

General Specifications

Model SC4A and PR4A Conductivity Sensors and Fittings for 2-electrode Systems

Insertion Sensors

Stainless steel or Titanium 2-electrode sensors with cell constants of 0.02 cm⁻¹, 0.10 cm⁻¹, and fixed cables 3 to 20 meters in length.

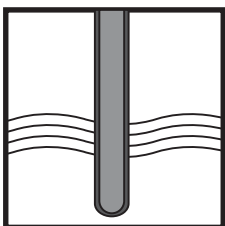
Intended for the low conductivity applications found in the semi-conductor, power, water and pharmaceutical industries, these sensors are designed in a convenient compact style. There are several mounting possibilities, including a compression gland, giving a simple effective method of direct insertion in process pipework. The sensors are made from a combination of wetted materials approved by FDA. This makes them ideally suited for the monitoring of pure water systems used in the preparation of injectable solutions. For this kind of application, sanitary clamp mountings are most often used. As with all Yokogawa conductivity sensors, the cell constants are individually calibrated in our laboratories using an ASTM method traceable to NIST international standards.

Features

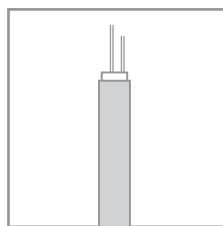
- Precise individually calibrated cell constant.
- Fast temperature response.
- Built-in Pt1000 temperature sensor.
- Fixed cable length 3, 5, 10, 15 or 20 mtr.
- Direct process insertion.
- Wide range of mountings.
- Compatible with PR4A retractably assembly.
- The sensor is polished to meet pharmaceutical requirements.



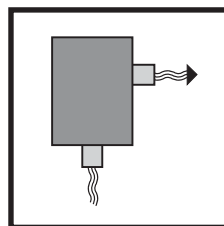
System Configuration



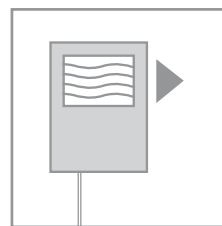
Sensors



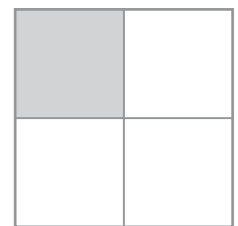
Cables



Fittings



Transmitters



Accessories

Specifications SC4A-AD

General Specifications - Materials - Wetted Parts

- Body & electrodes : Stainless steel AISI 316
or Titanium grade 2 or 3
- O-ring : EPDM FDA
- Mounting adapter : PVDF or Stainless steel AISI 316
- Insulation : PEEK (Poly Ether Ether Ketone)

Operating Specifications (Sensor)

- Measuring system : 2-electrode (4-wire)
- Maximum pressure : 10 bar (142 PSIG)
- Maximum temperature: 110°C (230 °F)
- Temperature response: < 1 minute for 90% of a step change
- Sterilize : At 135°C (275 °F)

Shipping details

- Package size : wxhxd 220 x 220 x 90 cm
- wxhxd 215 x 150 x 55 cm
- Package weight : Approx. 1.6 kg. 3.5 lb

Model	Suffix	Option	Description
SC4A*			19 mm conductivity sensor
	-T		Titanium
	-S		Stainless steel (EHEDG model)
Fitting-type	-AD		For adapter mounting
Sensor length	-09		9 cm
	-15		15 cm
Cellconstant	-002		0.02/cm
	-010		0.1/cm
Cable length	-03		3 mtr
	-05		5 mtr
	-10		10 mtr
	-15		15 mtr
	-20		20 mtr
	-T1		Pt1000
AD only		/PS	3/4"NPT Stainless Steel adapter
		/PF	3/4"NPT PVDF adapter
(option /PS required)		/FF	Stainless Steel flow fitting
Certificates		/Q	Quality Inspection Certificate

* 3.1 Material certificate according to EN 10024 is standard delivered with this sensor.

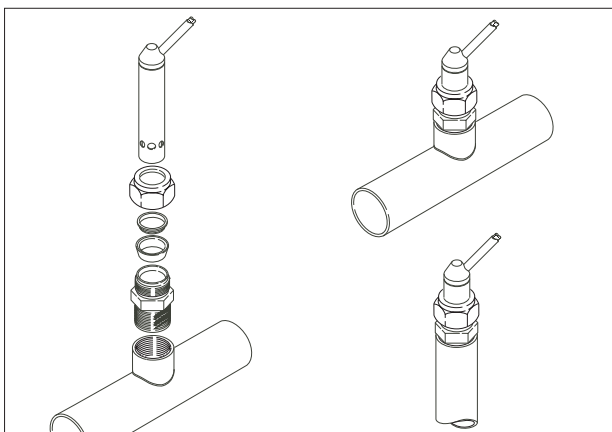
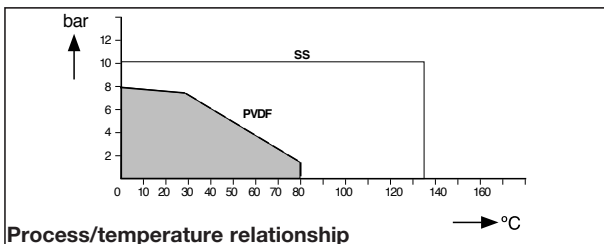


