

## CONDUCTIVITY TRANSMITTER

**WDM-135A (2-wire type)**  
**WDM-136A (4-wire type)**

It is a type of small firm aluminum 2-electrode site-installation CONDUCTIVITY TRANSMITTER (signal transmitter) and easy to operate.

The device is divided into 2-wire type (24V DC power supply) and 4-wire type (free power supply AC), and the transmission output is 4 to 20mA DC.

Please additionally refer to the detailed specification of conductivity meter detector for the details.



### Functions • Features

○ Large measurement range

It has large measurement range from ultrapure water (0 to 0.2 $\mu$ S/cm) to plant drainage (0 to 20mS/cm) and large temperature compensation range of -5 to 120°C. according to the cell constant of detector, the following measurement range is available for selection.

Cell constant	0.01/cm	0.1/cm	1.0/cm	10/ cm (note 3)
Measurement range (note 1)	0 to 0.200	0 to 2.00	0 to 20.0	0 to 0.200
	0 to 0.500	0 to 5.00	0 to 50.0	0 to 0.500
	0 to 1.000	0 to 10.00	0 to 100.0	0 to 1.000
	0 to 2.000	0 to 20.00	0 to 200.0	0 to 2.000
	0 to 3.00	0 to 30.0	0 to 300	0 to 3.00
	0 to 4.00	0 to 40.0	0 to 400	0 to 4.00
	0 to 5.00	0 to 50.0	0 to 500	0 to 5.00
	0 to 10.00	0 to 100.0	0 to 1000	0 to 10.00
	0 to 15.00	0 to 150.0	0 to 1500	0 to 15.00
	0 to 20.00	0 to 200.0	0 to 2000	0 to 20.00
Unit (note 2)	$\mu$ S/cm	$\mu$ S/cm	$\mu$ S/cm	mS/cm

(Note 1) Equivalent value at 25°C can be also made.

(Note 2) S/m unit system

(Note 3) If the cell constant is 10/cm high conductivity, it is recommended to use the electromagnetic induction type conductivity meter with better stability.

○ Changeable measurement range

As shown in the table above, the cell constants are changeable in 10 types of measurement range. For example, if the cell constant is 0.1/cm, it can be changed between 0 to 2.00 $\mu$ S/cm and 0 to 200.0 $\mu$ S/cm.

○ Temperature display

The measured sample water temperature (-5 to 120°C) is displayed.

○ Measured value adjustment

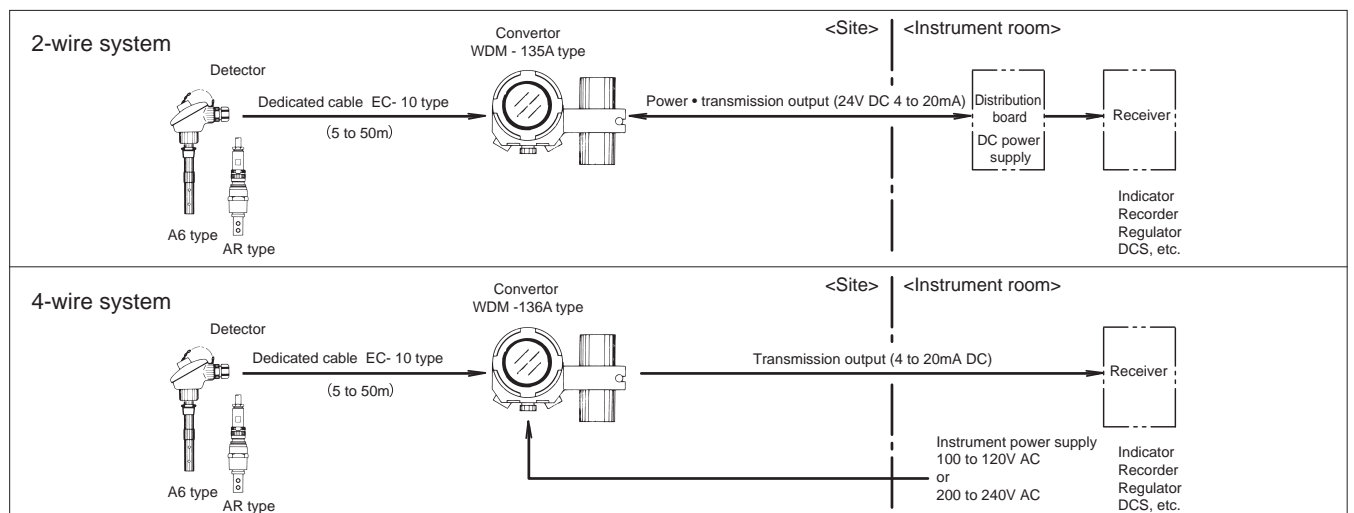
The measured value can be adjusted based on the conductivity value of secondary standard meter, etc. (Adjustment extent:  $\pm$ 10% of measured value).

