HORIBA
Process & Environmental

Beyond Water with You

Optimum measurement system for all types of application

Industrial Water Quality Measuring Instruments

Measurement item

pH | ORP | RESIST | COND | RC | DO | NH_4-N | F | MLSS | TURB | COLOR

Total support for all types of application from purified water

HORIBA H-1 and SLIM48/96 series of industrial water quality measuring instruments include a total array of measurement points for the broad applications required controling of water quality. With sensors, cleaners, and various accessories, these water quality measuring instruments are applicable to all kinds of water treatment and reduce the maintenance load.

Series Lineup of Industrial Water Quality Instruments

Series	Installation Location	Type	Power Supply	pH	ORP	Resistivity	Conductivity (Low Conductivity Solutions)	Conductivity (High Conductivity Solutions)	Residual Chlorine	DO	NH_4-N	F	MLSS	Turbidity	Color
H-1	Field -installation type	2-Wire Transmitter	24 V DC	HP-300	HO-300	HE-300R	HE-300C	—	—	HD-300	—	HC-300F	—	—	—
		2-Wire Multi -Parameter	24 V DC	HQ-300	HQ-300	HQ-300	HQ-300	—	—	HQ-300	—	HQ-300	—	—	—
		4-Wire Transmitter	90 to 264 V AC	HP-200	HO-200	HE-200R	HE-200C	HE-200H	HR-200	HD-200 HD-200FL	HC-200NH	HC-200F	HU-200SS	HU-200TB-W HU-200TB-H HU-200TB-EH HU-200TB-IM	HU-200CL
SLIM 48/96	Panel mount type	4-Wire Transmitter	90 to 264 V AC	HP-480 HP-960FTP	HO-480	HE-480R HE-960RW	HE-480C HE-960CW	HE-480H HE-960HI	HR-480P	HD-480	—	—	—	—	—

monitoring to waste water monitoring

Field-installation Type

H-1 Series

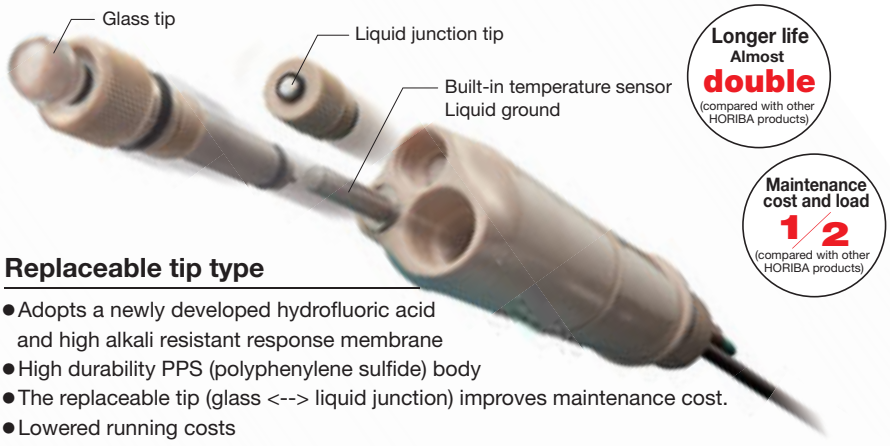
The Field installation type H-1 series Transmitters offer a rainproof structure. This has been newly developed under the concepts of “durability”,“functionality”, and “maintainability”
in order to stand the severe environmental conditions of on-site processes.
This series of units comprehensively can use all kinds of water treatment from purified water monitoring to waste water monitoring.

Panel mount type

SLIM48/96 Series

The panel mount type SLIM48/96 series instruments are the optimum Analyzers for incorporation in an instrumentation system. Their compact design means minimal space requirements for systems that combine multi-item measurement instruments. We recommend this series for automatic all-purpose monitoring of sewerage, factory effluent, factory processes, etc.

Industrial pH electrode



Longer life
Almost **double**
(compared with other HORIBA products)

Maintenance cost and load
1/2
(compared with other HORIBA products)

Replaceable tip type

- Adopts a newly developed hydrofluoric acid and high alkali resistant response membrane
- High durability PPS (polyphenylene sulfide) body
- The replaceable tip (glass <--> liquid junction) improves maintenance cost.
- Lowered running costs

Liquid junction: Porous ceramic; Temperature: -10 to 60°C; Pressure: 0 to 0.03 MPa (through internal liquid pressurization)
Liquid contact material: glass, ceramic, fluorine rubber, polyphenylene sulfide resin, and titanium (for hydrofluoric acid resistance: Nickel chrome alloy)

pH electrode HF

Combination with replaceable tip
Model: 6171-50B

Resistant to the waste fluids of semiconductor processes and strong acids, including hydrofluoric acid.

pH electrode Alkali

Combination with replaceable tip
Model: 6172-50B

Resistant to the water used in brine electrolysis processes and high alkali waste fluids.

pH electrode Oil

Combination with replaceable tip
Model: 6173-50B

Resistant to oil contamination in petroleum refinery processes and boiler circulation water that includes petroleum.

