

www.goldenrules.co.kr

Golden Rules Co.,Ltd

Series KC-7800W Clamp-on



- Standard wall-mounted



- Explosion-proof (ATEX)

The nation's development item, 100% domestic goods, Patent **NO.** 10-1606497

Wall-mount Clamp-on Ultrasonic Flowmeter KC-7800W

Series KC-7800W wall-mount Clamp-on Transit Time Ultrasonic Flowmeter provide abundant capabilities for accurate liquid flow measurement from outside of a pipe. It utilizes state-of-the-art technologies in ultrasonic transmission receiving, digital signal processing and transit-time measurement. The proprietary signal quality tracking and self-adapting technologies allow the system to optimally adapt to different pipe materials automatically.

The flow meters of the KC-7800W family are carefully designed with their user-interfaces self-explanatory and their operation simple and easy. The unique clamp-on fixture design makes the installation very simple, requiring no special skills or tools.

Due to the non-invasive nature of clamp-on transducers, there is no pressure drop, no moving parts, no leaks, and no risk of contamination or corrosion.

Features

1. Non-invasive transducers are easy to install, cost effective, and require no pipe cutting or processing interrupt.
Since the transducers do not contact with the liquid, fouling and maintenance are eliminated.
2. Standard and Explosion-Proof ATEX (ExdIIBT6; LCIE 09 ATEX 3008) transmitters are available, with wide operating temperature range: -40°C ~250°C.
3. Remote operation by the wireless handheld operator.
No matter the pipeline in high altitude or underground, users can install or adjust the transducers more convenient.
4. The wireless handheld operator has wireless remote reading function and it also can operate the meters instead of panel operations.
5. Built-in large capacity memory and USB data download function.
The downloaded data can be opened by EXCEL directly.
6. The heat measurement function by configuring with paired Pt1000 temperature sensors.
7. Wide range of pipe sizes from DN20 to DN4500.
8. Wide bi-directional flow range of 0.003 m/s to 12 m/s.



▲ Transmitter & Transducer



▲ Ex Transmitter & Transducer



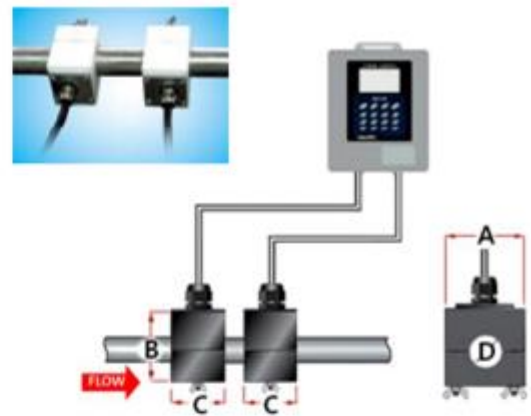
▲ Wireless Handheld Operator

Applications

- Water (Hot water, Cooling water, Potable water, Sea water etc.)
- Petroleum products
- Chemicals, including alcohol, acids, etc
- HVAC, energy measurement system
- Beverage, food and pharmaceutical processors
- Secondary sewage, waste treatment, etc.
- Power plants (nuclear power plants, thermal & hydropower plants), heat energy boiler feed water.
- Metallurgy and mining applications
- Pipeline leak detection, inspection, tracking and collection
- Network monitoring

K transducer

| Size | A | B | C | D |
|------------------------|----|----|----|----|
| K1: 3/4", 1" | 55 | 39 | 42 | 34 |
| K2: 3/4", 1", 1-1/4" | 64 | 46 | 42 | 43 |
| K3: 1-1/4", 1-3/4", 2" | 80 | 46 | 42 | 61 |



Note: K transducers utilize the Round-Clamp method, and the transducers' transmitting and receiving sides are connected with the pipe surface thoroughly to acquire enough coupling area, better reliability, stability, etc.

