminescence Measurement Equipment

MP Series

This equipment uses cathode luminescence to evaluate the physical characteristics at fine resolutions.

Energy Dispersive X-ray Analyzer

EMAXEvolution

When combined with an electron microscope (SEM or TEM), this analyzer can perform element analysis of substances down to the microscopic scale.

X-ray Analytical Microscope

XGT-7200V

This is an energy dispersive X-ray fluorescence analyzer that is capable of X-ray fluorescence-based elemental analysis and internal structure analysis by using transmission X-ray imaging.

Material Analysis

Glow Discharge Optical Emission Spectroscopy

GD-Profiler 2

This analyzer quickly performs depth profiling of BPSG and various metal silicide wiring films.

Raman Spectroscopy

LabRAM-HR evolution

This system uses Raman scattered light to enable microscopic domain analysis of substances. It is ideal for evaluating crystallinity and stress.

Fast Automatic Ellipsometer

Auto SE

This is a fast and easy-to-use automatic ellipsometer that provides results and reports in a matter of seconds, which makes it an ideal instrument for routine thin film measurements.

Fully Automated Ellipsometer

UVISEL2

This is the next generation of spectroscopic scientific ellipsometers that delivers the highest level of performance with an innovative, integrated, and fully automated design.

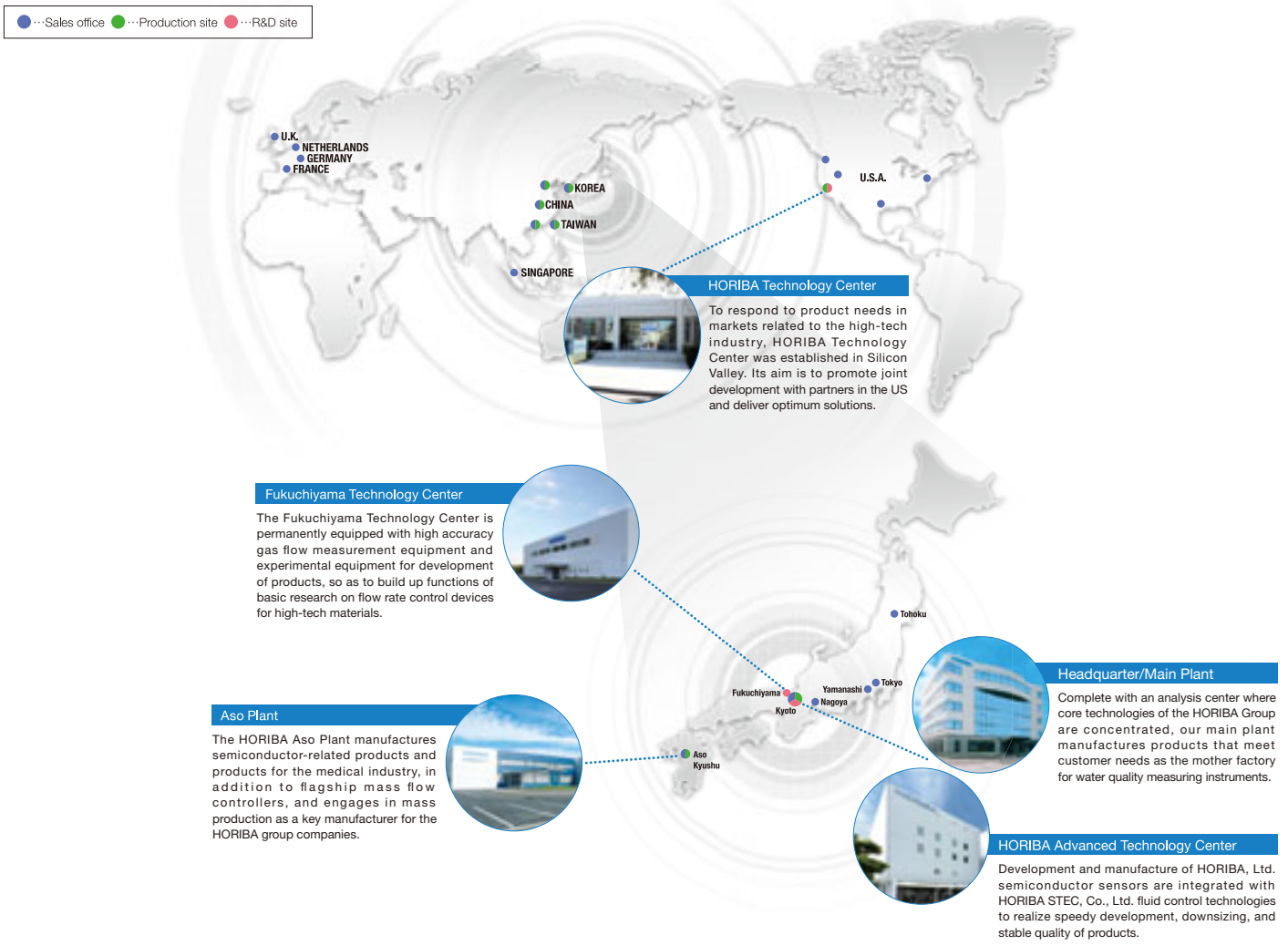
Handheld X-ray Fluorescence Analyzer

MESA Portable

This portable type analyzer is capable of rapid onsite elemental analysis. It is easy to operate with a touch panel.

Global support

The HORIBA Group's international network ensures complete support for customers.



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HORIBA
Semiconductor

IMS

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 ISO22301 in order to provide our products and services in a stable manner, even in emergencies.

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