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# Golden Rules Co., Ltd

Liquid
Handheld type

## KC-7780H Series
## Ultrasonic Flowmeter

| Standard type clip box | Bracket type box |
| --- | --- |
|  |  |

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

# 5. ULTRASONIC FLOWMETER

## 7-5. Ultrasonic Flowmeter KC-7780H Series

Golden Rule's KC-7780H Handheld ultrasonic flowmeter is designed to work with clamp-on sensors to measure the liquid flow within a closed pipe without any insertion mechanical parts. Mainly be used for routing inspection or pipe monitoring, very convenience for use. It is controlled by a micro-processor system which contains a wide range of data that enables it to be used with pipes with an outside diameter ranging from 15mm up to 6000mm (Depending on mode) and constructed of almost any material.

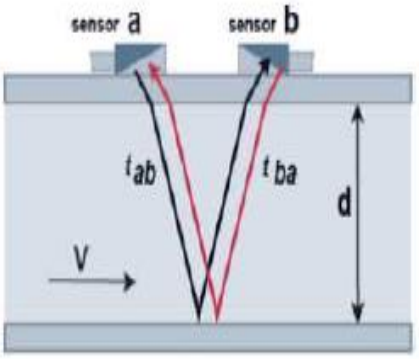
- Applications : Piping systems, Energy-saving monitoring, Water-saving management, Industrial use, Semiconductor manufacturing, Food manufacturing industry, Cooling tower, Power plant

Std. Clamp-on Type

KC-7780H

Bracket type Transducers

## Measurement Principle




When ultrasonic waves are irradiated into the pipe Through which the fluid is flowing, The ultrasonic wave that propagates (tab up-stream → down-stream) It reaches quickly in proportion to the sum of the flow rates, The ultrasonic wave (tba down-stream → up-stream) The time difference (tab-tba) 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.

$$Q = A \times Vb$$

# Handheld type Measuring Diagram-Clamp

## Clamp-on transducer

Easy to install and no need to cut off the flow,
No pressure loss.
Different transducer from DN15...DN6000.
Different transducer for temperature -30...160˚C.

## Bracket mounting

Reduces installation, improve installation accuracy.
Easy installation no need cut the flow,
No pressure loss.
Different transducer from DN15...DN700.
Different transducer for temperature -30...160˚C.

## Features

- No need to cut off water, no pressure loss
- Connect clamp-on temperature, transducer, can finish the heat / energy measurement
- Easy for installation
- Power Supply: AC 100 ~ 240V
- High Accuracy: ± 1.0% F.S
- Wide measuring range: DN15 ~ DN6000
- High reliability, low voltage application, 4-20mA technology, long life and reliability
- Single liquid can transmitter sound wave

## Performance Spec'

- Measurement Principle: Transit-time Ultrasonic Flowmeter
- Repeatability: ± 0.5%
- Response time: within 1 second
- Flow rate range: 0 ~ ±10 m/s
- 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.

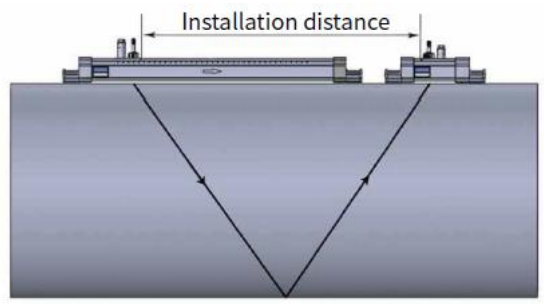
## Operating Spec'

- Measurement Liquid: Clean fluid or slightly turbid fluid (turbidity < 10,000ppm : less bubble)
- Enclosure type: Wall mount or Handheld type
- Display: 2 x 20 character LCD with backlight
- Enclosure Protection class: IP65
- Measuring medium : Water, Sea water, Waste water, Alcohol, Beer, Various kinds of oil etc which can conduct ultrasound single uniform liquid
- Fluid temperature : -30 ~ +160˚C standard
- Ambient temperature: Converter: -20 ~ 60˚C standard / Flow Transducer: -30 ~ +160˚C
- Ambient Humidity: Converter 85% RH / Flow Transducer: Water depth < 2m
- Units: Metric & imperial units are available
  m3/h, L/h, GAL/h, m3/min, L/min, GAL/min, Default unit setting : m3/h
- Output: 1 channel OCT pulse output, pulse width 6 ~ 1000 ms (Default is 200 ms)
- Connect the temperature transducer PT100
- Communication protocol: Isolation of 232 communication interface, can upgrade flow meter through PC
- Auxiliary output: OCT, Relay output (Pulse width 1000 ms, default is 200ms )
- Power Supply : Three internal 1.2V, 2000 mAH rechargeable Ni-MH battery Can work 12 hours fully charged . Can achieve continuous measurement with AC 100 ~ 240V power adapter
- Power consumption : 1.5 W
- Line Size: 15 ~ 6000 mm
- Velocity range: 0 ~ ±10 m/s
- Pipe Mat'l: Carbon Steel, Stainless Steel, Cast Iron, Copper, Cement, PVC, Aluminum, FRP, etc.
- Straight pipe : Transducer installation should be satisfied : upstream 10D, downstream 5D, 30D away from the pump outlet (D for diameter)
- Special cable : 10 m (Standard set, 2 cable)
- Data storage : 32 K BIT built-in data storage, can store two thousand rows of data

