ISO 14001 Certified

SPECIFICATION SHEET

TOA DKK

Industrial Conductivity (Electric Conductivity) Detector

A5/A6 (General Multi-Purpose Use)
AR4/AR5 (Compact Ultra-Pure Water Use)
SA6 (Intrinsically Safe)

The 2-electrode type industrial conductivity (electric conductivity) detector is perfectly suited for use in a broad range of measurement applications. In addition to measuring the conductivity of ultra-pure water used in the semiconductor manufacturing process or in power-generating plants, it can also be used to measure the conductivity of river water and wastewater.

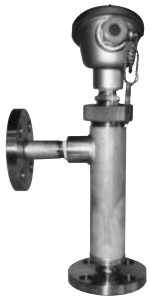
This series features a wide range of installation types, including an insertion type, immersion/submerged type, and flow-through type.

For high conductivity solutions and applications, such as sea water (5000 μS/cm or greater) or chemicals that contain strong levels of acid and alkali, see the specification sheets for electromagnetic induction type detectors.

For details about use in food processing and beverage plants, see the specification sheet for the sanitary type conductivity detector.

A6 screw-in type

A6 flange type



A6 with flow through type SUS case

A6 with flow through type PP case

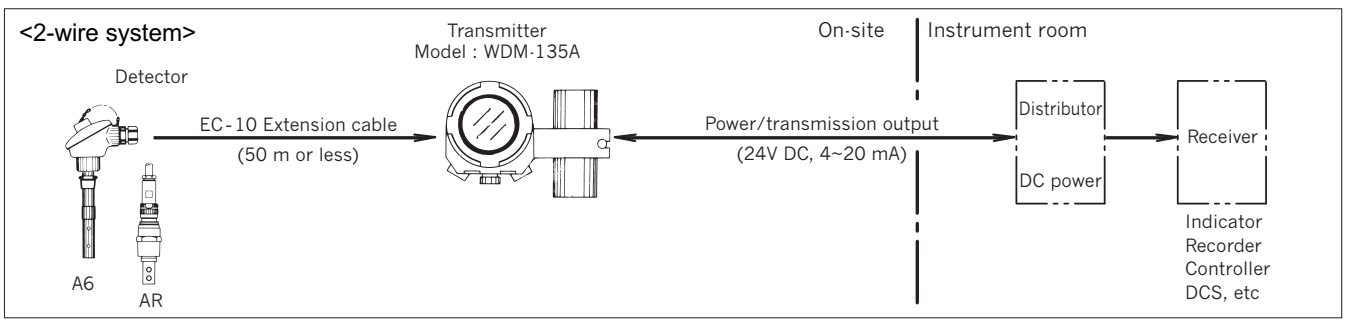
AR4 screw-in type

AR5 screw-in type

Features

- There are four types of cell constants available: 0.01, 0.1, 1, and 10/cm . These cell constants make it possible to obtain accurate measurement results for a number of different water types, such as ultra-pure water (0.2 μS/cm or less) and wastewater (10000 μS/cm).
- Hermetic seal and PTFE (Teflon) as insulater between the inner and outer electrodes provise excellent heat and pressure resistance.
- The integrated junction box makes it easy to both connect to a transmitter as well as remove the detector.
- The compact and lightweight AR4/5 detectors for ultra-pure water are perfectly suited for all types of installations.

Typical Configuration



Standard Specifications

Model	A5	A6	SA6	AR4	AR5
Application/Feature	Submerged type	General use	Intrinsically safe	Compact ultra-pure water use	
Cable connection	Waterproof/direct connection	Junction box		Connector	Junction box
Installation type	Stainless chain	Screw-in, flange, or flow-through type		R3/4 screw-in or flow-through type	
Wetted part materials	SUS316, glass hermetic seal, PTFE			Titanium, PPS, FKM	
Cell constant	0.01 /cm, 0.1 /cm, 1/cm or 10 /cm			0.01/cm or 0.1/cm	
Sample temperature	0~55ºC*	0~100 (80)ºC*		0~100ºC*	
Sample pressure	0.1 MPa or less	2.0 (1.0) (0.3) MPa or less		0.5 MPa or less	
Temperature compensation element	Thermistor (5 kΩ at 25ºC)				
Construction	Outdoor installation, water-proof type			Indoor installation	

*No freezing.

Cell Constant and Measurement Range (S/m : SI unit)

Sample classification	Ultra-pure water ~ Pure water ~ boiler water ~ Rain water (groundwater) ~ City water ~ water River ~ Industrial waste water (*1)				
Cell constant	0.01/cm (1.0/m)		0.1/cm (10/m)	1/cm (100/m)	10/cm (1000/m)
Measurement range	0 ~ 0.2 (20) 0 ~ 0.5 (50)	0 ~ 1.0 (100) 0 ~ 2.0 (200) 0 ~ 5.0 (500) 0 ~ 10 (1000)	0 ~ 20 (2) 0 ~ 50 (5) 0 ~ 100 (10)	0 ~ 200 (20) 0 ~ 500 (50) 0 ~ 1000 (100)	0 ~ 2 (200) 0 ~ 5 (500) 0 ~ 10 (1000)
Unit	µS/cm (µS/m)	µS/cm (µS/m)	µS/cm (mS/m)	µS/cm (mS/m)	mS/cm (mS/m)

*1 : A detector with a cell constant of 10/cm can be used for measurement ranges of 2mS/cm (200mS/m) or greater. However, for high conductivity applications we recommend using electromagnetic induction type conductivity analyzers that are user-friendly and capable of delivering high-performance.

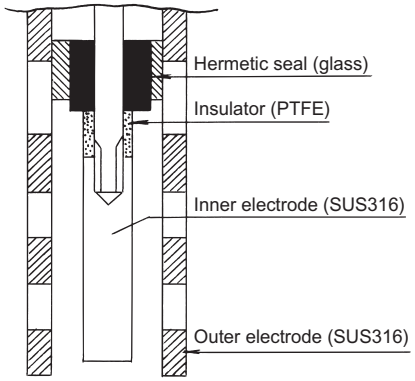
■ A/SA Detectors

A cell series (general use) model name

A□-□□□

- Cable connection
  - 5 ..... Direct connection (submerged type only)
  - 6 ..... Via junction box
- Always 1
  - 1 ..... (Temperature compensation: Universal structure for both general water and ultra-pure water)
- Process connection
  - 1 ..... Insertion type or immersion type, screw-in connection
  - 2 ..... Insertion type or immersion type, flange connection
  - 3 ..... Flow-through type with SUS 316 case, thread connection
  - 4 ..... Flow-through type with SUS 316 case, flange connection
  - 5 ..... Flow-through type with PP case, thread connection
  - 6 ..... Flow-through type with PP case, flange connection
  - 7 ..... Immersion type or submerged type (no connection part)
- Cell constant (nominal value)
  - 1 ..... 0.01/cm (1/m)
  - 2 ..... 0.1/cm (10/m)
  - 3 ..... 1/cm (100/m)
  - 4 ..... 10/cm (1000/m)

A cell series schematic diagra



SA cell series (intrinsically safe) model name

SA□-□□□

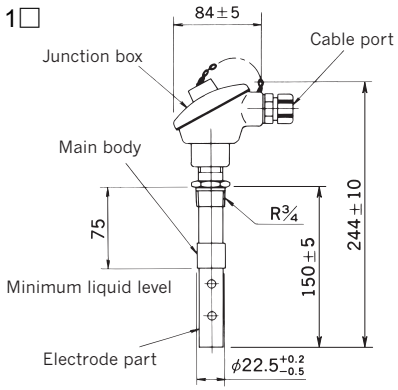
- 6 — Always 6 (Via junction box)
- 1 — Always 1 (Temperature compensation: Universal structure for both general water and ultra-pure water)
- Process connection
  - 1 — Insertion type or immersion type, screw-in connection
  - 2 — Insertion type or immersion type, flange connection
  - 3 — Flow-through type with SUS 316 case, thread connection
  - 4 — Flow-through type with SUS 316 case, flange connection
  - 5 — Flow-through type with PP case, thread connection
  - 6 — Flow-through type with PP case, flange connection
- Cell constant (nominal value)
  - 1 — 0.01/cm (1/m)
  - 2 — 0.1/cm (10/m)
  - 3 — 1/cm (100/m)
  - 4 — 10/cm (1000/m)

