bürkert
FLUID CONTROL SYSTEMS

Insertion flowmeter with paddle wheel, ELEMENT design

- Up to PN10, size of measurement pipes: DN 20…DN 400
- 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.

Can be combined with

Type 8692 ▸
Digital electropneumatic Positioner for the integrated mounting on process control valves

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

Type 8644 ▸
Remote Process Actuation Control System AirLINE

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

Type 8611 ▸
eCONTROL - Universal controller

Type S020 ▸
Insertion fitting for flow or analytical measurement

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

Type description

The flowmeter Type 8026 is a compact device, specially designed for measuring the flow rate in solid-free liquids, in a variety of applications (water, waste water monitoring, chemical processing, etc.).

Type 8026 is available with:
- 2 configurable outputs: one transistor output (NPN) and one 4…20 mA current output (2-wire)
- 3 configurable outputs: two transistor outputs (NPN/PNP) and one 4…20 mA current output (2-wire)
- 4 configurable outputs: two transistor outputs (NPN/PNP) and two 4…20 mA current outputs (3-wire).

Type 8026 converts the measured signal, displays different values in different units (if display/configuration module 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	
Please make sure the device materials are compatible with the fluid you are using. Detailed information can be found in chapter "3.1. Chemical Resistance Chart – Bürkert resistApp" on page 5.	
Non wetted parts	
Housing	Stainless steel 1.4404, PPS
Cover	Polycarbonate (PC), transparent (opaque on request)
Display/configuration module	PC
Navigation key	PBT
Union nut	PC
Seals	EPDM, silicone
Screws	Stainless steel 1.4401 (316 (A4))
Fixed connector holder	PPS CF30
Fixed connector	Nickel-plated brass (stainless steel on request)
Grounding terminal and screw	Stainless steel 1.4301 (304 (A2))
Wetted parts	
Seal	FKM standard (EPDM included, but not mounted)
Axis and bearings	Ceramics (Al_2O_3)
Sensor armature, paddle wheel	PVDF
Dimensions	Detailed information can be found in chapter "4. Dimensions" on page 6.
Measuring principle	Paddle wheel
Compatibility	Any pipe from DN 20[1.)]…DN 400 which is fitted with Bürkert S020 Insertion fitting. For the selection of the nominal diameter of the Insertion fittings, see **data sheet Type S020** ▶.
Pipe diameter	DN 20[1.)]…DN 400
Measuring range	• Flow rate: 0.5…75000 l/min (0.13…19813 gpm) • Flow velocity: 0.3…10 m/s
Product accessories	
Display/configuration module	Grey dot matrix 128 x 64 with backlighting
Performance data	
Measurement deviation	• Teach-In: ±1 % of the measured value[2.)] at Teach-In flow rate value • Standard K-factor: ±2.5 % of the measured value[2.)]
Linearity	±0.5 % of full scale[2.)]
Repeatability	±0.4 % of the measured value[2.)]
4…20 mA output uncertainty	±1 % of range
Electrical data	
Operating voltage	• 2 or 3 outputs transmitter (2-wire) version: 14…36 V DC, filtered and regulated • 4 outputs transmitter (3-wire) version: 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 60950-1 standards or limited energy circuit according to UL/EN 61010-1 §9.4
DC reverse polarity protection	Yes
Overvoltage protection	Yes
Current consumption	With sensor • ≤1 A (with transistors load) • 2 or 3 outputs transmitter (2-wire) version: ≤25 mA (at 14 V DC without transistors load, with current loop) • 4 outputs transmitter (3-wire) version: ≤5 mA (at 12 V DC without transistors load, without current loop)
Power consumption	Max. 40 W

