

# U-1000 HM

## Fixed Ultrasonic Heat/ Energy Meter with Modbus Communication

### Description:

The U-1000 HM is a clamp-on thermo-, heat- and energy meter based on ultrasound which is installed on the outside of a pipeline without any complications. The device measures the flow and return temperatures via PT100 sensors and the flow rate with ultrasound. An ultrasonic beam of a given frequency is generated by applying a repetitive voltage pulse to the transducer crystals. This transmission goes first from the Downstream transducer to the Upstream transducer. The transmission is then made in the reverse direction, being sent from the Upstream transducer to the Downstream transducer. The speed, at which the ultrasound is transmitted through the liquid, is accelerated slightly by the velocity of the liquid through the pipe. The subsequent time difference is directly proportional to the liquid flow velocity. Having measured the flow velocity and knowing the pipe cross-sectional area, the volumetric flow can be easily calculated. The temperature sensors measure the heat difference at the inlet and the outlet point. Together with the flow rate, the U-1000 HM then calculates the corresponding amount of heat. The values can be output individually or summed. In addition, there is a Modbus compatibility so that the device can also be used as a component in an aM & T or BEM system. The U-1000 HM is designed like the U-1000 for fixed installations. It is easy to install and requires a minimum of information that must be entered by the user. The device requires 12-24V AC/DC from an external source. The U-1000 HM is designed to work on steel, copper and plastic pipes with an outside diameter up to 180(225) mm.

## Features

- / NEW: wall mounted display
- / Heat- and Energy-measuring
- / Easy installation
- / For pipes with 22(25) - 115 mm OD  
or 125 - 180(225) mm OD
- / Water temperature up to 85 °C  
at wall mounted display up to 135°C
- / Modbus compatible
- / Single values and sums
- / Mbus (optional)

### Application:

Heat-metering and monitoring as:

Warm water meter, heat meter, chilled water meter, drinking-water meter, ultrapure water meter and for process water.



## Electrical Specifications:

|                           |  |
|---------------------------|--|
| <b>Power supply /</b>     | 12 V . . 24 V $\pm$ 10 % AC/DC at 7 watt |
| <b>Protection class /</b> | IP54<br>IP68 (Wall mounted display)      |
| <b>In-/Output-cable /</b> | 5 m x 6-core for power in and pulse out  |

## Ordering Codes:

|   |                  |           |           |
|---|------------------|-----------|-----------|
| <b>Order Number</b>   | <b>U-1000.HM</b> | <b>1.</b> | <b>1.</b> |
| <b>U-1000 HM Heatflowmeter</b>  |                  |           |           |
| <b>Version /</b><br>1 = with pulse output<br>2 = with pulse and Modbus<br>3 = with pulse and Mbus<br>4 = with wall mounted display (For nominal sizes see technical data) |                  |           |           |
| <b>Nominal diameter /</b><br>1 = 22 . . 115 mm outer diameter<br>2 = 125 . . 180 mm outer diameter  |                  |           |           |

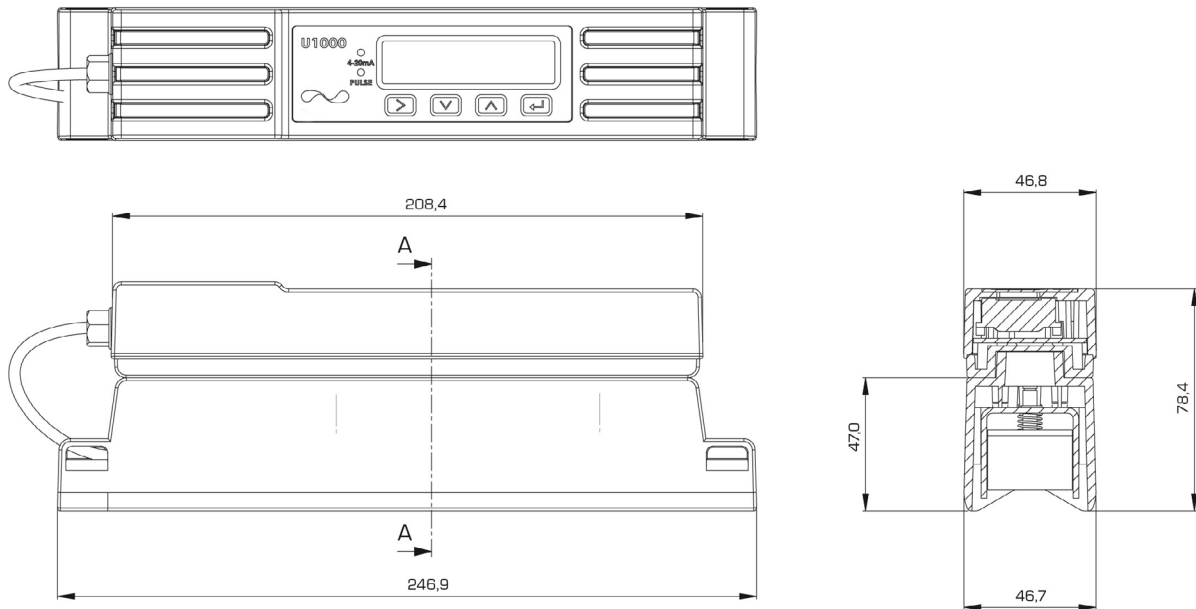
## Technical Specifications:

|   |   |
|---|---|
| <b>Measuring principle /</b>                | Transit time method & PT-100  |
| <b>Flow /</b>                               | 0.1 . . 10 m/s  |
| <b>Watertemp. range /</b>                   | 0 . . 85 °C<br>0 . . 135 °C (Wall mounted display)  |
| <b>Measuring range dynamic /</b>            | 100 : 1   |
| <b>Pipesize Ø /</b>                         | 22 . . 115 mm OD<br>125 . . 180 mm OD   |
| <b>Pipesize Ø /</b><br>Wall mounted display | 25 . . 115 mm OD<br>125 . . 225 mm OD   |
| <b>Media /</b>                              | Coldwater (with glycol),<br>warmwater   |
| <b>Accuracy /</b>                           | $\pm$ 3 % des Messwertes bei<br>Strömungsgeschwindigkeiten<br>> 0.3 m/s   |
| <b>Temperature sensors /</b>                | PT-100, clamp-on, class B,<br>4 cables, range 0 . . 85 °C,<br>resolution 0.1°C  |
| <b>Output /</b>                             | Pulse or frequency, energy (kWh<br>or BTU) or volume flow. The pulse<br>output can also be configured as<br>a loss of flow or low flow alarm<br>for standalone meter or modbus<br>communication applications. |
| <b>Communication /</b>                      | Modbus RTU slave, RS485 serial<br>link hardware layer. Energy,<br>power, temperature and flow.<br>Optional with Mbus  |



## Dimensions in mm:

U-1000 for pipe mounting:



U-1000.4 Elektronik for wall mounting:

