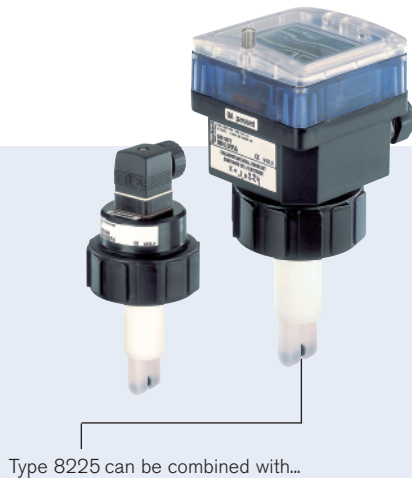
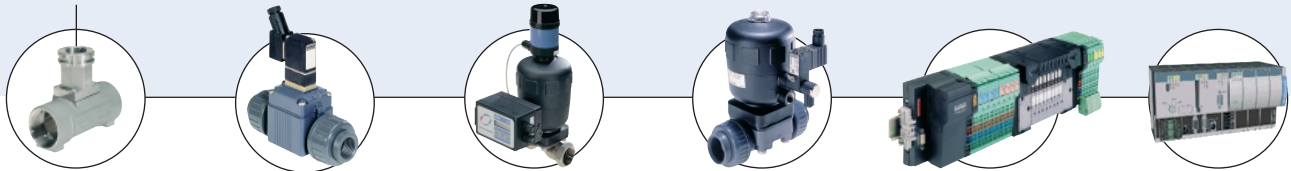


Digital conductivity transmitter



- Compact, remote versions for DN 15 to 200
- Fully programmable conductivity transmitter functions for all kinds of conductivity measurement tasks
- Large range of process connections with various fittings
- Multi language, menu-guided operation

Type 8225 can be combined with...



Type S020

INSERTION fitting

Type 6642

Solenoid valve

Type 2731

Diaphragm valve for continuous control

Type 2030

On/Off Diaphragm valve

Type 8644

Valve islands

PLC

The conductivity transmitter is available in different models:

- Compact conductivity transmitter with integrated conductivity electrodes
- Remote conductivity transmitter, for panel or wall mounting, to connect to the Bürkert conductivity sensor Type 8220.

The conductivity transmitter can be installed into a pipe by using INSERTION fitting Type S020 or other suitable installation materials. It can also be installed in tanks or containers by using an industrial immersion fitting.

Technical data (common to the various versions)

General data

Display	15 x 60 mm, 8-digit LCD, alphanumeric, 15 segments, 9 mm high
Electrical connections	shielded cable with 1.5 mm ² max. cross-section

Environment

Ambient temperature Operation and storage	0 to +60°C (32 to 140°F)
Relative humidity	≤ 80 %, non condensated

Standards, directives and approvals

Standard and directives	
EMC	EN 61000-6-3 (2001), EN 61000-6-2 (2001)
Security	EN 61010-1 (2001)
Pressure	Complying with article 3 of §3 from 97/23/CE directive.*
Vibration	EN 60068-2-6
Shock	EN 60068-2-27

* For the 97/23/CE pressure directive, the device can only be used under following conditions (depend on max. pressure, pipe diameter and fluid).

Type of fluid	Conditions
Fluid group 1, §1.3.a	DN25 only
Fluid group 2, §1.3.a	DN ≤ 32 or DN > 32 and PN*DN ≤ 1000
Fluid group 1, §1.3.b	DN ≤ 200
Fluid group 2, §1.3.b	DN ≤ 200

System versions

The compact version



combines a conductivity sensor and an electronic module with a display in an IP65 enclosure. The access to the output terminals are provided via two cable glands or a 4-pole plug.

Bürkert designed fitting ensures simple direct installation of the Bürkert transmitter into pipes from DN 15 to DN 200.

The panel-mounted version



consists of an electronic module 8225 integrated in a front-cover associated to a separate conductivity sensor Type 8220.

The output signals are provided on a terminal strip.

The wall-mounted version



consists of an electronic module 8225 in an IP65 enclosure associated to a separate conductivity sensor Type 8220.

The output signals are provided on a terminal strip via cable gland.

Operation and display

Customized adjustments, such as measuring range, engineering units and alarm setpoints can be carried out menu-supported on site via a multi-lingual display.

The operation is classified according to three levels.

