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<br>HD-200FL | HC-200NH | HC-200F | HU-200SS | HU-200TB-W<br>HU-200TB-H<br>HU-200TB-EH<br>HU-200TB-IM | HU-200CL |
| SLIM 48/96 | Panel mount type | 4-Wire Transmitter | 90 to 264 V AC | HP-480<br>HP-960FTP | HO-480 | HE-480R<br>HE-960RW | HE-480C<br>HE-960CW | HE-480H<br>HE-960HI | HR-480P | HD-480 | — | — | — | — | — |

# monitoring to waste water monitoring

Field-installation Type

## H-1 Series

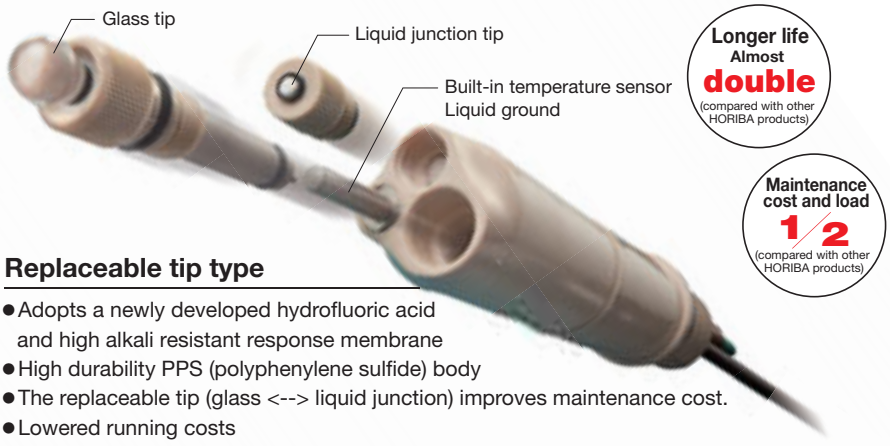
The Field installation type H-1 series Transmitters offer a rainproof structure. This has been newly developed under the concepts of “durability”,“functionality”, and “maintainability”
in order to stand the severe environmental conditions of on-site processes.
This series of units comprehensively can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

# Residual Chlorine

## HR-200
### (4-Wire Transmitter)

Rain-Proof Type | 4 wire

### HR-200 Specifications

| | | | |
|---|---|---|---|
| Measurement target | Free residual chlorine | | |
| Measuring method | Polarography | | |
| Measuring range | Residual Chlorine: 0 to 3 mg/L<br>Temperature: 0 to 50˚C | Resolution: 0.01 mg/L<br>Resolution: 0.1˚C | |
| Repeatability | Residual Chlorine: ±0.05 mg/L or less | Temperature: ±0.5˚C | (for equivalent input) |
| Linearity | Residual Chlorine: ±0.05 mg/L or less | Temperature: ±0.5˚C | (for equivalent input) |
| Transmission output | Two points 4 to 20 mA DC Input/output isolated type Maximum load resistance 900 Ω | | |
| Contact output | Three points No-voltage contact output Relay contact, SPDT<br>Contact capability R1, R2: Selectable from upper limit alarm, lower limit alarm, ON/OFF control, currently holding transmission output, and cleaning output. (opened at alarm operation, closed usually, closed at power-off)<br>FAIL: Error warning (normally closed; open when an error occurs; open when the power is turned OFF) | | |
| Contact input | Two points Contact type: No-voltage a contact for open collector<br>Contact capability: Input 1: External input for transmission holding<br>Input 2: Flow switch input for interlock (Open due to decreased flow) | | |
| Communication capability | RS-485 Two-wire input/output isolated type (not isolated from transmission output) | | |
| Temperature compensation range | 0 to 50°C | | |
| Ambient temperature | 0 to 55°C | | |
| Cleaning capability | Electrochemical Cleaning between Cathode and Electrochemical cleaning electrode | | |
| Calibration method | Zero calibration (Zero liquid calibration)<br>SPAN calibration (Compare to measurement value of DPD method, Including zero electric calibration) | | |
| Self-diagnosis function | Calibration error, Temperature sensor diagnostic error, Meter error | | |
| Power supply | 100 to 240 V AC, 50/60 Hz 35 VA (max.) when an automatic cleaner is connected. | | |
| Construction | Outdoor installation type: IP65 Protection class<br>Installation method: 50 A pole-mounted or wall-mounted<br>Material of case: Aluminum alloy (coated with epoxy modified melamine resin)<br>Material of mounting brackets: SUS304 | | |
| Weight | Approx. 4.5 kg | | |
| Regulatory certification | CE marking, FCC rules | | |