Dimensions

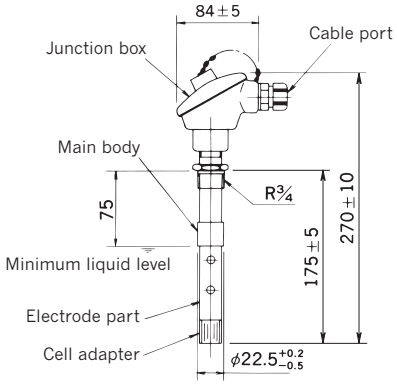
Unit : mm

● Pipe insertion type

Models: A6-11□, SA6-11□



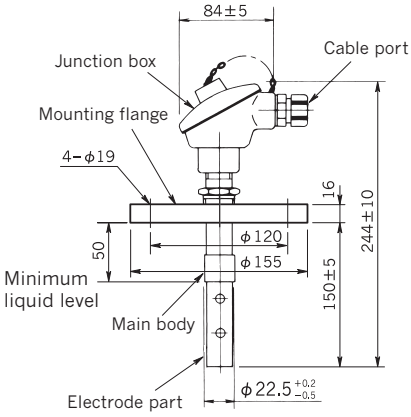
Cell constants: 0.01, 0.1, 1.0 /cm



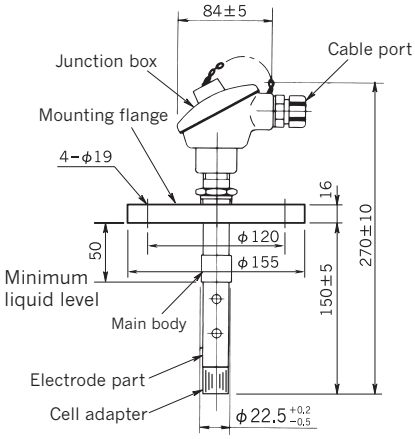
Cell constants: 10 /cm

● Flange type

Models: A6-12□, SA6-12□



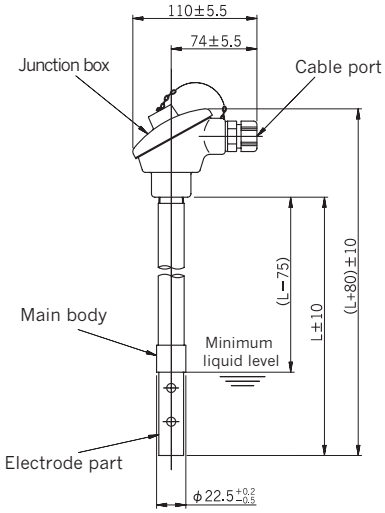
Cell constants: 0.01, 0.1, 1.0 /cm



Cell constants: 10 /cm

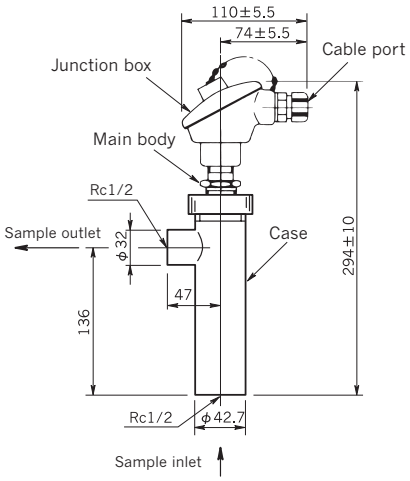
● Immersion type

Models: A6-17□, SA6-17□



● Flow-through type with SUS case (Thread connection)

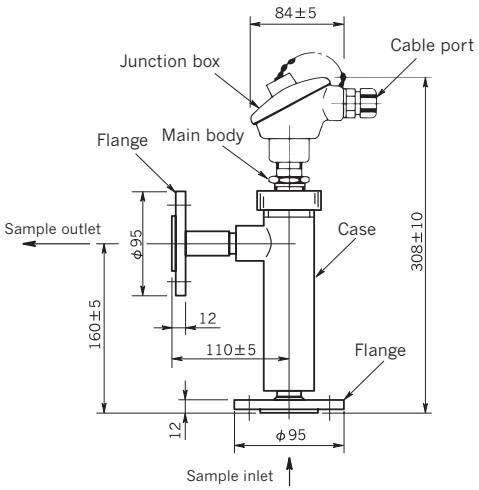
Models: A6-13□, SA6-13□



Screw thread specification: Rc 1/2

● Flow-through type with SUS case (flange connection)

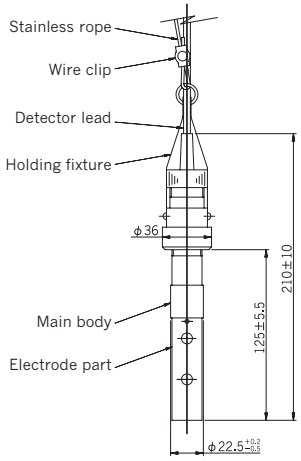
Models: A6-14□, SA6-14□



Flange specification: 15A JIS 10K RF

● Submerged type

Model: A5-17□



Standard specifications for A/SA detectors

Product name	: Industrial conductivity detector
Models	: A (general use), SA (intrinsically safe)
Items measured	: Conductivity of ultra-pure water, pure water, industrial water, wastewater etc.
Cell constant	: 0.01, 0.1, 1.0, 10 /cm
Ambient temperature /humidity	: -10~60ºC, 95%RH or less
Sample conditions	:
Temperature range	; 0~80ºC (polypropylene case) 0~100ºC (SUS316 case) No freezing
Pressure range	; 2.0 MPa or less (up to the nominal pressure capacity of the flange when connected to a flange; 0.3 MPa or less when equipped with a PP case)
Flow velocity or flow rate	; 0.01~5 m/s (flow rate of 0.5~10 L/min for detectors with a case)
Temperature sensor	: Thermistor
Materials	: Body; SUS316 Junction box; Cast aluminum Electrode; SUS316 Electrode insulator: Glass (hermetic seal), PTFE (Teflon) Case; SUS316 or PP (polypropylene)
Cable connection	: Junction box etc.
Weight	: Approx. 0.5 kg (screw-in type with R3/4)
Paint color	: Junction box; Metallic silver
Construction	: Water-proof type

Product code

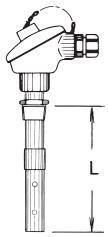
● Screw-in type Model: A6-11□

A61D-3-□□□□□□□□□□□ Model name

- Electrode material
  - A: SUS316: Standard
  - B: SUS316L (including thread part)
- Screw thread specification *1
  - 1: R3/4: Standard
  - 2: R1
  - 3: NPT3/4
  - 4: M42 cap nut (for use with a flow-through type case)
- Length (below thread) L *1

	0.01/0.1/1	10 ← Cell constant
0	150mm	175mm : Standard
2	525mm	550mm
3	1,025mm	1,050mm
4	1,525mm	1,550mm
5	2,025mm	2,050mm

- Always Y
- Always Y
- Always Y
- Cell constant
  - 1: A6-111: 0.01/cm
  - 2: A6-112: 0.1/cm
  - 3: A6-113: 1/cm
  - 4: A6-114: 10/cm
- Cell constant (SI unit system)
  - 5: A6-111: 1/m
  - 6: A6-112: 10/m
  - 7: A6-113: 100/m
  - 8: A6-114: 1000/m
- Assembly with cable port adapter
  - 0: None, G1/2: Standard
  - 1: G3/4 SUS304
  - 2: NPT1/2 SUS304
  - 3: NPT3/4 SUS304
- Degreasing *2
  - 0: None
  - 1: Provided
- Markings
  - A: Japanese (Standard)
  - B: English
- Combined transmitter *3
  - 0: Equipped
  - 1: None



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

*1. If the length (below thread) L is greater than 1025 (1050) mm, the extension grows thicker. For this reason, select the R1 thread (note that the R3/4 thread cannot be used).
A protection pipe to support the detector is required if the L length is 525 mm or more and the sample flow velocity is greater than 0.1 m/s (rough estimate).