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Outputs	
Transistor	• 1 transistor output (transmitter 2-wire): – NPN, open collector – 1…36 V DC – Max. 700 mA • 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	4…20 mA adjustable as sourcing or sinking (in the same mode as transistor): • 1 current output (transmitter 2-wire) Max. loop impedance: 1100 Ω at 36 V DC; 610 Ω at 24 V DC; 180 Ω at 14 V DC • 2 current outputs (transmitter 3-wire) Max. loop impedance: 1100 Ω at 36 V DC; 610 Ω at 24 V DC; 100 Ω at 12 V DC
Voltage supply cable	For the female M12 connector and/or the male M12 connector (not supplied, to order separately, see chapter "10.5. Ordering chart accessories" on page 11) use a shielded cable. • Ø 3…6.5 mm • Cross section of wires: max. 0.75 mm²
Medium data	
Fluid temperature	With fitting Type S020 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 S020** ▶ for more information.
Fluid pressure	Max. PN 10 (145 PSI) See **data sheet Type S020** ▶ for more information.
Viscosity	Max. 300 cSt
Rate of solid particles	Max. 1 %
Maximum particle size	0.5 mm
Process/Port connection & communication	
Process connection	G 2" for use with Type S020 Insertion fitting See **data sheet Type S020** ▶ for more information.
Electrical connection	• 2 or 3 outputs transmitter (2-wire) version: 1 x 5 pin M12 male fixed connector • 4 outputs transmitter (3-wire) version: 1 x 5 pin M12 male and 1 x 5 pin M12 female fixed connectors
Approvals and Certificates	
Standards	
Degree of protection[3,]	IP65, IP67 (according to EN60529), NEMA 4X (according to NEMA250) with device wired and M12 cable plug mounted and tightened and cover fully screwed down
Directives	
CE directives	The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable).
Pressure equipment directives	Complying with Article 4, Paragraph 1 of 2014/68/EU directive Detailed information on the pressure equipment directive can be found in chapter "2.2. Pressure Equipment Directive" on page 5.
Certification	UL-Recognized for US 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

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Equipment mobility	Fixed
Application range	Indoor and outdoor (protect the device against electromagnetic interference, ultraviolet rays and 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.) Restricted to some fitting process connections

2.) Under reference conditions i.e. measuring fluid = water, ambient and water temperature = 20 °C (68 °F), while maintaining the minimum inlet and outlet distances and the appropriate internal diameters of the pipes.

3.) Not evaluated by UL

2. Approvals

2.1. Certification UL

Certificate	Description
c UL us	**UL-Recognized for USA and Canada** Products are UL-certified products and comply also with the following standards: • UL 61010-1 • CAN/CSA-C22.2 No.61010-1

2.2. Pressure Equipment Directive

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

3. Materials

3.1. Chemical Resistance Chart – 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

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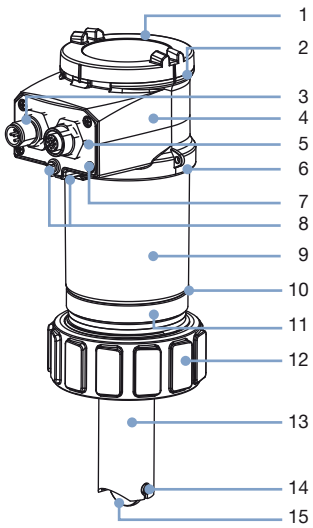
3.2. Material specifications

