

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



# 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 controlling 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		Residual Chlorine	DO	NH <sub>4</sub> -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.

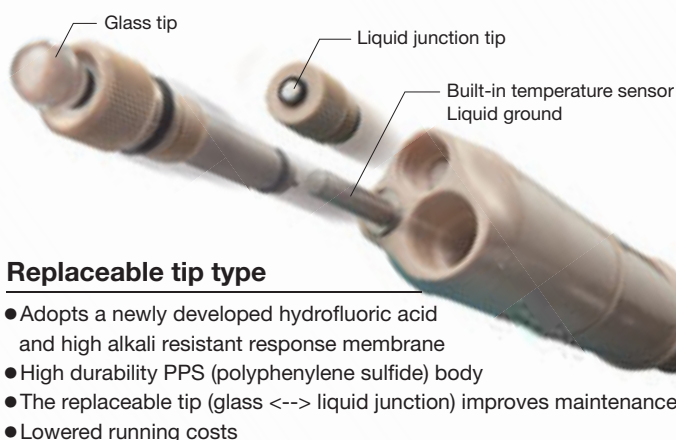


Panel mount type

## 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



### Fixed sleeve tough electrode

Integrated combination  
Model: 6109-50B



### Hydrofluoric-acid resistant

Integrated combination  
Model: 6151-50B



### High-alkali resistant

Integrated combination  
Model: 6152-50B



### pH electrode standard

Combination with replaceable tip  
Model: 6174-50B



## Resistivity

### HE-200R (4-Wire Transmitter)



### HE-300R (2-Wire Transmitter)



#### HE-200R Specifications

Measuring method	Two electrode method		
Measuring range	Cell constant	/cm	0.01
	Electrical resistivity	MΩ·cm	0.000 to 2.000
		kΩ·m	0.00 to 20.00
	* With conditions under which temperature compensation is not performed, it is possible to display 0.0 to 100.0 MΩ·cm (0 to 1,000 kΩ·m).		
	Temperature	°C	0 to 100 Resolution: 0.01°C
Repeatability	Electrical resistivity: ±0.1% full-scale or less, Temperature: ±0.1°C (for equivalent input)		
Linearity	Electrical resistivity: ±0.5% full-scale 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 (1c)		
	Contact function: R1, R2: Selectable from upper limit alarm, lower limit alarm, transmission output hold operation		
	FAIL: Malfunction alarm Alarm operation: Output details: Electrical resistivity, temperature		
Contact input	One point Contact format: Open collector no-voltage a contact Contact function: Transmission output hold 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)		
Calibration function	Electrical resistivity: Based on input of cell constant correction coefficient (parameter input) Temperature: One point calibration compared with reference temperature gauge		
Additional function	Ultra-pure water electrical resistivity selection function, clip function		
Self-diagnosis function	Sensor 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		
Compatible sensor	ERF series electrical resistivity sensor (cell constant 0.01/cm)		
Pair calibration accuracy*	Electrical resistivity: ±0.01 MΩ·cm or less (for standard unit / same temperature)		
	Temperature: ±0.02°C or less (for standard unit / same temperature)		
Weight	Approx. 4.5 kg		
Regulatory certification	CE marking, FCC rules		

\* The sensor and analyzer are assembled in advance and pair calibration is performed before shipping.

#### HE-300R Specifications

Measuring method	Two electrode method		
Measuring range	Cell constant	/cm	0.01
	Electrical resistivity	MΩ·cm	0.000 to 2.000
		kΩ·m	0.00 to 20.00
	* With conditions under which temperature compensation is not performed, it is possible to display 0.0 to 100.0 MΩ·cm (0 to 1,000 kΩ·m).		
	Temperature	°C	0 to 100 Resolution: 0.01°C
Repeatability	Electrical resistivity: ±0.1% full-scale or less, Temperature: ±0.1°C (for equivalent input)		
Linearity	Electrical resistivity: ±0.5% full-scale or less, Temperature: ±0.5°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)		
Calibration function	Electrical conductivity: Based on input of cell constant correction coefficient (parameter input) Temperature: One point calibration compared with reference temperature gauge		
Additional function	Ultra-pure water resistivity selection function, clip function		
Self-diagnosis function	Sensor 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 (rain-proof type)		
	Mounting method: 50 A pole or wall mounted		
	Case: Aluminum alloy		
	Mount fitting/hood: SUS304		
Compatible sensor	ERF series electrical resistivity sensor (cell constant 0.01/cm)		
Pair calibration accuracy*	Electrical resistivity: ±0.01 MΩ·cm or less Temperature: ±0.02°C or less (for standard unit / same temperature)		
Weight	Approx. 4 kg		
Regulatory certification	CE marking, FCC rules		

\* The sensor and transmitter are assembled in advance and pair calibration is performed before shipping.

