

# SPECIFICATION SHEET

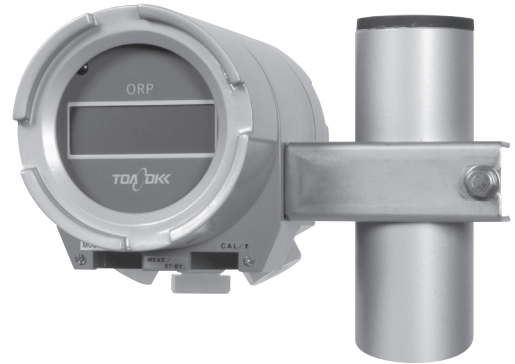


## ORP TRANSMITTER

HDM-137A (2-wire type)  
HDM-138A (4-wire type)

The ORP transmitter is a user-friendly device that features a compact and robust aluminum case, making it ideal for on-site installation.

This device comes in two different models: the 2-wire system (24VDC power supply) and the 4-wire system (adjustable-voltage AC power supply).

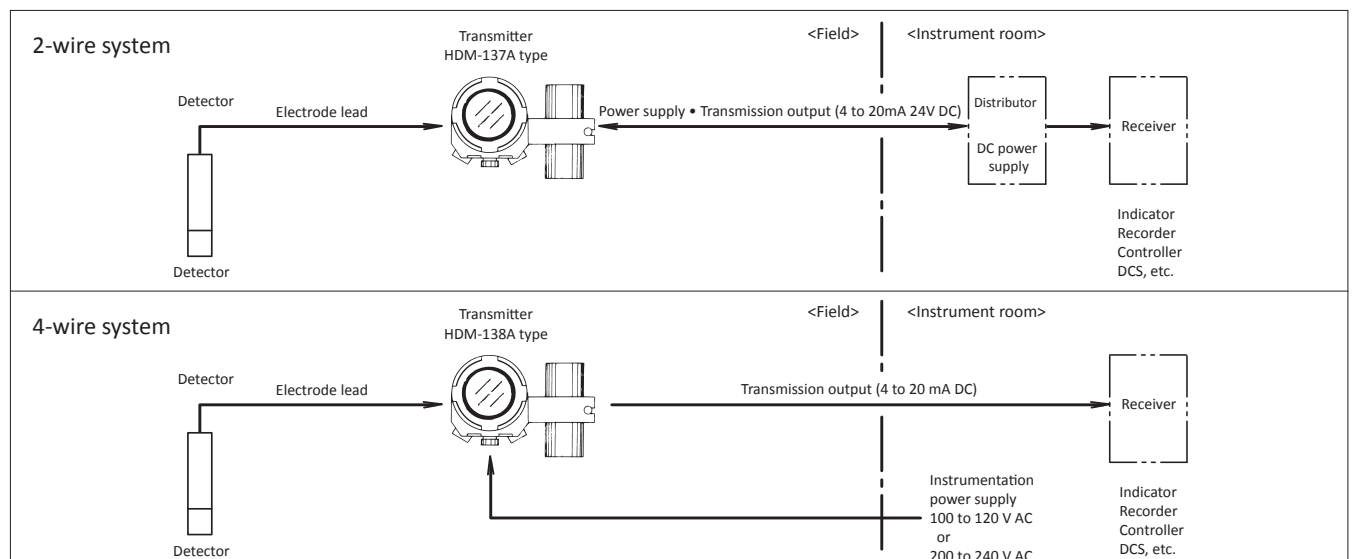


### Features

- The range of ORP transmission output can be changed.  
Transmission output 4 to 20 mA DC can be set in 400 or more mV width in the range of -2000 to 2000mV.
- Automatic determination of electrode quality:  
The transmitter judges the electrode quality from during check with ORP check solution. It can display "good", "high", "low", and the potential difference from the standard value.
- Temperature indication:  
Temperature of sample or ORP check solution can be indicated on the display (requires electrode with built-in temperature sensor, such as Models 2600, 2610 etc. ).
- Output can be held when in maintenance mode:  
By switching to "standby mode", the output is kept at the value present just before the mode is switched, preventing disruption to the process control system.