○ Self-diagnosis

○ Automatic recovery to measuring mode

If the maintenance mode lasts for 2 hours, the measuring mode will be recovered automatically.

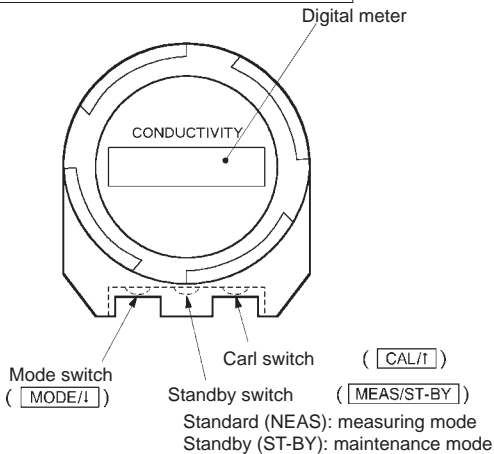
### Structure diagram



## Standard specification

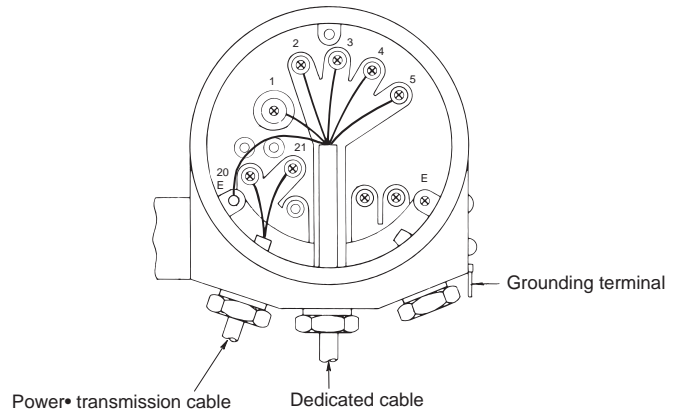
<b>Product name</b>		CONDUCTIVITY TRANSMITTER	
<b>Model</b>		WDM-135A (2-wire type)	WDM-136A (4-wire type)
<b>Measuring method</b>		AC 2-electrode method	
<b>Measurement range</b>		Min.: 0 to 0.2 $\mu$ S/cm Max.: 0 to 20mS/cm Or Min.: 0 to 20 $\mu$ S/m Max.: 0 to 2000mS/m (Temperature: -5 to 120°C, only displayed, no transmission output)	
<b>Display method</b>		4-bit electronic LCD	
<b>Temperature compensation</b>		Compensation range: -5 to 120°C Conversion temperature: 25°C Temperature characteristic: Conductivity temperature characteristic of NaCl solution Accuracy: within $\pm 1.0\%$ FS (equivalent power)	
<b>Performance</b>	<b>Linearity</b>	Within $\pm 0.5\%$ FS (equivalent input)	
	<b>Repeatability</b>	Within $\pm 0.2\%$ FS (equivalent input)	
<b>Transmission output</b>		4 to 20m A DC insulating type resistive load: less than 650 $\Omega$	
<b>Power supply</b>		24V $\pm 10\%$ DC	90 to 132V AC or 180 to 264V 50/60Hz AC
<b>Power consumption</b>		Less than 0.6VA	About 3 VA
<b>Ambient temperature • humidity</b>		-20 to 55°C, less than 99% (RH) (but no condensation)	
<b>Structure</b>		Outdoor installation, IP 55 (dust proof type, shunt preventing type)	
<b>Overall dimensions</b>		118 (W) $\times$ 129 (H) $\times$ 178 (D) mm	
<b>Installation method</b>		50A pipe is used	
<b>Weight</b>		About 3 kg	
<b>Wiring interface</b>		3 positions of G $\frac{3}{4}$ (PF $\frac{3}{4}$ F)	
<b>Materials</b>	<b>Main body</b>	Aluminum alloy casting	
	<b>Observation window</b>	Resin	
	<b>Assembly part</b>	SUS 304	
<b>Coating color</b>		Metal silver and blue	

