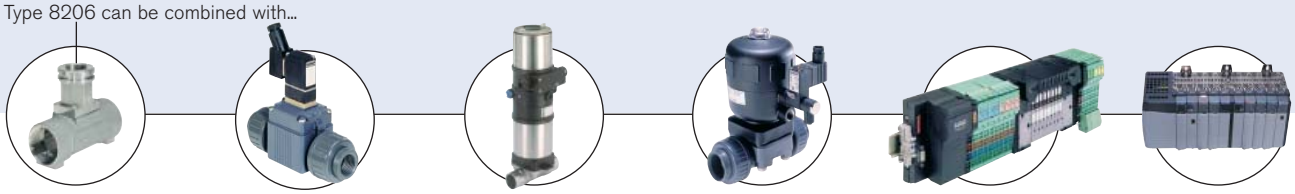
bürkert
FLUID CONTROL SYSTEMS

# Digital O.R.P. transmitter

- Compact, remote versions for DN15 to DN200
- Fully configurable O.R.P. transmitter for all kinds of O.R.P.-measurement tasks
- Large range of process connections with various fittings
- Multi language, menu-guided operation

Type 8206 can be combined with...



**Type S020**
INSERTION fitting

**Type 6642**
Solenoid valve

**Type 8802**
Process control valve

**Type 2030**
On/Off Diaphragm valve

**Type 8644**
Valve islands

**PLC**

The O.R.P. transmitter is available in different models:

- Compact O.R.P. transmitter with integrated O.R.P. probe
  It can be installed into pipes by using INSERTION Type S020 fittings or other suitable installation materials. It can also be installed in tanks or containers by using an industrial immersion fitting.

- Remote O.R.P. transmitter, for panel or wall mounting, to connect to an O.R.P. probe mounted into a Bürkert probe holder Type 8200 (max. 10 m) which can be installed into pipes by using INSERTION Type S020 fittings or using its own particular connection. It can also be installed in tanks or containers by using an industrial immersion fitting.

The simulation mode allows easy and fast verifying of the output signals prior to start up.

**Technical data** (common to the various versions)

| | |
|---|---|
| **General data** | |
| **Display** | 15x60 mm, 8-digit LCD, alphanumeric, 15 segments, 9 mm high |
| **Electrical connections** | shielded cable with 1.5 mm² max. cross-section |
| **Environment** | |
| **Relative humidity** | ≤ 95%, without condensation |
| **Standards, directives and approvals** | |
| **Standard and directives** | |
| EMC | EN 61000-6-3, EN 61000-6-2 |
| Security | EN 61010-1 |
| 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, type of probe and fluid).

| Type of fluid | Conditions |
|---|---|
| Fluid group 1, §1.3.a | DN25 only |
| Fluid group 2, §1.3.a | DN ≤ 100 |
| Fluid group 1, §1.3.b | DN ≤ 100 |
| Fluid group 2, §1.3.b | DN ≤ 100 |

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## System versions

**The compact version**

combines a O.R.P. 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 cable plug EN175301-803.

Bürkert designed fitting ensures simple direct installation of the Bürkert transmitter into pipes from DN15 to DN200.

**The panel-mounted version**

consists of an electronic module 8206 integrated in a front-cover. The associated separate O.R.P. sensor consists of a O.R.P. probe mounted into a Bürkert probe holder Type 8200.

The output signals are provided on a terminal strip.

**The wall-mounted version**

consists of an electronic module 8206 in an IP65 enclosure. The associated separate O.R.P. sensor consists of a O.R.P. probe mounted into a Bürkert probe holder Type 8200.

