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Gentos Measurement & Control Co., Ltd.

pFlow

Pure Water Ultrasonic Micro Flowmeter Applications

MFCL Micro Flowmeter

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Product Introduction

*The product shown above is a smart Healthcare device

The MFCL micro flow meter is suitable for supporting new energy equipment, medical devices, smart aquaculture equipment,smart agricultural equipment, and more. It adopts the measurement principle of ultrasonic-time method, relies on high reliability signal processing circuits, and accurately measures flow rate through complex algorithms such as sampling, calculation, and correction.

The product is designed with an integrated external clamping structure for quick and easy installation and operates without direct contact with the fluid medium, effectively avoiding interference with existing production processes.

Product Features

- Compact size
- LCD color display
- No need to break the pipe, simply clip on and measure
- Screen display can be rotated in four directions

*The product shown above is a smart agricultural device.

Application Industries

Pharmaceutical Equipment

Improve the quality, efficiency and reliability of pharmaceutical production.

Smart Farming Equipment

Improve farming efficiency, reduce costs, safeguard the farming environment and promote farming intelligent development.

New Energy Equipment Supporting

Improve the operation efficiency of new energy equipment, energy saving and emission reduction, ensure the safety of equipment operation, and promote the development and intelligentization upgrade of new energy industry.

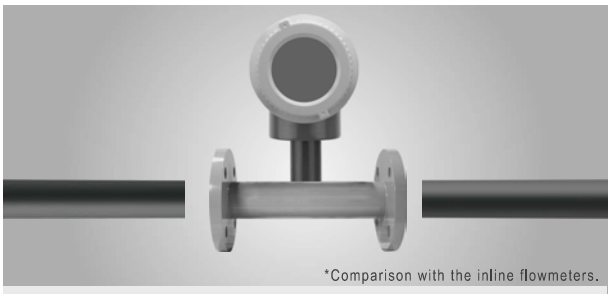
Intelligent Agricultural Equipment

Helps to improve agricultural production efficiency, reduce costs, protect crop growth demand, and promote the intelligent development of agricultural production.

Technical Parameters

- Flow velocity: 0.03m/s ~5.0m/s
- Accuracy: ±2.0% (0.3m/s~5m/s standard)
- Repeatability: 0.4%
- Output: 4~20mA
- Communication: RS485 (wired communication)
- IP Rating: IP54

Easy Installation



Professional, downtime pipe cutting installation

Installs with just a screwdriver

- Equipment stoppage
- Pipeline modification
- Installation time
- Extra parts costs
- Flowmeter costs

30-second rapid installation

- No need for professionals
- No need to stop work or production

Conventional Installation

1、Shut down the machine and remove the liquid in the pipeline.

2、Cut the pipeline

3、Through each line

4、Mount the sensor to the pipe sleeve fitting.

5、Install the sensor and sleeve connector to the pipeline.

6、Power on the machine so that the liquid is injected into the pipeline

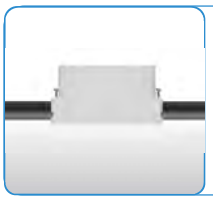
7、Adjust the flow rate to the default value

8、Check for fluid leakage

Four steps to complete the installation

Step 1
Cleanning pipes

Step 2
Installation of pipe clamp



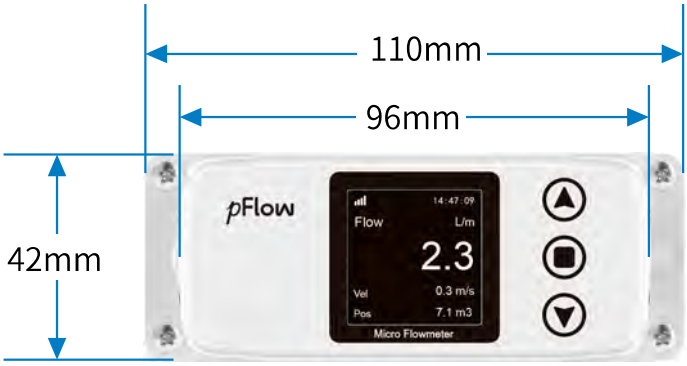
Step 3
Tighten the screws

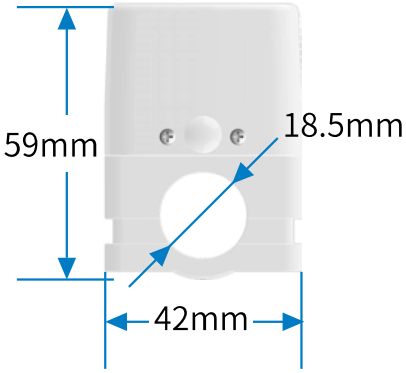
Step 4
Set parameters after powering on to start measuring