## Operation switch • display position

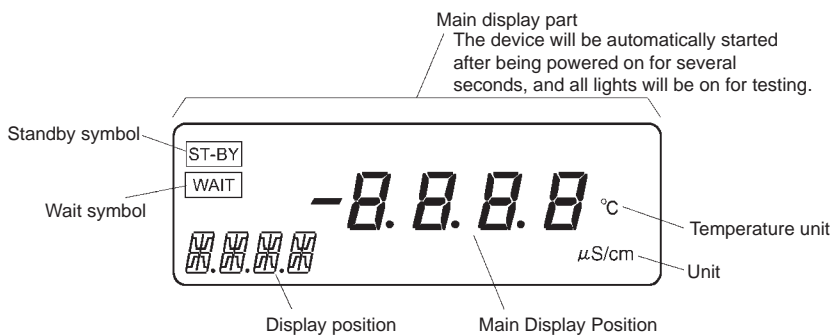
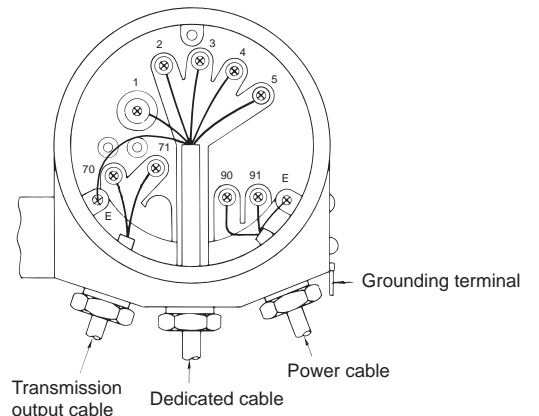


## Terminal diagram

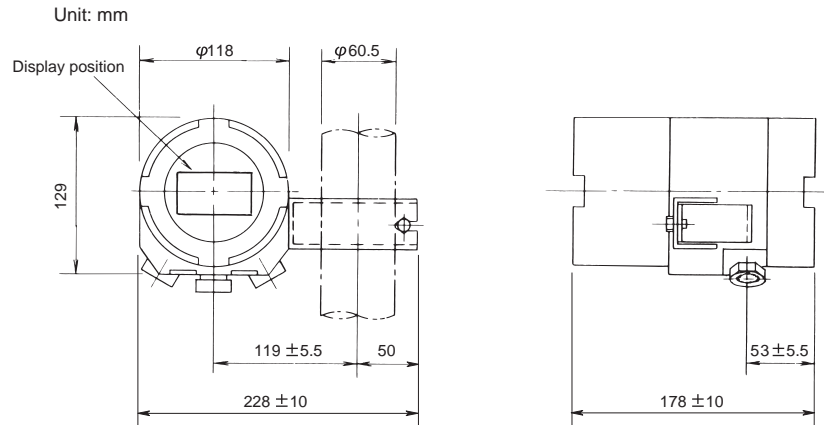
### ● WDM-135A type (2-wire type)



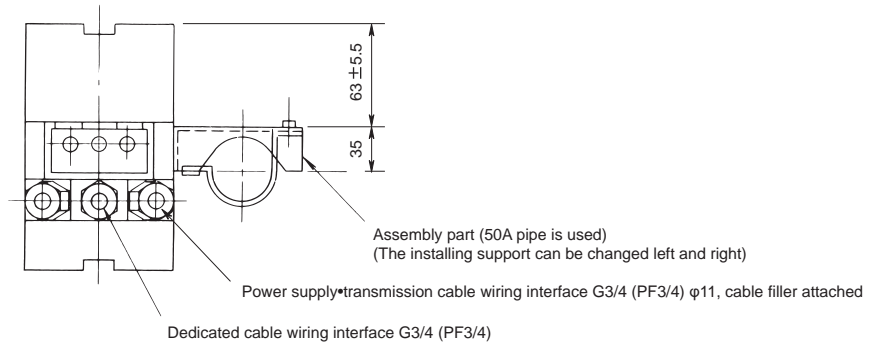
### ● WDM-136A type (4-wire type)



