General Specifications

Conductivity
Detectors/Sensors

EXA SC

GS 12D08G02-E

■ GENERAL

YOKOGAWA has been supplying superior on-line analyzers for monitoring or controlling the conductivity of liquid or solutions.

Now, YOKOGAWA provides the four-wire conductivity converter, (SC450G), the two-wire conductivity transmitter (FLXA202/FLXA21, SC202).

YOKOGAWA also provides many kinds of detectors/ sensors for accurately measuring liquid conductivity when using converters/transmitters.

The combination of YOKOGAWA's converters/ transmitter and detectors/sensors meets the demanding ultrapurewater requirements of the growing semiconductor and pharmacentical markets in addition to traditional water quality measurements for standard power plant and chemical applications.

SC4AJ

Adapter Mounting

SC8SG

Flow-through Type

SC210G

Screw-in Type

Four-wire Conductivity Converter SC450G

Refer to GS 12D08N05-01E

Two-wire Analyzer FLXA21

Refer to GS 12A01A02-01E

Two-wire Analyzer FLXA202

Refer to GS 12A01A03-01EN

YOKOGAWA

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GS 12D08G02-E
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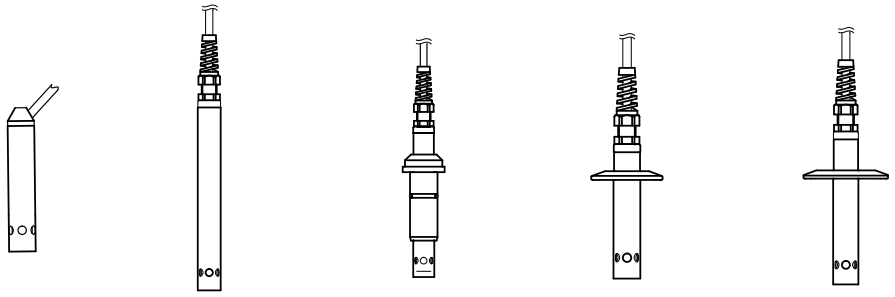
■ Models of Conductivity Detectors/Sensors

SC4AJ



-AD-09 Adapter Mounting Type (Sensor length: 9 cm)

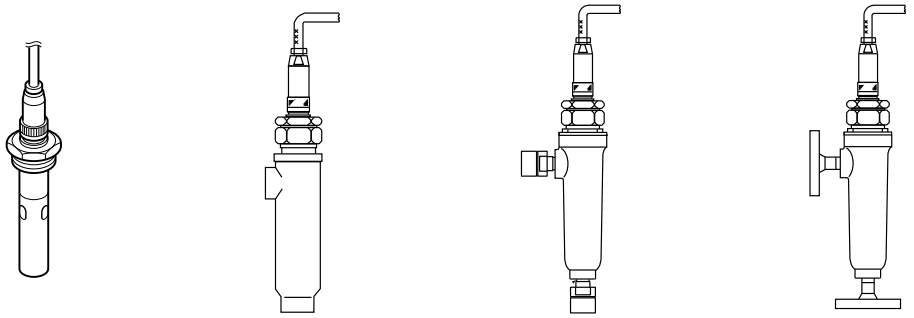
-AD-15 Adapter Mounting Type (Sensor length: 15 cm)

-SA Welding Socket Type

-SB 1 or 1.5 inch welding Clamp Type

-SC 2 inch welding Clamp Type

SC8SG



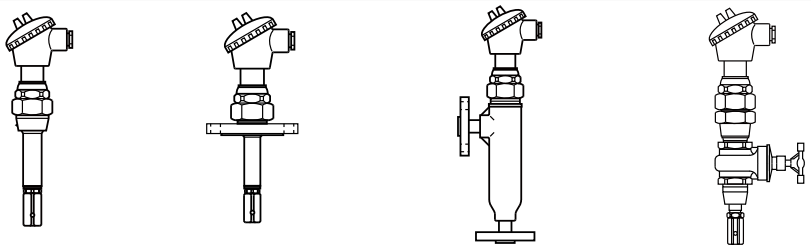
Screw-in Type

Flow-through Type (Screw Jointed) Chamber Material : SCS14

Flow-through Type (Screw Jointed) Chamber Material : PP

Flow-through Type (Flange Jointed)

SC210G



Screw-in Type

Flange Type

Flow-through Type

Screw-in Type with Gate Valve

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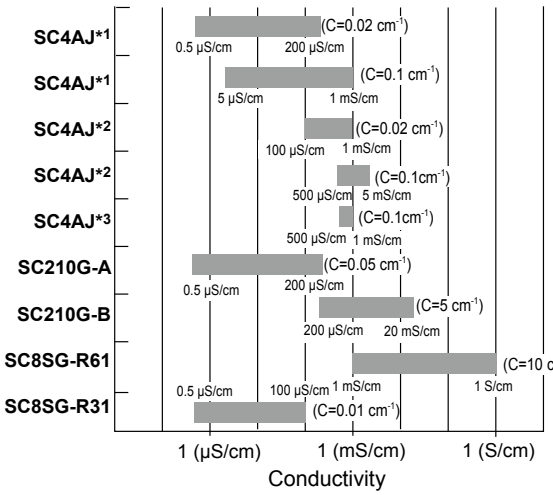
■ RANGE OF MEASURING UPPER RANGE LIMIT OF EACH SENSORS



NOTE:
The bar graph at the left shows the range of the upper range limit of each sensor. For example, in the case of SC8SG-R61, the measuring range is from 0-1 mS/cm to 0-1 S/cm.
In measurement in high conductivity range, polluted solution may affect measured values of any sensors.
C represents cell constant.

Note that when used in combination with the SC100 converter, the SC4AJ sensor has different measuring range depending on the material and so forth.

*1 : In case of the combination with the SC450G, FLXA202/FLXA21, SC202G, or SC202SJ
*2 : In case of the combination with the SC100 (Titanium)
*3 : In case of the combination with the SC100 (Stainless Steel)

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■ GENERAL SPECIFICATIONS

1. SC4AJ:

Cable with pin terminals (applicable to SC100, FLXA202/FLXA21, SC202G and SC202SJ)
Cable with M3 ring terminals (applicable to SC450G, SC202□/TB)
Cable with M4 ring terminals (applicable to FLXA202/FLXA21)
Object of measurement: Conductivity of solutions
Measuring principle: Two-electrode system
Cell constant: 0.02 cm^{-1}, 0.1 cm^{-1}
Measuring range: For a cell constant: 0.02 cm^{-1}
In case of the combination with the SC450G, FLXA202/FLXA21,SC202G or SC202SJ: 0-0.5 µS/cm to 0-200 µS/cm
In case of the combination with the SC100: 0-100 µS/cm to 0-1 mS/cm (Material: Titanium only, SC100 can not use with SC4AJ sensor made of Stainless Steel which cell constant is 0.02 cm^{-1})
For a cell constant: 0.1 cm^{-1}
In case of the combination with the SC450G, FLXA202/FLXA21,SC202G or SC202SJ: 0-5 µS/cm to 1 mS/cm
In case of the combination with the SC100: 0-500 µS/cm to 0-5 mS/cm (Material: Titanium)
In case of the combination with the SC100: 0-500 µS/cm to 1 mS/cm (Material: Stainless Steel)
Temperature Range: For electrode, 0 to 110°C
For holder, see Figure 1
Sterilization for electrode: 135°C (275°F), within 30 minutes in Steam Sterilization
Pressure range : For electrode, 0 to 1 MPa
For holder, see Figure 1

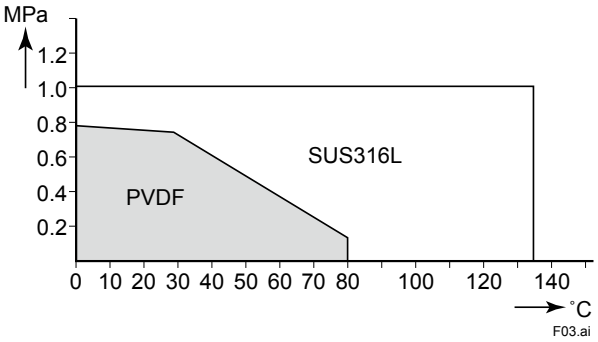

Figure1: The range of tolerance of holders (option: /PS, /PF, /RS, /RF, /SA1, /SA2, /SB1, /SB2, /SC1) for temperature and pressure

Sample solution condition:
Although flow rate is not limited in measurement, air bubbles should not be mixed in the sample solutions to obtain correct measured values.
Temperature sensor: Pt1000
Materials: Stainless steel (316L SS) (for all Fitting-type) or Titanium (only for adapter mounting type-AD), polyetheretherketone (PEEK), Fluoro rubber (FKM) O-ring.
Mounting adapter: Polyvinylidene difluoride (for /PF and /RF) or Stainless steel (316 SS), Stainless steel (316L SS)

Weight:
Sensors:
Adapter mounting type (SC4AJ-S-AD-09-002-05): approx.450 g
Adapter mounting type (SC4AJ-S-AD-15-002-05): approx.520 g
Welding socket type (SC4AJ-S-SA-NN-002-05): approx.670 g
1 or 1.5 inch welding clamp type (SC4AJ-S-SB-NN-002-05): approx.550 g
2 inch welding clamp type (SC4AJ-S-SC-NN-002-05): approx.670 g

Note: There are weight differences among SC4AJ sensors. In order to know the more accurate weight of each type of sensors, please calculate it from following information. The cable weighs 75 g/m. The SC4AJ with 0.02 cm^{-1} cell constant is 15 g heavier than the SC4AJ with 0.1 cm^{-1} cell constant. 314L SS electrode is 40 g heavier than Titanium electrode.

