

# Groundwater Monitoring Selection Guide

Introducing the OTT Groundwater Sensors and Dataloggers:

Common attributes across all OTT groundwater pressure sensors and loggers include:



- 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 SIM card, and desiccant on-site without tools

## All-in-one systems



### OTT ecoLog 500/800

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

## Groundwater Loggers



### OTT CTD and Orpheus Mini

- For monitoring depth to water, water level, and temperature
- Available with high accuracy temperature or conductivity measurement
- Integrated programmable datalogger, stores up to 500.000 measured values

## Pressure Level Sensor



### OTT PLS and PLS-C

- For monitoring water level, depth to water, pressure, and temperature
- Available with conductivity measurement (PLS-C)
- Simple integration into almost any datalogger or data collection platform
- 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)

## Contact Gauges



### OTT KL 010

- For manual measurement of depth to water
- Can be used for measuring water temperature (KL 010 TM) or conductivity (KL 010 TCM)
- Measuring Ranges: 15...750m, -1°...+70°C, 0...200mS/cm



## Sensor Selection Table Part 2

		OTT PLS	OTT PLS-C	OTT Orpheus Mini	OTT CTD	OTT ecoLog 500	OTT ecoLog 800	OTT Thalimedes	OTT SE 200
Type of Measurement		Gauge Pressure Temperature	Gauge Pressure Temperature Conductivity	Gauge Pressure Temperature	Gauge Pressure Temperature Conductivity	Gauge Pressure Temperature	Gauge Pressure Temperature Conductivity	Float-cable- counterweight system	Float-cable- counterweight system
Sensor Type		Ceramic pressure cell	Ceramic pressure cell & 4-graphite electrode conductivity cell	Ceramic pressure cell	Ceramic pressure cell & 4-graphite electrode conductivity cell	Ceramic pressure cell	Ceramic pressure cell & 4-graphite electrode conductivity cell	Shaft Encoder	Shaft Encoder
Measuring Range	Level	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)	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)	±199.99 m ±19.999 m ±199.99 ft	±30 m
	Temperature	-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)	-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		0 to 2000 µS/cm 0.1 to 100 mS/cm		
Accuracy	Level	<u>SDI-12:</u> ± 0.05% FS  <u>4...20mA:</u> ± 0.1% FS	± 0.05% FS	± 0.05% FS	± 0.05% FS	± 0.05% FS	± 0.05% FS	±0.0066 ft ±1 Digit  ±0.002 m ±1 Digit	<u>SDI-12:</u> ±0.003% of measurement range <u>4...20mA:</u> ±0.1% of measurement range
	Temperature	± 0.5°C	± 0.1°C	±0.5°C (±0.1°C optional)	± 0.1°C	± 0.5°C (±0.1°C optional)	± 0.5°C		
	Conductivity		<u>0 - 2000 µS/cm:</u> ± 1 µS/cm  <u>0.1 - 100 mS/cm:</u> ± 0.01mS/cm		<u>0 - 2000 µS/cm:</u> ± 1 µS/cm  <u>0.1 - 100 mS/cm:</u> ± 0.01mS/cm		<u>0 - 2000 µS/cm:</u> ± 1 µS/cm  <u>0.1 - 100 mS/cm:</u> ± 0.01mS/cm		
Power Consumption / Estimated Battery Life	1 hr. sample interval with Lithium:	<u>SDI-12:</u> Active: < 3.6 mA Sleep: < 600 µA	<u>SDI-12:</u> Active: < 20 mA Sleep: < 20 µA	min. 5 yrs.	min. 5 yrs.	Approx. 10 year (one transmission per week)	Approx. 10 year (one transmission per week)		
	1 hr. sample interval with Alkaline:			min. 1.5 yrs.	min. 1.5 yrs.	Approx. 2 years (one transmission per week)	Approx. 1 years (one transmission per week)	Approx. 15 months	<u>SDI-12:</u> Active: < 2.0 mA Sleep: < 400 µA
Installation	Well Diameter	≥1"	≥1"	≥1"	≥1"	≥2"	≥2"	≥4"	≥4"
	Placement	Probe in-well	Probe in-well	Probe and Logger in-well	Probe and Logger in-well	Probe, Logger and Transmitter in-well (external antenna option)	Probe, Logger and Transmitter in-well (external antenna option)	Float, pulley and logger in-well	Float and pulley in- well

# Determine what technology is best for your project?

## Well:

Diameter: \_\_\_\_\_

Measuring point reference: \_\_\_\_\_

Maximum well depth: \_\_\_\_\_

Description of existing top cap or borehole lid:  
\_\_\_\_\_

## Depth-to-Water:

Minimum: \_\_\_\_\_

Maximum: \_\_\_\_\_

This information identifies the water level fluctuation and assists with selecting the ideal water level measurement range

## Measurement parameters:

What data are you interested 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:

## Data Collection:

Is remote communication of measured data required?

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

In what Interval do you want to take measurements? \_\_\_\_\_

How often do you want to transmit the data? \_\_\_\_\_

## OTT Solutions



Groundwater Monitoring

- Groundwater dataloggers
- Remote groundwater monitoring
- Groundwater level sensors



Water Quality Monitoring

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



Remote Data Acquisition

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



Precipitation Measurement

- All weather precipitation gauges
- Present weather sensors



Surface Water Level & Discharge

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

## Established technology in Groundwater Monitoring

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

OTT groundwater 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 well site back to the office, using GSM or GPRS cellular technology.



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