- Simple operation by waterproof switches of an under surface.  
You can do all operations (ORP standard solution check, etc.) by the three switches of under surface.
- Input for remote "hold" command (Terminals 10 to 11):  
The transmitter can receive a "hold" command signal from the water jet cleaner or chemical cleaner to hold the output (4 to 20mA DC) during the cleaning process.
- Measured value shifting:  
The measured value can be shifted up or down to meet specific requirements of the process control system. (Shift width:  $\pm 100$  mV).

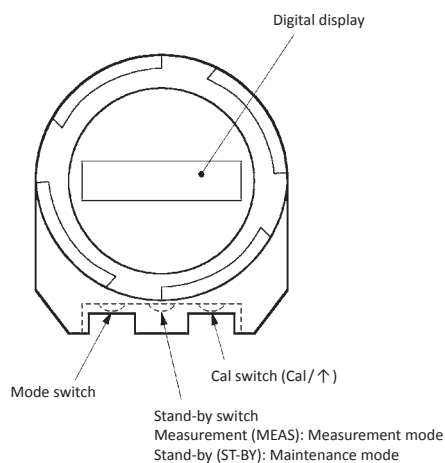
### System Configuration



## Standard Specifications

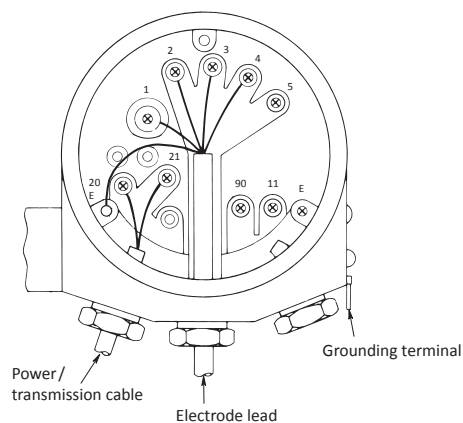
Product Name		ORP TRANSMITTER	
Model		HDM-137A (2-wire type)	HDM-138A (4-wire type)
Measurement range		-2000 to 2000mV ( temperature ; 0 to 100°C with no transmission output)	
Indication system		Digital (LCD)	
Min. Indication		mV-1, temperature-0.1	
Performance	Linearity	within $\pm 4\text{mV}$ (equivalent input).	
	Repeatability	within $\pm 3\text{mV}$ (equivalent input).	
Transmission Output		4 to 20 mA DC isolated type, max load : 650 $\Omega$	
Transmission Output range		Optional setting ( $\pm 2000\text{mV}$ ) is possible. Optional setting 400 or more mV width in 10 mV increments	
Power Supply		24VDC $\pm 10\%$	90 to 132VAC or 180 to 264 VAC 50/60Hz (option)
Power Consumption		0.6 or less VA	Approx. 3VA
Ambient Conditions		-20 to 55°C 99% RH or less with no condensation.	
Structure		Outdoor installation, IP55 (Water jets and dust-proof type)	
Dimensions		118(W) $\times$ 129(H) $\times$ 178(D)mm	
Construction		Mounted on 50A pipe	
Weight		Approx. 3.5kg	
Cable Entry		G3/4 (PF3/4F) 3 points	
Material	Main Body	Aluminum Alloy Casting	
	Window	Resin	
	Fixture	SUS304	
Paint Color		Metallic Silver and Blue	

## Control switch / display

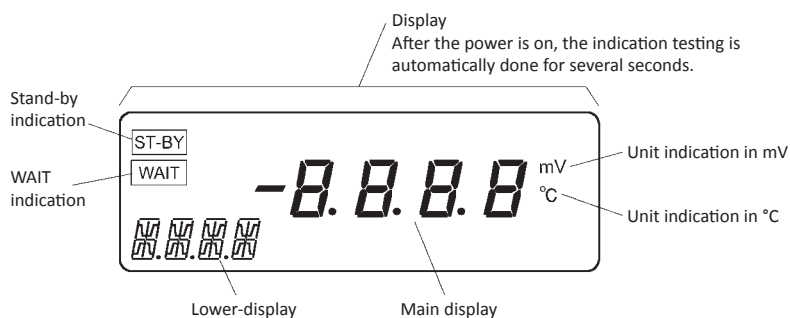
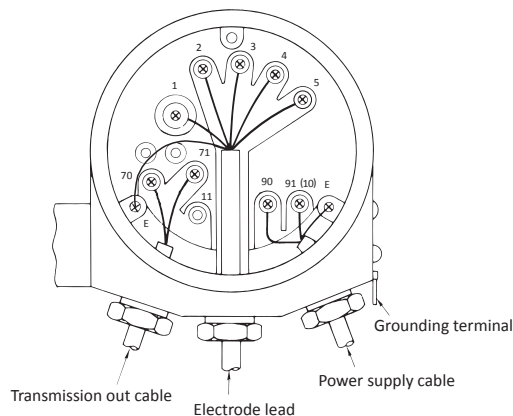


