

pH Transmitter

HDM-135A (2-wire system)
HDM-136A (4-wire system)

The pH 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

Simplified calibration with standard solutions

The data for up to five different pH standard solutions can be stored in the internal memory for single-action calibration. Stability judgement function provides accurate calibration with standard solutions, free from operator error.

Automatic determination of electrode quality

The transmitter judges the electrode quality from its characteristics during calibration with standard solutions. Degradation of electromotive force at pH7, degradation of electromotive force per pH and other information is displayed in the form of error messages. Characteristic data of each electrode can be called out to determine the extent of degradation as required.

Temperature display

The analyzer/transmitter measures and displays the temperature of samples and standard solutions using a pH electrode equipped with an internal temperature sensor (5600, GSS-304B, or other model).

Output hold while performing maintenance work

When the transmitter enters maintenance (ST-BY) mode, the previous output value is held. This helps to prevent disruptions to the control system.

Measured value shift

Measured pH values can be shifted for operational control. (Shift width: $\pm 1.0\text{pH}$)



Manual temperature compensation

Manual temperature compensation function (0-100°C) can be provided for use with electrodes which do not have compensation functions.

pH temperature compensation

The transmitter compensates the pH temperature characteristics of samples (such as pure water and boiler water).

Setting range of temperature compensation coefficient : $\pm 0.1\text{pH}/^\circ\text{C}$

Standard conversion temperature: 25°C

Self-diagnostics

The transmitter detects damage on the glass membrane, problem with temperature compensation resistance, hardware failures and abnormal data. If a fault is detected, the transmission output is switched to the upper or lower limit to notify the fault (burn-out function).

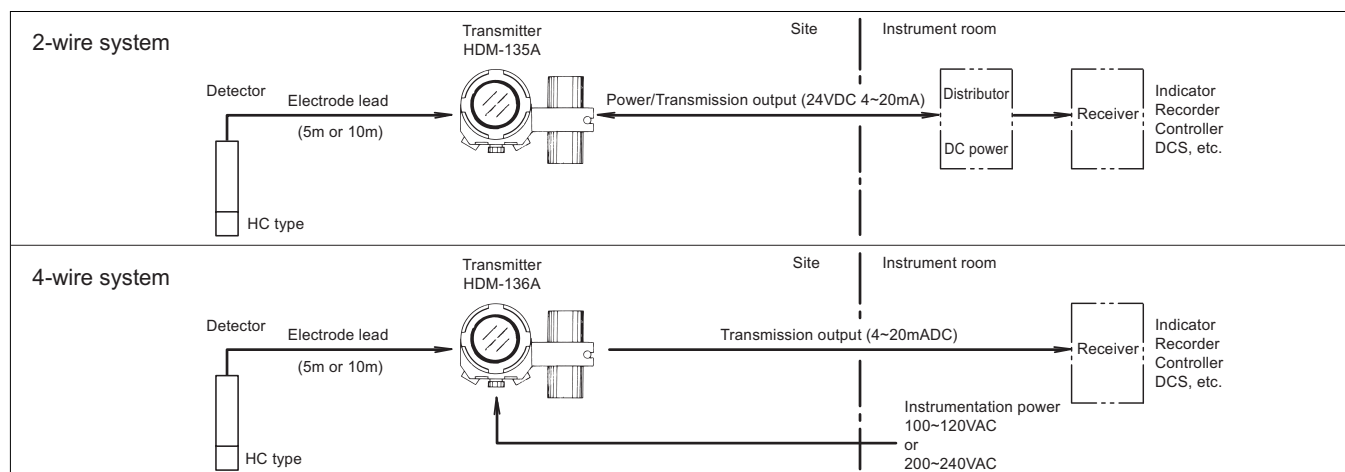
Automatic reversion to measurement mode

The analyzer/transmitter automatically switches back to measurement mode if it is left in maintenance mode for more than two hours.

External input for "hold" feature (option)

The transmitter can receive a "hold" command signal from the cleaning devices to hold output during the cleaning.

