bürkert
FLUID CONTROL SYSTEMS

Flowmeter for the continuous measurement of water

- Ultrasonic flowmeter using transit time method
- Dynamic range ≥ 1:250
- Low pressure drop
- No flow-settling section necessary in the inlet or outlet

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

Can be combined with

Type 8032 ▸
Flowmeter/Threshold detector with paddle wheel

Type 8611 ▸
eCONTROL - Universal controller

Type 8802 ▸
ELEMENT continuous control valve systems - overview

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

Type description

The ultrasonic flowmeter Type 8081 is designed for the flow measurement of water which may also be slightly contaminated.

The device consists of a brass fitting with an integrated measuring tube and a transmitter. It is available in 5 variants: QN 0.6 DN 15, QN 1.5 DN 15, QN 2.5 DN 20, QN 3.5 DN 25, QN 6.0 DN 25 with flow rate ranges of 0.06 to 20 l/min (nominal flow rate 0.6 m^3/h i.e. 10 l/min), 0.1 to 50 l/min (nominal flow rate 1.5 m^3/h i.e. 25 l/min), from 0.16 to 82 l/min (nominal flow rate 2.5 m^3/h i.e. 41 l/min), from 0.6 to 116 l/min (nominal flow rate 3.5 m^3/h i.e. 58 l/min) and from 1 to 200 l/min (nominal flow rate 6.0 m^3/h i.e. 100 l/min) respectively.

Each variant has either a pulse output or a pulse output and a 4…20 mA current output. The electrical connection is made via a 5-pin M12 male connector.

Combined with a controller and a control valve, the device can be used to set up a control loop.

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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 5**. Further information on the materials can be found in chapter **"3.2. Material specifications" on page 5**.	
Non wetted parts	
Cover	PA
Housing	PPS
Screw	Stainless steel
Fixed connector	Silicone
Wetted parts	
Fitting body	Brass
Measuring tube	PES
Seal	EPDM
Pipe diameter	DN 15…DN 25
Dimensions	Further information can be found in chapter **"4. Dimensions" on page 5**.
Measuring element	2 ultrasound emitter-receiver cells
Measuring range	0.06…200 l/min
Performance data	
Measurement deviation	Flowrate: ≤(0.01 % of full scale +2 % of measuring value)[1.)] Further information can be found in chapter **"5.1. Measurement deviation diagram" on page 6**.
Repeatability	≤1 %
Electrical data	
Operating voltage (V+)	12…36 V DC
Current consumption	• Own consumption: <4 mA • Consumption with load: <1 A
Output	The device is available with a pulse output or with a pulse output and a 4…20 mA analogue outputs • Device with a pulse (transistor) output: – Pulse (transistor): NPN (as default setting) or PNP (on request), open collector NPN-output: 0.2…36 V DC, max. 700 mA, min. 5 mA Galvanic insulation and protected against overvoltage, polarity reversals and short circuit • Device with a pulse (transistor) and a 4…20 mA analogue outputs: – Pulse (transistor): PNP (as default setting) or NPN (on request), open collector PNP-output: operating voltage (V+), max. 700 mA Galvanic insulation and protected against overvoltage, polarity reversals and short circuit – Current: 4…20 mA (sourcing mode and PNP transistor as default setting, sinking mode and NPN transistor on request) Loop impedance max.: 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 100 Ω at 12 V DC
Scaling	• Pulse (transistor): – Variants QN 0.6 or QN 1.5 : 1 pulse corresponds to a volume = 0.002 l (K factor = 500 pulse/litre) – Variants QN 2.5 or QN 3.5 : 1 pulse corresponds to a volume = 0.005 l (K factor = 200 pulse/litre) – Variant QN 6 : 1 pulse corresponds to a volume = 0.01 l (K factor = 100 pulse/litre) • Current: 4 mA correspond to 0 l/min and 20 mA correspond to Q_{max}. of flow range (by default)
Voltage supply cable	1.5 mm^2 max. cross-section

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Medium data	
Fluid temperature	+5…+90 °C (+41…+194 °F)
Fluid pressure	PN 16 (232.16 PSI)
Process/Pipe connection & communication	
Pipe connection	G or NPT external thread; ¾", 1" or 1"¼
Electrical connection	5-pin M12 male connector for 5-pin M12 female connector (not provided)
Approvals and conformities	
Directives	
CE directive	Further information on the CE Directive can be found in chapter "2.2. Standards" on page 4.
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 "2.3. Pressure Equipment Directive (PED)" on page 4.
Others	On request: • Calibration certificate • Test report 2.2
Environment and installation	
Ambient temperature	Operating and storage: +5…+55 °C (+41…+131 °F)
Relative air humidity	≤80 %, without condensation
Height above sea level	Max. 2000 m
Degree of protection according to IEC/EN 60529	IP65 with M12 cable plug plugged-in and tightened

1.) Under reference conditions i.e. measuring medium = water, ambient and water temperature = +20 °C (+68 °F)

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2. Approvals and conformities

2.1. Conformity

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

2.2. 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.

