

Optimum measurement system for all types of application
Industrial Water Quality Measuring Instruments



NEW

On-site (Rain-proof) type

H-1 Series

4-Wire Analyzer

2-Wire Transmitter



Panel mount type

SLIM48 Series

4-Wire Analyzer



Measurement item

- pH
- ORP
- DO
- Resist
- COND
- RC
- MLSS
- TURB



Total support for all types of application from purified water



HORIBA H-1 and SLIM48 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	DO	Resist	Conductivity		Residual Chlorine	MLSS	TURB
								Low Conductivity Solutions	High Conductivity Solutions			
H-1 Series	On-site type	Two-Wire Transmitter	24 V DC	HP-100 HP-300	HO-300	HD-300	HE-300R	HE-300C	—	—	—	—
		Four-Wire Analyzer	90 to 264 V AC	HP-200	HO-200	HD-200	HE-200R	HE-200C	HE-200H	HR-200	HU-200SS	HU-200TB
SLIM48 Series	Panel mount type	Four-Wire Analyzer	90 to 264 V AC	HP-480	HO-480	HD-480	HE-480R	HE-480C	HE-480H	HR-480	—	—

monitoring to waste water monitoring



NEW
On-site (Rain-proof) Type
H-1 Series

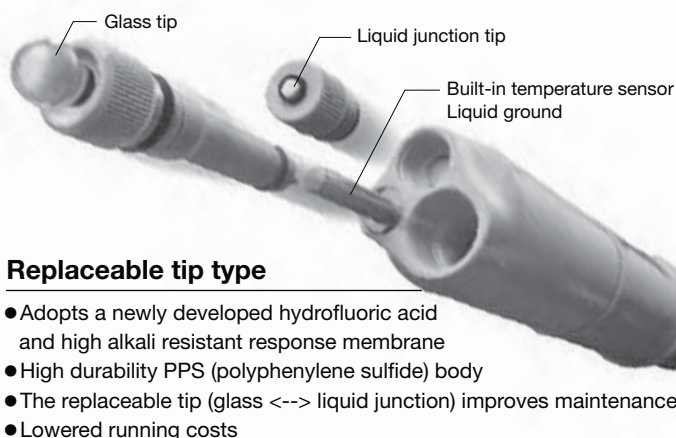
The on-site installation type H-1 series Analyzers and Transmitters offer a rainproof structure. This has been newly developed under the concepts of "durability", "functionality", and "maintainability" in order to stand the severe environmental conditions of on-site processes. This series of units comprehensively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



Panel mount type
SLIM48 Series

The panel mount type SLIM48 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

Model: 6108-50B
Integrated combination



Fixed sleeve tough electrode

Model: 6109-50B
Integrated combination



Hydrofluoric-acid resistant

Integrated combination
Model: 6152-50B



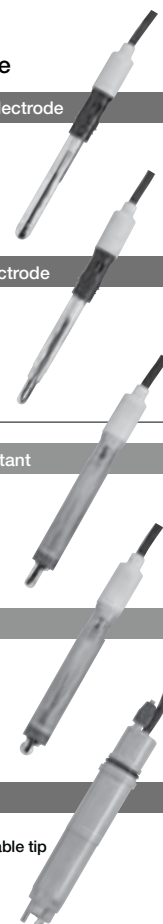
High-alkali resistant

Integrated combination
Model: 6152-50B



pH electrode standard

Model: 6174-50B
combination with replaceable tip



HP-100

(Two-Wire Transmitter)



HP-200

(Four-Wire Analyzer)



HP-100 Specifications

Measuring method	Glass electrode method
Measuring range	pH: 0 to 14 pH
Repeatability	pH: ±0.05 pH or less
Transmission output	4 to 20 mA DC (maximum load resistance 500 Ω)
Temperature compensation range	0 to 100°C
Ambient temperature	-10 to 50°C
Temperature compensation element	Pt 1000 (0°C)
Power supply	24 V DC (operating voltage range 22.5 V to 30 VDC) Power consumption Approx. 0.48 W
Equipment protected	CE marking, FCC rules

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 point 4 to 20 mA DC Input/output insulated type Maximum load resistance 900 Ω
Contact output	Five points Non-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 non-voltage a contact Contact function: Cleaning operation external input
Communication function	RS-485 Two wire system, Input/output insulated type (not insulated for 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	90 to 264 V AC 50/60 Hz Power consumption 15 W or less
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304
Weight	Approx. 4.5 kg
Equipment protected	CE marking, FCC rules

pH Electrodes

New pH electrode lineup enabling 50% reduction in maintenance load



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

Note that the pH electrodes and ORP electrodes are HORIBA, Ltd. products.

ToughH (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-300

(Two-Wire Transmitter)



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 insulated type Maximum load resistance 600 Ω
Contact input	One point Contact format: Non-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 V to 32 V DC) Power consumption 0.6 W or less
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304
Weight	Approx. 4 kg
Equipment protected	CE marking, FCC rules

HP-480

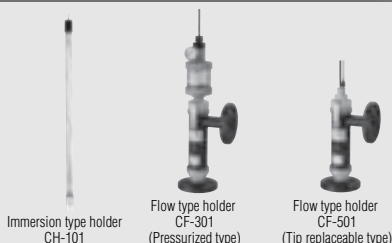
(Four-Wire Analyzer)



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 insulated type Maximum load resistance 900 Ω
Transmission output range	Freely settable within Measuring range
Contact output	Output points: 2 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 (1 point)
Self-diagnosis function	Calibration error, Electrode diagnosis error, Analyzer malfunction
Power supply	90 to 264 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
Equipment protected	CE marking, FCC rules

Holder



	Application	Product name	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.



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

Relay box

- CT-25pH (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-1A (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.



Product name	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.