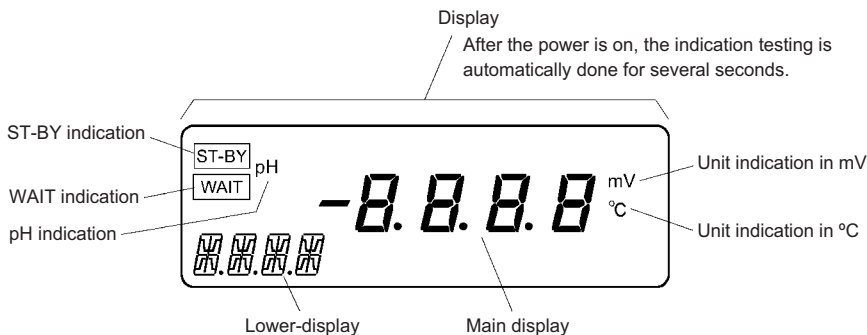
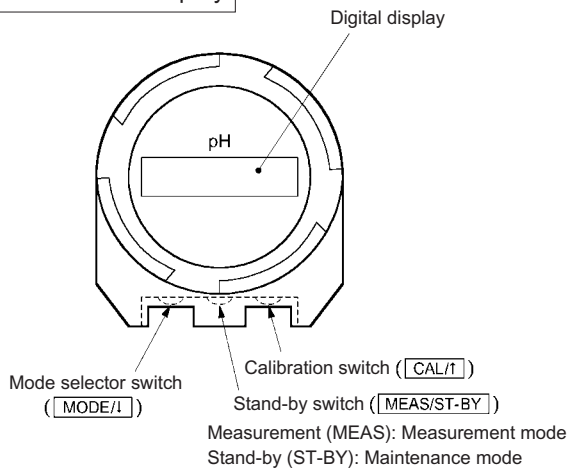
System configuration



Features

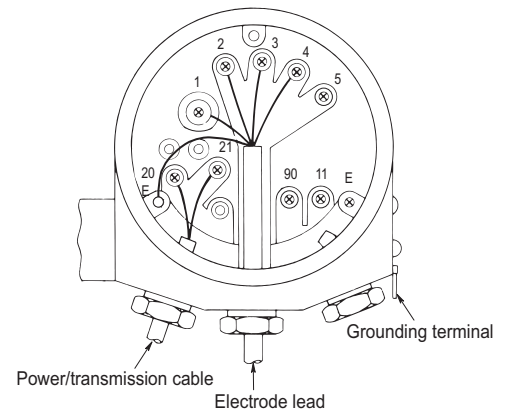
Product name	pH transmitter	
Model	HDM-135A (2-wire system)	HDM-136A (4-wire system)
Measurement range	pH: -1.00~14.00 (mV: -600~600 mV Temperature: 0~100°C Display only. No output-signal.)	
Display	Digital LCD	
Precision	pH; 0.01, mV; 0.1, Temperature; 0.1°C	
Performance (excluding detector)	Linearity	Within $\pm 0.03\text{pH}$ (at equivalent input)
	Repeatability	Within $\pm 0.02\text{pH}$ or less (at equivalent input)
Output signal	4~20mADC, isolated. Load resistance: Max 650Ω or less. Adjustable range between -1~14pH (0.1pH steps).	
Output range	Minimum width of 2 pH.	
Power supply	24VDC $\pm 10\%$	90~132VAC 50/60Hz or 180~264VAC 50/60Hz (option)
Power consumption	0.6VA or less	Approx. 3VA
Ambient conditions	-20~55°C, 99% (RH) or less (no condensation)	
Construction	Outdoor installation, IP55 (dust/jet-proof type)	
Dimensions	118 (W) x 129 (H) x 178 (D) mm	
Mounting	Mounted on 50A pipe	
Weight	Approx. 3.5kg	
Cable entry	G 3/4 (PF 3/4 F), 3 ports	
Materials	Main body	Cast aluminum alloy
	Window	Plastic
	Mounting bracket	SUS 304
Color	Metallic silver and blue	

Control switch/Display

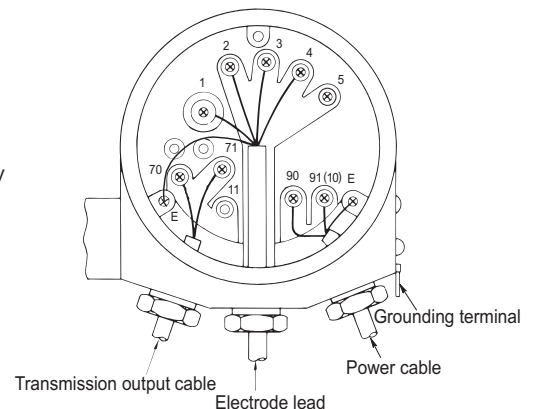


Terminals

● HDM-135A (2-wire system)



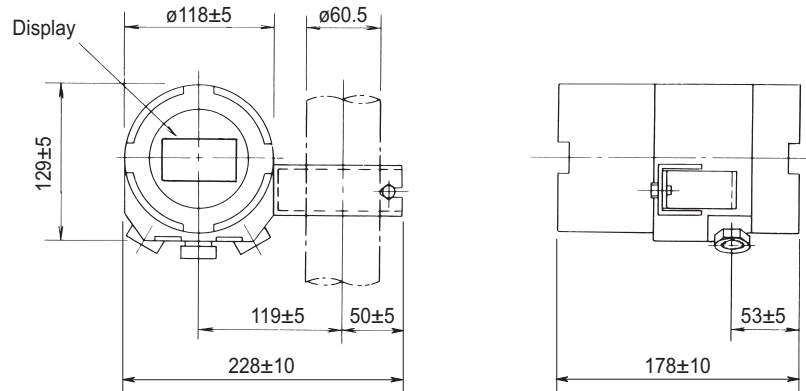
● HDM-136A (4-wire type)



