bürkert
FLUID CONTROL SYSTEMS

Inline positive displacement (PD) flowmeter, ELEMENT design

- Configurable outputs: one or two transistor output(s) and one or two 4...20 mA current output(s)
- Removable backlit display/configuration module for indication of flow rate and volume with two flow totalizers
- Automatic calibration using Teach-In, all outputs can be checked without the need for actual flow

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

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Can be combined with

Type 8611 ▸
eCONTROL - Universal controller

Type 2030 ▸
Pneumatically operated 2/2-way diaphragm valve CLASSIC with plastic valve body

Type 2101 ▸
Pneumatically operated 2/2-way globe valve ELEMENT for decentralised automation

Type 8692 ▸
Digital electro-pneumatic positioner for integrated mounting on process control valves

Type 8644 ▸
AirLINE SP electropneumatic automation system

Type 8619 ▸
multiCELL - Multi-channel and multi-function transmitter/controller

Type description

The device Type SE36 + S077 is specially designed for continuous flow measurement of highly viscous fluids like glue, honey or oil. slightly aggressive, solid-free liquids.

The device is made up of a compact Inline sensor-fitting with oval gears (Type S077) and a transmitter with display (Type SE36). 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 device is provided either with 2 configurable outputs (1 transistor output (NPN) and (1 current output 4...20 mA, 2-wire), or with 3 configurable outputs (2 transistor outputs (NPN/PNP) and 1 current output 4...20 mA, 2-wire) or with 4 configurable outputs (2 transistor outputs (NPN/PNP) and (2 current outputs 4...20 mA, 3-wire).

The device converts the measured signal, displays different values in different units (if the display/configuration module is mounted) and computes the output signals which are provided via one or two M12 fixed connectors. Thanks to 1 or 2 transistor outputs, the flowmeter can be used to switch a solenoid valve, activate an alarm and, thanks to 1 or 2 current outputs, establish one or two control loops.

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Visit product website ▸

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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 "3.1. Bürkert resistApp" on page 7. Further information on the materials can be found in chapter "3.2. Material specifications" on page 7.	
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))
Bayonet system	PC
Display/configuration module	PC
Navigation key	PBT
Seal	EPDM, silicone
Fixed connector holder	PPS CF30
Fixed connector	Nickel-plated brass (stainless steel on request)
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 "4. Dimensions" on page 8.
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)
Product accessory	
Display/configuration module	Grey dot matrix 128 × 64 with backlighting
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
4...20 mA output uncertainty	± 1 % of current range
Electrical data	
Operating voltage	• 2 or 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
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

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Current consumption	With sensor • ≤ 1 A (with transistors load) • 2 or 3 outputs transmitter (2-wire) variant: ≤ 25 mA (at 14 V DC without transistors load, with current loop) • 4 outputs transmitter (3-wire) variant: ≤ 5 mA (at 12 V DC without transistors load, without current loop)
Power consumption	Max. 40 W
Output	• Transistor (digital output): – 1 transistor output (transmitter 2-wire): – NPN, open collector – max. 700 mA – 1...36 V DC – 2 transistor outputs (transmitter 2 or 3-wire): – 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: 1...36 V DC – PNP-output: Power supply • Current (analogue output): – 4...20 mA – adjustable as sourcing or sinking (in the same mode as transistor) – max. loop impedance: – 1 current output (transmitter 2-wire): 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 180 Ω at 14 V DC – 2 current outputs (transmitter 3-wire): 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 100 Ω 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 "9.5. Ordering chart accessories" on page 12. For these connectors, use a shielded cable with: • diameter: 3...6.5 mm • cross section of wires: max. 0.75 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	• 2 or 3 outputs transmitter (2-wire) variant: 1 × 5-pin M12 male connector • 4 outputs transmitter (3-wire) variant: 1 × 5-pin M12 male and 1 × 5-pin M12 female connectors

Approvals and conformities	
Directives	
CE directive	Further information on the CE Directive can be found in chapter "2.3. Standards" on page 6.
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 "2.4. Pressure Equipment Directive (PED)" on page 6.
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.
Degree of protection [2.)]	IP65, IP67 (according to EN60529), NEMA 4X (according to NEMA250) under the following simultaneous conditions: • device wired • cover screwed tight • M12 connector 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.) Not evaluated by UL

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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 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 2014/68/EU under the following conditions:

Device used on a pipe

Note:

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

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.c.i	DN ≤ 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

2.5. North America (USA/Canada)

Approval	Description
c UL us	**Optional: UL Recognized for the USA and Canada** The products are UL Recognized for the USA and Canada according to: • UL 61010-1 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE – Part 1: General Requirements) • CAN/CSA-C22.2 No. 61010-1

