

**Description of operation**

This remote sensor is a solid state proximity type for 24 VDC which uses the echo delay time method for distance sensing. It senses a sound-reflecting object which enters the sound cone from any direction. The objects to be sensed can be solid, liquid or powdery.

**Installation**

Figure I (dimensions in mm)  
any mounting position  
Keep a free space around the sound cone of a distance "x"  
(= 60 mm) from reflecting objects (figure II).

**Connection**

By means of cable socket (figure III) part no. 237-13442-4  
(included in delivery range)

Pin		
1	L+	DC 20 ... 30 V
2	S	Switching output "High level" (NO)
3	L-	Ground (GND)
4	S2	Switching input "Low level"

The connections are polarized, short-circuit proof and overload-proof. In the case of electrical faults it is recommended to use shielded lines.

**Operation**

- Switching range (figure IV)
- a Unusable blind zone
  - b Sensing range
  - c Overfill range
- HV Hysteresis high level  
HL Hysteresis low level

The objects are sensed reliably in the set switching range within an opening angle of the sound cone of 5°. If the reflecting conditions are good, the objects can also be sensed outside the sound of cone. Keep the blind zone "a" free from objects. These would lead to undefined switching states. Take care that the surface of the transducer is clean.

Display:

Reservoir empty	H2 is lit
Filling level O.K.	H2 is not lit
Reservoir full	H1 is lit
Supply voltage	H3 is lit: green
Overfill signal	H3 is lit: red

**Technical Data**

Ambient temperature.....	- 25...70°C
Sensing range .....	50...500 mm *
Sensing distance "High level" ... S1 .....	60 mm *
Sensing distance "Low level" .... S2 .....	depends on the reservoir size
Hysteresis "High level" ... HV .....	20 mm
Hysteresis "Low level" .... HL .....	50 mm
Switching point fault .....	0,17% / K

\* measured on the housing surface

**Supply:**

Rated operational voltage .....	U <sub>E</sub> .....	24 VDC
Operating voltage range.....	U <sub>B</sub> .....	20...30 VDC
Admissible residual ripple .....		10 %
Open-circuit.....		< 60 mA

**Switching output:**

Rated normal current .....	I <sub>0</sub> .....	≤ 200 mA
Voltage drop .....	U <sub>d</sub> .....	≤ 3 V
Spurious switch-on pulse .....		suppressed
Switching function .... "High level" .....		NO contact switching on "plus"
"Low level" .....		NC contact switching on "plus"

**Typical values:**

Availability delay.....	250 ms
Reflection area .....	10 x 10 mm <sup>2</sup>
Ultrasonic frequency .....	400 kHz
Switching frequency .....	8 Hz
Resolution .....	1 mm