HO-200

(Four-Wire Analyzer)



HO-300

(Two-Wire Transmitter)



HO-200 Specifications

Measuring method	Metal electrode method
Measuring range	ORP: -2,000 to 2,000 mV Resolution: 1 mV Temperature: 0 to 100°C Resolution: 0.1°C
Repeatability	ORP: ±5 mV or less Temperature: ±0.3°C (for equivalent input)
Linearity	ORP: ±5 mV or less Temperature: ±0.3°C (for equivalent input)
Transmission output	Two points 4 to 20 mA DC Input/output insulated type Maximum load resistance 900 Ω
Contact output	Three points Non-voltage contact output Relay contact, SPDT (1c) Contact function: R1, R2: Selectable from upper limit alarm, lower limit alarm, ON/OFF control, transmission output hold operation, cleaning output FAIL: Malfunction alarm Control operation: Control width: 2 to 400 mV (±1 to ±200 mV)
Contact input	One point Contact format: Open collector non-voltage a contact Contact function: Cleaning operation external input
Communication function	RS-485 Two wire system, Input/output insulated type (not insulated from transmission output)
Ambient temperature	-20 to 55°C
Temperature measurement 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	Manual adjustment (offset) Correction (-200 to 200 mV) Manual sensitivity correction (0.500 to 1.500)
Self-diagnosis function	Electrode diagnosis error, Analyzer malfunction
Power supply	90 to 264 V AC 50/60 Hz Power consumption 15 W or less
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304
Weight	Approx. 4.5 kg
Equipment protected	CE marking, FCC rules

HO-300 Specifications

Measuring method	Metal electrode method
Measuring range	ORP: -2,000 to 2,000 mV Resolution: 1 mV Temperature: 0 to 100°C Resolution: 0.1°C
Repeatability	ORP: ±5 mV or less Temperature: ±0.3°C (for equivalent input)
Linearity	ORP: ±5 mV or less Temperature: ±0.3°C (for equivalent input)
Transmission output	4 to 20 mA DC Input/output insulated type Maximum load resistance 600 Ω
Contact input	One point Contact format: Non-voltage a contact Contact function: Transmission output is held for closed contact input.
Ambient temperature	-20 to 60°C
Temperature measurement element	Pt 1000 (0°C) Positive temperature sensitive resistor element: 500 Ω (25°C), 6.8 kΩ (25°C), 10 kΩ (25°C)
Calibration function	Manual adjustment (offset) Correction (-200 to 200 mV) Manual sensitivity correction (0.500 to 1.500)
Self-diagnosis function	Electrode diagnosis error, Transmitter malfunction
Power supply	24 V DC (operational voltage range: 21 V to 32 V DC) Power consumption 0.6 W or less
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304
Weight	Approx. 4 kg
Equipment protected	CE marking, FCC rules

ORP Electrodes



ORP electrode
(Pt) 6805-50B

Type	Product name	Sample temperature range	Sample pressure range	Combined holder
General use (Pt)	6805-50B ToughH <small>Pb free</small>	0 to 80°C	0 to 0.03 MPa	CH-101 CF-251 CF-301
General use (Au)	6815-50B ToughH <small>Pb free</small>			
Tip replaceable (Pt)	6870-60B	0 to 105°C	0 to 0.03 MPa	HIBP HIBS CF-501

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



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

HO-480

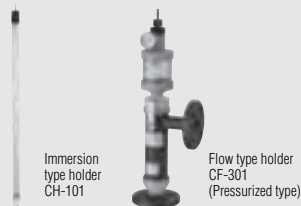
(Four-Wire Analyzer)



HO-480 Specifications

Measuring method	Metal electrode method
Measuring range	ORP: $\pm 2,000$ mV Resolution: 1 mV
Repeatability	ORP: ± 5 mV or less (for equivalent input)
Linearity	ORP: ± 5 mV or less (for equivalent input)
Transmission output	4 to 20 mA DC Input/output insulated type Maximum load resistance 900 Ω
Transmission output range	Freely settable within measuring range
Calibration function	Sensitivity correction Adjustment ± 200 mV Span variable range 50.0 to 150.0%
Contact output	Output points: 2 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
Self-diagnosis function	· Outside measuring range · Analyzer malfunction
Power supply	90 to 264 V AC 50/60 Hz Power consumption 10 W or less
Ambient temperature	-5 to 45°C
Equipment protected	CE marking, FCC rules

Holder



	Application	Product name	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	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

ORP sensor extension cable

- C-2A (Temperature compensation non-electrode type)

Used to connect transmitter and relay box.



Product name	C-2A
Outer diameter	$\varnothing 5$
Max. extendable distance	50 m

Relay box

- CT-20pH

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

- ORP standard powder (10 packs)

Other powders are also available in addition to solutions.

Mount fitting

- BA-1A (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.



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

Dissolved Oxygen

HD-200

(Four-Wire Analyzer)



HD-300

(Two-Wire Transmitter)



HD-200 Specifications

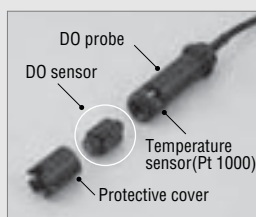
Measuring method	Membrane type polarography method
Measuring range	Dissolved oxygen concentration: 0 to 20 mg/L Resolution: 0.01 mg/L Saturation ratio: 0 to 200% Resolution: 1% Temperature: 0 to 50°C Resolution: 0.1°C
Repeatability	Dissolved oxygen concentration: ±0.5% full-scale or less, Temperature: ±0.5°C (for equivalent input)
Linearity	Dissolved oxygen concentration: ±0.5% full-scale or less, Temperature: ±0.5°C (for equivalent input)
Transmission output	Two points 4 to 20 mA DC Input/output insulated type Maximum load resistance 900 Ω
Contact output	Three points Non-voltage contact output Relay contact, SPDT(1c) Contact function R1, R2: Selectable from upper limit alarm, lower limit alarm, ON/OFF control, transmission output hold operation, cleaning output FAIL: Malfunction alarm Control operation Control range: 0.02 to 1.00 mg/L (±0.01 to ±0.50 mg/L)
Contact input	One point Contact format: Open collector non-voltage a contact Contact function: Cleaning operation external input
Communication function	RS-485 Two wire system, Input/output insulated type (not insulated for transmission output)
Temperature compensation range	0 to 50°C
Ambient temperature	-20 to 55°C
Temperature measurement element	Pt 1000 (0°C) (Built into DO-1100 probe)
Calibration method	Atmospheric calibration or saturated liquid calibration
Self-diagnosis function	Calibration error, Sensor diagnosis error, Analyzer malfunction
Power supply	90 to 264 V AC 50/60 Hz Power consumption 15 W or less
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304
Compatible sensor	Sensor: 5505, 5510 Probe: DO-1100
Weight	Approx. 4.5 kg
Equipment protected	CE marking, FCC rules

