



Product Catalog

Sensors Fittings Accessories

Knick 

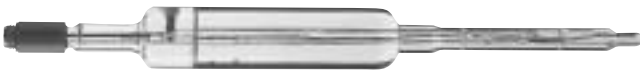
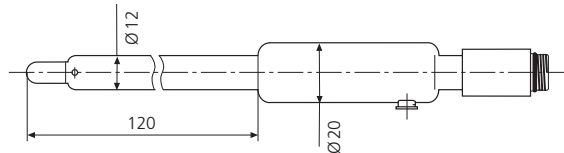
	Sensors	Fittings	Accessories
	Sensors		
pH	pH measurement		4
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Measured medium	Sensor (Xerolyt, gel)	Sensor (liquid)
Aqueous, general	SE 534, 537, 533, 532, 550	SE 536
Wastewater, general	SE 534, 533, 531, 550	
Wastewater strongly polluted	SE 534, 537, 533, 532, 550	
Emulsions, cosmetics	SE 534, 533, 550, 545	SE 536
Suspensions, Semi-solid media (pulp, paper, paints)	SE 534, 533, 550	SE 536
Milk, dairy products	SE 537, 532, 544, 545	
Fruit juice, beer	SE 537, 532, 544, 545	SE 536
Media containing sulfides	SE 534, 533, 550	
Strongly alkaline media	SE 534, 537; 533, 532, 550	SE 536
High salt concentrations, fertilizers	SE 534, 537, 533, 532, 550	SE 536
Ultrapure water	SE 537, 532	SE 538

Sensors

pH electrode SE 536	pH: 0 ... 14 Temperature: 0 ... 130 °C Pressure: -1 ... +6 bars (when mounted in ARI 103) Membrane glass: Highly resistant to alkalis Reference system: ARGENTHAL Electrolyte: ZU 0316 (VISCOLYT) Junction: 3 ceramic junctions Immersion depth: 120 mm Screw cap: S7 Suitable cable: ZU 0318 Suitable fitting: ARI 103	Order no.
		SE 536

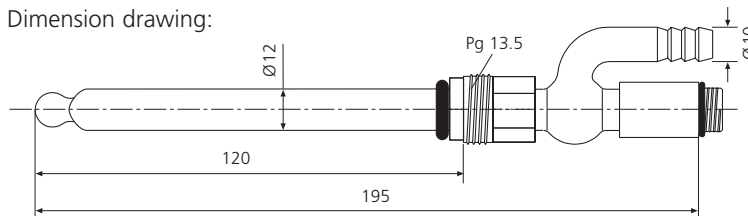
Dimension drawing:



Sterilizable	<input checked="" type="radio"/>
Autoclavable	<input type="radio"/>
CIP-resistant	<input checked="" type="radio"/>
Application: pharma/food/chemistry	

pH electrode SE 538	pH: 0 ... 12 Temperature: 0 ... 80 °C Pressure: Unpressurized Membrane glass: Low impedance (30 MOhm (25°C)) Reference system: Ag/AgCl Electrolyte: ZU 0316 (VISCOLYT) ZU 0591 (FRISCOLYT) for low-temperature applications Junction: 3 ceramic junctions Immersion depth: 120 mm Screw cap: S7 Suitable cable: ZU 0318 Suitable fitting: ARF 105	Order no.
		SE 538

Dimension drawing:

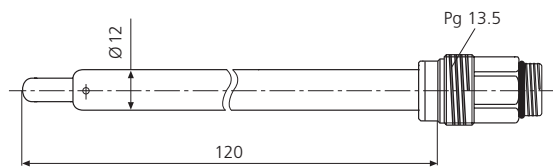


Sterilizable	<input type="radio"/>
Autoclavable	<input type="radio"/>
CIP-resistant	<input type="radio"/>
Application: ultrapure water/low temperature	

Sensors

pH electrode SE 534	pH: 2 ... 14 Temperature: 0 ... 110 °C Pressure: 16 bars (25 °C), 6 bars (100 °C) Membrane glass: Highly resistant to alkalis Reference system: ARGENTHAL Junction: Open junction to measured medium (2 holes) Immersion depth: 120 mm Screw cap: S8 Suitable cable: ZU 0318	Order no. SE 534
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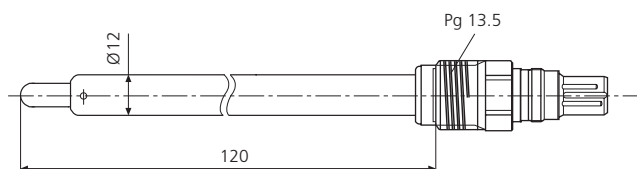
Dimension drawing:



Sterilizable	<input type="radio"/>
Autoclavable	<input type="radio"/>
CIP-resistant	<input type="radio"/>
Application: chemistry/water	

pH electrode SE 533	pH: 2 ... 14 Temperature: 0 ... 110 °C Pressure: 16 bars (25 °C), 6 bars (100 °C) Temp probe: Pt 1000 Reference system: ARGENTHAL Junction: Direct contact to measured medium (2 holes) Immersion depth: 120 mm Screw cap: VP Suitable cable: ZU 0313 / ZU 0314 / ZU 0315	Order no. SE 533
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Dimension drawing:

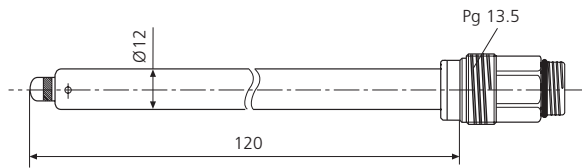


Sterilizable	<input type="radio"/>
Autoclavable	<input type="radio"/>
CIP-resistant	<input type="radio"/>
Application: chemistry/water	

Sensors

ORP electrode (platinum) SE 535	Temperature:	0 ... 110 °C	Order no. SE 535
	Pressure:	16 bars (25 °C), 6 bars (100 °C)	
	Electrode material:	Platinum	
	Reference system:	XEROLYT	
	Junction:	Direct contact to measured medium (hole)	
	Immersion depth:	120 mm	
	Screw cap:	S8	
	Suitable cable:	ZU 0318	

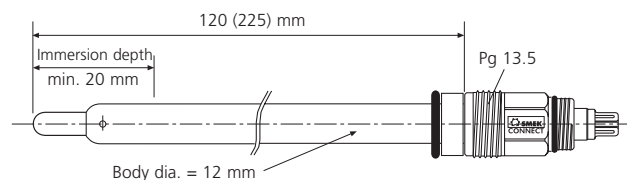
Dimension drawing:



Sterilizable	<input type="radio"/>
Autoclavable	<input type="radio"/>
CIP-resistant	<input type="radio"/>
Application: chemistry/water	

pH electrode SE 550	Product coding		Order no. SE 550/11 SE 550/21
	Length	1 120 mm 2 225 mm	
	Screw cap	1 SMEK	
	Type SE 550 /	<input type="checkbox"/> <input type="checkbox"/>	
	pH:	0 ... 14	
	Temperature:	0 ... 130 °C	
	Pressure:	0 ... 6 bars	
	Temp probe:	Pt 1000	
	Electrolyte:	Special gel	
	Junction:	Open junction to measured medium (2 holes)	
	Immersion depth:	120 mm	
	Screw cap:	SMEK	
	Suitable cable:	ZU 0551 / 0550 / 0549 / 0552	

Dimension drawing:

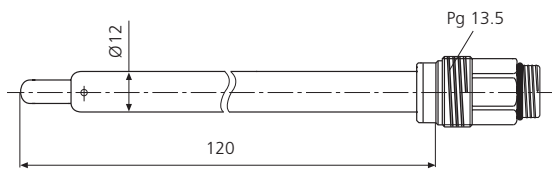


Sterilizable	<input checked="" type="radio"/>
Autoclavable	<input checked="" type="radio"/>
CIP-resistant	<input checked="" type="radio"/>
Application: chemistry/water/biotech	

Sensors

pH electrode SE 537	pH:	0 ... 14	Order no. SE 537
	Temperature:	0 ... 100 °C	
	Pressure:	-1 ... +2.5 bars	
	Membrane glass:	Highly resistant to alkalis	
	Reference system:	Ag/AgCl with silver ion trap	
	Junction:	Ceramic	
	Immersion depth:	120 mm	
	Screw cap:	S8	
Suitable cable:	ZU 0318		

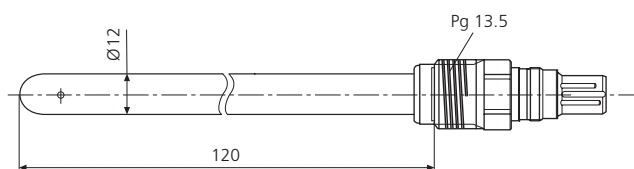
Dimension drawing:



Sterilizable	<input type="radio"/>
Autoclavable	<input type="radio"/>
CIP-resistant	<input checked="" type="radio"/>
Application: chemistry/water	

pH electrode SE 532	pH:	0 ... 14	Order no. SE 532
	Temperature:	0 ... 80 °C (130 °C for sterilization)	
	Pressure:	-1 ... +6 bars (40 °C)	
	Temp probe:	Pt 1000	
	Reference system:	Ag/AgCl with silver ion trap	
	Junction:	Ceramic	
	Immersion depth:	120 mm	
	Screw cap:	VP	
Suitable cable:	ZU 0313 / ZU 0314 / ZU 0315		

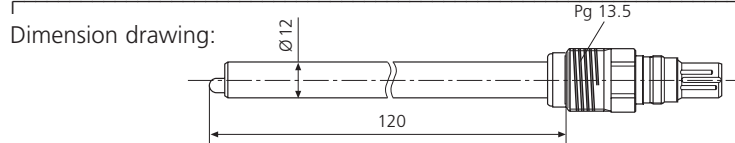
Dimension drawing:




Sterilizable	<input checked="" type="radio"/>
Autoclavable	<input checked="" type="radio"/>
CIP-resistant	<input checked="" type="radio"/>
Application: food/pharma	

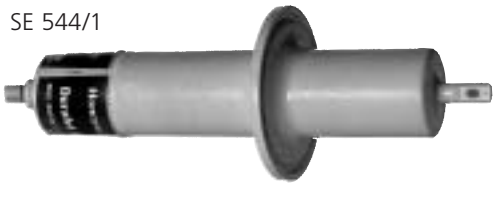
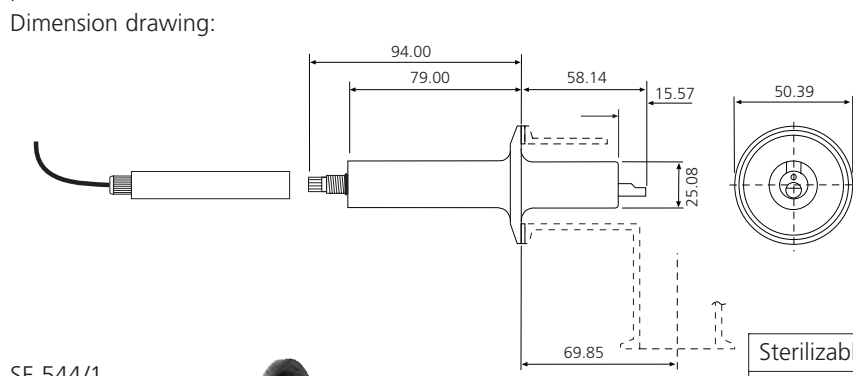
Sensors

pH electrode SE 531	pH: 2 ... 12 Temperature: 0 ... 60 °C Pressure: 2 bars (60 °C) Temp probe: Pt 1000 Reference system: ARGENTHAL Junction: Direct contact to measured medium Body material: PSU Immersion depth: 120 mm Screw cap: VP Suitable cable: ZU 0313 / ZU 0314 / ZU 0315	Order no.
		SE 531



Sterilizable	<input type="radio"/>
Autoclavable	<input type="radio"/>
CIP-resistant	<input type="radio"/>
Application: water	

pH electrode SE 544 Durafet 	pH: 0 ... 14 Temperature: -10 ... 110 °C (130 °C, 3.4 bars during sterilization) Temp probe: Pt 1000 Pressure: 0 ... 6.9 bars (-10 ... +100 °C), 0 ... 3.4 bars (> 100 °C) Process connection: Tri-Clamp® 1 1/2" Wetted materials: Body Polyethersulfone (conforming to FDA) Chip Silicon Junction Ceramic Screw cap: for ZU 0536 Cap Adaptor Suitable device: Stratos® 2402 pH	Order no.
		SE 544/1



Sterilizable	<input checked="" type="radio"/>
Autoclavable	<input type="radio"/>
CIP-resistant	<input type="radio"/>
Application: food	

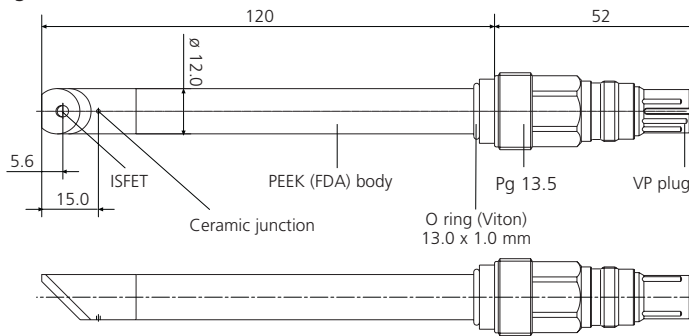
Cap-Adaptor ZU 0536	Amplifier for operating the SE 544 pH electrode Cable length approx. 3.5 m	Order no. ZU 0536
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Sensors

pH electrode ISFET SE 545	<p>pH: 0 ... 14 Temperature: 0 ... 80 °C (140 °C during sterilization) Pressure: 6 bars max. pH sensor: ISFET Reference system: ARGENTHAL Temp probe: Pt 1000 Hygienic design: EHEDG tested, acc. to 3-A Sanitary standards FDA certified materials</p> <p>Materials: Body: PEEK Junction: Ceramic</p> <p>Immersion depth: 120 mm Screw cap: VP Suitable cable: ZU 0582, 0583 Suitable fitting: e.g. ARI 104</p>	Order no. SE 545/1
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Dimension drawing:



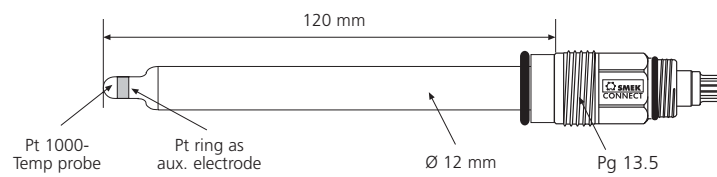
Sterilizable	●
Autoclavable	●
CIP-resistant	○
Application: food/pharma	

Cable VP6-ST/ISFET	<p>Sensor connection: VP screw cap Device connection: Wire end ferrules Temperature: Max. 70 °C</p> <p>Length: 5 m Length: 10 m</p>	Order no. ZU 0582 ZU 0583
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Accessories

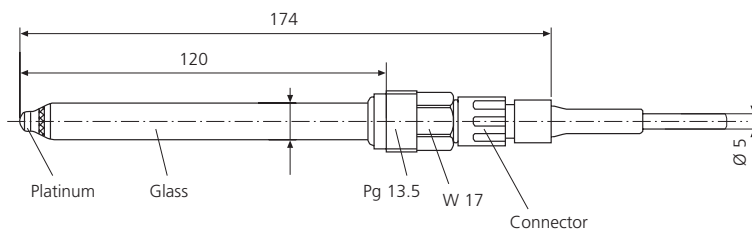
Temperature probe SE 803 Pt 1000 with aux. electrode (Pt ring)	Temperature: -30 ... 135 °C Pressure: 10 bars max. Temp probe: Pt 1000 Body material: Glass Immersion depth: 120 mm Screw cap: SMEK Suitable cable: ZU 0551 / 0550 / 0549 / 0552 Suitable fitting: z. B. ARF 105	Order no. SE 803
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Dimension drawing:



Equipotential bonding electrode ZU 0073	Material: Glass / Platinum Temperature: 130 °C max. Pressure: 10 bars max. Assembly: Pg 13.5 Suitable cable: Included, length 5 m	Order no. ZU 0073
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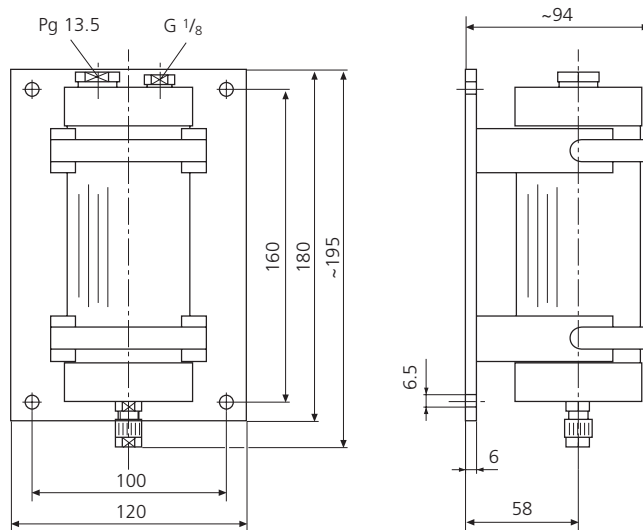
Dimension drawing:



Accessories

Electrolyte reservoir ZU 0321	<p>Material: Hard PVC, transparent</p> <p>Useful capacity: 300 mL</p> <p>Pressure: Unpressurized</p> <p>Electrode locations: 1 x Pg 13.5 for use as electrolytic key</p> <p>Hose connection: Threaded coupling for 4/6 x 1 mm hose (5 m hose 4/6 x 1, PVC, included in supply)</p> <p>Refill: G 1/8 refill hole with screw plug</p> <p>Assembly: Wall mounting assembly</p>	Order no. ZU 0321
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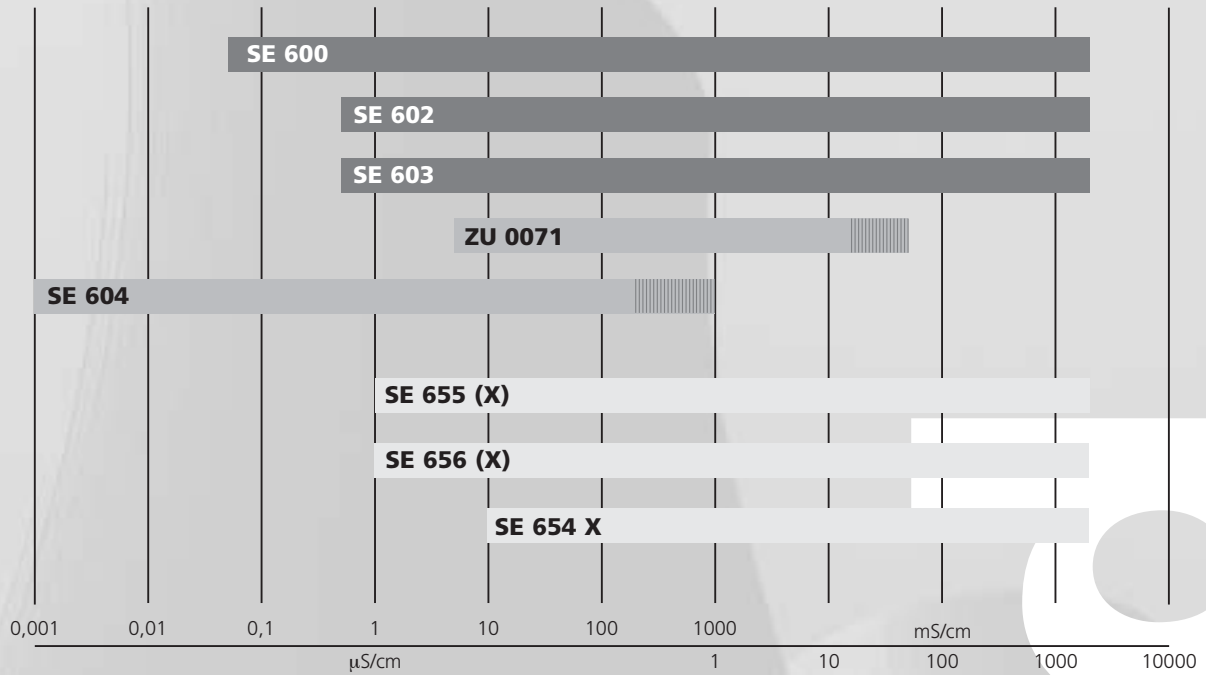
Dimension drawing:



Solutions and cables

		Order no.
Electrolyte (VISCOLYT)	Composition: KCl, 3 mol/l (VISCOLYT) Viscosity: 10 cp Amount: 250 ml For electrodes: SE 536, SE 538	ZU 0316
Electrolyte (FRISCOLYT)	Composition: KCl, 3 mol/l (FRISCOLYT) for measurements at low temperatures and for media with organic components (e.g. oil, protein etc.) Amount: 250 ml For electrodes: SE 538, SE 536	ZU 0591
pH buffer solution 4.01	pH value (25 °C): 4.01	Coloring: red, with quality test certificate ZU 0200
pH buffer solution 7.0	pH value (25 °C): 7.0	Coloring: green, with quality test certificate ZU 0201
pH buffer solution 9.21	pH value (25 °C): 9.21	Coloring: blue, with quality test certificate ZU 0202
	Tolerance: ±0.02 Amount: 1000 ml	
Redox buffer solution	Redox value (25 °C): +220 mV pH value: pH 7 Amount: 250 ml	ZU 0317
VP cable	Sensor connection: VP screw cap Device connection: Wire end ferrules Temperature: -20 ... 80 °C	Length: 3 m ZU 0313 Length: 5 m ZU 0314 Length: 10 m ZU 0315
AS9 cable	Sensor connection: AS7 / AS8 screw cap Device connection: Not preassembled Temperature: -30 ... 80 °C	Length: 5 m ZU 0318
SMEK KA 18 cable (2 coax, 3 wires)	Sensor connection: SMEK screw cap Device connection: Wire end ferrules Temperature: Max. 120 °C	Length: 5 m ZU 0329 Length: 10 m ZU 0328
SMEK KA 18 cable (2 coax, 3 wires)	Sensor connection: SMEK screw cap Device connection: SMEK connector (for ZU 0324 at device) Temperature: Max. 120 °C	Length: 5 m ZU 0327 Length: 10 m ZU 0326
SMEK KA 19 cable (1 coax, 4 wires)	Sensor connection: SMEK screw cap Device connection: Wire end ferrules Temperature: Max. 130 °C	Length: 5 m ZU 0551 Length: 10 m ZU 0550
SMEK KA 19 cable (1 coax, 4 wires)	Sensor connection: SMEK screw cap Device connection: SMEK connector (for ZU 0322 at device) Temperature: Max. 130 °C	Length: 5 m ZU 0549 Length: 10 m ZU 0552

Measurement ranges of conductivity sensors



- 4-electrode sensors
- 2-electrode sensors
- Electrodeless sensors
- Extended range using 77 (X) LFI, 76 X Cond or Stratos® 2000 (X) Cond

Compatibility of inductive conductivity sensors

Model	Protos® 3400		Stratos®				Process Unit 77	
	CONDI 3400-051	CONDI 3400X-051	2402 Condi	2211 Condi	2211 X Condi	2222 X Condi	77 LFI	77 X LFI
Sensor								
SE 655	X		X	X			X	
SE 655 X		X			X	X		X
SE 656	X		X	X			X	
SE 656 X		X			X	X		X
SE 654 X	X		X					

Sensors

2-electrode sensor
SE 604

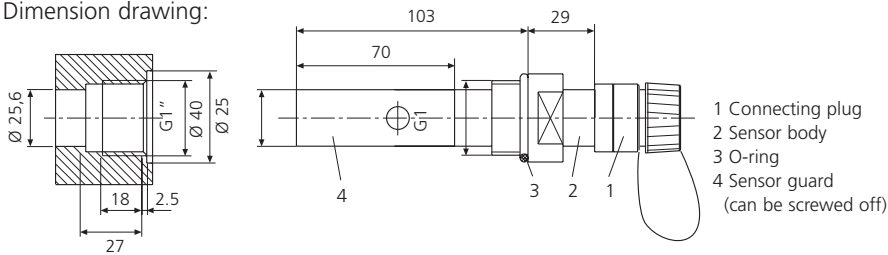


Cell constant: 0.029 cm⁻¹
 Range: Approx. 0.001 μS/cm ... 200 μS/cm (1000 μS/cm)
 (depending on connected device)
 Material: Stainless steel 1.4571, PVDF, FPM
 Temp probe: Pt 1000 Class A, T₉₀ < 2 min
 Cable: ZU 0569 Length 5 m (not in supply range, see page 26)
 ZU 0570: Length 10 m (not in supply range, see page 26)
 plug connection at sensor cap

Order no.
SE 604

Cell constant certificate Order no. ZU 0320 (page 27)

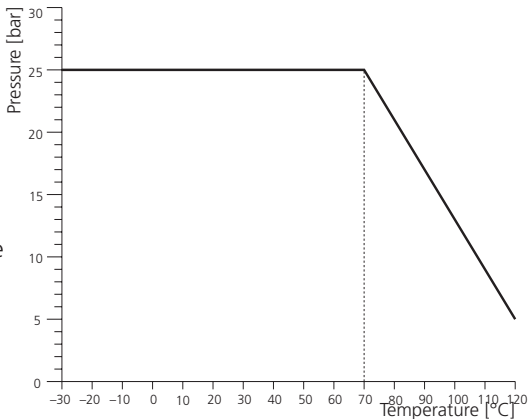
Dimension drawing:



Pressure/temperature diagram:

Temperature:
 Process: -30 ... 120 °C
 Environment: -25 ... 80 °C

Pressure:
 Max. 25 bars with thread
 Max. 10 bars with ZU 0278 flange
 Max. 10 bars with ARF 200 flow cell



Accessories

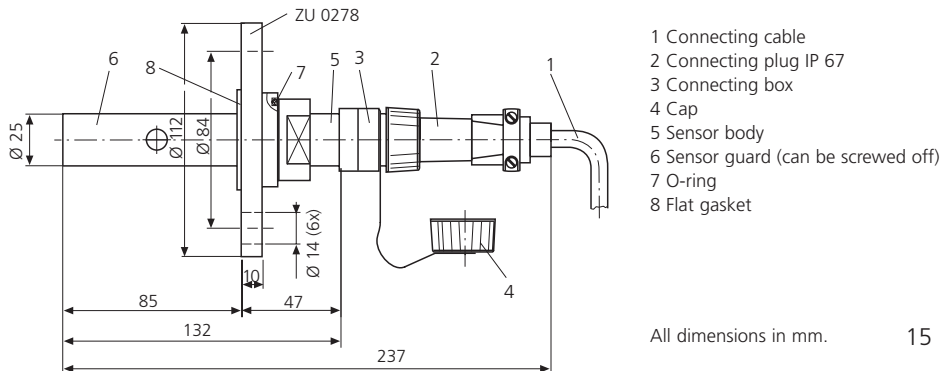
Flange (6-hole)
ZU 0278



Material: Stainless steel 1.4571
 Accessories: 6 screws, washers, nuts, M 12, stainless steel 1.4571, flat gasket 38/71x3 EPDM
 Pressure: Max. 10 bars
 Temperature: Max. 120 °C
 Electrode locations: 1 x G 1, O-ring 32.92 x 3.53 EPDM
 Sensors: SE 604

Order no.
ZU 0278

Dimension drawing: Typical installation of SE 604 with ZU 0278 flange



All dimensions in mm.

Sensors

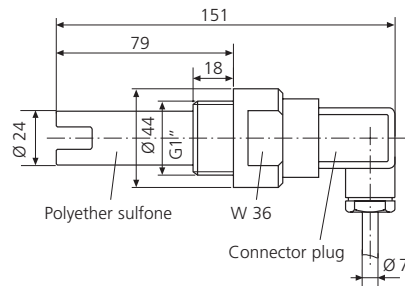
2-electrode sensor
ZU 0071



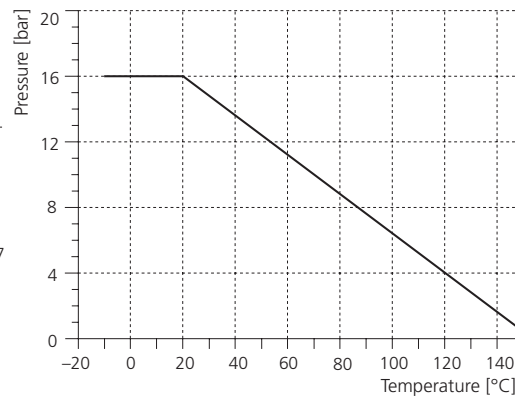
Cell constant: Approx. 1 cm⁻¹
 Range: Approx. 5 μS/cm ... 15 mS/cm (50 mS/cm)
 (depending on connected device)
 Material: Body: PES; electrodes: special graphite
 Pt 100 holder: titanium
 Temp probe: Pt 100
 Temperature: Max. 150 °C
 Pressure: Max. 16 bars
 Cable: Length 5 m
 Cell constant certificate Order no. ZU 0320 (page 27)

Order no.
ZU 0071

Dimension drawing



Pressure/Temperature diagram:



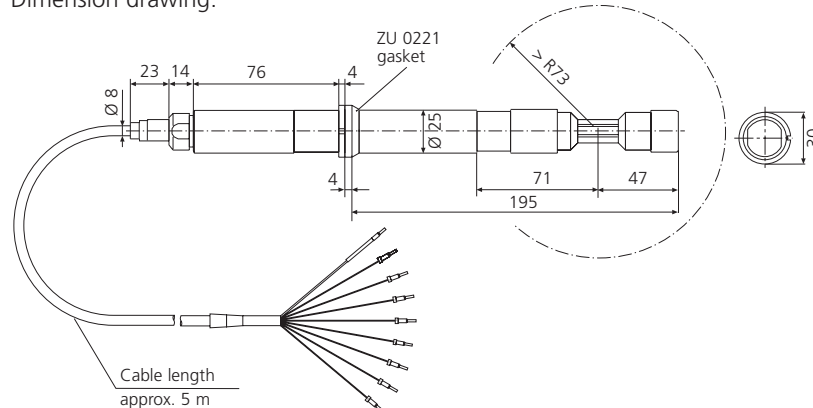
4-electrode sensor
SE 600



Cell constant: 0.14 ... 0.38 cm⁻¹ (Exact value on rating plate)
 Range: Approx. 0.5 μS/cm ... 600 mS/cm
 Material: Body: PTFE/stainless steel
 Electrodes: AISI 316 (1.4401) stainless steel
 Temp probe: Pt 1000 (IEC Class A)
 Temperature: Max. 210 °C
 Pressure: Max. 40 bars
 Cable: Length 5 m
 Mounting parts: ZU 0216 + ZU 0217, or ZU 0222, spare gasket ZU 0221
 Cell constant certificate Order no. ZU 0320 (page 27)

Order no.
SE 600

Dimension drawing:



Sensors

Accessories for SE 600

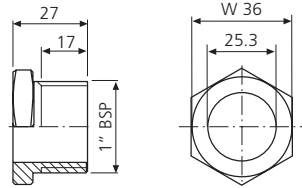
Screw

Material: AISI 316 L
 Process connection: 1" BSP for ZU 0217
 Temperature: Max. 210 °C
 Pressure: Max. 40 bars
 Sensors: SE 600

Order no.

ZU 0216

Dimension drawing:



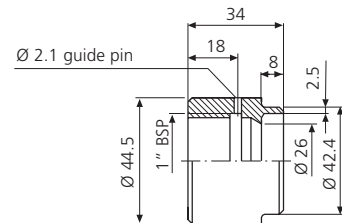
Weld-in coupling

Material: AISI 316 L
 Process connection: Welded coupling
 Temperature: Max. 210 °C
 Pressure: Max. 40 bars
 Sensors: SE 600

Order no.

ZU 0217

Dimension drawing:



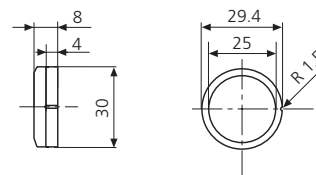
Gasket

Material: PTFE
 For sensor: SE 600

Order no.

ZU 0221

Dimension drawing:



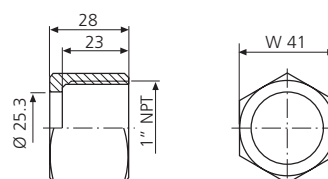
Union nut

Material: AISI 316 L
 Dimensions: 1" NPT
 Temperature: Max. 210 °C
 Pressure: Max. 40 bars
 Sensors: SE 600

Order no.

ZU 0222

Dimension drawing:



Sensors

4-electrode sensor
SE 602

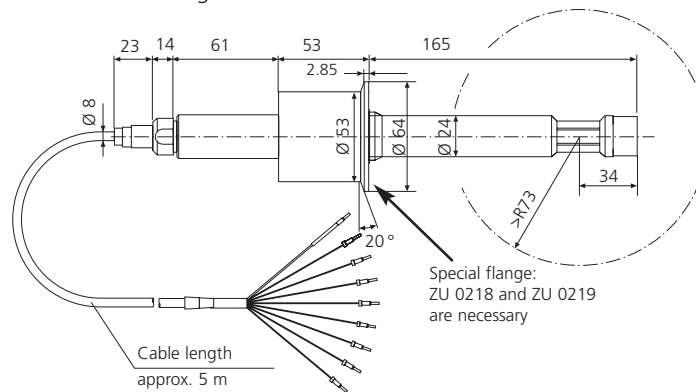


Cell constant: 0.14 ... 0.38 cm⁻¹ (Exact value on rating plate)
 Range: Approx. 0.5 μS/cm ... 600 mS/cm (2000 mS/cm) (depending on connected meter)
 Material: Body: PTFE; electrodes: tantalum
 Temp probe: Pt 1000 (IEC Class A)
 Temperature: Max. 120 °C
 Pressure: Max. 20 bars
 Cable: Length 5 m
 Mounting parts: ZU 0218, ZU 0219
 Cell constant certificate Order no. ZU 0320 (page 27)

Order no.

