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H-1 Series ORP Meter for Industrial Use (Two-Wire Type)

HO-300

■ Overview

●The HO-300 is designed to transmit the measured value for ORP as a signal of 4 to 20 mADC on the power supply line when an ORP electrode and a power source for 21 to 32 VDC are connected.
The measured value and various settings are displayed on the LCD readout. When used with our cleaner, the transmission output during cleaning may be held.
A variety of self-diagnostic capabilities is provided to allow you to detect a trouble with the pH electrode or the HO-300.

■ Measurement target

● ORP in solution

■ Measuring principle

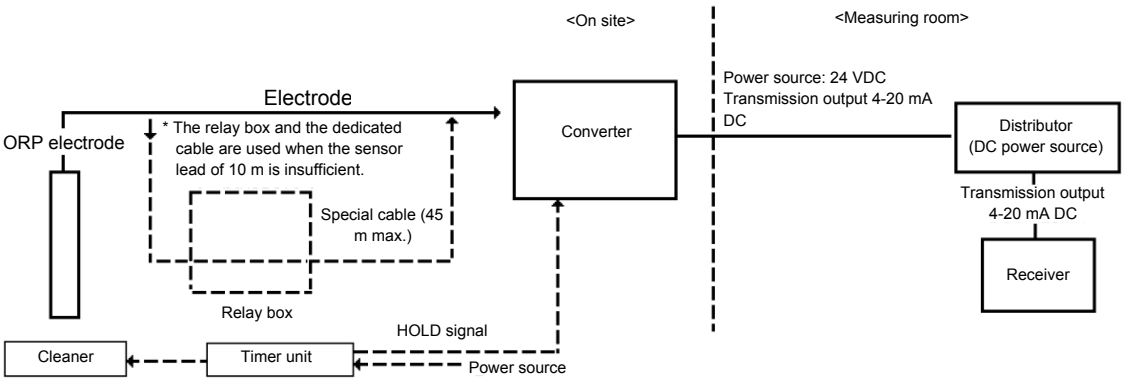
● Metal electrode type

■ Intended use

● Control and monitoring of drainage treatment and production process

■ System configuration

Standard specification



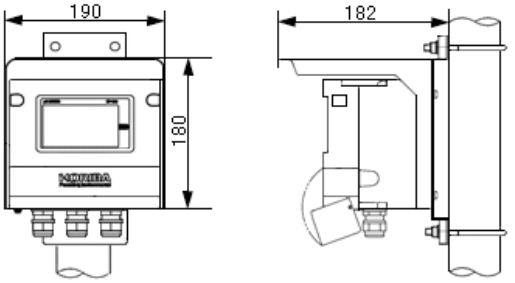
H-1 Series ORP Meter for Industrial Use (Two-Wire Type)

HO-300 Readout Converter

■ Features

- ●Outdoor installation type (equivalent to IP65; splash-proof construction)
- ●Selectable simultaneous display of temperature
- ●All settings available with front keys
  Improved maintenance feature (self-diagnostic capability)
- ●Selectable transmission output range
  Two-wire transmission type (21 to 32 VDC)
- ●Backup of stored data
- ●Easy-to-read display (150% larger than former display)
- ●Improved operability of keys by using an emboss sheet
- ●4 kinds of temperature compensation electrodes
  (500, 6.8 k, 1 k, and 10 k) Self-detection capability provided

■ External Dimensions



Unit: mm

■ Converter/Sensor

What is ORP?
ORP stands for oxidation-reduction potential.
It means an electric potential which is generated when a substance is oxidized or reduced as one of the chemical reactions.
What is oxidation?
It means that a substance is brought into chemical combination with oxygen. e.g. $C_2 + O_2 \rightarrow CO_2$
It means that a substance loses its electrons.
e.g. $Zn \rightarrow Zn^{2+} + 2^{e-}$
It means the oxidation number of an atom increases. (No example is available.)
What is reduction?
It means that a substance loses its oxygen. Exemple)
$CO_2 \rightarrow C_2 + O_2$
It means that a substance gains electrons. Exemple)
$Zn^{2+} + 2e^- \rightarrow Zn$
It means that the oxidation number of an atom increases. (No example is available.)
The electric potential is measured during one of the above chemical reactions.

Basically, the same principle as used to measure pH is applied except that a metal electrode (platinum) is used instead of a pH electrode.
The HO-200 uses two electrodes: a metal electrode (ORP electrode) and a comparison electrode. ORP is measured by determining the voltage (potential difference) generated between the two electrodes.

To measure the potential captured by the ORP electrode, another electrode is required. The comparison electrode (described above) must be very stable in electric potentials. For this purpose, its liquid junction is perforated or coated with ceramic.

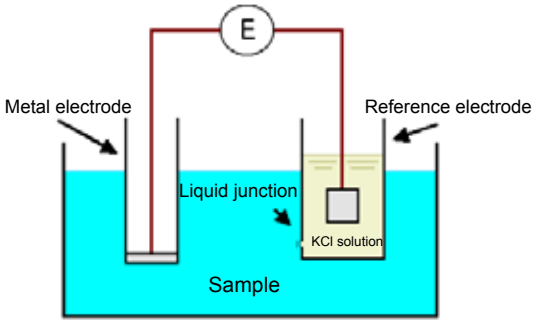
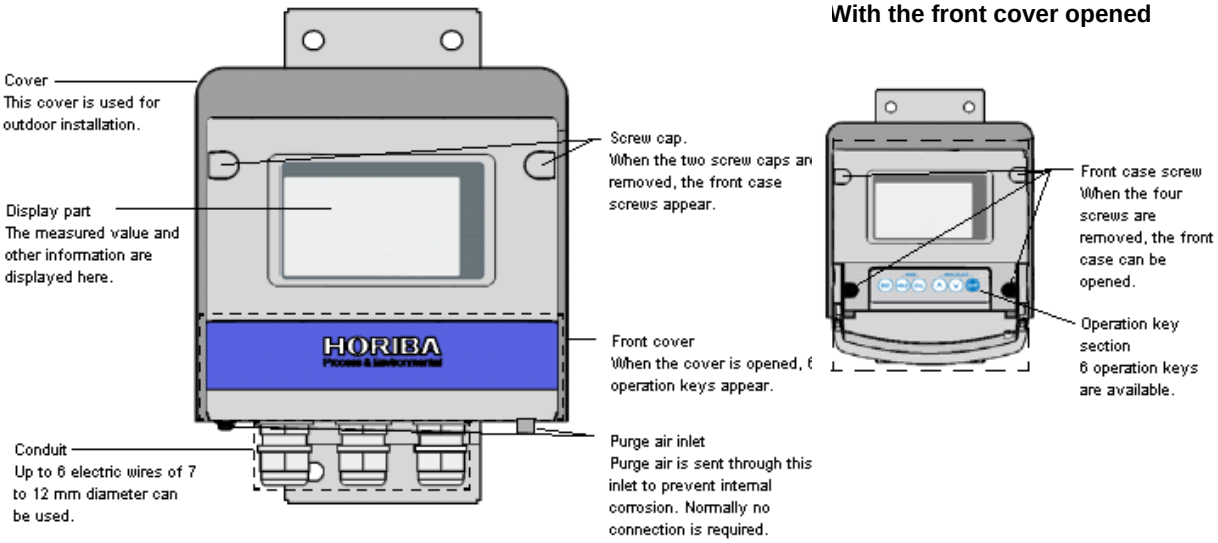


Diagram of principle for ORP measurement

■ Configurations

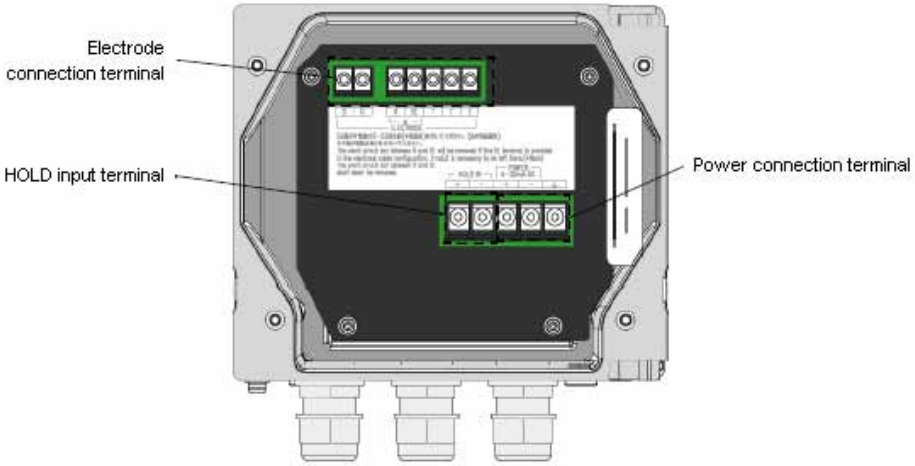
●Front



● Display part

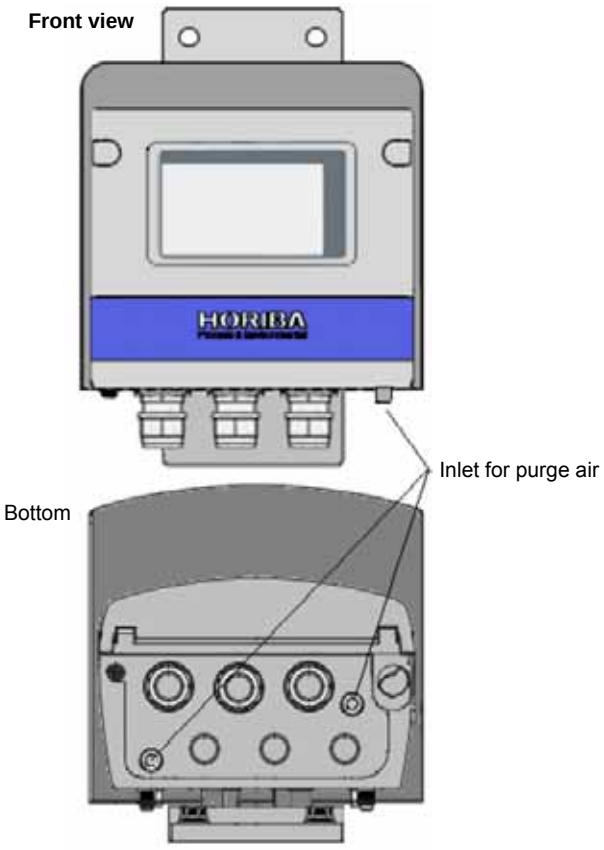
● Operation key section

● Terminal block



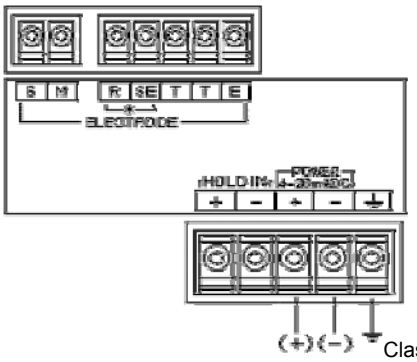
■ Air purge

Air inlets for purge are provided to prevent internal corrosion. To use the HO-300 in an environment where corrosive gas is generated, prevent corrosive gas from entering the inside by constantly sending instrument air.



■ Power supply

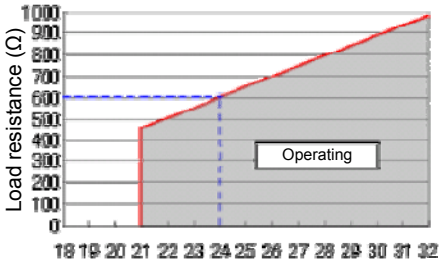
- The HO-300 has no power switch. Provide a power switch near the HE-300C so that the power can be turned ON/OFF.
- A power source with rated voltage of 21 to 32 VDC for two-wire transmission is used.
- Operation outside the rated range can cause a fault. Therefore, check the power supply voltage. Make sure that the voltage fluctuations of the power source fall within a range between 21 and 32 VDC.
- Use a duplex shielded cable.
- If the HO-300 might be struck by lightning, install two arrestors between the HO-300 and the distributor.



Class D grounding

Supply power
Voltage: 21 to 32 VDC
Load resistance: See below.

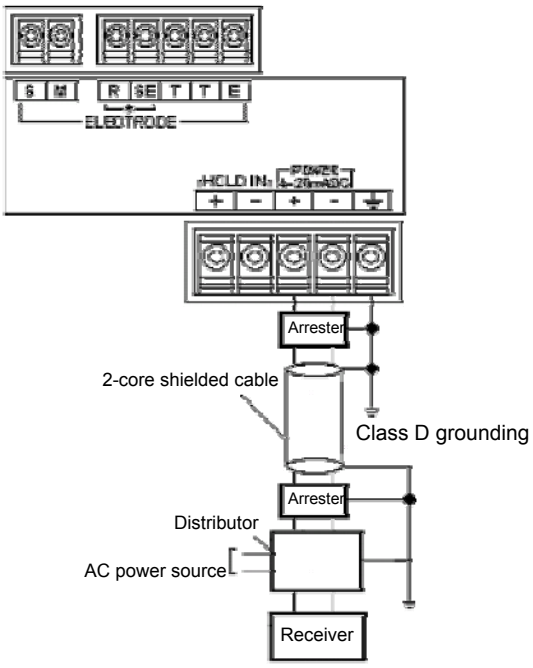
Relation between current-voltage and load resistance



- Be sure to ground the grounding terminal (class D grounding). Separate this grounding from any other grounding for electric equipment such as a motor.

Power source	Rated voltage: 24 VDC
Applicable power cable	0.75 to 5.5 mm^2 (AWG18 to 10).

Recommended typical connections



Recommended parts to be connected

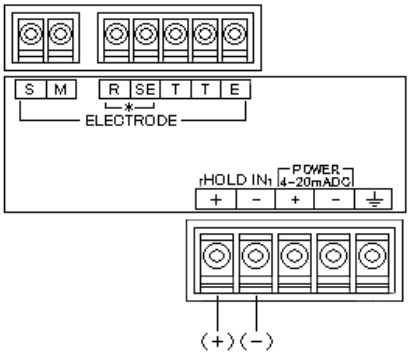
Item name	Model	Remarks
Distributor	DS-24-B	For 100 VAC
Arrester	MDP-24-1	For signals

Manufacturer: M-System Co., Ltd.

■ HOLD input for cleaning

・When the HO-300 is used with a cleaner, connect this input.
・When the HOLD contact signal from the cleaner is turned ON, the transmission output is held.
・The HOLD mode may be changed by settings.
・The resistance for the contact input (HOLD input for cleaner) should be 40Ω maximum.

Holding mode
・The HOLD mode may be changed by settings.
HoLd: The previous value is held for output.
PrES: A freely specified value is output.



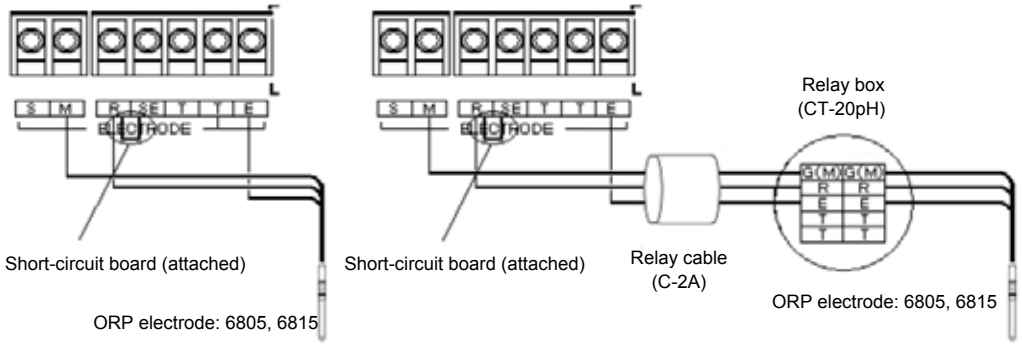
Contact input
(Cleaner HOLD input)

■ Sensor

The ORP electrode cable is of high insulation. In handling this cable, pay attention to the following points:
・Do not wet the terminals and terminal block for cables with water or the like or contaminate them with your hand or oil. TI insulation will otherwise deteriorate.
The decreased insulation causes instable readouts. Keep the cable dry and clean.
If the electrode cable should be soiled, wipe it off with alcohol or the like and then well dry it.
・In wiring, give a margin to the length of the electrode cable in order to calibrate the sensitivity with a standard substance and to inspect and replace the electrode.
・In wiring the electrode cable and the relay cable, keep them away from inducting equipment such as a motor and is power cable.

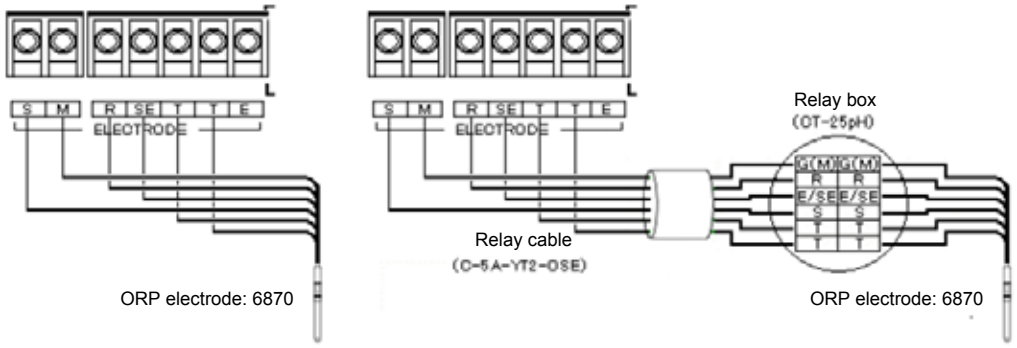
ORP electrode	S: Shielded drive terminal on ORP electrode
	M: ORP electrode terminal
	R: Reference electrode terminal
	SE: Wetted pole terminal
	T, T:Temperature compensation electrode terminal
	E: Shielded terminal

Connection methods for 6805 and 6815 without S-terminal, SE-terminal, and temperature electrode



Attach the provided short-circuit plate between R and SE

Connection methods for 6870 ORP electrode with S-terminal, SE-terminal, and temperature electrode



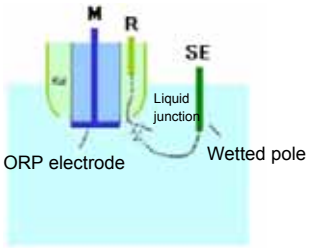
Remove the provided short-circuit plate between R and S

■ Function (self-diagnostic function for ORP electrode)

The HO-300 has a self-diagnostic function for the ORP electrode.
The self-diagnostic function detects clogging in the comparison electrode (liquid junction).
This function may not work depending on the electrode types and the operating environment.

The self-diagnostic for the ORP electrode is described below:

●Detection of liquid-junction resistance error (comparison electrode error)
The impedance (resistance) between the comparison electrode and
the wetted pole is measured by applying AC voltage between them.
When the measured resistance exceeds a threshold, the E-72 alarm (comparison electrode error) is triggered.



Electrode with wetted pole

●Details of self-diagnostic for each ORP electrode type
• ORP electrode without wetted pole (e.g. 6805 and 6815): The self-diagnostics cannot be used.
• ORP electrode with wetted pole (e.g. 6870): The liquid-junction resistance error" error can be detected.

●The self-diagnostic function may not be available depending on the electrode type and the operating environment.
• If the electrode is not exposed to the liquid under measurement:
The self-diagnostic function is not available.
Even if the comparison electrode is normal, the comparison electrode error (E-72) can occur.

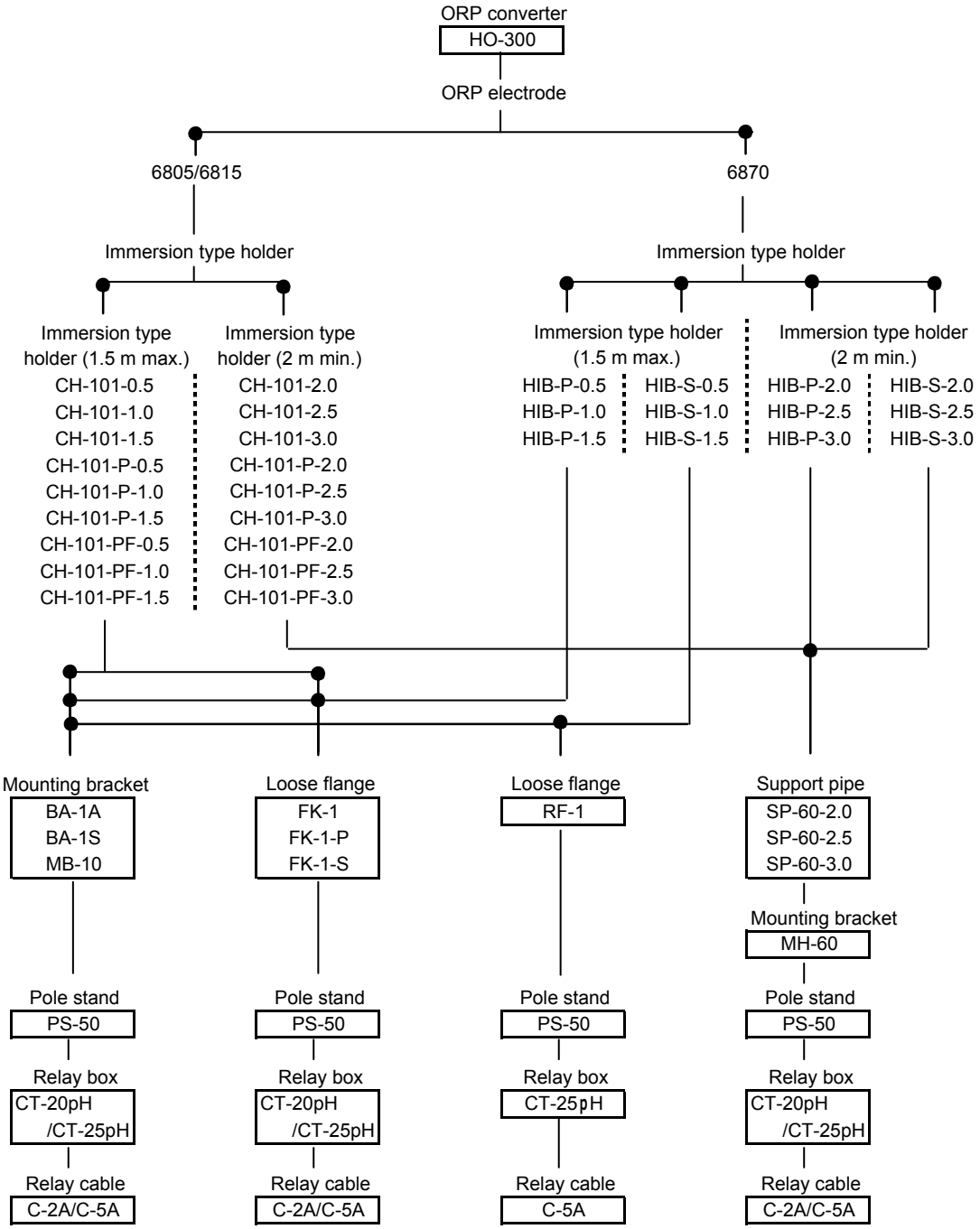
• If a crack occurs in the supporting tube for the comparison electrode with a wetted pole:
The comparison electrode error (E-72) does not occur because the liquid junction resistance becomes smaller.

• When the electric conductivity of the liquid under measurement is no larger than 10 mS/m (0.1 mS/cm):
The self-diagnostic function is not available because of its principle.
In this case, disable the self-diagnostic function. Even if the comparison electrode is normal, the comparison electrode error (E-72) may occur.

■ Combinations

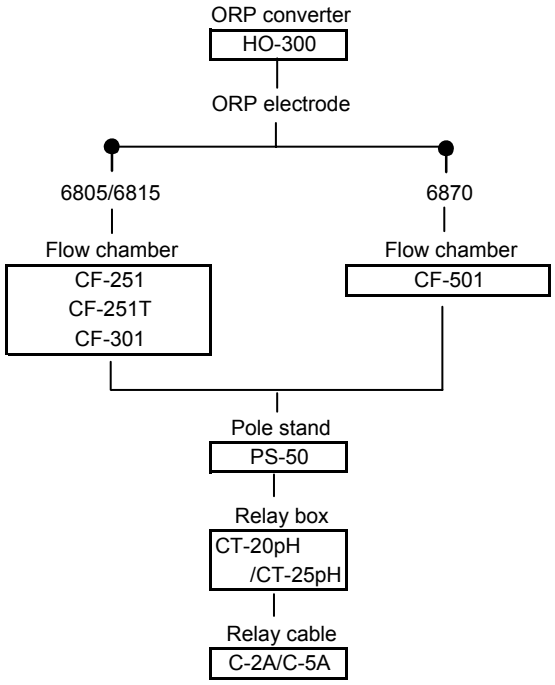
The following diagram shows the possible combinations of converters, electrodes, holders, and others.
For the detailed specifications, see the items of each product.

When the immersion type holder is used:



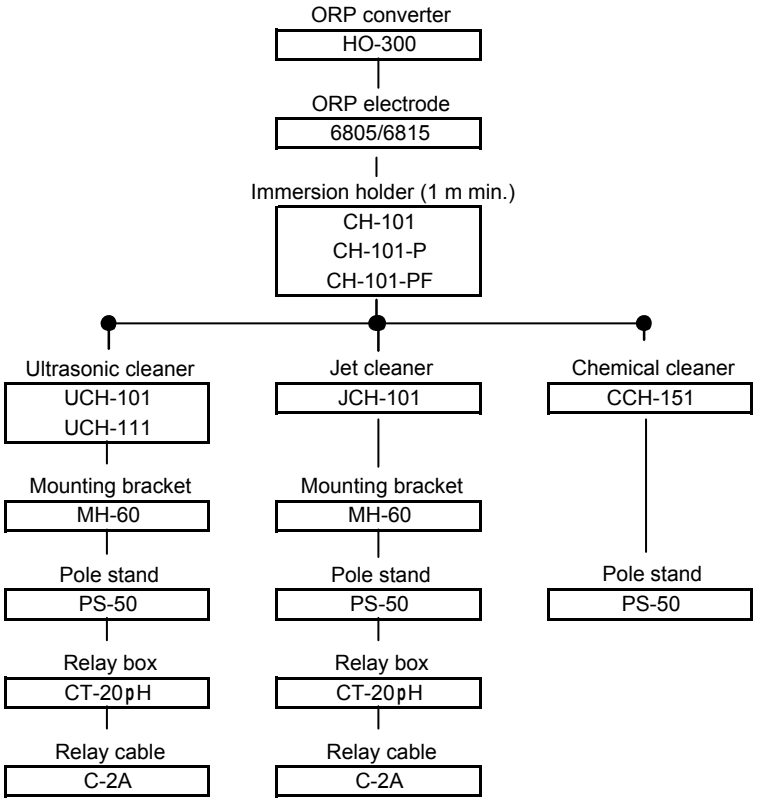
When the ORP electrode 6805 or 6815 is used, select the CT-20p relay box and the C-2A extension cable.

When the distribution type holder is used:

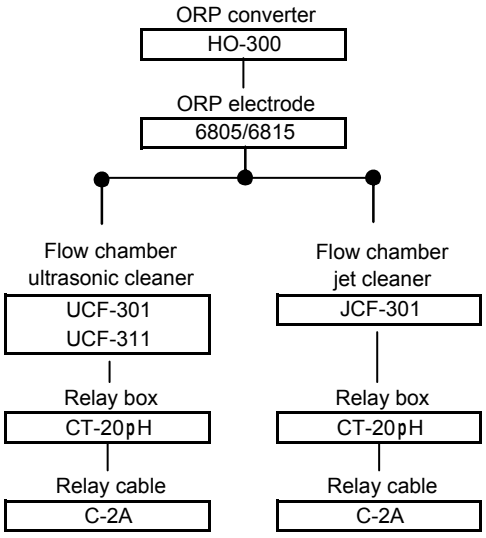


When the ORP electrode 6805 or 6815 is used, select the CT-20p relay box and the C-2A extension cable.