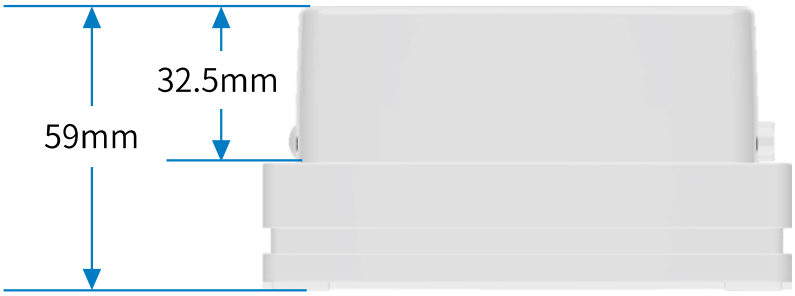
Range of Application/Size

Pipe material	Copper、Stainless steels		PVC、PPR	

Model	Pipe Material	Pipe Nominal Inner Diameter	Pipe Clamps for Pipe O.D. Range	Measurable range of flow rate (0.03~5.0)m/s
MFCL	Copper Stainless steel PVC PPR	DN10	(13.5~18.5)mm	(0.01~1.5)m3/h



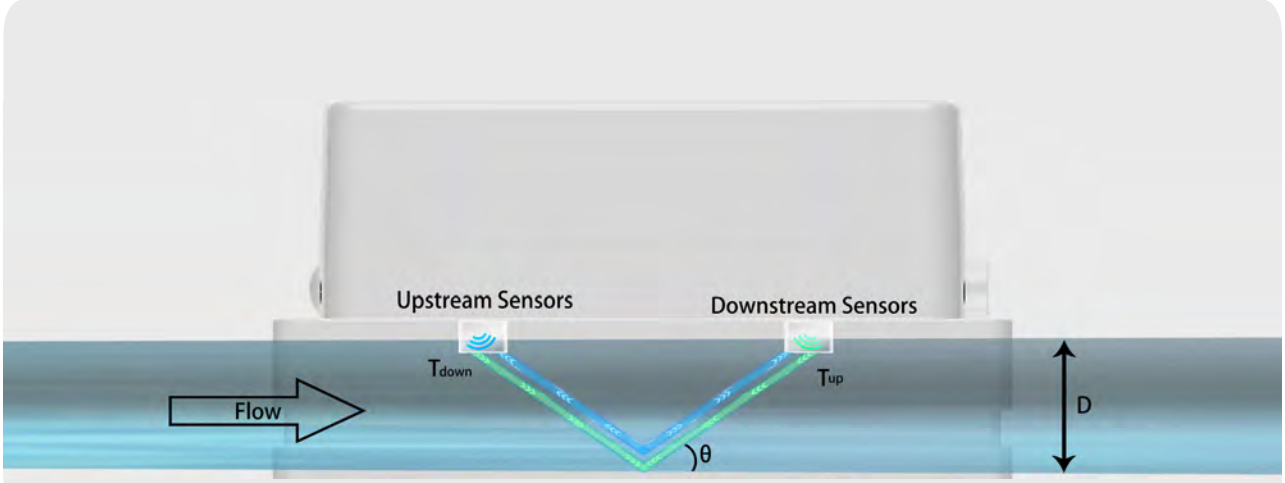




Working Principle

The MFCL micro flowmeter uses ultrasonic transit time measurement. An ultrasonic signal propagates through the fluid, with the speed increasing downstream and decreasing upstream. By measuring the difference in transmission times in both directions, the flow rate of the fluid is determined.

The flow rate of a fluid varies across different locations in a pipe, with the center having a faster flow than near the pipe wall. This flow velocity distribution can be represented by the cross-sectional distribution. By setting up the flow meter and accounting for this distribution, the average flow rate can be calculated. From the average flow rate and the pipe's cross-sectional area, the volume flow rate of the fluid can be derived.



$$V = \frac{MD}{\sin 2\theta} \times \frac{\Delta T}{T_{up} \cdot T_{down}}$$

Remark

V: Fluid velocity

M: Number of ultrasonic reflections

D: Pipe diameter

θ: The angle between the ultrasonic signal and the fluid

T_{up}: Time for the downstream transducer to transmit a signal to upstream

T_{down}: The time when the upstream transducer transmits a signal downstream

$\Delta T = T_{down} - T_{up}$

Product Model

Format of Selection Model : MFCL Format: MFCL - A

Model	Description of Transmitter
MFCL	Model Name: MFCL Micro Flowmeter
	Velocity Range: 0.03~5.0m/s
	Accuracy: 2.0% (0.3m/s~5m/s Standard)*
	Pipe Material: DN10
	Repeatability: 0.4%
	Communication Interface: RS485, Support FUJI Protocol and MODBUS Protocol
	Output: 4~20mA
	Medium: Water
	IP Rating: IP54
	Power Supply: 10～36VDC/500mA
	Keyboard: 3 touch keys
	Enclosure Material: PC(Polycarbonate)
	Display: 1.54"LCD Colorful Screen, Resolution 240*240
	Temp: Ambient Temperature: -10℃~50℃
	Fluid Temperature: 0℃~60℃
	Transmitter: All-in-one
	Transducer: Clamp On Type
	Cable: φ5 six-core cable
	Standard Leng: 2m

Specifications

A	Application Industry (Select the appropriate instrument for your industry.)
EM	Equipment Matching
HC	Healthcare
AQC	Aquaculture
AGC	Agriculture

Selection Example: MFCL; Specification: MFCL-EM
For example:[Model: MFCL;Specification: MFCL,Equipment Matching]

*The accuracy obtained through Gentos flow standard device may vary due to factors such as the type of pipeline used, the type of fluid being measured, temperature variations, etc.

Hint: The product provides options for selecting the application industry at the factory. Please refer to Selection A.

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The information provided is for reference only. Specific parameters are subject to the instruction manual.
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