



Flowmeter for continuous measurement of water

- Ultrasonic flowmeter operating according to the time of flight (TOF) principle
- Dynamic area $\geq 1:250$
- Minimal pressure loss
- No calming sections required at 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/multi-function transmitter/controller	►

Type description

The ultrasonic flowmeter Type 8081 is designed for measuring the flow rate of water, also with water with low levels of contamination.

The device consists of transmitter and a brass fitting with an integrated measuring tube. It is available in five 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, covering respective flow ranges of 0.06 to 20 l/min (nominal flow rate: 0.6 m³/h, i.e. 10 l/min), 0.1 to 50 l/min (1.5 m³/h, i.e. 25 l/min), 0.16 to 82 l/min (2.5 m³/h, i.e. 41 l/min), 0.6 to 116 l/min (3.5 m³/h, i.e. 58 l/min), and 1 to 200 l/min (6.0 m³/h, i.e. 100 l/min).

Each variant is fitted either with a pulse output or a pulse output and a 4...20 mA current output. The electrical connection is via a 5-pole M12 plug.

A control circuit can be created by combining the device with a controller and a control valve.

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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: $\leq (0.01\% \text{ of full scale} + 2\% \text{ of measuring value})^{1)}$ Further information can be found in chapter "5.1. Measurement deviation diagram" on page 6 .
Repeatability	$\leq 1\%$

Electrical data

Operating voltage (V+)	12...36 V DC
Current consumption	<ul style="list-style-type: none"> Own consumption: $< 4 \text{ mA}$ Consumption with load: $< 1 \text{ A}$
Output	<p>The device is available with a pulse output or with a pulse output and a 4...20 mA analogue outputs</p> <ul style="list-style-type: none"> Device with a pulse (transistor) output: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Pulse (transistor): <ul style="list-style-type: none"> 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

Medium data	
Fluid temperature	+ 5...+ 90 °C (+ 41...+ 194 °F)
Fluid pressure	PN 16 (232.16 PSI)
Product connections	
Pipe connection	G or NPT external thread; 3/4", 1" or 1 1/4"
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: <ul style="list-style-type: none"> • 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)

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

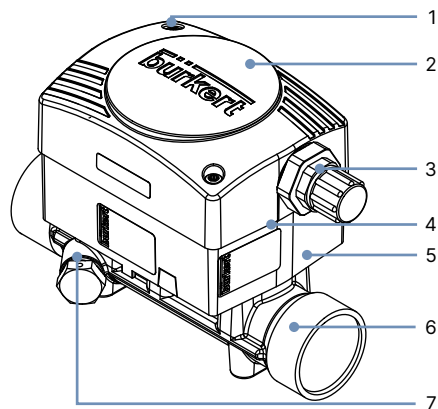


Bürkert resistApp – Chemical resistance chart

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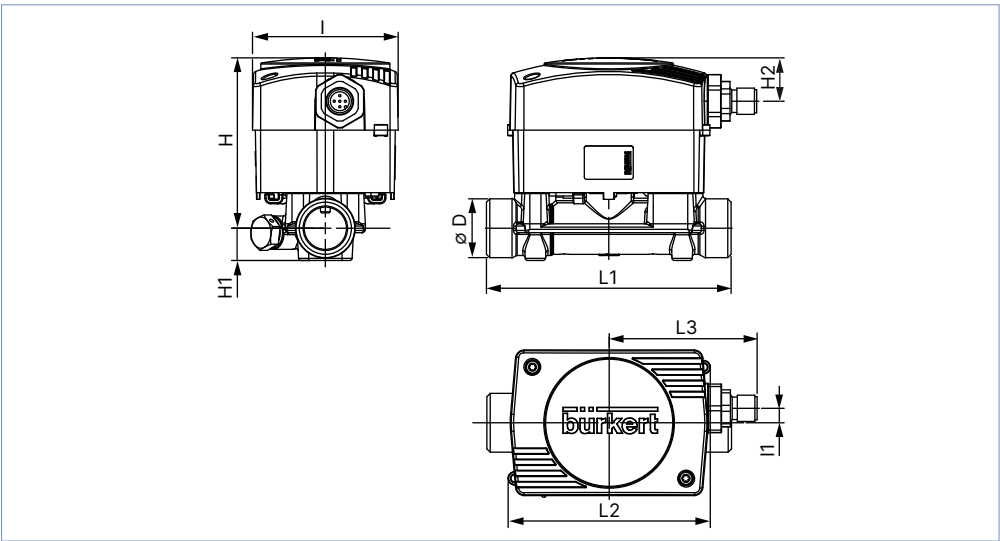
3.2. Material specifications



