

WE KNOW FLOW

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ISO 9001
CERTIFIED

**HydroVision applies
a quality management
system according to
DIN EN ISO 9001:2008**



SYSTEM Ductus-COI

**Clamp-On
Digital Transit-Time Flow Meter**

Applications and Installation

Applications

The **Ductus COI** is an universal transit time ultrasonic flow meter. With the advanced large scale integrated circuit technology, it is well suited to most industrial environments for continuous flow measurement of homogeneous liquid. Although the system was designed principally for clean liquid applications, the instrument is tolerant of liquids with small amounts of gas/air bubbles or suspended solids found in most industrial environments. The flow meter uses state-of-the-art digital electronics and very powerful ultrasonic transducers to give high accuracy for pipe sizes between 25 mm and 2000 mm (up to 5000 mm possible depending on pipe material and conditions).

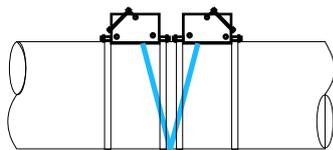
Flow measurements of homogeneous liquids that can transmit sonic wave, such as water, sewage, seawater, acid and alkaline liquid, edible oil, diesel oil, crude oil etc.

Applications in such fields as power plant (nuclear electricity, fire power and electric power), thermal power, heating, heat supply, metallurgy, mine, petroleum, chemical industry, food, medication.

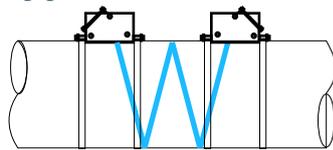
Applications for energy efficiency testing, water saving management, flow polling, flow tracking and gathering, flow computer management and network system monitoring.

Transducer Installation

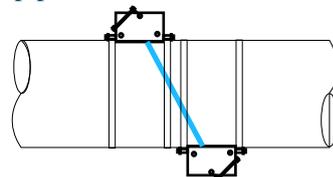
V-type standard installation



W-type pipe installation



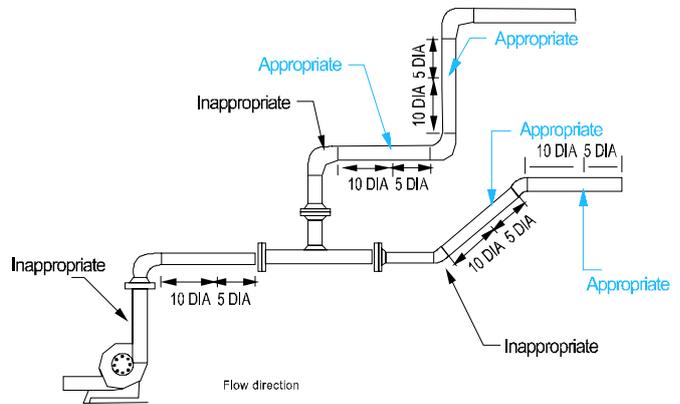
Z-type pipe installation



Point-Selection of Installation

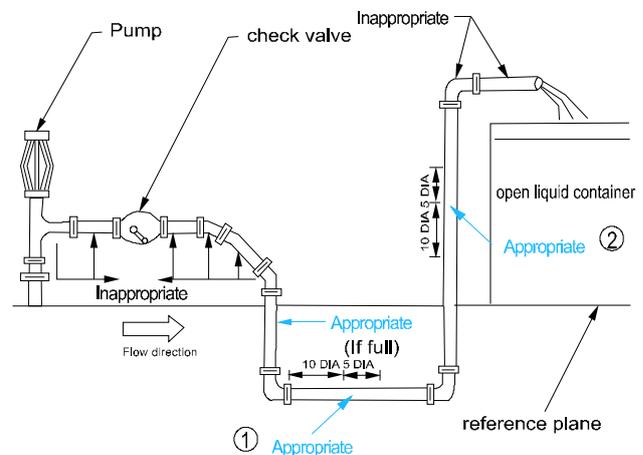
The liquid flows upward:

The locations where sensors are installed generally should keep a straight distance of **10D** in the front and **5D** in the back to an elbow, valve or throttling gear (D=Pipe Diameter).



Liquid flows downward and then upwards:

It is desirable to install the sensor in horizontal position (1) and vertical position (2). Keep 10D straight pipe length in front and 5D in the back.



Benefits

- Easy installation, no need to cut pipe or stop flow
- Minimal maintenance, external transducers do not require periodic cleaning
- No moving parts to foul or wear
- No pressure drop or energy loss
- Bi-directional flow operation
- Wide range of pipe sizes
- Moderate cost
- Small in size and weight
- Easy to use and easy to carry

Digital Transit Time Flow Meter

Ductus COI (stationary)

The stationary unit consists of a wall mount electronic housed in a Nema 4x enclosure and **two clamp-on sensors** that are permanently clamped to the outside of the pipe.

The electronic offers an easy-to-read two-line LC-display with a 16-button keypad for setting up the parameter. The unit is powered from a mains or DC voltage supply. A 4-20 mA current loop output, as well as pulse and frequency outputs, enable the unit to be used for continuous monitoring of flow.



Principle of Measurement

The acoustic method of discharge measurement is based on the fact that the propagation velocity of an acoustic wave and the flow velocity are summed vectorially.

It follows that an acoustic pulse sent upstream travels at a lower absolute speed than an acoustic pulse sent downstream. By measuring the times of the traverse of pulses sent in the two directions, the average axial velocity of the fluid crossing the path of the pulses is determined.

