









## pH or redox potential transmitter, ELEMENT design

- Compact measurement device for direct connection to the monitoring level (PLC) via analogue 4...20 mA signal or digital IO-Link or Bürkert system bus (büS)/CANopen communication
- Parameterisation, calibration and transfer of parameterisation data all possible thanks to a removable display/configuration module
- Fast and easy adaptation of the device between pH and ORP measurement
- Use of 120 mm standard PG 13.5 pH/ORP probes with S8 connection. (Type 8203 recommended)
- Simple one- or two-point calibration can be carried out directly on the unit; simulation of process values and diagnostic functions

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

### Can be combined with

	<b>Type 8203</b> pH- and ORP-probes	▶
	<b>Type 8611</b> eCONTROL - Universal controller	▶
	<b>Type 8619</b> multiCELL - Multi-channel and multi-function transmitter/controller	▶
	<b>Type 8693</b> Digital electro-pneumatic process controller for integrated mounting on process control valves	▶
	<b>Type 8802</b> ELEMENT continuous control valve systems - overview	▶
	<b>Type S022</b> Insertion adaptor/fitting for ELEMENT analytical measurement devices	▶

### Type description

The Bürkert transmitter Type 8202 is a compact device for the measurement of the pH value in liquids that are clean, dirty, or contain sulphide or protein or the measurement of the redox potential (ORP) value in clean or dirty liquids, liquids with sulphide or protein, and liquids that have a low conductivity.

Thus, due to the measurement device's design, Bürkert has simplified installation and maintenance work.

The device Type 8202 is available in two variants.

The first one, the so-called ELEMENT standard is proposed either with three adjustable outputs (two digital outputs and one analogue output) or with four adjustable outputs (two digital and two analogue) and can be equipped with a display. The display is only required for start-up, configuration (e.g. selection of pH/ORP measurement, measuring range, units, calibration, thresholds, etc) or as a process value display.

The second, the so-called ELEMENT neutrino is a 2-wire device, without display and with a 4...20 mA current output or with a digital communication mode that can communicate either in IO-Link or in büS (Bürkert system bus based on CANopen).

The device Type 8202 converts the measuring signal and computes the output signals, which are provided via one or two M12 plug connections for the ELEMENT standard variant as well as via one M12 plug connection or on a terminal strip via a cable gland for the ELEMENT neutrino variant. The device in the ELEMENT standard variant shows several values in different measuring units (if display is mounted).

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## 1. General technical data

### 1.1. About the device

The complete measurement device consists of a replaceable standard 120 mm pH or ORP probe, Type 8203, available in several models and the pH or ORP transmitter Type 8202.

See **data sheet Type 8203** ► for more information.

The transmitter is available in an ELEMENT standard variant or in an ELEMENT neutrino variant. The process connection of both variants is made via a G 1½" nut in PVC or PVDF.

The ELEMENT standard variant is available with up to two 4...20 mA analogue outputs or with up to two transistor outputs. The ELEMENT neutrino variant is available with a 4...20 mA analogue output or with digital communication.

The device with digital communication is distinguished by a status indicator on the cover, and is offered with a housing in metal (so-called metallic variant) or in plastic (so-called all-plastic variant for corrosive environmental conditions like in the electronic & semiconductor industry market).

The metallic variant is provided with a digital IO-Link and bÜS (Bürkert system bus, CANopen protocol) communication, the all-plastic variant with a digital IO-Link communication (bÜS available only for service activities such as configuration or calibration).

### 1.2. All variants

#### Note:

- The following data applies to all variants mentioned above.
- If the device is mounted in a humid environment or outside, then the maximum voltage allowed is **35 V DC** instead of 36 V DC.

#### Product properties

##### Material

Make sure the device materials are compatible with the fluid you are using.

Further information can be found in chapter **"3.1. Bürkert resistApp" on page 10**.

Further information on the materials can be found in chapter **"3.2. Material specifications" on page 10**.

##### Wetted parts

Probe holder	PVDF, stainless steel 1.4571 (316Ti)
Compatibility	<ul style="list-style-type: none"> <li>• Adaptor:               <ul style="list-style-type: none"> <li>– Any pipe which is fitted with Bürkert S022 adaptor, see <b>data sheet Type S022</b> ► for more information.</li> </ul> </li> <li>• Probe:               <ul style="list-style-type: none"> <li>– 120 mm Bürkert pH or ORP probe with S7/S8 connector, Type 8203 (recommended), see <b>data sheet Type 8203</b> ► for more information.</li> <li>– Any combined 120 mm pH or ORP probe, without temperature sensor, with PG13.5 head, S7/S8 connector</li> </ul> </li> </ul>
Pipe diameter	DN 25...DN 110 (DN 15...DN 20 under specific conditions)
Dimensions	Further information can be found in chapter <b>"4. Dimensions" on page 12</b> .
Temperature sensor	Pt1000 integrated within the holder
Temperature compensation	Automatic, reference temperature 25 °C (77 °F)

#### Performance data

4...20 mA output uncertainty	± 1 % of current range
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#### Electrical data

Power source (not supplied)	Limited power source according to UL/EN 62368-1 standards or limited energy circuit according to UL/EN 61010-1 paragraph 9.4
DC reverse polarity protection	Yes
Overvoltage protection	Yes

### Medium data

Fluid temperature <sup>1.)</sup>	Device with <ul style="list-style-type: none"> <li>• PVC union nut: 0...+50 °C (+32...+122 °F) restricted by the used probe</li> <li>• PVDF union nut (on request): -20...+130 °C (-4...+266 °F) restricted by the used probe or adaptor</li> </ul> Restriction with adaptor S022 in: <ul style="list-style-type: none"> <li>– PVC: 0...+50 °C (+32...+122 °F)</li> <li>– PP: 0...+80 °C (+32...+176 °F)</li> <li>– Metal: -20...+130 °C (-4...+266 °F)</li> </ul>
Fluid pressure <sup>1.)2.)</sup>	Max. PN 16 (232 PSI) Further information can be found in chapter <b>"5.1. Pressure temperature diagram"</b> on page 14 (depends on selected probe).