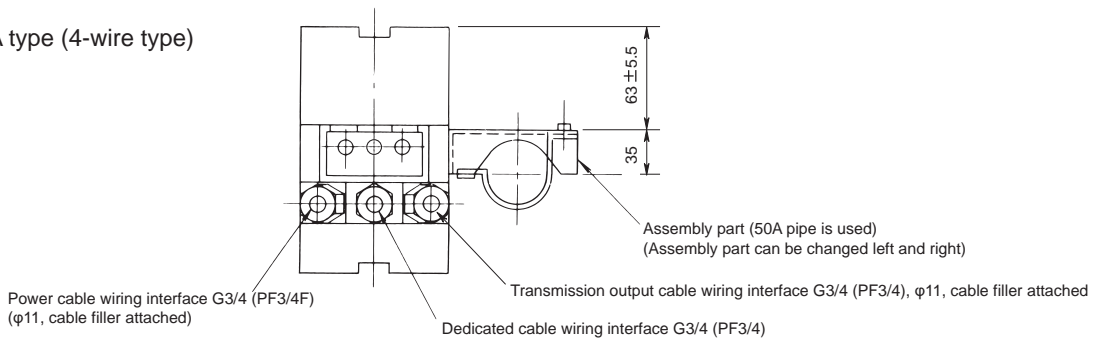
## Outline dimensions



### ● WDM-135A type (2-wire type)



### ● WDM-136A type (4-wire type)



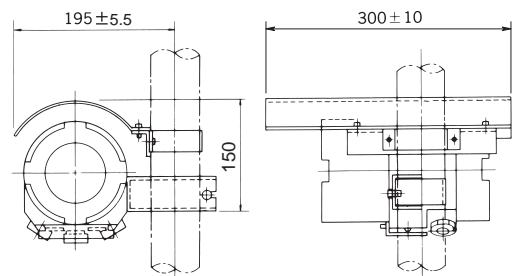
### ● Hood (optional)

Installed outdoors; recommended to be used in case of exposure to direct sunlight.