Figure 1. Mounted sensor with the option /PS and /PF

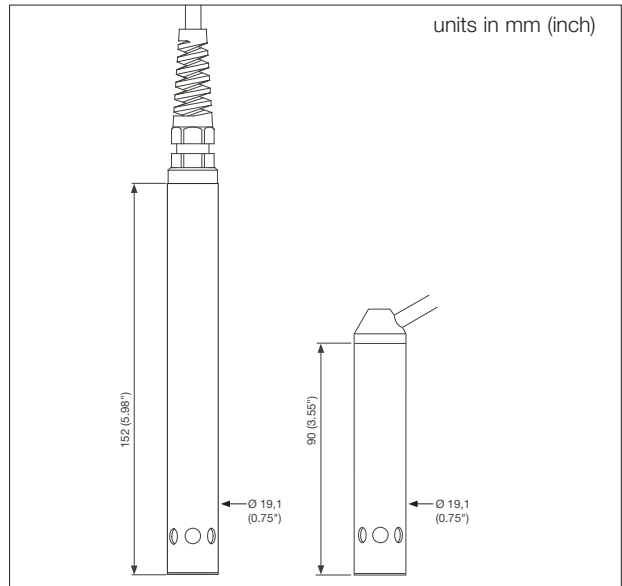


Figure 2. SC4A-AD-15 SC4A-AD-09

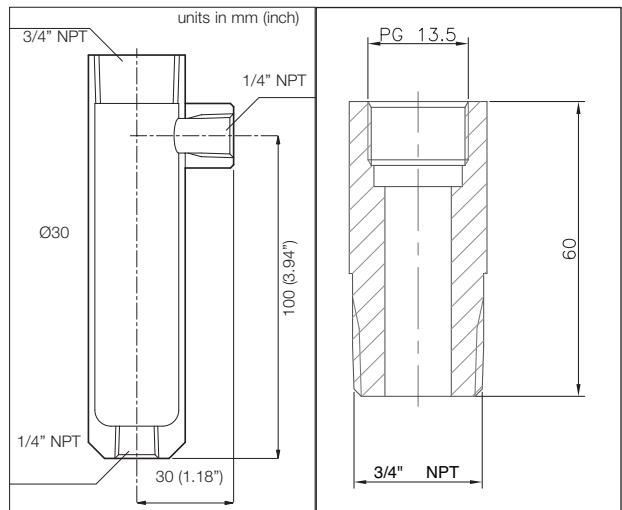


Figure 3. Flow fitting option /FF K1598 AC (incl. 3.1 B certificate)

Figure 4. Adapter K1598JB to fit sensors with PG13,5 process connection in K1523JB flow fitting

Specifications SC4A-SA/SB/SC

General Specifications

Materials

Wetted Parts

- Body & electrodes : Stainless steel AISI 316l (1.4435)
- O-ring : EPDM, FDA migration tested
- Mounting adapter : Stainless steel AISI 316l Tri-clamp according to ISO 2852-1993
- Insulation : PEEK (Poly Ether Ether Ketone) FDA migration tested
- Surface Roughness : 0.5µm

Operating Specifications (Sensor)

- Measuring system : 2-electrode, 4-wire
- Maximum pressure : 10 bar (142 PSIG)
- Maximum temperature : 110°C (230 °F)
- Temperature response : < 1 minute for 90% of a step change
- Sterilize : At 135°C (275 °F)

Operating Specifications options /SB1, /SB2, SA1, /SA2, /SC1

- Stainless Steel
- Maximum pressure : 10 bar (142 gpsi)
- Maximum temperature : 135°C (275°F)

Model Code	Suffix code	Option	Description
SC4A			19 mm conductivity sensor
	-E		EPDM FDA
Fitting-type	-SA		25mm port
	-SB		1-1 1/2" tri-clamp (ISO 2852)
	-SC		2" tri-clamp (ISO 2852)
Always	-NN		fixed length
Cellconstant	-002		0.02/cm
	-010		0.1/cm
Cable length	-03		3 meter
	-05		5 meter
	-10		10 meter
	-15		15 meter
	-20		20 meter
	-T1		Pt1000
Certificates		/Q	Quality Inspection Certificate

* 3.1 Material certificate according to EN 10024 is standard delivered with this sensor.

