SPECIFICATION SHEET

TOADKK

IMMERSION TYPE PH/ORP SENSOR WITH ULTRASONIC CLEANER

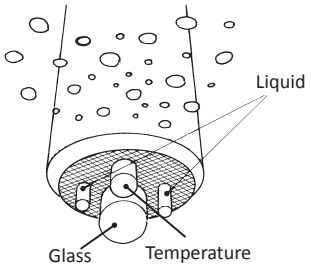
□HC-7 Series

Various cleaning methods are available to improve measurement reliability and reduce maintenance in all conditions of pH and ORP electrodes.

Please select the most effective cleaning method suitable for the installation site.

Sensitive parts such as glass or platinum sensor, liquid junction, and temperature compensation sensor are placed downward for pH and ORP electrodes.

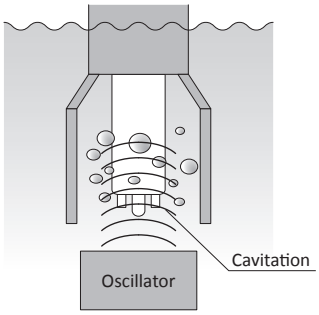
Therefore, various cleaning methods work more effectively.



Ultra Sonic Cleaning Method

By efficiently irradiating the sensitive part with ultrasonic waves, the cleaning effect can be obtained due to its cavitation effect. In addition, the use of the burst oscillation method (intermittent irradiation) has improved the cleaning effect.

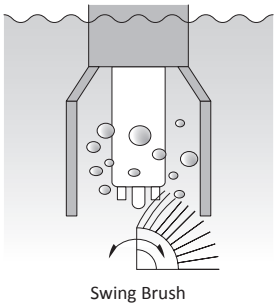
Immersion type: UHC-7D (page 2)



Brush cleaning

PP clean brushes intermittently swing the sensitive area and remove any fouling by 10 or more brushing operations.

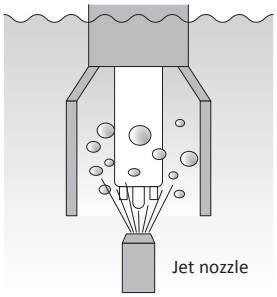
Immersion type: BHC-7C (page 4)



Water jet cleaning system

Intermittent injection of washing water injected from a jet nozzle into a sensitive part removes any fouling by pressure.

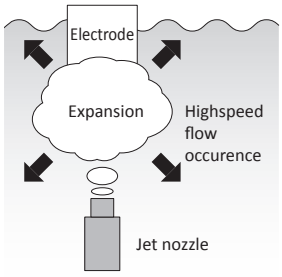
Immersion type: JHC-7C (page 7)



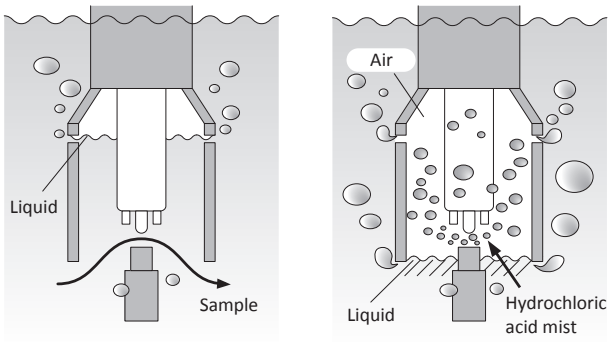
Pulse air-jet cleaning system

Clean by high-speed water flow generated when compressed air, which is intermittently injected from the jet nozzle, expands in water.

Immersion type: PHC-7D (page 18)



Chemical Cleaning Method



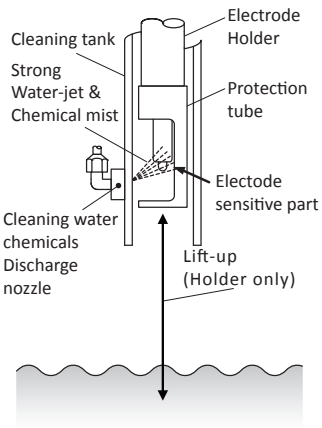
A large amount of air and chemicals (typically 5% hydrochloric acid) are injected intermittently from the jet nozzle to chemically dissolve and remove the crystalline pollution adhering to the electrode sensitive part.

Immersion type: RHC-7C (page 11)

Jet cleaning with lift-up system

With a water-jet and chemical solution (e.g. 5% hydrochloric acid) by pulling Electrode Holder up from the sample water. You can also clean the entire Electrode Holder.

Immersion type: LHC-7D (page 23)



SPECIFICATION SHEET

TOA DKK

IMMERSION TYPE SENSOR WITH ULTRASONIC CLEANER

UHC-7D
UHC-G7D

○This pH/ORP sensor has an immersion type electrode holder combined with a brush cleaner.
○The sensing portion of electrode is continuously irradiated by ultrasonic waves and the resultant cavitation effect prevents fouling adhesion to the electrode.
○Burst oscillation method (intermittent irradiation) is adopted to improve cleaning effectiveness.
○Maintenance work such as calibration with standard solution can be easily carried out by simply detaching the electrode holder.

Standard Specifications

Product Name	: Immersion type sensor with ultrasonic cleaner
Model	: UHC-7D / UHC-G7D
Measurement Object	: pH/ORP
Installation Method	: Immersion type
Cleaning Method	: Continuous irradiation of ultrasonic waves
Oscillation Method	: Burst oscillation method
Ambient Temperature	: -5 to 50˚C
Sample Conditions	: Temperature... -5 to 60°C (no freezing.) : Pressure...Atmospheric : Electric conductivity...100μS/cm or more
Ultrasonic Frequency	: Approx. 70kHz
Power Requirements	: 100 to 240V ±10% 50/60Hz
Power Consumption	: Approx. 20VA or less
Wetted Materials	: SUS316, fluororubber (FKM), PP (In the case of HC-763)
Weight	: Approx. 5kg
Structure	: Rainproof type (IP55)
Paint colour	: Metallic silver and blue
Combination equipment	: Mounting bracket; ZC-1 or ZC-2 Mounting flange (open flange); ZFK-1 or ZFK-2

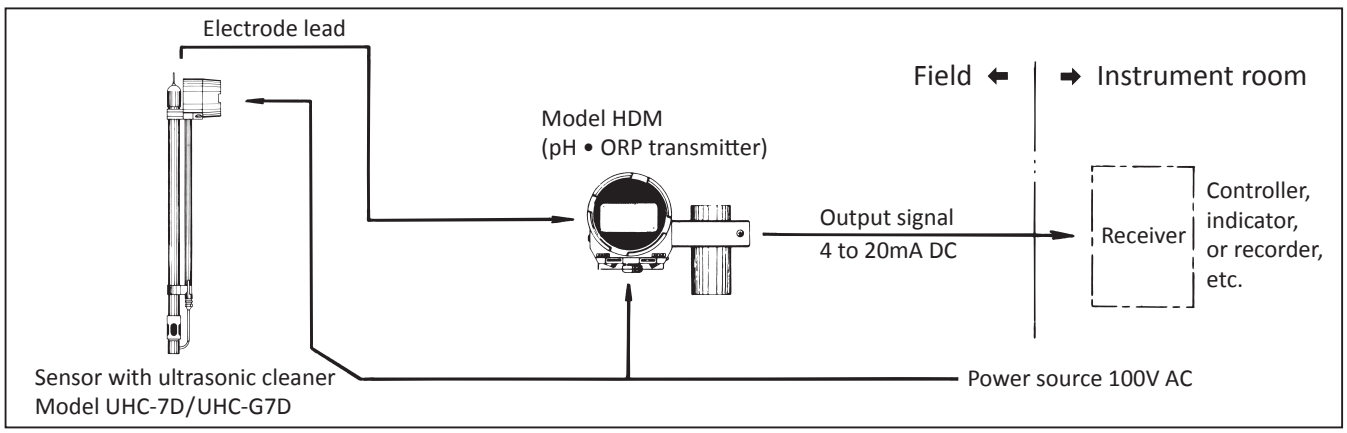
Typical combination of holder and electrode

Model	Holder	Holder material	Integrated pH electrode	Integrated ORP electrode	
UHC-7D	HC-763	PP	5600	2600	2605
	HC-703C	PVC			
UHC-G7D	HC-G7D	PP or PVC	GSS-304B	PSS -304B	ASS -304B

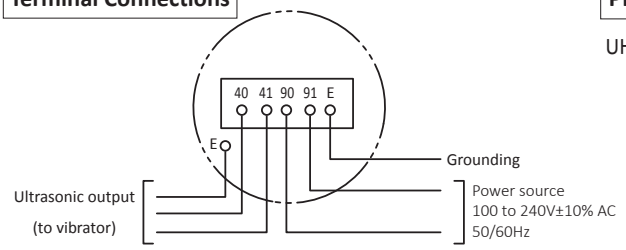
Note: For ORP electrodes, the measurement value of the ultrasonic cleaner that refreshes the sensing tip is affected by sample. This possibility is high especially in the case of ORP control under sewerage and wastewater treatment.
In this conditions, PHC-7D Pulse Air Jet Cleaner is recommended.

Configuration

(Typical configuration with Model HDM transmitter)

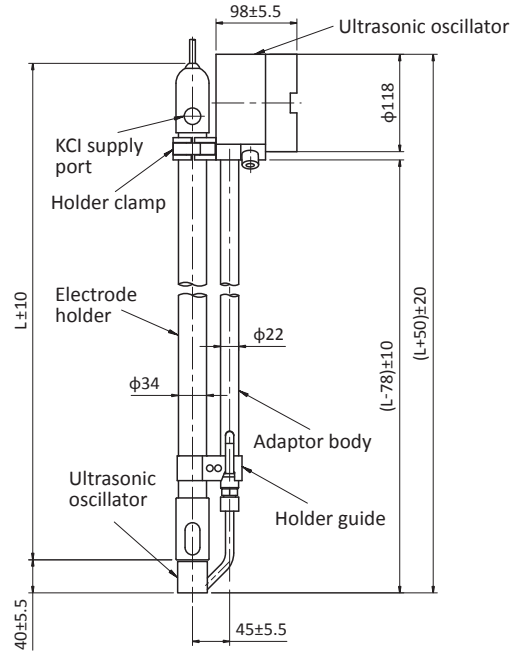


Terminal Connections

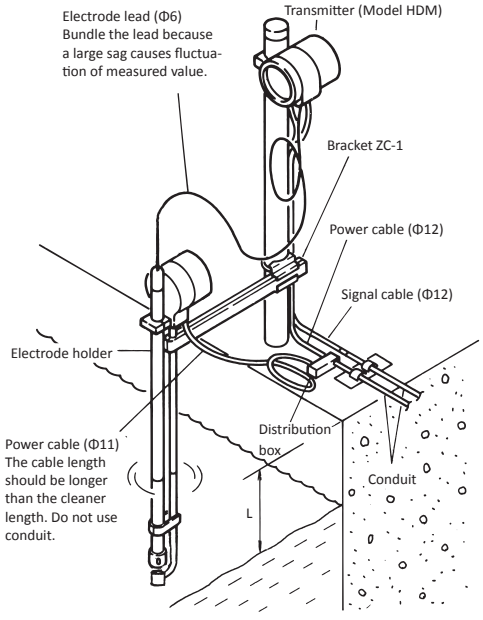


Dimensions

Unit : mm



Typical installation



The required length of electrode holder is L + (500 to 1000), where L is the distance from the water surface.