## Terminals

### ● HDM-137A (2-wire system)

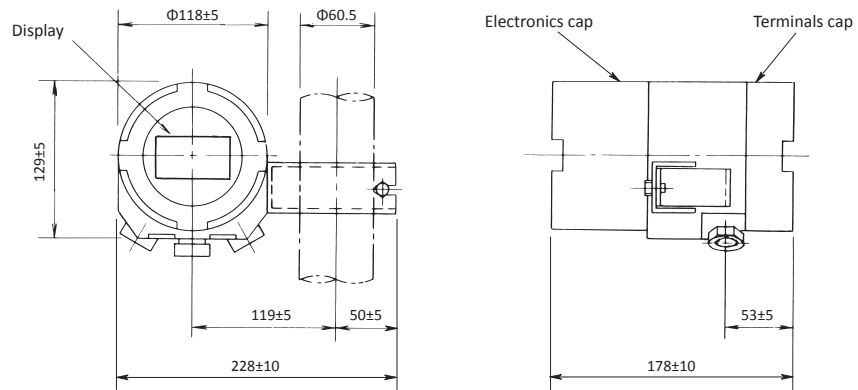


### ● HDM-138A (4-wire system)

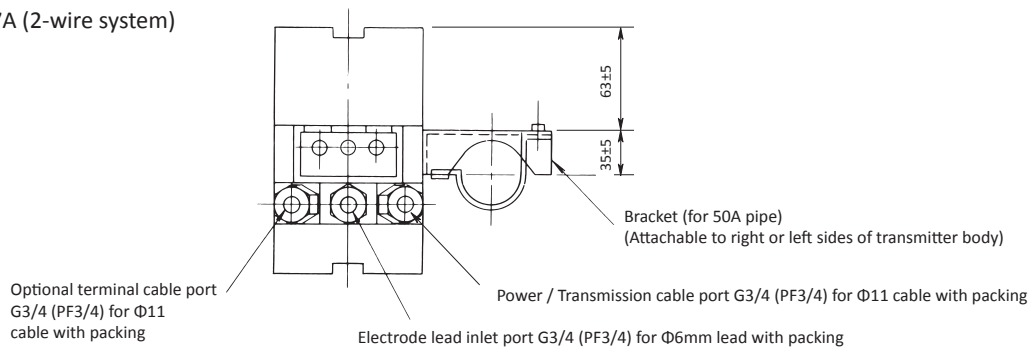


**Dimensions**

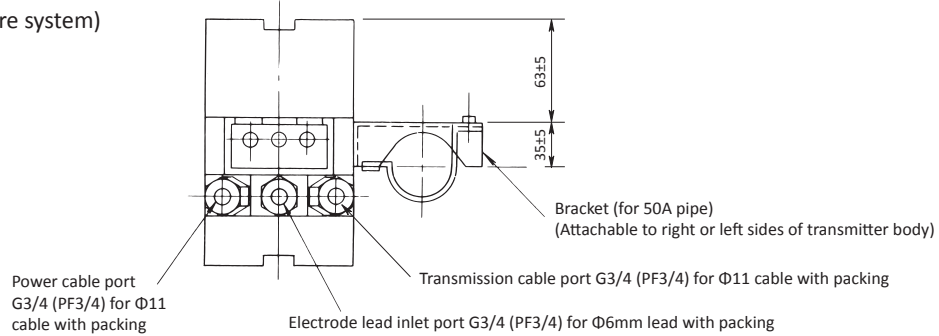
Unit : mm



● HDM-137A (2-wire system)



