# HORIBA
## Process & Environmental

**Beyond Water with You**

Optimum measurement system for all types of application

# Industrial Water Quality Measuring Instruments

### Field-installation type
# H-1 Series

4-Wire Transmitter   2-Wire Transmitter

### Panel mount type
# SLIM48/96 Series

4-Wire Transmitter

## Measurement item

| pH | ORP | RESIST | COND | RC | DO | NH4-N | F | MLSS | TURB | COLOR |

Explore the future     Automotive Test Systems  |  Process & Environmental  |  Medical  |  Semiconductor  |  Scientific     HORIBA

# 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 | NH4-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

Glass tip

Liquid junction tip

Built-in temperature sensor
Liquid ground
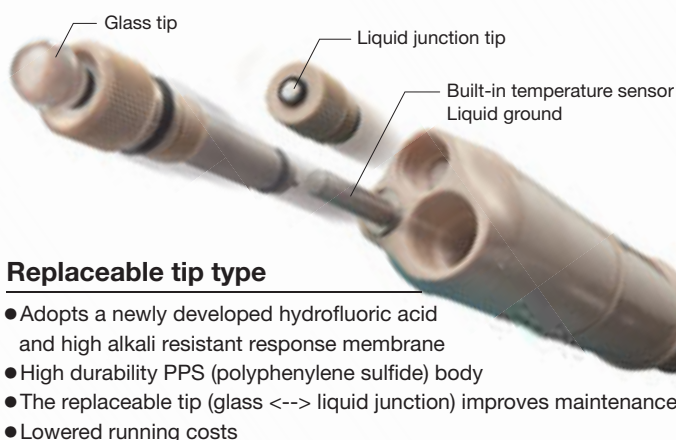
**Longer life**
Almost
**double**
(compared with other HORIBA products)

**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

Pb Free
ToupH

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

### pH electrode Alkali
Combination with replaceable tip
Model: 6172-50B

Pb Free

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

### pH electrode Oil
Combination with replaceable tip
Model: 6173-50B

Pb Free
ToupH

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

# HC-200NH
## (4-Wire Transmitter)

Rain-Proof Type | AC 4 wire

CE

### ■ Structure : AM-2000



- Potassium ion chip (for compensation)
- Reference chip
- Cap
- Ammonium ion chip

### HC-200NH Specifications

**• Ammonia nitrogen meter specifications**

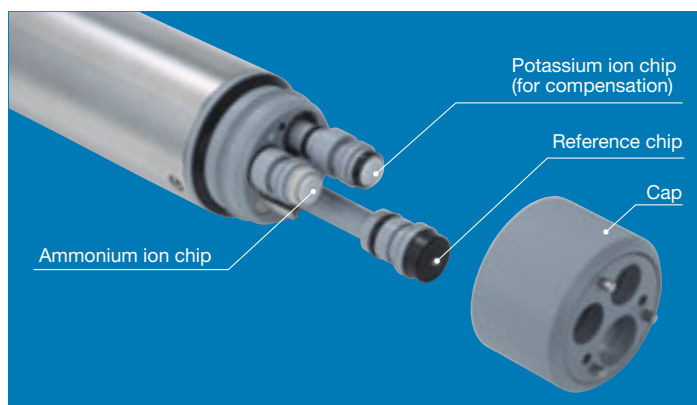| | |
|---|---|
| Combination sensor unit model | AM-2000 |
| Sensor model | 7691*: Ammonium ion chip, 7692*: Potassium ion chip for compensation, 7211: Reference chip |
| Measuring method | Ion selective electrode |
| Measuring range | NH4-N: 0 to 1000 mg/L (display range: 0 to 2000 mg/L)<br>Temperature: 0 to 40°C (display range: -10 to 110°C) |
| Display resolution | NH4-N: 0.01 mg/L: 0.00 to 10.00 mg/L  0.1 mg/L: 0.0 to 100.0 mg/L<br>                      1 mg/L: 0 to 1000 mg/L<br>Temperature: 0.1°C |
| Repeatability | NH4-N: Larger value between 3%±1 digit of measured value or 0.2 mg/L±1 digit  (with standard solution)<br>Temperature: ±0.3°C |
| Potassium ion compensation | Compensation range: Potassium ion concentration is under 10 times<br>                      of ammonium ion concentration and under 1000 mg/L<br>Compensation error: ±20% (measured value) |
| Additional function | Adjustment with manual analysis (One point), calibration curve input function (primary expression) |
| Self-diagnostic function | Correction error, sensor diagnostic error, transmitter malfunction |

**• Optical dissolved oxygen meter (optional)**

| | |
|---|---|
| Combination sensor unit model | DO-2000 |
| Sensor model | 5700A: Sensor cap |
| Measuring method | Optical (fluorescent) |
| Measurement range | Dissolved oxygen concentration: 0 to 20 mg/L  Display resolution 0.01 mg/L<br>Saturation degree: 0 to 200%  Display resolution 0.1%<br>Temperature: 0 to 50°C  Display resolution 0.1°C |
| Self-diagnostic | Correction error, sensor diagnostic error, transmitter malfunction |

