






pH- and ORP-probes

- For many different types of installations and applications
- Large selection of probe for a wide range of holder
- Useable for pipe DN 15...DN200

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

	Type 8200 ▶ Armatures for analytical probes
	Type 8202 ▶ pH or redox potential measurement device
	Type 8619 ▶ multiCELL - Multi-channel and multi-function transmitter/controller

Type description

A probe Type 8203 is inserted into a Bürkert pH or ORP meter, which is a modular device designed for the measurement of:

- the pH in clean liquids or liquids containing solids, sulphides or proteins.
- the oxidation-reduction potential in clean liquids or liquids containing solids, sulphides or proteins which may present low conductivity.

The probes of Type 8203 are available in various models:

- for pH
 - PLASTRODE pH 120 mm
 - FLATRODE pH 120 mm
 - LOGOTRODE pH 120 mm
 - UNITRODE PLUS pH 120 mm
 - CERATRODE pH 120 mm
 - FERMTRODE VP pH 120 mm
- for ORP
 - FLATRODE ORP 120 mm
 - LOGOTRODE ORP 120 mm
 - UNITRODE PLUS ORP 120 mm

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1. General Technical Data

1.1. About probes

For general or hygienic purposes the probes, available in several models, are

- used in combination with one of the many holders offered in Type 8200,
- or inserted in a pH or ORP meter Type 8202 in the standard or neutrino version

See **data sheet Type 8200** ► or **data sheet Type 8202** ► for more information.

1.2. All models

The following data applies to all versions.




Product properties	
Dimensions	Detailed information can be found in chapter "4. Dimensions" on page 8.
Temperature compensation	<ul style="list-style-type: none"> • Automatic <ul style="list-style-type: none"> – if the measuring system is equipped with Pt1000. Detailed information on the Pt1000 can be found in chapter "7. Product accessories" on page 10. – if the probe has an integrated Pt100 sensor. • Manual compensation reference temperature 25 °C (77 °F)
Electrical data	
Outputs	Analog signal, to be connected to ELEMENT or ELEMENT neutrino pH/ORP meter Type 8202 or multiCELL transmitter/controller Type 8619. See data sheet Type 8202 ► or data sheet Type 8619 ► for more information.
Process/Port connection & communication	
Process connection	PG 13.5
Approvals and certificates	
Directives	
CE directives	The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable).
Pressure equipment directives	Complying with Article 4, Paragraph 1 of 2014/68/EU directive Detailed information on the pressure equipment directive can be found in chapter "2.1. Pressure Equipment Directive" on page 7.
Environment and installation	
Ambient temperature	<ul style="list-style-type: none"> • Operation: 0...+60 °C (+32...+140 °F) • Storage: +4...+30 °C (+39.2...+86 °F)

1.3. pH probes




Note:

- The 8203 pH probe is available in 6 models.
- These probes can be used in a measuring range of 0...14 pH.

Technical data for PLASTRODE pH 120, FLATRODE pH 120 and LOGOTRODE pH 120 models

Product properties			
Sensor model	PLASTRODE pH 120	FLATRODE pH 120	LOGOTRODE pH 120
			
Material			
Armature	Glass	Cast epoxy resin, black	Glass
Diaphragm	"Single pore"	Annular and centered, in high density Polyethylen	"Single pore"
Seal	EPDM	FKM	EPDM
Number of diaphragms	1	1	1
Reference electrolyte	Polymer	Acrylamide gel KNO ₃ /3.5M KCl-AgCl	Polymer
Temperature sensor	Not integrated	Not integrated	Not integrated
Medium data			
Fluid	Drinking water, aquarium, swimming-pool...	Contaminated (viscous, suspended solids, small sized solids, paints, cosmetics, foodstuffs)	Clean (drinking water, cooling-water, aquarium, swimming-pool...)
Conductivity	Min. 50 µS/cm	Min. 50 µS/cm	Min. 2 µS/cm
Fluid temperature	- 10...+40 °C (+ 14...+ 104 °F) If the temperature ranges given for the holder and the inserted probe are different, use the most restrictive range.		
Fluid pressure	0...6 bar (0...87 PSI) If the pressure ranges given for the holder and the inserted probe are different, use the most restrictive range.		
Maximum pressure at max. temperature	6 bar (87 PSI)	4 bar (58 PSI)	6 bar (87 PSI)
Process/Port connection & communication			
Electrical connection	Coaxial shielded cables with S7/S8 connector and 4-wire cable for Pt1000/Liquid earth rod (if needed)		

