# NEXSENS

**ENVIRONMENTAL MEASUREMENTS CATALOG**

## Better Data

The way we monitor the environment is changing. The days of manual data collection at a few sites are gone. Complex wiring and data logger programming are things of the past. Technology has changed everything. Smartphones, Wi-Fi, broadband, and cloud computing let people gather information and communicate in real-time from any place on earth. It's never been easier to get and share information.

Collecting and sharing environmental data is just as easy. Here at NexSens, we call this better data. Our goal is to help people collect and share better data. It's why we do what we do and it's why we created our next generation X-Series data logger and WQData LIVE cloud-based data management system.

With a goal of creating a platform for collecting and sharing better data, the NexSens development team set out to create the world's most versatile environmental measurement system. They knew that it would need to provide years of reliable service in the harshest conditions, wirelessly connect to the cloud, transmit data from remote sites, and work with a comprehensive list of environmental measurement sensors.

Learn more about NexSens Technology and environmental measurement systems at www.nexsens.com



## Contents



## About NexSens

NexSens Technology is a US-based company specializing in the design and manufacture of real-time environmental measurement systems.

Recent developments in data logger, sensor, mobile computing, and internet technologies simplify collecting and sharing environmental project data. NexSens measurement systems employ these latest technologies and provide high-quality data transmitted by Wi-Fi, cellular, or satellite, and shared in real-time on a secure cloud-based datacenter.

Environmental professionals around the world configure and deploy these systems in a wide variety of applications. The services and support provided by the NexSens application team help ensure successful project startup and continued operation.

# Monitoring Applications

For more systems and applications, visit www.nexsens.com/systems

## Harmful Algal Bloom Detection

Harmful algal blooms (HABs) refer to a sudden overgrowth of algae or cyanobacteria (blue-green algae) that negatively impact water quality. They may produce anoxic conditions and toxins that, in severe cases, can cause fish kills and contaminate drinking water supplies.

Eutrophication, the excess presence of nutrients in a body of water, is the most common cause of HABs. Automated monitoring systems can help predict when potentially hazardous conditions are forming and track HAB outbreaks.

## Stream and River Monitoring

Streams and rivers are the major arteries transporting Earth's freshwater. These waters serve many vital functions, including aquatic habitat, nutrient transport, drinking water, industrial water supply, irrigation, transportation, power generation, and recreation.

Protecting the health of these waterways is essential to maintaining the balance between nature and human activity. Automated monitoring aids in understanding how these valuable resources are changing and how we can best conserve them.

## Wave Measurement Buoy

Offshore, coastal, and large inland waters are subject to varying and potentially hazardous wave conditions. Waves can impact sediment transport patterns, coastline morphology, beach safety, and maritime operations.

Wave buoys measure wave height, period, and direction to provide critical data for boaters and shipping vessels, researchers, offshore construction managers, or any other application where wave data is of interest.

## Flood Warning Systems

Flash flooding often leaves only minutes to react before conditions approach dangerous levels. Flood warning systems save lives, protect property and limit damage to infrastructure by quickly alerting to heavy precipitation and changing water levels.

An effective flood warning system enables authorities to take appropriate action, such as evacuation and control of dams in advance of a flood event, often leading to much less catastrophic outcomes when severe weather strikes.