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

## Operation and display

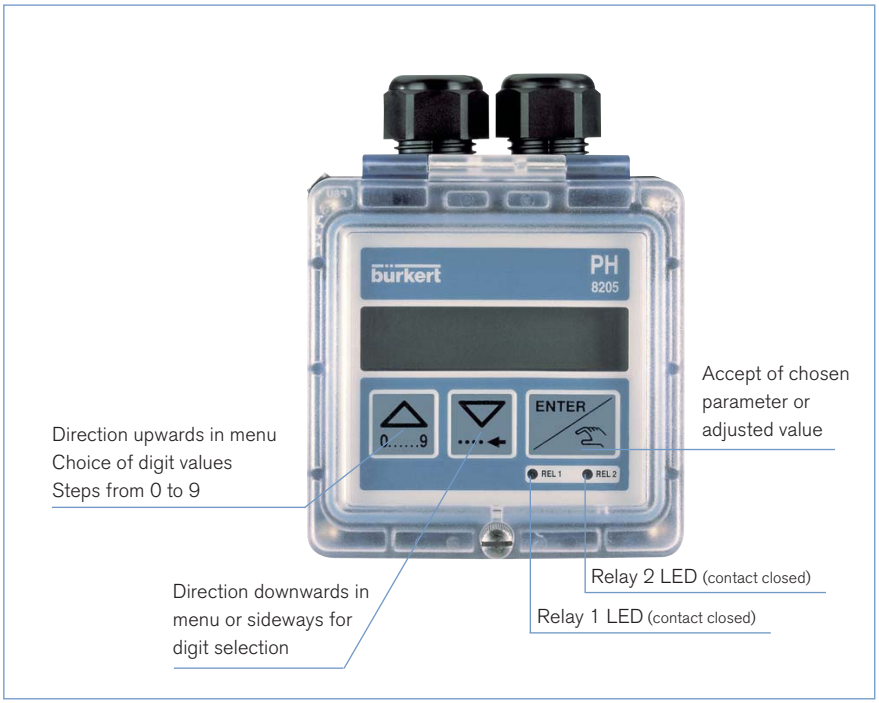
Customized adjustments, such as measuring range, engineering units can be carried out menu-supported on site via a multilingual display.

The operation is classified according to three levels:

**Main Menu**
- O.R.P.
- output current
- HOLD function
- O.R.P. probe calibration

**Calibration Menu**
- language
- measuring range 4-20 mA
- relay parameter definition
- filter selection

**Test Menu**
- Offset
- Span
- simulation of O.R.P.

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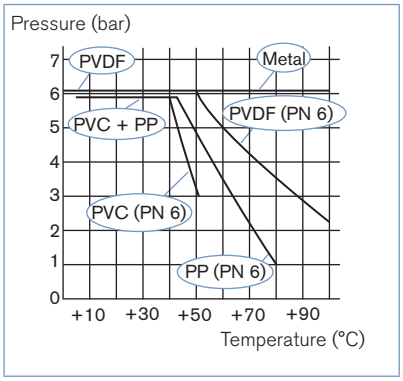
# Compact O.R.P. transmitter Type 8206

The sensor component consists of a replaceable combination O.R.P.-probe, screwed into the sensor holder.
The measured signal is conveyed to the transmitter via a coax plug.

The transmitter electronics converts the measured signal, displays the actual value and computes the output signals.

## Pressure / temperature chart




## Principle of operation

The most important part of the O.R.P. transmitter is the O.R.P. probe with its potential selective glass membrane. When the probe is immersed into the solution, an electron exchange occurs between the oxidised and the reduced state of electrolyte. The generated cell voltage is the redox potential, directly proportional to the O.R.P. value.

The transmitter functions in a two wire circuit (without relay) or three wire circuit (with relays - limit values freely adjustable) and requires a power supply of 12...30 V DC.

