

# SMARTTECH INC

## ULTRASONIC FLOW CALIBRATORS

Advance Clamp-On Transit -Time Technology for Accurate Flow Measurement



## Features and Benefits

- Wide Flow Measurement Range , From 0.01 M/ S To 32 M/ S
- Bi-Directional Measurement Totalize For Net ,Positive & Negative Flow
- HighAccuracy, Better Than  $\pm 1\%$  Of Velocity
- Wide Pipe Size Range From DN 15 To DN 6000 Mm
- Suitable For All Commonly Used Pipe Materials.
- Rechargeable Battery With 10 Hours Of Operation
- Built-In Data Logger
- Self-Explanatory User Interface
- Windows PC Software for Data down-Load and Real-Time Data Display.
- Signal Quality Tracking And Self -Adjusting Capabilities That Automatically Match Transducer To PipeMaterial
- Compact Light Weight Enclosure@ 538g For The Handset
- Can Also Be Deployed As A Remote RTU For Long-Term Flow Monitoring Application
- Easy And Economical Installation
- Non-Invasive. No Pipe Disturbance. No Moving Parts. No Pressure Drop
- Ideal For Both Clean & Opaque Liquid Flows.

The **TDS-100H Handheld Clamp-On Ultrasonic Flow Meter** Is One of The Most Powerful Flow meters Available for Liquid Measurement. Utilization of our proprietary ultrasonic transit time measurement and signal quality tracking technologies allow accurate flow Measurement of the Liquid Flow Rate from Outside Of a Pipe.

The TDS-100H Flow Meter Carefully Designed So That It Is Very Compact & Easy To Use. A User Can Use One Hand to Hold As well As Operate the Flow meter Main Unit. The User Interface Is Self Explanatory & Very Easy To Follow. Besides, The Unique Clamp-On Fixture Design Makes The Installation Very Simple & No Special Skills Or Tools Required. Due To The Non - Intrusive Nature Of The Clamp-On Technique, There Is No Pressure Drop, No Moving Parts, No Leaks & No Contamination.

## APPLICATION

- **Water** : hot water ,chilled water , city water , sea water
- Sewage & drainage water with small particle quantity.
- **Oil** : Crude Oil, Lubricating Oil, Diesel Oil, Fuel Oil
- **Chemicals** : Alcohol, Acids ,etc
- **Solvents**
- Beverage & food processes.
- HVAC hot & cool water, water/glycol solutions
- Water & Waste Water
- **Power Plants** : Nuclear, Thermal, Hydropower ,heat energy boiler feed water
- Energy consumption supervision & water conservation management
- Metallurgy & mining applications (e.g. acid recovery)
- Marine Operation & maintenance
- Pulp & Paper
- Pipeline leak detection, inspection, tracking & collection.
- Energy measurement & balancing
- Network monitoring

### Specifications

Linearity	Better than 1%
Repeatability	0.2%
Accuracy	Normally better than $\pm 1\%$ for velocity above 0.2m/ s
Response Time	0-999 seconds, user-configurable
Velocity	$\pm 0.01$ to 32 m/s, bi -directional
Pipe Range	DN-20 mm to DN 6000 mm
Pipe Material	All metals, most plastics ,concrete, lined pipe
Units	English metric
Totalizer	7 –digit totals for net, positive & negative flow respectively
Liquid Types	Virtually all liquids ( Full Pipe)
Liquid Temp.	0°C to 100 °C ( if Over 80°C,Pls choose high temp. sensor
Security	Set-Up Modification Lockout. Access code needed for unlocking
Display	4 x 16 letters
Digital Interface	RS-232.User protocol can be made on enquiry
Transducer	Model M1 for standard, other 3 models for optional
Transducer Cable	Standard 2 x 5m. Contact the factory for longer cable
Power Supply	3x AAA Ni-H built-in batteries. When fully recharged, it will last over 10 hours of operation.100 V AC ~ 240 V AC
Data Logger	Built -in data logger can store over 2,000 lines of data
Housing Material	Aluminum alloy protective case, suitable for normal & harsh environment
Case size	200mm x 92 mm x 32 mm
Handset weight	538 g with batteries.

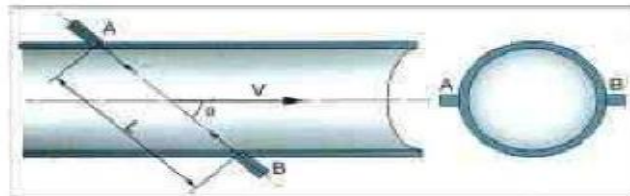
## WORKING

The flow meter is based on the transit time measurement principle, as shown in the following diagram's.

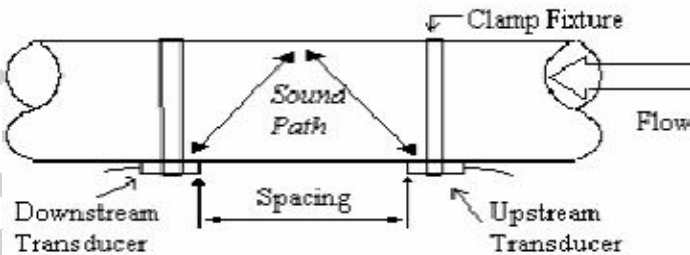
A typical transit -time flow measurement system utilizes two transducers (A & B) that function as ultrasonic transmitter & receiver. The transducer is clamped on the outside of a closed pipe at a specific distance from each other. The flow sensors operate by alternately transmitting & receiving a coded burst of sound energy & measuring the transit time that it takes for sound to travel between them. The difference in the transit time measured is directly proportional to the velocity of the liquid in the pipe.