Technical data for UNITRODE PLUS pH 120, CERATRODE pH 120 and FERMTRODE pH 120 models




Product properties			
Sensor model	UNITRODE PLUS pH 120	CERATRODE pH 120	FERMTRODE pH 120
			
Material			
Armature	Glass	Glass	Glass
Diaphragm	"Single pore"	HP ceramics	HP-COATRAMIC
Seal	FPM	EPDM (conform to FDA - 21CFR 177.2600 and to USP class VI)	Silicone (conform to FDA - 21CFR 177.2600 and to USP class VI)
Number of diaphragms	2	3	1
Reference electrolyte	Polymer	Gel	Pressurized FOODLYTE (conform USP 31)
Temperature sensor	Not integrated	Not integrated	Integrated Pt100
Medium data			
Fluid	<ul style="list-style-type: none"> Contaminated (waste water, cooling water, electro-plating, paints, cosmetics...) Containing sulfides/proteins (tannery, animal breeding, waste water, foodstuffs, cosmetics, biotechnology) 		Biotechnology, pharma, food industry <ul style="list-style-type: none"> containing proteins, cell cultures, injectable applications requiring biocompatibility or suitability for food contact guarantee
Conductivity	Min. 2 µS/cm	Min. 50 µS/cm	Min. 100 µS/cm
Fluid temperature	0...+130 °C (+32...+266 °F) If the temperature ranges given for the holder and the inserted probe are different, use the most restrictive range.		
Fluid pressure	<ul style="list-style-type: none"> 0...16 bar if fluid temperature < +100 °C (0...232 PSI if fluid temperature < +212 °F) 0...10 bar if fluid temperature between +100...+130 °C (0...145 PSI if fluid temperature between +212...+266 °F) If the pressure ranges given for the holder and the inserted probe are different, use the most restrictive range.		
Maximum pressure at max. temperature	10 bar (145 PSI)	6 bar (87 PSI)	6 bar (87 PSI)
Process/Port connection & communication			
Electrical connection	Coaxial shielded cables with S7/S8 connector and 4-wire cable for Pt1000/Liquid earth rod (if needed)		Variopin 6.0

1.4. ORP probes

Note:

- The 8203 ORP probe is available in 3 models.
- These probes can be used in a measuring range of -2000...+2000 mV.

Technical data for FLATRODE ORP 120, LOGOTRODE ORP 120, UNITRODE PLUS ORP 120 models

Product properties			
Sensor model	FLATRODE ORP 120	LOGOTRODE ORP 120	UNITRODE PLUS ORP 120
			