**• Transmitter common specifications**
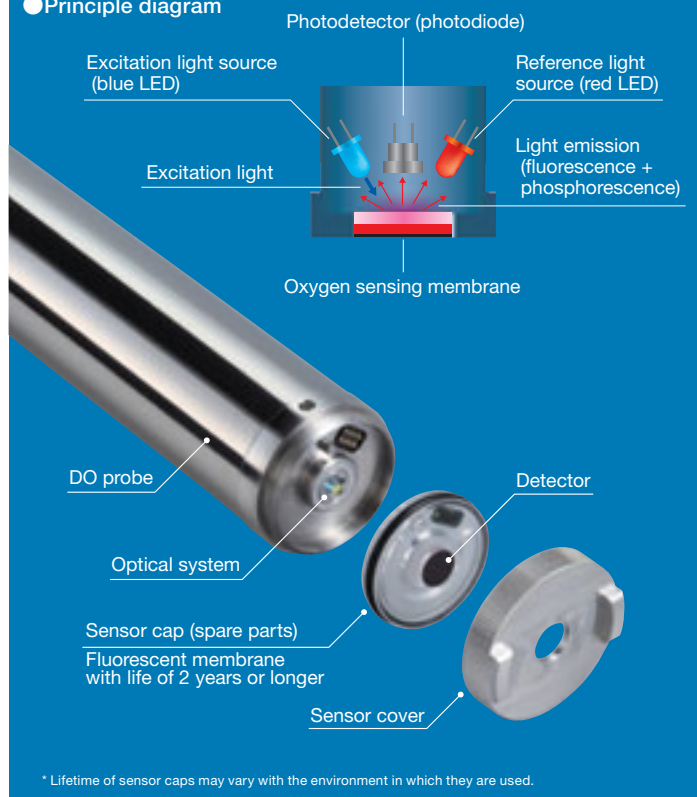
| | |
|---|---|
| Transmission output | Three points  DC 4 to 20 mA  input-output isolated type  Maximum load resistance 900 Ω<br>Select Three items from below<br>Output range 1: Ammonia nitrogen concentration: Configurable<br>                      within measurement range<br>Output range 2: Dissolved oxygen concentration: Configurable<br>                      within measurement range<br>Output range 3: Temperature reading of the ammonia nitrogen meter: Configurable<br>                      within measurement range of -10 to 110°C<br>Output range 4: Temperature reading of the dissolved oxygen meter: Configurable<br>                      within measurement range of -10 to 110°C |
| Operation temperature range | -20 to 55°C |
| Power supply | 100 to 240 V  AC 50/60 Hz  Consumption power 28 VA (max.) |
| Structure | Outdoor installation type: Protection level IP65  Installation method: 50 A pole or attached to wall<br>Case: aluminum alloy  Attachment bracket: Hood: SUS304 |
| Weight | Approx. 4.5 kg (Unit: Approx. 3.5 kg  Hood, attachment bracket: Approx. 1 kg) |
| Regulatory certification | CE Marking, FCC rules |

### ■ Structure : DO-2000

**● Principle diagram**



- Photodetector (photodiode)
- Excitation light source (blue LED)
- Reference light source (red LED)
- Light emission (fluorescence + phosphorescence)
- Excitation light
- Oxygen sensing membrane



- DO probe
- Optical system
- Sensor cap (spare parts)
- Fluorescent membrane with life of 2 years or longer
- Detector
- Sensor cover

* Lifetime of sensor caps may vary with the environment in which they are used.

### Sensor



**Specifications**

| Model | AM-2000 |
|---|---|
| Sample condition | 0 to 40°C, 4.0 to 8.5 pH |
| Measurement depth | 10 m |
| Wetted material | SUS316, FKM, PVC |
| Weight | Approx. 2.7 kg (including 10 m cable) |

AM-2000



**Specifications**

| Model | DO-2000 |
|---|---|
| Measurement sample temperature | 0 to 40°C |
| Measurement depth | 10 m |
| Wetted material | SUS316, NBR, PVC |
| Weight | Approx. 3.0 kg (including 10 m cable) |

DO-2000

# HC-200F
## (4-Wire Transmitter)

Rain-Proof Type | AC 4 wire  CE

# HC-300F
## (2-Wire Transmitter)

Rain-Proof Type | DC 2 wire  CE

### HC-200F Specifications

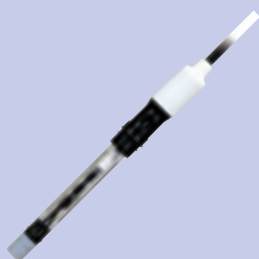| | |
|---|---|
| Measuring method | Fluoride ion electrode method |
| Measuring range | 0.0 to 10.0, 0.0 to 20.0 mg/L (Resolution: 0.1 mg/L)<br>0 to 50, 0 to 100, 0 to 200 mg/L (Resolution: 1 mg/L)<br>0 to 500, 0 to 1000, 0 to 2000 mg/L (Resolution: 10 mg/L)<br>0 to 5000, 0 to 10000 mg/L (Resolution: 100 mg/L) |
| Linearity | ±10% FS (excluding detection unit), ±30% FS (including detection unit) |
| Repeatability | ±7% FS (excluding detection unit), ±30% FS (including detection unit) |
| Contact output | No. of outputs: Three points (R1, R2, FAIL)<br>  Contact type: SPDT<br>  Contact rating: AC 25 V 3 A, DC 30 V 3 A<br>  (resistance load) |
| Contact input | No. of contacts: One point |
| | For cleaning |
| Transmission output | 4 to 20 mA DC |
| | Max. load res. 900 Ω |
| Additional functions | Error message |
| | Alarm ON delay |
| | Cleaning time |
| | Set periodic cleaning |
| | Select transmission output state in<br>Hold mode during calibration or cleaning |
| | Output hold functions |
| | Set damping factor function |
| | Transmission output, Arbitary Hold setting |
| Power supply | 100 to 240 V AC 50/60 Hz  VA (max.) |
| Ambient environment | -20 to 55℃ |
| Structure | Outdoor installation: JIS C0920, Protection level: 3 (rain-proof)<br>Installation method: 50 A pole or wall attachment |
| Weight | Approx. 4.5 kg |
| Regulatory certification | CE marking, FCC rules |