Standard electrode

Dome-shaped tough electrode
Integrated combination
Model: 6108-50B
Pb Free · silver ION trap · ToupH

Fixed sleeve tough electrode
Integrated combination
Model: 6109-50B
Pb Free · silver ION trap · ToupH · Sleeve

Hydrofluoric-acid resistant
Integrated combination
Model: 6151-50B
Pb Free · silver ION trap · ToupH

High-alkali resistant
Integrated combination
Model: 6152-50B
Pb Free · silver ION trap

pH electrode standard
Combination with replaceable tip
Model: 6174-50B
Pb Free

HP-200

(4-Wire Transmitter)

Rain-Proof Type | 4-wire

HP-200 Specifications

Measuring method	Glass electrode method
Measuring range	pH: 0 to 14 pH Resolution: 0.01 pH Temperature: 0 to 100˚C Resolution: 0.1˚C
Repeatability	pH: ±0.03 or less Temperature: ±0.3˚C (for equivalent input)
Linearity	pH: ±0.03 or less Temperature: ±0.3˚C (for equivalent input)
Transmission output	Two points 4 to 20 mA DC Input/output isolated type Maximum load resistance 900 Ω
Contact output	Five points No-voltage contact output Relay contact, SPDT (1c) Contact function: R1, R2: Selectable from upper limit alarm, lower limit alarm, ON/OFF control, time-shared proportional control R3, R4: Selectable from upper limit alarm, lower limit alarm, transmission output hold operation, cleaning output FAIL: Malfunction alarm
Contact input	One point Contact format: Open collector no-voltage a contact Contact function: Cleaning operation external input
Communication function	RS-485 Two wire systems, Input/output isolated type (not isolated from transmission output)
Temperature compensation range	0 to 100˚C
Ambient temperature	-20 to 55˚C
Temperature compensation element	Pt 1000 (0˚C) Positive temperature sensitive resistor element: 500 Ω (25˚C), 6.8 kΩ (25˚C), 10 kΩ (25˚C)
Calibration method	Automatic or manual calibration
Self-diagnosis function	Calibration error, Electrode diagnosis error, Analyzer malfunction
Power supply	100 to 240 V AC 50/60 Hz Power consumption 15 VA (max.)
Construction	Outdoor installation type: IP65 protection level Mounting method: 50 A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304
Weight	Approx. 4.5 kg
Regulatory certification	CE marking, FCC rules

HP-300

(2-Wire Transmitter)

Rain-Proof Type | 2-wire

HP-300 Specifications

Measuring method	Glass electrode method
Measuring range	pH: 0 to 14 pH Resolution: 0.01 pH Temperature: 0 to 100˚C Resolution: 0.1˚C
Repeatability	pH: ±0.03 or less Temperature: ±0.3˚C (for equivalent input)
Linearity	pH: ±0.03 or less Temperature: ±0.3˚C (for equivalent input)
Transmission output	4 to 20 mA DC Input/output isolated type Maximum load resistance 600 Ω
Contact input	One point Contact format: No-voltage a contact Contact function: Transmission output is held for closed contact input.
Temperature compensation range	0 to 100˚C
Ambient temperature	-20 to 60˚C
Temperature compensation element	Pt 1000 (0˚C) Positive temperature sensitive resistor element: 500 Ω (25˚C), 6.8 kΩ (25˚C), 10 kΩ (25˚C)
Calibration method	Automatic or manual calibration
Self-diagnosis function	Calibration error, Electrode diagnosis error, Transmitter malfunction
Power supply	24 V DC (operational voltage range: 21 to 32 V DC) 0.6 W (max.)
Construction	Outdoor installation type: IP65 protection level Mounting method: 50 A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304
Weight	Approx. 4 kg
Regulatory certification	CE marking, FCC rules