HD-300 Specifications

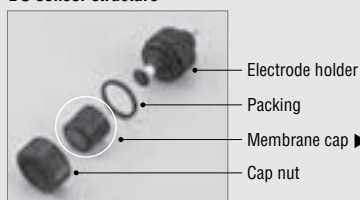
Measuring method	Membrane type polarography method
Measuring range	Dissolved oxygen: 0 to 20 mg/L Resolution: 0.01 mg/L Saturation ratio: 0 to 200% Resolution: 1% Temperature: 0 to 50°C Resolution: 0.1°C
Repeatability	Dissolved oxygen concentration: ±0.5% full-scale or less, Temperature: ±0.5°C (for equivalent input)
Linearity	Dissolved oxygen concentration: ±0.5% full-scale or less, Temperature: ±0.5°C (for equivalent input)
Transmission output	4 to 20 mA DC Input/output insulated type Maximum load resistance 600 Ω
Contact input	One point Contact format: Non-voltage a contact Contact function: Transmission output is held for closed contact input.
Temperature compensation range	0 to 50°C
Ambient temperature	-20 to 60°C
Temperature measurement element	Pt 1000 (0°C) (Built into DO-1100 probe)
Calibration method	Atmospheric calibration or saturated liquid calibration
Self-diagnosis function	Calibration error, Sensor diagnosis error, Transmitter malfunction
Power supply	24 V DC (operational voltage range: 21 V to 32 V DC) Power consumption 0.6 W or less
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304
Compatible sensor	Sensor: 5505, 5510 Probe: DO-1100
Weight	Approx. 4 kg
Equipment protected	CE marking, FCC rules

DO sensing system for HD-200 / HD-300

Combines sensor replacement and internal solution, membrane replacement during parts renewal



DO sensor structure



Pb Free

The membrane remains fixed to the diaphragm cap, simplifying the replacement work during tip renewal.

Specifications

Product name	5505	5510
Measuring method	Membrane type polarography	
Construction	Sensor replacement and membrane internal solution replacement system	
Material	Membrane thickness	50 μm
	Membrane material	PFA
	Electrode material	C-Ag
	Solution contact material	PPO, PFA, EPDM
	Internal solution	KCl (neutral)
Performance	Response speed (90% response)	120 sec. or less
	Repeatability	±0.1 mg/L
Measurement solution conditions	Temperature	0 to 50°C
	Pressure	0 to 0.5 MPa
	Flow velocity	20 cm/sec. or more
Combined probe	DO-1100	

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.

HD-480

(Four-Wire Analyzer)



HD-480 Specifications

Measuring method	Galvanic cell method
Measuring range	Dissolved oxygen: 0 to 20 mg/L: Resolution 0.01mg/L Saturation ratio: 0 to 200%: Resolution 1% Temperature: 0 to 40°C: Resolution 0.1°C
Repeatability	Dissolved oxygen: ±0.5% full-scale or less (for equivalent input)
Linearity	Dissolved oxygen: ±0.5% full-scale or less (for equivalent input)
Transmission output	4 to 20 mA DC Input/output insulated type Maximum load resistance 900 Ω
Transmission output range	Freely settable within measuring range
Contact output	Output points: 2 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, temperature
Calibration function	· Atmospheric calibration or saturated liquid calibration · Salinity correction (0.0 to 5.0%) · Temperature calibration (2 points)
Self-diagnosis function	· Calibration failure (zero error, sensitivity error) · Sensor diagnosis (temperature sensor short-circuit, temperature sensor disconnection) · Outside measuring range · Analyzer malfunction
Power supply	90 to 264 V AC 50/60 Hz Power consumption 10 W or less
Temperature compensation range	0 to 40°C
Ambient temperature	-5 to 45°C
Compatible sensor	Sensor: 5405, Probe: DP-100
Equipment protected	CE marking, FCC rules

DO sensing system for HD-480

DO Sensor

Product name	5405
Construction	Cartridge replacement disposable type
Cleaner combination	Possible
Film thickness	50 μm
Responsiveness (for same measurement conditions)	90% response 120 sec. or less
Measurement solution conditions	Temperature: 0 to 40°C Pressure: 0 to 0.1 MPa (DO measurement is possible to a maximum depth of 10 m.) Flow velocity: 25 cm/sec. or more
Film material	PTFE
Combined probe	DP-100



5405

[Disposable type sensor]

The film recovering work required when renewing conventional electrodes is no longer necessary and anyone can easily perform replacement. In addition, disposable type sensors deliver high quality and low cost.

Probe

Product name	DP-100
Construction	Immersion type
Measurement solution temperature	0 to 40°C
Solution contact material	PVC, titanium, CR
Combined sensor	5405

[Immersion type probe]

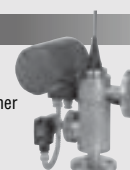
Directly immerse the probe in the measurement solution during use. No special installation work is required. Immersion type holders / flow type holders are available according to the application.



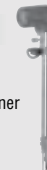
DP-100

Cleaner

Water/air jet Cleaner
Flow type
JDF-30



Water/air jet Cleaner
Immersion type
JDH-10



Probe



Specifications

Product name	DO-1100
Construction	Tip replacement type
Measurement solution temperature	0 to 50°C (no freezing)
Measurement solution pressure	0 to 0.5 MPa
Solution contact material	PPO, EPDM, Ti
Combined sensor	5505, 5510

Holder

- **Immersion type holder**
DH-101 series (insertion type)
NH-10 series (drop-in type)
- **Flow type holder**
DF-30 series

Cleaner

- **Immersion type jet cleaner**
JDH series
- **Flow type jet cleaner**
JDF series

Accessories

- **DO sensor extensive cable**
•C-7E



- **Relay box**
•CT-2000



Resistivity

HE-200R (Four-Wire Analyzer)



HE-300R (Two-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
	Temperature	°C	0 to 100
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 insulated type Maximum load resistance 900 Ω		
Contact output	Three points Non-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 non-voltage a contact Contact function: Transmission output hold external input		
Communication function	RS-485 Two wire system, Input/output insulated type (not insulated for 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	90 to 264 V AC 50/60 Hz Power consumption 15 W or less		
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A 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		
Equipment protected	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
	Temperature	°C	0 to 100
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 insulated type Maximum load resistance 600 Ω		
Contact input	One point Contact format: Non-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 V to 32 V DC) Power consumption 0.6 W or less		
Construction	Outdoor installation type: IP65 protection level (rain-proof type) Mounting method: 50A 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		
Equipment protected	CE marking, FCC rules		

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

Resistivity Sensors

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

Product name	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

(Four-Wire Analyzer)



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	Output points: 1 point 4 to 20 mA DC Input/output insulated 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	Conductivity: Input of cell constant correction coefficient (parameter input) Temperature: Calibration compared with reference temperature gauge
Power supply	90 to 264 V AC 50/60 Hz Power consumption 10 W or less
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)
Equipment protected	CE marking, FCC rules

Holder

Flow type holder

•EF-30 series



EFA-30 (PVC)

EFA-30P (PVDF)

EFA-30 S (SUS 316)

Specifications

Product name	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.