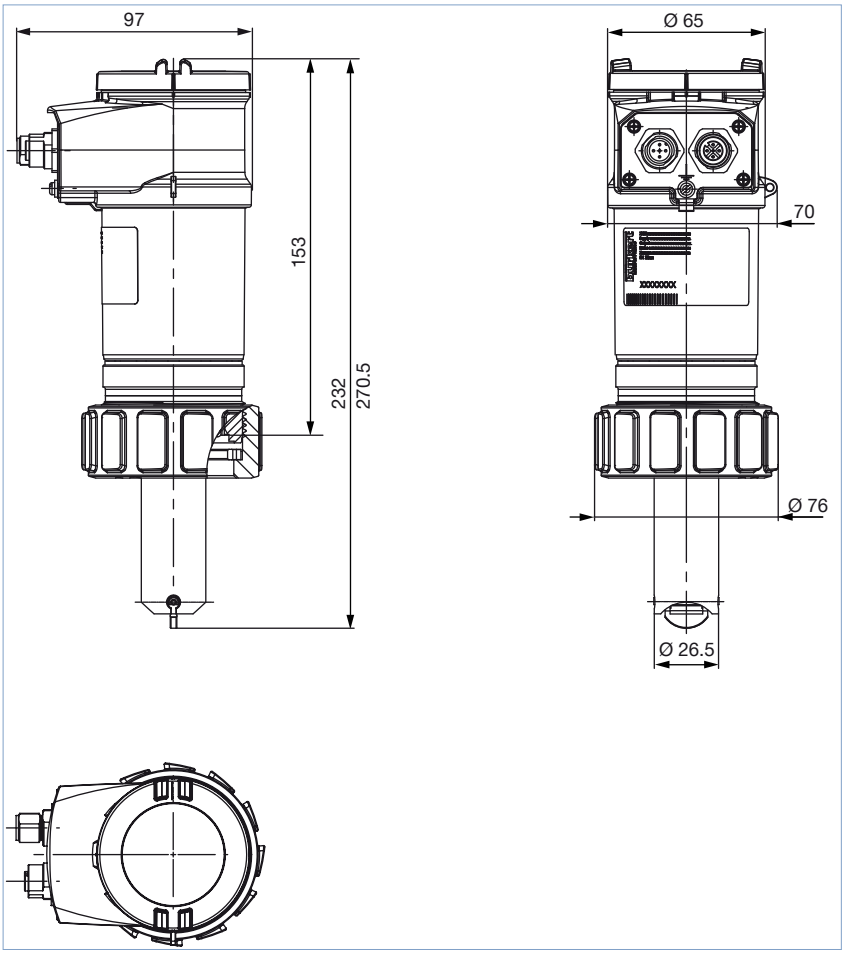


No.	Element	Material
1	Cover	PC
2	Seal	Silicone
3	Fixed connector (female /male M12)	Nickel-plated brass
4	Housing (top)	PPS
5	Fixed connector holder	PPS CF30
6	Seal	EPDM
7	Screws	Stainless steel 1.4301 (304 (A2))
8	Grounding terminal and screw	Stainless steel 1.4401 (316 (A4))
9	Housing (body)	Stainless steel
10	Seal	EPDM
11	Housing (base)	PPS
12	Union nut	PC
13	Sensor armature	PVDF
14	Axis and bearings	Ceramics (Al_2O_3)
15	Paddle wheel	PVDF

4. Dimensions

4.1. Flowmeter

Note:
Specifications in mm



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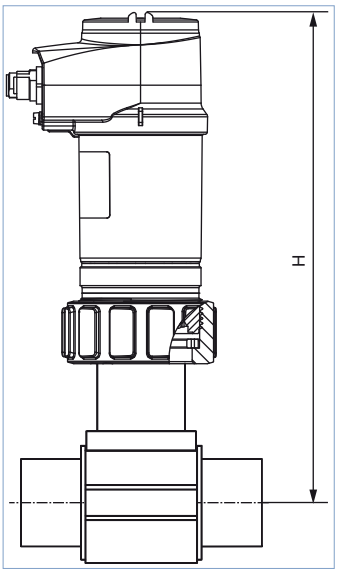
4.2. Flowmeter installed in a S020 fitting

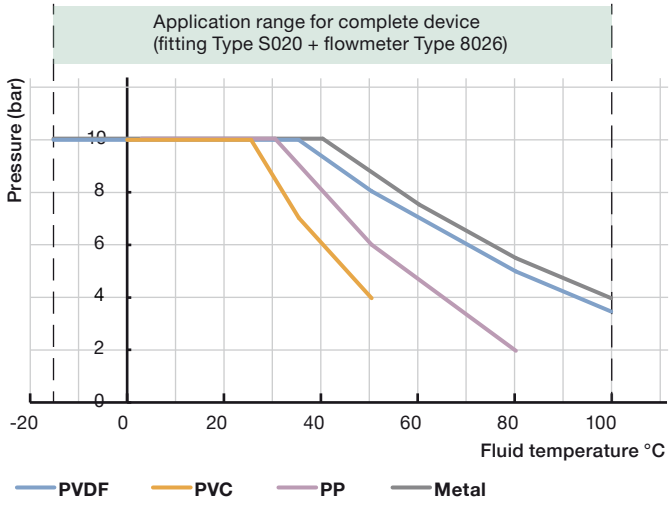
Note:
Specifications in mm



DN	H			
	T-Fitting	Saddle	Plastic spigot	Metal spigot
20	231.5	–	–	–
25	231.5	–	–	–
32	234.5	–	–	–
40	238.5	–	–	–
50	244.5	269.5	–	239.5
65	244.5	267.5	252.5	245.5
80	–	272.5	258.5	250.5
100	–	277.5	265.5	260.5
110	–	273.5	–	–
125	–	280.5	300.5	271.5
150	–	250.5	307.5	282.5
180	–	314.5	–	–
200	–	326.5	328.5	303.5
250	–	–	346.5	363.5
300	–	–	358.5	382.5
350	–	–	371.5	394.5
400	–	–	386.5	–