A 4...20 mA standard signal proportional to the O.R.P. is available as output signal.

| | |
|---|---|
| **General data** | |
| **Compatibility** | with fittings S020 (see corresponding data sheet) |
| **Materials** | |
| Housing, cover, lid, nut | PC |
| Front panel foil / Screws | Polyester / Stainless steel |
| Cable plug, glands | PA |
| Wetted parts materials | |
| Fitting | Brass, stainless steel 1.4404/316L, PVC, PP or PVDF |
| Sensor holder / Liquid earth rod | PVDF / Stainless steel 1.4571 (316Ti) |
| Seal | FKM (EPDM included in delivery) |
| **Probe** | UNITRODE PLUS O.R.P. |
| **Electrical connection** | Cable plug acc. to EN 175301-803 or cable glands M20x1.5 |
| **Complete device data (fitting + transmitter)** | |
| **Pipe diameter** | DN15 to DN200 |
| **O.R.P. measurement** | |
| Measuring range | -1575 mV...+1575 mV |
| Resolution | 1 mV |
| Accuracy | ±3 mV, after proper probe calibration |
| **Minimal range** | 50 mV (corresponding to 4-20 mA) |
| **Medium temperature max.** | with fitting in PVC: 0°C...+50°C *(32°F to 122°F)* - PP: 0°C...+80°C *(32°F to 176°F)* - PVDF, stainless steel, brass: 0°C...+100°C *(32°F to 212°F)* |
| **Medium pressure max.** | PN6 *(87PSI)* (see pressure / temperature chart) |
| **Electrical data** | |
| **Power supply** | 12...30 V DC, filtered and regulated |
| **Current consumption with sensor** | ≤ 80 mA - transmitter with relays<br>≤ 20 mA - transmitter without relay |
| **Output** | 4...20 mA programmable (3-wire with relays, 2-wire without relay), proportional to O.R.P.<br>max. loop impedance: 1000 Ω at 30 V DC;<br>750 Ω at 24 V DC; 250 Ω at 15 V DC |
| Relays (option) | 2 relays, freely configurable, 3 A, 230 V AC |
| **Environment** | |
| **Ambient temperature** | |
| Operation | 0°C to +60°C *(32°F to 140°F)* |
| Storage | 4°C to +30°C *(39.2°F to 86°F)* (limited through the probe) |
| **Standard** | |
| **Protection class** | IP65 with cable gland mounted and tightened or with obturator locked if not used. |
| **Specific technical data: UNITRODE PLUS O.R.P. probe** | |
| **Fluid** | - Clean (drinking water, aquarium, swimming pool...)<br>- Contamined (effluent rinse water, cooling tower water, brackish water, RO pretreatment, electroplating, cosmetics...)<br>- with low conductivity (pure and rainwater...)<br>- containing sulfides/proteins (tannery, animal breeding, effluent, foodstuffs, cosmetics, biotechnology...) |
| **Measuring range** | -2000 m...+2000 mV |
| **Minimal conductivity** | 2 µS/cm (200 kΩ.cm) |
| **Housing** | glass shaft |
| **Medium temperature** | with fitting in PVC: 0°C...+50°C *(32°F to 122°F)* - PP: 0°C...+80°C *(32°F to 176°F)* - PVDF: 0°C...+100°C *(32°F to 212°F)*, stainless steel, brass: 0°C...+130°C *(32°F to 266°F)* |
| **Medium pressure** | 0...6 bar *(0...87PSI)* |
| **Max. pressure at max. temperature** | 6 bar at 130°C *(87PSI at 266°F)* |
| **Diaphragm** | Two clogging free "Single pores™" |
| **Reference electrolyte** | polymer |