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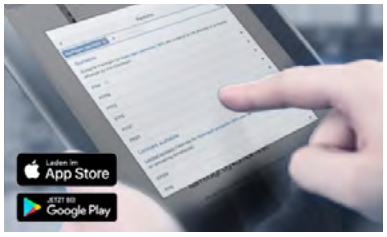
3. Materials

3.1. Bürkert resistApp

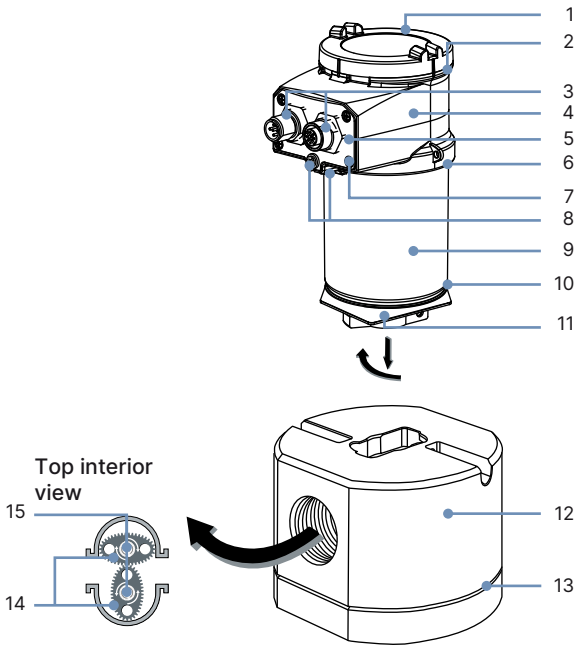


Bürkert resistApp – Chemical resistance chart

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



No.	Element	Material
1	Cover	PC
2	Seal	Silicone
3	Connector (female /male M12)	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	Sensor-fitting body	Aluminium or stainless steel (316L)
13	Seal	FKM or FEP/PTFE encapsulated
14	Oval gear	PPS, aluminium or stainless steel (316L)
15	Axis	Stainless steel (316L)

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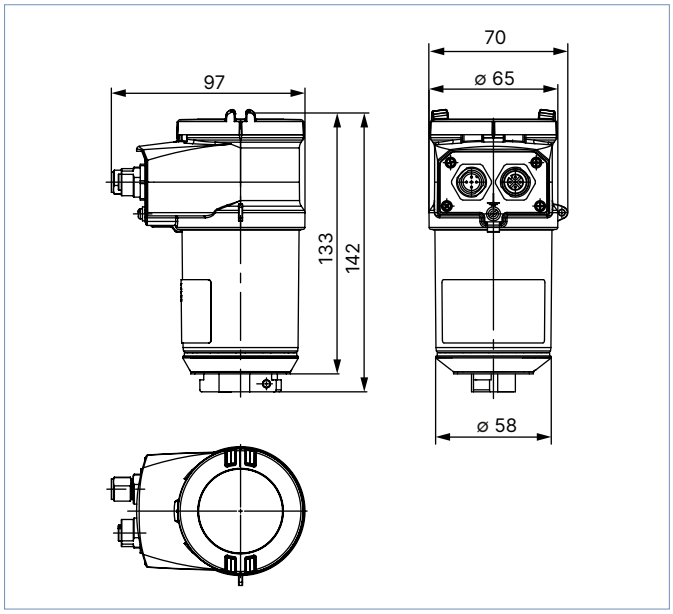
4. Dimensions