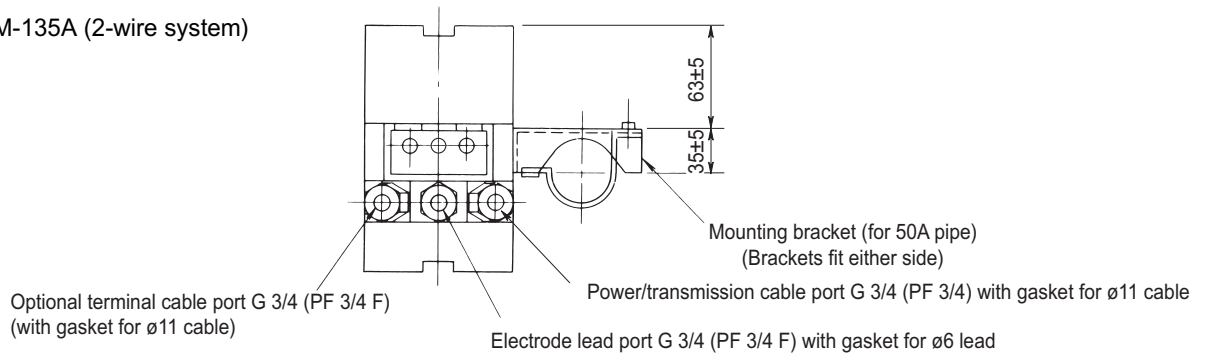
Dimensions

Unit : mm

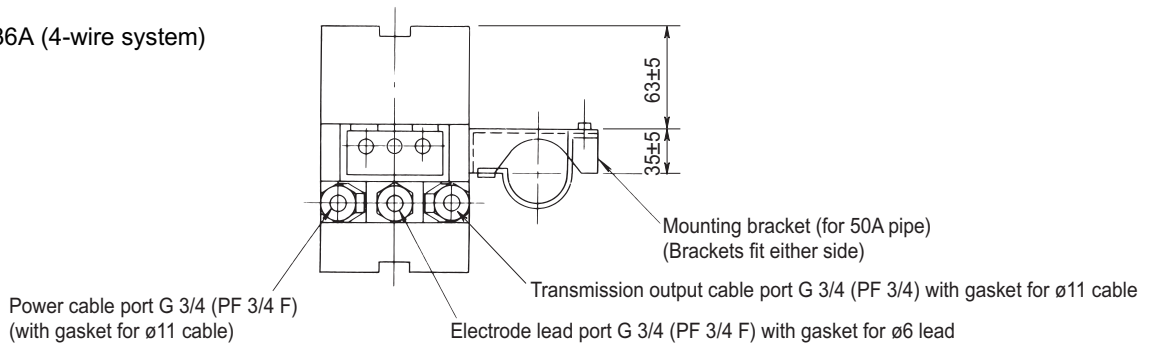
● HDM-135A/136A



● HDM-135A (2-wire system)



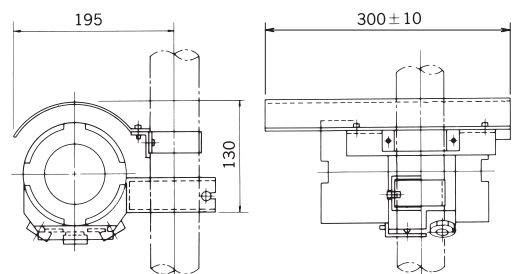
● HDM-136A (4-wire system)



● Hood (option)

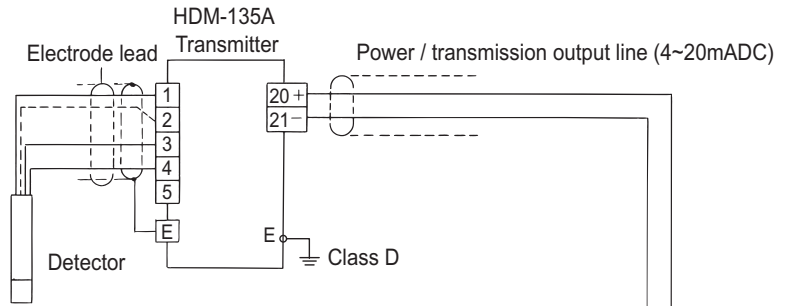
Recommended when installing the instrument in a location exposed to direct sunlight.

