

**Radarsensor
for contact free
measurement of
surfacewater level**

Kalesto





River with debris



Mountain stream

Kalesto



The Kalesto radarsensor represents a new type of level measurement for surfacewater which offers many advantages in hydrological field applications.

Kalesto is the first level sensor from OTT which does not come in direct contact with the water. Thanks to its compact design and the non-contact measuring principle, the sensor can be installed easily and inconspicuously, at no great cost in terms of time or money. With the Kalesto, problems like disruption of measuring operation caused by high-water, silt accumulation, debris, plant growth etc. as well as time-consuming maintenance are eliminated.

Cumbersome stilling wells are replaced by an integrated software filter for averaging wave motion. The measuring signals are transferred to a data logger by means of a RS 485 interface, over distances of up to 1,000 m. A power supply of 12 V (rechargeable battery, solar energy) and low power consumption enable the device to operate independently in the most remote areas. Kalesto is particularly suitable for areas where conventional measuring systems cannot be used or where a station needs to be set up quickly and inexpensively.

Examples of use

In addition to the conventional applications, the Kalesto is also suitable for use in:

Brackish water, drains, rivers where great fluctuations are present

- no contact with the measuring medium

Irrigation canals, grachts, falajs

- simple installation e.g. on an extension arm

Water containing large amounts of suspended matter e.g.: mountain streams, wadis, etc.

- no silt accumulation
- sensor is easily moved e.g. when changes in water cross-section (low flow) occur, compared to stations with a gauging shelter and stilling well or inlet pipe

Short-term measurements, portable operation

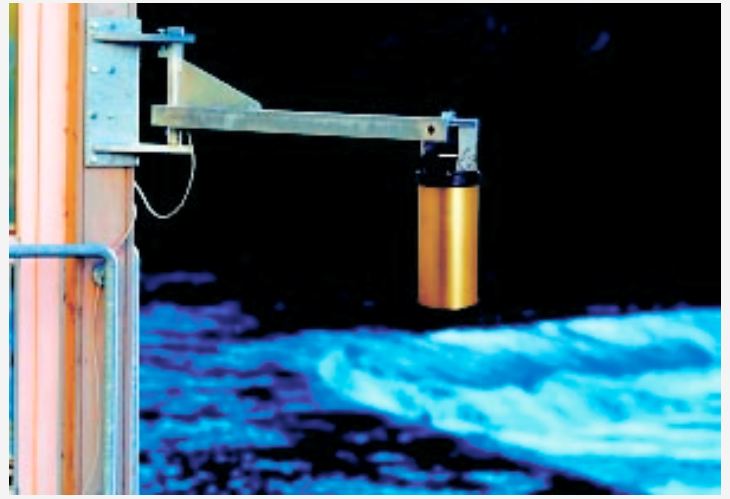
Easy to handle - the same sensor can be used for a variety of projects without any need for alterations. The usual inconvenience associated with fixed lengths of measuring tubes, pressure sensor cables or float cable is thus avoided.

Weirs, harbour basins, dam walls, recharge dams

Not installed in water ⇒ the hydraulic system is not damaged; unaffected by construction and maintenance work.



Sediment loaded rivers



Installation at a 'extension arm'

Features

- Non contact measuring principle, no damage caused by silt accumulation or debris
- Simple, inexpensive installation - no difficult fitting procedure necessary
- 12 V DC power supply; low power consumption enables operation with rechargeable batteries or solar
- Cost reduction due to low maintenance requirements
- RS 485 interface (data line up to 1.000 m), optional SDI 12 signal (RS 485 ↔ SDI 12 converter)
- Integrated lightning protection fitted as standard
- Minimal risk of vandalism due to robust, weatherproof housing (IP 68)

Installation / Function

The Kalesto can be fitted easily and quickly, on a bridge, measuring frame, pipeline or 'extension arm', for example.

The water level is measured contactless from the air
 ⇒ absolute measuring principle.