Adapters:

3/4NPT stainless steel adapter (/PS):	approx. 110 g
R3/4 stainless steel adapter (/RS):	approx. 110 g
3/4NPT PVDF adapter (/PF):	approx. 35 g
R3/4 PVDF adapter (/RF):	approx. 35 g
Straight welding socket (/SA1):	approx. 300 g
Angle welding socket 15 (/SA2):	approx. 320 g
Welding clamp 1 inch (/SB1):	approx. 330 g
Welding clamp 1.5 inch (/SB2):	approx. 305 g
Welding clamp 2 inch (/SC1):	approx. 350 g

note: Do not submerge the sensor itself in process water, as the seams between the mold and the metal of the sensor are not waterproof.

2. SC8SG:

Cable with pin terminals
(applicable to FLXA202/FLXA21, SC202G and SC202SJ)
Cable with M3 ring terminals (applicable to SC450G,)
Cable with M4 ring terminals (applicable to FLXA202/FLXA21)
Object of measurement: Conductivity of liquids
Measuring Principle: 2-electrode system or 4-electrode system
Cell Constants: 0.01 cm^{-1} or 10 cm^{-1} (for two-electrode system)
10 cm^{-1} (for four-electrode system)
Measuring Ranges: 0-0.5 µS/cm to 0-100 µS/cm for a cell constant of 0.01 cm^{-1}
0-1 mS/cm to 0-1000 mS/cm for a cell constant of 10 cm^{-1}
Temperature Range: 0˚ to 100˚C (130˚C maximum only for 0.01 cm^{-1} cell constant detectors, excluding those with polypropylene chambers)
Pressure: 1000 kPa max. (500 kPa maximum for detectors with polypropylene chambers)
Flow rate of Sample Solution: No particular limitation applies, although a value of less than 20 L/min. is recommended for flow-through detectors.

Note: No limitation applies to flow rate (flow velocity) as far as measurement is concerned. Take care, however, when using flow-through detectors. Electrodes or the inner walls of a liquid chamber may wear put drastically at higher flow speeds if a measured solution contains slurry. Air bubbles should not be mixed in the sample solutions to obtain correct measured values.

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RTD for Temperature Compensation:
Pt1000 (built into the sensor)
Construction: Direct insertion (in-situ) type or flow-through types.
Rainproof encapsulation (compatible with the JIS C0920 Japanese Industrial Standard)
Installation :
•Screw-in type: held by the process piping
•Flow-through type (polypropylene chamber)
: mounted on a pipe (nominal diameter of 50 mm ±2 in.)
•Flow-through type (SCS14 chamber)
: held by the process piping
Process Connection: Screw-in or flow-through
Construction of Wetted Part:
•Sensor-holding base:
Stainless steel (316 SS) and Fluoro rubber when using screw-in type holder or the chamber made of stainless steel. PP and Fluoro rubber when using the chamber made of PP.
•0.01 cm^{-1} cell constant, two-electrode sensor:
Stainless steel (316 SS) and ethylene chloride trifluoride
•10 cm^{-1} cell constant, two-electrode sensor:
reinforced epoxy resin and graphite
•10 cm^{-1} cell constant, four-electrode sensor:
polyvinylidene difluoride, glass and platinum
•Stem (flow-through type):
SCS14 or polypropylene resin
Weight:
Screw-in type
approximately 1.3 kg (excluding the cable)
Flow-through type (SCS14 chamber)
approximately 3.1 kg (excluding the cable)
Flow-through type (SCS14 chamber, flanged)
approximately 4.5 kg (excluding the cable)
Flow-through type (polypropylene chamber)
approximately 2.7 kg (excluding the cable)
Flow-through type (polypropylene chamber, flanged)
approximately 3.2 kg (excluding the cable)
Cable ; 0.3 kg for 5.5 m length
; 0.5 kg for 10 m length
; 0.9 kg for 20 m length.

3. WU41: Dedicated cable for the SC8SG

Cable : Six multicore wire
Diameter: 9.2 mm
Material : Thermoplastic PVC

4. SC210G:

Cable with pin terminals (applicable to FLXA202/FLXA21, SC202G and SC202SJ)
Cable with M4 ring terminals (applicable to FLXA202/FLXA21)
Cable with M3 ring terminals (applicable to SC450G, SC202□/TB)

Object of measurement:
Conductivity of solutions
Measuring principle : Two-electrode system
Cell constant : 0.05 cm^{-1}, 5 cm^{-1}
Measuring range : 0-0.5 µS/cm to 0-200 µS/cm
(Cell constant: 0.05 cm^{-1})
0-200 µS/cm to 0-20 mS/cm
(Cell constant: 5 cm^{-1})
Temperature Range: 0 to 105°C
(chamber material: SCS14)
0 to 100°C
(chamber material: Polypropylene)
Pressure range : 0 to 1 MPa
(chamber material: SCS14)
0 to 500 kPa
(chamber material: Polypropylene)
Measuring solution condition:
Although flow rate is not limited in measurement, less than 20 L/min is recommended for flow-through type. If slurry is included in sample solutions in flow-through type detectors, the electrode part and the inside of solution chamber may be worn significantly.
Air bubbles should not be mixed in the sample solutions to obtain correct measured values.
Temperature sensor: Thermistor (PB36NTC)
Wet part Materials
SC210G-A: For sensor, Stainless steel (316 SS), Fluoro rubber (FKM) (O-ring) and Polytrifluorochloroethylene For body, Stainless steel (316 SS), polypropylene and Fluoro rubber (FKM) (O-ring)
SC210G-B: For sensor, Platinum, glass and Fluoro rubber (FKM) (O-ring) For body, Stainless steel (316 SS), polypropylene and Fluoro rubber (FKM) (O-ring)
Construction: JIS C0920 watertight (equal to NEMA 4)

■ Compliance with the simple apparatus requirements

SC210G and SC4AJ meet the simple apparatus requirements defined in the following standards.

Note: TIIS certified types cannot be connected.

Use the sensors under the conditions of use required by the standards.

Applicable standards:
ANSI/ISA-60079-11 (2014)
ANSI/ISA-60079-0 (2009)
CAN/CSA-C22.2 NO. 60079-11:14
CAN/CSA-C22.2 NO. 60079-0:11
방호장치 의무안전인증 고시
GB 3836.4-2010

Conditions of use:
(1) Use in combination with an internally isolated transmitter, or use with, a transmitter in combination with isolated barrier.
The FLXA21 is internally isolated.

(2) Upper limit of the process temperature.
The upper limit of process temperature is indicated below when the sensor is used in combination with a YOKOGAWA transmitter.
For FLXA21, model and suffix code below is available.
FLXA21-D-□-D-EA-C1-○-A-N-LA-N-NN
□: can be any value.
○: must be NN or C1.
Any option code is available.
For SC202S, model and suffix code below is available.
SC202S-A-E
There are no SC202S models that meet the Korean explosion proof standards.
Any option code is available.

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Upper limit of process temperature on the SC210G

Transmitter used in combination	FLXA21		SC202S	
Ambient temperature Ta / Temperature class	40°C	60°C	40°C	60°C
T6	30	30	64	64
T5	95 (*1)	35	95 (*1)	79
T4	105	45	105	105
T3	105	65	105	105
T2	105	105	105	105
T1	105	105	105	105

*1: Care about upper limit 100°C of temperature class T5 should be taken.

Upper limit of process temperature on the SC4AJ

Transmitter used in combination	FLXA21		SC202S	
Ambient temperature Ta / Temperature class	40°C	60°C	40°C	60°C
T6	49	49	72	72
T5	95 (*1)	64	95 (*1)	87
T4	110	99	110	110
T3	110	110	110	110
T2	110	110	110	110
T1	110	110	110	110

*1: Care about upper limit 100°C of temperature class T5 should be taken.

Other warnings are provided in the user's manual.

■ Applicable transmitter/converter with various detectors

Detector	SC4AJ			SC8SG			SC210G		
Type of terminals	Pin	Ring M4	Ring M3	Pin	Ring M4	Ring M3	Pin	Ring M4	Ring M3
Converter: SC100 (*3)	Yes	N.A.		N.A.			N.A.		
Transmitter: SC202G, SC202SJ (*3)	Yes	N.A.	Yes (*1)	Yes	N.A.	Yes (*1)	Yes	N.A.	Yes (*1)
Converter: SC402G (*3)	Yes	N.A.	N.A.	Yes	N.A.	N.A.	Yes	N.A.	N.A.
Converter: SC450G	(*2)	N.A.	Yes	(*2)	N.A.	Yes	(*2)	N.A.	Yes
Analyzer: FLXA202/FLXA21	Yes	Yes	N.A.	Yes	Yes	N.A.	Yes	Yes	N.A.

*1: Applicable when option code /TB (screw terminal) specified for SC202G/SC202SJ.
*2: Both pin and M3 ring can be used for SC450G, but M3 ring are recommended.
*3: SC402G, SC100, SC202SJ has been terminated.

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■ MODEL AND SUFFIX CODES

1. SC4AJ

Model	Suffix Code	Option Code	Description
SC4AJ	.....	.....	Conductivity sensor
Material	**-T**	.....	Titanium (Only for -AD)
	-S	.....	316L SS
Fitting type	**-AD**	.....	Adapter mounting type
	-SA	.....	Welding socket type (*1)
	-SB	.....	1 or 1.5 inch welding clamp type (*2)
	-SC	.....	2 inch welding clamp type (*2)
Sensor length	**-09**	.....	9 cm (Code for -AD)
	-15	.....	15 cm (Code for -AD)
	-NN	.....	fixed length (Code for -SA, -SB, -SC)
Cell constant	**-002**	.....	0.02 cm^{-1}
	-010	.....	0.1 cm^{-1}
Cable length	**-03**	.....	3 m (pin terminals)
	-05	.....	5 m (pin terminals)
	-10	.....	10 m (pin terminals)
	-15	.....	15 m (pin terminals) (*3)
	-20	.....	20 m (pin terminals) (*3)
	-X1	.....	3 m (M4 ring terminals) (*5)
	-X2	.....	5 m (M4 ring terminals) (*5)
	-X3	.....	10 m (M4 ring terminals) (*5)
	-X4	.....	15 m (M4 ring terminals) (*5)
	-X5	.....	20 m (M4 ring terminals) (*5)
	-Y1	.....	3 m (M3 ring terminals) (*6)
	-Y2	.....	5 m (M3 ring terminals) (*6)
	-Y3	.....	10 m (M3 ring terminals) (*6)
	-Y4	.....	15 m (M3 ring terminals) (*6)
	-Y5	.....	20 m (M3 ring terminals) (*6)
Temperature sensor	**-T1**	.....	Pt1000
Option	For AD only	**/PS**	3/4NPT adapter 316 SS
		/PF	3/4NPT adapter PVDF
		/RS	R3/4 adapter 316 SS
		/RF	R3/4 adapter PVDF
	For SA only	**/SA1**	Straight welding socket 316L SS
		/SA2	Angled welding socket 15° 316L SS
	For SB only	**/SB1**	Welding clamp 1 inch 316L SS
		/SB2	Welding clamp 1.5 inch 316L SS
	For SC only	**/SC1**	Welding clamp 2 inch 316L SS
	Oil prohibit	**/DG1**	Oil-prohibited use (*4)

*1: When you select fitting type -SA, place an order on the SC4AJ with option code /SA1 or /SA2.
*2: When you select fitting type -SB, place an order on the SC4AJ with option code /SB1 or /SB2 (including seal ring),
When you select fitting type -SC, place an order on the SC4AJ with option code /SC1 (including seal ring).
*3: Impossible use for the SC400G
*4: Washing treatment of wet part with alcohol.
*5: Used for connection to FLXA202/FLXA21.
*6: Used for connection to SC450G, SC202□/TB.

Spare parts for SC4AJ

Parts No.	Description
K9670MA	O-ring set for -SA
K9670MK	Seal rings for /SB1 or /SB2
K9670MP	Seal rings for /SC1
K9670MT	3/4 NPT Stainless steel adapter for -AD
K9670MU	3/4 NPT PVDF Adapter for -AD
K9670MV	R3/4 Stainless steel adapter for -AD
K9670MW	R3/4 PVDF Adapter for -AD
K9670MD	Angled welding socket and mounting nut for -SA
K9670ME	Staight welding socket for -SA
K9670MB	Angled welding socket for -SA
K9670MC	Straight welding socket for -SA
K9670ML	Welding clamp 1 or 1.5 inch for -SB
K9670MQ	Welding clamp 2 inch for -SC

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2. SC8SG

Model	Suffix Code	Option Code	Description
SC8SG	.....	.....	Conductivity detector
Measuring range	**-R31**	.....	Low range; cell constant: 0.01 cm^{-1}
	-R61	.....	High range; cell constant: 10 cm^{-1}
Electrode configuration	**-T**	.....	2-electrode system (for both 0.01 cm^{-1} and 10cm^{-1} cell constants) - for general measurements (*1)
	-F	.....	4-electrode system (for 10 cm^{-1} cell constant only) - for countermeasures against polarization due to contamination (*2)
Construction — Screw-in type	**-100**	.....	with welding socket (*3)
	-101	.....	without welding soket (a welding socket [K9208BK] should be ordered separately)
Construction — Flow-through type (*7)	**-302**	.....	Rc1/2 female threaded; chamber material: SCS14
	-312	.....	Rc1/2 female threaded; chamber material: PP
	-303	.....	1/2NPT female threaded; chamber material: SCS14
	-313	.....	1/2NPT female threaded; chamber material: PP
	-304	.....	JIS 10K 15 RF flange; chamber material: SCS14
	-314	.....	JIS 10K 15 FF flange; chamber material: PP
	-305	.....	ANSI Class150 1/2 RF flange with serration; chamber material: SCS14
	-315	.....	ANSI Class150 1/2 FF flange; chamber material: PP
Cable length	**-P1**	.....	5.5 m (special cable supplied with detector) (pin terminals)
	-P2	.....	10 m (special cable supplied with detector) (pin terminals)
	-P3	.....	20 m (special cable supplied with detector) (pin terminals) (*4)
	-F1	.....	5.5 m (special cable supplied with detector) (fork terminal)
	-F2	.....	10 m (special cable supplied with detector) (fork terminal)
	-F3	.....	20 m (special cable supplied with detector) (fork terminal) (*4)
	-X1	.....	5.5 m (special cable supplied with detector) (M4 ring terminal) (*5)
	-X2	.....	10 m (special cable supplied with detector) (M4 ring terminal) (*5)
	-X3	.....	20 m (special cable supplied with detector) (M4 ring terminal) (*5)
	-Y1	.....	5.5 m (special cable supplied with detector) (M3 ring terminal) (*6)
	-Y2	.....	10 m (special cable supplied with detector) (M3 ring terminal) (*6)
	-Y3	.....	20 m (special cable supplied with detector) (M3 ring terminal) (*6)
Style code	***A**	.....	Style A
Option		**/PS**	Stainless Steel Mounting hardware (for PP chamber)
		/SS	Stainless Steel Mounting hardware (for SCS14 chamber)

*1: The cell constant is 0.01 cm^{-1} when the combiration of measuring range -R31 and Electrode configuration -T is chosen.
The cell constant is 10 cm^{-1} when the combination of measuring range -R61 and Electrode configuration -T is chosen.
*2: Electrode configuration -F cannot be chosen when -R31 is chosen. For process where can give contamination to a detector, a four-electrode detector, the combination of -R61 and -F, should be used.
*3: If a welding socket (K9208BK) needs to be ordered beforehand, either place a separate order or prepare one by referring to the extemal view later in this brochure.
*4: Impossible use for the SC400G.
*5: Used for connection to FLXA202/FLXA21.
*6: Used for connection to SC450G, SC202□/TB.
*7: The model is not equipped with a mounting hardware, please place an order on the SC8SG with option code /PS or /SS when you select flow-through model.
The PP chamber can have cracks or splits unless it is not supported by a mounting hardware.

Spare Parts for SC8SG

Parts No.	Description
K9208BA	0.01 cm^{-1} cell constant, two-electrode sensor
K9208BC	10 cm^{-1} cell constant, two-electrode sensor
K9208BD	10 cm^{-1} cell constant, four-electrode sensor
K9208BK	Welding socket for screw-in model
G9303EB	O-ring

3. WU41

Model	Suffix code	Option code	Description
WU41	.....	.....	Dedicated Cable for SC8SG
Cable end	-F	.....	fork terminals
	-P	.....	pin terminals
	-X	.....	M4 ring terminals (*1)
	-Y	.....	M3 ring terminals (*2)
Cable length	-05	.....	5.5 m
	-10	.....	10 m
	-20	.....	20 m

*1: Used for connection to FLXA202/FLXA21.
*2: Used for connection to SC450G, SC202□/TB

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4. SC210G

Model	Suffix Code	Option Code	Description
SC210G	.....	.....	Conductivity detector
Measuring range	**-A**	.....	Low range; cell constant: 0.05 cm^{-1}
	-B	.....	Medium range; cell constant: 5 cm^{-1}
Construction: Screw-in type	**-100**	.....	R1-1/2
	-103	.....	1-1/2NPT male
Construction: Flange type	**-206**	.....	JIS 10K 50 RF flange
	-207	.....	ANSI Class150 2 RF flange (with serration)
	-208	.....	JPI Class150 2 RF flange
Construction: Flow-through type (*1)	**-302**	.....	Rc1/2 female, chamber material: SCS14
	-312	.....	Rc1/2 female, chamber material: PP
	-303	.....	1/2NPT female, chamber material: SCS14
	-313	.....	1/2NPT female, chamber material: PP
	-304	.....	JIS 10K 15 RF flange, chamber material: SCS14
	-314	.....	JIS 10K 15 FF flange, chamber material: PP
	-305	.....	ANSI Class150 1/2 RF flange with serration, chamber material: SCS14
	-315	.....	ANSI Class150 1/2 FF flange, chamber material: PP
	-306	.....	JPI Class150 1/2 RF flange, chamber material: SCS14
Construction: With gate valve	**-402**	.....	R1-1/4
	-403	.....	1-1/4NPT male
Sensor length	**-L015**	.....	150 mm (Standard)
	-L030	.....	300 mm (*2)
	-L050	.....	500 mm (*2)
	-L100	.....	1000 mm (*2)
	-L150	.....	1500 mm (*2)
	-L200	.....	2000 mm (*2)
Cable length	**-03**	.....	3 m (M4 ring terminals) (*4)
	-05	.....	5 m (M4 ring terminals) (*4)
	-10	.....	10 m (M4 ring terminals) (*4)
	-15	.....	15 m (M4 ring terminals) (*4)
	-20	.....	20 m (M4 ring terminals) (*3) (*4)
	-AA	.....	3 m (pin terminals)
	-BB	.....	5 m (pin terminals)
	-CC	.....	10 m (pin terminals)
	-DD	.....	15 m (pin terminals)
	-EE	.....	20 m (pin terminals) (*3)
	-Y1	.....	3 m (M3 ring terminals) (*5)
	-Y2	.....	5 m (M3 ring terminals) (*5)
	-Y3	.....	10 m (M3 ring terminals) (*5)
	-Y4	.....	15 m (M3 ring terminals) (*5)
	-Y5	.....	20 m (M3 ring terminals) (*5)
Style code	***A**	.....	Style A
Option		**/SCT**	Stainless steel tag plate
		/ANSI	With ANSI connection adaptor (*6)
		/PF	DAI-ELperfrow (perfluoro-elastomer) specification (*7)
		/PS	SUS mounting hardware (for PP construction)
		/SS	SUS mounting hardware (for SCS14 construction)
		/X1	Epoxy-coated (baked)
		/DG1	Oil-prohibited use (Degrease cleaning treatment) (except for the type with gate valve)
		/MCT	Material Certificate (*8) (except for gate valve)

*1: The model is not equipped with a mounting brackets, place an order on the SC210G with option code /PS or /SS when you select flow-through model. The PP chamber material can have cracks or splits unless it is not supported by a mounting hardware.
*2: Only for Screw-in type and Flange type
*3: Impossible use for the SC400G
*4: Used for connection to FLXA202/FLXA21.
*5: Used for connection to SC450G or SC202/TB.
*6: Adaptor for cable inlet (carbon steel)
*7: Materials for O-ring of electrode assembly and chamber seal become perfluoro-elastomer. But, in construction -402 and -403, the sealing part of gate valve doesn't become the elastomer.
*8: Additional lead time is required.