### Process/Pipe connection & communication

Process connection	G 1½" internal thread for use with Type S022 adaptor See <b>data sheet Type S022</b> ► for more information.
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### Approvals and conformities

#### Directives

CE directive	Further information on the CE directive can be found in chapter <b>"2.3. Standards"</b> on page 9.
Pressure equipment directive	Complying with article 4, paragraph 1 of 2014/68/EU directive Further information on the pressure equipment directive can be found in chapter <b>"2.4. Pressure Equipment Directive (PED)"</b> on page 9.
North America (USA/Canada)	UL Recognized for the USA and Canada

### Environment and installation

Ambient temperature	Operation and storage: -10...+60 °C (+14...+140 °F)
Relative air humidity	≤85 %, without condensation
Height above sea level	Max. 2000 m
Operating condition	Continuous
Equipment mobility	Fixed
Application range	Indoor and outdoor Protect the device against electromagnetic interference, ultraviolet rays and, when installed outdoors, against the effects of climatic conditions.
Installation category	Category I according to UL/EN 61010-1
Pollution degree	Degree 2 according to UL/EN 61010-1

1.) If the specific temperature limits for the probe used and the temperature limits as stated above are different, the narrower temperature limits are valid (see corresponding data sheet).

2.) Not evaluated by UL

### 1.3. ELEMENT standard variant



### Product properties

#### Material

Further information on the materials can be found in chapter **"3.2. Material specifications"** on page 10.

#### Non wetted parts

Cover	Polycarbonate (PC), transparent (opaque on request)
Housing	Stainless steel 1.4404 (316L), PPS
Screw	Stainless steel 1.4401 (316 (A4))
Grounding terminal and screw	Stainless steel 1.4301 (304 (A2))
Union nut	PVC or PVDF
Display/configuration module	PC
Navigation key	PBT
Seal	EPDM, silicone
Fixed connector holder	PPS CF30
Fixed connector	Nickel-plated brass

**Wetted parts**

Probe holder PVDF, stainless steel 1.4571 (316Ti)

**Measuring range**

pH measurement -2...16 pH or -580...+580 mV  
 ORP measurement -2000...+2000 mV  
 Temperature measurement -20...+130 °C (-4...266 °F)

**Product accessory**

Display/configuration module Grey dot matrix 128 x 64 with backlighting

**Performance data****pH measurement**

Measurement deviation  $\pm 0.02$  pH or 0.5 mV  
 Measuring range resolution 0.001 pH or 0.1 mV  
 Minimal scale 0.5 pH or 30 mV (i.e. 6.7...7.2 pH or -20...+10 mV corresponds to 4...20 mA current output)

**ORP measurement**

Measurement deviation  $\pm 3$  mV  
 Measuring range resolution 1 mV  
 Minimal scale 50 mV (i.e. 1550...600 mV corresponds to 4...20 mA current output)

**Temperature measurement**

Measurement deviation  $\pm 1$  °C  
 Measuring range resolution 0.1 °C  
 Minimal scale 10 °C (i.e. +10...+20 °C corresponds to 4...20 mA current output)

**Electrical data**

Operating voltage

- 3 outputs transmitter (2-wire) variant: 14...36 V DC, filtered and regulated
- 4 outputs transmitter (3-wire) variant: 12...36 V DC, filtered and regulated

Connection to main supply: permanent (through external SELV (Safety Extra Low Voltage) and LPS (Limited Power Source) power supply)

Current consumption

With sensor

- $\leq 1$  A (with transistors load)
- 3 outputs transmitter (2-wire) variant:  $\leq 25$  mA (at 14 V DC without transistors load, with current loop)
- 4 outputs transmitter (3-wire) variant:  $\leq 5$  mA (at 12 V DC without transistors load, without current loop)

**Output**

Digital output

Transistor:

- Adjustable as sourcing or sinking (respectively both as PNP or NPN), open collector
- Max. 700 mA
- 0.5 A max. per transistor if the 2 transistor outputs are wired
- NPN-output: 0.2...36 V DC
- PNP-output: Power supply
- Protected against overvoltage, polarity reversals and short circuit

## Analogue output

Current

- 4...20 mA adjustable as sourcing or sinking (in the same mode as transistor)
- Response time (10%...90%): 150 ms (standard)
- 1 current output (3 outputs transmitter (2-wire) variant)  
 Max. loop impedance: 1100  $\Omega$  at 36 V DC; 610  $\Omega$  at 24 V DC; 180  $\Omega$  at 14 V DC
- 2 current outputs (4 outputs transmitter (3-wire) variant)  
 Max. loop impedance: 1100  $\Omega$  at 36 V DC; 610  $\Omega$  at 24 V DC; 100  $\Omega$  at 12 V DC

## Voltage supply cable

The female M12 connector and/or the male M12 connector are not included in the delivery and must be ordered separately, see chapter [“11.5. Ordering chart accessories” on page 20](#)). For these connectors, use a shielded cable with:

- diameter: 3...6.5 mm
- cross section of wires: max. 0.75 mm<sup>2</sup>

### Process/Pipe connection & communication

Electrical connection	<ul style="list-style-type: none"> <li>3 outputs transmitter (2-wire) variant: 1 x 5-pin M12 male connector</li> <li>4 outputs transmitter (3-wire) variant: 1 x 5-pin M12 male and 1 x 5-pin M12 female connectors</li> </ul>
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### Approvals and conformities

Foods and beverages/Hygiene	FDA declaration of conformity
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### Environment and installation

Degree of protection <sup>1.)</sup> according to IEC/EN 60529	IP65, IP67 under the following simultaneous conditions: <ul style="list-style-type: none"> <li>device wired</li> <li>cover screwed tight</li> <li>M12 connector mounted and tightened</li> </ul>
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1.) Not evaluated by UL

## 1.4. ELEMENT neutrino variant



### Product properties

#### Material

Further information on the materials can be found in chapter **“3.2. Material specifications”** on page 10.