SE 602

Dimension drawing:



4-electrode sensor
SE 603

Cell constant: 0.14 ... 0.38 cm⁻¹ (Exact value on rating plate)
 Range: Approx. 0.5 μS/cm ... 600 mS/cm (2000 mS/cm) (depending on connected device)
 Material: Body: PTFE; electrodes: platinum
 Temp probe: Pt 1000 (IEC Class A)
 Temperature: Max. 120 °C
 Pressure: Max. 20 bars
 Cable: Length 5 m
 Mounting parts: ZU 0218, ZU 0219
 Cell constant certificate Order no. ZU 0320 (page 27)

Order no.

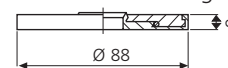
SE 603

Dimension drawing: Like SE 602

Sealing washer

Material: PTFE / AISI 316 L
 Pressure: 20 bars
 Temperature: 120 °C
 Sensors: SE 602 / SE 603
 For mounting with ZU 0219

Dimension drawing:



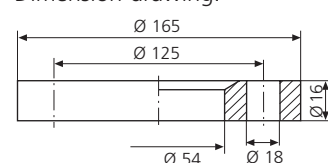
Order no.

ZU 0218

Flange

Material: AISI 316 L
 Process connection: DN 50, PN 10, Ø 165 mm
 Pressure: 10 bars
 Temperature: 120 °C
 Sensors: SE 602 / SE 603
 For mounting with ZU 0218

Dimension drawing:



Order no.

ZU 0219

Sensors

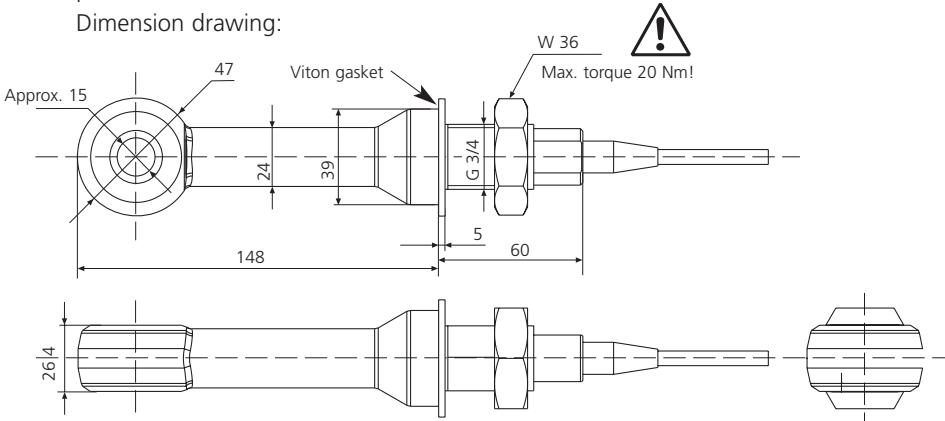
Electrodeless sensor
SE 655 (X)



Cell factor: Approx. 2 (≥ 30 mm distance to the wall)
 Range: 0.001 ... 2000 mS/cm
 Material: Sensor: PEEK
 Gasket: Viton
 Temp probe: Pt 100 (Class A)
 Temperature: -20 ... +125 °C (see P/T diagram page 20)
 Pressure: 0 ... 20 bars (see P/T diagram page 20)
 Explosion protection: II 1 G EEx ia IIC T4/T6 (only SE 655 X)
 Cable: Length 5 m, Connection: wire end ferrules
 Ingress protection: IP 67 (when mounted)
 Mounting: G 3/4, 1 union nut W 36 and Viton gasket included

Order no.
SE 655
SE 655 X

Dimension drawing:



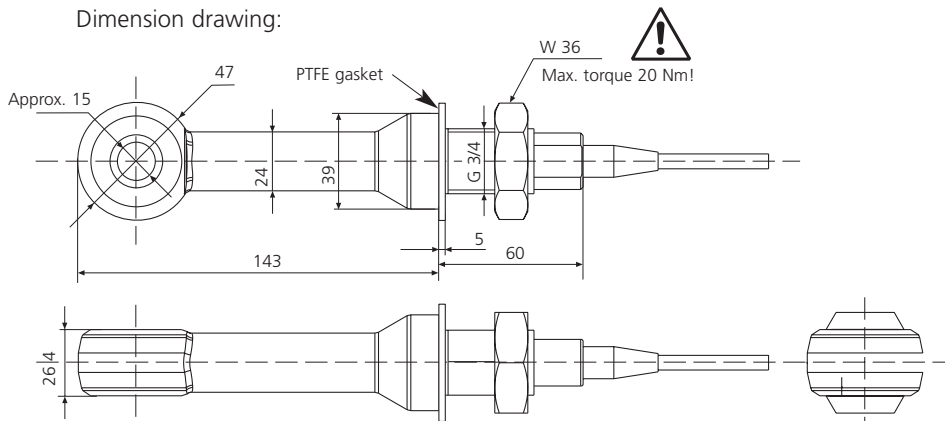
Order no.
SE 656
SE 656 X

Electrodeless sensor
SE 656 (X)



Cell factor: Approx. 2 (≥ 30 mm distance to the wall)
 Range: 0.001 ... 2000 mS/cm
 Material: Sensor: PFA
 Gasket: PTFE with Viton core
 Temp probe: Pt 100 (Class A)
 Temperature: -20 ... +125 °C (see P/T diagram page 20)
 Pressure: 0 ... 16 bar (see P/T diagram page 20)
 Explosion protection: II 1 G EEx ia IIC T4/T6 (only SE 656 X)
 Cable: Length 5 m, Connection: wire end ferrules
 Ingress protection: IP 67 (when mounted)
 Mounting: G 3/4, 1 union nut W 36 and Viton gasket incl.

Dimension drawing:



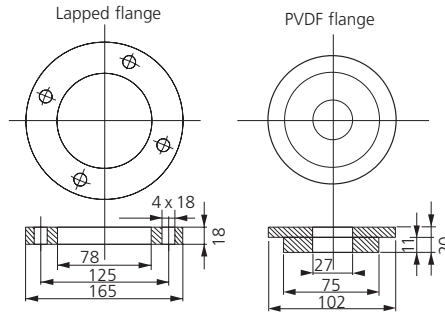
All dimensions in mm.

Sensors

Flange PVDF
DN 50, PN 10
ZU 0344



Dimension drawing:



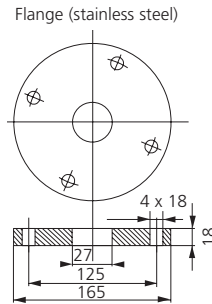
Order no.

ZU 0344

Flange 316 L
DN 50 PN 16
ZU 0343



Dimension drawing:



All dimensions in mm.

Order no.

ZU 0343

ZU 0340
ZU 0341
ZU 0342

Replacement sealing kit A (nut + Viton gasket (3 pieces)), see page 21
Replacement sealing kit B (nut + PTFE gasket (1 piece)), see page 21
Sealing kit C (PTFE washer DN 50 + spacer)
Protection of the flange from aggressive media, see page. 21

Order no.

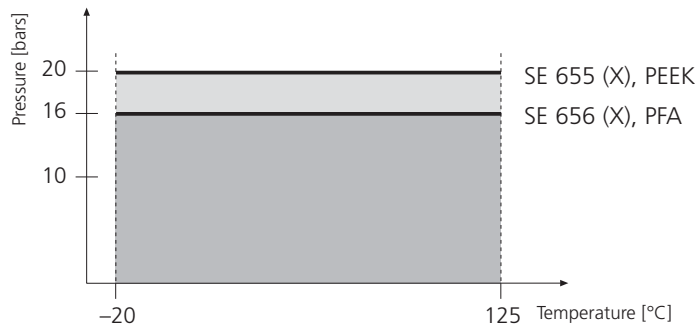
ZU 0340

ZU 0341

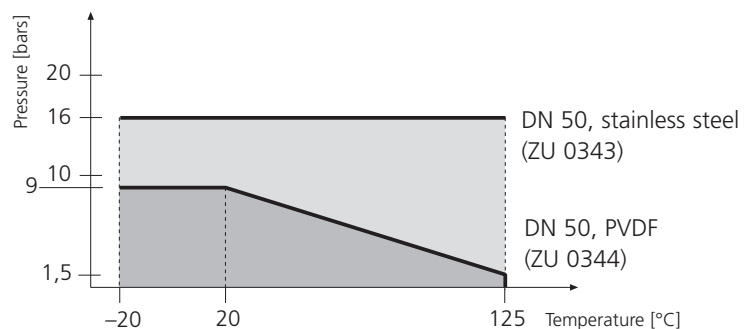
ZU 0342

Pressure/temperature
diagram

SE 655 (X) /
SE 656 (X)
without flange



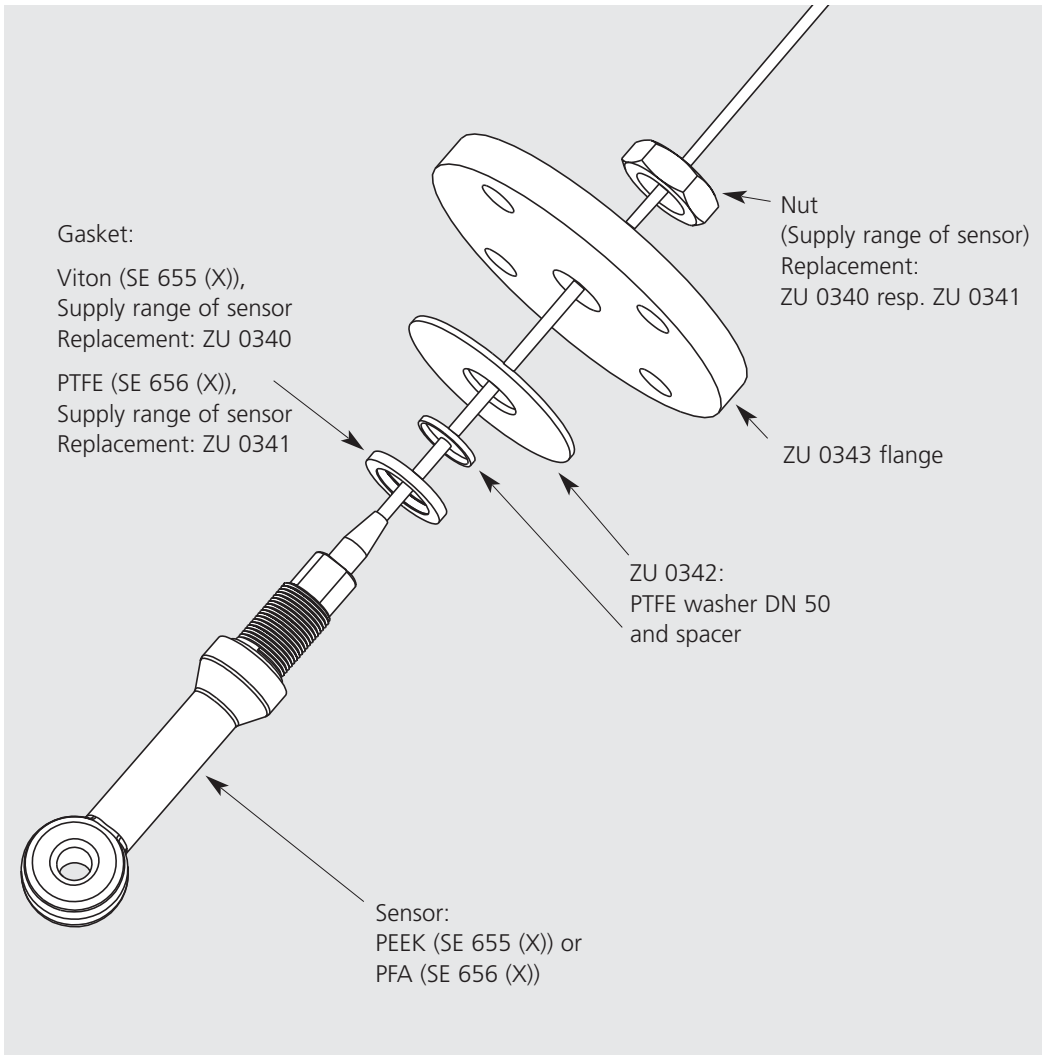
SE 655 (X) /
SE 656 (X)
with flange



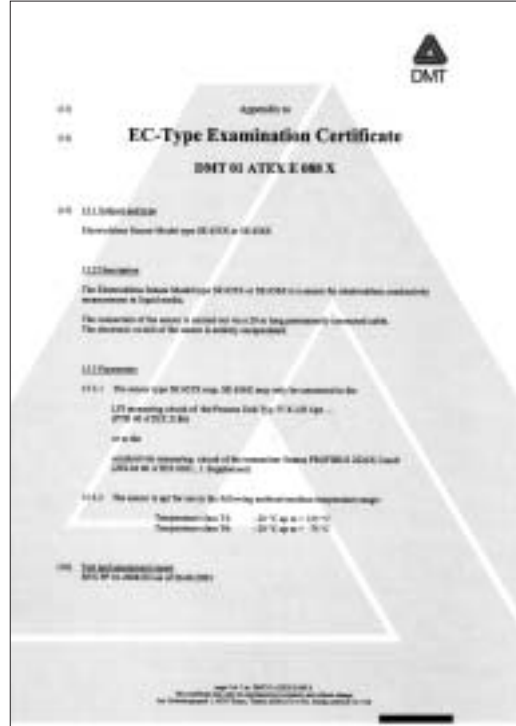
Sensors

Overview of accessories and assembly

Example:



EC-Type-Examination Certificate



Sensors

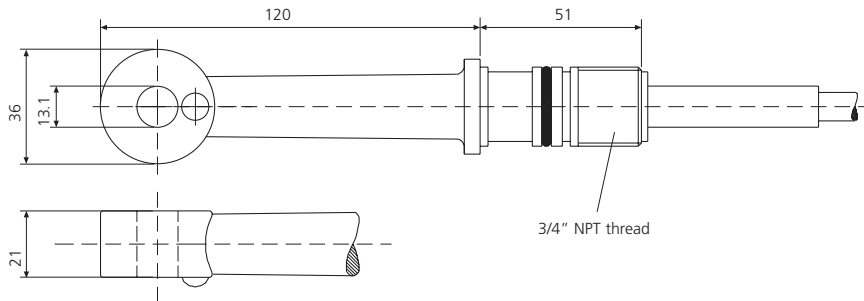
Electrodeless sensor
SE 654X



Cell factor: Nominal value 2.15 cm⁻¹
(≥ 30 mm distance to the wall)
Range: 0.01 mS/cm ... 2000 mS/cm
Material: Sensor: PEEK; gasket: EPR
Temp probe: NTC 100 kOhm
Temperature: -5 ... +120 °C
Pressure: 0 ... 17.5 bars
Cable: Length 6 m
Explosion protection: on request
Mounting: 3/4" NPT thread

Ref. No
SE 654X

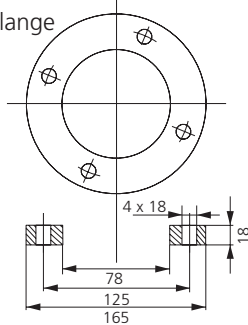
Dimension drawing:



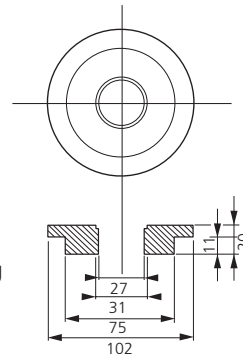
Flange kit DN 50, PVDF
ZU 0540



Lapped flange



PVDF flange



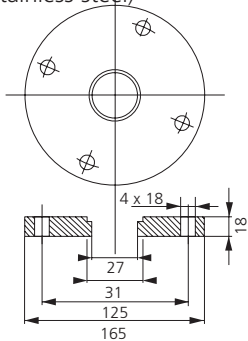
O-ring 25 x 3
(EPDM) and
ZU 0347 fixing
nut included

Order no.
ZU 0540

Flange kit
DN 50 PN 16, 1.4571
ZU 0535



Flange (stainless steel)