When using an immersion type cleaner



When the distribution type cleaner is used:



■ Specification 1 (HO-300 ORP Meter for Industrial Use)

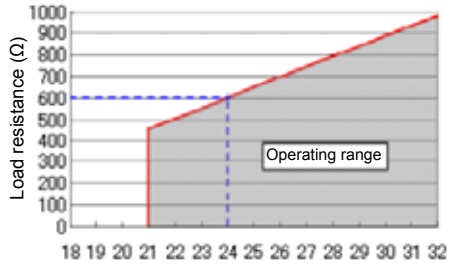
Product name	ORP converter for industrial use (two-wire type)				
Model	HO-300				
Combination electrode	ORP electrode				
Measurable range	ORP		-2000 to 2000 mV (readout range: -2200 to 2200 mV)		
	Temperature		0 to 100°C When the automatic detection capability of temperature sensor types is used: 10 to 110°C When a temperature sensor type is manually specified: Display range: 20 to		
Display resolution	ORP		1mV		
	Temperature		0.1°C		
Performance	ORP	Repeatability	Within±5 m (with equivalent input)		
		Linearity	Within±5 m (with equivalent input)		
	Temperature	Repeatability	Within ±0.3°C(for equivalent input)		
		Linearity	Within ±0.3°C(for equivalent input)		
Transmission output	Output type		4-20 mADC input/output insulated type (two-wire transmission type)		
	Load resistance		600Ω max. (*1)		
	Repeatability		Within ±0.02 mA (output only)		
	Linearity		Within ±0.08 mA (output only)		
	Output range		ORP: Selectable from a fixed range or freely specifiable within the measurable range		
	Error output		With burn-out capability (3.8 or 21 mA)		
	Hold capability		Selectable from previous value hold, arbitrary value hold, and calibration value hold		
Contact input	Number of input points		1		
	Contact type		Open collector, no-voltage a-contact		
	Conditions		ON resistance: 40Ω Open voltage: 1.2 V Short-circuit current: 21 mADC max.		
	Contact function		When a closed contact signal is input, transmission output is held.		
Temperature compensation	Applicable temperature element		Platinum resistive element: 1 kΩ(0°C) Positive-characteristic temperature-sensitive resistor: 500Ω (25°C), 6.8 kΩ (25°C), 10 kΩ (25°C)		
	Element selection method		Automatic detection of automatic temperature sensor type or manual selection (omission of temperature compensation is also possible)		
	Temperature compensation range		0 to 100°C		
	Temperature calibration function		One-point calibration using comparison with reference thermometer		
Calibration	ORP correction		Manual adjustment (offset) calibration (-200 to 200 mV)		
			Manual sensitivity calibration (0.500 to 1.500)		
	Temperature calibration		One-point calibration using comparison with reference thermometer		
Self-diagnostics	Calibration errors		Temperature calibration error (only for electrode with temperature sensor)		
	Electrode diagnostic error		Comparison electrode impedance error (for only electrode with {fluid grounding terminal ???}) Temperature sensor short-circuit, temperature sensor error, and temperature measurement range error (only for electrode with temperature sensor)		
	Converter error		CPU error, ADC error, and memory error		
Operating temperature range	-20°C to 60°C (without freeze)				
Operating humidity range	Relative humidity: 5% to 90% (without condensation)				
Storage temperature	-25 to 65°C				
Power source	Rated voltage		24 VDC (operating voltage range: 21-32 VDC) (*1)		
	Power consumption		0.6 W max.		
Applicable standards	CE marking		EMC Directive (2000/108/EC)		
	EMC	Immunity Industrial location	Electrostatic discharge	IEC61000-4-2	
			Radiated radiofrequency electromagnetic field	IEC61000-4-3 (*2)	
			Electric fast transient/burst	IEC61000-4-4	
			Surge	IEC61000-4-5(*3)	
			Conducted interference induced by radiofrequency	IEC61000-4-6 (*2)	
		Emission class A	Radiated disturbance	CISPR 11 CLASSA	
	FCC Rules		Part 15 CLASS A		

■ Specification 2 (HO-300 ORP Meter for Industrial use)

Structure	Installation	Outdoor installation type
	Installation method	50 A pole or wall mounting
	International protection code	IP65 IEC60529, JIS C0920
	Case material	Aluminum alloy (coated with epoxy modified melamine resin)
	Mounting bracket material	SUS304
	Hood material	SUS304 stainless steel (coated with epoxy modified melamine resin)
	Readout window material	Polycarbonate
	Readout element	Reflection type monochrome LCD
External dimensions	180 (W) x 155 (H) x 115 (D) (excluding the mounting bracket)	
Weight	Body: Approx. 2.8kg; hood and mounting bracket: Approx. 1 kg	

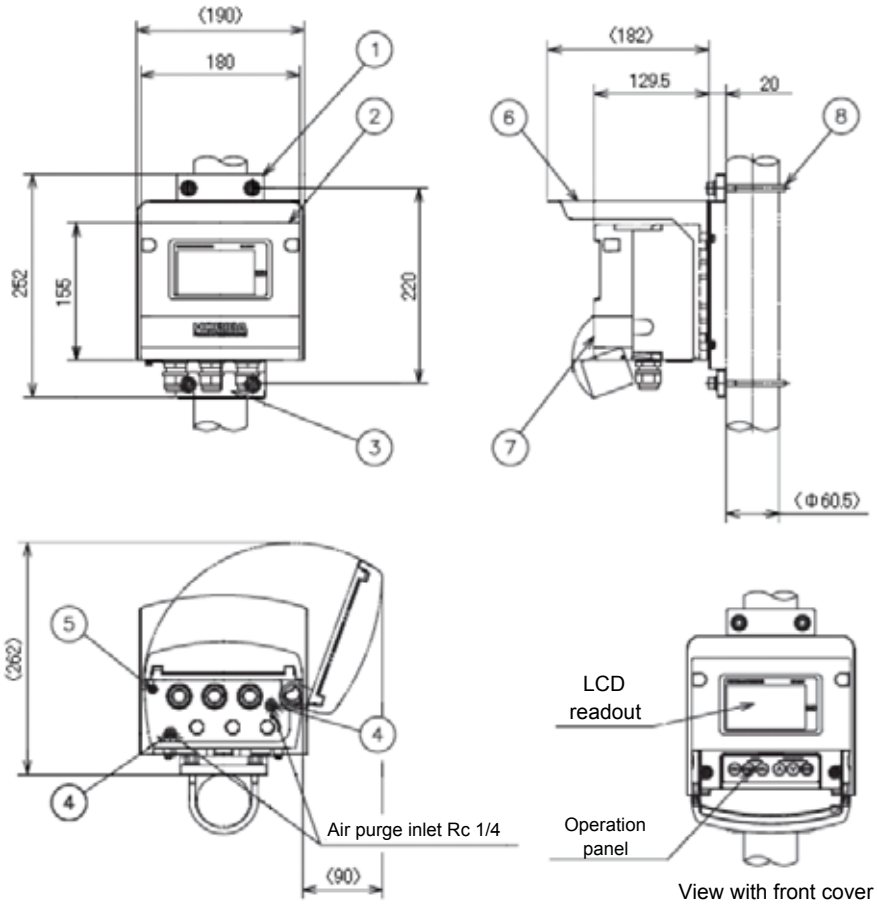
*1: The maximum load resistor may be used in the following range depending on the power supply voltage.

Relation between current-voltage and load resistance



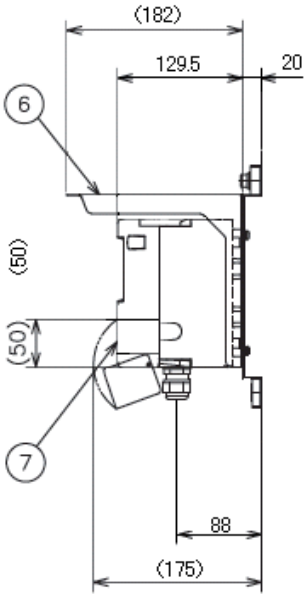
*2: The effect on the readout in the radiated radiofrequency electromagnetic field and conducted interference tests should be within the measured ORP value±6 mV as standard.
*3: When the electrode cable, transmission cable, or contact input cable is extended exceeding 30 m, the surge test in the EMC directive for CE marking is not applicable.
*4: For the transmission output, an arrester (sparkover voltage: 400 V) is provided. Yet install the most suitable surge absorption element on the connected line considering the ambient environment, the equipment installation situation, and the externally connected equipment.

■ External dimensions (HO-300 ORP Meter for Industrial Use)



View with front cover opened

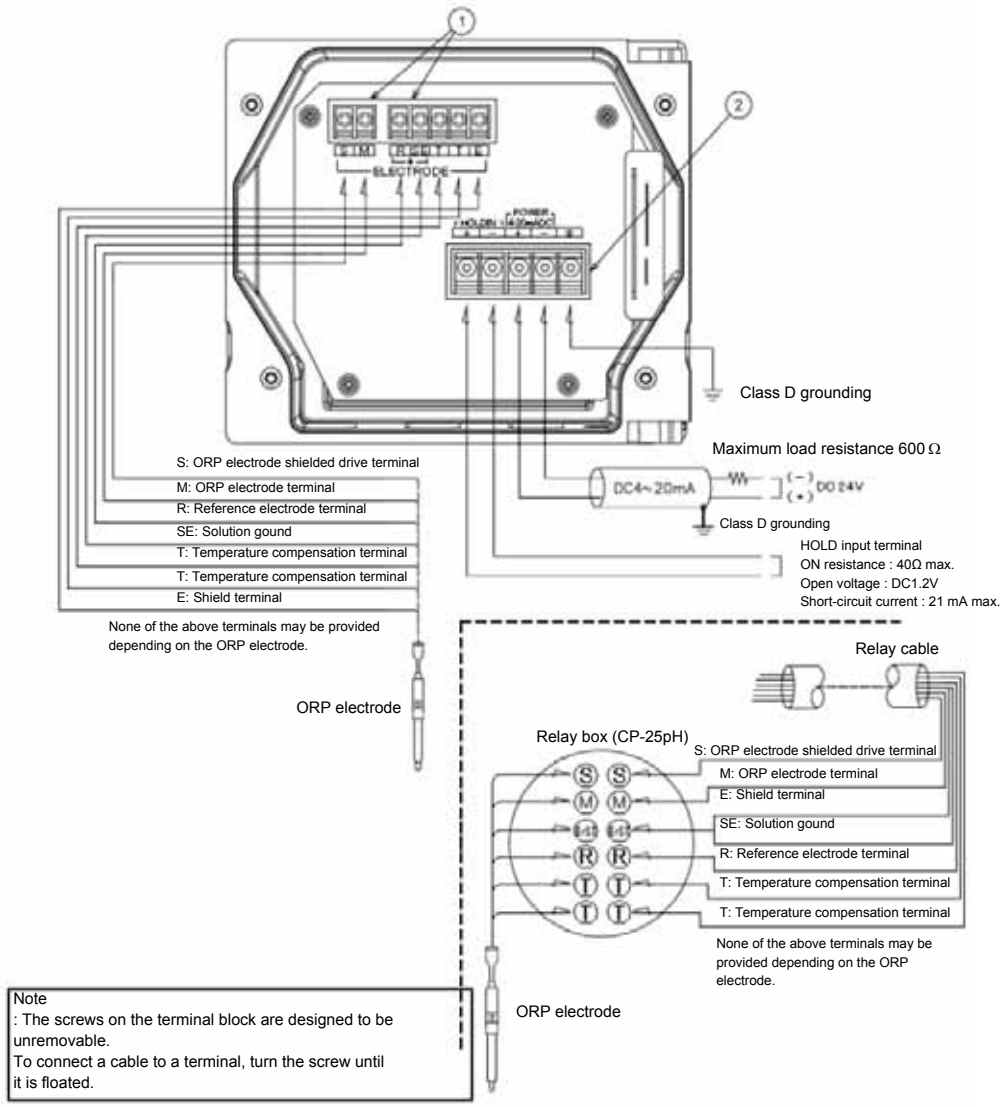
Drawing for external dimensions of HO-300 ORP Meter for Industrial Use (wall-mounted)
(The other dimensions are as shown above.))



	PARTS	NOTES
(1)	Mounting plate	SUS304
(2)	Case	ADC12
(3)	Wiring hole	O.DΦ7 to Φ12cable
(4)	Plug	SUS304
(5)	Earth	SUS304 M4
(6)	Cover	SUS304
(7)	Front cover	ADC12
(8)	U-bolt	SUS304 50A MB

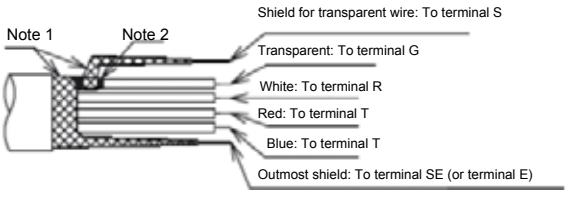
Coated with epoxy modified melamine resin
(Munsell 10PB/7/1)
Approx. 4.1 kg
IP65（IEC60529, JIS C0920)

■ External connection diagram (HO-300 ORP Meter for Industrial Use)



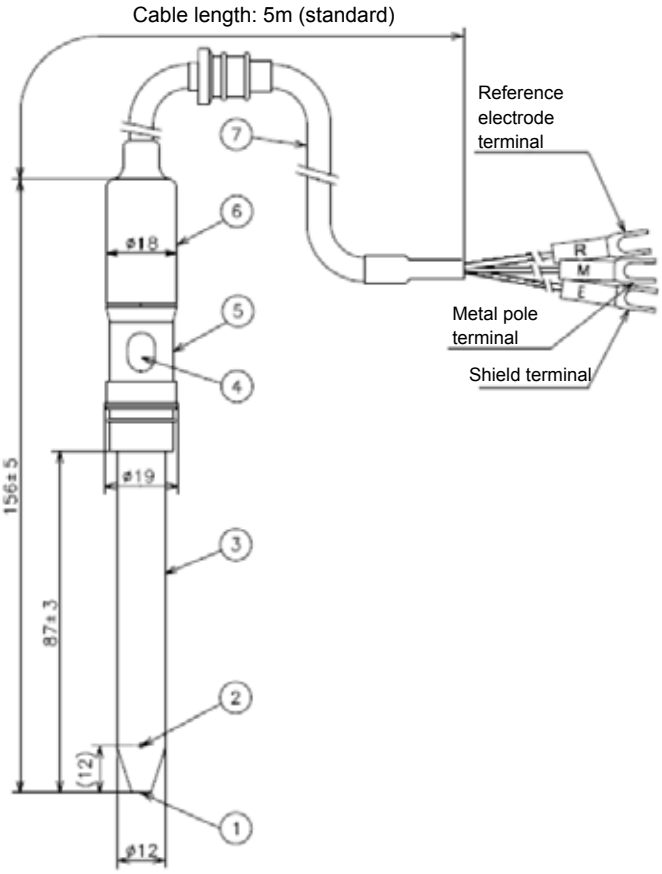
	Terminal screw	Applicable crimp-type terminal	Applicable electric wire	Screw tightening torque
①	M3	MAX6.5, MAX3.2, MAX6.2	1.25mm²/MAX (AWG16)	0.8N·m
②	M4	MAX7.6, MAX4.2, MAX8.5	3.5mm²/MAX (AWG12)	1.2N·m

Relay cable termination method



Note
: Insulate the braided shields for the S-terminal and SE-terminal with insulation tubes or the like.
: Strip the covering (conductive plastic: black) of transparent wire up to the root.

■ ORP electrode (6805/6815)



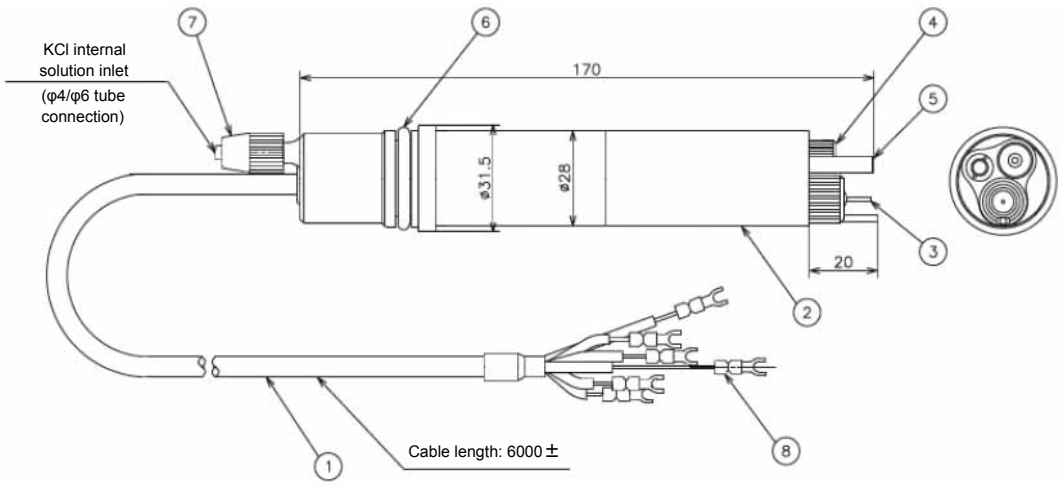
Model		6805-50B
Measuring method		Metal electrode method
Measurable range		-2000 to 2000mV
Sample water conditions	Temperature range	0 to 80°C (without freeze)
	Pressure	0 to 0.03MPa
Comparison electrode	Liquid junction	Porous ceramics
	Internal fluid	3.3mol Kcl (filling type)
Cable length		Standard: 5±50 mm

	PARTS	NOTES
(1)	Metal pole	Pt
(2)	Liquid junction	Porous ceramics
(3)	Supporting tube	Glass
(4)	Internal solution refilling port	
(5)	Sensor body	PP
(6)	Sensor cap	Silicone
(7)	Silicone	PVC

Model		6815-50B
Measuring method		Metal electrode method
Measurable range		-2000 to 2000mV
Sample water conditions	Temperature range	0 to 80°C (without freeze)
	Pressure	0 to 0.03MPa
Comparison electrode	Liquid junction	Porous ceramics
	Internal fluid	3.3mol Kcl (filling type)
Cable length		Standard: 5±50 mm

	PARTS	NOTES
(1)	Metal pole	Pt+Au plating
(2)	Liquid junction	Porous ceramics
(3)	Supporting tube	Glass
(4)	Internal solution refilling port	
(5)	Sensor body	PP
(6)	Sensor cap	Silicone
(7)	Silicone	PVC

■ ORP electrode (6870)



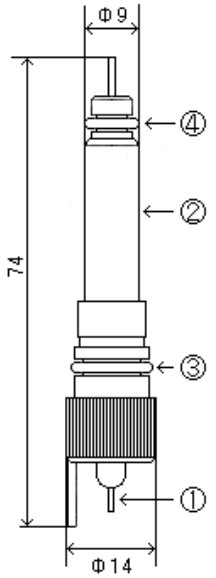
Model		6870-60B
Measuring method		Metal electrode method
Measurable range		-2000 to 2000mV
Sample water conditions	Temperature range	0 to 60°C (without freeze)
	Pressure	
Comparison electrode	Liquid junction	Porous ceramics
	Internal fluid	3.3mol Kcl (filling type)
Cable length		Standard: 6±200 mm

	PARTS	NOTES
(1)	Sensor cable	
(2)	Sensor body	PPS
(3)	ORP sensor tip	
(4)	Liquid junction chip	Porous ceramics
(5)	Temperature compensation/ground pole	Ti
(6)	O-ring	FPM P22.4
(7)	Hexagon cap nut	PPS
(8)	Terminal	M3

ORP sensor tip

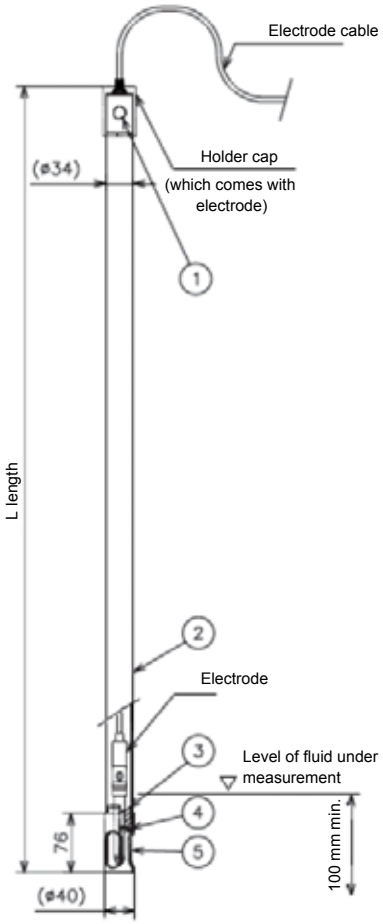
	Material
7312	Pt
7712	Au

7312 ORP sensor



	PARTS	NOTES
(1)	Platinum electrode	
(2)	Tip body	PPS
(3)	O-ring	P9 FPM
(4)	O-ring	P5 FPM

■ Immersion type holder (CH-101 series): Specifications and external dimensions

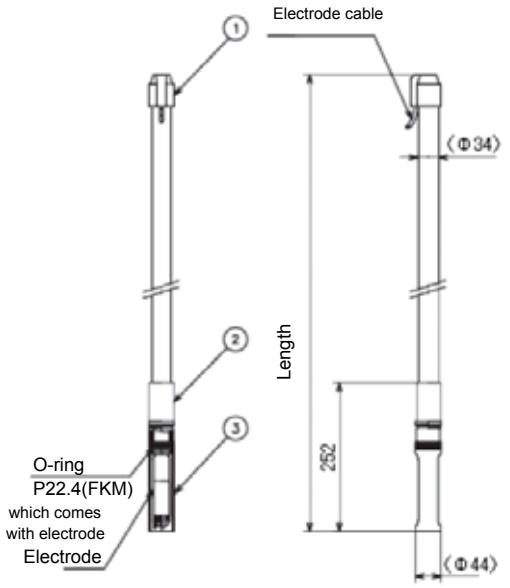


	PARTS	NOTES
(1)	Internal solution refilling port	
(2)	Holder	PP(CH-101)
		PVC(CH-101-P)
		PVDF(CH-101-PF)
(3)	Electrode gasket	FKM
(4)	Washer	PP(CH-101, CH-101-P)
		PVDF(CH-101-PF)
(5)	Protective tube	PP(CH-101, CH-101-P)
		PVDF(CH-101-PF)

Nominal length	Length (mm)
0.5m	500±10
1m	1000±10
1.5m	1500±10
2m	2000±10
2.5m	2500±10
3m	3000±10

Model			CH-101 series	CH-101-P series	CH-101-PF series
Holder material			PP	PVC	PVDF
Temperature			-5 to 80°C	-5 to 50°C	-5 to 100°C
			For the actual operating temperature range, check the specifications of electrode to be combined.		
Pressure			Atmospheric pressure		
Flow rate			2 m/sec. max.		
Wetted material		Electrode gasket	FKM	FKM	FKM
		Washer	PP	PP	PVDF
		Protective tube	PP	PP	PVDF
Holder length (m)			0.5, 1, 1.5, 2, 2.5, 3		
Weight (kg)	Holder length	0.5m	Approx. 0.2	Approx. 0.23	Approx. 0.25
		1m	Approx. 0.3	Approx. 0.45	Approx. 0.45
		1.5m	Approx. 0.45	Approx. 0.67	Approx. 0.65
		2m	Approx. 0.6	Approx. 0.89	Approx. 0.85
		2.5m	Approx. 0.75	Approx. 1.11	Approx. 0.85
		3m	Approx. 0.9	Approx. 1.33	Approx. 1.25

■ Immersion type holder (HIBP series): Specifications and external

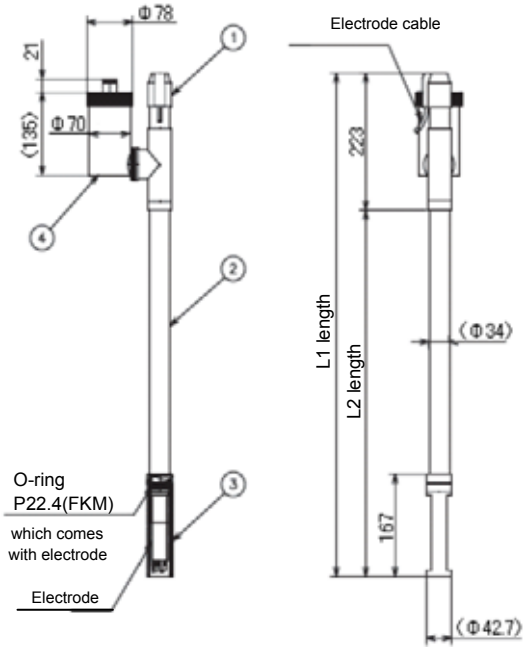


Model	HIBP
Holder material	PP
Temperature	-5 to 80°C
	For the actual operating temperature range, check the specifications of the electrodes to be combined.
Pressure	Atmospheric pressure
Flow rate	2 m/sec. max.
Wetted material	PP (excluding the electrode)

	PARTS	NOTES
(1)	Holder cap	EPT
(2)	Holder	PP
(3)	Protective tube	PP

Nominal length	Length (mm)
0.5m	772±10
1m	1272±10
1.5m	1772±10
2m	2272±10
2.5m	2772±10
3m	3272±10

■ Immersion type holder (HIBS series): Specifications and external dimensions

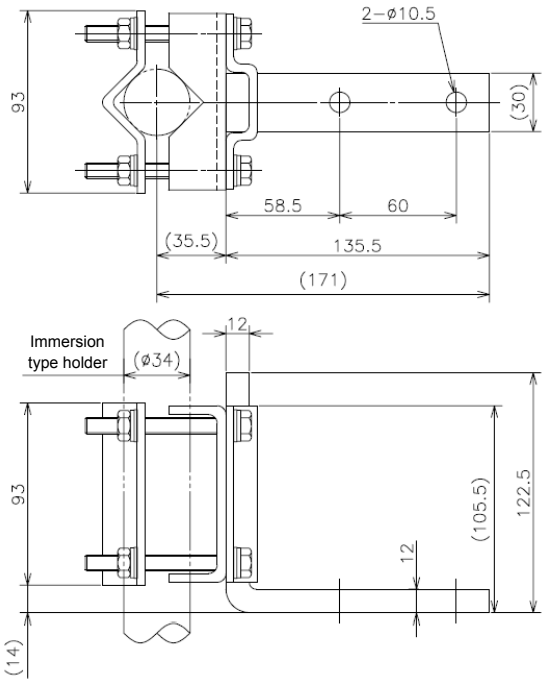


Model	HIBS
Holder material	SUS316
Temperature	-5 to 100°C
	For the actual operating temperature range, check the specifications of the electrodes to be combined.
Pressure	Atmospheric pressure
Flow rate	2 m/sec. max.
Wetted material	SUS316 (excluding the electrode)

	PARTS	NOTES
(1)	Holder cap	EPT
(2)	Holder	SUS316
(3)	Protective tube	SUS316
(4)	Kcl internal solution tank	PC 300ml

Nominal length	L1 length (mm)	L2 length (mm)
0.5m	818±10	595
1m	1318±10	1095
1.5m	1818±15	1595
2m	2318±20	2095
2.5m	2818±20	2595
3m	3318±20	3095

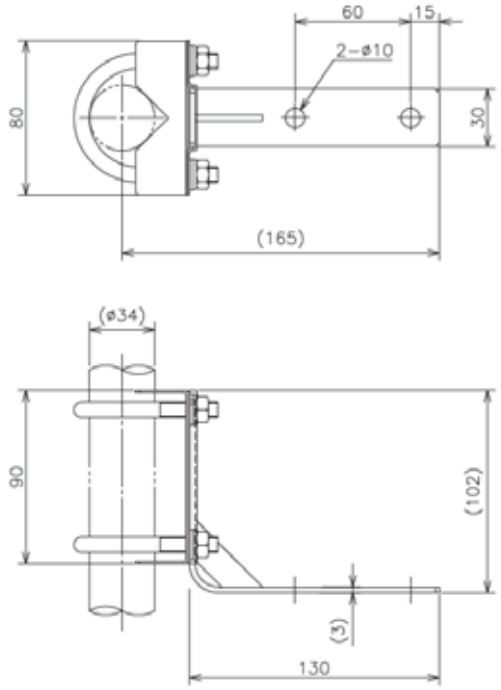
■ Mounting bracket (BA-1A): Specifications and external



Model	BA-1A
Material	ABS resin
Mounting pipe	50A

This product is applicable for immersion holders of 1.5 m maximum.