# X3

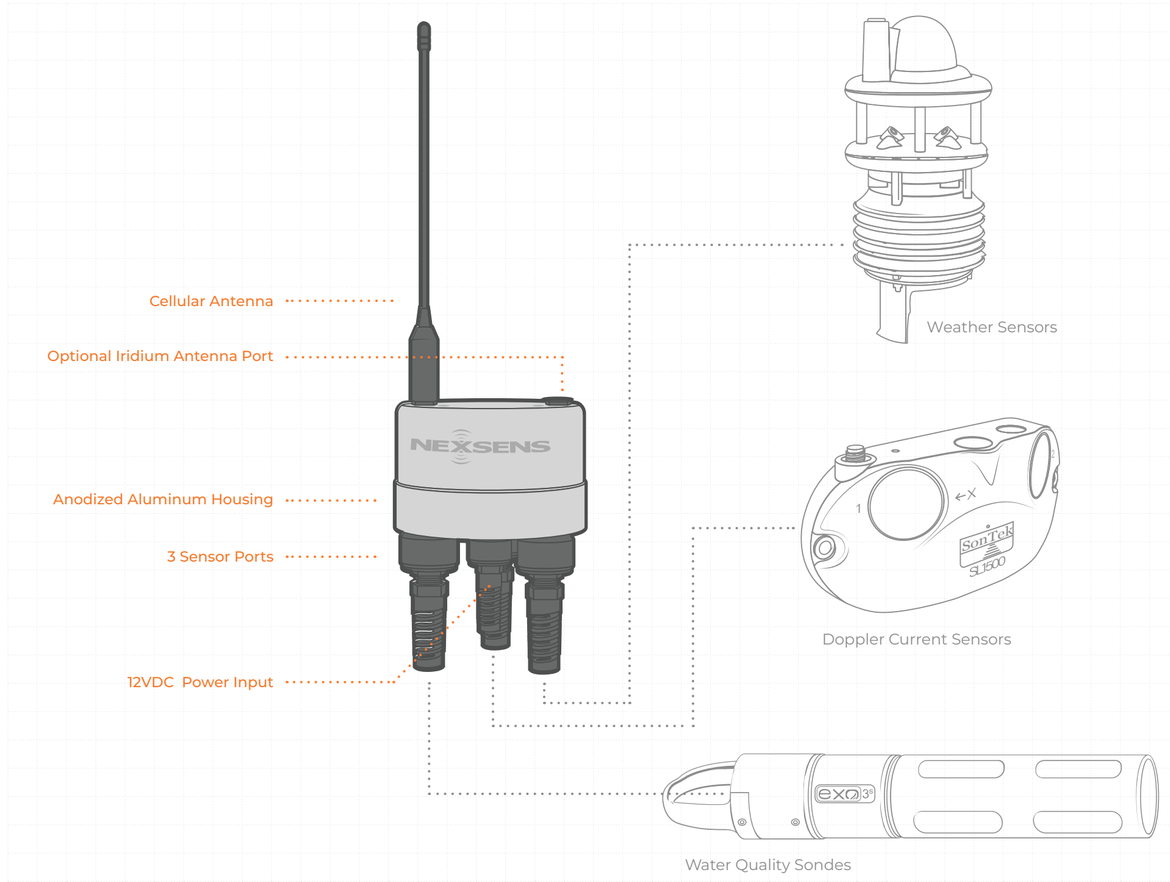
The X3 is an all-in-one environmental data logger designed for both pole/wall mount and buoy-based applications. The three waterproof sensor ports are compatible with most environmental sensors. All connections are made with a simple thread-in connector, and the built-in sensor library automatically facilitates setup and configuration. Data is stored at set intervals.

Advanced power management combined with ultra-low sleep and run currents extend battery life and eliminate the need for multi-battery arrays or large solar charging systems. Internal temperature, humidity, voltages, and currents are constantly recorded by the X3, and failure alerts can be sent automatically to a predefined list of contacts.

Using integrated Bluetooth or optional USB adapter, users can configure the X3 data logger for deployment, view live data, change settings, or troubleshoot. Standard Wi-Fi and optional integrated 4G LTE cellular or Iridium satellite telemetry modules offer 2-way remote communications via the WQData LIVE web datacenter. Other features include automated reports, email/text alarms, public portal, and much more.

## Key Features

- Supports most industry environmental sensors
- Wi-Fi, 4G LTE, and Iridium satellite telemetry options
- Direct PC or cloud-based communications
- Waterproof sensor and power ports
- Marine anodized aluminum housing



# X3-SUB

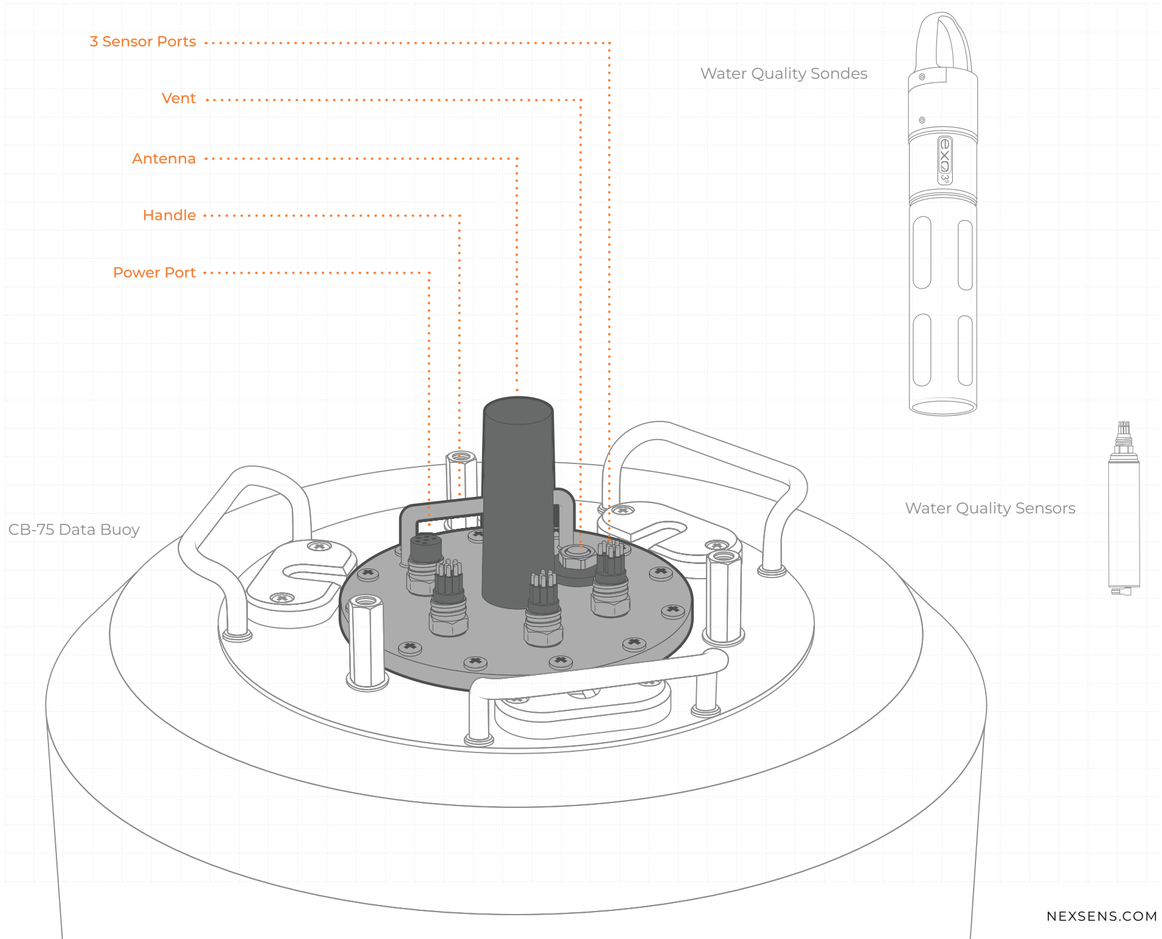
The X3-SUB Submersible Data Logger is a rugged, self-powered remote data logging system specifically designed for offshore use without fear of accidental flooding. The system is configured with three sensor ports for connection to most environmental sensors. All connections are made using wet-mate connectors, and the built-in sensor library automatically facilitates setup and configuration. Sensor data is recorded at set intervals.