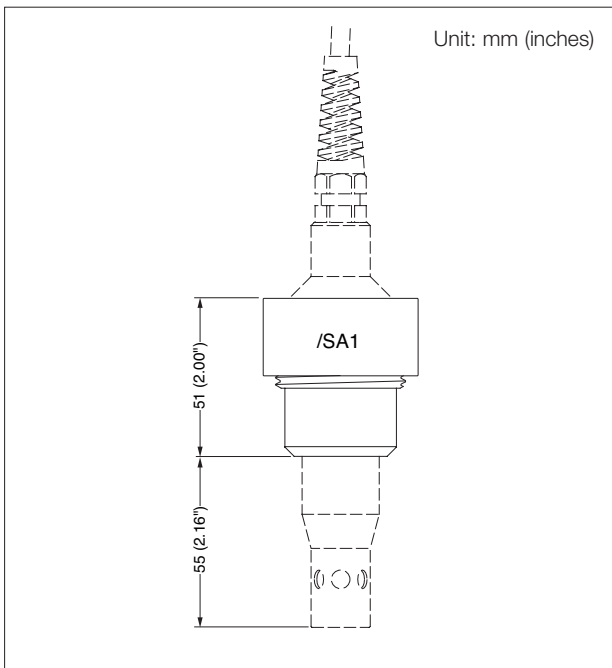


Figure 6. Option /SA1

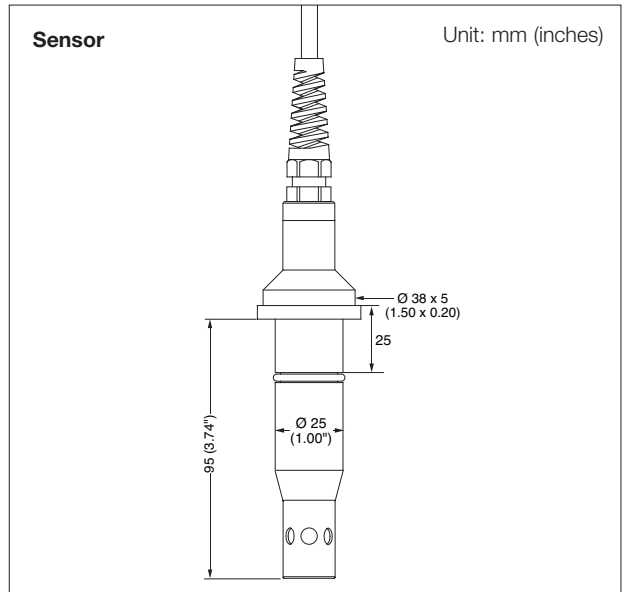


Figure 7. Sensor SC4A-SA

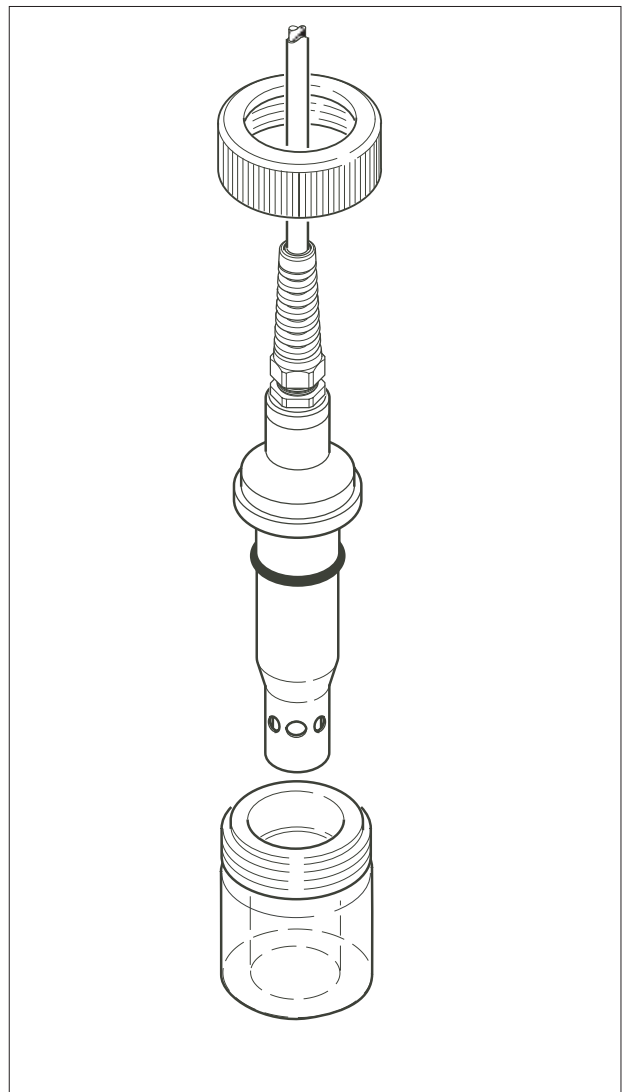


Figure 8. Mounted Sensor SC4A -SA

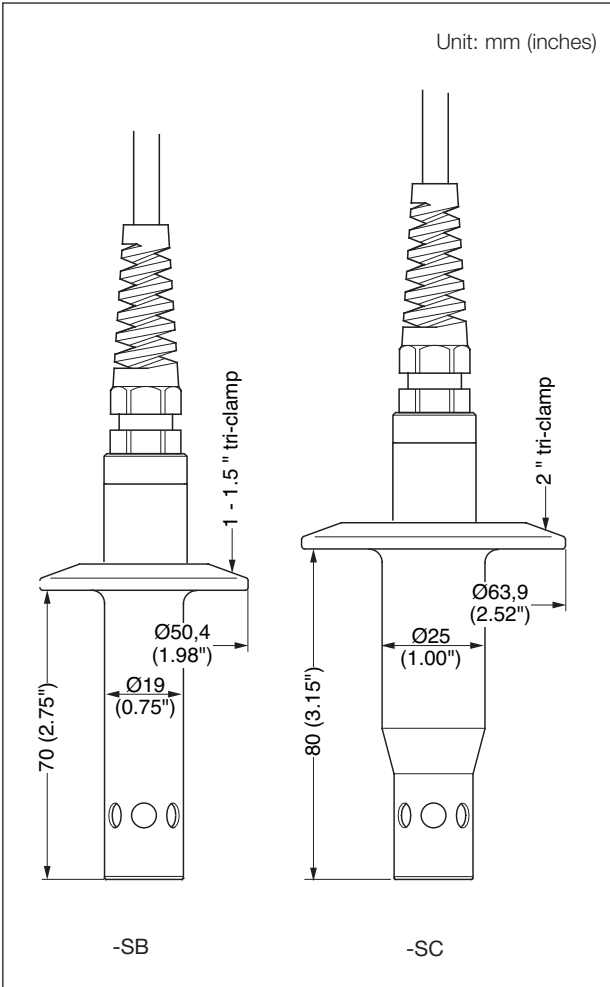


Figure 9. Sensor SC4A

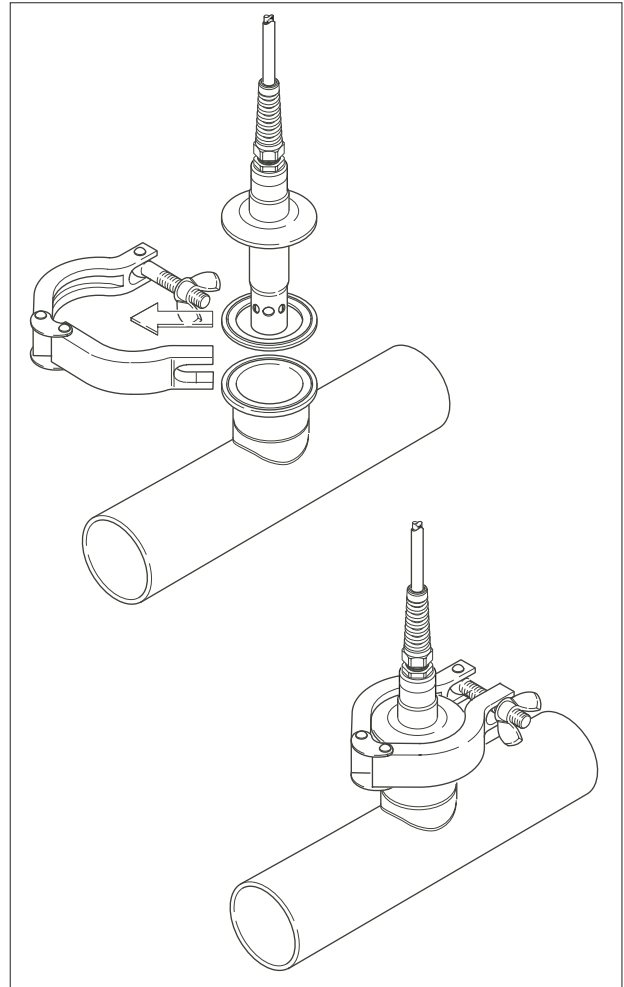


Figure 11. Mounting example

