Surface Water-Level Sensor Selection Guide

Introducing the OTT Surface Water Sensors:

Radar Level Sensor

OTT RLS

- Measures the distance from the water surface to the bottom of the radar sensor
- Non-contact water level measurement, ideal for measuring flood stages
- Flat sensor design – significantly reduces maintenance requirements and frequency
- Uses standard communication protocols like SDI-12

Compact Bubbler Sensor

OTT CBS

- Measures the pressure of air in a measuring tube and calculates the difference of pressure in the tube compared to atmospheric pressure to calculate water level
- Indirect pressure measurement with no electrical components installed in water
- Drift-free measurement principle that does not require desiccant
- Uses standard communication protocols like SDI-12

Shaft Encoders

OTT Thalimedes and SE200

- Continuous Measurement of water level using float-operated shaft encoder
- Available with an integrated datalogger or sensor-only for use with external dataloggers
- Integrated LCD display (Thalimedes only)
- Remote data transmission option available using the OTT ITC

OTT Surface Water pressure sensors

Common attributes

- Ceramic pressure measurement cell – robust and reliable, with 5 x burst pressure
- Compensated for barometric pressure, temperature, and water density
- High grade 904 L Stainless Steel – designed for use in harsh environments, like saltwater
- Simple maintenance – easily replace battery and desiccant on-site without tools

Pressure Level Sensor

OTT PLS

- For monitoring water level, depth to water, pressure, and temperature
- Simple integration into almost any datalogger or data collection platform
- Uses standard communication protocols like SDI-12

All-in-one systems

OTT ecoLog 500/800

- For remote transmission of water level, depth to water and temperature
- Conductivity measurement available with ecoLog 800
- Integrated programmable datalogger, stores up to 500.000 measurements
- Support data transmission via GSM/GPRS cellular using FTP, HTTP, SMS or e-mail (SMTP)

Water Level Loggers

OTT CTD and Orpheus Mini

- For monitoring water level, depth to water, and temperature
- Available with high accuracy temperature or conductivity measurement
- Integrated programmable datalogger, stores up to 500.000 measured values
- Remote data transmission option available when paired with the OTT ITC

Sensor Selection Table Part 1

		OTT RLS	OTT CBS	OTT Thalimedes	OTT SE 200	OTT PLS	OTT ecoLog 500	OTT ecoLog 800	OTT Orpheus Mini	OTT CTD
Parameters	Water Level/Depth	x	x	x	x	x	x	x	x	x
	Conductivity							x		x
	Temperature					x (not with 4..20mA)	x	x	x	x
Logging	Integrated datalogger			x			x	x	x	x
Remote Communication	Cellular (GSM/GPRS)			In conjunction with OTT ITC (Only GSM)			x	x	In conjunction with OTT ITC	In conjunction with OTT ITC
Output	SDI-12	x	x	x	x	x				
	RS485 using SDI-12	x	x			x				
	4…20mA	x	x		x	x				
	Local Wireless Communication (IrDA)			x			x	x	x	x
	GSM/GPRS (FTP, HTTP, SMTP, SMS)						x	x	In conjunction with OTT ITC	In conjunction with OTT ITC
Applications	Snow/Ice cover and flows	-	+	o	o	+	+	+	+	+
	Large debris in water	+	o	o	o	o	o	o	o	o
	Flash Floods	+	o	+	+	o	o	o	o	o
	Migrating Channels	o	+	o	o	o	o	o	o	o
	Unstable banks	+	-	-	-	-	-	-	-	-
	Stilling Well	-	o	+	+	+	+	+	+	+
	Bridge	+	+	+	+	+	+	+	+	+
	Weir/Flume	o	+	+	+	+	+	+	+	+
	Lightening prone sites/areas	+	+	+	+	o	o	o	o	o
	Brackish water	+	+	+	+	+	+	+	+	+
	Corrosive conditions	+	+	+	+	+	+	+	+	+
	Salt-water intrusion detection	-	-	-	-	-	-	+	-	+
	Water pollution detection	-	-	-	-	-	-	+	-	+