5. Performance specifications

5.1. Pressure temperature diagram



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6. Product installation

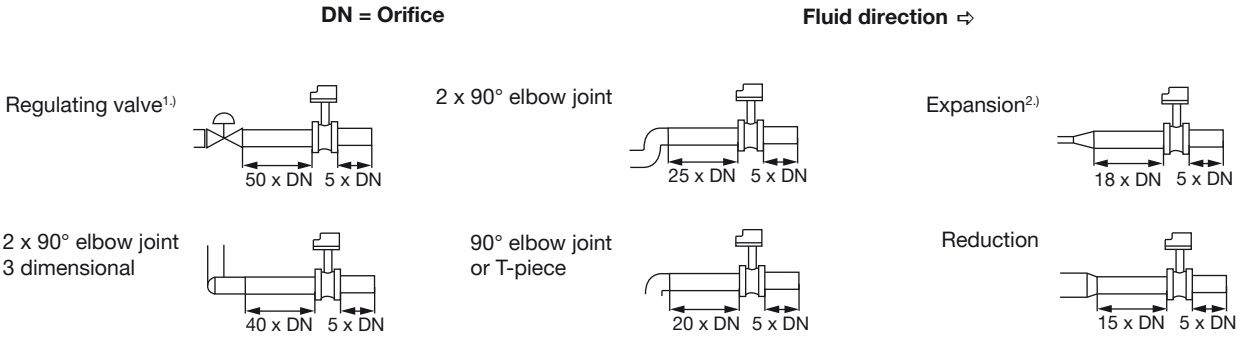
6.1. Installation notes

Note:
The flowmeter is not designed for gas and steam flow measurement.

Minimum straight upstream and downstream distances must be observed. According to the pipe's design, necessary distances can be bigger or use a flow conditioner to obtain the best accuracy.

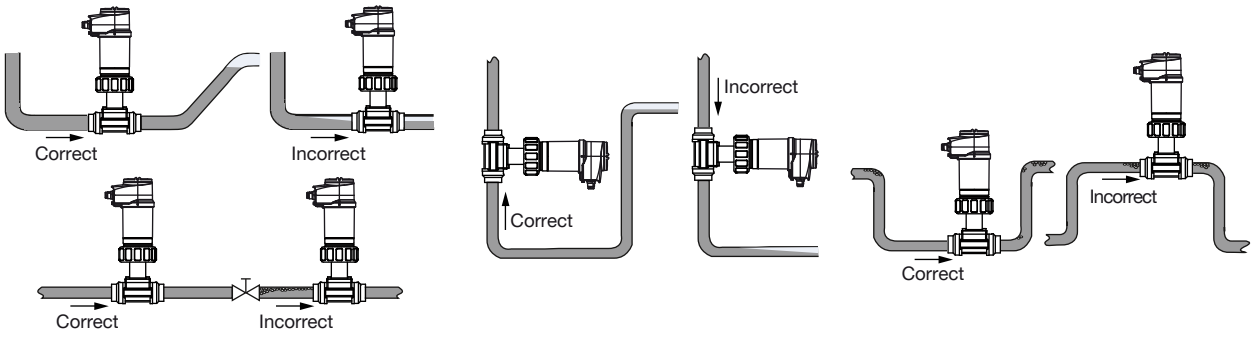
For more information, please refer to EN ISO 5167-1.
EN ISO 5167-1 specifies the straight inlet and outlet distances that must be complied with when installing fittings in pipe lines in order to achieve calm flow conditions. The most important layouts that could lead to turbulence in the flow are shown below, together with the associated specified minimum inlet and outlet distances.

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 flowmeter can be installed into either horizontal or vertical pipes.
Important criteria for this are; ensure that the measurement pipe is fully filled and that the measurement pipe is free of bubbles.



Pressure and temperature ratings must be respected according to the selected fitting material. The suitable pipe size is selected using the diagram for selecting the nominal diameter of the fitting, see **data sheet Type S020** ▸ for more information.