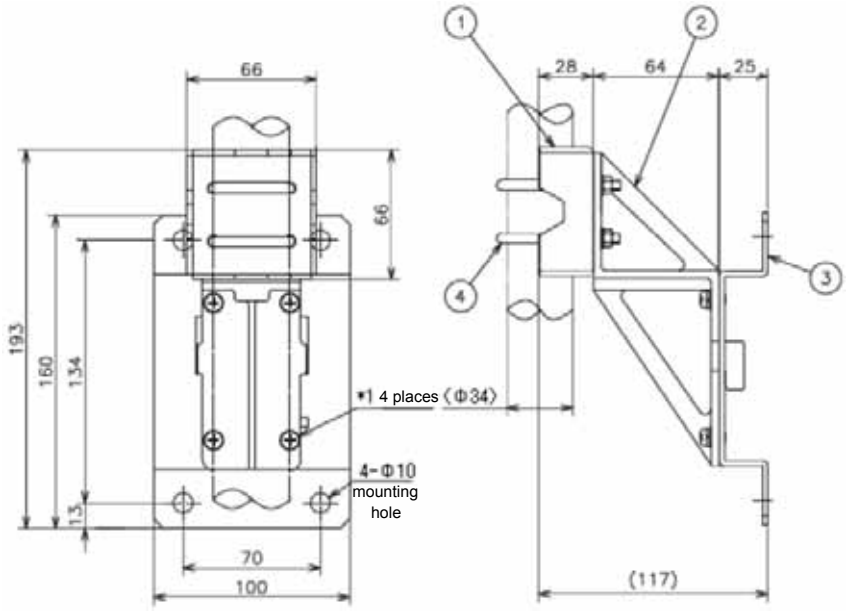
■ Mounting bracket (BA-1S): Specifications and external



Model	BA-1S
Material	SUS304
Mounting pipe	50A

This product is applicable for immersion holders of 1.5 m maximum.

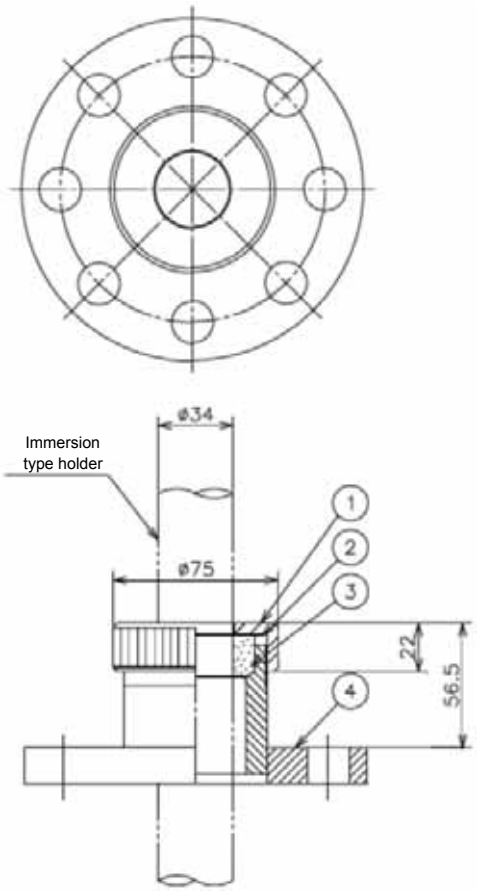
■ Mounting bracket (MB-10): Specifications and external dimensions



	PARTS	NOTES
(1)	Base 1	SUS304
(2)	Mounting plate	SCS13
(3)	Base 2	SUS304
(4)	U-bolt	SUS304

Mounting pipe: 50 A
*1. Wobbling or vibration, if any, may cause the immersion holder to fall off. Fasten four points with M5 screws.

■ Loose flange (FK-1 series): Specifications and external

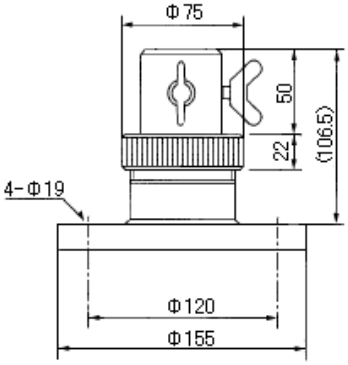


Model		FK-1	FK-1P	FK-1S
Material	Flange	PP	PVC	SUS316
	Nut	PP	PVC	SUS304
	Washer	PP	PVC	PP
	Gasket	FKM	FKM	FKM
Flange standard		JIS 10K 50A FF		

This product is applicable for immersion holders of 1.5 m maximum.

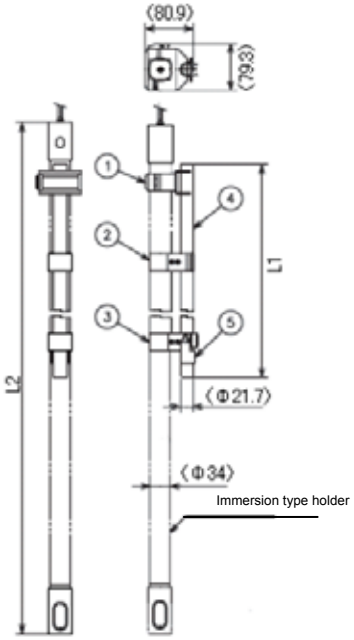
	PARTS	NOTES
(1)	Hexagon cap nut	-
(2)	Washer	-
(3)	Gasket	FKM
(4)	Loose flange	-

■ Loose flange (RF-S1): Specifications and external dimensions



Model	RF-S1
Material	SUS316
Flange standard	JIS 10K 50A FF, etc.
Applicable immersion type holders	HIBS series

■ Supporting bracket (SP-60): Specifications and external dimensions



Model	SP-60
Material	SUS316
Applicable holder length	1, 1.5, 2, 2.5, 3
Applicable holder	CH-101 series
	CH-101P series

When the flow rate is fast even if the holder length is no longer than 1.5 m, the support pipe may be required.

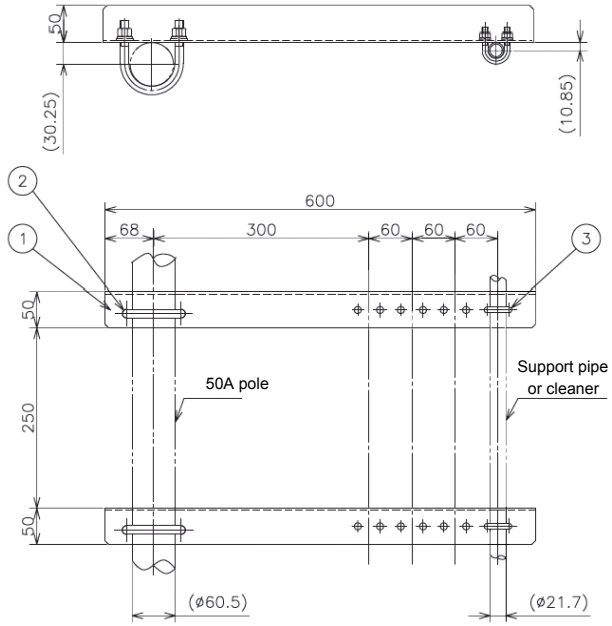
	PARTS	NOTES
(1)	Holder mounting bracket	PVC
(2)	Intermediate hook	SUS316
(3)	Hook	SUS316
(4)	Support pipe	SUS316
(5)	Stopper	SUS316

The intermediate hook is provided when the immersion type holder length is 2 m or more.

For any combination with the CH-101PF, contact us.

	Support pipe L1(mm)	Immersion holder L2(mm)
For 1m	500±10	1000 -5/+10
For 1.5m	1000±10	1500 -5/+10
For 2 m	1500±10	2000 -5/+10
For 2.5m	2000±10	2500 -5/+10
For 3m	2500±10	3000 -5/+10

■ Mounting bracket (MH-60): Specifications and external dimensions

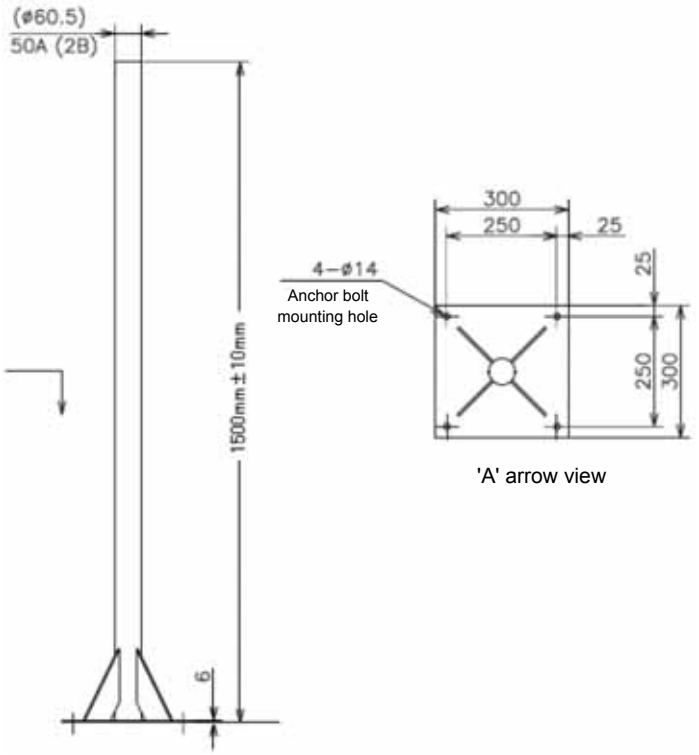


Model		MH-60
Material	Arm	SUS-304
	U-bolt	SUS-304
Mounting pipe		50A

This hardware is used to secure the support pipe (SP-60 series) to the pole stand.

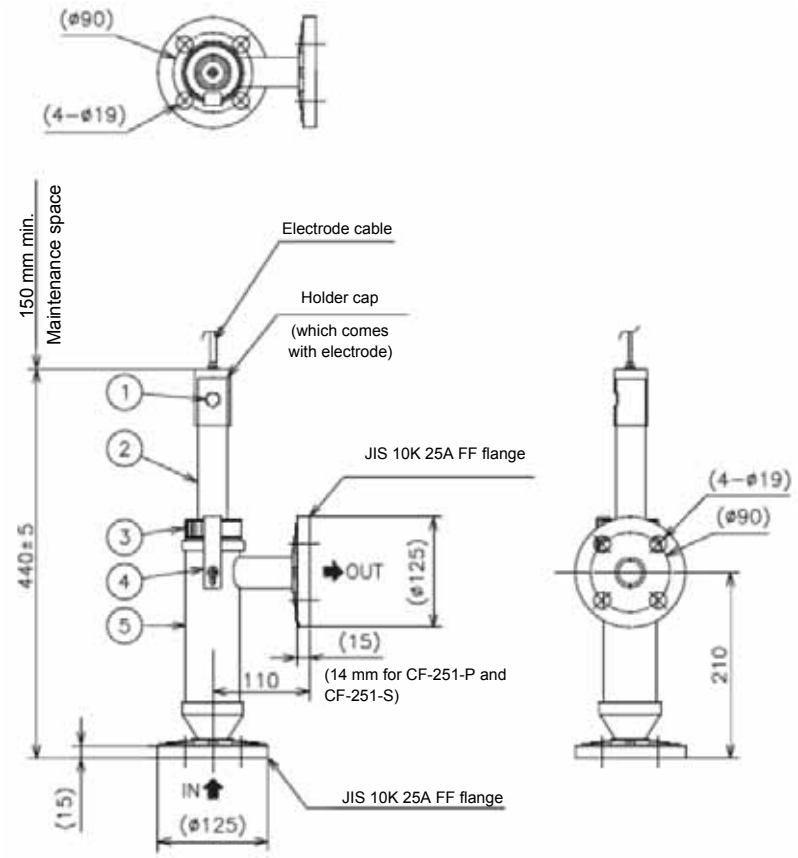
	PARTS	NOTES
(1)	Arm	SUS304
(2)	U-bolt	SUS304 stainless steel (for 50A)
(3)	U-bolt	SUS304 stainless steel (for 15A)

■ Pole stand (PS-50): Specifications and external dimensions



Model	PS-50
Material	SUS-304
Pipe diameter	50A

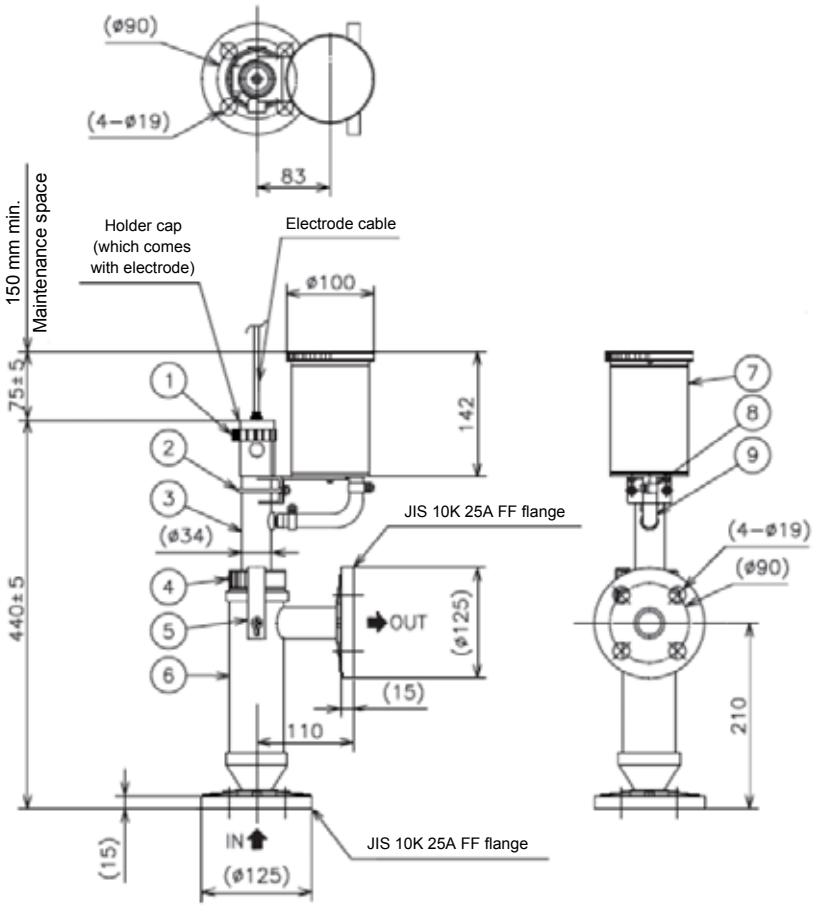
■ Flow chamber (CF-251 series): Specifications and external dimensions



Model		CF-251	CF-251-P	CF-251-S
Holder material		PP	PVC	SUS316
Ambient Temperature		-5 to 60°C	-5 to 50°C	-5 to 60°C
Conditions for measurement solution	Temperature	-5 to 80°C	-5 to 50°C	-5 to 100°C
	For the actual operating temperature range, check the specifications of electrode to be combined.			
	Pressure	Atmospheric pressure		
	Flow rate	0.3 to 10L/miln		
Wetted material	Gasket	FKM	FKM	FKM
	Washer	PP	PP	PVDF
	Protective tube	PP	PP	PVDF
	If any problem with weatherability occurs under direct sunshine, use a holder made of PVC or a holder made of SUS316+PVDF. For the sample properties that affect FKM (fluorine rubber) (strong alkali, etc.), please consult with HORIBA Advanced Techno.			
Weight		Approx. 0.6kg	Approx. 0.9kg	Approx. 4.5kg

	PARTS	NOTES
(1)	Internal solution refilling port	
(2)	Holder	PP(CF-251)
		PVC(CF-251-P)
		PVDF(CF-251-S)
(3)	Tightening nut	PP(CF-251)
		PVC(CF-251-P)
		SUS304(CF-251-S)
(4)	Locking plate	SUS304
(5)	Distribution holder	PP(CF-251)
		PVC(CF-251-P)
		SUS316(CF-251-S)

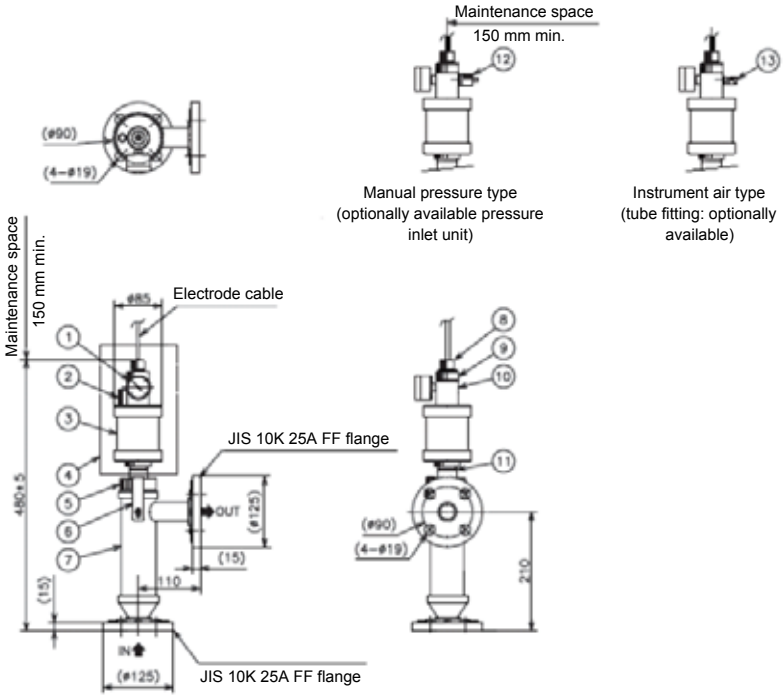
■ Flow chamber (CF-251-T series): Specifications and external dimensions



Model		CF-251-T	CF-251-P-T	CF-251-S-T
Holder material		PP	PVC	SUS316
Ambient Temperature		-5 to 60°C	-5 to 50°C	-5 to 60°C
Conditions for measurement solution	Temperature	-5 to 80°C	-5 to 50°C	-5 to 100°C
	For the actual operating temperature range, see the specifications for the electrodes to be combined.			
	Pressure	Atmospheric pressure		
	Flow rate	0.3 to 10L/miln		
Wetted material	Gasket	FKM	FKM	FKM
	Washer	PP	PP	PVDF
	Protective tube	PP	PP	PVDF
	If a problem arises with weather resistance under direct sunlight, use a model made of PVS or SUS 316 stainless steel plus PVDF. For any sample with properties (strong acidity) that corrode fluorine-contained rubber (FKM), contact us.			
Weight		Approx. 1.3kg	Approx. 1.6kg	Approx. 5.2kg

	PARTS	NOTES
(1)	Clamping band	SUS304
(2)	Mounting bracket	SUS304
(3)	Holder	PP(CF-251-T)
		PVC(CF-251-P-T)
		PVDF(CF-251-S-T)
(4)	Tightening nut	PP(CF-251-T)
		PVC(CF-251-P-T)
		SUS304(CF-251-S-T)
(5)	Locking plate	SUS304
(6)	Distribution holder	PP(CF-251-T)
		PVC(CF-251-P-T)
		SUS316(CF-251-S-T)
(7)	kcl tank	PVC
(8)	Hose band	SUS304
(9)	Hose	PVC

■ Flow chamber (CF-301 series): Specifications and external dimensions



	PARTS	NOTES
(1)	Pressure gauge	0 to 0.5MPa
(2)	KCl inlet	PVC
(3)	kcl tank	PVC(CF-301/CF-301-P)
		PP(CF-301-S)
(4)	Pressure holder	
(5)	Tightening nut	PP(CF-301)
		PVC(CF-301-P)
		SUS304(CF-301-S)
(6)	Locking plate	SUS304

(7)	Distribution holder	PP(CF-301)
		PVC(CF-301-P)
		SUS316(CF-301-S)
(8)	Cable cap	PPO
(9)	Holder cap	PPO
(10)	Pressure mating screw	Rc1/8
(11)	Holder	PP(CF-301)
		PVC(CF-301-P)
		SUS316(CF-301-S)
(12)	Pressure union	C3604
(13)	Fitting	For PVDF tube with 4 mm i.d. and 6 mm o.d.

Model		CF-301	CF-301-P	CF-301-S
Holder material		PP	PVC	SUS316
Ambient Temperature		-5 to 60°C	-5 to 50°C	-5 to 60°C
Conditions for measurement solution	Temperature	-5 to 80°C	-5 to 50°C	-5 to 100°C
		For the actual operating temperature range, check the specifications of electrode to be combined.		
	Pressure	-5 to 40°C：0.30MPa 40 to 60°C：0.22MPa 60 to 80°C：0.15MPa	-5 to 40°C：0.30MPa 40 to 50°C：0.15MPa	-5 to 40°C：0.30MPa 40 to 60°C：0.25MPa 60 to 80°C：0.20MPa 80 to 100°C：0.15MPa
	Flow rate	0.3 to 10L/miln		
Wetted material	Gasket	FKM	FKM	FKM
	Washer	PP	PP	PVDF
	Protective tube	PP	PP	PVDF
	If any problem with weatherability occurs under direct sunshine, use a holder made of PVC or a holder made of SUS316+PVDF. For the sample properties that affect FKM (fluorine rubber) (strong alkali, etc.), please consult with HORIBA Advanced Techno.			
Bore Size of Measured Liquid Connection		JIS 10K 25A FF flange		
Pressurizing Inlet for Holder's Internal Pressure		Rc 1/8		
Weight		Approx. 1.2kg	Approx. 1.5kg	Approx. 5.1kg

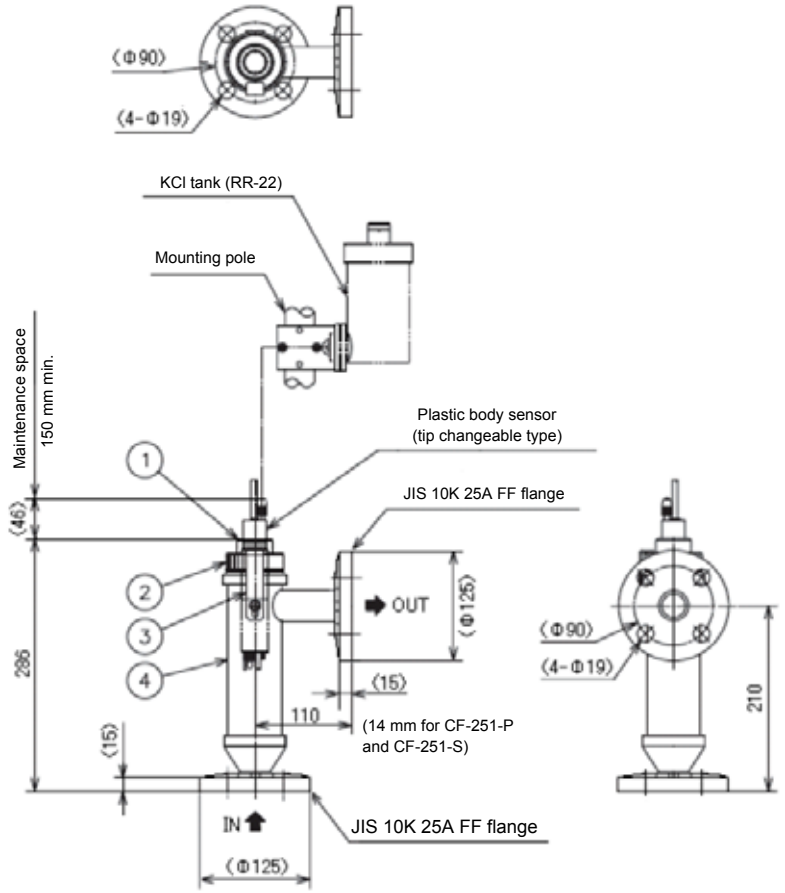
*1 Maintain a pressure in the Pressurizing Holder at the level of 0.03 to 0.05 MPa higher than a measured liquid pressure at all times.

・If periodical pressurization is manually performed, separately place a purchase order for optional parts: pressurizing inlet and hand pump.

・Holders are detached at the time of maintenance. So use a flexible pipe for instrument air.

・For the instrumentation air line, install a mist catcher and a regulator with a filter.

■ Flow chamber (CF-501 series): Specifications and external dimensions



Flow chamber: CF-501

	PARTS	NOTES
(1)	Sensor adaptor	PP
(2)	Tightening nut	PP
(3)	Locking plate	SUS304
(4)	Distribution holder	PP

Flow chamber: CF-501P

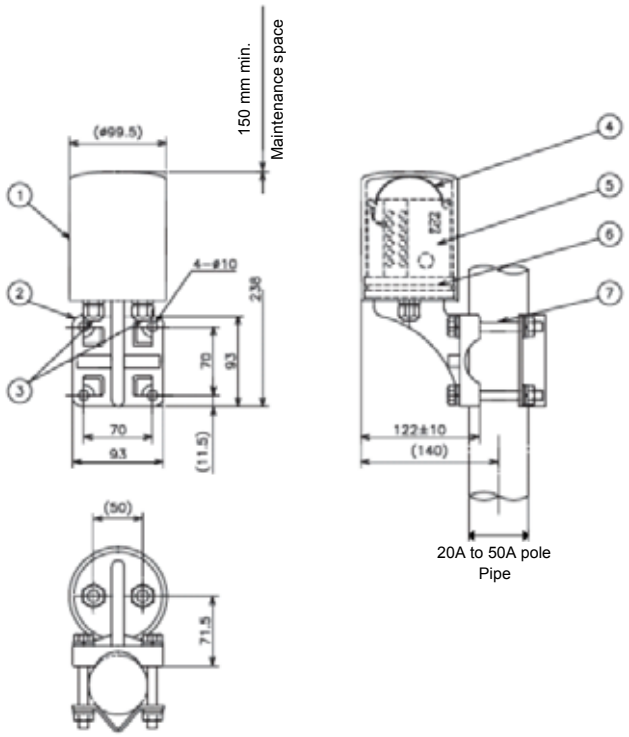
	PARTS	NOTES
(1)	Sensor adaptor	PVC
(2)	Tightening nut	PVC
(3)	Locking plate	SUS304
(4)	Distribution holder	PVC

Flow chamber: CF-501S

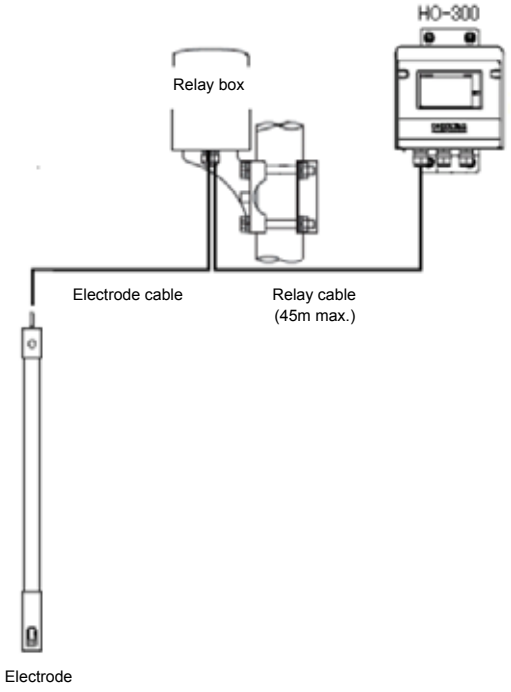
	PARTS	NOTES
(1)	Sensor adaptor	PPS
(2)	Tightening nut	SUS304
(3)	Locking plate	SUS304
(4)	Distribution holder	SUS316

Model		CF-501	CF-501P	CF-501S
Ambient Temperature		-5 to 60°C	-5 to 50°C	-5 to 60°C
Conditions for measurement solution	Temperature	-5 to 80°C	-5 to 60°C	-5 to 100°C
		Working temperature ranges vary with combinational electrodes. Check the working temperature of an electrode. Moreover, measurements cannot be made when a measured liquid is in a freezing or boiling state.		
	Pressure	Atmospheric pressure (with outlet being open)		
	Flow rate	0.3 to 10L/miln		
Wetted material		PP, FKM	PVC, PP, FKM	SUS316, PPS, FKM
Bore Size of Measured Liquid Connection		JIS 10K 25A FF flange		
Weight		Approx. 0.6kg	Approx. 0.9kg	Approx. 4.2kg
Special Note		• Be sure to use it in combination with the kcl Tank (RR-22). • This product is not supplied with the electrode/ kcl tank. • If any problem with weatherability occurs under direct sunshine, use a holder made of PVC or a holder made of SUS316+PVDF. For the sample properties that affect FKM (fluorine rubber) (strong alkali, etc.), please consult with HORIBA Advanced Techno.		