Unlike many data loggers, the X3-SUB can withstand extreme wave action, floods, periodic and long-term deployment underwater, and more. The Type 316 stainless-steel housing is completely sealed and waterproof for long-term sub-surface data logging. When fitted for wireless remote communication, the cellular and satellite antennas are also waterproof. The X3-SUB can be powered by internal SLA battery, alkaline battery pack, or external 12 VDC power.

Using integrated Bluetooth or optional USB adapter, users can configure the X3-SUB data logger for deployment, view live data, change settings, or troubleshoot. Optional integrated 4G LTE cellular or Iridium satellite telemetry modules offer 2-way remote communications via the WQData LIVE web datacenter. Other features include automated reports, email/text alarms, public portal, and much more.

## Key Features

- Supports most industry environmental sensors
- 4G LTE or Iridium satellite telemetry options
- Direct PC or cloud-based communications
- MCIL/MCBH wet-mate sensor and power ports
- Type 316 stainless-steel housing



# Water Quality Sensors


*actual size

## NEW NX260 Turbidity Sensor

The NexSens NX260 Turbidity Sensor is an optical, self-cleaning sensor designed to measure turbidity in lakes, rivers, and other freshwater or marine environments. The probe is ideal for construction sites, dredging projects, stormwater applications, and many other water quality monitoring settings where water clarity is a concern.

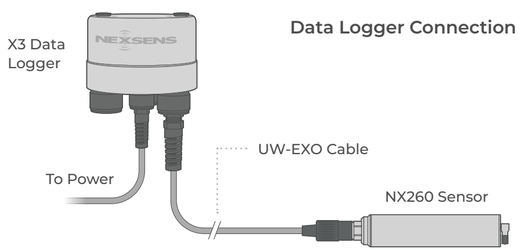
The sensor is housed in a corrosion-resistant titanium body with a scratch-resistant sapphire lens. No wiring or programming is required to integrate the sensor with NexSens X-Series data loggers.

| NX260 Sensor Specifications | |
|---|---|
| Sensor | Optical, 90° scatter |
| Unit | FNU |
| Range | 0-1000 FNU |
| Accuracy | <5% or 0.3 FNU WIG |
| Display Resolution | 0.01 FNU |

## Key Features

- Outputs turbidity measurements in FNU
- Wiper cleans optics prior to each measurement
- Supports end user calibrations via CONNECT Software
- RS-485 Modbus RTU or SDI-12 output options

