

US0078-000 Ultrasonic Liquid Flow Transducer (Plastic - 2 MHz)

Description

The US0078-000 is an ultrasonic transducer intended for liquid flow measurement with an operating frequency of 2 MHz. Compared with similar competitive products on the market, it has superior electrical performance stability and strong pressure resistance. At the same time, it has the characteristics of high sensitivity, fast reaching the peak value and easier signal processing, which helps to improve the measurement accuracy of ultrasonic water meters and provides a more competitive hardware basis for the iterative upgrade of the ultrasonic intelligent water meter.

The Ultrasonic Flow Transducer is used as the core element of ultrasonic flow meters. Ultrasonic flow measurement uses the transit time principle, whereby opposite sending and receiving ultrasonic flow sensors are used to transmit signals through the flow. The signal travels faster when moving with the flow stream than it does against the flow stream. The difference between the two transit times is used to calculate the flow rate.



Features

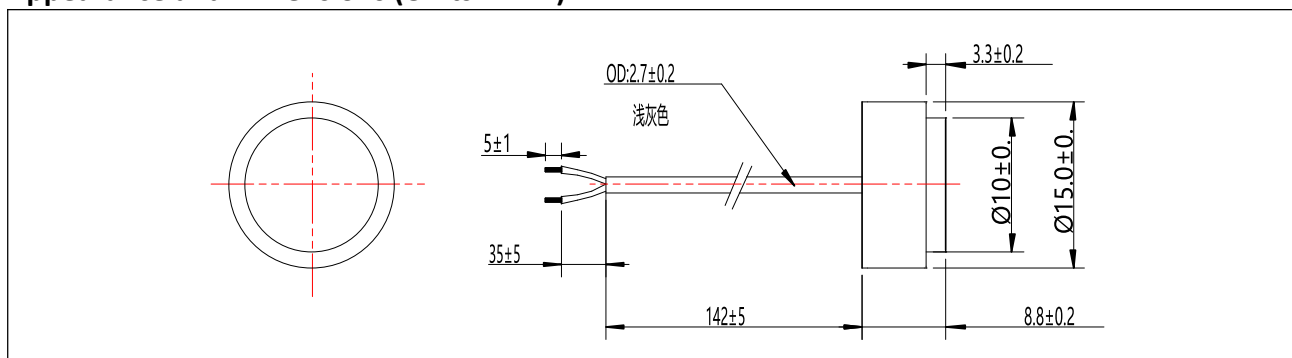
- High sensitivity with receive signal rapidly reaching peak value for easy processing.
- Highly stable electrical performance at high and low temperature with zero flow drift.
- High reliability operation with a maximum pressure resistance specification of 2.5 MPa

Ordering Information

Part Number: US0078-000

Model Number: T/R2110-US0078L830-01

Appearance and Dimensions (Units = mm)



Note: All materials comply with RoHS Standards, with Piezo ceramic exempt from lead restriction.

Electrical Specifications

No.	Item	Specification	Unit	Test Condition: T = 25°C
1	Thick Resonant frequency Fr2	2110 ± 30	kHz	HIOKI IM3570 Impedance analyzer
2	Resonant impedance Zr2	10 ~ 90	Ω	HIOKI IM3570 Impedance analyzer
3	Resonant impedance Z(2MHz)	250 ± 100	Ω	HIOKI IM3570 Impedance analyzer
5	Free capacitance	600 ± 20%	pF	Digital bridge At: 1000Hz/1V
6	Receiving Signal	330 ~ 530	mV	1. Square Wave Generator: 20 pulses at 2MHz; 1.0VPP Default at 0°/Output impedance 50Ω 2. Oscilloscope: 10X probe
7	Maximum Operating Water Pressure	2.5	MPa	—
8	Mean Time to Failure	5	years	At 2 MHz/1V _{pp}
9	Operating Temperature	+0.1 ~ +90	°C	—
10	Storage Temperature	-25 ~ +90	°C	—