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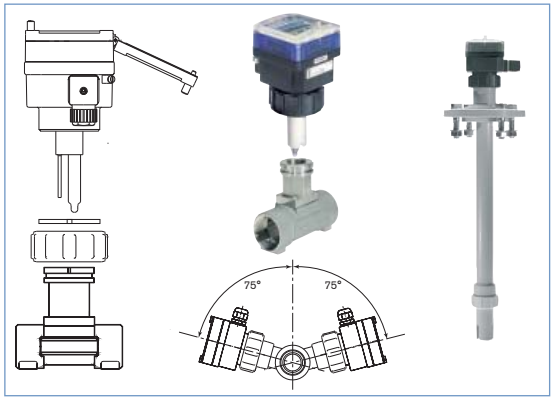
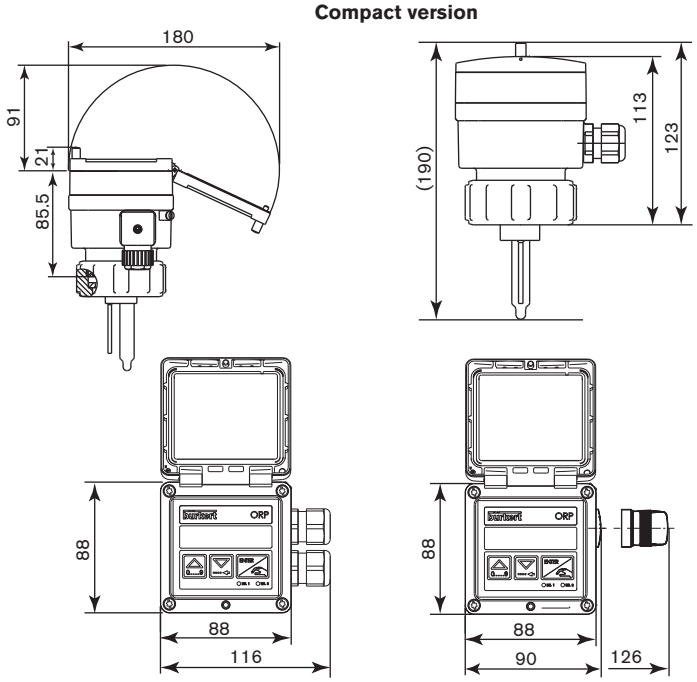
## Installation

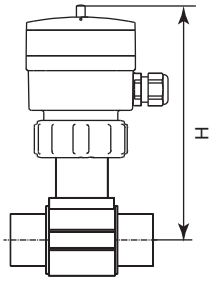
The 8206 O.R.P. transmitter has to be installed with a maximum angle of ±75 degrees from vertical into any Bürkert INSERTION fitting (S020).
Select and install the required fitting onto the pipe, according to specific requirements of the sensor and fitting material (temperature and pressure). Then, cautiously install the unit on the fitting, and tighten with the nut.
In order to get a reliable measurement, air bubbles must be avoided, and the mounting location must ensure that the probe is continuously and completely immersed in the flow stream. When kept in inventory or the system is not in use, ensure the probe is in fluid and wet at all times; this prevents the probe from drying out which will result in probe failure.
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]

### Compact version

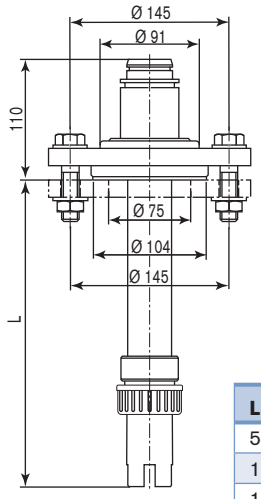


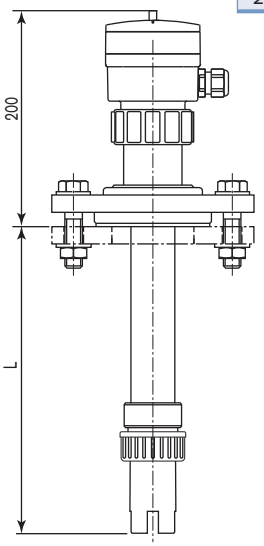

| Orifice | H | | |
|---|---|---|---|
| | T-Fitting | Plastic spigot* | St. St. spigot |
| 15 | 187 | | |
| 20 | 185 | | |
| 25 | 185 | | |
| 32 | 188 | | |
| 40 | 192 | | |
| 50 | 198 | | 193 |
| 65 | 198 | 206 | 199 |
| 80 | | 212 | 204 |
| 100 | | 219 | 214 |
| 110 | | | |
| 125 | | | 225 |
| 150 | | | 236 |
| 180 | | | |
| 200 | | | 257 |

