

Sensors for Conductivity Measurement

Chem

Energy



SE 604 Conductivity Sensor

Robust 2-electrode sensor, for precise and reliable measurement of low and very low conductivities, particularly in ultrapure water

Robust, coaxially arranged electrodes made of stainless steel. Large measuring range from ultrapure water to 1000 $\mu\text{S}/\text{cm}$ with only one sensor model (cell constant). Integrated temperature detector for exact temperature compensation. Easy to clean thanks to replaceable outer electrode. Reliable and easy checking of the measurement using PortaSim simulators.

Applications

Boiler feed water, feed water, boiler water, cooling water, water vapor cycle, pure water, condenser monitoring

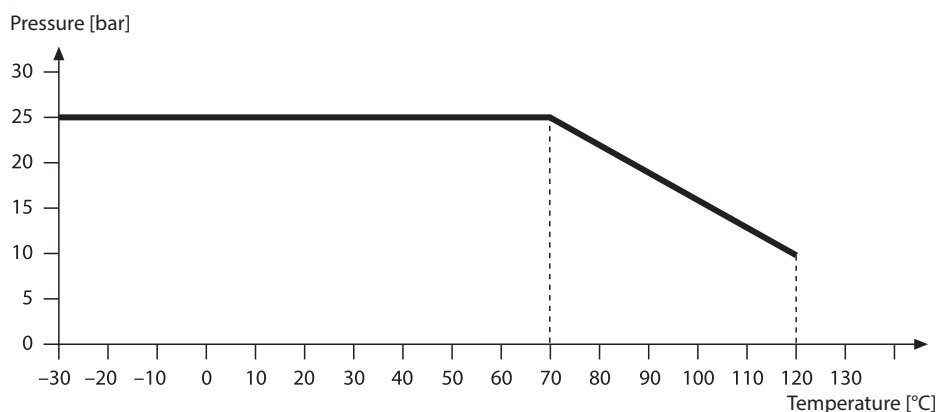
Facts

- Large measuring range from 1 nS/cm to 1,000 $\mu\text{S}/\text{cm}$
- Coaxially arranged electrodes
- Independent of installation conditions
- Integrated temperature detector
- High level of process safety due to durable materials and robust design
- Easy to clean thanks to detachable outer electrode
- Particularly suitable for monitoring ultrapure water in power plants
- Calibration Certificate
- Suitable PortaSim simulators

Specifications

Cell constant:	0.029/cm
Measuring range:	0.001 ... 1000 $\mu\text{S}/\text{cm}$
Material:	Cell and electrodes: 1.4571 stainless steel; insulator: PVDF; gaskets: FKM (Viton)
Temperature detector:	Pt 1000 Class A, $T_{90} < 2 \text{ min}$
Temperature:	Medium: -30 ... +120 °C; Environment: -25 ... +80 °C
Pressure:	Max. 25 bar (-30 ... +70 °C) Max. 10 bar (120 °C)
Process adaptation:	G 1" thread
Sensor cap:	7-pin

Pressure/Temperature Diagram



Product Range

SE 604 conductivity sensor

G 1"

Order No.

SE 604

Accessories

Measuring cable with plug

Sensor connection: 7-pin socket

1.5 m

Device connection: ferrules

3 m

Temperature: -20 ... +80 °C

5 m

10 m

15 m

20 m

30 m

Order No.

ZU 0743

ZU 0645

ZU 0569

ZU 0570

ZU 0589

ZU 0590

ZU 0660

6-hole flange

ZU 0278

Conductivity standard

KCl 300 ml 15 µS/cm ± 1 %

ZU 0350

KCl 500 ml 147 µS/cm ± 1 %

ZU 0702

Calibration Certificate

ZU 0320

Conductivity simulator
(cell constant 0.029/cm
(Details from page 86))

PortaSim Cond A*) 0.055 µS/cm

25 °C

ZU 0308

PortaSim Cond B*) 5 µS/cm

100 °C

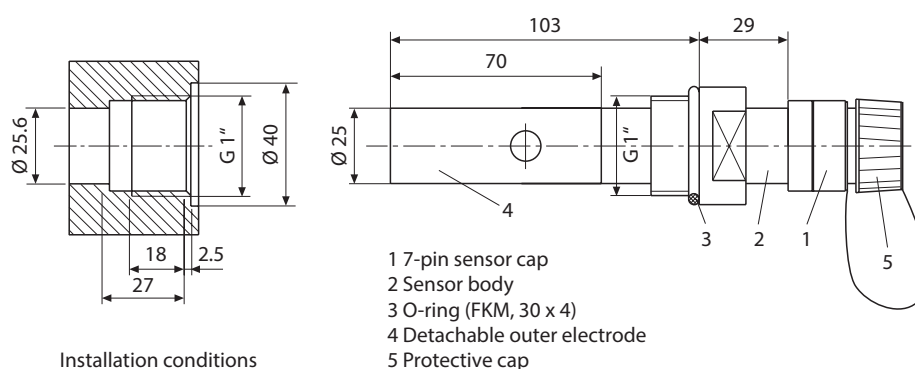
ZU 0309

*) Conductivity simulator; checking the meter and cable by simulating the sensor.

High-precision comparison resistors, traced to NIST standard. Used for measurement to USP <645>.

Check by simply replacing the sensor by the simulator

Dimension drawing



All dimensions in mm

Sensors for Conductivity Measurement

Chem

Energy

MEMOSENS



SE 604 Memosens Conductivity Sensor

Robust 2-electrode sensor, for precise and reliable measurement of low and very low conductivities, particularly in ultrapure water, digital, with Memosens technology.

Robust, coaxially arranged electrodes made of stainless steel. Large measuring range from ultrapure water to 500 $\mu\text{S}/\text{cm}$. Integrated temperature detector for temperature compensation. Easy to clean thanks to replaceable outer electrode.

Applications

Boiler feed water, feed water, boiler water, cooling water, water vapor cycle, pure water, condenser monitoring

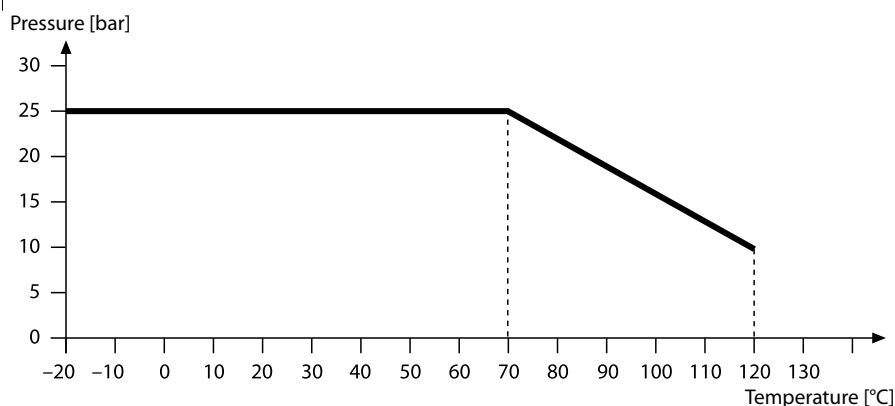
Facts

- Perfect galvanic isolation thanks to Memosens technology
- Digital data transfer
- Integrated sensor diagnostics
- Large measuring range from ultrapure water to 500 $\mu\text{S}/\text{cm}$
- Coaxially arranged electrodes
- Independent of installation conditions
- Integrated temperature detector
- High level of process safety due to durable materials and robust design
- Easy to clean thanks to detachable outer electrode
- Particularly suitable for monitoring ultrapure water in power plants

Specifications

Cell constant:	0.029/cm
Measuring range:	0.001 ... 500 $\mu\text{S}/\text{cm}$
Accuracy:	2 % meas. value
Material:	Sensor body and electrodes: 1.4571 stainless steel Insulator: PVDF Gaskets: FKM (Viton)
Temperature detector:	NTC 30 k Ω
Temperature:	Medium: -20 ... +120 °C; Environment: -25 ... +80 °C
Pressure:	Max. 25 bar (-20 ... +70 °C); max. 10 bar (120 °C)
Process adaptation:	G 1" thread
Sensor connector:	Memosens
Explosion protection:	Ex II 1 G Ex ia IIC T3/T4/T6 II 3 G Ex ic IIC T3/T4/T6 Gc

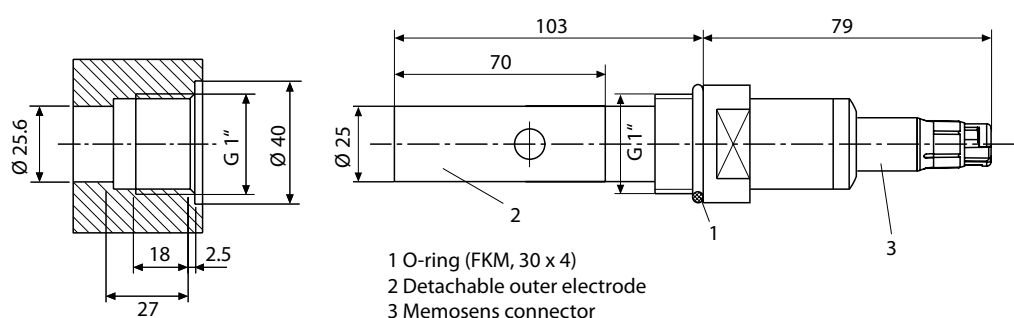
Pressure/Temperature Diagram



Product Range				Order No.
SE 604 conductivity sensor		G 1"		SE 604-MS SE 604X-MS
SE 604 X conductivity sensor		G 1" Ex		
Accessories				Order No.
Memosens cable		3 m		CA/MS-003NAA
		5 m		CA/MS-005NAA
		10 m		CA/MS-010NAA
		20 m ^{*)}		CA/MS-020NAA
Memosens cable, Ex		3 m		CA/MS-003XAA
		5 m		CA/MS-005XAA
		10 m		CA/MS-010XAA
		20 m ^{*)}		CA/MS-020XAA
6-hole flange				ZU 0278
Conductivity standard	KCl	300 ml	15 µS/cm ± 1 %	ZU 0350
	KCl	500 ml	147 µS/cm ± 1 %	ZU 0702
MemoSuite				Order No.
Management software for Memosens sensors		Basic version (calibration)		SW-MS1400-B
		Advanced version (calibration, diagnostics, documentation)		SW-MS1400-A

^{*)} Greater lengths on request

Dimension Drawing



Installation conditions

All dimensions in mm

SE 604 Memosens Conductivity Sensor

Accessories / Specifications

Flange (6-hole)

ZU 0278



Material: Stainless steel, 1.4571

Accessories: 6 bolts, washers, nuts, M 12, 1.4571 stainless steel

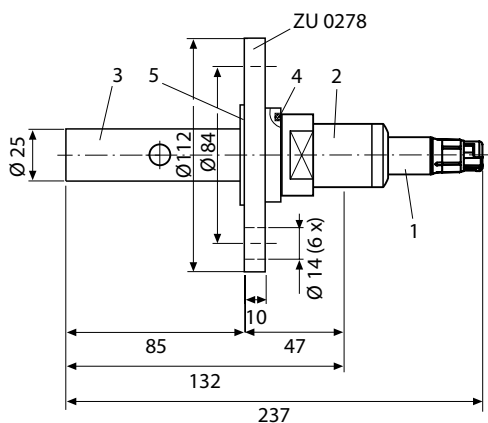
Pressure: Max. 10 bar

Temperature: Max. 120 °C

Sensor locations: 1 x G 1"

Sensors: SE 604

Dimension drawing: SE 604 Memosens with ZU 0278 flange



- 1 Memosens connection
- 2 Sensor body
- 3 Detachable outer electrode
- 4 O-ring (FKM, 30 x 4)
- 5 Flat gasket



SE 605 H Memosens Conductivity Sensor

Robust 2-electrode sensor, for precise and reliable measurement of low and very low conductivities, particularly in ultrapure water, digital, with Memosens technology

Robust, coaxially arranged electrodes made of stainless steel. Large measuring range from ultrapure water to 600 $\mu\text{S}/\text{cm}$. Integrated temperature detector for temperature compensation. Easy to clean thanks to replaceable outer and inner electrode.

Applications

Ultrapure water, WFI (water for injection), pharmaceutical and food industry, biotechnology

Facts and Features

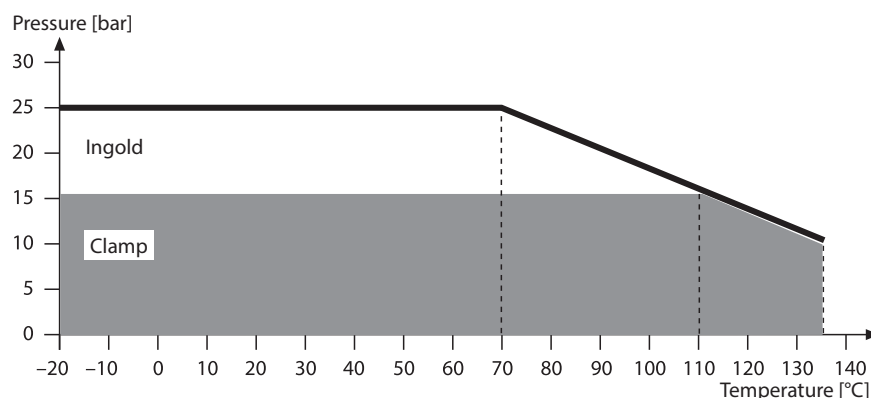
- Perfect galvanic isolation thanks to Memosens technology
- Digital data transfer
- Integrated sensor diagnostics

- Large measuring range from ultrapure water to 600 $\mu\text{S}/\text{cm}$
- Hygienic design
- Electropolished – roughness < 0.4 or < 0.8 μm , resp.
- FDA-certified materials
- Coaxially arranged electrodes
- Independent of installation conditions
- Integrated temperature detector
- High level of process safety due to durable materials and robust design
- Easy to clean thanks to replaceable outer and inner electrode
- Particularly suitable for monitoring ultrapure water in power plants
- Replaceable gaskets

Specifications

Cell constant:	0.021/cm
Measuring range:	0.001 ... 600 $\mu\text{S}/\text{cm}$
Accuracy:	2 % meas. value up to 500 $\mu\text{S}/\text{cm}$
Process-wetted materials:	1.4435 stainless steel; insulator: PEEK; gaskets: EPDM
Temperature detector:	NTC 30 k Ω (reduced accuracy above 100 °C)
Temperature:	Medium: -20 ... +135 °C Environment: -25 ... +80 °C
Pressure, Ingold:	-1 ... 25 bar (-20 ... +70 °C), -1 ... 10 bar (135 °C)
Pressure, Clamp:	-1 ... 16 bar (-10 ... +110 °C), -1 ... 10 bar (135 °C)
Process adaptation:	See product range
Sensor connector:	Memosens
ATEX marking:	II 1 G Ex ia IIC T3/T4/T6 Ga

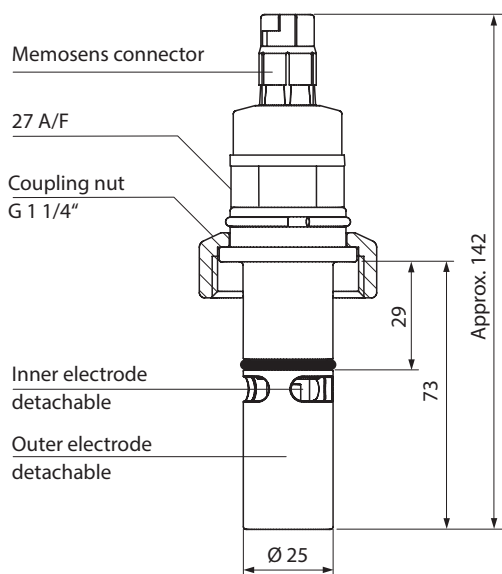
Pressure/Temperature Diagram



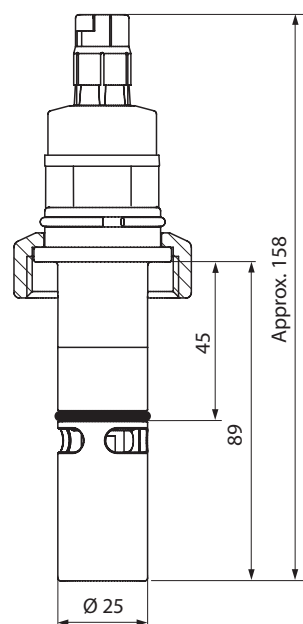
SE 605 H Memosens Conductivity Sensor

Dimension Drawing

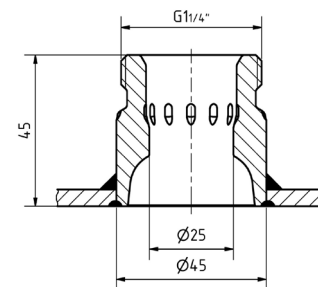
**Ingold socket process adaptation,
e.g., 40 mm (H0)**



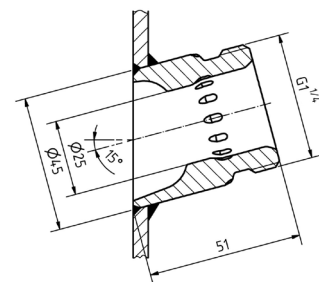
**Ingold socket process adaptation,
e.g., 50 mm (HZ)**



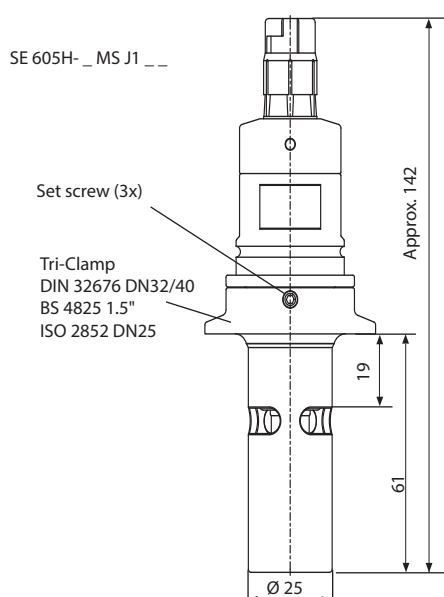
Weld-in socket, straight
ZU 0922



Weld-in socket, beveled 15°
ZU 0923



Clamp process adaptation



Note: These weld-in sockets are only suitable for sensors with design version HO.
Further weld-in sockets are available on request.

SE 605 H Memosens Conductivity Sensor

		Order No.								
		SE 605H -								
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explosion protection	Without ATEX	N	X							
Sensor connector	Memosens	MS								
Process adaptation	Ingold socket, 25 mm (G 1 1/4"), 29-mm groove			H	0					
	Ingold socket, 25 mm (G 1 1/4"), 45-mm groove			H	Z					
	Clamp 1 1/2"			J	1					
Gasket material	FKM FDA					F				
	EPDM FDA					E				
	FFKM FDA					H				
	FKM FDA USP VI					V				
	EPDM FDA USP VI					U				
	FFKM FDA USP VI					W				
Certificates	Without									0
	Inspection Certificate 3.1 according to EN 10204									3
	FDA - USP VI									U
	FDA									F
	Surface Ra < 0.4 µm									4
	Surface Ra < 0.8 µm									8

