

# Sonometer 30

*Non-invasive level measurement  
from the outside with ultrasound*

- **Non-invasive ultrasonic measuring principle**
- **No contact between sensor and liquid**
- **Easy and cost effective installation - sensors are simply attached to the outside of the tank; no holes to drill; ideal for retrofits**
- **Suitable for high pressure, corrosive, aggressive and toxic media**
- **No problems with foam or gaseous turbulences on the liquid surface**
- **Measurement is independent of air temperature**
- **Self-checking electronics**
- **EEx certified versions available**



## Description

The Sonometer 30 is a measuring instrument which utilises ultrasonic signals for the precise level control and measurement of liquids. The sensors are attached to the outside of the tank and measurements are made through the wall. There is no need to drill holes or to perform any welding to install the sensors.

Since there is no contact between the sensors and the liquid to be measured, the devices are ideal for hygienic applications and for the measurement of aggressive media.

## Applications

Most applications for Sonometer 30 can be found in the food and pharmaceutical/chemical industry as the measuring principle used guarantees cleanliness and a long life-time of the installation.

- **Continuous level measurement for tanks with a maximum measuring range of up to 15 m**
- **Distance measurement**
- **Determination of piston position in hydraulic cylinders**

## Advantages of the measuring principle

- The sensors are mounted, without the need to penetrate the wall, to the bottom surface of the tank, the vessel or the stand pipe.
- There is no contact with the medium.
- The ultrasonic signals are not dangerous.
- Transmitter can be positioned up to 300 m away from ultrasonic sensor without signal loss.
- The evaluation time of the measurement is very short.
- High pressure inside the vessel does not present a problem.
- Accurate level measurements are possible even with foam on the liquid surface.
- The medium can be toxic, corrosive or aggressive.
- There are no hygienic problems with the sensor.
- The sensors are maintenance-free, no wear and tear.
- The installation costs are low.
- Retrofits can be undertaken without process interruption.
- No drilling or welding on tank or pipe is necessary.
- There is no re-inspection required for retrofits on pressure vessels.

## Measuring principle

The Sonometer units are novel ultrasonic measuring devices using sensors which are installed to the outside of tanks or stand pipes. Ultrasonic signals are continuously transmitted through the wall and into the liquid. The received echo signals are evaluated in the electronics. The measured value is available as switch output and/or as analogue and/or digital signal.

## Requirements

The liquid medium should only contain a small amount of gaseous or solid content. The tank bottom should be free of or be covered only by a little amount of deposit material.

## Sensors (AE series)

Type	Measuring range	Temperature
AE01	3 m	- 20 °C ... 85 °C
AE02	10 m	- 20 °C ... 85 °C

High temperature (max. 135 °C) and EEx certified sensors on request

## Technical data

Measuring principle	: Ultrasonic pulse-echo, non-invasive, with single sensor
Transmitter	: Single channel, optional dual channel
Sensor mounting	: From the outside of tank or stand pipe
Sensor cable length to transmitter	: < 300 m
Vessel material	: Carbon steel, stainless steel, other metals, glass, plastic materials
Transmitter set-up	: Parameters are set via keys and integral display
Signal evaluation	: Intelligent signal optimisation
Measuring interval	: Selectable, 100 ms ... 500 s
Status LED's	: Relay 1, relay 2, alarm
Current output	: 0/4mA ... 20 mA
Serial interface	: RS 485, 2 wire
Power supply	: 18 V ... 30 V DC/AC, max. 500 mA, approx. 3 s delay after switch-on
Dimensions/weight	: Transmitter housing (W x L x H) 100 x 102 x 110 mm, 450 g
Terminal Mounting of transmitter housing	: Screw clamps : Wall or DIN rail (35 mm) mounting
Operating temperature	: Transmitter electronics - 20 °C ... 60 °C, Sensors (AE series) - 20 °C ... 135 °C
Serial interface	: RS 485, 2 wire
Accessories	: Mounting fixtures, couplants