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Spare Parts for SC210G

Name	Part No.	Remarks
Electrode Assembly (*1) (for SC210G-A)	K9208EA K9208EB K9208EC K9208ED K9208EE K9208EF K9315NA K9315NB K9315NC K9315ND K9315NE K9315NF	150 mm (C=0.05cm^{-1}) 500 mm (C=0.05cm^{-1}) 1000 mm (C=0.05cm^{-1}) 1500 mm (C=0.05cm^{-1}) 2000 mm (C=0.05cm^{-1}) 300 mm (C=0.05cm^{-1}) 150 mm (C=0.05cm^{-1}) with perfluoro-elastomer 300 mm (C=0.05cm^{-1}) with perfluoro-elastomer 500 mm (C=0.05cm^{-1}) with perfluoro-elastomer 1000 mm (C=0.05cm^{-1}) with perfluoro-elastomer 1500 mm (C=0.05cm^{-1}) with perfluoro-elastomer 2000 mm (C=0.05cm^{-1}) with perfluoro-elastomer
Electrode Assembly (*2) (for SC210G-A with gate valve)	K9208KA K9315NN	(C=0.05cm^{-1}) (C=0.05cm^{-1}) with perfluoro-elastomer
Electrode Assembly (*1) (for SC210G-B)	K9208JA K9208JB K9208JC K9208JD K9208JE K9208JF K9315NG K9315NH K9315NJ K9315NK K9315NL K9315NM	150 mm (C=5cm^{-1}) 500 mm (C=5cm^{-1}) 1000 mm (C=5cm^{-1}) 1500 mm (C=5cm^{-1}) 2000 mm (C=5cm^{-1}) 300 mm (C=5cm^{-1}) 150 mm (C=5cm^{-1}) with perfluoro-elastomer 300 mm (C=5cm^{-1}) with perfluoro-elastomer 500 mm (C=5cm^{-1}) with perfluoro-elastomer 1000 mm (C=5cm^{-1}) with perfluoro-elastomer 1500 mm (C=5cm^{-1}) with perfluoro-elastomer 2000 mm (C=5cm^{-1}) with perfluoro-elastomer
Electrode Assembly (*2) (for SC210G-B with gate valve)	K9208MA K9315NP	(C=5cm^{-1}) (C=5cm^{-1}) with perfluoro-elastomer
Cable	K9315QA K9315QB K9315QC K9315QF K9315QG K9315QR K9315QS K9315QT K9315QU K9315QV K9315QJ K9315QK K9315QL K9315QM K9315QQ	3 m (M4 ring terminals, SC210G...-03) 5 m (M4 ring terminals, SC210G...-05) 10 m (M4 ring terminals, SC210G...-10) 15 m (M4 ring terminals, SC210G...-15) 20 m (M4 ring terminals, SC210G...-20) 3 m (pin terminals) 5 m (pin terminals) 10 m (pin terminals) 15 m (pin terminals) 20 m (pin terminals) 3 m (M3 ring terminals) 5 m (M3 ring terminals) 10 m (M3 ring terminals) 15 m (M3 ring terminals) 20 m (M3 ring terminals)
O-ring	K9050AT K9050MR K9319RN	Fluoro-rubber (FKM) O-ring (for screw-in type, flange type and flow-through type) Fluoro-rubber (FKM) O-ring (for gate valve type) Perfluoro-elastomer O-ring (for all types)

*1: For the electrode assembly for oil-prohibited use (/DG1) and/or with material certificate (/MCT), please contact Yokogawa.
*2: For the electrode assembly with material certificate (/MCT), please contact Yokogawa.

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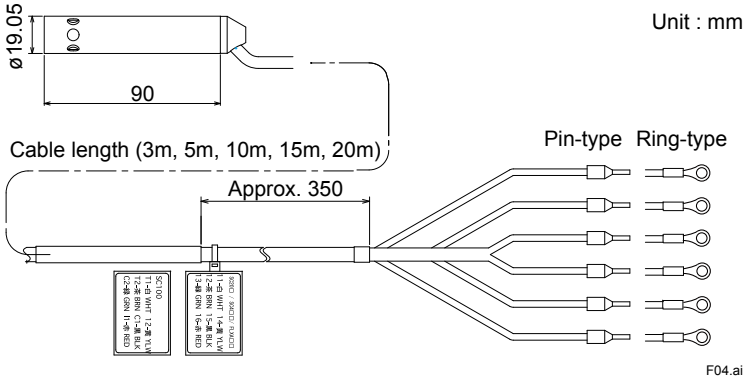
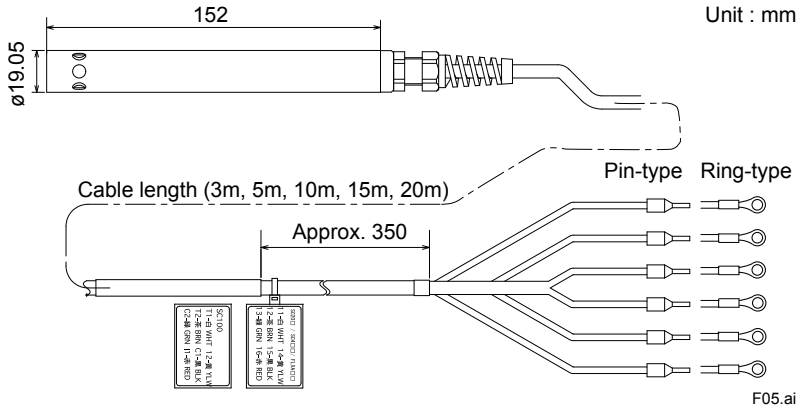
■ DIMENSIONS

1. SC4AJ

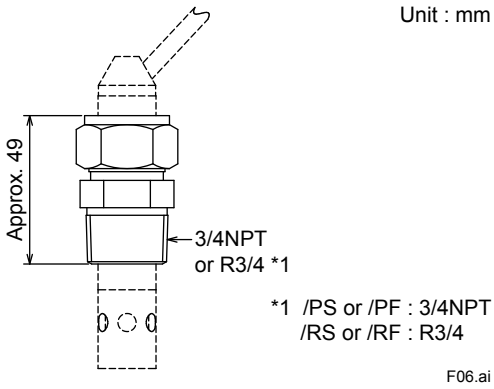
<Adapter mounting type>
SC4AJ-□-AD-09
Sensor length: 09 (9 cm)



SC4AJ-□-AD-15
Sensor length: 15 (15 cm)



● **Option: Adapter mounting type (-AD)** **/PS (Stainless Steel)** **/PF (PVDF)**
/RS (Stainless Steel) **/RF (PVDF)**



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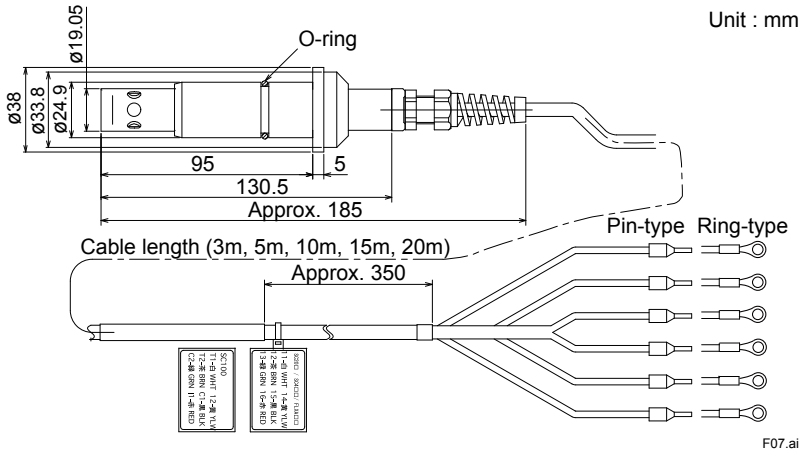
<Welding socket type>
SC4AJ-□-SA-NN