▶ **Main Menu**

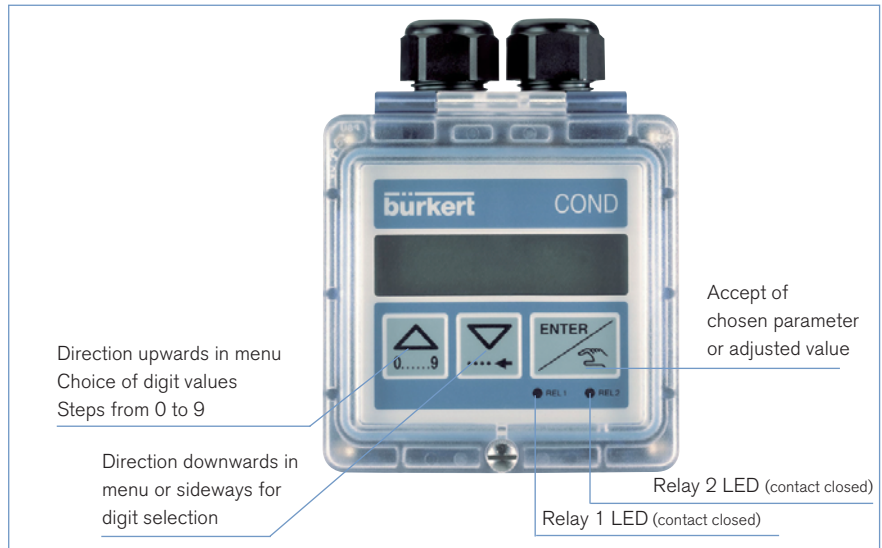
- conductivity
- temperature
- output current
- HOLD function

▶ **Calibration Menu**

- language
- engineering units
- cell constant
- temperature compensation
- measuring range 4-20 mA
- relay function
- filter selection

▶ **Test Menu**

- Offset
- Span
- conductivity non compensation
- simulation of conductivity



Principle of operation - Electrodes measuring range

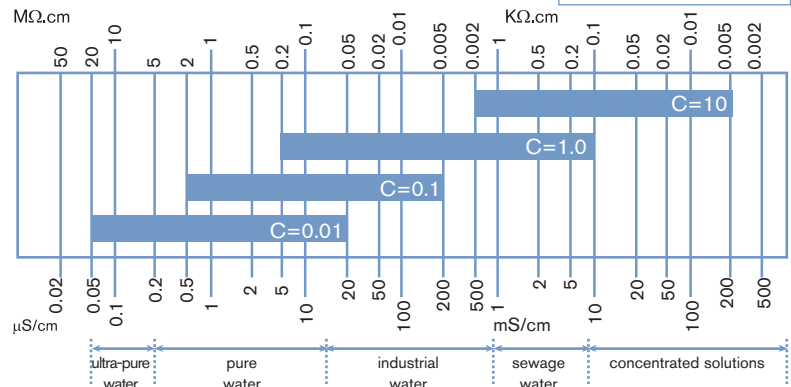
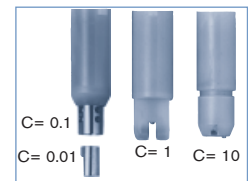
Conductivity is defined as the ability of a solution to conduct electrical current. The load carriers are ions (E.G. dissolved salt or acids). In order to measure conductivity, 2 electrodes are used which are set at a fixed distance apart and with a known specified surface. An AC voltage source is connected to the electrodes. The measured current is a direct function of the conductivity of the solution.

The transmitter functions in a two wire circuit (without relay) or three wire circuit (with 2 additional relays - limits values freely adjustable) and requires a power supply of 12... 30 VDC. The device is available with a power supply of 115/230 V AC.

A 4... 20 mA standard signal proportional to the conductivity is available as output signal.

Different electrode designs are required based on selected cell constant.

The conductivity transmitter can be fitted with 4 different electrodes with cell constants C=0.01; 0.1; 1 and 10. The electrode is selected according to the measuring range and medium by using the table below.



Compact conductivity transmitter Type 8225

The sensor component consists of a cell, screwed into the sensor housing. The sensor with cell constants 0.01 or 0.1 are fitted with stainless steel electrodes and those with cell constants 1.0 or 10 are fitted with graphite electrodes.

The Pt1000 for automatic temperature compensation is a standard feature in the sensor housing.

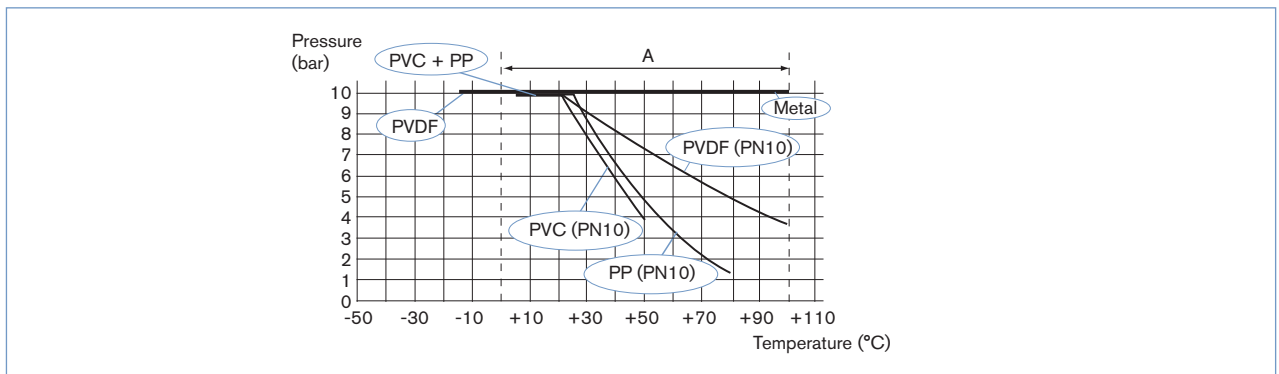
The transmitter component converts the measured signal and displays the actual value.