<Note>
To be able to draw up the cleaner for its functional check, bundle the power cable by a length equivalent to the total length of the cleaner.

Product code

UHC7D-0-□□□□□□□□□□

- Type of oscillator
  - A … intergrated type (standard)
  - B … Separated type*1
- Wetted part materials in cleaning part
  - 1 … SUS316 (standard)
  - 2 … Vibrator, titanium, supporting pipe (PP)*2
  - 3 … Vibrator, titanium, supporting pipe; SUS316L
- Combined holder (no separate order required)
  - 0 … No holder
  - 1 … PP holder : HC-763
  - 2 … Clear PVC holder : HC-703C
- Length of combined holder*3
  - 1 … 0.5m ↑The sensor length depends on this holder
  - 2 … 1.0m
  - 3 … 1.5m
  - 4 … 2.0m
  - 5 … 2.5m
  - 6 … 3.0m
- Electrode to be combined
  - 0 … No electrode
  - A … pH. general use, normal temperature 5600
  - 1 … ORP(Pt). general use normal temperarure 2600★
  - 2 … ORP(M). for sewage (human waste) 2605★
  - 8 … Custom spec*4
- Electrode lead length
  - 0 … No electrode
  - K … 5m (holder length 2m or less)
  - M … 10m
- Surface finish (painting)*5
  - A … Standard painting
  - B … Heavy-duty Anti-corrosion painting
- Arrester*6
  - 0 … Nill
  - 1 … Equipped
- Markings
  - 0 … Japanese
  - 1 … English
- Examinant
  - 0 … None
  - 1 … Present (inspection mark affixed)
  - 2 … Present (inspection mark and approval certification affixed)

★ Official approval not applicable

Custom spec. code;
Numeric digit: 9
Alphabet: Z

*1. When oscillator is separated, cable (OD φ12, 6m from oscillator to detector) is supplied (including holder length)
*2. For oscillator titanium and support tube PP, it is limited to separate type oscillator. Combination holder length is 2m max.
*3. The length of the combination holder is 3m for PP-made material and 4m for transparent PVC-type. For demands exceeding 4m, the drop-in type of GSS-electrode (custom-made product) can be used.
*4. Please contact us for mounting ex-model 6462 or 5700.
*5. Standard coat of oscillator, melamine resin is used for under and final coatings. The average film thickness is to be 30μm or more for melamin under / final coating. Average film thickness of heavy duty epoxy resin under, intermediate, and the polyurethane resin final coating is 100μm or more .
*6. Ceramic serge arrester (easy type) is attached to power supply line.
*7. Max. sample temperature is 60°C.

For the product code of UHC-G7D, refer to the spec sheet of "GSS / PSS / ASS series tip replaceable type immersion detector for pH / ORP electrode □HC-G7 / G9 type holder".

SPECIFICATION SHEET

TOA DKK

IMMERSION TYPE SENSOR WITH BRUSH CLEANER BHC-7C

○This pH/ORP sensor is an immersion type electrode holder combined with a brush cleaner.
○The sensor part of the electrode is cleaned by a swinging brush on a cyclic basis to prevent fouling build-up. Maintenance work such as calibration with standard solution can be easily carried out by simply detaching the electrode holder.
○BHC-7C type, has a built-in timer to set the cleaning cycle and duration. Output of the cleaning in progress signal to the converter eliminates disturbance of the control system.

Standard Specifications

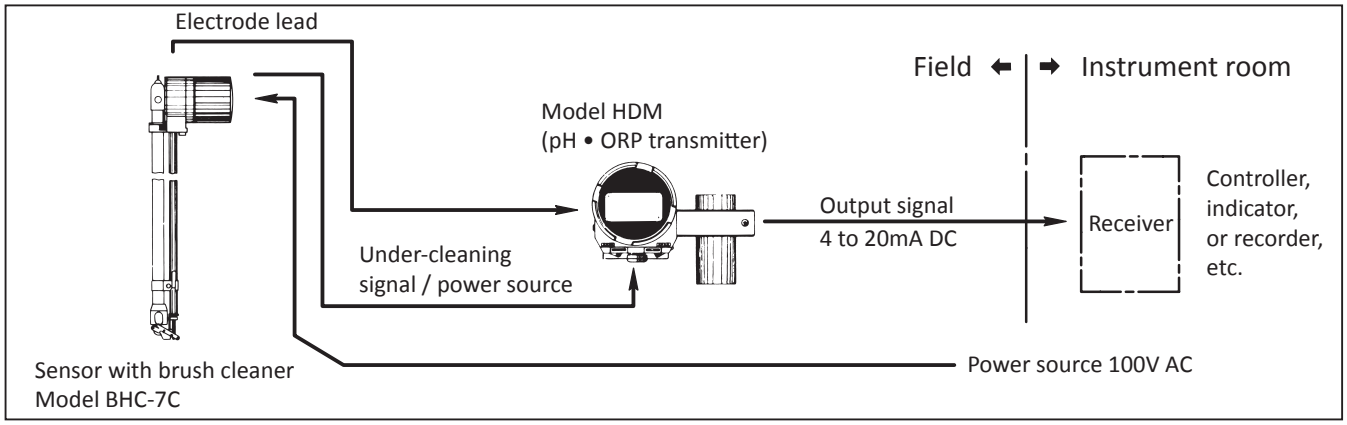
Product Name : Immersion type pH/ORP sensor with brush cleaner
Model : BHC-7C
Measurement Object : pH/ORP
Installation Method : Immersion type
Cleaning Method : Intermittent cleaning using swinging brush
Cleaning Cycle* : 0.1 to 3h (optionally up to 12h)
Cleaning Duration* : 0 to 1min
Signal delay time during cleaning : 0 to 5min
Signal output time during cleaning : 0 to 6min
Signal Duration
Input/Output Signals : Under cleaning signal output 1a, 1c (2 types) Contact capacity...125V AC, 1A
External cleaning start input
Cleaning starts when; contacts closed for 100mS or more, no-voltage contact capacity...30V DC, 0.1A or more
Cleaning stop signal input
Cleaning stops when; contacts opened (normally short-circuitted) Internal load motor AC 100V, 250mA
Ambient Temperature : -5 to 80˚C (Do not freeze movable part)
Sample Conditions : Temperature...-5 to 50˚C (Do not freeze. Range varies depending on combination holder spec)
Pressure...Atmospheric
Electric conductivity...100μS/cm or more
Power Requirements : 100V AC 50/60Hz
Power Consumption : Approx. 25VA
Wetted Materials : SUS316, fluoro-rubber (FKM), PP (for HC-763 type)
Weight : 7kg (length; 1m)
Construction : Rainproof type (IP55)
Paint colour : Metallic silver and blue
Related Transmitter : Model HBM,HDM
Related Equipment : Mounting bracket... Models ZC-1 or ZC-2
Mounting flange (open flange)
Models ZFK-1 or ZFK-2

Sample temperature range for typical electrode & holder combination

Holder	Holder material	Integrated pH electrode		Integrated ORP electrode
		Model 5600	Model 5601	Model 260□
HC-763	PP	-5 to 70˚C	-5 to 80˚C	-5 to 70˚C
HC-703C	PVC	-5 to 60˚C	—	- 5 to 60˚C

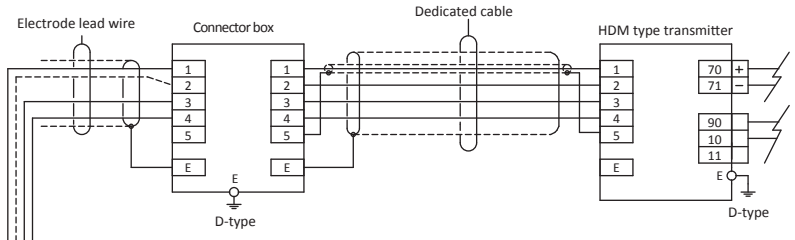
Configuration

(Typical configuration with Model HDM transmitter)



System connection and flow

When relaying the electrode lead wire to the connector box



Description of the connection terminal Connect as necessary

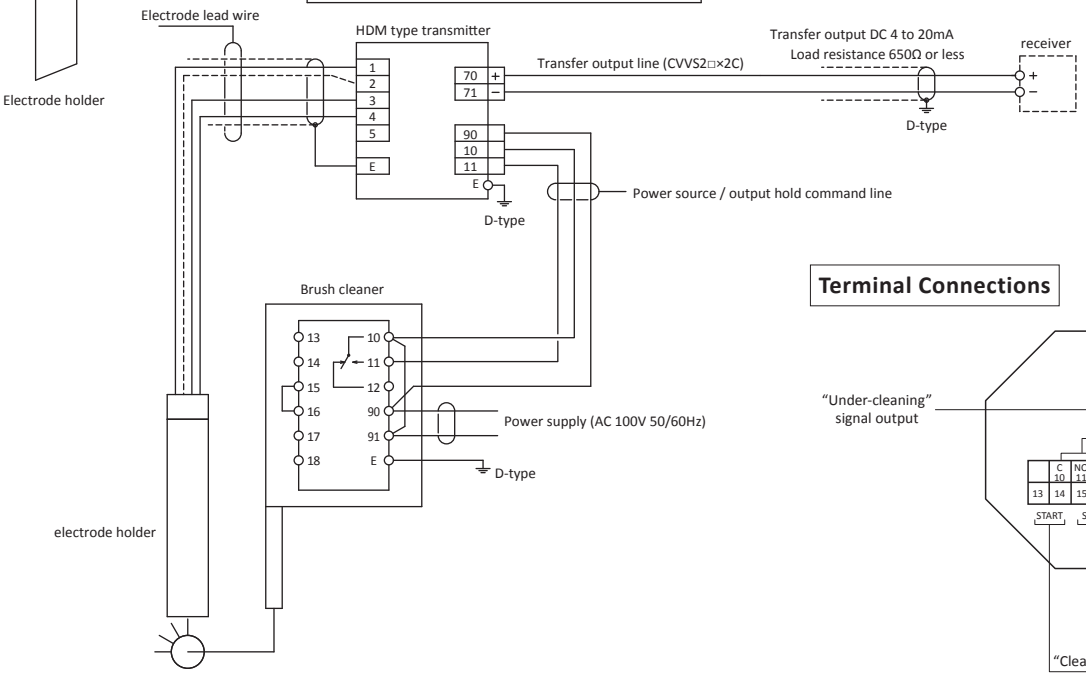
13,14 : Cleaning start signal input terminal
"Closed"time : Non - voltage "Closed"contact pulse of 100msec or more
Capacity : DC 30V, 0.1A or more

15,16 : Cleaning stop signal input terminal
Stop with "Open"(Short circuit at shipment)
Internal-load motor: AC 100V, 250mA

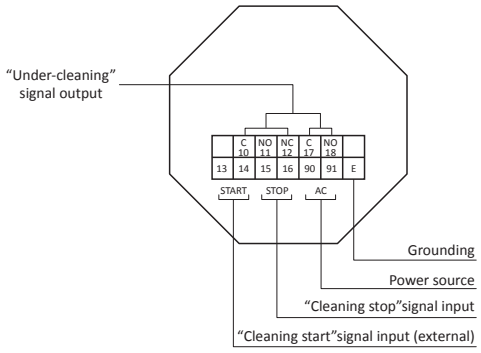
10,11,12 : Under cleaning signal 1 output terminal
"Closed"between #10 to #11 during cleaning
Capacity : AC 125V, 1A