O-ring 25 x 3
(EPDM) and
ZU 0347 fixing
nut and spacer
included

Order no.
ZU 0535

Fixing nut
ZU 0347



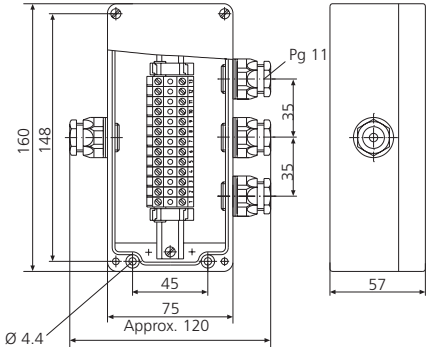
For mounting the SE 654 X sensor

Order no.
ZU 0347

Accessories

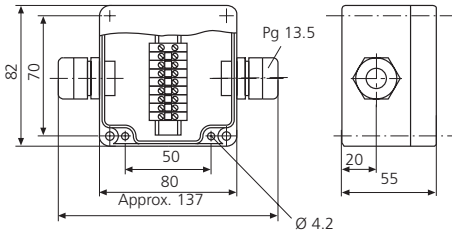
IS terminal box ZU 0074X	Material: Glass reinforced polyester Terminals: 13 Cable glands: 4 x Pg 11 For mounting in hazardous areas	Order no. ZU 0074X
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Dimension drawing:



Terminal box ZU 0307	Material: Polycarbonate Terminals: 9 Cable glands: 2 x Pg 13.5	Order no. ZU 0307
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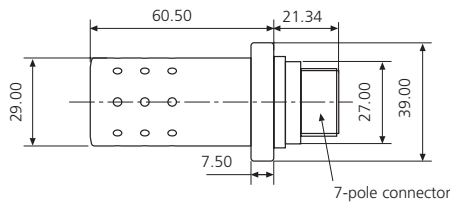
Dimension drawing



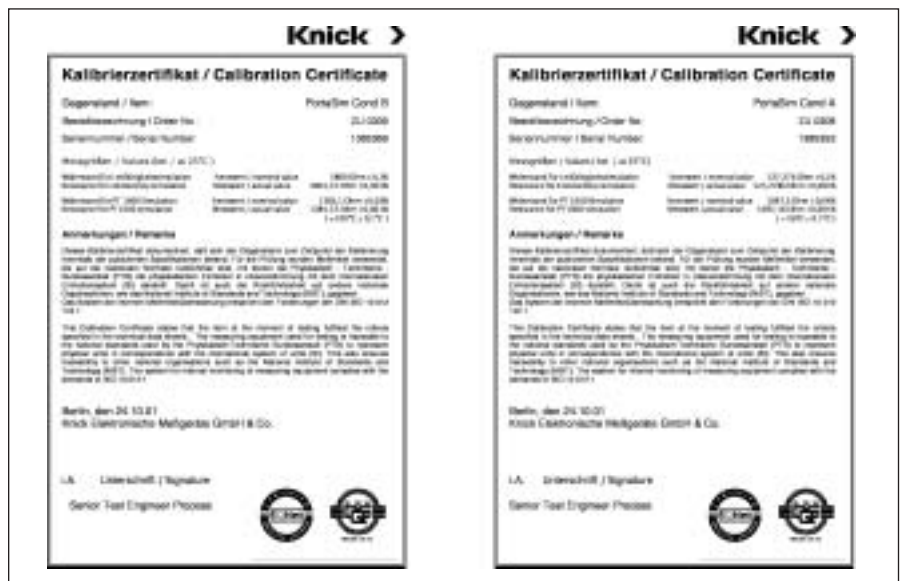
Accessories

Cable KA 18	Type: KA 18 Special extension cable for 2- or 4-electrode sensors Composition: 2 coax lines, 3 wires, cable shield Connection: Wire end ferrules	Length: 10 m Length: 15 m Length: 20 m	Order no. ZU 0292 ZU 0293 ZU 0294
Cable for SE 604	Type: Connection cable for SE 604 Sensor connection: Plug connection Device connection: Wire end ferrules	Length: 5 m Length: 10 m	Order no. ZU 0569 ZU 0570
PortaSim Cond A	Conductivity simulator (simulates SE 604 sensor) Sim. conductivity: 0.055 $\mu\text{S/cm}$ (for cell constant 0.029/cm) Sim. temperature: 25.0 °C (Pt 1000) Incl. certificate		Order no. ZU 0308
PortaSim Cond B	Conductivity simulator (simulates SE 604 sensor) Sim. conductivity: 5 $\mu\text{S/cm}$ (for cell constant 0.029/cm) Sim. temperature: 100.0 °C (Pt 1000) Incl. certificate		Order no. ZU 0309

Dimension drawing: PortaSim Cond A, PortaSim Cond B



All dimensions in mm.



Accessories

Calibration Certificate
ZU 0320

Calibration Certificate for the following conductivity sensors
SE 202, SE 204, SE 600, SE 602, SE 603, SE 604, ZU 0071

Order no.
ZU 0320

Zertifikat
Certificate

über die Kalibrierung einer Leitfähigkeitsmeßzelle
concerning the calibration of a conductivity cell

*

Im Rahmen unseres Qualitätssicherungssystems gemäß
Within the scope of our quality assurance system to

DIN ISO 9001

ist die Zellkonstante *k* der Leitfähigkeitsmeßzelle
the cell constant k of the conductivity cell

Kennzeichen:
Identification **Knick SE 202 No. 1234567**

durch Messungen in einem Kalibrierverfahren bestimmt worden,
has been determined by measurements in a calibration procedure

das ergeben hat:
with the following result:

$k = 0,099 / \text{cm} \pm 0,0015 / \text{cm}$

Die Messungen sind mit einem Knick Konduktometer 703 bei einer elektrischen Leitfähigkeit von 1,4 $\mu\text{S}/\text{cm}$ in einer Kaliumchloridlösung erfolgt, die bei den Messungen mittels eines Transfernormalis angeschlossen worden ist an eine Standardlösung gemäß

The measurements were taken using a Knick 703 Conductivity Meter at an electric conductivity of 1,4 $\mu\text{S}/\text{cm}$ potassium chloride solution which was connected during the measurements via a transfer standard to a standard solution according to

DIN (ISO) EN 27 888


*

Knick Elektronische Meßgeräte GmbH & Co. KG, Berlin

01. Juni 1999
Kalibrierdatum
Date of calibration

i. A. 
by order
by order

Unterschrift
Signature



Measured medium	Sensor	Page
Water, general	SE 706	25
Waste-water, sewage plant	SE 706	25
Boiler feed water, Trace oxygen measurement	SE 707	26
Chemistry	SE 706	25
Biotechnology	SE 706	25
Fermentation	SE 706	25
Food	SE 706	25
Beverage	SE 706, SE 707	25, 26

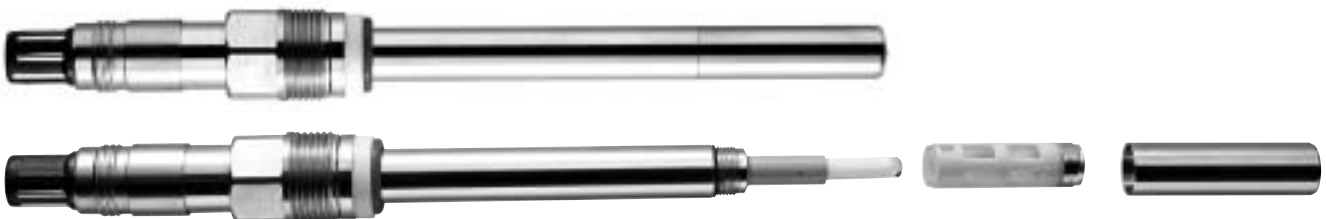
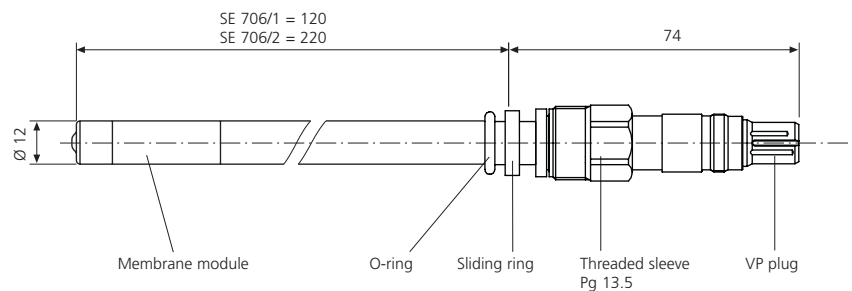


O₂

Sensors

		Order no.
DO sensor SE 706	Length	120 mm
		220 mm
Model SE 706/	<input type="checkbox"/>	SE 706/1 SE 706/2
Range:	pO ₂ < 1200 mbars	
Detection limit:	6 ppb	
Accuracy:	1 % or 4 ppb	
Response time at 25 °C (Air → N ₂):	98 % of end value < 90 s	
Sensor signal in room air:	40 ... 110 nA	
Residual signal in O ₂ -free medium:	< 0.1 % of the signal in room air	
Dependency on flow:	≤ 5 %	
Adm. gauge pressure (measurement):	0.2 ... 6 bars absolute	
Mech. pressure resistance:	Max. 12 bars absolute	
Adm. temp range (measurement):	0 ... 80 °C	
Temp range (stability):	-5 ... 140 °C (sterilizable/autoclavable)	
O-ring material:	Viton, Silicone (FDA-tested)	
Membrane material:	Teflon/Silicone/Teflon (reinforced with steel mesh)	
Process-wetted metal parts:	Stainless steel 1.4435	
Surface roughness:	N 5 (RA < 0.4 µm)	
Temperature probe:	NTC 22 kΩ	
Interior body incl. sensing electrodes:	Replaceable (ZU 0567)	
Certificates:	EHEDG, 3A 3.1 B (EN 10204.3/1.B)	
Screw cap:	VP	
Cable connection:	ZU 0313, ZU 0314, ZU 0315	

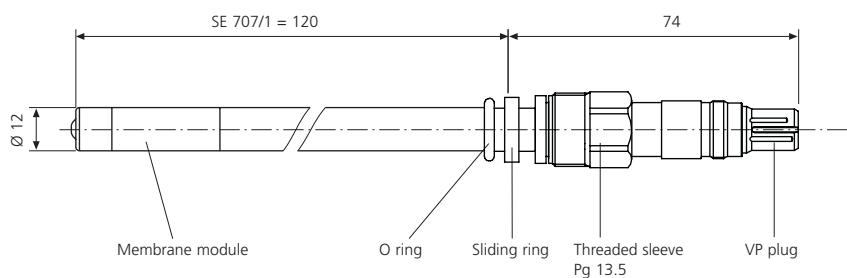
Dimension drawing:



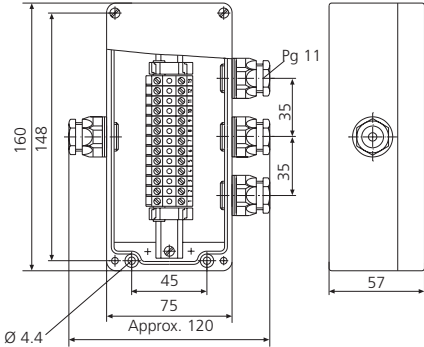
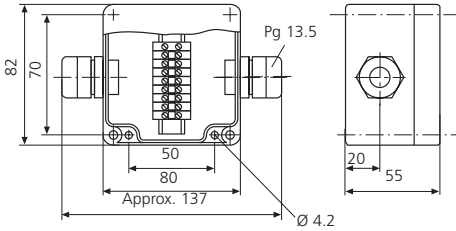
Sensors

DO sensor SE 707 Trace measurements	Length	1	120 mm	Order no. SE 707/1
	Model SE 707/	<input type="checkbox"/>		
Range:		pO ₂ < 1200 mbars		
Detection limit:		1 ppb		
Accuracy:		1 % or 1 ppb		
Response time at 25 °C (air → N ₂):		98 % of end value < 90 s		
Signal in room air:		250 ... 400 nA		
Residual signal in O ₂ -free medium:		< 0.03 % of the signal in room air		
Dependency on flow:		≤ 5 %		
Adm. gauge pressure (measurement):		0.2 ... 6 bars absolute		
Mech. pressure resistance:		Max. 12 bars absolute		
Adm. temp range (measurement):		0 ... 80 °C		
Temp range (stability):		-5 ... 121 °C (sterilizable)		
O-ring material:		Viton, Silicone (FDA-tested)		
Membrane material:		Teflon/Silicone/Teflon (reinforced with steel mesh)		
Process-wetted metal parts:		Stainless steel 1.4435		
Surface roughness:		N 5 (RA < 0.4 µm)		
Temperature probe:		NTC 22 kΩ		
Interior body incl. sensing electrodes:		Replaceable (ZU 0568)		
Certificates:		EHEDG, 3A 3.1 B (EN 10204.3/1.B)		
Screw cap:		VP		
Cable connection:		ZU 0313, ZU 0314, ZU 0315		

Dimension drawing:



Accessories

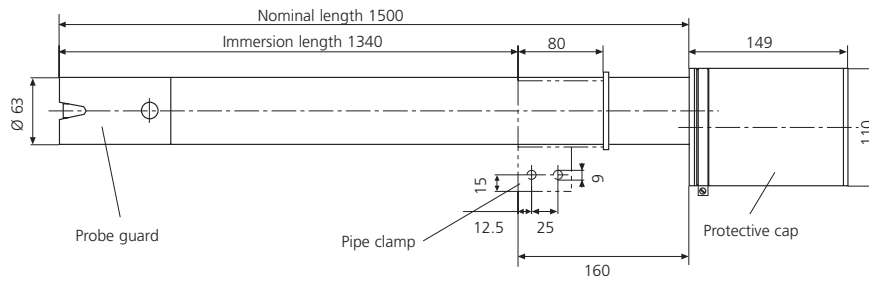
		Order no.
IS terminal box ZU 0074X	Material: Glass reinforced polyester Terminals: 13 Cable glands: 4 x Pg 11 For mounting in hazardous areas Dimension drawing:	ZU 0074X
		
Terminal box ZU 0307	Material: Polycarbonate Terminals: 9 Cable glands: 2 x Pg 13.5 Dimension drawing	ZU 0307
		
DO membrane module T 96, single (SE 706/707)		ZU 0563
DO membrane kit T 96, 12 mm (SE 706/707), consisting of: DO membrane module (4x), O-ring kit (1x), 25 ml electrolyte (1x)		ZU 0564
DO electrolyte 25 ml (SE 706/707)		ZU 0565
DO electrolyte 5 ml (SE 707), low sensitivity to CO ₂		ZU 0566
Interior body for SE 706		ZU 0567
Interior body for SE 707		ZU 0568
VP cable	Length: 3 m Length: 5 m Length: 10 m	ZU 0313 ZU 0314 ZU 0315
Adapter VP plug to cable ZU 0231/ZU 0232		ZU 0562

Fittings	Code	Page
Immersion fitting (dip in)	ARD	33
Flow-through fitting	ARF	37
Insertion fitting	ARI	45
Retractable fitting	ARR WA	48

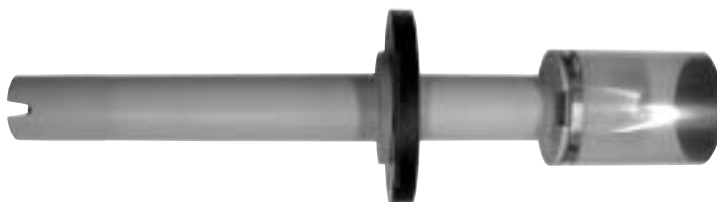
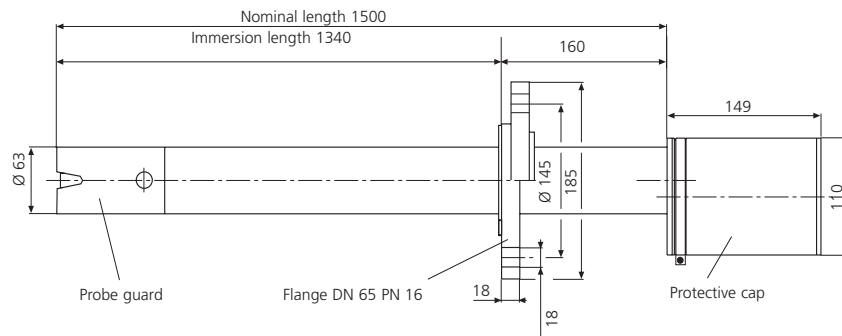
Fittings

Immersion fitting ARD 220	Material: See product coding Process connection: See product coding Nominal length: See product coding Diameter: Ø 63 mm Pressure: PP: unpressurized (90 °C), 1 bar (30 °C) Temperature: PP: 0 ... 90 °C Electrode locations: 3 x Pg 13.5 Sensors: Pg 13.5, L = 120 mm	Order no. See product coding
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Dimension drawing of pipe clamp:
Example: ARD 220/112411