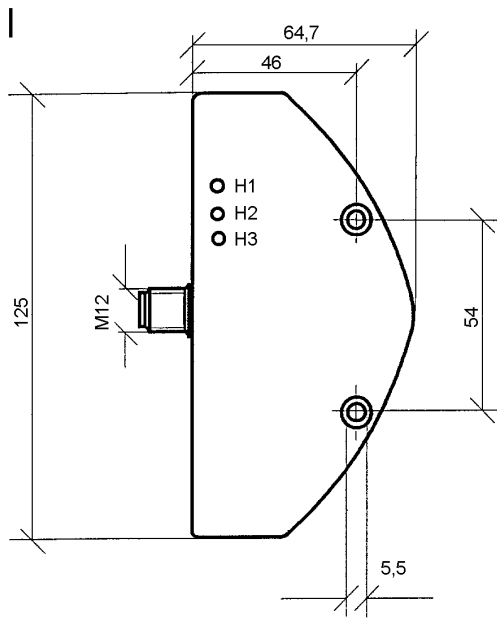
Protection ..... IP 65

**Part-Number**

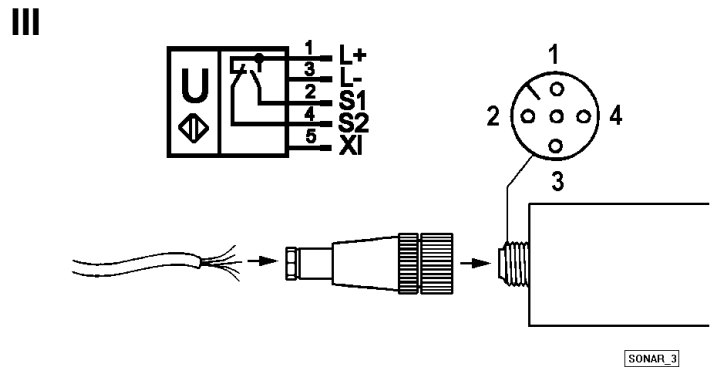
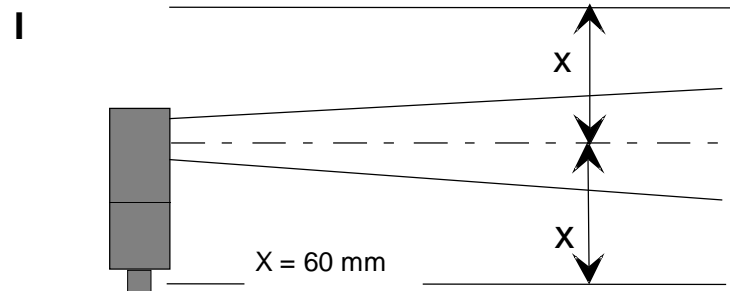
Ultrasonic sensor set for reservoirs:	Part-No.:
4L (pump 205)	664-36939-1
5L (pump 205)	664-36939-2
8L (pump 205)	664-36939-3
10L (pump 215)	664-36939-4
30L (pump 215)	664-36939-5

**Extra Equipment**

Cable socket with 5 m cable part-no. 237-13429-6



30 mm high

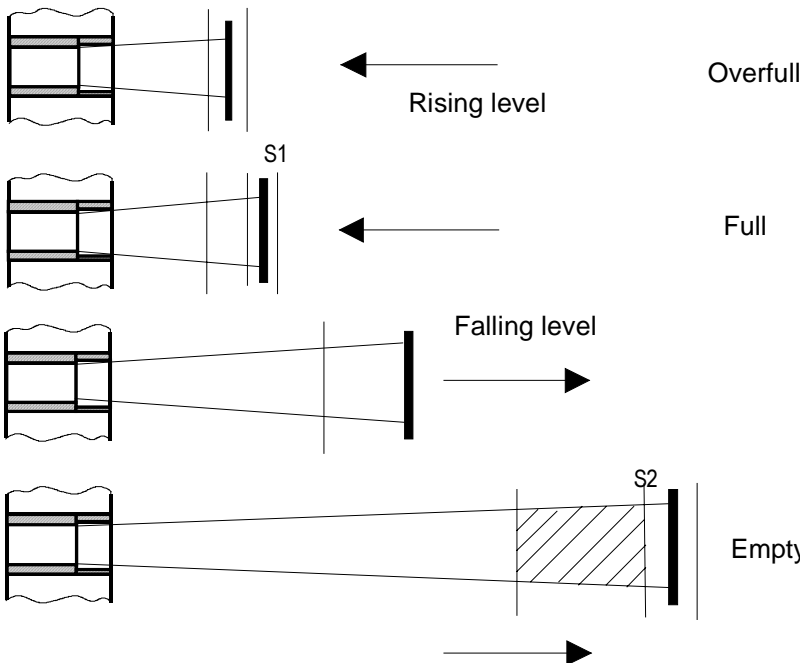
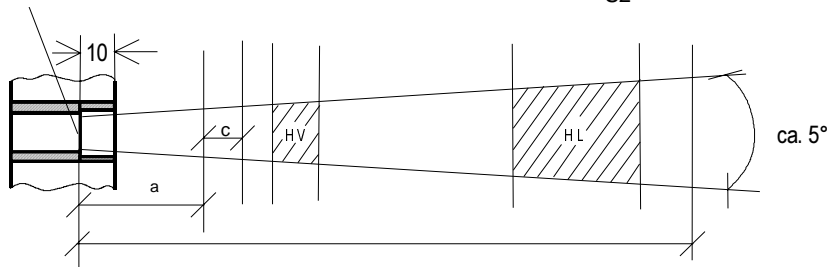


**IV**

Surface of the transducer

Full  
S1

Empty  
S2



Full Empty

S1	S2	
1	1	
H1	H2	H3
on	off	red

S1	S2	
1	1	
H1	H2	H3
on	off	green

S1	S2	
0	1	
H1	H2	H3
off	off	green

S1	S2	
0	0	
H1	H2	H3
off	on	green