pH Electrodes

New pH electrode lineup enabling 50% reduction in maintenance load

6108-50B 6151-50B 6171-50B

Type		Model	Useable temperature range	Useable pressure range	Combined holder
Standard	Dome type pH electrode	6108-50B ToupH Pb Free	-10 to 100˚C	0 to 0.6 MPa	CH-101, CF-251 CF-301, CF-401
	Sleeve type pH electrode	6109-50B ToupH Pb Free	-10 to 80˚C	0 to 0.03 MPa	CH-101 CF-251
	Plastic composite pH electrode (for Hydrofluoric acid containing sample)	6151-50B ToupH Pb Free	-10 to 60˚C	0 to 0.2 MPa	CH-101 CF-251 CF-301
	Plastic composite pH electrode (for Highly alkalic sample)	6152-50B Pb Free			
	Dome type pH electrode (gel)	6108G-50B ToupH Pb Free	-10 to 100˚C	0 to 0.6 MPa	Specialized pressurized holder
Tip replaceable	pH electrode (Tip replaceable)	6174-50B Pb Free	-10 to 100˚C	0 to 0.03 MPa	HIBP, HIBS CF-501
	pH electrode HF (Tip replaceable)	6171-50B ToupH Pb Free	-10 to 60˚C	0 to 0.03 MPa	
	pH electrode Alkaline (Tip replaceable)	6172-50B Pb Free			
	pH electrode Oil (Tip replaceable)	6173-50B ToupH Pb Free			

ToupH (Tough electrode) Impact-resistant, splinterless glass electrode

Pb Free Lead free glass is used in both the sensitive glass areas and main body.

Contact your sales representative when electrodes are to be used with any of the samples below.

- With strongly oxidizing solutions such as aqua regia, chromic acid, hypochlorous acid, perchloric acid
- When corrosive gases (ammonia, chlorine, hydrogen sulfide) are involved

HP-480
(4-Wire Transmitter)

HP-480 Specifications

Measuring method	Glass electrode method
Measuring range	pH: 0 to 14 pH Resolution: 0.01 pH Temperature: 0 to 100˚C Resolution: 1˚C (selectable display)
Repeatability	pH: ±0.05 pH (for equivalent input)
Transmission output	4 to 20 mA DC Input/output isolated type Maximum load resistance 900 Ω
Transmission output range	Freely settable within Measuring range
Contact output	Output points: Two points (R1, R2) Contact format: Relay contact SPDT (1c) Contact capacity: 240 V AC 3 A, 30 V DC 3 A (resistance load) Contact function: Selectable from upper, lower limit operation (ON/OFF control) and malfunction alarm, maintenance operation
Calibration function	· Two point automatic calibration and manual calibration Two point automatic calibration: Automatic potential stability assessment Standard solution: Combination of pH 2, 4, 9, 10 (JIS) and pH 7 (JIS) Manual calibration: Freely settable, difference of 2 pH or more · Temperature calibration (One point)
Self-diagnosis function	Calibration error, Electrode diagnosis error, Analyzer malfunction
Power supply	100 to 240 V AC 50/60 Hz Power consumption 10 W or less
Temperature compensation range	0 to 100˚C
Ambient temperature	-5 to 45˚C
Temperature compensation element	Selectable from 500 Ω, 6.8 kΩ, 1 kΩ, 10 kΩ, 350 Ω, no compensation
Weight	Approx. 400 g
Regulatory certification	CE marking, FCC rules

HP-960FTP
(4-Wire Transmitter)

HP-960FTP Specifications

Measuring method	Glass electrode method
Measuring range	pH: 0 to 14 pH Resolution: 0.01 pH Temperature: 0 to 100˚C Resolution: 1˚C (selectable display)
Repeatability	pH: ±0.05 pH (for equivalent input)
Transmission output	4 to 20 mA DC Input/output isolated type Maximum load resistance 900 Ω
Transmission output range	Free range within Measuring range
Contact output	Outputs points: Four points Alarm contact output (R1, R2, R3 and R4) Contact type: relay contact, SPDT (1c) Contact rating: 240 V AC, 3 A and 30 V DC, 3 A (resistance load) Contact function: Selectable from upper/lower limit operation (ON/OFF control, timesharing proportional control), alarm, and maintenance.
Control action	ON/OFF control · Upper and lower limits setting range: 0.00 to 14.00 pH · Control width: 0.00 to 4.00 pH (± 0.00 to ± 2.00 pH) Time-division proportional control · Upper and lower limits setting range: 0.00 to 14.00 pH · Proportional band: 0.00 to 14.00 pH · Cycle time: 5 to 300 s · Control output shift capability: 0 to 50% of shift volume for the cycle time · Self-extending cycle time capability: The cycle time is extended automatically when the deviation value enters a set range (F zone) in proportion to the deviation value.(this feature has no effect when the shift function has been enabled.) · F zone: 1 to 100% of the proportional band (Self-extension of the cycle time starts working when the deviation enters the above range.) · Upper limit for extending the cycle time: 0 to 300 s. · Maximum control volume: 50 to 100% (To be applied regardless of whether the measured value is in the proportional band ro not.)
Calibration function	· Two point automatic calibration or manual calibration Two point automatic calibration: Automatically determines whether the electric potential is stable or not. Types of standard solution: pH 2, 4, 7, 9 and 10 (JIS) Combination of standard solutions: pH7 and one of the others Manual calibration: Freely selectable, but the difference should be over 2 pH. · Temperature calibration (One point)
Self-diagnosis function	· Calibration function Asymmetry potential error, sensitivity error, response speed error and standard solution error · Electrode self-check Temperature sensor short-circuit and temperature sensor disconnection · Outside of the measuring range · Transducer error
Power supply	100 to 240 V AC, 50/60 Hz, 10 VA (max.)
Temperature compensation range	0 to 100˚C
Ambient temperature	5 to 45˚C
Temperature compensation element	Selectable from compensation ON (500Ω(25˚C), 6.8kΩ(25˚C), 350Ω(25˚C), 1kΩ(0˚C) or 10kΩ(25˚C)) and compensation OFF
Weight	Approx. 500 g
Regulatory certification	CE marking, FCC rules

