Inline positive displacement (PD) flowmeter

- High accuracy
- Medium with high viscosity
- Mounting and dismounting of the electronics by a quarter-turn
- Connection to Bürkert devices in remote variants

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

DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

Can be combined with

Type 8619
multiCELL - transmitter/controller

Type 8025
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 decentralized automation - overview

Type 8802
ELEMENT continuous control valve systems - overview

PLC

Type description

This positive displacement flowmeter Type SE30 + S077 is specially designed for continuous flow measurement of highly viscous fluids like glue, honey or oil.

The device is made up of a compact Inline sensor-fitting with oval gears (Type S077) and a transmitter with display (Type SE30). The device is quickly and easily assembled thanks to a bayonet mounting and locking system. The Bürkert “Inline quarter-turn” technology ensures a leakage-free operation.

The Bürkert designed sensor-fitting system ensures simple installation of the devices into all pipelines from DN 15...DN 100.

The flowmeter produces frequency signal (pulse), proportional to the flow rate, which can easily be transmitted and processed by a Bürkert transmitter (Type 8025, Type 8022, Type 8611, Type 8619...) oder a PLC.

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Table of contents

1. General technical data 3

2. Product variants 5

3. Approvals and conformities 5

3.1. Conformity 5
3.2. Standards 5
3.3. Pressure Equipment Directive (PED) 5
Device used on a pipe 5

4. Materials 6

4.1. Bürkert resistApp 6
4.2. Material specifications 6

5. Dimensions 6

5.1. Transmitter Typ SE30 6
5.2. Transmitter Type SE30 mounted in an Inline sensor-fitting Type S077 7

6. Product installation 7

6.1. Installation notes 7
Flow measurement 7

7. Product operation 8

7.1. Measuring principle 8

8. Product design and assembly 8

8.1. Product assembly 8

9. Networking and combination with other Bürkert products 9

10. Ordering information 9

10.1. Bürkert eShop 9
10.2. Recommendation regarding product selection 9
10.3. Bürkert product filter 10
10.4. Ordering chart 10
Flow transmitter Type SE30 10
10.5. Ordering chart accessories 10

DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

1. General technical data

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	
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 6. Further information on the materials can be found in chapter "4.2. Material specifications" on page 6.	
Non-wetted parts	
Cover (male fixed plug)	PC
Housing	PC
Screw	Stainless steel
Plug contact	3P+PE: • 3P in brass (CuZn36 F38) • PE in tin-plated brass (CuZn, Sn finish)
Bayonet system	PC
Female cable plug	• Body, contact holder and cable gland in PA • Cable gland seal and flat seal in NBR
Wetted parts	
Axis	Stainless steel 316L (1.4401)
Oval gear	Stainless steel 316L (1.4401)
Sensor-fitting body	Aluminium, stainless steel 316L (1.4401)
Cover	Aluminium, stainless steel 316L (1.4401)
Seal	FKM or FEP/PTFE encapsulated
Compatibility	Any pipe from DN 15...DN 100 which is fitted with Bürkert S077 Inline sensor-fitting. For the selection of the nominal diameter of the Inline sensor-fittings, see **data sheet Type S077** ▶.
Pipe diameter	DN 15...DN 100
Dimensions	Further information can be found in chapter "5. Dimensions" on page 6.
Measuring principle	Oval gear
Measuring range	• Viscosity > 5 mPa.s: 2...1200 l/min (0.53...320 gpm) • Viscosity < 5 mPa.s: 3...616 l/min (0.78...320 gpm)
Performance data	
Measurement deviation	• With K-factor determined with a teach-in procedure or with the specific K-factor marked on the sensor-fitting: ± 0.5 % of the measured value (at Teach-In flow rate value) • With standard K-factor: ± 1 % of the measured value
Repeatability	± 0.03 % of the measured value
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
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
Current consumption	With sensor • Hall variant: ≤ 30 mA • Hall "Low Power" variant: ≤ 0.8 mA

DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

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 %
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
Medium data	
Fluid temperature	With Inline sensor-fitting Type S077 in: • Aluminium: - 20...+ 80 °C (- 4...+ 176 °F) • Stainless steel: - 20...+ 120 °C (- 4...+ 248 °F) See **data sheet Type S077** ▶ for more information.
Fluid pressure	With Inline sensor-fitting Type S077 with: • DN 15: max. 55 bar (798.05 PSI) (threaded process connection) • DN 25: max. 55 bar (798.05 PSI) [1)] • DN 40 or DN 50: max. 18 bar (261.18 PSI) • DN 80: max. 12 bar (174.12 PSI) • DN 100: max. 10 bar (145.1 PSI) See **data sheet Type S077** ▶ for more information.
Dynamic viscosity η	Max. 1 Pa.s (higher on request)
Maximum particle size	250 µm To prevent damage from dirt or foreign matter, we strongly recommend the installation of a 250 µm (60 mesh) strainer as close as possible to the inlet side of the meter.
Product connections	
Pipe connection	With Inline sensor-fitting Type S077 with: • Thread: ½", 1", 1½", 2" or 3" (G or NPT) • Flange: – 25, 40, 50, 80 or 100 mm DIN PN 16 flange – 1", 1½", 2", 3" or 4" ANSI 150LB flange See **data sheet Type S077** ▶ for more information.
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 5.
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 5.
Environment and installation	
Ambient temperature	Operation and storage: 0...+ 60 °C (+ 32...+ 140 °F)
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.) Or in accordance to the value of the used flanges

2. Product variants

The flowmeter is available with frequency output in two 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.