SE 605 H Memosens Conductivity Sensor

SE 605 H Memosens Conductivity Sensor

Accessories				Order No.	
Memosens cable				3 m	CA/MS-003NAA
				5 m	CA/MS-005NAA
				10 m	CA/MS-010NAA
				20 m*	CA/MS-020NAA
Memosens cable, Ex				3 m	CA/MS-003XAA
				5 m	CA/MS-005XAA
				10 m	CA/MS-010XAA
				20 m*	CA/MS-020XAA
Conductivity standard	KCl	250 ml	1.3 µS/cm		CS-C13K/250
	KCl	500 ml	15 µS/cm		CS-C15K/500
	KCl	500 ml	147 µS/cm		CS-C147K/500
Weld-in socket, straight, 40 mm	For tank wall				ZU 0717
	For pipe, DN 50				ZU 0717/DN50
	For pipe, DN 65				ZU 0717/DN65
	For pipe, DN 80				ZU 0717/DN80
	For pipe, DN 100				ZU 0717/DN100
Weld-in socket, beveled, 15°, 40 mm	For tank wall				ZU 0718
	For pipe, DN 50				ZU 0718/DN50
	For pipe, DN 65				ZU 0718/DN65
	For pipe, DN 80				ZU 0718/DN80
	For pipe, DN 100				ZU 0718/DN100
Weld-in socket with HSD safety function (Handling Safety Design), straight, 40 mm	For tank wall				ZU 0922
	For pipe, DN 50				ZU 0922/DN50
	For pipe, DN 65				ZU 0922/DN65
	For pipe, DN 80				ZU 0922/DN80
	For pipe, DN 100				ZU 0922/DN100
Weld-in socket with HSD safety function (Handling Safety Design), beveled, 15°, 40 mm	For tank wall				ZU 0923
	For pipe, DN 50				ZU 0923/DN50
	For pipe, DN 65				ZU 0923/DN65
	For pipe, DN 80				ZU 0923/DN80
	For pipe, DN 100				ZU 0923/DN100
MemoSuite					Order No.
Management software for Memosens sensors	Basic version (calibration)				SW-MS1400-B
	Advanced version (calibration, diagnostics, documentation)				SW-MS1400-A

* Greater lengths on request

Sensors for Conductivity Measurement

Water

MEMO SENS



SE 615 Memosens 2-Electrode Sensor

Reasonably priced sensor for water and wastewater treatment

Large measuring range thanks to electrodes made from low polarized special graphite. Designed for MemoRail applications. The SE 615 conductivity sensor with Memosens connector system has 2 graphite electrodes and requires low maintenance. The integrated temperature detector provides automatic temperature compensation during calibration and operation of the sensor.

The sensor is designed for simultaneous measurement of conductivity and temperature in industrial processes.

Facts

- Perfect galvanic isolation thanks to Memosens technology
- No influence of humidity in the connector
- Precalibration in the lab
- Digital data transfer
- Integrated sensor diagnostics
- low maintenance
- Integrated temperature detector
- 2 graphite electrodes

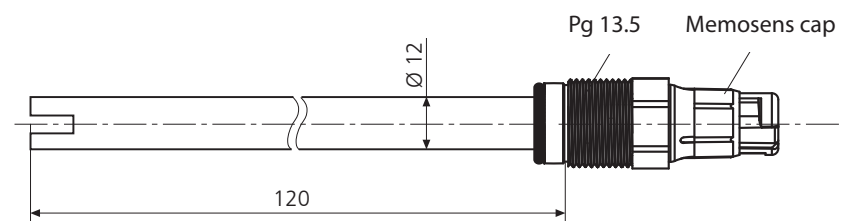
Applications

Water/wastewater treatment.

Specifications

Cell constant:	Approx. 1/cm
Measuring range:	10 μ S/cm ... 20 mS/cm
Temperature:	-5 ... +80 °C
Pressure:	Max. 4 bar
Temperature detector:	NTC 30 kohms
Body material:	Polysulfone
Membrane material:	Graphite
Measuring principle:	2-pole
Length:	120 mm
Process adaptation:	Pg 13.5
Sensor cap:	Memosens

Dimension Drawing



All dimensions in mm

For up-to-date information, please visit www.knick.de

Isolation Amplifiers
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

Knick 

Product Range

SE 615 2-electrode conductivity sensor

Length 120 mm

Order No.

SE 615/1-MS

Cable

Memosens cable

3 m

Order No.

CA/MS-003NAA

5 m

CA/MS-005NAA

10 m

CA/MS-010NAA

20 m*)

CA/MS-020NAA

Conductivity Standards

Conductivity standard

KCl 300 ml 15 μ S/cm \pm 1 %

Order No.

ZU 0350

KCl 500 ml 147 μ S/cm \pm 1 %

ZU 0702

Certificate

Calibration Certificate

Order No.

ZU 0320

MemoSuite

Management software for
Memosens sensors

Basic version (calibration)

Order No.

SW-MS1400-B

Advanced version (calibration, diagnostics, documentation)

SW-MS1400-A

*) Greater lengths on request

Sensors for Conductivity Measurement

Chem

Water



SE 630 Conductivity Sensor

2-electrode sensor for measuring low to medium conductivity values, flexible application; high chemical, thermal and mechanical resistance

Corrosion-proof materials, graphite electrodes, and PES body. High accuracy and integrated temperature detector for correct temperature compensation and concentration measurement.

Large pressure and temperature range.

Applications

Water, moderately polluted wastewaters, process solutions with medium conductivities; also corrosive media

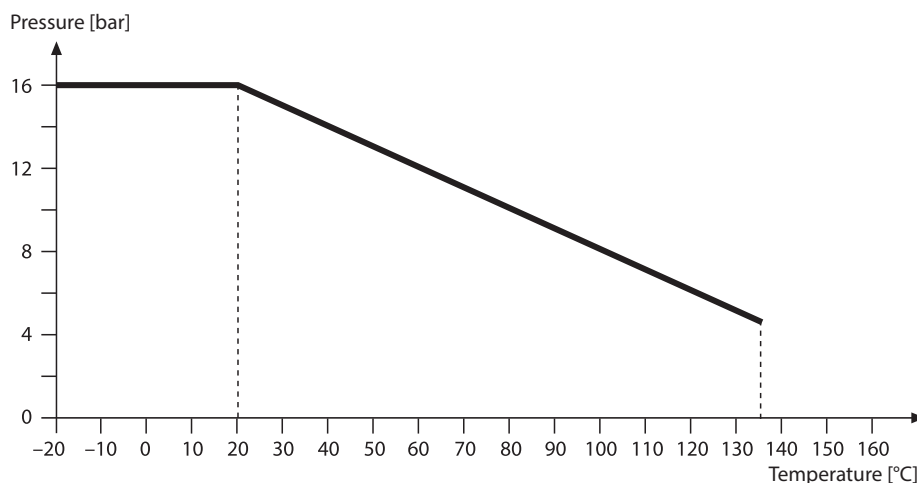
Facts

- High level of process safety due to durable materials
- Integrated temperature detector
- Robust design
- Large pressure and temperature range
- Easy to clean
- High-precision measurement of conductivities up to 50 mS/cm
- High chemical and thermal resistance

Specifications

Cell constant:	1/cm
Measuring range:	5 μ S/cm ... 50 mS/cm
Material:	Body: PES Electrodes: special graphite Pt 100 holder: titanium
Temperature detector:	Pt 100
Temperature:	-20 ... +135 °C
Pressure:	Max. 16 bar (20 °C), 2.5 bar (135 °C)
Process connection:	G 1"
Cable:	Length 5 m

Pressure/Temperature Diagram



For up-to-date information, please visit www.knick.de

Isolation Amplifiers
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

Knick 

Product Range

SE 630 conductivity sensor

G 1"

Order No.

SE 630

Accessories

Conductivity standard

KCl	0.1 mol/l	12.88 mS/cm	± 1.5 %	250 ml
KCl	0.01 mol/l	1413 µS/cm	± 2 %	250 ml

Order No.

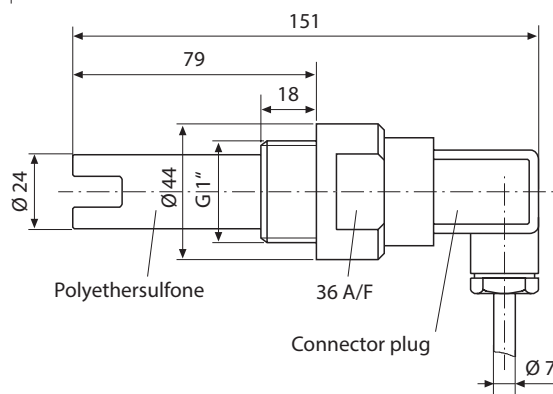
ZU 0348

ZU 0349

Calibration Certificate

ZU 0320

Dimension Drawing



All dimensions in mm

Sensors for Conductivity Measurement

Chem

Water

MEMOSSENS



SE 630 Memosens Conductivity Sensor

2-electrode sensor for measuring low to medium conductivity values, flexible application; high chemical, thermal and mechanical resistance, digital, with Memosens technology

Corrosion-proof materials, graphite electrodes, and PES body. High accuracy and integrated temperature detector for correct temperature compensation and concentration measurement. Large pressure and temperature range.

Applications

Water, moderately polluted wastewaters, process solutions with medium conductivities; also corrosive media

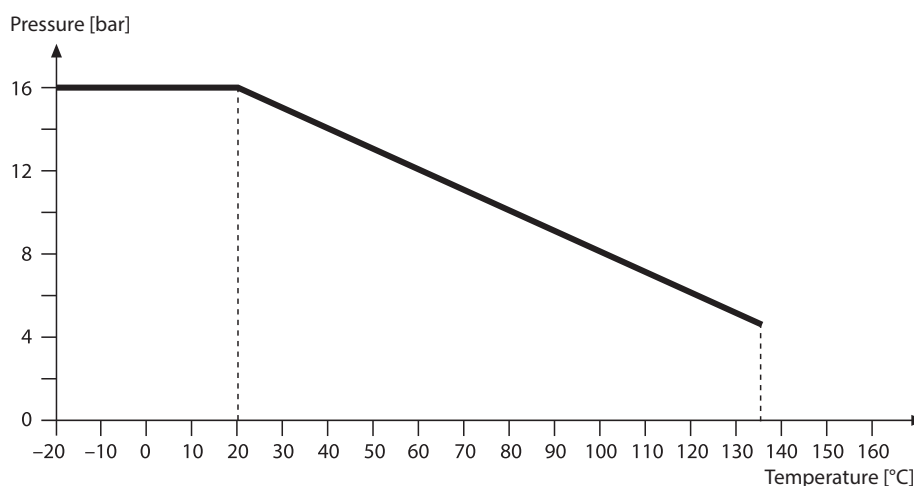
Facts

- Perfect galvanic isolation thanks to Memosens technology
- Digital data transfer
- Integrated sensor diagnostics
- High level of process safety due to durable materials
- Integrated temperature detector
- Robust design
- Large pressure and temperature range
- Easy to clean
- High-precision measurement of conductivities up to 20 mS/cm
- High chemical and thermal resistance

Specifications

Cell constant:	1/cm
Measuring range:	10 μ S/cm ... 20 mS/cm
Material:	Body: PES
Electrodes:	Special graphite
Temp detector protection:	Titanium
Temperature detector:	NTC 30 kohms
Temperature:	-20 ... +135 °C
Pressure:	Max. 16 bar (20 °C), 2.5 bar (135 °C)
Process connection:	G 1"
Sensor cap:	Memosens

Pressure/Temperature Diagram



For up-to-date information, please visit www.knick.de

Knick

Product Range

SE 630 conductivity sensor

G 1"

Order No.