#### Non wetted parts

Cover	PPS
Light guide	Digital communication variant: PC, PMMA and NBR88
Housing	<ul style="list-style-type: none"> <li>Analogue output variant: stainless steel 1.4404 (316L), PPS</li> <li>Digital communication variant:               <ul style="list-style-type: none"> <li>stainless steel 1.4404 (316L), PPS (metallic variant)</li> <li>PPS (all-plastic variant)</li> </ul> </li> </ul>
Grounding terminal	Nickel-plated brass (only metallic variant)
Union nut	PVC (PVDF on request)
Seal	EPDM
Fixed connector	<ul style="list-style-type: none"> <li>Analogue output variant: PA66</li> <li>Digital communication variant:               <ul style="list-style-type: none"> <li>nickel-plated brass (metallic variant)</li> <li>PA66 (all-plastic variant)</li> </ul> </li> </ul>
Cable gland	Analogue output variant: PA66

#### Measuring range

pH measurement	0...14 pH
ORP measurement	-2000...+2000 mV
Temperature measurement	-20...+130 °C (-4...266 °F)

### Performance data

#### pH measurement

Measurement deviation	± 0.05 pH
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#### ORP measurement

Measurement deviation	± 3 mV
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#### Temperature measurement

Measurement deviation	± 1 °C
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### Electrical data

Operating voltage	12...36 V DC, filtered and regulated Connection to main supply: permanent (through external SELV (Safety Extra Low Voltage) and LPS (Limited Power Source) power supply)
Current consumption	4...20 mA output variant: ≤ 25 mA (with sensor)
Power consumption	≤ 1 W

## Input/Output

Digital input/output	<p>Digital communication variants: through the communication interface</p> <ul style="list-style-type: none"> <li>• Bürkert system bus (bÜS)/CANopen</li> <li>• IO-Link</li> </ul>
Analogue output	<p>Analogue output variant:</p> <ul style="list-style-type: none"> <li>• current of 4...20 mA</li> <li>• response time (10 %...90 %): 5 s (standard)</li> <li>• max. loop impedance: 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 100 Ω at 12 V DC</li> </ul>
Voltage supply cable	<ul style="list-style-type: none"> <li>• For connector: The female M12 connector is not included in the delivery and must be ordered separately, see chapter "11.5. Ordering chart accessories" on page 20). For this connector, use according to the output of the device:           <ul style="list-style-type: none"> <li>– a shielded cable with:               <ul style="list-style-type: none"> <li>– diameter of 3...6.5 mm</li> <li>– cross section of wires: max. 0.75 mm<sup>2</sup></li> </ul> </li> <li>– a Canopen standard cable for Bürkert system bus (bÜS)/CANopen communication, max. 50 m length</li> <li>– a standardised industrial cable (unshielded 3- or 4-wire cable) for IO-Link communication, max. 20 m length</li> </ul> </li> <li>• For terminal strip via a cable gland (measuring data acc. to CEI 664-1/VDE 0110 (4.97 use a cable):           <ul style="list-style-type: none"> <li>– solid H05(07) V-U: 0.25...1.5 mm<sup>2</sup></li> <li>– flexible H05(07) V-K: 0.25...1.5 mm<sup>2</sup></li> <li>– with wire end ferrule: 0.25...1.5 mm<sup>2</sup></li> <li>– with plastic collar ferrule: 0.25...0.75 mm<sup>2</sup></li> <li>– diameter: 4...8 mm</li> </ul> </li> </ul>

## Process/Pipe connection & communication

Electrical connection	<ul style="list-style-type: none"> <li>• 1 x 5-pin free positionable M12 male connector or</li> <li>• Terminal strip via 1x cable gland M16 x 1.5</li> </ul>
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## Data transfer

### Digital communication: bÜS

External communication	Through bÜS (Bürkert system bus, CANopen protocol)
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### Digital communication: IO-Link

Communication interface	IO-Link device V1.1.2
SIO mode	No
Baud rate (data transfer rate)	COM 3 (230.4 kBaud)
Type of ports	Class A
Cycle time	Min. 5 ms
Process data width	48 Input bits, 8 Output bits
IO-Link data storage	Yes
Block configuration	No
IO device description (IODD)	The device description is available in the operating instructions which can be found on our website under the "User Manuals" heading for <b>Type 8202</b> ►. Alternatively, see "Device Description Files" under the "Software" heading for <b>Type 8202</b> ► or at <a href="https://ioddfinder.io-link.com">https://ioddfinder.io-link.com</a>

## Environment and installation

Degree of protection	<ul style="list-style-type: none"> <li>• IP65<sup>1.)</sup>, IP67<sup>1.)</sup> (according to IEC/EN 60529)</li> <li>• NEMA 4X and NEMA 6P (according to NEMA250) (with device installed on the fitting)</li> <li>• UL50E</li> </ul> <p>under the following simultaneous conditions:</p> <ul style="list-style-type: none"> <li>• device wired</li> <li>• cover screwed tight</li> <li>• M12 connector or glands mounted and tightened</li> <li>• with blind plug on unused cable glands</li> </ul>
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1.) Not evaluated by UL



## 2. Approvals and conformities

### 2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available variants of the device can be supplied with the below mentioned approvals or conformities.

### 2.2. Conformity

In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

### 2.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

### 2.4. Pressure Equipment Directive (PED)

The device conforms to article 4, paragraph 1 of the Pressure Equipment Directive (PED) 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 (in bar), 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 (in bar), 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 $PS \leq 1000 \text{ bar}$

### 2.5. North America (USA/Canada)

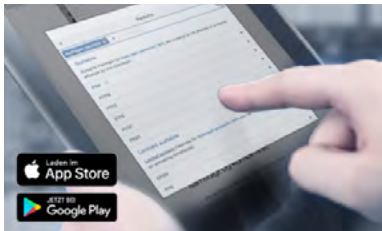
Approval	Description
	<b>Optional: UL Recognized for the USA and Canada</b> The products are UL Recognized for the USA and Canada according to: <ul style="list-style-type: none"> <li>• UL 61010-1</li> <li>• CAN/CSA-C22.2 No. 61010-1</li> </ul>

2.6. Foods and beverages/Hygiene

Conformity	Description
FDA	<b>FDA – Code of Federal Regulations (valid for the variable code PL02, PL03)</b> The devices are compliant with the Code of Federal Regulations published by the FDA (Food and Drug Administration, USA) according to the manufacturer’s declaration.