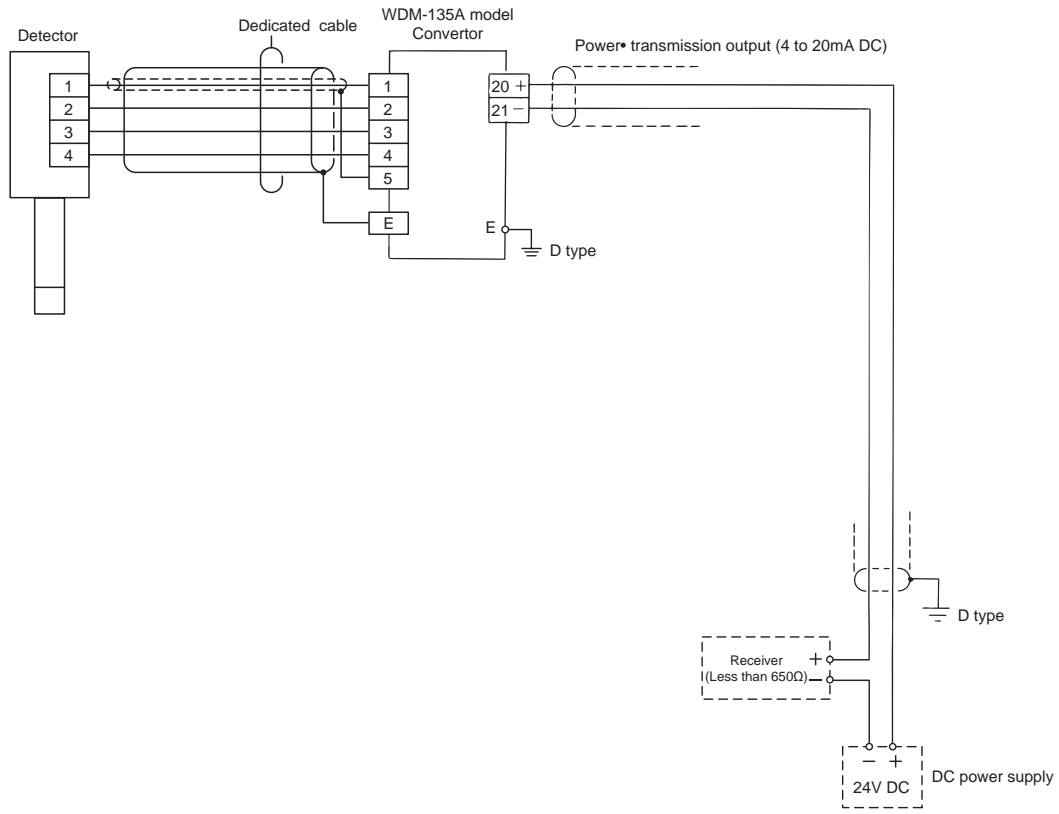
**Materials** : SUS304

**Installation method** : Installed on the 50A pipe

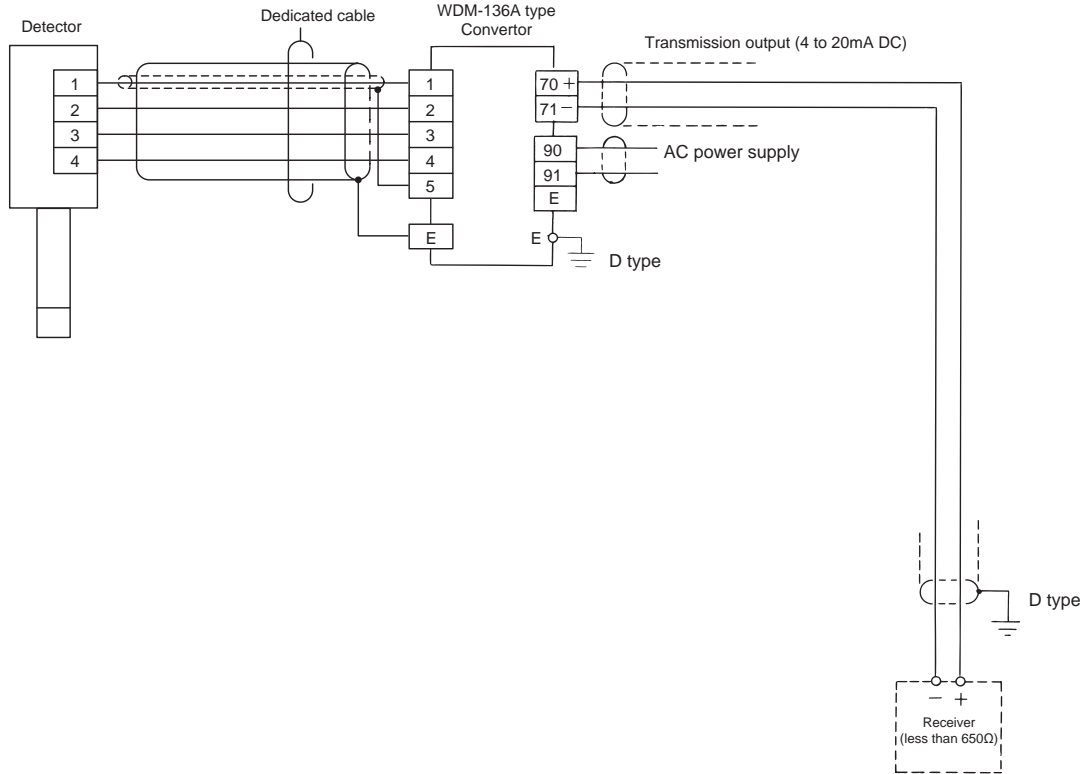
**Code No.** : 544493K



**2-wire line connection diagram**



**4-wire line connection diagram**



Product code

WDM135A-1-□□□□□

		<b>Cell constant and Measurement range</b>	
A	.....	0.01/cm (Please specify the measurement range from the table below)	} *1
B	.....	0.1/cm (Please specify the measurement range from the table below)	
C	.....	1.0/cm (Please specify the measurement range from the table below)	
D	..... cm unit system above	10.0/cm (Please specify the measurement range from the table below)	
E	..... m unit system below	1.0/m (Please specify the measurement range from the table below)	} *2
F	.....	10.0/m (Please specify the measurement range from the table below)	
G	.....	100/m (Please specify the measurement range from the table below)	
H	.....	1000/m (Please specify the measurement range from the table below)	
		<b>Surface working (coating) <sup>3</sup></b>	
A	.....	Standard coating	
B	.....	Heavy corrosion preventing coating	
		<b>Built-in surge arrester<sup>4</sup></b>	
0	.....	No	
1	.....	Yes	
		<b>Wiring interface adaptor integration</b>	
0	.....	No G $\frac{3}{4}$ (PF $\frac{3}{4}$ ) standard	
1	.....	G $\frac{1}{2}$ (PF $\frac{1}{2}$ ) SUS304	
2	.....	NPT $\frac{1}{2}$ SUS304	
3	.....	NPT $\frac{3}{4}$ SUS304	
		<b>Hood or not (sunshade)</b>	
0	.....	No	
1	.....	Yes (code No.544493K)	
		<b>Mark form</b>	
A	.....	Japanese	
B	.....	Designated English	
		<b>Combined detector</b>	
0	.....	No <sup>5</sup>	
1	.....	Making simultaneously	