Components Ductus COI-P



Transducer Cable

Magnetic Slide Bar

Tensioning Band

Portable Digital Transit-Time Flowmeter

Carrying bag

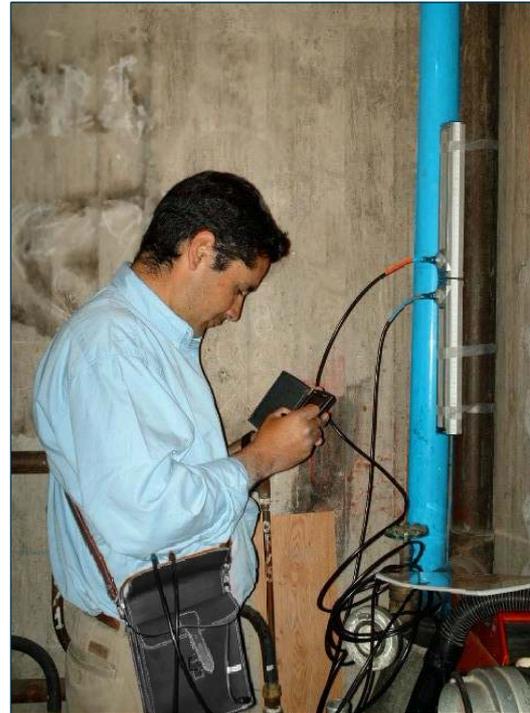
PDA

Storage Box

Ductus COI-P (portable)

For applications where monitoring is infrequent, or where it is required to spot-check the operation of pumps or other process equipment, such as flow through heat exchanger, the model COI-P flow-meter offers a great advantage in ease of setting up, as it employs Bluetooth communications between the flow-meter and a Palm PDA device to allow for greater portability and increased battery life.

The software included with the system enables the PDA display to be used in the same way as the interactive display on the stationary model COI.



The PDA offers enhanced functions for logging and trending in a real-time environment or for later visual interpretation with its unique graphing function. The portable ultrasonic flow-meter is supplied in a handy and lightweight carry case with the flow-meter, sensors, PDA, battery charger and all standard accessories. The flow-meter itself is supplied in a separate leather carry case with a shoulder strap for ease of use. Measurement is unaffected by the fluid viscosity or conductivity and, since it is a clamp-on device, is non-intrusive and offers a low cost installation.

Technical Data

| Ductus COI (stationary) | |
|-------------------------------------|---|
| Flow Range | -12 m/s to +12 m/s (40 ft/s) |
| Accuracy | ± 0.5% of measured value (for ±1.5 to 40 ft/sec) |
| Pipe Size | 25 mm (1") to 2000 mm (76") |
| Medium | Homogeneous liquids, tolerant with small amounts of gas/air bubbles or suspended solids found in most industrial environments |
| Outputs | Analogue output: 0/4 to mA (max. load 750 Ohm) Pulse output: 0 to 9999 Hz Relay output: max. 1Hz (1A @ 125V _{AC} or 2A @ 30V _{DC}) |
| Communication Interface | RS 232 (standard); RS 485 (option) |
| Memory | 1GByte SD card memory |
| Power Supply | 10-36V _{DC} or 90-250V _{AC} (48 - 63Hz) |
| Keypad | 16 (4x4) |
| Display | 20 characters, 2 lines (20x2), alphanumeric, backlit |
| Operating Temperature - Transmitter | -40°C to +60°C |
| Operating Temperature - Transducer | -40°C to 80°C (standard), -40°C to 150°C (option) |
| Humidity | Up to 99% relative humidity (non condensing) |
| Transmitter | Cast-Aluminium, IP 65 (NEMA 4x) |
| Sensor | Encapsulated design standard cable length: 9m / max. 305m (30 ft/ max. 1000 ft.) |
| Weight | Transmitter: 2,15 kg (4.7 lbs); Sensor: 0,9 kg (2.0 lbs) |
| Dimensions | 200 x 198 x 92 mm (WxHxD) |

| Ductus COI-P (portable) | |
|-------------------------------------|---|
| Flow Range | -12 m/s to +12 m/s (40 ft/s) |
| Accuracy | ± 0.5% of measured value (for ±1.5 to 40 ft/sec) |
| Pipe Size | 25 mm (1") to 2000 mm (76") |
| Medium | Homogeneous liquids, tolerant with small amounts of gas/air bubbles or suspended solids found in most industrial environments |
| Outputs | Analogue output: 0/4 to mA (max. load 750 Ohm) |
| Communication Interface | Bluetooth |
| Memory | 1GByte SD card memory |
| Power Supply | rechargeable Lithium battery; operation time > 8 hours |
| Keypad | 16 (4x4) |
| Display | (320x480 high resolution colour) |
| Operating Temperature - Transmitter | -40°C to +60°C |
| Operating Temperature - Transducer | -40°C to 80°C (standard), -40°C to 150°C (option) |
| Humidity | Up to 99% relative humidity (non condensing) |
| Transmitter | Cast-Aluminium, IP 65 (NEMA 4x) |
| Sensor | Encapsulated design with magnet and clamp for installation standard cable length: 5m / max. 305m (16 ft/ max. 1000 ft.) |
| Weight | Transmitter: 2,15 kg (4.7 lbs); Sensor: 0,9 kg (2.0 lbs) |

incl. Palm TX PDA with data logging function and UFM data analysis software

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