

ALSONIC High Temp

Allengra's Ultrasonic Flow Meter for High Temperature Applications



Overview

- For Water, Water+Glycol, DI Water *and many others*
- Accuracy $\pm 2\%$ of measured value
- Almost **no pressure loss**
- Analogue & Bus communication
- Integrated **Temperature Sensor**
- **Gas Bubble Detection**
- **Glycol Concentration Measurement & Compensation**

Operating conditions

Media	Water, Water-glycol mixtures, Oils <i>other media on request</i>
Medium temperature	-40 – 200 °C <i>fluid in liquid phase</i>
Medium over temperature	220 °C < 1 min
Operating pressure	0 – 40 bar
Burst pressure	50 bar
Ambient temperature	-25 – +90°C
Relative humidity	< 95 % rh
IP code	acc. to IP 44 <i>on request IP66</i>
Storage temperature	-40 - +80 °C
Lifetime	> 12 years

Compliance

CE Marking	Compliant to all applicable EU Directives (EMC, RoHS, PED)
REACH Regulation	Compliant
Drinking Water	All materials compliant to the German FEA guidelines (UBA BWGL)
Food	All materials compliant with EU regulations 1935/2004, 10/2011, NSF51 and FDA
Electrical Safety	Acc. to EN 60335-1, EN 60335-2-40

Materials

Wetted parts	Stainless Steel 316L / 1.4404
Non-wetted parts	PPS 40% GF, ABS

Features

Gas bubble detection	Identifies inefficiently vented-systems.
Glycol concentration	Measurement of glycol concentration , automatic volume flow compensation and freezing point estimation.

ALSONIC High Temp

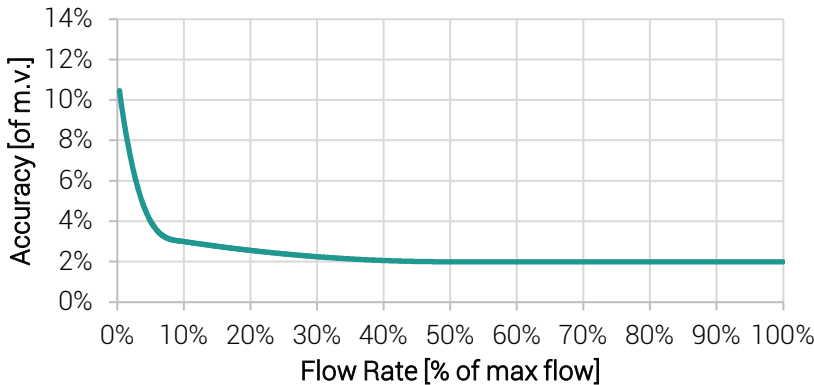
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Flow Measurement

Measurement technology	Ultrasonic	
Dimension	DN15	DN20 ¹
Measurement range [L/min]	0.15 - 50	0.3 - 100
Measurement range [L/h]	9 - 3000	18 - 6000
Accuracy	± 2 % of measured value ²	
Repeatability	± 1 % of measured value	
Response time	<0.5 s	

Accuracy funnel

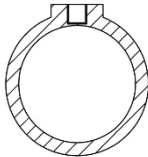


¹ Not yet in series production.

² Accuracy specification per accuracy funnel, assuming turbulence-free flow conditions (refer to [installation notes](#)).

Internal Temperature Measurement

Measurement type	Contact Sensor
Measurement element	PT1000
Measurement range	-40 – 240°C
Accuracy	± 0.5 K
Repeatability	± 0.3 K
Response time T ₉₀	< 5 s



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Electrical data

Power Supply	4.5-28 VDC
Current consumption	< 10 mA (< 40 mA during power up for 100 ms)
Protection class	III

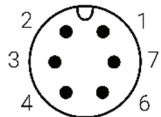
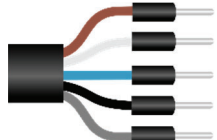
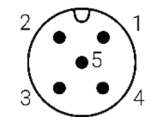
Electrical reliability

	Power Supply	0 – 5 V	Pulse	Modbus
Reverse voltage	Yes	N/A	N/A	N/A
ESD Protection	Yes	Yes	Yes	Yes
Overvoltage protection	Up to 30 V	N/A	N/A	N/A
EMI Protection	Yes	Yes	Yes	Yes
Short circuit of VCC over output interfaces	N/A	up to 13V	up to 28V	up to 15V

Electrical interface

Cable length	0.3 m	0.5 m	1.0 m	1.5 m
Max. perm. wire extension	Modbus < 50 m, Pulse 0 -5V < 10 m			