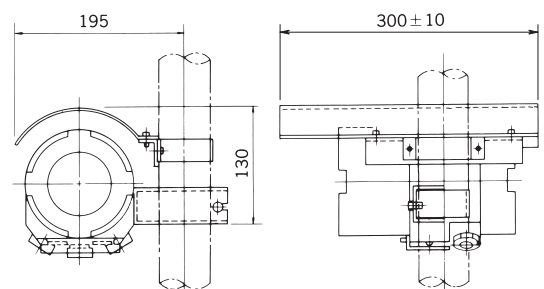
● HDM-138A (4-wire system)



● Sun Shade (option)

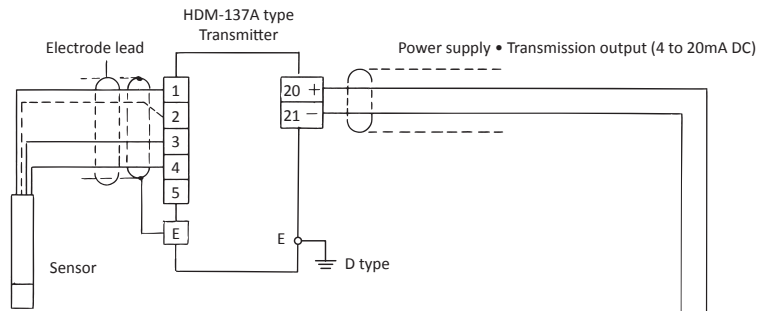
Recommended when the instrument is installed at a location exposed to direct sunlight.