17,18 : Under cleaning signal 2 output terminal
"Closed"between #17 to #18 durning cleaning
Capacity : AC 125V, 1A

When relaying the electrode lead wire to transmitter

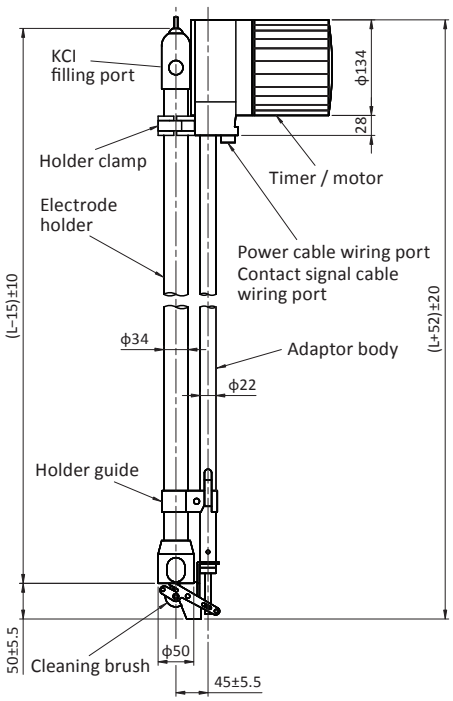


Terminal Connections

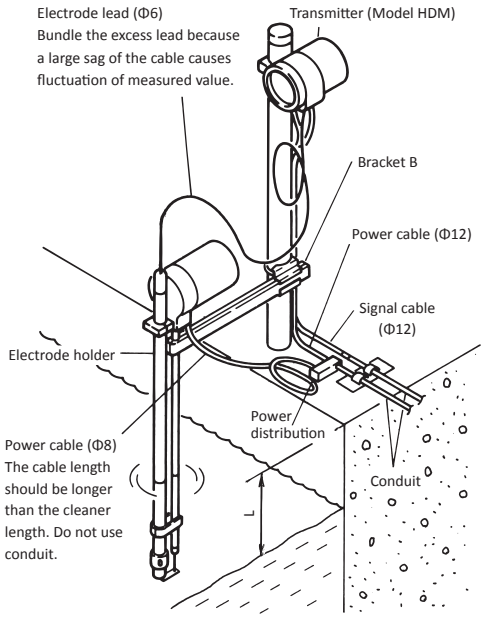


Dimensions

Unit : mm



Typical Installation



The required length of electrode holder is L + (500 to 1000)mm where L is the distance from the water surface

<Note>

To be able to draw up the cleaner for its functional check, bundle the power cable by a length equivalent to the total length of the cleaner.

Product code

BHC7C-2- □□□□□□□□□□

Power source *1
- A ····· 100V AC 50/60

Materials of wetted parts in cleaner
- 1 ····· SUS316 (Standard)
- 2 ····· SUS316L

Combined holder (no separate order required)
- 0 ····· No holder
- 1 ····· PP holder : HC-763
- 2 ····· Clear PVC holder : HC-703C

Length of combined holder *2
- 1 ····· 0.5m ↑The sensor length depends on this holder
- 2 ····· 1.0m
- 3 ····· 1.5m
- 4 ····· 2.0m
- 5 ····· 2.5m
- 6 ····· 3.0m

Applicable electrode
- 0 ····· No electrode
- A ····· pH normal temperature — Model 5600
- B ····· pH high temperature — Model 5601
- 3 ····· ORP (Pt) general use — Model 2600★
- 4 ····· ORP (M) sewage/human waste — Model 2605★
- 8 ····· Others to be specified *3

Electrode lead length
- 0 ····· No electrode
- K ····· 5m (holder length max. 2m)
- M ····· 10m

Cleaning cycle
- 0 ····· 3 hours (0.1 to 3 hours) (standard)
- 1 ····· 12 hours (0.1 to 12 hours)

Markings
- 0 ····· Standard
- 1 ····· English

Examinant
- 0 ····· None
- 1 ····· Present (inspection mark affixed)
- 2 ····· Present (inspection mark and approval certification affixed)

★ Official approval not applicable

Custom spec. code;
Numeric digit: 9
Alphabet: Z

*1. For the line voltage of more than 100V AC, order a step-down transformer (Model ZP-30: 35VA, Separately installed)
*2. Max. length is 3m for PP holder, and 4m for clear PVC holder.
*3. Please contact us for mounting ex-Model 6462 or 5700.

SPECIFICATION SHEET

TOADKK

IMMERSION TYPE SENSOR WITH WATER-JET CLEANER JHC-7C

○This detector has a flow-through type pH/ORP electrode holder with a water-jet cleaner.
○The sensing portion of the electrode is cleaned by water-jet spray intermittently.
○Control part and solenoid valve are integrated, so installation is simple. Maintenance work such as calibration with standard solution can be easily carried out by simply detaching the electrode holder.
○A built-in timer function for setting the cleaning cycle and time is provided for JHC-7C.
Output of the cleaning in progress signal to the converter eliminates disturbance of the control system.

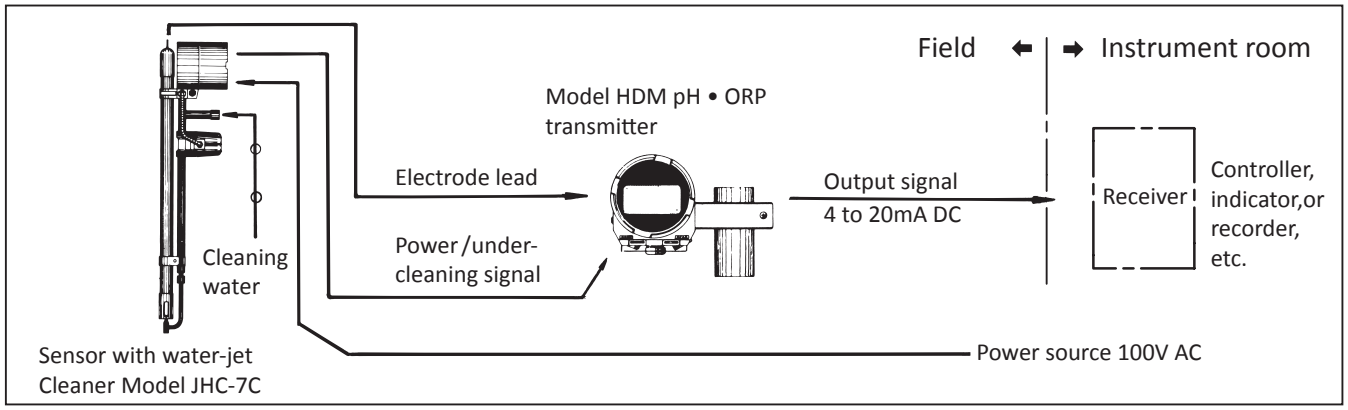
Standard Specifications

Product Name	: Flow-through type detector with water jet cleaner
Model	: JHC-7C
Measurement Object	: pH/ORP
Installation Method	: Flow-through type
Cleaning Method	: Intermittent cleaning with water jet
Cleaning Cycle	: 0.1 to 3hrs. (optionally up to 12hrs.)
Water Jet Spraying Time	: 0 to 60secs.
Under Cleaning Signal Delay Time	: 0 to 5min
Under Cleaning Signal Output Time	: 0 to 6min
Input/Output Signals	: Under Cleaning Signal Output 1a, 1c (2 systems) Contact Capacity ... 125V AC 1A Cleaning Start Input Closing time ... 100ms or more, no-voltage closed contact pulse Contact Capacity ... DC 30V 0.1A or more Cleaning Stop Input Cleaning stops when contacts open (normally short-circuited) Internal load motor AC 100V, 250mA
Ambient Temperature	: -5 to 50˚C (cleaning water flow path, no freezing)
Sample Conditions	: Temperature ... -5 to 50˚C (No freezing. Temp range limited by combination holders) Pressure ... Atmospheric Pressure Eelectric Conductivity ... 100μS/cm or more
Cleaning Water Conditions	: Temperature ... 5 to 80°C Pressure ... 0.2 to 0.5MPa Water quality ... Industrial water (equivalent to tap water) Consumption ... Approx. 5 to 11L/min.
Power	: 100V AC 50/60Hz
Power consumption	: Approx. 25VA
Wetted Materials	: SUS316, PP (for HC-763), FKM
Weight	: Approx. 7kg
Structure	: Rainproof, (IP55)
Colour	: Metallic silver and blue
Combination	: HDM : Bracket … ZC-1 type or ZC-2 type Flange ... (Open flange) ZFK-1 type or ZFK-2 type

Typical electrode & holder combination is as following page.

Configuration

(Typical configuration with Model HDM transmitter)

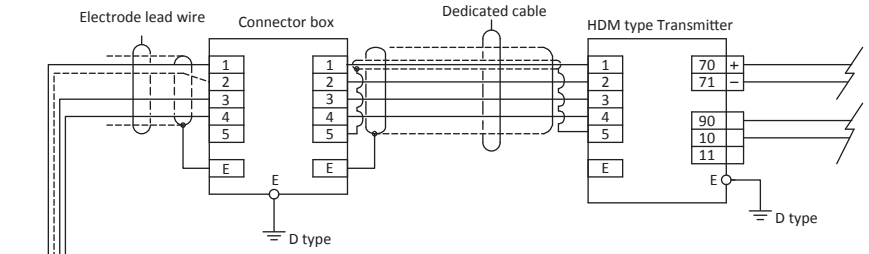


Sample temperature range for typical electrode & holder combination

Holder	Holder material	Integrated pH electrode		Integrated ORP electrode
		Model 5600	Model 5601	Model 260□
HC-763	PP	-5 to 70˚C	-5 to 80˚C	-5 to 70˚C
HC-703C	PVC	-5 to 60˚C	—	- 5 to 60˚C

System connection and flow

When connecting the electrode lead wire with connector box



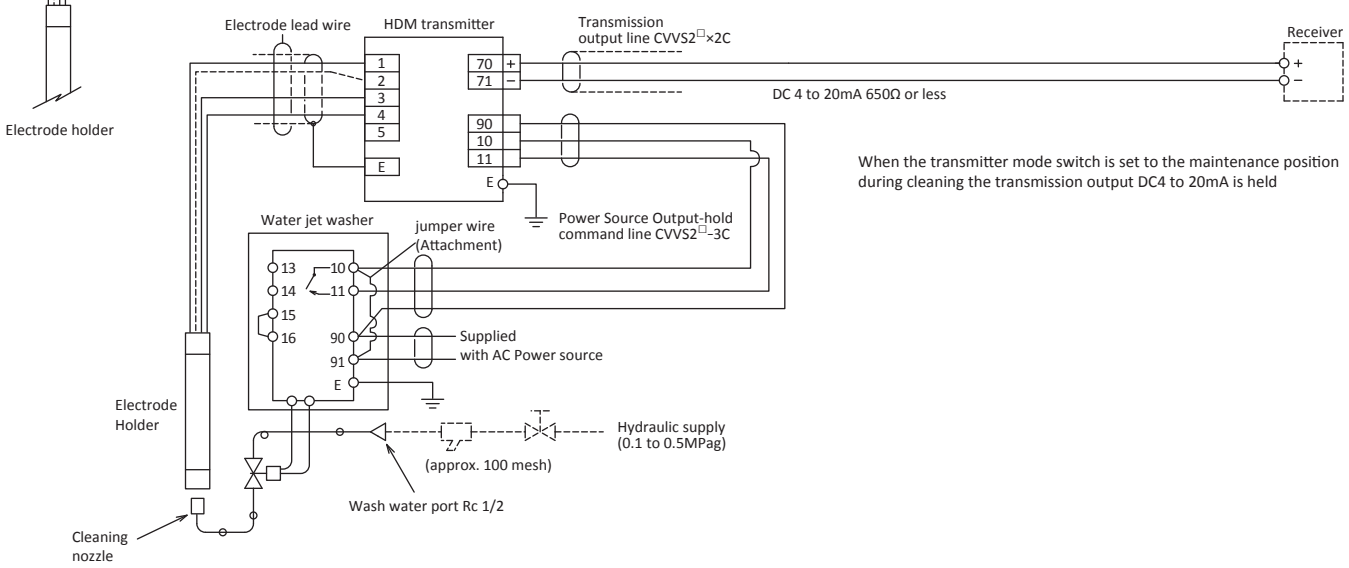
Description of the connection terminal Connect as necessary