General data	
Compatibility	with fittings S020 (see corresp. datasheet)
Materials	<p>Housing, cover, lid, nut: PC</p> <p>Front panel foil / Screws: Polyester / Stainless steel</p> <p>Cable plug, glands: PA</p> <p>Wetted parts materials:</p> <ul style="list-style-type: none"> Fitting: Brass, stainless steel 1.4404/316L, PVC, PP or PVDF Sensor holder / Pt1000: PVDF / Stainless steel 1.4571 (316Ti) Seal: FKM (EPDM included in delivery)
Electrode	<p>Stainless steel for cell constant C =0.01 or 0.1</p> <p>Graphite for cell constant C =1.0 or 10</p>
Electrical connection	Cable plug EN 175301-803 or cable glands M20 x 1.5
Complete device data (fitting + Electronics)	
Pipe diameter	DN 15 to 200
Conductivity measurement	<p>Measuring range: 0.05 µS/cm ... 200 mS/cm (depending on cell constant)</p> <p>Accuracy: typical: 3% o. MV.* - max.: 5% o. MV.*</p>
Temperature measurement	<p>Measuring range: -50 to +150°C (-58 to 302°F)</p> <p>Resolution: 0.1°C (0.18°F)</p> <p>Accuracy: ± 1°C (1.8°F)</p> <p>Temperature compensation: automatic (integrated Pt1000) - reference temperature 25°C (77°F)</p>
Medium temperature max.	with fitting in PVC: 50°C (122°F), - PP: 80°C (176°F) PVDF, stainless steel, brass: 100°C (212°F)
Medium pressure max.	PN10 (see pressure / temperature chart)
Electrical data	
Power supply	12-30 V DC, filtered and regulated or 115/230 V AC 50/60 Hz (see technical specifications 115/230 VAC)
Current consumption with sensor	<p>≤ 80 mA - transmitter with relays</p> <p>≤ 20 mA - transmitter without relay</p>
Output	<p>4-20 mA programmable (3-wire with relays; 2-wire without relays), proportional to conductivity.</p> <p>max. load: 800 Ω at 30 V DC; 550 Ω at 24 V DC; 150 Ω at 15 V DC</p> <p>Relays (option): 2 relays, freely programmable, 3A, 230 V AC</p>
Technical specifications 115/230 VAC	
Voltage supply	27 V DC regulated, max. current: 125 mA integrated protection: fuse 125 mA temporised power: 3 VA
Standard	
Protection class	IP65 with cable plug or cable gland mounted and tightened, blanked if not used