### HC-300F Specifications

| | |
|---|---|
| Measuring method | Fluoride ion electrode method |
| Measuring range | 0.0 to 10.0, 0.0 to 20.0 mg/L (Resolution: 0.1 mg/L)<br>0 to 50, 0 to 100, 0 to 200 mg/L (Resolution: 1 mg/L)<br>0 to 500, 0 to 1000, 0 to 2000 mg/L (Resolution: 10 mg/L)<br>0 to 5000, 0 to 10000 mg/L (Resolution: 100 mg/L) |
| Linearity | ±10% FS (excluding detection unit), ±30% FS (including detection unit) |
| Repeatability | ± 7% FS (excluding detection unit), ±30% FS (including detection unit) |
| Contact input | No. of contacts: One point |
| | For holding signal |
| Transmission output | 4 to 20 mA DC |
| | Max. load res. 600 Ω |
| Additional functions | Error message |
| | Select transmission output state in<br>Hold mode during calibration or cleaning |
| | Output hold functions |
| | Set damping factor function |
| | Transmission output, Arbitary Hold setting |
| Power supply | 21 to 32 V DC |
| Ambient environment | -20 to 60°C |
| Structure | Outdoor installation: JIS C0920, Protection level: 3 (rain-proof)<br>Installation method: 50 A pole or wall attachment |
| Weight | Approx. 4.5 kg |
| Regulatory certification | CE marking, FCC rules |

## Accessories

**Relay box**
•CT-50EC

**Specialized extension cable**
•C-7E

## Sensor

### Specifications

| | |
|---|---|
| Model | 1009 |
| Measuring method | Ion electrode method, LaF3 response membrane |
| Test sample environment | pH range: 4 to 8 (at 0.2 mg/L), 4 to 10 (at 20 mg/L), 4 to 12 (at 2000 mg/L)<br>Temperature range: 0 to 40°C, Electric conductivity: Over 500 µS/cm<br>Flow speed range: 1 to 20 cm/sec. |
| Compensation element | Pt 1000 Ω (0°C) |
| Temperature compensation range | 0 to 40°C |
| Cable length | 5 m |
| Weight | Approx. 200 g |
| Compatible holders | CH-101 series (Immersion type holder), CF-250/300 series (Flow type holder) |
| Compatible cleaning device | JCH-121 Immersion type water-jet cleaning device<br>JCH-311 Circulation type water-jet cleaning device |

# HU-200SS

## (4-Wire Transmitter)

Rain-Proof Type

AC 4-wire

CE

### HU-200SS Specifications

| | |
|---|---|
| Measuring method | Light transmission method |
| Measurable range | Activated sludge (MLSS): 0 to 20000 mg/L   Resolution: 1 mg/L (0 to 10000 mg/L)<br>Kaolin: 0 to 10000 mg/L   10 mg/L (10000 to 22000 mg/L)<br>Clay (inorganic mud): 0 to 20000 mg/L |
| Repeatability | Within a reading value ±3% or ±10 mg/L, whichever is larger. (sensor connecting sludge measured value) |
| Transmission output | One point  4 to 20 mA DC  Input/output isolated type  Maximum load resistance 900 Ω |
| Transmission output range | Free range |
| Contact output | Three points  Output type: No-voltage contact output  Relay contact, SPDT<br>Contact capability  R1, R2: Selectable from upper limit alarm, lower limit alarm, transmission<br>output Hold, and cleaning output<br>FAIL: Error warning |
| Cleaning output | One point   Active voltage contact output (connected supply voltage output)<br>Contact capability: Solenoid valve drive for cleaning |
| Contact input | One point   Contact type: No-voltage a contact for open collector<br>Contact function: Cleaning operation external input. |
| Communication function | RS-485  Two-wire input/output isolated type (not isolated from transmission output) |
| Ambient temperature | -20 to 55°C |
| Calibration method | • Zero calibration: With clean water<br>• Span calibration: Concentration conversion method using coefficient input<br>• Working curve selection: (selection of activated sludge and inorganic mud)<br>There is a feature that allows you to match an instrument indicated value to a hand analyzed<br>value of sludge (by the Mass method). |
| Self-diagnosis | Sensor check error, Transmitter error |
| Power supply | 100 to 240 V AC, 50/60 Hz  35 VA (max.) when an automatic cleaner is connected. |
| Structure | Outdoor installation type: IP65 Protection class<br>Installation method: 50 A pole-mounted or wall-mounted<br>Material of case:  Aluminium alloy (coated with epoxy modified melamine resin)<br>Material of mounting brackets: SUS304 |
| Weight | Approx. 4.5 kg |
| Regulatory certification | CE marking, FCC rules |