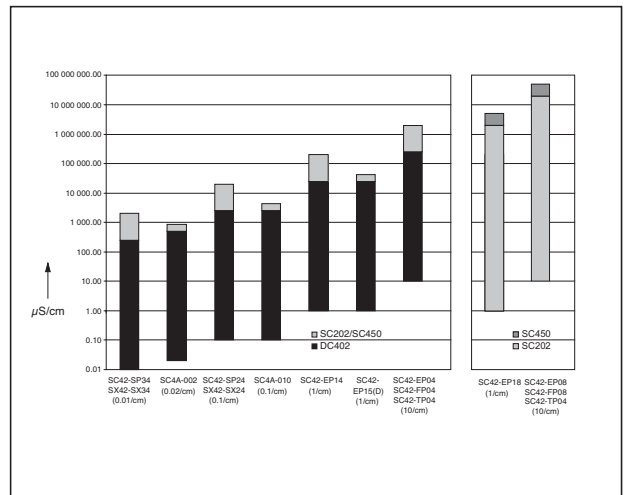


Figure 12. Suitable application area

Specifications SC4A-PR

General Specifications

Materials

Wetted Parts

- Body & electrodes : Stainless steel AISI 316
or Titanium grade 2 or 3
- O-ring : Viton
- Mounting adapter : Retractable fitting
- Insulations : PEEK (Poly Ether Ether Ketone)

