

Conductivity sensor for hygienic process applications



Type 8221 can be combined with...



Type 8285

Modular analysis transmitter

The 8221 Hygienic conductivity sensors are used to determine electrical conductivity in solutions. Due to their hygienic design and the robust layout, these conductivity sensors are suitable for use under demanding conditions in food & beverage, pharmaceutical, biotechnology and the general chemical industry.

The sensors are based on the 4-electrode principle which excludes polarization phenomena normally observed with 2-electrode sensors. The engineered design guarantees an excellent linearity over a wide conductivity range of more than 6 decades.

An integrated temperature sensor (Pt1000) is a standard feature of all versions.

- 4-electrode technology for extended measuring range 0.1 $\mu\text{S/cm}$...500 mS/cm
- Process connections, materials, surface finish designed for use in hygienic applications
- Suitable for steam sterilization, CIP (Clean in place)
- All wetted parts FDA approved

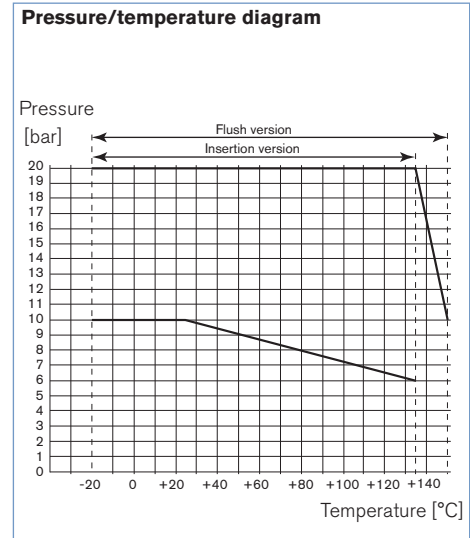
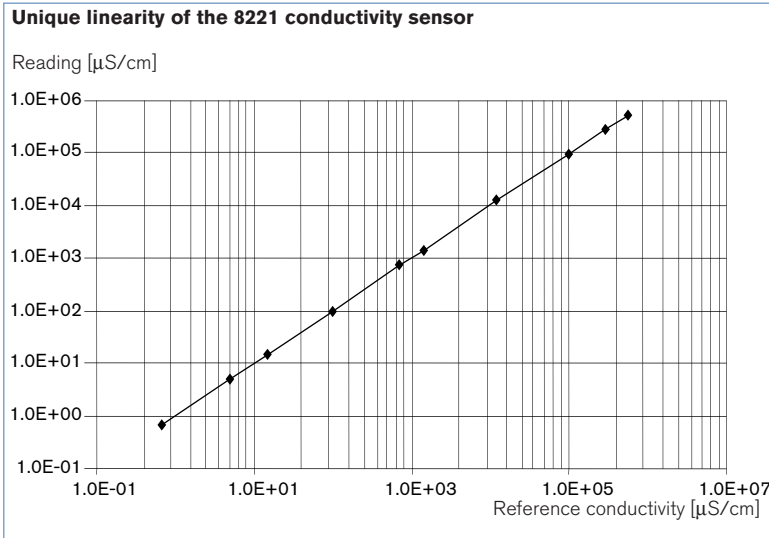
Technical data - Electrode	
Measuring range	
Insertion version	0.1 $\mu\text{S/cm}$... 500 mS/cm
Flush version	1 $\mu\text{S/cm}$... 500 mS/cm
Linearity ¹⁾ (relative)	$\pm 0.5 - 5 \%$
Cell constant ²⁾	
Insertion version	0.147 cm^{-1}
Flush version	0.360 cm^{-1}
Temperature range	
Insertion version	-20 to 135°C (-4 to 275°F)
Flush version	-20 to 150°C (-4 to 302°F)
Pressure range	
Insertion version	Refer to pressure/temperature diagram, on next page. Max. 6 bar (87.06 PSI) at 135°C (275°F), higher pressure possible at lower temperature: max. 10 bar (145.1 PSI) at 25°C (77°F)
Flush version	Max. 10 bar (145.1 PSI) at 150°C (302°F), higher pressure possible at lower temperature: max. 20 bar (290.2 PSI) at 135°C (275°F) or at 25°C (77°F).
Temperature sensor	Pt1000
Materials	
Electrode	Stainless steel 1.4435/316L
Shaft	PEEK with FDA approval (CFR 177.2415), Stainless steel 1.4435
Surface quality	0.4 μm , electro-polished
Process connection	
Insertion version	Clamp 1.5"
Flush version	Clamp 2" or Varivent® DN50/40
Electrical connections	
Insertion version	High temperature cable, length 5 m, instrument side with open wire.
Flush version	VarioPin (VP 6.0)
Standard	EHDG approved design: Varivent® DN50/40 Design according to EHDG: Clamp 1.5" and 2"