\*1. Please select the test range of designated S/cm unit system from the table below. (Not made except for the specifications below)

Cell constant	Measurement range (unit: S/cm, displayed in the LCD)
A 0.01/cm	0 to 0.200/0.500/1.000/2.000/3.00/4.00/5.00/10.00/15.00/20.00 $\mu$ S/cm at 25°C
B 0.1/cm	0 to 2.00/5.00/10.00/20.00/30.0/40.0/50.0/100.0/150.0/200.0 $\mu$ S/cm at 25°C
C 1.0/cm	0 to 20.0/50.0/100.0/200.0/300/400/500/1000/1500/2000 $\mu$ S/cm at 25°C
D 10.0/cm	0 to 0.200/0.500/1.000/2.000/3.00/4.00/5.00/10.00/15.00/20.00 mS/cm at 25°C

\*2. Please select the test range of designated S/cm unit system from the table below. (Not made except for the specifications below)

Cell constant	Measurement range (unit S/m is displayed at the sealing part)
E 1.0/m	0 to 20.0/50.0/100.0/200.0/300/400/500/1000/1500/2000 $\mu$ S/m at 25°C
F 10/m	0 to 0.200/0.500/1.000/2.000/3.00/4.00/5.00/10.00/15.00/20.00 mS/m at 25°C
G 100/m	0 to 2.00/5.00/10.00/20.00/30.0/40.0/50.0/100.0/150.0/200.0 mS/m at 25°C
H 1000/m	0 to 20.0/50.0/100.0/200.0/300/400/500/1000/1500/2000 mS/m at 25°C

\*3. The standard coating method is to spray melamine resin up and down with the average film thickness of more than 30 $\mu$ m.  
The heavy corrosion preventing coating method is to spray epoxy resin at the middle and lower parts and spray polyurethane resin at upper part with the film thickness of more than 100  $\mu$ m.

\*4. The porcelain surge arrester (simple type) is installed on the power transmission line.

\*5. In case of " No. " please notify the length of cable installed.

**Product code**

WDM136A-1-□□□□□□

1	.....	<b>Supply voltage</b>	AC 90V~132V 50/60Hz
2	.....		180V~264V 50/60Hz AC
		<b>Cell constant and measurement range</b>	
A	.....		0.01/cm (Please specify the measurement range from the table below)
B	.....		0.1/cm (Please specify the measurement range from the table below)
C	.....		1.0/cm (Please specify the measurement range from the table below)
D	.....	cm unit system above	10.0/cm (Please specify the measurement range from the table below)
E	.....	m unit system below	1.0/m (Please specify the measurement range from the table below)
F	.....		10.0/m (Please specify the measurement range from the table below)
G	.....		100/m (Please specify the measurement range from the table below)
H	.....		1000/m (Please specify the measurement range from the table below)
		<b>Surface working (coating)</b> <sup>3</sup>	
A	.....		Standard coating
B	.....		Heavy corrosion preventing coating
		<b>Built-in surge arrester</b> <sup>4</sup>	
0	.....		No
1	.....		Yes
		<b>Wiring interface adaptor integration</b>	
0	.....		No G <sup>3</sup> / <sub>4</sub> (PF <sup>3</sup> / <sub>4</sub> ) standard
1	.....		G <sup>1</sup> / <sub>2</sub> (PF <sup>1</sup> / <sub>2</sub> ) SUS304
2	.....		NPT <sup>1</sup> / <sub>2</sub> SUS304
3	.....		NPT <sup>3</sup> / <sub>4</sub> SUS304
		<b>Hood (sun shade)</b>	
0	.....		No
1	.....		Yes (code No. 544493K)
		<b>Mark form</b>	
A	.....		Japanese
B	.....		Designated English
		<b>Combined detector</b>	
0	.....		No <sup>5</sup>
1	.....		Making simultaneously