### Data Logger Connection




# Other Compatible Sensors

## Water Quality

- Aanderaa Smart Sensors
- AML Oceanographic AML-1/3/6 Instruments
- Chelsea Technologies TriLux Sensors
- Chelsea Technologies UniLux Sensors
- Chelsea Technologies UviLux Sensors
- Eureka Manta+ Water Quality Probes
- Eureka Trimeter Water Quality Probes
- In-Situ Aqua TROLL Water Quality Sensors
- In-Situ RDO Optical Dissolved Oxygen Sensors
- LDI ROW Non-Contact Oil Detectors
- LI-COR Underwater PAR Sensors
- Observator ANALITE NEP5000 Turbidity Sensors
- Pro-Oceanus Mini Dissolved Gas Probes
- Pro-Oceanus Solu-Blu Dissolved Gas Probes
- Proteus Multi-Parameter Water Quality Sensors
- Sea-Bird Scientific ECO Sensors
- Sea-Bird Scientific HydroCAT CTD Sensors
- Sea-Bird Scientific SUNA V2 UV Nitrate Sensor
- Seametrics Water Quality Loggers
- Sequoia LISST-Tau Transmissometers
- TriOS NICO UV Nitrate Sensors
- TriOS OPUS UV Spectral Sensors
- Turner Designs C-FLUOR Sensors
- Turner Designs C3/C6P Fluorometers
- YSI EXO Multi-Parameter Water Quality Sondes
- YSI ODO RTU Optical Dissolved Oxygen Sensors
- YSI ProSwap Loggers

... and more!

## Hydrology

- Aanderaa Doppler Current Profiler Sensors
- Aanderaa ZPulse Doppler Current Sensors
- Airmar EchoRange SS510 Sonar Depth Sensors
- APG MNU Series Ultrasonic Level Sensors
- APG PT-500 Water Level Sensors
- Geolux Non-Contact Flow Sensors
- Geolux Non-Contact Level Sensors
- Geolux Non-Contact Surface Velocity Sensors
- Geolux Non-Contact Wave Sensors
- Nortek Aquadopp Current Meters
- Nortek Aquadopp Current Profilers
- Nortek Signature-Series Current Profilers
- OTT RLS Radar Water Level Sensors
- OTT SVR 100 Surface Velocity Radar Sensors
- Seametrics PT12 Water Level Sensors
- Seametrics PT2X Water Level Loggers
- SeaView Systems SVS-603HR Wave Sensors
- Solinst Water Level Temperature Sensors
- SonTek-IQ Acoustic Doppler Flow Meters
- SonTek-SL Acoustic Doppler Current Meters
- Teledyne/RDI ChannelMaster ADCPs
- Van Essen Diver Water Level Loggers
- VEGA VEGAPULS Radar Water Level Sensors

... and more!

## Weather

- Airmar WX-Series Ultrasonic WeatherStations
- Gill MaxiMet Compact Weather Stations
- Kipp & Zonen SMP Series Smart Pyranometers
- LI-COR Terrestrial Light Sensors
- Lufft WS-Series Weather Sensors
- Sentek Drill & Drop Soil Moisture Probes
- Vaisala GMP-Series Carbon Dioxide Probes
- Vaisala HMP-Series Humidity Sensors
- Vaisala WXT-Series Weather Sensors
- YOUNG ResponseONE Weather Sensors
- YOUNG Serial Output Wind Monitors
- YOUNG Ultrasonic Anemometers
- YSI H-3401 Tipping Bucket Rain Gauges

... and more!


For more sensor information, visit www.nexsens.com

# Power Options

For remote applications where line power is not available, solar power packs may be installed to continuously operate the data logger and attached sensors. Alternatively, an AC power adapter may be used to power the logger and sensors.

## Solar Power Pack

The SP-Series Solar Power Packs feature a solar panel, regulator, and battery housed in a weathertight enclosure. Solar Power Packs are used to provide continuous power for X-Series systems. All components are weathertight and designed to withstand harsh conditions. A UW-6 plug provides an easy-to-use, waterproof, thread-in connection to compatible devices. A built-in mounting bracket allows the packs to be mounted to a 1.5" to 2" pipe. Options include 15- and 32-watt packs.

### Features:

- Designed for use with the NexSens X-Series data loggers
- All components are weathertight and designed to withstand harsh conditions
- Adjustable angle to 30 and 45 degrees

## AC Power Adapter

The UW6-PW AC adapter is used to supply power to X-Series instruments through NexSens' standard UW6 underwater connector for continuous operation. The instrument connection end is waterproof and vented, allowing for a wide range of deployment options.