Conductivity (Low conductivity solutions)

HE-200C (Four-Wire Analyzer)



HE-300C (Two-Wire Transmitter)



HE-200C Specifications

Measuring range	Cell constant	/cm	0.01	0.1	1.0
			Electrical conductivity	$\mu\text{S/cm}$	0.000 to 2.000 0.00 to 20.00
		mS/m	0.0000 to 0.2000 0.000 to 2.000	0.0000 to 0.2000 0.000 to 2.000 0.00 to 20.00 0 to 200.0*	0.00 to 20.00 0.0 to 200.0
TDS conversion	mg/L		0.00 to 2.00 0.0 to 20.0	0.0 to 20.0 0 to 200	0 to 200 0 to 2,000
			Electrical conductivity measurement and TDS conversion measurement cannot be selected at same time.		
Temperature	$^{\circ}\text{C}$		0 to 100 Resolution: 0.01 $^{\circ}\text{C}$		
			* Range only applies to sanitary sensors.		
Repeatability	Electrical conductivity: $\pm 0.5\%$ full-scale or less, TDS conversion: $\pm 1.5\%$ full-scale or less Temperature: $\pm 0.1^{\circ}\text{C}$ (for equivalent input)				
Linearity	Electrical conductivity: $\pm 0.5\%$ full-scale or less, TDS conversion: $\pm 1.5\%$ full-scale or less Temperature: $\pm 0.5^{\circ}\text{C}$ (for equivalent input)				
Transmission output	Two point 4 to 20 mA DC Input/output insulated type Maximum load resistance 900 Ω				
Contact output	Three points Non-voltage contact output Relay contact, SPDT (1c) Contact function: R1, R2: Selectable from upper limit alarm, lower limit alarm, USP assessment, transmission output hold operation FAIL: Malfunction alarm Alarm operation: Output details: Electrical conductivity (or TDS conversion), temperature				
Contact input	One point Contact format: Open collector non-voltage a contact Contact function: Transmission output hold external input				
Communication function	RS-485 Two wire system, Input/output insulated type (not insulated for transmission output)				
Temperature compensation range	0 to 100 $^{\circ}\text{C}$ (but for 0 $^{\circ}\text{C}$ or less, 100 $^{\circ}\text{C}$ or more, extend and perform calculation)				
Ambient temperature	-20 to 55 $^{\circ}\text{C}$				
Temperature compensation element	Pt 1000 (0 $^{\circ}\text{C}$)				
Calibration function	Electrical conductivity: Based on input of cell constant correction coefficient (parameter input) TDS conversion: Conversion based on specified coefficient (0.30 to 1.00) Temperature: One point calibration compared with reference temperature gauge				
Self-diagnosis function	Sensor diagnosis error, Analyzer malfunction				
Power supply	90 to 264 V AC 50/60 Hz Power consumption 15 W or less				
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304				
Weight	Approx. 4.5 kg				
Equipment protected	CE marking, FCC rules				

HE-300C Specifications

Measuring range	Cell constant	/cm	0.01	0.1	1.0
			Electrical conductivity	$\mu\text{S/cm}$	0.000 to 2.000 0.00 to 10.00
		mS/m	0.0000 to 0.2000 0.000 to 1.000	0.0000 to 0.2000 0.000 to 2.000 0.00 to 10.00	0.00 to 20.00 0.0 to 100.0
TDS conversion	mg/L		0.00 to 2.00 0.0 to 10.0	0.0 to 20.0 0 to 100	0 to 200 0 to 1,000
			Electrical conductivity measurement and TDS conversion measurement cannot be selected at same time.		
Temperature	$^{\circ}\text{C}$		0 to 100 Resolution: 0.01 $^{\circ}\text{C}$		
Repeatability	Electrical conductivity: $\pm 0.5\%$ full-scale or less TDS conversion: $\pm 1.5\%$ full-scale or less Temperature: $\pm 0.1^{\circ}\text{C}$ (for equivalent input)				
Linearity	Electrical conductivity: $\pm 0.5\%$ full-scale or less TDS conversion: $\pm 1.5\%$ full-scale or less Temperature: $\pm 0.5^{\circ}\text{C}$ (for equivalent input)				
Transmission output	4 to 20 mA DC Input/output insulated type Maximum load resistance 600 Ω				
Contact input	One point Contact format: Non-voltage a contact Contact function: Transmission output is held for closed contact input.				
Temperature compensation range	0 to 100 $^{\circ}\text{C}$ (but for 0 $^{\circ}\text{C}$ or less, 100 $^{\circ}\text{C}$ or more, extend and perform calculation)				
Ambient temperature	-20 to 60 $^{\circ}\text{C}$				
Temperature compensation element	Pt 1000 (0 $^{\circ}\text{C}$)				
Calibration function	Electrical conductivity: Based on input of cell constant correction coefficient (parameter input) TDS conversion: Conversion based on specified coefficient (0.30 to 1.00) Temperature: One point calibration compared with reference temperature gauge				
Self-diagnosis function	Sensor diagnosis error, Transmitter malfunction				
Power supply	24 V DC (operational voltage range: 21 V to 32 V DC) Power consumption 0.6 W or less				
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304				
Compatible sensor	ESH series electrical conductivity sensor (cell constant 0.01/cm, 0.1/cm, 1.0/cm)				
Weight	Approx. 4 kg				
Equipment protected	CE marking, FCC rules				

Conductivity Sensors

General use Two Electrode Electrical Conductivity Sensor

•Screw in type ESH-001/01/1 series

ESH-01
(Cable-attached type)



ESH-01
(Connector type)



For flange mounting
ESH-01
(Connector type)



Specifications

Product name	ESH-001	ESH-01	ESH-1
Cell constant	Approx. 0.01/cm	Approx. 0.1/cm	Approx. 1.0/cm
Solution contact material	Electrode	Selectable from SUS316 or titanium	
	Body	PVDF	
	Packing	FKM	
Measurement solution pressure	0 to 0.5 MPa		
Measurement solution temperature	0 to 100 $^{\circ}\text{C}$		
Cable length	Cable-attached type: 10 m, Y terminal (standard) Max. extendable distance: 100 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		

