



Water level measurement
OTT CBS – compact bubble sensor
for measuring depth and water level

OTT CBS

Indirect measurement principle for precise data

The OTT Compact Bubble Sensor (CBS) measures water levels accurately and remains stable long-term. It operates according to a non-drifting measurement principle, covering a range of measurement of up to 30 m. The system uses an indirect measurement technique that keeps the pressure measurement cell and electronics out of the water.

An integrated compact piston pump produces the bubbling pressure required for the indirect measurement process. The compressed air is blown out in the water with the attached measuring tube using a bubble chamber – after the blowing process the pressure between the measuring tube and the water pressure at the bubble chamber is equalized. A pressure measuring cell in the OTT CBS measures the air pressure and the prevailing tube pressure in succession. By taking the difference between both signals, the exact water level is calculated compensated for drift.

By using an intelligent pumping strategy, the bubble sensor doses the exact amount of air required in order to be able to guarantee a precise water level measurement and minimize condensation. In addition, power consumption is reduced and the lifetime of the pump unit increased.

Quantitative
Hydrology

OTT CBS – accurate, compact, and reliable

Features and Benefits

- Optimized pump strategy for low power consumption and high dynamics (1 m level change/minute can be detected)
- Integrated overload protection – continual monitoring of the tube pressure and the motor current of the pump
- No software needed for initial startup – all settings are made via DIP switches
- Simple system integration into existing networks and stations – SDI-12 interface and scaleable 4...20 mA output present
- Air inlet with dust protection – no air drying needed in the 15 m measuring range
- Connection of measuring tubes with different inner diameters of 2 mm, 4 mm or 1/8" possible; existing 4 mm standard pneumatic measuring tubes can also be used.

Individually tailored

- Optional: An advanced version with an extended calibration and air drying unit allows measurements of up to 30 m – particularly suitable for applications at dams or water reservoirs.
- Optional: For special applications a version with ± 3 mm accuracy in the first 4.5 m of the 15 m range is available (USGS Specification).

Applications

- Water level measurement in streams, rivers, canals, lakes
- Dams, irrigation plants, water reservoirs
- Garbage depots, industrial and mining waste water
- Channels with long, flat embankments
- Especially suitable for areas prone to lightning strikes (indirect measurement principle)

Technical data

Sensor Technology

Bubble sensor,
indirect pressure measurement

Measuring ranges

- Standard version + USGS Specification:
0 ... 15 m (0... 50 ft)
- Measuring range 30 m version:
0 ... 30 m (0... 100 ft)

Resolution

1 mm (0.01 ft)

Accuracy

- Standard version +
Measuring range 30 m version: ± 5 mm
- USGS Specification version*:
measuring range 0 ... 15 ft: ± 0.01 ft;
measuring range 15 ... 50 ft:
 ± 0.065 % of measured value or
 ± 0.02 ft, whichever is less

Measuring dynamics (max. level change)

1 m/min

Units

m, cm, ft, mbar, psi

Interfaces

4 ... 20 mA, SDI-12, SDI-12 via RS-485

Power supply

9.6 ... 30 V DC, typ. 12/24 V DC

Power consumption

- Sample interval 1 min: typ. 320 mAh/day
- Sample interval 15 min: typ. 25 mAh/day

Measuring tube

Inner diameter typ. 2 or 4 mm

Dimensions

165 mm x 205 mm x 115 mm

Weight

approx. 1500 g

Housing material

ABS

Protection type

IP 43

Temperature range

- Operational: -20 ... $+60$ °C
- Storage: -40 ... $+85$ °C

Relative humidity

10 ... 95 % non-condensing

EMC limits

IEC61326 and EN61326 are adhered to



Order numbers

- OTT CBS: 63.200.001.9.2
- Coding Standard: 1
- Coding USGS-Specification: 2
- Coding Measuring range 30 m: 3



Quickly and easily mounted



DIP switches
for easy programming



Accessory: OTT EPS 50 bubble chamber

*The OTT CBS with increased accuracy requires regular calibration.