

ALSONIC Stainless Steel

Allengra's Ultrasonic Flow Meter for Industrial Applications

ALLENGRA
Flow meters



Overview

- Available in DN15 – DN50
- 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**
- Integrated **Pressure Sensor** *Optional*
- External Temperature Probe for heat metering *Optional*
- **Gas Bubble Detection**
- **Glycol Concentration Measurement & Compensation**

Operating conditions

Media	Water, Water-glycol mixtures, Oils <i>other media on request</i>
Medium temperature	-20 – 100 °C <i>fluid in liquid phase</i>
Medium over temperature	110 °C < 5 min
Operating pressure	0 – 16 bar
Burst pressure	25 bar
Ambient temperature	-20 – +80 °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

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

Features

Gas bubble detection	Identifies inefficiently vented heating systems and safety-relevant leaks in heat pumps using flammable refrigerants.
Glycol concentration	Measurement of glycol concentration , automatic volume flow compensation and freezing point estimation.
Consumption measurement	Measurement of water and heat/cooling energy for efficient system operation, resource management and monitoring.

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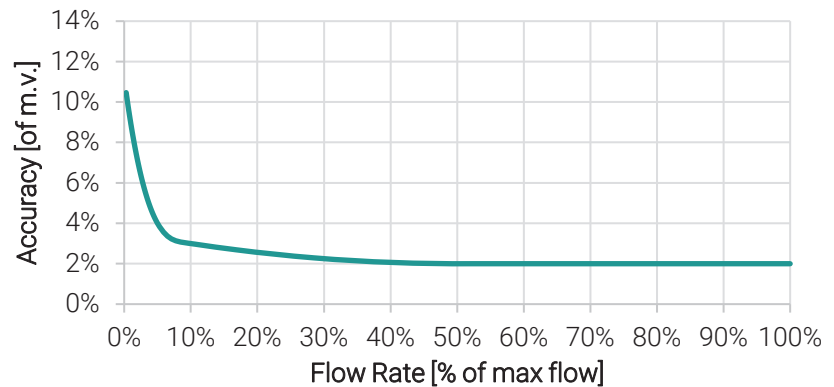
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Flow Measurement

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

	Standard Contact Sensor		Immersion Sensor (Metal Sleeve)	
Measurement element	NTC		PT1000 class B	
Measurement range	-20 – 110 °C		-20 – 110 °C	
Accuracy	±3 K		±0.5 K	
Repeatability	± 0.3 K		± 0.3 K	
Response time T ₉₀	< 30 s		< 2 s	

Pressure Measurement *Optional*

Measurement element	Ceramic pressure sensor
Measurement range	0-10 bar
Accuracy	2 % of measured value
Repeatability	1 % of measured value
Response time	<0.5 s

External temperature sensor for heat metering *Optional*

Configuration	Internal immersion sensor option mandatory	
Measurement element	PT1000 class B	
Measurement range	0-110 °C	
Accuracy Repeatability <i>Ext. Temp.</i>	±0.5 K ±0.3 K	
Accuracy Repeatability <i>Temp. Diff.</i>	±0.5 K ±0.3 K <i>Internal and external sensor paired</i>	
Accuracy Heat Measurement	±3 % at a temp. diff. ΔT = 30 K	±5 % at a temp. diff. ΔT = 10 K
Response time T ₉₀	< 2 s	
Wetted materials	Stainless steel, EPDM	

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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	Standard		Optional ¹		
	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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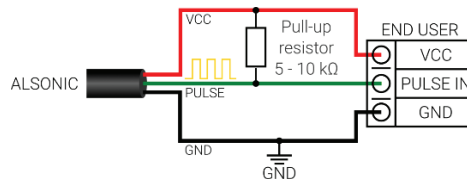


PULSE / PWM channel

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

¹ Not yet in series production.