Symbols: **+** highly suitable **o** suitable **-** not suitable

Sensor Selection Table Part 2

		OTT RLS	OTT CBS	OTT Thalimedes	OTT SE 200	OTT PLS	OTT ecoLog 500	OTT ecoLog 800	OTT Orpheus Mini	OTT CTD
Type of Measurement		Non-contact (distance to water and water level)	Indirect pressure measurement	Float-cable-counterweight system	Float-cable-counterweight system	Gauge Pressure, Temperature	Gauge Pressure, Temperature	Gauge Pressure, Temperature, Conductivity	Gauge Pressure, Temperature	Gauge Pressure, Temperature, Conductivity
Sensor Type		Radar Level Sensor	Compact Bubble Sensor	Shaft Encoder	Shaft Encoder	Ceramic pressure cell	Ceramic pressure cell	Ceramic pressure cell & 4-graphite electrode conductivity cell	Ceramic pressure cell	Ceramic pressure cell & 4-graphite electrode conductivity cell
Measuring Range	Level	0.8-35 m (2.6-115 ft)	0-15 m (0-50 ft) 0-30 m (0-100 ft)	±199.99 m ±19.999 m ±199.99 ft	±30 m (98ft)	0-4 m (0-13 ft) 0-10 m (0-33 ft) 0-20 m (0-66 ft) 0-40 m (0-130 ft) 0-100 m (0-328 ft)	0-4 m (0-13 ft) 0-10 m (0-33 ft) 0-20 m (0-66 ft) 0-40 m (0-130 ft) 0-100 m (0-328 ft)	0-4 m (0-13 ft) 0-10 m (0-33 ft) 0-20 m (0-66 ft) 0-40 m (0-130 ft) 0-100 m (0-328 ft)	0-4 m (0-13 ft) 0-10 m (0-33 ft) 0-20 m (0-66 ft) 0-40 m (0-130 ft) 0-100 m (0-328 ft)	0-4 m (0-13 ft) 0-10 m (0-33 ft) 0-20 m (0-66 ft) 0-40 m (0-130 ft) 0-100 m (0-328 ft)
	Temp.					-25° to 70°C (-13° to 158°F)	-25° to 70°C (-13° to 158°F)	-25° to 70°C (-13° to 158°F)	-25° to 70°C (-13° to 158°F)	-25° to 70°C (-13° to 158°F)
	Conductivity							0 to 2000 µS/cm 0.1 to 100 mS/cm		0 to 2000 µS/cm 0.1 to 100 mS/cm
Accuracy	Level	SDI-12: 0.8-2.0m: ±10mm 2.0-30 m: ±3 mm 30-35 m: ±10 mm 4…20mA: ±0.1 % full scale	Standard: ± 0.5mm USGS specification: 0-15 ft: ± 0.1ft 15-50 ft: ± 0.2ft	±0.002 m ±1 Digit ±0.0066ft ±1 Digit	SDI-12: ±0.003% of measurement range 4…20mA: ±0.1% of measurement range	SDI-12: ± 0.05% FS 4…20mA: ± 0.1% FS	± 0.05% FS	± 0.05% FS	± 0.05% FS	± 0.05% FS
	Temp.					± 0.5°C	± 0.5°C (±0.1°C optional)	± 0.5°C	±0.5°C (±0.1°C optional)	± 0.1°C
	Conductivity							0 - 2000 µS/cm: ± 1 µS/cm 0.1 - 100 mS/cm: ± 0.01mS/cm		0 - 2000 µS/cm: ± 1 µS/cm 0.1 - 100 mS/cm: ± 0.01mS/cm
Power Consumption / Estimated Battery Life	1 hr. sample interval with Lithium:	Measurement operation: < 140 mW (< 12 mA at 12 V) Rest mode: < 1mW (< 0.05mA at 12V)	Sample interval 1 min: Typ. 320mAh/day Sample interval 15 min: Typ. 25mAh/day		SDI-12: Active: < 2.0 mA Sleep: < 400 µA	SDI-12: Active: < 3.6 mA Sleep: < 600 µA	Approx. 10 year (one transmission per week)	Approx. 10 year (one transmission per week)	min. 5 yrs. (ITC option: > 2 yrs. at 1 SMS per day)	min. 5 yrs. (ITC option: > 2 yrs. at 1 SMS per day)
	1 hr. sample interval with Alkaline:			Approx. 15 months			Approx. 2 years (one transmission per week)	Approx. 1 years (one transmission per week)	min. 1.5 yrs.	min. 1.5 yrs.
Installation	Placement	Bridge or mounting arm	Measuring tube and bubble chamber installed in the water	Stilling well or pipe	Stilling well or pipe	Pressure probe installed in the water	Pressure probe installed in the water	Pressure probe installed in the water	Pressure probe installed in the water	Pressure probe installed in the water
	Well Diameter	Not for use in wells	≥1”	≥4”	≥4”	≥1”	≥2”	≥2”	≥1” 2”-4” (ITC option)	≥1” 2”-4” (ITC option)