* using fusion spigot (Item no. 418652, 418660 or 418644 in PP, PVDF or PE) for orifice DN65-DN100

### Immersion kit




| L |
|---|
| 500 |
| 1000 |
| 1500 |
| 2000 |

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## Remote O.R.P. transmitter Type 8206

**The remote O.R.P. transmitter** Type 8206 is available in 2 versions:

- Panel-mounted

- Wall-mounted

A separate O.R.P. sensor from Bürkert must be associated with this remote O.R.P. transmitter. This sensor consisting of a O.R.P. probe and a probe holder Type 8200 must be ordered separately.

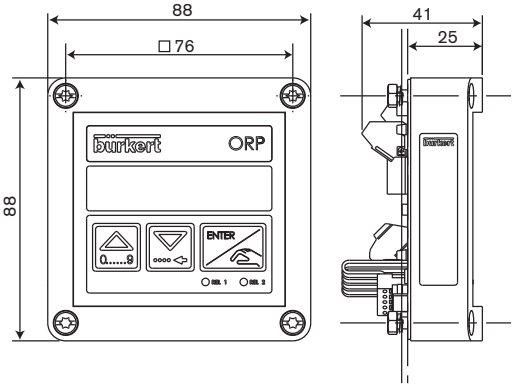
| | |
|---|---|
| **General data** | |
| **Compatibility** | Bürkert O.R.P. sensor |
| **Materials** | |
| Housing, cover | PC (panel-mounted version); ABS (wall-mounted version) |
| Front panel foil / Screws | Polyester / Stainless steel |
| Cable glands | PA |
| **Electrical connection** | Terminals (panel-mounted version) or terminals via 5 cable glands M16x1.5 (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 V AC) |
| **Current consumption with sensor** | ≤ 80 mA - transmitter with relays<br>≤ 20 mA - transmitter without relay |
| **Sensor input** | Analog signal from O.R.P. probe |
| **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 O.R.P.<br>max. loop impedance: 1000 Ω at 30 V DC;<br>750 Ω at 24 V DC; 250 Ω at 15 V DC |
| Relays (option) | 2 relays, freely configurable, 3A, 230 V AC |
| **Environment** | |
| **Ambient temperature** | 0°C to +60°C *(32°F to 140°F)* (Operation and storage) |
| **Standard** | |
| **Protection class** | IP65 (panel-mounted and wall-mounted version)<br>IP20 (panel-mounted version, inside the cabinet) |
| **Technical specifications 115/230 VAC** | |
| **Voltage available in the device** | 27 V DC regulated,<br>max. current: 250 mA<br>integrated protection: fuse 250 mA temporised<br>power: 6 VA |

## Installation

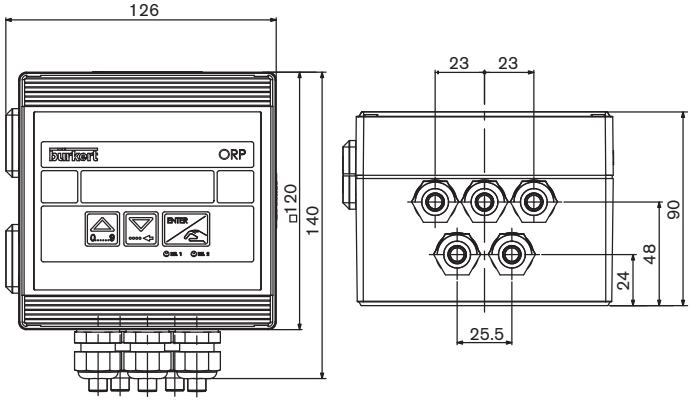
The remote 8206 O.R.P. transmitter has to be installed into a cabinet or on a wall. An O.R.P. sensor from Bürkert must be associated with this remote O.R.P. transmitter.
The O.R.P. sensor in its extended version can also be associated with an industrial immersion kit, which allows O.R.P. measurement into tanks or containers. The following lengths are available: 500, 1000, 1500, 2000 mm. Special lengths on request.
This sensor consisting of a O.R.P. probe and a probe holder must be ordered separately (see separate data sheet Type 8200).