HE-480C

(Four-Wire Analyzer)



HE-480C Specifications

Sensor input	One channel (cell constant: 0.01/cm, 0.1/cm, 1.0/cm)				
Measuring range	Cell constant	/cm	0.01	0.1	1.0
	Conductivity	μS/cm	2.000/20.00	20.00/200.0	200.0/2000
		mS/m	0.2000/2.000	2.000/20.00	20.00/200.0
	TDS conversion	mg/L	2.00/20.0	20.0/200	200/2000
Temperature: 0 to 100°C (The displayed decimal place is selectable among 0, 1, and 2)					
Repeatability	±0.5% full-scale or less (but TDS is ±1.5% full-scale or less)				
Transmission output	Output points: 1 point 4 to 20 mA DC Input/output insulated type Maximum load resistance: 900 Ω				
Contact output	Output points: 2 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), USP assessment, malfunction alarm, maintenance operation				
Calibration function	Conductivity: Input of cell constant correction coefficient (parameter input) Temperature: Calibration compared with reference temperature gauge TDS: Conversion based on specified coefficient (0.30 to 1.00)				
Power supply	90 to 264 V AC 50/60 Hz Power consumption 10 W or less				
Temperature compensation	<ul style="list-style-type: none"> Temperature characteristics of ultra-pure water (reference temperature 25°C) Reference temperature and temperature coefficient specified settings (Reference temperature : 5 to 95°C Temperature coefficient: ±5%/°C) NaCl temperature characteristics No temperature compensation 				
Ambient temperature	-5 to 45°C				
Temperature compensation element	Pt 1000 (0°C)				
Compatible sensor	ESH, FS series conductivity sensor (Cell constant: 0.01/cm, 0.1/cm, 1.0/cm)				
Equipment protected	CE marking, FCC rules				

Holder

- Flow type holder
- EFA-30 series



Specifications

Product name	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

- Relay box
- CT-20EC



- Specialized extension cable
- C-5C



- Connector cable
- CK-10M/20M/30M



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

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.

Conductivity (High conductivity solutions)

HE-200H (Four-Wire Analyzer)



HE-480H (Panel mounted type)



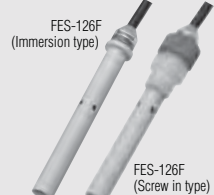
HE-200H Specifications			
Measuring method	Four electrode method		
Measuring range	Electrical conductivity: 0.0 to 200.0 mS/cm* 0.00 to 20.00 S/m* (Switchable between fixed range (decimal point) and automatic range) * With conditions under which temperature compensation is not performed, it is possible to display 0 to 2,000 mS/cm (0 to 200 S/m). Temperature: 0 to 100°C Resolution: 0.01°C		
Salinity conversion function	Sea water: 0.00 to 4.00%, NaCl: 0.0 to 20.0%		
Concentration conversion function	NaOH: 0.00 to 5.00%, HNO3: 0.00 to 5.00%, H3PO4: 0.00 to 5.00 Specified 1 to 4: 0.00 to 100.00%		
Repeatability	Electrical conductivity		
Linearity	Cell constant	0.1/cm	1.0/cm
	0 to 20.00 mS/cm	±0.5% full-scale or less	±0.5% full-scale or less
	20.0 to 200.0 mS/cm	±1.0% full-scale or less	±0.5% full-scale or less
	Condition	For equivalent input	
	Temperature	Repeatability: ±0.1°C, Linearity: ±0.5°C	
Transmission output	Two points 4 to 20 mA DC Input/output insulated type Maximum load resistance 900 Ω		
Contact output	Three points Non-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 conductivity (or conversion value), temperature Note: Range only applies to sanitary sensors.		
Contact input	Two points Contact format: Open collector non-voltage a contact Contact function: Transmission output range switching, transmission output hold external input Function selectable from "Transmission 4 range selection" or "Transmission 2 range selection + hold" Linking to selected transmission range also allows automatic switching of display		
Communication function	RS-485 Two wire system, Input/output insulated type (not insulated for transmission output)		
Temperature compensation range	0 to 100°C (but for 0°C or less, 100°C or more, extend and perform calculation)		
Ambient temperature	-20 to 55°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 thermometer		
Self-diagnosis function	Sensor diagnosis error, Analyzer malfunction		
Power supply	90 to 264 V AC 50/60 Hz Power consumption 15 W or less		
Construction	Outdoor installation type: IP65 protection level Mounting method: 50A pole or wall mounted Case: Aluminum alloy Mount fitting/hood: SUS304		
Weight	Approx. 4.5 kg		
Equipment protected	CE marking, FCC rules		

HE-480H Specifications				
Measuring method	Four electrode method			
Sensor input	One channel (cell constant: 1.0/cm)			
Temperature sensor specifications	Measurement temperature resistor element 1,000 Ω/0°C			
Measuring range	Conductivity (mS/cm)	0.00 to 20.00	0.0 to 200.0	0.0 to 500.0
	(S/m)	0.000 to 2.000	0.00 to 20.00	0.00 to 50.00
	Note: In the 200.0 mS/cm, 20.00 S/m range, with a reference temperature of 25°C, measurement is possible for a freely settable temperature coefficient of up to ±3.5%/°C. Note: In the 500.0 mS/cm, 50.00 S/m range, measurement is possible without temperature compensation.			
	Sea water salinity conversion: 0.00 to 4.00%			
	NaCl salinity conversion: 0.0 to 20.0%			
	Temperature: 0 to 100°C (no places after decimal point, 1 digit, 2 digit selectable display)			
Repeatability	±0.5% full-scale or less (salinity conversion and 500 mS/cm range: ±1.0%)			
Transmission output	Output points: 1 point 4 to 20 mA DC Input/output insulated type Maximum load resistance 900 Ω			
Contact output	Output points: 2 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			
Ambient temperature	-5 to 45°C			
Temperature compensation	· NaCl temperature characteristics · Reference temperature and temperature coefficient specified settings (Reference temperature : 5 to 95°C Temperature coefficient: ±5%/°C) · No temperature compensation			
Compatible sensor	FES series conductivity sensor (Cell constant: 1.0/cm) Note: The measurable range differs according to the sensor model.			
Equipment protected	CE marking, FCC rules			

Conductivity Sensors

General use Four Electrode Conductivity Sensor

Immersion type / Screw in type FES-100 series



Specifications

Product name	FES-125F	FES-126F
Cell constant	Approx. 1.0/cm	
Solution contact material	Electrode	Titanium
	Body	PVC PPS
	Packing	FKM
Measurement solution pressure	0 to 0.5 MPa	
Measurement solution temperature	0 to 50°C	0 to 120°C*
Cable length	10 m, Y terminal (standard) When extending more than this, use CT-20EC relay box. Max. extendable distance: 50 m.	
Attachment	1. Immersion type 2. Screw in type Use EA-20 screw in adapter. Use EA-40 screw in adapter.	
Combined holder	Flow type holder: EF-20, EF-20P, EF-20 S	

* When used with immersion type, condition changes to 0 to 50°C.