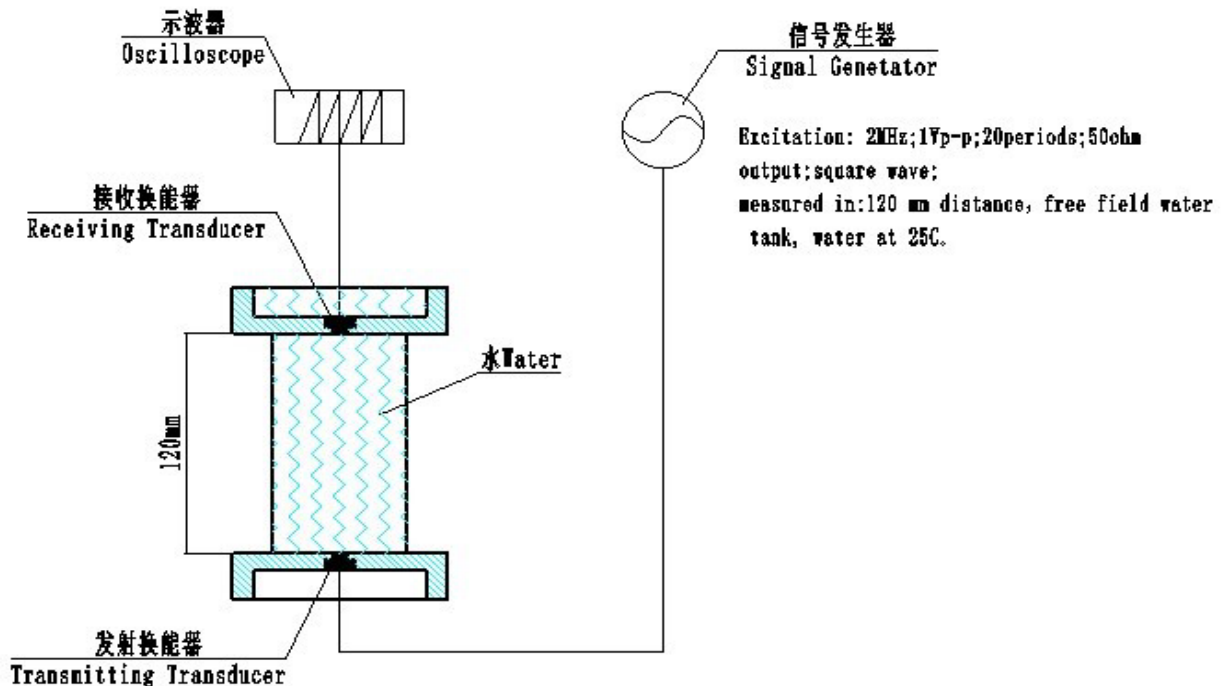
Note: All materials comply with RoHS Standards with piezoelectric ceramic exempt from lead restriction.

Receive Signal Amplitude Test Method

Test Conditions:

1. Excitation signal: operating frequency 2MHz, amplitude 1V_{P-P}, bias 0.5V, square wave, duty cycle 50%, 20 waves, initial phase 0°, output impedance 50Ω.
2. Emission source sensor (thickness frequency: 2110±10kHz)

Figure 1:



Precautions

1. This product is only intended for use in liquid medium, not for air medium.
2. Anti-interference function in drive circuit is recommended.
3. It is recommended that the design of secondary products should include anti-failure functions to prevent accidents caused by work failures.
4. If it required to add an external case around this product, use a soft rubber ring to separate the case and the sensor. In order not to affect the vibration of the sensor, the front surface of the sensor should be kept free, otherwise the performance of the sensor may change.
5. Please do not use the product under the below conditions to avoid any fault or performance degradation:
 - a. Strong shock or vibration
 - b. in the presence of dissolved organic matter
 - c. With applied input voltage exceeding the maximum specification

Shipping Package

PCS/CTN	Carton 128 (cm)	Gross weight (Kg)	Net weight (Kg)
640	53.5 X 17 X 18	4.3	3

Revision History

Revision Number	Revision Date	Description	Pages Changed
A1	2021-9-10	New Standard Specification	-

Contacts


For pricing, delivery, and detailed ordering information please contact:

Audiowell International
12060 County Line Rd.
Suite J 265
Madison, AL 35756
Phone: 256.929.3734

Email: sales@audiowell-international.com

Tentative Release

This specification is based on design objectives and is strictly Preliminary and subject to change. Test data may exist, but this specification is subject to change based on the results of additional testing and evaluation. Application specific specifications will be produced for approval prior to production product being released.

 WARNING This product can expose you to chemicals including Lead, Chromium (hexavalent compounds) and Phthalates (DEHP) which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov
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