

Solids Content Sensor 7520 SAV-T/E

Solids Content Sensor for High Concentrations using the Light Absorption Method



The 7520 SAV sensor is used for optical solids content measurement in turbid water for up to 50g solid matter/l.

Applications

- Solids content measurement of suspended matter in sewage treatment plants:
Primary sludge, digested sludge, thickened sludge,
Inflow to centrifuge / press
- Industrial quality control

Features and benefits

- Reliable concentration measurement using optical measuring process
- Four-beam pulsed light method for compensation of sensor soiling and ageing of optical components
- Stainless steel sensor body
- No mechanically moving parts
- Measured value preprocessing in sensor resulting in low signal transmission sensitivity

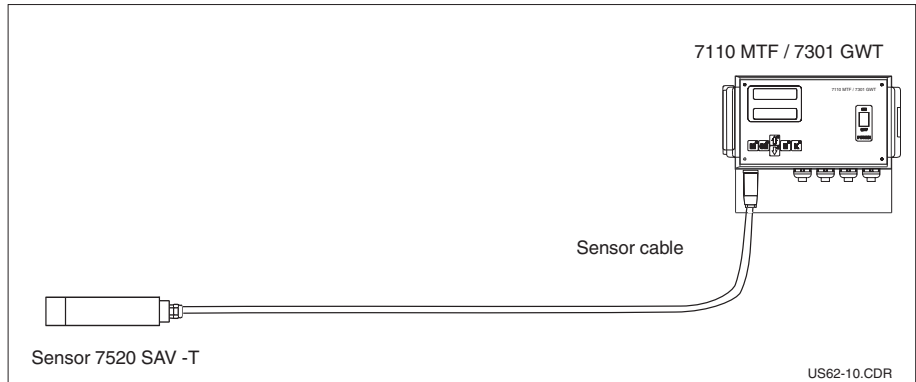
Measuring system

The complete measuring system:

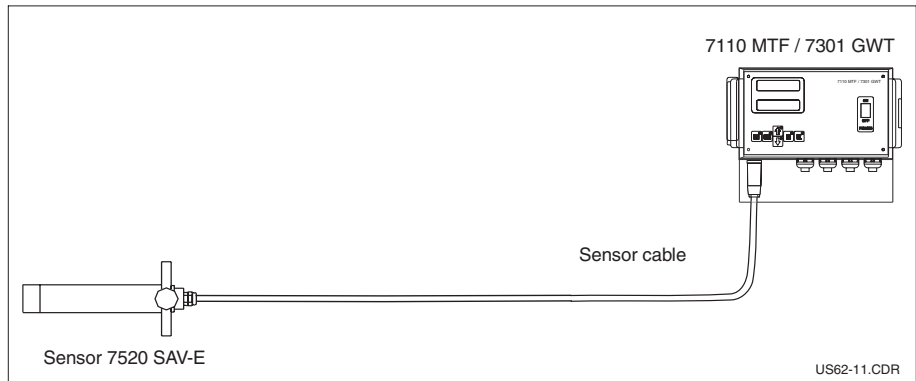
- Turbidity measurement transmitter 7110 MTF or 7301 GWT
- Solids content sensor 7520 SAV

Example of a measuring system

7110 MTF or 7301 GWT with 7520 SAV-T



Measuring system 7110 MTF or 7301 GWT with 7520 SAV-E



Measuring principle

Four-beam pulsed light method

This method is based on two light sources and two photoreceivers. Long-life LEDs (at least 20,000 operating hours) are used as monochromatic light sources.

To eliminate interference from extraneous light sources, the LEDs are pulsed at a rate of several kHz.

Two measuring signals are detected at the two photoreceivers with every light pulse. The four measuring signals are compared with each other logarithmically and converted to a ratio. This compensates for detector soiling and the ageing of optical modules.

Light absorption method

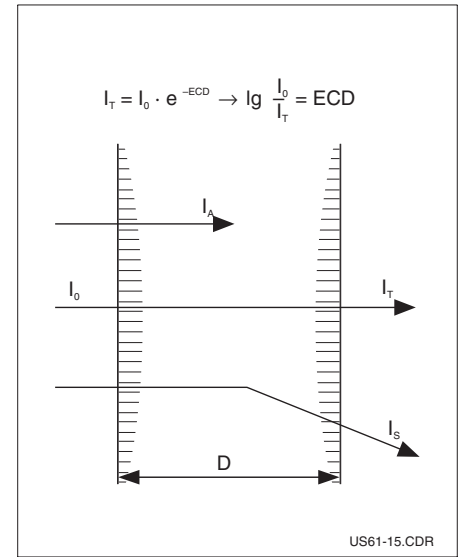
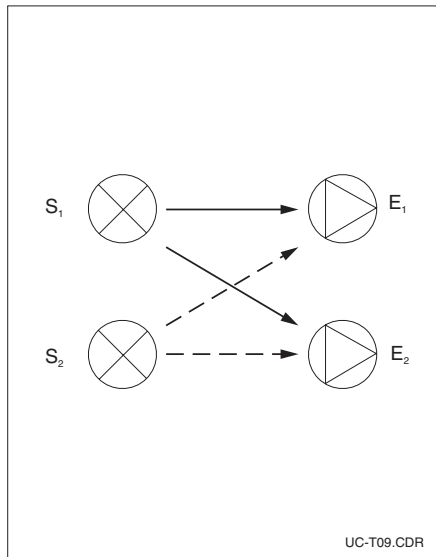
This measuring method is based on the Lambert-Beer law. Turbidity is measured by light attenuation.