2.3. 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

3. Materials

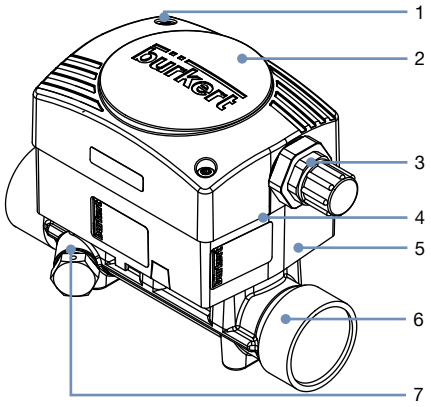
3.1. Bürkert resistApp

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

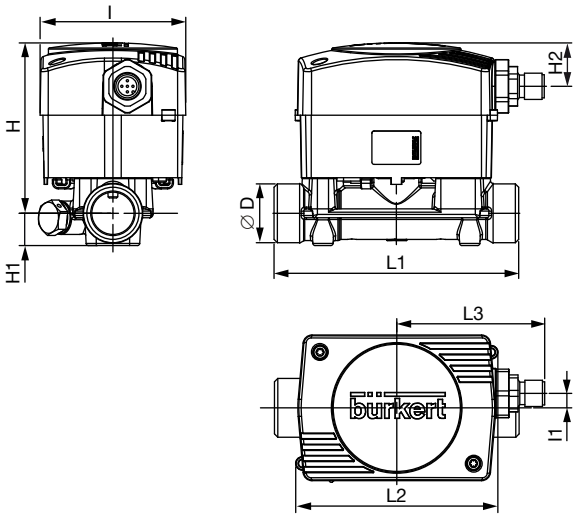
3.2. Material specifications



No.	Element	Material
1	Screws	Stainless steel
2	Cover	PPS
3	M12 male connector	PA
4	Seal	Silicone
5	Housing	PPS
6	Fitting and measuring tube (inside fitting)	Brass and PES
7	Seal	EPDM

4. Dimensions

Note:
Dimensions in mm, unless otherwise stated



DN	H	H1	H2	L1	L2	L3	Ø D	I	I1
15	76.5	14.5	19.5	110	90	67	G or NPT ¾"	65.5	6.5
20	79.0	18.0	19.5	130	90	67	G or NPT 1"	65.5	6.5
25	83.5	23.0	19.5	260	90	67	G or NPT 1¼"	65.5	6.5

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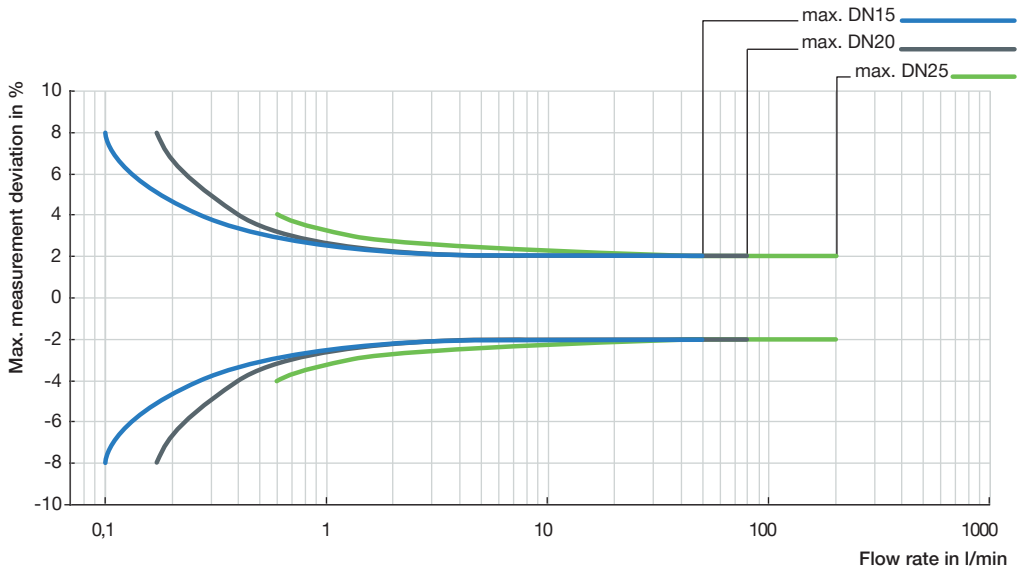
5. Performance specifications