Operating Specifications (Sensor)

- Measuring system : 2-electrode
- Maximum pressure : 10 bar (142 PSig)
- Maximum temperature: 110°C (230 °F)
- Temperature response: < 1 minute for 90% of a step change
- Sterilize : At 135°C (275 °F)

Shipping details

- Package size : wxhxd 220 x 220 x 90 cm
wxhxd 215 x 150 x 55 cm
- Package weight : Approx. 1.6 kg, 3.5 lb

Model Code	Suffix code	Option	Description
SC4A*			19 mm conductivity sensor
	-T		Titanium
	-S		Stainless steel
Fitting-type	-PR		For retractable mounting
Always	-NN		fixed length
Cellconstant	-002		0.02/cm
	-010		0.1/cm
Cable length	-03		3 meter
	-05		5 meter
	-10		10 meter
	-15		15 meter
	-20		20 meter
	-T1		Pt1000
Certificates		/Q*	Quality Inspection Certificate

* 3.1 Material certificate according to EN 10024 is standard delivered with this sensor.

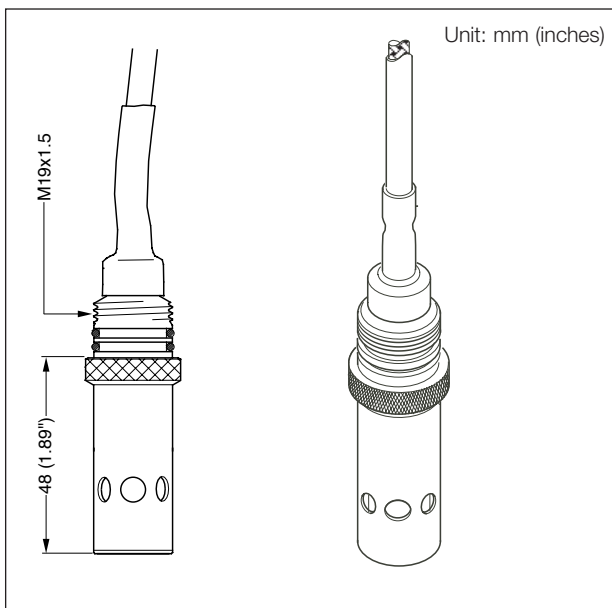


Figure 13. SC4A -PR

**Model PR4A
Retractable
Conductivity Fitting**

A modern trend in process control analyzers is to make the measurement with an on-line retractable sensor. Applications for the PR4A retractable fittings can be found in all processes where the sensor needs to be removed without interrupting continuity (e.g. anaerobic, toxic or pressurised systems). The Yokogawa design ensures the safe retraction of the sensor from the process without a shut-down.

The optional adapters make selection of a suitable construction easy. Both flanged and tapered thread connections are available in DIN or ANSI versions. The standardised connection ISO 228/1-G1 1/4 (1 1/4 inch BSPP) is also used for weld-in sockets.

When inserted, the probe can be locked at any position (between the minimum and maximum) with a locking ring. In addition, optional flush ports make cleaning without complete disassembly possible.

The choice between stainless steel and titanium as construction materials, make use in corrosive applications possible. For safety reasons Yokogawa recommends the use of a flanged ball-valve wherever possible.

Features

- Specially designed T-bar locking mechanism for additional safety
- Adjustable insertion depth for optimal positioning in the process.
- Easy sensor maintenance.
- Damped probe retraction by friction ring, for safety in pressurized systems.
- Adaptable to most installations by a range of options.
- Optional flush ports for cleaning or calibration purposes.
- Compatible with Yokogawa sensor check.



A. Wetted materials

Model PR4A-S (Stainless steel)

- Probe : Stainless steel AISI 316
- O-ring seals : Viton 70° shore

Model PR4A-T (Titanium)

- Probe : Titanium. Grade 2 or 3
- O-ring seals : Viton 70° shore

B. Non-wetted materials

: Stainless steel (AISI 316) and polyphenylene sulphide (PPS)

C. Insertion length

: The dimensional drawing indicates the maximum insertion length for both specified probe lengths.