The transducers can be mounted in three modes Depending on pipe size,

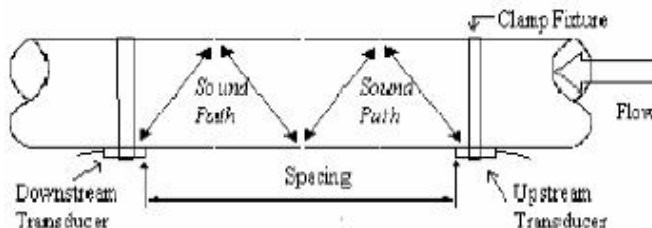
- **Diagonal Mode:** Used for larger pipes & the two transducers are installed on opposite sides of the pipe.



- **Reflex Mode:** Used for medium size pipes & the two transducers are mounted on the same side of the pipe. Thus the sound transverse the flow twice.



- **Double Mode:** Used for small pipe & the ultrasound transverse across the flow four times.



## OPTIONAL TRANSDUCER

	<p><b>Type S1</b></p> <ul style="list-style-type: none"> <li>• Small size transducer (magnetic with clamp-on fixture)</li> <li>• Dimension: 45mm×30mm×30mm</li> <li>• Temp.: 0®- 70®</li> <li>• Weight: 75g</li> <li>• Protection class: IP65</li> <li>• For pipesize: DN15-DN100mm</li> <li>• Installation: V -method (N, W)</li> </ul>
	<p><b>Type M1</b></p> <ul style="list-style-type: none"> <li>• Medium size transducer (magnetic with clamp-on fixture)</li> <li>• Dimension: 60mm×45mm×45mm</li> <li>• Temp.: 0®- 70®</li> <li>• Weight: 250g</li> <li>• Protection class: IP65</li> <li>• For pipesize: DN50-DN700mm</li> <li>• Installation: V -method and Z-method</li> </ul>
	<p><b>Type L1</b></p> <ul style="list-style-type: none"> <li>• Large size transducer (magnetic with clamp-on fixture)</li> <li>• Dimension: 80mm×70mm×55mm</li> <li>• Temp.: 0®- 70®</li> <li>• Weight: 650g</li> <li>• Protection class: IP65</li> <li>• For pipe size: DN300-DN6000mm</li> <li>• Installation: Z-method</li> </ul>
	<p><b>Type S1H</b></p> <ul style="list-style-type: none"> <li>• Small size high temp. transducer (with clamp-on fixture)</li> <li>• Dimension: 90mm×85mm×24mm</li> <li>• Temp.: 0°C- 160°C</li> <li>• Weight: 94g</li> <li>• Protection class: IP65</li> <li>• For pipesize: DN15-DN100mm</li> <li>• Installation: V -method (N, W)</li> </ul>
	<p><b>Type M1H</b></p> <ul style="list-style-type: none"> <li>• Medium size high temp. transducer (with clamp-on fixture)</li> <li>• Dimension: 90mm×82mm×29mm</li> <li>• Temp.: 0°C- 160°C</li> <li>• Weight: 150g</li> <li>• Protection class: IP65</li> <li>• For pipesize: DN50-DN700mm</li> </ul>

	<ul style="list-style-type: none"> <li>• Installation: V-method and Z-method</li> </ul>
<b>Special and standard transducers for handheld type</b>	
	<p><b>Type S1Z</b></p> <ul style="list-style-type: none"> <li>• Small size rack type transducer (magnetic with clamp-on fixture)</li> <li>• Dimension: 200mm×25mm×25mm</li> <li>• Temp.: 0°C-70°C</li> <li>• Weight: 250g</li> <li>• Protection class: IP65</li> <li>• For pipe size: DN15-DN100mm</li> <li>• Installation: V-method (N, W)</li> <li>• In the menu 23 of the flowmeter, this type transducer is <b>8. Standard—HS.</b></li> </ul>
	<p><b>Type M1Z</b></p> <ul style="list-style-type: none"> <li>• Medium size rack type transducer (magnetic with clamp-on fixture)</li> <li>• Dimension: 280mm×40mm×40mm</li> <li>• Temp.: 0°C-70°C</li> <li>• Weight: 1080g</li> <li>• Protection class: IP65</li> <li>• For pipe size: DN50-DN700mm</li> <li>• Installation: V-method and Z-method</li> <li>• In the menu 23 of the flow meter, this type transducer is <b>8. Standard—HM.</b></li> </ul>

Picture 1 is the example: Handheld type with medium size rack type **S1Z** transducer

## **SMARTECH INC.**

F-109, Sundram Complex, Near Vadsar Bridge to Darbar  
Chowkdi, Opp.Ambe School, Makarpura, Vadodara – 10

PH: 2631121, 9825439692

Email: smartechinc1@gmail.com

**SMARTECH INC**