Dimension drawing of flange DN 65 PN 16:
Example: ARD 220/113411



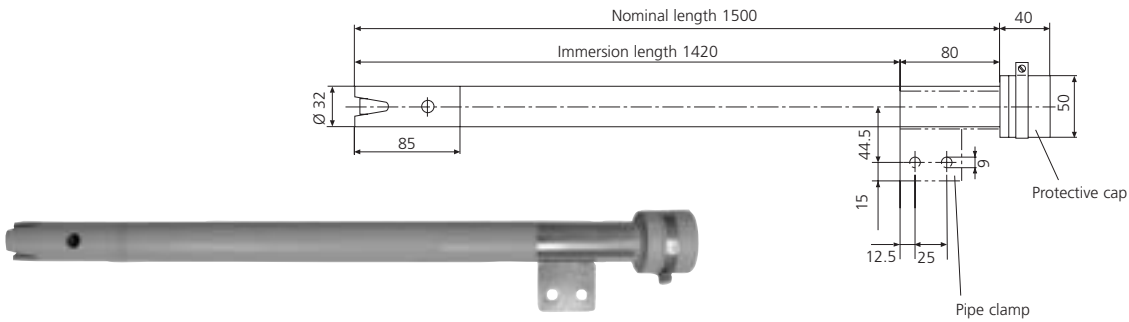
Fittings

		Product coding						
Immersion fitting ARD 220	Model	ARD 220/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Material		1					PP-H
			2					PVDF
			3					1.4571
	Sensor adapter		1					3 x Pg 13.5
			2					SE 654 X
			4					SE 655 (X) / SE 656 (X)
			7					SE 604 (G 1")
	Process connection		2					Pipe clamp
			3					Flange (loose) DN 65 PN 16
		4					Catenary suspension	
Nominal length				1			300	
				2			500	
				3			1000	
				4			1500	
				5			2000	
Protective cap						1	Normal	
						2	With electrolyte reservoir	
						3	3 cable glands	
Gasket material						1	EPDM	
						2	FPM (Viton)	
						3	FFPM (Kalrez)	

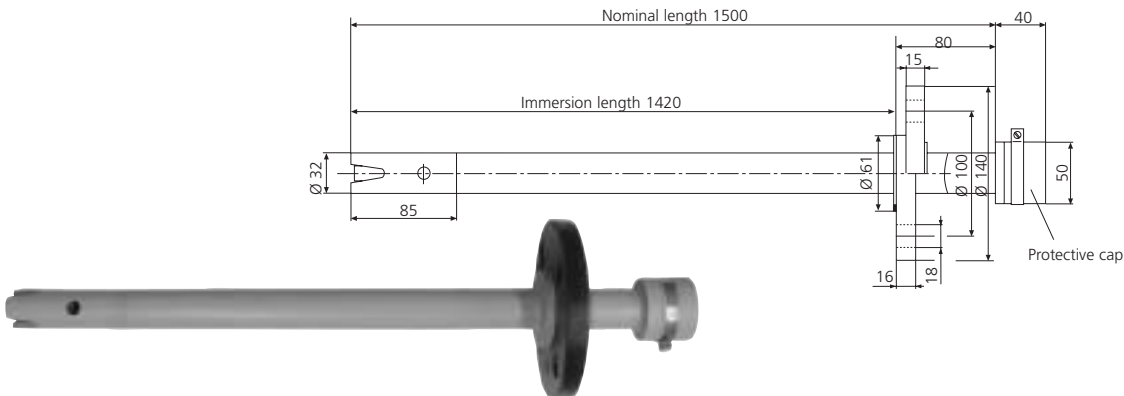
Fittings

		Order no.
Immersion fitting ARD 230	Material: See product coding Process connection: See product coding Nominal length: See product coding Diameter: Ø 32 mm Pressure: PP-H: unpressurized (90 °C), 1 bar (30 °C) Temperature: PP-H: 0 ... 90 °C Electrode locations: 1 x Pg 13.5 Sensors: Pg 13.5, L = 120 mm	See product coding

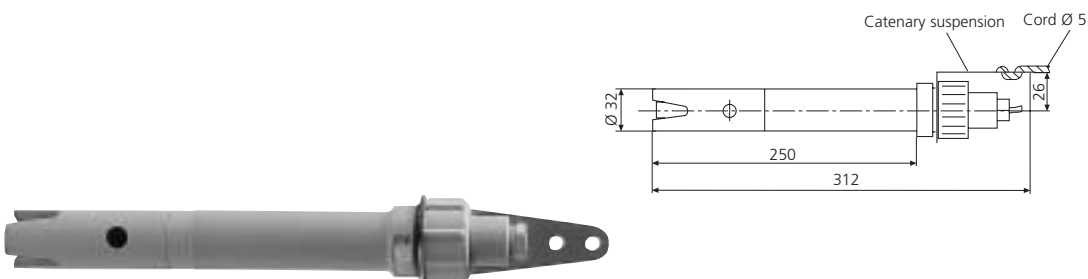
Dimension drawing of pipe clamp:
Example: ARD 230/112411



Dimension drawing of flange DN 32 PN 10:
Example: ARD 230/113411



Dimension drawing of catenary suspension:
Example: ARD 230/114121

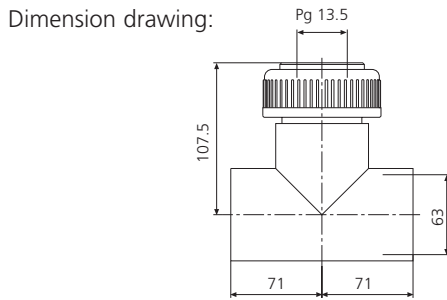


Fittings

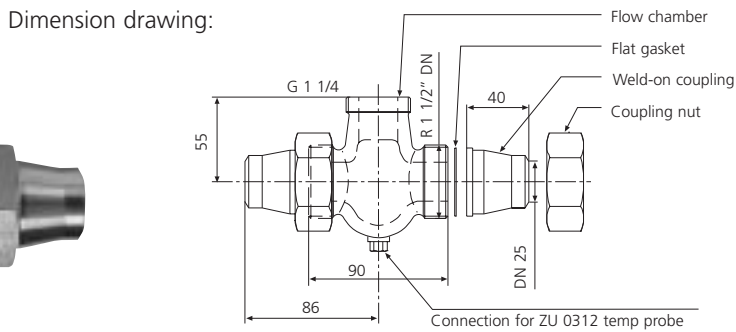
		Product coding							
Immersion fitting ARD 230	Model	ARD 230/	□	□	□	□	□	□	
	Material		1					PP-H	
			2					PVDF	
			3					1.4571	
	Sensor adapter		1					1 x Pg 13.5	
	Process connection				1				DN 32 coupling
					2				Pipe clamp
					3				Flange (loose) DN 32 PN 10
					4				Catenary suspension
	Nominal length					1			250
					2			500	
					3			1000	
					4			1500	
					5			2000	
Protective cap						1		Normal (N)	
						2		1 cable gland (U,T)	
Gasket material							1	EPDM	
							2	FPM (Viton)	
							3	FFPM (Kalrez)	

Fittings

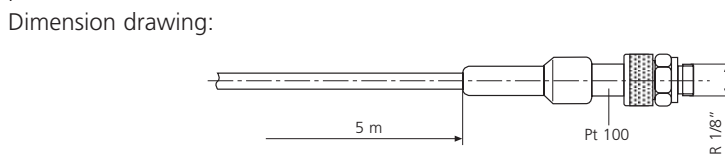
<p>Flow-through fitting ARF 101</p>	<p>Material: PVC Process connection: DN 50 (d = 63 mm) adhesive sleeve Pressure: 4 bars (45 °C), 1 bar (60 °C) Temperature: Max. 60 °C Electrode locations: 1 x Pg 13.5 Sensors: Pg 13.5, L = 120 mm</p>	<p>Order no. ARF 101</p>
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<p>Flow-through fitting ARF 102</p>	<p>Material: 1.4408 steel, Klingerit flat gasket Process connection: 25 mm weld-on couplings Pressure: 0 ... 6 bars Temperature: -30 ... 130 °C Electrode locations: 1 x 25 mm coupling G 1 1/4 for ARI 103 and ARI 104</p>	<p>Order no. ARF 102</p>
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<p>Accessories for ARF 102 Temperature probe Pt 100</p>	<p>Temperature: -30 ... 130 °C Pressure: 0 ... 6 bars Cable length: 5 m Fitting: ARF 102</p>	<p>Order no. ZU 0312</p>
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Fittings

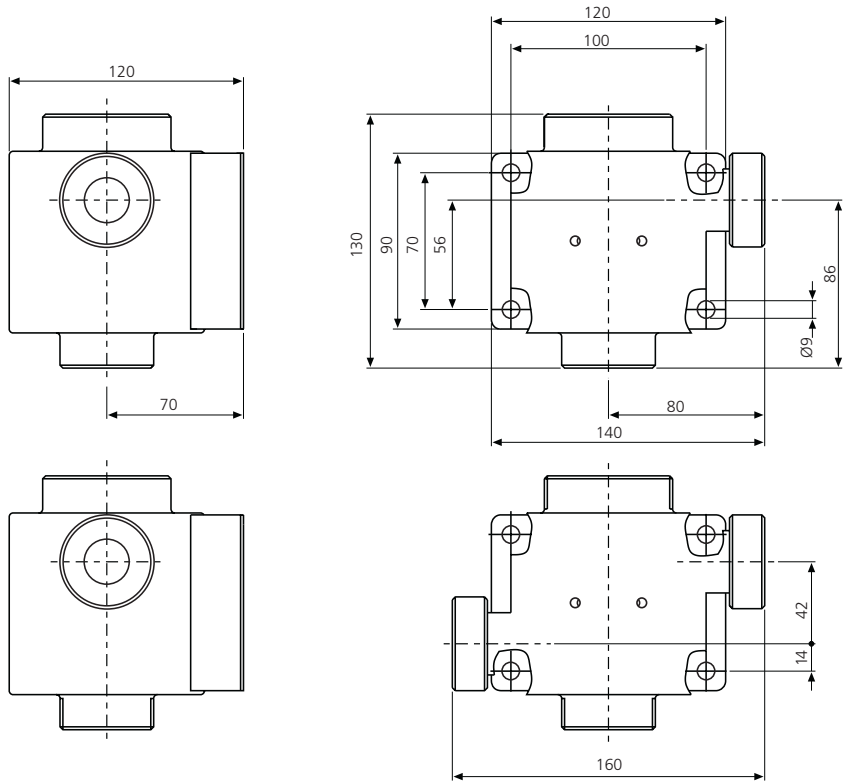
Flow-through fitting
ARF 215

Material: See product coding
 Process connection: See product coding
 Sensor adapter: See product coding
 Pressure/temp: See pressure/temperature diagram

Order no.

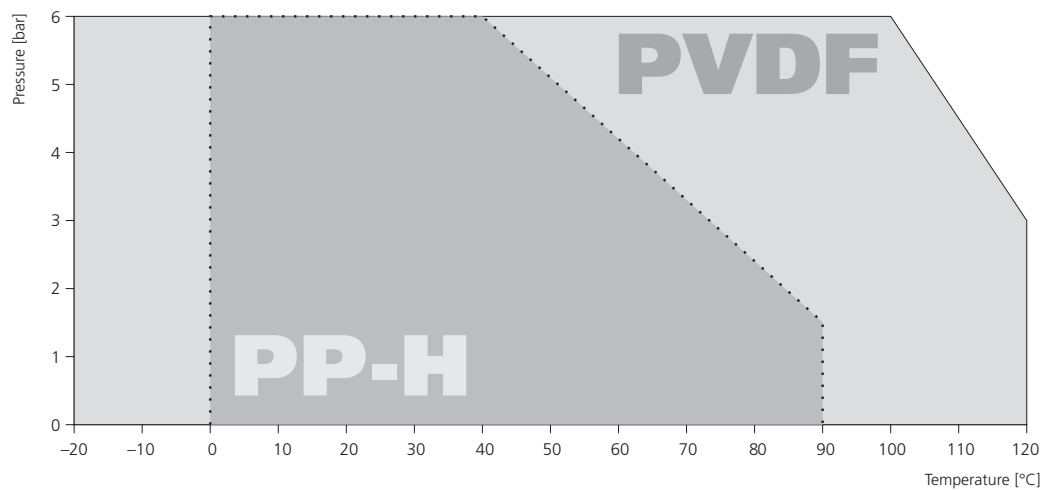
See
product
coding

Dimension drawing DN 25 coupling



All dimensions in mm.

Pressure/temperature diagram

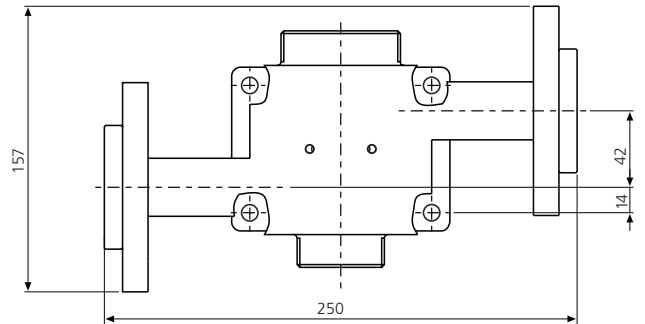
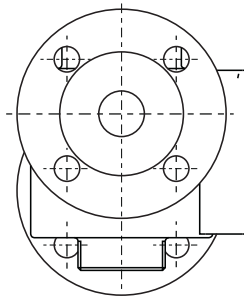
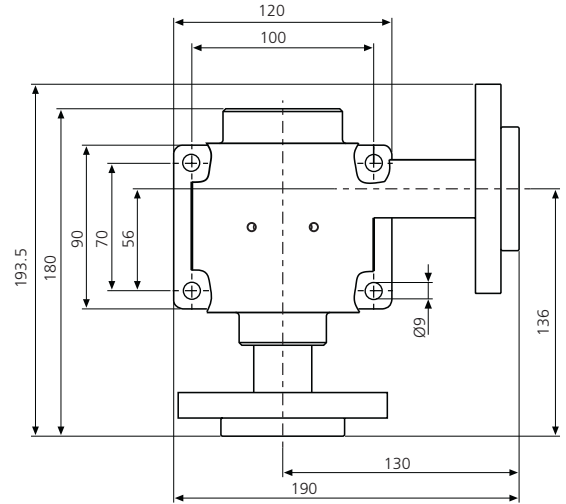
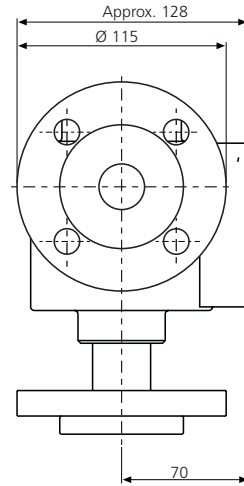


Fittings

Flow-through fitting
ARF 215



Dimension drawing flange connection



Product coding

All dimensions in mm.

Model	ARF 215/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Material	1						PP-H
	2						PVDF
Sensor adapter	1						3 x Pg 13.5
	2						SE 654 X
	4						SE 655 (X) / SE 656 (X)
	7						SE 604 (G 1")
Process connection	1						DN 25 coupling
	2						G 1/4
	3						DN 25 flange
	5						DN 25 coupling (incl. joining pieces)
Installation position	1						90°
	2						180° staggered
	3						180° with cleaning connection (for 3x Pg13.5)
Protective cap	0						Without
	1						Normal
	2						With electrolyte reservoir
Calibration beaker	0						Without
	1						With
Gasket material	1						EPDM
	2						FPM (Viton)
	3						FFPM (Kalrez)

Fittings

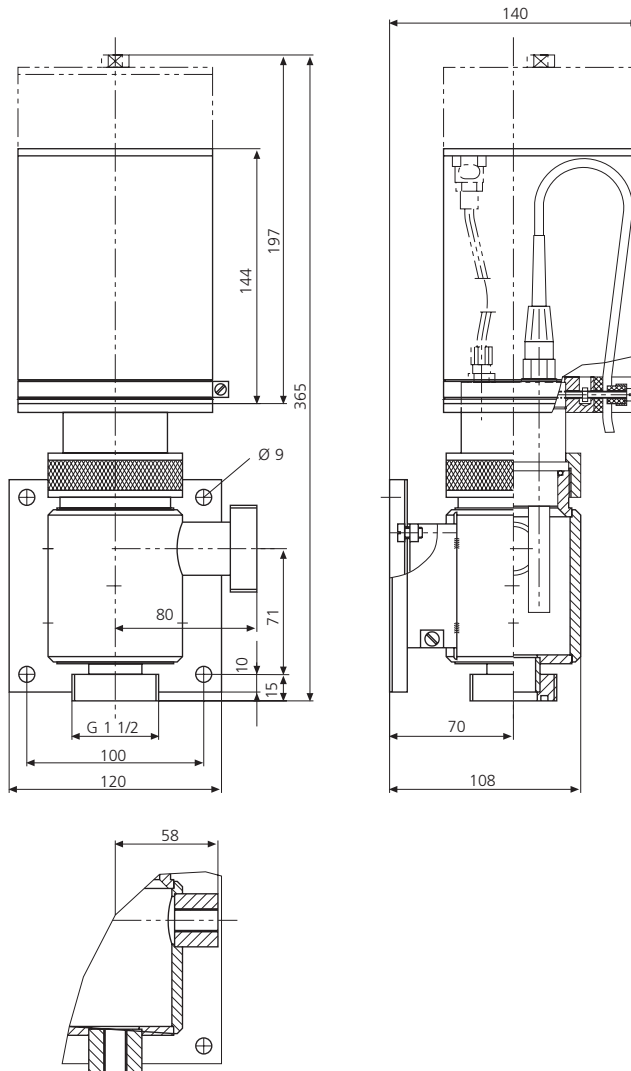
Flow-through fitting
ARF 210

Material: 1.4571
 Process connection: See product coding
 Pressure: 10 bars -35 ... +135 °C
 Sensor adapter: See product coding

Order no.