Configuration

Electrical Connection	Open cable ends		Flying M12 6-Pin Male	Open cable ends		Flying M12 5-Pin Male
						
	1	Modbus A/D-	ORANGE	1	VCC	BROWN
	2	VCC	RED	2	4 – 20 mA	WHITE
	3	Pulse	GREEN	3	GND	BLUE
	4	0 – 5 V	YELLOW	4	IO-Link	BLACK
	5	Modbus B/D+	BROWN	5	Pulse PNP/NPN	GREY
	7	GND	BLACK	¹ Not yet in series production		

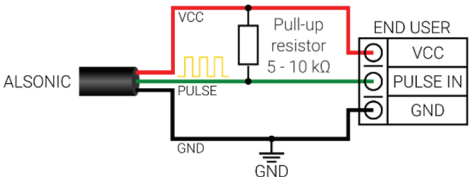
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PULSE / PWM channel

Channel assignment	Flow	
Type	Open collector	
PLC connection	 external 5 – 10 kΩ pull-up resistor required Voltage level equal to VCC (voltage pull-up resistor)	

Dimension	DN15	DN20 ¹
Pulses/Liter	1000	1000
Conversion	$\text{Volume Flow [L/h]} = \text{Frequency [Hz]} \cdot \frac{3600}{\text{Pulse Rate [Pulses/L]}}$	
	$\text{Frequency [Hz]} = \frac{\text{Pulse Rate [Pulses/L]} \cdot \text{Volume Flow [L/h]}}{3600}$	
¹ Not yet in series production.		

0 – 5 V channel *Supply Voltage > 5.5 V mandatory*

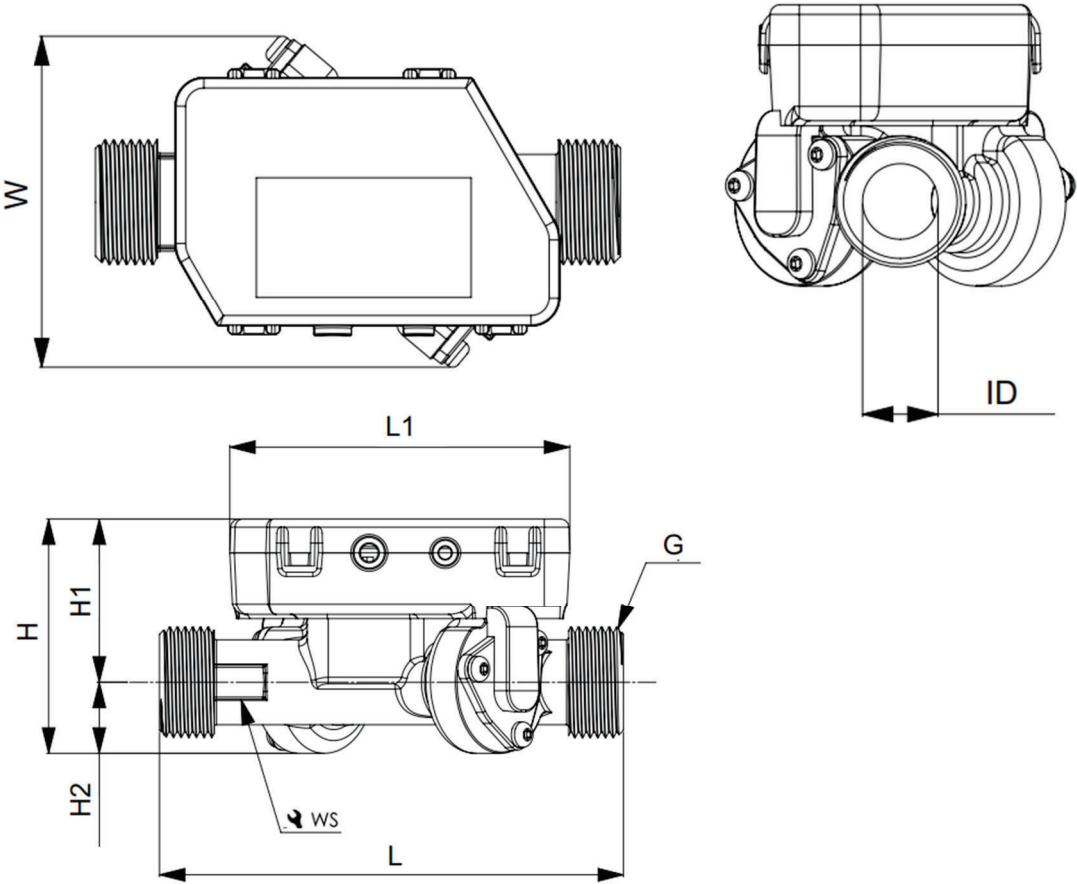
Channel assignment options	Flow	Temperature
Measuring range <i>others on request</i>	0 – max flow	-40 - 240 °C
Voltage range	0.5-4.5 V	
Conversion	$\text{meas.value} = \frac{(\text{max} - \text{min})}{4 \text{ V}} \cdot (\text{meas.voltage} - 0.5 \text{ V})$	