Holder

Flow type holder EF-20 series

Specifications

Product name	EF-20	EF-20P	EF-20 S
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) 1/2, Outlet: Rc (PT) 1/2		



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.

Accessories

Relay box
•CT-20EC



Specialized extension
cable
•C-7E



Residual Chlorine

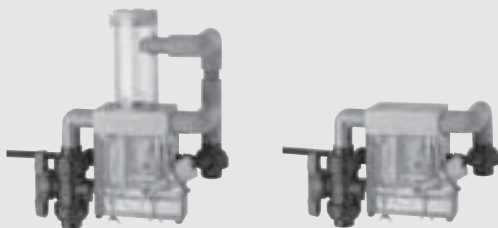
HR-200 (Four-Wire Analyzer)



HR-200 Specifications

Measuring method	Polarography
Measuring range	Residual Chlorine: 0 mg/L to 3 mg/L Resolution: 0.01 mg/L Temperature: 0 to 50°C Resolution: 0.1°C
Repeatability	Residual Chlorine: Within ±0.05 mg/L or less Temperature: Within ±0.5°C (for equivalent input)
Linearity	Residual Chlorine: Within ±0.05 mg/L or less Temperature: Within ±0.5°C (for equivalent input)
Transmission output	Two points 4 to 20 mA DC Input/output insulation type Maximum load resistance 900 Ω
Contact output	Three points No-voltage contact output Relay contact, SPDT 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) 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 Contact capability: Input 1: External input for transmission holding Input 2: Flow switch input for interlock (Open due to decreased flow)
Communication capability	RS-485 Two-wire input/output insulation type (not insulated 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) 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 source	90 V to 264 V AC, 50/60 Hz 35 VA (max.) when an automatic cleaner is connected.
Construction	Outdoor installation type: IP65 Protection class Installation method: 50 A pole-mounted or wall-mounted Material of case: Aluminum alloy (coated with epoxy modified melamine resin) Material of mounting brackets: SUS304
Weight	Approx. 4.5 kg
Equipment protected	CE marking, FCC rules

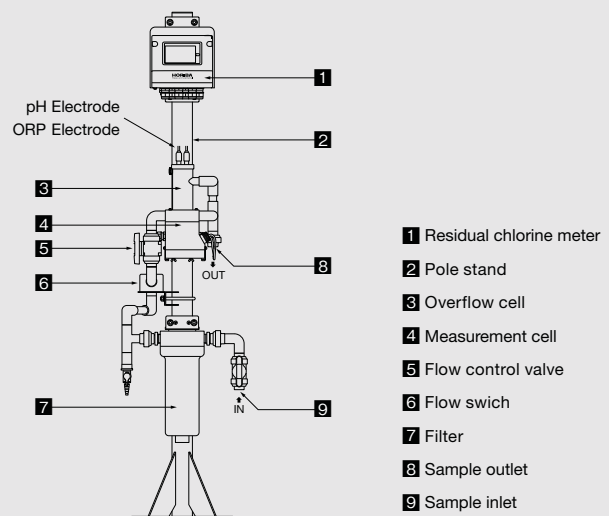
Sensor



Specifications

Model	RA-10	RA-20
	Overflow type	Inline type
Measuring method	Polarography	
Sample condition	Temperature 0°C to 45°C (without freeze)	
	Flow rate	1.3L/min to 2.0L/min
Pressure	Within 0.5MPa	
pH	5.8pH to 8.6pH (Constant)	
Electrical conductivity	More than 10mS/m	
Wetted part material	PVC, PPO, EPDM	
Electrode material	Au, AgCl, C	
Bead material	SiO2	
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: 2m, Maximum extension: 40m	

Unit



Accessories

Cathode

•RA-K

Filter unit

•RA-F

Flow switch

•RA-FS10 (for RA-10)
•RA-FS20 (for RA-20)

Flow meter

•RA-FM (for RA-20)

Constant flow valve

•RA-CFV (for RA-20)

Residual Chlorine

HR-480 (Four-Wire Analyzer)



HR-480 Specifications

Measurement target	Free residual chlorine
Measuring method	Galvanic cell method
Measuring range	Residual chlorine : 0 to 2 mg/L : Resolution 0.01 mg/L
Repeatability	Residual chlorine : ± 0.05 mg/L or less (for equivalent input)
Linearity	Residual chlorine : ± 0.05 mg/L or less (for equivalent input)
Transmission output	4 to 20 mA DC Input/output insulated 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	· Zero calibration (Equipped with zero calibration skip function) · Span calibration (Calibration compared with DPD tester)
Hold function	Selectable from preceding hold, specified value hold, continuous operation
Self-diagnosis function	· Calibration failure (zero error, sensitivity error) · Outside measuring range · Analyzer malfunction
Power supply	90 to 264 V AC 50/60 Hz Power consumption 10 W or less
Ambient temperature	-5 to 45°C
Compatible sensor	RS-1
Equipment protected	CE marking, FCC rules

Sensor

Specifications

Product name	RS-1
Measurement solution conditions	Temperature: 0 to 40°C (temperature change $\pm 5^\circ\text{C}$ or less) Flow rate: 0.5 to 1.0 L/min pH: 6 to 8 pH (constant)
Solution contact material	PVC
Electrode material	Anode electrode: Pt Cathod electrode: Ag / AgCl
Max. extendable distance	50 m (meter from sensor) However, as the standard length of the sensor cable is 5 m, when extending more than this, use a relay box.