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

Channel assignment options

Flow

Temperature

Measuring range *others on request*

0 – max flow

0 – 90 °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

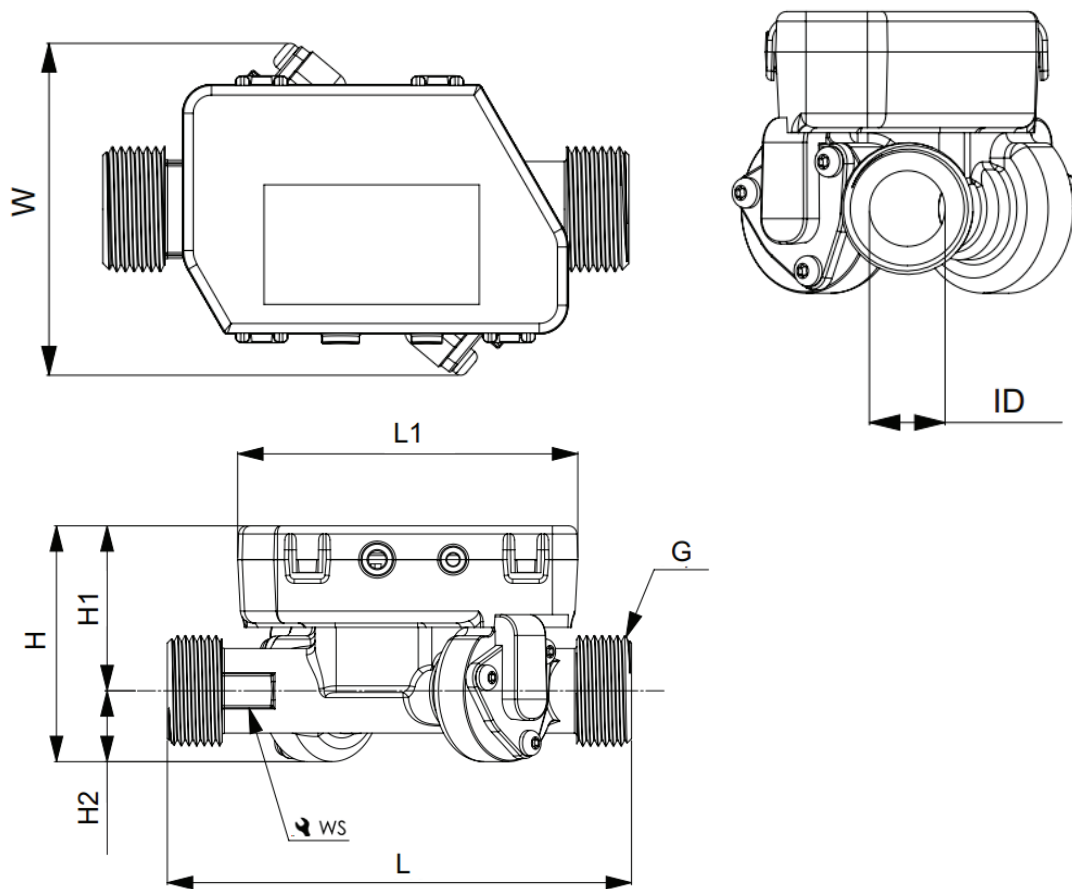
Flow, Temperature **and** Diagnostics

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

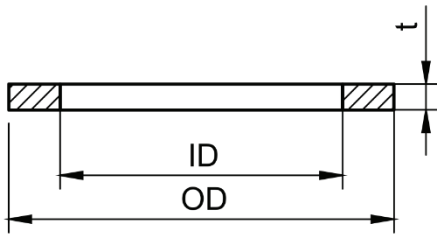
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Seals