Modbus channel

Channel assignment	Flow, Temperature and Diagnostics
Additional features	Bubble detection, Heat metering, Freezing point estimation for water-glycol mixtures, Consumption measurement, High-speed temperature measurement

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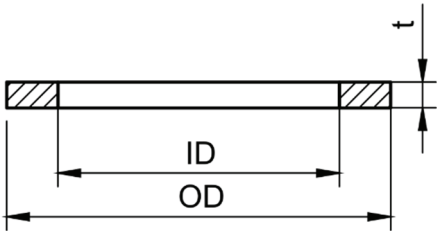


Dimensions

Dimension	DN15	DN20 ¹
Inner Diameter ID	15	20
Thread G for flat seal	G3/4"	G1"
Wrench Size WS	21	26
Length L	110.0	120
Length L1	80.6	80.6
Width W	69.4	74.1
Height H	55.75	57.5
Height H1	39.0	41.5
Height H2	16.75	16.1

¹ Not yet in serial production.

Seals



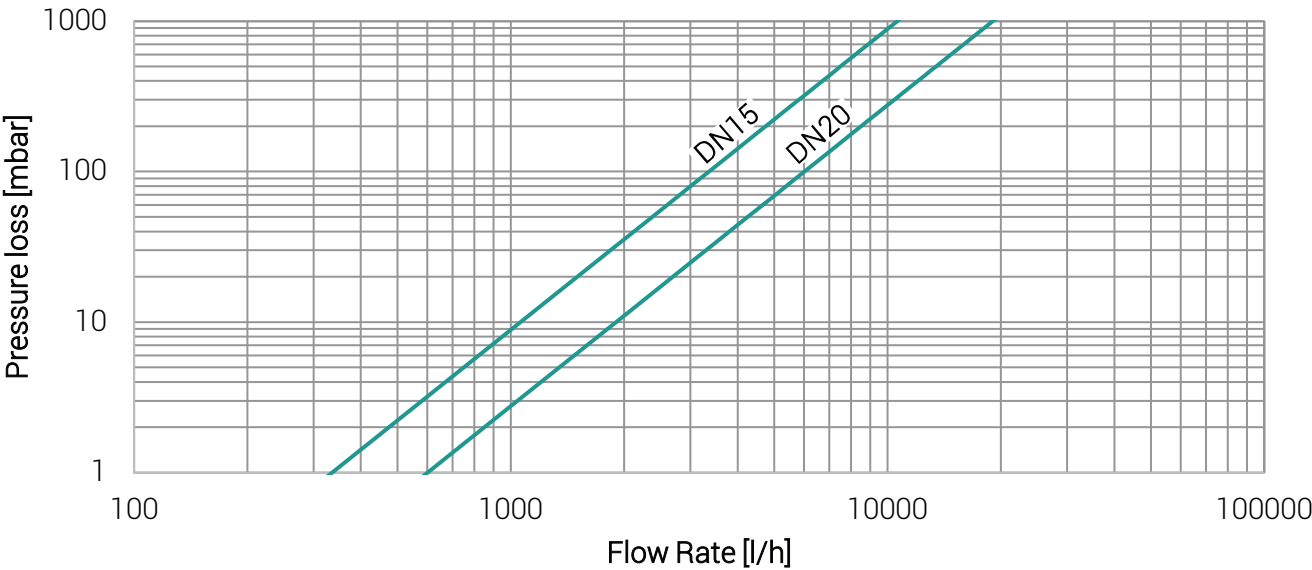
Hydraulic connection with flat seals *not included*
Choose ID of seal larger than sensor *see recommendation*
Align flat seal concentrically *no interference with free cross-section*

Dimension	DN15	DN20 ¹
Recommended Flat Seal dimensions	24x17x2	30x22x2

¹ Not yet in series production.

