



Hydrological Sensors

water level - temperature

the adequate solution for all gauging

- 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

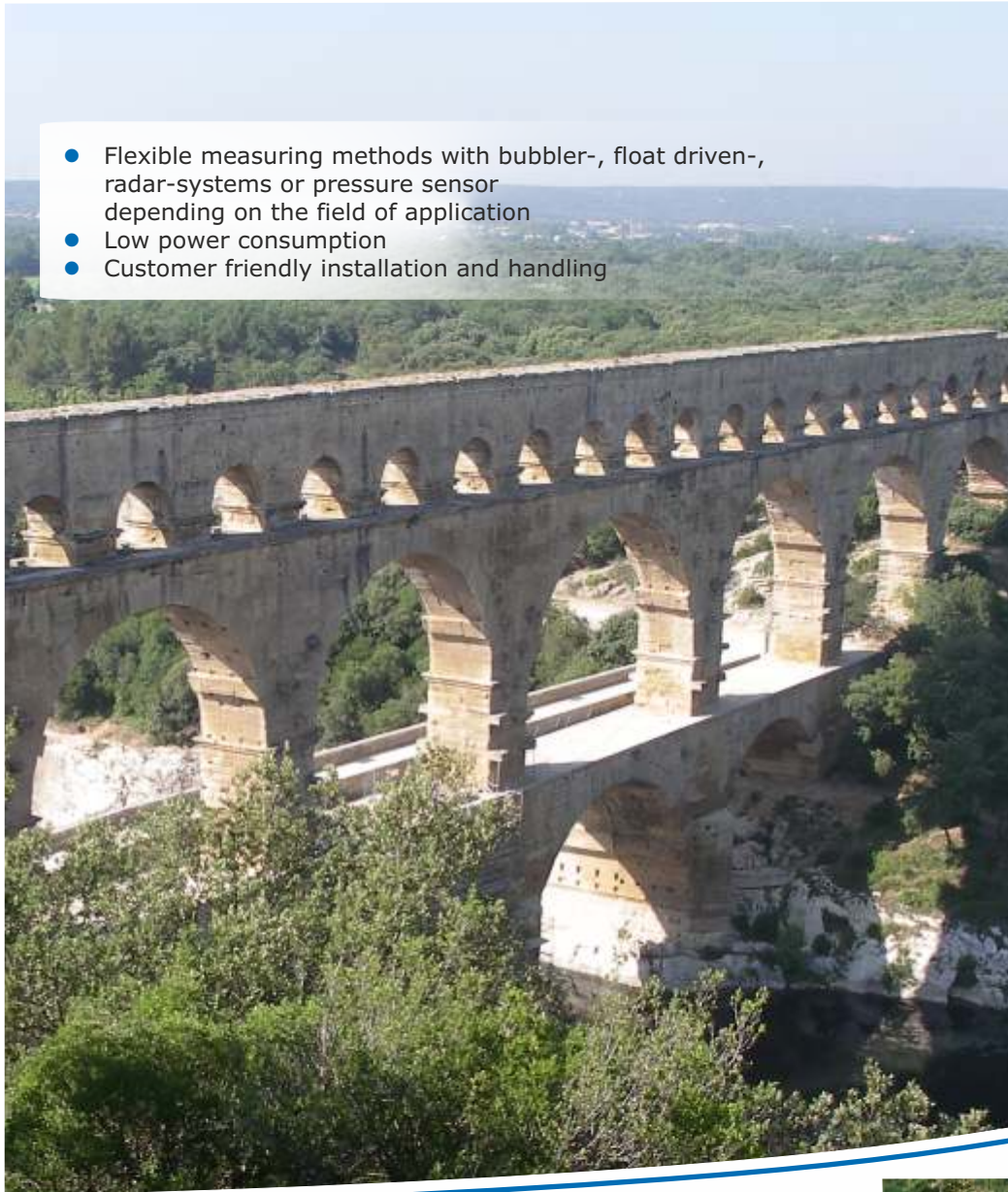


Radar Sensor SEBAPuls 8/15/20/120



LevelSense

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 50 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. Surfboat Sensor 2:

The surfboat-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 Sensor:

The 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 1 V | 0/4 to 20 mA (extended ESD protection according to IEC 61000-4 part 5) | RS485 (SHWP/Modbus) | SDI-12 |
| ranges: | 0 to 2 m 0 to 10 m 0 to 20 m 0 to 40 m 0 to 100 m 0 to 200 m 0 to 300 m | 0 to 2 m 0 to 10 m 0 to 20 m 0 to 40 m 0 to 100 m 0 to 200 m 0 to 300 m | 0 to 2 m 0 to 10 m 0 to 20 m 0 to 40 m 0 to 100 m 0 to 200 m 0 to 300 m | 0 to 2 m 0 to 10 m 0 to 20 m 0 to 40 m 0 to 100 m 0 to 200 m 0 to 300 m |
| accuracy: | ± 0.1% (at 25°C) | ± 0.1% (at 25°C) | ± 0.05% (at 25°C) | ± 0.05% (at 25°C) |
| operation temperature: | -5°C to +60°C | -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 | 9 - 35V DC stabilized |
| material: | stainless steel | stainless steel | stainless steel | stainless steel |
| dimensions: | Ø 22 mm length 182 mm | Ø 22 mm length 182 mm | Ø 22 mm length 182 mm | Ø 22 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:

| | |
|--------------------|--------------------------------------------------------------------|
| outputs: | 2 channels 0-1V, 4-20mA RS485 with SHWP/Modbus protocol, SDI-12 |
| water level: | see DS-22 |
| temperature | |
| measuring range: | -5°C to +50°C (RS485) -5°C to +60°C (0-1V, 4-20 mA) |
| accuracy: | 0,1°C |



Angle encoder Levelsense

The newly developed SEBA **LevelSense** is a rugged angle encoder for acquisition of water level data, which works completely slip-free with approved ball-chain and float/counterweight system. This device is suitable for subsequent adaption to all conventional float-operated measuring instruments, like SEBA Strip Chart Recorder Delta, XI Horizontal Water Level Recorder etc.

The SEBA **LevelSense** is standardly equipped with LC-display and RS232-interface for configuration, available output formats are analog U/I, SDI-12 and RS485. This device provides 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 is operated by an external power supply of typ. 12 V, in case of power blackout a 9 V battery serves as a back up system and emergency supply.

Technical Data:

| | |
|-------------------------------|----------------------------------------------------------------------------------------|
| Dimensions | 143 x 85 x 38 mm (l x w x h) |
| External power supply: | 9 ... 15 V (typ. 12 V) required with supplied sensors |
| D/A-converter: | 14 bit |
| Flash-controller: | 3R2C 32 bit with integrated watchdog |
| Display: | 3 lines, each 16 characters, 3.65 mm |
| Serial interface: | RS232 |
| Operating temperature: | -30°C to +70°C |
| Inputs: | up/down-counter, encoder input, impuls (rain) 2 contact inputs (control, recording) |
| Outputs: | 1 analog output for norm signals analog U/I, SDI-12, Modbus, RS485 |
| Housing material: | aluminium |
| Protection class: | IP 65 |
| Weight: | ca. 0,25 kg |



LevelSense

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 two minutes) in combination with SEBA data loggers |

PS-Light-2 with
mobile modem



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 - 3G+

same as PS-Light-2 Sensor but additionally with:

- **Data Logger** with RS232 interface
- **LC-Display** for digital indication of current water level
- with integrated **mobile modem** for online- and offline operation

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

All PS-Light systems can be upgraded with mobile modem

Radar sensor types SEBAPuls 8 / 15 / 20 / 120

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 mobile modem, Satellite or landline.

Measuring principle - Pulse radar

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 8: Ø 93mm, length 243mm
Dimension SEBAPULS 15: Ø 116mm, length 300mm
Dimension SEBAPULS 20: Ø 116mm, length 245mm
Dimension SEBAPULS 120: Ø 116mm, length 245mm

Material:

Synthetic or Aluminium housing, IP68
Horn antenna made of Synthetic

Weight:

approx. 2kg

Registration of measuring values:

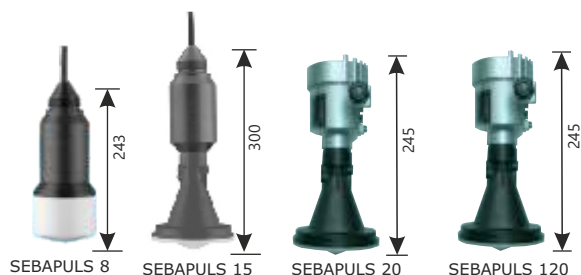
| | SEBAPuls 8: | SEBAPuls 15: | SEBAPuls 20: | SEBAPuls 120: |
|------------------------------------|-------------------------------------------------|--------------|--------------|---------------|
| Accuracy: | ± 5 mm | ± 2mm | ± 2mm | ± 5mm |
| Measuring range: | 0 - 8 m | 0 - 15m | 0 - 35m | 0 - 120m |
| Operation temperature (all types): | -40°C up to 80°C | | | |
| Output (all types): | 4 up to 20mA or 0.4 up to 2V (optional: SDI-12) | | | |

Transmission of measuring values to PC

Offline: manual data readout with SEBA Data logger
Online: remote data transmission via mobile modem (e.g. FTP-Push or SMS-Push)

Power supply

Battery: 12V or 24V
Solarpanel: incl. charger and buffer accumulator
Mains adapter: 220V_{AC}/12V_{DC}/24V_{DC}



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



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