

# manas

a name that spells trust.....

An ISO 9001 : 2015 Company



## ULTRASONIC FLOW METER

### UFM SERIES



#### manas microsystems Pvt. Ltd.

EL-54,Block-J,MIDC Bhosari, Pune-411026.(India)

Phone No.:- +91 20 2712 7044 / 7858

Fax No.:- +91 20 2712 7045

Email: [mktg@manasmicro.com](mailto:mktg@manasmicro.com)

Website: [www.manasmicro.com/](http://www.manasmicro.com/)

[www.flowmeterindia.in](http://www.flowmeterindia.in)



# Ultrasonic Flow meter.

## INTRODUCTION:

Ultrasonic flow meter works on the Transit Time or Time of Flight principle. The Flow meter unit utilizes two transducers that functions as both Ultrasonic transmitter and receiver. The transducers are either clamped on or inserted to the outside surface of the closed pipes. The transit time flow meter measures the time it takes for an ultrasonic signal transmitted from one transducer to cross the pipe and be received by second transducer. The flow is then measured by comparing the upstream and downstream time of Ultrasonic signal. With no flow through the pipe the transit time would be equal in both directions

## PRINCIPLE OF OPERATION:

For measuring the Flow of the medium, two ultrasonic pulses are sent through the medium, one in the flow direction and other in the opposite direction.

The transit time of the two pulses are then measured. The transit time difference  $\Delta t$  between these two pulses gives the average flow velocity on the propagation path of the Ultrasonic signals. This can be used to obtain the average flow velocity on the cross section of the pipe, which is proportional to the volumetric flow.

## TRASNSDUCER TYPES:

### Clamp on Type:

The transducers are clamped on the outside surface of the closed pipe.



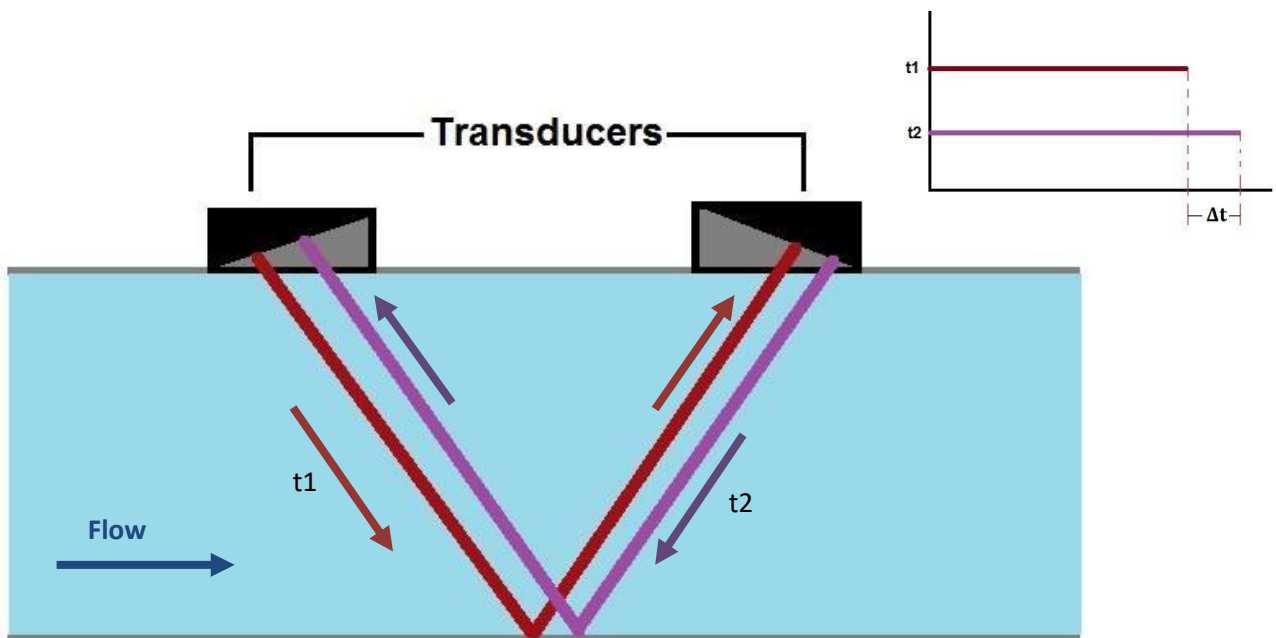
### Insertion Type:

The transducers are inserted in the surface of the closed pipe



### Full Bore Type:

The transducers are aligned diagonally on the surface of the closed pipe



## Transit Time Principle

## Ultrasonic Flow meter.

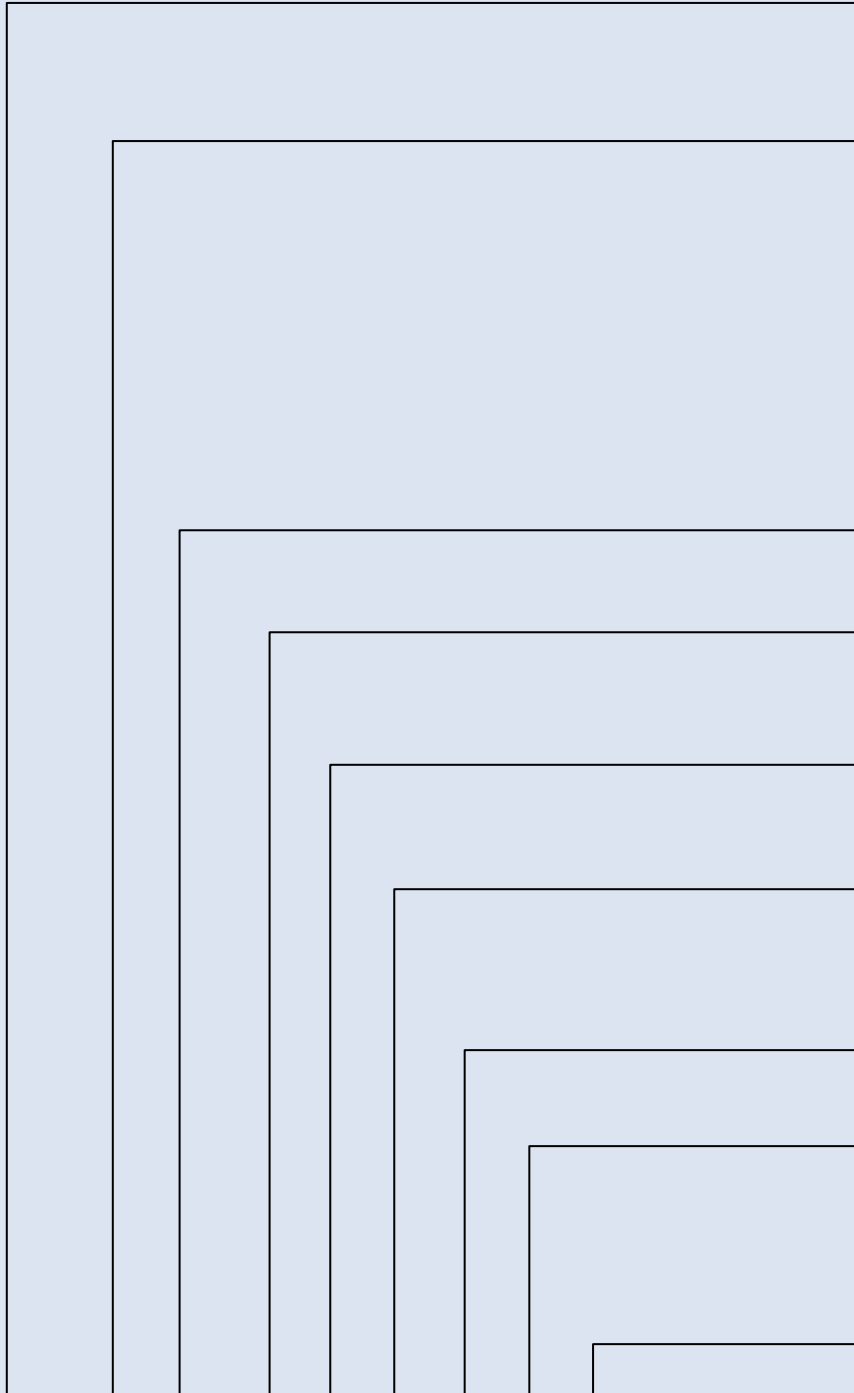
### Technical Specifications of Transmitter:

| Parameters           | UFMc Handheld (Clamp On)   | UFMc Wall mount (Clamp On)  | UFMi (Insertion )   |
|----------------------|--|---|---|
| <b>Power supply</b>  | 3 AAA NiMH built-in battery (12 hours of operation) & 100-240 V AC for the charger | 24 V DC<br>110 V AC<br>240  | 24 V DC<br>110 V AC<br>240  |
| <b>Velocity</b>      | ±12 m/sec. Bidirectional   | ±12 m/sec. Bidirectional  | ±12 m/sec. Bidirectional  |
| <b>Display</b>       | 4 lines, 16 characters, LCD with back light, flow rate, velocity, totalizer        | 2 lines, 16 characters, LCD with back light, flow rate, velocity, totalizer     | 2 lines, 16 characters, LCD with back light, flow rate, velocity, totalizer     |
| <b>Units</b>         | User configurable English/Metric   | User configurable English/Metric  | User configurable English/Metric  |
| <b>Totalizer</b>     | FWD, NET, REV, BATCH (Gallons, ft <sup>3</sup> , Barrels, lbs, m <sup>3</sup> )    | FWD, NET, REV, BATCH (Gallons, ft <sup>3</sup> , Barrels, lbs, m <sup>3</sup> ) | FWD, NET, REV, BATCH (Gallons, ft <sup>3</sup> , Barrels, lbs, m <sup>3</sup> ) |
| <b>Output</b>        | RS 232   | 4-20 mA DC (Standard)   | 4-20 mA DC (Standard)   |
| <b>Accuracy</b>      | ±1% of reading @ rate >0.5 m/sec.  | ±1% of reading @ rate >0.5 m/sec.   | ±1% of reading @ rate >0.5 m/sec.   |
| <b>Repeatability</b> | 0.2% of Span   | 0.2% of Span  | 0.2% of Span  |
| <b>Weight</b>        | <0.5 kg  | <2.5 kg   | <2.5 kg   |
| <b>Dimensions</b>    | 204x90x30 mm   | 251x190x96 mm   | 251x190x96 mm   |
| <b>Security</b>      | Keypad lockout, access code enabled  | Keypad lockout, access code enabled   | Keypad lockout, access code enabled   |