## HR-480P
### (4-Wire Transmitter)

Panel mount Type | 4 wire

### HR-480P Specifications

| | | |
|---|---|---|
| Measurement target | Free residual chlorine | |
| Measuring method | Polarogrphy | |
| Measuring range | Residual chlorine: 0 to 3 mg/L (Display range 0 to 5 mg/L) Resolution 0.01 mg/L<br>Temperature: 0 to 50°C (Display range -10 to 110°C) Resolution 0.1°C | |
| Repeatability | Residual chlorine: ±0.05 mg/L (response for equivalent input)<br>Temperature: ±0.5°C (response for equivalent input) | |
| Linearity | Residual chlorine: ±0.05 mg/L (response for equivalent input)<br>Temperature: ±0.5°C (response for equivalent input) | |
| Transmission output | Two points 4 to 20 mA DC Input/output isolated type Maximum load resistance 900 Ω | |
| Contact output | Three points Outoput type: No-voltage contact output Relay contact, SPST(1a)<br>Contact capability R1, R2, R3: Selectable from upper limit alarm, lower limit alarm, transmission output Hold, and cleaning output. (Closed at alarm operation, opened usually, closed at power off)<br>FAIL: Error alarm (Closed in the normal state, opened in the failure state or While the power is down)<br>RNG1,RNG2: Range signal by 2 bits binary output | |
| Contact input | One point Contact type: No-voltage a contact for open collector<br>Conditions ON resistance: 100 Ω max.<br>Open voltage: 24 VDC<br>Short-circuit current: 12 mA DC max<br>Contact function Flow switch input for interlock (Open due to decreased flow) | |
| Temperature compensation range | 0 to 50°C | |
| Cleaning capability | Cleaning period | Select from 1hour, 2hour, 4hour, 6hour, 8hour, 12hour, 1day, 2day, 3day, 4day, 5day, 6day, 7day |
| | Cleaning time | 5 to 600 seconds |
| | Hold time | 10 to 600 seconds |
| | Timer accuracy | 2minutes per month |
| Callibration function | Zero calibration (Zero liquid calibration)<br>SPAN calibration(Compare to measurement value of DPD method, Including zero electric calibration) | |
| Additional function | Automatic detection of calibration failure (Zero error)<br>Calibration history (Elapsed days from the last calibration either zero or span. zero shift) | |
| Self-diagnosis function | Calibration error<br>Temperature sensor diagnostic error<br>Meter error | |
| Power supply | 100 V to 240 V AC 50/60 Hz 15 VA (max.) | |
| Weight | Approx. 400 g | |
| Regulatory certification | CE marking, FCC rules | |

## Sensor

Specifications

| Model | | RA-10 | RA-20 |
|---|---|---|---|
| | | Overflow type | Inline type |
| Measuring method | | Polarography | |
| Sample condition | Temperature | 0 to 45˚C (without freeze) | |
| | Flow rate | 1.3 to 2.0 L/min | 0.6 to 1.0 L/min (Constant) |
| | Pressure | Within 0.5 MPa | |
| | pH | 5.8 to 8.6 pH (Constant) | |
| | Electrical conductivity | More than 10 mS/m | |
| Wetted part material | | PVC, PPO, EPDM | |
| Electrode material | | Au, AgCl, C | |
| Bead material | | $SiO_2$ | |
| Filter material | | Nylon | |
| Pipe arrangement | Sample inlet | PREFAB JOINT TS16A (ASHAHI) | |
| | Sample outlet | PREFAB JOINT TS16A (ASHAHI) | |
| Cleaning method | | Physical polishing by glass bead, Electrochemical Cleaning | |
| Cable length | | Standard: 2 m, Maximum extension: 40 m | |