SE 630-MS

Accessories

Memosens cable

3 m

5 m

10 m

20 m^{*)}

Memosens cable, Ex

3 m

5 m

10 m

20 m^{*)}

6-hole flange

ZU 0278

Conductivity standard

KCl 0.1 mol/l 12.88 mS/cm ± 1.5 % 250 ml

KCl 0.01 mol/l 1413 µS/cm ± 2 % 250 ml

ZU 0348

ZU 0349

Calibration Certificate

ZU 0320

MemoSuite

Management software for
Memosens sensors

Basic version (calibration)

Advanced version (calibration, diagnostics, documentation)

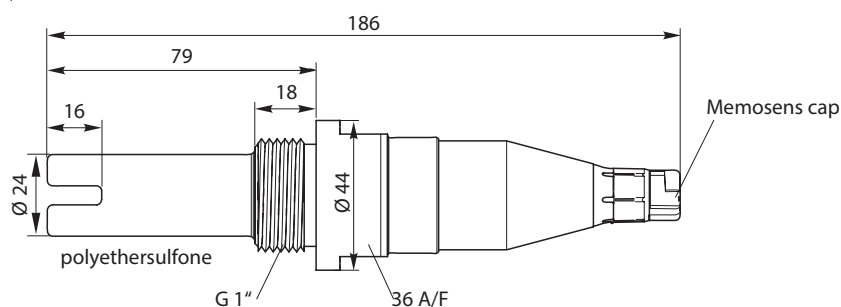
Order No.

SW-MS1400-B

SW-MS1400-A

^{*)} Greater lengths on request

Dimension Drawing



All dimensions in mm

Sensors for Conductivity Measurement

Chem

Energy

Water

DIGITAL



SE 670 Toroidal Conductivity Sensor

Competitively priced digital sensor for measuring low to very high conductivity values, insensitive to contamination and corrosion

Universal conductivity sensor with large measuring range for moderate chemical stress. With integrated, extremely fast temperature detector.

Applications

Fresh water and wastewater treatment, electroplating, photographic processes, air conditions, cooling tower monitoring, in-company wastewater treatment plants, monitoring of salts, alkaline solutions, and conductivity, tanneries, caustic treatment, washers, automotive engineering, rinsing processes

Facts

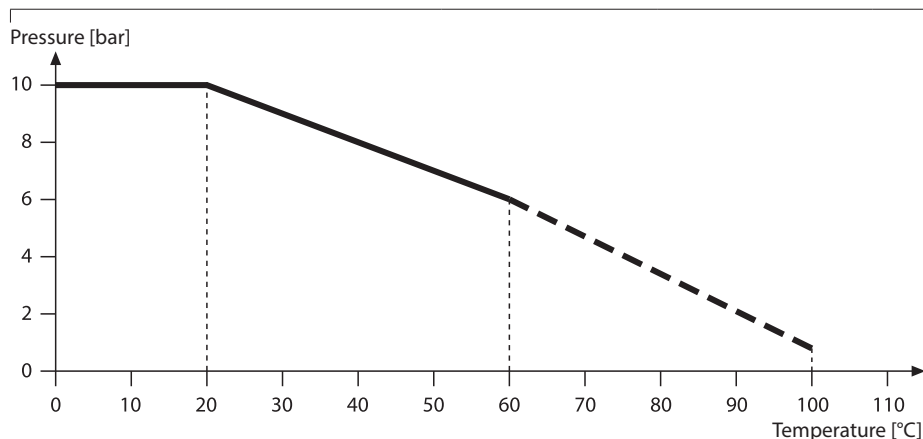
- Digital data transfer
- Cable length up to 100 m
- Competitively priced
- Compact design
- No process-wetted electrodes
- Large measuring range
- Quick-reacting temperature detector
- Insensitive to deposits and contaminations

Specifications

Cell factor*):	Approx. 6.4/cm
Measuring range:	0.02 to 2000 mS/cm
Accuracy:	≤ 1 %
Material:	PP (polypropylene)
Temperature detector:	Pt 1000
Temperature response time:	Quick, using extrapolation with neuronal process
Temperature:	0 ... 60 °C (momentarily 100 °C)
Pressure:	Max. 10 bar at 20 °C, max. 6 bar at 60 °C
Process adaptations:	Coupling nut, G 1 1/2" Dairy pipe screw joint, DN 50 Replacement sensor for installation in ARF 210/215 or ARD 220
Sensor cap:	M12

*) Observe instructions for use (field conditions)

Pressure/Temperature Diagram



Product Range

SE 670 conductivity sensor

Coupling nut G 1 1/2"

Dairy-pipe screw joint DN 50

Replacement sensor for installation in ARF 210/215 or ARD 220

Order No.

SE 670/U1

SE 670/C1

SE 670/G1

Accessories

Digital cable with M12 socket

5 m

10 m

20 m^{*)}

Conductivity standard

KCl 0.1 mol/l 12.88 mS/cm ± 1.5 % 250 ml

Calibration Certificate

Order No.

CA/M12-005NA

CA/M12-010NA

CA/M12-020NA

ZU 0348

ZU 0320

MemoSuite

Management software for
Memosens sensors

Basic version (calibration)

Advanced version (calibration, diagnostics, documentation)

Order No.

SW-MS1400-B

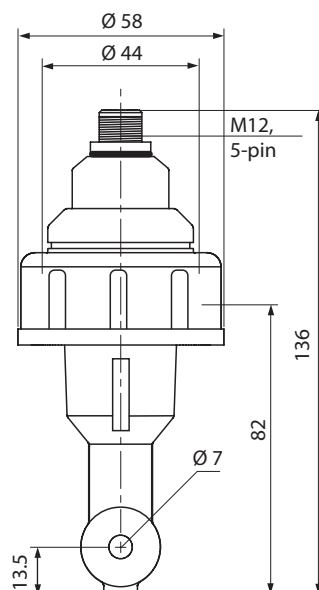
SW-MS1400-A

^{*)} Greater lengths on request (max. 100 m)

Dimension Drawings

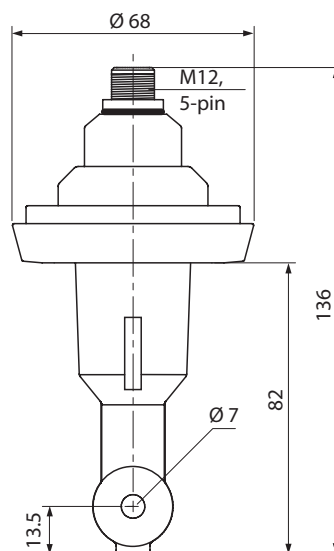
SE 670/U1

Coupling nut G 1 1/2" (PP)



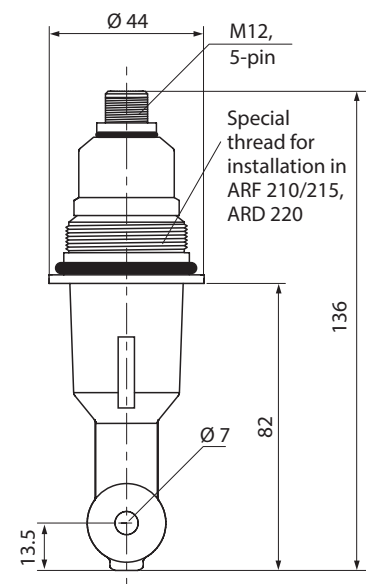
SE 670/C1

Dairy pipe screw joint, DN 50



SE 670/G1

Replacement sensor for installation in
ARF 210/215 or ARD 220



All dimensions in mm

Sensors for Conductivity Measurement

Chem

Energy

Pharm

Food

Water

DIGITAL Memosens Protocol



SE 680 Toroidal Conductivity Sensor

High-precision sensor made of FDA-approved PEEK with an extremely large measuring range. Steam-sterilizable.

The joint- and gap-free, sealless design and stain-resistant surface made of Virgin PEEK make the SE 680 a heavy-duty sensor. The inductive technology is not influenced by polarization and does not have any sensor surfaces subject to corrosion.