### Features:

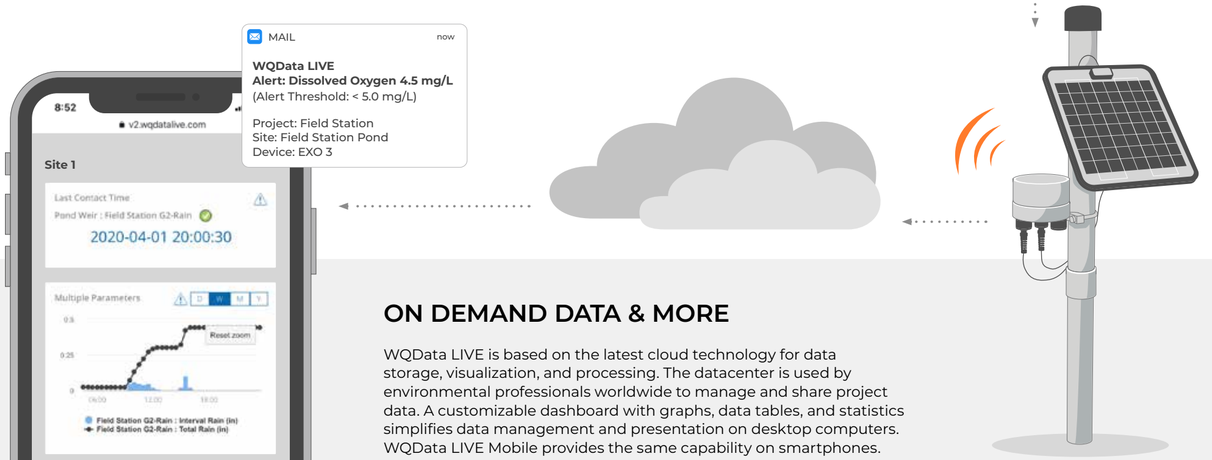
- Vented and waterproof UW-6 provides robust connection to instruments
- Specifically designed to work seamlessly with NexSens X-Series instruments
- 2A supply runs even high power draw systems



# EASY-TO-CONNECT LOGGERS & SENSORS

## PLUG-AND-PLAY DESIGN

The NexSens NX-Series sensors and other popular sensors easily connect to and are auto-recognized by X-Series data loggers. When powered and scanned, the data logger begins streaming data to the cloud, where it is available to view or download at the WQData LIVE datacenter.



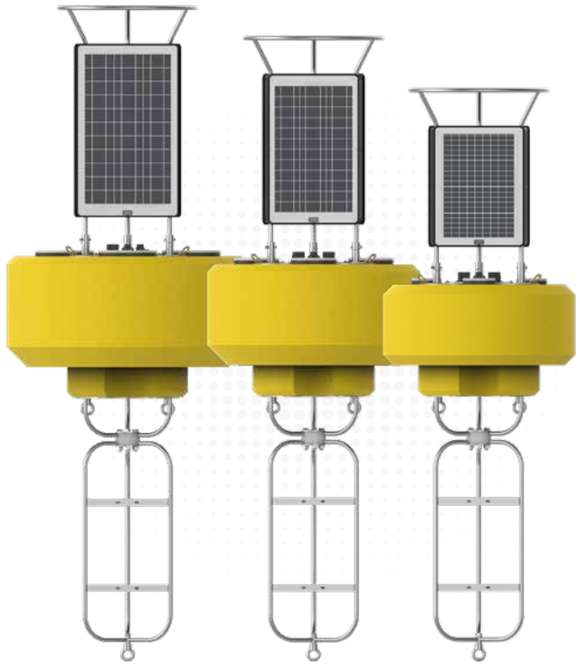

## ON DEMAND DATA & MORE

WQData LIVE is based on the latest cloud technology for data storage, visualization, and processing. The datacenter is used by environmental professionals worldwide to manage and share project data. A customizable dashboard with graphs, data tables, and statistics simplifies data management and presentation on desktop computers. WQData LIVE Mobile provides the same capability on smartphones.

For more information, visit www.nexsens.com

# Large Data Buoys

Designed for large lakes and coastal waters, the CB-1250, CB-950, and CB-650 are easy to deploy and built for extreme environments. Sensors and data logging equipment are powered by optional high-capacity batteries. Three integral solar panels provide adequate charging independent of buoy orientation. Tower mounting accessories and water column ports aid in sensor deployment. A heavy polymer coating protects the closed-cell foam and provides adequate flotation. Structural strength is achieved with a through-hull stainless-steel frame and bottom cage structure.



CB-1250 CB-950 CB-650

## CB-1250

The CB-1250 offers increased flotation and solar charging for heavy or power-hungry sensors while still maintaining a relatively small footprint.

## CB-950

The CB-950 offers sufficient power and sensor payload for demanding instruments including video cameras, ADCPs, and more.

## CB-650

The CB-650 offers a compact platform with convenient tower mounting for meteorological sensors, navigation lights, and radar reflectors.

| Specifications | CB-1250 | CB-950 | CB-650 |
|---|---|---|---|
| Hull Outer Diameter in (cm) | 48 (121.9) | 42 (106.7) | 38 (96.5) |
| Hull Height in (cm) | 28 (71.1) | 26 (66.0) | 22 (55.9) |
| Tower Height in (cm) | 46 (116.8) | 41 (104.1) | 35 (88.9) |
| Data Well Inner Diameter in (cm) | 10.3 (26.2) | 10.3 (26.2) | 10.3 (26.2) |
| Data Well Height in (cm) | 27.5 (69.9) | 25.5 (64.8) | 21.5 (54.6) |
| Pass-Through Hole Diameter in (cm) | 8 (20.3) | 6 (15.2) | 4 (10.2) |
| Weight lbs (kg) | 262 (119) | 219 (99) | 182 (83) |
| Net Buoyancy lbs (kg) | 1044 (474) | 728 (330) | 499 (226) |
| Solar Panels Watts | 3x 71-watts | 3x 46-watts | 3x 32-watts |
| Mooring Attachments ¾" eyenut | 3 | 3 | 3 |