*2. Degreasing means cleaning the wetted electrode part with alcohol.

*3. If the detector is not equipped with a transmitter, please provide us with the model and serial number of the existing transmitter.

Notes

1 : Because the A6 cell is equipped with a junction box, an extension cable is required. Order the EC-10 extension cable (outside diameter: ø8mm) separately.

2 : Sample temperature range: 0~100ºC. Max. pressure: 2.0 MPa.

3 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

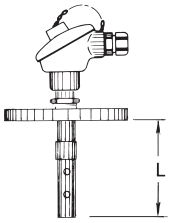
● Flange insertion type Model: A6-12□

A61D-3-□□□□□□□□□□□ Model name

- Electrode material
  - A: SUS316: Standard
  - B: SUS316L (including flange part)
- Always Y
- Always Y
- Flange specification
  - A: 50A JIS 10K FF: Standard
  - B: 50A JIS 5K FF: Compatible with WS-21 sensor part
  - C: 2" ANSI 150LB RF
- Length (below flange) *1

	0.01/0.1/1	10 ← Cell constant
0	125mm	150mm : Standard
1	150mm	175mm
2	500mm	525mm
3	1,000mm	1,025mm
4	1,500mm	1,525mm
5	2,000mm	2,025mm

- Always Y
- Cell constant
  - 1: A6-121: 0.01/cm
  - 2: A6-122: 0.1/cm
  - 3: A6-123: 1/cm
  - 4: A6-124: 10/cm
- Cell constant (SI unit system)
  - 5: A6-121: 1/m
  - 6: A6-122: 10/m
  - 7: A6-123: 100/m
  - 8: A6-124: 1000/m
- Assembly with cable port adapter
  - 0: None, G1/2: Standard
  - 1: G3/4 SUS304
  - 2: NPT1/2 SUS304
  - 3: NPT3/4 SUS304
- Degreasing *2
  - 0: None
  - 1: Provided
- Markings
  - A: Japanese (Standard)
  - B: English
- Combined transmitter *3
  - 0: Equipped
  - 1: None



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

*1. A protector pipe to support the detector is required if the L length is 500 mm or more and the sample flow velocity is greater than 0.1 m/s (rough estimate).

*2. Degreasing means cleaning the wetted electrode part with alcohol.

*3. If the detector is not equipped with a transmitter, please provide us with the model and serial number of the existing transmitter.

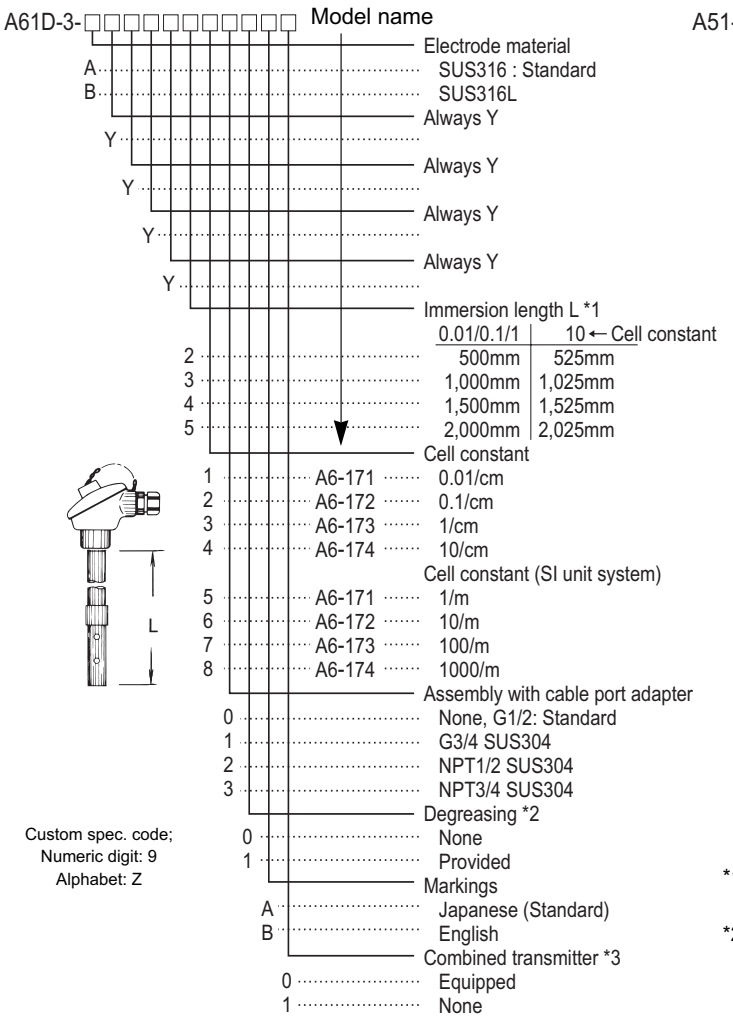
Notes

1 : Because the A6 cell is equipped with a junction box, an extension cable is required. Order the EC-10 extension cable (outside diameter: ø8mm) separately.

2 : Sample temperature range: 0~100ºC, Max. pressure: 1.0 MPa (flange nominal pressure)

3 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

● Immersion type Model: A6-15□



*1. A protector pipe to support the detector is required if the L length is 500 mm or more and the sample flow velocity is greater than 0.1 m/s (rough estimate)

*2. Degreasing means cleaning the wetted electrode part with alcohol.

*3. If the detector is not equipped with a transmitter, please provide us with the model and serial number of the existing transmitter.

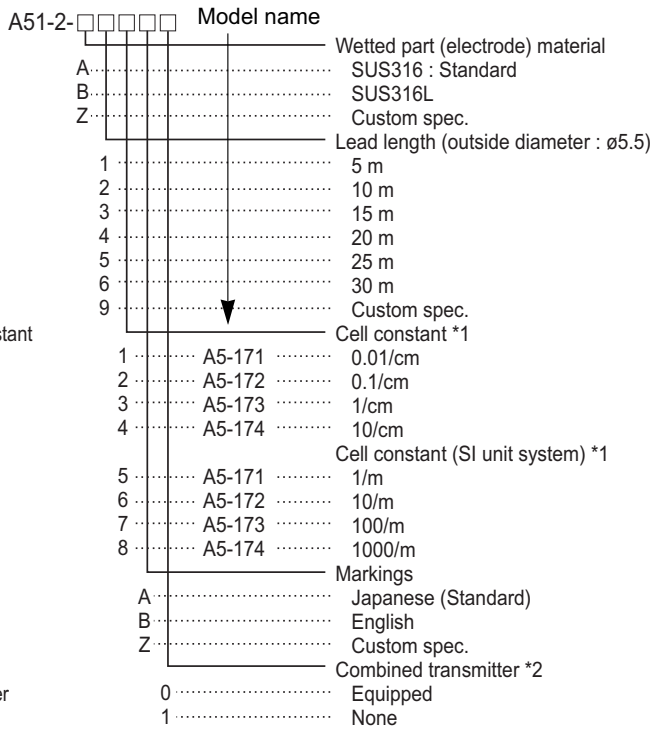
Notes

1 : Because the A6 cell is equipped with a junction box, an extension cable is required. Order the EC-10 extension cable (outside diameter: ø8mm) separately when using the A6 cell.
In addition, because the A6-17□ is an immersion type detector, mounting brackets are required. You can prepare these brackets on-site or order them separately.