\*1. Please select the test range of designated S/cm unit system from the table below. (Not made except for the specifications below)

Cell constant	Measurement display range (unit: S/cm, displayed in the LCD)
A 0.01/cm	0 to 0.200/0.500/1.000/2.000/3.00/4.00/5.00/10.00/15.00/20.00 μS/cm at 25°C
B 0.1/cm	0 to 2.00/5.00/10.00/20.00/30.0/40.0/50.0/100.0/150.0/200.0 μS/cm at 25°C
C 1.0/cm	0 to 20.0/50.0/100.0/200.0/300/400/500/1000/1500/2000 μS/cm at 25°C
D 10.0/cm	0 to 0.200/0.500/1.000/2.000/3.00/4.00/5.00/10.00/15.00/20.00 mS/cm at 25°C

\*2. Please select the test range of designated S/cm unit system from the table below. (Not made except for the specifications below)

Cell constant	Measurement display range (unit S/m is displayed at the sealing part)
E 1.0/m	0 to 20.0/50.0/100.0/200.0/300/400/500/1000/1500/2000 μS/m at 25°C
F 10/m	0 to 0.200/0.500/1.000/2.000/3.00/4.00/5.00/10.00/15.00/20.00 mS/m at 25°C
G 100/m	0 to 2.00/5.00/10.00/20.00/30.0/40.0/50.0/100.0/150.0/200.0 mS/m at 25°C
H 1000/m	0 to 20.0/50.0/100.0/200.0/300/400/500/1000/1500/2000 mS/m at 25°C

\*3. The standard coating method is to spray melamine resin up and down with the average film thickness of more than 30μm.

The heavy corrosion preventing coating method is to spray epoxy resin at the middle and lower parts and spray polyurethane resin at upper part with the film thickness of more than 100 μm.

\*4. The porcelain surge arrester (simple type) is installed on the power transmission line.

\*5. In case of no, please notify the length of cable installed.

## Typical Combination Detectors

**Product Name:** Conductivity Detector

**Model:** A6 cell, AR cell

**Cell Constant:** A6 cell...0.01/cm, 0.1/cm, 1.0/cm

AR cell (Compact, For Pure Water)...0.1/cm

**Temperature Sensor:** Thermistor type (enclosed in inner pole)

**Sample Conditions:** Temperature: 0~100 °C

Pressure: max. 1 MPa

max. 0.5 MPa for AR type

**Materials:** Main body: SUS 316

Titanium for AR cell

**Electrode Insulation:** glass, PTFE

FKM, PPS for AR cell

**Connector box:** cast aluminum

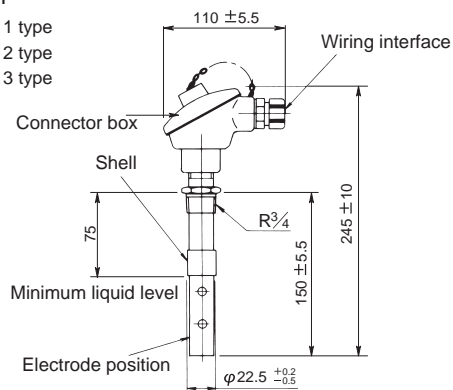
**Case:** SUS 316 or polypropylene (PP)

**Piping Connections:** R3/4 thread or Flange

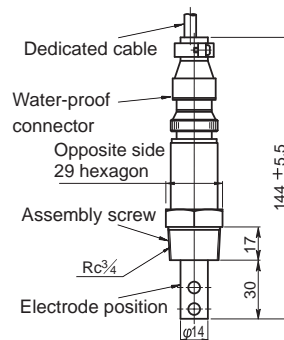
**Dedicated cable:** EC-10 type (OD φ8)