Applications

Fresh water technology, dairy products, breweries, soft drink manufacturing, electroplating, air-conditioning, CIP monitoring in the beverage industry, pharmaceutical applications, cooling tower monitoring, on-site wastewater treatment plants, monitoring concentrations of salt solutions, alkalis and acids, washers, and rinsing processes

Facts and Features

- Compact design
- Competitively priced
- Large measuring range
- Quick-reacting temperature detector
- Digital data transfer
- Completely closed surface
- Virgin PEEK, FDA type

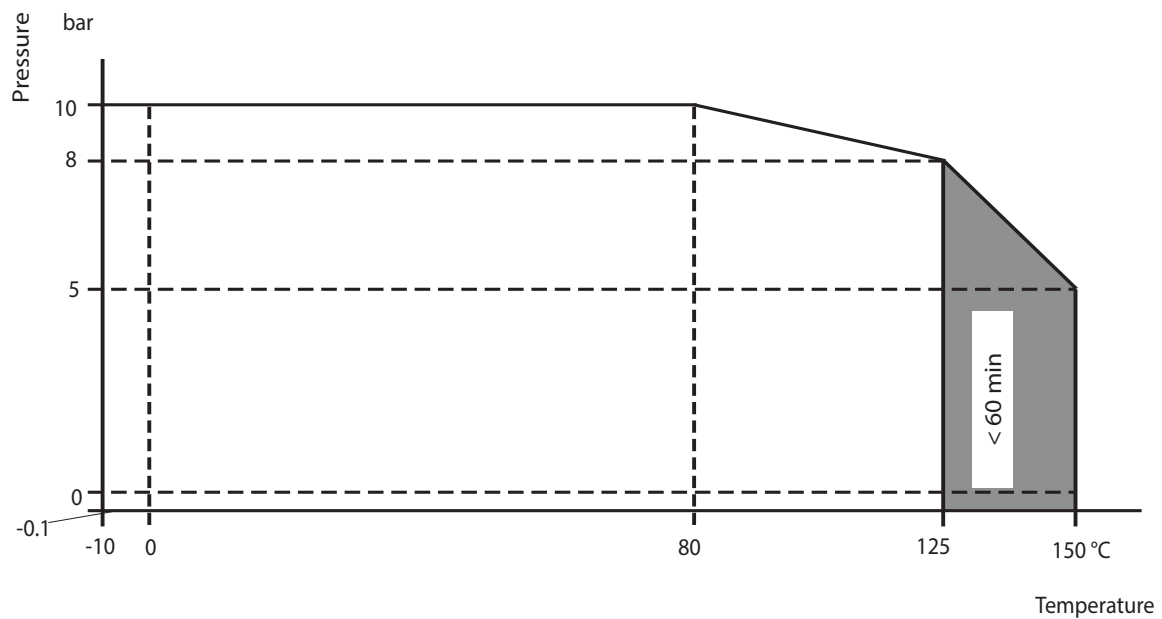
Specifications

Cell factor:	$c \approx 5.0/\text{cm}$
Installation factor:	1 (adjustable)
Measuring range:	0 ... 2000 mS/cm
Error:	$\pm 1\% \text{ meas. val.} + 0.002 \text{ mS/cm, } \pm 0.02\%/\text{K}$
Resolution:	2 $\mu\text{S/cm}$
Materials with process contact:	Virgin PEEK, FDA type
Materials without process contact:	PP-ESD
Temperature sensor:	Pt1000
Response time:	T_{90} approx. 30 s
Process temperature:	-10 ... +125 °C (see PT diagram)
Sterilization:	$\leq 5 \text{ bar} / \leq 150\text{ °C} / \leq 60 \text{ min}$
Ambient temperature:	-20 ... +60 °C
Pressure range P_{rel} :	-0.1 ... 10 bar (see PT diagram)
Electrical connection:	M12 plug, 4-pin; cable length max. 100 m

Specifications

Certificates:	FDA CFR 177.2415
Explosion protection:	IECEX TUN 15.0026 X Ex ia IIC T6/T4/T3 Ga TÜV 15 ATEX 154534 X ⊕ II 1 G Ex ia IIC T6/T4/T3 Ga
Temperature class:	Ambient and process temperature range
T6	$-20\text{ °C} \leq T_a \leq +75\text{ °C}$
T4	$-20\text{ °C} \leq T_a \leq +125\text{ °C}$
T3	$-20\text{ °C} \leq T_a \leq +150\text{ °C}$

Pressure/Temperature Diagram



Sensors for Conductivity Measurement

Chem

Energy

Pharm

Food

Water

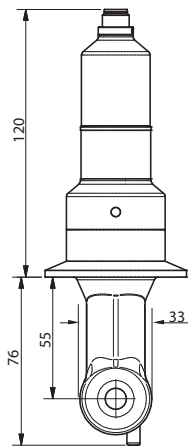
Product Range		Order No.			
		SE 680-	<input type="checkbox"/>	-	<input type="checkbox"/> N4U00M
Explosion protection	Safe area		N		
	Ex Zone 0		X		
Process connection	Dairy pipe DN50				C1
	Varivent pipe ≥ DN50				V1
	Clamp 2"				J2
	for ARF 210/215				K8
	SMS 2"				M2

Accessories

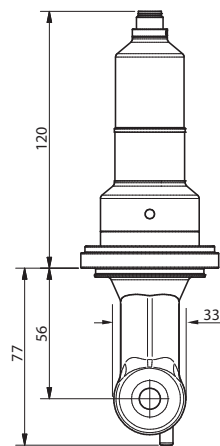
Digital cable with M12 socket						5 m	CA/M12-005NA
						10 m	CA/M12-010NA
						20 m*	CA/M12-020NA
						Order No.	
Conductivity standard		KCl	0.1 mol/l	12.88 mS/cm	± 1.5 %	250 ml	ZU 0348

* Greater lengths on request (max. 100 m)

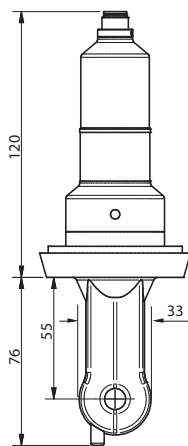
**Dimension Drawings / Process Connections /
Order References**



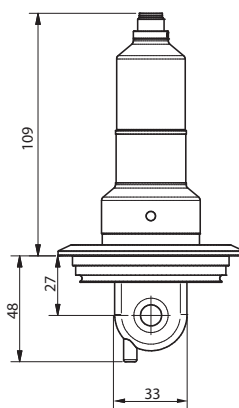
Clamp 2"
SE680(N/X)-J2N4U00M



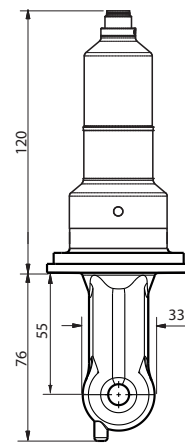
for ARF 210/215
SE680(N/X)-K8N4U00M



Dairy pipe DN 50
SE680(N/X)-C1N4U00M



Varivent DN 50 or larger
SE680(N/X)-V1N4U00M



SMS 2"
SE680(N/X)-M2N4U00M

Sensors for Conductivity Measurement

Energy

Water



SE 610 Conductivity Sensor

The low-cost solution for measuring low conductivities in water

Compact 2-electrode sensor with coaxial stainless-steel electrodes, integrated temperature detector and fixed cable.

Applications

Drinking water, industrial water, surface water, ion exchangers and reverse osmosis plants, rinse water, seawater desalination plants

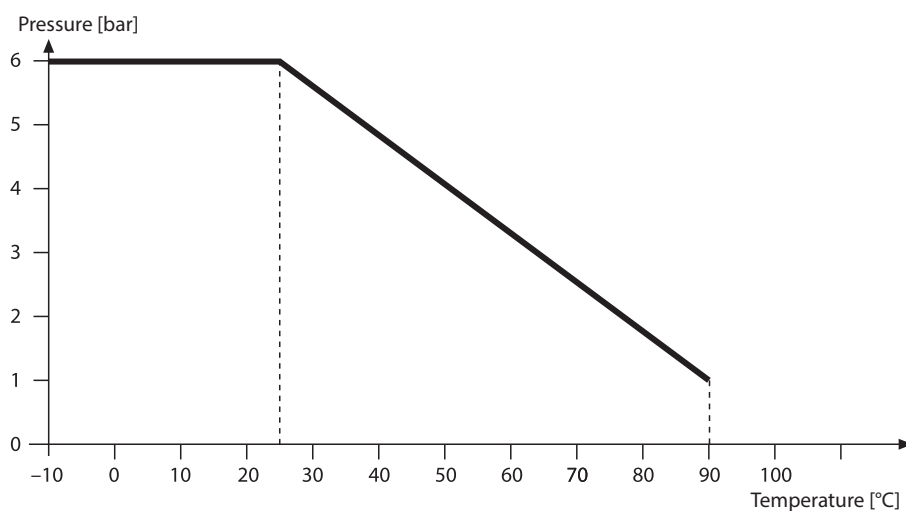
Facts

- Compact design
- Cost-efficient
- Broad applications
- Robust stainless-steel electrodes
- Integrated temperature detector
- 5 m fixed cable

Specifications

Cell constant:	0.1/cm
Measuring range:	0.1 ... 1000 $\mu\text{S}/\text{cm}$
Material:	Body: PEI (polyetherimide) Electrodes: stainless steel, 1.4571
Temperature detector:	Pt 1000
Temperature:	10 ... 90 °C
Pressure:	6 bar (at 25 °C)
Process connection:	G 1/2"
Cable:	Fixed cable, 5 m

Pressure/Temperature Diagram



For up-to-date information, please visit www.knick.de

Knick >

Product Range

SE 610 conductivity sensor

G 1/2"

Order No.

SE 610

Accessories

(Details from page 134)

Order No.

Conductivity standard

KCl	300 ml	15 $\mu\text{S/cm}$	$\pm 1\%$
KCl	500 ml	147 $\mu\text{S/cm}$	$\pm 1\%$

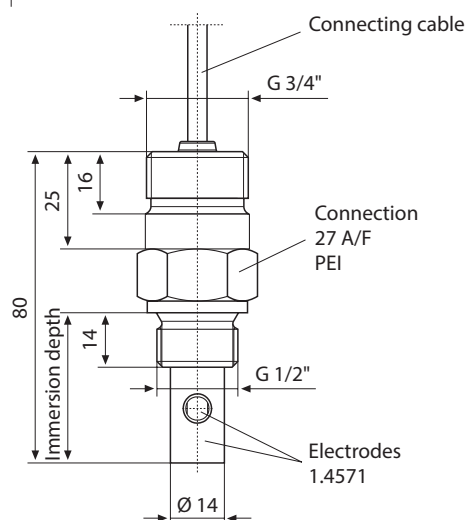
ZU 0350

ZU 0702

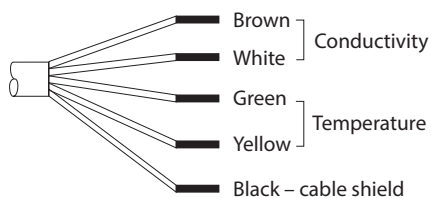
Cell constant certificate

ZU 0320

Dimension Drawing



Cable connection diagram



All dimensions in mm

Sensors for Conductivity Measurement

Pharm

Food



SE 620 Conductivity Sensor

Pharma-compliant 2-electrode sensor in hygienic design

Conductivity sensor in pharmaceutical design with coaxial electrodes and integrated temperature detector. Low surface roughness of $< 0.8 \mu\text{m}$. The materials are physiologically harmless and meet FDA requirements. Steam-sterilizable. Reliable and easy checking of the measurement according to USP <645> using PortaSim simulator.