2 : Sample temperature range: 0~100ºC, Pressure: Atmospheric pressure since the detector is an immersion type.

3 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

● Submerged type Model: A5-17□



*1. Select the cell constant that corresponds to the measurement range (the same value as indicated on the transmitter).

*2. If the detector is not equipped with a transmitter, please provide us with the information (serial number) of the existing transmitter. Note that even if the detector is equipped with a transmitter, a separate transmitter is still required.

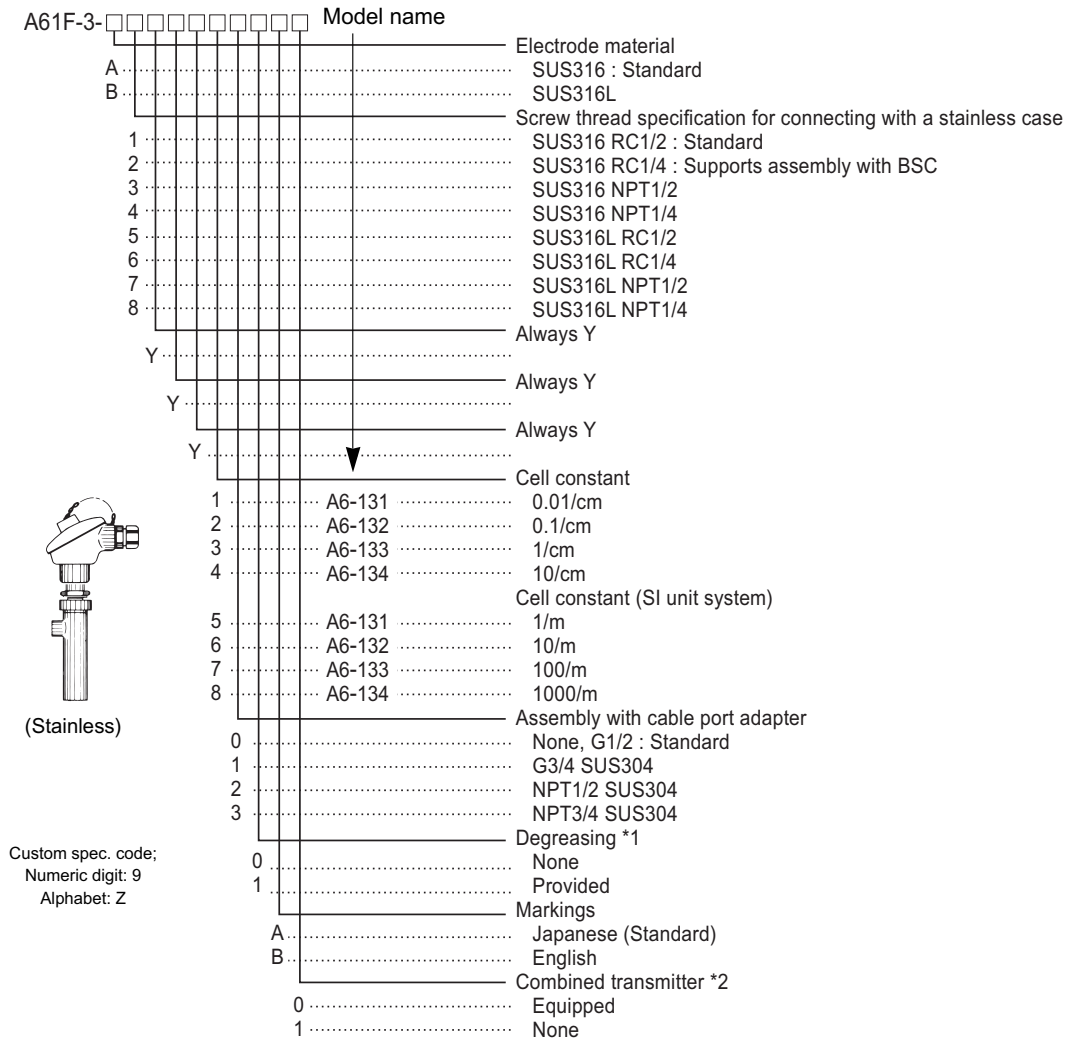
Notes

1 : This model is a submerged type conductivity detector with a compact electrode. The length of the electrode is 125 mm or 150 mm (total length: 210 mm, max. diameter: ø36).
The detector is equipped with a stainless wire designed to reinforce the detector lead.

2 : The service temperature and pressure range are as follows:
Temperature: 0~55ºC
Pressure: 0.1 MPa or less (water depth: max. 10 m)

3: When performing high conductivity measurements with a cell constant of 10/cm (Model: A5-174), air bubbles often form on the inner electrode. These air bubbles can cause the efficiency of sample water displacement to deteriorate. We recommend using the electromagnetic conductivity detector ME-111□ for high conductivity applications.

● Flow-through type with stainless case (thread connection) Model: A6-13□



*1. IDegreasing means cleaning the wetted electrode part and case with alcohol.

*2. IIf the detector is not equipped with a transmitter, please provide us with the model and serial number of the existing transmitter.