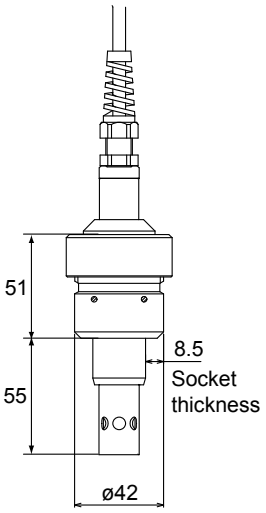
Unit : mm



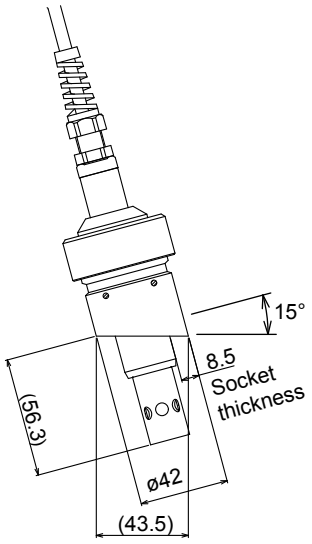
● **Option: Welding socket type (-SA)**

Unit : mm

Straight welding socket: /SA1



Angled welding socket: /SA2



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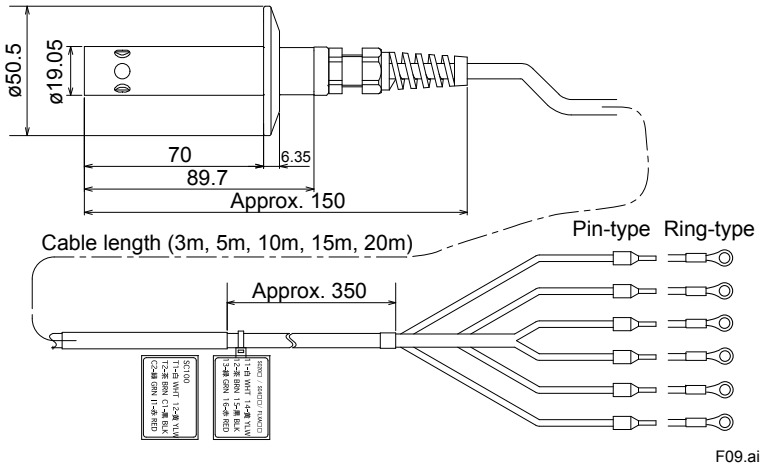
<Welding clamp type>
SC4AJ-□-SB-NN

Unit : mm

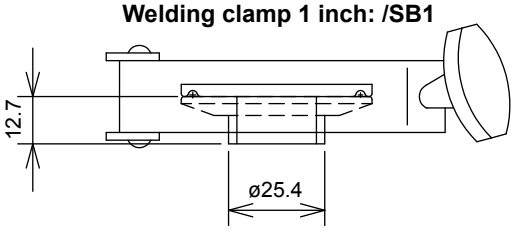


F09.ai

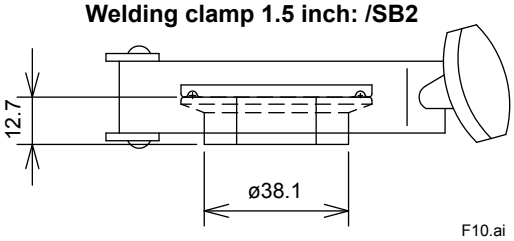
● **Option: Welding clamp type (-SB)**

Unit : mm

Welding clamp 1 inch: /SB1



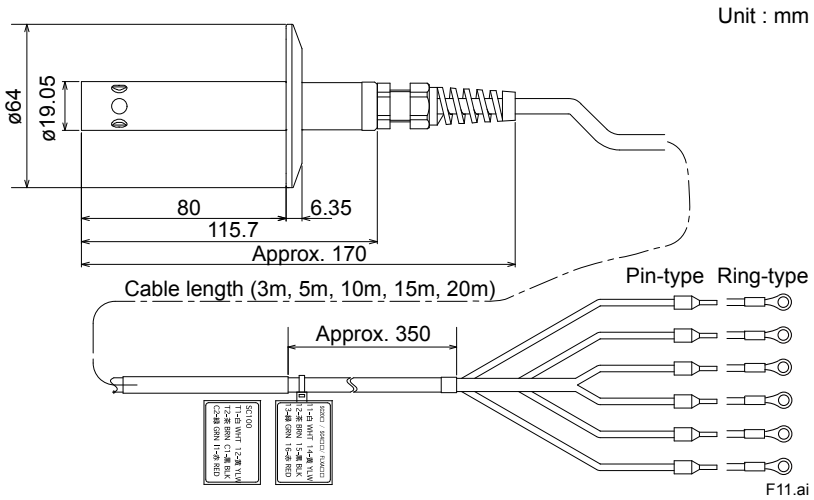
Welding clamp 1.5 inch: /SB2



F10.ai

Sensor SC4AJ-□-SC-NN

Unit : mm

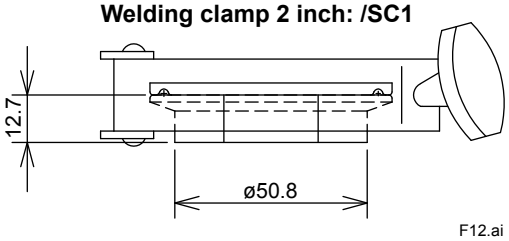


F11.ai

● **Option: Welding clamp type (-SC)**

Unit : mm

Welding clamp 2 inch: /SC1



F12.ai

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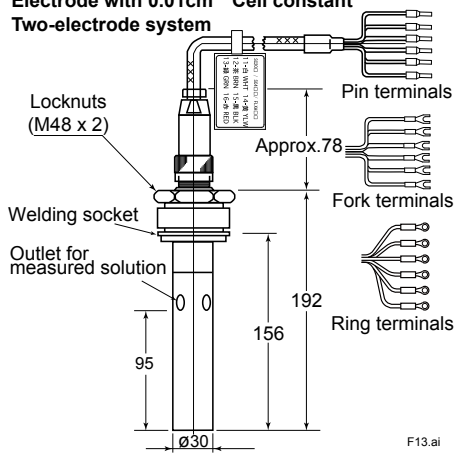
2. SC8SG

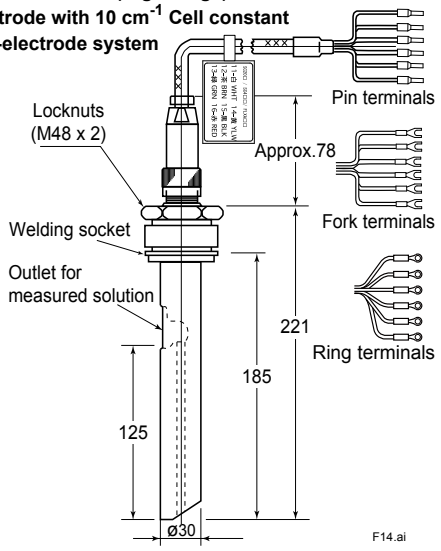
<Screw-in type>

SC8SG-R31-T-100 (Low range) Unit : mm
Electrode with 0.01cm^{-1} Cell constant
Two-electrode system



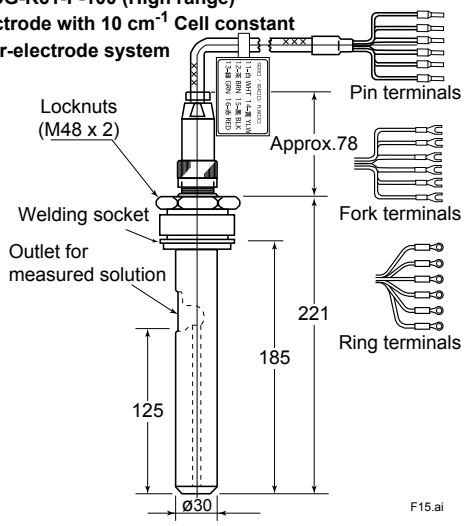
F13.ai

SC8SG-R61-T-100 (High range) Unit : mm
Electrode with 10 cm^{-1} Cell constant
Two-electrode system



F14.ai

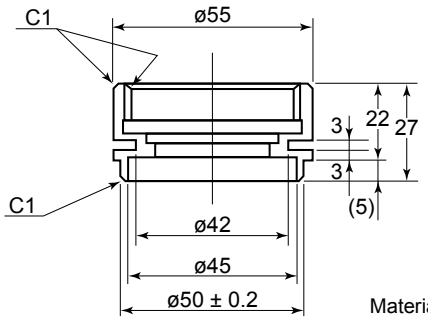
SC8SG-R61-F-100 (High range) Unit : mm
Electrode with 10 cm^{-1} Cell constant
Four-electrode system



F15.ai

Welding socket
Parts No: K9208BK

Unit : mm



Material: 316 SS

Note: If you make the welding socket for screw-in type, refer to the above drawing.

F16.ai

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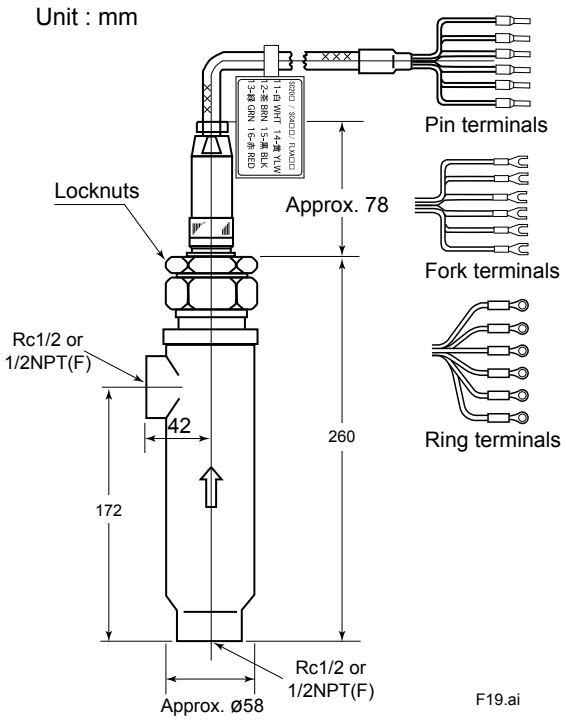
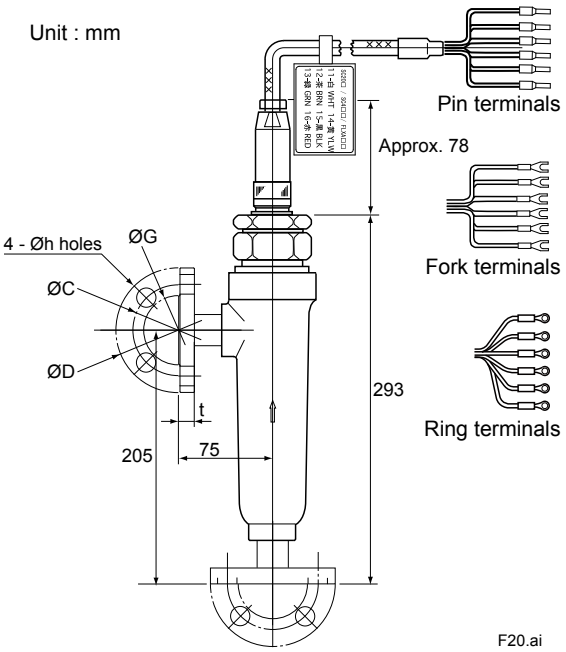
<Flow-through type>
SC8SG-R□1-□-302,
SC8SG-R□1-□-303,
Screw connection (Chamber Material: SCS14)



