bürkert
FLUID CONTROL SYSTEMS

Inline flowmeter for continuous measurements

- Economical integration into pipe systems
- 3-wire frequency-pulse variant for direct connection to a PLC (PNP and NPN)
- Simple connection to Bürkert evaluation devices in a separate variant
- HT variant available for high temperatures and pressure (max. 125 °C/ max. 40 bar)

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

Can be combined with

Type 8619
multiCELL – multi-channel/ multi-function transmitter/ controller

Type 8025
Insertion flowmeter or batch controller with paddle wheel and flow transmitter or remote batch controller

Type 8611
eCONTROL – Universal controller

Type 8022
Flow transmitter / Pulse divider

Type 8801
ELEMENT On/Off valve systems with decentralised automation – overview

Type 8802
ELEMENT continuous control valve systems – overview

Type description

The flowmeter Type 8030/8030-HT with paddle wheel is especially suited for use with neutral or mildly aggressive, particle-free liquids.

The device consists of a compact Inline sensor-fitting (Type S030/S030-HT) and a transmitter (Type SE30/SE30-HT). Assembly is quick and simple thanks to a mounting/bayonet catch system. Bürkert's "Inline Quarter-Turn" technology guarantees leak-free operation.

Bürkert's proprietary sensor fitting system ensures simple installation of the devices into all pipelines from DN 06 to DN 65.

The device generates a pulse frequency signal proportional to the flow velocity. The signal can be processed by a Bürkert Transmitter/Controller.

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1. General technical data

1.1. About the device

The flowmeter Type 8030 is available with a wide variety of process connection and

- either with a Hall or Hall "Low Power" transducer

- or with a coil transducer. This variant called High Temperature (Type 8030-HT) is intended for flow measurement at high temperatures.

1.2. All variants

The following data applies to all variants mentioned above.

Product properties	
Material	
Make sure the device materials are compatible with the fluid you are using. Further information can be found in chapter "4.1. Bürkert resistApp" on page 8.	
Further information on the materials can be found in chapter "4.2. Material specifications" on page 8.	
Non-wetted parts	
Screw	Stainless steel
Plug contact	3P+PE: • 3P in brass (CuZn36 F38) • PE in tin-plated brass (CuZn, Sn finish)
Female cable plug	• Body, contact holder and cable gland in PA
Wetted parts	
Axis	Ceramics (Al_2O_3)
Seal	FKM or EPDM, depending on the Inline sensor-fitting variant Type S030
Compatibility	Any pipe from DN 06...DN 65 which are fitted with Bürkert Type S030 Inline sensor-fitting. For the selection of the nominal diameter of the Inline sensor-fittings, see **data sheet Type S030** ▶.
Pipe diameter	DN 06...DN 65
Dimensions	Further information can be found in chapter "5. Dimensions" on page 9.
Measuring principle	Paddle wheel
Performance data	
Measurement deviation	• Teach-in: ± 1 % of the measured value [1.] at teach-in flow rate value • Standard K factor: ± 2.5 % of the measured value [1.]
Linearity	± 0.5 % of full scale [1.]
Repeatability	± 0.4 % of the measured value [1.]
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
Protection against DC polarity reversal	Yes
Voltage supply cable	• Cable with maximum operating temperature greater than 80 °C • Max. 50 m length, shielded • External diameter of wire: 5...8 mm • Cross section of wires: 0.25...1.5 mm²

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Medium data	
Viscosity	Max. 300 cSt
Rate of solid particles	Max. 1 %
Maximum particle size	0.5 mm
Product connections	
Electrical connection	Female cable plug according to DIN EN 175301-803
Approvals and conformities	
Directives	
CE directive	Further information on the CE Directive can be found in chapter "3.2. Standards" on page 7
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 "3.3. Pressure Equipment Directive (PED)" on page 7.
Environment and installation	
Relative air humidity	≤ 80 %, 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.
Degree of protection according to IEC/EN 60529	IP65 under the following simultaneous conditions: • device wired • cable plug mounted and tightened
Installation category	Category I according to UL/EN 61010-1
Pollution degree	Degree 2 according to UL/EN 61010-1

1.) Under reference conditions i.e. measuring medium = water, ambient and water temperature = + 20 °C (+ 68 °F), observing the minimum the minimum inlet and outlet sections and the appropriate inner diameter of the pipe.