* o. MV. = of measured value

Pressure / temperature chart

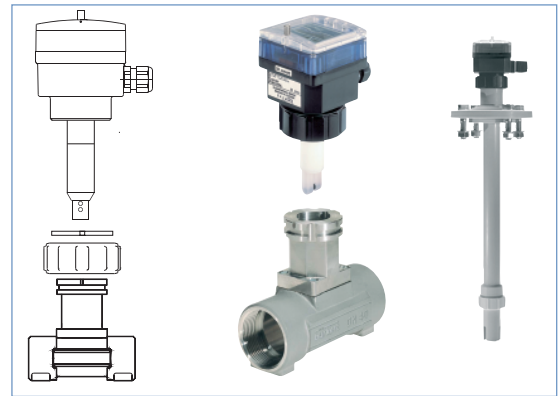


Installation

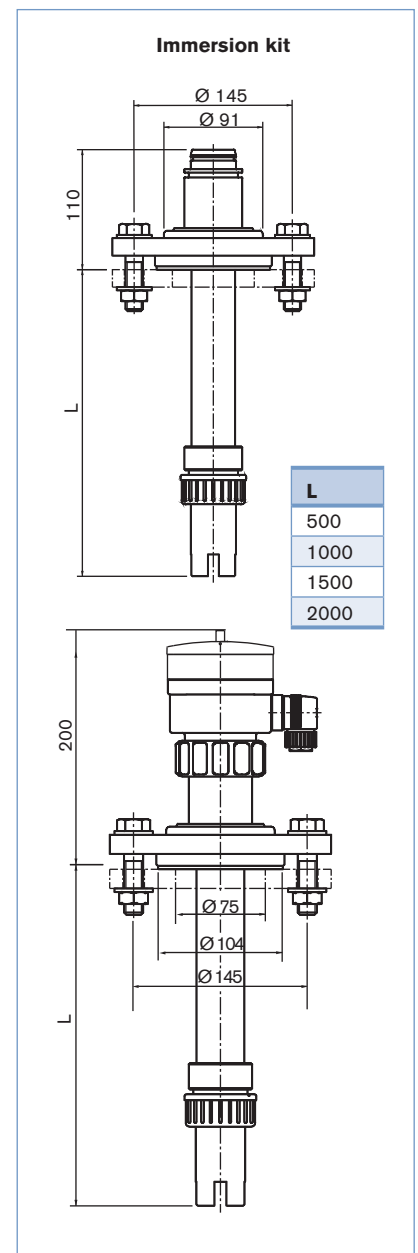
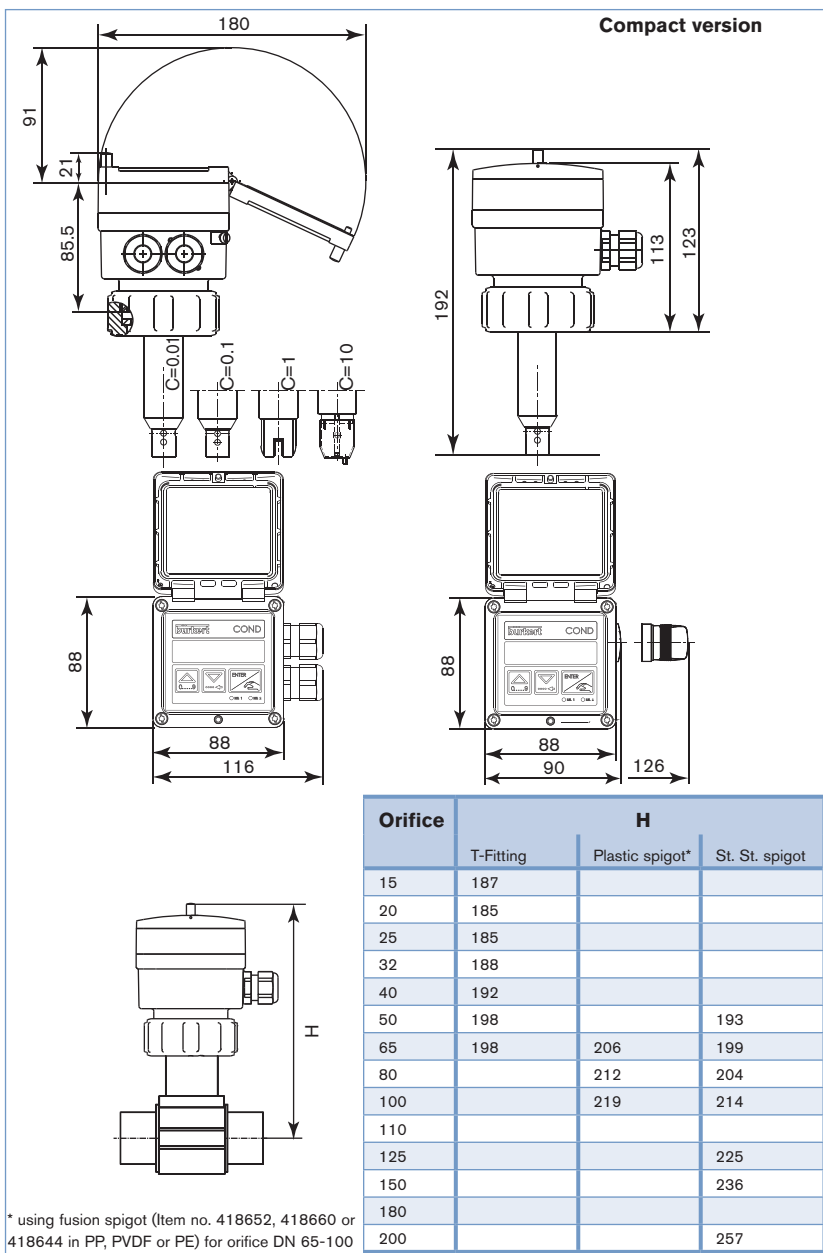
The 8225 conductivity transmitter can be installed into any Bürkert INSERTION fitting (S020).

Select and install the required fitting onto the pipe, according to specific requirements of the sensor and fitting material (temperature and pressure). Then, cautiously install the unit on the fitting, and tighten with the nut. With a cell constant $C = 10$, the opening hole of the small channel must be located on the flow side. The transmitter can be installed in any position. In order to get a reliable measurement, air bubbles must be avoided, and the mounting location must ensure that the electrode is continuously and completely immersed in the flow stream. The transmitter must be protected from constant heat radiation and other environmental influences, such as direct exposure to sunlight.

An industrial immersion kit allows installation of this transmitter into tanks or containers. The following lengths are available: 500, 1000, 1500, 2000 mm. Special lengths on request.



Dimensions [mm]



Remote conductivity transmitter Type 8225 (for connection to Bürkert sensor Type 8220)

The remote conductivity transmitter Type 8225 is available in 2 versions:

- Panel-mounted conductivity transmitter



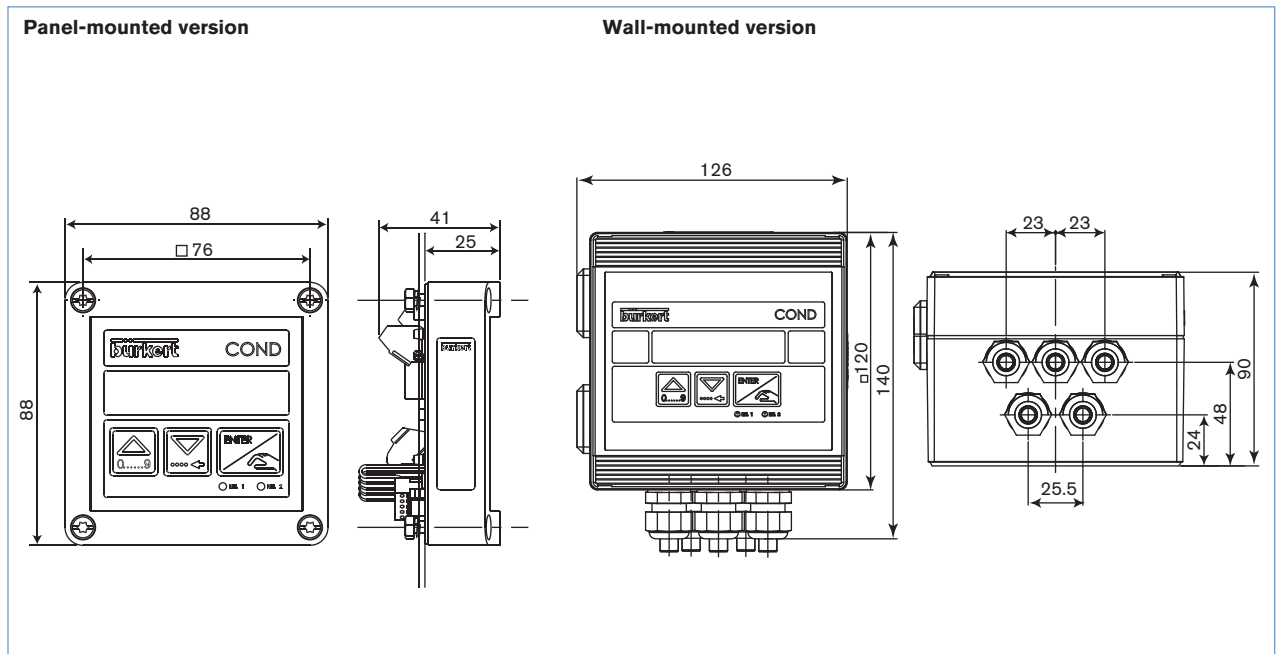
- Wall-mounted conductivity transmitter



A separate compact conductivity sensor 8220 from Bürkert must be associated with this remote conductivity transmitter. This sensor Type 8220 must be ordered separately.

General data	
Compatibility	Bürkert conductivity sensor Type 8220
Materials	PC (panel-mounted version); ABS (wall-mounted version) Polyester Stainless steel PA
Electrical connection	Terminals (panel-mounted version) Or terminals via 5 cable glands M16 x 1.5 (wall-mounted version)
Electrical data	
Power supply	Panel-mounted version: 12-30 V DC, filtered and regulated Wall-mounted version: 12-30 V DC, filtered and regulated or 115/230 V AC - 50/60 Hz (see technical specifications 115/230 VAC)
Current consumption with sensor	≤ 80 mA - transmitter with relays ≤ 20 mA - transmitter without relay
Sensor input	Analog signal from conductivity electrode and Pt1000
Cable length	max. 10 m (distance between sensor and transmitter)
Output	4-20 mA programmable (3-wire with relays; 2-wire without relay), proportional to the conductivity max. load: 800 Ω at 30 V DC; 550 Ω at 24 V DC; 150 Ω at 15 V DC Relays (option): 2 relays, freely programmable, 3A, 230 V AC
Technical specifications 115/230 VAC	
Voltage available in the device	27 V DC regulated, max. current: 250 mA integrated protection: fuse 250 mA temporised power: 6 VA
Standard	
Protection class	IP65 (panel-mounted and wall-mounted version) IP20 (panel-mounted version, inside the cabinet)

Dimensions [mm]



Remote conductivity sensor Type 8220 (for connection to Bürkert transmitter Type 8225)

Four conductivity sensors with different cell constants (C = 0.01; 0.1; 1; 10) offer large capabilities of conductivity measurement. The Pt1000 for automatic temperature compensation is integrated in the sensor housing.



This sensor transmits directly an analog signal via a 4 x 1.5 mm² shielded cable, and is fitted with a standard EN175301-803 plug connector for the connection to remote conductivity transmitter Type 8225 (maximal cable length of 10 m).

General data	
Compatibility	with fittings S020 (see corresp. datasheet)
Materials	
Housing	PC
Screws	Stainless steel
Cable plug	PA
Wetted parts materials	
Fitting	Brass, Stainless steel 1.4404/316L, PVC, PP or PVDF
Sensor holder	PVDF
Pt1000	Stainless steel 1.4571 (316Ti)
Seal	FKM (EPDM included in delivery)
Electrode	Stainless steel for cell constant C = 0.01 or 0.1 Graphite for cell constant C = 1.0 or 10
Electrical connection	Cable plug EN 175301-803

Complete device data (fitting + sensor)	
Pipe diameter	DN 15 to 200
Conductivity measurement	
Measuring range	0.05 µS/cm ... 200 mS/cm (depending on cell constant)
Accuracy	typical: 3% o. MV.* - max.: 5% o. MV.*
Temperature measurement	
Measuring range	-50 to +150°C
Resolution	0.1°C
Accuracy	± 1°C
Temperature compensation	automatic (integrated Pt1000) - reference temperature 25°C
Medium temperature max.*	with fitting in PVC: 50°C (122°F) - PP: 80°C (176 °F) - PVDF, stainless steel, brass: 100°C (212°F)
Fluid pressure max	PN10 (see pressure / temperature chart)

* o. MV. = of measured value

Electrical data	
Power supply	none
Connection cable	4 x 1.5mm ² shielded, max. length 10 m
Output	Analog signal, to be connected to remote electronic module Type 8225

Installation

The 8220 conductivity sensor can be installed into any Bürkert INSERTION fitting (S020).