## Key Features

### Solar Panels

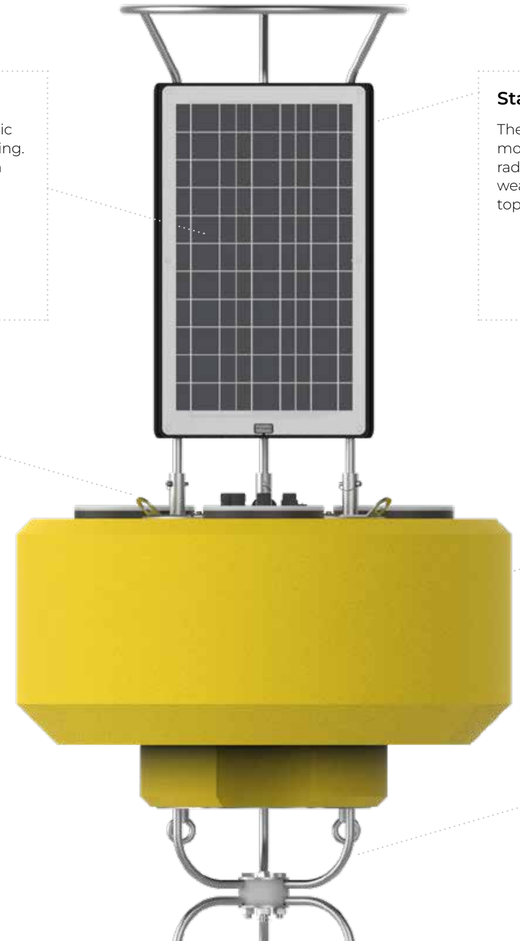
The solar panels are constructed of a plastic film surface with semi-flexible metal backing. The panels are mounted to the tower with stainless-steel hardware.

### Stainless-Steel Lifting Eyes

Stainless-steel topside lifting eyes accommodate straps and rigging hooks while bottom mooring eyes are provided for mooring and sensor line connection.

### Sealed Data Well

A 10-inch diameter data well provides a watertight housing for batteries, data loggers, sensors, and other hardware.



### Stainless-Steel Tower

The stainless-steel tower includes a top mounting plate for solar marine light and radar reflector. Mounts are also available for weather sensors, video cameras, and other topside instruments.

### Inner Core - Outer Shell

An advanced polyurea coating protects an inner core of closed-cell polyethylene foam providing a puncture-proof watertight platform with adequate flotation.

### Stainless-Steel Frame

The stainless-steel frame supports both single-point and multi-point moorings and supports the addition of sacrificial zinc anodes, an instrument cage, and ballast weights for additional stability.

# General-Purpose Data Buoy

The CB-450 data buoy is designed for deployment in larger water bodies, striking a balance between compact design and powerful capabilities. The versatile and lightweight design allows the CB-450 to be easily deployed from a boat. Three integrated solar panels provide adequate power and charging for sensor operation and data transmission. A data well provides watertight housing for batteries, data loggers, sensors, and other hardware that users may wish to integrate. The data buoy is built to last with a heavy polymer coating protecting the closed-cell foam and providing adequate flotation with the strength of an indestructible stainless-steel frame.

CB-450

## CB-450

Featuring 4-inch pass-through ports, the CB-450 allows for larger instruments (water quality sondes, etc.) to be deployed and retrieved without lifting the buoy out of the water.

| Specifications | CB-450 |
|---|---|
| Hull Outer Diameter in (cm) | 34.0 (86.4) |
| Hull Height in (cm) | 20.0 (50.8) |
| Tower Height in (cm) | 20.0 (50.8) |
| Data Well Inner Diameter in (cm) | 10.3 (26.2) |
| Data Well Height in (cm) | 19.5 (49.5) |
| Pass-Through Hole Diameter in (cm) | 4.0 (10.2) |
| Weight lbs (kg) | 124 (56) |
| Net Buoyancy lbs (kg) | 368 (167) |
| Solar Panels Watts | 3x 15-watts |
| Mooring Attachments ¾" eyenut | 3 |

The CB-450 data buoy is ideally suited for dredge turbidity monitoring, temperature profiling, dissolved oxygen monitoring, limnology research, weather monitoring on inland lakes, and many other applications. The system can be deployed in lakes, rivers, coastal waters, harbors, estuaries, and other freshwater or marine environments.

The self-powered system is often paired with weather stations, temperature strings, water quality sensors, Doppler current profilers, and other monitoring instruments.