1.3. Flowmeter with an Hall or Hall "Low Power" transducer

Note:
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	
Non-wetted parts	
Cover (male fixed plug)	PC
Housing	PC
Bayonet system	PC
Female cable plug	Cable gland seal and flat seal in NBR
Wetted parts	
Sensor armature	Stainless steel (316L - 1.4404), brass ($CuZn_{39}Pb_2$), PVC, PP or PVDF (depending on Type S030 Inline sensor-fitting variant)
Bearing	Ceramics (Al_2O_3)
Paddle wheel	PVDF
Sensor-fitting body	Stainless steel (316L - 1.4404), brass ($CuZn_{39}Pb_2$), PVC, PP or PVDF (depending on Type S030 Inline sensor-fitting variant)
Measuring range	• Flow rate: 0.5...1000 l/min (0.13...265 gpm) • Flow velocity: 0.3...10 m/s

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Electrical data	
Operating voltage	• Hall variant: 12...36 V DC ± 10 %, filtered and regulated Connection to main supply: permanent, through external SELV (Safety Extra Low Voltage) and LPS (Limited Power Source) power supply • Hall "Low Power" variant: via the connected Bürkert transmitter
Current consumption	With sensor • Hall variant: ≤ 30 mA • Hall "Low Power" variant: ≤ 0.8 mA
Output	• Hall variant: – 2 transistors, pulse output – NPN and PNP, open collector – max. 100 mA – frequency: 0...300 Hz – NPN output: 0.2...36 V DC – PNP output: supply voltage – duty cycle (pulse duration/period): ½ ± 10 % • Hall "Low Power" variant: – 1 transistor, pulse output – NPN, open collector – max. 10 mA – frequency: 0...300 Hz – duty cycle (pulse duration/period): ½ ± 10 %
Medium data	
Fluid temperature	With Inline sensor-fitting Type S030 in: • PVC: 0...+ 50 °C (+ 32...+ 122 °F) • PP: 0...+ 80 °C (+ 32...+ 176 °F) • PVDF, stainless steel or brass: - 15...+ 100 °C (+ 5...+ 212 °F) See **data sheet Type S030** ▶ for more information.
Fluid pressure	With Inline sensor-fitting Type S030 in: • plastic: max. PN 10 • metal: max. PN 16 (PN 40 on request) See **data sheet Type S030** ▶ for more information.
Product connections	
Pipe connection	With Inline sensor-fitting Type S030 in: • plastic: true union with nut and solvent/fusion socket, spigot or external thread • metal: internal or external thread, weld ends, clamp or flange See **data sheet Type S030** ▶ for more information.
Environment and installation	
Ambient temperature	Operation and storage: - 15...+ 60 °C (+ 5...+ 140 °F)

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1.4. Flowmeter with coil transducer for high temperature (variant Type 8030-HT)

Note:
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	
Non-wetted parts	
Cover (male fixed plug)	PPS, glass fibre reinforced
Housing	PPS, glass fibre reinforced
Bayonet system	PPS, glass fibre reinforced
Female cable plug	Cable gland seal in NBR and flat seal in silicone
Wetted parts	
Sensor armature	Stainless steel
Bearing	Iglidur®
Paddle wheel	Stainless steel (316L - 1.4404)
Sensor-fitting body	Stainless steel
Measuring range	• Flow rate: 0.85...1000 l/min (0.22...265 gpm) • Flow velocity: 0.5...10 m/s
Electrical data	
Power supply	12...36 V DC ± 10 %, filtered and regulated Connection to main supply: permanent, through external SELV (Safety Extra Low Voltage) and LPS (Limited Power Source) power supply
Current consumption	≤ 10 mA (no load)
Output	• 2 transistors, pulse output • NPN and PNP, open collector • Max. 700 mA • Frequency: 0...250 Hz • NPN output: 0.2...30 V DC • PNP output: supply voltage • Duty cycle (pulse duration/period): ½ ± 10 % • Protected against overvoltage, polarity reversals and short circuit
Medium data	
Fluid temperature	- 15...+ 125 °C (+ 5...+ 257 °F)
Fluid pressure	• Max. PN 40 for - 15...+ 90 °C temperature range • Max. PN 25 for + 90...+ 125 °C temperature range
Product connections	
Pipe connection	With Inline sensor-fitting Type S030-HT: Internal or external thread, weld ends (clamps or flanges on request) Further information can be found in the data sheet of the Inline sensor-fittings variant high temperature (Type S030-HT), see **data sheet Type S030** ▶.
Environment and installation	
Ambient temperature	Operation and storage: - 15...+ 80 °C (+ 5...+ 176 °F)