## Sensor

### Ultra-pure water type Electrical Resistivity Sensor

### Responds sensitively to changes in temperature of measured water

#### Screw in type

#### •ERF-001 series

ERF-001-L-T  
(Cable-attached type)



ERF-001-C-T  
(Connector type)



#### Specifications

Model		ERF-001
Cell constant		Approx. 0.01/cm
Solution contact material	Electrode	Titanium
	Body	PVDF
	Packing	FKM
Measurement solution pressure		0 to 0.5 MPa
Measurement solution temperature		0 to 80°C
Cable length		Cable-attached type: 10 m, Y terminal (standard)    Max. extendable distance: 50 m Connector type: 10 m (CK-10M), 20 m (CK-20M), 30 m (CK-30M)
Attachment		Screw in type Thread aperture: R (PT) 3/4
Combined holder		Flow type holder: EFA-30, EFA-30P, EFA-30S

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



# HE-480R

(4-Wire Transmitter)



HE-480R Specifications	
Sensor input	One channel (cell constant: 0.01/cm)
Measuring range	Resistivity: 0 to 0.200, 0 to 2.00, 0 to 20.0, 0 to 100.0 MΩ·cm : 0 to 2.00, 0 to 20.0, 0 to 200.0, 0 to 1,000 kΩ·m (In the 1,000 MΩ·cm and 1,000 kΩ·m range, measurement is possible without temperature compensation.) Temperature: 0 to 100°C (no places after decimal point, 1 digit, 2 digit selectable display)
Repeatability	±0.5% full-scale or less (for equivalent input)
Linearity	±0.5% full-scale or less (for equivalent input)
Transmission output	No. of outputs: One point 4 to 20 mA DC Input/output isolated type Maximum load resistance: 900 Ω
Transmission output range	Freely settable within measuring range
Contact output	No. of outputs: 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	Conductivity: Input of cell constant correction coefficient (parameter input) Temperature: Calibration compared with reference temperature gauge
Power supply	100 to 240 V AC 50/60 Hz Power consumption 10 VA (max.)
Temperature compensation	· Ultra-pure water temperature characteristics (reference temperature: 25°C) · Reference temperature and temperature coefficient specified settings (reference temperature: 5 to 95°C temperature coefficient: ±5%/°C) · No temperature compensation
Ambient temperature	-5 to 45°C
Temperature compensation element	Pt 1000 (0°C)
Compatible sensor	ERF series resistivity sensor (cell constant: 0.01/cm)
Weight	Approx. 400g
Regulatory certification	CE marking, FCC rules

# HE-960RW

(4-Wire Transmitter)



HE-960RW Specifications	
Sensor input	Two channel (cell constant: 0.01/cm)
Measuring range	Resistivity: 0 to 0.200, 0 to 2.00, 0 to 20.0, 0 to 100.0 MΩ·cm* : 0 to 2.00, 0 to 20.0, 0 to 200.0, 0 to 1000 kΩ·m* (*: Measurable without temperature compensation) Temperature: 0 to 100°C (The displayed decimal place is selectable among 0, 1 and 2.)
Repeatability	±0.1% of the full-scale (for equivalent input)
Linearity	±0.5% of the full-scale (for equivalent input)
Transmission output	No. of outputs: Two points 4 to 20 mA DC isolated I/O type Maximum load resistance: 900 Ω
Transmission output range	Freely settable within measuring range
Contact output	No. of outputs: Four points (R1, R2, R3 and R4) Contact type: Relay contacts R1 to R3: SPST (1a); R4: SPDT (1c) Contact rating: 240 V AC 3 A, 30 V DC 3 A (Resistance load) Contact function: Select between upper/lower limit operation (ON/OFF control), alarm, and maintenance (R1 and R2, R3 and R4 are for common use, respectively)
Calibration function	Conductivity: Based on the specified compensation coefficient for the cell constant (parameter input) Temperature: Calibrated by comparing with the reference thermometer
Power supply	100 to 240 V AC 50/60 Hz 15 VA (max.)
Temperature compensation	· Based on the temperature characteristics of ultra-pure water (reference temperature: 25°C) · Based on the reference temperature and user-defined temperature coefficient (reference temperature: 5 to 95°C temperature coefficient: ±5%/°C) · No temperature compensation
Ambient temperature	-5 to 45°C
Temperature compensation element	Pt 1000 (0°C)
Compatible sensor	ERF series resistivity sensor (cell constant: 0.01/cm)
Weight	Approx. 550g
Regulatory certification	CE marking, FCC rules

## Holder

### Flow type holder •EF-30 series



### Specifications

Model	EFA-30	EFA-30P	EFA-30S
Solution contact material	PVC	PVDF	SUS 316
Measurement solution temperature	0 to 50°C	0 to 100°C	0 to 100°C
Measurement solution pressure	0 to 0.1 MPa	0 to 0.1 MPa	0 to 0.5 MPa
Measurement solution flow rate	0 to 10 L/min		
Connection pipe aperture	Inlet: Rc (PT) 3/4, Outlet: Rc (PT) 3/4		







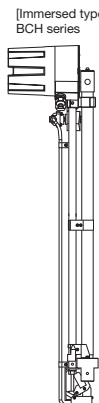



## Accessories

### Connector cable •CK-10M/20M/30M

This cable is for joining a connector type sensor and analyzer or transmitter.