- Material : SUS304
- Mounting : Mounted on 50A pipe
- Code Number : 544493K

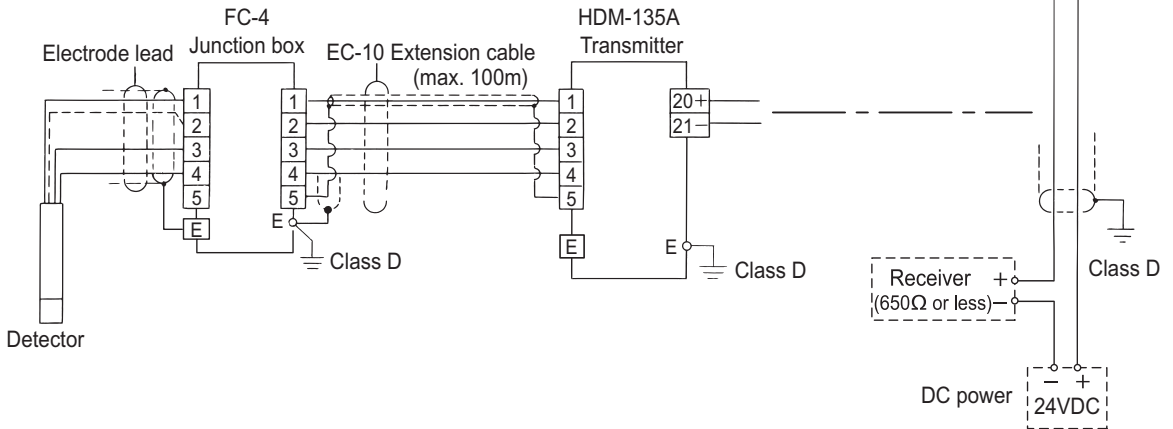


Wiring diagrams for 2-wire system

<When electrode is directly connected to transmitter>

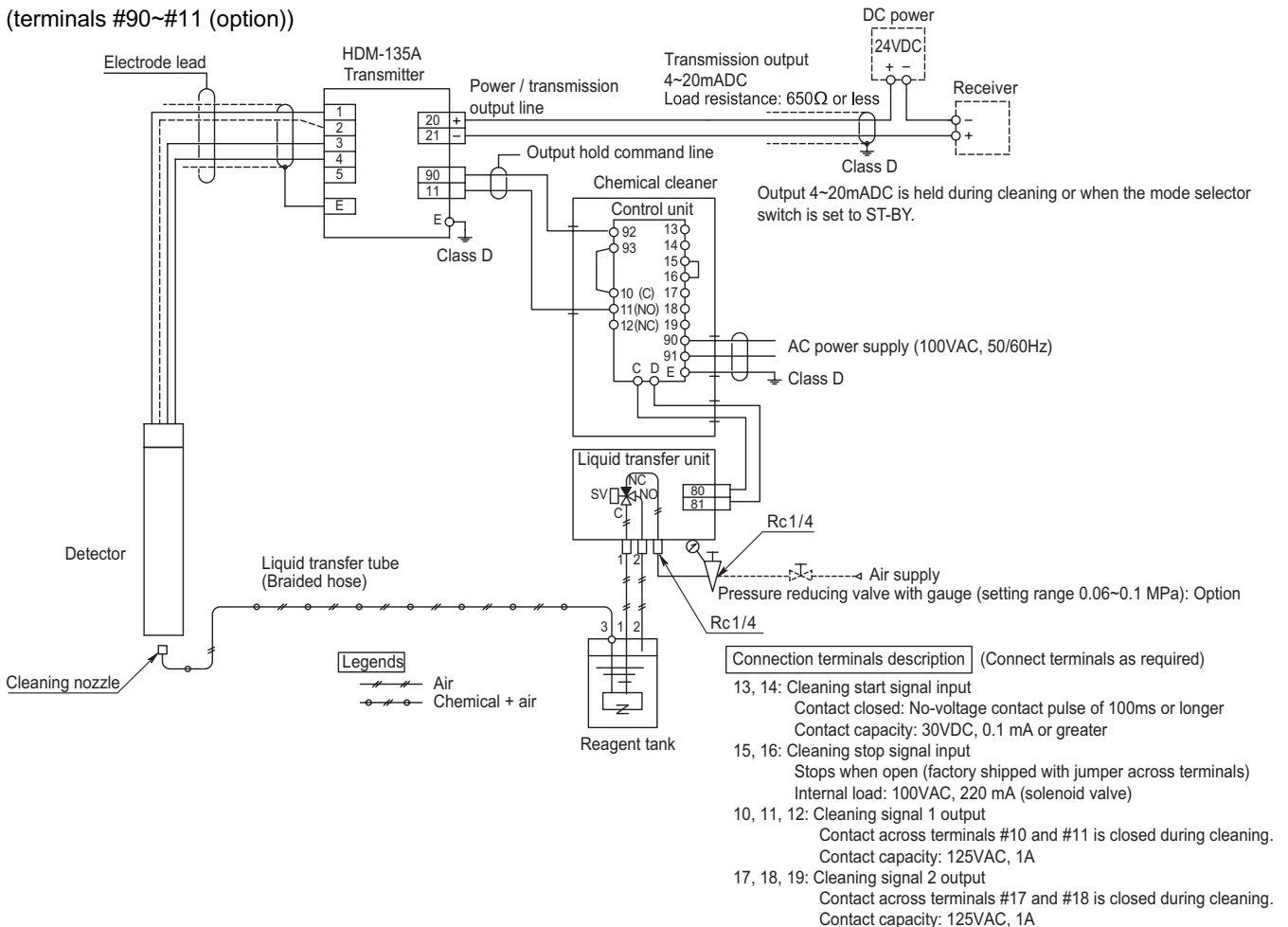


<When the electrode is connected via a junction box and extension cable>



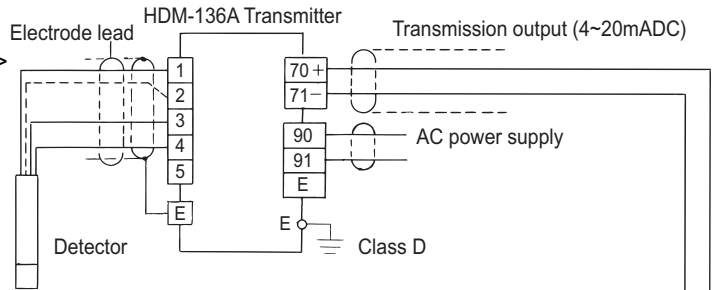
<Wiring example when using the device together with a RHC-7C chemical cleaner>

When the transmitter is equipped with the external input for the output hold command (terminals #90~#11 (option))