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

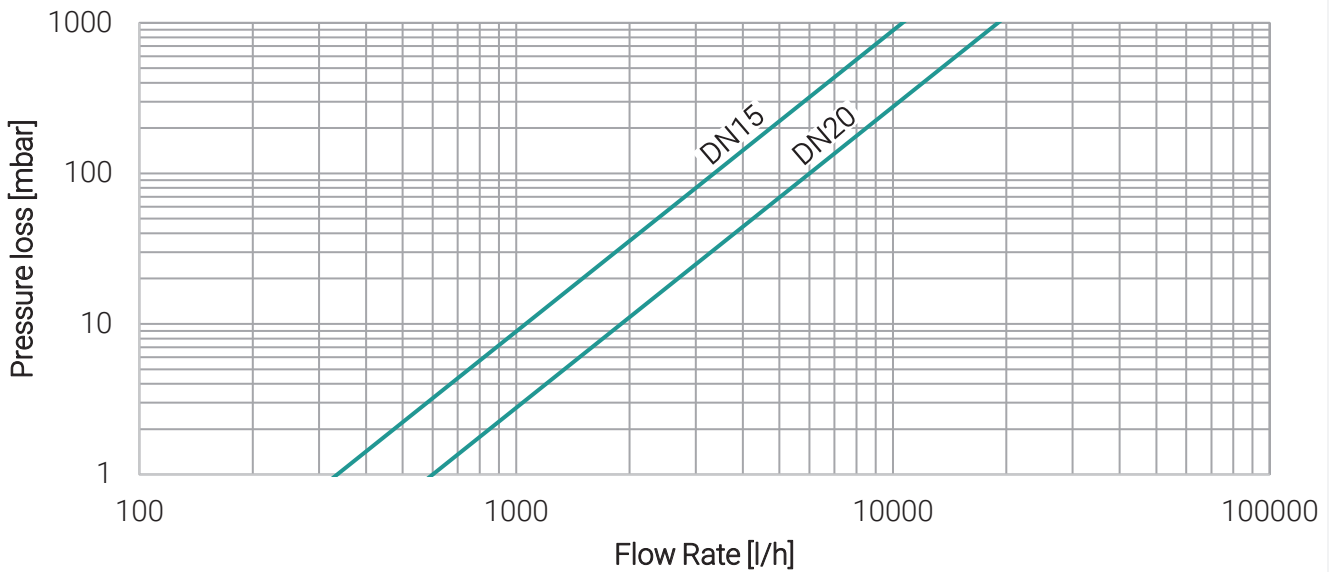
¹ Not yet in series production.

Permissible Tightening Torque for Hydraulic Thread Connection

Dimension:	DN15	DN20
M_{max} [Nm]	12	12

Pressure Loss

Dimension	DN15	DN20 ¹
Pressure Loss @ max flow [mbar]:	80	100
Kvs [m ³ /h]:	10.6	19.0

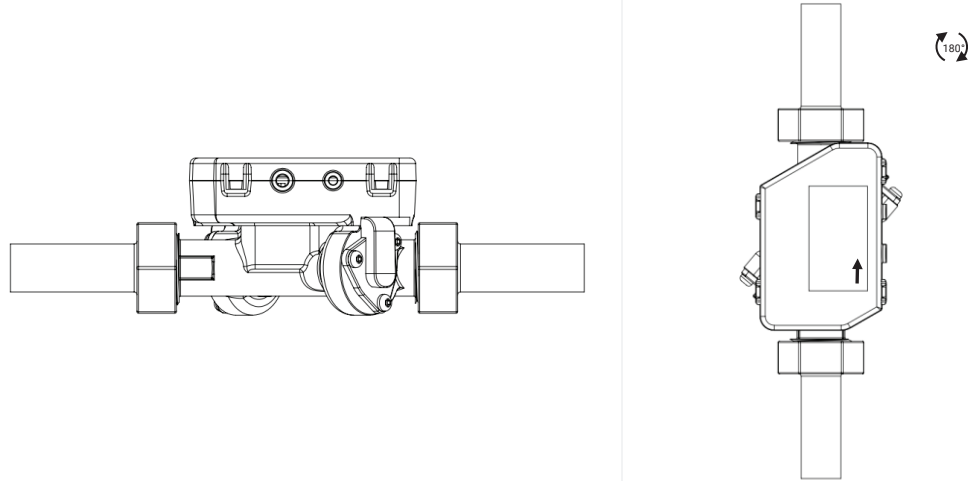


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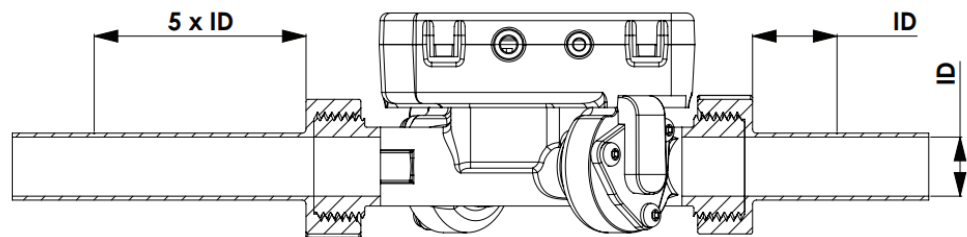
Installation notes

Orientation Recommended installation positions (*others on request*):
Horizontal (*housing cover parallel to ground*)
Vertical (*flow direction up and down permitted*)



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-Durchflussmessung, 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, Kaffeefullautomaten, Bodenreinigungsmaschinen, dem Motorsport, der industriellen Automatisierung und vieles mehr.