Material : SUS304  
Mounting : 50A-2inch pipe

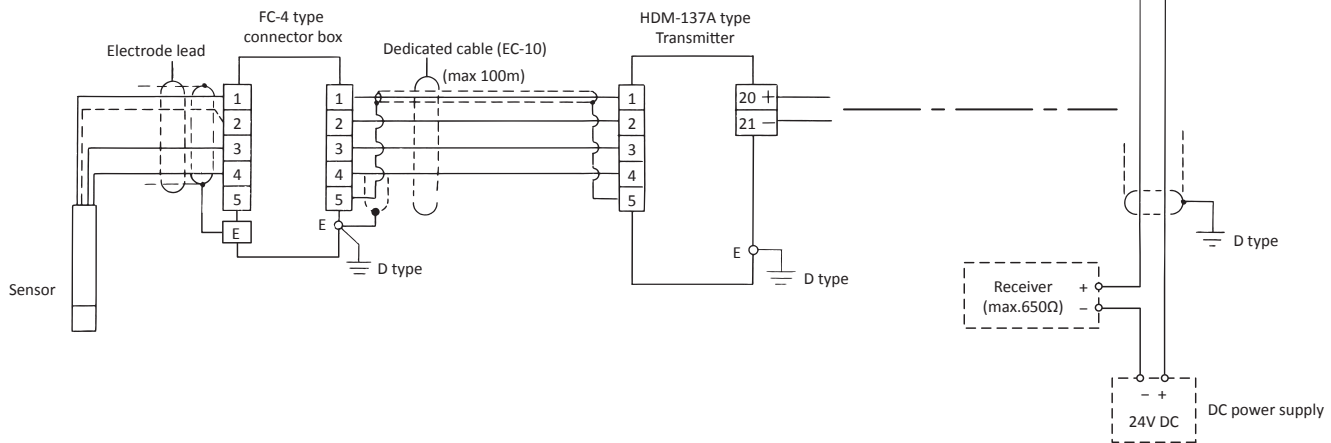


**Wiring Diagrams (2-wire system)**

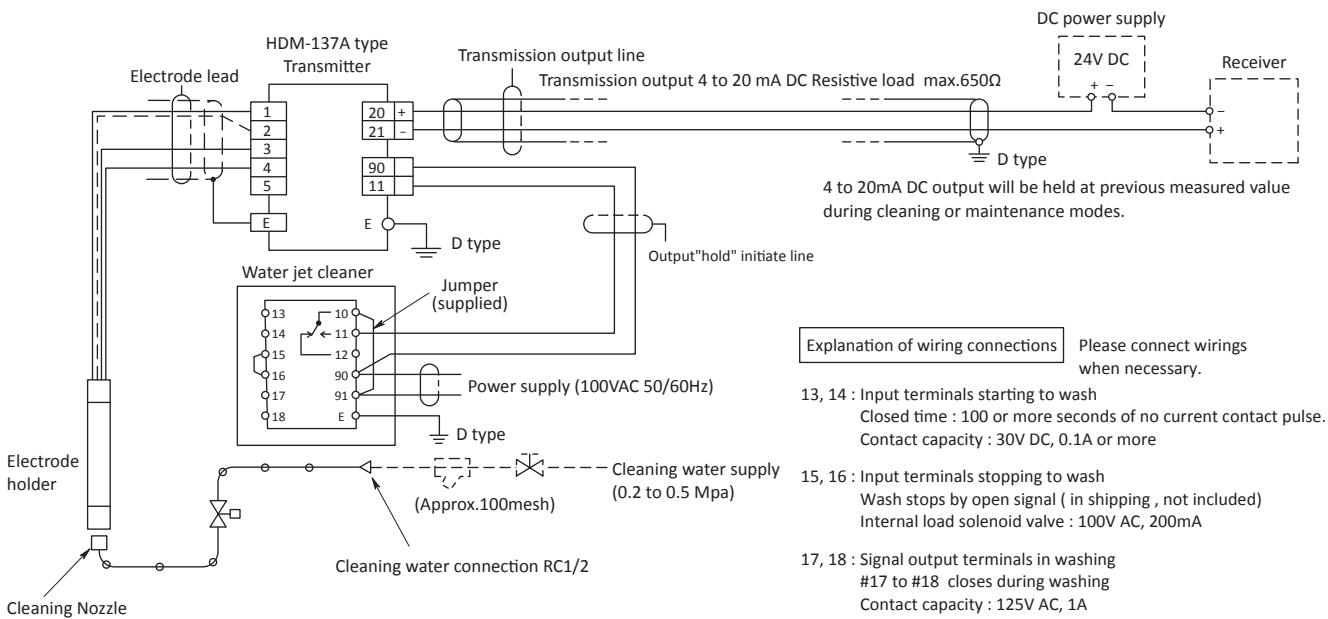
<In the case of directly connecting electrode lead.>



<In the case of using connector box or dedicated cable.>

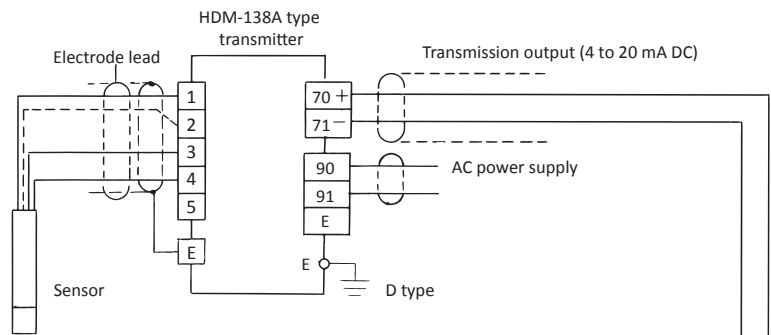


<Example of a system combined with water jet cleaner, Model JHC-7C with output signal "hold" feature (Terminals #90-#11are optional)>