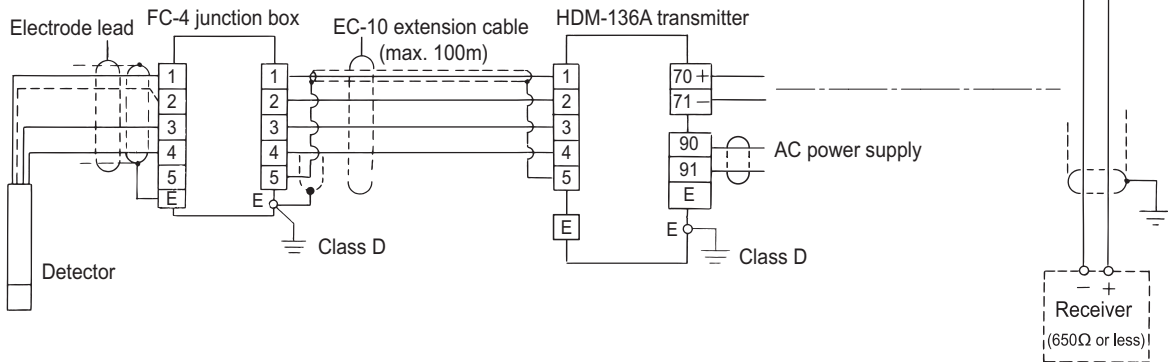


Wiring diagrams for 4-wire system

<When electrode is directly connected to transmitter>

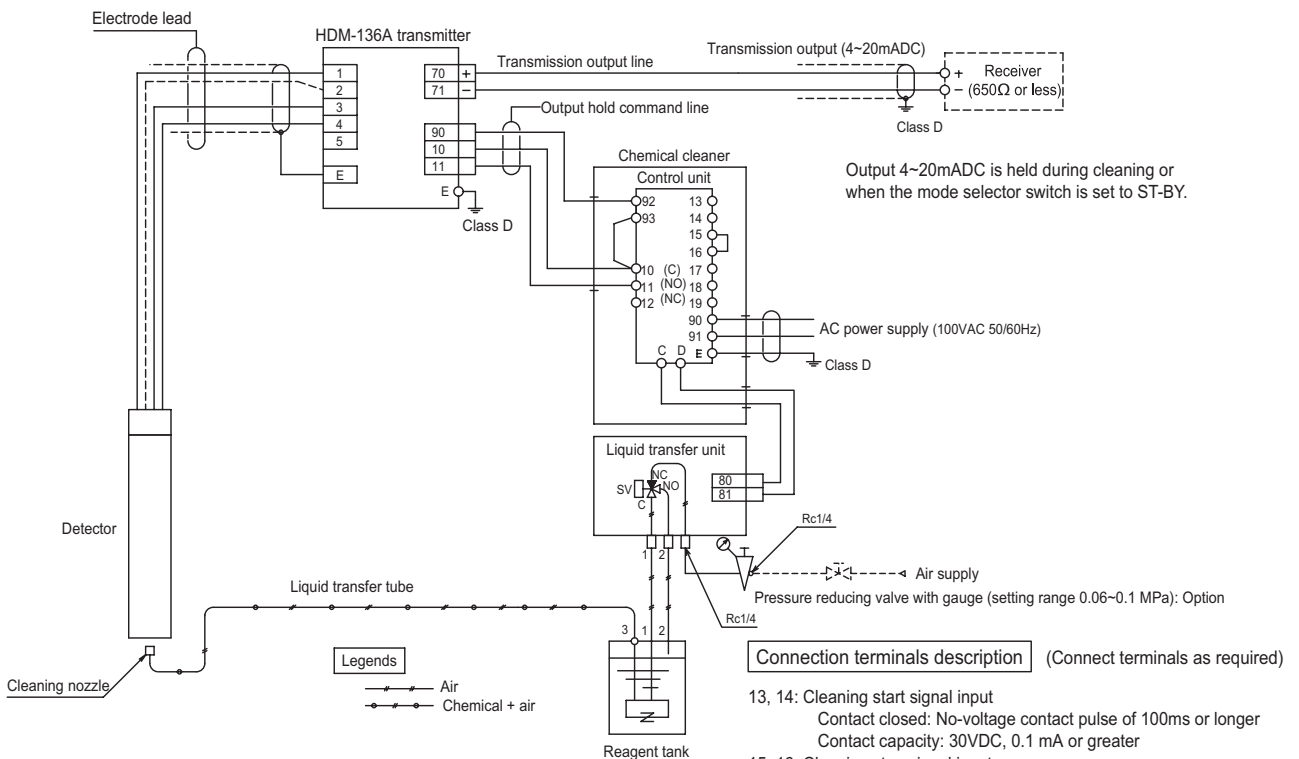


<When the electrode is connected via a junction box and extension cable>



<Wiring example when using the device together with a RHC-7C chemical cleaner>

When the transmitter is equipped with the input for the external output hold command (terminals #10~#11 (option))



Connection terminals description (Connect terminals as required)

- 13, 14: Cleaning start signal input
Contact closed: No-voltage contact pulse of 100ms or longer
Contact capacity: 30VDC, 0.1 mA or greater
- 15, 16: Cleaning stop signal input
Stops when open (factory shipped with jumper across terminals)
Internal load: 100VAC, 220mA (solenoid valve)
- 10, 11, 12: Cleaning signal 1 output
Contact across terminals #10 and #11 are closed during cleaning.
Contact capacity: 125VAC, 1A
- 17, 18, 19: Cleaning signal 2 output
Contact across terminals #17 and #18 are closed during cleaning.
Contact capacity: 125VAC, 1A

Product code

HDM135A-2-	□□□□□□□□	
A	.....	Transmission output range (4~20mADC)
B	.....	0~14 pH
C	.....	0~10 pH
D	.....	0~8 pH
E	.....	2~12 pH
F	.....	4~14 pH
G	.....	4~10 pH
Y	.....	6~14 pH
	.....	Custom spec.*1
0	.....	Input for external output hold command*2
1	.....	None
	.....	Equipped
	.....	Surface finish (coating)*3
A	.....	Standard coating
B	.....	High performance coating
	.....	Arrester*4
0	.....	None
1	.....	Included
	.....	Assembly with cable port adapter
0	.....	None, 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	.....	EC-10 Extension cable (connection with FC-4)
	.....	Hood (sun shade)
0	.....	None
1	.....	Equipped (No. 544493K)
	.....	Markings
A	.....	Japanese (standard)
B	.....	English
	.....	Official Approval
0	.....	None
1	.....	Equipped (with identification tag/ inspection certificate) *5