See
product
coding

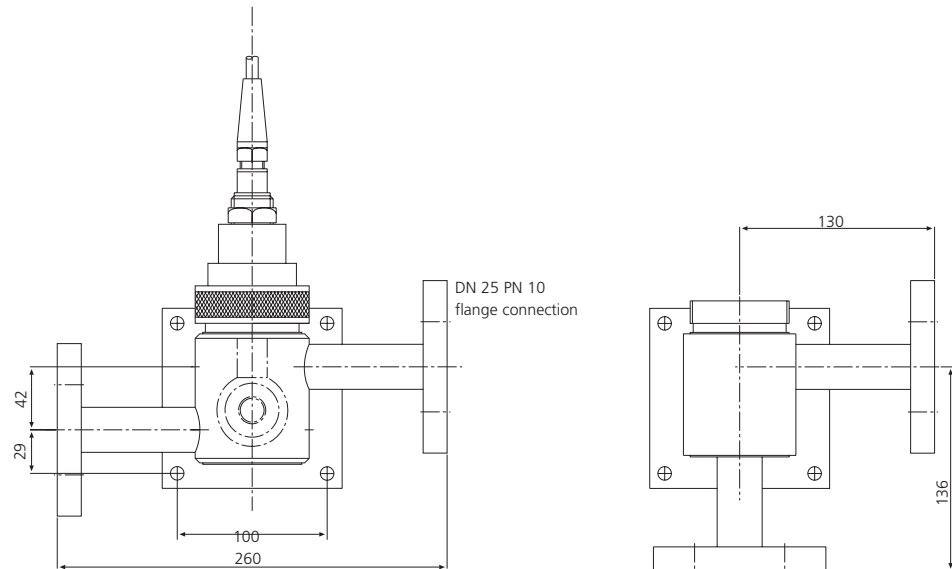
Dimension drawing DN 25 coupling



Fittings

Flow-through fitting
ARF 210

Dimension drawing flange connection



Product coding

Type	ARF 210/	□	□	□	□	□	□
Material	3						1.4571
Sensor adapter	1						3 x Pg 13.5
	2						SE 654 X
	4						SE 655 (X) / SE 656 (X)
	7						SE 604 (G 1")
Process connection	1						DN 25 coupling
	2						G 1/4
	3						DN 25 flange
	5						DN 25 coupling (incl. joining pieces)
Installation position	1						90°
	2						180° staggered
	3						180° with cleaning connection (f. 3x Pg13.5)
Protective cap	0						Without
	1						Normal
	2						With electrolyte reservoir
Calibration beaker	0						Without
	1						With
Gasket material	1						EPDM
	2						FPM (Viton)
	3						FFPM (Kalrez)

Fittings

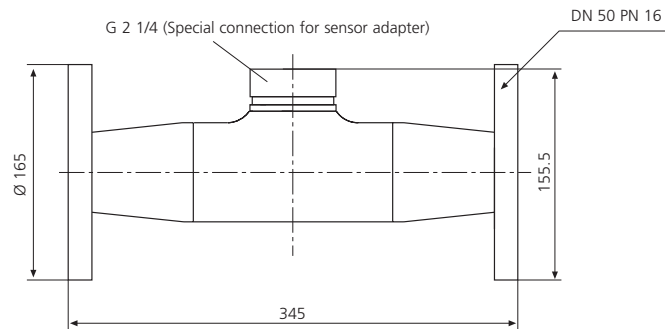
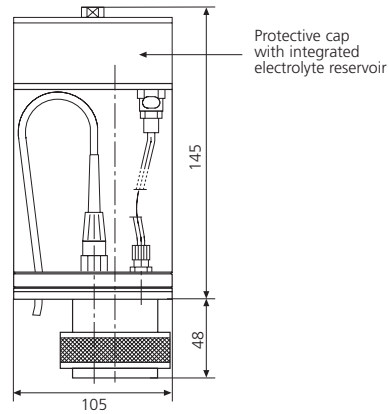
Flow-through fitting
ARF 240

Material: 1.4571 steel
Process connection: DN 50 PN 16 flanges
Pressure: 10 bars
Temperature: 120 °C
Electrode locations: See product coding

Order no.

See
product
coding

Dimension drawing: Example ARF 240/31111



Product coding

Flow-through fitting
ARF 240

Model	ARF 240/						
Material	3						1.4571
Sensor adapter	1	2	4	7			3 x Pg 13.5 SE 654 X SE 655 (X) / SE 656 (X) SE 604 (G 1")
Process connection			1				DN 50 PN 16 flange
Installation position				1			180°
Protective cap					0	1	Without Normal
						2	With electrolyte reservoir
Gasket material						1	EPDM
						2	FPM (Viton)
						3	FFPM (Kalrez)

Fittings

Flow-through fitting
ARF 105

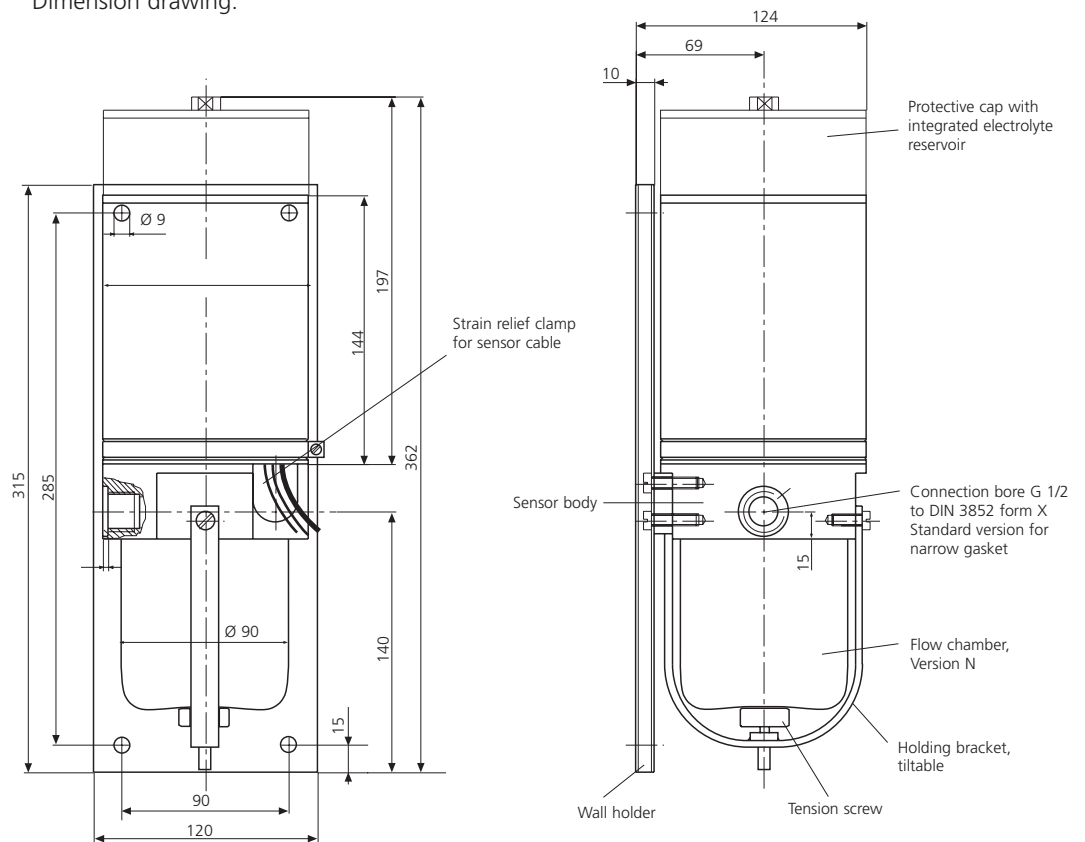


Material: PP-H, Duran 50 glass
 Process connection: Internal thread G 1/2
 Pressure: Max. 0.5 bars (30 °C)
 Temperature: 0 ... 90 °C
 Electrode locations: 3 x Pg 13.5 1 x Ø = 22 mm
 Protective cap: PVC with integrated electrolyte reservoir
 Sensors: Pg 13.5, L = 120 mm

Order no.

ARF 105

Dimension drawing:



Fittings

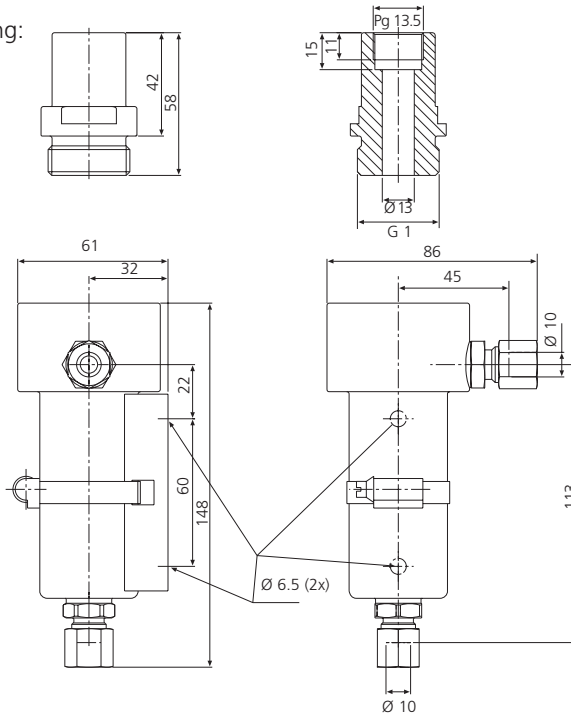
Flow-through fitting
ARF 200 + ZU 0547



Material: 1.4571 stainless steel
 Process connection: Pipe socket Serto 10 mm
 Pressure: Max. 10 bars
 Temperature: Max. 120 °C
 Electrode locations: 1 x G 1", O ring 32.92 x 3.53 EPDM
 Sensors: SE 604 (Pg 13.5, L = 120 mm with ZU 0547)

Dimension drawing:
ZU 0547

ARF 200



Order no.

ARF 200
ZU 0547

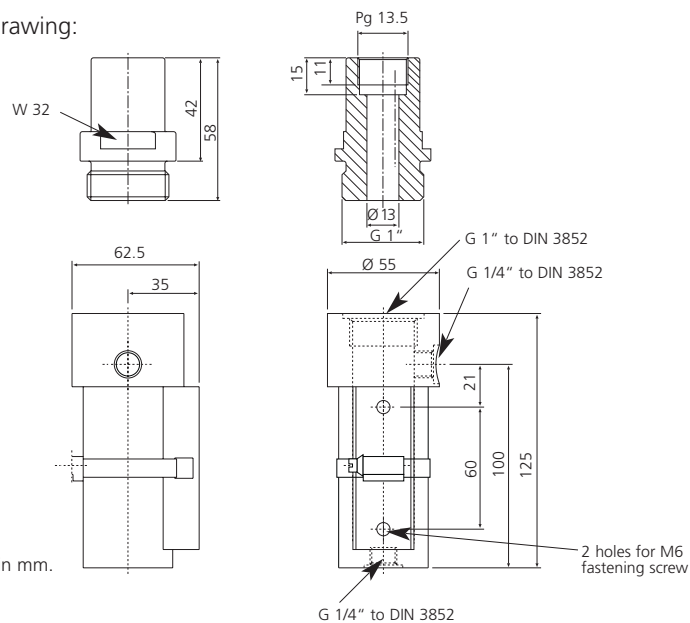
Flow-through fitting
ARF 201 + ZU 0323



Material: PP-H
 Process connection: Internal thread G 1/4"
 Pressure: Unpressurized (1 bar)
 Temperature: Max. 90 °C
 Electrode locations: 1 x G 1, O-ring 30 x 4 EPDM
 Sensors: SE 604 (Pg 13.5, L = 120 mm with ZU 0323)

Dimension drawing:
ZU 0323

ARF 201



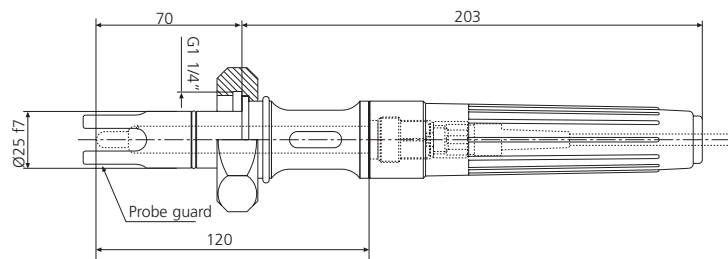
Order no.

ARF 201
ZU 0323

Fittings

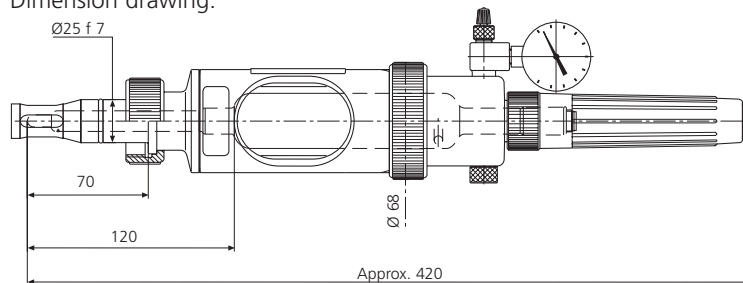
		Order no.
Insertion fitting ARI 104	Material: 1.4435 steel, Viton gasket Process connection: For 25-mm-coupling ZU 0085, ZU 0086 (G 1 1/4") or ARF 102 Pressure: 0 ... 6 bars Temperature: 0 ... 110 °C Electrode locations: 1 Sensors: Pg 13.5, L = 120 mm	ARI 104

Dimension drawing:



		Order no.
Insertion fitting ARI 103	Material: 1.4435 steel, silicone gasket Process connection: For 25-mm coupling ZU 0085, ZU 0086 (G 1 1/4") or ARF 102 Pressure: 0 ... 6 bars Temperature: -30 ... 130 °C, steam sterilizable Electrode locations: 1 Sensors: SE 536	ARI 103

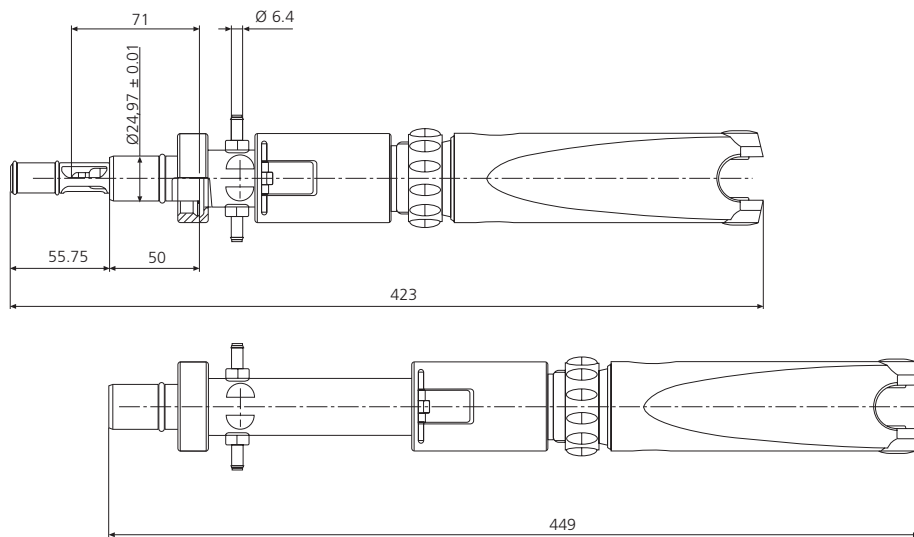
Dimension drawing:



Fittings

Manually retractable fitting with rinsing chamber ARR 113	Material: 1.4571 stainless steel, Viton gaskets Process connection: For 25 mm coupling ZU 0085, ZU 0086 (G 1 1/4") Pressure: Max. 4 bars Temperature: -10°C ... +130°C Electrode locations: 1 Sensors: Pg 13.5, L = 225 mm (e.g. SE 550/21)	Order no. ARR 113
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Dimension drawing:

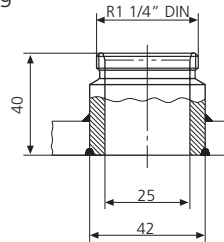


Accessories

		Order no.
Weld-in coupling straight	Material: 1.4435 steel (other materials on request) Thread: G 1 1/4" Length: 40 mm For mounting of ARI 103, ARI 104 insertion fittings	ZU 0086