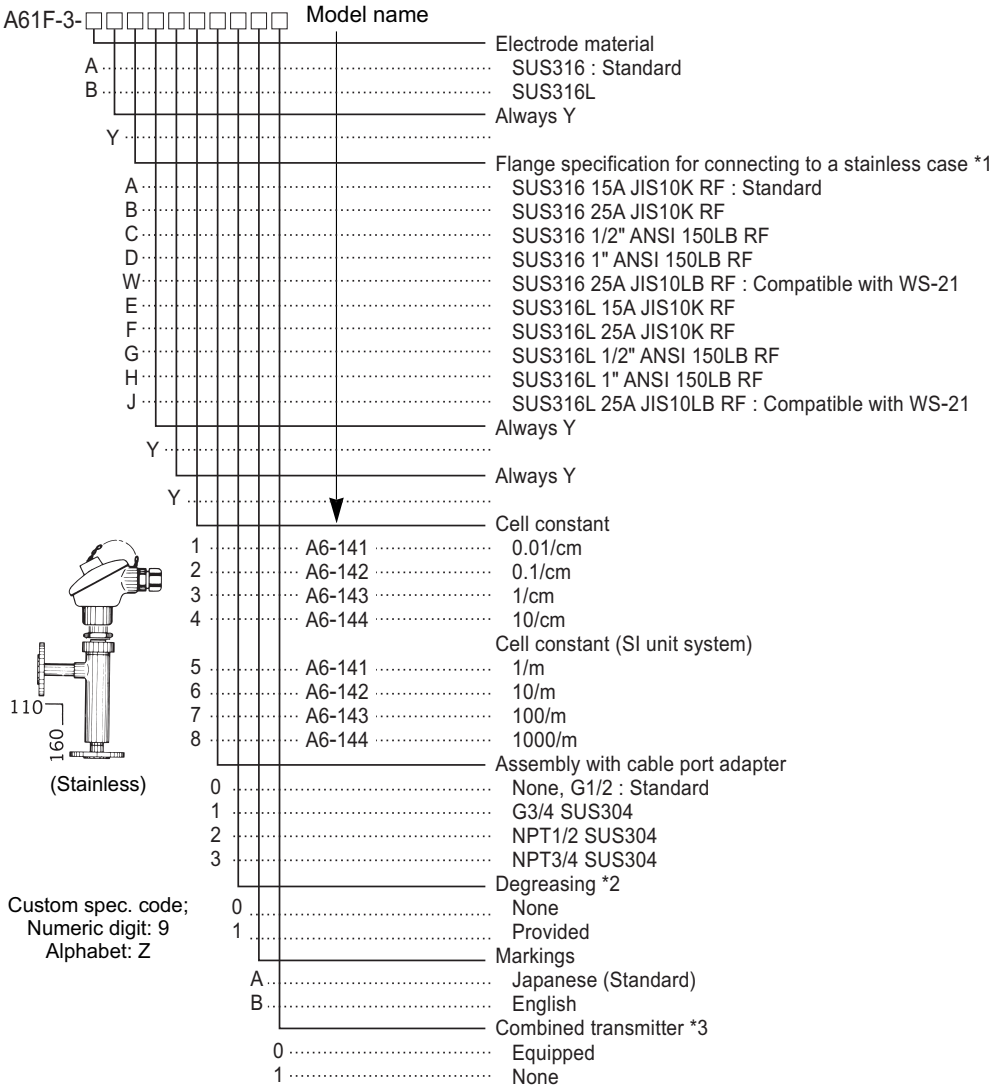
Notes

1 : Because the A6 cell is equipped with a junction box, an extension cable is required. Order the EC-10 extension cable (outside diameter: ø8mm) separately.

2 : Sample temperature range: 0~100ºC. Max. pressure: 1.0 MPa

3 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

● Flow-through type with stainless case (flange connection) Model: A6-14□



*1. When using a 25A (1”) flange, be sure to select a 15A (1/2”) pipe (sample in/out pipe diameter).

*2. Degreasing means cleaning the wetted electrode part and case with alcohol.

*3. If the detector is not equipped with a transmitter, please provide us with the model and serial number of the existing transmitter.

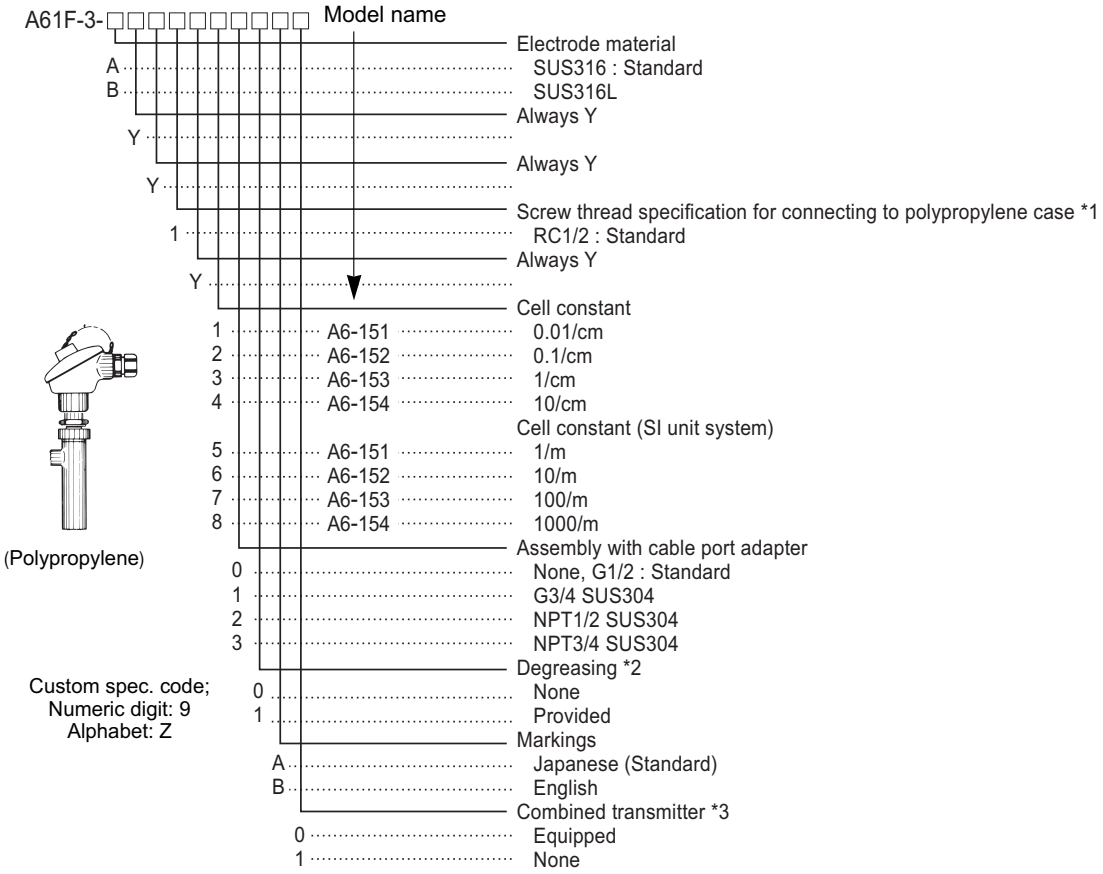
Notes

1 : Because the A6 cell is equipped with a junction box, an extension cable is required. Order the EC-10 extension cable (outside diameter: ø8mm) separately.

2 : Sample temperature range: 0~100ºC. Max. pressure: 1.0 MPa

3 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

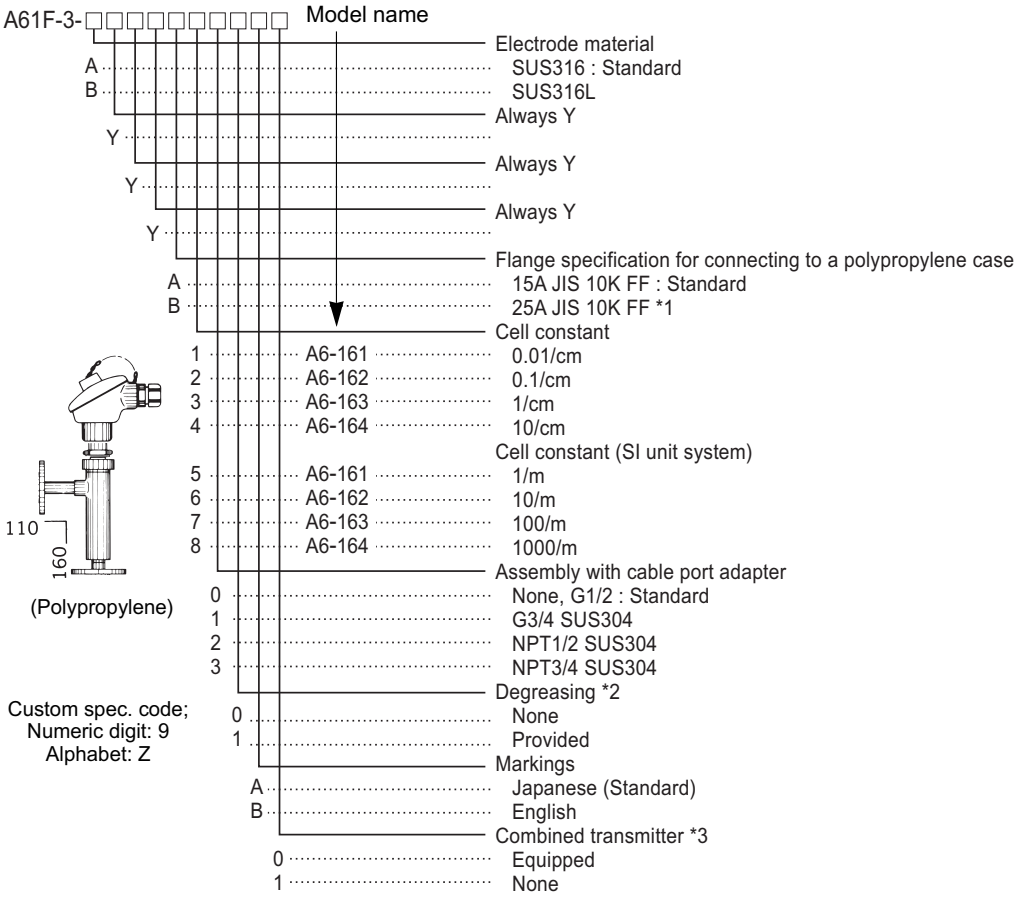
● Flow-through type with polypropylene case (thread connection) Model: A6-15□



*1. Because the polypropylene case is a molded case, only a Rc1/2 thread connection can be used.
*2. Degreasing means cleaning the wetted electrode part and case with alcohol.
*3. If the detector is not equipped with a transmitter, please provide us with the model and serial number of the existing transmitter.

