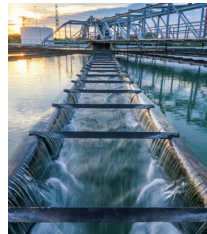


# SONOPRO® Commercial Series Transit Time Flowmeter Model U42 Clamp-On/Insertion Ultrasonic



*The U42 ultrasonic flow meter can be used in many measurement applications, including industrial water flow, municipal water, oil, chemical, and agricultural flow.*

**U42** is a wall-mount, clamp-on or insertion type ultrasonic flow meter using transit time technology to accurately meter clean liquids with little to no air bubbles or particles. Clamp-on type ultrasonic flow meters are easy to install and do not require shutting down or cutting the pipe, saving you trouble and cost. Insertion type ultrasonic flow meters allow measurement of pipes that are not compatible with the clamp-on type. The SONOPRO® U42 uses our unique calculation software to ensure high accuracy and low velocity response.

U42 has the option of adding RTD temperature sensors to become an energy meter for the monitoring of energy use, helping you save energy and money.



**VorTek**  
INSTRUMENTS

VorTek Instruments, LLC  
8475 West I-25 Frontage Rd., Suite 300  
Longmont, CO 80504 USA  
Tel: 303/682-9999 Fax: 303/682-4368  
info@vortekinst.com

## Specifications

### Performance

Flow Range	±0.03 ft/s ~ ±40 ft/s (±0.01 m/s ~ ±12 m/s)
Accuracy	±1% of reading (0.5% according to calibration)
Repeatability	0.15% of reading
Linearity	±0.5%
Pipe Size	1" to 200" (25 mm to 5000 mm)
Fluid	Clean liquids with little to no air bubbles or particles

### Function

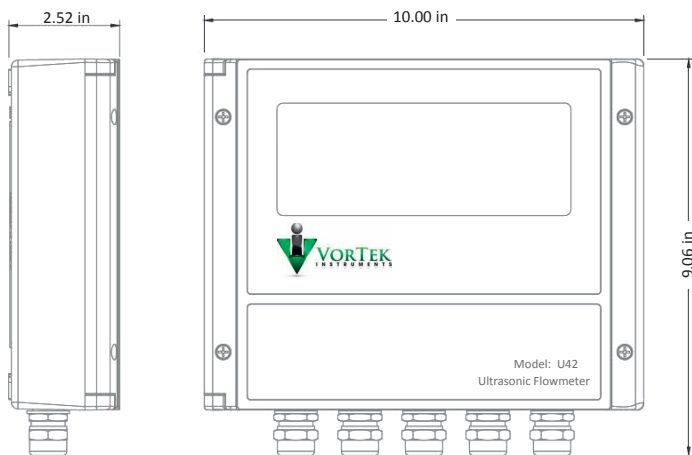
Outputs	Analog output: 4 ~ 20 mA, max load 750 Ω.
Pulse output:	0 ~ 9999 Hz, OCT, (min. and max. frequency is adjustable)
Relay output:	SPST, max 1 Hz, (1 A @ 125 VAC or 2 A @ 30 VDC)
Communication	RS-232 & RS-485 Modbus
Memory	SD card (Max 4GB)
Power Supply	90 to 245 VAC, 48 to 63 Hz, or 10 to 36 VDC
Display	240*128 back lit LCD
Transmitter Temperature	-40°F ~ 140°F (-40 °C ~ 60°C)
Humidity	Up to 99% RH, non-condensing

### Physical<sup>o</sup>

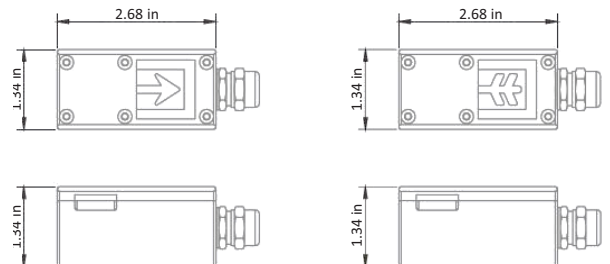
Transmitter	Aluminum, IP65
Transducers	IP68
	Encapsulated design
	Double-shielded transducer cable
	Standard/maximum cable length: 30 ft / 100 ft (9 m / 30 m)