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2. Product variants

The flowmeter is available with frequency output in three variants:

- **Hall variant** with two transistor outputs NPN and PNP.
  The flowmeter requires an external power supply of 12...36 V DC. The output signal is designed for connection to any system with open collector NPN or PNP frequency input.
  This variant is intended, for example, for connection to Universal flow transmitters or batch controller Type 8025, to pulse divider Type 8022, to eCONTROL universal controller Type 8611 or to multiCELL transmitter/controller Type 8619.
  See **data sheet Type 8025** ▶, **data sheet Type 8022** ▶, **data sheet Type 8611** ▶, **data sheet Type 8619** ▶ for more information.
- **Hall "Low Power" variant** with one NPN transistor "Low Power" output.
  The flowmeter requires an external power supply of 12...36 V DC, provided by the connected Bürkert transmitter.
  This variant is **only** intended for connection to the Bürkert device Type 8025 in its flow transmitter for "Low Power" flowmeters Type 8025 or to 4...20 mA flow transmitter Type 8022.
  See **data sheet Type 8025** ▶, **data sheet Type 8022** ▶ for more information.
- **High temperature variant (SE30-HT**) with two transistor outputs NPN and PNP.
  The flowmeter requires an external power supply of 12...36 V DC. The output signal is designed for connection to any system with open collector NPN or PNP frequency input. This variant is intended, for example, for connection to Universal flow transmitters or batch controller Type 8025, to pulse divider Type 8022, to eCONTROL universal controller Type 8611 or to multiCELL transmitter/controller Type 8619.
  See **data sheet Type 8025** ▶, **data sheet Type 8022** ▶, **data sheet Type 8611** ▶, **data sheet Type 8619** ▶ for more information.

In a 3-wire system, the signal can be connected to a display or processed directly. The electrical connection is provided via a cable plug according to DIN EN 175301-803.

3. Approvals and conformities

3.1. Conformity

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

3.2. 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.

3.3. 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 ≤ 25
Fluid group 2, Article 4, Paragraph 1.c.i	DN ≤ 32 or PS*DN ≤ 1000
Fluid group 1, Article 4, Paragraph 1.c.ii	DN ≤ 25 or PS*DN ≤ 2000
Fluid group 2, Article 4, Paragraph 1.c.ii	DN ≤ 200 or PS ≤ 10 or PS*DN ≤ 5000

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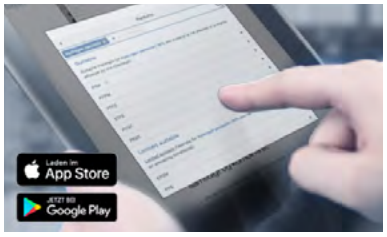
4. Materials