### Sensor

#### Specifications

| | |
|---|---|
| Model | SS-90 |
| Measuring method | Light transmission method |
| Light source | LED, 880 nm, |
| Detector | Silicon photo diode |
| Cell length | Approx. 7 mm |
| Self-check | Water immersion detection |
| Operating temperature range | 5°C to 50°C (without freezing) |
| Measured liquid pressure | 0 MPa to 0.2 MPa |
| Material of wetted part | PPO SUS316 PFA FKM EPDM PVC |
| Cable length | 10 m (standard), maximum extension: 50 m (overall length: 60 m) |
| Power supply | 12 V DC supplied  from the HU-200SS Transmitter |
| External dimensions | 48 mm in diameter x_250 mm in length (excluding the cable) |
| Weight | Approx. 0.8 kg (excluding the cable) |

### Holder and Cleaner

• **Immersion type holder**
DH-101 series (insertion type)
NH-10 series (drop-in type)

• **Immersion type jet cleaner**
JDH series
• **Immersion type jet cleaner**
JH-100 series (Submersible type)

### Accessories

**MLSS Sensor extension cable**
•**C-7E**

**Relay box**
•**CT-50SS**

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.

# HU-200TB-IM
## (4-Wire Transmitter)

Rain-Proof Type | AC 4 wire | CE

# HU-200TB-W
## (4-Wire Transmitter)

Rain-Proof Type | AC 4 wire | CE

## HU-200TB-IM Specifications

| | |
|---|---|
| Measuring method | 90-degree transmission-scattering method |
| Measuring range | Turbidity Formazin: 0 to 4000 NTU<br>Kaolin: 0 to 2000 degrees (Display range: 2001 to 4000 degrees)<br>SS Kaolin: 0 to 2000 mg/L (Display range: 2001 to 4000 mg/L) |
| Transmission output | Two points 4 to 20 mA DC input/output isolated type Maximum load resistance 900 Ω |
| Contact output | Six points Output type: No-voltage contact output Relay contact, SPST<br>Contact capability R1, R2, R3: Selectable from upper limit alarm, lower limit alarm, transmission output Hold, and cleaning output<br>Setting range: Within the measurement range of turbidity or absorbance<br>Delay time: 0 to 600 s<br>FAIL: You can use the NO and NC relay contact.<br>Error alarms for values outsides the measurement range, self-checks, and calibration errors can be set<br>Delay time: 0 to 600 s<br>RNG1, RNG2: Status output of the transmission output range |
| Contact input | Four points Contact type: No-voltage a contact for open collector<br>Contact function EXT1: Transmission output hold<br>EXT2: Cleaning operation external input<br>EXT3 EXT4: Selection from four ranges by 2 bits input |
| Communication function | RS-485 Two wire type, the power source of the communication is isolated from the power of measurement circuit. (The power source of transmission and communication are not isolated) |
| Ambient temperature | -20 to 55°C |
| Self-diagnosis | Sensor check error, Transmitter error |
| Power supply | 100 to 240 V AC 50/60 Hz 36 VA (max.) |
| Structure | Outdoor installation type: IP65 Protection class<br>Installation method: 50 A pole-mounted or wall-mounted<br>Material of case: Aluminium alloy (coated with epoxy modified melamine resin)<br>Material of mounting brackets: SUS304 |
| Weight | Approx. 4.5 kg |
| Regulatory certification | CE marking, FCC rules |

## HU-200TB-W Specifications

| | |
|---|---|
| Measuring method | 90-degree transmission-scattering method |
| Measuring range | Kaolin 0 to 1000 degrees (Display range: 0 to 1100 degrees) or 0 to 1000 mg/L<br>Formazin 0 to 2000 degrees (Display range: 0 to 2200 degrees)<br>PSL 0 to 100 degrees (Display range: 0 to 110 degrees) |
| Transmission output | Two points 4 to 20 mA DC input/output isolated type Maximum load resistance 900 Ω |
| Transmission output range | Free range |
| Contact output | Four points Output type: No-voltage contact output Relay contact, SPST<br>Contact capability R1, R2, R3: Selectable from upper limit alarm, lower limit alarm, transmission output Hold, and cleaning output.<br>FAIL: Error alarm<br>RNG1, RNG2: Range signal by 2 bits binary output |
| Contact input | Four points Contact type: No-voltage a contact for open collector<br>Contact function EXT1 EXT2: Can be selected from auto zero cal directives or transmission hold<br>EXT3 EXT4: Selection from four ranges by 2 bits input |
| Communication function | RS-485 Two wire input/output isolated type (not isolated from transmission output) |
| Ambient temperature | -20 to 55°C |
| Self-diagnosis | Sensor check error, Converter error |
| Power supply | 100 to 240 V AC 50/60 Hz 35 VA (max.) |
| Structure | Outdoor installation type: IP65 Protection class<br>Installation method: 50 A pole-mounted or wall-mounted<br>Material of case: Aluminium alloy (coated with epoxy modified melamine resin)<br>Material of mounting brackets: SUS304 |
| Weight | Approx. 4.5 kg |
| Regulatory certification | CE marking, FCC rules |

