



Flowmeter for water continuous measurement

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

Type 8081 can be combined with...



Type 8032
Flow transmitter



Type 8611
eCONTROL -
Universal controller



Type 8802
ELEMENT control
valve systems



Type 8619
multiCELL
transmitter

The Type 8081 ultrasonic flowmeter is intended for the measurement of water flows which may be slightly charged with contaminants. It consists of an electronic module and a brass fitting with a built-in measuring tube. It enables a control loop to be established. The electrical connection is made via a 5 pin M12 fixed connector.

The flowmeter features, depending on the version:

- a pulse output or
- a pulse output and a 4...20 mA current output.

Each version is available for 5 flow ranges:

- model QN 0.6 DN15: 0.06 to 20 l/min
(nominal flow rate 0.6 m³/h namely 10 l/min)
- model QN 1.5 DN15: 0.1 to 50 l/min
(nominal flow rate 1.5 m³/h namely 25 l/min)
- model QN 2.5 DN20: 0.16 to 82 l/min
(nominal flow rate 2.5 m³/h namely 41 l/min)
- model QN 3.5 DN25: 0.6 to 116 l/min
(nominal flow rate 3.5 m³/h namely 58 l/min)
- model QN 6.0 DN25: 1 to 200 l/min
(nominal flow rate 6.0 m³/h namely 100 l/min).

General technical data

Process connection	G or NPT External thread; ¾", 1" or 1"¼
Materials	
Housing, cover	PPS
Fixed connector M12	PA
Seal	Silicone
Materials wetted parts	
Fitting	Brass
Measuring tube	PES
Seal	EPDM
Electrical connection	5 pin M12 male fixed connector for female 5 pin M12 cable plug (not provided)
Connection cable	1.5 mm ² max. cross-section
Complete device data (fitting + electronic module)	
Pipe diameter	DN15...DN25
Measuring range	0.06...200 l/min
Measuring element	2 ultrasound emitter-receiver cells
Fluid temperature	+5...+90 °C (+41...+194 °F)
Fluid pressure max.	PN16 (232.16 PSI)
Measurement deviation¹⁾ (Flow-rate)	≤0.01 % (of F.S.) ²⁾ + 2 % (of measuring value) ³⁾
Repeatability	≤1 %

¹⁾ = "measurement bias" as defined in the standard JCGM 200:2012

²⁾ F.S. = Full scale (see flow range on accuracy diagram)

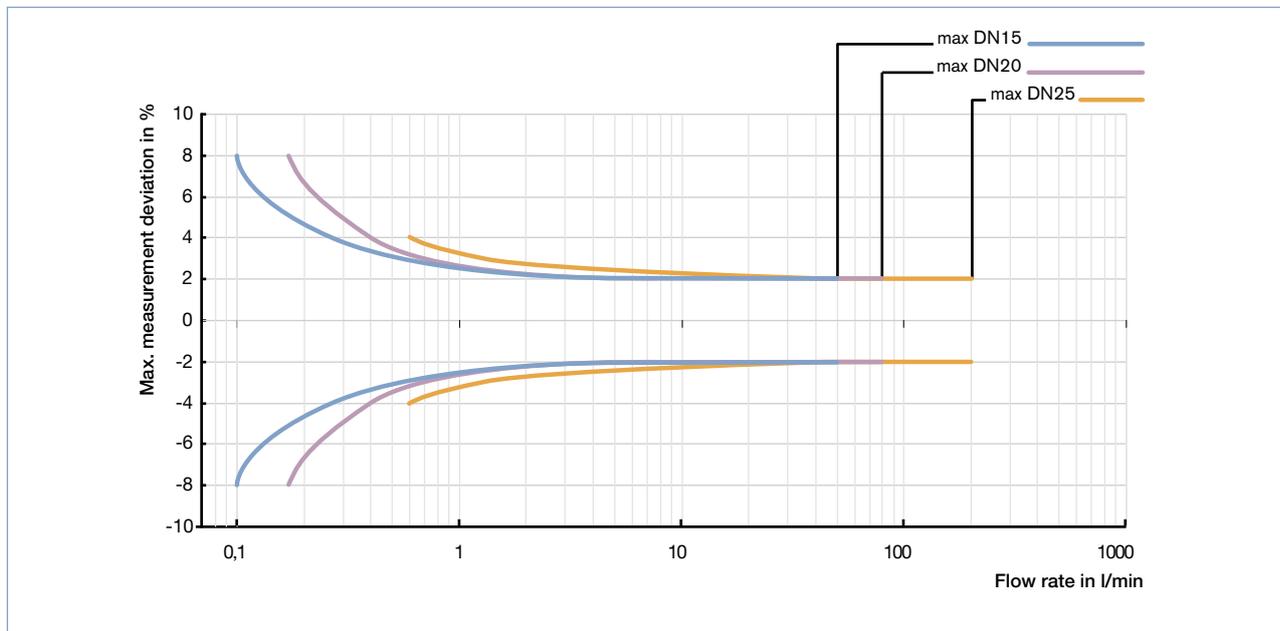
³⁾ Under reference conditions i.e. measuring fluid = water, ambient and water temperature = 20 °C (68 °F).