4.1. Bürkert resistApp

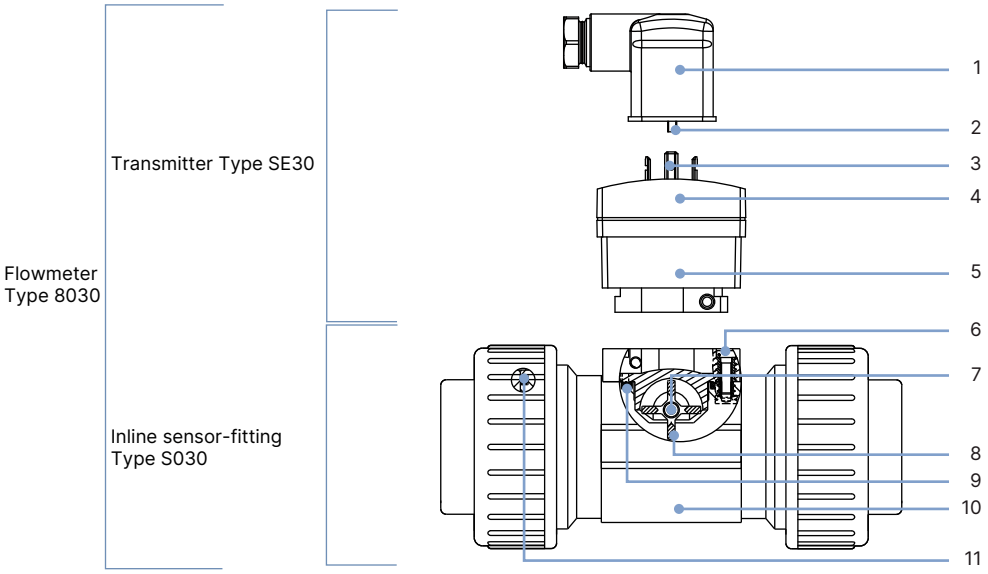


Bürkert resistApp – Chemical resistance chart

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

4.2. Material specifications



No.	Element	Material
1	Female cable plug (DIN EN 175301-803)	• Body, contact holder and cable gland in PA • Cable gland seal in NBR and flat seal in NBR or in silicone for variant Type 8030-HT
2	Screws	Stainless steel
3	Plug contacts (3P+PE)	• 3P in brass (CuZn36 F38) • PE in tin-plated brass (CuZn, Sn finish)
4	Cover (male fixed plug)	PC
5	Housing	• PC or • PPS, glass fibre reinforced (for variant Type 8030-HT)
6	Screws	Stainless steel
7	Axis and bearing	• Axis in ceramics (Al_2O_3) • Bearings in: – ceramics (Al_2O_3) – Iglidur® (for variant Type 8030-HT)
8	Paddle wheel	• PVDF • Stainless steel (for variant Type 8030-HT)
9	Seal	FKM or EPDM (depending on the Inline sensor-fitting variant Type S030)
10	Sensor-fitting body	• Stainless steel (316L - 1.4404), brass ($CuZn_{39}Pb_2$), PVC, PP, PVDF (depending on the Inline sensor-fitting variant Type S030) • Stainless steel (316L - 1.4404) (for variant Type 8030-HT)
11	Seals	FKM or EPDM (depending on the Inline sensor-fitting variant Type S030 and only for true union connection with nut and solvent/fusion socket)

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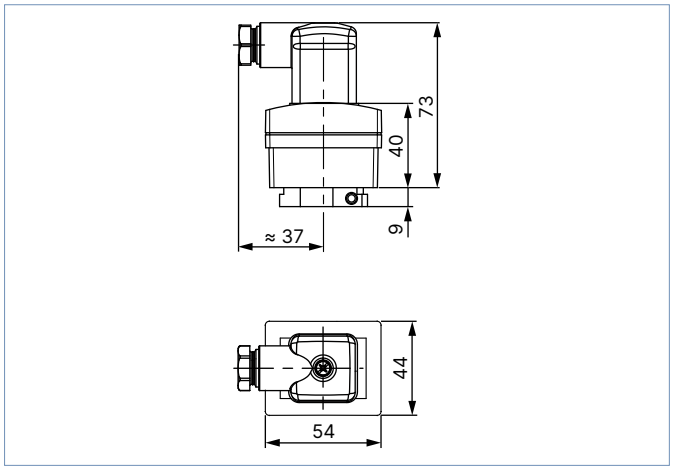
5. Dimensions