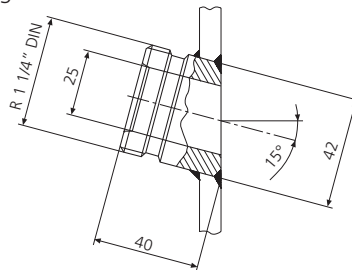
Dimension drawing
(other dimensions on request)

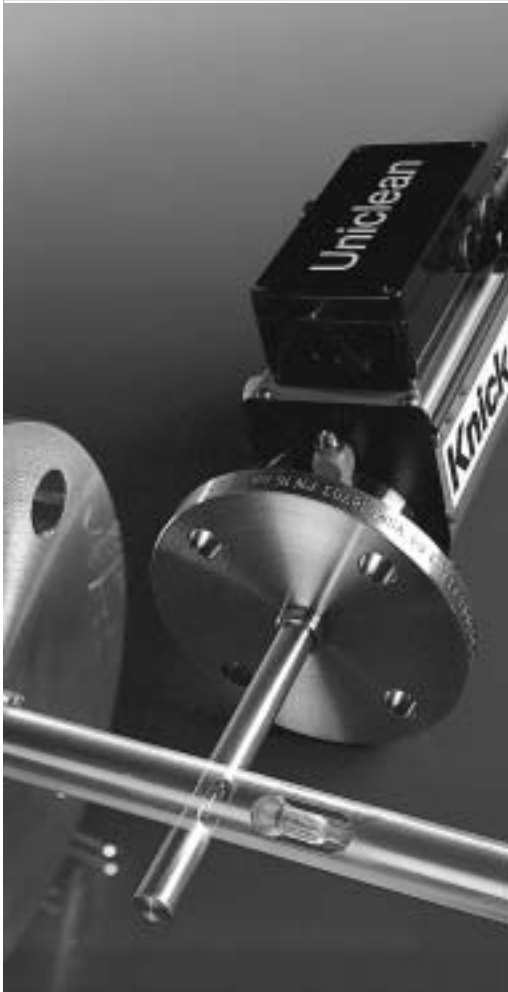


		Order no.
Weld-in coupling bevelled	Material: 1.4435 steel (other materials on request) Thread: G 1 1/4" Length: 40 mm Bevel: 15° For mounting of ARI 103, ARI 104 insertion fittings	ZU 0085



Dimension drawing
(other dimensions on request)





Uniclean® WA 110/115

Remote Cleaning Probe with integrated control for safe pH measurement

The most frequent causes for erroneous pH measurements are dirty and badly maintained electrodes. The Uniclean® Remote Cleaning Probe and the Process Unit 73 pH offer a cost-effective solution by providing automatic cleaning and at the same time monitoring of the electrode. Measurement security is increased while maintenance costs are even reduced.

Reduced maintenance work.

Fully automatic electrode cleaning in user-defined intervals without interrupting the process. Decisive reduction of maintenance work, especially for hardly accessible measuring points.

Long electrode life in critical processes.

When measuring in aggressive process media or at high process temperatures, the electrode rests in the rinsing chamber and is only briefly moved into the process for measurement. This method decisively increases the electrode life.

Safe and easy measurement in strongly polluted media.

Electrode cleaning and rinsing is performed in user-defined intervals.

Water and cleaning solution, if required, are automatically pumped into the rinsing chamber. Dismounting and manual cleaning of the electrode are not necessary.

Electrode cleaning without disrupting the process, even when measuring in a pressure tank.

Since the electrode is not dismounted for cleaning, the process can continue uninterrupted.

This allows problem-free measurements in a pressure tank or in the main pipe. Costly by-passes are omitted, measurement accuracy is increased.

Check of electrode data in the running process.

Using a cleaning solution with known pH or a buffer solution, the electrode data can be determined during cleaning and be compared with preset limit values.

Integration into complex process sequences.

Via the contact inputs, the Uniclean® can be remote-controlled by an SPC or a PCS, allowing integration into complex process cycles.

Suitable for universal applications.

Uniclean® has been successfully used for many applications, such as for production of basic chemicals, wastewater treatment, in the food and paper industry, and in many other fields where precise measurement results must be ensured even in difficult conditions.

Uniclean®...

... switches
pH measurement to "HOLD",

... moves the electrode
from the process
into the rinsing chamber,

... rinses the electrode with water,

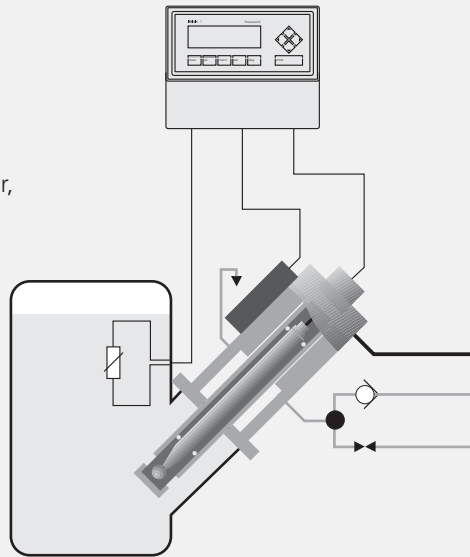
... cleans it with a
cleaning solution,

... checks it with
the pH value of the
cleaning solution,

... rinses the electrode
with water,

... moves it back
into the process,

... stops the "HOLD"
function.



The facts

- Interval- and program-controlled electrode cleaning
- Cleaning with two different solutions
- Easy check of the electrode with the pH value of the cleaning solution
- Reduced maintenance work due to automatic cleaning
- No disruption of the production for cleaning and checking the electrode
- Measurement directly in the pressure tank, no by-pass required
- Increased control accuracy due to measurement in the main stream
- Longer electrode life due to short-time measurement and regular cleaning
- Remote control by SPC or PCS
- Application also at hardly accessible points
- Immediate readiness for measurement after production interruption since electrode is safely stored in liquid

Warranty

Defects occurring within 1 year from delivery date shall be remedied free of charge at our works (carriage and insurance paid by sender).

Product line

		Order no.
Uniclean® Remote Cleaning Probe for electrodes with solid electrolyte	Uniclean® WA 110-S for combination electrodes with solid electrolyte, process-wetted parts made of 1.4435 stainless steel, Viton gaskets	WA 110-S
	Uniclean® WA 110-H for combination electrodes with solid electrolyte, process-wetted parts made of Hastelloy C-22, Kalrez gaskets	WA 110-H
	Mettler Toledo Xerolyt combination pH electrode HA405-DXK-S8	SE 500
	Mettler Toledo Xerolyt combination ORP electrode Pt 4805-DXK-S8	SE 502
	Mettler Toledo gel-filled combination pH electrode HA405-DPA-S8	SE 504
	Mettler Toledo gel-filled combination ORP electrode Pt 4805-DPA-S8	SE 506
Uniclean® Remote Cleaning Probe for electrodes with liquid electrolyte	Uniclean® WA 115-S for combination electrodes with liquid electrolyte, process-wetted parts made of 1.4435 stainless steel, Viton gaskets	WA 115-S
	Uniclean® WA 115-H for combination electrodes with liquid electrolyte, process-wetted parts made of Hastelloy C-22, Kalrez gaskets	WA 115-H
	Mettler Toledo combin. pH electrode with liquid electrolyte HA465-50-EQ-T-S7/9848	SE 508
	Mettler Toledo combination ORP electrode with liquid electrolyte Pt 4865-50-S7	SE 510
Options	Power supply 24 V AC/DC 115 V AC	298 363
	Remote Cleaning Probe for installation in 25-mm coupling instead of flange	(steel) 435 (Hastelloy) 436
	Connection for additional medium	437
Accessories	25 mm weld-in coupling, straight	1.4436 steel ZU 0086
	25 mm weld-in coupling, bevelled 15 °	1.4435 steel ZU 0085 Hastelloy ZU 0251
	Technical buffers	pH 4.01 ZU 0200
	Mettler Toledo 1000 ml	pH 7.00 ZU 0201 pH 9.21 ZU 0202
	Connecting cable AS 9/5 m, length 5 m	ZU 0082
	Water shock absorber for Uniclean®	ZU 0247
	Control cable, 7-wire, length to customer requirements	ZU 0236

Product line

		Order no.
Accessories	Connection block for additional medium, for retrofitting	ZU 0234
	Pump for cleaning solution with 25-l tank	ZU 0235
	Test cable with banana plugs for Uniclean®	ZU 0237
	Valve for additional medium*	ZU 0253
Spare parts	Viton sealing kit for Remote Cleaning Probe	ZU 0238
	Kalrez sealing kit for Remote Cleaning Probe	ZU 0243
	Check-back switch set	ZU 0239
	Terminal box, complete (Specify mains voltage option!)	ZU 0240
	Water valve	ZU 0241
	Pneumatic valve	ZU 0242
pH meter	Uniclean® is controlled by the Process Unit 73 pH.	

* Only in conjunction with Option 437 or ZU 0234

Specifications

System control	By Knick Process Unit 73, Option 404 Connection through ZU 0236 7-wire control cable Distance max. 20 m (without impedance converter)		
Inputs	2 control inputs for signal contacts, switching current 0 ... 25 mA (24 V DC) "Start" starts program "Lock" locks timer-controlled start of program		
Output ratings	Valve or pump for cleaning solution 24 V DC (pulsating direct voltage), max. 9 W		
RFI suppression	To EN 50081-1 and EN 50081-2		
Immunity to interference	To EN 50 082-2 and NAMUR* EMC recommendation for process and laboratory control equipment		
Protection against electrical shock	Safe isolation of all extra-low voltages from all dangerous contact voltages (power supply 230 V / 115 V) to VDE 0100 Part 410 as defined in DIN VDE 0106 Part 101		
Power supply	Opt. 363	230 V AC	-15% +10 %, 48 ... 62 Hz, ≤ 9 VA
	Opt. 363	115 V AC	-15% +10 %, 48 ... 62 Hz, ≤ 9 VA
	Opt. 298	24 V AC/DC,	AC: -15% +10 %, 48 ... 62 Hz, ≤ 9VA DC: -15% +20 %, ≤ 9 W
Protection class	II		
Ingress protection	IP 65		

* German committee for measurement and control standards in the chemical industry

Specifications

Compressed-air supply	Water- and oil-free (filter and water separator to be installed by customer) Pressure 4 ... 7 bars Connection G 1/4" a, nickel-plated brass or 6/8 mm hose connection
Rinsing-water supply	City water (filter and nonreturn valve to be installed by customer) Pressure 2 ... 6 bars Temperature +5 ... +90 °C Connection G 3/4" a, plastic PA6
Cleaning solution (Opt. 437)	ZU 0235 pump or ZU 0253 valve for cleaning solution or 10 mm hose grommet Lifting height 3 m Displaced volume 0.3 L/min Temperature +5 ... +40 °C Connection cap for plastic bottle type Kautex 401/65 with 2, 5, 10, 25, or 60 L capacity
Rinsing-chamber drain	Stainless steel hose grommet Diameter 12 mm
Process pressure Process temperature	0 ... 6 bars 0 ... 110 °C
Materials with process contact	WA 110/115-S: 1.4435 stainless steel, Viton gaskets WA 110/115-H: Hastelloy C-22, Kalrez gaskets
Materials with rinsing water contact	PU, Ms 58, Viton, Hostaform
Materials with cleaning solution contact	POM, PVDF, 1.4435 stainless steel
pH electrode	Combination electrode with solid electrolyte (WA 110) Combination electrode with liquid electrolyte (WA 115)
Process connection	DIN DN 50/PN 16 flange or 25 mm weld-in coupling (Opt. 435 or 436)
Insertion length from flange	175 mm
Cable glands	4 Pg 13.5 cable glands
Dimensions	WA 110: See dimension drawing WA 115: See dimension drawing
Ambient temperature	Operation +5 ... +50 °C Transport and storage -20 ... +70 °C
Weight	Approx. 10 kg

Specifications

Electrodes with solid electrolyte, for WA 110

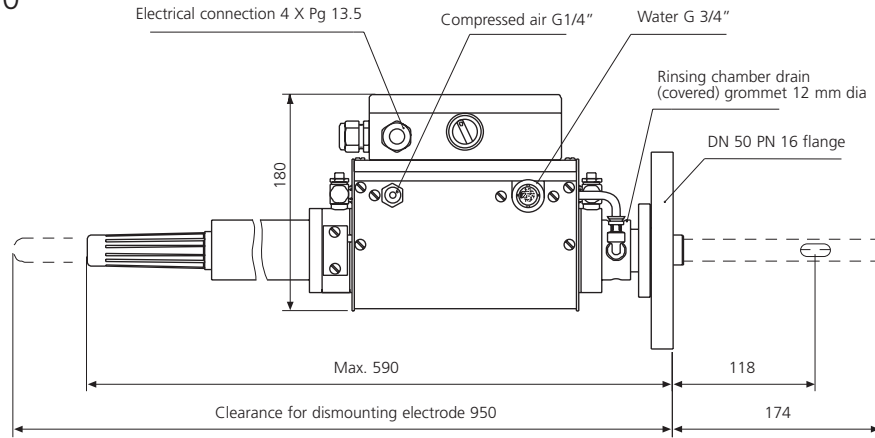
SE 500	Combination pH electrode with Xerolyt solid electrolyte pH range 2 ... 14 Temp range 0 ... 110 °C Pressure range 0 ... 6 bars
SE 502	Combination ORP electrode with Xerolyt solid electrolyte Temp range 0 ... 110 °C Pressure range 0 ... 6 bars
SE 504	Combination pH electrode with gel electrolyte pH range 0 ... 14 Temp range 0 ... 100 °C Pressure range 0 ... 2.5 bars
SE 506	Combination ORP electrode with gel electrolyte Temp range 0 ... 100 °C Pressure range 0 ... 2.5 bars

Electrodes with liquid electrolyte, for WA 115

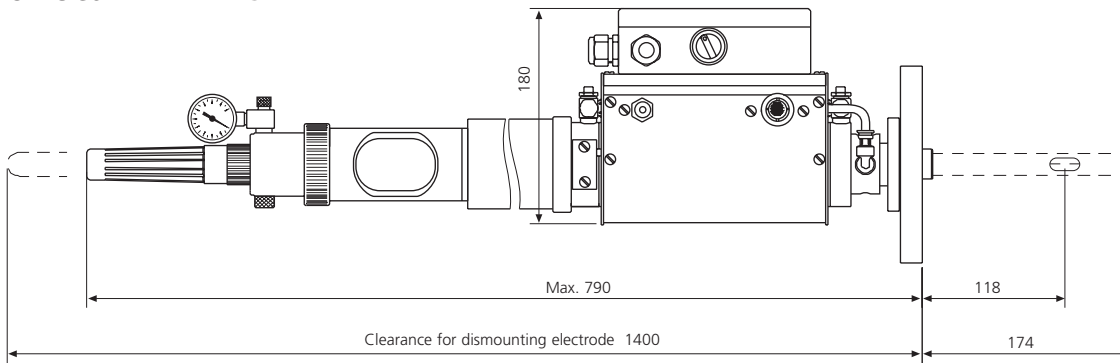
SE 508	Combination pH electrode for liquid electrolyte Reference system Equithal with 3 ceramic junctions Filling solution Friscolyt-B pH range 0 ... 14 Temp range 0 ... 130 °C
SE 510	Combination ORP electrode for liquid electrolyte Reference system Argenthal Filling solution Viscolyt Temp range 0 ... 130 °C