Principle of Measurement

KC7800w transit time flowmeter utilizes two transducers that function as both ultrasonic transmitters and receivers. The transducers are clamped on the outside of a closed pipe at a specific distance from each other. The transducers can be mounted in V-method in which case the ultra sound transverses the pipe twice, or W-method in which case the ultra sound transverses the pipe four times, or in Z-method in which case the transducers are mounted on opposite sides of the pipe and the ultra sound transverses the pipe only once. The selection of mounting method depends on pipe and liquid characteristics. When the flow meter works, the two transducers transmits and receives ultrasonic signals amplified by multi beam which travels firstly downstream and then upstream (Figure 1).

Because ultra sound travels faster downstream than upstream, there will be a difference of time of flight (Δt). When the flow is still, the time difference (Δt) is zero. Therefore, as long as we know the time of flight both downstream and upstream, we can work out the time difference, and then the flow velocity (V) and flow volume (Q) via the following formula.

$$V = K * \Delta t$$

$$Q = S * V$$

Where:

V: Liquid velocity

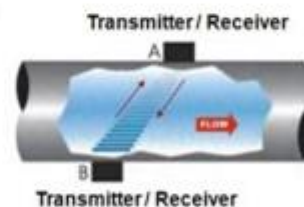
K: Constant

Δt : Difference in time of flight

Q: Flow rate

S: Sectional area of pipe

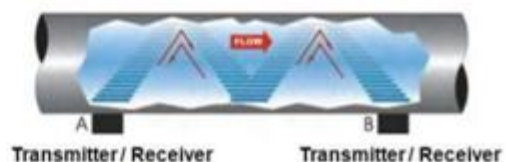
(a) Z method



(b) V method



(c) W method



► Figure 1

Technical Specifications

| Transmitter | |
|-----------------------|--|
| Power Supply | 100~240V AC 50/60Hz ±15% 12~36V DC Solar supply 12V DC |
| Velocity | 0.003 to 12m/s, bi-directional |
| Display | 4 line×16 English letters LCD, it can display total flow, flow rate, velocity and meter running status etc. |
| Units Rate Totalized | User Configured (English and Metric); Rate and Velocity Display; gallons, ft ³ , barrels, lbs, liters, m ³ , kg |
| Output | Data storage function, 4~20mA, Frequency (For Flow rate or Total flow), Relay (For Total flow or Alarm), RS485(Modbus-RTU) Options: Wireless handheld operator, GPRS |
| Accuracy | ±1.0% of reading at rates >0.5 m/s ±0.005 m/s of reading at rates <0.5 m/s |
| Sensitivity | 0.003m/s |
| Repeatability | 0.2% of reading |
| Dimensions and Weight | Standard: 261*193*80mm, Weight: < 2.5kg Explosion-proof: 310*226*127mm, Weight: < 7.5kg |
| Security | Keypad lockout, access code enable |

| Transducer | |
|---------------------------|---|
| Liquid Types Supported | Virtually most any liquid containing less than 2% total suspended solids (TSS) or aeration |
| Suited Liquid Temperature | Standard Temp.: -40°C ~121°C High Temp.: -40°C ~250°C |
| Cable Length | Standard: 6m (20 feet); Opt: Maximum: 300m (990 feet) |
| Pipe Size (mm) | S transducer: DN20-50mm Standard M transducer: DN40 -1000mm L transducer: DN1000-4500mm K-mode round transducer: DN20-50mm (For K, S transducer on the stainless steel pipe, It is better that the thickness of the pipe is more than 2.5mm. |
| Dimensions and weight | S: Size: 42*25*25mm; Weight: < 0.2kg M: Size: 60*43*43mm; Weight: < 0.5kg L: Size: 80*53*53mm; Weight: < 1.0kg |

Parts Identification

- **Transmitters:**



- Standard wall-mounted



- Explosion-proof (ATEX)

- **Transducers:**



- Ex-proof type (ATEX)



- K transducer



- High temperature transducer



- S-Transducer



- M-Transducer



- L-Transducer



- M-Mounting Frame (V method and Z method)



- S-Mounting Frame (V method and Z method)