7. Product operation

7.1. 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 (available in the instruction manual of the S020 fitting), specific to each pipe (size and material) enables the conversion of this frequency into a flow rate.

The electronic component converts the measured signal into several outputs (according to the flowmeter version) and displays the actual value. Totalizers are used to obtain the volume of fluid passed through the pipe.
The electrical connection is provided via one or two M12 fixed connectors.

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8. Product design and assembly

8.1. Product assembly

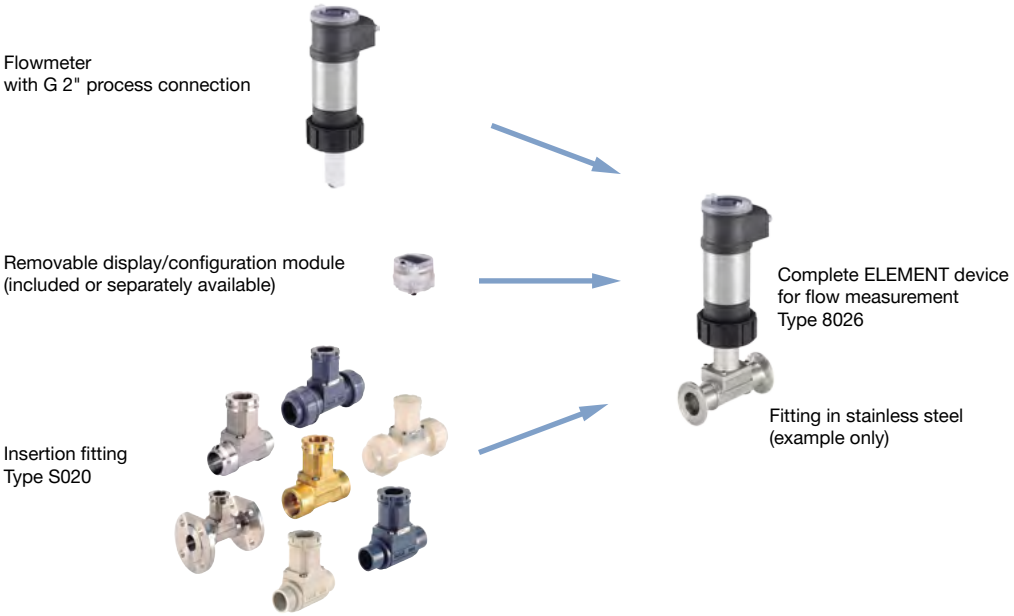
Note:

- The 8026 flowmeter can easily be installed into any Bürkert Insertion fitting system (S020) by just fixing the main nut.
- The S020 Insertion fitting ensures simple installation into pipes from DN 20…DN 400.

See **data sheet Type S020** ▸ for more information.

The device is equipped with a sensor with a paddle wheel, available in long or short version (dependent on the size of the used fitting). This sensor holder is plugged-in and pinned to an enclosure with cover containing the electronic module.

A removable display/configuration module completes this flowmeter. The flowmeter can operate without the display/configuration 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.