13,14 : Cleaning start signal input terminal
"Closed"time : Non-voltage "Closed"contact pulse of 100msec or more
Capacity : DC30V, 0.1A or more

15,16 : Cleaning stop signal input terminal
Stop with "Open"(short circuit at shipment)
Internal-load solenoid valve : AC 100V, 220mA

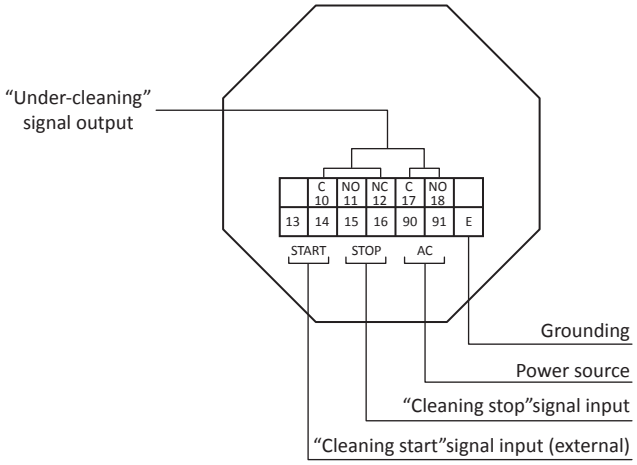
10,11,12 : Under cleaning signal 1 output terminal
"Closed"between #10 to #11 during cleaning
Capacity : AC 125V, 1A

When connecting the electrode lead wire



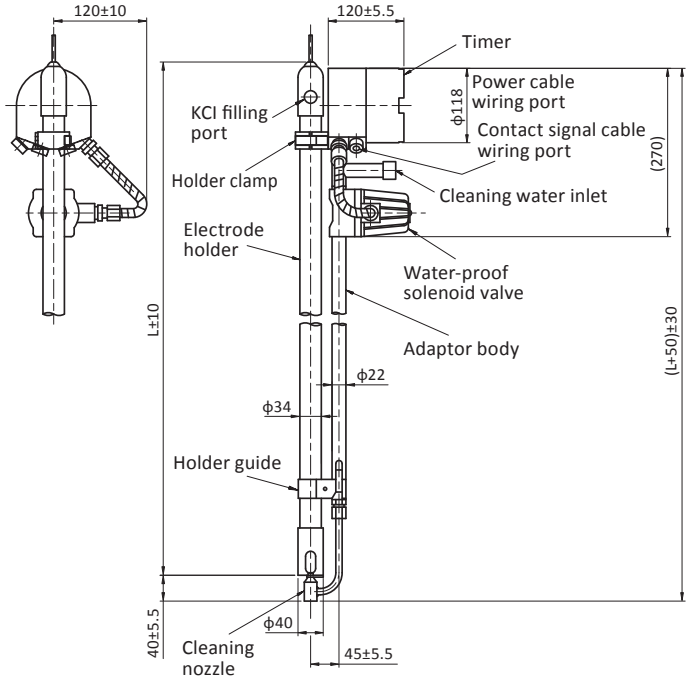
When the transmitter mode switch is set to the maintenance position during cleaning the transmission output DC4 to 20mA is held

Terminal Connections



Dimensions

Unit : mm



Cleaning Water

- Industrial water is used as cleaning water. When using tap water, it is prohibited to supply it directly from the tap water. Use water pressurization equipment to isolate the analyzer from city water supply pipes.
- When freezing in winter is likely, thermal insulation of the pipe will be required.

* A higher pressure provides a better cleaning effect. A pressure above 0.2MPa is recommend.

Product code

JHC7C-2-□□□□□□□□□□

- Powersupply*1
  - A: AC 100V 50/60Hz
- Type of operation parts (timer and solenoid valve)
  - A: Integrated type (standard)
  - B: Separated type*2
- Wetted part material in cleaning part
  - 1: SUS316 (standard)
  - 2: PP*3
  - 3: SUS316L
- Holder to be combined (not necessary to order separately)*4
  - 0: No holder
  - 1: PP holder : Model HC-763
  - 2: Clear PVC holder : Model HC-703C
- Holder length*5
  - 1: 0.5m ↑The sensor length depends
  - 2: 1.0m on this holder
  - 3: 1.5m
  - 4: 2.0m
  - 5: 2.5m
  - 6: 3.0m
- Electrode to be combined
  - 0: no electrode
  - A: pH general use, normal temperature — Model 5600
  - B: pH high temperature — Model 5601
  - 3: ORP (Pt) general use — Model 2600 ★
  - 7: ORP (M) sewerage / waste water — Model 2605 ★
  - 8: Custom. Spec *6
- Electrode lead length
  - 0: no electrode
  - K: 5m (holder length 2m or less)
  - M: 10m
- Cleaning cycle
  - 0: 0.1 to 3 H (standard)
  - 1: 0.1 to 12 H
- Marking
  - 0: Standard
  - 1: English
- Examinant
  - 0: None
  - 1: Present (inspection mark affixed)
  - 2: Present (inspection mark and approval certification affixed)

★ Official approval not applicable

Custom spec. code;
Numeric digit: 9
Alphabet: Z

*1. If power voltage is more than AC 100V, please order step down transmitter (ZP-30 type: 35VA). (Separately installed)

*2. For the operation part (timer part and solenoid valve) are separate type, the wash water tubing 5m between the solenoid valve and the detector is included.

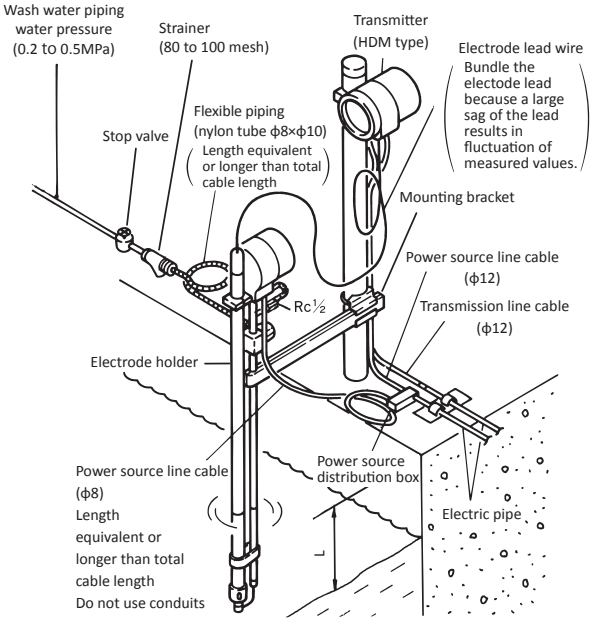
*3. When the cleaning part is made of PP, it is limited to separate type, and the combination holder length is 2m max.

*4. For the holder for NOS-electrode (HC-N76), select "9: Special".

*5. The material PP is 3m and transparent PVC is 4m for the length of the combination holder. For demands that exceed 3m, a drop-in JHC-95C type with a NOS-electrode with good maintenance operability is recommended.

*6. Please let us know when incorporating ex-models 6462 or 5700. For NOS electrode (5910 type) select "9: Special.

Typical Installation



Length of electrode holder is L+ (500 to 1000), assuming that the distance to the water surface is L

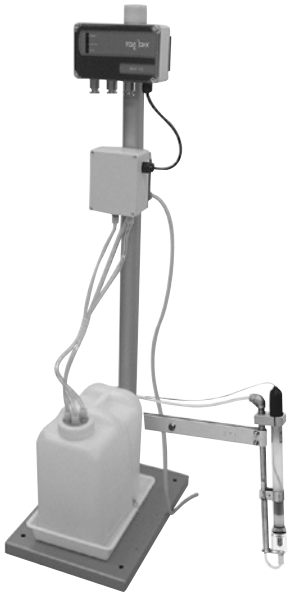
<Caution>
As the washer must be pulled up for operation inspection, bundle the flush water flexible pipe and power source cable to the length equivalent to the total length of the washer as shown in the figure.

SPECIFICATION SHEET

TOA DKK

IMMERSION TYPE SENSOR WITH CHEMICAL CLEANER RHC-7C

○This sensor has an immersion type pH/ORP electrode holder combined with a chemical cleaner.
○A mixture of chemical solution and air is sprayed on to the sensor section of the electrode to dissolve and remove fouling build-up. This is especially excellent in removing crystalline scale made from hydroxide. The chemical solution used for cleaning is normally 5% hydrochloric acid.
○During cleaning, an air gap is formed around the sensing section of the electrode and this isolates the sensor tip from the sample. Thus, even a small quantity of chemical solution (approx.100mL) is sufficient for effective cleaning.
○Timer function (cleaning cycle or cleaning time) is equipped for the RHC-7C type. During cleaning, signal is output to a transmitter, preventing to disturb a control system.

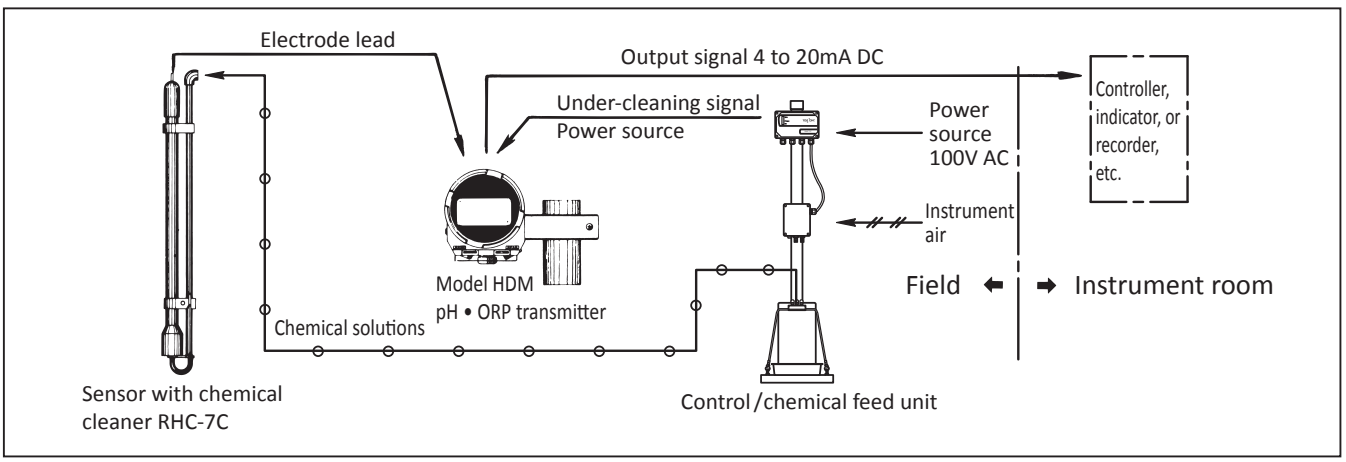


Standard Specifications

Product Name	: Immersion type sensor with chemical cleaner
Models	: RHC-7C
Measurement Object	: pH/ORP
Installation Method	: Timer / chemical feed unit; 50A pipe or wall mount. Sensor; Fixture or flange mount
Cleaning Method	: Cyclic cleaning with reagent solution spray combined with air-gap.
Chemical Solution	: Hydrochloric acid, nitric acid
Solution consumption	: 100ml / cleaning
Cleaning cylcle	: 0.1 to 12h
Spraying Duration	: 0 to 60s
Extended Time after Spraying	: 0 to 5min
Under Cleaning Signal Duration	: 0 to 6min
Input / Output Signal	: Washing in progress signal output 1c 2 systems Contact; 125V 1A External wash start input signal Closing time 100ms or more, no-voltage closed contact pulse Contact capacity; DC 30V 0.1A or more Wash stop signal input Stops when open (normally short-circuited) Internal load motor AC 100V, 250mA
Ambient Temperature	: -5 to 50°C (Cleaner channel, do not freeze)
Sample Conditions	: -5 to 80°C (Do not freeze, The range depends on combined holder.) Pressure...Atmospheric Conductivity...100μS/cm or more

Configuration

(Typical configuration with Model HDM transmitter)



Chemical used : Type... 5 to 15% hydrochloric acid or nitric acid

Quantity used : Amount... Approx. 100mL/1 time
(The effective capacity of the tank is approximately 18L.)