5.1. Measurement deviation diagram



6. Product installation

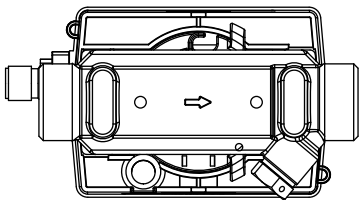
6.1. Installation notes

Flow measurement

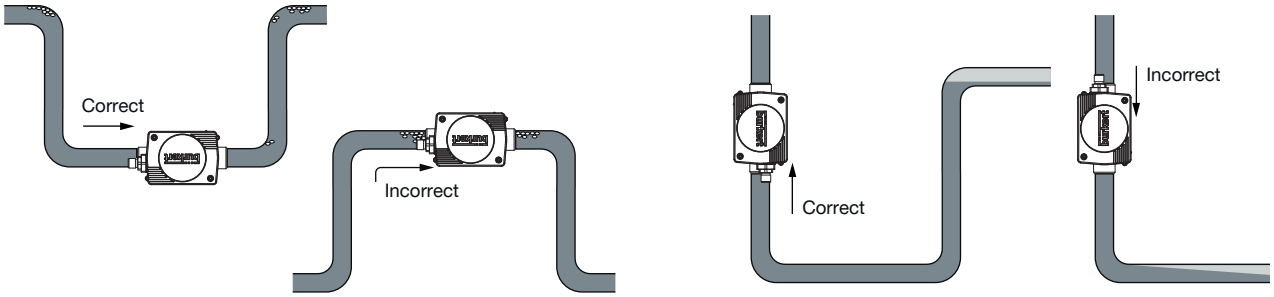
Note:

- The device is not suitable for use in gaseous media and steam.
- Minimum straight upstream and downstream distances are not necessary.

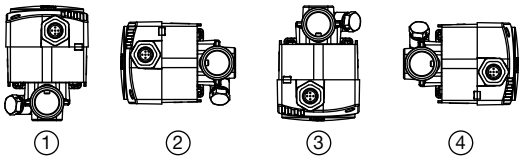
The correct direction of fluid flow in the pipe is indicated with an arrow, engraved on the underside of the fitting.



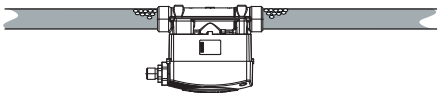
The flowmeter can be installed into either horizontal or vertical pipes. When horizontally mounted, the max. fluid temperature is 90 °C. The max. fluid temperature must be reduced to 80 °C when the electronic (black enclosure) is turned upwards. When vertically mounted the max. fluid temperature is also 80 °C.



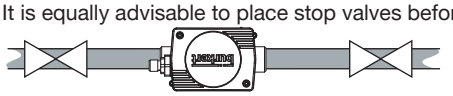
The Type 8081 works correctly when the pipe is full and free of any air bubbles near the flowmeter. In presence of bubbles in the pipe, the left installation no.1 should be avoided.



If the absence of any air bubbles cannot be guaranteed, the device should be fitted on a horizontal pipe, with the electronic enclosure facing down. This way, the bubbles will not interfere with the propagation of ultrasound waves.



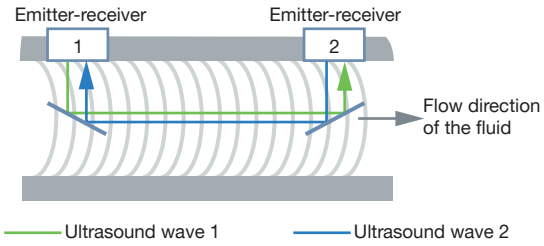
It is equally advisable to place stop valves before and after the flowmeter, in order to facilitate the assembly and disassembly of the latter.

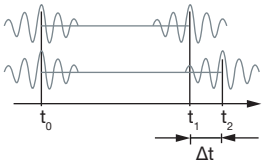


7. Product operation

7.1. Measuring principle

The Type 8081 ultrasonic flowmeter is based on the transit time method. The sound transit time from emitter 1 to receiver 2 will be measured and compared with the transit time from emitter 2 to receiver 1. The difference in transit time is directly proportional to the flow speed of the fluid.





The electronic module delivers a pulse signal proportional to the volume or an industry standard 4…20 mA signal, proportional to the flow rate.

8. Ordering information

8.1. 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

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8.2. 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

8.3. Ordering chart

Variant	DN	Measuring range	Pipe connection	Output	Article no.
QN 0.6	15	0.06…20 l/min	External thread G ¾"	Pulse, NPN	560131
				Pulse, PNP +4…20 mA as source	560113
			External thread NPT ¾"	Pulse, NPN	560612
				Pulse, PNP +4…20 mA as source	560617
QN 1.5	15	0.1…50 l/min	External thread G ¾"	Pulse, NPN	559865
				Pulse, PNP +4…20 mA as source	559868
			External thread NPT ¾"	Pulse, NPN	560613
				Pulse, PNP +4…20 mA as source	560618
QN 2.5	20	0.16…82 l/min	External thread G 1"	Pulse, NPN	559866
				Pulse, PNP +4…20 mA as source	559869
			External thread NPT 1"	Pulse, NPN	560614
				Pulse, PNP +4…20 mA as source	560619
QN 3.5	25	0.6…116 l/min	External thread G 1¼"	Pulse, NPN	559867
				Pulse, PNP +4…20 mA as source	559870
			External thread NPT 1¼"	Pulse, NPN	560615
				Pulse, PNP +4…20 mA as source	560620
QN 6.0	25	1…200 l/min	External thread G 1¼"	Pulse, NPN	560132
				Pulse, PNP +4…20 mA as source	560114
			External thread NPT 1¼"	Pulse, NPN	560616
				Pulse, PNP +4…20 mA as source	560621

8.4. Ordering chart accessories

Description	Article no.
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

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