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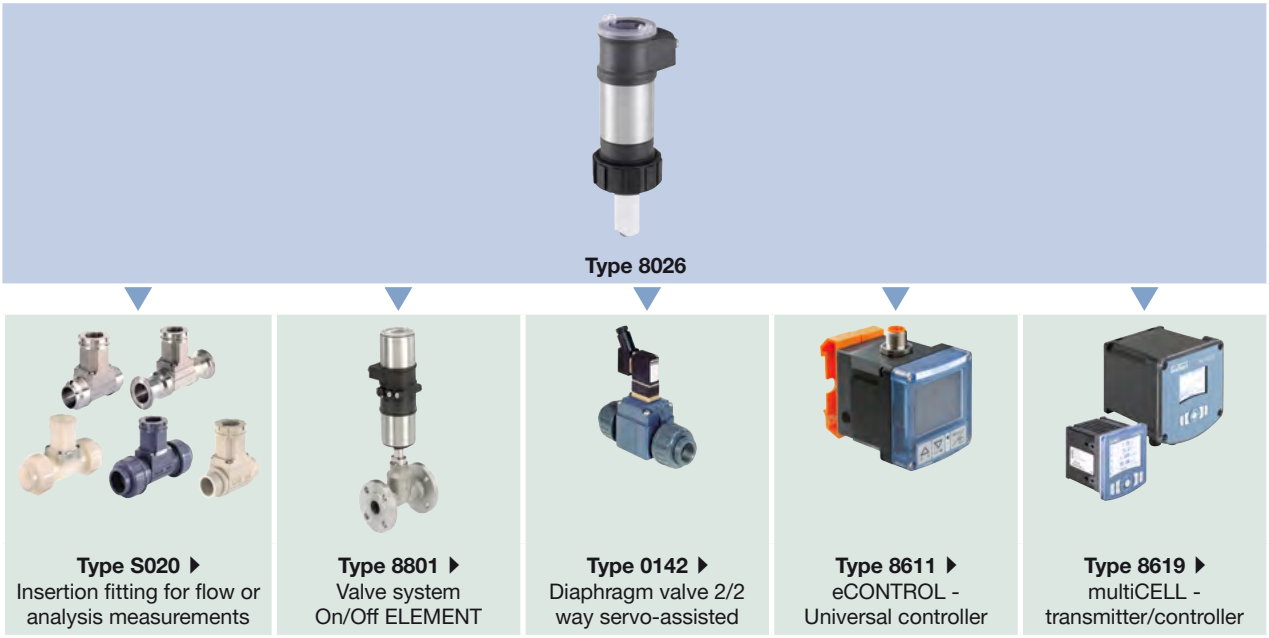
9. Networking and combination with other Bürkert products

Example:



10. Ordering information

10.1. Bürkert eShop – Easy ordering and quick delivery

Bürkert eShop – Easy ordering and fast 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

Note:

- A complete flow measurement equipment consists of a ELEMENT flowmeter Type 8026, a removable display/configuration module and a Bürkert Insertion fitting Type S020.
- When you order devices without display/configuration module, please take care that you also order at least one display/configuration module for parametrising the device (see chapter "10.5. Ordering chart accessories" on page 11).

See **data sheet Type S020** ▶ for more information.

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

- **Article no.** of the desired flowmeter **Type 8026** available with or without display/configuration module (see chapter "10.4. Ordering chart" on page 11)
- **Article no.** of the removable display/configuration module, if necessary (see chapter "10.5. Ordering chart accessories" on page 11)
- **Article no.** of the selected S020 Insertion fitting (see **data sheet Type S020** ▶)

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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

Note:

- All settings and digital output have to be adjusted with the optional available display/configuration module.
- All following article nos. have a transparent cover as standard.
- FKM seal in standard; 1 set including a green FKM and a black EPDM seals for the sensor and a mounting instruction sheet, is supplied with each flow meter.

Operating voltage	Output	Sensor version	UL certification	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)	Short	–	5 pin M12 male fixed connector	560860	561860
			UL-Recognized		560863	561863
		Long	–		560870	561870
			UL-Recognized		560873	561873
	3 outputs: 2 x transistors NPN/PNP + 1 × 4…20 mA (2 wires)	Short	–		560861	561861
			UL-Recognized		560864	561864
		Long	–		560871	561871
			UL-Recognized		560874	561874
12…36 V DC	4 outputs: 2 x transistors NPN/PNP + 2 × 4…20 mA (3 wires)	Short	–	5 pin M12 male and 5 pin M12 female fixed connectors	560862	561862
			UL-Recognized		560865	561865
		Long	–		560872	561872
			UL-Recognized		560875	561875

1.) Order separately (see chapter "11.5. Ordering chart accessories" on page 10): M12 cable plugs (only female for one 4…20 mA output, 1 male + 1 female for two 4…20 mA outputs flowmeter)

10.5. Ordering chart accessories

Description	Article no.
Removable display/configuration module (with instruction sheet)	559168
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
Mounting ring (open) for S020 fitting	619205
PC - nut for S020 fitting	619204
5 pin M12 female straight cable plug with plastic threaded locking ring, to be wired	917116
5 pin M12 male straight cable plug with plastic threaded locking ring, to be wired	560946
5 pin M12 female straight cable plug moulded on cable (2 m, shielded)	438680
5 pin M12 male straight cable plug moulded on cable (2 m, shielded)	559177

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