Notes
1 : Because the A6 cell is equipped with a junction box, an extension cable is required. Order the EC-10 extension cable (outside diameter: ø8mm) separately.
2 : Sample temperature range: 0~80ºC, Max. pressure: 0.3 MPa
3 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

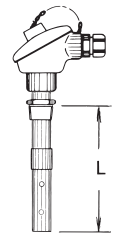
● Flow-through type with polypropylene case (flange connection) Model: A6-16□

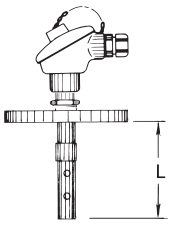


*1. The face-to-face flange dimensions for 25A flanges are 110 (W) x 170 (H).
When using a 25A flange, be sure to select a 15A (1/2") pipe (sample in/out pipe diameter).
*2. Degreasing means cleaning the wetted electrode part and case with alcohol.
*3. If the detector is not equipped with a transmitter, please provide us with the model and serial number of the existing transmitter.

Notes
1 : Because the A6 cell is equipped with a junction box, an extension cable is required. Order the EC-10 extension cable (outside diameter: ø8mm) separately.
2 : Sample temperature range: 0~80ºC. Max. pressure: 0.3 MPa
3 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

● Insertion type (intrinsically safe) Model: SA6





SA61D-□□□□□□□□□□ Model name

Main body/Electrode material
- A: SUS316 : Standard
- B: SUS316L
- Z: Custom spec.

Screw-in type pipe connector specification *1
- Y: NA (= flange connection type)
- 1: SA6-11□ R3/4 (PT3/4): Standard
- 2: SA6-11□ R1 (PT1)
- 3: SA6-11□ NPT3/4
- 4: SA6-11□ M42 cap nut (for use with a case)
- 9: SA6-11□(S) Custom spec. (no applicable screw specification/no connection part)

Length (below thread) of screw-in type detector*2

Screw-in
- Y: NA (=flange connection type)

		0.01~1	10 ← Cell constant
0	SA6-11□	150mm	175mm : Standard
2	SA6-11□	525mm	550mm
3	SA6-11□	1,025mm	1,050mm
4	SA6-11□	1,525mm	1,550mm *1
5	SA6-11□	2,025mm	2,050mm *1
9	SA6-11□(S)	Custom spec. (length below thread) *1	

Flange type pipe connector specification
- Y: NA (= screw-in type connector)
- A: SA6-12□ 50A JIS 10K FF : Standard
- B: SA6-12□ 50A JIS 5K FF
- C: SA6-12□ 2" ANSI 150LB RF
- Z: SA6-12□(S) Custom spec. (flange specification

Length (below flange) of flange type detector *2

Flange
- Y: NA (= screw-in type connector)

		0.01~1	10 ← Cell constant
0	SA6-12□	125mm	150mm : Standard
1	SA6-12□	150mm	175mm : Compatible with flow-through type SWS cell
2	SA6-12□	500mm	525mm
3	SA6-12□	1,000mm	1,025mm
4	SA6-12□	1,500mm	1,525mm
5	SA6-12□	2,000mm	2,025mm
9	SA6-12□(S)	Custom spec. (length below flange)	

Cell constant
- 1: SA6-1□1 0.01/cm
- 2: SA6-1□2 0.1/cm
- 3: SA6-1□3 1/cm
- 4: SA6-1□4 10/cm
- 5: SA6-1□1 1/m (SI unit system)
- 6: SA6-1□2 10/m (SI unit system)
- 7: SA6-1□3 100/m (SI unit system)
- 8: SA6-1□4 1000/m (SI unit system)

Assembly with cable port adapter
- 0: None, G1/2 (PF1/2) : Standard
- 1: G3/4 (PF3/4) SUS304
- 2: NPT1/2 SUS304
- 3: NPT1/2 SUS304
- 9: Custom spec.

Markings
- A: Japanese (Standard)
- B: English
- Z: Custom spec.

Combined transmitter model
- 3: SECP-20T
- 9: Custom spec.

Combined transmitter *3
- 0: Equipped
- 1: None

*1. If the length (below thread) L is greater than 1025 (1050) mm, the extension grows thicker. For this reason, select the R1 thread (note that the R3/4 thread cannot be used).

*2. A protector pipe is required if the length(below thread or flange) is 500 mm or more and the sample flow velocity is greater than 0.1 m/s (rough estimate). The purpose of this pipe is to prevent the detector from breaking. (Exercise extra caution when using a tank with a built-in agitator.)

*3. If the detector is not equipped with a transmitter, please provide us with the information (serial number) of the existing transmitter. Note that even if the detector is equipped with a transmitter, a separate transmitter is still required.

Notes

1 : The service temperature and pressure range are as follows:

Model: SECP-20T	0~100ºC	Screw-in type: 2.0 MPa or less
		Flange type: 1.0 MPa or less

2 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

● Flow-through type (intrinsically safe) Model: SA6

SA61F-2-□□□□□□□□□□□ Model name

Main body/Electrode material (case excluded)
- A ····· SUS316 : Standard
- B ····· SUS316L
- Z ····· Custom spec.

Thread connection type with SUS316 case
- Y ····· NA
- 1 ····· SA6-13□ ····· RC1/2: Standard
- 2 ····· SA6-13□ ····· RC1/4
- 3 ····· SA6-13□ ····· NPT1/2
- 4 ····· SA6-13□ ····· NPT1/4
- 9 ····· SA6-13□(S) ···· Custom spec. (screw thread specification, case material) *4

Flange connection type with SUS316 case
- Stainless Y ····· NA
- A ····· SA6-14□ ····· 15A JIS 10K RF : Standard
- B ····· SA6-14□ ····· 25A JIS 10K RF *1
- C ····· SA6-14□ ····· 1/2" ANSI 150LB RF
- D ····· SA6-14□ ····· 1" ANSI 150LB RF *1

Face-to-face flange dimensions: 160 (H) x 110 (W)

- W ····· SA6-14□ ····· 25A JIS 10K RF — Face-to-face flange dimensions : 160 (H) x 95 (W)
- Z ····· SA6-14□(S) ···· Custom spec. (flange specification, case material) *4

Thread connection type with polypropylene case
- Y ····· NA
- 1 ····· SA6-15□ ····· RC1/2 : Standard
- 9 ····· SA6-15□(S) ···· Custom spec. (screw thread specification) *2

Flange connection type with polypropylene case
- PP Y ····· NA
- A ····· SA6-16□ ····· 15A JIS 10K FF : Standard
- B ····· SA6-16□ ····· 25A JIS 10K FF *1 *5
- Z ····· SA6-16□(S) ···· Custom spec. (flange specification)

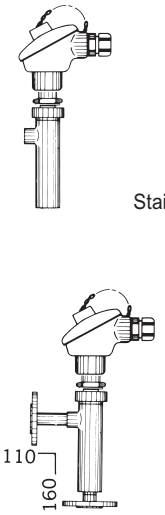
Cell constant
- 1 ····· SA6-1□1 ····· 0.01/cm
- 2 ····· SA6-1□2 ····· 0.1/cm
- 3 ····· SA6-1□3 ····· 1/cm
- 4 ····· SA6-1□4 ····· 10/cm
- 5 ····· SA6-1□1 ····· 1/m (SI unit system)
- 6 ····· SA6-1□2 ····· 10/m (SI unit system)
- 7 ····· SA6-1□3 ····· 100/m (SI unit system)
- 8 ····· SA6-1□4 ····· 1000/m (SI unit system)

Assembly with cable port adapter
- 0 ····· None, G1/2 (PF1/2) : Standard
- 1 ····· G3/4 (PF3/4) SUS304
- 2 ····· NPT1/2 SUS304
- 3 ····· NPT3/4 SUS304
- 9 ····· Custom spec.