D. Pressure/temperature ratings

- Static conditions : 1 MPa at 20°C (68 °F)
- : 1 MPa at 110°C (230 °F)
- Operating conditions maintenance : max. 500 kPa
- : max. 100°C (212 °F)
- Flange ratings : DIN flange DN25 PN16
- : ANSI flange 1" 150 lbs

E. - Weight

: Approx 2.5 kg (stainless steel version without ball-valve)

Model and Suffix Codes

Model Code	Suffix Code	Option	Description
PR4A			Retractable 19 mm conductivity holder
Material	-S -T		Stainless steel (AISI 316) Titanium. Grade 2 or 3
Length	-05 -10		0.5 m 1.0 m
Options		/M /T	3.1 Material certificate according to EN 10024 Pressure certificate
Options		SS. /SBS Ti. /TBS /SNS /TNS /SDS /TDS /SUS /TUS /SES /TES /SVS /TVS /SWR /SBB /SNN /SDD /SUU /SED /SVU	Adapter R1-G1 ¹ / ₄ Adapter 1 NPT-G1 ¹ / ₄ DIN flange DN25 PN16+adapter ANSI flange 1"-150 lbs+adapter DIN DN25 PN16+adapter (flush ports) ANSI 1"-150 lbs+adapter (flush ports) Straight welding adapter Ballv. Rc1" female+adapter Ballv. 1" NPT female+adapter Ballv. DIN DN25 PN16+adapter Ballv. ANSI 1"-150 lbs+adapter Ballv. DIN DN25+adapter (flush ports) Ballv. 1" ANSI+adapter (flush ports)

Note: The titanium ball valve options must be ordered as a separate item, example: BV20/TBB

Wiring Diagram

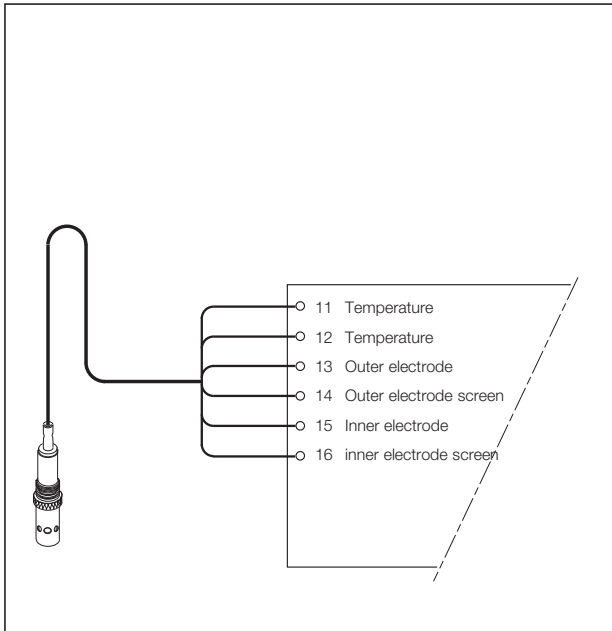


Figure 14. SC4A Sensors with integrated cable

Table 1. Adapters

Model	Option	Description
BV20		Titanium ball valve 1" (25 mm)
	/TBB	ball valve Rc1" female + adapter
	/TNN	ball valve 1" NPT female + adapter
	/TDD	ball valve DIN DN25 PN16 + adapter
	/TUU	ball valve ANSI 1"-150 lbs + adapter
	/TED	ball valve DIN DN25 PN16 + adapter (flush ports)
	/TVU	ball valve ANSI 1"-150 lbs, + adapter (flush ports)

Table 2. Option codes

Option	Drawing	Option	Drawing
/SBS, /TBS	A	/SBB, /TBB*	A, D
/SNS, /TNS	A	/SNN, /TNN*	A, D
/SDS, /TDS	B, C	/SDD, TDD*	B, C, E
/SUS, /TUS	B, C	/SUU, /TUU*	B, C, E
/SES, /TES	F, C	/SED, /TED*	F, C, E
/SVS, /TVS	F, C	/SVU, TVU*	F, C, E
/SWR			H

