

Operating Instructions

Radar Sensor

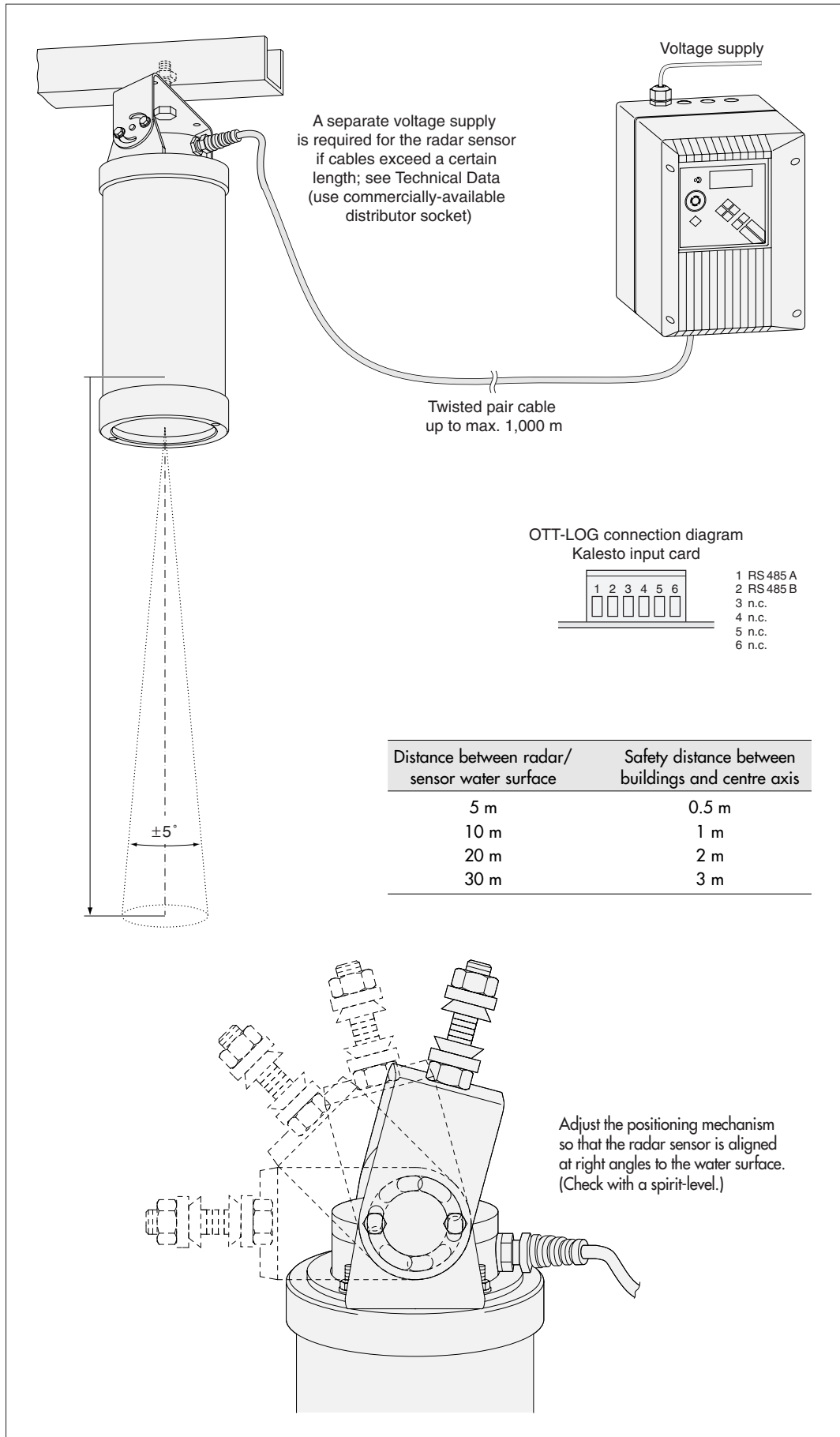
Kalesto



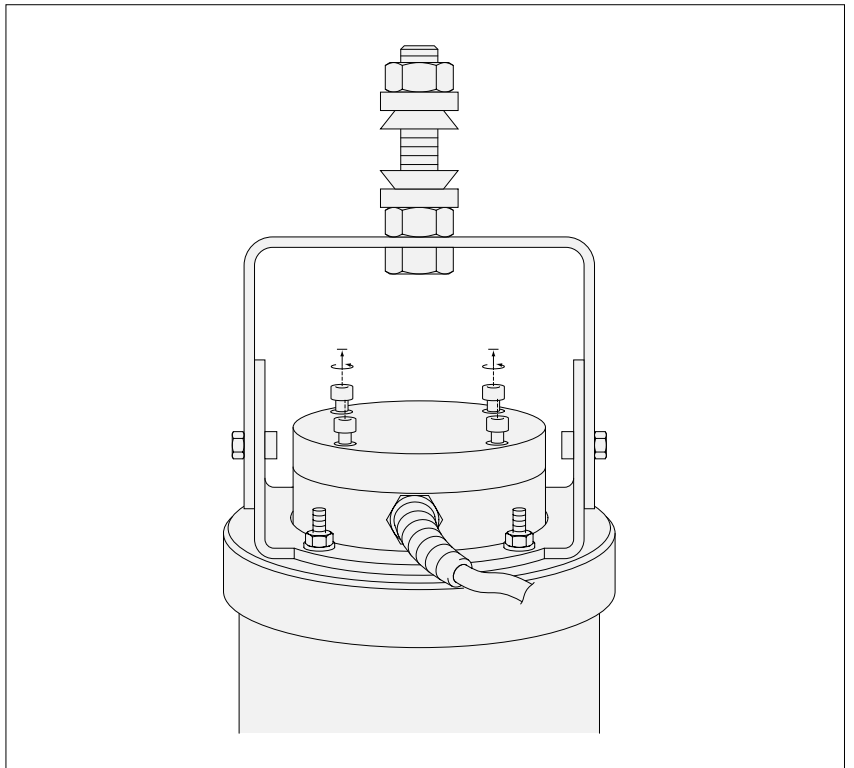
OTT 00.518

