



# Hydrological Sensors

water level - temperature

the adequate solution for all gauging stations

- Flexible measuring methods with bubbler-, float driven-, radar-systems or pressure sensor depending on the field of application
- Low power consumption
- Customer friendly installation and handling



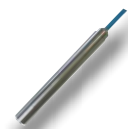
PS-Light 2 Sensor



Radar Sensor SEBAPuls 15/20/30/70



Surfloat-Sensor 2



Pressure sensor DS-22  
Pressure and temperature sensor DST-22



water level measurement



radar sensor



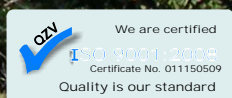
PS-Light-2 station



radar bracket



water level measurement with pressure sensor



# Hydrological Sensors

SEBA HYDROMETRIE monitoring equipment - including hydrological sensor systems - have proven their reliability and quality for over 40 years in more than 140 countries.

Altogether, four different hydrological sensor systems can be deployed in order to obtain reliable surface water level data:

## 1. Pressure Sensor:

The sensor is installed below the surface water level recording the hydrostatic pressure.

## 2. Surffloat Sensor 2:

The surffloat-sensor is based on the float mechanism principle which consists of a float and counterweight (floating on the surface water level) and a digital surface water level logger.

## 3. PS-Light-2 Bubbler Sensor:

The bubbler sensor measures the corresponding hydrostatic pressure through a pressure tube and a highly sensitive sensor.

## 4. Radar Sensor:

The radar sensor represents a contactfree, undisturbed surface water level measurement using the runtime of an emitted radar sensor impulse.

## Pressure Sensor type DS-22

For water level measurement in groundwater (aquifer), surface water, water tanks or water reservoirs etc.

### Technical data

output:	0 to approx. 1V	0/4 to 20 mA	RS485 interface (SHWP protocol)
ranges:	0 to 1.25 m	0 to 1.25 m	0 to 1.25 m
	0 to 2.50 m	0 to 2.50 m	0 to 2.50 m
	0 to 5.00 m	0 to 5.00 m	0 to 5.00 m
	0 to 10 m	0 to 10 m	0 to 10 m
	0 to 20 m	0 to 20 m	0 to 20 m
	other ranges on request	other ranges on request	other ranges on request
accuracy:	± 0.1% (at 25°C)	± 0.1% (at 25°C)	± 0.1% (at 25°C)
operation			
temperature:	-5°C to +60°C	-5°C to +60°C	-5°C to +60°C
power supply:	7 - 30V DC stabilized	7 - 30V DC stabilized	9 - 35V DC stabilized
material:	stainless steel	stainless steel	stainless steel
dimensions:	Ø 22 mm	Ø 22 mm	Ø 22 mm
	length 182 mm	length 182 mm	length 182 mm
cable:	multicore transmission cable, screened with atmospheric pressure compensation tube		



## Pressure / Temperature Sensor type DST-22

Combined water level and temperature sensor for the acquisition of both parameters with only one sensor. Signals are transferred via one single cable only.

### Technical data:

output:	2 channels 0-1V, RS485 with SHWP protocol
water level:	see DS-22
<u>temperature</u>	
measuring range:	0°C to 25°C or on request
accuracy:	± 0.1°C (span 0°C to 25°C)



## Surfloat-Sensor 2

The SEBA **Surfloat-Sensor 2** sensor is a rugged, float-driven encoder for recording the water level. As a "stand-alone" instrument, the Surfloat-Sensor 2 can be operated with float & counter weight and also with the reliable float cable which is free of slip and slide effects. Furthermore, the Surfloat-Sensor 2 is perfectly suitable for all conventional float operated water level recorders (e.g. SEBA Delta, XI Horizontal gauge, etc.).

The standard Surfloat-Sensor 2 is equipped with an LC-display and an RS232 & RS485 interface. Optionally a parallel or analogue interface (BCD, Gray code, Binary code) can be added to this system. Thanks to the LC display, it allows customer friendly handling: if the LC display is activated and if the float-wheel is turned simultaneously, the desired measuring value can be adjusted by the customer. The instrument can be operated by an external and internal power supply. In case of an external power supply, the built-in lithium cell serves as a back up system and emergency supply.

### Technical Data:

Dimensions	40 x 55 x 160 mm (l x w x h)
Accuracy:	±1 cm
External power supply:	5 VDC to 25 VDC (with integrated lithium cell for buffering)
Display range:	-9999 m to 99999 m (decimal point position configurable)
Power consumption:	Ø 0.5 mA
Display:	3 rows, 16 characters
Serial interface:	RS232, RS485 protocol: SHWP
Operating temperature:	-20°C to +70°C
Parallel output:	via configurable connector data formats: 16 Bit, BCD/Binary/Gray - Code) (standard or inverted)
Analogue output:	0..20 mA, 4..20 mA, 0-1 V, 0-5 V

No drift, free of temperature influences



Surfloat-Sensor 2

## Pressure sensor pneumatic gauge type PS-Light-2

The SEBA pneumatic gauge type "**PS-Light-2**" is a robust, reliable and economic measuring system for monitoring water level in surface waters. The measuring principle is based on a version of the bubbler system, well-known and proven by the other SEBA instruments of the PS-series.