Supply Air : Quality... Equivalent to instrumented air
Pressure...0.05 to 0.1MPa
Consumption...15 to 20NL/min

Power Source : 100V AV 50/60 Hz

Power Consumption : Approx.25VA

Length of Sensor Section : 0.5m, 1.0m, 1.5m, 2.0m, 2.5m or 3.0m (to be specified)

Wetted Materials : SUS316, PP (for HC-763), FKM, softPVC

Weight : Sensor... approx.3kg (holder length; 1m)
Control part and chemical feed unit... approx.9kg (Pole stand is not included.)

Construction : Rainproof type (IP54)
(Note) Pole stand on the picture is optional.
Fixtures for a sensor is also ordered separately.

Combination Transmitter : Model HDM transmitter

Combination Equipment : · Sensor bracket... Model ZC-1
Length of sensor unit: 0.5 to 2.0m, type A or B.
for 2.0m or longer is type C
· Sensor bracket... (Stainless steel)...
Model ZC-2 (max. sensor length 2m)
· Mounting flange (open frange)
Model ZFK-1
100A JIS 10K FF, PVC
Model ZFK-2
100A JIS 10K FF, SUS316

Sample temperature range for typical electrode & holder combination

Holder	Holder material	Integrated pH electrode		Integrated ORP electrode
		Model 5600	Model 5601	Model 260□
HC-763	PP	-5 to 70˚C	-5 to 80˚C	-5 to 70˚C
HC-703C	PVC	-5 to 60˚C	—	- 5 to 60˚C

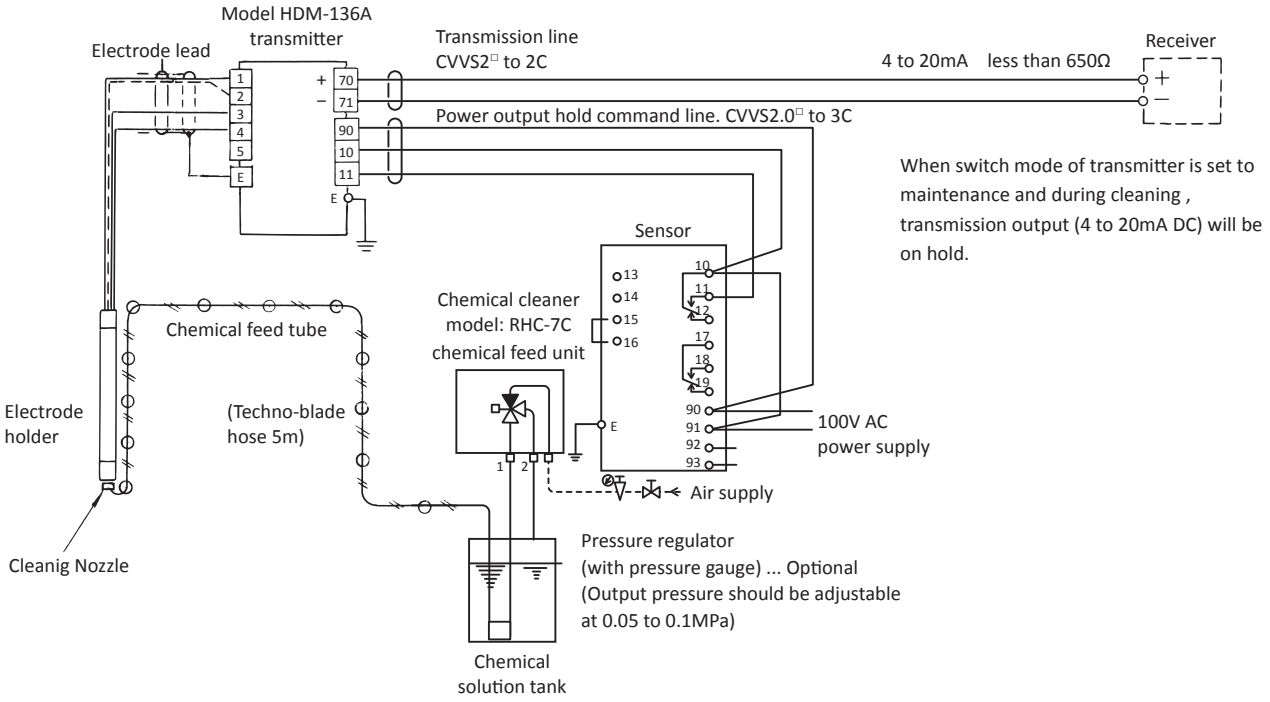
Options

· Pole stand
A 50 A stand with base on which timer/liquid feed unit and a tank can be mounted.

· Pressure regulator for instrument air
Regulator with a low pressure filter and 0.3MPa pressure gauge. This is installed on the liquid feed unit and is used to set the chemical solution transfer pressure at 0.1MPa.

· Air pump unit
When instrument air is not available, this unit should be added to the system. A pump with a capacity sufficient for chemical feed is housed in a rainproof case and is mounted on a 50A pipe.

System connection and flow



Description of the connection terminal Connect as necessary

13, 14 Cleaning start signal input terminals
(Contact closure time / greater than 100ms)
(Contact rating : 30VDC 0.1A or more)

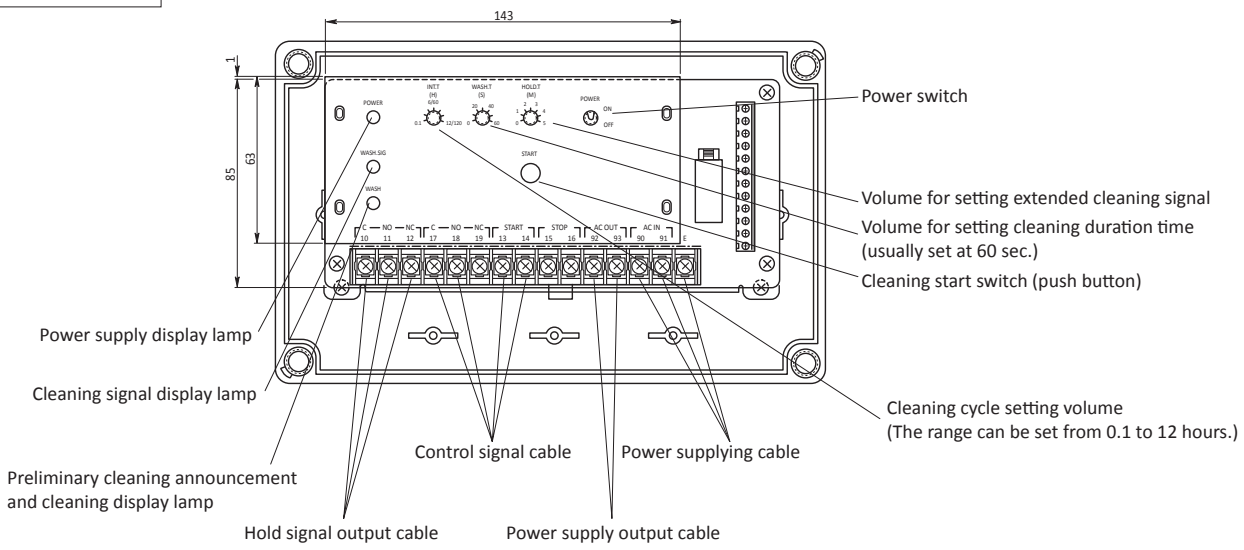
15, 16 Cleaning stop signal input terminals
(Stops when open. (Short-circuit when shipped.))
Internal load solenoid valve AC 100V, 220mA

92, 93 Power source for service (100VAC, 3A)

10, 11, 12 Under cleaning signal output terminal 1

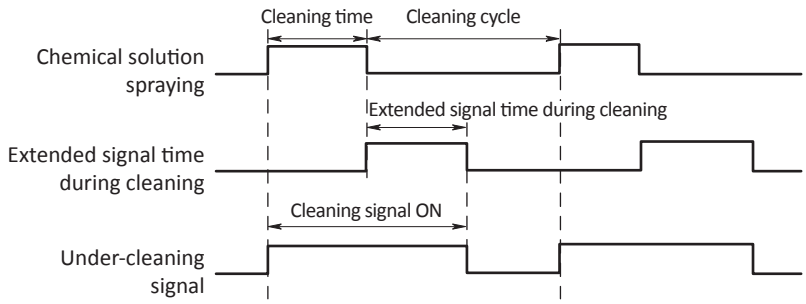
17, 18, 19 Under cleaning signal output terminal 2