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

- *1. Specify the output range (4~20mADC) in 0.1 pH steps, with a minimum width of 2 pH.
- *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.
 High performance coating: Epoxy primer and middle coat, polyurethane resin topcoat. Average film thickness: 100 µm or greater.
- *4. Ceramic surge arrester (simplified) is mounted on the power/transmission line.
- *5. For official approval the measurement range is pH 0~14 or pH 2~12.

HDM136A-2-	□□□□□□□□	
1	.....	Power supply voltage*1
2	.....	90V~132VAC, 50/60Hz
	.....	180V~264VAC, 50/60Hz
	.....	Transmission output range (4~20mADC)
A	.....	0~14 pH
B	.....	0~10 pH
C	.....	0~8 pH
D	.....	2~12 pH
E	.....	4~14 pH
F	.....	4~10 pH
G	.....	6~14 pH
Y	.....	Custom spec.*2
	.....	Input for external output hold command*3
0	.....	None
1	.....	Equipped
	.....	Surface finish (coating) *4
A	.....	Standard coating
B	.....	High performance coating
	.....	Arrester *5
0	.....	None
1	.....	Included
	.....	Assembly with cable port adapter
0	.....	None, 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	.....	EC-10 Extension cable (connection with FC-4)
	.....	Hood (sun shade)
0	.....	None
1	.....	Equipped (No. 544493K)
	.....	Markings
A	.....	Japanese (standard)
B	.....	English
	.....	Official Approval
0	.....	None
1	.....	Equipped (with identification tag/ inspection certificate) *6

: Not subject to certification

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 (4~20mADC) in 0.1 pH steps, with a minimum width of 2 pH.
- *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. Glossiness: G40.
 High performance coating: Epoxy primer and middle coat, polyurethane resin topcoat. Average film thickness: 100 µm or greater. Glossiness: G80.
- *5. Ceramic surge arrester (simplified) is mounted on the power line and transmission line.
- *6. For official approval the measurement range is pH 0~14 or pH 2~12.