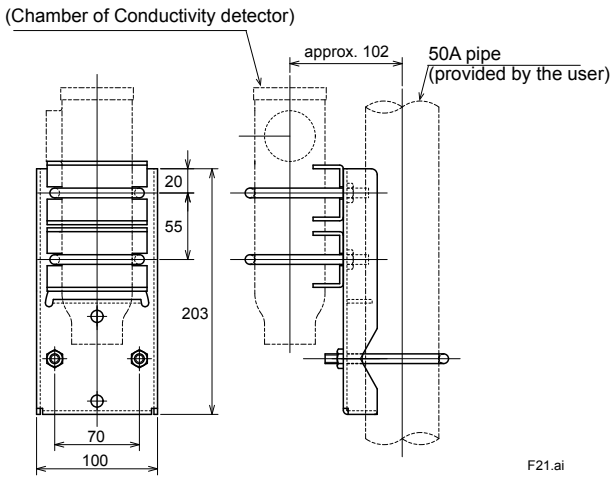
SC8SG-R□1-□-304,
SC8SG-R□1-□-305,
Flange connection (Chamber Material: SCS14)



Flange rating	øC	øD	øG	øh	t
JIS 10K 15 RF	70	95	52	15	12
ANSI Class150 1/2 RF (with serration)	60.5	88.9	34.9	15.7	11.2

● Option: Mounting hardware (-SS)

Unit : mm



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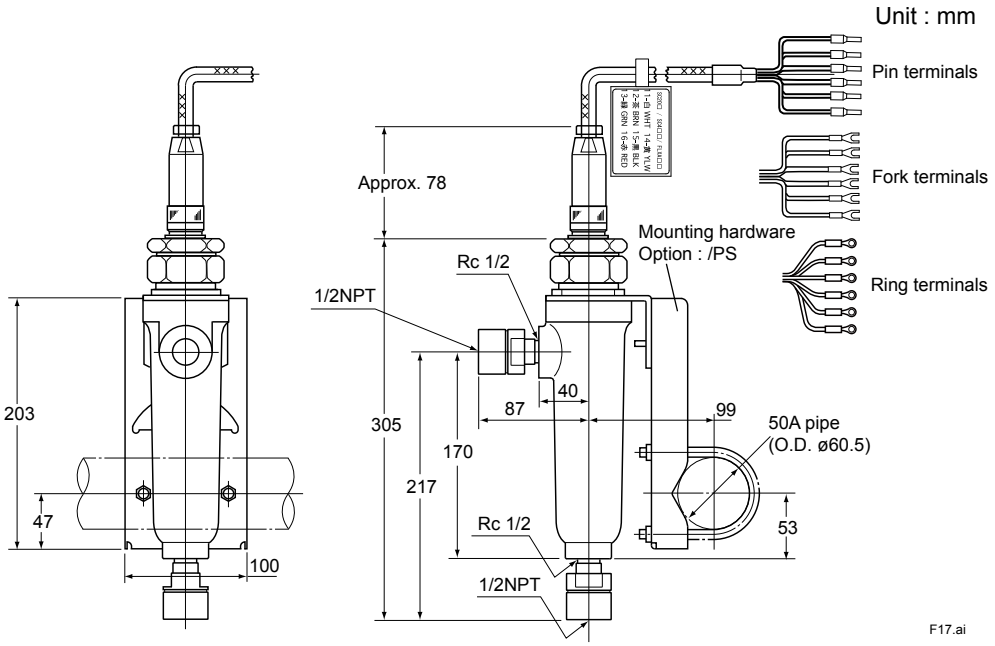
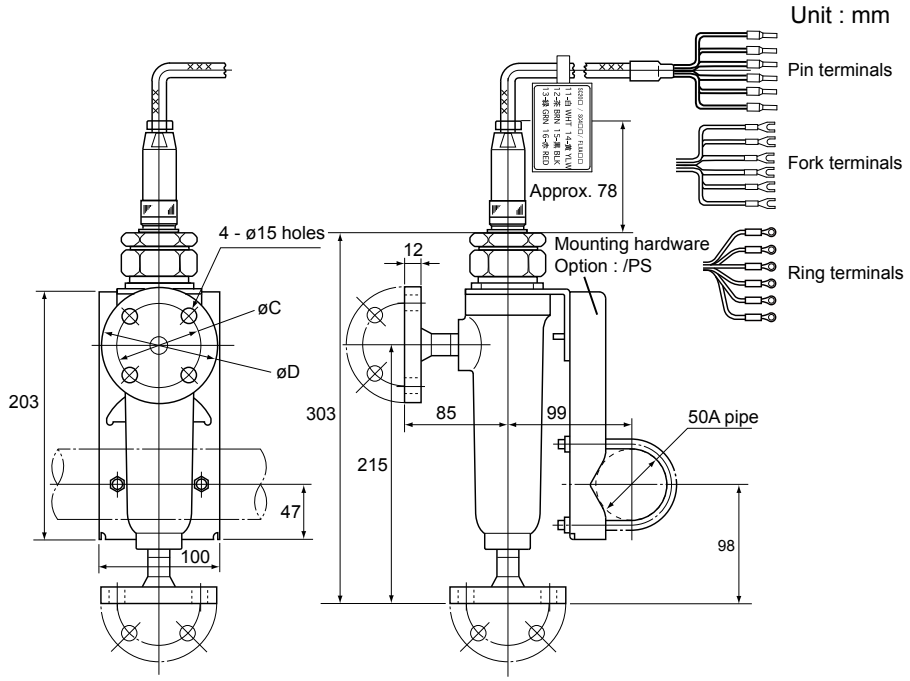
SC8SG-R□1-□-312, SC8SG-R□1-□-313,
Screw connection (Chamber Material: PP) + Option (Mounting hardware (/PS))



SC8SG-R□1-□-314, SC8SG-R□1-□-315,
Flange connection (Chamber Material: PP) + Option (Mounting hardware (/PS))



Flange rating	øC	øD
JIS 10K 15 FF	70	95
ANSI Class150 1/2 FF	60.5	88.9

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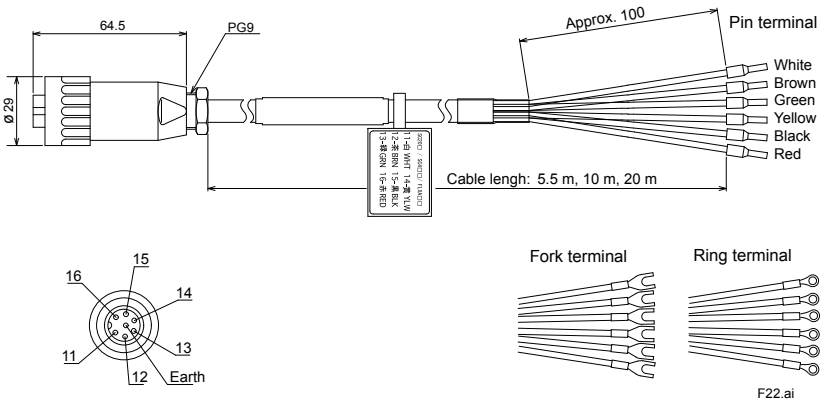
3. WU41 for SC8SG

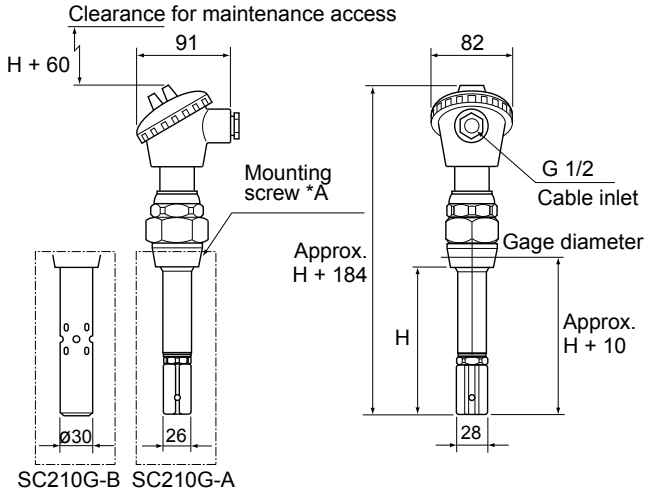
Unit : mm



4. SC210G

<Screw-in type>
SC210G-□-100, SC210G-□-103

Unit : mm



<Mounting screw>

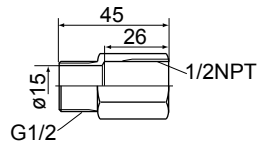
Suffix Code	A
SC210G - □ - 100	R 1-1/2
SC210G - □ - 103	1-1/2 NPT

