

Sonicont® USP4S

Ultrasonic filling level transmitter for general applications
Operating manual BA02.20



Technical modifications reserved.

1 Safety instructions

The operating manual is part of the device and must be kept always accessible nearest its installation location.

Installation, electrical connection, commissioning, operation, dismantling and disposal of the device must be made by a qualified and authorized expert according to the information's in this Operating Manual and the relevant standards and rules.

This expert must have read and understood this Operating Manual and especially the safety notes. Complementary the Technical Information TI has to be adhered to, that can be ordered by the manufacturer or downloaded from the homepage.

1.1 Operational safety

The device is safely built and tested according to state-of-the-art technology.

The device meets the legal requirements of all relevant EU directives. This is confirmed by attaching the CE mark. The associated EU-Declaration of Conformity can be ordered or downloaded from the homepage.

1.2 Intended use

The device is an electronic ultrasonic filling level transmitter for monitoring, control and continuous measurement of filling levels in liquids.

The device may only be used within the permitted operation limits. Every use besides these limits as agreed can lead to serious dangers.

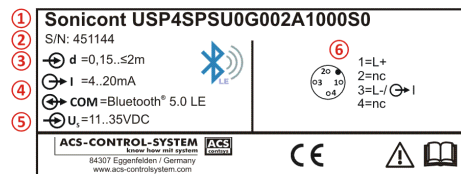
The materials of the device must be checked for compatibility with the respective application requirements (contacting materials, process temperature) before use. An unsuitable material can lead to damage, abnormal behavior or destruction of the device and to the resulting dangers. The sensors may not be used as sole device for prevention of dangerous conditions in machines and plants.

The operational reliability of the device is ensured only at the intended use.

An inappropriately use, disregarding the Operating Manual and the technical rules, using under-qualified personnel, making unauthorized alterations as well as damage of the device releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

2 Installation

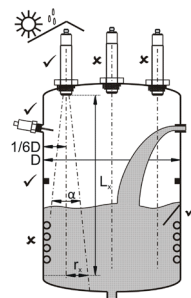
2.1 Product label



- ① Type code
- ② Serial number
- ③ Input signal / Measuring range
- ④ Output signal
- ⑤ Power supply
- ⑥ Pin assignment

2.2 Installation place

The correct function of the device within the specific technical data can only be guaranteed, if the permitted process and environmental conditions at the installation place (see Technical Information TI) will not be exceeded.



Use only one ultrasonic sensor per tank.

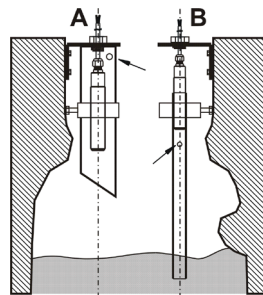
The sensor must be installed eccentrically at a distance of 1/6 of the tank diameter D to the tank wall and vertical to the product surface.

Avoid measurements through the filling curtain.

No devices or equipment's are allowed to be located within the sound beam, eventually these must be covered by a above installed cover.

Values for calculating the sound beam can be found in the chapter "Technical Data - Input".

At direct sunlight use a protective cover.



In narrow shafts, at strong noise echoes, foams or strong airflows a (A) standpipe ID $\geq 100\text{mm}$ or a

(B) ultrasound guide pipe made of plastic with smooth inner wall must be used.

If the lower end of the tube is uncovered, it must be cut diagonally (45°).

At the upper end of the tube venting hole ($\varnothing 5 \dots 10\text{mm}$) must be provided.

2.3 Installation notes

Do not remove packaging until just before mounting and check the device for any damage.

DANGER - Install the device only when the system is pressureless. There is a risk of fast escaping media resp. pressure blow.

DANGER - Let the system cool down sufficiently before installing the device. There is a risk of dangerous and hot media escaping.

Low pressure $\leq -0,2\text{bar}$ / -20kPa or vapor pressure $\geq 50\text{mbar}$ (20°C / 68°F) influences the measuring result.

The maximum sensor range is dependent on the measuring conditions.

If the blocking distance BD (see chapter "Technical Data - Input") is undershot, it may cause device malfunction.

Buildups at the sound converter can cause faulty measurements.

3 Electrical connection

Danger - Install the device only when power supply is off. There is a risk of electric shock.

Note - For inauguration deactivate all connected control devices, to avoid unwanted control reactions.

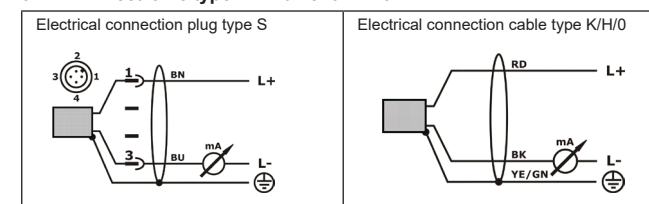
The device must be grounded.

Install cable separated from power leading cables, if existing connect shield to earth.

Cable: M12 - A-coded, 1-BN = brown / 2-WH = white / 3-BU = blue / 4-BK = black

Cable: BN = brown / WH = white / RD = red / BK = black / YE/GN = yellow/green

3.1 Electronic type A - Current 4...20mA



Use a cable 2-core, twisted, shielded.

Observe maximum permitted supply voltage:

- $U_s = 11 \dots 35\text{VDC}$

Observe maximum permitted load resistor of the analogue output:

- $R_L \leq (U_s - 11\text{V}) / 22\text{mA}$

4 Operation

4.1 Bluetooth® 5.0 LE

Configuration via Mobile-App ACS SmartConnect.

- Measuring value indication distance / temperature
- Interference echo suppression
- Settings
- Envelope curve indication

Default settings [Adjustment range]:

- Start value LRV: Nominal lower adjustment value = 4mA
- End value URV: Nominal upper adjustment value = 20mA
- Current alarm: Hold value 3,8...20,5mA [Hold value 3,8...20,5mA / 3,6mA / 22mA]
- BT password: no Password

5 Maintenance

The device is free of maintenance.

Solid coatings on the diaphragm can lead to faulty measurement results. The diaphragm must be regularly cleaned. Don't use sharp resp. hard tools, pressured air or aggressive chemicals. For dismounting the device see safety information's of the chapter "Dismounting".

6 Dismounting

Use suitable protective clothing, e.g. goggles, gloves.

Danger - Dismount the device only when power supply is off. There is a risk of electric shock.

Danger - Let the device and the system cool down sufficiently fore dismounting it. There is a risk of hot surfaces as well as dangerous and hot media escaping.

Danger - Dismount the device only when the system is pressureless. There is a risk of fast escaping media resp. pressure blow.

7 Troubleshooting / Repair

In case of malfunction check:

- Enclosure >> Damage
- Diaphragm >> Damage / Pollution
- Supply voltage >> Polarity / Voltage / Load / Contact
- Cable >> Damage / Short circuit / Wire break

For dismounting the device see safety information's of the chapter "Dismounting".

A repair may only be carried out by the manufacturer.

8 Return

Enclose necessary information's for return:

- An exact description of the application.
- The chemical and physical characteristics of the product.
- A short description of the occurred error.

Before returning the device, the following measures must be performed:

- Adhesive product residues e.g. caustic, toxic, radioactive etc. must be removed.
- A returning must be refrained, if it is not possible by 100% to remove the unhealthily product completely.

9 Disposal

This instrument is not subject to the WEEE directive and the respective national laws. Hence, pass the instrument directly on to a specialized recycling company and do not use the municipal collecting points.