Material			
Armature	Cast epoxy resin, black	Glass	Glass
Diaphragm	Annular and centered, in high density Polyethylen	"Single pore"	"Single pore"
Seal	FKM	EPDM	FPM
Number of diaphragms	1	1	2
Reference electrolyte	Acrylamide gel KNO ₃ /3.5M KCl-AgCl	Polymer	Polymer
Temperature sensor	Not integrated	Not integrated	Not integrated
Medium data			
Fluid	Contaminated (viscous, suspended solids, small sized solids, paints, cosmetics, foodstuffs)	<ul style="list-style-type: none"> • Clean liquids (cooling-water, waste water or slightly contaminated) • With low conductivity (pure or rainwater...> 2 µS/cm) 	<ul style="list-style-type: none"> • Clean liquids (drinking water, aquarium, swimming-pool...) • Contaminated (waste water, cooling water, electro-plating, paints...) • With low conductivity (pure or rainwater...> 2 µS/cm) • Containing sulfides/proteins (tannery, animal breeding, waste water, foodstuffs, cosmetics, biotechnology...)
Conductivity	Min. 50 µS/cm	Min. 2 µS/cm	Min. 2 µS/cm
Fluid temperature	0...+80 °C (+32...+176 °F) If the temperature ranges given for the holder and the inserted probe are different, use the most restrictive range.	-10...+60 °C (+14...+140 °F)	0...+130 °C (+32...+266 °F)
Fluid pressure	0...6 bar (0...87 PSI)	0...6 bar (0...87 PSI)	<ul style="list-style-type: none"> • 0...16 bar if medium temperature < +100 °C (0...232 PSI if medium temperature < 212 °F) • 0...10 bar if medium temperature between +100...+130 °C (0...145 PSI if medium temperature between 212...266 °F)
	If the pressure ranges given for the holder and the inserted probe are different, use the most restrictive range.		
Maximum pressure at max. temperature	4 bar (58 PSI)	6 bar (87 PSI)	10 bar (145 PSI)
Process/Port connection & communication			
Electrical connection	Coaxial shielded cables with S7/S8 connector and 4-wire cable for Pt1000/Liquid earth rod (if needed)		

2. Approvals

2.1. Pressure Equipment Directive

The device conforms to Article 4, Paragraph 1 of the Pressure Equipment Directive 2014/68/EU under the following conditions:

Device used on a pipe

Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure, DN = nominal diameter of the pipe

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.c.i	$DN \leq 25$
Fluid group 2, Article 4, Paragraph 1.c.i	$DN \leq 32$ or $PS \cdot DN \leq 1000$
Fluid group 1, Article 4, Paragraph 1.c.ii	$DN \leq 25$ or $PS \cdot DN \leq 2000$
Fluid group 2, Article 4, Paragraph 1.c.ii	$DN \leq 200$ or $PS \leq 10$ or $PS \cdot DN \leq 5000$

Device used on a vessel

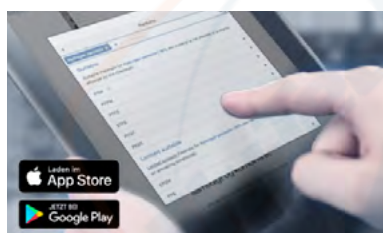
Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure, V = vessel volume

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.a.i	$V > 1 \text{ L}$ and $PS \cdot V \leq 25 \text{ bar} \cdot \text{L}$ or $PS \leq 200 \text{ bar}$
Fluid group 2, Article 4, Paragraph 1.a.i	$V > 1 \text{ L}$ and $PS \cdot V \leq 50 \text{ bar} \cdot \text{L}$ or $PS \leq 1000 \text{ bar}$
Fluid group 1, Article 4, Paragraph 1.a.ii	$V > 1 \text{ L}$ and $PS \cdot V \leq 200 \text{ bar} \cdot \text{L}$ or $PS \leq 500 \text{ bar}$
Fluid group 2, Article 4, Paragraph 1.a.ii	$PS > 10 \text{ bar}$ and $PS \cdot V \leq 10000 \text{ bar} \cdot \text{L}$ or $PS \leq 1000 \text{ bar}$

3. Materials

3.1. Chemical Resistance Chart – Bürkert resistApp



Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

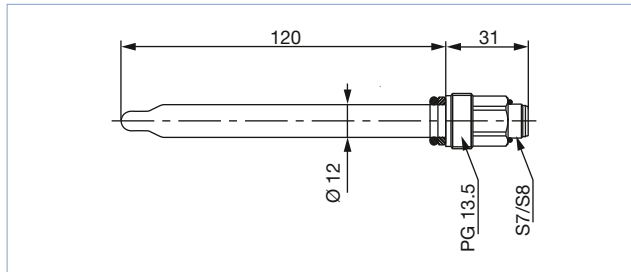
[Start Chemical Resistance Check](#)