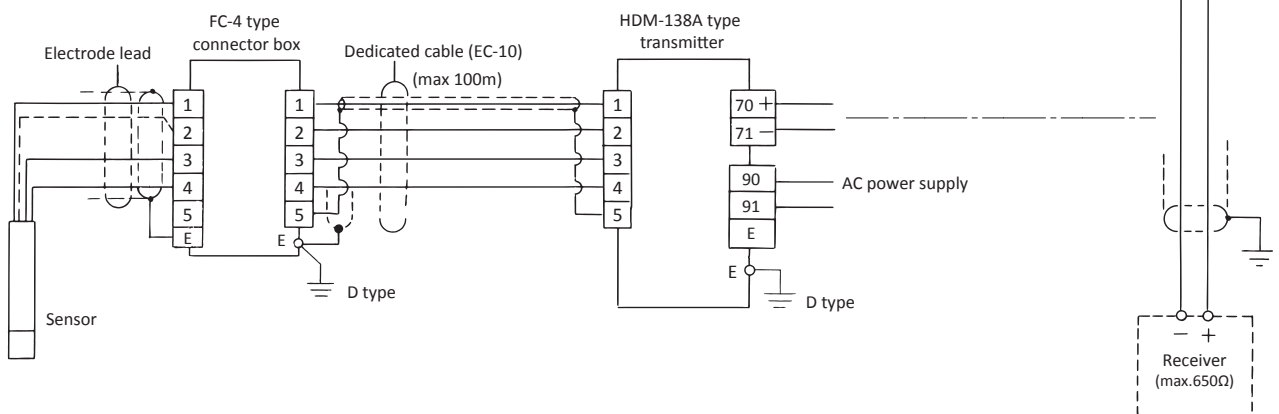


### Wiring Diagrams (4-wire system)

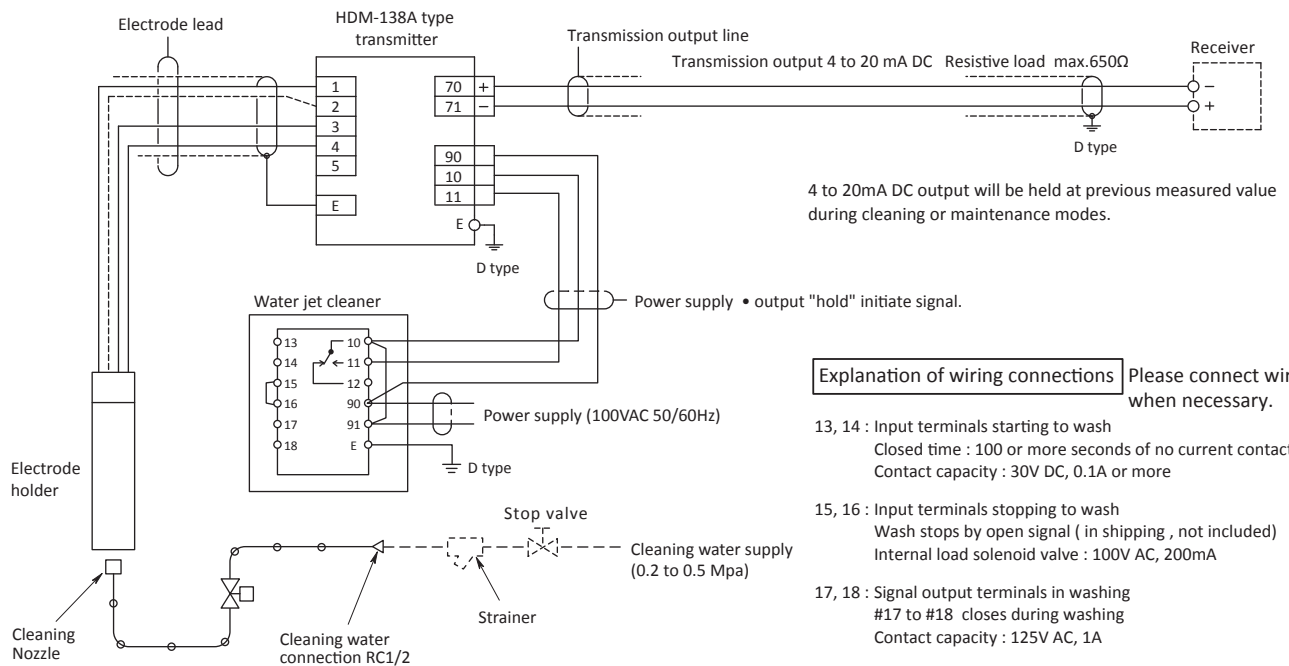
<In the case of electrode direct connection>



<In the case of using connector box and dedicated cable>



<Example of a system combined with water jet cleaner, model JHC-7C type>  
with external input signal "hold" terminal #10 to #11.



## Product code

HDM137A-2-	□	□	□	□	□	□	□	□	□	□
										Transmission output range
A										±200mV
B										±500mV
C										±700mV
D										±1000mV
E										±1400mV
F										±2000mV
G										0 to +1000mV
H										0 to +1400mV
Y										The other specified*1
										External input for output holding*2
										0 Nil
										1 Equipped
										Surface finish (painting)*3
										A Normal painting
										B Heavy-duty anticorrosion painting
										Arrester*4
										0 Nil
										1 Equipped
										Assembling with cable port adapter
										0 Nil G3/4 (PF3/4) (standard)
										1 G1/2 (PF1/2) SUS304
										2 NPT1/2 SUS304
										3 NPT3/4 SUS304
										Electrode lead port
										0 Direct connection
										1 Dedicated cable EC-10 type (combined with FC-4)
										Sunshade
										0 Nil
										1 Equipped
										Markings
										A Japanese (standard)
										B English