***Note:** The titanium ball valve options must be ordered as a separate item, example: BV20/TBB

External Dimensions

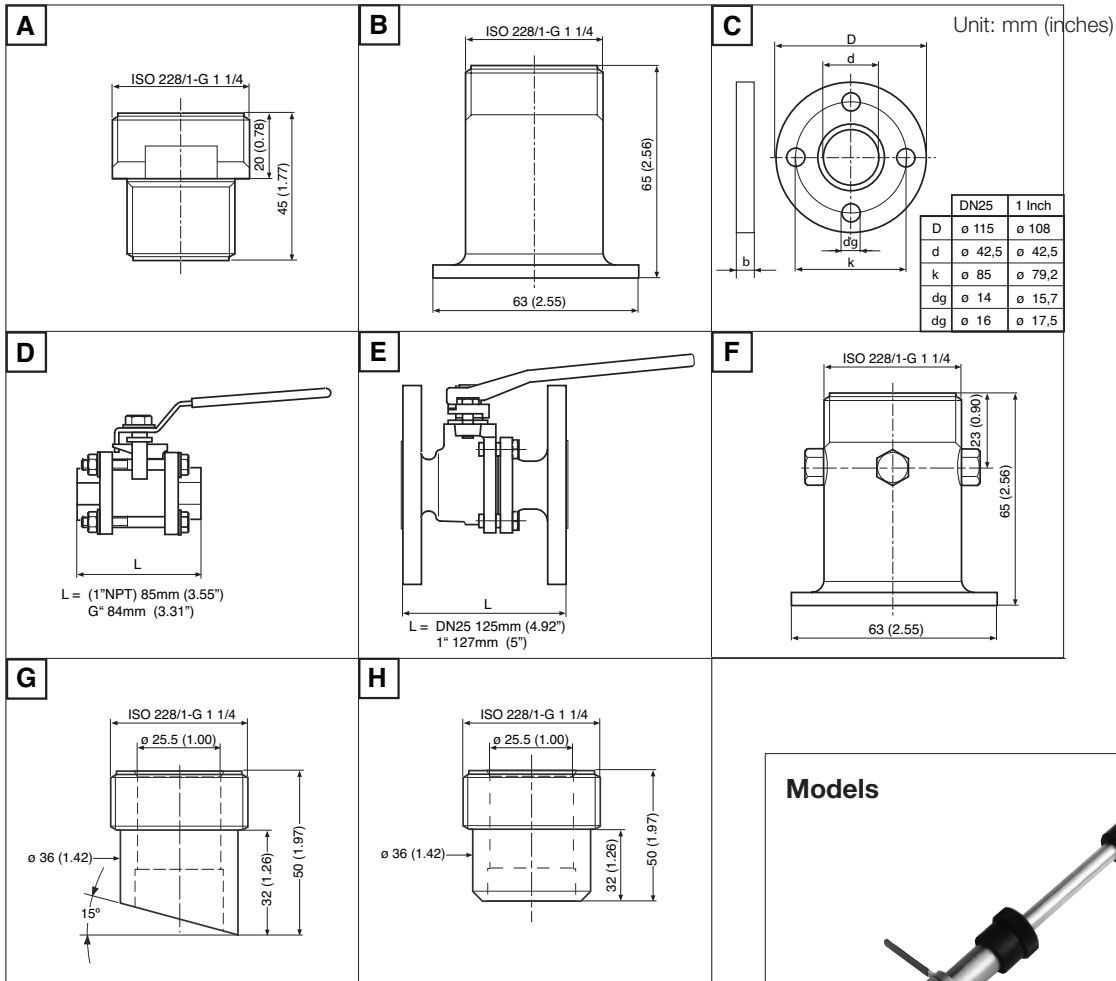


Figure 15. PR4A options

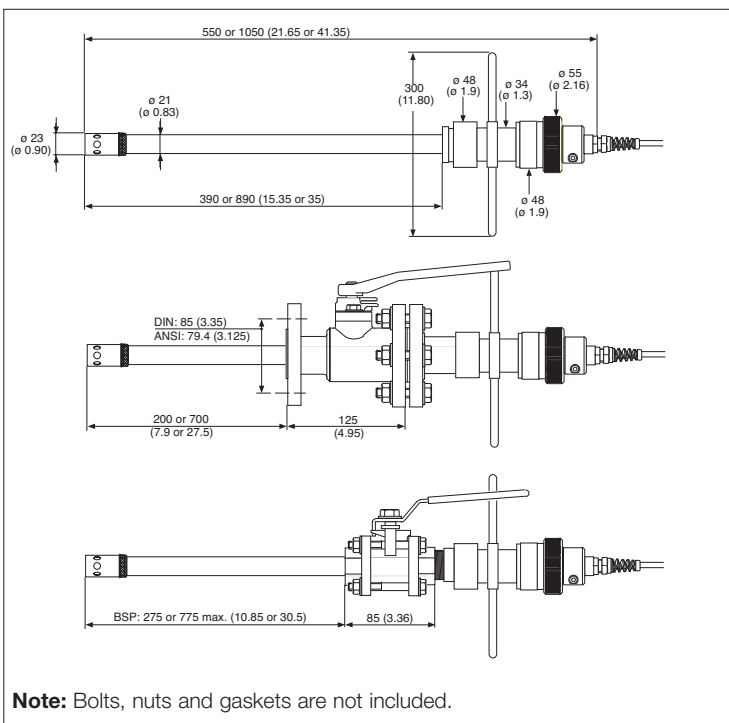
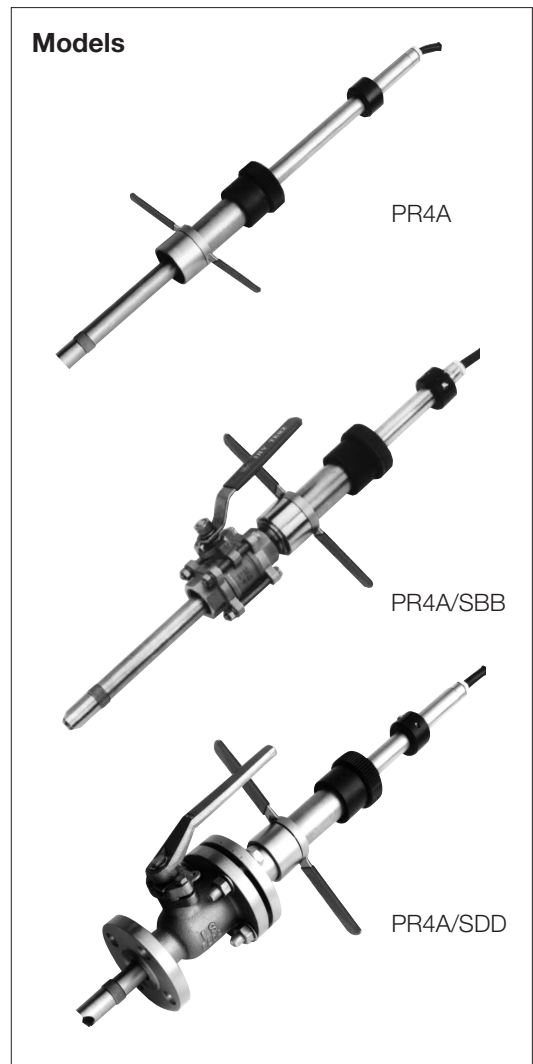