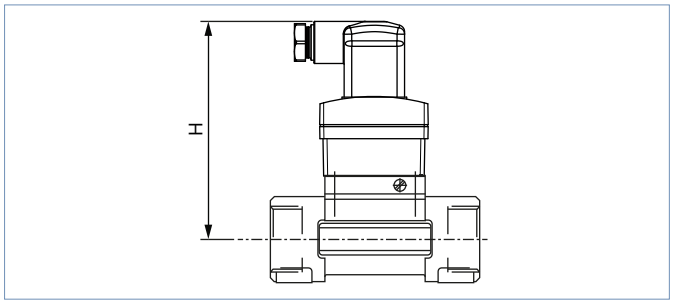
5.1. Transmitter Type SE30

Note:
Dimensions in mm, unless otherwise stated



5.2. Transmitter Type SE30 mounted in an Inline sensor-fitting Type S030

Note:
Dimensions in mm, unless otherwise stated



DN	H
06	102.5
08	102.5
15	107.5
20	105.0
25	105.0
32	109.0
40	112.5
50	119.0
65	119.0

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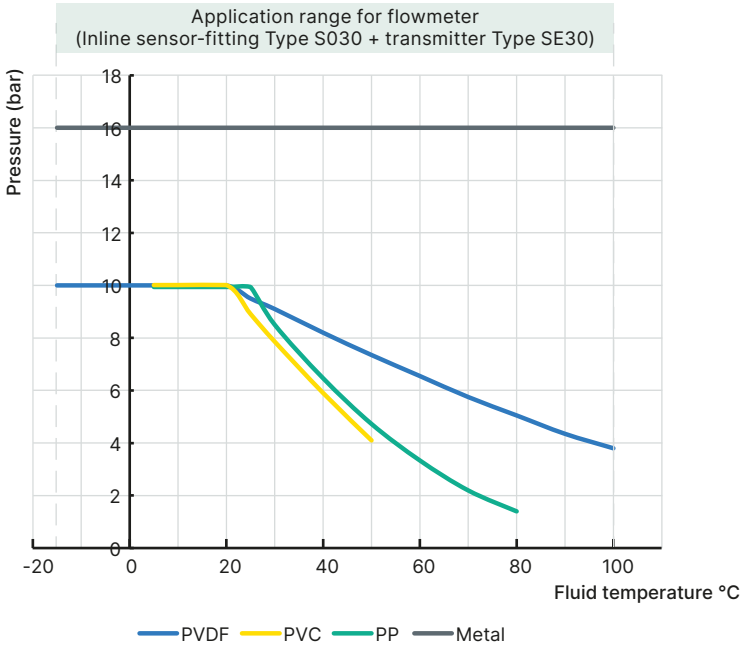
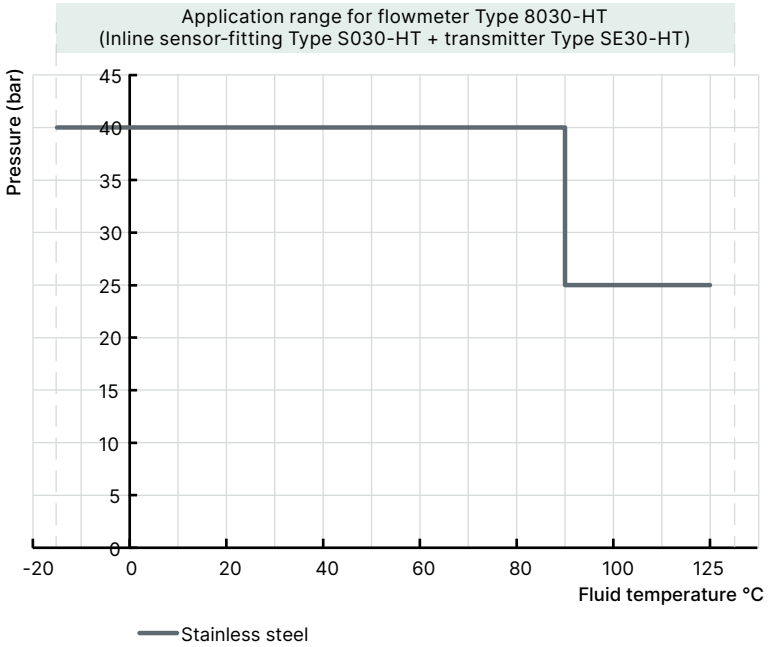
6. Performance specifications

6.1. Pressure temperature diagram

Flowmeter with an Hall or Hall "Low Power" transducer



Flowmeter with coil transducer for high temperature (variant Type 8030-HT)