### Technical Specifications of Transducer:

| Parameters                 | UFMc Handheld (Clamp On)                              | UFMc Wall mount (Clamp On)                            | UFMi (Insertion )                    |
|----------------------------|---|---|--------------------------------------|
| <b>Suited temp. - Std.</b> | -40 C to 120 C  | -40 C to 120 C  | -40 C to 120 C                       |
| <b>Suited temp. - High</b> | -40 C to 250 C  | -40 C to 250 C  | -40 C to 250 C                       |
| <b>Pipe size</b>           | S : 15-80 mm<br>M : 50-700 mm<br>L : 400-4570 mm      | S : 15-80 mm<br>M : 50-700 mm<br>L : 400-4570 mm      | 65mm – 1200mm                        |
| <b>Dimensions</b>          | S : 45x30x30 mm<br>M : 60x45x45 mm<br>L : 80x70x55 mm | S : 45x30x30 mm<br>M : 60x45x45 mm<br>L : 80x70x55 mm | 180mm with 20mm bore                 |
| <b>Weight</b>              | S : < 0.3 Kg<br>M : < 0.5 Kg<br>L : < 1.0 Kg          | S : < 0.3 Kg<br>M : < 0.5 Kg<br>L : < 1.0 Kg          | < 1.5 kg                             |
| <b>Cable length</b>        | 6 m Std. Can be extended up to 300 m                  | 6 m Std. Can be extended up to 300 m                  | 6 m Std. Can be extended up to 300 m |
| <b>Flexible belts</b>      | SS belt according to pipe size                        | SS belt according to pipe size                        | NA                                   |
| <b>Portable case</b>       | Size - 463x383x103 mm                                 | NA  | NA                                   |

## Ordering Information:



| CODE   | MODEL                               |
|--------|-------------------------------------|
| UFMc   | Clamp On Type                       |
| UFMi   | Insertion Type                      |
| UFMfb  | Full Bore Type                      |
| CODE   | TRANSMITTER                         |
| HH     | Handheld                            |
| WM     | Wall Mounted                        |
| INT    | Integral                            |
| CODE   | LINE SIZE (Insertion and Full Bore) |
| 25 NB  | DN 25 : 1"                          |
| 40 NB  | DN 40 : 1½"                         |
| 50 NB  | DN 50 : 2"                          |
| 80 NB  | DN 80 : 3"                          |
| 100 NB | DN 100 : 4"                         |
| 150 NB | DN 150 : 6"                         |
| 200 NB | DN 200 : 8"                         |
| AO     | ANY OTHER                           |
| NA     | Not Applicable                      |
| CODE   | SENSOR (For Clamp On Type Only)     |
| S      | 15-80 mm                            |
| M      | 50-700 mm                           |
| L      | 400-4570 mm                         |
| NA     | Not Applicable                      |
| CODE   | OUTPUT                              |
| 1      | 4-20 mA                             |
| 2      | Pulse                               |
| 3      | Relay                               |
| CODE   | COMMUNICATION                       |
| RS4    | RS 485                              |
| RS2    | RS232                               |
| NA     | Not Applicable                      |
| CODE   | DATA LOGGING                        |
| 1      | Required                            |
| 2      | Not Required                        |
| CODE   | CABLE                               |
| 6      | 6 Meters                            |
| 10     | 10 Meters                           |
| AO     | Any Other                           |
| CODE   | POWER SUPPLY                        |
| 1      | 110 V AC                            |
| 2      | 240 V AC                            |
| 3      | 24 V DC                             |
| 4      | Battery Operated                    |

|      |    |    |   |   |     |   |    |   |                             |
|------|----|----|---|---|-----|---|----|---|-----------------------------|
| UFMc | HH | NA | M | 1 | RS4 | 2 | 10 | 4 | SAMPLE ORDERING INFORMATION |
|------|----|----|---|---|-----|---|----|---|-----------------------------|

### manas microsystems Pvt. Ltd.

WORKS : EL-54, Block-J, MIDC Bhosari, Pune411026.India  
 Phone No.:- +91 20 2712 7044 / 7858  
 Mob No. :- 09975598938 / 09975598939 / 07722034924  
 Fax No.:- +91 20 2712 7045  
 Email: [mktg@manasmicro.com](mailto:mktg@manasmicro.com)  
 Website:[www.manasmicro.com/](http://www.manasmicro.com/)  
[www.flowmeterindia.in](http://www.flowmeterindia.in)