## Sensor

### Specifications

| Model | SS-150 |
|---|---|
| Measuring method | Light scattering/transmission method or transmission method |
| Light source | Infrared LED 860 nm |
| Detector | Silicon photo diode |
| Automatic cleaner | Rotary wiper |
| Measured liquid temperature | 0 to 45°C (Without freezing) |
| Measured liquid pressure | 0 to 0.1 MPa |
| Material of wetted Part | PFA, POM, FKM, M, SUS316, EPDM, PVC, |
| Cable length | Provided standard cable: 10 m, maximum extension distance: 50 m |
| Power supply | 24 V DC 6 W supplied from HU-200TB-IM Transmitter |
| Weight | Approx. 1.0 kg (excluding cables) |

### Specifications

| Model | SS-120-W |
|---|---|
| Measuring method | 90-degree transmission-scattering method |
| Light source | LED 860 nm |
| Detector | Silicon photo diode |
| Automatic cleaner | Wiper (Option) |
| Measured liquid temperature | 5 to 45°C (without freezing) |
| Measured liquid pressure | 0 to 0.3 MPa |
| Material of wetted Part | PVC SUS316 FKM silicone rubber hard glass EPDM |
| Cable length | Standard attachment cable: 5 m |
| Installation | Screwing in bore size: Rc3/4 |
| Power supply | 12 V DC supplied from HU-200TB Transmitter |
| Weight | Mainframe: approx. 3.5 kg Cleaner: 2.5 kg |

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.

# HU-200TB-H
## (4-Wire Transmitter)

Rain-Proof Type | AC 4 wire | CE

# HU-200TB-EH
## (4-Wire Transmitter)

Rain-Proof Type | AC 4 wire | CE

## HU-200TB-H Specifications

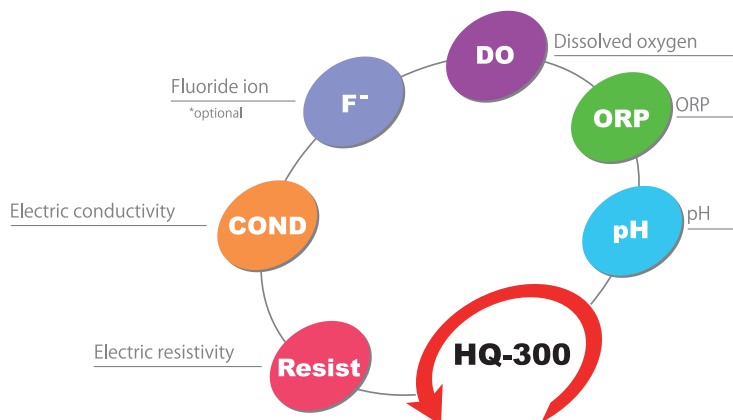| | |
|---|---|
| Measuring method | 90-degree transmission-scattering method |
| Measuring range | Kaolin 0 to 10.00 degrees (Display range: 0 to 11.00 degrees) |
| | Formazin 0 to 10.00 NTU (Display range: 0 to 11.00 NTU ) |
| | PSL 0 to 10.00 degrees (Display range: 0 to 11.00 degrees) |
| Transmission output | Two points 4 to 20 mA DC input/output isolated type Maximum load resistance 900 Ω |
| Transmission output range | Free range |
| Contact output | Two points Output type: No-voltage contact output Relay contact, SPST<br>Contact capability R1, R2, R3: Selectable from upper limit alarm, lower limit alarm, transmission output Hold, and cleaning output.<br>FAIL: Error alarm<br>RNG1, RNG2: Status output of the transmission output rang e |
| Contact input | Four points Contact type: No-voltage a contact for open collector<br>Contact function EXT1 EXT2: Can be selected from auto zero cal directives or transmission hold<br>EXT3 EXT4: Selection from four ranges by 2 bits input |
| Communication function | RS-485 Two wire input/output isolated type (not isolated from transmission output) |
| Ambient temperature | -20 to 55°C |
| Self-diagnosis | Sensor check error, Converter error |
| Power supply | 100 to 240 V AC 50/60 Hz 35 VA (max.) |
| Structure | Outdoor installation type: IP65 Protection class<br>Installation method: 50 A pole-mounted or wall-mounted<br>Material of case: Aluminium alloy (coated with epoxy modified melamine resin)<br>Material of mounting brackets: SUS304 |
| Weight | Approx. 4.5 kg |
| Regulatory certification | CE marking, FCC rules |