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7. Product installation

7.1. Installation notes

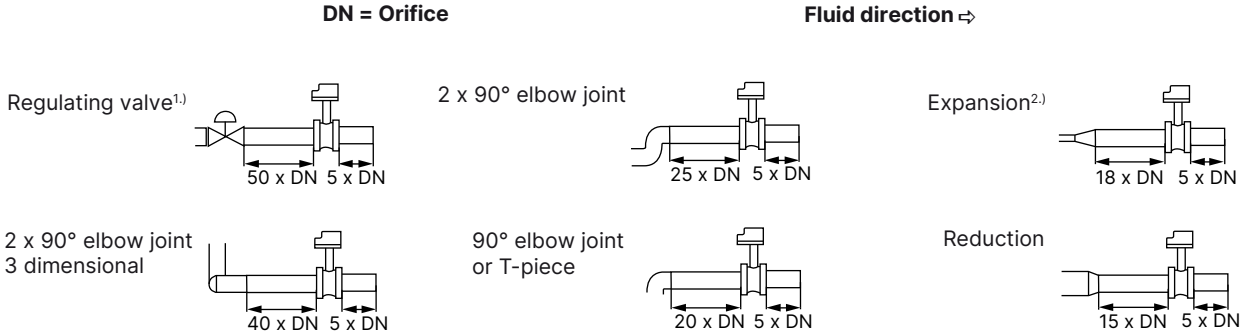
Flow measurement

Note:
The device is not suitable for use in gaseous media and steam.

Minimum straight distances upstream and downstream of the sensor must be observed. These stabilizing distances depend on the pipe's design. Increasing these distances or installing a flow conditioner may be necessary to obtain the best accuracy. For more information, refer to EN ISO 5167-1.

EN ISO 5167-1 specifies the straight inlet and outlet distances that must be complied with when installing fittings in pipe lines in order to achieve calm flow conditions. The most commonly used elements that could lead to turbulence in the flow are shown below. The related minimum inlet and outlet distances that ensure a calm flow are also specified.

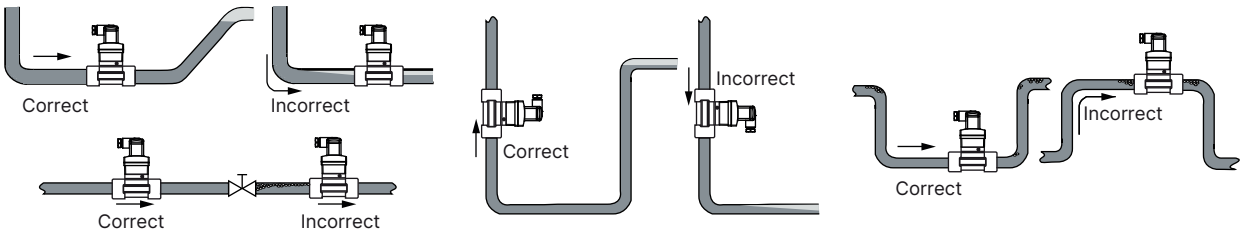
Make sure that the measuring conditions at the point of measurement are calm and problem-free.



1.) If the valve cannot be mounted after the measuring device, the minimal distances have to be respected.
2.) If an expansion cannot be avoided, the minimal distances have to be respected.
Please note minimum flow velocity

The device can be installed in either horizontal or vertical pipes, but following additional conditions should be respected:

- The pipe always has to be filled with fluid at all times near the device.
- The pipe design must be such that no air bubbles or cavitation can form within the medium near the device at any time.



Pressure and temperature ratings must be respected according to the selected fitting material. The suitable pipe size is selected using the diagram in the chapter "Nominal size selection" of the **data sheet Type S030 ▶**.

8. Product operation

8.1. Measuring principle

When liquid flows through the pipe, the paddle wheel with 4 inserted magnets is set in rotation, producing a measuring signal in the sensor (Hall sensor). The frequency modulated induced voltage is proportional to the flow velocity of the fluid.
A K factor, specific to each pipe, enables the conversion of this frequency into a flow rate.
This K factor is available in the Inline sensor-fittings' operating instructions, see **Type S030 ▶**.