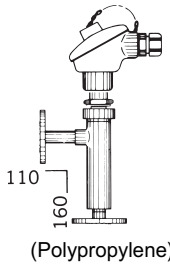
Markings
- A ····· Japanese (Standard)
- B ····· English
- Z ····· Custom spec.

Combined transmitter model
- 2 ····· SECP-20T
- 9 ····· Custom spec.

Combined transmitter*3
- 0 ····· Equipped
- 1 ····· None



(Stainless)



(Polypropylene)

*1. Sample in/out pipe size: 15A (1/2").
*2. The polypropylene case is a molded case. Contact us in advance for information about custom sizes.
*3. If the detector is not equipped with a transmitter, please provide us with the information (serial number) of the existing transmitter.
Note that even if the detector is equipped with a transmitter, a separate transmitter is still required.
*4. If the case material is SUS316L, select 9 (thread) / Z (flange) for the custom spec. codes.
*5. The face-to-face flange dimensions are only 170 (H) x 110 (W) when using the 25A flange connection type with a polypropylene case.

Notes
1 : The service temperature and pressure range are as follows:

Model: SECP-20T	0~100ºC	Stainless case type: 1.0 MPa or less, 100ºC or lessPolypropylene
		case type: 0.3 MPa or less, 80ºC or less

2 : We recommend using electromagnetic induction type detectors for performing high conductivity measurements with a cell constant of 10/cm (1000/m).

■ AR Detectors

AR cell series model name (compact ultra-pure water use)

AR□- □□□

- 4 ····· Cable connection: Connector
- 5 ····· Cable connection: Via junction box
- 2 ····· Always 2: (Temperature compensation : for ultra-pure water)
- 1 ····· Always 1: (Insertion type, screw-in connection)
- 1 ····· Cell constant (design value): 0.01/cm (1/m)
- 2 ····· Cell constant (design value): 0.1/cm (10/m)

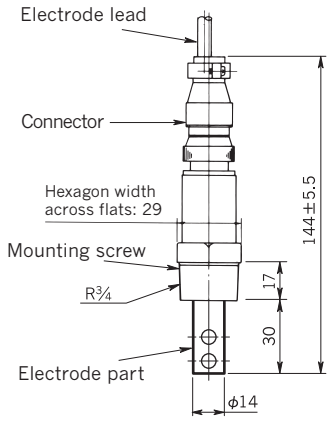
Standard specifications for AR detectors

Product name	: Electric conductivity analyzer detector
Models	: AR4-21□, AR5-21□
Cell constants	: Approx. 0.1 /cm , approx. 0.01 /cm
Temperature sensor	: Class 0.1 level thermistor (sealed inside inner electrode)
Sample conditions	: Temperature; 0~100ºC (no freezing) Pressure; 0.5 MPa or less
Materials	: Electrode; Titanium Bushing; SUS316 (Teflon coated) Seal; Fluororubber Connector (AR4); Plastic Junction box (AR5); Cast aluminum
Pipe connection	: R3/4, Screw-in
Heat resistance	: 0~100ºC
Extension cable	: Outside diameter: ø8mm. Standard length: 5 m (max. 100 m). Equipped with drip-proof connector (for AR4)

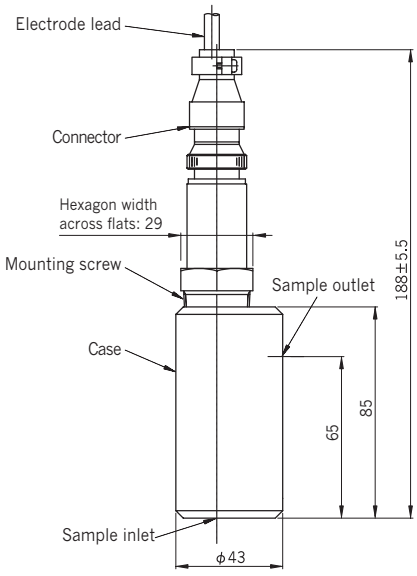
AR cell series dimensions

Unit : mm

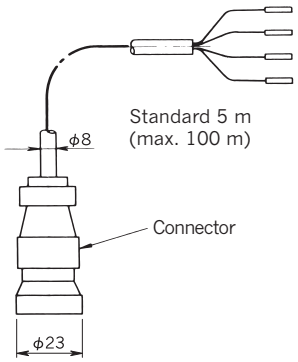
● Screw-in type
Model: AR4-212



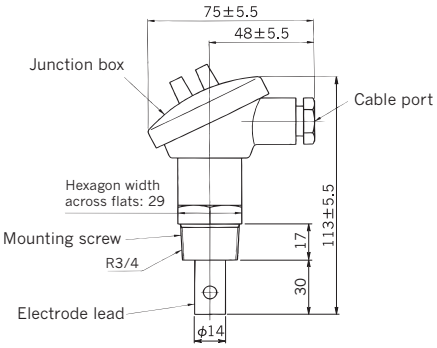
● Flow-through type with case
Model: AR4-21□



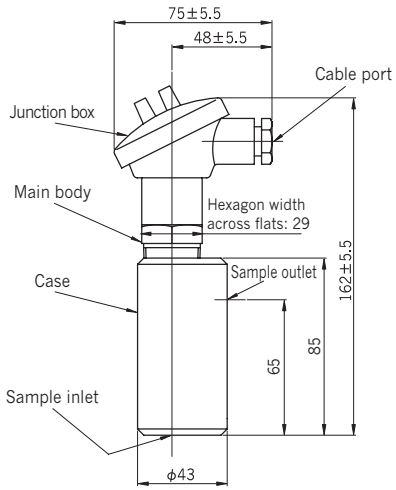
● Connector type extension cable
Model: EC-10



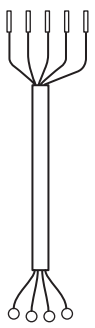
● Screw-in type
Model: AR5-212



● Flow-through type with case
Model: AR5-21□



● Junction box type extension cable
Model: EC-10



Product code

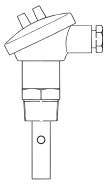
● Model: AR4 (connector type)

AR42-3-□□□□□

- Connection specification
  - 1 ····· R3/4 (PT3/4) : Standard
  - 9 ····· Custom spec.
- Combined transmitter
  - 1 ····· Resistivity analyzer
  - 2 ····· Conductivity analyzer
  - 9 ····· Custom spec.
- Case connection specification : Rc1/4
  - A ····· None
  - B ····· Equipped (SUS316)
  - Z ····· Custom spec.
- Cell constant
  - 1 ····· AR4-212 ····· 0.1/cm
  - 2 ····· AR4-211 ····· 0.01/cm
- Markings
  - 0 ····· Japanese (Standard)
  - 1 ····· English
  - 9 ····· Custom spec.

● Model: AR5 (junction box type)

AR52-1-□□□□□



- Connection specification
  - 1 ····· R3/4 (PT3/4) : Standard
  - 9 ····· Custom spec.
- Paired transmitter
  - 1 ····· Resistivity analyzer
  - 2 ····· Conductivity analyzer
  - 9 ····· Custom spec.
- Case connection specification : Rc1/4
  - A ····· None
  - B ····· Equipped (SUS316)
  - Z ····· Custom spec.
- Cell constant
  - 1 ····· AR5-212 ····· 0.1/cm
  - 2 ····· AR5-211 ····· 0.01/cm
- Markings
  - 0 ····· Japanese (Standard)
  - 1 ····· English
  - 9 ····· Custom spec.