RS-1

Sampling Rack

Specifications

Product name	SS-2/SS-3
Measurement solution flow rate	0.5 to 1.0 L/min
Measurement solution pressure	Inlet: 0.3 MPa or less Outlet: Open atmosphere
Connection pipe aperture	Inlet: PVC 13A socket Outlet: PVC 20A pipe
Attachment	Wall mounted type (standard: indoor attachment)
Weight	Approx. 4.5 kg
Product name	Immersion sensor
SS-2	Residual chlorine / pH / ORP / temperature
SS-3	Residual chlorine / pH / ORP / conductivity / temperature



SS-2

Turbidity

HU-200TB (Four-Wire Analyzer)



HU-200TB Specifications

Measuring method	Two light sources, 90-degree transmission-scattering method	
Measuring range	Kaolin: 0 to 500 degrees Formazin: 0 to 1000 degrees PSL: 0 to 100 degrees	Resolution: 0.01 degree (0 to 10 degree range) Resolution: 0.1 degree (10 to 100 degree range) Resolution: 1 degree (100 to 1000 degree range)
Repeatability	Within readings $\pm 2\%$ or $\pm 0.04\%$ degrees, whichever is larger (Depend on span calibration jigs)	
Linearity	The deviation at the mid-range point of span calibration values is within a calibration value $\pm 2\%$ or ± 0.04 degrees, whichever is larger.	
Transmission output	One points 4 to 20 mA DC Input/output insulation type Maximum load resistance 900 Ω	
Contact output	Three points Output type: No-voltage contact output Relay contact, SPDT Contact capability R1, R2: Selectable from upper limit alarm, lower limit alarm, transmission output Hold, and cleaning output (opened at alarm operation, closed usually, closed at power-off) FAIL: Error warning (normally closed; open when an error occurs; open when the power is turned OFF)	
Contact input	One points Contact type: No-voltage a contact for open collector Contact capability: Can be selected from cleaning directives and transmission hold.	
Communication capability	RS-485 Two-wire input/output insulation type (not insulated from transmission output)	
Ambient temperature	0°C to 55°C (without freezing)	
Cleaning function	Cleaning method: Electric wiper type (executes cleaning operation by communications with the converter)	
Self-check	Sensor check error, Converter error	
Power source	90 V to 264 V AC, 50/60 Hz 35 VA (max.) when an automatic cleaner is connected.	
Structure	Outdoor installation type: IP65 Protection class Installation method: 50 A pole-mounted or wall-mounted Material of case: Aluminum alloy (coated with epoxy modified melamine resin) Material of mounting brackets: SUS304	
Weight	Approx. 4.5 kg	
Equipment protected	CE marking, FCC rules	

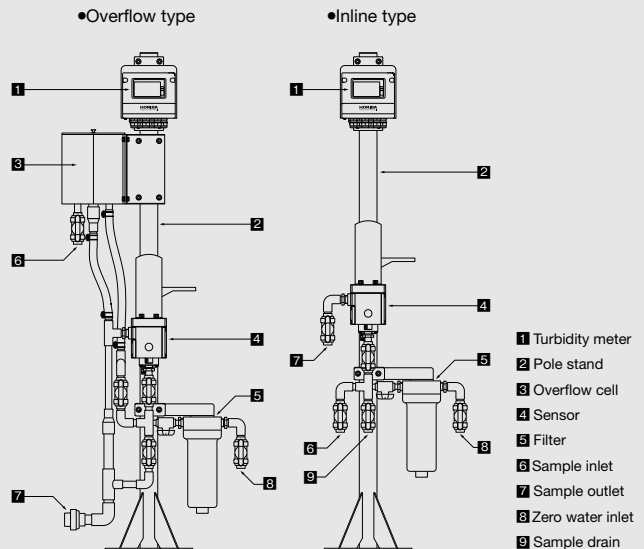
Sensor



Specifications

Model	SS-120
Measuring principle	2 light sources, 90-degree transmission-scattering method
Light source	Light source
Detector	Silicon photo diode
Measured liquid temperature	5°C to 45°C (without freezing)
Measured liquid pressure	0 MPa 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 source	12 V DC supplied from HU-200TB Analyzer
Mass	Mainframe: approx. 3.5 kg cleaner: 2.5 kg

Unit



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.

MLSS (Mixed Liquor Suspended Solid)

HU-200SS (Four-Wire Analyzer)



HU-200SS Specifications

Measuring method	Light transmission method
Measurable range	Activated sludge (MLSS): 0-20000 mg/L Resolution: 1 mg/L (0-10000mg/L) Kaolin: 0-10000 mg/L 10 mg/L (10000-22000mg/L) Clay(inorganic mud): 0-20000 mg/L
Repeatability	Within a reading value $\pm 3\%$ or ± 10 mg/L, whichever is larger. (sensor connecting sludge measured value)
Transmission output	One points 4 to 20 mA DC Input/output insulation type Maximum load resistance 900 Ω
Contact output	Three points Output type: No-voltage contact output Relay contact, SPDT Contact capability R1, R2: Selectable from upper limit alarm, lower limit alarm, transmission output Hold, and cleaning output. (opened at alarm operation, closed usually, closed at power-off) FAIL: Error warning (normally closed; open when an error occurs; open when the power is turned OFF)
Cleaning output	One points Active voltage contact output (connected supply voltage output) Contact capability: Solenoid valve drive for cleaning
Contact input	One points Contact type: No-voltage a contact for open collector Contact capability: Can be selected from cleaning directives and transmission hold.
Communication capability	RS-485 Two-wire input/output insulation type (not insulated from transmission output)
Ambient temperature	-20°C to 55°C (without freezing)
Calibration method	<ul style="list-style-type: none"> • Zero calibration : With clean water • Span calibration: Concentration conversion method using coefficient input • Working curve selection: (selection of activated sludge and inorganic mud) There is a feature that allows you to match an instrument indicated value to a hand analyzed value of sludge (by the Mass method).
Self-diagnosis	Sensor check error, Converter error
Power source	90 V to 264 V AC, 50/60 Hz 35 VA (max.) when an automatic cleaner is connected.
Structure	Outdoor installation type: IP65 Protection class Installation method: 50 A pole-mounted or wall-mounted Material of case: Aluminum alloy (coated with epoxy modified melamine resin) Material of mounting brackets: SUS304
Weight	Approx. 4.5 kg
Equipment protected	CE marking, FCC rules

Sensor



Specifications

Model	SS-90
Measuring principle	Light transmission method
Light source	Infrared LED, 880 nm, approx. 10 Hz, AC blinking
Detector	(transmitted light/reference light)
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 source	12 VDC supplied from the HU-200SS Analyzer
External dimensions	48 mm in diameter x 250 mm in length (excluding the cable)
Mass	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-25SS



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.