3. Materials

3.1. Bürkert resistApp



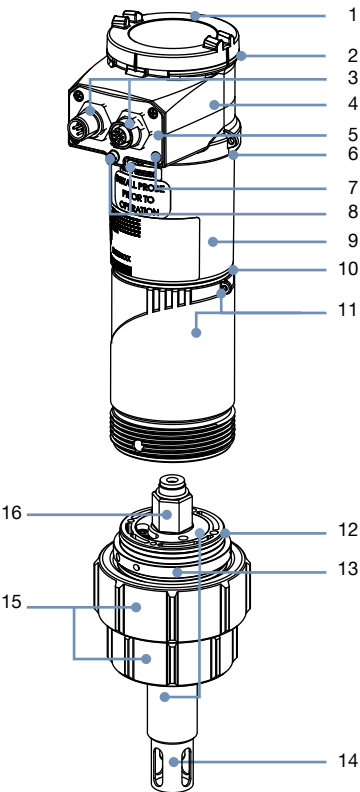
Bürkert resistApp – Chemical resistance chart

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](#)

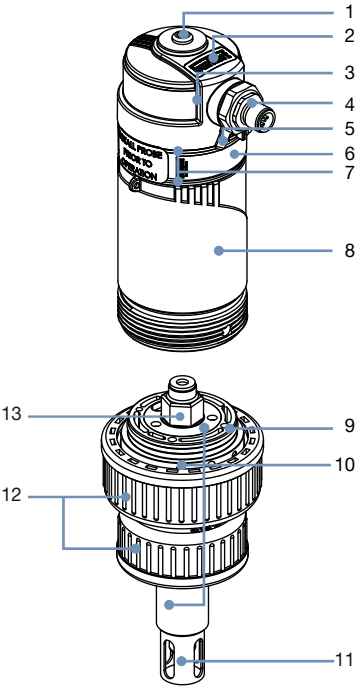
3.2. Material specifications

ELEMENT standard variant



No.	Element	Material
1	Cover	PC
2	Seal	Silicone
3	M12 fixed connector (female/ male)	Nickel-plated brass
4	Housing (top)	PPS
5	Connector holder	PPS CF30
6	Seal	EPDM
7	Screws	Stainless steel 1.4301 (304 (A2))
8	Grounding terminal and screw	Stainless steel 1.4401 (316 (A4))
9	Housing (body)	Stainless steel 1.4404 (316L)
10	Seal	EPDM
11	Housing (base)	PPS
12	Seal	EPDM
13	Probe holder	PVDF
14	Probe holder	Stainless steel 1.4571 (316 Ti)
15	Union nuts	PVC or PVDF
16	Probe	According to the used probe See <b>data sheet Type 8203</b> ► or specific data sheet

ELEMENT neutrino variant



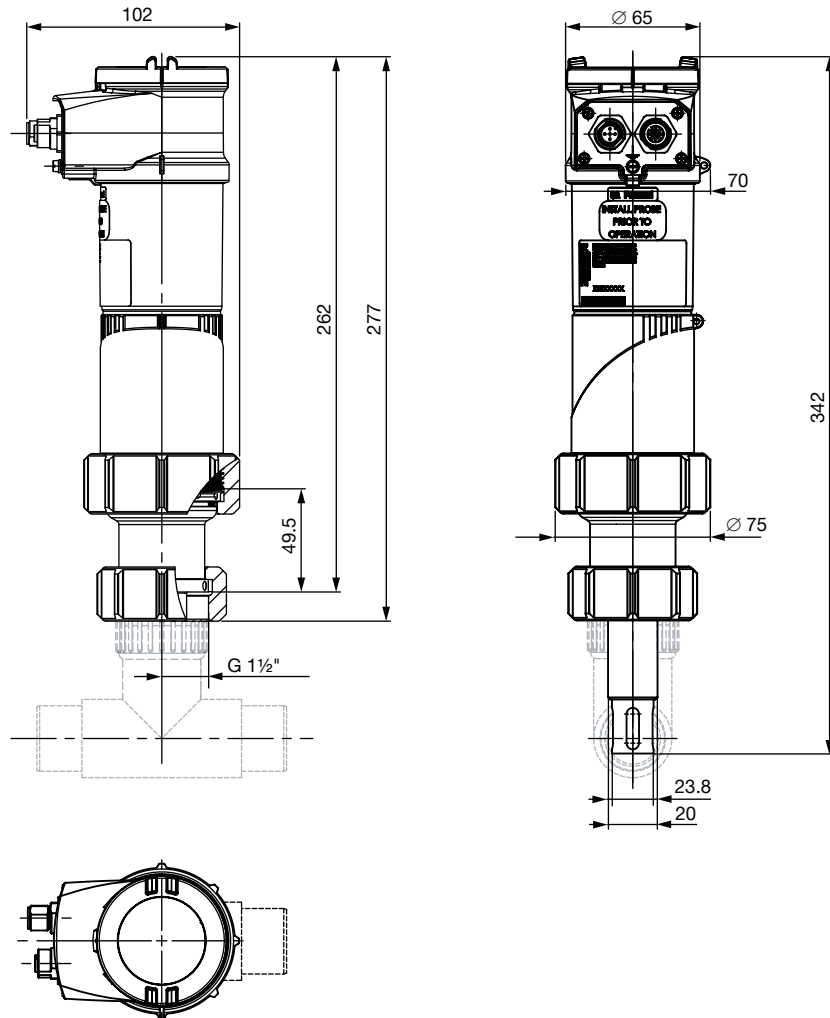
No.	Element	Material
1	Light guide	PC, PMMA and NBR88 (only digital communication variant)
2	Cover	PPS
3	Seal	EPDM
4	M12 male fixed connector	<ul style="list-style-type: none"><li>• PA66 (4...20 mA output variant and digital communication all-plastic variant)</li><li>• Nickel-plated brass (digital communication metallic variant)</li></ul>
	or cable gland	PA66 (only 4...20 mA output variant)
5	Grounding terminal	Nickel-plated brass (only digital communication metallic variant)
6	Housing (top)	<ul style="list-style-type: none"><li>• PPS (digital communication all-plastic variant)</li><li>• Stainless steel 1.4404 (316 L), PPS (4...20 mA output variant and digital communication metallic variant)</li></ul>
7	Seal	EPDM
8	Housing (body)	PPS
9	Seal	EPDM
10	Probe holder	PVDF
11	Probe holder	Stainless steel 1.4571 (316 Ti)
12	Union nut	PVC (or PVDF on request)
13	Probe	According to the used probe See <b>data sheet Type 8203</b> ► or specific data sheet