## Dimensions [mm]

**Panel-mounted version**




**Wall-mounted version**

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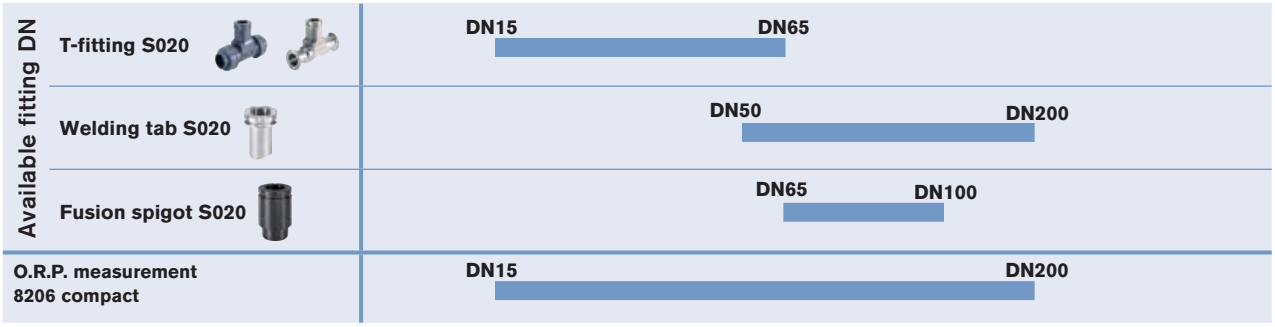
## Combining the compact O.R.P. transmitter Type 8206 with fittings Type S020




## Ordering chart for compact transmitter Type 8206

A complete compact O.R.P. transmitter Type 8206 consists of a compact O.R.P. transmitter Type 8206 and a Bürkert INSERTION fitting Type S020.

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

- **Item no.** of the desired O.R.P. transmitter **Type 8206** (see ordering chart, below)
- **Item no.** of the selected INSERTION fitting **Type S020** (DN15 - DN200 - see separate data sheet)

→ You have to order two components.

More info. When you click on the orange box "More info.", you will come to our website for the resp. product where you can download the data sheet.

**Compact O.R.P. transmitter Type 8206**

| Specifications | Voltage supply | Output | Relays | Sensor version | Electrical connection | Item no. |
|---|---|---|---|---|---|---|
| Compact | 12...30 V DC | 4...20 mA | None | UNITRODE PLUS O.R.P. | EN 175301-803 | 418 836 |
| | | | | | 2 cable glands | 418 850 |
| | | | 2 | UNITRODE PLUS O.R.P. | 2 cable glands | 418 837 |

FKM gasket in standard; 1 Kit including a black EPDM gasket for the sensor, an obturator for an M20x1.5 cable gland, a 2x6 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 EN 175301-803.

## Tank installation with a compact O.R.P. transmitter Type 8206.

A compact O.R.P. transmitter Type 8206 for tank installation is made up of a compact O.R.P. transmitter Type 8206 and an immersion kit which is consisting of an immersion fitting, an extension cable for immersion fitting and a fixing kit (flange DN65 with stainless steel screws).