■ Relay box (CT-25pH): Specifications and external dimensions



	PARTS	NOTES
(1)	Cover	ABS
(2)	Bracket	ABS
(3)	Wiring hole	
(4)	Spring	SUS304
(5)	Terminal board	ABS
(6)	O-ring	NBR
(7)	Bolt (provided)	SUS304 M8



• When the distance between the sensor and the converter is longer than the sensor cable length, be sure to use the relay box.
• For wiring, be sure to use the dedicated cable. Do not use a general cable or connect to the standard cable halfway.
• The relay box is designed as rainproof.

■ Specification of relay cable (C-2A or C-5A)

• To extend the standard cable for the ORP electrode exceeding 5 m, use this relay cable.
• For wiring, be sure to use the dedicated relay cable. Do not use a general cable or connect to the standard cable halfway.
• To extend the standard cable, use the relay box.

Characteristics

Conductor resistance	63.2Ω/hm max.
Withstand voltage	Shall withstand 1000 VAC for 1 minute.
Insulation resistance	10000MΩ/hm
Rated temperature	90°C
Capacitance	150 PP/m max.

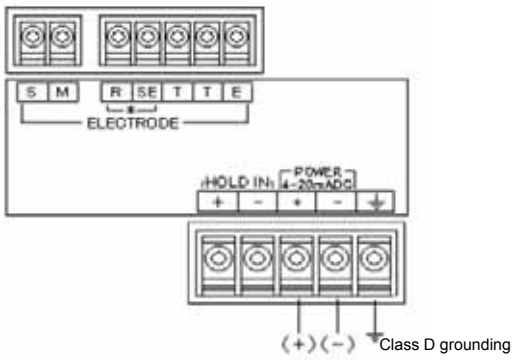
■ Installation (power source, transmission, etc.)

The description of the following installation (power source, transmission, etc.) assumes that the HO-300 is of the standard specification.
For the HO-300, the optionally available cleaner may be installed.
The installation of the HO-300 with the cleaner will be described in the section for the cleaner.

Carry out the installation of execution of work while paying attention to the following points:

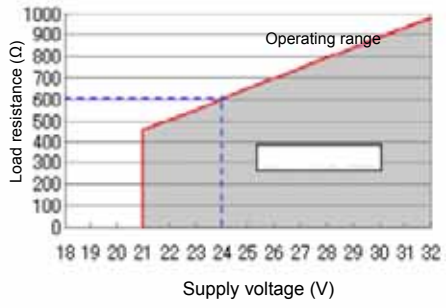
Power source
• The HO-300 has no power switch. Provide a power switch near the HO-300 so that the power can be turned ON/OFF.
• A power source with rated voltage of 21 to 32 VDC for two-wire transmission is used.
• Operation outside the rated range can cause a fault. Therefore, check the power supply voltage. Make sure that the voltage fluctuations of the power source fall within a range between 21 and 32 VDC.
• Use a duplex shielded cable.
• If the HO-300 might be struck by lightning, install two arrestors between the HO-300 and the distributor.
• Be sure to ground the grounding terminal (class D grounding).
• Separate this grounding from any other grounding for electric equipment such as a motor.

Power source	Rated voltage: 24 VDC
Applicable power cable	0.75 to 5.5 mm^2 (AWG18 to 10).

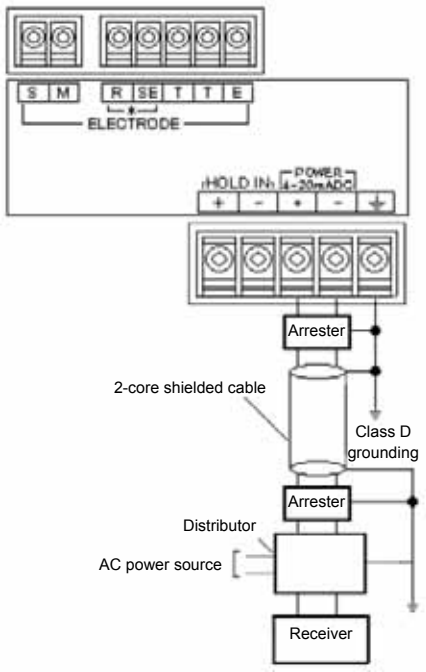


Supply power
Voltage: 21 to 32 VDC
Load resistance: See below.

Relation between current-voltage and load resistance



Recommended typical connections

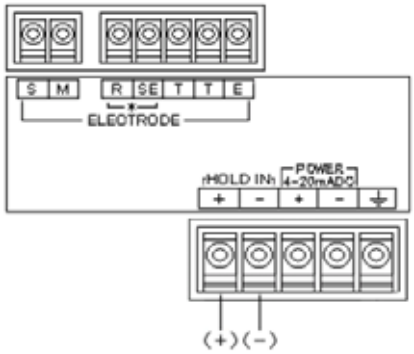


Recommended parts to be connected

Item name	Model	Remarks
Distributor	DS-24-B	For 100 VAC
Arrester	MDP-24-1	For signals

Manufacturer: M-System Co., Ltd.

Cleaning hold
• When the HO-300 is used with a cleaner, connect this input.
• When the HOLD contact signal from the cleaner is turned ON, the transmission output is held.
• The HOLD mode may be changed by settings.
• The resistance for the contact input (HOLD input for cleaner) should be 40Ω maximum.

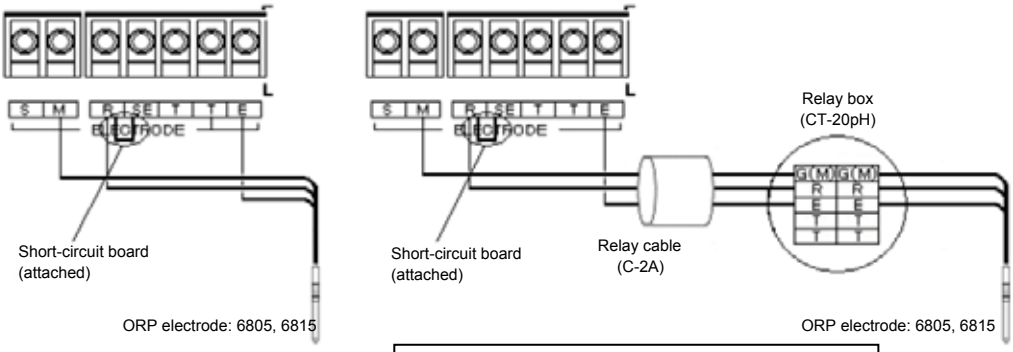


Contact input
(Cleaner HOLD input)

Electrode cable
The electrode cable is highly insulated.
Exercise care in handling the sensor cable.
Do not wet any cable terminal or the terminal block with water or the like; also do not soil it with dirt, oil, or the like. The insulation will otherwise deteriorate.
The decreased insulation causes instable readouts. Keep the cable dry and clean.
If the electrode cable should be soiled, wipe it off with alcohol or the like and then well dry it.
・Give a margin to the length of the electrode cable in order to calibrate the sensitivity with a standard substance and to inspect and replace the electrode.
・In wiring the electrode cable and the relay cable, keep them away from a motor and any other equipment that gives induction and their power cables.

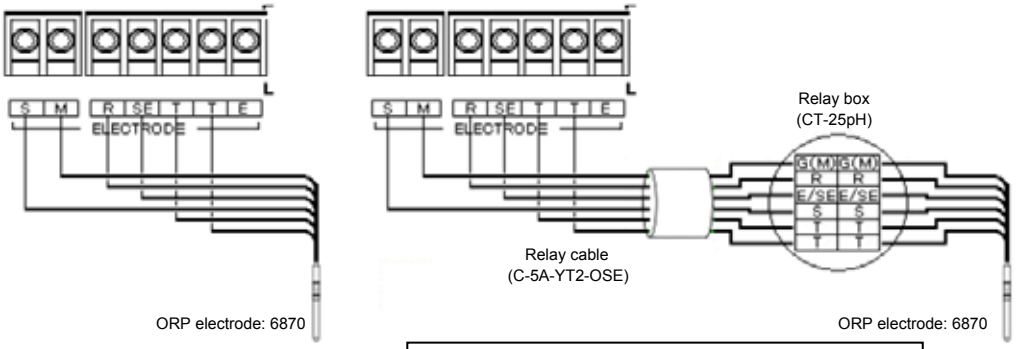
ORP electrode	S: Shielded drive terminal on ORP electrode
	M: ORP electrode terminal
	R: Reference electrode terminal
	SE: Wetted pole terminal
	T, T:Temperature compensation electrode terminal
	E: Shielded terminal

Connection methods for 6805 and 6815 without S-terminal, SE-terminal, and temperature electrode



Attach the provided short-circuit plate between

Connection methods for 6870 ORP electrode with S-terminal, SE-terminal, and temperature electrode



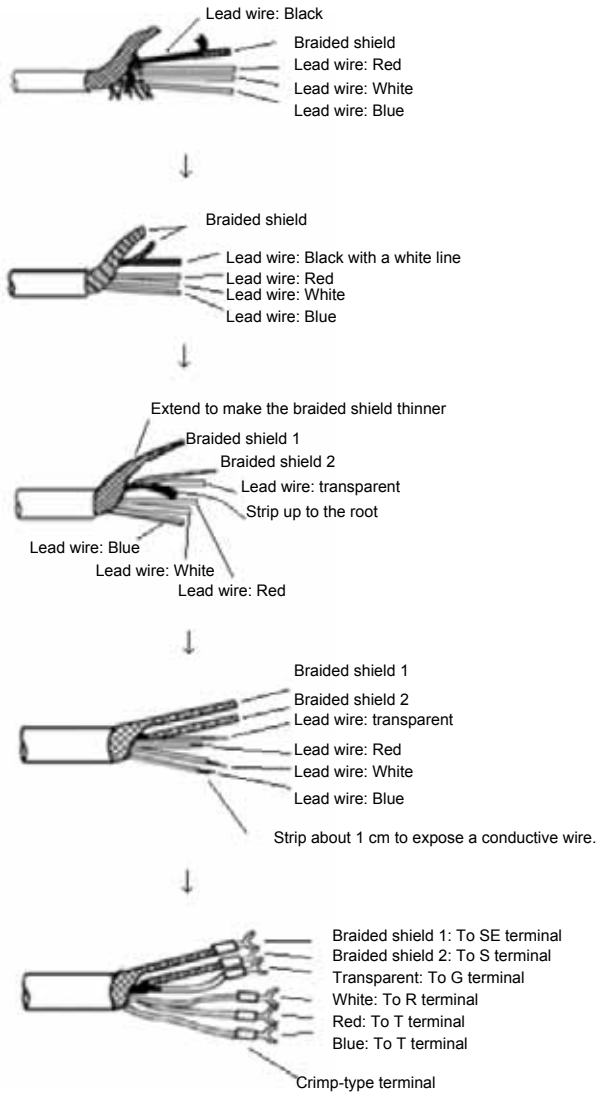
Remove the provided short-circuit plate between R ar

Extension of electrode cable
• Be sure to use the dedicated relay cable and relay box.

• Extension cable exclusively for electrode cable (C-2A/C-5A)
• Dedicated relay box (CT-20p H/CT-25pH)

• The extendable distance between the HC3-300 and the electrode is 50 m maximum.
• It is recommended that the dedicated relay cable be placed in a conduit in order to prevent static electricity from being generated by induction or vibration. In this case, the wiring near any instrument should be passed through a flexible tube.

Terminal treatment for extension cable (for C-5A)



Strip covering of the lead wire (black) up to a place near the remaining covering of the electrode cable and then take out the braided shield for that lead wire.

Strip covering of the lead wire (black with a white line).

Strip covering of the lead wire (black with a white line) and strip covering (conductive plastic: black with a white line) up to the root of the transparent lead wire.

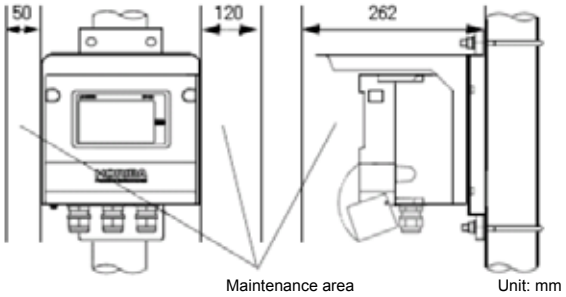
Strip each of the lead wires so that its copper wire end is exposed about 1 cm.
Cover each of braided shields 1 and 2 with a shrinking tube to avoid short-circuit.

Crimp the conductive wire with a crimp tool.

■ Installation (mounting)

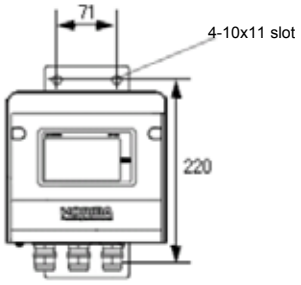
The description of the following installation (mounting) assumes that the HO-300 is of the standard specification.
For the HO-300, the optionally available cleaner may be installed.
The installation of the HO-300 with the cleaner will be described in the section for the cleaner.

Main unit (as mounted on the pole)



The body may be mounted on the pole or the wall.
• For pole-mounting, use the 50A pole.
• In either mounting method, provide a maintenance space.

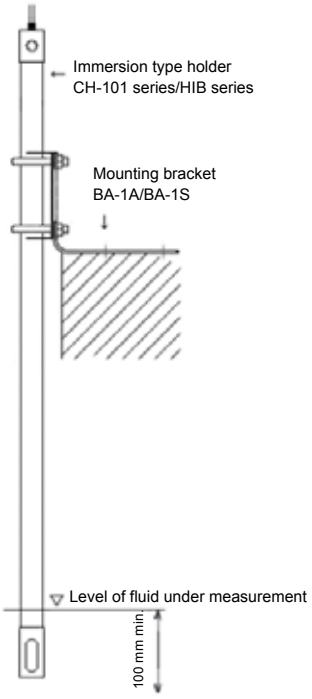
Body (to be wall-mounted)



Immersion type holder + mounting bracket (BA-1A or BA-1S)

The mounting bracket BA-1A or BA-1S should be secured with 2-Φ10 bolts.
• The immersion type holder should be mounted 250 mm minimum above the slab.
• Position the immersion type holder so that its lower part of 100 mm minimum is immersed in sample water.

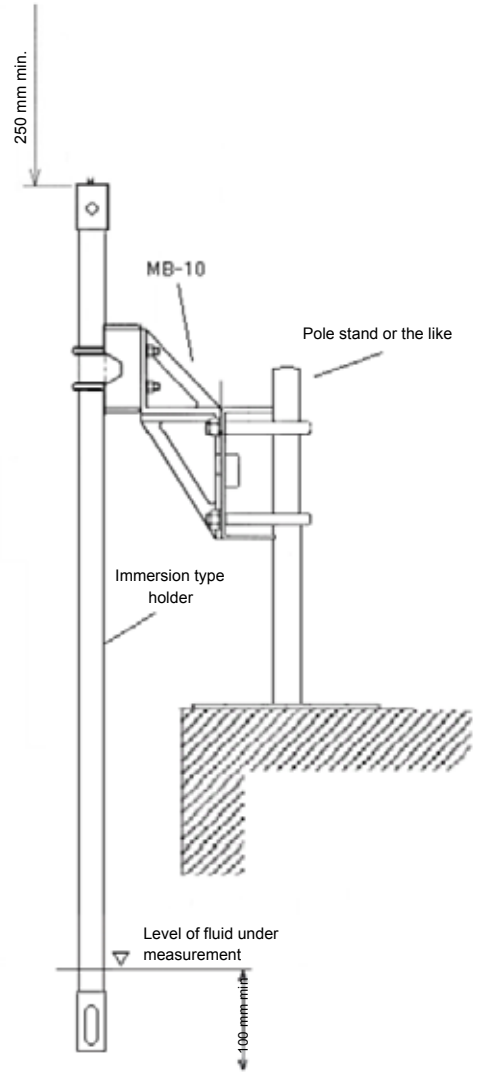
• Any immersion type holder of 1.5 m maximum may be installed.



Immersion type holder + mounting bracket (MB-10)

The mounting bracket MB-10 should be secured to the 50A pole.
• In installing the immersion type holder for the MB-10, position it about 250 mm above the U-bolt that secures that holder.
• Position the immersion type holder so that its lower part of 100 mm minimum is immersed in sample water.

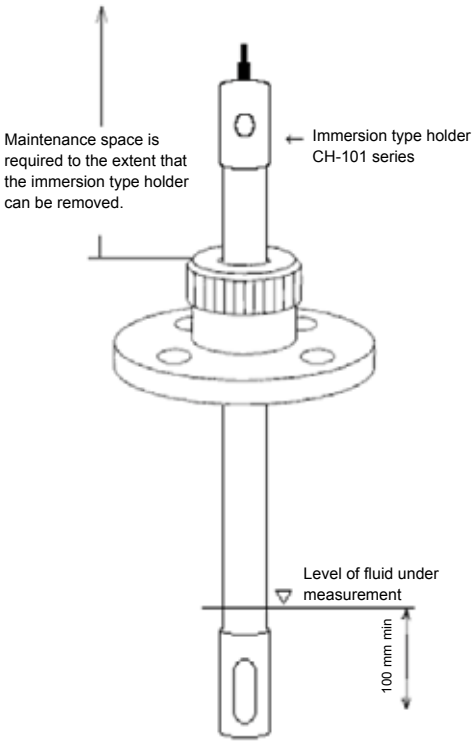
• Any immersion type holder of 1.5 m maximum may be installed.



Immersion type holder + loose flange (FK-1 series)

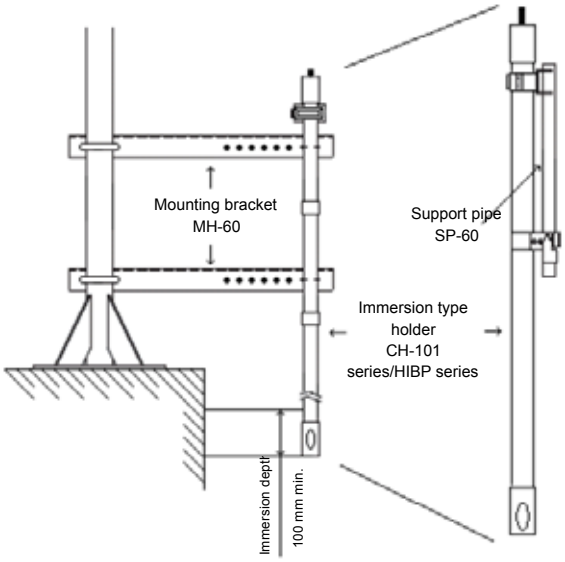
• For the FK-1 series, the basic size is JIS 10K 50A FF. To install a special type of loose holder, previously check its size.

• In installing the immersion type holder for the FK-1 series, position it about 200 mm minimum above the hexagon cap nut on the loose holder.
• Position the immersion type holder so that its lower part of 100 mm minimum is immersed in sample water.
• The mountable immersion type holder is limited to 1.5 m.



■ Immersion type holder + support pipe (SP-60 series) + mounting bracket (MH-60)

• In using any immersion type holder of 1.5 m minimum, it is recommended that the immersion type holder be secured using a support pipe.
• Before using the support pipe, check the length of the immersion type holder. (The lengths at which the immersion type holder and the support pipe can be used are determined.))
• To use the immersion type holder, secure it to the support pipe.
• To use the support pipe, secure it with the mounting bracket (MH-60).
• The mounting bracket MB-10 should be secured to the 50A pole.
• Position the immersion type holder so that its lower part of 100 mm minimum is immersed in sample water.



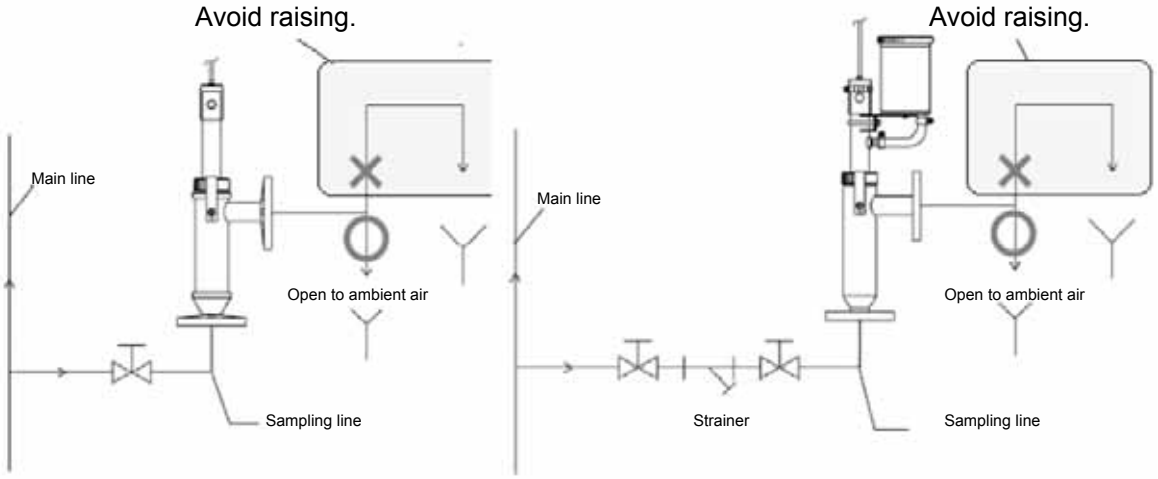
Flow chamber

• The basic size of the CF-251 and CF-501 series flow chambers is JIS 10K 25A FF. To install a special type of flow-through holder, previously check its size.

• Make sure that the holder is installed upright.

CF-251 series/CF-501
• Install a valve at the inlet of the distribution holder.
Minimize the piping length at the outlet so that no back pressure is applied. (The piping at the outlet is open to the atmosphere.)
• Do not use a riser for outlet piping.
Back pressure will be applied to the inside of the flow chamber, causing the liquid under measurement to reversely leak into the sensor. This will prevent you from carrying out accurate measurements. The sensor with reverse leakage cannot be used.

• Be sure to provide a valve on the influx side. If the flow rate of the solution under measurement is too fast, the reading may fluctuate with occurrence of cavitation or application of pressure to the sensor liquid junction due to the flow rate. If the flow rate is too slow, the response of the readout will be delayed. Control the flow rate with the conditions of the liquid under measurement.
• If many suspended solids are contained in the measured liquid, provide a strainer on the inflow side of the flow chamber.

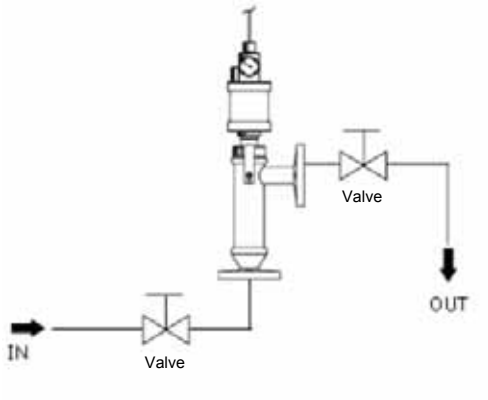


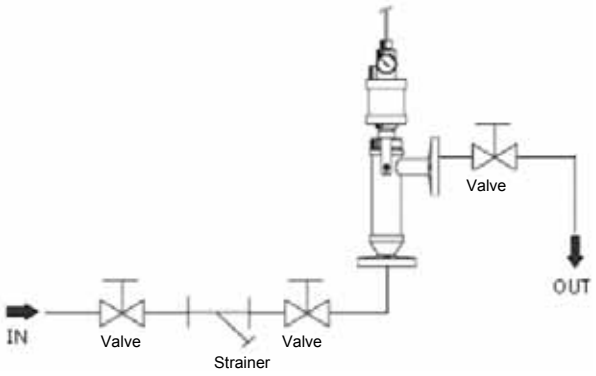
Pressurized flow chamber

• Make sure that the holder is installed upright.

CF-301 series/CF-401S series
• For the pressurized flowchamber, install a valve at both its inlet and outlet
• Maintain the inside of the pressurized flowchamber at 0.03 to 0.05 MPa.
• To use instrument air, use a flexible hose considering maintenance easiness.

• Provide a bypass line from the main line so that the liquid under measurement flows in from below the pressurized flow chamber and then flows out laterally.
• Be sure to provide a valve on the influx side. If the flow rate of the solution under measurement is too fast, the reading may fluctuate with occurrence of cavitation or application of pressure to the sensor liquid junction due to the flow rate. If the flow rate is too slow, the response of the readout will be delayed. Control the flow rate with the conditions of the liquid under measurement.
• If many suspended solids are contained in the measured liquid, provide a strainer on the inflow side of the flow chamber.

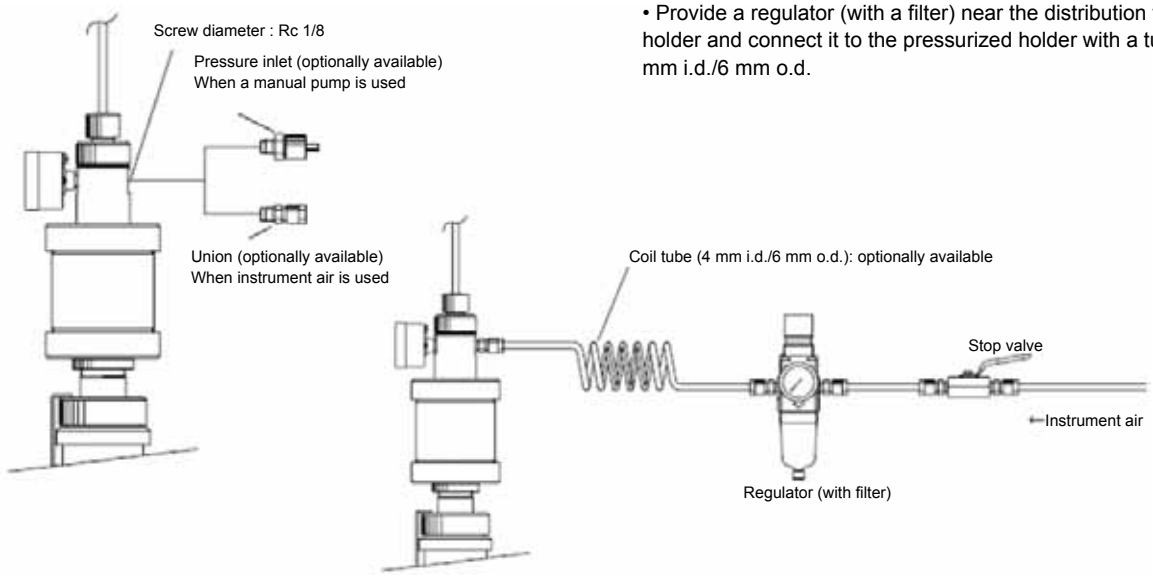




Pressurization

• For pressurization with an inflator, use the pressure inlet.
• Maintain the pressure in the pressurized holder at 0.03 to 0.05 MPa.
• To use instrument air, use a flexible hose considering maintenance easiness.

For pressurization with instrument air, use a union.
• Maintain the pressure in the pressurized holder at 0.03 to 0.05 MPa.
• To use instrument air, use a flexible hose considering maintenance easiness.
• Provide a regulator (with a filter) near the distribution type holder and connect it to the pressurized holder with a tube of 4 mm i.d./6 mm o.d.



Immersion type ultrasonic cleaner for H-1 series

UCH-series

■ Overview

● This cleaner is designed to remove foreign matter adhering to the electrode or to prevent the electrode from being contaminated.
The electrode is irradiated with ultrasonic waves and this cavitation effect removes dirt adhering to the electrode.
In order to improve the cleaning effect, ultrasonic waves are intermittently oscillated (burst oscillation).

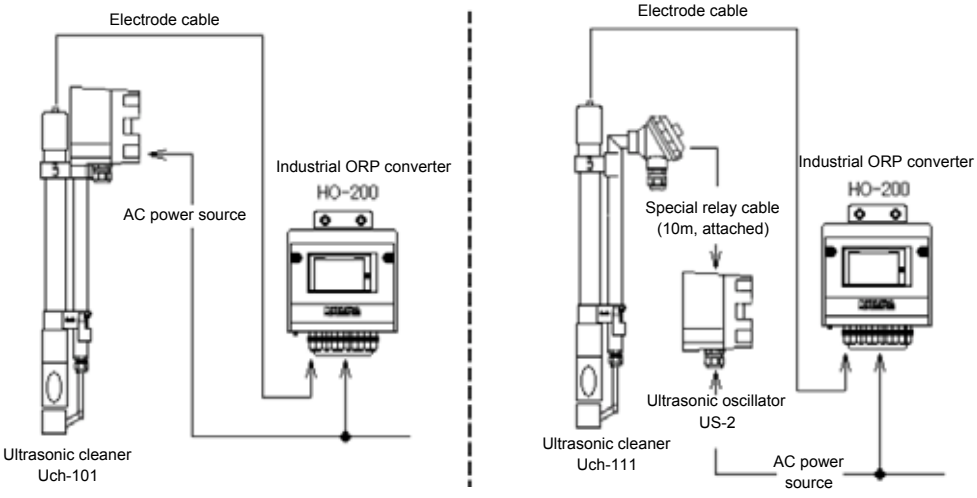
■Objects

The Ultrasonic Cleaner is relatively effective to the following objects.
However, its effect differs with various conditions and is not guaranteed.