Control Unit Layout

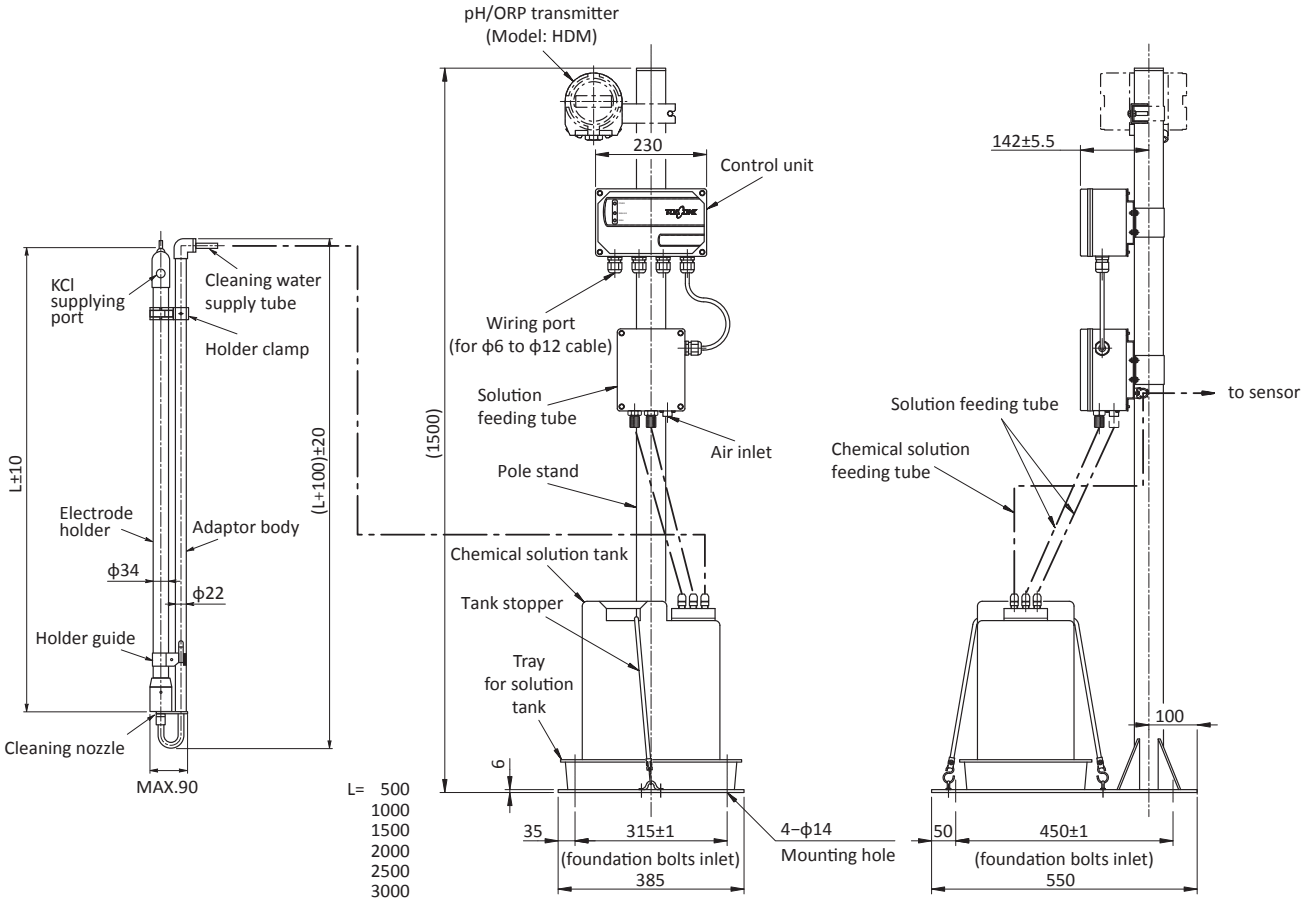


10	C	Under-cleaning signal 1 output terminals
11	NO	
12	NC	
17	C	Under cleaning signal 2 output terminals
18	NO	
19	NC	
13		Cleaning start input terminals (input a closed contact signal of 100mS or more)
14		
15		Cleaning stop signal input terminals (Stop at open position. Internal load solenoid valve AC 100V, 220mA)
16		
92		Service Power terminals (Usable as a power supply for related equipments. Independent from power supply switch. 3A fuse is supplied.)
93		
90		Power supply terminals
91		
E		Grounding terminal

Time chart during operation is as follows.



Dimensions Unit : mm



Product code

RHC7C-2-□□□□□□□□□□□□□□

- Power supply *1
  - A: 100V AC 50/60Hz
- Wetted part material in cleaning part
  - 1: Major parts SUS316S.S.(only nozzle : PP)
  - 2: All PP *2
  - 3: Major parts SUS316,(only nozzle : PP)
- Holder to be combined (not necessary to order separately)
  - 0: No holder
  - 1: PP holder : Model HC-763
  - 2: Clear PVC holder : Model HC-703C
- Holder length *3
  - 1: 0.5m ↑The sensor length depends on this holder
  - 2: 1.0m
  - 3: 1.5m
  - 4: 2.0m
  - 5: 2.5m
  - 6: 3.0m
- Electrode to be combined
  - 0: no electrode
  - 1: pH general use, normal temperature, model 5600
  - 2: pH high temperature, model 5601
  - 5: ORP(Pt) general use model 2600★
  - 6: ORP(M) sewerage / waste water model 2605★
  - 8: Custom. Spec *4
- Electrode lead length
  - 0: no electrode
  - K: 5m (holder length 2m or less)
  - M: 10m
- Cleaning cycle
  - 0: 0.1 to 12H (standard)
  - 1: 0.1 to 120H
- Chemical solution tank capacity
  - 1: 20L (standard)
  - 2: 50L
- Air supply
  - 0: External supply : no pressure regulator (Instrument air and regulator are to be supplied by customer.)
  - 1: External supply : with filter / regulator (Instrument air and regulator are to be supplied by customer.)
  - 2: With air pump unit
- Dedicated pole stand
  - 0: none
  - 1: Equipped *5
- Installation site *6
  - A: Indoor (not under sunlight)
  - B: Outdoor (Equipped with chemical solution tank (20L) with sunshade)
  - C: Outdoor (Equipped with chemical solution tank (50L) with sunshade)
- Arrester *7
  - 0: None
  - 1: Equipped
- Marking
  - 1: Standard
  - 2: English
- Official approval
  - 0: None
  - 1: with the certification
  - 2: with the certification and official approval

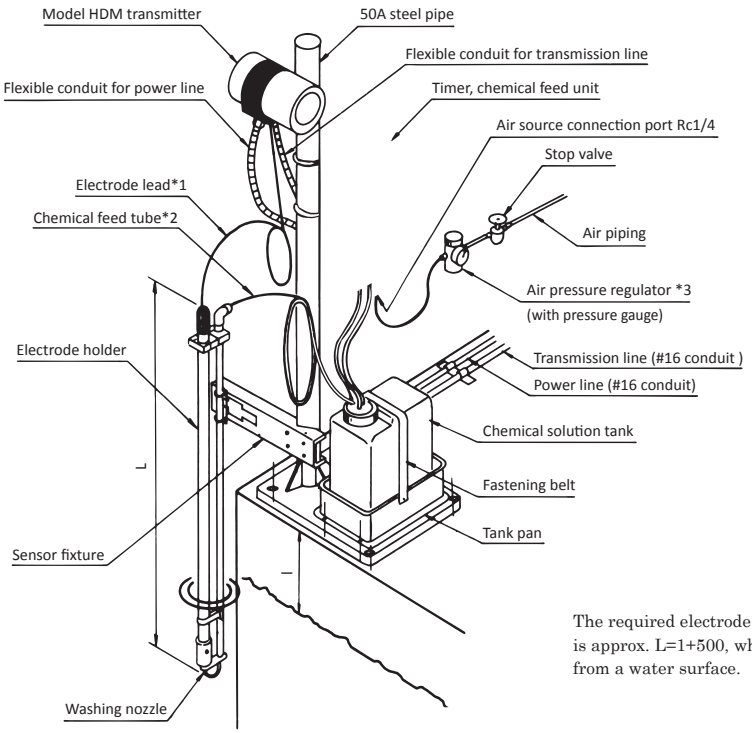
★ Official approval not applicable

Custom spec. code;
Numeric digit: 9
Alphabet: Z

*1. When power supply is more than AC 100V, please order a step-down transformer ZP-30 type, (normally 35VA, 140VA when air pump unit is equipped).
*2. When all of wetted part materials in cleaning unit are made of PP, max holder length is 2m.
*3. Holder length is up to 3m (PP), 4m (clear-PVC).
*4. For installation to ex-models, 6462 or 5700, please notice us.
*5. Dedicated pole stand is different from model : B-150 (Code No. 67904600).
*6. When installed outdoor, sunshade is necessary to prevent the deterioration of chemical solution tank by ultraviolet light (sun light).
*7. Ceramic surge arrester (easy type) is attached to power supply line.

Typical Installation

<Example of standard installation>



The required electrode lead length L is approx. L=1+500, where 1=distance from a water surface.

*1. Bundle the electrode lead because a large sag of the lead results in fluctuation of measured values.

*2. The standard length of chemical feed tube is 5m. Do not cut the tube but bundle it. If cut, the chemical feed may not work efficiently for cleaning.

*3. Use air pressure regulator capable of setting 0.06 to 0.1Mpa. Install a filter and a drain trap when the supplied air contains dust or mist.

SPECIFICATION SHEET

IMMERSION TYPE DETECTOR WITH PULSE AIR JET CLEANER PHC-7D

This detector combines immersion type pH/ORP Electrode Holder and a pulsed air jet cleaner as a single unit.

○The pulse air jet cleaner periodically discharges compressed air intermittently to the sensitive part of electrode part in the sample water.
The high-speed water flow generated when compressed air expands rapidly in the sample water effectively removes and cleans dirt adhering to the electrode sensitive part. This high-speed water flow contains a large amount of bubbles, that hits the electrode sensitive part randomly. This removes and cleans out the crystalline scale such as hydroxide by peeling them off by the water flow.

○Has high cleaning effect against fouls produced by organic substances and traces in wastewater treatment facilities and sewage treatment plants which reduces maintenance work to keep electrodes clean.

○Use general-purpose air in the plant for compressed air. Air pumps can be built in if there is no supply facility, so the system can be self-contained.

○Cleaning timer is built in for combination of HDM type transducers without cleaning function.

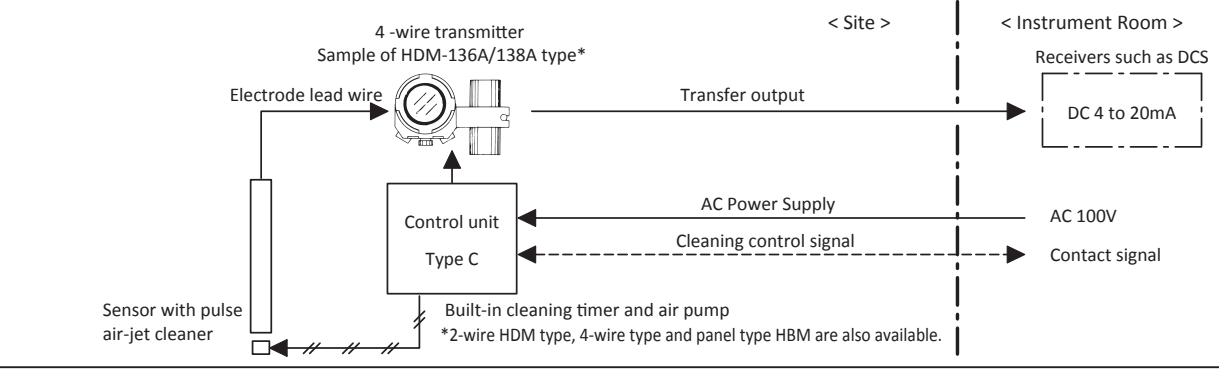
Standard Specifications

Product name	: Immersion Type Detector with Pulse Air-Jet Cleaner
Model	: PHC-7D
Measurement object	: pH or ORP of solution
Cleaning Method	: Intermittent cleaning by high-speed water flow caused by expansion during discharge of compressed air
Combination electrode	: pH electrode … 5600/5601 ORP electrode … 2600/2605
Supply Air	: Plant general -purpose air Dust-removing Oil (air filter) Connection ... Rc 1/4 Pressure ... 0.1 to 0.3MPa Consumption ... Approx. 0.6L (per pulse)
Supplied power	: AC 100V±10% 50/60Hz
Power consumption	: Approx. 20VA Approx. 150VA for models with air pump
Ambient temperature and humidity	: -5 to 50°C 95%RH or less
Sample conditions	: Temperature ... -5 to 60°C Pressure …atmospheric pressure Electric conductivity ... 100μS/cm or more
Wetted main material	: PVC (for HC-703C), SUS316, PP
Control unit	: Protective structure ... IP54 Wiring port ... φ6 to 12 cable gland for 3 pieces Weight ... approx.15kg (with air pump)
Detector weight	: Approx 4kg (1m long)
Cleaning timer (Option)	: Required for combination with a transmitter other than HBM-16□B type and with an air pump.

