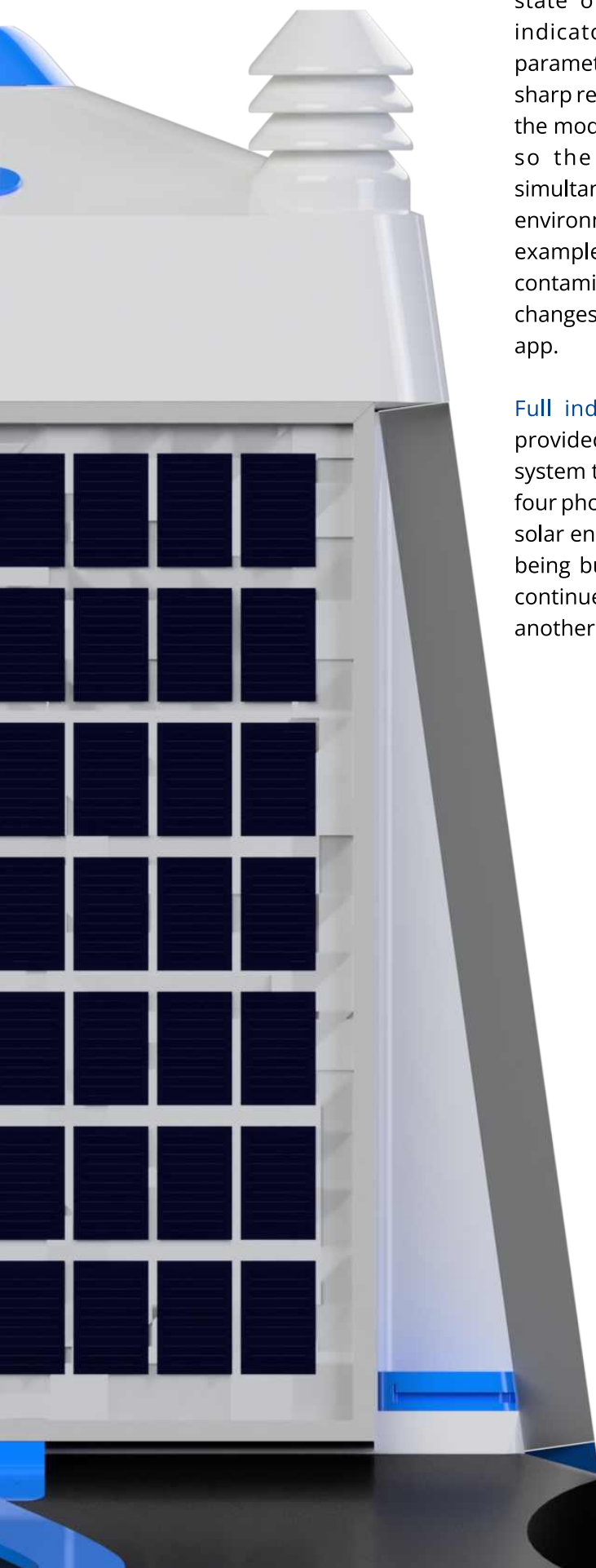


MEASURING BUOY

The buoy signals its presence on the water with a cyclic flashing light, the color of which depends on the current state of water quality, more specifically the WQI indicator. If there is a sudden change in water parameters or a vandalism situation, the buoy flashes a sharp red light color. The beacon can also be switched to the mode of marking the waterway, port or starboard - so the device can act as a floating sign that simultaneously monitors the parameters of the water environment. In case the beacon is unnecessary - for example, in areas that are devoid of artificial light contamination - it can be turned off completely. All changes can be made with a few clicks in the Waterly app.

Full independence and autonomy of operation is provided by a battery equipped with an additional system that obtains energy directly from the sun, using four photovoltaic panels. In the event of loss of access to solar energy, for example, as a result of the equipment being buried by a thick layer of snow, the device will continue to work and perform its tasks, and for up to another three months.



MONITORING

The main task of Waterly's measuring buoys is to monitor water parameters and provide early warning of changes in the aquatic environment. Each Waterly buoy is equipped with an advanced sensor system that monitors individual water and air parameters all the time, regardless of weather conditions or season. The frequency of the measurements is adjustable and can be changed via the Waterly app from 5 minutes to 4 hours.

Waterly buoys have a set of sensors on board that monitor such water parameters as temperature, conductivity, salinity, TDS, pH, ORP potential, the amount of oxygen expressed in mg/l and oxygenation expressed in %. The water environment is strongly dependent on atmospheric factors, so Waterly buoys also monitor temperature, humidity and, importantly, atmospheric pressure. The table opposite shows the baseline parameters that are monitored by Waterly buoys.

Despite appearances, water temperature is a very important parameter. For people resting by the water, its value should be as high as possible. For fish, the value of water temperature affects their development. The higher the temperature indication, the lower the solubility of oxygen in the water, and this can lead to fish suffocation.

The conductivity of water makes it possible to assess the level of water mineralization. The conductivity value increases with the amount of impurities present in the water. Using conductivity, TDS (Total Dissolved Solids) is determined, which is the total amount of dissolved substances in the water, which also increases with the amount of impurities.

The pH of water is one of the most important parameters regarding water quality. Based on it, we can assess whether conditions for plant and animal life are possible in the water and animals. In addition, the correct pH range makes it possible to preserve the water's self-purification mechanisms.

The level of oxygenation and the amount of dissolved oxygen in water is fundamental to the functioning and life of aquatic organisms. It takes part in the natural processes of water purification, and too low a value of oxygen in the water can lead to the death of fish. Its content is strongly related to water temperature and atmospheric pressure.