## 4. Dimensions

### 4.1. ELEMENT standard variant

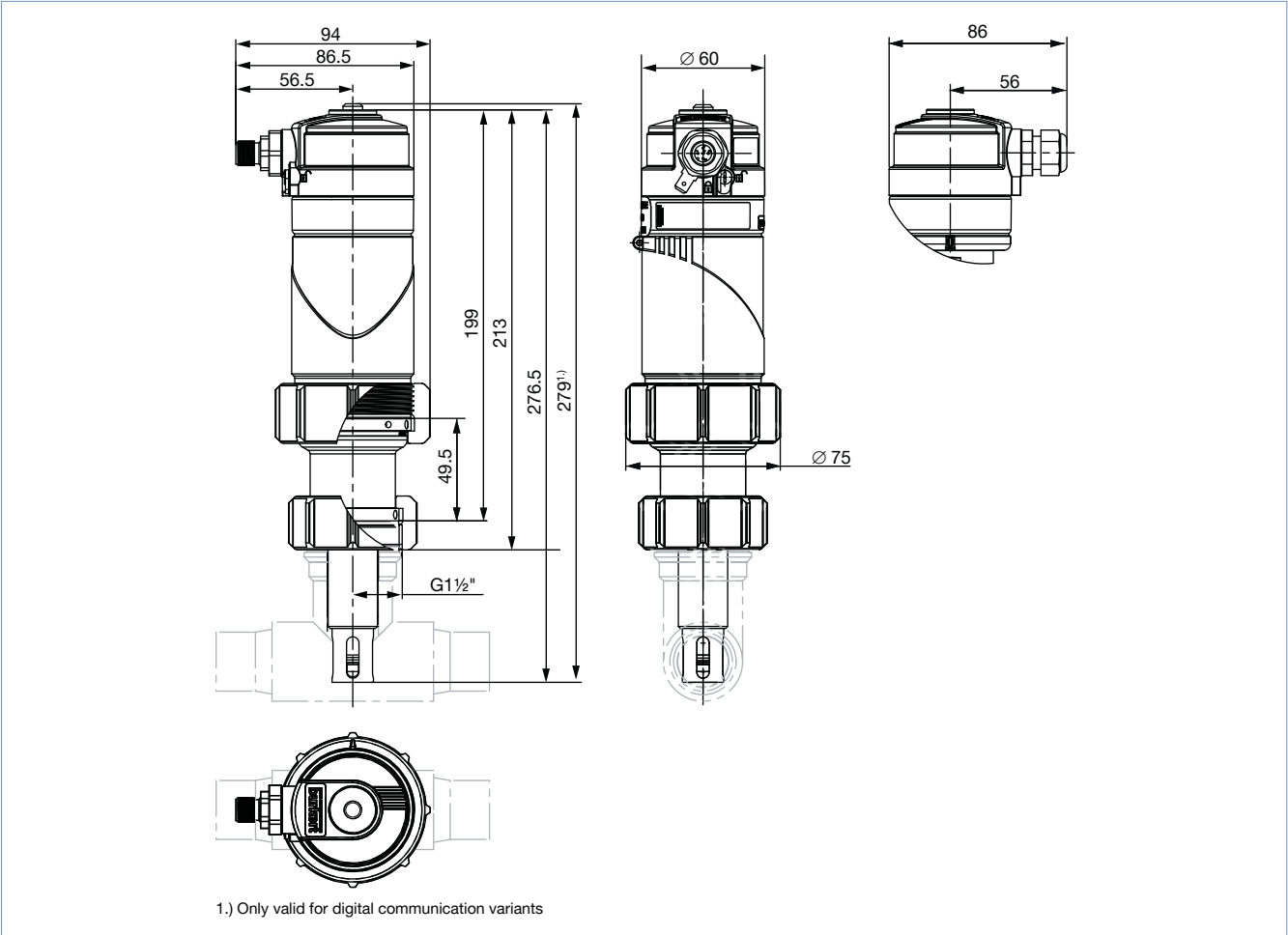
**Note:**

Dimensions in mm, unless otherwise stated



4.2. ELEMENT neutrino variant

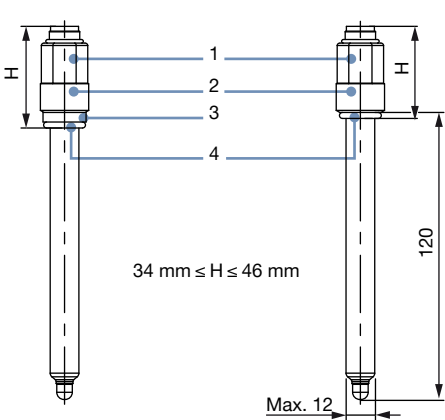
**Note:**  
Dimensions in mm, unless otherwise stated



4.3. Probe

**Note:**

- Dimensions in mm, unless otherwise stated
- It is recommended to use Bürkert Type 8203 pH or ORP probes. The probes are not included in the scope of delivery. The following dimensions are for information. See **data sheet Type 8203** ► for more information.

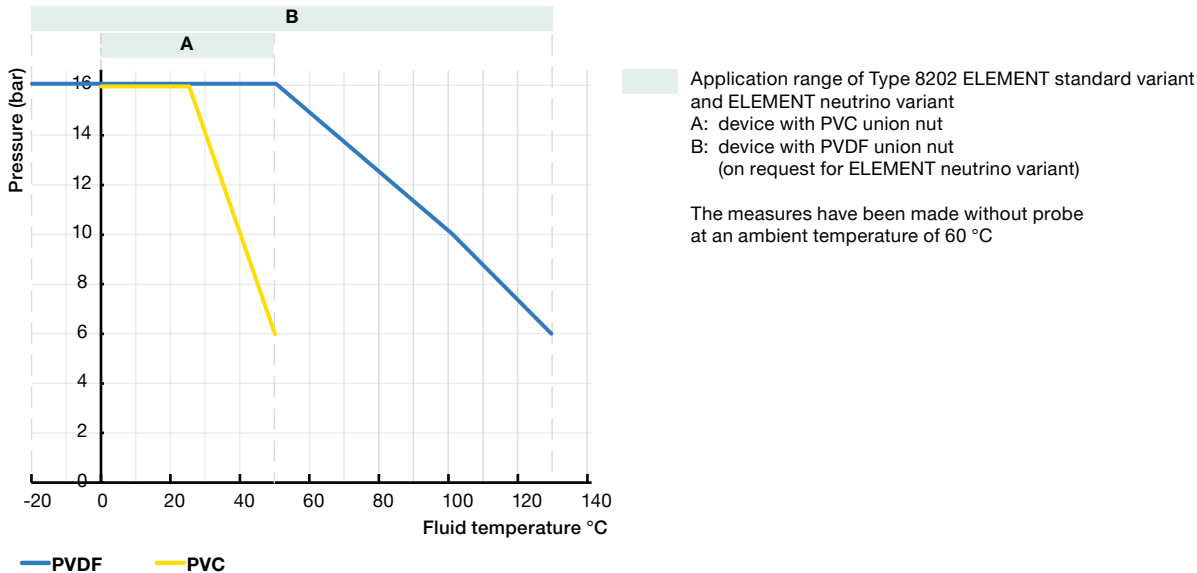


No.	Element
1	Probe head
2	PG 13.5
3	Compression washer (its height has to be adjusted if the H dimension on the probe is not between 34 and 46 mm.)
4	Seal