<Sensor length>

Suffix Code	H
SC210G - □ - 10□ - L015 - □ □ *A	150
SC210G - □ - 10□ - L030 - □ □ *A	300
SC210G - □ - 10□ - L050 - □ □ *A	500
SC210G - □ - 10□ - L100 - □ □ *A	1000
SC210G - □ - 10□ - L150 - □ □ *A	1500
SC210G - □ - 10□ - L200 - □ □ *A	2000

F23.ai

● **Option: With ANSI connection adaptor (-ANSI)**



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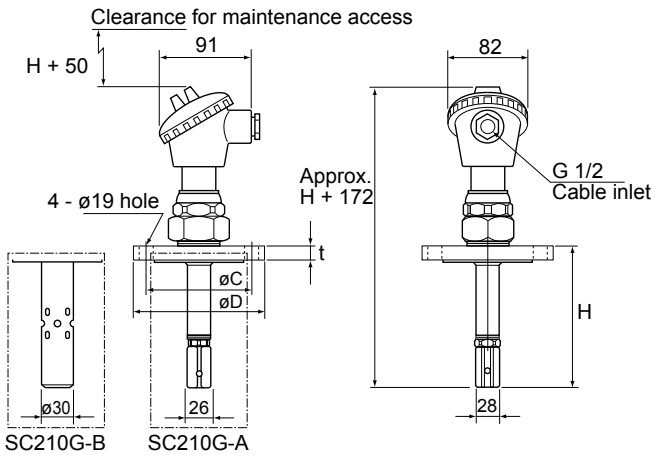
<Flange Type>
SC210G-□-206, SC210G-□-207, SC210G-□-208

Unit : mm



<Flange>

Sensor length code	Flange rating	øC	øD	t
SC210G - □ - 206 -L □ □ □ - □ □ * A	JIS 10K 50 RF	120	155	16
SC210G - □ - 207 -L □ □ □ - □ □ * A	ANSI Class150 2 RF	120.7	152.4	19.1
SC210G - □ - 208 -L □ □ □ - □ □ * A	JPI Class150 2 RF	120.6	152	19.5

Note : ANSI flange with serrations.

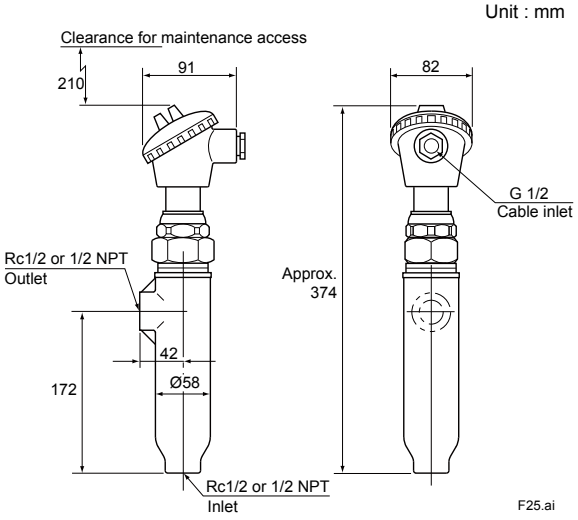
F24.ai

<Sensor length>

Sensor length code	H
SC210G - □ - 20□ - L015 - □ □ * A	162
SC210G - □ - 20□ - L030 - □ □ * A	312
SC210G - □ - 20□ - L050 - □ □ * A	512
SC210G - □ - 20□ - L100 - □ □ * A	1012
SC210G - □ - 20□ - L150 - □ □ * A	1512
SC210G - □ - 20□ - L200 - □ □ * A	2012

<Flow-through type>
SC210G-□-302, SC210G-□-303 *1
Screw connection (Chamber Material: SCS14)

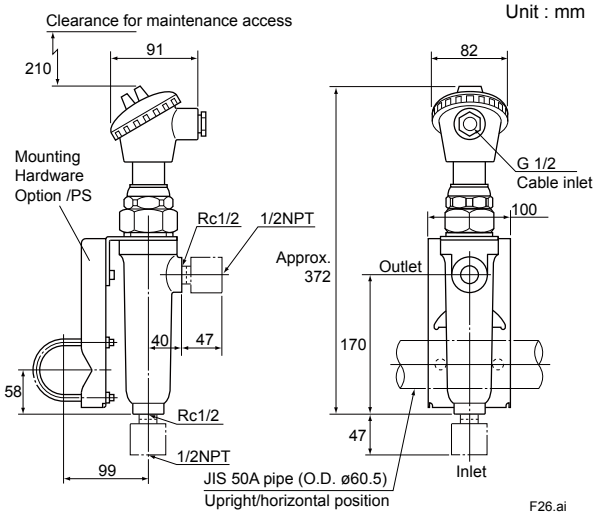
Unit : mm



F25.ai

SC210G-□-312, SC210G-□-313
Screw connection (Chamber Material: PP)

Unit : mm



F26.ai

*1: Dimension and Fitting of Option (Mounting hardware (/SS)) refer to p13.

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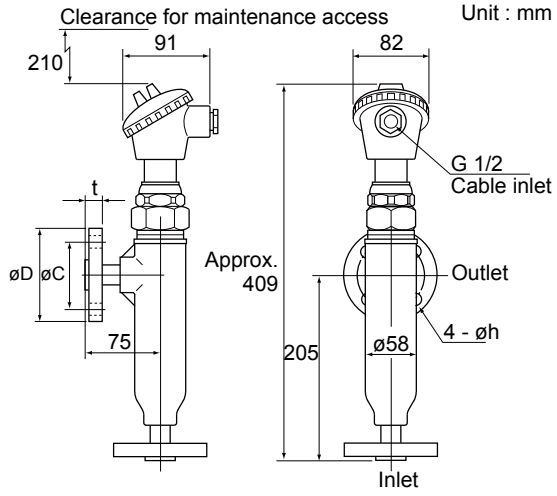
SC210G-□-304, SC210G-□-305
SC210G-□-306
Flange connection (Chamber Material: SCS14)



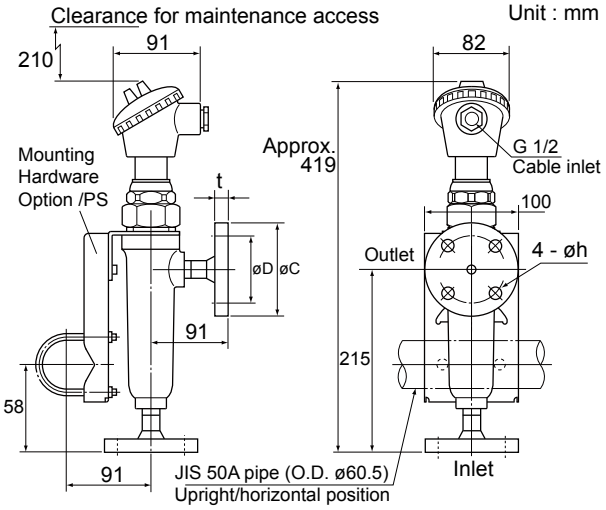
Fange rating	øC	øD	t	øh
JIS 10K 15 RF	70	95	12	15
ANSI Class150 1/2 RF	60.5	88.9	11.2	15.7
JPI Class150 1/2 RF	60.3	89	10.9	16

Note: ANSI flange is serration.

F28.ai

SC210G-□-314, SC210G-□-315

Flange connection (Chamber Material: PP)

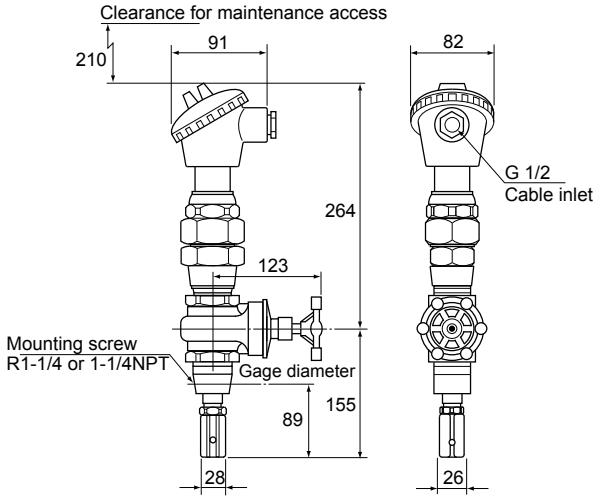


Flange rating	øC	øD	t	øh
JIS 10K 15 FF	70	95	12	15
ANSI Class150 1/2 FF	60.5	88.9	12	15

F27.ai

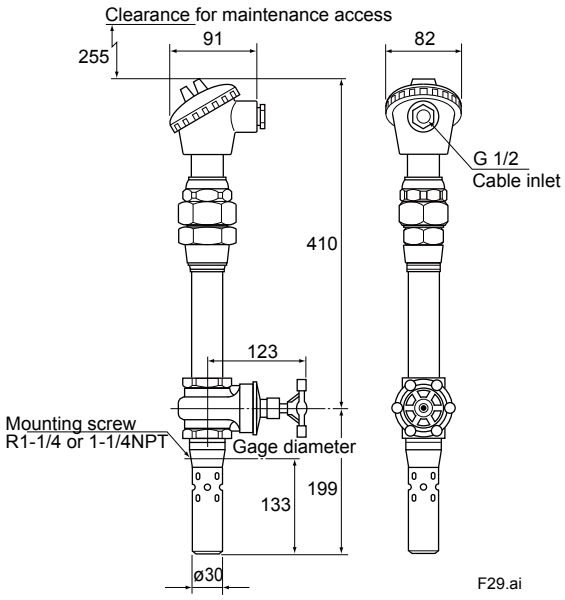
<With gate valve>
SC210G-□-402, SC210G-□-403