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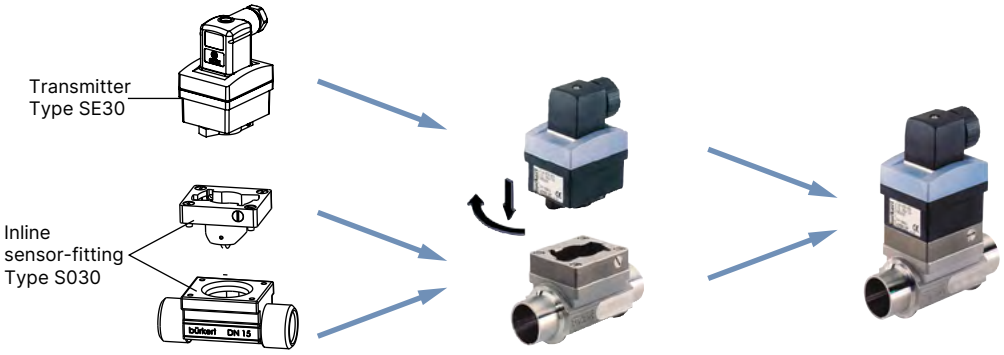
9. Product design and assembly

9.1. Product assembly

Note:

- The device Type 8030 is made up of a Bürkert Inline sensor-fitting Type S030 equipped with a paddle wheel sensor and a transmitter Type SE30.
- The Inline sensor-fitting Type S030 ensures simple installation into pipes from DN 06...DN 65. The transmitter Type SE30 can be mounted on any Inline sensor-fitting Type S030 and fastened with a bayonet catch, see **data sheet Type S030** ▶ for more information.



10. Networking and combination with other Bürkert products

Example:

Type 8030

With Hall transducer (NPN and PNP transistor outputs) or with coil transducer (pulse signal output F = KQ [1.])

With Hall "Low Power" transducer (NPN transistor output)

Type 8025 ▶
Universal flow transmitter or remote batch controller

Type 8022 ▶
Pulse divider

Type 8619 ▶
multiCELL - transmitter/controller

Type 8611 ▶
eCONTROL - Universal controller

Type 8025 ▶
Flow transmitter for "Low Power" flowmeters

Type 8022 ▶
Flow transmitter, 4...20 mA

1.) Output: F = frequency [Hertz], K = K factor of the Inline sensor-fitting [pulse/liter] and Q = flow rate [l/s]

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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

A complete flowmeter Type 8030 consists of a flow transmitter Type SE30 and a Bürkert Inline sensor-fitting Type S030.

See **data sheet Type S030** ▶ for more information.

Two different components must be ordered to obtain a complete device. The following information is required:

- **Article no.** of the desired compact Type SE30 flow transmitter (see chapter "11.4. Ordering chart" on page 14
- **Article no.** of the selected Type S030 Inline sensor-fitting (see **data sheet Type S030** ▶)

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.

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11.4. Ordering chart

Transmitter Type SE30

Description	Operating voltage	Output	Electrical connection	Article no.
Hall variant (connectable to Type 8025 universal transmitter, or batch controller, Type 8619, Type 8611, Type 8022 pulse divider or to a PLC)	12...36 V DC	Frequency with pulse, transistors PNP and NPN, open collector	Female cable plug DIN EN 175301-803	423913
Hall "Low Power" variant (only connectable to the flow transmitter for "Low Power" flowmeters Type 8025 or to the flow transmitter Typ 8022)	From associated transmitter	Frequency with pulse, transistor NPN, open collector		423914
High Temperature (Type SE30-HT) variant 1.) (connectable to Type 8025 universal transmitter or batch controller, Type 8619, Type 8611, Type 8022 pulse divider or to a PLC)	12...36 V DC	Frequency with pulse, transistors PNP and NPN, open collector		449694

1.) Only mount with Inline sensor-fitting in High Temperature variant **(S030-HT)**

Further variants on request
Approval F ATEX for hazardous areas II 1 G/D - II 3 GD, NAMUR or NPN/PNP variant See **data sheet Type SE30 Ex** ▶ for more information.

11.5. Ordering chart accessories

Description	Article no.
Electrical connection	
Female cable plug, 4-pin (3 conductors + protective conductor), form A according to DIN EN 175301-803, with cable gland (**Type 2518** ▶)	572264
Female cable plug, 4-pin (3 conductors + protective conductor), form A according to DIN EN 175301-803, with cable gland and flat seal in silicone (only for Type 8030-HT variant) (**Type 2518** ▶)	572330
Female cable plug 32 mm, 4-pin (3 conductors + protective conductor), form A according to DIN EN 175301-803, with NPT ½" reduction without cable gland (**Type 2509** ▶)	162673

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