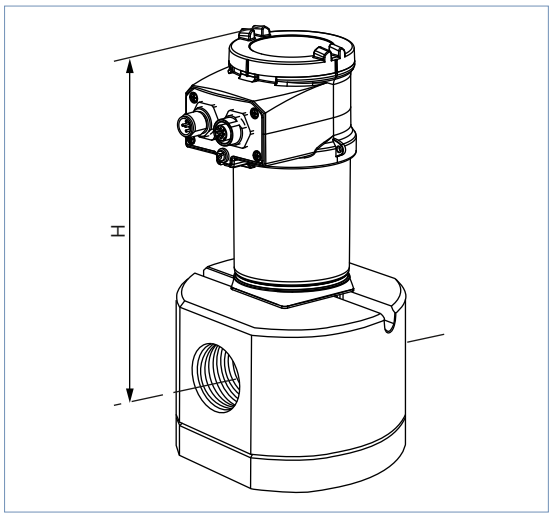
4.1. Transmitter Type SE36

Note:
Dimensions in mm, unless otherwise stated



4.2. Transmitter Type SE36 mounted in an Inline sensor-fitting Type S077

Note:
Dimensions in mm, unless otherwise stated



DN	H
15	154
25	163
40	175
50	185
80	235
100	251

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

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

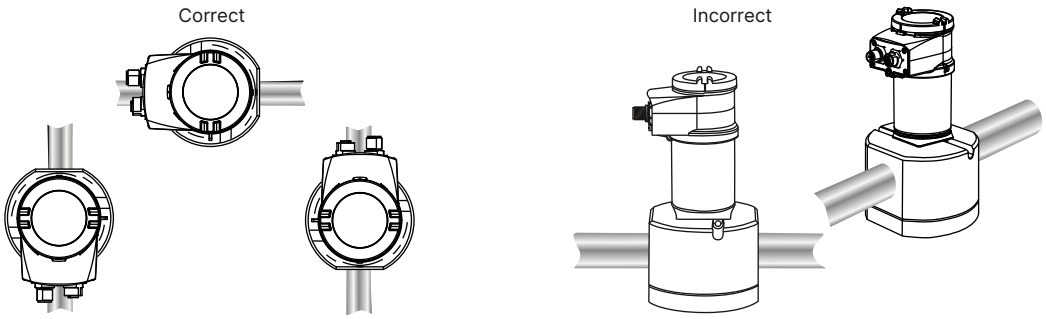
5. Product installation

5.1. 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**.



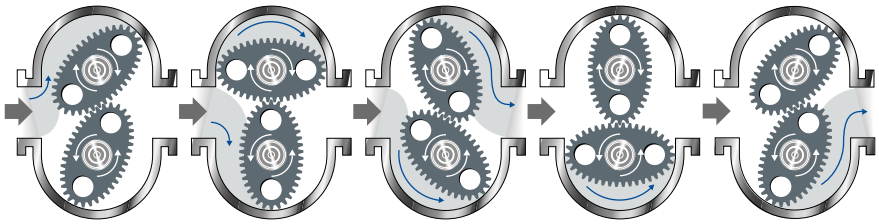
The following installation conditions must also be observed:

- 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.

6. Product operation

6.1. 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.

The electronic component converts the measured signal into several outputs (according to the device variant) and displays the actual value. Totalizers are used to obtain the volume of fluid passed through the pipe.
The electrical connection is provided via a male connector or via male connector M12 and a female connector M12, depending on variant.

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7. Product design and assembly

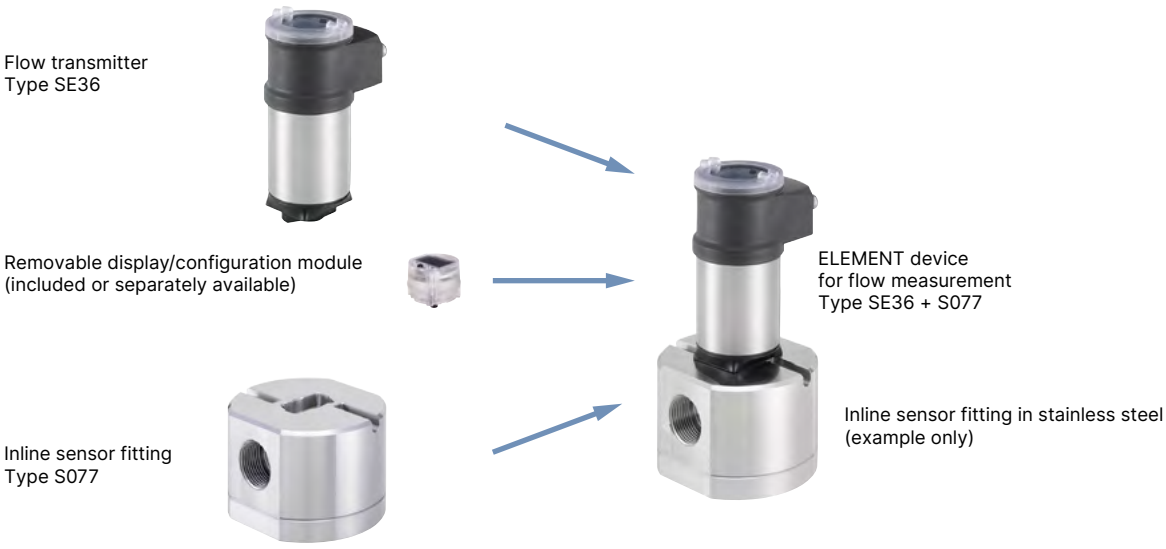
7.1. Product assembly

Note:

- The device Type SE36 + S077 is made up of a Bürkert Inline sensor-fitting Type S077 equipped with a sensor with oval gears and a transmitter Type SE36.
- The Inline sensor-fitting Type S077 ensures simple installation into pipes from DN 15...DN 100. The transmitter Type SE35 can be mounted on any Inline sensor-fitting Type S077 and fastened with a bayonet catch, see **data sheet Type S077** ▶ for more information.