Dimension drawings

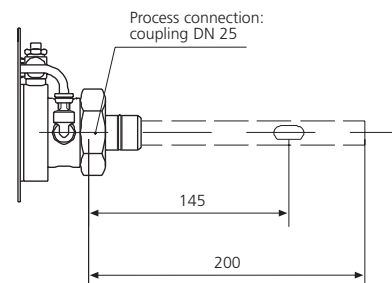
Uniclean® WA 110



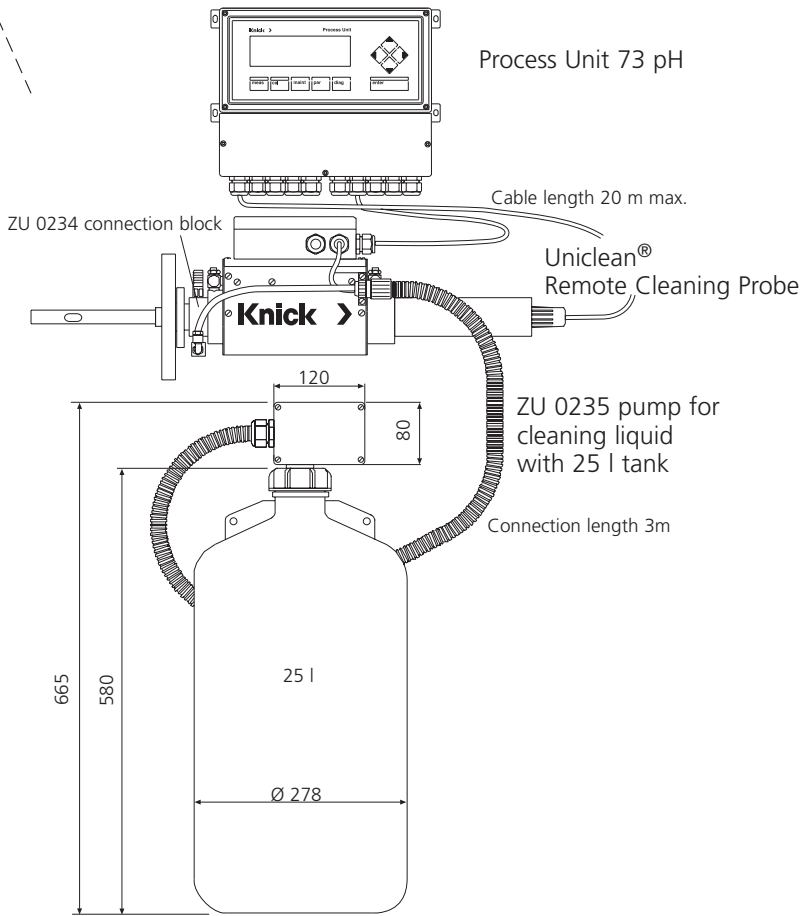
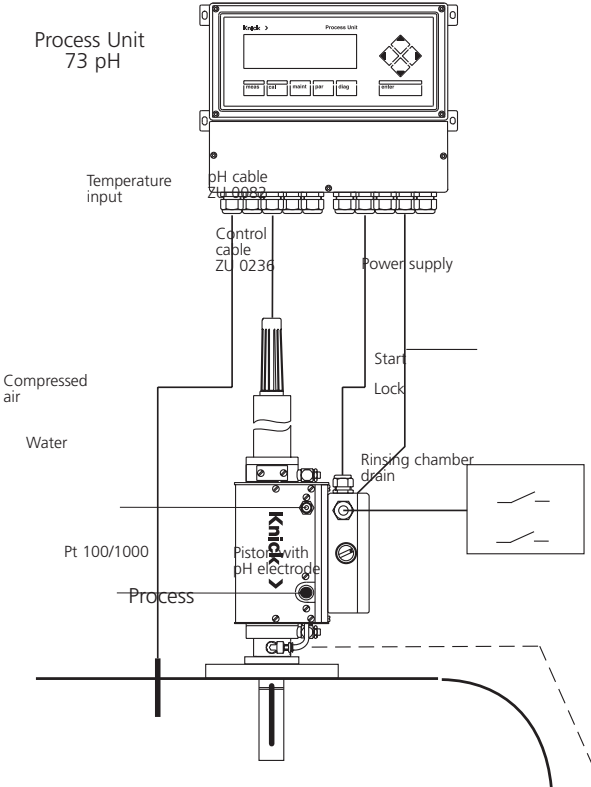
Uniclean® WA 115



Option 435 and 436



Uniclean® installation





Unical® 9000

Unical® 9000 (X) is a fully automatic pH/ORP measuring system. It allows highly accurate measurements to be taken even under difficult process conditions such as high pressure, high temperatures, and high levels of impurities.

The Unical® can be installed directly in the process within the hazardous location. It is controlled by the Protos® 3400 (X) measuring system or directly via SPC.

Maintenance work reduced to a minimum.

Fully automatic electrode calibration in user-defined intervals without interrupting the process. Two buffer solutions are automatically pumped into the calibration chamber. You just have to refill the buffer bottles.

Long electrode life even in critical processes.

When measuring in aggressive process media or at high process temperatures, the electrode rests in the calibration chamber and is only briefly moved into the process for measurement. This method decisively increases the electrode life.

Safe and easy measurement even in strongly polluted media.

Electrode cleaning and rinsing is performed in user-defined intervals.

Cleaning solution and water are automatically pumped into the calibration chamber. Dismounting and manual cleaning of the electrode are not necessary.

Calibration without disrupting the process, even when measuring directly in the pressure tank.

Since the electrode is not dismounted for calibration, the process can continue uninterrupted.

This allows problem-free measurements in a pressure tank or in the main pipe. Costly by-passes are omitted, measurement accuracy is increased.

Check of electrode data in the running process.

The electrode data can be determined and recorded while the process is running by using the tolerance band recorder in the Protos® 3400 measuring system. Calibration is only carried out when pre-set deviations are detected. Constant displacement of the measured values due to small calibration scatters is omitted.

PROFIBUS PA.

Thanks to the PROFIBUS PA interface the Unical® system can be directly integrated into PROFIBUS networks.

Universal adaptation to retractable probes.

The modular structure of the Unical® allows any retractable probes to be used. An optimum of functionality can be achieved by the use of Ceramat® WA 150 remote calibration probe.



Warranty

Defects occurring within 1 year from delivery date shall be remedied free of charge at our works (carriage and insurance paid by sender).

The facts

- Consistent enclosure design
- Modular system, can be adapted to almost every measurement task
- Easy assembly and retrofitting
- Hygienic design (polished stainless steel)
- High security by means of signaling actual probe position (Service)
- No mixing of process media thanks to separate guiding of the liquids
- Low maintenance effort due to innovative pump technology and extremely low consumption of process medium
- Automatic 2-point calibration
- Time-controlled cleaning and checking
- Cleaning with water and additional cleaning solution
- Hardly any maintenance work due to automatic calibration
- No interruptions in production for calibration
- Operation in hazardous area, Zone 1 (all system components)
- Measurement directly in the pressure tank, bypass line not required
- Increased control accuracy due to measurement in main flow
- Longer electrode life due to short-time measurement and regular cleaning
- Remote control using SPC or PCS
- Small dimensions permit operation in areas which are difficult to access
- Immediate readiness for measurement after production stop due to safe storage of electrode in liquid
- Safety ensured by monitoring of the compressed air and water supply, the probe position and the buffer solution level



Specifications

Compressed air	Free of oil and condensate
Adm. pressure range	4 ... 7 bars
Pressure monitoring	Automatic monitoring, signaling
Connection	1/4" internal thread
Rinsing water	Filtered 100 µm
Adm. pressure range	2 ... 6 bars
Temperature range	5 ... 65 °C
Pressure monitoring	Automatic monitoring, signaling
Connection	1/4" internal thread and 3/4 " external thread (for coupling)
Pump (optional)	For buffer solution / cleaning liquid
Number of bottles	Max. 3
Bottle volume	4 L
Max. lifting height	10 m
Displaced volume	25 cm ³ /stroke
Level monitoring	Continual, signaling
Material	PP, PE, EPDM, nonreturn valves: glass, FPM, HC4
Dimensions	150 mm x 150 mm x 340 mm with 4 L bottle
Weight	Approx. 1.5 kg (pump with 4 L bottle)
Supply	Supply by means of Protos® PHU module
(EEx ia IIC)	$V_i = 8.5 \text{ V}$ $I_i = 200 \text{ mA}$ $P_i = 400 \text{ mW}$ 6.8 V (± 10 %) / 15 mA
Connection	Terminals, wire cross section max 2.5 mm ² (preassembled connecting cable to Protos® 3400)
RS 485	Communication with Protos® PHU module or external host computer (e.g. PCS/SPC)
(EEx ia)	$V_i/V_o = 5 \text{ V}$ $I_i/I_o = 250 \text{ mA}$ $R_i = 20 \text{ Ohms}$
Transmission	1200 Bauds / 8 data bits / 1 stop bit / No parity
Securing	CRC16
Connection	Terminals, wire cross section max 2.5 mm ² (preassembled connecting cable to Protos® 3400) length max. 10 m
Adapter to process medium	Approx. 2 kg
Service switch	Wall or pipe/post mounting (Ø 30 ... 65 mm) cable length → Unical® 9000: 5 m (optional 10 m)

Specifications

PCS input M/S (EEx ia IIC)	Measurement/Service $V_i = 30$ V, floating, galvanic isolation up to 60 V
Switching voltage	0 ... 2 V AC/DC inactive (measurement) 10 ... 30 V AC/DC active (Service)
Connection	Terminals, wire cross section max 2.5 mm ²
PCS input A/M (EEx ia IIC)	Automatic locked $V_i = 30$ V, floating, galvanic isolation up to 60 V
Switching voltage	0 ... 2 V AC/DC inactive (automatic intervals enabled) 10 ... 30 V AC/DC active (automatic intervals locked)
Connection	Terminals, wire cross section max 2.5 mm ²
PCS inputs PRG1 ... 3 (EEx ia IIC)	Program selection 1 ... 8 $V_i = 30$ V, floating, interconnected galvanic isolation up to 60 V
Switching voltage	0 ... 2 V AC/DC inactive 10 ... 30 V AC/DC active
Connection	Terminals, wire cross section max 2.5 mm ²
PCS outputs ML1 ... 3 (EEx ia IIC)	Checkback: Service, measurement, program electronic switching contacts, floating, interconnected $V_i = 30$ V $I_i = 100$ mA $P_i = 800$ mW, galvanic isolation up to 60 V
Voltage drop	< 1.2 V
Connection	Terminals, wire cross section max 2.5 mm ²
Explosion protection	II 2(1) G EEx ia IIC T4
EMC	EN 61326 EN 61326/A1
Lightning protection	EN 61000-4-5, Installation class 2
Protection against electrical shock	To EN 61010
Ambient conditions Ambient temperature	+2 ... +55 °C (Ex: +2 ... +50 °C) (other temperature range on request)
Transport/Storage temp	-20 ... +70 °C
Relative humidity	10 ... 95 %, not condensing
Enclosure	Unical® 9000 (X) S stainless steel A2, polished Unical® 9000 (X) C stainless steel A2, coated, color: pidgeon blue
Assembly	Wall mounting Pipe/post mounting Δ 30 ... 65 mm, 30 ... 50 mm Weld-on bracket for hygienic wall/pipe mounting
Dimensions	W x H x D approx. 320 mm x 400 mm x 120 mm
Ingress protection	IP 65/NEMA 4X
Cable glands	6 M 20x1.5 cable glands breakthroughs for NPT 1/2" or Rigid Metallic Conduit
Weight	Approx. 9 kg



The Ceramat® is an automatic Remote Calibration Probe with ceramic sealing between calibration chamber and process. The usual problems caused by O-ring sealings of conventional retractable probes are omitted. Sealing is achieved by two plane ceramic discs which separate the calibration chamber from the process by their relative movement. The drive unit consists of a compact pneumatic rotating/reciprocating motor with positively-controlled, integrated valves.

Ceramat® WA 150

Remote calibration probe with ceramic sealing to process

The Ceramat® remote calibration probe is particularly suited for application in difficult processes where standard O-ring seals fail:

- Process media with solids or other contaminations
- Sticky or pulpy process media, such as in food industry.

The Ceramat® provides internal rinsing, which makes it suitable for use in sensitive processes with a high safety requirement.

The process-wetted parts even of the basic Ceramat® version are made of ceramic and PEEK and allow application in chemically aggressive media.

The attractive price/performance ratio, the compact design and versatile process adaptation make the Ceramat® suitable for practically any application in chemistry, pharma and food industry.

The facts

- Ceramic seal to the process, insensitive to strong pollutions
- 2 independent barriers with internal rinsing
- Compact design for different process adaptations
- Installation in immersion fittings from DN 120 possible
- Smooth surfaces to prevent pollution
- High-quality materials for process-wetted parts even for the basic version
- In the case of a fault the drive unit can easily be replaced under process conditions (one coupling nut). Also when the electrode is broken, the drive unit can be removed under process conditions to clean the calibration chamber.
- Application of liquid or gel electrolyte electrodes (225 mm length)
- Electrode locking device

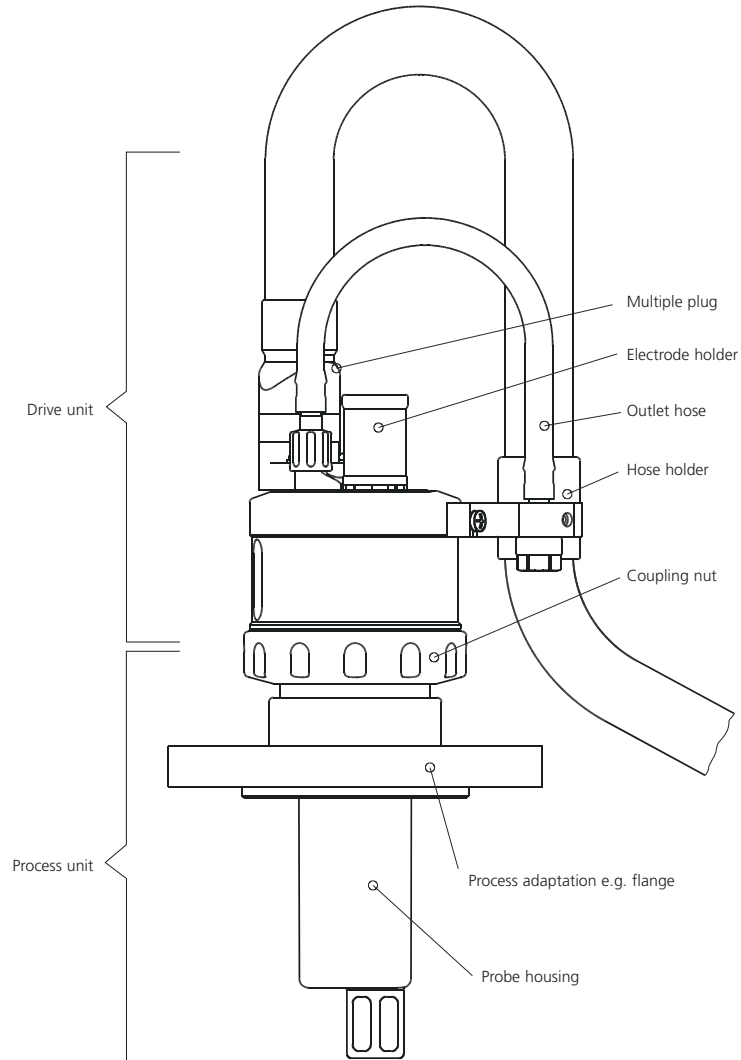
Specifications

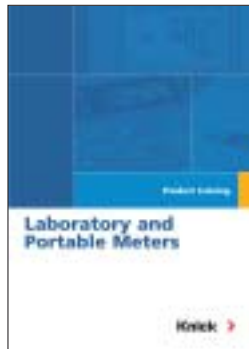
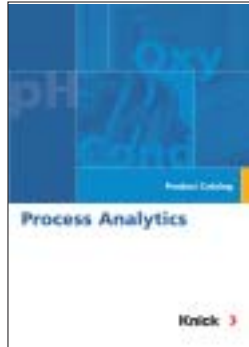
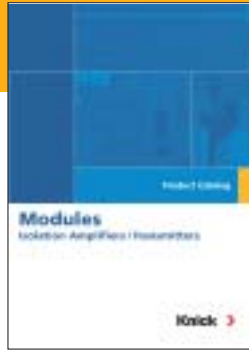
Adm. process temperature	0 ... 120 °C, for sterilization: 130 ... 140 °C
Adm. process pressure	6 bars overpressure at 120 °C
Electrodes	225 mm
Air supply	(4) 5 ... 7 bars, oil-free, filtered 10...25 µm, Compressed-air demand temporarily approx. 100 L/min
Immersion depth	Approx. 135 mm (from flange to electrode tip)
Process adaptations	DN 50 flange, DN 50 dairy pipe thread TRI-Clamp, APV, Neumo immersion fitting DN 120 V4A or plastic lengths up to 3 m. Further adaptations coming soon.
Outlet	Hose coupling grommet with collar Material: PVDF/Viton 1/4 " " Internal locking by ceramic washers
Inlet	Material: PVDF/Viton 1/4 " " Internal locking by ceramic washers
Rinsing function	Discontinual rinsing of inner cavities
Process-wetted materials	PEEK carbon fiber-reinforced ceramic (aluminum oxide); O-rings made of EPDM or Viton, optionally Kalrez
Housing	1.4404 stainless steel
Tightness	IP 66
Connection to Unical® 79/2 X	Compact multi-plug connection for 2x buffer solution, 1x rinsing water; 1x cleaning liquid or compressed air, 2x compressed-air supply to drive unit, 4 integrated check valves for buffer solution, water and cleaning liquid, electrical limit position indication
Connection to Unical® 9000 (X)	Compact multi-plug connection for 3x buffer, 1x rinsing water; 1x cleaning liquid, 1x purging air, 5 integrated check valves for buffer solution, water and cleaning liquid, 2x compressed-air supply to drive unit, noncontacting electrical limit position indication
Electrode protection	Bulb guards (different mesh sizes) with bayonet lock
Limit switch	Noncontacting electrical limit position indication

Product line

		Order no.
Ceramat® WA 150	Remote Calibration Probe with ceramic seal to process	WA 150

Assembly drawing





**Knick
Elektronische Messgeräte
GmbH & Co. KG**

P.O. Box 37 04 15
14134 Berlin
Germany

Telefon: +49 - 30-801 91-0
Telefax: +49 - 30-801 91-200
E-Mail: knick@knick.de
Internet: <http://www.knick.de>

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