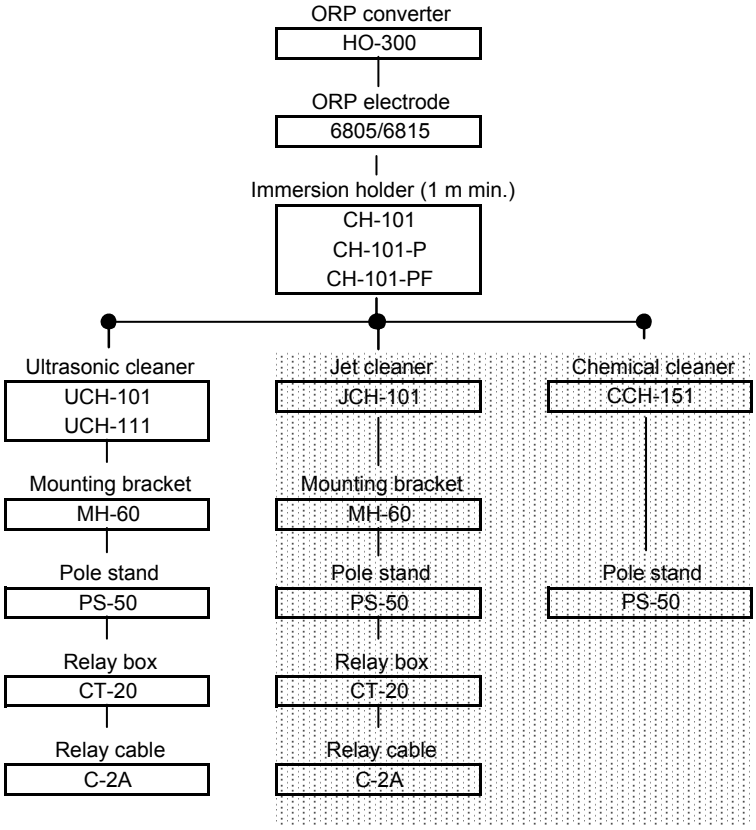
Properties	Objects	
slime	food, paper, pulp, algae	○
Microorganism	bacteria (activated sludge), slag	⊙
Oily	tar, heavy oil	×
	light oil	○
	fatty acid, amine	×
suspended matters	earth and sands	⊙
	metallic minute powder	○
	clay, calcareous	○
scale	coagulated deposit and neutralized effluent treatment	○

⊙:Good ○:Acceptable ×:Not acceptable

System configuration



■Combination (immersion type ultrasonic cleaner)



■ Specification (UCH-101 and UCH-111)

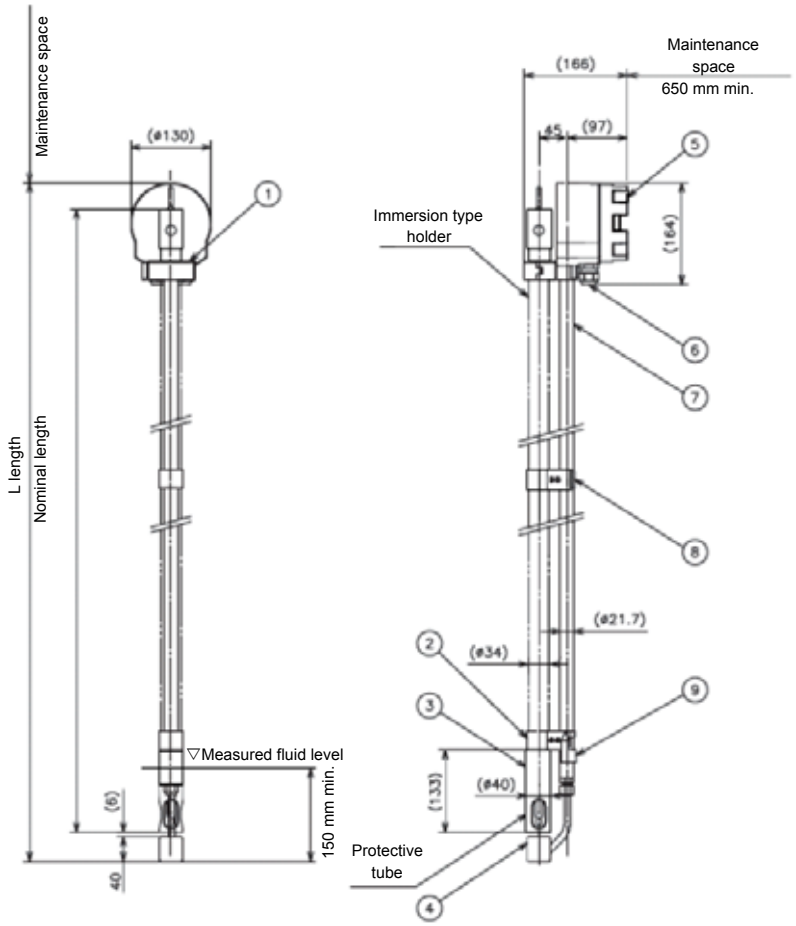
Product name		Ultrasonic cleaner for immersion type (incorporating the ultrasonic oscillator into a single unit)
Model		UCH-101
Supply Voltage		AC 100 to 240V　50/60Hz
Permissible Voltage Variation Range		90% to 110% of supply voltage
Power consumption		10VA
Cleaning Method		Ultrasonic wave continuous irradiation system
Control System		Burst system by oscillation time control
Oscillation Frequency		Approx. 70kHz
Ambient Temperature		-5 to 50°C
Ambient Humidity		5 to 90%RH (No condensation)
Temperature of liquid under measurement (*1)		-5°C to 80°C (non-freezing)
Flow Velocity of Measured Liquid		2 m/sec. max.
Measuring liquid pressure		Atmospheric pressure
Wetted material		SUS316 (not including an electrode and materials for Immersion Holders)
Weight		Approx. 4.0kg (when immersion type holder is 1 m long)
Oscillator case	International protection	IP54(IEC60529, JIS C0920) (Category 2)
	Material	AC4C
	Finish	Epoxy degenerated melamine resin painting (Munsell 10PB5/1)
Special Note		This Product does not come with electrodes and an Immersion Holder.

*1: The operating temperature range differs depending on the combined electrode and holder. Refer to the temperature of each product in the specification.

Product name		Ultrasonic cleaner for immersion type (with ultrasonic oscillator separately installed)
Model		UCH-111
Supply Voltage		AC 100 to 240V　50/60Hz
Permissible Voltage Variation Range		90% to 110% of supply voltage
Power consumption		10VA
Cleaning Method		Ultrasonic wave continuous irradiation system
Control System		Burst system by oscillation time control
Oscillation Frequency		Approx. 70kHz
Ambient Temperature		-5 to 50°C
Ambient Humidity		5 to 90%RH (No condensation)
Temperature of liquid under measurement (*1)		-5°C to 80°C (non-freezing)
Flow Velocity of Measured Liquid		2 m/sec. max.
Measuring liquid pressure		Atmospheric pressure
Wetted material		SUS316 (not including an electrode and materials for Immersion Holders)
Weight	Oscillator	Approx. 2.0kg
	Vibrator holder	Approx. 2.5kg (when immersion type holder is 1 m
Oscillator case	International protection	IP54(IEC60529, JIS C0920) (Category 2)
	Material	AC4C
	Finish	Epoxy degenerated melamine resin painting (Munsell 10PB5/1)
Special Note		This Product does not come with electrodes and an Immersion Holder.

*1: The operating temperature range differs depending on the combined electrode and holder.Refer to the temperature of each product in the specification.

■ External dimensions (UCH-101)



	PARTS	NOTES
(1)	Electrode holder mounting bracket	PVC
(2)	Hook	SUS316
(3)	spacer	PP
(4)	Ultrasonic vibrator	SUS316
(5)	Ultrasonic oscillator	AC4C
(6)	Piping slot	O.DΦ7to12cabel
(7)	Vibrator holder	SUS316
(8)	Support hook	SUS316
(9)	Stopper	SUS316

The support hook does not come with any cleaner of 1.5 m maximum.

The L length and tolerance of the UCH-101 immersion type ultrasonic cleaner are shown in the following table:

Nominal length (m)	L length (mm)	Maintenance space (mm)
0.5	588±10	500 or more
1	1088±10	1000 or more
1.5	1588±10	1500 or more
2	2088±10	2000 or more
2.5	2588±10	2500 or more
3	3088±10	3000 or more

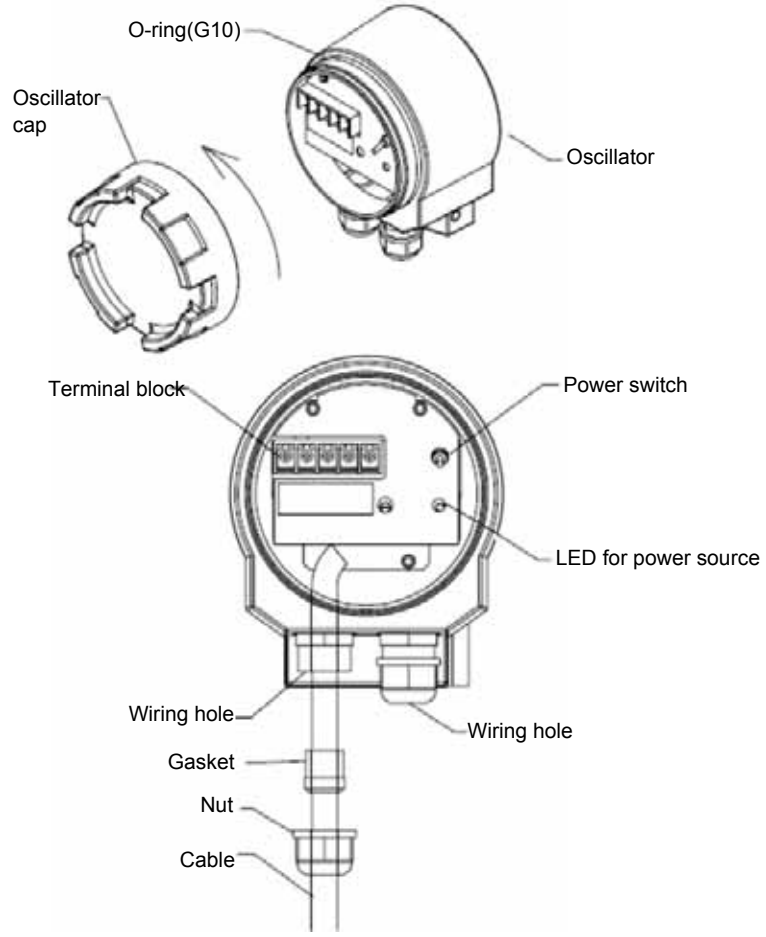
A maintenance space is required above the ultrasonic oscillator.

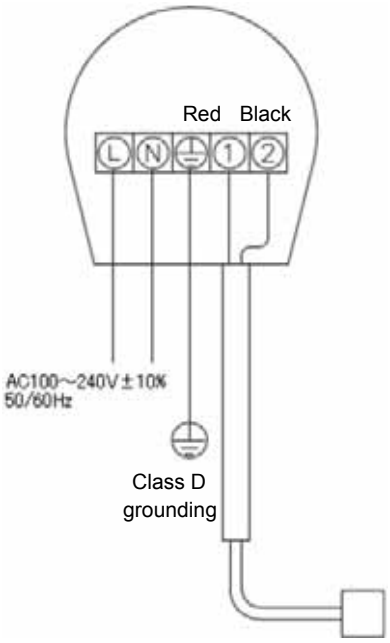
■ Installation (UCH-101) (connections)

Carry out the installation of execution of work while paying attention to the following points:

Power source
•The HO-300 is provided with a power switch. Turn this switch OFF during installation.
•Operation outside the rated range can cause a fault. Therefore check the power supply voltage.
•Check that fluctuations of the power supply voltage fall within ±10%.
•Be sure to ground the grounding terminal (class D grounding).
•The applicable cable diameter for the wiring hole is 7 to 12 mm.
•After the installation, be sure to put the oscillator cap to prevent electric shocks.
•The ultrasonic vibrator is already connected to the corresponding terminal.

Supply power	Voltage: 100 to 240 VAC
	Frequency: 50/60 Hz
Applicable electric wire	Φ7 to Φ12

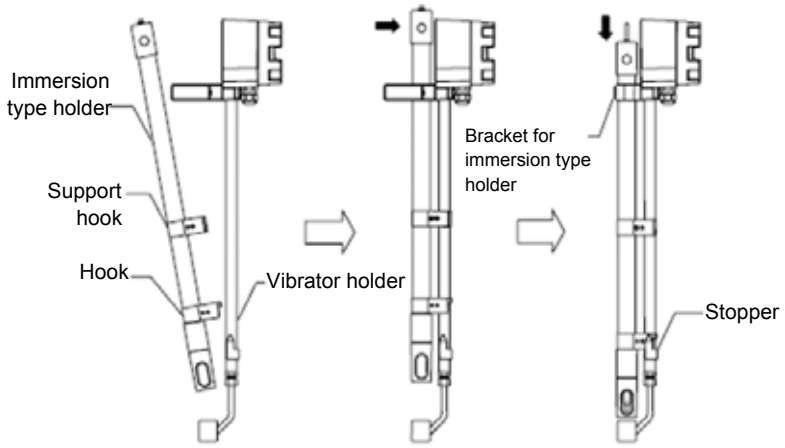




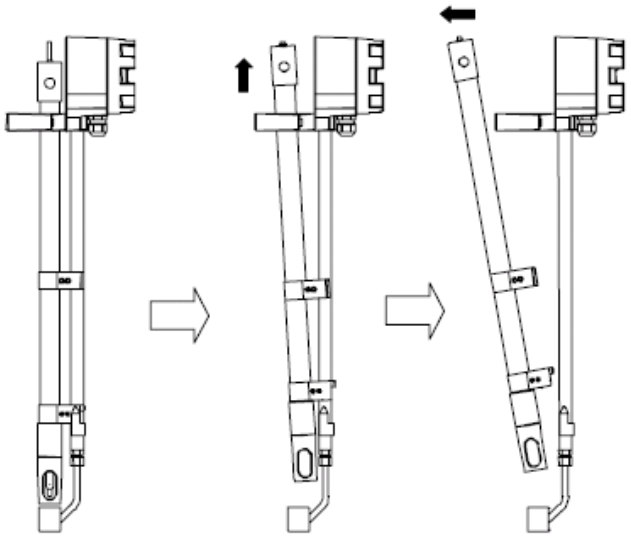
■ Installation (ultrasonic cleaner and holder)

Carry out installation and execution of work as illustrated below:

Installation
• Attach the hook to the immersion holder.
• Slowly move down the hook along the vibrator holder.
• Once the hook is caught by the stopper on the oscillator holder, fasten the immersion holder fixing hardware.

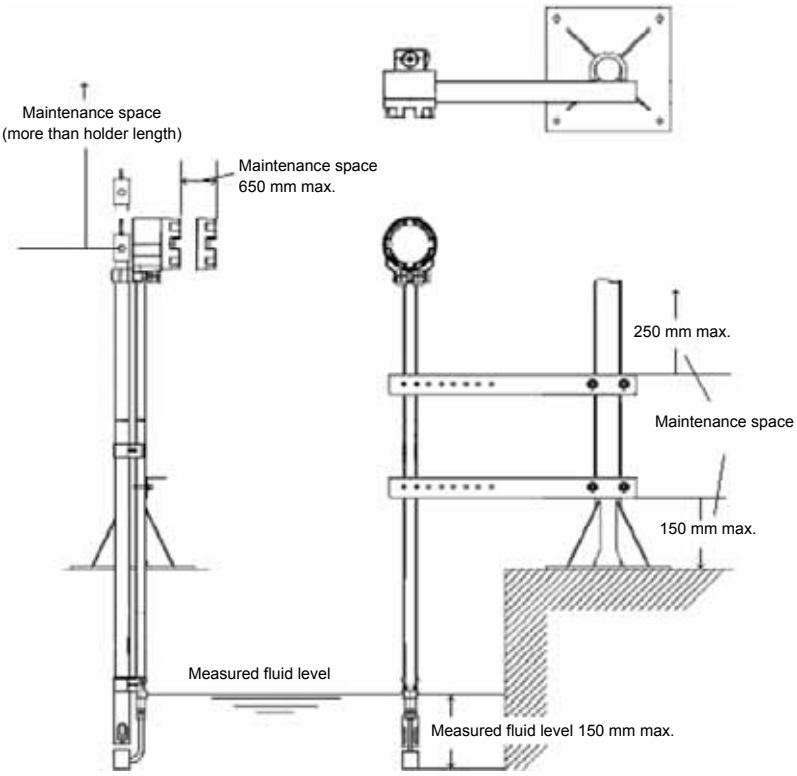


Removal
• Remove the immersion holder fixing hardware.
• Pull up the immersion holder.
• Remove the hook and the support hook from the vibrator holder.

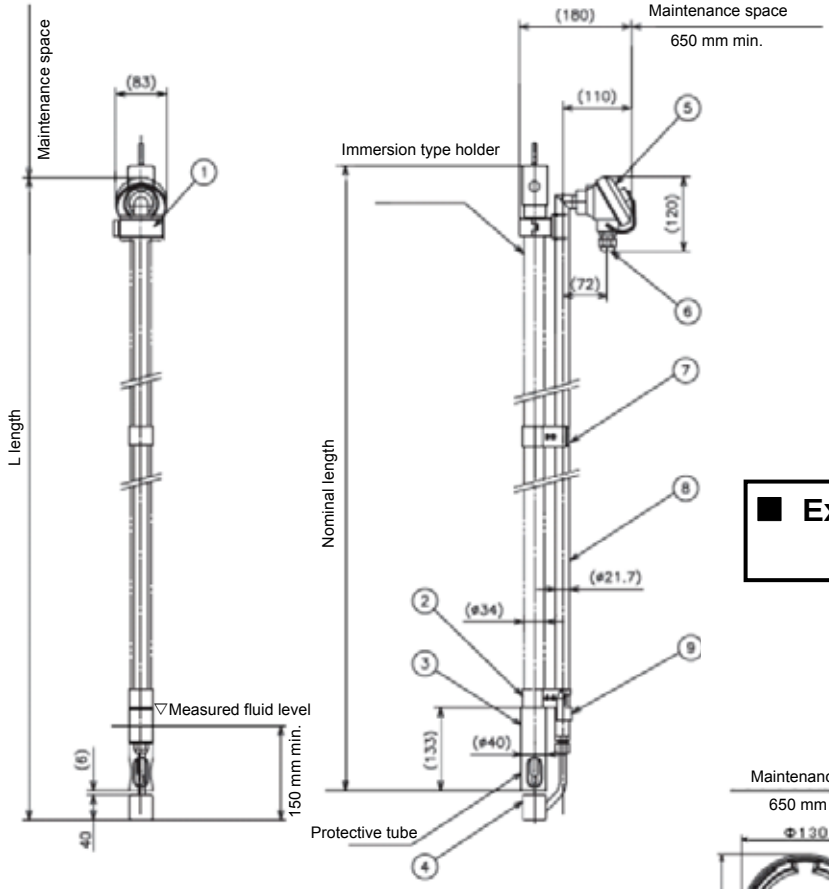


■ Installation

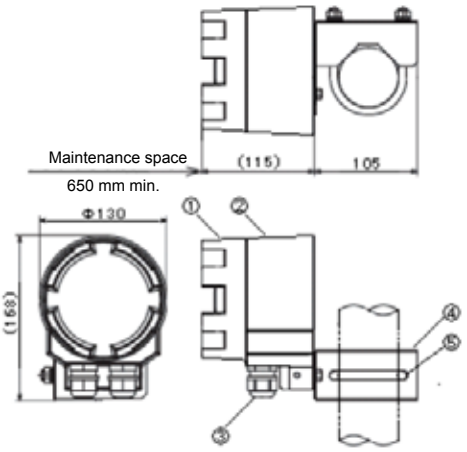
Installation environment
• Install the Cleaner at a location where maintenance work can be easily performed.
• Ensure that the ORP electrode remains immersed even if the level of the liquid under measurement changes.
• Avoid installing the Cleaner at a location exposed to corrosive fluid and gas. etc.
• Avoid installation in a location near a heating element or the like, where the surface and ambient temperatures reach 50 **° C** or higher.



External dimensions (UCH-111)



■ External dimensions (US-2)



50A pole

	PARTS	NOTES
(1)	Immersion holder fixing bracket	PVC
(2)	Hook	SUS316
(3)	spacer	PP
(4)	Ultrasonic vibrator	SUS316
(5)	Relay terminal box	Al
(6)	Piping slot	O.DΦ7to12cabel
(7)	Vibrator holder	SUS316
(8)	Support hook	SUS316
(9)	Stopper	SUS316

	PARTS	NOTES
(1)	Oscillator cover	AC4C
(2)	Oscillator cover	AC4C
(3)	Wiring hole	O.DΦ7to12cabel
(4)	Mounting bracket SUS304	SUS304
(5)	U-bolt	SUS304 M8

Mass: Approx. 2.0 kg
Protection Class: IP 54
(IEC60529, JIS C0920)(Category 2)
Finish: Epoxy degenerated melamine resin painting
(Munsell 10PB5/1)

• No support hook is provided on the cleaner of 1.5 m or less.

The L length and tolerance of the UCH-101 immersion type ultrasonic cleaner are shown in the following table:

Nominal length (m)	L length (mm)	Maintenance space (mm)
0.5	528±10	500 or more
1	1028±10	1000 or more
1.5	1528±10	1500 or more
2	2028±10	2000 or more
2.5	2528±10	2500 or more
3	3028±10	3000 or more

The maintenance space is required above the ultrasonic oscillator.

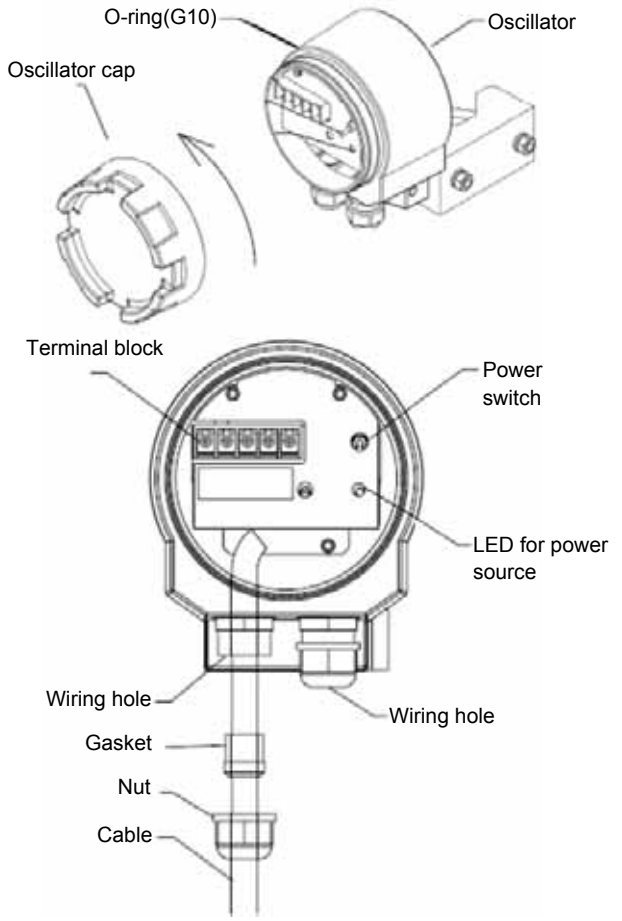
Installation (UCH-111) (connections)

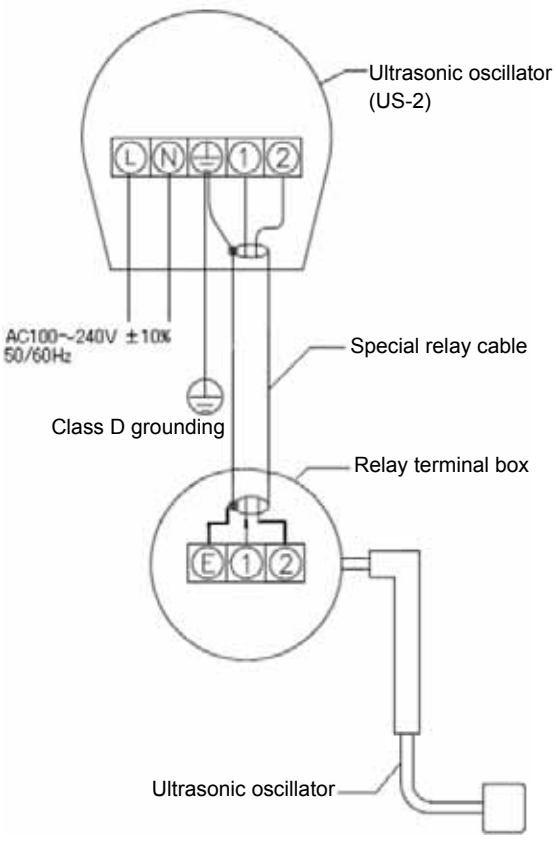
Carry out the installation of execution of work while paying attention to the following points:

Power source

•The HO-300 is provided with a power switch. Turn this switch OFF during installation.
•Operation outside the rated range can cause a fault. Therefore, check the power supply voltage.
•Check that fluctuations of the power supply voltage fall within ±10%.
•Be sure to ground the grounding terminal (class D grounding).
•The applicable cable diameter for the wiring hole is 7 to 12 mm.
•After the installation, be sure to put the oscillator cap to prevent electric shocks.

Supply power	Voltage: 100 to 240 VAC
	Frequency: 50/60 Hz
Applicable electric wire	Φ7 to Φ12

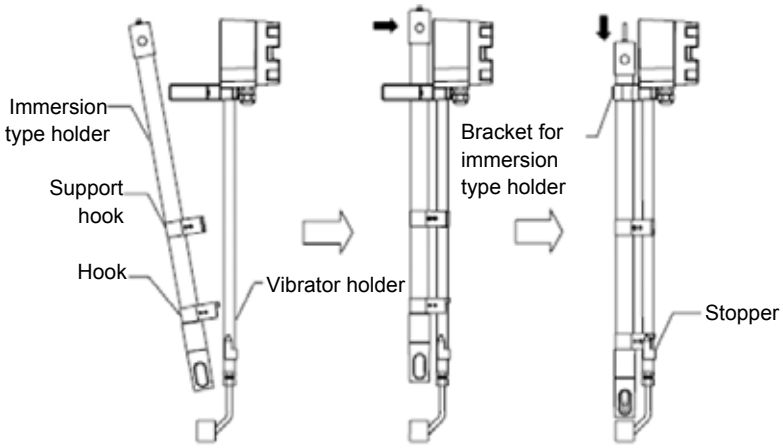




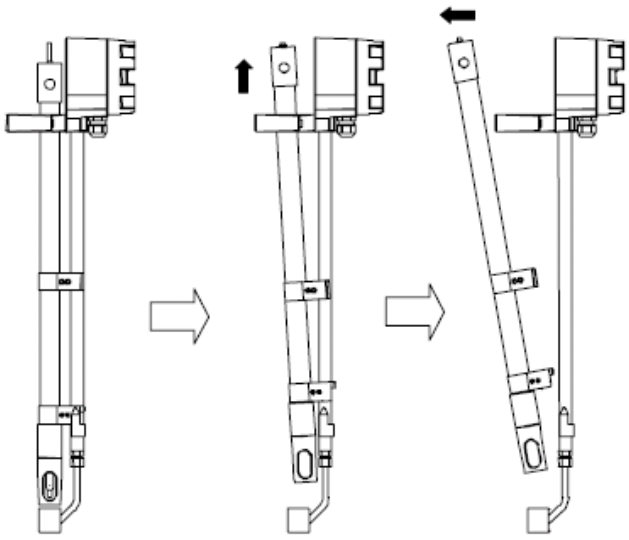
Installation (ultrasonic cleaner and holder)

Carry out installation and execution of work as illustrated below:

Installation
•Attach the hook to the immersion holder.
•Slowly move down the hook along the vibrator holder.
•Once the hook is caught by the stopper on the oscillator holder, fasten the immersion holder fixing hardware.