### ● Thread type

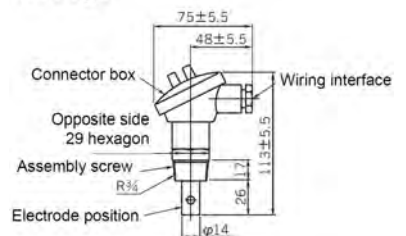
A6-111 type  
A6-112 type  
A6-113 type



AR4-212 type

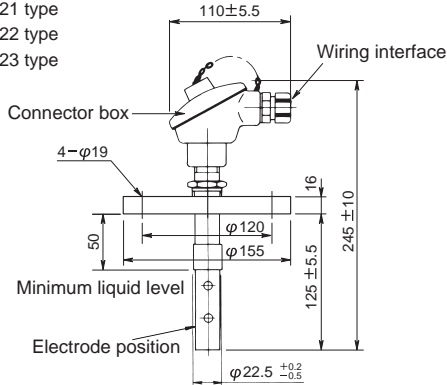


AR5-212 type



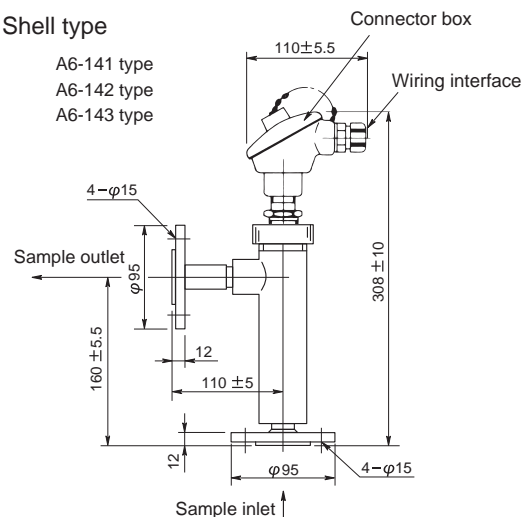
### ● Flange type

A6-121 type  
A6-122 type  
A6-123 type



### ● Shell type

A6-141 type  
A6-142 type  
A6-143 type



### ● Dedicated cable

The dedicated cable is used for conductivity meter between the transmitter and detector

**Model** : EC-10

**Outer diameter** : φ8

**Insulating matter** : PP and plastic

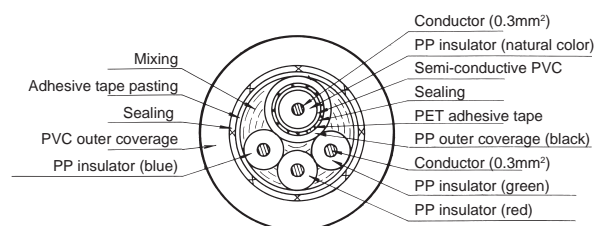
**External coverage** : Plastic

**Insulating resistance between cores** : more than 10<sup>5</sup>MΩ/100m

**Extended distance** : Max.: 50 m, not available to connect in the middle.

**Standard length** : 5m to 50m, in unit of 5m

**Weight** : about 0.5kg/5m



EC-10model Sectional view

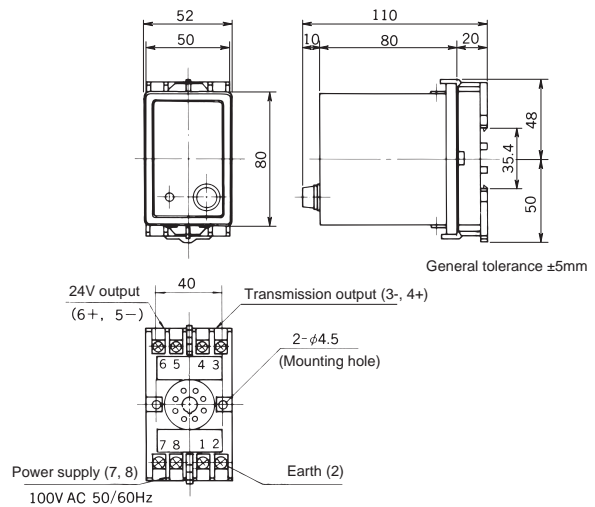
## Relevant equipment

Prepare the power supply for 2-wire convertor. Please order as per the demand.

### ● Power supply

**Model** : PA-24  
**Rated output voltage** :  $24V_{-1}^{+3}$  V DC  
**Rated output current** : 2 to 22mA (2 meters cannot be connected in parallel)  
**Supply voltage** :  $100V \pm 10\%$  50/60Hz AC  
**Ambient temperature** : -5 to 55°C  
**Structure** : for indoor application, insertion type  
**Weight** : about 300 g

※Terminal block transmission output signal; 4 to 20mA DC can be acquired.



**DKK-TOA CORPORATION**



**CAUTION**

Please read the operation manual carefully before using products.

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