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

- \*1. Specify the output range (4 to 20mA DC) in 10mV steps, with a minimum width of 400mV.
- \*2. Select "Equipped" when using the device together with JHC/BHC/BJHC/RHC cleaners (UHC excluded). Output is held during cleaning.
- \*3. Standard coating: Melamine primer and topcoat. Average film thickness: 30µm or greater.  
Heavy-duty anticorrosion coating: Epoxy primer and middle coat, polyurethane resin topcoat. Average film thickness: 100 µm or greater.
- \*4. Ceramic surge arrester (simplified type) is mounted on the power/transmission line.

HDM138A-2-	□	□	□	□	□	□	□	□	□	□
										Power supply voltage*1
										1 90 to 132 VAC 50/60Hz
										2 180 to 264 VAC 50/60Hz
										Transmission output (4 to 20mA DC) Range
										A ±200mV
										B ±500mV
										C ±700mV
										D ±1000mV
										E ±1400mV
										F ±2000mV
										G 0 to + 1000mV
										H 0 to + 1400mV
										Y The other specified*2
										External input for output holding*3
										0 Nil
										1 Equipped
										Surface finish (painting)*4
										A Normal painting
										B Heavy-duty anticorrosion painting
										Arrester*5
										0 Nil
										1 Equipped
										Assembling with cable port adapter
										0 Nil G3/4(PF3/4) (standard)
										1 G1/2 (PF1/2) SUS304
										2 NPT1/2 SUS304
										3 NPT3/4 SUS304
										Electrode lead port
										0 Direct connection
										1 Dedicated cable EC-10 type (combined with FC-4)
										Sunshade
										0 Nil
										1 Equipped
										Markings
										A Japanese (standard)
										B English

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

- \*1. Adjustable-voltage power supply is either 100VAC or 200VAC. Only 100VAC is available when using the device together with JHC/BHC/BJHC/RHC cleaners.
- \*2. Specify the output range (4 to 20mADC) in 10mV steps, with a minimum width of 400mV.
- \*3. Select "Equipped" when using the device together with JHC/BHC/BJHC/RHC cleaners (UHC excluded). Output is held during cleaning.
- \*4. Standard coating: Melamine primer and topcoat. Average film thickness: 30 µm or greater.  
Heavy-duty anticorrosion coating: Epoxy primer and middle coat, polyurethane resin topcoat. Average film thickness: 100 µm or greater.
- \*5. Ceramic surge arrester (simplified) is mounted on the power line and transmission line.

## Options

- External input terminals - (transmission output is held)  
Transmission output is held during cleaning signal from washers (water jet, chemical jet and pulse air jet etc.).
- Food (sunshade)  
In direct sun light, this is necessary.

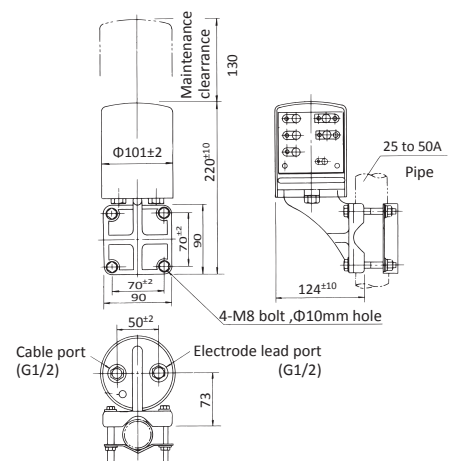
- Heavy-duty anticorrosion painting  
This is corresponding to salt damage and corrosive atmosphere.

## Related Equipments

### ● Junction box and Extension cable

Junction box and Extension cable are required when the transmitter and electrode are installed away from each other and the standard electrode lead length (5m) is too short. Both of them are special high insulating shield structure.

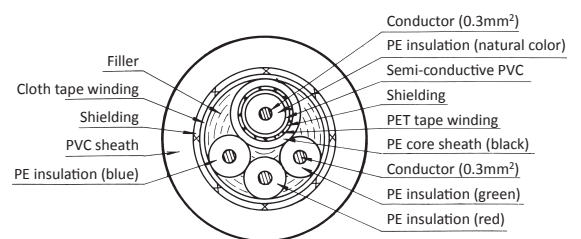
Model	: FC-4
Construction	: Outdoor installation
Mounting	: 25 to 50A pipe, wall or panel mount
Material	: ABS resin
Finish	: Pearskin finish chromium plating
Weight	: Approx. 0.9kg



### ● Extension cable

The extension cable is a special cable specifically manufactured for a pH/ORP transmitter. It connects the transmitter and junction box.

