



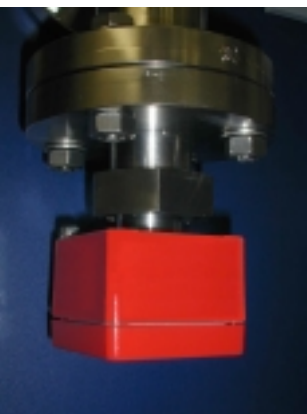
KSR-Ultrasonic Sensor Type UltraMeter



Sensors



Sensor for UltraMeter 50/100



Sensor for UltraMeter 300

General Description

KSR Ultrasonic Sensors are used for non-intrusive continuous measurement of liquid levels in vessels. The sensors are attached to the outside of the tank wall. Thus, these sensors are especially suited for retro-fits to existing tanks.

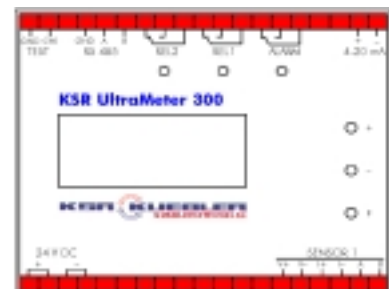
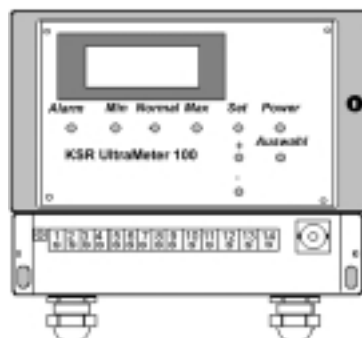
Measuring principle

The transducer generates an ultrasonic impulse that travels through the tank wall and enters into the liquid. If liquid is present, the impulse will be reflected at the surface of the liquid. This reflection is detected by the transducer (ultrasonic pulse echo measurement). The KSR UltraMeter unit will calculate the level inside the tank depending on the time of flight of the signal and the speed of sound inside the liquid. If no liquid is present, there will be no reflection as the ultrasonic impulse will not travel through air or gas.

Features

- no direct contact with the liquid and thus suitable for corrosive, aggressive, and toxic materials or use in the food and pharmaceutical industry
- foam on surface of the liquid will not disturb the measurement
- for vessels made of metal, glass, or plastic, even for coated and rubber-lined tanks
- measurement completely independent from pressure
- no wear and tear on the sensors
- all sensors temperature compensated
- temperature range from -20°C to 135°C
- available for use in hazardous areas
- available designs: weather-proof housing (IP 65), DIN mounting rail and 19"-Rack
- output signal and relays volt-free
- EMC-tested

If used with KSR Bypass Level Indicators, a local display can be provided.





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Technical Data

	KSR UltraMeter 50	KSR UltraMeter 100	KSR UltraMeter 300
Power supply	Terminal 1, 2 18 ... 30 VDC	Terminal 1, 2 18 ... 30 VDC	Terminal 20/21, 22/23 18 ... 30 VDC
Power consumption	approx. 150 mA	approx. 300 mA	approx. 300 mA
Output signals Relay outputs	0/4 - 20 mA 1 Relay NO, max. 50V/0,5A	0/4 - 20 mA 3 Relays, 1 Alarm SPDT, max. 50V/0,1A	0/4 - 20 mA 2 Relays, 1Alarm SPDT, max.50V/5A
Display	LCD-Display, 4 digits, programmable		
Interface	-	RS232	RS485
Electrical connections	plug-in terminals in housing	terminal box, tamper-proof seal	plug-in terminals
Measurement principle	Pulse-Echo-Measurement		
Measuring range (water)	approx. 30 mm - 22000 mm (Time of flight max. 30 ms)	approx. 30 mm - 22000 mm (Time of flight max. 30 ms)	approx. 40 mm - 23000 mm (Time of flight max. 32 ms)
Resolution	1 % FS, max. 1 mm		
Sample frequency	approx. 20 Hz	approx. 20 Hz	approx. 10 Hz
Frequency of ultrasonic probe	500 kHz ... 2 MHz	500 kHz ... 2 MHz	500 kHz ... 1 MHz
Length of cable	depending on sensor head 10 m, or consult factory	depending on sensor head 10 m, or consult factory	depending on sensor head max. 300 m
Environmental conditions			
Permissible ambient temperature	- 20°C ... + 80°C (+135°C optional)	- 20°C ... + 80°C (+135°C optional)	- 20°C ... + 80°C
Ingress protection	IP65	IP 65	IP 20
Mechanical Data			
Design	Aluminium housing 160 x 120 x 80 mm (WxLxH)	plastic housing with transparent lid 195 x 180 x 105 mm (WxLxH)	polycarbonate housing 75 x 100 x 110 mm (WxLxH)
Installation	wall mount	wall mount	DIN mounting rail 35 mm to DIN EN 50022
Weight	approx. 950 g	approx. 800 g	approx. 800 g