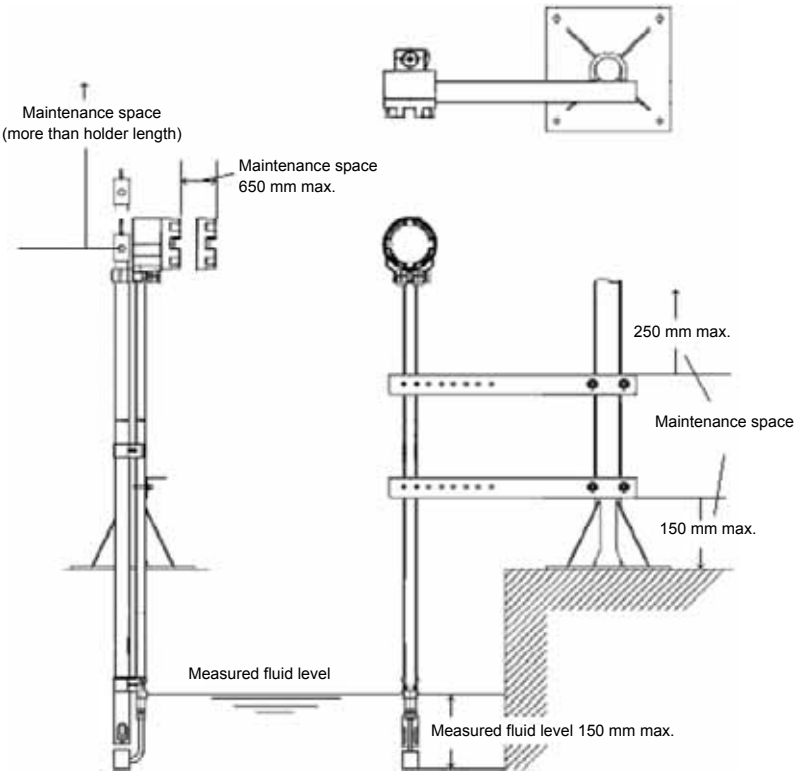


Removal
•Remove the immersion holder fixing hardware.
•Pull up the immersion holder.
•Remove the hook and the support hook from the vibrator holder.



■Installation

Installation environment
•Install the Cleaner at a location where maintenance work can be easily performed.
•Ensure that the ORP electrode remains immersed even if the level of the liquid under measurement changes.
•Avoid installing the Cleaner at a location exposed to corrosive fluid and gas. etc.
•Avoid installation in a location near a heating element or the like, where the surface and ambient temperatures reach 50 ° **C** or higher.



Immersion type jet cleaner for H-1 series

JCH-101

■ Overview

●This cleaner is designed to intermittently clean the ORP electrode with cleaning water and air.The cleaner has a timer that allows you to specify cleaning intervals and duration.

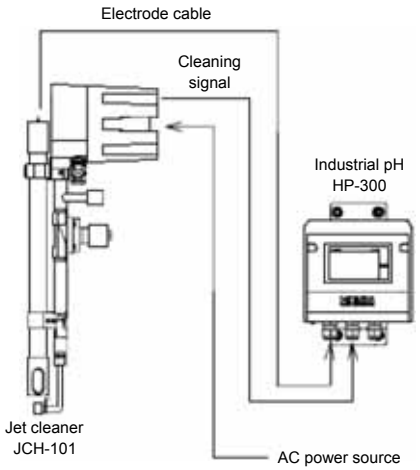
■Objects

The Ultrasonic Cleaner is relatively effective to the following objects.
However, its effect differs with various conditions and is not guaranteed.

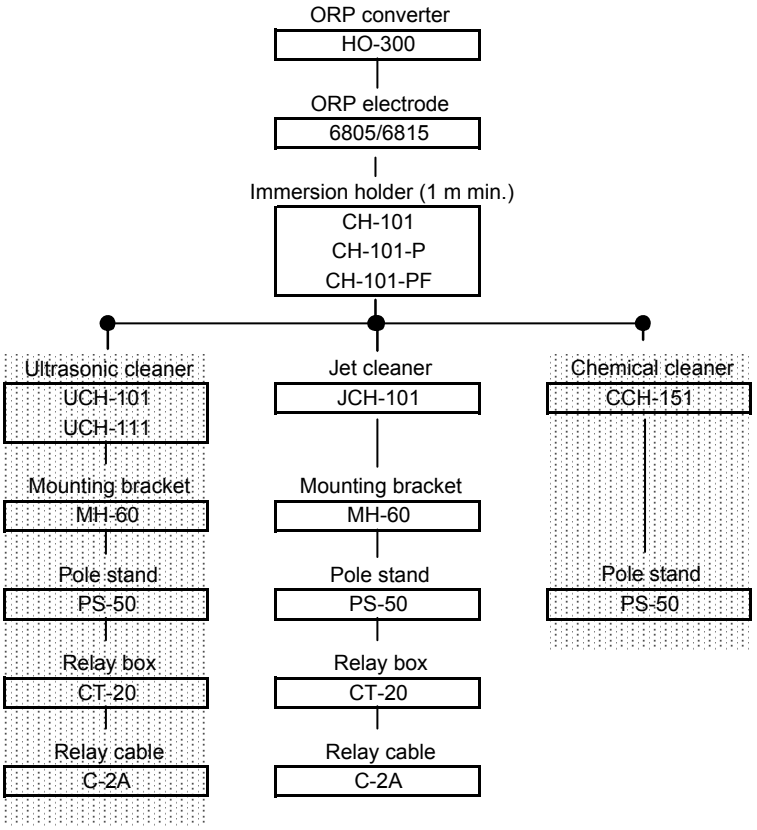
Properties Classification	Objects	
slime	food, paper, pulp, algae	⊙
Microorganism	bacteria (activated sludge), slag	⊙
Oily	tar, heavy oil	×
	light oil	○
	fatty acid, amine	○
suspended matters	earth and sands	○
	metallic minute powder	○
	clay, calcareous	○
scale	coagulated deposit and neutralized effluent treatment CaCO3, etc.	○

⊙:Good ○:Acceptable ×:Not acceptable

System configuration



■ Combination (immersion type jet cleaner)



■ Specification (JCH-101)

Product name		eaner (with built-in timer unit)
Model		JCH-101
Supply Voltage (*1)		AC 100V 50/60Hz
Permissible Voltage Variation Range		90% to 110% of supply voltage
Power consumption		40 VA max.
Signal output during cleaning Output	Contact type	Relay contact SPDT(1c)
	Contact point capacity	250 VAC 3 A; 30 VDC 3A (resistance load)
	Conditions	Between NO and COM: short-circuit, between NC and COM: open
Start of external cleaning Input (*2)	Contact type	No-voltage contact
	Contact point capacity	DC30V 0.1A
	Conditions	Pulse input close time 100 msec min.
Cleaning stop signal Input (*3)	Contact type	No-voltage contact
	Contact point capacity	DC30V 0.1A
	Conditions	Stopped by turning OFF continuous input
Timer	Washing frequency	0.1 to 3.0 hours
	Washing time	Between 0.5 and 10.0
	Signal output during cleaning Delay time	Between 0.2 and 5.0
Cleaning Method		Intermittent water jet/air jet cleaning
Ambient Temperature		-5 to 50°C
Ambient Humidity		5% to 90% RH (No condensation)
Temperature of liquid under measurement (*4)		-5°C to 80°C (non-freezing)
Flow Velocity of Measured Liquid		2 m/sec. max.
Pressure of fluid under measurement		Atmospheric pressure
Cleaning pressure	Water	0.05 to 0.5 MPs (consumption: approx. 4 L/min) (*5)
	Air	0.05 MPs to 0.2 MPs (consumption: approx.. 90 L/min)
Bore diameter connected for cleaning		Rc 1/2
Wetted material		SUS316, FKM (not including an electrode and materials for Immersion Holders)
Weight		Approx. 6.5 kg (when immersion type holder is 1 m long)
Timer case	International protection code	IP54(IEC60529, JIS C0920)(Category 2)
	Material	AC4C
	Finish	Epoxy degenerated melamine resin painting (Munsell 10PB5/1)
Special Note		This Product does not come with electrodes and an Immersion Holder.

*1: The power supply voltage of 200 VAC is available optionally.For any other power supply voltage, contact us.

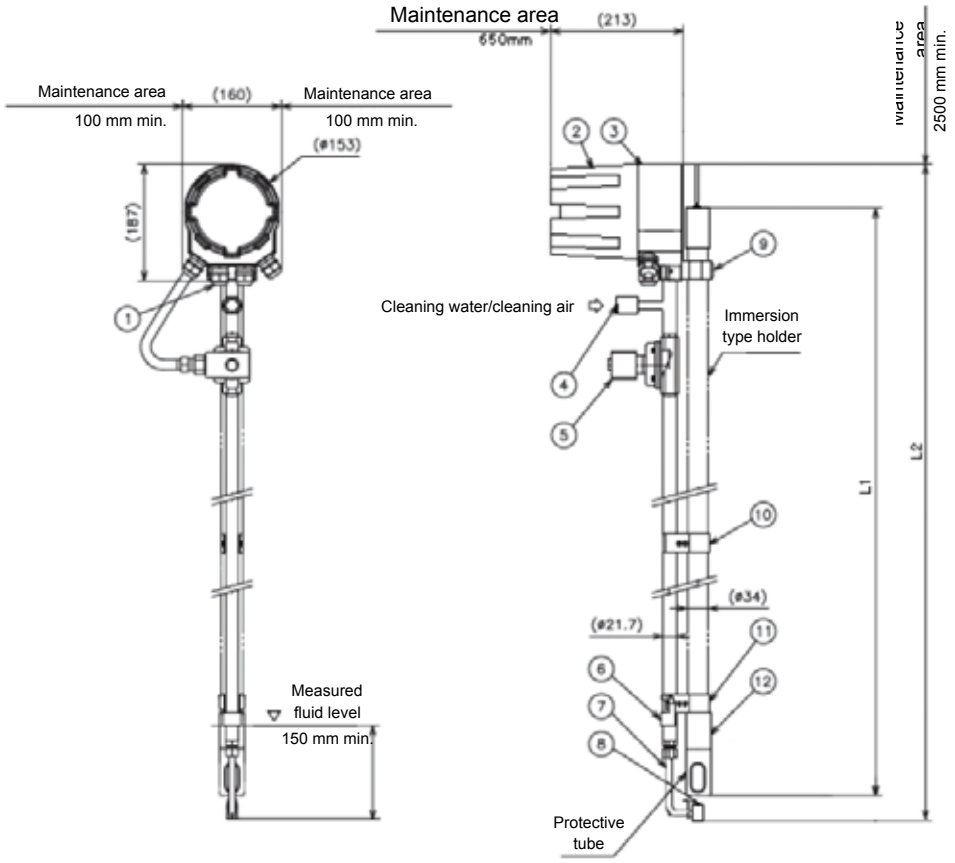
*2: When the input line to start external cleaning is used, remove the cleaning frequency timer (T1).

*3: The terminals were short-circuit at factory.To input the cleaning stop signal, remove the short-circuit.

*4: Since the operating temperature range differs depending on the combined electrode and immersion type holder, see the temperature of each product in the specification.

*5: In using tap water for cleaning water, the water supply law prohibits supplying it directly from water works. Use a tap water pressurization system or the like to insulate the tap water from the common tap water pipe. If cleaning water might be frozen, use thermally insulated piping.

■ External dimensions (JCH-101)



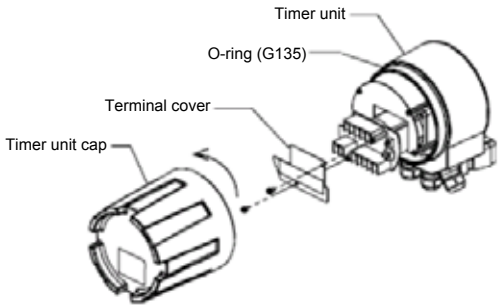
	PARTS	NOTES
(1)	Piping slot	O.D Φ7toΦ12cable
(2)	Timer unit cover	AC4C
(3)	Timer unit	AC4C
(4)	Cleaning water/air inlet	Rc1/2
(5)	Solenoid valve	
(6)	stopper	SUS316
(7)	Nozzle holder	SUS316
(8)	Nozzle	SUS316
(9)	Immersion holder fixing bracket	PVC
(10)	Support hook	SUS316
(11)	Hook	SUS316
(12)	spacer	PP

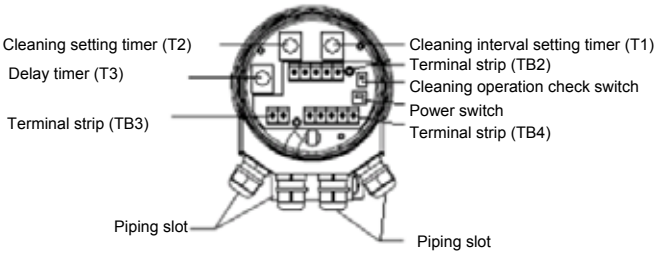
The support hook does not come with any cleaner of 1.5 m maximum.

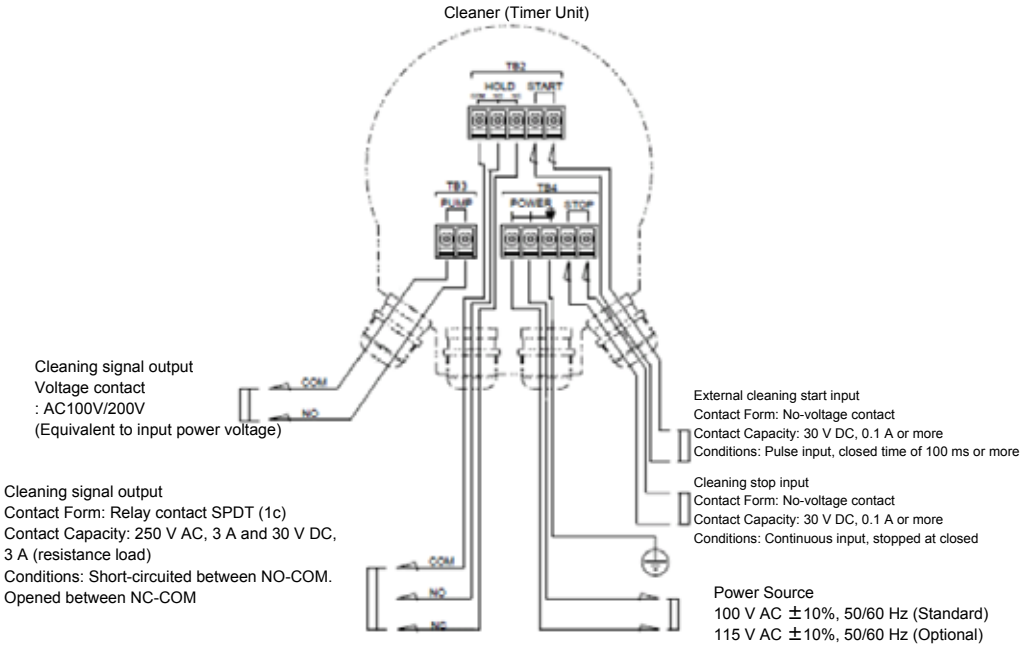
L1 (m) (nominal length)	L2
1	1108±10
1.5	1608±10
2	2108±10
2.5	2608±10
3	3108±10

Unit: mm

■ Part names and terminals (JCH-101)





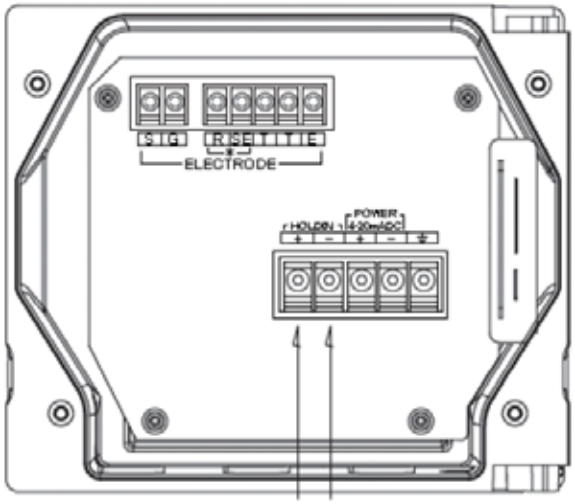


■ Installation (JCH-101) (connections)

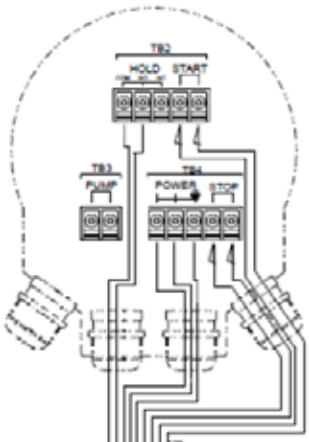
Carry out the installation of execution of work while paying attention to the following points:

Applicable electric wire	Φ7 to Φ12　0.75mm2 min.

Connections
• Be sure to ground the grounding terminal (class D grounding).
• The applicable cable diameter for the wiring hole is Φ7 to Φ12 mm.



Cleaner (Timer Unit)



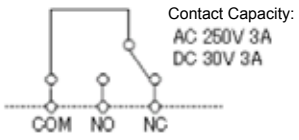
HOLD input terminal
ON resistance: Max. 40Ω
Open voltage: 1.2 VDC
Short-circuit current: Max. 21 mA

Cleaning signal output
Contact Form: Relay contact SPDT(1c)
Contact Capacity: 250 V AC, 3 A and 30 V DC, 3 A (resistance load)
Conditions: Short-circuited between NO-COM. Opened between NC-COM

External cleaning start input
Contact Form: No-voltage contact
Contact Capacity: 30 V DC, 0.1 A or more
Conditions: Pulse input, closed time of 100 ms or more

Power Source
AC 100 V ±10%, 50/60 Hz (Standard)
AC 200 V ±10%, 50/60 Hz (Optional)

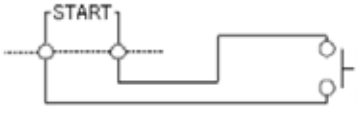
Wiring for HOLD (signal output during cleaning -- output of HOLD signal)
Wiring of cleaning signal output (hold signal output)
•Contact capacity under resistance load is 250 V AC, 3 A and 30 V DC, 3 A (resistance load).
•Cleaning signal output can be produced from the "COM, NO, and NC" Terminals in the Terminal Block.



Contact Capacity:
AC 250V 3A
DC 30V 3A

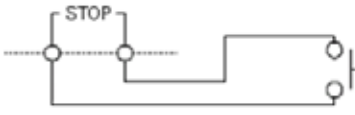
COM, NO ••• "ON" at cleaning
COM, NO ••• "OFF" at cleaning

Wiring of START (external cleaning start input)
•Cleaning operation can be started from the outside by using the external cleaning start input line.
•Produce an input of "Closed" signal of 100 ms or more to the "START" Terminal in the Terminal Block.



Closed Time:
No-voltage contact pulse input of 100 ms or more
Load relay:
30 VDC, 0.1 A or more

Wiring of STOP (cleaning stop signal input)
•Cleaning operation can be stopped by using the "STOP" Terminal.
•This "STOP" terminal is arranged in series with the p ower supply line to the motor.
If this terminal is opened, the motor is not powered. This allows you to stop the cleaning process.The terminal is normally short-circuited with a short bar.

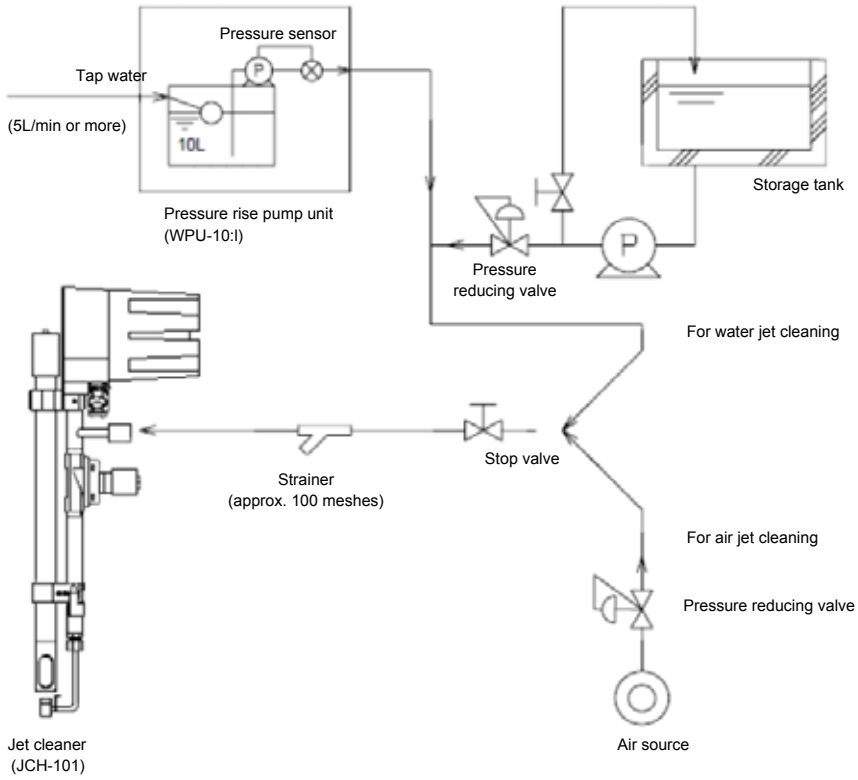


Cleaning stop signal
Close •••••• Cleaning "ON"
Open •••••• Cleaning "OFF"
Load: 100 VAC, 500 mA

■ Installation (JCH-101) (piping)

Carry out the installation of execution of work while paying attention to the following points:

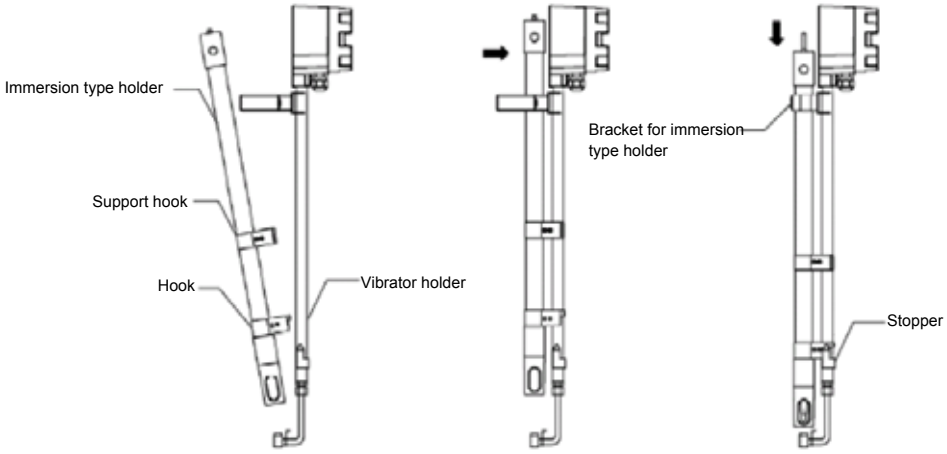
Piping
• Since the cleaner must be removed during maintenance, use flexible piping and give an allowance to its length.
• Before connecting the piping to the cleaner, be sure to flush off the piping with water.
• With the regulator, adjust the cleaning water to a specified pressure.
In using tap water for cleaning water, the water supply law prohibits supplying it directly from water works. Temporarily receive the tap
water in a tank or the like and then pressurize it with a pum However,
if original water for industrial use (tertiary treatment water) is used,
it may be connected directly. If tap water is distributed after passing through a tank located on the roof or the like, it may also be connected as it is insulated.



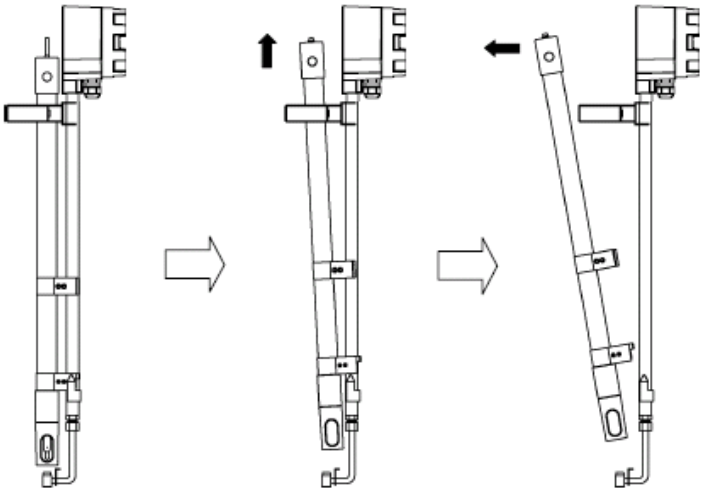
■ Installation (jet cleaner and holder)

Carry out installation and execution of work as illustrated below:

Installation
• Attach the hook to the immersion holder.
• Slowly move down the hook along the nozzle holder.
• Once the hook is caught by the stopper of the nozzle holder, secure the bracket for the immersion type holder.

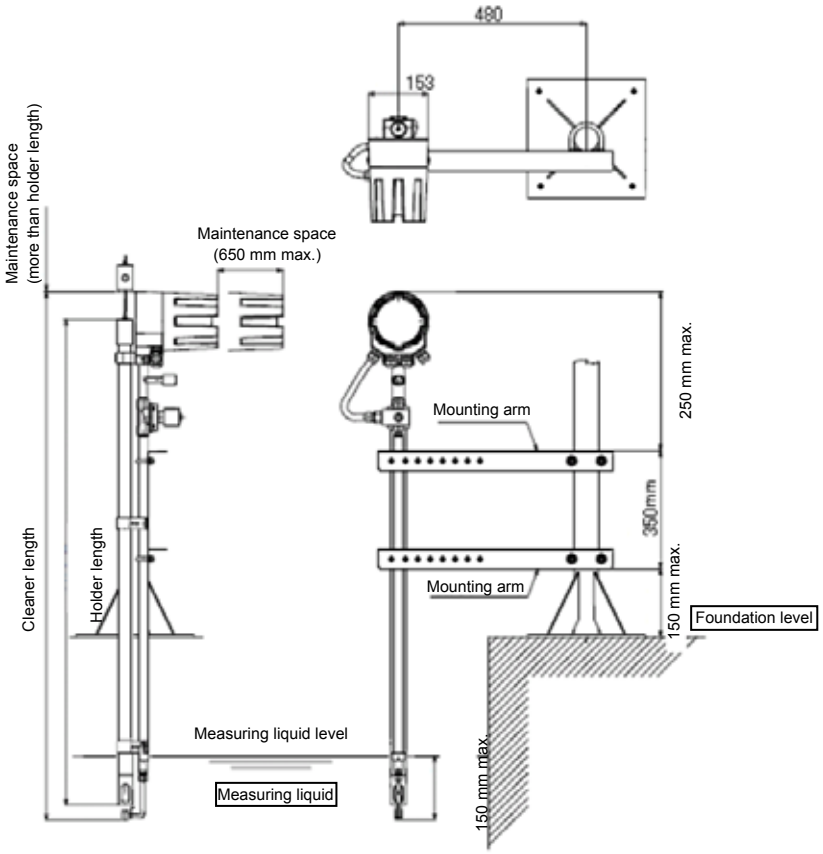


Removal
• Remove the immersion holder fixing hardware.
• Moves up the immersion type holder.
• Remove the hook and the support hook from the vibrator holder.



■ Installation

Installation environment
• Install the Cleaner at a location where maintenance work can be easily performed.
• Install the Cleaner at a height where an electrode is always immersed in measured liquid even if a measured liquid level changes.
• Avoid installing the Cleaner at a location exposed to corrosive fluid and gas. etc.
• Avoid installation in a location near a heating element or the like, where the surface and ambient temperatures reach 50℃ or higher。



Flow chamber ultrasonic cleaner for H-1 series

UCF-series

■ Overview

● This cleaner, when used with the electrode, cleans the electrode by removing foreign matter adhering to the electrode and prevents the electrode from being contaminated.
The electrode is irradiated with ultrasonic waves and this cavitation effect removes dirt adhering to the electrode.
In order to improve the cleaning effect, ultrasonic waves are intermittently oscillated (burst oscillation).