- **Accessories:**



- Stainless Steel Strap



- Flexible belts



- Couplant

Model Selection

| Transmitter Model : KC-7800W | | Clamp-on Ultrasonic Flow Meter * (Transducers) |
|------------------------------|-----------|--|
| Approvals | N | None |
| | Ex | ATEX (Exd II BT6) |
| Power Supply | A | 100~220V AC |
| | E | 12~36V DC |
| | S | Solar supply (including solar board) |
| Output Selection 1 | N | None |
| | 0 | Data storage function |
| | 1 | 4-20mA std. |
| | 2 | Frequency Output (Flow rate Totalizer) |
| | 3 | Electric Relay (Totalizer or Alarm) |
| | 4 | RS485 Output (ModBus-RTU) |
| | 5 | Wireless handheld operator |
| | 6 | GPRS Wireless Module (Excluding software) |
| Output Selection 2 | | Frequency Output (Flow rate Totalizer) |
| Output Selection 3 | | Electric Relay (Totalizer or Alarm) |
| Output Selection 4 | | RS485 Output (ModBus-RTU) |

| Transducer Model : KHB- | | Clamp-on Transducer type |
|---------------------------|-------------|--|
| Transducer type | S | Small (DN20-DN50) |
| | M | Medium (DN40-DN1000) |
| | Ex-M | Ex-proof Medium (DN40-DN1000) |
| | L | Large (DN1000-DN4500) |
| | Kxx | K Small-Pipe Round Clamp-on (DN20-DN50), xx is inside DN |
| Transducer Mounting Frame | N | None |
| | FS | for DN20-DN50 |
| | FM | for DN50-DN1000 |
| Transducers Temperature | N | -40~121°C |
| | H | -40~250°C (For larger transducer, consult us.) |
| Mounting Type | N | Common |
| | M | Magnetic (suitable for pipe above DN80) |
| Pipeline Diameter | DNXX | DN20, DN4500 |
| Cable Length | Xm | Common cable Max 300m |
| | XmH | High temp. cable Max 300m |

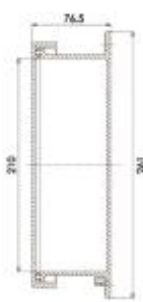
Parts Number Construction example:

KC-7800W-N-A-0 4 N N N /DB-M-N-N-N-DN400-30m

Description:

KC-7800W standard Clamp-on ultrasonic flow meter, no explosion-proof, 100~220VAC power supply, Data storage function and RS485 output; standard M type transducer, no mounting frame, standard temperature, common mounting type, used in pipeline DN400, transducer cable length 30m.

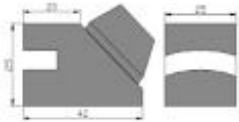
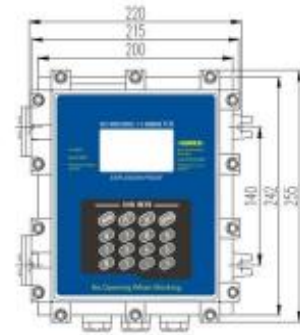
Parts & Dimension



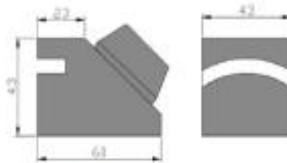
• Standard Transmitter



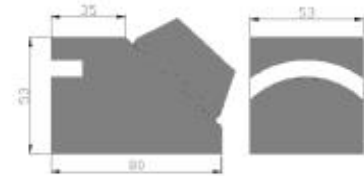
• Explosion-proof Transmitter



• S Transducer



• Std. M Transducer



• L Transducer

Wiring Terminals

Conduit holes: M18×1.5 for KC-7800W, and M20×1.5 for KC-7800W Series -Ex.

Housing: NEMA 4 X [IP65], aluminum alloy die-casting for KC-7800W Series
NEMA 4 X [IP65], aluminum casting alloy for KC-7800W Series -Ex.





Golden Rules

• GOLDEN RULES

www.goldenrules.co.kr

Gas , Steam , Liquid , Oil
Mass Flow meter & Instruments
Specialty Manufacture

Distributer

Certified in accordance with

KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

 (주)골든룰