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# ADAFLOW



## AUW440

ULTRASONIC-FLOWMETER  
NON-INVASIV / CLAMP-ON-SENSORS

[www.adaflow.com.tr](http://www.adaflow.com.tr)



Flowmeter

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# AUW440 ULTRASONIC-FLOWMETER



## Technical Information:

Ultrasonic-Flowmeter – Principle of Measurement

**AUW440** transit time flow meter utilizes two transducers that function as both ultrasonic transmitters and receivers. The transducers are clamped on the outside of a closed pipe at a specific distance from each other. The transducers can be mounted in V-method in which case the ultra sound transverses the pipe twice, or W-method in which case the ultra sound transverses the pipe four times, or in Z-method in which case the transducers are mounted on opposite sides of the pipe and the ultra sound transverses the pipe only once. The selection of mounting method depends on pipe and liquid characteristics. When the flow meter works, the two transducers transmits and receives ultrasonic signals amplified by multi beam which travels firstly downstream and then upstream (Figure 1). Because ultra sound travels faster downstream than upstream, there will be a difference of time of flight( $\Delta t$ ). When the flow is still, the time difference ( $\Delta t$ ) is zero. Therefore, as long as know the time of flight both downstream and upstream, we can work out the time difference, and then the flow velocity ( $V$ ) and flow volume ( $Q$ ) via the following formula.

$$V = K \times D \times \Delta t$$
$$Q = S \times V$$

### Whereas:

$K$  = Constant

$D$  = Distance between the two transducers

$S$  = pipe cross section

$V$  = Liquid velocity

$\Delta t$  = Difference in time of flight

$Q$  = flow rate

## Parameters of main unit



## Clamp-on Ultrasonic-Flowmeter Series AUW440

Series AUW440 wall-mount Clamp-on Transit Time Ultrasonic Flow Meters provide abundant capabilities for accurate liquid flow measurement from outside of a pipe. It utilizes state-of-the-art technologies in ultrasonic transmission receiving, digital signal processing and transit-time measurement. The proprietary signal quality tracking and self-adapting technologies allow the system to optimally adapt to different pipe materials automatically.

The flow meters of the AUW440 family are carefully designed with their user-interfaces self-explanatory and their operation simple, requiring no special skills or tools.

Due to the non-invasive nature of clamp-on transducers, there is no pressure drop, no moving part, no leaks, and no risk of contamination or corrosion.

Features:

- Non-invasive clamp-on style transducers
  - Bi-directional flow measurement
  - Able to measure positive, negative and net total flow
  - Can measure pipe sizes from 12 mm to 3000 mm
  - Measurable temperature range: -40°C ~ 90°C
  - Up to 8GB SD card data logger optional
  - Easy operation and quick installation
- Applications:
- Water (hot water, cooling water, De-ionized water, potable water)
  - Petroleum products
  - Chemicals, including alcohol, acids, etc.
  - HVAC, energy measurement system
  - Beverage, food and pharmaceutical processors

# Level I Magnetic level gauge I Bypass

## Technical Specifications

|             |                                      |  |
|-------------|--------------------------------------|--|
| Transmitter | <b>Power Supply</b>                  | <b>Standard:</b> 10 ~ 28 V DC / 2,5 VA max.;<br>115/230 V AC 50/60 Hz $\pm$ 15 % / 5 VA max.;<br><b>Solar energy:</b> 12 V DC                                |
|             | <b>Velocity</b>                      | -12 ~ 12 m/s (-40 ~ 40 ft/s), bi-directional   |
|             | <b>Display</b>                       | FSTN. LCD back lit, can display total flow, flow rate, velocity and meter running status etc.  |
|             | <b>Unit Rate Totalized</b>           | User Configured (English and Metric) Rate and Velocity Display (FWD, NET, REV or BATCH) gallons, ft <sup>3</sup> , barrels, lbs, Liters, m <sup>3</sup> , kg |
|             | <b>Output</b>                        | 4...20 mA, OCT Pulse, Relay, RS232C or RS485, options: Up to 8 GB Data logger, +(4...20 mA), MODBUS Protocol etc.  |
|             | <b>Accuracy</b>                      | $\pm$ 1,0 % of reading at rates > 0,5 m/s<br>$\pm$ 0,005 m/s of reading at rates < 0,5 m/s   |
|             | <b>Sensitivity</b>                   | Flow Rate: 0,0003 m/s (0,001 ft/s)   |
|             | <b>Repeatability</b>                 | 0,2 % of reading   |
|             | <b>Dimensions and Weight</b>         | Standard: 241 x 193 x 76,5 mm,<br>Weight: < 2,5 kg   |
|             | <b>Security</b>                      | Keypad lockout, access code enable   |
| Transducer  | <b>Liquid Types Supported</b>        | Virtually most any liquid containing less than 2 % total Suspended solids (TSS) or aeration  |
|             | <b>Suited Liquid Temperature</b>     | Std. Temp. Transducer: -40 ~ +90 °C<br>High Temp. Transducer: -40 ~ +250 °C  |
|             | <b>Cable Length</b>                  | Standard: 10 m Opt: max. 100 m   |
|             | <b>Pipe-<math>\varnothing</math></b> | Sensor Type S: 12 ~ 50 mm<br>Sensor Type M: 40 ~ 800 mm (Standard)<br>Sensor Type L: 800 ~ 3000 mm   |
|             | <b>Dimensions and weight</b>         | Type S: 42 x 25 x 25 mm; weight < 0,2 kg<br>Type M: 60 x 43 x 43 mm; weight < 0,5 kg<br>Type L: 80 x 53 x 53 mm; weight < 1,0 kg                             |
| Accessories | <b>Couplant</b>                      | Dow Corning 111 or 732 (112 for high temp.)  |
|             | <b>Data Logger</b>                   | 512 MB to 8 GB SD card   |
|             | <b>S-S Belt</b>                      | According to the pipe line size  |

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# Level I Magnetic level gauge I Bypass

## ● Mounting Bracket Transducer



Improve installation efficiency and accuracy  
Protection Level: IP68  
Measuring range: DN32 ~ DN700  
Temperature range: -30° ~ 160°C

| Type            | Small        | Medium       | Extended   | Small        | Medium       | Extended    |
|-----------------|--------------|--------------|------------|--------------|--------------|-------------|
| Model           | HS           | HM           | EB-1       | HS-HT        | HM-HT        | EB-1-HT     |
| Measuring Range | DN15 ~ DN100 | DN50 ~ DN700 | >DN300     | DN15 ~ DN100 | DN50 ~ DN300 | >DN300      |
| Temperature     | -40°~ 90°C   | -40°~ 90°C   | -40°~ 90°C | -40°~ 160°C  | -40°~ 160°C  | -40°~ 160°C |
| Dimention       | 318×59×85mm  | 568×59×85mm  | 88×59×49mm | 318×59×145mm | 568×59×145mm | 88×59×49mm  |

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