

# SonoPro® Portable Transit Time Clamp-On Ultrasonic Flowmeter (Model U44)



VorTek Instruments SonoPro® Portable clamp-on flowmeter incorporates high accuracy transit-time ultrasonic technology to deliver accurate and reliable flow metering. The innovative design includes matched precision transducers and signal processing circuitry to accurately measure the flow of most liquids over a wide range of velocities. Clamp-on transducers create no wear, zero pressure loss, and do not require process interruptions to install them since they are attached to the outside of the pipe. With the addition of external temperature inputs, SonoPro Portable can provide a reliable (BTU) energy measurement.



**VorTek**  
INSTRUMENTS

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## Specifications

### Performance

Velocity Range	±0.03 ft/s ~ ±40 ft/s (±0.01 m/s~ ±12 m/s)
Accuracy	±1% of reading
Repeatability	0.2%
Pipe size	1"~ 48"(25mm ~ 1200mm)
Fluid	Clean liquids with little to no air bubbles or particles

### Function

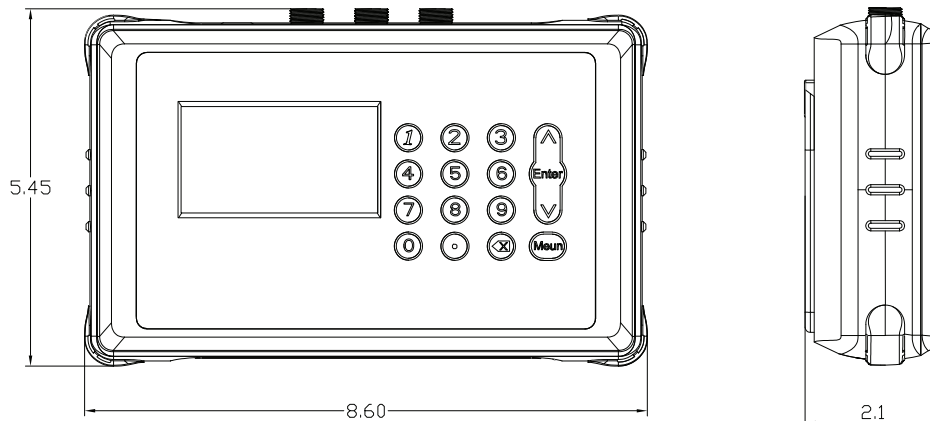
Outputs	Analog output: 4 ~ 20 mA, max load 750 Ω. Modbus: RS485
Memory	SD Card (16GB)
Display	240*128 back lit LCD
Power supply	Rechargeable Lithium Battery Power, 3000mAh (16 hour battery life under continuous operation)
Transmitter Temperature	-40°F - 140°F (-40°C - 60°C)
Humidity	Up to 99% RH, non-condensing

### Physical

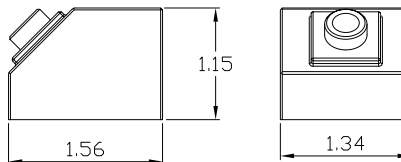
Transmitter Enclosure Rating	NEMA13, IP54
Transducer Enclosure Rating	Encapsulated design, IP68
Transducer cable	Standard cable length: 5m (16ft).

## Physical Specifications

### Transmitter



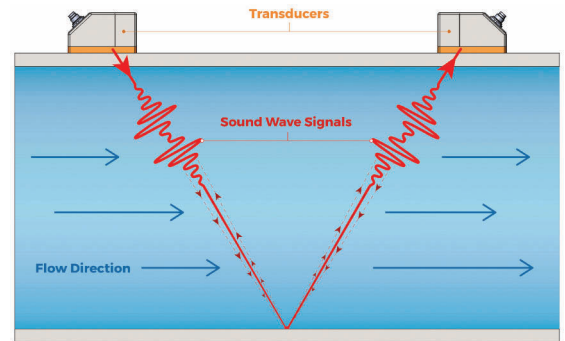
### Transducer



All dimensions in inches

## Measuring Principle

Transit-time ultrasonic flowmeters measure the time from when a signal is transmitted from the first transducer until the second transducer receives it. Time measurements are taken in both directions, with and against the flow. If there is no flow in the pipe, the time measurements will be the same in both directions. With flow in the pipe, the sound waves will move faster traveling with the flow and slower traveling against the flow. The liquid velocity is calculated from the difference in these two time measurements. With the area of the pipe and velocity known, the meter can calculate the volumetric flow rate.



## Included Accessories



- Carrying Case
- Handheld Transmitter
- Transducers (Pair)
- Transducer Mounting Bracket
- Transducer Mounting Bracket Pipe Straps (Pair)
- Acoustic Coupling Grease
- Battery Charger
- Output Cable
- Measuring Tape

## Model Number Information

Model	Description
<b>U44</b>	Portable Ultrasonic Flow Meter
	Velocity Range: $\pm 0.03$ ft/s ~ $\pm 40$ ft/s ( $\pm 0.01$ m/s ~ $\pm 12$ m/s)
	Accuracy: $\pm 1\%$ of Reading
	Repeatability: 0.2%
	Output: 4-20mA, RS485
	Internal lithium power supply: 3000mAh (16 hour battery life under continuous operation)
	Pipe size range: 1" ~ 48" (25mm~1200mm)
Code	Model
<b>1</b>	Volumetric Flowmeter for Liquids
<b>2</b>	Volumetric & Energy (BTU) Flowmeter for Liquids
Code	Transducers
<b>D1</b>	Clamp-on, IP68. Operating temperature: $-40^{\circ}\text{F}$ ~ $+176^{\circ}\text{F}$ ( $-40^{\circ}\text{C}$ ~ $+80^{\circ}\text{C}$ )
<b>D1U</b>	Clamp-on, IP68. Operating temperature: $-40^{\circ}\text{F}$ ~ $+266^{\circ}\text{F}$ ( $-40^{\circ}\text{C}$ ~ $+130^{\circ}\text{C}$ )
<b>W1</b>	Insertion, IP68. Operating temperature: $-40^{\circ}\text{F}$ ~ $+266^{\circ}\text{F}$ ( $-40^{\circ}\text{C}$ ~ $+130^{\circ}\text{C}$ )
Code	Transducer Mounting Bracket
<b>DT</b>	Dual Guide Mounting Bracket
Code	Transducer Cable Length
<b>P5</b>	Standard Cable - 16 ft (5 m) Length
<b>PXX</b>	Custom cable length. Maximum length is 100 ft (30m)
Code	Temperature sensor
<b>PT1000</b>	Pair of clamp-on PT1000 temperature sensors. 30 ft (9m) cable length

### Volumetric Flowmeter Model (example)

U44-1-D1-DT-P5

Portable Volumetric Flowmeter, D1 type transducers 5m cables with dual guide mounting bracket.

### Volumetric & Energy (BTU) Flowmeter Model (example):

U44-2-D1-DT-P5-PT1000

Portable volumetric & energy (BTU) flowmeter, D1 type transducer 5m cables with dual guide type mounting track. A pair of PT1000 clamp on temperature sensors, 9m cable length