Cleaning cycle; 0.1 to 99.9 hours (0.5 hours when shipped)
Number of air pulses; 1 to 19 times (once when shipped)
Wait time after cleaning; 0.0 to 99.9 minutes (0.5 minutes at shipment)

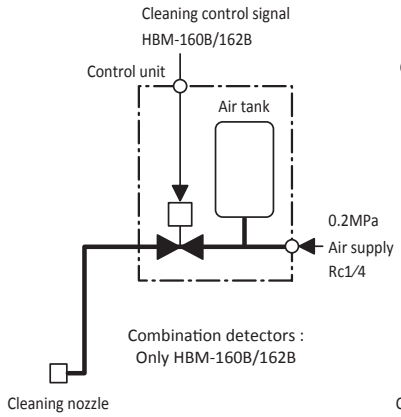
Configuration

Self-contained compressed air with built-in air pump, with cleaning timer …Type C

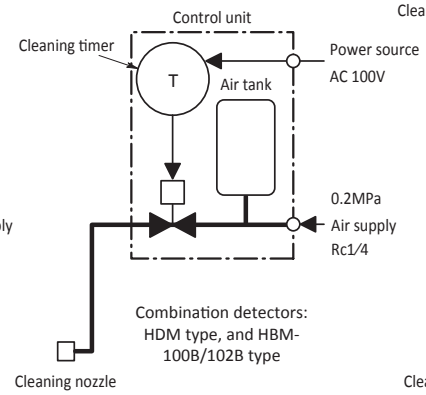


Flow

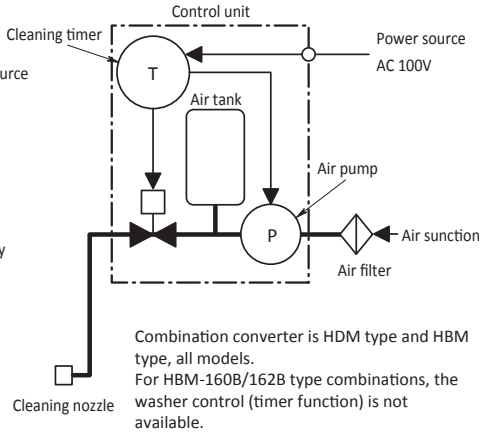
●Type A : Without air pump or cleaning timer



●Type B : With cleaning timer Without air pump

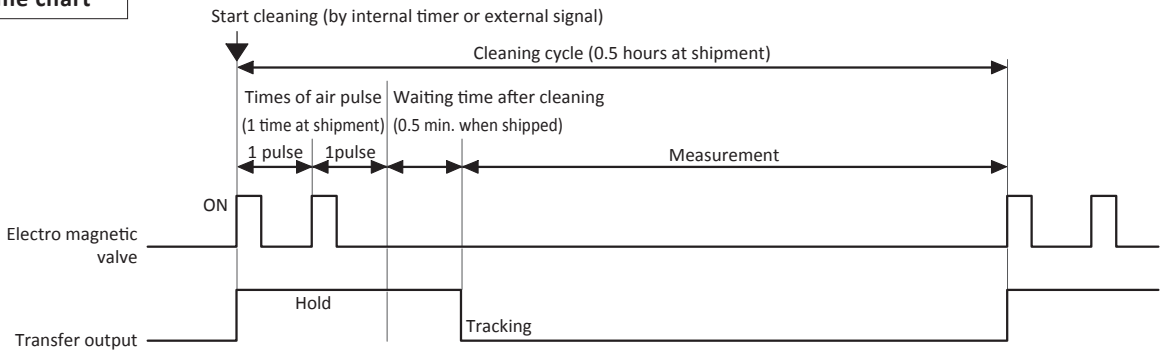


●Type C : With cleaning timer and air pump



Combination converter is HDM type and HBM type, all models.
For HBM-160B/162B type combinations, the washer control (timer function) is not available.
To control the air pump of the cleaner using the built-in cleaning timer.

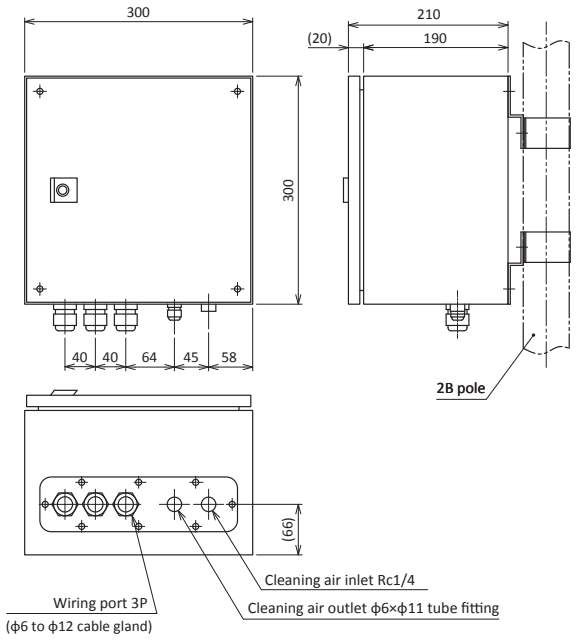
Time chart



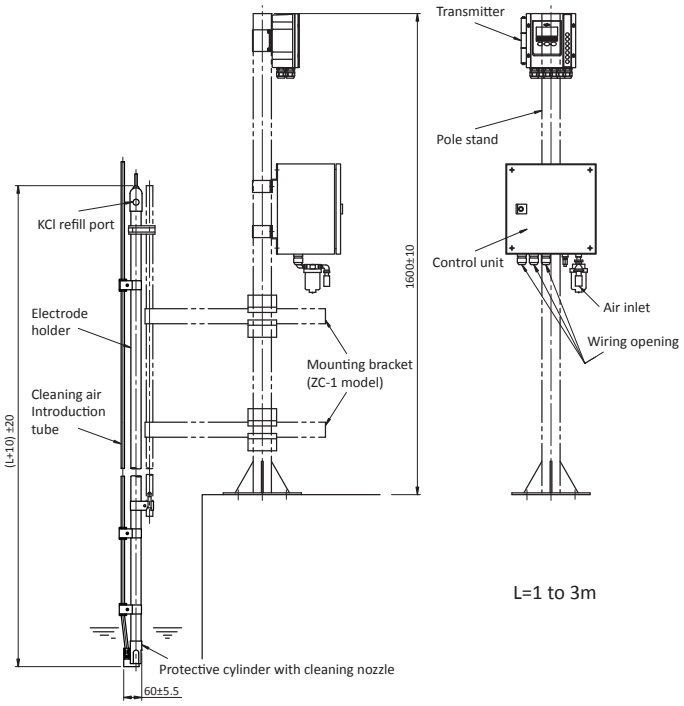
Dimensions

Unit : mm

● Control unit (Type A / B)

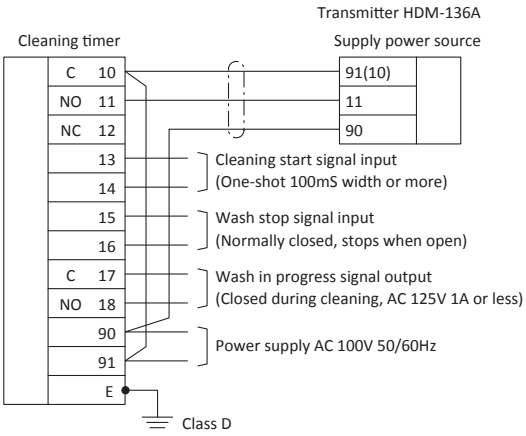


● Detector (control unit : Type C)



Connection of cleaning timer

Type B/C connection sample with HDM-136A type detector



Product code

PHC7D-0-□□□□□□□□□□□□

- Compressed air supply method *1
  - 1 … Type A … External supply
  - 2 … Type A … External supply / Pressure regulator built-in filter
  - 3 … Type B … External supply / cleaning timer built-in
  - 4 … Type B … External supply / cleaning timer built-in/ Pressure regulator
  - 5 … Type C … Self-contained air pump built-in / cleaning timer built-in
- Power supply voltage
  - A … AC 100V 50/60Hz
  - B … 50/60Hz specified at AC 110 to 120V *2
  - C … 50/60Hz specified at AC 200 to 240V *2
- Combination holder
  - A … Transparent PVC (HC-703C type, sample temperature max 60°C)
  - B … PP (HC-763 type, sample temperature max 80°C)
- Length of combination holder
  - 1 … 1.0m
  - 2 … 1.5m
  - 3 … 2.0m
  - 4 … 2.5m
  - 5 … 3.0m
- Incorporated electrode
  - 0 … Not required
  - A … pH General normal temperature 5600 type
  - B … pH General high temperature 5601 type
  - 1 … ORP (Pt) For general use 2600 type★
  - 2 … ORP (M) For sewage and human waste 2605 type★
- Length of the electrode lead wire
  - 0 … When built-in electrode is not required
  - K … 5m (holder length 2m or less)
  - M … 10m
- Hood (shading of operation parts)
  - 0 … None
  - 1 … Equipped
- Built-in arrester
  - 0 … None
  - 1 … Equipped *3
- Holder guide assay
  - 0 … None (use mounting bracket ZC-2 type for holder length 1.5m or less,)
  - 1 … Equipped (combine ZN-7 type support bracket with holder)
- Marking
  - A … Standard
  - B … English
- Examinant
  - 0 … None
  - 1 … with the certification
  - 2 … with the certification and official approval

★ Official approval not applicable

Custom spec. code;
Numeric digit: 9
Alphabet: Z

*1. The combination changer differs depending on the compressed-air supply method (TypeA/B/C).

Type A	HBM-160B/162B
Type B	HDM-135A/136A/137A/138A, HBM-100B/102B
Type C	HBM-160B/162B, HDM-135A/136A/137A/138A, HBM-100B/102B

*2. Specify from AC 110V / 115V / 120V, or AC 200V / 220V / 230V / 240V. (AC 100V step-down transformer is built into the control unit.)