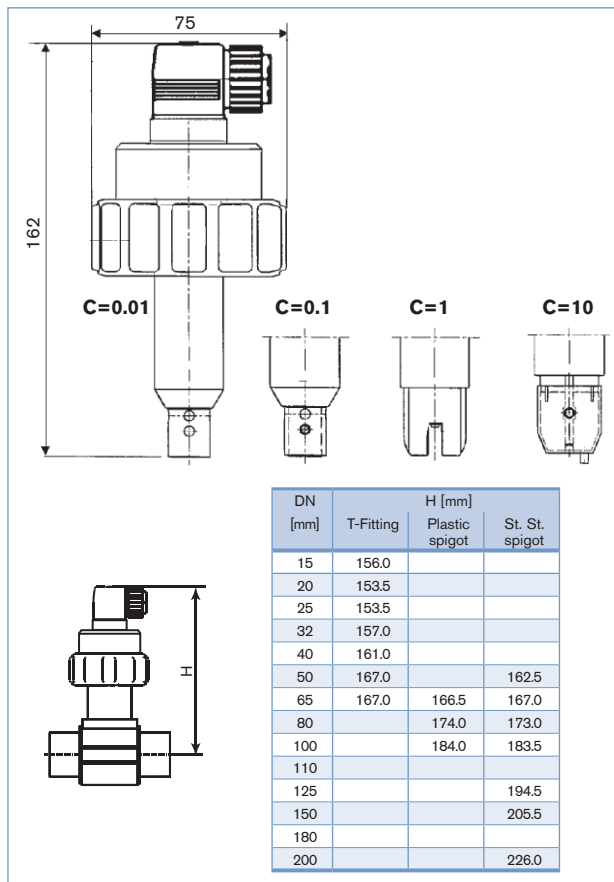
Select and install the required fitting onto the pipe, according to specific requirements of the sensor and fitting material (temperature and pressure). Then, cautiously install the unit on the fitting, and tighten with the nut. With a cell constant C = 10, the opening hole of the small channel must be located on the flow side.

The sensor can be installed in any position. In order to get a reliable measurement, air bubbles must be avoided, and the mounting location must ensure that the electrode is continuously and completely immersed in the flow stream.

The transmitter must be protected from constant heat radiation and other environmental influences, such as direct exposure to sunlight.

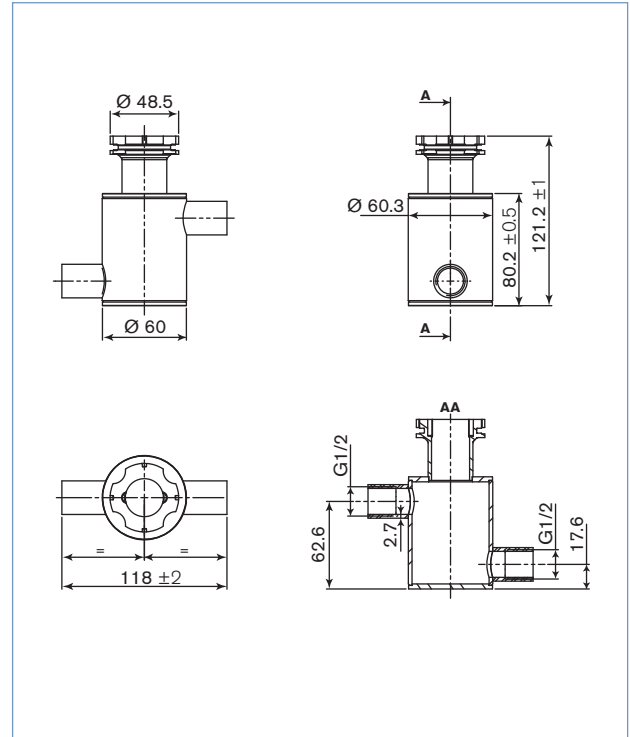


Dimensions [mm]



Measuring chamber for Type 8225 / 8220

The specially designed measuring chamber provides for easy installation of all 8225 conductivity transmitters or 8220 sensors in all pipe systems, either directly in the main stream or in a by-pass line. The chamber also ensures the electrode is always wet and isolates it easily from the main stream for calibration purposes.