SC210G-A (Low range)



SC210G-B (Medium range)

Unit : mm



F29.ai

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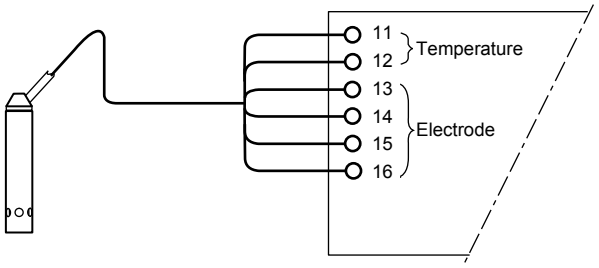
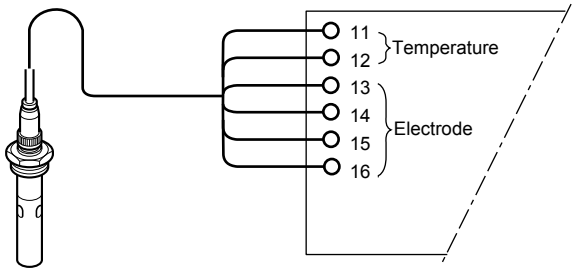
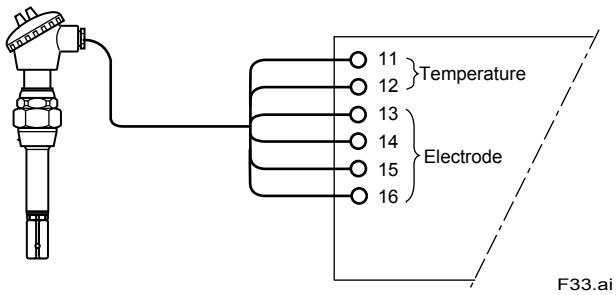
■ WIRING DIAGRAM



SC4AJ Conductivity Sensor
(two-electrode system)
Applicable Converter / Transmitter:
SC450G, FLXA202/FLXA21, SC202G, SC202SJ
For SC100, see SD12D11A01-01E.



SC8SG Conductivity Detector
(two-electrode system, four-electrode system)
Applicable Converter / Transmitter:
SC450G, FLXA202/FLXA21, SC202G, SC202SJ



SC210G Conductivity Detector
(two-electrode system)
Applicable Converter / Transmitter:
SC450G, FLXA202/FLXA21, SC202G, SC202SJ

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■ TABLE OF CORROSION-RESISTANT MATERIALS

Note: This table shows corrosion resistances against each specified chemical only. If two or more kinds of chemical are mixed in a sample, the properties may be different from those shown in this table.

◎ Very suitable
○ Suitable
△ Slightly unsuitable
× Unusable

Example of Description
Concentration % Temperature ˚C Judgement ◎

		Holder material			Electrode material						Seal O-ring material
		Polypropylene			316 SS			Epoxy resin			PVDF			Fluoro-rubber (FKM)
Inorganic acids	Hydrochloric acid	5 20 ◎ 80 ◎			5 30 ×			5 30 ○ 10 60 ×			5 30 ◎ 1 b ×			
	Hypohlorous acid	10 20 ◎ 40 ○			14 30 ×			15 30 ×			20 40 ◎			
	Nitric acid	10 20 ◎ 80 ◎			10 30 ◎			10 30 ◎ 25 60 ×			10 100 ○			Strong acid ◎ Weak acid ◎
	Sulfuric acid	3 20 ◎ 3 100 ◎			5 30 ◎ 5 100 ×			5 20 ○ 10 60 ×			5 30 ◎ 5 100 ×			
	Phosphoric acid	30 60 ◎ 30 100 △			15 30 ◎ 5 b ◎			5 30 ◎ 25 100 ×			5 30 ◎ 5 60 ○			
Alkali	Ammonia water	15 80 ◎ 15 100 ○			10 b ◎ 28 65 ◎			10 b ◎ 28 65 ◎			10 b ◎ 28 65 ◎			
	Caustic potash				10 b ◎ 25 b ◎			10 60 ○ 25 b ×			10 b ◎ 25 b ○			
	Caustic soda	20 80 ◎ 20 100 ◎			20 30 ◎ 20 b ◎			20 60 ◎ 20 b ×			20 30 ◎ 20 b ◎			Strong alkali × Weak alkali △
	Potassium carbonate				5 b ◎ 35 b ◎			5 b ◎ 35 b ◎			5 b ◎ 35 b ○			
	Sodium carbonate	sat. 100 ◎			25 b ◎			25 b ◎			25 b ◎			
Chlorides	Zinc chloride				20 b △			20 60 ○			20 b ◎			
	Aluminum chloride				25 25 × 25 25 ×						10 b ◎ 25 b ×			
	Ammonium chloride	35 40 ◎			25 b △			25 20 ○			25 b ◎			
	Potassium chloride				sat. 60 ◎			sat. 60 ◎			sat. 60 ◎			
	Calcium chloride	sat. 80 ◎ sat. 100 ◎			25 b ○			25 b ◎			25 b ◎			
	Ferric chloride	20 40 ◎ 60 ◎			30 b ×			30 60 ○ 100 ×			30 b ◎			
	Sodium chloride 20% + C12 (saturated) (Electrolyte)	100 ◎			90 ×			90 ×			90 ◎			
	Sea water	24 ◎			24 △			60 ○			24 ◎			
Sulfates	Ammonium sulfate	5 60 ◎			20 b ◎ sat. 30			20 b ◎ sat. 30 ○			20 b ◎ sat. 30 ◎			
	Potassium sulfatc				10 b ◎			10 b ◎			10 b ◎			
	Sodium sulfate	Good corrosion resistance against all salts normally used			20 b ◎			20 b ◎			20 b ◎			
Ni-trates	Ammonium nitrate				20 b ◎			20 b ◎			20 b ◎			
	Sodium nitrate				50 b ◎			50 b ◎			50 b ◎			
Others	Sodium sulfite				20 b ◎						20 b ◎			
	Hydrogen peroxide				10 30 ◎			10 30 ◎			10 30 ◎			
	Sodium hypochlorite	10 90 ◎ 20 80 ◎			2 60 to 90 ×			2 60 to 90 ×			15 30 ◎			
	Potassium bichromate				10 b ◎			10 20 ○			10 b ◎			
	Alcohol	96 70 ◎			100 b ◎			80 60 ○			80 100 ○			
	Acetic acid	100 70 ◎			100 70 ◎			10 60 ○			10 100 ○			
	Phenol	100 20 ◎			95 30 ◎			100 20 ×			100 20 ○			
	Aromatic solvent	100 20 ×			100 25 ◎			100 20 ×			100 ○			

(Note) b: Shows temperatures up to the boiling point. PVDF: Polyvinylidene difluoride

CAUTION

Select the material of wetted parts with careful consideration of process characteristics. Inappropriate selection may cause leakage of process fluids, which greatly affects facilities. Considerable care must be taken particularly in the case of strongly corrosive process fluid such as hydrochloric acid, sulfuric acid, hydrogen sulfide, and sodium hypochlorite. If you have any questions about the wetted part construction of the product, be sure to contact Yokogawa.

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Conductivity Detectors/Sensors Inquiry Specifications

Thank you for inquiry about YOKOGAWA Conductivity Detector/Sensor. Please check (✓) the appropriate box (☐) and write down the relevant information in the underlined blanks.

1. General Items

Name of your company:_____
Person in charge :_____ Belongs to:_____(Phone No.:_____)
Name of plant :_____
Measuring point :_____
Purpose of use : ☐ Indication ☐ Record ☐ Alarm ☐ Control
Power supply :_____V AC,_____Hz

2. Measuring Conditions

(1) Liquid temperature :_____to_____, Normal_____[˚C]
(2) Liquid pressure :_____to_____, Normal_____[kPa]
(3) Flow rate :_____to_____, Normal_____[L/min.]
(4) Flow speed :_____to_____, Normal_____[m/s]
(5) Slurry or fouling components: ☐ No ☐ Yes
(6) Name of measuring liquid :_____
(7) Component of measuring liquid :_____
(8) Others :_____

3. Installing Location

(1) Ambient temperature :_____
(2) Installing location : ☐ Outdoors ☐ Indoors_____
(3) Others :_____

4. Specification Requirements

(1) Measuring Range :_____
(2) Transmission output : ☐ 4 to 20 mA DC ☐ 0 to 20 mA DC
(3) Detector/Sensor : SC4AJ ☐ 2-electrode system (0.02 cm^{-1}) ☐ 2-electrode system (0.1 cm^{-1})
SC8SG ☐ 2-electrode system (0.01 cm^{-1}) ☐ 2-electrode system (10 cm^{-1})
☐ 4-electrode system (10 cm^{-1})
SC210G ☐ 2-electrode system (0.05 cm^{-1}) ☐ 2-electrode system (5 cm^{-1})
(4) Mounting type : SC4AJ ☐ Adapter mounting ☐ Welding socket ☐ Welding clamp
SC8SG ☐ Screw-in ☐ Flow-through
SC210G ☐ Screw-in ☐ Flange ☐ Flow-through
☐ Screw-in with gate valve
(5) Cable length : SC4AJ ☐ 3 m ☐ 5 m ☐ 10 m ☐ 15 m ☐ 20 m
SC8SG ☐ 5.5 m ☐ 10 m ☐ 20 m
SC210G ☐ 3 m ☐ 5 m ☐ 10 m ☐ 15 m ☐ 20 m
(6) Dedicated cable for SC8SG : WU41 ☐ 5.5 m ☐ 10 m ☐ 20 m

(7) Others :_____

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