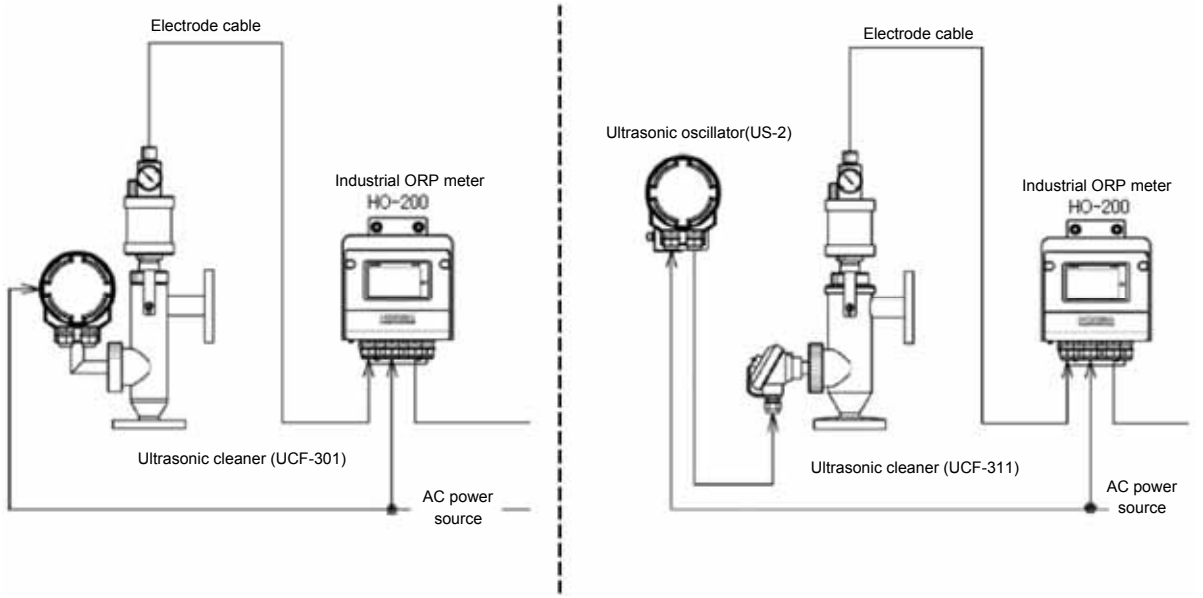
■Objects

The Ultrasonic Cleaner is relatively effective to the following objects.
However, its effect differs with various conditions and is not guaranteed.

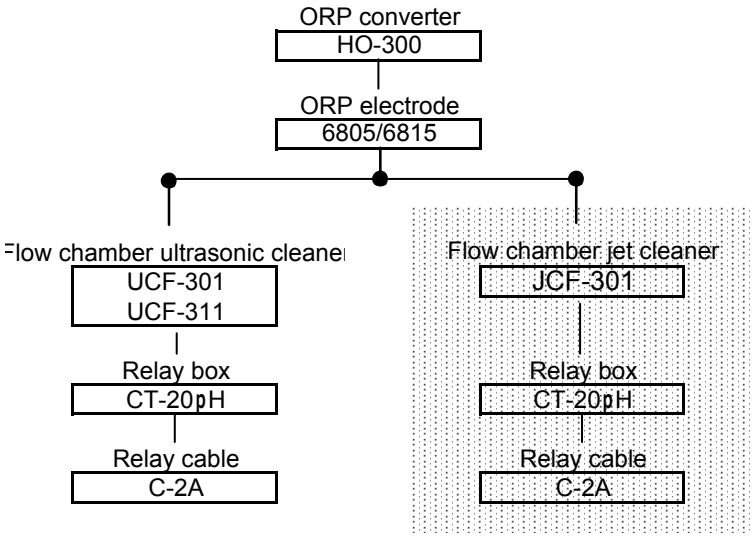
Properties Classification	Objects	
slime	food, paper, pulp, algae	○
Microorganism	bacteria (activated sludge), slag	⊙
Oily	tar, heavy oil	×
	light oil	○
	fatty acid, amine	×
suspended matters	earth and sands	⊙
	metallic minute powder	○
	clay, calcareous	○
scale	coagulated deposit and neutralized effluent treatment CaCO3, etc.	○

⊙:Good ○:Acceptable ×:Not acceptable

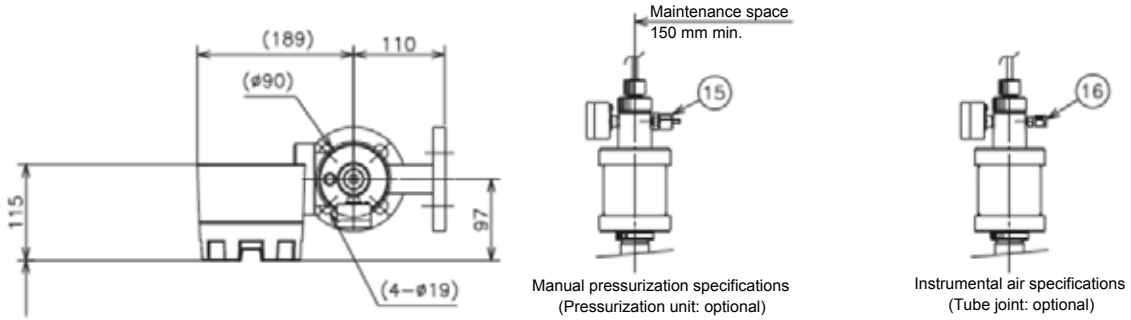
■System configuration

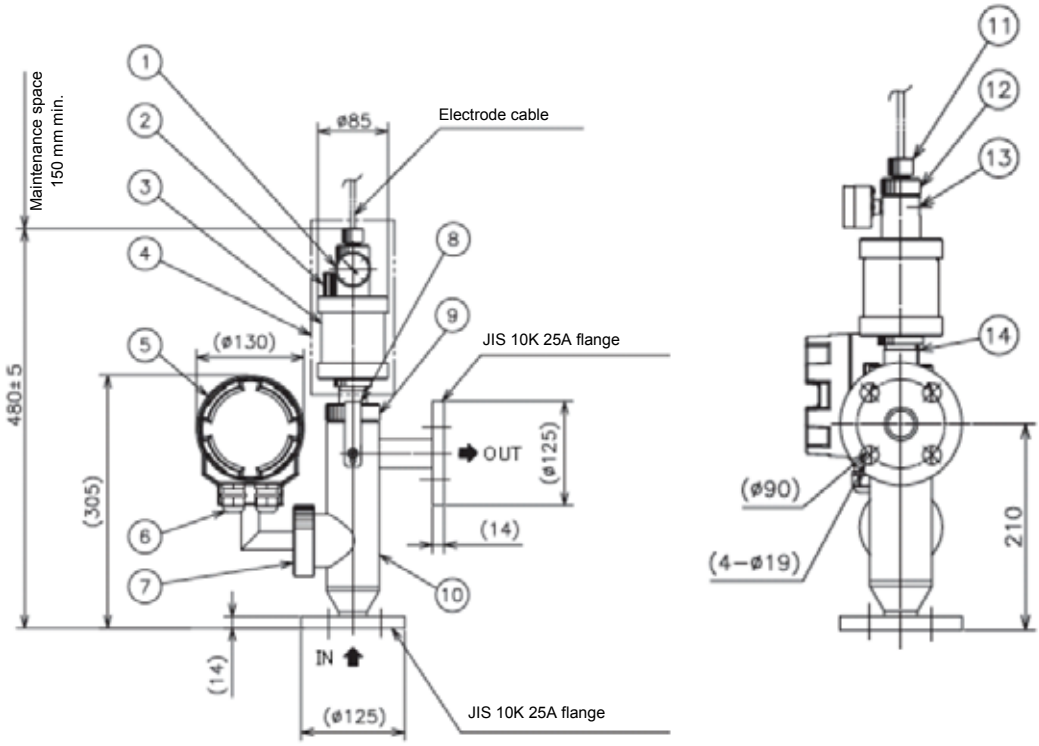


■Combination (flow-through type ultrasonic cleaner)



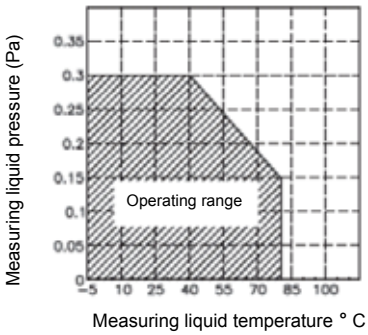
■ External dimensions (UCF-301)



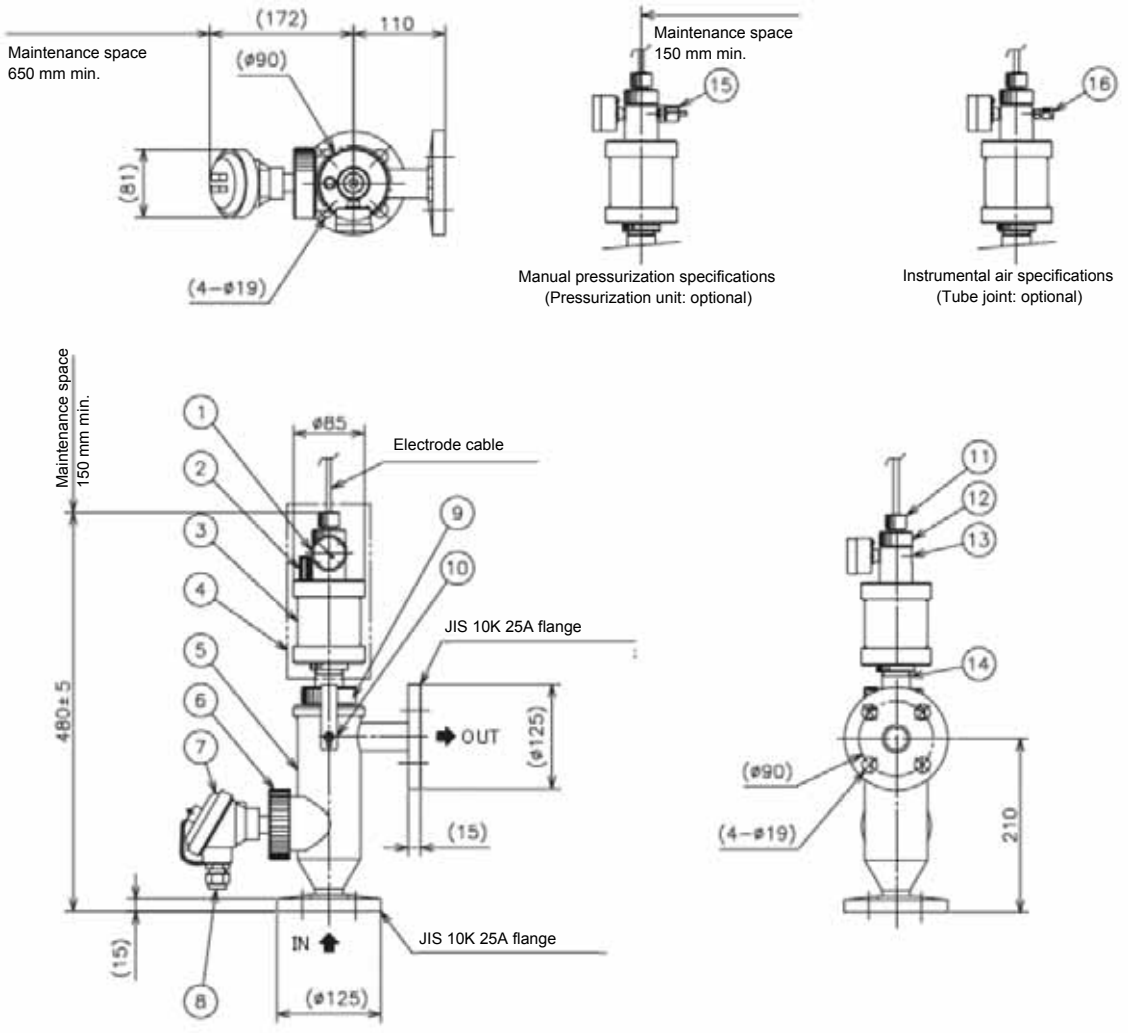


	PARTS	NOTES	
(1)	Pressure gauge	0 to 0.5MPa SUS304	
(2)	KCl inlet	PVC	
(3)	KCl tank	PVC	
(4)	Pressure holder		
(5)	Ultrasonic oscillator	AC4C	
(6)	Piping slot	O.DΦ7to12cabel	
(7)	Vibration mounting nut	SUS304	
(8)	Locking plate	SUS304	
(9)	Tightening nut	SUS304	
(10)	Distribution holder	SUS316	
(11)	Cable cap	PPO	
(12)	Holder cap	PPO	
(13)	Pressure mating screw	Rc1/8	
(14)	Holder	PP	
(15)	Pressure union	C3604	←optionally available
(16)	Fitting	for tube PVDF of 6 mm o.d./4 mm i.d.	←optionally available

Relation between temperature and pressure

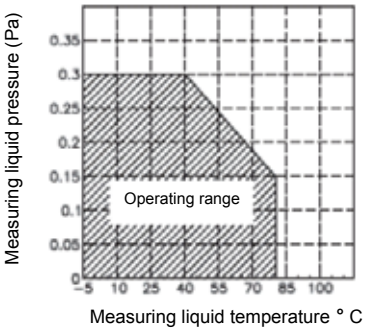


■ External dimensions (UCF-311)



	PARTS	NOTES	
(1)	Pressure gauge	0 to 0.5MPa SUS304	
(2)	KCl inlet	PVC	
(3)	KCl tank	PVC	
(4)	Pressure holder		
(5)	Distribution holder	PP	
(6)	Vibration mounting nut	PP	
(7)	Relay box	Al	
(8)	Wiring hole	Cable with 7 to 12 mm o.d.	
(9)	Tightening nut	PP	
(10)	Locking plate	SUS316	
(11)	Cable cap	PPO	
(12)	Holder cap	PPO	
(13)	Pressure mating screw	Rc1/8	
(14)	Holder	PP	
(15)	Pressure union	C3604	←optionally available
(16)	Fitting	for tube PVDF of 6 mm o.d./4 mm i.d.	←optionally available

Relation between temperature and pressure

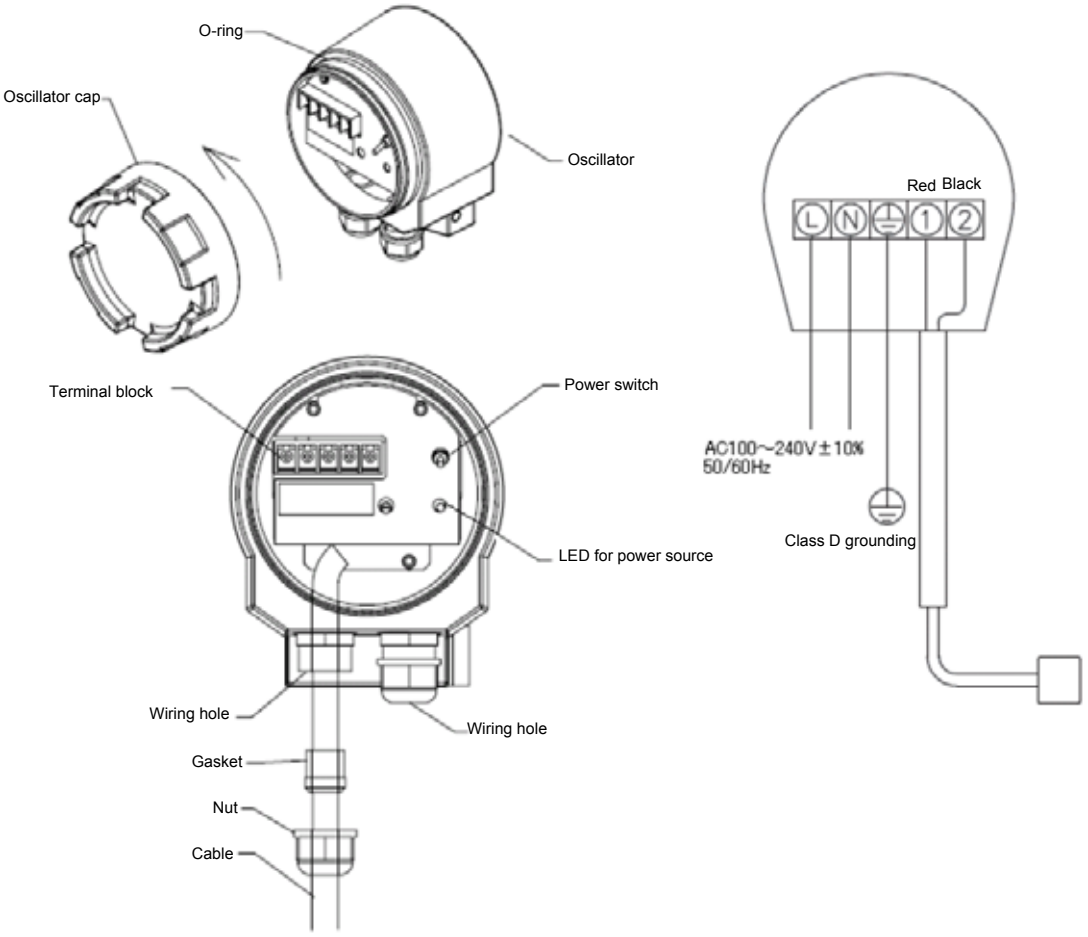


■Installation (UCH-301) (connections)

Carry out the installation of execution of work while paying attention to the following points:

Power source
•The HO-300 is provided with a power switch. Turn this switch OFF during installation.
•Operation outside the rated range can cause a fault. Therefore, check the power supply voltage.
•Check that fluctuations of the power supply voltage fall within ±10%.
•Be sure to ground the grounding terminal (class D grounding).
•The applicable cable diameter for the wiring hole is 7 to 12 mm.
•After the installation, be sure to put the oscillator cap to prevent electric shocks.
•The ultrasonic vibrator is already connected to the corresponding terminal.

Power supplied	Voltage: 100 to 240 VAC
	Frequency: 50/60 Hz
Applicable power cable	Φ7 to Φ12



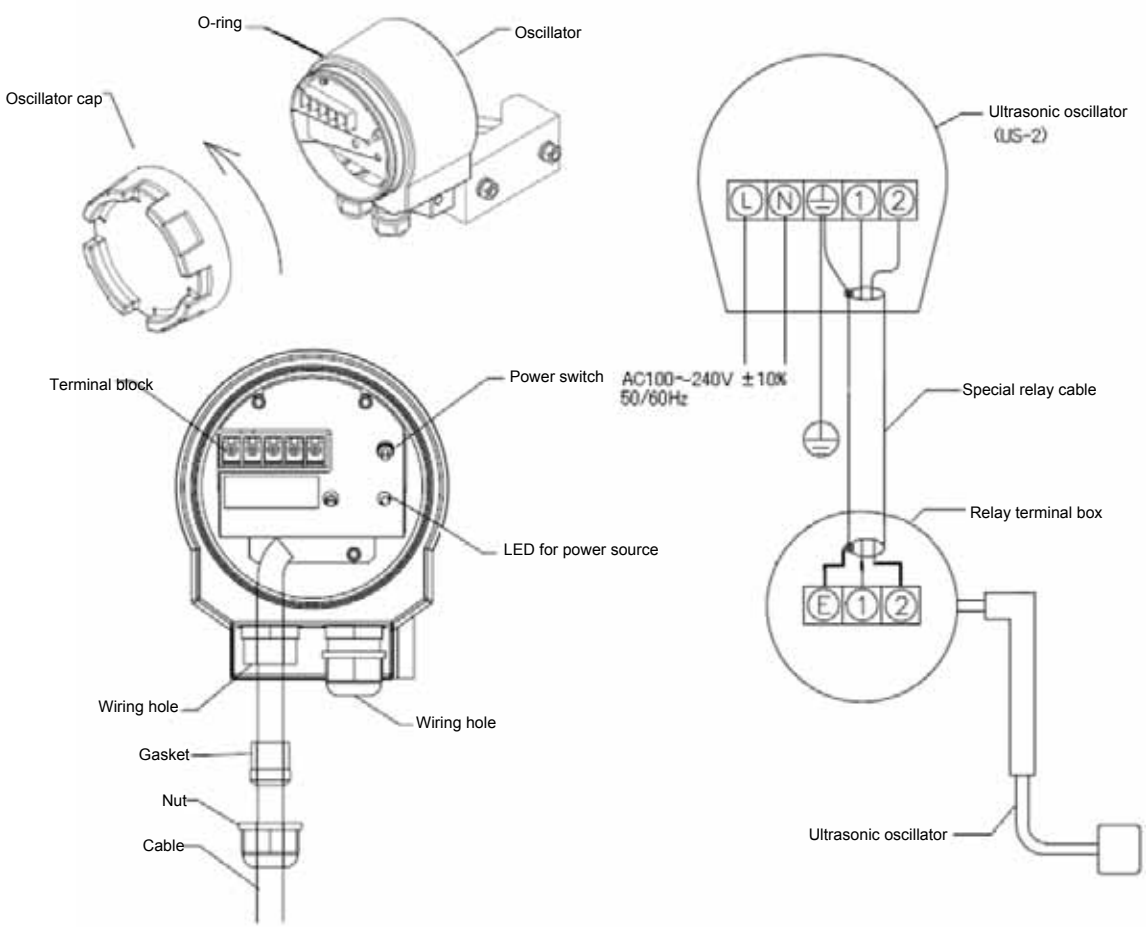
■Precautions for installation (US-2 -- UCF-311) (connections)

Carry out the installation of execution of work while paying attention to the following points:

Power source

•The HO-300 is provided with a power switch. Turn this switch OFF during installation.
•Operation outside the rated range can cause a fault. Therefore, check the power supply voltage.
•Check that fluctuations of the power supply voltage fall within ±10%.
•Be sure to ground the grounding terminal (class D grounding).
•The applicable cable diameter for the wiring hole is 7 to 12 mm.
•After the installation, be sure to put the oscillator cap to prevent electric shocks.

Power supplied	Voltage: 100 to 240 VAC
	Frequency: 50/60 Hz
Applicable power cable	Φ7 to Φ12

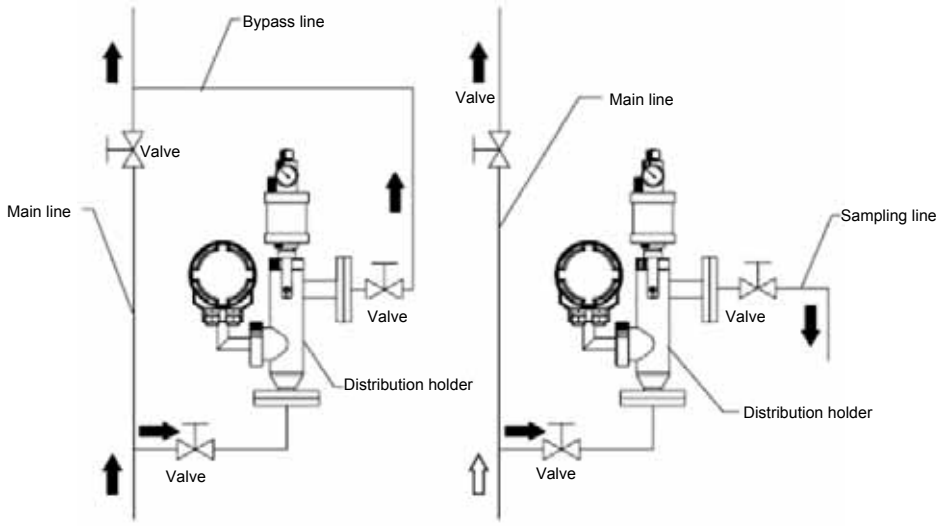


■Precautions for installation (UCF-301/UCF-311)

Be sure to following the following instructions for setup.

Installation environment
• Install the UCH-301 in a location where maintenance and other services can be done with ease.
• Provide a maintenance space of 15 cm minimum in height above the pressurization type holder.
• Give a margin to the electrode cable so that it can be removed.
• Avoid installation in a location exposed to severe vibrations or a high dust level.
• Install the UCH-301 so that the electrode will not be floated into air as the liquid under measurement in the line is drained even if the liquid under measurement stops.
• Avoid installation in a location exposed to corrosive liquid or gas.

•Avoid installation in a location near a heating element or the like, where the surface and ambient temperatures reach 50℃ or higher.
• For any liquid under measurement containing air bubbles, slurry, or any solid that may damage the electrode, previously remove them.
• Do not include the flow-through type holder in the main line. For installation, be sure to provide a bypass line or a sampling line. Unless the main line is stopped, the maintenance work cannot be done.)



Piping
For installation of the Distribution Holder, provide a bypass line from the main line so that the measured liquid flows into the bottom side of the Distribution Holder and flows out of the lateral side of the Distribution Holder.
Be sure to provide valves on the inflow and outflow sides respectively.
See Fig. 1.

If the flow rate of the liquid under measurement is too fast, the readout may fluctuate because of the occurrence of caviation or the pressurization of the liquid junction of the ORP electrode by the flow rate. If the flow rate is too slow, the response of the readout will be delayed. Therefore, control the flow rate in accordance with the conditions of the liquid under measurement.
If there are many suspended solids in the liquid under measurement, provide a strainer at the influx side of the holder.
See Fig. 2.

Fig. 1

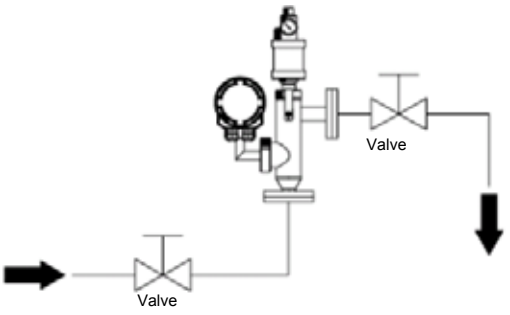
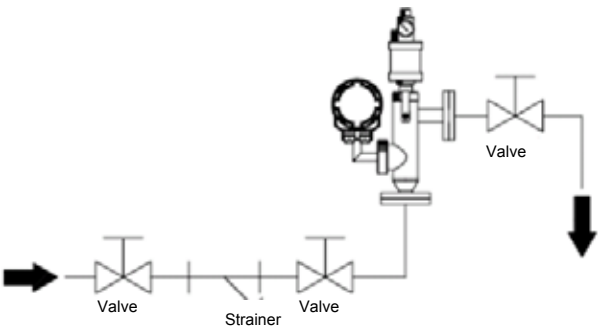
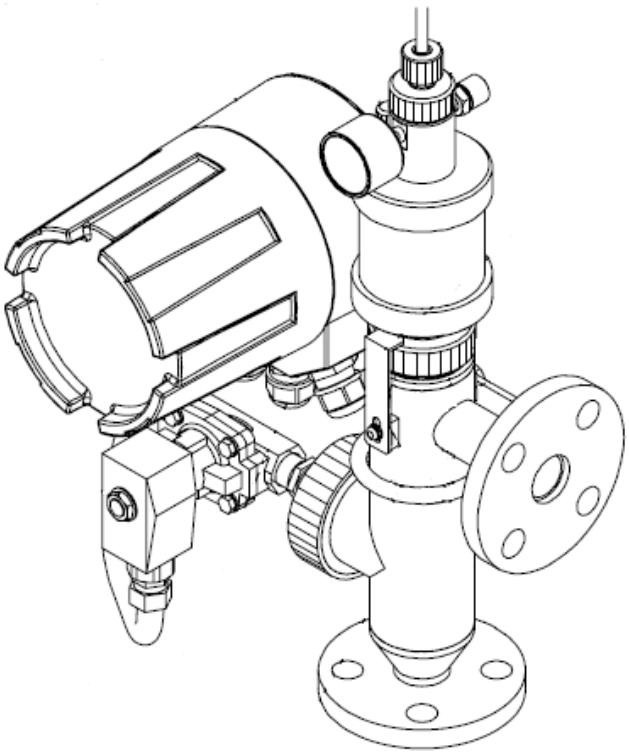


Fig. 2



Flow chamber jet cleaner for H-1 series

JCF-301



■ Overview

● This cleaner is designed to remove foreign matter adhering to the ORP electrode or to prevent the electrode from being contaminated.
The cleaner intermittently cleans the electrode and liquid junction with cleaning water and ai
The Timer in the Timer Unit is used to make settings for cleaning interval and cleaning time.
This Jet Cleaner is comparatively effective against the following objects.
However, its effect differs with various conditions and is not guaranteed。

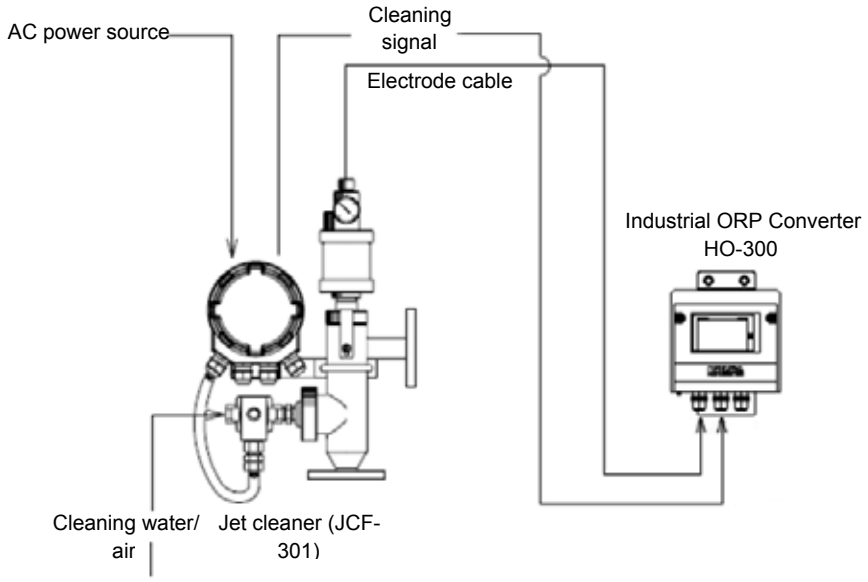
■ Objects

The Ultrasonic Cleaner is relatively effective to the following objects.
However, its effect differs with various conditions and is not guaranteed.