Combining the conductivity transmitter Type 8225 with fittings Type S020

Available fitting DN	T-fitting S020	DN 15	DN65
	Welding tab S020		DN50 DN200
	Fusion spigot S020		DN65 DN100
Conductivity measurement 8225 compact		DN 15 Note A	DN32 DN200
Conductivity measurement 8220/8225 remote version		DN15 Note A	DN32 DN200

Note A: Use only with analyse plastic fitting version with true union acc. to DIN 8063 (PVC), to DIN 16962 (PP) or to ISO 10931 (PVDF)

Ordering chart for compact conductivity transmitter Type 8225

A compact conductivity transmitter Type 8225 consists of:

- an INSERTION conductivity transmitter 8225
- an INSERTION fitting Type S020 (DN15 - DN 200) (Refer to corresponding datasheet - has to be ordered separately)

Specifications	Voltage supply	Output	Relays	Electrode version	Electrical connection	Item no.		
Compact ¹⁾	12-30 V DC	4-20 mA	None	C = 0.01	EN 175301-803	418 950		
					2 cable glands	418 962		
				C = 0.1	EN 175301-803	418 951		
					2 cable glands	418 963		
				C = 1	EN 175301-803	418 952		
			2 cable glands		418 964			
			C = 10	EN 175301-803	418 953			
				2 cable glands	418 965			
			2	None	4-20 mA	C = 0.01	2 cable glands	418 954
						C = 0.1	2 cable glands	481 955
	C = 1	2 cable glands				418 956		
	C = 10	2 cable glands				418 957		
	C = 10	2 cable glands				418 957		
	115/230 V AC	4-20 mA	None	C = 0.01	2 cable glands	426 935		
					2 cable glands	426 936		
				C = 1	2 cable glands	426 937		
					2 cable glands	426 938		
				C = 10	2 cable glands	426 938		
			2 cable glands		426 938			
			2	None	4-20 mA	C = 0.01	2 cable glands	426 943
C = 0.1						2 cable glands	426 944	
C = 1						2 cable glands	426 945	
C = 1						2 cable glands	426 945	
C = 10	2 cable glands	426 946						

¹⁾ FKM gasket in standard; 1 Kit including a black EPDM gasket for the sensor, an obturator for an M20 x 1.5 cable gland, a 2 x 6 mm multiway seal and a mounting instruction sheet is supplied with each transmitter with cable glands or 1 Kit including a green FKM and a black EPDM gaskets is supplied with each transmitter with connection EN175301-803.

Compact conductivity transmitter for tank installation consists of:

- an INSERTION conductivity transmitter
- an immersion Kit consisting of :
 - an immersion fitting (has to be ordered separately)
 - an extension cable for immersion fitting (has to be ordered separately)
 - a fixing kit: flange DN65 with stainless steel screws (has to be ordered separately)

Description	Item no.
Immersion fitting - PP - 0.5 m	419 567
Immersion fitting - PP - 1.0 m	419 568
Immersion fitting - PP - 1.5 m	419 569
Immersion fitting - PP - 2.0 m	419 570
Extension cable for immersion fitting - PP - 0.5 m	419 574
Extension cable for immersion fitting - PP - 1.0 m	419 575
Extension cable for immersion fitting - PP - 1.5 m	419 576
Extension cable for immersion fitting - PP - 2.0 m	419 577
Fixing kit - flange DN65 with stainless steel screws	413 615

Ordering chart for accessories for compact conductivity Type 8225

Description	Item no.
Set with 2 reductions M20 x 1.5 /NPT1/2" + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20 x 1.5	551 782
Set with 1 stopper for unused cable gland M20 x 1.5 + 1 multiway seal 2 x 6 mm for cable gland + 1 black EPDM gasket for the sensor + 1 mounting instruction sheet	551 775

Ordering chart for remote conductivity transmitter Type 8225

A complete remote transmitter Type 8225 consists of:

- a conductivity transmitter Type 8225 (wall-mounted or panel-mounted version)
- a conductivity sensor Type 8220 (see ordering chart sensor)
- an INSERTION fitting S020 (DN15 - DN 200) (Refer to corresponding datasheet - has to be ordered separately)

Specifications	Voltage supply	Output	Relays	Sensor version	Electrical connection	Item no.
Panel-mounted	12-30 V DC	4-20 mA	None	8220	Terminal strip	426 830
			2	8220	Terminal strip	426 831
Wall-mounted	12-30 V DC	4-20 mA	None	8220	Cable glands	426 834
			2	8220	Cable glands	426 835
	115-230 V AC	4-20 mA	None	8220	Cable glands	426 836
			2	8220	Cable glands	426 837

Ordering chart for conductivity sensor Type 8220

Specifications	Voltage supply	Cell constant	Cell materials	Electrical connection	Item no.
Sensor	0.05 µS/cm ... 20 µS/cm	C = 0.01	Stainless steel	EN 175301-803	426 872
	0.5 µS/cm ... 200 µS/cm	C = 0.1	Stainless steel	EN 175301-803	426 873
	5 µS/cm ... 10 mS/cm	C = 1	Graphite	EN 175301-803	426 874
	0.5 mS/cm ... 200 mS/cm	C = 10	Graphite	EN 175301-803	426 845

¹⁾ FKM gasket in standard; 1 Kit including a green FKM and a black EPDM gaskets is supplied with each sensor.

