Micro Flow Meter

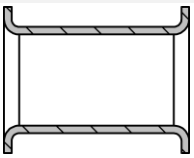
Mastering smallest volume flows with precision

ALLENGRA Flowmeters

Overview

- For Water, Milk, Coffee, Soft Drinks *and many others*
- Accuracy **± 2 %** *of measured value*
- **Push-In Fitting** Connection **U & Z** shaped
- **Food Approved** Design & Materials
- **Analogue & Bus** Communication
- Integrated **Temperature Sensor**
- Ultrasonic **High-Speed Temperature** Measurement
- **Gas Bubble** Detection

Operating conditions	
Media	Water, Sparkling Water, Milk, Coffee, Soft Drinks *and many others*
Operating temperature	0 – 105 °C
Operating pressure	0 – 16 bar
Over temperature	120 °C < 5 min
Over pressure	25 bar
Burst pressure	40 bar
IP code	acc. to IP 44
Relative humidity	≤ 95 % rh
Lifetime	> 12 years
Compliance	
CE Marking	Compliant to all applicable EU Directives (EMC, RoHS, PED)
REACH Regulation	Compliant
Food	All materials compliant with EU regulations 1935/2004, 10/2011, NSF51 and FDA
Drinking Water	All materials compliant with German FEA guidelines (UBA BWGL)
Materials	
Wetted parts	PPS, Silicone Rubber (VMQ)
Non-wetted parts	POM

Tube Insert		Stainless Steel	Plastic
Wetted tube material		Stainless Steel 1.4301	PPS

Features	
Gas Bubble Detection	Detect and quantify gas bubbles in liquid flow for timely intervention to prevent issues such as empty tanks or reservoirs.
High-Speed Temperature Measurement	Monitor highly dynamic temperature changes due to the fast response time of ultrasonic temperature measurement.
Liquid Identification	Identify liquids or detect changes, such as contamination, by analyzing their speed of sound characteristics.

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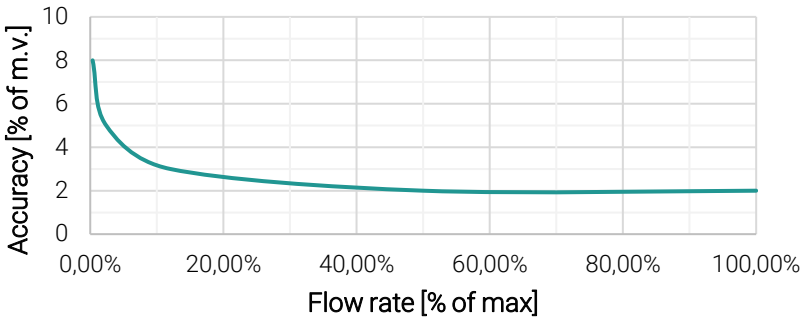
Flow Measurement		
Measurement technology	Ultrasonic	
Dimension	**OD 6**	**OD 8**
Measurement range	1 - 300 l/h	1 – 600 l/h
	0.02 - 5 l/min	0.02 – 10 l/min
	0.28 - 83.3 ml/s	0.28 – 166.7 ml/s
Accuracy	±2 % of measured value *	
Repeatability	±1 % of measured value	
Response time	< 0.1 s	
Accuracy funnel		

* Accuracy specification per accuracy funnel, assuming turbulence-free flow conditions (refer to installation notes).

Temperature Measurement		
Measurement element	PT1000 class B	
Measurement range	0 - 120 °C	
Variant	**Stainless Steel Tube Insert**	**Plastic Tube Insert**
Accuracy	±1 K	±3 K
Repeatability	±0.15 K	±0.3 K
Response time T_{90}	< 2 s	< 30 s

High-Speed Temperature Measurement	
Measurement technology	Ultrasonic Transit Time
Measurement range	0 - 60 °C
Accuracy	±3 K
Repeatability	±1.5 K
Response time T_{70}	< 0.1 s
Response time T_{90}	< 0.25 s

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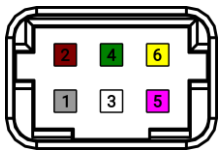
Electrical data

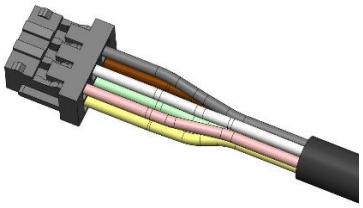
Power Supply	4.5 - 28 V
Current consumption	< 10 mA *(< 40 mA during power up for 100 ms)*

Electrical interface

Electrical connection	Female Hirose DF11-6DS-2C Socket
Pinout / Color-coding	

1	GND	GRAY
2	VCC	BROWN
3	0 – 3.3V	WHITE
4	SDA | Modbus A/D-	GREEN
5	Pulse	PINK
6	SCL | Modbus B/D+	YELLOW

Cable with Hirose DF11-6DS-2C plug and open wires
available as optional accessory

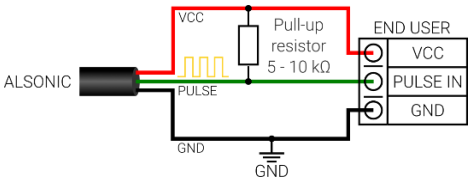


Cable length options

1.0 m 1.5 m

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)*



Pulses/Liter	5000 *configurable from 100 - 75000*

0 – 3.3 V channel

Channel assignment options	Flow	Temperature (PT1000)
Measuring range	0 – max flow	0 – 120 °C
Voltage range	0.3 - 3 V	
Conversion	$\text{meas.value} = \frac{(\text{max} - \text{min})}{2.7\ \text{V}} \cdot (\text{meas.voltage} - 0.3\ \text{V})$	

RS485 ModBus / I²C channel

Channel assignment	Flow, Temperature, **and** Diagnostics
Additional features	Bubble detection, High-speed temperature measurement *see separate Modbus/I²C interface description for details*

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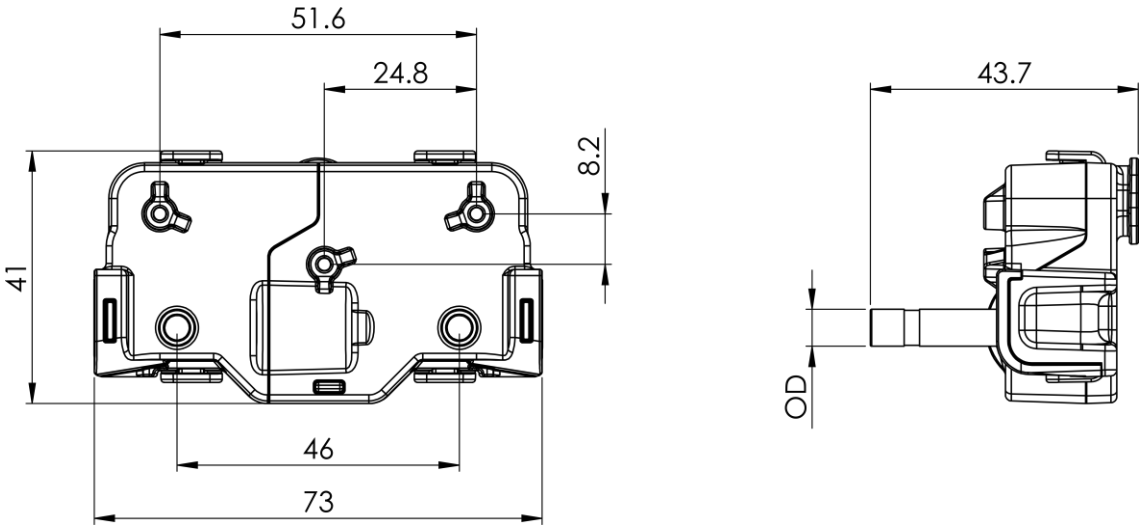
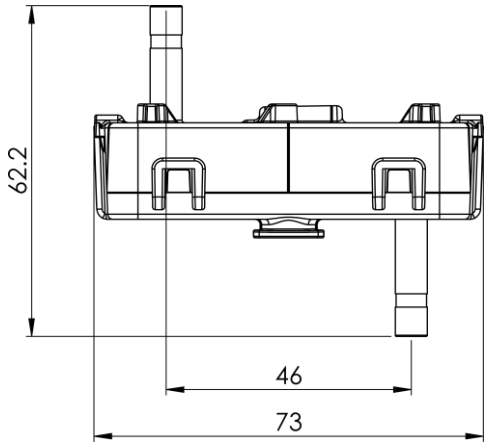
Dimensions

U-Shape



Z-Shape



Configuration	U-Shape	Z-Shape
Length	73 mm	73 mm
Height	41 mm	41 mm
Width	43.7 mm	62.2 mm
Connection	Male Hose Push-Fit Connection	
Dimension	**OD 6**	**OD 8**
Outer Diameter OD	6 mm	8 mm
Inner Diameter ID	4 mm	6 mm

Installation notes

Orientation	Install in any orientation; avoid air accumulation inside the sensor.
Calming section	Ensure accurate readings with a calming section upstream and downstream of the sensor.

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Ordering Code

		MF	_	_	_	_	_ _ _ _ _	_
Hydraulic Configuration	U-Shape		U					
	Z-Shape		Z					
Dimension	DN6			6				
	DN8			8				
Tube Insert	Stainless Steel				S			
	Plastic				P			
Bus Interface	Modbus					M		
	I²C					I		
Pulse Rate	100 Pulses/L						00100	
	1000 Pulses/L						01000	
	5000 Pulses/L *Standard*						05000	
	10000 Pulses/L						10000	
	Other						99999	
Source 0 – 3.3 V	Temperature							T
	Flow							F

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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.

Allengra's 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, Kaffeevollautomaten, Bodenreinigungsmaschinen, dem Motorsport, der industriellen Automatisierung und vieles mehr.