WATER TEMPERATURE

RANGE	0-60°C
RESOLUTION	0.1°C
ACCURACY	0.5°C

CONDUCTIVITY OF WATER

RANGE	0-100000 uS/cm
RESOLUTION	1 uS/cm
ACCURACY	2.5%

TDS WATER

RANGE	0-9999 ppm
RESOLUTION	1 ppm
ACCURACY	2.5%

WATER SALINITY

RANGE	0-40.00 ppt
RESOLUTION	0.01 ppt
ACCURACY	2.5%

pH OF WATER

RANGE	0.00-14.00
RESOLUTION	0.01
ACCURACY	0.02

WATER ORP

RANGE	-1000.0-1000.0 mV
RESOLUTION	0.1 mV
ACCURACY	0.2 mV

AMOUNT OF OXYGEN DISSOLVED IN WATER

RANGE	0-20.00 mg/l
RESOLUTION	0.01 mg/l
ACCURACY	0.3 mg/l

WATER OXYGENATION

RANGE	0-200 %
RESOLUTION	1 %
ACCURACY	3 %

AIR TEMPERATURE

RANGE	-40-80°C
RESOLUTION	0.1°C
ACCURACY	0.5°C

AIR HUMIDITY

RANGE	0-100 %
RESOLUTION	1 %
ACCURACY	3 %

ATMOSPHERIC PRESSURE

RANGE	300-1100 hPa
RESOLUTION	1 hPa
ACCURACY	1 hPa

ADDITIONAL PARAMETERS

The Waterly buoys were designed by our designers with the broadest possible spectrum of applications in mind, so the architecture of the devices allows the sensory system to be expanded to monitor additional parameters such as the depth of the water body, the turbidity and color of the water, the amount of nitrates, phosphates, chlorine or carbon dioxide in the water. And this makes the Waterly solution, a multi-instrument system for aquatic environments. Additional parameters are shown in the table opposite.

The buoy can be equipped with a depth monitoring system for each body of water. Whether lakes, ponds, reservoirs or rivers. This allows them to act as a digital water level gauge with an early warning and notification system for changes in water levels.

Water turbidity (the inverse of transparency) is a parameter that determines the ability to absorb and scatter light rays. The greater the turbidity, of water, the greater the content of organic agents (clays, plankton, bacteria, insoluble organic compounds from industrial wastewater) or inorganic substances (sands, iron compounds, manganese, chemical compounds from wastewater). Water color depends mainly on the amount of iron and manganese, but can also come from industrial wastewater.

Nitrates are toxic compounds that, even in minimal amounts, are particularly dangerous to fish. They are formed from the decomposition of organic residues and find their way into waterways primarily as a result of agricultural field fertilization and sewage discharges. and manganese, but can also come from industrial wastewater.

TANK DEPTH / WATER LEVEL

RANGE	0-70 m
RESOLUTION	1 cm
ACCURACY	1 cm

WATER TURBIDITY

RANGE	0.01-4000.00 NTU
RESOLUTION	0.01 NTU
ACCURACY	0.1 NTU

AMOUNT OF NITRATES (NO₃) IN THE WATER

RANGE	0.1-1000 mg/l
RESOLUTION	0.01 mg/l
ACCURACY	5%

AMOUNT OF AMMONIUM NITROGEN (NH₄-N) IN WATER

RANGE	0.1-1000 mg/l
RESOLUTION	0.01 mg/l
ACCURACY	5%

AMOUNT OF CHLOROPHYLL IN THE WATER

RANGE	0-400 ug/l
RESOLUTION	0.01 ug/l
ACCURACY	5%

AMOUNT OF DISSOLVED DIOXIDE IN WATER

RANGE	0-2000 ppm
RESOLUTION	1 ppm
ACCURACY	5%

VANDAL-PROOF

Waterly measuring buoys are equipped with detectors that continuously analyze the status of the device and detect unexpected incidents such as mechanical impacts and shocks, as well as unauthorized removal of buoys from the water. These types of incidents, trigger an immediate alarm procedure, which automatically activates the optical signaling with a red warning light and an alarm siren, in addition to immediately notifying the situation by email, text message or through PUSH notifications in the Waterly app.

In the event of an alarm situation, the siren starts flashing with an intense red light, the glow of which will spread across the water surface of the entire tank. Safety is enhanced by an alarm siren (now available on the Waterly Mini buoy), whose sharp sound can be heard up to 1,000 meters away. These elements effectively deter potential vandals.

Each Waterly buoy is equipped with a GPS locator, so the actual position of the device is available on the app at all times, and to an accuracy of 70 centimeters. In case of theft, the buoy will continuously transmit its location to the app, even if it is severely damaged.



INFO SIGN

The Waterly system is complemented by waterfront information boards that allow you to easily and quickly launch the Waterly app, which will instantly present the parameters measured by the buoy for which the information board has been prepared.

Each array has its own unique QR code, which can be scanned with a smartphone. This code is assigned to the corresponding measurement buoy nearest the array.

The information board can be installed in a place that is both accessible to tourists and one where the measuring buoy can be observed within sight. This will allow you to see what color the measuring buoy is flashing after dark to verify the water level through the WQI indicator.

The boards, like the measuring buoys, are fully resistant to changing weather conditions and can be installed in any location.

TECHNICAL PARAMETERS

OVERALL HEIGHT	120 cm
BOARD WIDTH	25 cm
BOARD LENGTH	35 cm

