

# DOPPLER ULTRASONIC FLOWMETER

CLAMP-ON



Designed to measure volumetric flow of solids-bearing or aerated liquid within closed conduit.

# CLAMP-ON DOPPLER ULTRASONIC FLOWMETER

## General:

The Clamp-On Doppler ultrasonic flow meter is designed to measure volumetric flow of solids-bearing or aerated liquid within closed conduit, the pipe line must be full of liquids, and there must be a certain amount of air bubbles or suspended solids in liquid.

Transducers are clamp-on or hot-tapped insertion types, user don't need to shut down the pipe flow when install transducers.

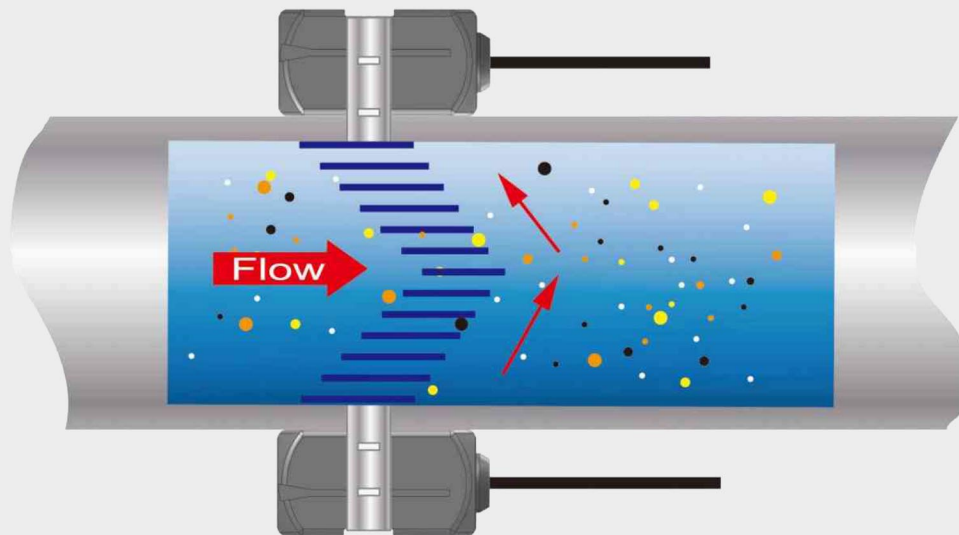
The Clamp-On Doppler ultrasonic flow meter can display flow rate and flow totalizer, etc., and is configured with 4-20mA, Relays, OCT outputs.

## Applications:

- Raw sewage
- Activated sludge
- Ground water
- Pulp and paper slurries
- Chemical slurries
- Drainage
- Mining recirculation



## Principle of Measurement:



The flowmeter operates by transmitting an ultrasonic sound from its transmitting transducer, the sound will be reflected by useful sonic reflectors suspended within the liquid and recorded by the receiving transducer. If the sonic reflectors are moving within the sound transmission path, sound waves will be reflected at a frequency shifted (Doppler frequency) from the transmitted frequency. The shift in frequency will be directly related to the speed of the moving particle or bubble. This shift in frequency is interpreted by the instrument and converted to various user defined measuring units.

There must be some particles large enough to cause longitudinal reflection - particles larger than 100 micron.

When installing the transducers, the installation location must have enough straight pipe length upstream and downstream. Commonly, the upstream needs 1 OD and downstream needs 5D straight pipe length, where D is pipe diameter.

## Wall-mounted Doppler Ultrasonic Flowmeter



### Features:

- It is suitable for pipe sizes ranging from 40 to 4000mm.
- For dirty liquids, a certain amount of air bubbles or suspended solids shall be contained.
- Excellent low flow rate measurement ability, low to 0.05m/s.
- A wide range of flow measurement, high flow rate can reach 12m/s.
- High-temperature transducer is suitable to liquids of  $-35^{\circ}\text{C} \sim 200^{\circ}\text{C}$ .
- Do not need to shut down the pipe flow when installing the transducers.
- User-friendly configuration.
- 4-20mA, Relay and OCT outputs.
- Accuracy: 2.0% calibrated span.

## Specifications:

### Transmitter:

Measurement principle	Doppler ultrasonic
Resolution	0.25mm/s
Repeatability	0.5% of reading
Accuracy	0.5% - 2.0% F.S.
Response time	2-60s for optional
Flow Velocity Range	0.05- 12m/s
Liquid Types Supported	Liquids containing 100ppm of reflectors and at least 20% of the reflectors are larger than 100 micron.
Power Supply	AC: 85-265V DC: 24V/500mA
Enclosure type	Wall-mounted
Degree of protection	IP66 according to EN60529
Operating temperature	-20°C to +60°C
Housing material	Fiberglass
Measurement Channels	1
Display	2 line x 8 characters LCD, 8-digit rate or 8-digit total (resettable)
Units	User Configured (English and Metric)
Rate	Rate and Velocity Display
Totalized	gallons, ft <sup>3</sup> , barrels, lbs, litres, m <sup>3</sup> , kg
Communication	4-20mA, Relay and OCT output
Keypad	4pcs buttons
Size	244(h)*196(w)*114(d)mm
Weight	2.4kg

### Transducer:

Transducers Type	Clamp-on
Degree of protection	IP65. IP67 or IP68 according to EN60529
Suited Liquid Temperature	Std. Temp.: -35°C~85°C High Temp.: -35°C~200C
Pipe diameter range	40-4000mm
Transducer Size	60(h)834(w)*32(d)mm
Material of transducer	Aluminum (standard temperature); Peek (high temperature)
Cable Length	Std: 10m

## Configuration Code:

### Wall-mounted Doppler Clamp-on Ultrasonic Flowmeter

#### Power Supply

- A 110VAC
- B 220VAC
- D 24VDC
- S 65W Solar supply (including solar board)

#### Output Selection 1

- N N/A
- 1 4-20mA
- 2 Relay
- 3 Oct

#### Output Selection 2

Same as above

#### Sensor Type

- D Standard Clamp-on transducer (DN40-4000)

#### Transducer Temperature

- S -35 ~ 85°C
- H -35 ~ 200°C

#### Pipeline Diameter

- DNX e.g. DN40 - 400mm, DN4000 - 4000mm

#### Cable length

- 10m 10m (standard 10m)
- Xm Common cable Max 300m (standard 10m)
- XmH High temp. cable Max 300m

**DF6100-EC - B - 1 - N/LDC - D - S - DN100 - 10m (example configuration)**

#### Description:

Power supply: 220VAC; output:4-20mA; transducer type: standard for DN40-4000; transducer temperature: -35 ~ 85°C; DN100 application; 10m transducer cables.

# Dill-Tech



*Distributor of Subsurface Detection System and Utility Instruments*

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