## HU-200TB-EH Specifications

| | |
|---|---|
| Measuring method | 90-degree transmission-scattering method |
| Measuring range | Kaolin Formazin PSL: 0 to 2.0000 degrees (Display range: 0 to 2.2000 degrees) |
| Transmission output | Two points 4 to 20 mA DC input/output isolated type Maximum load resistance 900 Ω |
| Transmission output range | Free range |
| Contact output | Six points Output type: No-voltage contact output Relay contact, SPST<br>Contact capability R1, R2, R3: Selectable from upper limit alarm, lower limit alarm, transmission output Hold, and cleaning output.<br>Setting range: Within the measurement range of turbidity or absorbance<br>Delay time: 0 to 600s<br>FAIL: You can use the NO and NC relay contact.<br>Error alarms for values outsides the measurement range,<br>self-checks, and calibration errors can be set<br>Delay time: 0 to 600s<br>RNG1, RNG2: Status output of the transmission output range |
| Contact input | Four points Contact type: No-voltage a contact for open collector<br>Contact capability EXT1 EXT2: Can be selected from auto zero cal directives or transmission hold<br>EXT3 EXT4: Selection from four ranges by 2 bits input |
| Communication function | RS-485 Two wire input/output isolated type (not isolated from transmission output) |
| Ambient temperature | -20 to 55°C |
| Self-diagnosis | Transmitter error |
| Power supply | 100 to 240 V AC 50/60 Hz 35 VA (max.) |
| Structure | Outdoor installation type: IP65 Protection class<br>Installation method: 50 A pole-mounted or wall-mounted<br>Material of case: Aluminium alloy (coated with epoxy modified melamine resin)<br>Material of mounting brackets: SUS304 |
| Weight | Approx. 4.5 kg |
| Regulatory certification | CE marking, FCC rules |

## Sensor

### Specifications

| Model | SS-120-H |
|---|---|
| Measuring method | 90-degree transmission-scattering method |
| Light source | LED 660 nm |
| Detector | Silicon photo diode |
| Automatic cleaner | Wiper (Option) |
| Measured liquid temperature | 5 to 45°C (without freezing) |
| Measured liquid pressure | 0 to 0.3 MPa |
| Material of wetted Part | PVC SUS316 FKM silicone rubber hard glass EPDM |
| Cable length | Standard attachment cable: 5 m |
| Installation | Screwing in bore size: Rc3/4 |
| Power supply | 12 V DC supplied from HU-200TB Transmitter |
| Weight | Mainframe: approx. 3.5 kg Cleaner: 2.5 kg |

### Specifications

| Model | SS-120-LD |
|---|---|
| Measuring method | 90-degree transmission-scattering method |
| Light source | Laser diode 670 nm |
| Detector | Silicon photo diode |
| Measured liquid temperature | 0 to 40°C (no freezing) |
| Measured liquid pressure | 0 to 0.3 MPa |
| Material of wetted Part | PVC SUS316, FKM Silicon rubber Hard glass EPDM |
| Cable length | Standard attachment cable: 5 m |
| Power supply | 12 V DC 6 W supplied from HU-200TB-EH transmitter |
| Weight | Approx. 3.5 kg |

| Model | | Turbidity Concentration (NTU, mg/L) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.0001 | 0.001 | 0.01 | 0.1 | 1 | 10 | 100 | 1000 | 10000 | 100000 |
| SS-120-W | HU-200TB-W | | | | Wide Range | | | | | 2000 mg/L | |
| SS-120-H | HU-200TB-H | | | High Sensitivity | | | 10 mg/L | | | | |
| SS-120-LD | HU-200TB-EH | | Ultra High Sensitivity | | | 2 mg/L | | | | | |
| SS-150 | HU-200TB-IM | | | Wide Range throw in Type | | | | | 4000 mg/L | | |

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.

## Color

# HU-200CL
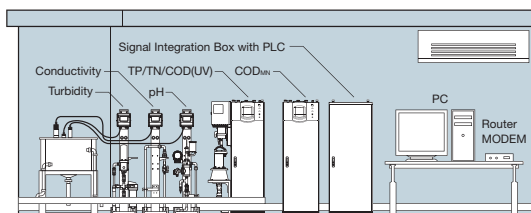## (4-Wire Transmitter)

Rain-Proof Type | AC 4-wire | CE

| HU-200CL Specifications | |
|---|---|
| Measuring method | Light transmission method |
| Measuring range | Color 0 to 100 (TCU, ptCo)  Turbidity 0 to 50 (mg/L) |
| Transmission output | Two points 4 to 20 mA DC input/output isolated type Maximum load resistance 900 Ω |
| Transmission output range | Free range |
| Contact output | Six points Output type: No-voltage contact output Relay contact, SPDT<br>Contact capability R1, R2, R3: Selectable from upper limit alarm, lower limit alarm, transmission output Hold, and cleaning output.<br>FAIL: Error alarm |
| Contact input | Two points  Contact type: No-voltage a contact for open collector<br>Contact capability EXT1: Command to clean or to hold transmission<br>E XT2: Command to calibrate or to hold transmission |
| Communication function | RS-485 Two wire input/output isolated type (not isolated from transmission output) |
| Ambient temperature | -20 to 55˚C |
| Self-diagnosis | Transmitter error |
| Power supply | 100 to 240 V AC 50/60 Hz 30 VA (max.) |
| Structure | Outdoor installation type: IP65 Protection class<br>Installation method: 50 A pole-mounted or wall-mounted<br>Material of case: Aluminium alloy (coated with epoxy modified melamine resin)<br>Material of mounting brackets: SUS304 |
| Weight | Approx. 4.5 kg |
| Regulatory certification | CE marking, FCC rules |