English

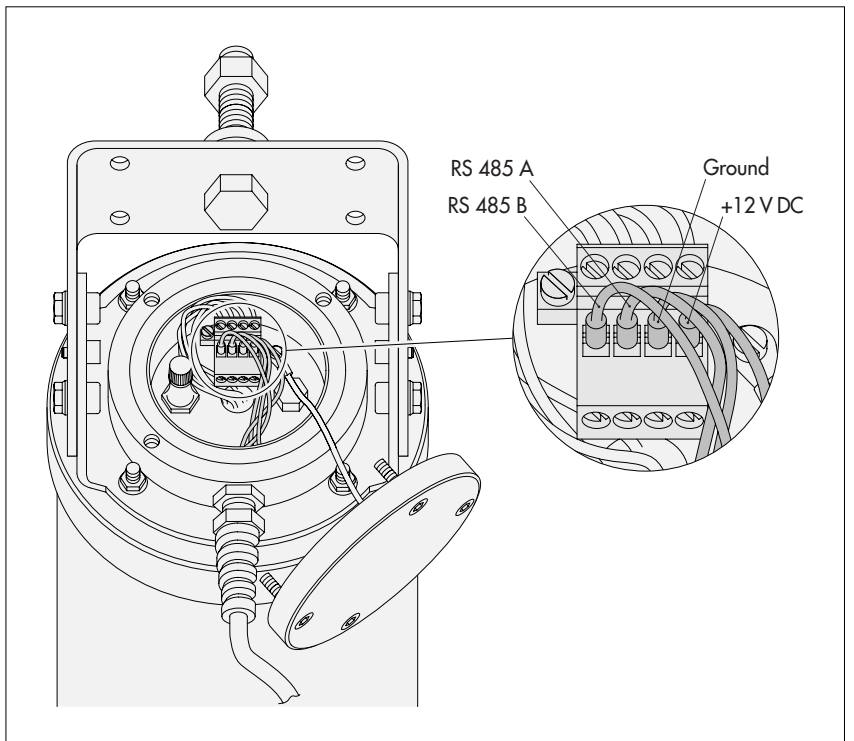
Connection diagram



Opening the connection section on the Kalesto radar sensor (captive screws).