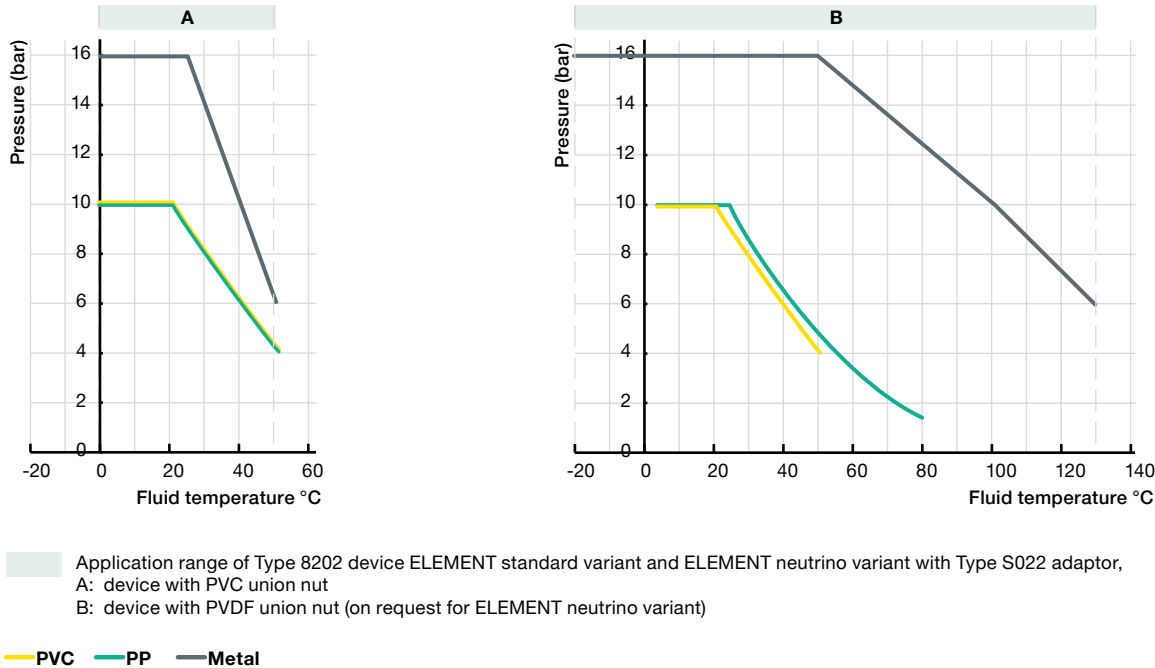
5. Performance specifications

5.1. Pressure temperature diagram

ELEMENT standard and ELEMENT neutrino variants



ELEMENT standard and ELEMENT neutrino variants installed with an S022 adaptor



## 6. Product installation

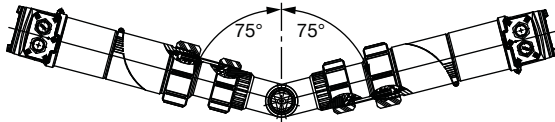
### 6.1. Installation notes

#### Note:

If a suitable 120 mm pH probe or 120 mm ORP probe from a manufacturer other than Bürkert is used, the manufacturer's specific pipeline installation instructions for this probe must be observed.

The ELEMENT pH/ORP transmitter Type 8202 can be installed into any adaptor with G 1½" external threaded sensor connection by just fixing the union nut.

Select the required adaptor, taking in account the specific requirements of the sensor and adapter material (temperature and pressure), and install it in a vertical position or with an angle of  $\pm 75^\circ$  max. relative to the vertical on a horizontal pipe.

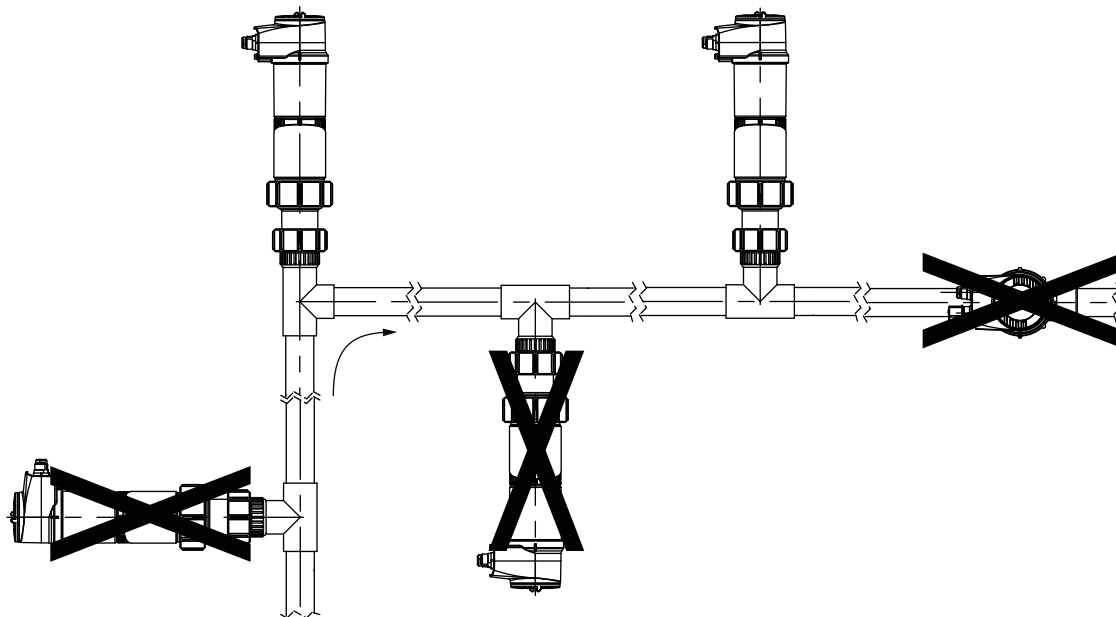


For mounting on a tank or direct mounting on a pipe (DN 100 or DN 110), an adaptor with a G 1½" external threaded sensor connection must be used.

See **data sheet Type S022** ▶ for more information about adaptor.