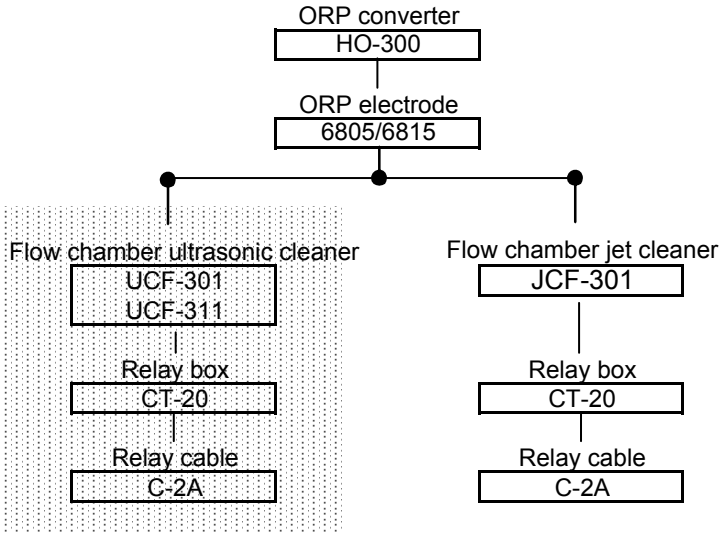
Properties Classification	Objects	
slime	food, paper, pulp, algae	⊙
Microorganism	bacteria (activated sludge), slag	⊙
Oily	tar, heavy oil	×
	light oil	○
	fatty acid, amine	○
suspended matters	earth and sands	○
	metallic minute powder	○
	clay, calcareous	○
scale	coagulated deposit and neutralized effluent treatment	○

⊙:Good ○:Acceptable ×:Not acceptable

■System configuration



■Combination (flow chamber ultrasonic

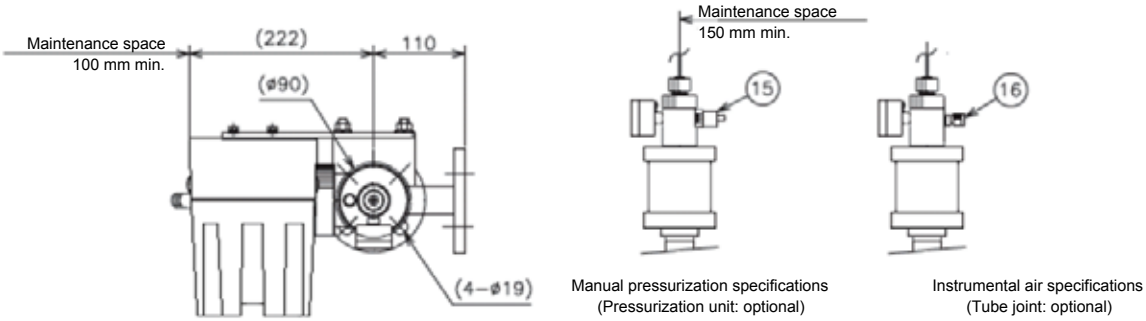


Specification 1 (JCF-301)

Product name		Flow-through type jet cleaner (timer unit incorporated type)
Model		JCF-301
Ambient Temperature		-5 to 50°C
Ambient Humidity		5% to 90% RH (No condensation)
Conditions for measurement solution	Temperature (*1)	-5°C to 80°C (non-freezing)
	Pressure	-5 to 40°C:0.30MPa 40 to 60°C:0.22MPa 60 to 80°C:0.15MPa
	Flow rate	0.3 to 10L/min
Materials for Liquid Junction Section		SUS316, PP, FKM(not including materials for electrode)
Supply Voltage		100 VAC, 50/60 Hz
Permissible Voltage Variation Range		90% to 110% of supply voltage
Power consumption		Max. 30VA
Cleaning signal outpu	Contact type	Relay contact SPDT (1c)
	Contact point capacity	250 VAC 3 A; 30 VDC 3A (resistance load)
	Conditions	Between NO and COM: short-circuit, between NC and COM: open
External Cleaning Start Input (*3)	Contact type	No-voltage contact
	Contact point capacity	30 VDC, 0.1 A min.
	Conditions	Pulse input close time 100 msec min.
Input of cleaning stop signal (*4)	Contact type	No-voltage contact
	Contact point capacity	30 VDC, 0.1 A min.
	Conditions	Stopped by turning OFF continuous input
Timer	Washing frequency	0.1 to 3.0 hours
	Washing time	Between 0.5 and 10.0
	Signal output during cleaning Delay time	Between 0.5 and 10.0
Cleaning Method		Intermittent water jet/air jet cleaning
Cleaning pressure (*5)		Water/air: 0.05 to 0.5 MPa Adjust a cleaning pressure to a measured liquid pressure + 0.05 MPa to 0.2 MPa.
Bore diameter connected for cleanir		Rc1/2
International protection code		IP54 (IEC 60529, JIS C0920) (category 2)
Material		AC4C
Finish		**Epoxy degenerated melamine resin painting (Munsell 10PB5/1)**
Bore Size of Measured Liquid Connection		JIS 10K 25A FF flange
Internal pressurization inlet of holder (*6)		Rc1/8
Weight		Approx. 9.5kg
Special Note		・To manually perform periodical pressurization, purchase the optionally available pressurization inlet and hand pump. ・Holders are detached at the time of maintenance. So use a flexible pipe for instrument air. ・Provide a regulator with a mist cap and a filter to an instrument air line. This Product does not come with electrodes.

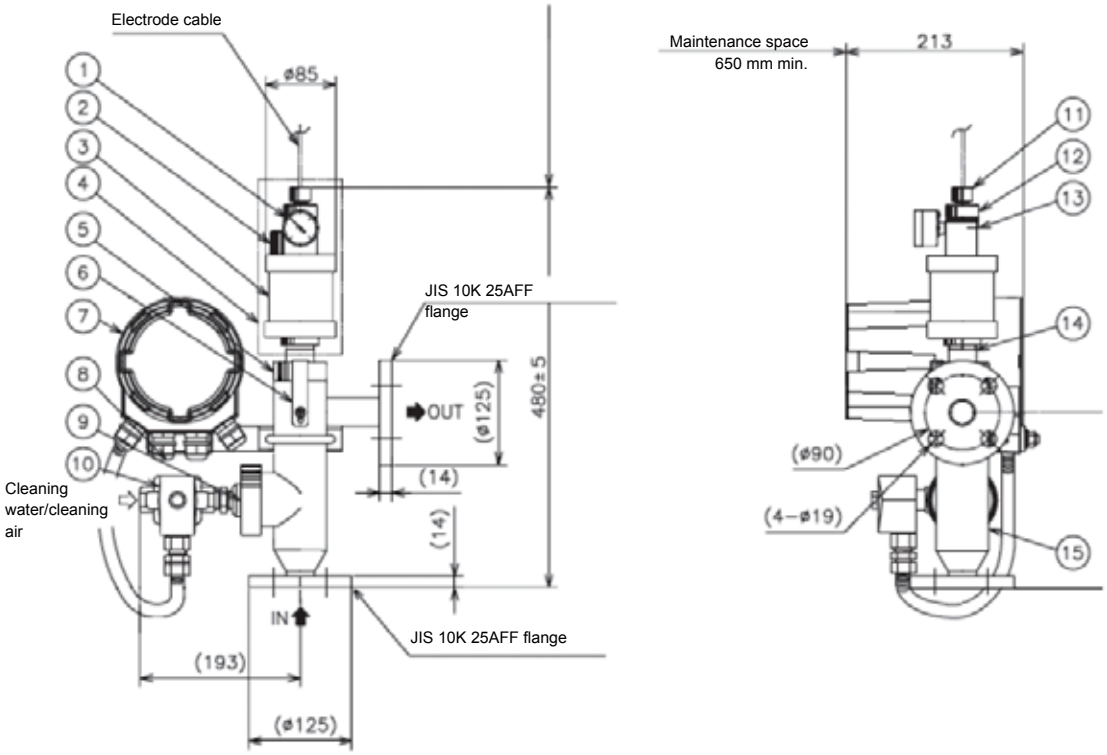
*1: The operating temperature range differs depending on the combined electrode. Refer to the temperature of the electrode in the specification.
*2: If your sample has any property (e.g. alkalinity) of damaging FKM (fluoro-rubber), contact us.
*3: When the input line to start external cleaning is not used, remove the cleaning frequency time (T1).
*4: The terminals were short-circuit at factory. To input the cleaning stop signal, remove the short-circuit line.
*5: In using tap water for cleaning water, the water supply law prohibits supplying it directly from water works. Insulate the tap water from any common tap water pipe by using a city water pressurization device or the like. If cleaning water might be frozen, use thermally insulated piping.
*6. Maintain the pressure in the pressurization holder 0.03 to 0.05 MPa higher than the pressure of the liquid under measurement.

External dimensions (JCF-301)



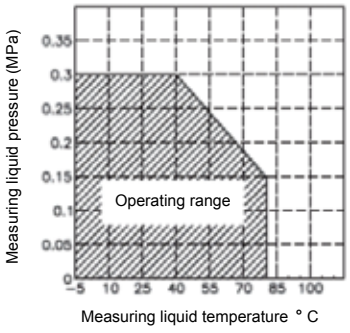
Manual pressurization specifications
(Pressurization unit: optional)

Instrumental air specifications
(Tube joint: optional)

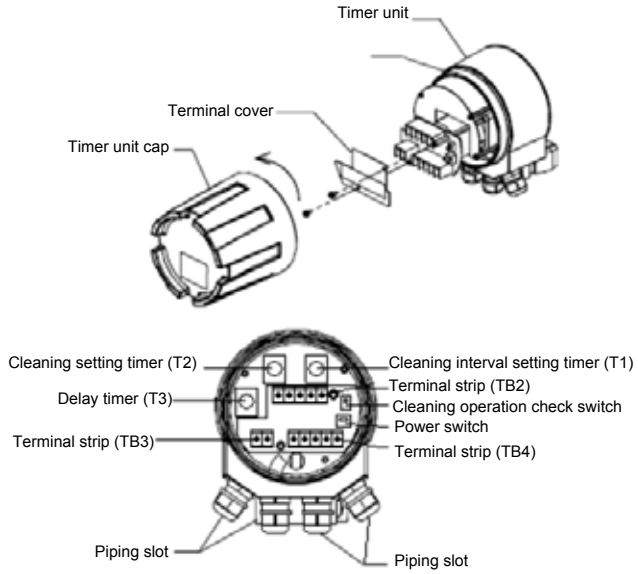


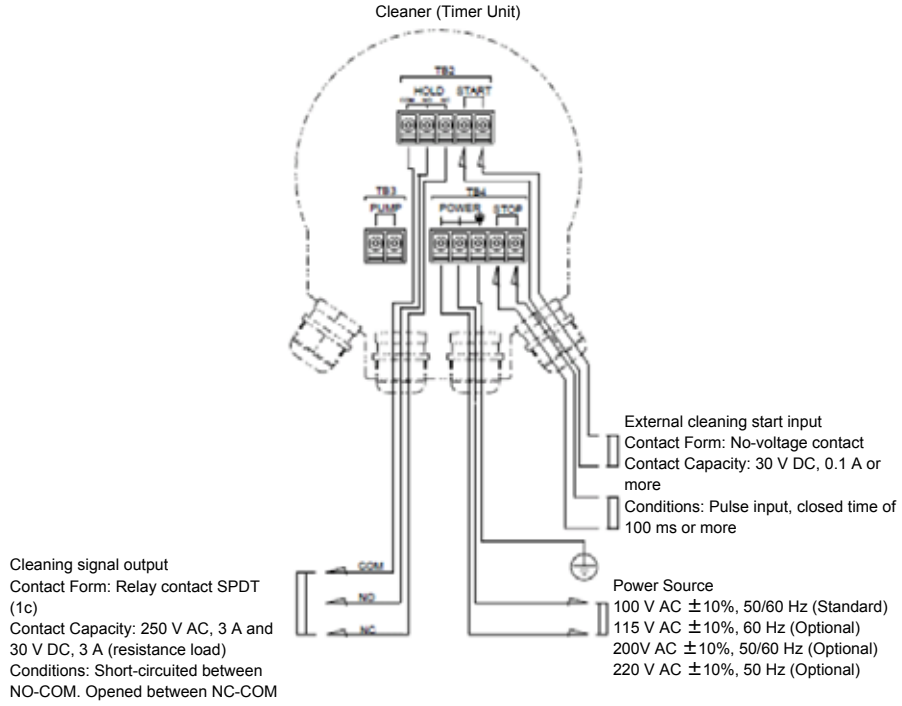
	PARTS	NOTES
(1)	Pressure gauge	0 to 0.5MPa SUS304
(2)	KCl inlet	PVC
(3)	kcl tank	PVC
(4)	Pressure holder	
(5)	Tightening nut	PP
(6)	Locking plate	SUS304
(7)	Timer unit	AC4C
(8)	Wiring hole	O.D Φ7 to Φ12cable
(9)	Nozzle mounting nut	PP
(10)	Solenoid valve	Rc1/2
(11)	Cable cap	PPO
(12)	Holder cap	PPO
(13)	Pressure mating screw	Rc1/8
(14)	Holder	PP
(15)	Distribution holder	PP
(16)	Pressure union	C3604 ←optionally available
(17)	Fitting	for tube PVDF of 6 mm o.d./4 mm i.d. ←optionally available

Relation between temperature and pressure



■Part names and terminals (JCF-301)



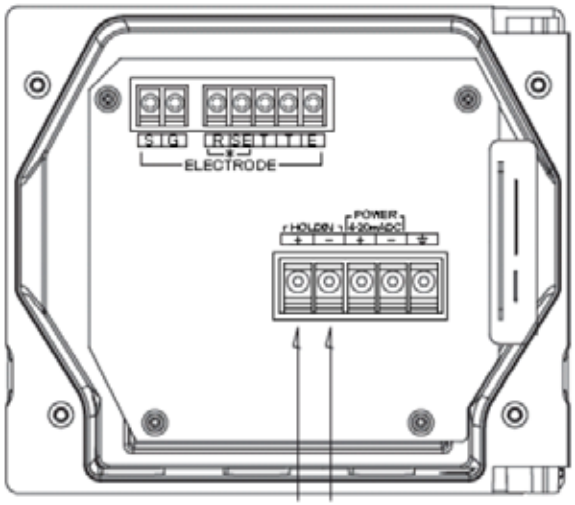


Installation (JCF-301) (connections)

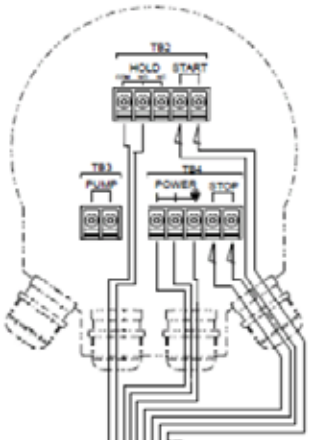
Carry out the installation of execution of work while paying attention to the following points:

Connections
•Be sure to ground the grounding terminal (class D grounding).
•The applicable cable diameter for the wiring hole is 7 to 12 mm.

Applicable power cable	Φ7 to Φ12 0.75mm2 max.



Cleaner (Timer Unit)



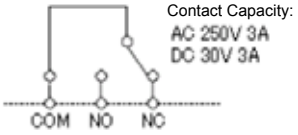
HOLD input terminal
ON resistance: Max. 40Ω
Open voltage: 1.2 VDC
Short-circuit current: Max. 21 mA

Cleaning signal output
Contact Form: Relay contact SPDT(1c)
Contact Capacity: 250 V AC, 3 A and 30 V DC, 3 A (resistance load)
Conditions: Short-circuited between NO-COM.
Opened between NC-COM

External cleaning start input
Contact Form: No-voltage contact
Contact Capacity: 30 V DC, 0.1 A or more
Conditions: Pulse input, closed time of 100 ms or more

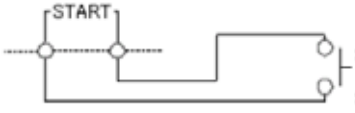
Power Source
100 V AC ±10%, 50/60 Hz (Standard)
115 V AC ±10%, 60 Hz (Optional)
200V AC ±10%, 50/60 Hz (Optional)
220 V AC ±10%, 50 Hz (Optional)

Wiring for HOLD (signal output during cleaning -- output of HOLD signal)
Wiring of cleaning signal output (hold signal output)
•Contact capacity under resistance load is 250 V AC, 3 A and 30 V DC, 3 A (resistance load).
•Cleaning signal output can be produced from the "COM, NO, and NC" Terminals in the Terminal Block.



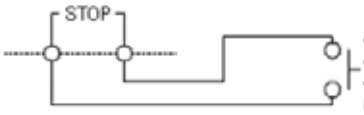
COM, NO ••• "ON" at cleaning
COM, NO ••• "OFF" at cleaning

Wiring of START (external cleaning start input)
•Cleaning operation can be started from the outside by using the external cleaning start input line.
•Produce an input of "Closed" signal of 100 ms or more to the "START" Terminal in the Terminal Block.



Closed Time:
No-voltage contact pulse input of 100 ms or more
Load relay:
30 VDC, 0.1 A or more

Wiring of STOP (cleaning stop signal input)
•Cleaning operation can be stopped by using the "STOP" Terminal.
•This "STOP" terminal is arranged in series with the p ower supply line to the motor.
If this terminal is opened, the motor is not powered. This allows you to stop the cleaning process.The terminal is normally short-circuited with a short bar.



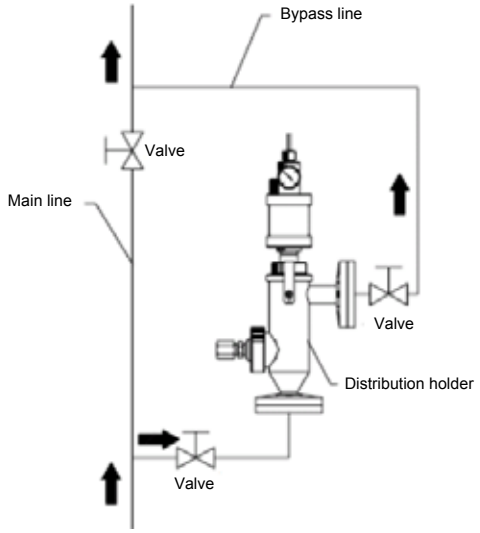
Cleaning stop signal
Close •••••• Cleaning "ON"
Open •••••• Cleaning "OFF"
Load: 100 VAC, 500 mA

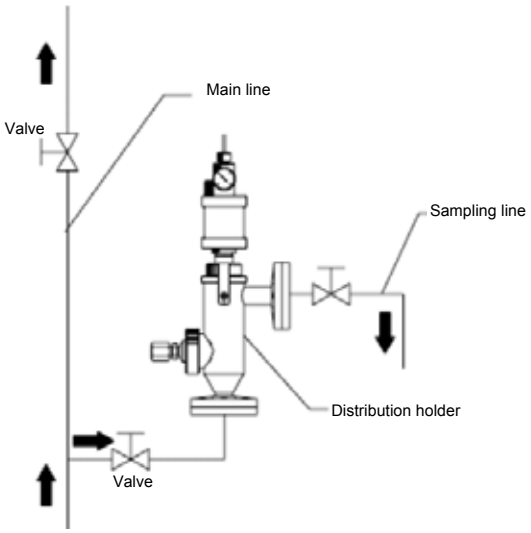
■Installation (JCH-311) (piping)

Carry out the installation of execution of work while paying attention to the following points:

Installation environment
• Install the JCH-311 in a location where maintenance and other services can be done with ease.
• Provide a maintenance space of 15 cm minimum in height above the pressurization type holder. Give a margin to the electrode cable so that it can be removed.
• Avoid installation in a location exposed to severe vibrations
or a high dust level.
• Install the JCH-311 so that the electrode will not be floated into air as the liquid under measurement in the line is drained even if the liquid under measurement stops.
• Avoid installation in a location exposed to corrosive liquid or gas.

• Avoid installation in a location near a heating element or the like, where the surface and ambient temperatures reach 50 C or higher.
• For any liquid under measurement containing air bubbles, slurry, or any solid that may damage the electrode, previously remove them.
• Do not include the flowchamber in the main line. For installation, be sure to provide a bypass line or a sampling line. Unless the main line is stopped, the maintenance work cannot be done.)





Piping
For installation of theflow chamber, provide a bypass line from the main line so that the measured liquid flows into the bottom side of the flow chamber and flows out of
the lateral side of theflow chamber.
Be sure to provide valves on the inflow and outflow sides respectively.
See Fig. 1.

If the flow rate of the liquid under measurement is too fast, the readout may fluctuate because of the occurrence of caviation or the pressurization of the liquid junction of the ORP electrode by the flow rate. If the flow rate is too slow, the response of the readout will be delayed. Therefore, control the flow rate in accordance with the conditions of the liquid under measurement.
If there are many suspended solids in the liquid under measurement, provide a strainer at the influx side of the holder.
See Fig. 2.

Fig. 1

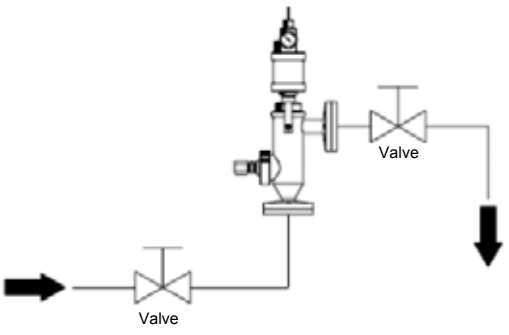
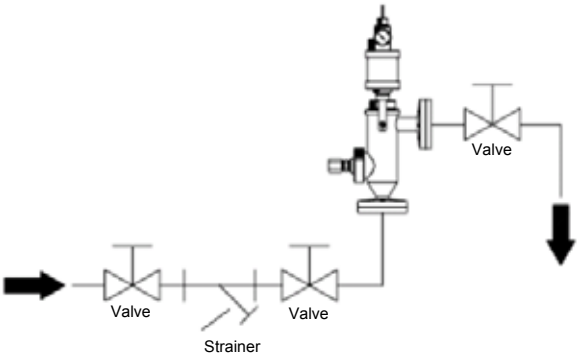


Fig. 2

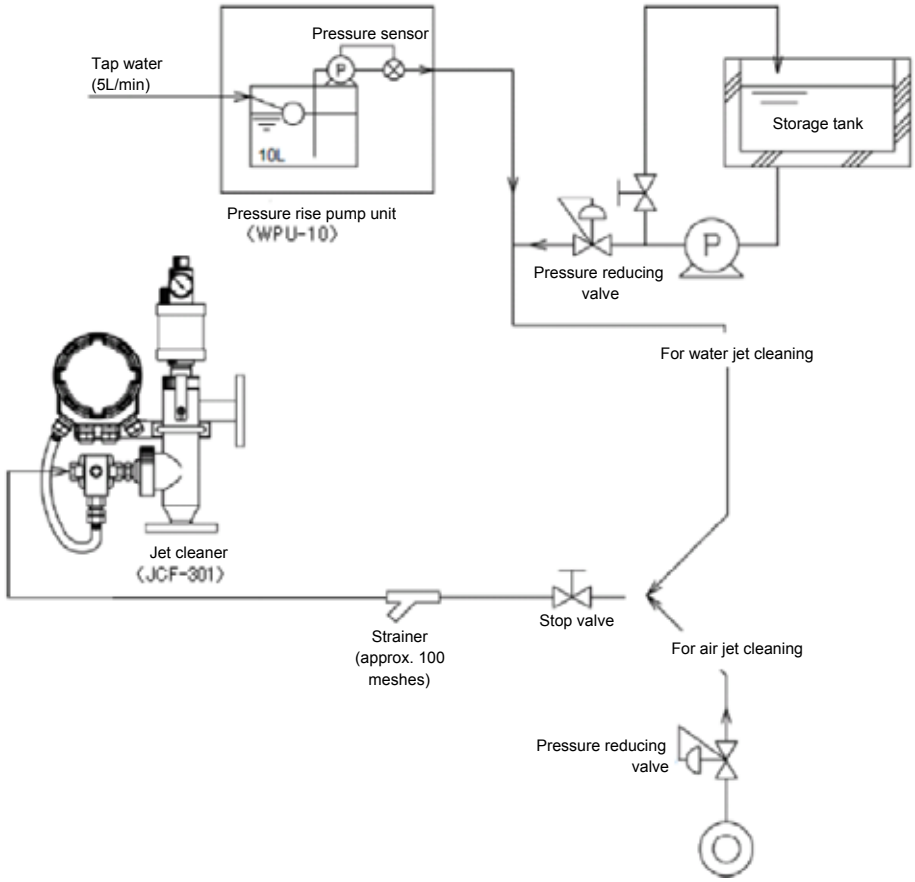


Installation (JCF-301) (piping)

Be sure to following the following instructions for setup.

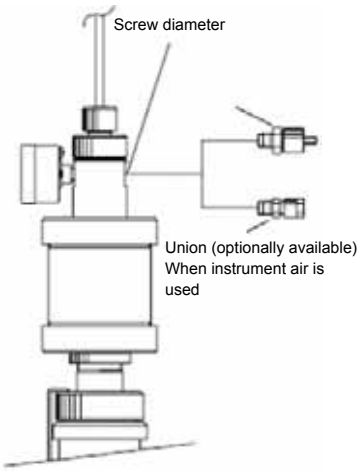
Piping

•Since the cleaner must be removed during maintenance, use flexible piping and give an allowance to its length.
•Before connecting the piping to the cleaner, be sure to flush off the piping with water.
•With the regulator, adjust the cleaning water to a specified pressure.
In using tap water for cleaning water, the water supply law prohibits supplying it directly from water works.Temporarily receive the tap water in a tank or the like and then pressurize it with a pump.
However, if original water for industrial use (tertiary treatment water) is used, it may be connected directly. If tap water distributed after passing through a tank located on the roof or the like, it may also be connected as it is insulated.



Pressurized piping

•For pressurization with an inflator, use the pressure inlet.
•Maintain the pressure in the pressurized holder at 0.03 to 0.05 MPa.
•To use instrument air, use a flexible hose considering maintenance easiness.



For pressurization with instrument air, use a union.
•Maintain the pressure in the pressurized holder at 0.03 to 0.05 MPa.
•To use instrument air, use a flexible hose considering maintenance easiness.
•Provide a regulator (with a filter) near the distribution type holder and connect it to the pressurized holder with a tube of 4 mm i.d./6 mm o.d.