¹⁾ Deviations of $\pm 5\%$ arise when using only ONE single cell constant for the full range. $\pm 0.5\%$ accuracy can be achieved when calibration is performed in a conductivity range close to that of the sample.

²⁾ Individual cell constant measured with the Bürkert standard procedure. The cell constant can be influenced by the assembly situation.

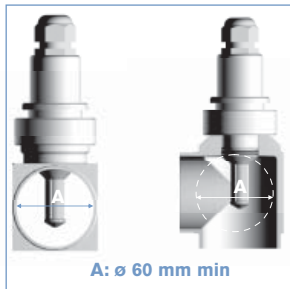
Varivent® is a registered Trademark of GEA Tüchenhagen.

Technical data (continued)

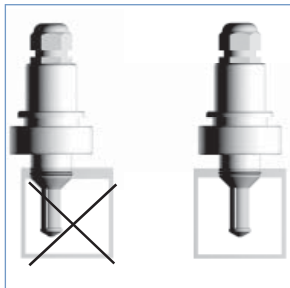


Installation

The process connection must be sufficiently clean. Install the conductivity sensor following the instructions mentioned below.



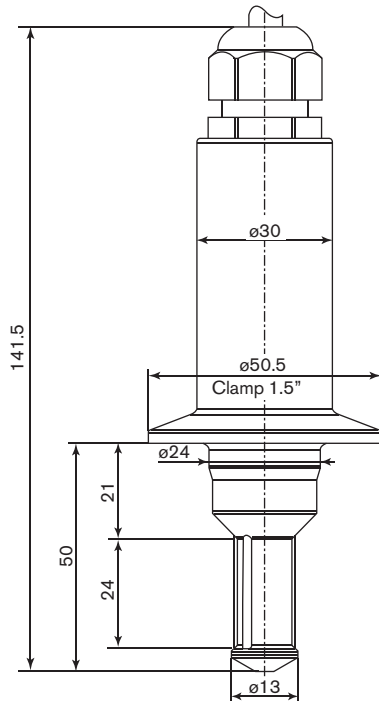
The cell constant and the linearity of the sensor can vary with the fitting situation. A symmetrical setup is recommended. Leave an open space of 60 mm minimum diameter.
Partitions made of non-conductive material should preferably be used.



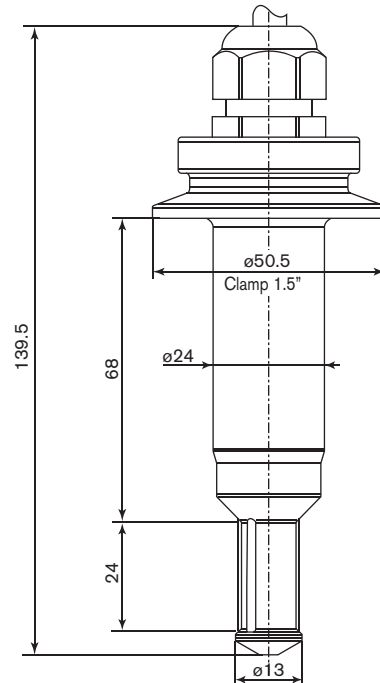
A symmetrical setup is recommended in order to ensure a high degree of linearity. To achieve high precision the cell constant should be calibrated in the final setup. Make sure that all the 4 electrodes are completely and continuously immersed in the measuring sample.