4. Dimensions

4.1. pH/ORP probes in glass with S7/S8 connector

Note:

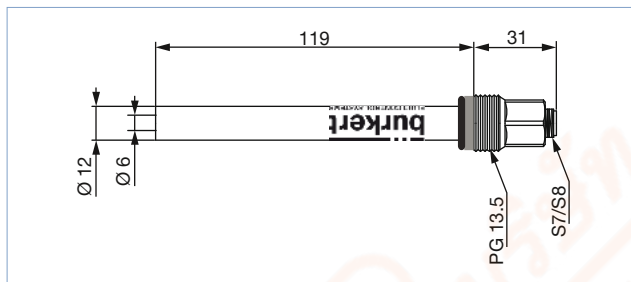
Dimensions in mm



4.2. pH/ORP probes in cast epoxy resin with S7/S8 connector

Note:

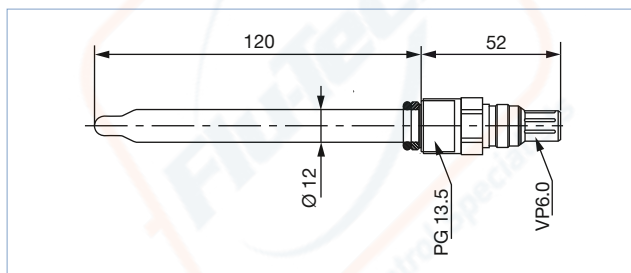
Dimensions in mm



4.3. pH probe with VP 6.0 multipin connector

Note:

Dimensions in mm



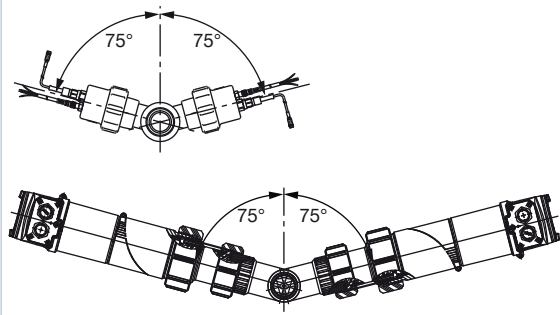
5. Product installation

5.1. Installation notes

Note:

- The pH or ORP probe is installed in a holder Type 8200 or inserted into the pH or ORP meter standard version or neutrino Type 8202.
- The probe must continuously be immersed into the measuring fluid in order to protect it from drying out.
- The device must be protected from constant heat radiation and other environmental influences, such as direct exposure to sunlight.

See **data sheet Type 8200** ► or **data sheet Type 8202** ► for more information.

Installation example	Description
	<p>The device has to be installed with a maximum angle of 75 degrees against the vertical onto an horizontal pipe. Select and install the required fitting onto the pipe, according to specific requirements of the device and fitting material (temperature and pressure).</p> <p>After having connected the probe to the Type 8619 (pH/ORP) multiCELL transmitter/controller and having calibrated the unit, cautiously install the complete pH/ORP meter on the fitting.</p> <p>See data sheet Type 8619 ► for more information.</p> <p>In order to get reliable measurement air bubbles must be avoided. Please ensure that the mounting location provides a continuous and complete immersion of the probe in the flow stream.</p>

6. Product operation

6.1. Measuring principle

The pH or redox probe built up on a glass membrane with variable sensitivity according to the pH or the redox, which must be screwed into the selected probe holder Type 8200 or inserted into the pH or redox meter (standard version or neutrino) Type 8202, connected to the e.g. transmitter/controller Type 8619. Only the probe with S7/S8 electrical connector can be screwed into the pH/redox ELEMENT meter Type 8202 (standard or neutrino version). The probe must be calibrated with buffer solution before the installation of the sensor into the pipe.

