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Golden Rules Co.,Ltd

Liquid
Clamp-on type

KC-7780C Series
Ultrasonic Flowmeter



The nation's development item, 100% domestic goods, Patent **NO.** 10-1660226

5. ULTRASONIC FLOWMETER

7-5. Ultrasonic Flowmeter KC-7780C Series

Golden Rule KC-7780C series Clamp-on Ultrasonic Flow Transmitter measures the velocity of a fluid with ultrasound to calculate volume flow. Using ultrasonic transducers, the flow transmitter can measure the average velocity along the path of an emitted beam of ultrasound, by averaging the difference in measured transit time between the pulses of ultrasound propagating into & against the direction of the flow or by measuring the frequency shift from the Doppler effect. It is affected by the acoustic properties of the fluid & can be impacted by temperature, density, viscosity & suspended particulates depending on the exact flow transmitter.

Features

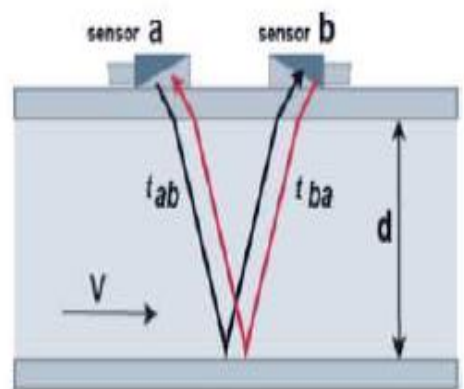
- Small and lightweight
- Economical price
- Parameter setting and checking by 4 keys
- Power Supply DC 24V
- Low power consumption less than 1.5W
- Accuracy $\pm 2.0\%$ F.S
- Wide measuring range DN15 ~ DN50
- High reliability, low voltage application, 4-20mA technology, long life and reliability
- Double balance for noise reduction of converter for strong external interference rejection
- Signal difference receiver and driving circuit
- Automatic data saving function in case of power failure (64 times)

Flow measurement principle

When ultrasonic waves are irradiated into the pipe through which the fluid is flowing, the ultrasonic wave that propagates (t_{ab} up-stream → down-stream) reaches quickly in proportion to the sum of the flow rates, the ultrasonic wave (t_{ba} down-stream → up-stream) reaches slowly in proportion to the difference in flow rate. The time difference (t_{ab}-t_{ba}) Δt is reached due to the slow arrival in proportion to the difference in flow rate.

Will occur. Since the propagation Δt generated here is a correlation function of the fluid velocity, the average flow velocity (V) in the sound wave path is calculated based on this, and the flow rate (Q) is calculated again taking into account the cross-sectional area of the pipe bore (d). In this case, ultrasonic waves have the characteristics of sound waves and pass through with a unique flow velocity depending on the fluid.

$$Q = A \times Vb$$



Performance specifications

- Measurement Principle: Correlation of ultrasonic time difference
- Accuracy: $\pm 2.0\%$ F.S (± 0.5 m/s ... 5.0 m/s)
- Repeatability: $\pm 0.8\%$
- Response time: within 2 second
- Flow rate range: 0.01 ~ 5 m/s bi-directional
- Function: Instantaneous & Accumulated
- Resolution: 0.5 mm/s
- Sensitivity: 0.03 m/s
- The clamp-on design is not necessary to shut down flow or cut the pipe when installing the Ultrasonic Flow Transmitter.

Operating specifications

- Measurement Liquid: Clean fluid or slightly turbid fluid (turbidity <10,000ppm)
- Enclosure type: Clamp-on type
- Display: OLED 128x64 display screen
- Totalizer: 6-digit bit
- Enclosure Protection class: IP54
- Enclosure material: Aluminum alloy
- Fluid temperature: 0 ~ 50°C standard
- Ambient temperature: 0 ~ 50°C standard
- Ambient Humid: 0 ~ 95% RH (Non-condensing)
Operation: 4 – light touch buttons
- Units: Metric & imperial units are available
m³/h, L/h, GAL/h, m³/min, L/min, GAL/min, Default unit setting : m³/h
- Output: 4 – 20mA DC, Maximun load : 6 ohm
- Communication protocol: Modbus RS – 485
- Auxiliary output: OCT, high & low flow alarm function (Optional)
- Power supply: DC 24V
- Automatic data storage function (64 times in case of power failure)
- Communication: RS-485, GPRS module connection support
- Double balanced signal receiver for noise reduction of the converter for strong external interference rejection
- Line Size: DN15 ~ DN50
- Pipe Mat'l: Carbon Steel, Stainless Steel, PVC