The LEDs on the sensor send a directed light beam to the photoreceivers. The intensity of the beam is attenuated by solid matter particles in the medium. The photoreceivers measure the absorption signal and convert it into a frequency signal. The frequency signals are assigned to corresponding turbidity units and solid matter concentrations, and appear in the display.

left:
Principle of measured light radiation
S = Transmitter
E = Receiver

right:
Principle of measured light attenuation analogue to Lambert-Beer'schen law

- I_0 = Intensity of transmitted light
- I_A = Intensity of absorbed light
- I_T = Intensity of light transmitted
- I_S = Intensity of scattered light
- E = Extinction coefficient
- C = Concentration
- D = Optical path length



Calibration

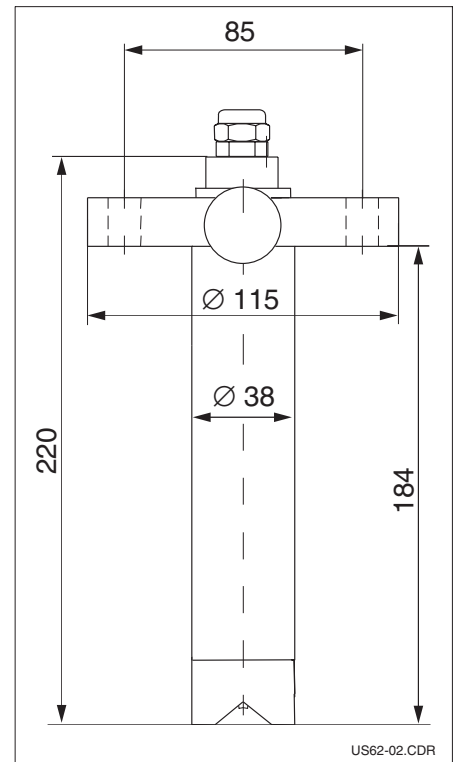
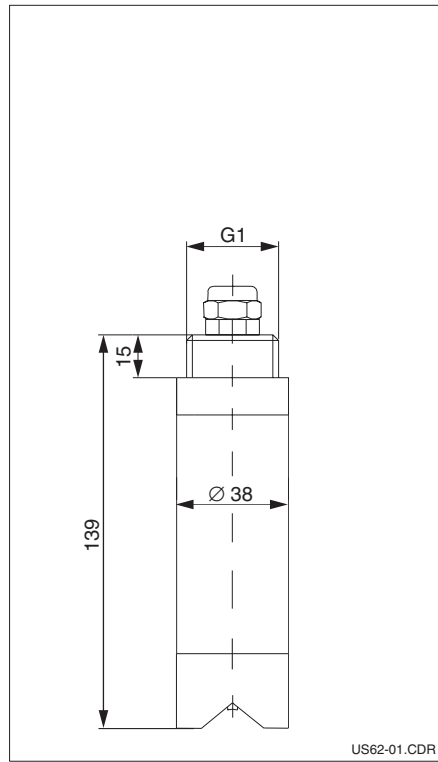
Each sensor is subjected to a careful calibration at the factory. One customer-defined calibration can also be saved. For the calibration of solids content measurement, such as sludge, refer to the concentration determined by a reference method (dry substance).

