



Description

The GaiaXus Water Guardian System is a water quality monitoring system designed for use in K12 STEM education and in citizen science projects. The Water Guardian System consists of sensors, mobile app and web services.

Sensors

The GaiaXus Proteus Sonde is a portable, rechargeable device that can be used by students in a classroom setting or during field excursions.

Operation

The GaiaXus Proteus is pre-programmed by the operator using a mobile app. The Proteus then acquires water quality parameters autonomously until the operator ends the process using the Mobile App. Acquired data is transferred to the mobile device using Bluetooth.

Caution

The system is for education and information only and not to be used to assess water safety.

Operating Mode	Use Case
Continuous Recording	Records data every 10 seconds
Grab Sample	Takes a single reading at greatest depth.
Towing Mode	Records data at pre-set intervals and associates it with GPS coordinate from the mobile device. Used to survey from a slow-moving watercraft (e.g. kayak). Requires the mobile device to be present with the operator
Buoy Mode	Allows the system to record water quality data at set intervals at a single position.



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Sensor	Turbidity / Nephelometry	850nm IR LED illumination at 90degree (nephelometry) and 180 degrees (absorbance). 5-400 NTU Formazin standards
Sensor	Salinity	Practical range 0 – 42000 ppm 5 – 200k $\mu\text{S} \pm 2\%$ at 25°C 2000 – 42000 ppm $\pm 2\%$ at 25°C
Sensor	Temperature	0-40 $\pm 2^\circ\text{C}$
Sensor	Pressure	0-100 kPa ~ 0-1000mbar $\pm 2\text{mbar}$ (0-60 °C)
Sensor	Depth	0-10m $\pm 0.02\text{m}$ (25°C and 0 ppm)
Sensor	Chlorophyl	Qualitative detection using 650nm (red) absorbance and 430nm (blue) fluorescence.
Operating Time		24h recording at 5min intervals (25°C)
Battery	Battery life	300 – 500 charge cycles with >60% battery capacity
	Battery type	Li-ion Rechargeable battery, 3.6V, 3500mAh
	Charge type	Qi @ wireless power transfer, 350mA/h. ~ 9h to full charge from depleted battery
Material	Housing	Nylon© PA-12
	Pressure rating	1 bar overpressure ~ 10m depth in freshwater.
Physical Dimensions	Weight	400g
	Dimensions	175mm (L) x 92mm (OD)
	Sensor volume	53mL
	Channel diameter	20mm