Applications

Pure and ultrapure water, water for injection (WFI), food, ion exchangers, reverse osmosis plants, also chip manufacturing

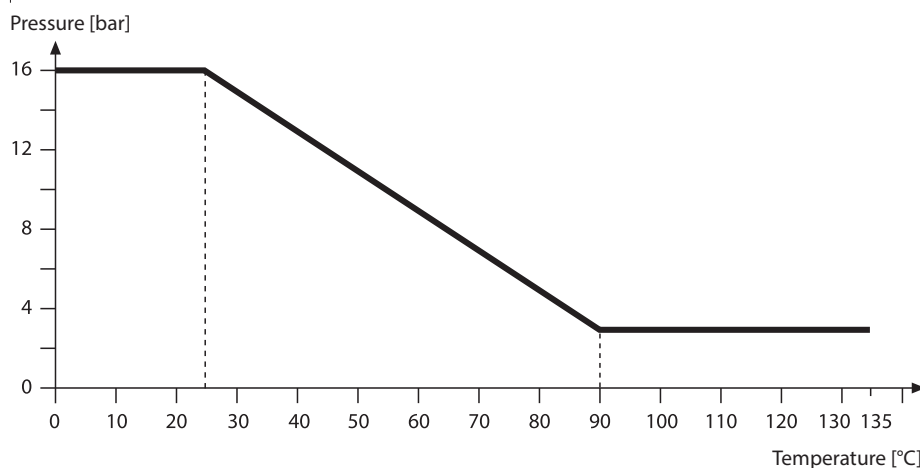
Facts

- Low surface roughness
- Steam-sterilizable
- CIP-capable
- Integrated temperature detector
- Measuring range 0.001 to 50 $\mu\text{S}/\text{cm}$
- Coaxially arranged electrodes
- Independent of installation conditions
- Insulator and sealing materials FDA-listed
- VP screw cap
- PortaSim simulator with VP plug
- Incl. Inspection Certificate 3.1

Specifications

Cell constant:	0.01/cm
Measuring range:	0.001 ... 50 $\mu\text{S}/\text{cm}$
Material:	Cell and electrodes: stainless steel 1.4435, electropolished; Insulator and O-rings (plastics), FDA-listed
Roughness:	$< 0.8 \mu\text{m}$
Temperature detector:	Pt 1000
Temperature:	0 ... 135 °C (steam-sterilizable)
Pressure:	16 bar at 25 °C, 9 bar at 60 °C
Process connection:	Clamp DN 25
Sensor cap:	VP (VarioPin)

Pressure/Temperature Diagram



Product Range

SE 620 conductivity sensor

Clamp DN 25

Order No.

SE 620

Accessories

VP6-ST cable

3 m
5 m
10 m
15 m
20 m

Order No.

ZU 0313
ZU 0314
ZU 0315
ZU 0584
ZU 0589

Conductivity standard

KCl 300 ml 15 $\mu\text{S}/\text{cm} \pm 1 \%$
KCl 500 ml 147 $\mu\text{S}/\text{cm} \pm 1 \%$

ZU 0350
ZU 0702

Calibration Certificate

ZU 0320

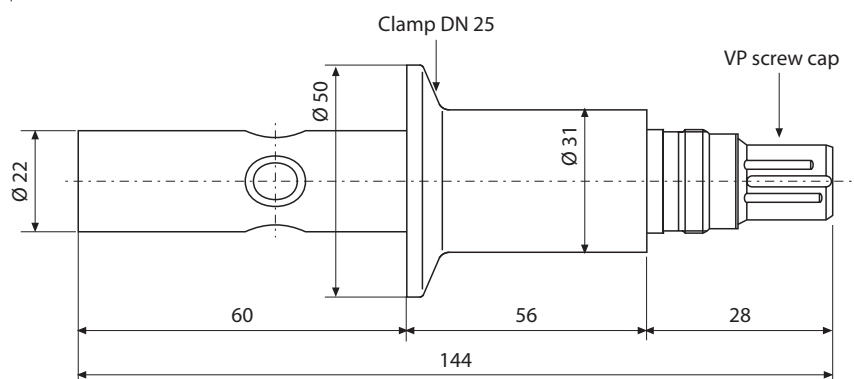
Conductivity simulator
(cell constant 0.01/cm
(Details from page 98)

PortaSim Cond C*) 1.3 $\mu\text{S}/\text{cm}$ 25 °C

ZU 0308

*) Conductivity simulator; checking the meter and cable by simulating the sensor.
High-precision comparison resistors, traced to NIST standard. Used for measurement to USP <645>.
Check by simply replacing the sensor by the simulator

Dimension Drawing



Sensors for Conductivity Measurement

Chem

Energy

Pharm

Food

Water



SE 655 Toroidal Conductivity Sensor

Universal and precise sensor with high chemical resistance over a very large measuring range, for heavily polluted media

Corrosion-resistant toroidal sensor for measuring pure water up to maximum conductivities. Smooth, easy-to-clean design. High accuracy due to electrodeless measurement. Low risk of contamination because of large sensor opening. Also for hazardous locations.

Applications

Concentration measurement of acid and alkaline solutions, heavily polluted media, coating-forming and oil-containing media, salt spring, heavily polluted wastewaters, cooling water blowdown, concentrate monitoring, regeneration of ion exchangers

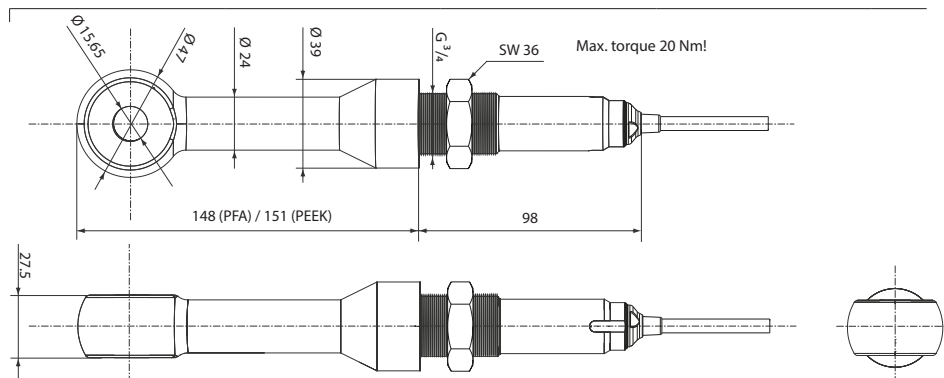
Facts

- Robust design
- Extremely large measuring range due to inductive measuring principle
- Insensitive to contamination
- No process-wetted electrodes
- High chemical resistance (PEEK)
- Measurement in hazardous locations
- Steam-sterilizable
- CIP-capable

Specifications

Cell factor:	Approx. 2/cm (≥ 30 mm distance to wall)
Measuring range:	0.002 to 2000 mS/cm
Accuracy:	$\pm (5 \mu\text{S/cm} + 0.5 \% \text{ measured value})$ at $-20^\circ\text{C} \dots +100^\circ\text{C}$ $\pm (10 \mu\text{S/cm} + 0.5 \% \text{ measured value})$ at $>100^\circ\text{C}$
Material:	Cell: PEEK; gasket: FKM (Viton)
Temperature detector:	Pt 100 (Class A)
Temperature:	$-20 \dots +125^\circ\text{C}$
Temp. response time t_{90} :	Approx. 7 min
Pressure:	0 ... 20 bar
Cable:	Fixed cable, 5 m
Protection:	IP 68 (when mounted)
Assembly:	G 3/4" (36-mm nut and FKM (Viton) gasket included in shipment)
ATEX Certificate (SE 655 X):	II 1 G Ex ia IIC T4/T6 Ga

Dimension Drawing



All dimensions in mm

Product Range

SE 655 conductivity sensor	G 3/4"
SE 655X conductivity sensor	G 3/4"

Order No.

SE 655
SE 655X

Accessories

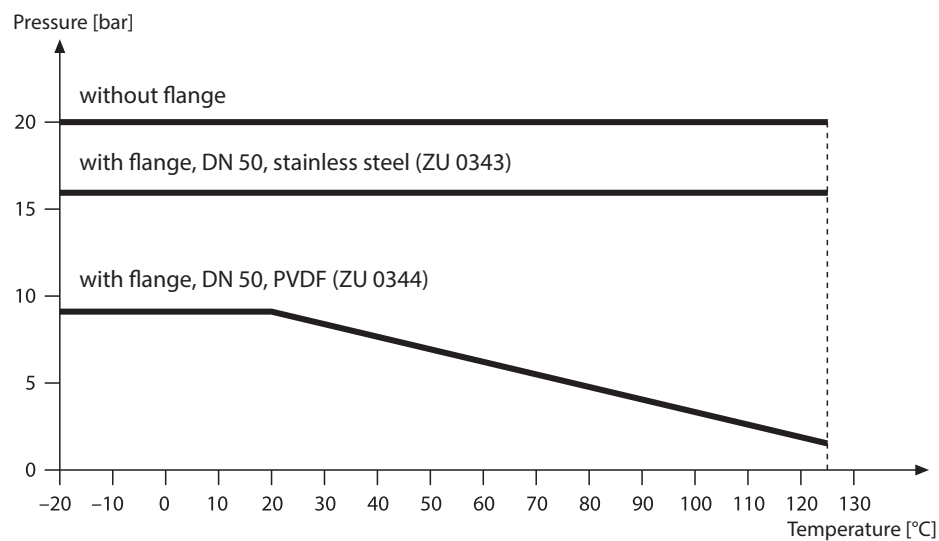
Flange DN 50 PN 16	Material: 316 L
Flange DN 50 PN 10	Material: PVDF
Sealing set A (spare parts)	Nut + FKM (Viton) O-ring (3 x)
Sealing set C	PTFE washer, DN 50 (protects ZU 0343 flange against aggressive media)
Conductivity standard*)	KCl 0.1 mol/l 12.88 mS/cm ± 1.5 % 250 ml

Order No.