Dimensions

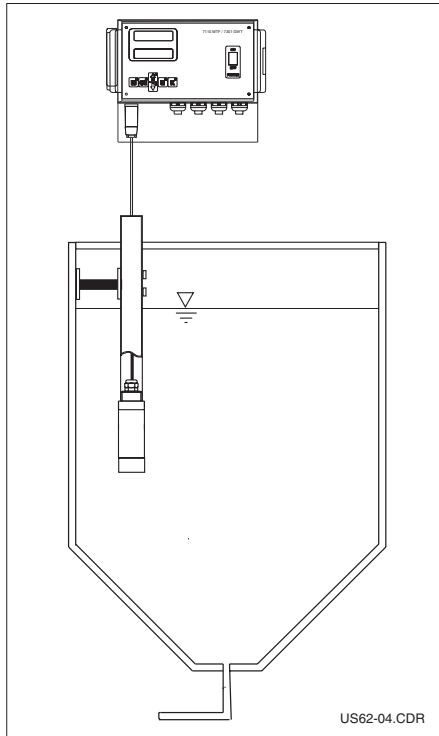
Dimensions 7520 SAV

left:
7520 SAV Immersion
type

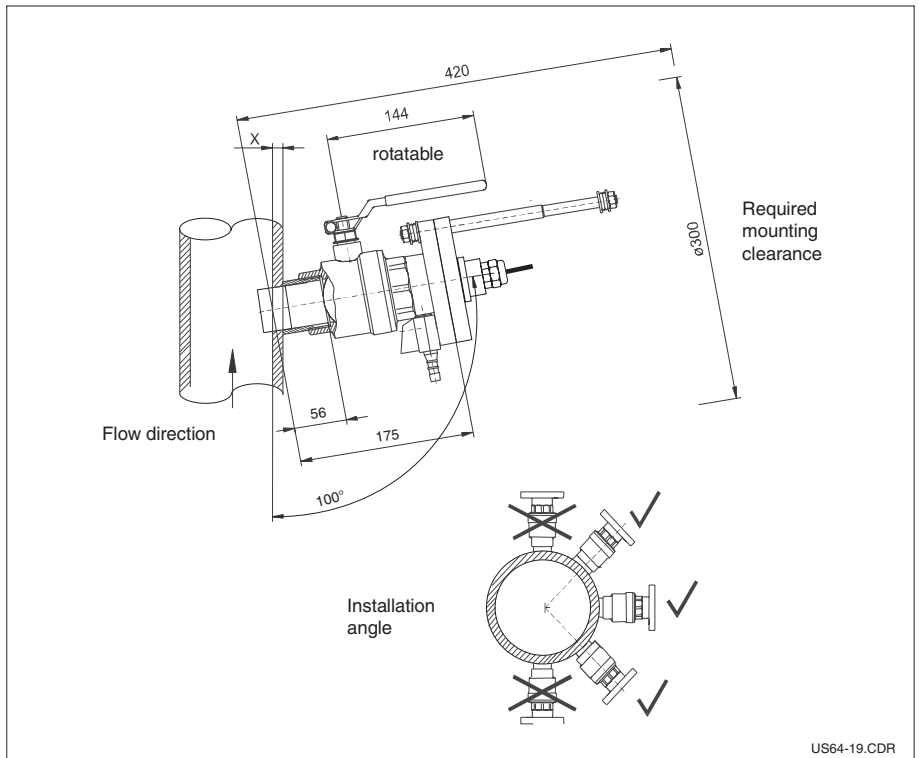
right:
7520 SAV Installation
type



Installation



Installation example of
7520 SAV
Immersion type
Tank installation



Installation example of
7520 SAV
Installation type
Tube installation with ball
valve built-in assembly
(Accessories)



Note:

- We recommend the use of an immersion tube with 180° thread for the 7520 SAV immersion type
- Installing the sensor in pipelines or close to a wall can lead to back-scattering and therefore to signal increase.

Accessories

- ❑ Ball valve built-in assembly for sensor extension under process conditions, DN 40 with safety lock
Material: stainless steel SS 316 Ti,
O-rings made of Viton®
Order No.: 51503660
- ❑ Sensor fixing bracket for basin mounting
Material: stainless steel SS 316 Ti,
Order No.: 51503581
- ❑ Sensor rinsing tool for SAV-T
Material: stainless steel SS 316 Ti
Order No.: 51503863
- ❑ Immersion tube 1 m
Material: stainless steel SS 316 Ti
Order No. 51506000
- ❑ Immersion tube 2 m
Material: stainless steel SS 316 Ti
Order No. 51505994
- ❑ Immersion tube 3 m
Material: stainless steel SS 316 Ti
Order No. 51505995

Technical Data

General data	Manufacturer	ISI Europa
	Product designation	Solids content sensor 7520 SAV
Mechanical data	Dimensions (L x Ø)	139 x 38 Ø mm
	Immersion type Installation type	220 x 38 Ø mm
Material	Weight	approx. 1kg
	Immersion type Installation type	approx. 3kg
Material	Sensor body	Stainless steel SS 316 Ti
	Sight glass	Epoxy resin
	O-rings	Viton®
Turbidity measurement	Measuring principle	Light absorption method
	Optical components	Light source: 2 LEDs, Detector: 2 photodiodes
	Measuring light	Infrared light at 880nm (absorption maximum)
	Measuring range	0 ... 50g solid matter/l, dependent on sludge type
	Accuracy	< 1% of measuring range end value
	Reference	Using four-beam pulsed light method
	Factory calibration	SiO ₂
	Cable lengths T version E version	13m 1m + 10m extension cable
	Connecting cable length of Zener barrier to transmitter	2m
Operating conditions	Operating temperature	0 ... +50°C
	Operating pressure	max. 6 bar
	Ingress protection	IP 68
Supplementary documentation	Technical Information 7110 MTF	Order No.: 51508353
	Technical Information 7301 GWT	Order No.: 51508491

Subject to modifications.

Ordering information

<input type="checkbox"/> 7520 SAV-T	with frequency output	51503624
<input type="checkbox"/> 7525 SAV-T	with analog output	51503625
<input type="checkbox"/> 7520 SAV-E	with frequency output	51503654
<input type="checkbox"/> 7525 SAV-E	with analog output	51503655
<input type="checkbox"/> 7520 SAV-E-SP	with frequency output and integrated rinse nozzle	51503656
<input type="checkbox"/> 7525 SAV-E-SP	with analog output and integrated rinse nozzle	51505992

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