Water Quality Monitoring System

Summary

For the monitoring station for the aquatic environment, it is required to distribute total system to deliver analysis data to the customers. To meet the requests, we can offer Water Quality Monitoring System, that include analytical instruments for water quality, water sampling equipment, data acquisition system, and remote data communication system.

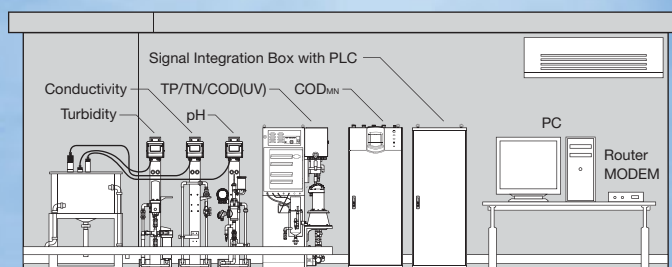
Feature

- HORIBA will provide the Water Quality Monitoring System to meet customers' request.
- Save initial cost and labor to collect analytical instruments and other additional devices. HORIBA can provide total system with isolated stations/houses.

Explanation

It has been required to observe wastewater quality (and load in some case) to discharge wastewater to natural water body, such as river and lakes. HORIBA's Water Quality Monitoring System will provide solutions for the customer's requests. We can offer Water Quality Monitoring System, which include analytical instruments for water quality, water sampling equipment, data acquisition system, and remote data communication system.

As the item to watch the water quality, we are prepared following automatic analytical instruments remote data communication system.



- CODA-500: Automatic Chemical Oxygen Demand (COD_{MN}) monitor,
- TPNA-300: Total nitrogen and total phosphorus concentration analyzer,
- OPSA-150 (COD(UV)): Organic Pollutant Monitor with the principle of ultraviolet ray absorption by organic matters
- pH analyzer
- Conductivity analyzer
- Turbidity analyzer
- Water sampling system
- Operation system
- Data acquisition system (DAS)
- Data communication system
- Shelter and other equipment



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

- The contents of this catalog are subject to change without prior notice, and without any subsequent liability to this company.
- The color of the actual products may differ from the color pictured in this catalog due to printing limitations.
- It is strictly forbidden to copy the content of this catalog in part or in full.
- All brand names, product names and service names in this catalog are trademarks or registered trademarks of their respective companies.

<http://www.horiba.com> e-mail: info@horiba.co.jp

● HORIBA, Ltd.

Head Office
2 Miyano Higashi, Kisshoin
Minami-ku, Kyoto, Japan
Phone: 81 (75) 313-8123
Fax: 81 (75) 321-5725

Tokyo Sales Office
Kanda-Awaji-cho Nichome
Building 2-6, Awaji-cho,
Kanda, Chiyoda-ku, Tokyo,
Japan
Phone: 81 (3) 6206-4721
Fax: 81 (3) 6206-4730

● HORIBA (China) Trading Co., Ltd.

Shanghai Office
Room 1701, United Plaza,
1468 Nanjing Rd. West,
Shanghai, 200040, China
Phone: 86 (21) 6289-6060
Fax: 86 (21) 6289-5553

Beijing Office
Room 1801, SK Tower,
Tower 1 No.6Jia, Jianguomenwai Ave.,
Chaoyang District, Beijing,
100022 China
Phone: 86 (10) 8567-9966
Fax: 86 (10) 8567-9066

● HORIBA Korea Ltd.

112-6 Sogong-Dong
Choong-ku, Seoul, Korea
Phone: 82 (2) 753-7911
Fax: 82 (2) 756-4972

● HORIBA Instruments (Singapore) Pte Ltd.

Head Office
10 Ubi Crescent
Lobby B #05-11/12, Ubi
Techpark Singapore 408564
Phone: 65 6745-8300
Fax: 65 6745-8155

Hanoi Office
Unit 10, 4 Floor, CMC tower,
Dich Vong Hau Ward, Cau Giay
district, Hanoi, Vietnam
Phone: 84 (4) 3795-8552
Fax: 84 (4) 3795-8553

● HORIBA India Private Limited

Jakarta Office
Menara Bidakara 2 Unit 11-04,
Jl. Jend. Gatot Subroto
Kav. 71-73, Jakarta
Selatan, 12870, Indonesia
Phone: 62 (21) 2906-9419
Fax: 62 (21) 2906-9421

● HORIBA India Private Limited

Delhi Office
246, Okhla Industrial Estate,
Phase 3 New Delhi - 110020,
India
Phone: 91 (11) 4646-5000
Fax: 91 (11) 4646-5020

● HORIBA India Private Limited

Pune Office
502, Purushottam Plaza,
Baner Road, Baner,
Pune - 411045 India
Phone: 91 (20) 4076-6000
Fax: 91 (20) 4076-6010

● HORIBA Instruments Incorporated

Irvine North Office
17671 Armstrong Avenue
Irvine, CA 92614, U.S.A.
Phone: 1 (949) 250-4811
Fax: 1 (949) 250-0924

● HORIBA UK Limited

Northampton Office
Kyoto Close
Summerhouse Road
Moulton Park, Northampton
NN3 6FL, UK
Phone: 44 (1604) 542-500
Fax: 44 (1604) 542-699

● HORIBA (Austria) GmbH

Kaplanstrasse 5
A-3430 Tulln,
Austria
Phone: 43 (2272) 65225
Fax: 43 (2272) 65230

● HORIBA Czech

Organizacni slozka Praha
Petrohradská 13
CZ-101 00 Praha 10,
Czech Republic
Phone: 420 (2) 717-464-80
Fax: 420 (2) 717-470-64

● HORIBA Europe GmbH

Head Office
Hans-Mess-Str.6
D-61440 Oberursel
Germany
Phone: 49 (6172) 1396-0
Fax: 49 (6172) 1373-85

● HORIBA Europe GmbH

Leichlingen Office
Julius-kronenberg Str.9
D-42799 Leichlingen
Germany
Phone: 49 (2175) 8978-0
Fax: 49 (2175) 8978-50

● HORIBA France Sarl

12, Avenue des Tropiques
Hightec Sud, F-91955
LES ULIS France
Phone: 33 (1) 69-29-96-23
Fax: 33 (1) 69-29-95-77