Connecting the twisted pair cable to the radar sensor.



Setting the OTT-LOG operating matrix for a Kalesto radar sensor

Field 15 Enter scaling + point position; create relation to reference point

```
15_      SCALING
100%     0.00
0%       30.00
POINT POS xxx.xx
```

100% + 0% = Adjusts the OTT-LOG to the Kalesto radar sensor measurement range.
POINT POS = Sets the decimal point position within the measured value

The Kalesto radar sensor measures the distance from the bottom of its housing* to the water surface: the maximum measured value is 30.00 m. The measurement result for distance or level measurement is scaled by entering a value in the 0% and 100% boxes in field 15 of the OTT-LOG operating matrix.

* Please note that the measurement zero point is initially positioned some centimetres inside the sensor housing. After scaling with relation to a reference point, you can check the result of all subsequent measurements (housing bottom/water surface) using an electric contact gauge, for example.

Scaling for water level measurements (with relation to reference point)

- Carry out measurement using the settings 100% = 0.00; 0% = 30.00 (result in matrix field 10).
- Determine the reference value using a staff gauge, for example.
- Calculate: Correction value = Displayed value – staff gauge value
- Enter scaling/comma position
 - New 100% value = 0.00 – correction value
 - New 0% value = 30.00 – correction value

Important: Do not forget the sign!

Example:

Display in field 10 =	18.50
Staff gauge reference value =	1.15
Correction value =	17.35
→ New 100% value =	-17.35
→ New 0% value =	12.65

Scaling for distance measurements (depth of water)

(radar sensor ↔ water surface with relation to a reference point)

- Perform measurement using the settings 100% = 30.00; 0% = 0.00 (result in matrix field 10).
- Determine the reference value using an electric contact gauge, for example.
- Calculate: Correction value = Displayed value – electric contact gauge value
- Enter scaling/comma position
 - New 100% value = 30.00 – correction value
 - New 0% value = 0.00 – correction value

Important: Do not forget the sign!

Enter scaling/decimal point position:

- E
- E E Select digit position; E E Select sign/digits
- E
- E E Select digit position; E E Select sign/digits
- E
- E E Select decimal point position

Factory setting: 100% = 0.00;
0% = 30.00;
POINT POS = xxx.xxx

- Possible decimal point positions: xxx.xxx → Resolution 1 cm
xxx.xxx → Resolution 1 mm *
xxx.xxx → Resolution 0.01ft
- Do not forget the sign in all entries!
- The decimal point position also affects the matrix fields 10, 11, 14, 15, 16 and 18.
- For a resolution in 0.01 ft: Use 98.43 instead of 30.00 (30 m = 98.43 ft)
- * For distance measurements: possible using OTT-LOG version V2.16 and later versions (100% value, 0% value: max. ±29.999 m)

Operating mode „surface velocity“

This operating mode of the Kalesto is provided for the approach determination of the surface velocity of a river.

Please note: The accuracy of measured values depends on the roughness of water surface. Strong wind influences or very smooth water surfaces falsify measuring results.

Special input card for OTT-LOG necessary: 55.505.138.3.2

Min. surface velocity $v_{\min} = 1 \text{ m/s}$

The actual velocity of the river is larger than the measured velocity of the KALESTO:

$$v = v_{\text{Kalesto}} / \cos \alpha$$

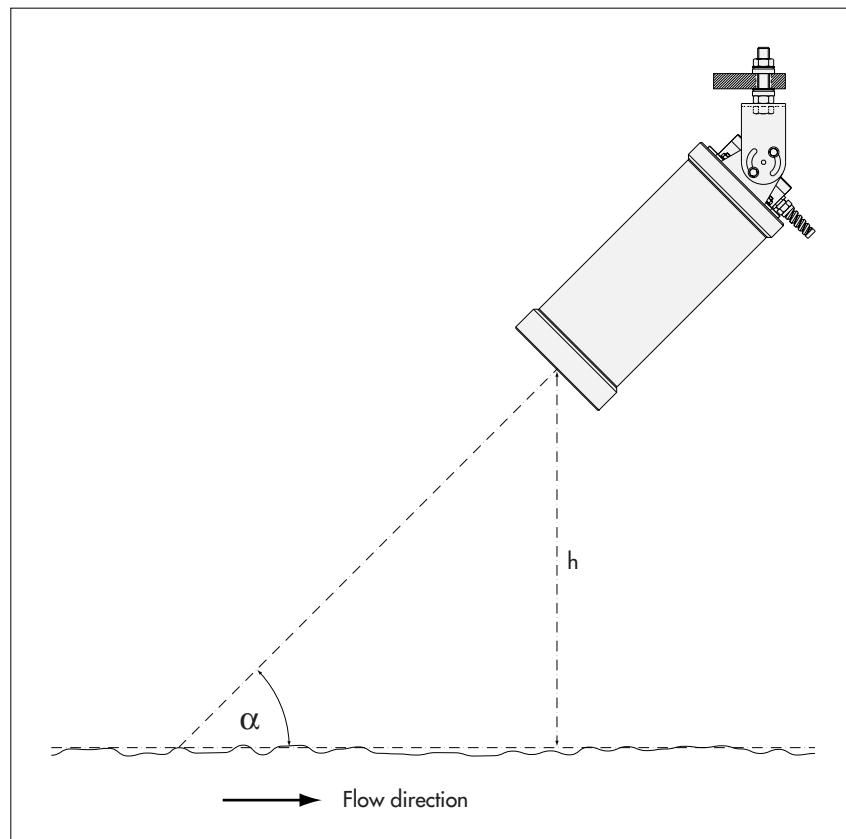
For this reason it is necessary to enter a correction value in the 100 % field of the matrix. Through this the OTT-LOG calculates the resulting velocity automatically.

Scaling for surface velocity

- Determine the value for 100 % from the table.
- Enter 100 % and 0 % value; e. g. $\alpha = 45^\circ$
 - 100% value = 42.43
 - 0% value = 0.00

The OTT-LOG displays the measured value in m/s.

Radar Sensor Kalesto: Operating mode „surface velocity“



Angle	100 % value (field 10)	h_{min} approx.	h_{max} approx.
30 °	34.64	1.00 m	10.5 m
35 °	36.62	1.10 m	12.0 m
40 °	39.16	1.25 m	13.5 m
45 °	42.43	1.40 m	15.0 m
50 °	46.67	1.50 m	16.0 m
55 °	52.30	1.60 m	17.0 m
60 °	60.00	1.70 m	18.0 m

(Point position: xxxx. xx)

Technical data

Measurement range	1.5 ... 30 m
Resolution	1 mm
Maximum measurement error ¹⁾	±1 cm + 1 digit
Operating voltage	9 ... 15 V DC
Current consumption	
– Active	550 mA
– Standby mode	< 1 µA
Interface	RS 485; max. 1,000 m twisted pair cable
Transmission speed	9,600 bit/s
Microwave frequency	24.125 GHz
Transmission output	5 mW
Radiation angle	±5°
Length of measurement cycle	17 s
Measured value output	17 s after measured value request When the device is combined with an OTT-LOG data logger in the HYDROSENS "MIDI" housing, operation and measured value readings are performed using the OTT-LOG operating matrix.
Degree of protection	IP 68
Insertable cable	e. g. Li2YCYv (TP) 2 x 2 x 0.5 mm ²
Filling	Nitrogen; 0.5 bar overpressure
Authorisation number	D810117L
Dimensions L x Diam.	approx. 500 mm x 160 mm
Weight	approx. 8.0 kg
Temperature range	-40 to +85 °C

¹⁾ under reference conditions

A separate voltage supply is required for the Kalesto radar sensor if cables exceed a certain length (voltage reduction in twisted pair cable):

Wire cross-section in mm ²	Max. cable length for voltage supply	
	12 V	15 V
0.5	35 m	100 m
1.0	70 m	200 m
1.5	110 m	300 m

OTT MESSTECHNIK GmbH & Co. KG

P.O. Box 21 40 · D-87411 Kempten
Ludwigstrasse 16 · D-87437 Kempten
Phone ++49(0)8 31 56 17-0
Fax ++49(0)8 31 56 17-209

E-mail: info@ott-hydrometry.de
Internet: <http://www.ott-hydrometry.de>