

Sonocontrol 20

*Non-invasive level control
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**
- **Self-checking electronics**
- **EEx certified versions available**



Description

The Sonocontrol 20 is a measuring instrument which utilises ultrasonic signals for precise level control 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 Sonocontrol 20 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. Many other applications are possible with Sonocontrol 20 such as the detection of gas bubbles or solid particles.

- **Level control for tanks with a maximum measuring range of up to 15 m**
- **Limit alarm**
- **Overflow protection**
- **Wet/dry or full/empty detection in tanks and pipes**
- **Pump protection**
- **Monitoring of tanks and pipes for gas pockets or solid deposits**
- **Leakage detection in double-wall tanks**

Advantages of the measuring principle

- The sensors are mounted, without the need to penetrate the wall, to the side of the tank, the vessel or the stand pipe.
- There is no contact with the medium.
- The ultrasonic signals are not dangerous.
- The evaluation time of the measurement is very short.
- High pressure inside the vessel does not present a problem.
- Accurate evaluation of the signals is 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.
- Pipes can be pigged.
- There is no re-inspection required for retrofits on pressure vessels.

Measuring principle

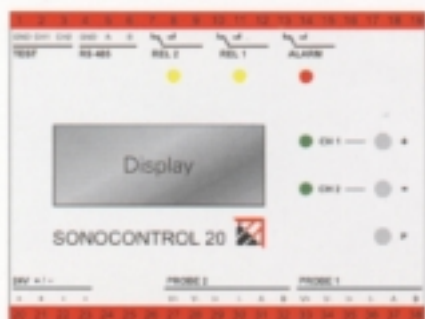
The Sonocontrol units are novel ultrasonic measuring devices using sensors which are installed to the outside of tanks or stand pipes. Ultrasonic signals are continuously transmitted through the wall and into the liquid. The received echo signals are evaluated in the electronics. The measured value is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

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

Transmitter connections



| | | |
|-----------------------|-----------------------------------|---------------|
| 1 Test/GND | 13 Relay Alarm/NO contact | 27 Probe 2/V+ |
| 2 Test/Channel 1 | 14 Relay Alarm/NC contact | 28 Probe 2/V- |
| 3 Test/Channel 2 | 15 Relay Alarm/Common | 29 Probe 2/I+ |
| 4 RS485/GND | | 30 Probe 2/I- |
| 5 RS485/A | 16, 17, 18, 19 No connections | 31 Probe 2/A |
| 6 RS485/B | | 32 Probe 2/B |
| 7 Relay 2/NC contact | 20 Power supply 18 ... 30 DC/AC/+ | 33 Probe 1/V+ |
| 8 Relay 2/NO contact | 21 Power supply 18 ... 30 DC/AC/+ | 34 Probe 1/V- |
| 9 Relay 2/Common | 22 Power supply 18 ... 30 DC/AC/- | 35 Probe 1/I+ |
| 10 Relay 1/NC contact | 23 Power supply 18 ... 30 DC/AC/- | 36 Probe 1/I- |
| 11 Relay 1/NO contact | | 37 Probe 1/A |
| 12 Relay 1/Common | 24, 25, 26 No connections | 38 Probe 1/B |

Technical data

| | |
|------------------------------------|--|
| Measuring principle | : Ultrasonic pulse-echo, non-invasive, mounted on side or bottom of tank with single sensor; or transmission method with two sensors |
| Transmitter | : Single channel, optional dual channel |
| Ultrasonic sensors | : AE series (active sensors) |
| 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 processing | : Integration, delay and inverter functionality |
| Measuring interval | : Selectable, 100 ms ... 500 s |
| Status LED's | : Relay 1, relay 2, alarm |
| Switch outputs | : Limit 1, limit 2 (optional), alarm (self-checking); relay change-over contacts, max. 240 V/5 A, voltage free contacts |
| 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 | : Screw clamps |
| Mounting of transmitter housing | : 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 |
| Certifications | : Optional - Sonocontrol 20 in special enclosure with EEx certification for Zone 1 |