## Multi-Parameter Transmitter

# HQ-300
## (2-Wire Transmitter)

HART COMMUNICATION PROTOCOL

Rain-Proof Type | DC 2-wire | CE

| HQ-300 Specifications | | |
|---|---|---|
| Measurement item | pH, ORP, Dissolved oxgen,  Electrical conductivity, Electrical resistivity, Fluoride ion(optional) | |
| Measuring range | pH | 0 to 14 pH |
| | ORP | -2000 to 2000 mV |
| | Dissolved oxygen | 0 to 20 mg/L |
| | Electrical conductivity | 0 to 2000 µS/cm (0 to 200 kΩ·m )<br>(Measurement range varies with cell constant) |
| | Electical resistivity | 0 to 20 MΩ·cm (0 to 200 kΩ·m) |
| | Fluoride ion(optional) | 0 to 10000 mg/L |
| Accuracy | pH  Repeatability | ±0.03 pH at equivaletinput |
| | pH  Linearity | ±0.03 pH at equivaletinput |
| | ORP  Repeatability | ±5 mV at equivaletinput |
| | ORP  Linearity | ±5 mV at equivaletinput |
| | Dissolved oxygen  Repeatability | ±0.5% of full scale at equivaletinput |
| | Dissolved oxygen  Linearity | ±0.5% of full scale at equivaletinput |
| | Electrical conductivity  Repeatability | ±0.5% of full scale at equivaletinput |
| | Electrical conductivity  Linearity | ±0.5% of full scale at equivaletinput |
| | Electical resistivity  Repeatability | ±0.1% of full scale at equivaletinput |
| | Electical resistivity  Linearity | ±0.5% of full scale at equivaletinput |
| | Fluoride ion(optional)  Repeatability | ±7% of full scale at equivaletinput |
| | Fluoride ion(optional)  Linearity | ±10% of full scale at equivaletinput |
| Transmission output | 4 to 20 mA DC Maximum load resistance  550 Ω | |
| HART comunication | Protocol revision | 7 |
| | Burst mode | Not suported |
| | Multi-drop connection | 15 transmitters maximum |
| Contact input | No-voltage "a" contact | |
| Ambient Temperature | -20 to 60˚C | |
| Power supply | 24 V DC (Power-supply voltage range: 21 V DC to 32 V DC ) 0.6W (max.) | |
| Construction | Outdoor installation type: IP 65 Protection class<br>installation method: 50 A pole-mounted or wall-mounted<br>Material of case: Aluminium alloy (coated with epoxy modified melamine resin)<br>Material of mounting brackets:SUS304 | |
| Weight | Approx. 4 kg | |
| Regulatory certification | CE marking, FCC rules | |

HART® is a registered trademark of FieldComm Group.

## Sensor

Light source(LED)
Wiper cleaner
Detector
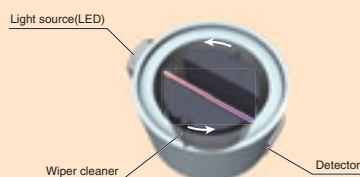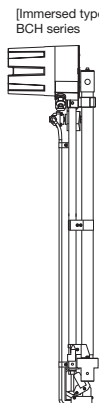
### Specifications

| Model | CL-20 |
|---|---|
| Measuring method | Light transmission method |
| Light source | Two, LEDs 390 nm, 660 nm |
| Detector | Silicon photo diode |
| Automatic cleaner | Rotary wiper |
| Measured liquid temperature | 0 to 45˚C (without freezing) |
| Measured liquid pressure | Within 0.1 MPa |
| Material of wetted Part | PVC Titanium FKM EPDM Hard Glass |
| Power supply | 24 V DC supplied from HU-200CL transmitter |
| Weight | Approx. 8 kg |

DO — Dissolved oxygen
Fluoride ion *optional — F⁻
ORP — ORP
Electric conductivity — COND
pH — pH
Electric resistivity — Resist
HQ-300

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 | Jet Cleaner JCH-1X1 JCF-3X1 | Jet Driven Brush Cleaner BH-1X1 | Brush Cleaner BCH-1X1 | Brush/Jet Cleaner BCH-1X1J | Chemical Cleaner CCH-1X1 | Chemical Brush Cleaner CBCH-1X1 | pH Meter with Auto Calibration Function AH-151 |
|---|---|---|---|---|---|---|---|
| The use of original burst oscillation method enables continuous cleaning, as measurement values are not affected during cleaning. | Cleans with water or air jet. Effective physical cleaning to remove adhered substances. | 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. | Motor-driven brush cleaner. Effective physical cleaning to remove adhered substances. | Composite type cleaner, combining a motor-driven brush cleaner and a jet cleaner. | Chemical cleaner using dilute hydro-chloric acid. Optimum for removing coating materials such as calcium. | Composite type cleaner, combining a chemical cleaner using dilute hydro-chloric acid and a motor-driven brush cleaner. | 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] UCH series

[Immersed type] JCH series

[Immersed type] BH series

[Immersed type] BCH series

[Immersed type] BCH series

[Immersed type] CCH series

[Immersed type] CBCH series

[Immersed type] AH-151-CH

[Circulation type] UCF series

[Circulation type] JCF series

# 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



- HORIBA UK Limited Northampton Office
- HORIBA Europe GmbH Leichlingen Office
- HORIBA Europe GmbH
- HORIBA Europe GmbH HORIBA Czech
- HORIBA (Austria) GmbH
- HORIBA FRANCE SAS Les Ulis Office
- HORIBA India Private Limited
- HORIBA India Private Limited Bangalore Office
- HORIBA India Private Limited Technical Center
- HORIBA (China) Trading Co., Ltd. Beijing Office
- HORIBA (China) Trading Co., Ltd. Shanghai Office
- HORIBA KOREA Ltd.
- HORIBA
- HORIBA Advanced Techno
- HORIBA Vietnam Co., Ltd.
- HORIBA (Thailand) Ltd. East Office
- HORIBA Instruments (Singapore) Pte Ltd.
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- HORIBA Instruments Incorporated Irvine Office
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- HORIBA Instruments Brasil, Ltda.