Determine what technology is best for your project?

Site Characteristics

Natural or Man-made Objects

Large rocks	☐	Sand bars	☐
Bridge	☐	Vertical wall	☐
Weir	☐	Flume	☐
Stilling well	☐		

Enviromental Conditions

Fresh water	☐	Salt-water	☐
Brackish water	☐	Braided stream	☐
Migrating channels	☐		

Wind:	Light	☐	Strong	☐
Waves:	Small	☐	Large	☐
Banks:	Stable	☐	Unstable	☐

Seasonal Conditions

Flash floods	☐
Debris in water	☐
Pools at low flow	☐
Snow/Ice cover and flows	☐
Lightning prone site/area	☐
High concentration of sediment	☐

Water Level

Minimum:	_____
Maximum:	_____
Rapid Fluctuations	☐

Measurement:

What data are you interest in measuring and collecting?

Water level / Depth to water:	☐
Water temperature:	☐
Conductivity:	☐
Salinity:	☐
Total Dissolved Solids (TDS):	☐

Other information of interest?

Power Supply:	☐
GSM Signal strength:	☐
Other:	_____

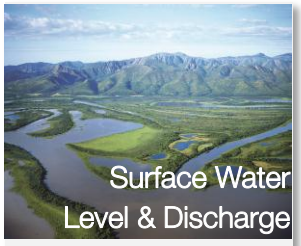
Data Collection:

Is remote communication of measured data required?	☐
In what Interval do you want to take measurements?	_____
How often do you want to transmit the data?	_____

What are the benefits of remote communication:

- Reduce the frequency of site visits by transmitting measured data direct to the office or a web server
- Transmit alarm messages to notify users of low battery voltage, quality assurance status messages, and user definable thresholds

OTT Solutions



- Pressure, radar, and bubbler level sensors
- Discharge
  - Spot measurement
  - Continuous measurement

- Surface water sensors
- Groundwater sensors
- Multiparameter Sondes for surface and groundwater

- Software for communication and data management
- Web application for data management
- Tel-, Sat, GSM-, GPRS- and IP-Com

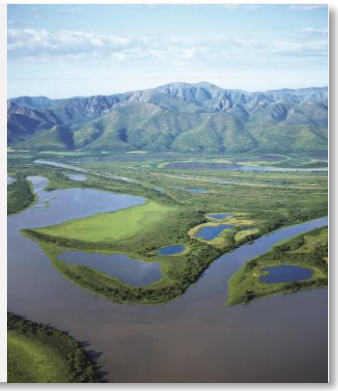
- All weather precipitation gauges
- Present weather sensors

- Groundwater dataloggers
- Remote groundwater monitoring
- Groundwater level sensors

Established technology in Surface Water Monitoring

OTT Hydromet has been developing and manufacturing surface water loggers, sensors, and remote communication units for over 20 years. Known for their reliability and longevity, OTT surface water products have been field proven in thousands of installations worldwide.

OTT surface water loggers accurately measure parameters such as water level or depth to water, temperature, and conductivity. Collected data is stored to the internal datalogger and can be transmitted automatically from the site back to the office, using GSM or GPRS cellular technology.



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