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:

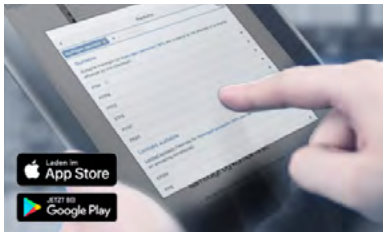
- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure (in bar), DN = nominal diameter of the pipe

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

DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

4. Materials

4.1. Bürkert resistApp

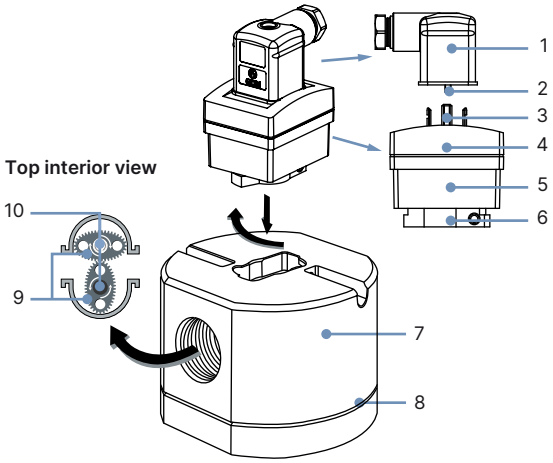


Bürkert resistApp – Chemical resistance chart

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

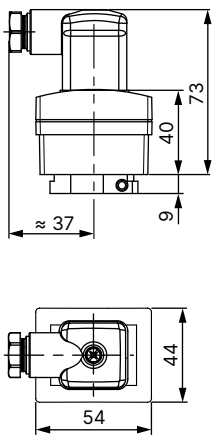


No.	Element	Material
1	Female cable plug (DIN EN 175301-803)	• Body, contact holder and cable gland in PA • Cable gland seal and flat seal in NBR
2	Screws	Stainless steel
3	Plug contacts (3P+PE)	• 3P in brass (CuZn36 F38) • PE in tin-plated brass (CuZn, Sn finish)
4	Cover (male fixed plug)	PC
5	Housing	PC
6	Quarter turn system	PC
7	Sensor-fitting body	Aluminium or stainless steel (316L)
8	Seal	FKM or FEP/PTFE encapsulated
9	Oval gear	PPS, aluminium or stainless steel (316L)
10	Axis	Stainless steel (316L)

5. Dimensions

5.1. Transmitter Typ SE30

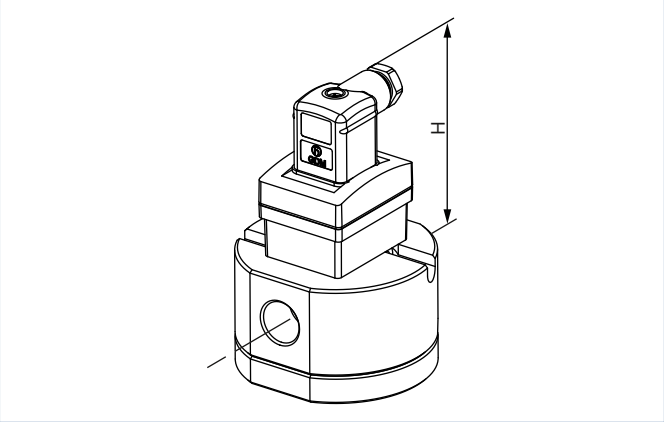
Note:
Dimensions in mm, unless otherwise stated



DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

5.2. Transmitter Type SE30 mounted in an Inline sensor-fitting Type S077

Note:
Dimensions in mm, unless otherwise stated



DN	H
15	94
25	103
40	115
50	125
80	175
100	191

DN 15 DN 25 DN 40 DN 50 DN 80
Threaded connection

DN 25 DN 40 DN 50 DN 80 DN 100
Flanged connection

6. Product installation

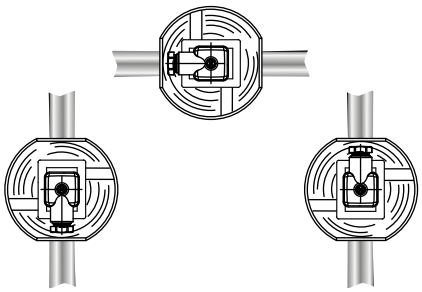
6.1. Installation notes

Flow measurement

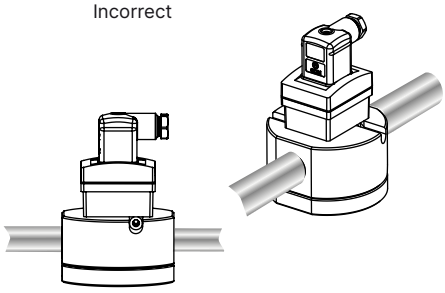
Note:
The device is not suitable for use in gaseous media and steam.