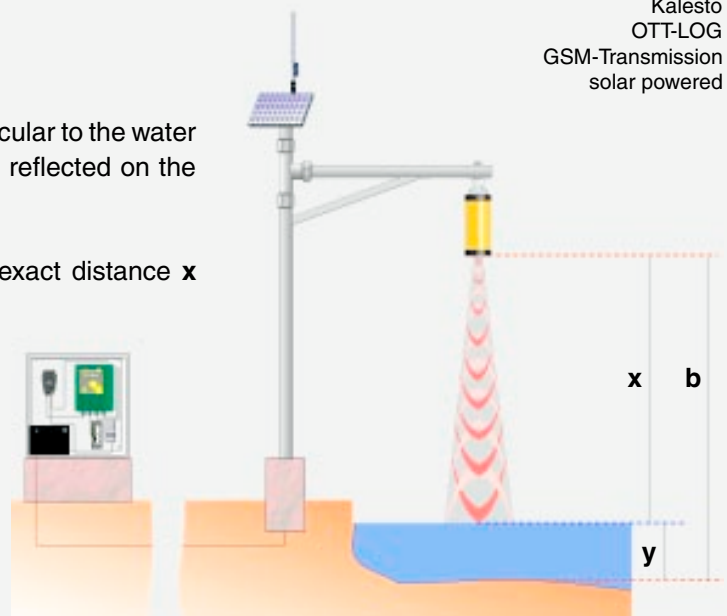
The Kalesto sends radar waves (microwaves) perpendicular to the water surface. These waves are then mixed with the signals reflected on the surface.

An intelligent signal processor (DSP) calculates the exact distance x between the sensor and the surface of the water.

Digital measured values, status values and any error messages present are scanned by means of an external data logger via the RS 485 interface.

The data logger calculates the water level y out of the system length b and the distance x and makes the stored values available for further processing.

Example for installation:
 'extension arm'
 Kalesto
 OTT-LOG
 GSM-Transmission
 solar powered



Extensions



**OTT-LOG
Multi-channel
data logger**

Kalesto / OTT LOG - an ideal combination

Circular memory, buffered for up to 400,000 measured values (1 MB)

- preselectable sample- / storage intervals
- event-driven recording

RS 232 interface for directly connecting the Kalesto HYDROSENS combination to various remote data transmission systems (serial modem / GSM, satellite, radio, etc.).

Three additional slots for connecting other sensors (e.g. for conductivity, temperature, precipitation, etc.).

CAN-bus for connection to other HYDROSENS modules, such as an OTT-COM communication module

- Alarm management when levels either exceed or fall below limit values and connection to an OTT-S measured value announcer.



**HYDROSENS
«MIDI»**

Wall-mounted cabinet, IP 64 (190 x 250 x 140 mm W/H/D) for housing the OTT-LOG data logger

Optical interface (infra-red technology)

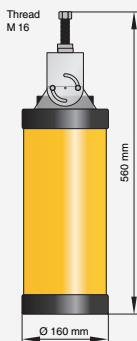
Reading of OTT-LOG stored values on site with a notebook or VOTA multifunctional unit.

LCD for clear display of system and sensor parameters (level recorder function).

Operating terminal

A clearly laid-out operating matrix allows parameters for the data logger and the relevant sensors to be set quickly and directly on site using the integrated touch-sensitive keyboard.

Technical Data



Dimensions:

- Dia: 160 mm
- Length: 560 mm, incl. mounting thread M 16 x 60 mm
- Weight: 8 kg

Material:

Aluminium body,
UV resistant plastic (POM)
cover, protection IP 68

Temperature range: – 40 °C ... + 80 °C

Sensor technology:

Touchless measurement of water level using the FMCW principle (Frequency Modulated Continuous Waves)

- microwaves: 24,125 GHz, 5 mW
- beam width: ± 5°
- dead range: 1.5 m (5 ft)
- installation distance: min. 1 m (3 ft), e.g. from a wall
- measuring interval: 17 sec. (40 values, creating mean values)

Power supply:

- Nominal 12 V DC 9 ... 15 V DC (accu, solar- or mains supply)
- 500 mA active
- < 1 µA stand by

Integrated lightning protection (standard):

to reduce the possibility of damage caused by over voltage (lightning).

RS 485 interface:

- digital data transmission up to 1.000 m (3,000 ft) distance
- Transmission rate 9.600 bps

Signal line:

Connection Radarsensor ↔ data logger.
Standard length 3 m (10 ft) (max. 1.000 m / 3,000 ft)

- Outer-dia = 6 mm incl. connecting clamps

Accessories: reflection mirror unit
(horizontal installation possible)

Measuring range: 28.5 m (93.5 ft)

- min. distance to water: 1.5 m
- with reflection mirror unit: 0 m

Resolution: 1 mm (0.01 ft optional)

Accuracy: ± 1 cm (± 0.03 ft)

over the complete measuring range

Sign of registration:



Small design details may be changed without notice.



Delivery program, e.g.:

- Raingauges
- Shaft Encoders
- Data Loggers
- Remote Data Transmission
- Waterlevel Recorders
- Current Meters