## Key Features

### Versatile

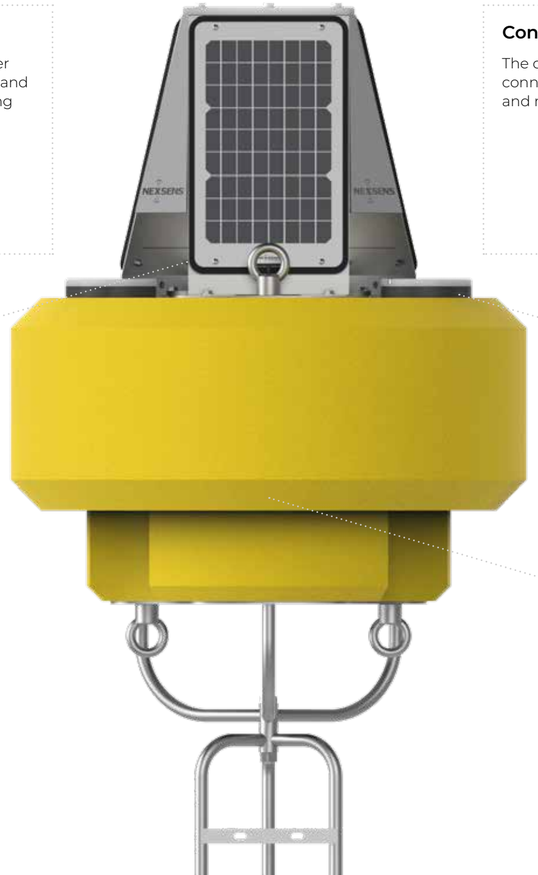
Light enough to deploy from most smaller boats while still offering adequate power and charging for rigorous instrument sampling and data transmission.

### Efficient Charging

Three integrated 15-watt solar panels are angled and evenly spaced around the buoy to capture sunlight from any direction and provide adequate battery charging.

### Durable Design

Cross-linked polyethylene foam coated with a heavy polymer skin over a stainless-steel frame makes the CB-450 durable against rough environmental conditions.




### Connections

The data well lid provides pass-through connections for sensors, power, venting, and more.

### Pass-Through Ports

Three 4-inch pass-through ports on the CB-450 allow sensors to be mounted underwater while securely routing the cable.

### Data Well

A 10-inch diameter by 19.5 tall data well provides watertight housing for batteries, data loggers, sensors, and other hardware.

# Compact Data Buoy

The XB-200 is ideal for applications requiring portability and quick deployment, yet strong enough for rough water. The hull and solar tower are made from UV stabilized, linear low-density polyethylene (LLDPE), offering both flexibility and toughness. The hull is filled with a lightweight, closed-cell polyurethane foam to keep the buoy afloat even if pierced or damaged. Batteries are housed in a waterproof compartment in the buoy hull with additional room for measurement electronics and telemetry equipment. When configured with the NexSens X3 data logger, electronics are mounted under the solar tower top plate for quick access and easy replacement. Three 4" pass-through ports accommodate water monitoring sensors, and a configurable top plate accommodates weather sensors along with a navigation beacon.


## NEW XB-200

The XB-200 data buoy represents the next generation of buoy hulls from NexSens Technology. It merges the best features of the CB-250 and CB-450 buoys into a compact polyethylene hull that can be deployed and serviced from small boats.

| Specifications | XB-200 |
|---|---|
| Hull Outer Diameter in (cm) | 30 (76.2) |
| Hull Height in (cm) | 22 (55.8) |
| Tower Height in (cm) | 20 (50.8) |
| Battery Well Inner Diameter in (cm) | 9.7 (23.6) above battery |
| Battery Well Height in (cm) | 20.5 (52.1) |
| Pass-Through Hole Diameter in (cm) | 4 (10.2) |
| Weight lbs (kg) | 70 (32) |
| Net Buoyancy lbs (kg) | 264 (120) |
| Solar Panels Watts | 3x 15 watts |
| Mooring Attachments ⅝" eyenut | 3 |

The XB-200 is a popular choice for limnology research, dredge turbidity monitoring, temperature or dissolved oxygen profiling, fisheries and aquaculture monitoring, harmful algal bloom detection, and oil spill response. The compact buoy is often deployed in lakes, rivers, coastal waters, harbors, estuaries, and other freshwater or marine environments.

Typical monitoring sensors including weather stations, wave sensors, thermistor strings, multi-parameter sondes, Doppler current profilers, and other monitoring instruments.



## Key Features

### Topside Electronics

When configured with NexSens data logging and telemetry equipment, all electronics are mounted just under the top plate with the antenna passing through for a clear view of the sky. Equipment can be swapped quickly and easily without the need to remove the tower or open the data well. Additionally, the top plate supports weather stations, a navigation beacon, and other instrumentation.

### Solar-Charged Battery

Three 15-watt solar panels mount to the tower and provide solar charging from any direction. A single 12VDC, 28 A-hr battery located in the bottom of the hull provides enough power for continuous operation of typical environmental monitoring systems.