ZU 0343
ZU 0344
ZU 0340N
ZU 0342N
ZU 0348

*) Observe instructions for use (field conditions)

Pressure/Temperature Diagram



Sensors for Conductivity Measurement

Chem

Energy

Pharm

Food

Water

SE 655 Toroidal Conductivity Sensor

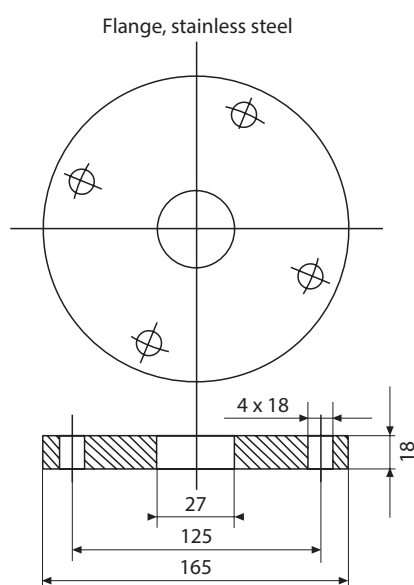
Accessories / Specifications

316 L flange
ZU 0343



DN 50 PN 16

Dimension drawing:

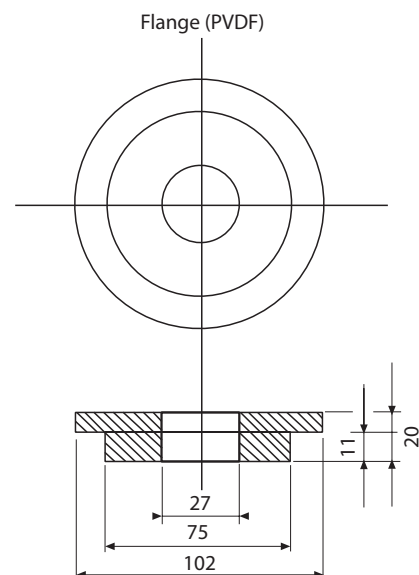
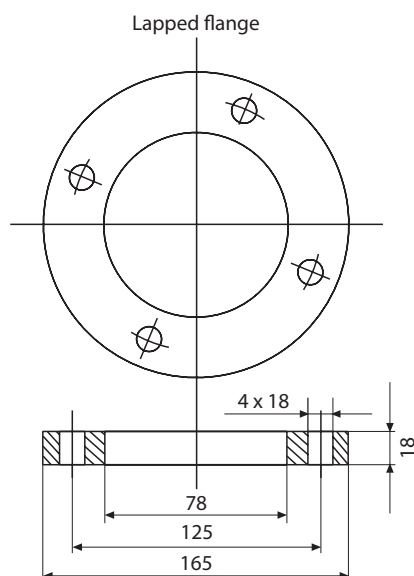


PVDF flange
ZU 0344



DN 50 PN 10

Dimension drawings:

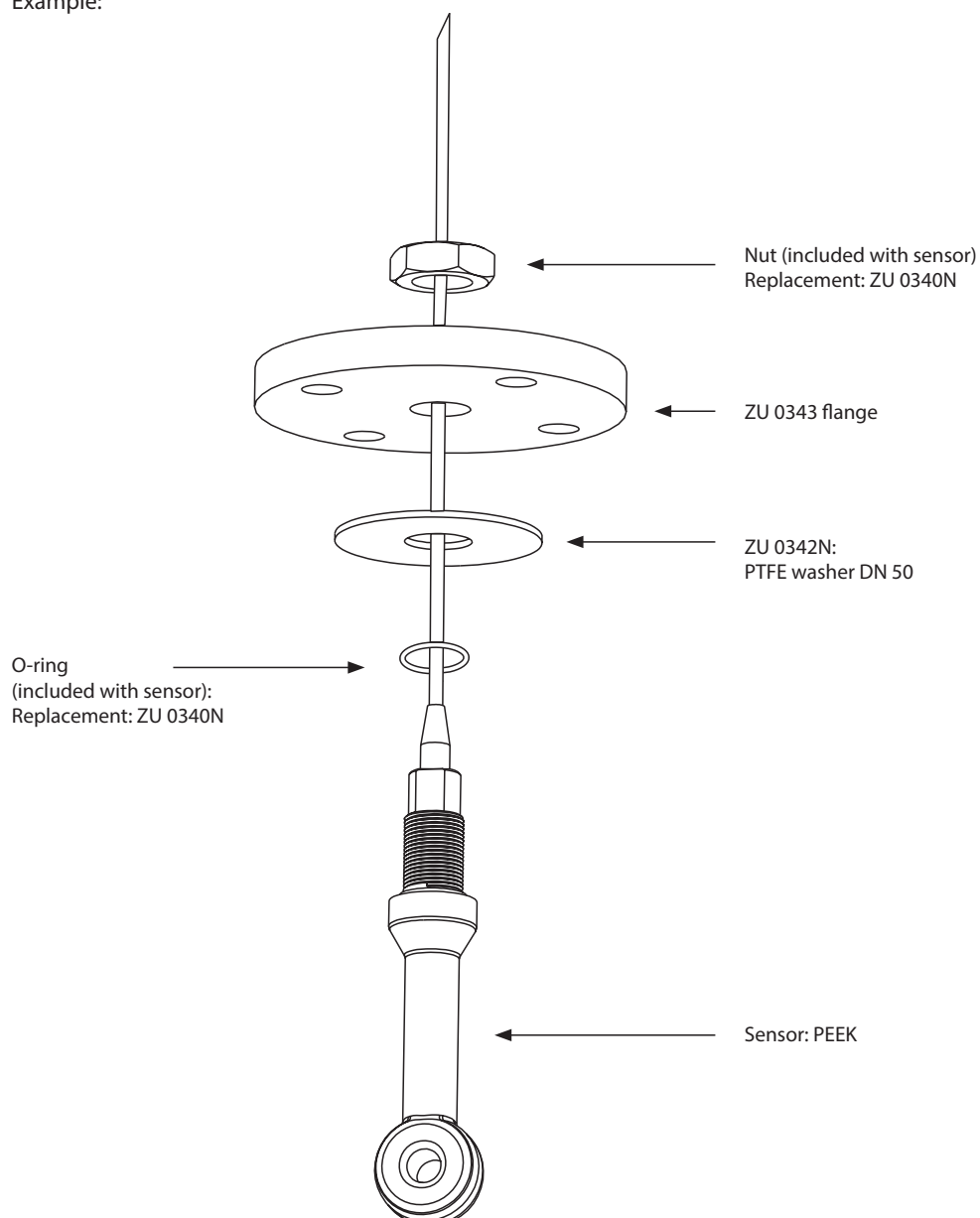


For up-to-date information, please visit www.knick.de

Knick >

Overview of Accessories and Assembly

Example:



Sensors for Conductivity Measurement

Chem



SE 656 Toroidal Conductivity Sensor

Special and precise sensor with high chemical resistance over a very large measuring range, for heavily polluted and strongly oxidizing media

Corrosion-resistant toroidal sensor for measuring pure water up to maximum conductivities. Insensitive to strongly oxidizing media. Smooth, easy-to-clean design. High accuracy due to electrodeless measurement. Low risk of contamination because of large sensor opening. Also suitable for hazardous locations.

Facts

- Robust design
- Extremely large measuring range due to inductive measuring principle
- Insensitive to contamination
- No process-wetted electrodes
- Extremely high chemical resistance (PFA)
- Measurement in hazardous locations

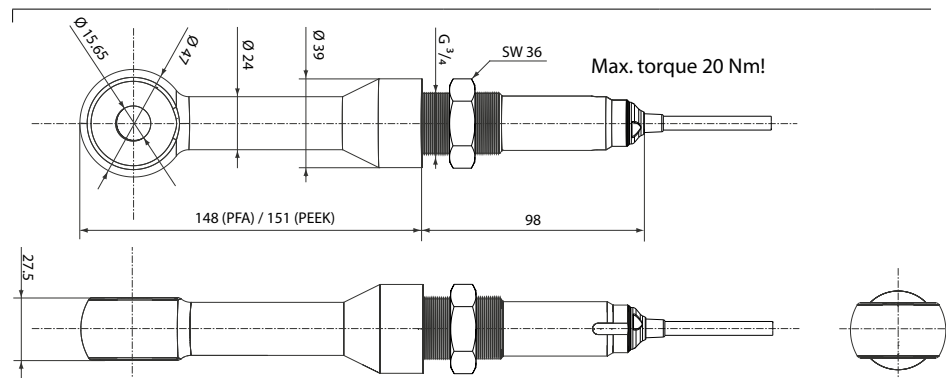
Applications

Conductivity measurement of highly concentrated acid and alkaline solutions, hydrofluoric acid, nitric acid, concentrated sulfuric acid, oleum, concentrated alkaline solutions, strongly oxidizing media

Specifications

Cell factor:	Approx. 2/cm (≥ 30 mm distance to wall)
Measuring range:	0.002 to 2000 mS/cm
Accuracy:	$\pm (5 \mu\text{S/cm} + 0.5 \% \text{ measured value})$ at $-20^\circ\text{C} \dots +100^\circ\text{C}$ $\pm (10 \mu\text{S/cm} + 0.5 \% \text{ measured value})$ at $>100^\circ\text{C}$
Material:	Cell: PFA ; Gasket: FFKM (Chemraz)
Temperature detector:	Pt 100 (Class A)
Temp. response time t_{90} :	Approx. 11 min
Temperature:	$-20 \dots +125^\circ\text{C}$
Pressure:	0 ... 16 bar
Cable:	Fixed cable, 5 m
Protection:	IP 68 (when mounted)
Assembly:	G 3/4" (36-mm nut and FFKM (Chemraz) gasket included in shipment)
ATEX Certificate (SE 656 X):	II 1 G Ex ia IIC T4/T6 Ga

Dimension Drawing



All dimensions in mm

Product Range

SE 656 conductivity sensor	G 3/4"
SE 656X conductivity sensor	G 3/4"

Order No.