See **data sheet Type 8200** ►, **data sheet Type 8619** ►, **data sheet Type 8202** ► for more information.

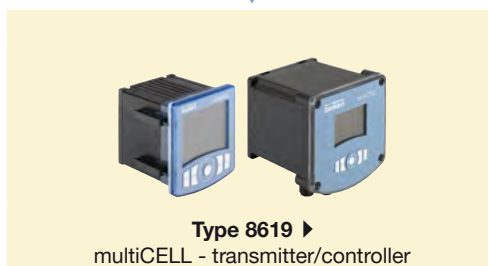
- When a pH probe is immersed into the solution a difference in potential is formed due to ions (H⁺) between the glass membrane and the solution. This difference in potential measured in relation to a reference electrode is directly proportional to the pH value (59.16 mV per pH unit at 25 °C).
The pH meter can be calibrated in 1-point (Offset at pH 7) or in 2-points (Offset at pH 7 and Span at pH 4 or pH 10).
- When a redox probe is immersed into the solution an ion exchange occurs between the oxidised and the reduced state of an electrolyte. The generated cell voltage is the oxidation-reduction potential value. The redox meter can only be calibrated in 1-point (Offset).

7. Product accessories

Description	Dimensions
<p>For an automatic temperature compensation a Pt1000 temperature probe/liquid earth rod will be needed if the probe does not integrate a temperature sensor.</p> <p>Detailed information on Pt1000 ordering can be found in chapter "9.5. Ordering chart accessories" on page 14).</p>	

8. Networking and combination with other Bürkert products

Example:



9. Ordering information

9.1. Bürkert eShop – Easy ordering and quick delivery



Bürkert eShop – Easy ordering and fast delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

[Order online now](#)

9.2. Recommendation regarding product selection

Complete pH/ORP sensor

A complete pH/ORP sensor consists of a pH or ORP probe Type 8203, a Pt1000/liquid earth rod (option, if not integrated in the pH probe), a probes holder Type 8200 with seals, a pH/ORP shielded cable, a Pt1000/liquid earth rod shielded cable (option, if needed).

See **data sheet Type 8200** ► for more information.

Different components must be ordered in order to select a complete device. The following information is required:

- **Article no.** of the selected pH or ORP probe **Type 8203** (see chapter “9.4. Ordering chart” on page 13)
- **Article no.** of the desired probes holder **Type 8200** (see **data sheet Type 8200** ►)
- **Article no.** of the Pt1000/liquid earth rod, if needed (see chapter “9.5. Ordering chart accessories” on page 14)
- **Article no.** of the pH/ORP shielded cable (see chapter “9.5. Ordering chart accessories” on page 14)
- **Article no.** of the Pt1000/liquid earth rod shielded cable, if needed (see chapter “9.5. Ordering chart accessories” on page 14)

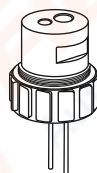
pH or ORP probes



Pt1000/
liquid earth rod



Probe Holder Type 8200
(example: with G 2" process connection)



Cable for pH-
or ORP probe



Cable for Pt1000/
liquid earth rod



For connection to Type 8619

Complete pH/ORP meter

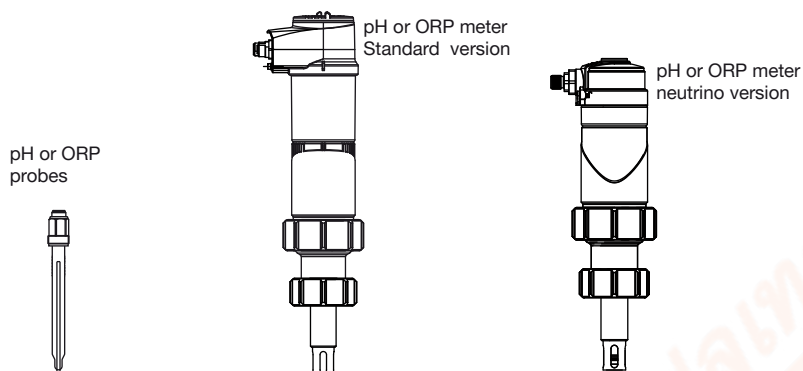
A complete pH/ORP meter consists of a replaceable standard 120 mm pH or ORP probe Type 8203 and a pH or ORP meter Type 8202.