The housing of the device contains the electronic module and a removable display/configuration module.

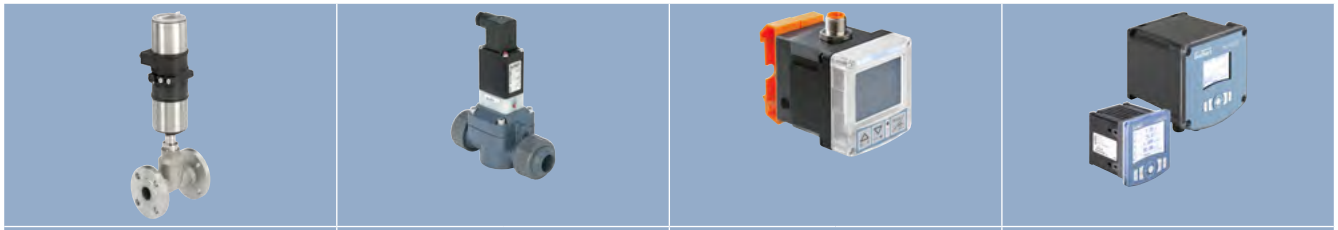
The device operates without the display/configuration module, but it is required for device configuration (i.e. set or restore parameters, configure information to be displayed, enter access codes...) and also for visualizing continuously the measured and processed data.



8. Networking and combination with other Bürkert products

Example:

Type SE36 + S077



Type 8801 ▶ Valve system On/Off ELEMENT	**Type 8801** ▶ Valve system On/Off ELEMENT	**Type 8611** ▶ eCONTROL - Universal controller	**Type 8619** ▶ multiCELL - transmitter/controller

9. Ordering information

9.1. 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

9.2. Recommendation regarding product selection

Note:
When only ordering devices without a display/configuration module, make sure that you have at least one display/configuration module to configure the device. Otherwise you must also order one (see chapter "9.5. Ordering chart accessories" on page 12).

A complete flowmeter Type SE36 + S077 consists of a flow transmitter Type SE36 and an Inline sensor-fitting Type S077.

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

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

- **Article no.** of the compact Type SE36 flow transmitter available with or without display/configuration module (see chapter "9.4. Ordering chart" on page 12)
- **Article no.** of the removable display/configuration module, if necessary (see chapter "9.5. Ordering chart accessories" on page 12)
- **Article no.** of the selected Type S077 Inline sensor-fitting (see **data sheet Type S077** ▶)

9.3. Bürkert product filter

Bürkert product filter – Get quickly to the right product

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

Try out our product filter

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9.4. Ordering chart

Transmitter Type SE36

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 no.s. have a transparent cover as standard.

Operating voltage	Output	UL approval	Electrical connection [1.)]	Article no.	
				Without display/ configuration module	With display/ configuration module
14...36 V DC	2 outputs: 1 x transistor NPN + 1 × 4...20 mA (2 wires)	–	5-pin M12 male connector	560880	561880
		UL-Recognized		560883	561883
	3 outputs: 2 x transistors NPN/PNP + 1 × 4...20 mA (2 wires)	–		560881	561881
		UL-Recognized		560884	561884
12...36 V DC	4 outputs: 2 x transistors NPN/PNP + 2 × 4...20 mA (3 wires)	–	5-pin M12 male and 5-pin M12 female connectors	560882	561882
		UL-Recognized		560885	561885

1.) Must be ordered separately (see chapter "9.5. Ordering chart accessories" on page 12): M12 male/female connectors (only 1 M12 female for the variant with one 4...20 mA output, 1 M12 male and 1 M12 female for the variant with two 4...20 mA outputs of the device)

9.5. Ordering chart accessories

Description	Article no.
Spare part	
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
Electrical connection	
M12 female connector with plastic threaded clamping ring, 5-pin, straight, to be wired	917116
M12 male connector with plastic threaded clamping ring, 5-pin, straight, to be wired	560946
M12 female connector with moulded cable (shielded), 5-pin, straight, cable length: 2 m	438680
M12 male connector with moulded cable (shielded), 5-pin, straight, cable length: 2 m	559177
Configuration accessory	
Removable display/configuration module (with instruction sheet)	559168

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