Pressure Loss

Dimension	DN15	DN20 ¹
Pressure Loss @ max flow [mbar]:	80	100
Kvs [m³/h]:	10.6	19.0

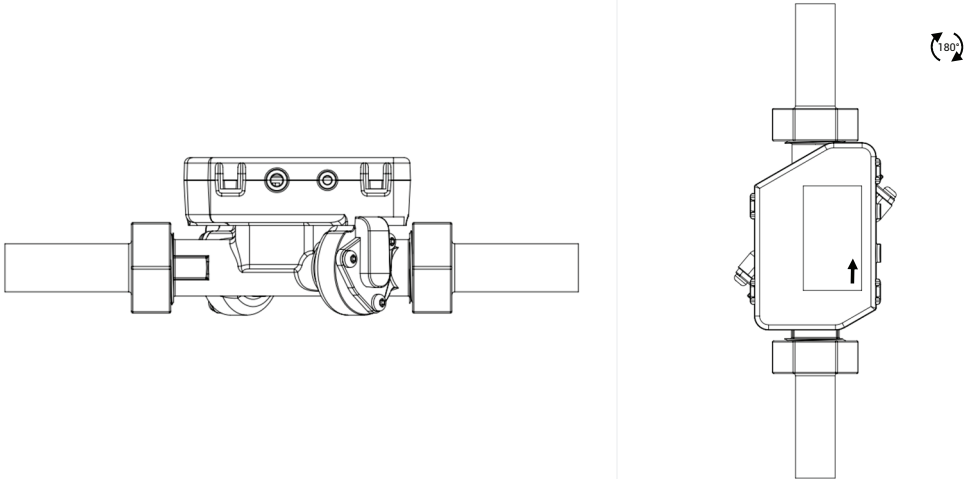
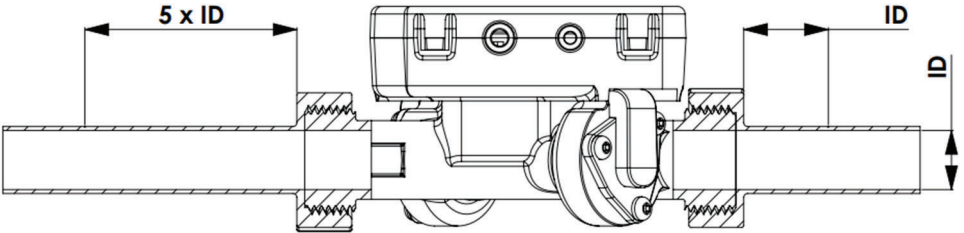


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Installation notes

Orientation	Recommended installation positions (<i>others on request</i>): Horizontal (<i>housing cover parallel to ground</i>) Vertical (<i>flow direction up and down permitted</i>)
	
Calming section	Ensure accurate readings with a calming section upstream and downstream of the sensor. Select the pipe ID according to the sensor dimensions. Other installation conditions on request with special calibration.
	

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About Us

Allengra GmbH, with headquarters in Germany and Romania, was established in 2005 and specializes in the design and production of standard or OEM ultrasonic flow sensors and control valves for liquids and gases, tailored to meet the specific needs of each end client application. Our company manages the entire development process, from concept to serial production, with various engineering departments and prototyping skills at our disposal.

Allengras core technology, ultrasonic metering, has been refined over the years to a level where both high-end device integration and cost-effective applications are achievable. Allengra provides metering and regulating solutions for various industries, including gas heating boilers, automatic coffee machines, robotic scrubbers, and industrial automation, among others.

Über Uns

Die 2005 gegründete Allengra GmbH mit Sitz in Deutschland und Rumänien entwickelt und produziert sowohl Standard- als auch maßgeschneiderte Ultraschall-Durchflusssensoren und Regelventile für Flüssigkeiten und Gase. Allengra vereint alle notwendigen Engineering und Prototyping Fähigkeiten, um die Produkte interdisziplinär und ganzheitlich zu entwickeln. So können auch neue und innovative Ideen schnell und flexibel in robuste Serienprodukte überführt werden.

Allengras Kernkompetenz, die Ultraschall-Durchflusssmessung, kann durch die umfangreiche und langjährige Erfahrung mit der Technologie problemlos sowohl in High-End-Produkte als auch in robuste und kostengünstige Serienlösungen integriert werden. Allengra bietet Mess- und Regelungslösungen für Anwendungen in Gasheizkesseln, Kaffeevollautomaten, Bodenreinigungsmaschinen, dem Motorsport, der industriellen Automatisierung und vieles mehr.