After having connected the pH or redox probe to the Type 8202 transmitter and having calibrated the unit, carefully install the unit on the fitting. In order to obtain reliable measurements air bubbles must be avoided.

**Please ensure that the mounting location provides a continuous and complete immersion of the probe in the flow stream.**



The probe must be continuously 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.

## 7. Product operation

### 7.1. Measuring principle

The Type 8202 ELEMENT device can be used as a pH or an ORP meter according to the Type 8203 probe variant mounted into the holder. The Type 8203 pH or redox probe is a glass membrane with variable selectivity according to the pH or the redox, which must be calibrated with a buffer solution before the installation of the device into the pipe.

- 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 sensor 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 in a solution, an exchange of electrons occurs based on the oxidizing and reducing effects of an electrolyte. The resulting voltage is the oxidation reduction potential. The ORP sensor can only be calibrated in 1-point (Offset).

The meter is either a two wire device (3 outputs transmitter ELEMENT standard variant or ELEMENT neutrino variant) or a three wire device (4 outputs transmitter ELEMENT standard variant) which requires a power supply of 14 V DC (3 outputs transmitter ELEMENT standard variant) or 12 V DC (4 outputs transmitter ELEMENT standard variant or ELEMENT neutrino variant) up to 36 V DC and delivers a 4...20 mA standard signal proportional to the pH or to the redox potential as output signal.

The electrical connection is provided via one or two M12 connectors for the ELEMENT standard variant or via one free positionable M12 male connector or terminal strip through cable gland for the ELEMENT neutrino variant.

## 8. Product design and assembly

### 8.1. Product assembly

#### Note:

The Type 8202 device can be installed with the help of the Type S022 adaptor or fitting with G 1½" external threaded sensor connection.

The pH/ORP meter consists of a replaceable 120 mm pH or ORP probe, Type 8203, which is screwed in a probe holder with integrated Pt1000 temperature sensor. This ensemble is plugged-in and screwed with a union nut to an enclosure with cover containing the electronic module.

See **data sheet Type S022** ▶ and **data sheet Type 8203** ▶ for more information.

A removable display/configuration module complements the ELEMENT standard transmitter variant. The pH/ORP meter can operate independently of this module, but it will be required for configuration of the device (i.e. set parameters, restore default parameters, configure information to be displayed, enter access codes, adjust 4...20 mA output(s) ...) and also for visualizing continuously the measured and processed data.

Removable display/configuration module  
(included or separately available)

pH/ORP transmitter  
ELEMENT standard variant  
Type 8202

pH/ORP probes  
Type 8203

Insertion adaptor Type S022

pH/ORP transmitter  
ELEMENT neutrino variant  
Type 8202

Complete device  
ELEMENT standard variant  
for pH or ORP measurement

Fitting  
(example only)

Complete device  
ELEMENT neutrino variant  
for pH or ORP measurement

Fitting  
(example only)





9. Product accessories

**Note:**

To configure a device with a digital communication, use the USB-büS interface Type 8923 and the Bürkert Communicator software Type 8920.

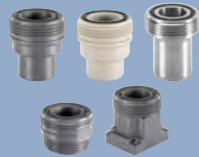



See **Software manual Type 8920** ▶ for more information.

Accessories	No.	Description
<b>USB-büS interface set 1</b> 	1	Quick-Start
	2	Power supply: 100...240 V AC/ 24 V DC 1 A and adaptors for power supply worldwide use
	3	büS terminating resistor on büS Y-splitter
	4	5-pin M12 male connector wired on free end cable, cable length: 0.2 m
	5	büS connection cable with 5-pin M12 male connector, micro USB B plug, cable length: 0.3 m
	6	büS adaptor with 5-pin M12 male connector, A-coded to 5-pin M12 male connector, A-coded
	7	büS stick (USB to büS/CANopen adaptor)
	8	büS service cable with 5-pin M12 female connector, mini USB plug and circular female connector for power supply, cable length: 0.7 m
	9	Magnetic key
	10	CD - Communicator (30-day license without registration, update and licensing over Bürkert home page)
<b>USB-büS interface set 2</b> 	5	
	7	
	8	

10. Networking and combination with other Bürkert products

**Example:**



			
<b>Type S022 ▶</b> Insertion adaptor/fitting for ELEMENT analytical measurement devices	<b>Type 8802 ▶</b> ELEMENT continuous control valve systems	<b>Type 8611 ▶</b> eCONTROL - Universal controller	<b>Type 8619 ▶</b> multiCELL - transmitter/controller

## 11. Ordering information

### 11.1. Bürkert eShop



#### Bürkert eShop – Easy ordering and quick 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](#)

### 11.2. Recommendation regarding product selection

#### Note:

When only ordering devices without a display/configuration module, make sure that you have a display/configuration module at least for parameterising the device. Otherwise you must also order one (see chapter “[11.5. Ordering chart accessories](#)” on page 20).

A complete pH or ORP measurement equipment consists of a pH or ORP transmitter Type 8202 (ELEMENT standard or ELEMENT neutrino variant), a removable display/configuration module (only for ELEMENT standard variant), a 8203 pH or ORP probe and a Bürkert Insertion adaptor Type S022.

See [data sheet Type 8203](#) ► and [data sheet Type S022](#) ► for more information.

Three or four different components must be ordered in order to select a complete device. The following information is required:

- **Article no.** of the desired pH or ORP transmitter Type 8202 in the ELEMENT standard variant without display/configuration module or in the ELEMENT neutrino variant (see chapter “[11.4. Ordering chart](#)” on page 19)
- **Article no.** of the removable display/configuration module, if necessary (see chapter “[11.5. Ordering chart accessories](#)” on page 20)
- **Article no.** of the desired 8203 pH or ORP probe (see [data sheet Type 8203](#) ►)
- **Article no.** of the selected S022 Insertion adaptor with G 1½" external threaded sensor connection (see [data sheet Type S022](#) ►)

### 11.3. 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](#)

## 11.4. Ordering chart

### ELEMENT standard variant








#### Note:

- All settings as well as the digital output have to be configured with the display/configuration module (must be ordered separately).
- The following article nos. have a transparent cover as standard and an integrated Pt1000.