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

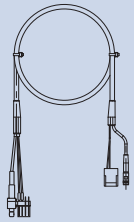
- **Item no.** of the desired compact O.R.P. transmitter **Type 8206** (see ordering chart on p. 6)
- **Item no.** of the immersion fitting (see accessories ordering chart on p. 8)
- **Item no.** of the extension cable for the immersion fitting (see accessories ordering chart on p. 8)
- **Item no.** of the fixing kit (flange DN65 with stainless steel screws - see accessories ordering chart on p. 8)

→ You have to order four components.

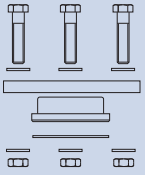
**Compact O.R.P. transmitter Type 8206**

**Immersion fitting**

**Extension cable**



**Fixing kit**



## Ordering chart for remote transmitter Type 8206

A complete remote O.R.P. transmitter Type 8206 consists of a remote O.R.P. transmitter Type 8206, a O.R.P. sensor and a Bürkert INSERTION fitting Type S020.

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

- **Item no.** of the desired O.R.P. transmitter **Type 8206** (wall-mounted or panel-mounted version - see ordering chart, below)
- **Item no.** of the desired O.R.P. sensor made of O.R.P. probe and probe holder **Type 8200** (see separate data sheet) More info.
- **Item no.** of the selected INSERTION fitting **Type S020** (DN15 - DN200 - see separate data sheet) More info.

→ You have to order three components.

**O.R.P. transmitter Type 8206 panel or wall-mounted version**

| Specifications | Voltage supply | Output | Relays | Sensor version | Electrical connection | Item no. |
|---|---|---|---|---|---|---|
| Panel-mounted | 12...30 V DC | 4...20 mA | None | 8200 | Terminal strip | 429 088 |
| | | | 2 | 8200 | Terminal strip | 430 754 |
| Wall-mounted | 12...30 V DC | 4...20 mA | None | 8200 | Cable glands | 430 755 |
| | | | 2 | 8200 | Cable glands | 430 756 |
| | 115/230 V AC | 4...20 mA | None | 8200 | Cable glands | 430 757 |
| | | | 2 | 8200 | Cable glands | 430 758 |

## Tank installation with a remote O.R.P. transmitter Type 8206.

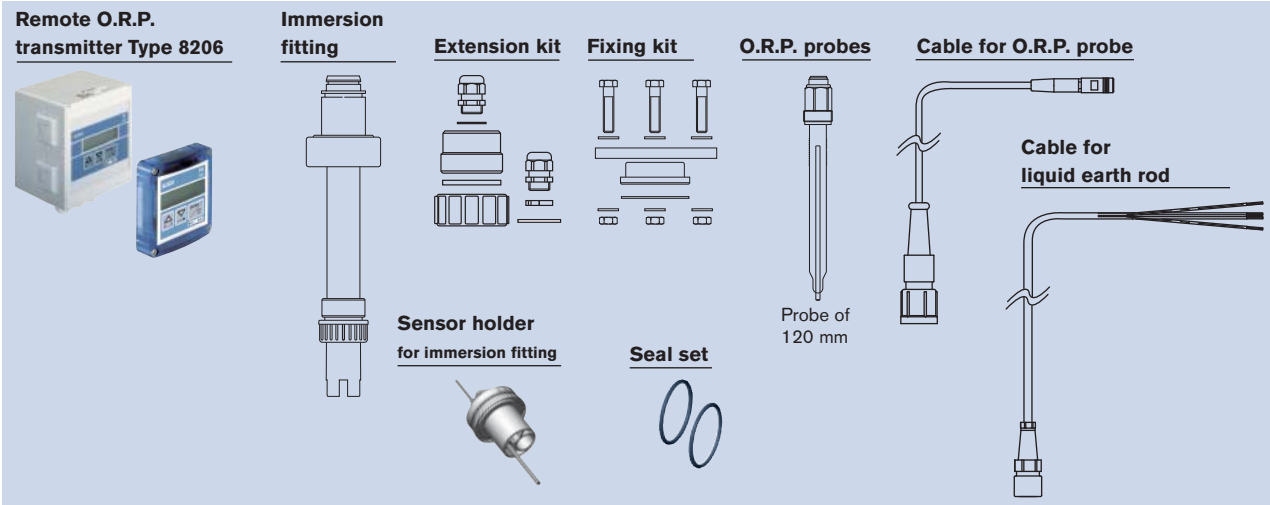
A remote O.R.P. transmitter Type 8206 for tank installation is made up of a remote O.R.P. transmitter Type 8206, an immersion kit which is consisting of an immersion fitting, an extension kit for immersion fitting, a fixing kit (flange DN65 with stainless steel screws), a sensor holder with liquid earth rod, an O.R.P. probe, an shielded cable for O.R.P, a shielded cable for liquid earth rod and a seal.