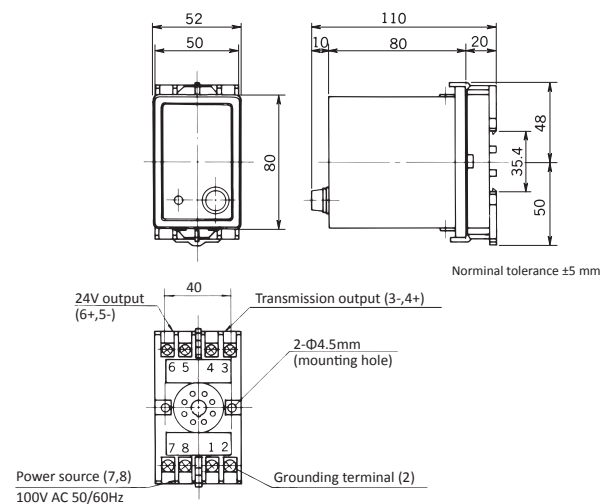
Model	: EC-10
Outside diameter	: $\phi 8$
Insulation	: Polyethylene and PVC
Sheath	: PVC
Insulation resistance between core conductors	
Maximum cable length	: $105M\Omega$ or greater / 100m.
Standard length	: 100m, no cable splicing.
Weight	: 5m to 100m (5m unit step)
	: Approx. 0.5kg / 5m



### ● Power supply unit

Model	: PA-24
Output voltage rating	: 24VDC+3/-1V
Output current rating	: 2 to 22mA (Parallel connection between two instruments cannot be made.)
Power requirements	: 100VAC $\pm$ 10%, 50/60Hz
Ambient conditions	: -5 to 55°C
Construction	: Indoor installation, plug-in type
Weight	: Approx. 300g

\*Output transmission signal of 4 to 20mADC can be drawn from the terminal block.



## Supported detectors

A wide variety of detectors can be used together with HDM-137A/138A, as shown in the following table. Select the detector that best fits measurement conditions.

Classification		Application	Model	Wetted part material	ORP electrode	Notes
Immersion type	Integrated model	General use (60°C or less)	HC-703C	PVC FKM	2600: Pt 2605: M	Excellent in weather proof. For outdoor The length: 0.5 to 4.0m
		High temperature (80°C or less)	HC-763	PP FKM	2601: Pt	Excellent in heat resistance. For indoor The length: 0.5 to 3.0m
		High temperature, chemical resistance (100°C or less)	HC-703F	PVDF FKM	2602: Pt	Fluorine resin type high quality holder The length: 0.5 to 4.0m
		General use pressurized type	HC-753C	PVC FKM	2610: Pt	Stain-resistant Stable measurement is possible. The length: 0.5 to 4.0m
	Replaceable-tip electrode	Effluent treatment (60°C or less)	HC-G70	PVC	PSS-304B KCL non-supply type	Pt electrode and liquid junction are changeable. The length: 0.5 to 3.0m
		Drop-in type	HC-G95	PVC SUS316	PSS-304B KCL non-supply type	Drop-in type for deep tank The length: 2 to 5m
		General use (60°C or less)	HC-G70	PVC	PSS-314B KCl-supply type	Pt electrode and liquid junction are changeable. The length: 0.5 to 3.0m
Flow-through type	Integrated model	General use Insert model pressurized type (80°C or less)	HC-880	PP FKM	2610: Pt	Connection: M60 P2 Cap nut or 25A JIS10K FF flange
		Supplied with PP case	NHC-882			Connection: 25A JIS10K FF Pressure proof: Max.0.3Mpa
		Supplied with SUS case	NHC-883	PP SUS316 FKM		Connection: 25A JIS10K FF Pressure proof: Max.0.3Mpa
		Supplied with SUS case head type (80°C or less)	NHC-893	PP SUS316 FKM		2600: Pt 2605: M



**DKK-TOA CORPORATION**



**CAUTION**

Please read the operation manual carefully before using products.

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