Figure 16. Dimensions retractables



Spare Parts SC4A

Part no.	Description
SC4A-S- AD and SC4A-T-AD	
K1542DF	Compression fitting in Stainless Steel (/PS)
K1500DY	Ferrule set for K1542DF
K1542CW	3/4" npt adapter PVDT
K1598AC	Flowfitting with 3.1 material certificate
SC4A-E-SA	
K1542FA	Straight welding socket and mounting nut SS
K1500BJ	O-rings in EPDM (5), FDA migration tested
SC4A-E-SB	
K1542FC	Tri-Clamp mounting set for 1" triclamp (welding socket, sealing gasket and clamp ring) (/SB1)
K1500HN	Sealing gasket in EPDM for K1542FC (3), FDA migration tested
K1542FF	Tri-Clamp mounting set for 1,5" triclamp (welding socket, sealing gasket and clamp ring) (/SB2)
K1500BN	Sealing gasket in EPDM for K1542FF (3), FDA migration tested
SC4A-E-SC	
K1542FE	Tri-Clamp mounting set for 2" triclamp (welding socket, sealing gasket and clamp ring) (/SC1)
K1500BP	Sealing gasket in EPDM for K1542FE (3), FDA migration tested
SC4A-T-PR and SC4A-S-PR	
K1500BE	O-rings in Viton (10)
K1500ED	O-rings in Kalrez (2)

Spare Parts PR4A

Part no.	Description
K1500AG	O-rings viton 29.74x3.53 (5)
K1500AH	O-ring Kalrez 29.74x3.53
K1500AK	O-rings EPDM 29.74x3.53 (5)
K1500BE	O-rings viton, SC4A-*-PR (10x)
K1500EB	20.22x3.53 (1x)
K1500ED	15.6x1.78 (1x)
K1500FX	O-rings Sil 70 29.74x3.53 (5)
K1520AW	Cable gland for PR20
K1520AY	O-ring set-2 viton, PR20/PR4A
K1520DZ	Adapter 1"NPT-male, SS
K1520EJ	Straight weld-in adapter, SS
K1520EK	Angled weld-in adapter, SS
K1520KC	Main fixing screw, retr. holders
K1520KD	Clamping ring, retr. holders
K1520KF	Position clip assy, retr holder
K1520TA	Clamping set SS, retr. holder
K1520TF	Nut for PR20/PR4A
K1520TK	Key for retr. holders
K1520TN	Outer tube 0,5m SS, PR20/PR4A
K1520UB	Clamping set Ti, retr. holder
K1520UF	Outer tube 0,5m Ti, PR20/PR4A
K1520UH	Outer tube 1,0m SS, PR20/PR4A
K1520UJ	Outer tube 1,0m Ti, PR20/PR4A
K1522UW	Adapter ISO 7/1-R1
K1522VC	/SDS for PR20/PR4A
K1522VD	/SUS for PR20/PR4A
K1522VE	/SES for PR20/PR4A
K1522VF	/SVS for PR20/PR4A
K1522VG	/SBB for PR20/PR4A
K1522VH	/SNN for PR20/PR4A
K1522VJ	/SDD for PR20/PR4A
K1522VK	/SUU for PR20/PR4A
K1522VL	/SED for PR20/PR4A
K1522VM	/SVU for PR20/PR4A
K1522VN	/TBS for PR20/PR4A
K1522VP	/TNS for PR20/PR4A
K1522VQ	/TDS for PR20/PR4A
K1522VR	/TUS for PR20/PR4A
K1522VS	/TES for PR20/PR4A
K1522VT	/TVS for PR20/PR4A
K1541DA	Ball valve 1" ANSI 150 lbs
K1541DB	Ball valve DIN DN25 PN16
K1541DC	Ball valve G 1"
K1541DD	Ball valve 1" NPT
K1542FA	/SA1 for SC4A

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