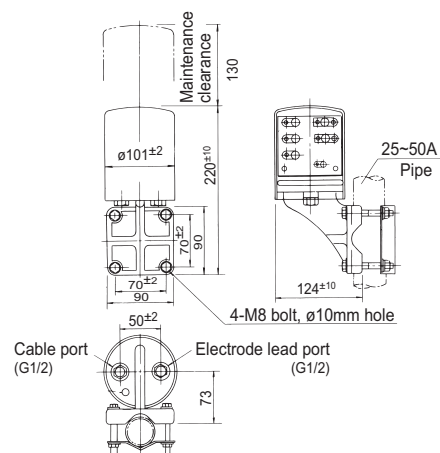
Related equipment

There are related optional products for HDM-135A/136A. Order separately as necessary.

● 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.

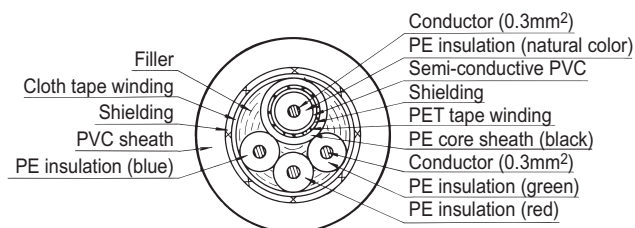
Model	: FC-4
Construction	: Outdoor installation
Mounting	: 25 ~ 50A pipe, wall or panel mount
Material	: ABS resin
Finish	: Pearskin finish chromium plating
Weight	: Approx. 0.9kg



● Extension cable

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

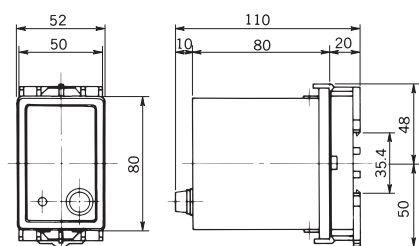
- Model : EC-10
- Outside diameter : $\varnothing 8$
- Insulation : Polyethylene and PVC
- Sheath : PVC
- Insulation resistance between core conductors : $10^5 M\Omega$ or greater/100m.
- Maximum cable length : 100m, no cable splicing.
- Standard length : 5m ~ 100m (5m unit step)
- Weight : Approx. 0.5kg/5m



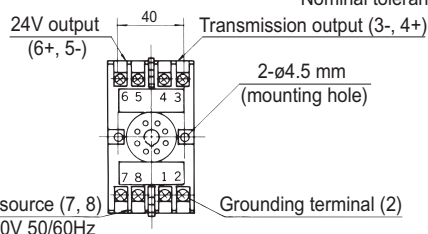
● Power supply unit

A power supply unit (24VDC) for the 2-wire type HDM-135A.

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



Nominal tolerance ± 5 mm



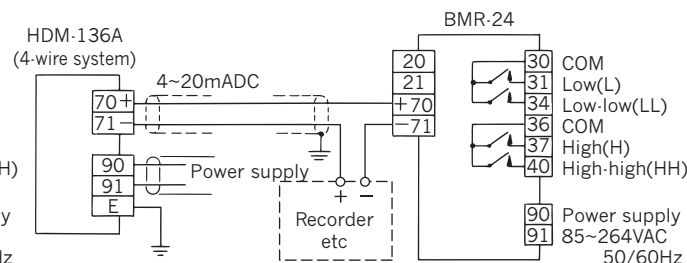
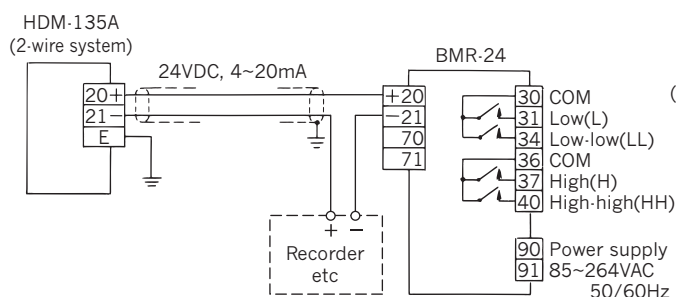
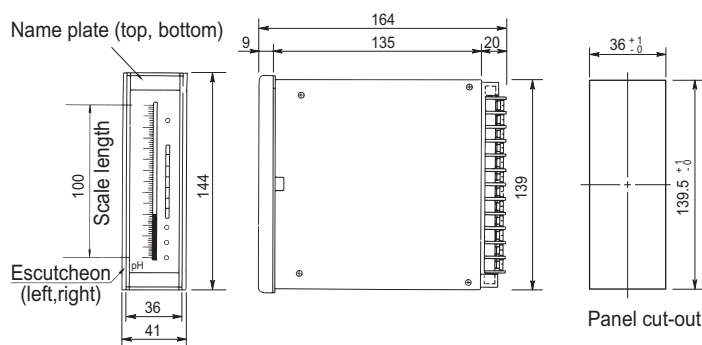
*Output transmission signal of 4~20mADC can be drawn from the terminal block.