RA-10

RA-20

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

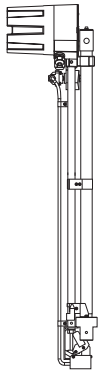
Motor-driven brush cleaner. Effective physical cleaning to remove adhered substances.

[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.

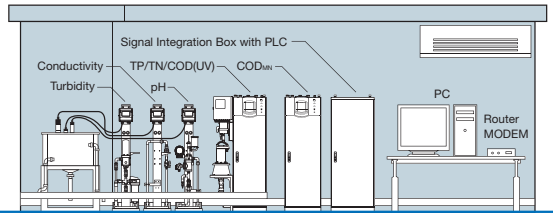
[Immersed type] AH-151-CH

## Comparison Table of Automatic Cleaners

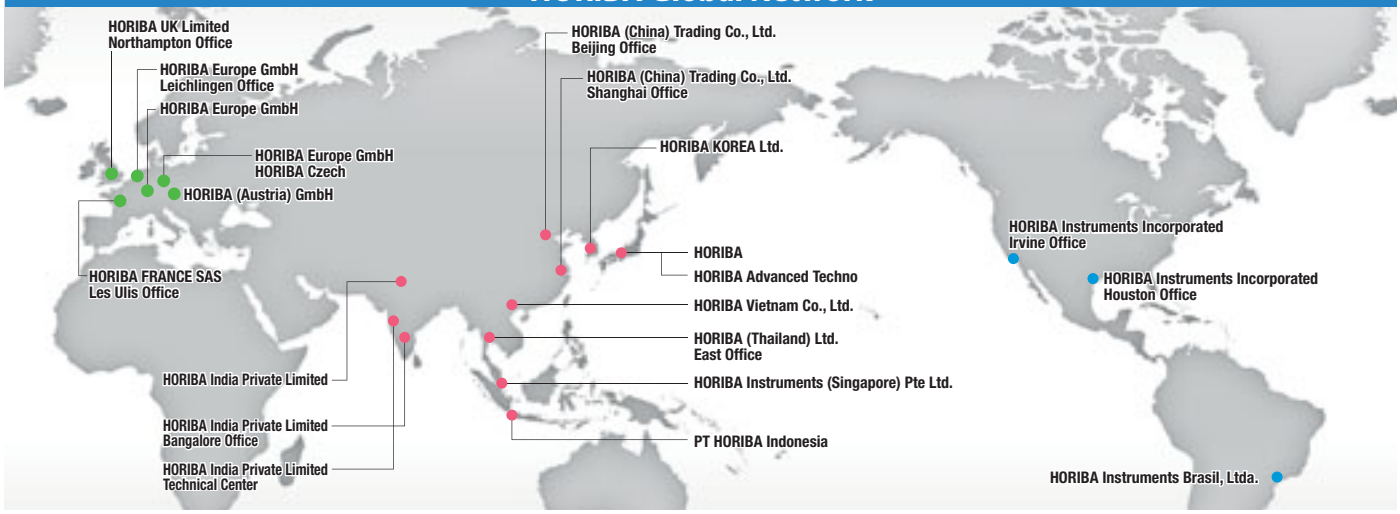
| | Ultrasonic Cleaner | Jet Cleaner | Jet Driven Brush Cleaner | Brush Cleaner | Brush/Jet Cleaner | Chemical Cleaner | Chemical Brush Cleaner | pH Meter Auto Calibration Function |
|---|---|---|---|---|---|---|---|---|
| pH | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ORP | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × |
| 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

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