At adjustable intervals an integrated, highly efficient mini compressor bubbles air through the pressure tube into the water. The pressure generated in the tube corresponds exactly to the hydrostatic pressure above the mouthpiece. This tube pressure is measured by a high-precision pressure sensor inside the PS-Light-2.

### Technical data:

Accuracy:	<0.05 % of the measuring range (<1 cm at 10 m measuring range)
Measuring ranges:	0 to 10 m, 0 to 15 m, 0..20 m, 0..40 m, 0..70 m
Operating temperature:	-20°C to +50°C
Output:	optional 1 from 7, 0..1 V, 0.5 V, RS232, 0/4 to 20 mA, BCD-Code, Binary-Code, Gray-Code
Measuring interval:	1, 2, 5, 15, 30, 60, 120 or 180 minute(s), by an internal activation in the PS-Light resp. free programmable (from one minute) in combination with SEBA data loggers

#### PS-Light -2-Sensor

consisting of:

- high-precision pressure sensor for water level measurement
- mini compressor
- output: analogue and digital
- plastic protection box

#### PS-Light-2-Sensor-LCD

consisting of:

- PS-Light sensor
- LC display for digital indication of the current measuring data

#### PS-Light-2 (- Logger)

consisting of:

- PS-Light sensor
- Data logger with an RS232 interface for on- and offline operation

#### PS-Light-2 (- Logger)-LCD:

consisting of:

- PS-Light
- LC Display for digital indication of the current measuring data



PS-Light-2 with GSM modem and antenna

All PS-Light systems can be upgraded with GSM or telephone modem.

# Radar sensor types SEBAPuls 15 / 20 / 30 / 70

The **SEBAPuls** radar sensor is designed for operation at rivers, channels, dams, lakes and tidal areas monitoring the surface water level implementing the contactfree radar principle.

## Key Benefits

- unaffected by mudding, drifting materials, weedage, aggressive media (sewage, brackish or saline water etc.)
- low cost and time efficient installation (i.e. setup of bridge jibs);
- no disturbance of general hydraulic
- no influence of measurement accuracy by air humidity (fog) or by high air temperature fluctuations
- low power consumption
- short measuring interval
- minimum distance from antenna end: 50 mm
- small mounting distance (approx. 20 to 30 cm)



The basic version of this measuring equipment consists of a sensor with an analogue output (4...20mA). A modular concept of the **SEBAPuls** sensor enables the installation of an additional data storage unit (e.g. SEBA Data logger) and a remote data transmission system via GSM/GPRS, Satellite or landline.

## Measuring principle - Pulse radar (26GHz-technology)

The "pulse radar" measuring method emits a short microwave impulse to the water surface followed by a short time lag of the transmitter. Within this time lag, the radar receives the reflected impulse from the water surface and transmits it to the integrated evaluation system. The run time of the impulse corresponds directly to the distance of the actual surface water level.

## Technical data

### Housing

Dimension SEBAPULS 15: Ø 72mm, length 300mm  
Dimension SEBAPULS 20: Ø 116mm, length 245mm  
Dimension SEBAPULS 30: Ø 116mm, length 392mm  
Dimension SEBAPULS 70: Ø 116mm, length 606mm

### Material:

Aluminium housing, IP66  
Horn antenna made of stainless steel 1.4435

### Weight:

approx. 2kg

### Registration of measuring values

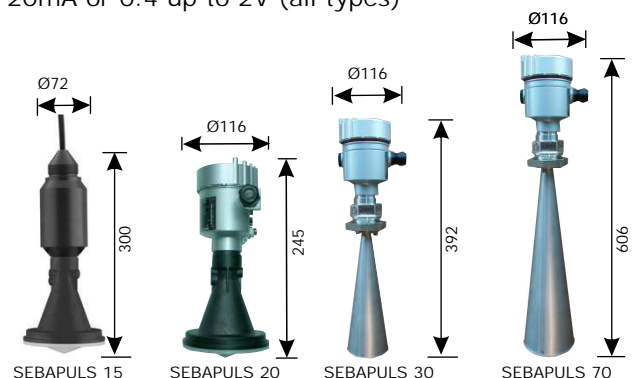
	SEBAPULS 15:	SEBAPULS 20:	SEBAPULS 30:	SEBAPULS 70:
Accuracy:	± 2mm	± 2mm	± 3mm	± 15mm
Measuring range:	0...15m	0...35m	0...35m	0...70m
Operation temperature:	-40°C up to 80°C (all types)			
Output:	4 up to 20mA or 0.4 up to 2V (all types)			

### Transmission of measuring values to PC

Offline: with SEBA data logger  
Online: analogue with 4...20mA, digitally with GSM or telephone-modem

### Power supply

Battery: 12V or 24V  
Solarpanel: incl. charger and buffer accumulator  
Mains adapter: 220V<sub>AC</sub>/12V<sub>DC</sub>/24V<sub>DC</sub>



The right is reserved to change or amend the foregoing technical specification without prior notice.



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