SE 656
SE 656X

Accessories

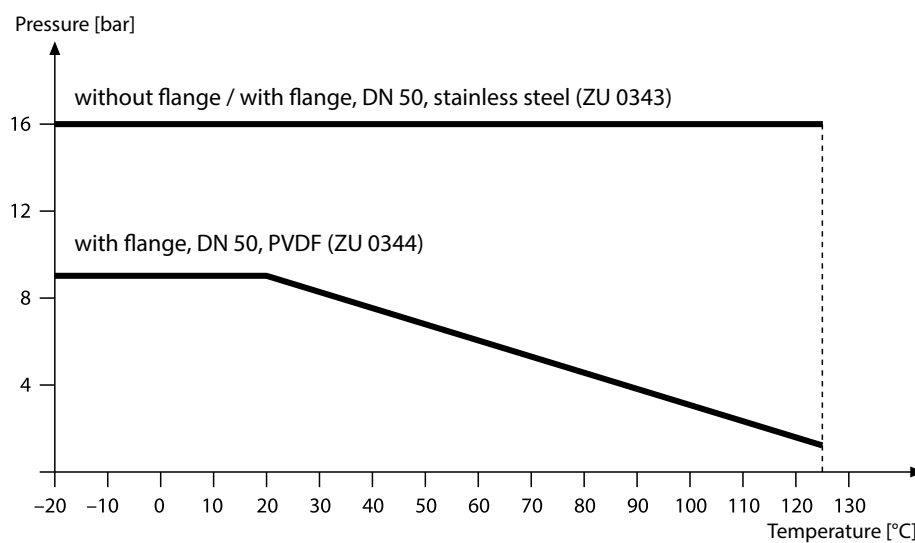
Flange DN 50 PN 16	Material: 316 L
Flange DN 50 PN 10	Material: PVDF
Sealing set A (spare parts)	Nut + FKM (Viton) O-ring (3 x)
Sealing set C	PTFE washer, DN 50 (protects ZU 0343 flange against aggressive media)
Conductivity standard*)	KCl 0.1 mol/l 12.88 mS/cm ± 1.5 % 250 ml

Order No.

ZU 0343
ZU 0344
ZU 0340N
ZU 0342N
ZU 0348

*) Observe instructions for use (field conditions)

Pressure/Temperature Diagram



Sensors for Conductivity Measurement

Chem

SE 656 Toroidal Conductivity Sensor

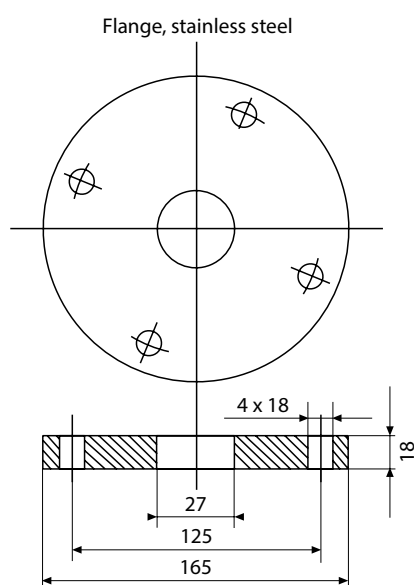
Accessories / Specifications

316 L flange
ZU 0343



DN 50 PN 16

Dimension drawing:

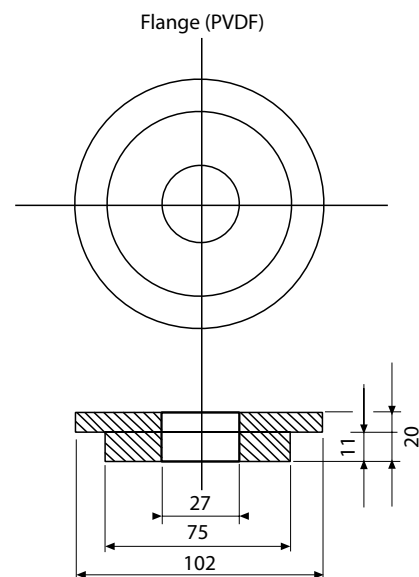
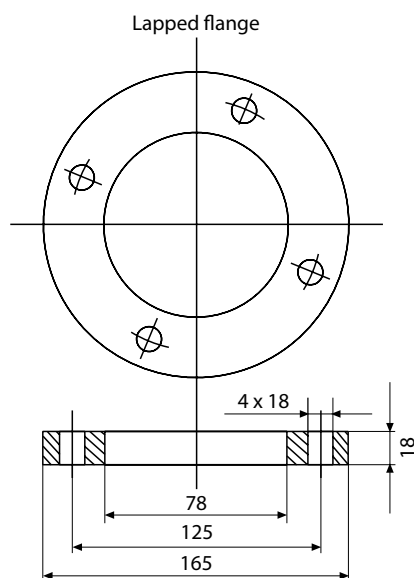


PVDF flange
ZU 0344



DN 50 PN 10

Dimension drawings:

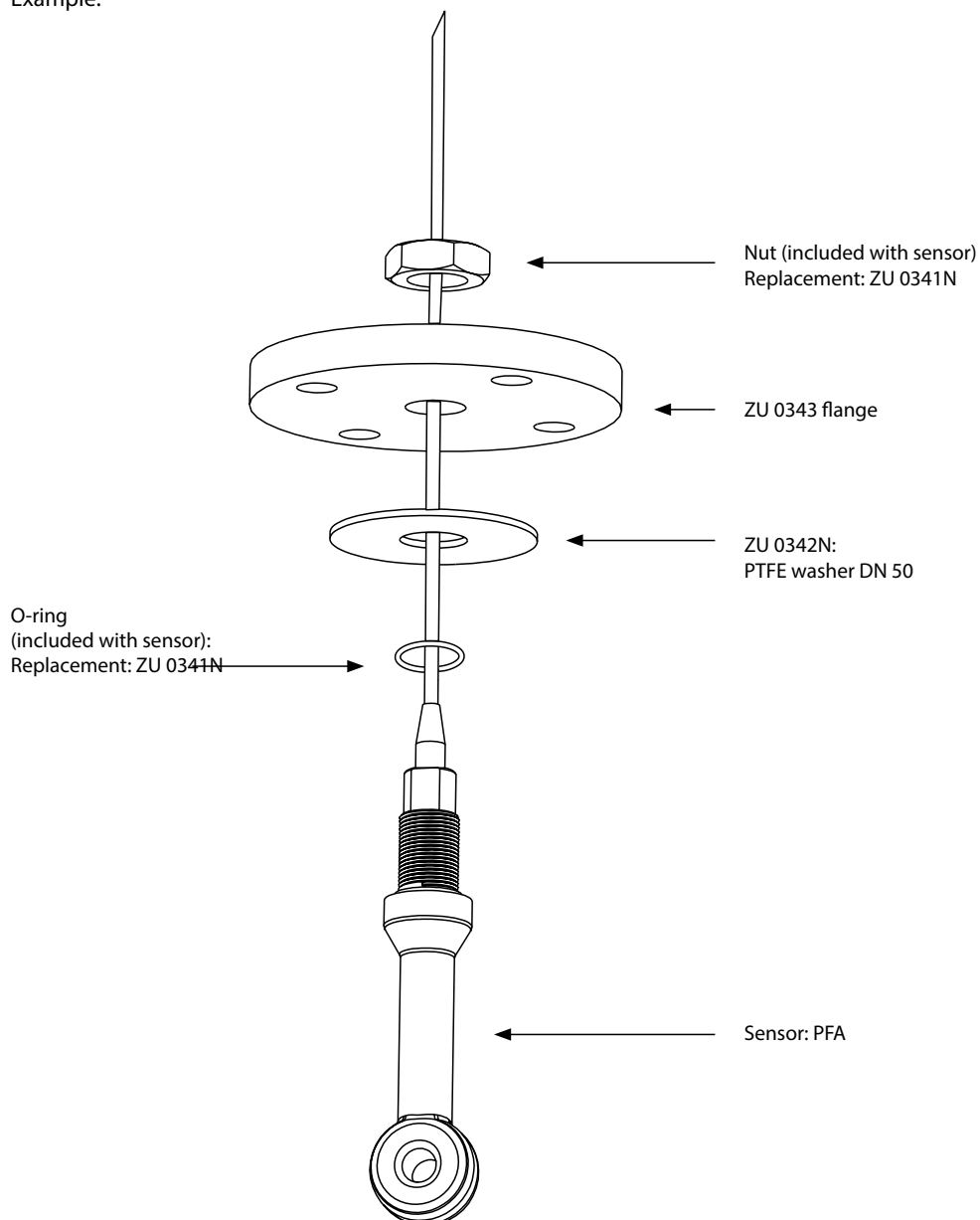


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Overview of Accessories and Assembly

Example:



Sensors for Conductivity Measurement

Pharm

Food



PortaSim Cond C Conductivity Simulator

Simulation of SE 620 sensor according to USP <645>

Simulation of SE 620 conductivity sensor using high-precision resistors. Checking the accuracy of the meter including sensor cable. The measurement uncertainty and traceability of the simulators are confirmed by Calibration Certificates.

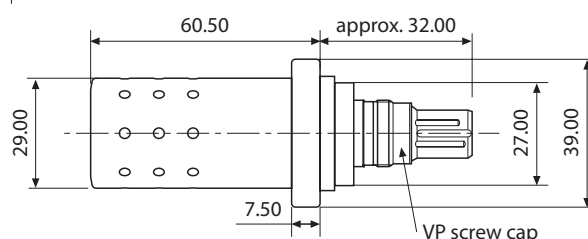
Facts

- Conductance and temperature simulation
- Simulated sensor: SE 620
- Check of sensor cable and meter
- Simple operation
- Maintenance-free
- High precision
- Measurement acc. to USP <645>

Specifications

Simulated cell constant:	0.01/cm (SE 620)
Simulation resistance:	7.692 kΩ ± 0.1 %
Simulated conductivity:	1.30 μS/cm ± 0.1 %
Simulated resistivity:	769.2 kΩcm ± 0.1 %
Simulated temp. (Pt 1000):	25 °C ± 0.1 %
Operating/ambient temp.:	5 ... 30 °C
Transport/storage temp.:	-20 ... +70 °C

Dimension Drawing



All dimensions in mm

Product Range

PortaSim Cond C	1.30 μS/cm	25 °C
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Order No.

ZU 0674

Accessories

Carrying case

Order No.

ZU 0337