Holder

Immersion type holder CH-101

Flow type holder CF-301 (Pressurized type)

Flow type holder CF-501 (Tip replaceable type)

	Application	Model	Main materials	Measurement solution conditions*			Interface
				Temperature	Pressure	Flow rate	
Immersion type	General use type	CH-101	PP	-5 to 80˚C	Atmospheric pressure	2 m/sec or less (flow velocity)	—
	Tip replaceable type	HIBP	PP	-10 to 80˚C			
Flow type	General use type	CF-251	PP	-5 to 80˚C	Atmospheric pressure	0.3 to 10 L/min	JIS 10K 25A FF flange (Input port/ output port)
	General use internal solution tank mounted type	CF-251-T	PP	-5 to 80˚C			
	General use pressurized type	CF-301	PP	-5 to 80˚C	0.3 MPa		
	Tip replaceable type	CF-501	PP	-5 to 80˚C	Atmospheric pressure		

* Usage conditions vary according to the combination of electrodes. Refer to the specifications document of each product for details.

Accessories

pH sensor extension cable

•C-5A

Used to connect transmitter and relay box.

Model	C-5A
Outer diameter	Ø10
Max. extendable distance	50 m

Relay box

•CT-50pH (S/SE terminal attached)

If the distance between the electrode holder and analyzer or transmitter main unit is longer than the electrode cable, use the relay box as a cable repeater. Connect the relay box and analyzer or transmitter main unit using a specialized extension cable.

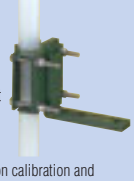
Calibration standard solution

- **•pH7 standard solution** (500 ml)
- **•pH4 standard solution** (500 ml)
- **•pH9 standard solution** (500 ml)
- **•Reference electrode internal solution** (250 ml)
- **•ORP standard powder** (10 packs)

Other powders are also available in addition to solutions.

Mount fitting

•BA-2A (ABS)
•BA-1S (SUS)



Attachment/detachment can be performed in one step using the specialized mount fitting. Standard solution calibration and maintenance are also straightforward. The fitting is available in two types of material: either ABS resin or stainless steel (SUS304).

[Loose flange]

This is an adapter for attaching the CH-101 series immersion type holder to the flange.

Model	Material	Interface
FK-1	PP	JIS10K 50A
FK-1P	PVC	
FK-1S	SUS	

Caution: The selection of equipment will differ based on various conditions, including the installation site, usage environment, measurement samples, and any special characteristics. Contact your sales representative for details.

Lineup of Cleaners

Ultrasonic Cleaner UCH-1X1 UCF-3X1

The use of original burst oscillation method enables continuous cleaning, as measurement values are not affected during cleaning.

[Immersed type] UCH series

[Circulation type] UCF series

Jet Cleaner JCH-1X1 JCF-3X1

Cleans with water or air jet. Effective physical cleaning to remove adhered substances.

[Immersed type] JCH series

[Circulation type] JCF series

Jet Driven Brush Cleaner BH-1X1

Cleaner with a brush rotated by water or air jet. Can be used in an explosion-proof area, as power supply is not required as long as jet source is available.

[Immersed type] BH series

Brush Cleaner BCH-1X1

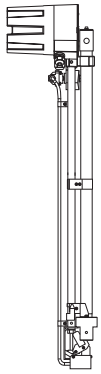
Motor-driven brush cleaner. Effective physical cleaning to remove adhered substances.