## Physical Specifications

### Transmitter

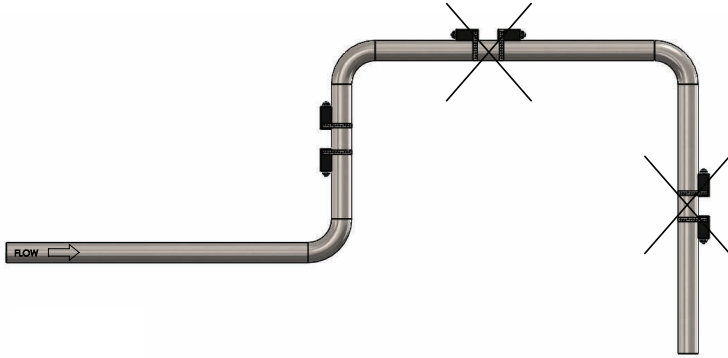


### Transducer



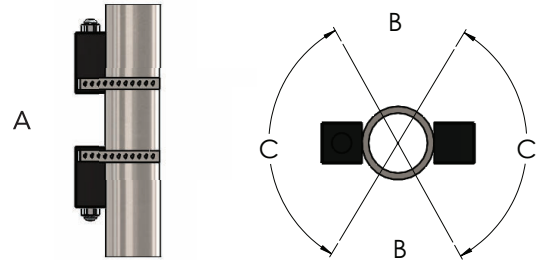
## Installation Site Selection

The ultrasonic flow meter requires that the pipe is full of liquid, as bubbles will greatly impact the accuracy of measurement. Please avoid the following installation positions:



The suggested installation method is as follows:

A is for an upright pipeline. Please notice that the fluid is flowing upward.  
B is for a horizontal pipeline. The transducers need to be installed inside the C area. The angle for area C has a maximum of 120°.



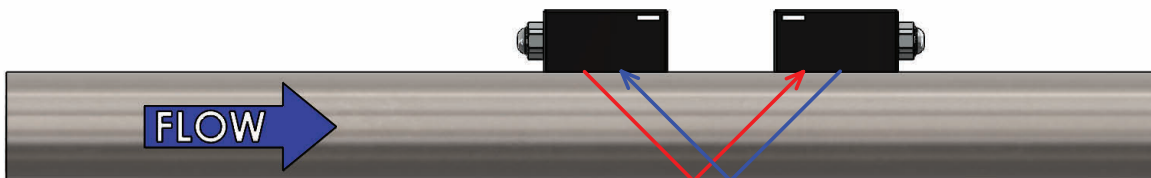
## Straight Pipe Demand

We suggest avoiding valves, T-branch pipes, and elbows if the pipe conditions allow. When dealing with more than one interfering resource, please satisfy the largest position installation requirement.

Condition	Piping Conditions	
	Pipe Diameters, D	
	Upstream	Downstream
One 90° elbow before meter	10D	5D
Two 90° elbows before meter	15D	5D
Two 90° elbows before meter, out of plane	30D	10D
Reduction before meter	10D	5D
Expansion before meter	20D	5D
Partially open valve	30D	10D

## Measuring Principle

Transit time technology utilizes ultrasonic waves transmitted and received through moving liquid. The difference between upstream and downstream transit time can be used to calculate flow and velocity.



## Model Number Information

Model		Transmitter	
<b>U42</b>	Ultrasonic Flow Meter	Wall Mount	
	Flow Range :	$\pm 0.03$ ft/s ~ $\pm 40$ ft/s ( $\pm 0.01$ m/s ~ $\pm 12$ m/s)	
	Accuracy :	$\pm 1\%$ of reading (0.5% according to calibration)	
	Repeatability :	0.15% of reading	
	Display :	240*128 backlit LCD	
	Power Supply :	90-250 VAC ,48-63 Hz, or 10-36 VDC	
	Output :	4-20 mA, OCT, Relay	
	Communication :	RS-232/RS-485, Modbus Protocol	
Code		Model	
<b>1</b>	OCT, Relay, RS-232/RS-485, 4-20 mA (Volumetric)		
<b>2</b>	OCT, Relay, RS-232/RS-485, 4-20 mA, RTD input (Energy)		*must select Code PT1000 or provide external temperature sensors
Code		Transducers	
<b>C1U</b>	Clamp-on, IP68. Operating temperature: $-40^{\circ}\text{F}$ ~ $+266^{\circ}\text{F}$ ( $-40^{\circ}\text{C}$ ~ $+130^{\circ}\text{C}$ )		
<b>C1H</b>	Clamp-on, IP68. Operating temperature: $32^{\circ}\text{F}$ ~ $+356^{\circ}\text{F}$ ( $0^{\circ}\text{C}$ ~ $+180^{\circ}\text{C}$ )		
<b>W1</b>	Insertion, IP68. Operating temperature: $-40^{\circ}\text{F}$ ~ $+266^{\circ}\text{F}$ ( $-40^{\circ}\text{C}$ ~ $+130^{\circ}\text{C}$ )		
<b>W1H</b>	Insertion, IP68. Operating temperature: $32^{\circ}\text{F}$ ~ $+356^{\circ}\text{F}$ ( $0^{\circ}\text{C}$ ~ $+180^{\circ}\text{C}$ )		
XXX		Cable Length	
<b>030</b>	Standard length 30 ft (9 m)		
<b>XXX</b>	Max length to 100 ft (30 m)		
Code		Temperature Sensors	
<b>PT1000</b>	PT1000 temperature sensors		*must select Code 2 for RTD input

Standard model: U42-1-C1U-030

Description: Standard clamp-on type ultrasonic flowmeter with open collector transistor (OCT), relay, RS-232/RS-485, 4-20 mA output, and 30 ft cable.