The sensor fitting can be installed in any orientation as long as **the rotor shafts are always in a horizontal plane**.

Correct



Incorrect



The following installation conditions must also be observed:

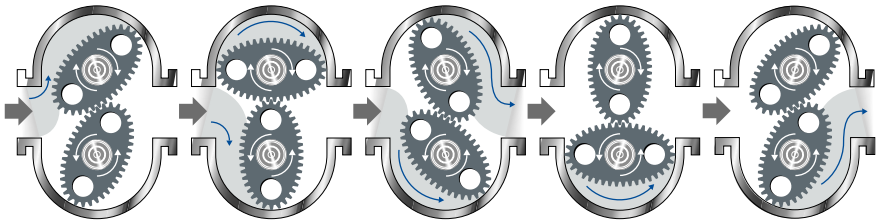
- The pipe always has to be filled with fluid at all times near the device.
- The pipe design must be such that no air bubbles or cavitation can form within the medium near the device at any time.
- We recommend the installation of a 250 µm strainer as close as possible to the inlet side of the meter, to prevent damage from particles,
- Air purges can damage the appliance and should therefore be avoided.

DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

7. Product operation

7.1. Measuring principle

When liquid flows through the pipe, the rotors turn. This rotation produces a measuring signal in the associated Hall sensor. The rotation frequency of this signal is proportional to the flow velocity of the fluid. The volume of the fluid being transferred in this way is exactly determined through the sensor geometry.



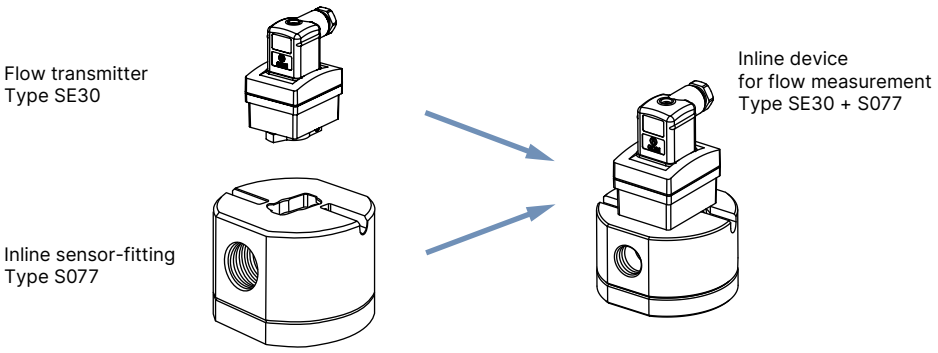
A conversion coefficient, specific to each meter size, enables the conversion of this frequency into a flow rate. The standard K factor depending on the meter size is available in the flowmeter's operating instructions, see **Type S077** ▶. To improve the measurement deviation, a device-specific K factor is given on the device label.

8. Product design and assembly

8.1. Product assembly

Note:

- The device Type SE30 + S077 is made up of a Bürkert Inline sensor-fitting Type S077 equipped with a sensor with oval gears and a transmitter Type SE30.
- The Inline sensor-fitting Type S077 ensures simple installation into pipes from DN 15...DN 100. The transmitter Type SE30 can be mounted on any Inline sensor-fitting Type S077 and fastened with a bayonet catch, see **data sheet Type S077** ▶ for more information.



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9. Networking and combination with other Bürkert products

Example:

Type SE30 + S077

With Hall transducer (NPN and PNP transistor outputs)				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

10. Ordering information

10.1. 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

10.2. Recommendation regarding product selection

A complete flowmeter Type SE30 + S077 consists of a flow transmitter Type SE30 and an Inline sensor-fitting Type S077.

See **data sheet Type S077** ▶ for more information.

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

- **Article no.** of the compact Type SE30 flow transmitter (see chapter "10.4. Ordering chart" on page 10)
- **Article no.** of the selected Type S077 Inline sensor-fitting (see **data sheet Type S077** ▶)

DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026

10.3. 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

10.4. Ordering chart

Flow 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

10.5. Ordering chart accessories

Description	Article no.
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 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

DTS 1000285776 EN Version: - Status: RL (released | freigegeben | valide) printed: 28.10.2026