⚠ **Please read the operation manual before using this product to assure safe and proper handling of the product.**

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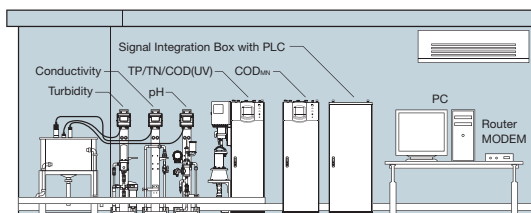
| Ultrasonic Cleaner UCH-1X1 UCF-3X1 | Jet Cleaner JCH-1X1 JCF-3X1 | Jet Driven Brush Cleaner BH-1X1 | Brush Cleaner BCH-1X1 | Brush/Jet Cleaner BCH-1X1J | Chemical Cleaner CCH-1X1 | Chemical Brush Cleaner CBCH-1X1 | pH Meter with Auto Calibration Function AH-151 |
|---|---|---|---|---|---|---|---|
| The use of original burst oscillation method enables continuous cleaning, as measurement values are not affected during cleaning. | Cleans with water or air jet. Effective physical cleaning to remove adhered substances. | 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. | Motor-driven brush cleaner. Effective physical cleaning to remove adhered substances. | Composite type cleaner, combining a motor-driven brush cleaner and a jet cleaner. | Chemical cleaner using dilute hydro-chloric acid. Optimum for removing coating materials such as calcium. | Composite type cleaner, combining a chemical cleaner using dilute hydro-chloric acid and a motor-driven brush cleaner. | 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] UCH series

[Immersed type] JCH series

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[Immersed type] BCH series

[Immersed type] BCH series

[Immersed type] CCH series

[Immersed type] CBCH series

[Immersed type] AH-151-CH

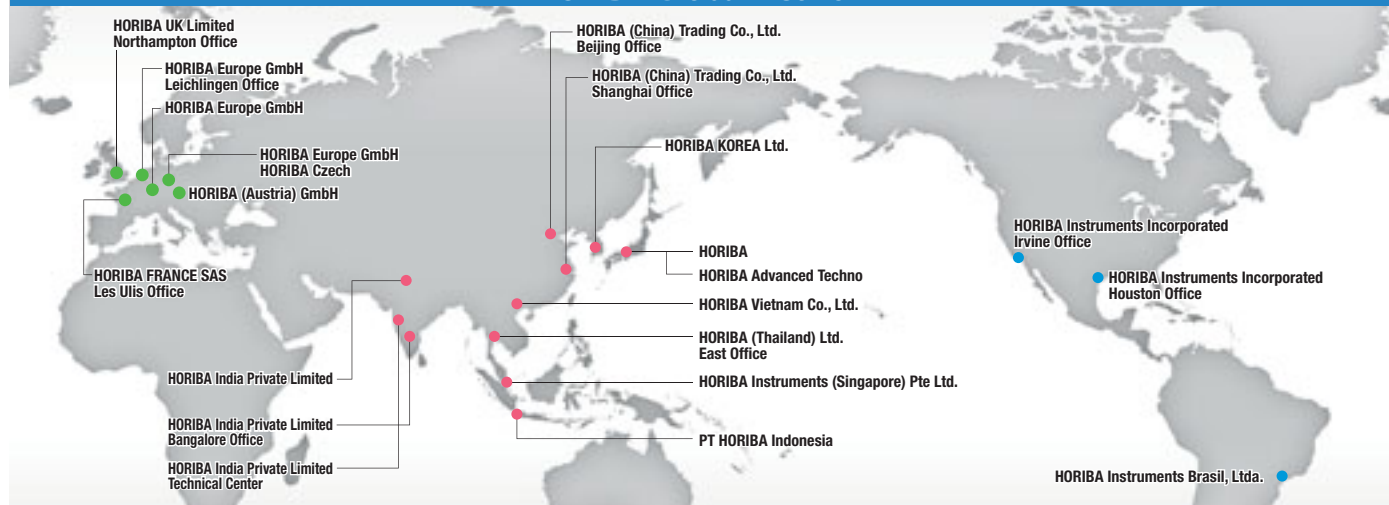[Circulation type] UCF series

[Circulation type] JCF series

| | 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） | ○ | ○ | × | × | × | × | × | × |
| NH4-N | ○ | ○ | × | × | × | × | × | × |
| F | × | ○ | × | × | × | ○ | × | × |
| MLSS | × | ○ | × | × | × | × | × | × |

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



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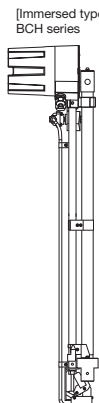
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