● Bar graph meter relay with DC power source

Bar graph meter relay with DC power source is the unit that receives 4~20mADC output from the HDM series transmitter, displays measured value and outputs 4 points contact outputs.

And it can supply 24VDC to the 2-wire type HDM-135A pH transmitter.

- Model : BMR-24
- Input : 4~20mADC (input resistance: 10 Ω)
- Output voltage : 24VDC \pm 1V
- Alarm outputs : High-high, high, low, low-low, 4 contacts (Contact rating: 125VAC, 0.5A or 30VDC, 2A)
- Power requirements : 85V~264VAC, 50/60Hz, Approx. 5VA
- / Power consumption
- Scale : 0~14pH, 70 linears
- Scale length : 100mm
- Display : Red LED, 101 dots.
- Ambient conditions : 0~45°C, 40~80%RH
- Construction : Indoor installation, panel mount type
- Weight : Approx. 450g



Supported detectors

Supported detectors can be used together with HDM-135A/136A controller, as shown in the following table. Select the detector that best fits the immersion type, flow-through type, material and measurement conditions. For detailed specifications, see the attached detector specification sheet.

● Replaceable-tip pH Detectors

Classification		Application	Model	Wetted part material	Features	pH electrode
KCl supply type	Immersion type	General process use (60°C or below)	HC-G70	PVC	Outdoor installation, highly weather-proof	GSS-314B (General use), GSS-314A (High alkali resistant), GSS-314F (Hydrofluoric acid resistant)
		High temperature Process (80°C or below)	HC-G70	PP	Indoor installation, highly heat-proof	
	Flow-through type	General process use pressurized type (60°C or below)	HC-G80P	PVC	Head pressure type available	
		High temperature process pressurized type (80°C or below)	HC-G82P	PP, SUS316	Head pressure type available, stainless steel case, pressure-resistant 0.3MPa	
KCl non-supply type	Immersion type	Effluent treatment (60°C or below)	HC-G70	PVC	Outdoor installation, highly weather-proof	GSS-304B (General use), GSS-304A (High alkali resistant), GSS-304F (Hydrofluoric acid resistant)
		High temperature effluent treatment (80°C or below)	HC-G70	PP	Indoor installation, highly heat-proof	
			HC-G72	SUS316	Stainless	
	Effluent treatment drop-in type	HC-G95	PVC, SUS316	Easy maintenance deep vessel installation		
	Flow-through type	Effluent treatment (60°C or below)	HC-G80	PVC	Inner solution non-pressurized type	
		High temperature effluent treatment (80°C or below)	HC-G82	PP, SUS316	Inner solution non-pressurized type pressure-resistant 0.3MPa	

● KCl supply type pH Detectors

Classification		Application	Model	Wetted part material	Features	pH electrode
Immersion type	Immersion type	General process use / effluent treatment (60°C or below)	HC-703C	PVC	Outdoor installation, highly weather-proof	5600 (General use), 5605 (Hydrofluoric acid resistant)
		High temperature process use (80°C or below)	HC-763	PP	Indoor installation, highly heat-proof	5601
		High temperature process use (chemical-resistant)	HC-703F	PVDF	Polyvinylidene fluoride	
		High temperature process use (organic solvent-resistant)	HC-703T	PFA, PTFE	Fluorine resin	5602
Flow-through type	Flow-through type	General process use / effluent treatment insertion / pressurized type (80°C or below)	HC-880	PP	Pressure-resistant 0.15MPa	5601 (Normal temperature), 5611 (High temperature)
		General process use / effluent treatment pressurized type with PP case	NHC-882	PP	Pressure-resistant 0.15MPa	
		General process use / effluent treatment pressurized type with SUS case	NHC-883	PP, SUS316	Pressure-resistant 0.3MPa	
Micro flow rate type	Micro flow rate type	Boiler / pure water	HC-64	Acrylic	Measurable 0.1~100 S/cm	MG511, 4164,6149



DKK-TOA CORPORATION



CAUTION

Do not operate products before consulting instruction manual.

International Operations:
 DKK-TOA Corporation
 29-10, 1-Chome, Takadanobaba, Shinjuku-ku,
 Tokyo 169-8648 Japan
 Tel : +81-3-3202-0225 Fax : +81-3-3202-5685