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

- **Item no.** of the desired remote O.R.P. transmitter **Type 8206** (wall-mounted or panel-mounted version - see ordering chart on p. 7)
- **Item no.** of the immersion fitting (see separate data sheet Type 8200)
- **Item no.** of the extension kit for the immersion fitting (see separate data sheet Type 8200)
- **Item no.** of the fixing kit (flange DN65 with stainless steel screws - see separate data sheet Type 8200)
- **Item no.** of the sensor holder with liquid earth rod (see separate data sheet Type 8200)
- **Item no.** of the 120 mm O.R.P. probe (see separate data sheet Type 8200)
- **Item no.** of the gasket set if EPDM desired (see separate data sheet Type 8200)
- **Item no.** of the shielded cable O.R.P (see separate data sheet Type 8200)
- **Item no.** of the shielded cable for liquid earth rod (see separate data sheet Type 8200)

→ You have to order nine components.

More info. When you click on the orange box "More info.", you will come to our website for the resp. product where you can download Type 8200 data sheet.

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## Ordering chart for accessories for O.R.P. transmitter Type 8206

| Description | Item no. |
|---|---|
| Set with 2 cable glands M20x1.5 + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20x1.5 + 2 multiway seals 2x6 mm | 449 755 |
| Set with 2 reductions M20x1.5 /NPT1/2" + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20x1.5 | 551 782 |
| Set with 1 stopper for unused cable gland M20x1.5 + 1 multiway seal 2x6 mm for cable gland + 1 black EPDM gasket for the sensor + 1 mounting instruction sheet | 551 775 |
| 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 |
| Ring | 619 205 |
| PC - nut | 619 204 |
| Set with 1 green FKM + 1 black EPDM gasket | 552 111 |
| Sensor holder with stainless steel liquid earth rod | 418 889 |
| Sensor holder with titanium liquid earth rod | 418 890 |
| O.R.P. probe 0...130°C, 0...6 bar, -2000...+2000 mV - UNITRODE PLUS O.R.P. 80 mm | 634 507 |
| Immersion fitting in PP, L=0.5 m | 419 567 |
| Immersion fitting in PP, L=1.0 m | 419 568 |
| Immersion fitting in PP, L=1.5 m | 419 569 |
| Immersion fitting in PP, L=2.0 m | 419 570 |
| Extension cable, long of 0.7 m (for immersion fitting, L=0.5 m) | 416 632 |
| Extension cable, long of 1.2 m (for immersion fitting, L=1.0 m) | 416 633 |
| Extension cable, long of 1.7 m (for immersion fitting, L=1.5 m) | 416 634 |
| Extension cable, long of 2.2 m (for immersion fitting, L=2.0 m) | 416 635 |
| Fixing kit - flange DN65 with stainless steel screws | 413 615 |
| Storage solution for electrodes (KCl 3M), 500 ml | 418 557 |
| Cleaning solution set for electrodes, 3 x 500 ml | 560 949 |
| Buffer solution, 500 ml, O.R.P. = 475 mV | 418 555 |
| Factory 1-point O.R.P. calibration certificate | 550 674 |

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## Interconnection possibilities with other Bürkert devices