Ordering chart for accessories for conductivity transmitter Type 8225, sensor Type 8220

Description	Item no.
Set with 2 cable glands M20 x 1.5 + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20 x 1.5 + 2 multiway seals 2 x 6 mm	449 755
Ring	619 205
PC - nut	619 204
Set with 1 green FKM + 1 black EPDM gasket	552 111
Cable plug EN 175301-803 with cable gland (Type 2508)	438 811
Cable plug EN 175301-803 with NPT1/2 " reduction without cable gland (Type 2509) - UR and UL approval	162 673

Ordering chart for accessories for conductivity transmitter Type 8225, sensor Type 8220

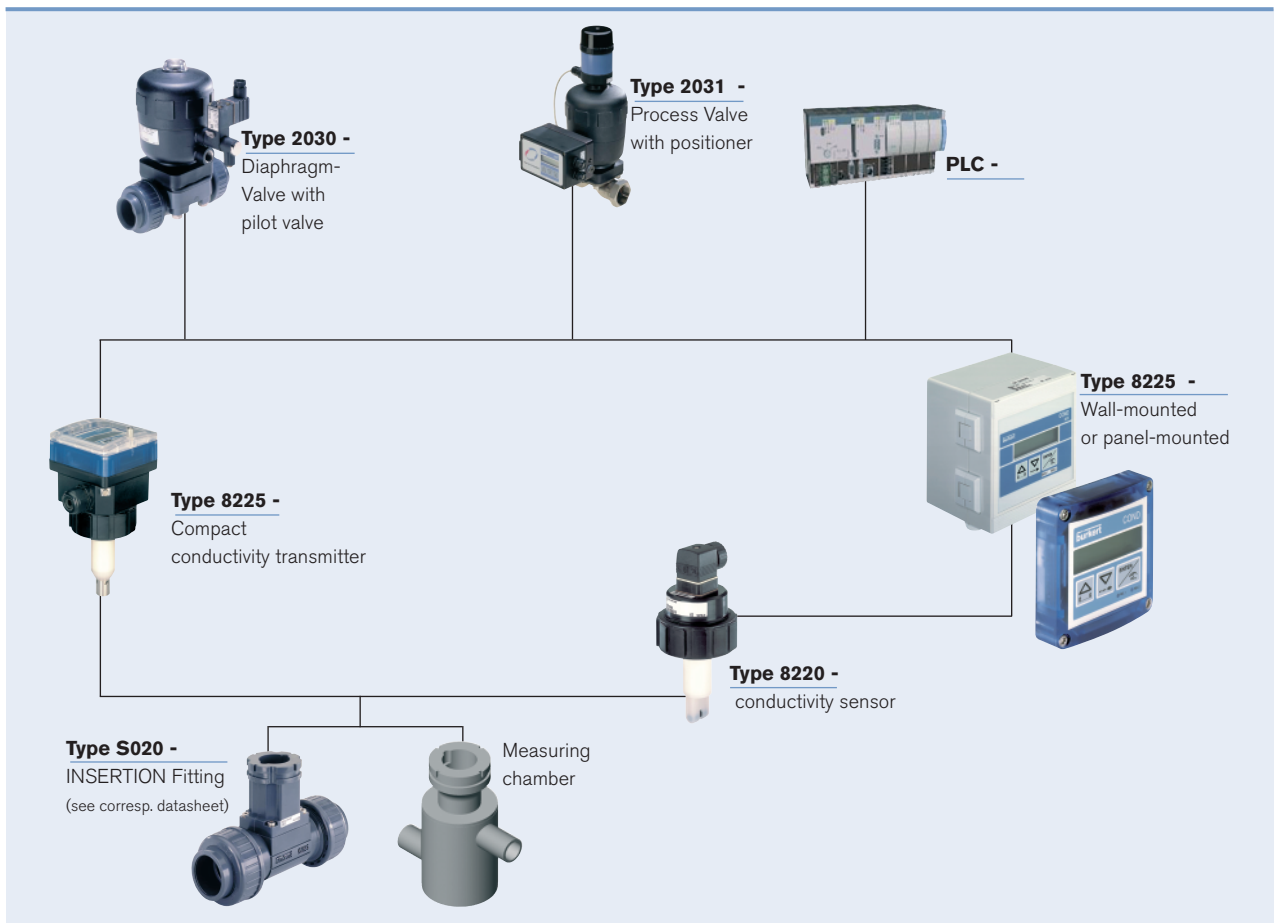
Description	Item no.
Conductivity electrode C = 0.01	633 367
Conductivity electrode C = 0.1	631 647
Conductivity electrode C = 1	418 217
Conductivity electrode C = 10	634 759
Factory 2-point conductivity calibration certificate	550 675
Measuring chamber stainless steel 316L (1.4404) ¹⁾ with G 1/2" connection thread	553 611

1) other materials on request

Note:

Compact conductivity transmitter 8225, remote (Wall-mounted or Panel-mounted versions) conductivity electronic module 8225, conductivity sensor 8220, connection cable, INSERTION fitting S020, have to be ordered separately.

Interconnection possibilities with other Bürkert devices



To find your nearest Bürkert facility, click on the orange box →

www.burkert.com

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

Subject to alteration.
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