## How to use the Extension Bracket

**V-method Installation**

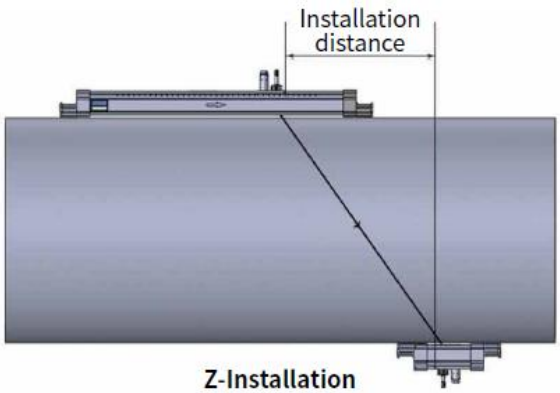
V-method installation is the most widely used mode for daily measurement with pipe inner diameters ranging from 15mm to 200mm.
It is also called reflective mode or method.




V-Installation

**Z-method Installation**

Z-method is commonly used when the pipe diameter is between 300mm and 500mm.




Z-Installation

## Optional Transducers

| Type | Picture | Size | Model | Measuring range | Temp. | Dimension (mm) |
|---|---|---|---|---|---|---|
| Standard clamp on type |  | Small | CS | DN15 ... DN100 | -30 ... 90°C | 45x25x32 |
| |  | Medium | CM | DN50 ... DN700 | -30 ... 90°C | 64x39x44 |
| |  | Large | CL | DN300 ... DN6000 | -30 ... 90°C | 97x54x53 |
| Standard bracket type |  | Small | BS | DN15 ... DN100 | -30 ... 90°C | 318x59x85 |
| |  | Medium | BM | DN50 ... DN300 | -30 ... 90°C | 568x59x85 |
| |  | Large(without sensor) | BE | DN300 ... DN700 | -30 ... 90°C | 188x59x49 |

# Order Code KC-7780H Series (Ultrasonic Flowmeter)

| | Type | Diameter | Transducer | Power | Output | Display | Converter | Pipe mat'l | Liquid | Cable | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|
| KC-77 | 8 | H | | – | | – | P | – | V | – | | – | | – | | – | | – | | – | |
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 |

| Type | Code 1 |
|---|---|
| Handheld | H |

| Pipe outside diameter | Code 2 |
|---|---|
| DN15 ~ 100 | 1 |
| DN50 ~ 700 | 2 |
| DN300 ~ 6000 | 3 |
| Agency approved, customer specified | W |

| Flow transducer (Clamp-on type) | Code 3 |
|---|---|
| CS (Small) : DN15 ~ 100 | 1 |
| CM (Medium) : DN50 ~ 700 | 2 |
| CL (Large) : DN300 ~ 6000 | 3 |
| Flow transducer (Bracket type) | HT |
| BS (Small) : DN15 ~ 100 | 4 |
| BM (Medium) : DN50 ~ 300 | 5 |
| BE (Large) : DN300 ~ 700 | 6 |

| Input power | Code 4 |
|---|---|
| Battery | 2 |
| AC 100 ~ 240V, 60Hz | 3 |

| Output | Code 5 |
|---|---|
| RS-232C | 1 |
| 1 channel OCT pulse output | 2 |
| Agency approved, customer specified | W |

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

| Converter Temp' | Code 7 |
|---|---|
| Main unit : -20 ~ 60'C | 1 |
| Sensor : -30 ~ 160'C | 2 |
| Agency approved, customer specified | W |

| Pipe Material | Code 8 |
|---|---|
| Carbon Steel | CS |
| Stainless Steel | SS |
| Cast Iron | CI |
| Agency approved, customer specified | W |

| Liquid | Code 9 |
|---|---|
| Water | 1 |
| Sea water | 2 |
| Waste water | 3 |
| Alcohol | 4 |
| Agency approved, customer specified | w |

| Remote Cable | Code 10 |
|---|---|
| 10 m (std.) | 1 |

| Option | Code11 |
|---|---|
| Calorimeter | 1 |
| SD card memory | 2 |
| Agency approved, customer specified | w |

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Gases & Liquid

# Mass & Magnetic & Total Flowmeter

Specialty Manufacture

**Distributer**

Certified in accordance with

KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

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