Dimensions [mm]

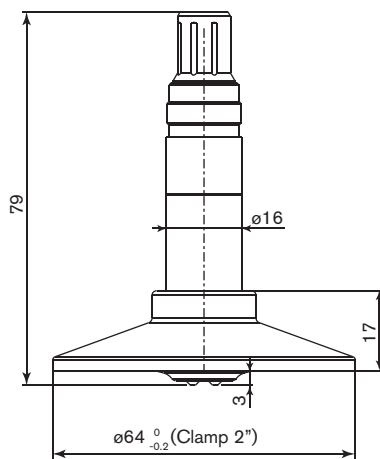
**Short Insertion 4-electrode sensor version
with 1.5" Clamp connection
Design according to EHEDG**



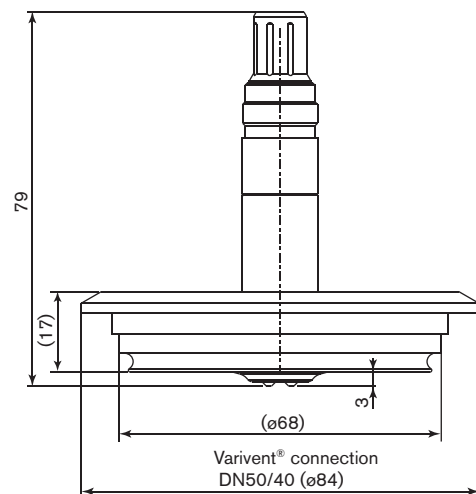
**Long Insertion 4-electrode sensor version
with 1.5" Clamp connection
Design according to EHEDG**



**Flush 4-electrode sensor version
with 2" Clamp connection
Design according to EHEDG**




**Flush 4-electrode sensor version
with 2" (DN50/40) Varivent® connection
EHEDG approved design**



Ordering chart for conductivity sensor Type 8221

Specifications	Technology	Measuring range	Process connection	Electrical connection	Item no.
Conductivity sensor	Insertion 4-electrode, short	0.1 ... 500 000 µS/cm	1.5" Clamp	Cable 5m open wires	557 719
	Insertion 4-electrode, long	0.1 ... 500 000 µS/cm	1.5" Clamp	Cable 5m open wires	558 884
	Flush 4-electrode	1 ... 500 000 µS/cm	2" Clamp	VarioPin male connector	559 120
	Flush 4-electrode	1 ... 500 000 µS/cm	2" (DN50/40) Varivent®	VarioPin male connector	559 121

i Further versions on request

 Port connection
Others...

Ordering chart for accessories for conductivity sensor Type 8221

Description	Item no.
Buffer solution, 5 µS/cm conductivity standard, ±1% accuracy, 300 ml	440 015
Buffer solution, 15 µS/cm conductivity standard, ±5% accuracy, 300 ml	440 016
Buffer solution, 100 µS/cm conductivity standard, ±3% accuracy, 300 ml	440 017
Buffer solution, 706 µS/cm conductivity standard, ±2% accuracy, 300 ml	440 018
Buffer solution, 1413 µS/cm conductivity standard, ±1% accuracy, 300 ml	440 019
Buffer solution, 100 mS/cm conductivity standard, ±1% accuracy, 300 ml	440 020
Connection cable VarioPin (VP 6.0) female connector, 3 meters	554 855
Connection cable VarioPin (VP 6.0) female connector, 5 meters	554 856
Connection cable VarioPin (VP 6.0) female connector, 10 meters	554 857

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In case of special application conditions,
please consult for advice.

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