See **data sheet Type 8202** ► for more information.

Different components must be ordered in order to select a complete device. The following information is required:

The following information is necessary for the selection of a complete device:

- **Article no.** of the selected pH or ORP probe **Type 8203** (see chapter “9.4. Ordering chart” on page 13)
- **Article no.** of the selected pH/ORP meter **Type 8202** (see **data sheet Type 8202** ►)



9.3. Bürkert product filter















Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.







[Try out our product filter](#)

9.4. Ordering chart

pH probes

Probe	Measuring range	Fluid temperature	Fluid pressure	Fluid minimum conductivity	Article no.
	[pH]	[°C]	[bar]	[µS/cm]	
PLASTRODE pH 120 mm 	0...14	-10...+40	0...6	50	560377 
FLATRODE pH 120 mm 		0...+80	0...6	50	561025 
LOGOTRODE pH 120 mm 		-10...+60	0...6	2	427114 
UNITRODE PLUS pH 120 mm 		0...+130	0...16	2	560376 
CERATRODE pH 120 mm 		0...+130	0...16	50	418319 
FERMTRODE pH 120 mm 		0...140	0...6	100	561727 

ORP probes

Probe	Measuring range	Fluid temperature	Fluid pressure	Fluid minimum conductivity	Article no.
	[mV]	[°C]	[bar]	[µS/cm]	
FLATRODE ORP 120 mm 	-2000...+2000	0...+80	0...6	50	561027 
LOGOTRODE ORP 120 mm 		-10...+60	0...6	2	560379 
UNITRODE PLUS ORP 120 mm 		0...+130	0...16	2	560378 

9.5. Ordering chart accessories

Temperature probes

Description	Article no.
Pt1000/liquid earth rod - in stainless steel 1.4571	427023
Pt1000/liquid earth rod - in titanium	560317

Cables for probes

Description	Length	Article no.
pH/ORP coaxial cable with standard probe plug for connection between Type 8619 transmitter and pH/ORP probe mounting into armatures Type 8200	3 m	561904
pH/ORP coaxial cable with standard probe plug for connection between Type 8619 transmitter and pH/ORP probe mounting into armatures or immersion fitting Type 8200	5 m	561905
	10 m	561906
pH/ORP cable with VarioPin (VP 6.0) probe plug for connection between Type 8619 transmitter and pH/ORP probe mounting into armatures Type 8200	3 m	554855
	5 m	554856
	10 m	554857
Pt1000/liquid earth rod 4-wire cable with M8 connector for connection between Type 8619 transmitter and Pt1000/liquid earth rod mounting into armatures Type 8200	2 m	427110
	3 m	561907
	5 m	427113
	10 m	554822
Pt1000/liquid earth rod 4-wire cable with plug-in connector for connection between Type 8619 transmitter and Pt1000/liquid earth rod mounting into the immersion fitting Type 8200	5 m	562627
	10 m	562628

Other accessories

Description	Article no.
Storage solution for probe (KCl 3M), 500 ml	418557
Cleaning solution set for probe, 3 x 500 ml	560949
Buffer solution, 500 ml, pH = 4.01 ^{1.)}	418540
Buffer solution, 500 ml, pH = 7.00 ^{1.)}	418541
Buffer solution, 500 ml, pH = 10.01 ^{1.)}	418543
Buffer solution, 500 ml, ORP = 475 mV	418555
Factory 2-point pH calibration certificate	550673
Factory 1-point ORP calibration certificate	550674

1.) At 25°C certified and traceable to NIST and PTB