Application

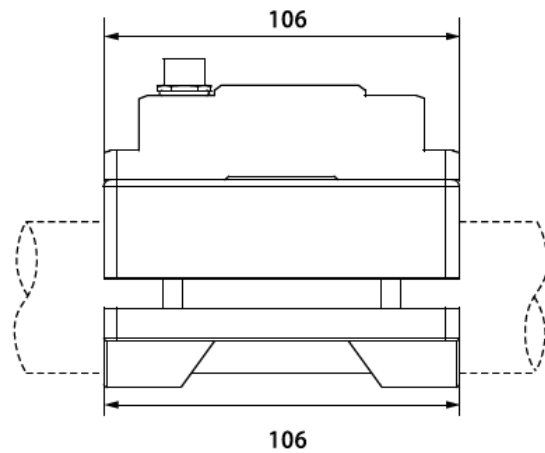
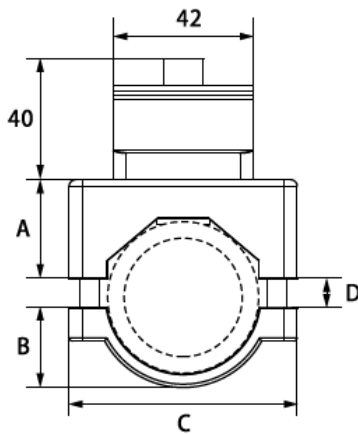
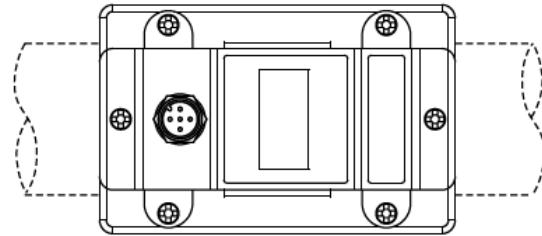
- Water and wastewater treatment
- Food, pharmaceutical and paper
- industry, Petrochemical industry
- Refrigeration and air conditioning industry
- Energy plant

Dimension I

Clamp-on Ultrasonic Flow Transmitter

Dimension

A (mm)	B (mm)	C (mm)	D(mm)	
			min.	Max.
25	8	58	1.5/Φ 20	8/Φ 23
25	15	58	1.5/Φ 25	4.5/Φ 28
28.5	18.5	58	1.5/Φ 32	4.5/Φ 35
29.5	24	68	1.5/Φ 38	8.5/Φ 45
36	27	78	1.5/Φ 48	8.5/Φ 54
41	32	91	1.5/Φ 58	7.5/Φ 64



Dimensions (mm)	Electric unit	106x42x51		
		Base bracket	106x58x40	106x58x47
Weight (Kg)	Electric unit	0.19		
	Base bracket	0.35	0.33	0.41

Pipe outside diameter	Φ 20	Φ 25	Φ 32	Φ 40	Φ 50	Φ 63
Pipe inside diameter	15 mm	20 mm	25 mm	32mm	40 mm	50 mm
Nominal name	DN15	DN20	DN25	DN32	DN40	DN50
Popular name	1/2"	3/4"	1"	1.2"	1.5"	2"

Order Code KC-7780C Series (Ultrasonic Flowmeter)

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Type	8	0
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 C-

Diameter	
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Material		
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Power	P
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Output	V
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Display		
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Pressure	
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Temp'	
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Humidity	
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Liquid	
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Option	
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11

Type	Code 1
Clamp-on	C

Input power	Code 4
DC 24V	2

Liquid	Code 10
Water	1
Chemical	2
Oil	3
Others	4
Agency approved, customer specified	w

Pipe outside diameter	Code 2
DN20	1
DN25	2
DN32	3
DN40	4
DN50	5
DN63	6

Output	Code 5
Modbus RS-485	1
4-20 mA DC	2
Alarm: High & Low (Optional)	3

Display	Code 6
No Readout	NR
Digital Display (Flow & Total)	DD
Agency approved, customer specified	W

Option	Code 11
Agency approved, customer specified	W

Pipe Material	Code 3
Carbon Steel	CS
Stainless Steel	SS
Cast Iron	CI
Glass Fiber Reinforced	GF
PVC	PVC
Cement	CM
Others	W

Pressure	Code 7
0.6 Mpa Standard	1
1.6 Mpa (Option)	2
Agency approved, customer specified	W

Temperature	Code 8
Liquid: 0 ~ 50°C	1
Ambient: 0 ~ 50°C	2
Agency approved, customer specified	W

Humidity	Code 9
0 ~ 95% RH (Non-condensing)	1
Agency approved, customer specified	W



Golden Rules

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Gases & Liquid

Mass & Magnetic & Total Flowmeter

Specialty Manufacture

Distributor

Certified in accordance with

KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

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