[Immersed type] BCH series

Brush/Jet Cleaner BCH-1X1J

Composite type cleaner, combining a motor-driven brush cleaner and a jet cleaner.

[Immersed type] BCH series



Chemical Cleaner CCH-1X1

Chemical cleaner using dilute hydrochloric acid. Optimum for removing coating materials such as calcium.

[Immersed type] CCH series

Chemical Brush Cleaner CBCH-1X1

Composite type cleaner, combining a chemical cleaner using dilute hydrochloric acid and a motor-driven brush cleaner.

[Immersed type] CBCH series

pH Meter with Auto Calibration Function AH-151

pH meter with automatic functions to clean electrodes with chemicals and calibrate standard solutions and to measure pH, which significantly reduces man-hours required for maintenance. Regular cleaning and calibration enable stable and reliable pH measurement.

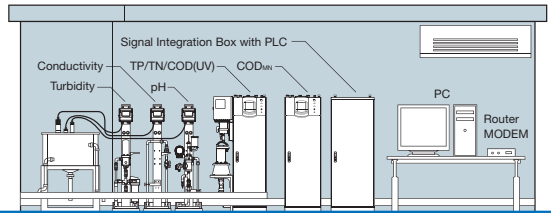
[Immersed type] AH-151-CH

Comparison Table of Automatic Cleaners

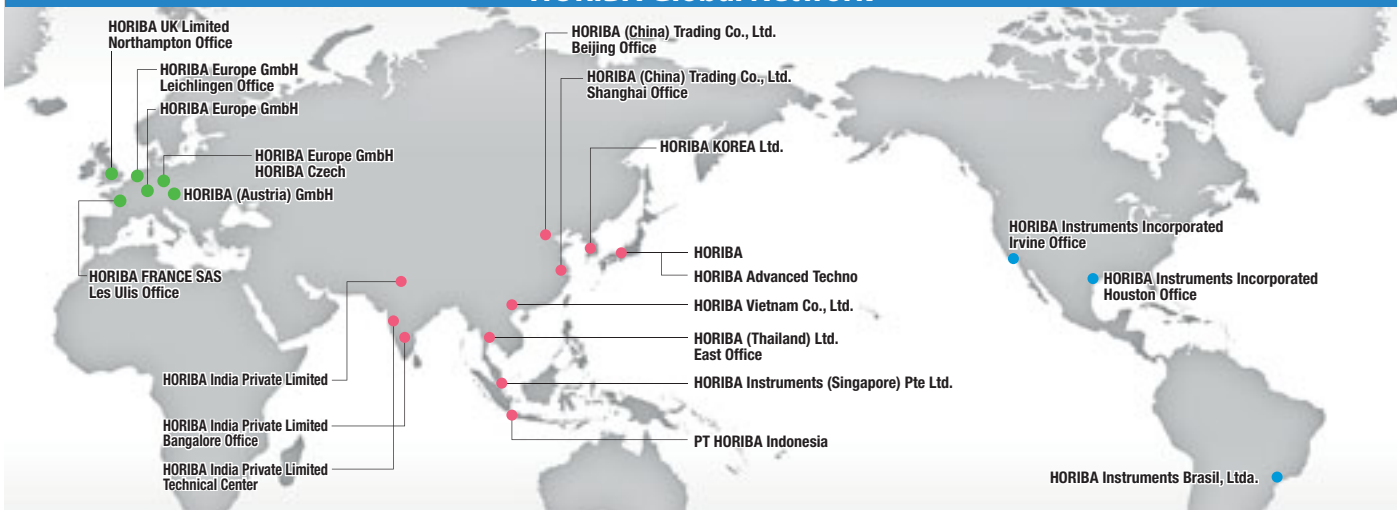
	Ultrasonic Cleaner	Jet Cleaner	Jet Driven Brush Cleaner	Brush Cleaner	Brush/Jet Cleaner	Chemical Cleaner	Chemical Brush Cleaner	pH Meter Auto Calibration Function
pH	○	○	○	○	○	○	○	○
ORP	○	○	○	○	○	○	○	×
DO(Polarography)	×	○	×	×	×	×	×	×
DO（Optical）	○	○	×	×	×	×	×	×
NH_4-N	○	○	×	×	×	×	×	×
F	×	○	×	×	×	○	×	×
MLSS	×	○	×	×	×	×	×	×

Water Quality Monitoring System

As the item to watch water quality, we offer
the following automatic analytical instruments.



HORIBA Global Network



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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Bulletin:HAE-S0160C

Printed in Japan 1708SK53