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

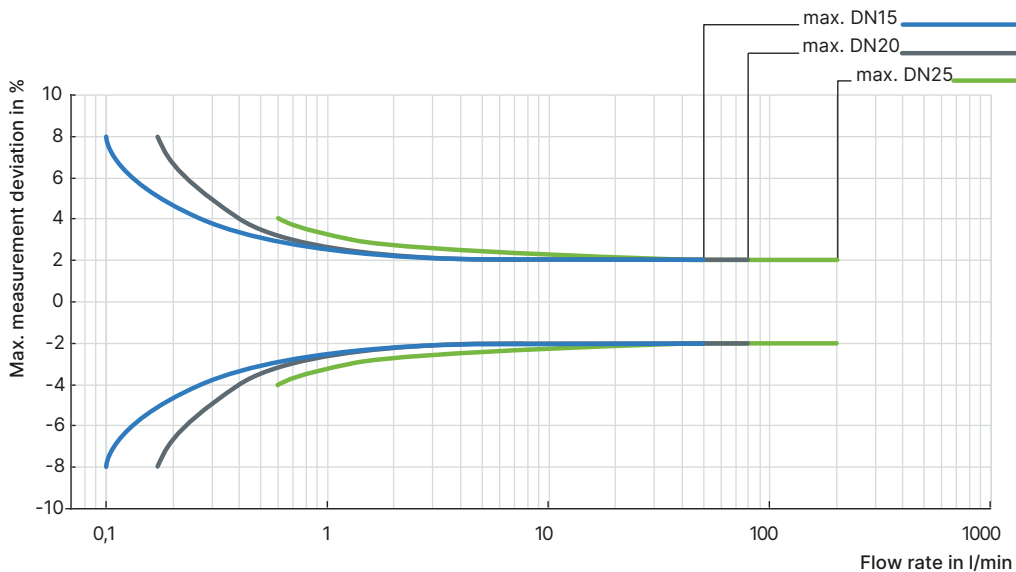
Note:
Dimensions in mm, unless otherwise stated



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

5. Performance specifications

5.1. Measurement deviation diagram



6. Product installation

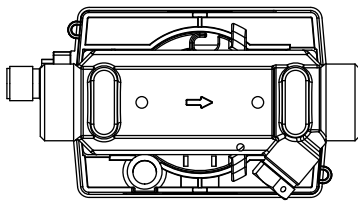
6.1. Installation notes

Flow measurement

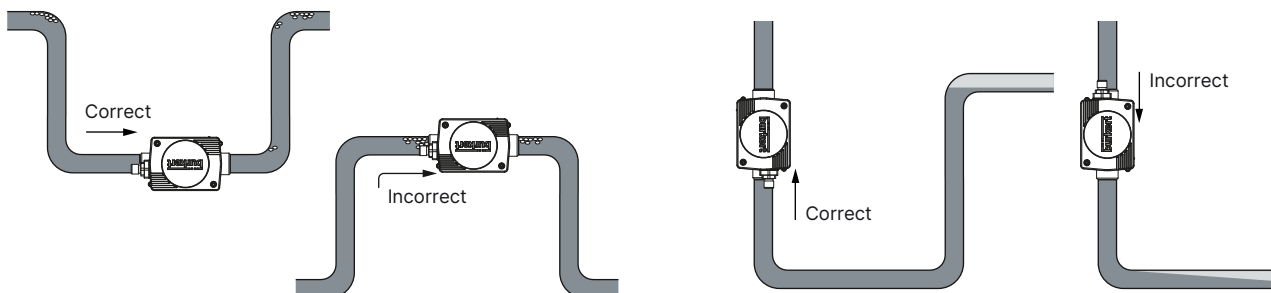
Note:

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

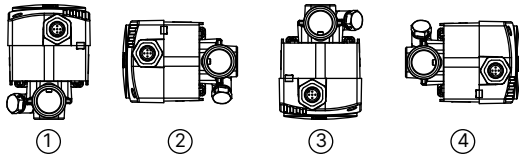
The correct direction of fluid flow in the pipe is indicated with an arrow, engraved on the underside of the fitting.



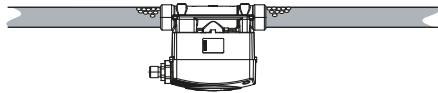
The flowmeter can be installed into either horizontal or vertical pipes. When horizontally mounted, the max. fluid temperature is 90 °C. The max. fluid temperature must be reduced to 80 °C when the electronic (black enclosure) is turned upwards. When vertically mounted the max. fluid temperature is also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



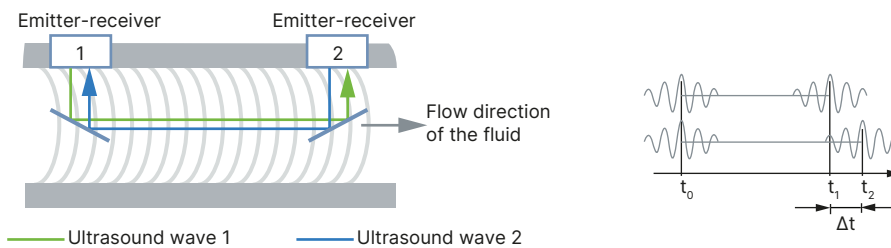
It is equally advisable to place stop valves before and after the flowmeter, in order to facilitate the assembly and disassembly of the latter.



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



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8.2. Bürkert product filter























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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 3/4"	Pulse, NPN	560131 
				Pulse, PNP + 4...20 mA as source	560113 
			External thread NPT 3/4"	Pulse, NPN	560612 
				Pulse, PNP + 4...20 mA as source	560617 
QN 1.5	15	0.1...50 l/min	External thread G 3/4"	Pulse, NPN	559865 
				Pulse, PNP + 4...20 mA as source	559868 
			External thread NPT 3/4"	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 1 1/4"	Pulse, NPN	559867 
				Pulse, PNP + 4...20 mA as source	559870 
			External thread NPT 1 1/4"	Pulse, NPN	560615 
				Pulse, PNP + 4...20 mA as source	560620 
QN 6.0	25	1...200 l/min	External thread G 1 1/4"	Pulse, NPN	560132 
				Pulse, PNP + 4...20 mA as source	560114 
			External thread NPT 1 1/4"	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 