Operating voltage	Probe	Output	Nut material	UL approval	Electrical connection <sup>1.)</sup>	Article no.
14...36 V DC	None	3 outputs: 2 x transistors NPN/PNP + 1 x 4...20 mA (2 wires)	PVC	–	5-pin M12 male connector	559630 
				UL Recognized		559634 
			PVDF	–		559632 
				UL Recognized		559636 
12...36 V DC	None	4 outputs: 2 x transistors NPN/PNP + 2 x 4...20 mA (3 wires)	PVC	–	5-pin M12 male and 5-pin M12 female connectors	559631 
				UL Recognized		559635 
			PVDF	–		559633 
				UL Recognized		559637 

1.) Must be ordered separately (see chapter "11.5. Ordering chart accessories" on page 20): M12 male/female connectors (only female for the variant with one 4...20 mA output, 1 male + 1 female for the variant with two 4...20 mA outputs of the device)

### ELEMENT neutrino variant with a 4...20 mA output









Operating voltage	Probe	Output	Nut material	UL approval	Electrical connection <sup>1.)</sup>	Article no.
12...36 V DC	None	1 x 4...20 mA (2 wires)	PVC	–	5-pin M12 male connector	561685 
				UL Recognized		562557 
				–	Cable gland	561686 
				UL Recognized		562558 
			PVDF	–	5-pin M12 male connector	562868 
				UL Recognized		568866 
				–	Cable gland	563518 
				UL Recognized		On request

1.) Must be ordered separately (see chapter "11.5. Ordering chart accessories" on page 20): M12 female connector

### ELEMENT neutrino variant with digital communication



























#### Note:





















The communication protocol is selected automatically by the device depending on the master controlling it.

Operating voltage	Probe	Output	Nut material	UL approval	Electrical connection <sup>1.)</sup>	Article no.
Metallic variant						
12...36 V DC	None	Digital IO-Link and büS/ CANopen communication	PVC	–	5-pin M12 male connector	574240 
				UL Recognized		574241 
			PVDF	–		574242 
				UL Recognized		574243 
All-plastic variant						
12...36 V DC	None	Digital IO-Link communication	PVC	–	5-pin M12 male connector	574244 
				UL Recognized		574245 
			PVDF	–		574246 
				UL Recognized		574247 

1.) Must be ordered separately (see chapter "11.5. Ordering chart accessories" on page 20): M12 female connector

## 11.5. Ordering chart accessories

Description	Article no.
<b>Probe holder</b>	
<b>For all variants</b>	
Probe holder with PVC union nut	560947 
Probe holder with PVDF union nut	561476 
<b>Seals</b>	
<b>For all variants</b>	
One Ø 46 x 2 mm EPDM seal for 120 mm probe holder (with instruction sheet)	559169 
<b>For ELEMENT neutrino variant</b>	
EPDM seal for cover/housing sealing	561752 
<b>Spare part</b>	
<b>For ELEMENT standard variant</b>	
Opaque cover with seal (1 screw cover with EPDM seal + 1 quarter turn closing cover with silicone seal)	560948 
Transparent cover with seal (1 screw cover with EPDM seal + 1 quarter turn closing cover with silicone seal)	561843 
<b>Electrical connection</b>	
<b>For all variants</b>	
M12 female connector with plastic threaded clamping ring, 5-pin, straight, to be wired	917116 
M12 female connector with moulded cable (shielded), 5-pin, straight, cable length: 2 m	438680 
<b>For ELEMENT standard variant</b>	
M12 male connector with plastic threaded clamping ring, 5-pin, straight, to be wired	560946 
M12 male connector with moulded cable (shielded), 5-pin, straight, cable length: 2 m	559177 
<b>Configuration accessory</b>	
<b>For ELEMENT standard variant</b>	
Removable display/configuration module (with instruction sheet)	559168 
<b>System Connect</b>	
<b>Type ME43 Gateway/Interface</b>	
Industrial Ethernet gateway (PROFINET IO, EtherNet/IP, Modbus TCP, EtherCAT®)	307390 
PROFIBUS gateway (PROFIBUS DPV1)	307393 
<b>Type ME61 Display</b>	
FieldConnect ME61 3.5" display (8.9 cm)	368544 
<b>EDIP Accessories</b>	
<b>büS Stick Set</b>	
	USB-büS interface set 1 (Type 8923) Further information can be found in chapter <a href="#">“9. Product accessories” on page 17.</a>
	772426 
USB-büS interface set 2 (Type 8923) Further information can be found in chapter <a href="#">“9. Product accessories” on page 17.</a>	
	772551 
<b>Connectors</b>	
büS M12 female connector, 5-pin, straight, A-coded	772416 
büS M12 male connector, 5-pin, straight, A-coded	772417 
büS M12 female connector, 5-pin, angled, A-coded	772418 
büS M12 male connector, 5-pin, angled, A-coded	772419 
büS Y-distributor (M12 female connector, 5-pin to M12 male and female connectors, 5-pin)	772420 
büS Y-distributor with power interrupt (M12 female connector, 5-pin to M12 male and female connectors, 5-pin)	772421 
büS adaptor (M12 male connector, 5-pin, A-coded to M12 male connector, 5-pin, A-coded)	772867 
büS terminating resistor 120 ohms, M12 male connector, 5-pin	772424 
büS terminating resistor 120 ohms, M12 female connector, 5-pin	772425 

Description		Article no.
<b>Connectors with cable</b>		
Adaptor cable with M12 female connector, 8-pin to M12 male connector, 5-pin	0.5 m	773286 
M12 female connector, 5-pin, angled, moulded on bÜS cable, with open leads	0.7 m	772626 
M12 female connector, 5-pin, straight, moulded on bÜS cable, with open leads	1 m	772409 
	3 m	772410 
	5 m	772411 
	10 m	772412 
M12 male connector, 5-pin straight and micro USB connector, moulded on bÜS cable	0.3 m	773254 
M12 female connector, 8-pin, straight, moulded on bÜS cable, with open leads	2 m	919061 
<b>Extensions</b>		
 M12 female and male connectors, 5-pin, straight, moulded on bÜS cable, shielded	0.1 m	772492 
	0.2 m	772402 
	0.5 m	772403 
	1 m	772404 
	3 m	772405 
	5 m	772406 
	10 m	772407 
	20 m	772408 
<b>Power supply unit for standard rail Type 1573</b>		
100...240 V AC / 24 V DC, 1 A (Class 2 according to NEC)		772361 
100...240 V AC / 24 V DC, 2 A (Class 2 according to NEC)		772362 
100...240 V AC / 24 V DC, 3.8 A (Class 2 according to NEC)		772898 
100...240 V AC / 24 V DC, 10 A		772698 