## Lineup of Cleaners

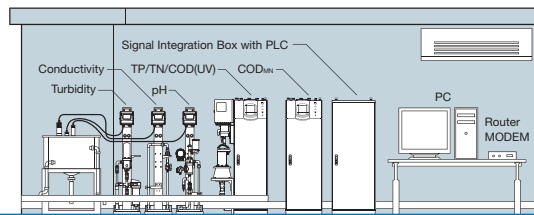
Ultrasonic Cleaner UCH-1X1 UCF-3X1	Jet Cleaner JCH-1X1 JCF-3X1	Jet Driven Brush Cleaner BH-1X1	Brush Cleaner BCH-1X1	Brush/Jet Cleaner BCH-1X1J	Chemical Cleaner CCH-1X1	Chemical Brush Cleaner CBCH-1X1	pH Meter with Auto Calibration Function AH-151
The use of original burst oscillation method enables 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 hydrochloric acid. Optimum for removing coating materials such as calcium.	Composite type cleaner, combining a chemical cleaner using dilute hydrochloric 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   [Circulation type] UCF series	 [Immersed type] JCH series   [Circulation type] JCF 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-GH

## Comparison Table of Automatic Cleaners

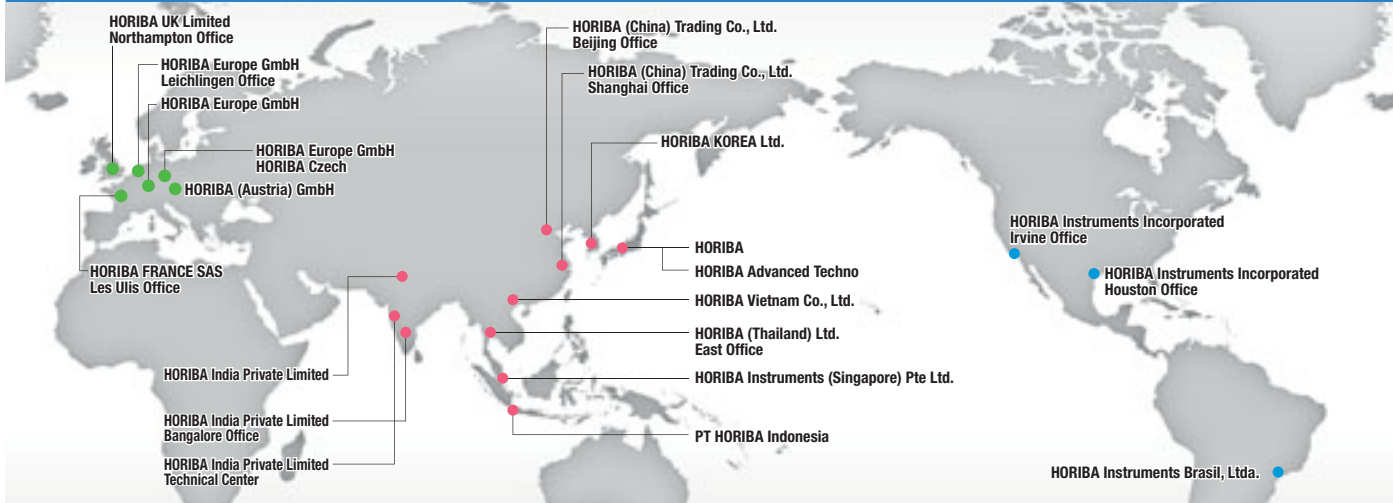
	Ultrasonic Cleaner	Jet Cleaner	Jet Driven Brush Cleaner	Brush Cleaner	Brush/Jet Cleaner	Chemical Cleaner	Chemical Brush Cleaner	pH Meter Auto Calibration Function
pH	○	○	○	○	○	○	○	○
ORP	○	○	○	○	○	○	○	×
DO(Polarography)	×	○	×	×	×	×	×	×
DO (Optical)	○	○	×	×	×	×	×	×
NH <sub>4</sub> -N	○	○	×	×	×	×	×	×
F	×	○	×	×	×	○	×	×
MLSS	×	○	×	×	×	×	×	×

## Water Quality Monitoring System

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



## HORIBA Global Network



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.



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

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