Notes

1 : The main material used in the electrodes is titanium. PPS is used for the insulation between the inner and outer electrodes. The O-ring insulating seal is made of FKM (Fluororubber). The instruments are not water-proof. Make sure to install the instruments indoors.
2 : Sample conditions: Temperature: 0~100ºC, Pressure: 0.5 MPa or less
3 : The EC-10 extension cable is not attached. Order separately.

Notes

1 : The main material used in the electrodes is titanium. PPS is used for the insulation between the inner and outer electrodes. The O-ring insulating seal is made of FKM (Fluororubber). The instruments are not water-proof. Make sure to install the instruments indoors.
2 : Sample conditions: Temperature: 0~100ºC. Pressure: 0.5 MPa or less
3 : The EC-10 extension cable is not attached. Order separately.

■ Supported Conductivity Analyzer/Transmitter Models

Field installation type (2-wire system) / (4-wire system) WDM-135A/WDM-136A	Intrinsically safe (2-wire system) SECP-20T
	
● Field installation type conductivity analyzer/transmitter with built-in microcomputer and water-proof construction ● Adjustable transmission output range (4~20 mA DC) ● Output can be held when in maintenance mode ● Power supply: 2-wire system: 24V DC 4-wire system: 90~132V AC ● Units displayed in S/cm and S/m(SI unit system) ● Measurement range: 0~20/200/2000 μS/cm , 0~20mS/cm, 0~2000 μS/m, 0~20/200/2000 mS/m	● Intrinsically safe explosion proof construction that conforms to IEC (Ex) standards ● Alterable transmission output range (4~20 mA DC) ● Output can be held when in maintenance mode ● Power supply: 2-wire system, 24V DC ● Units displayed in S/cm and S/m(SI unit system) ● Measurement range (S/cm example) 0~1/2/5/10 μS/cm or mS/cm 0~20/50/100/200/500/1000 μS/m

Field installation type (4-wire system)
WBM-160

- Conductivity analyzer housed in a sturdy die-cast aluminum enclosure and equipped with a variety of practical features
- Two circuit transmission output for conductivity and sample temperature (4~20 mA)
- Alterable transmission output range (4~20 mA DC)
- High and low limit alarm contacts
- Can be fitted with RS-232C output (optional feature)
- Power supply: 90~264VAC
- Units displayed in S/cm and S/m(SI unit system)
- Measurement range: 0~20/200/2000 μS/cm , 0~20 mS/cm, 0~2000 μS/m, 0~20/200/2000 mS/m

Field installation type (2-wire system)
WBM-165H

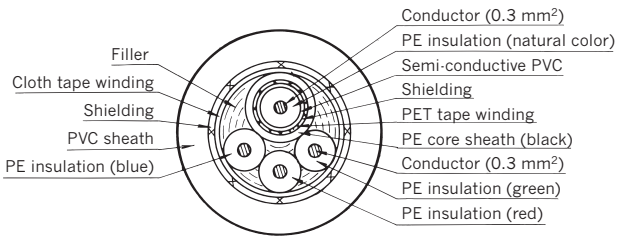
- HART communication interface (version 7) using a 2 wire, 24VDC circuit
- Conductivity analyzer housed in a sturdy die-cast aluminum enclosure and equipped with a variety of practical features
- One touch auto calibration
- Self diagnosis
- Power supply: 24VDC
- Units displayed in S/cm and S/m(SI unit system)
- Measurement range: 0~20/200/2000 μS/cm, 0~20 mS/cm, 0~2000 μS/m, 0~20/200/2000 mS/m

Panel mount type
WBM-100 / WBM-210A

- Compact DIN 96 size unit
- Ability to connect two detectors to WBM-210A (2 channels)
- Alterable transmission output range (4~20 mA DC)
- High and low limit alarm contacts (4-point alarm available)
- RS-232C equipped as standard (WBM-210A)
- Power supply: 90~264VAC
- Units displayed in S/cm and S/m(SI unit system)
- Measurement range: 0~20/200/2000 μS/cm , 0~20 mS/cm, 0~2000 μS/m, 0~20/200/2000 mS/m

■ Extension cable

The extension cable is a special cable designed for use with conductivity analyzers. It is used to connect the transmitter to the detector.



EC-10 cross section

Model	: EC-10
Outside diameter	: ø8mm
Insulation	: Polyethylene and PVC
Sheath	: PVC
Insulation resistance between core conductors	: 10^5 MΩ or greater/100 m
Maximum cable length	: 50 m. No cable splicing.
Standard length	: 5 m~50 m (5 m steps)
Weight	: Approx. 0.5 kg/5 m

■ When installing a conductivity detector, make sure to do the following:

1. Install the detector in a location that is free from excessive vibration and easily accessible for maintenance.
2. Install the detector in a location that is free from corrosive gases or chemicals.
3. Follow the recommended mounting procedure for insertion type detectors
   For a screw-in or flange connection insertion type detector, we recommend vertically mounting the detector on the upper end of the horizontal pipe. (Figure A)

   When mounting the detector on a vertical pipe, it can be mounted horizontally. (Figure B)
   Detectors with a cell constant of 0.01/cm or 0.1/cm can be mounted horizontally.
   Detectors with a cell constant of 1.0/cm or 10/cm must be mounted diagonally at a horizontal angle of 45 degrees or greater. (Figure C)
   It is difficult to remove the bubbles that form inside the electrode. To help release the bubbles from the electrode, mount the detector diagonally. (Bubbles that form inside the electrode can cause measurements to fluctuate.)
4. Follow the recommended installation procedure for flow-through type detectors with a case
   Set the by-pass valve on the by-pass line and the stop valves on the IN/OUT lines. (Figure D)
   This makes it possible to perform maintenance while the plant is running by allowing you to close the stop valves and remove the detector.
   When mounting the ultra-pure water detector, make the by-pass pipe as short as possible.

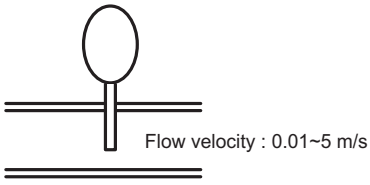


Figure A : Vertical mounting on horizontal pipes

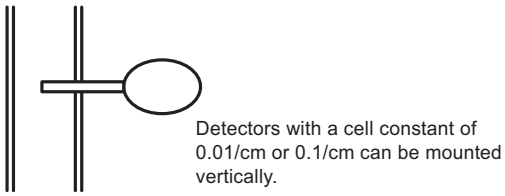


Figure B : Horizontal mounting on vertical pipes

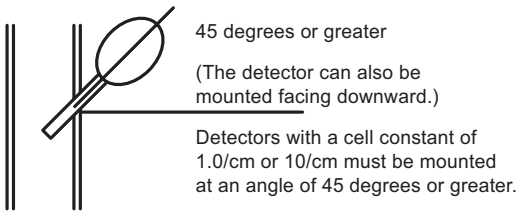


Figure C : Diagonal mounting on vertical pipes

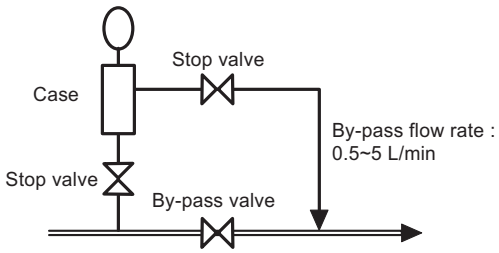


Figure D : Mounting the by-pass line for a flow-through type detector

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⚠ CAUTION Do not operate producuts before consulting instruction manual.

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