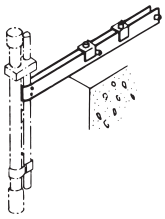
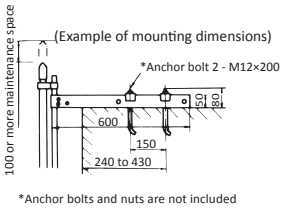
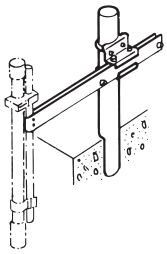
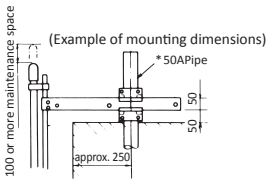
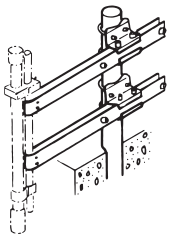
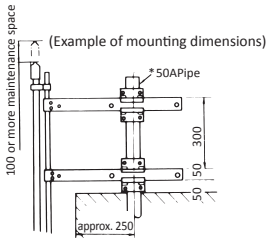
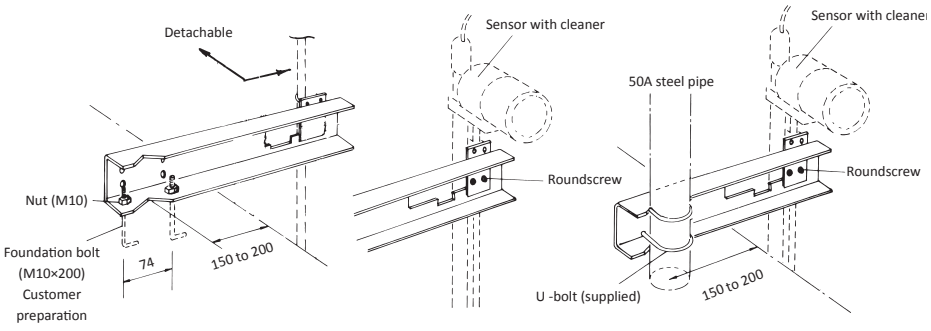
*3. For Type B/C (with built-in clean timer), attach the ceramic surge arrester to Power Source line.

NOTE: If a mounting device is required, a pole-stand ZB-1 type or the mounting brackets shown below must be ordered separately.

Mounting bracket: Holder length 1. ZC-2 up to 5m

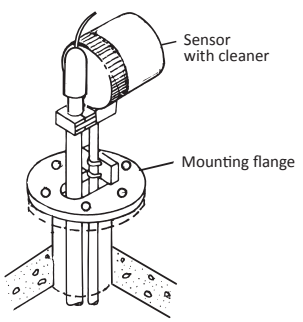
For holder length 2m or longer, combine ZC-1 and C type with support bracket ZN-7 type

■ Mounting bracket for detector with cleaner

Model	Spec	Mounting image
ZC-1 A	For fixing anchor bolts Bracket length: 600mm Material: SS41 (steel) Coat: Munsell N7 Acid proof base	Can be fixed on detectors with cleaner up to 1.5m in overall length.   *Anchor bolts and nuts are not included
ZC-1 B	For fixing pole (50A) Bracket length: 600mm Material: SS41 (steel) Coat: Munsell N7 Acid proof base	Can be fixed on detectors with cleaner up to 1.5m in overall length.   *50A pipe is not included
ZC-1 C	For fixing pole (50A) for deep tank Bracket length: 600mm X2 Material: SS41 (steel) Coat: Munsell N7 Acid proof base	Can be fixed on detectors with cleaner from 2.0m to 4.0m in overall length.   *50A is not included
ZC–2	Can be fixed either with anchor bolts or 50A poles. Detachable with one touch per washer. Bracket length: 500mm Material: SUS304 Detectors with cleaning up to the full length of 2.0m can be fixed.	 <Installation with anchor bolts> <Mounting on a pole stand>

■ Detector mounting flange with cleaning (open flange)

Model	Spec	Mounting image
ZFK-1	Resin (hard PVC or PP) flange size: 100A to 300A JIS 10K or 5K FF Rubber cover (odor proof packing) for flange opening is optional.	Can be fixed on detectors with cleaner up to 1.5m in overall length. Cannot be used for BJHC, BRHC, & PHC-7D
ZFK-2	Metallic (SUS304 or SUS316) flanges: 100A to 300A JIS 10K or 5KRF Rubber cover (odor proof packing) for flange opening is optional. Note: The flange size should be 125A (5("B)) or more to facilitate removal of the holder.	Can be fixed on detectors with cleaner from 2.0m to 4.0m in overall length. Cannot be used for BJHC, BRHC, & PHC-7D



Product code

ZC1-1-□□□

- Types
  - A ····· A (fixed to anchor bolts)
  - B ····· B (fixed to 50 A pipes)
  - C ····· C (fixed to 50 A pipes)
- Bracket materials
  - 1 ····· Iron (Typical)
  - 2 ····· SUS304 (Types A & B)
  - 3 ····· SUS304 (Type C) Special
  - 9 ····· Special
- Coating
  - 0 ····· None
  - 1 ····· Munsell N7, acid resistant substrate (standard)
  - 9 ····· Special

ZC2-0-□□□□

- Mounting method
  - A ····· Fixed on anchor bolt
  - B ····· Fixed on 50A pipe
  - Z ····· Special
- Type of mounting holder
  - 1 ····· For 1 holder
  - 2 ····· For holder with cleaner
  - 3 ····· For 2 holders
  - 4 ····· For 1 holder and a holder with cleaner
  - 9 ····· Special
- Material
  - 1 ····· SUS304 (Standard)
  - 9 ····· Special
- Coating
  - 0 ····· None (standard)
  - 9 ····· Special

ZFK1-1-□□□□□

- Material (flange)
  - 1 ····· Hard PVC (standard)
  - 2 ····· PP
  - 9 ····· Special
- Size (nominal diameter) *
  - A ····· 100 (A) (Standard)
  - B ····· 125 (A)
  - C ····· 150 (A)
  - D ····· 200 (A)
  - E ····· 250 (A)
  - F ····· 300 (A)
  - G ····· 4″ (B)
  - H ····· 5″ (B)
  - J ····· 6″ (B)
  - K ····· 8″ (B)
  - L ····· 10″ (B)
  - Z ····· Special
- Specification (nominal pressure)
  - 1 ····· JIS 5K
  - 2 ····· JIS10K (Standard)
  - 3 ····· ANSI 150LB
  - 4 ····· JPI 150LB
  - 9 ····· Special
- Shape of flange surface
  - 1 ····· FF (typical)
  - 2 ····· RF
  - 9 ····· Special
- Opening cover (deodorizing packing)
  - 0 ····· None (Standard)
  - 1 ····· Exists
  - 9 ····· Special

*For JIS standards, select from A to F to ANSI, and for JPI standards, select from G to L.

ZFK2-1-□□□□□

- Material
  - 1 ····· SUS316 (standard)
  - 2 ····· SUS316L
  - 3 ····· SUS304
  - 9 ····· Special
- Size (nominal diameter) *
  - A ····· 100 (A) (standard)
  - B ····· 125 (A)
  - C ····· 150 (A)
  - D ····· 200 (A)
  - E ····· 250 (A)
  - F ····· 300 (A)
  - G ····· 4″ (B)
  - H ····· 5″ (B)
  - J ····· 6″ (B)
  - K ····· 8″ (B)
  - L ····· 10″ (B)
  - Z ····· Special
- Specification (nominal pressure)
  - 1 ····· JIS 5K
  - 2 ····· JIS10K (Standard)
  - 3 ····· ANSI 150LB
  - 4 ····· JPI 150LB
  - 9 ····· Special
- Shape of flange surface
  - 1 ····· FF (standard)
  - 2 ····· RF
  - 9 ····· Special
- Opening cover (deodorizing packing)
  - 0 ····· None (Standard)
  - 1 ····· Exist
  - 9 ····· Special

*For JIS standards, select from A to F to ANSI, and for JPI standards, select from G to L.

■ Auxiliary equipment for detector with cleaning

● Voltage Conversion Unit

This step-down transformer is required when Power Source voltage supplied to the detector with cleaning is more than AC100V.

Model	: ZP-30 (field installation type)
Primary Voltage	: AC 240 / 220 / 200 / 120 / 115 / 110V
Secondary Voltage	: AC 100V
Volume	: 35VA or140VA (need to specify)
Wiring opening	: Two Glands for φ6 to φ12 cables
Case material / structures	: Polycarbonate / IP65
Mounting method	: 50A pole mounting

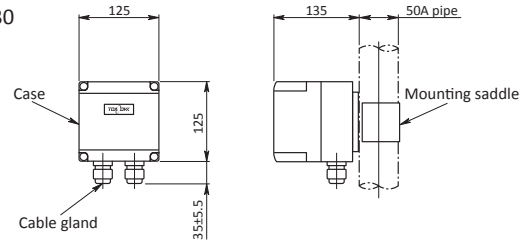
● Pole stand

This pole stand is used to mount the immersion type sensor with cleaner to the tank wall together with the transmitter.

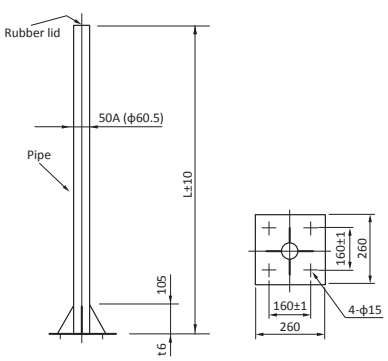
Model	: ZB-1
Material	: 50A steel pipe (SGP) or SUS304
Coat color	: Metallic silver No coating for SUS304
Length	: 1.0 m or 1.6m

Dimensions Unit : mm

ZP-30



ZB-1



■ Electrode Holder with Lift up Type Jet Cleaner　LHC-7D

The Lift-up style air jet cleaning system employs a water jet flow which can remove and dissolve crystalline fouling effectively. The water jet produced in the transparent decontamination enclosure works together with a jet mixture of chemical mist and air.

This setup prevents the washing nozzle from clogging as well as sample water from diluting from wash water and chemical solution.

Specifications

Cleaning method	: Lift-up style water jet · Chemical mist intermittent cleaning
Power	: 100V AC±10%, 50/60Hz
Air requirements	: Instrument air 0.3 to 0.7MPa
Wash water requirements	: Industrial water or plant water 0.2 to 0.5MPa
Cleaning chemical requirements	: Tank capacity; 20L (Effective volume; Approx. 18L) Concentration; 5% to 15% Hydrochloric acid or nitric solution

Please see LHC-7D specification sheet for more details

■ Selection table of various cleaning methods (recommended)

○: Effective　△: Small effect　—: Inappropriate

Nature of Fouling	Measurement target / process	pH electrode automatic cleaning system						Notes
		Ultrasound UHC	Brush BHC	Water jet JHC	Chemical RHC	Pulse air-jet PHC	Lift-up Jet LHC	
Suspended Fibrous Cohesive Algae Microorganism	Wastewater treatment water control*	○	△	○	○	○	○	Gravel or sold cannot be mixed with BHC/JHC/PHC Electrode may be damaged The asterisk mark indicates crystalline scale adhesion during the chemical injection control process
	Sewage and human waste treatment processes	△	—	○	—	○	○	
	River lakes and marshes, sea water	○	△	△	—	○	—	
	Marine product processing and aquaculture	○	○	△	—	○	○	
	Water treatment process*	○	○	△	○	○	○	
	Cooling water, pure water equipment*	○	△	—	○	○	○	
	Food processing, sugar production*	○	△	—	—	—	○	
	Final effluent monitoring	○	△	△	—	○	○	
Crystalline Scale	Desulfurization and absorbent control	—	—	—	○	—	○	$CaCO_3$ / $CaSO_4$ / $Fe(OH)_2$ / $FeCl_3$ dissolved with chemical solution
	Above slurry liquid control	—	—	—	○	—	○	
	Metal wastewater tretment control	△	—	△	○	△	○	
Oil contamination	Wastewater treatment process	△	—	—	○	—	○	Diesel oil, machine oil, etc. dissolved in chemical solution
	Oil refining process	△	—	—	○	—	○	

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CAUTION Please read the operation manual carefully before using producuts.

https://www.toadkk.com/english/

Information and specifications are subject to change without notice.

Issued 03/2023