Electrical data	
Power supply (V+)	12...36 V DC
Current consumption	Own consumption: <4 mA Consumption with load: <1 A
Reversed polarity of DC	Protected
Voltage peak	Protected
Short circuit	Protected for transistor output
Output	
Pulse (transistor) version without current output	NPN (as default setting) or PNP (on request), open collector, 700 mA max., 5 mA min., NPN output: 0.2...36 V DC
version with current output	PNP (as default setting) or NPN (on request), open collector, 700 mA max., 5 mA min., PNP output: supply voltage (V+)
Current	4...20 mA (sourcing mode and PNP transistor as default setting, sinking mode and NPN transistor on request) loop resistance max.: 1100 Ω at 36 V DC 610 Ω at 24 V DC; 100 Ω at 12 V DC
Scaling	
Pulse (transistor)	K-factor: 500 Pulse/Litre (version QN 0.6 and 1.5) 200 Pulse/Litre (version QN 2.5 and 3.5) 100 Pulse/Litre (version QN 6.0)
Current	4 mA correspond to 0 l/min and 20 mA correspond to Q_{max} of flow range (by default)
Environment	
Ambient temperature	+5...+55 °C (+41...+131 °F) (operating and storage)
Relative humidity	≤80 %, without condensation
Standards, directives and certifications	
Protection class	IP65 with M12 cable plug plugged-in and tightened
Standards and directives CE	The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Ex- amination Certificate and/or the EU Declaration of conformity (if applicable)
Pressure	Complying with article 4, §1 of 2014/68/EU directive*
Certificates (on request)	Test report 2.2; Calibration certificate

* For the 2014/68/EU pressure directive, the device can only be used under the following conditions (depends on max. pressure, pipe diameter and fluid).

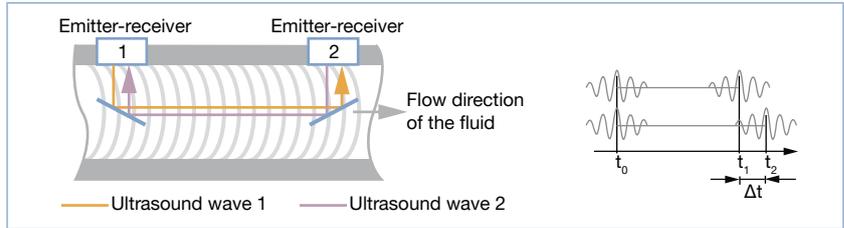
Type of Fluid	Conditions
Fluid group 1, article 4, §1.c.i	DN ≤ 25
Fluid group 2, article 4, §1.c.i	DN ≤ 32 or PN*DN ≤ 1000
Fluid group 1, article 4, §1.c.ii	DN ≤ 25 or PN*DN ≤ 2000
Fluid group 2, article 4, §1.c.ii	DN ≤ 200 or PN ≤ 10 or PN*DN ≤ 5000

Measurement deviation chart



Design and operating principle

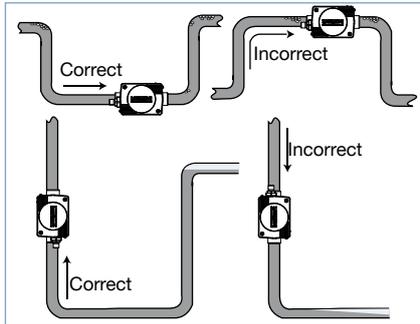
The 8081 ultrasonic flowmeter is based on the transit time method. The sound transit time from emitter 1 to receiver 2 will be measured and compared with the transit time from emitter 2 to receiver 1. The difference in transit time is directly proportional to the flow speed of the fluid.



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

Installation

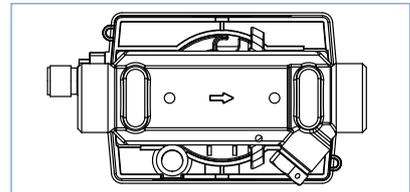
The 8081 ultrasound flowmeter can be fitted onto a horizontal or vertical pipe.



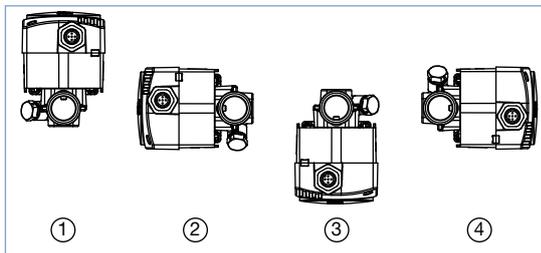
When horizontally mounted, the max. fluid temperature is 90 °C. The max. fluid temperature must be reduced to 80 °C when the electronic (black enclosure) is turned upwards. When vertically mounted the max. fluid temperature is also 80 °C.

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

Minimum upstream and downstream distances are not necessary.

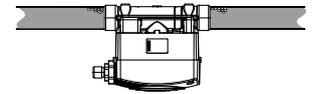


The 8081 works correctly when the pipe is full and free of any air bubbles near the flowmeter. In presence of bubbles in the pipe, the left installation no.1 should be avoided.



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.



Dimensions [mm]

DN	A	B	H	h	L1	L2	L3	L4	L5
15	G or NPT ¼"	65.5	76.5	14.5	110	90	67	6.5	19.5
20	G or NPT 1"	65.5	79.0	18.0	130	90	67	6.5	19.5
25	G or NPT 1 ¼"	65.5	83.5	23.0	260	90	67	6.5	19.5

Ordering chart for flowmeter Type 8081

Model	DN	Flow range	Process connection	Outputs	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

Ordering chart for accessories for flowmeter Type 8081 (to be ordered separately)

Description	Article no.
5 pin M12 female cable plug moulded on cable (2 m, shielded)	438680
5 pin M12 female cable plug with plastic threaded locking ring	917116

To find your nearest Bürkert facility, click on the orange box →

www.burkert.comIn case of special application conditions,
please consult for advice.Subject to alteration.
© Christian Bürkert GmbH & Co. KG

1802/7_EU-en_00895047