### Sensor Ports

Three 4" ports pass through the hull and are capped with sensor plates. The plates have a slot for cable passage and an underside eye for relieving sensor cable weight or attaching sensor mounting lines. Water quality sondes, small Doppler current meters, and sensor strings are deployed through these ports, and cables can pass through for cage mounted sensors.


### Inner Core - Outer Shell

The outer shell is manufactured from UV stabilized, LLDPE plastic and the hull is filled with closed-cell polyurethane foam. This combination provides the flexibility and toughness needed for harsh marine environments, intense sunlight, and polluted waters.

### Mooring Eyes

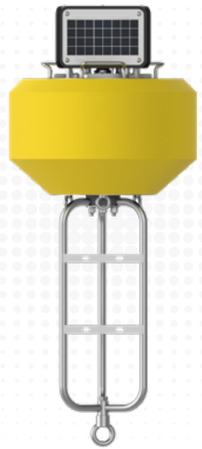
Two 5/8" stainless-steel mooring eyes support either one- or two-point mooring. The mooring eyes provide quick connection to surface or subsurface flotation and mooring lines.

### Stainless-Steel Cage

The stainless-steel cage bolts to the bottom of the XB-200 and provides convenient mounting for subsurface instrumentation. Sacrificial zinc anodes and ballast weights are easily attached and a bottom eye supports additional sensor line connections.

# Micro Data Buoy

Designed for integration with the X3-SUB, the CB-75 data buoy is a compact, affordable, and easy-to-deploy platform for both water and atmospheric observations. An integrated power supply, wet-mate marine connectors, and optional wireless telemetry make real-time monitoring possible. The included instrument cage supports water quality sensors, multi-parameter sondes, ADCPs, and other subsurface instruments. The cross-linked polyethylene foam with a heavy polymer skin surrounding a stainless-steel frame allows the CB-75 to be deployed anywhere.



## CB-75

The CB-75 data buoy is a compact, affordable, and easy to deploy platform for both water and atmospheric observations.

| Specifications | CB-75 |
|---|---|
| Hull Outer Diameter in (cm) | 21 (53.34) |
| Hull Height in (cm) | 13 (33.02) |
| Tower Height in (cm) | 8.2 (20.83) |
| Data Well Inner Diameter in (cm) | 5.5 (13.97) |
| Data Well Height in (cm) | 13 (33.02) |
| Pass-Through Hole Diameter in (cm) | 1.5 (3.81) |
| Weight lbs (kg) | 37 (17) |
| Net Buoyancy lbs (kg) | 88 (39.92) |
| Solar Panels Watts | 3x 4-watts |
| Mooring Attachments ¾” eyenut | 4 |

The CB-75 offers a small, cost-effective solution for buoy-monitoring applications. Pair the CB-75 with select sensors and sondes to monitor river, lake, and ocean waters.

## CB-75-SVS Wave Buoy

Equipped with the SVS-603HRi wave sensor, the compact CB-75-SVS wave buoy offers the latest in real-time wave observations with flexible communications and optional expansion for additional sensors. The buoy’s small size makes it easy to deploy in virtually any application at an affordable price.

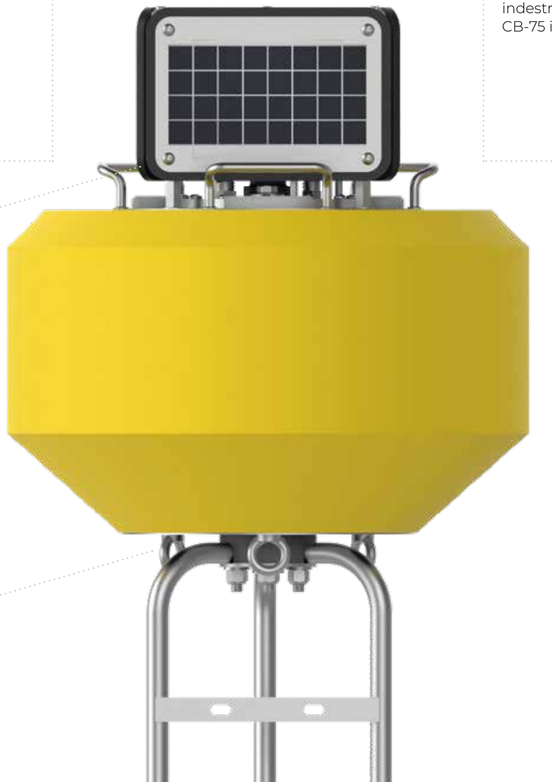
## Key Features

### Compact

With a 21-inch (53.34 cm) hull diameter and less than 40 lb. weight, the CB-75 is ideally suited for tethered moorings.

### Built to Last

Constructed of cross-linked polyethylene foam with a heavy polymer skin and an indestructible stainless-steel frame, the CB-75 is designed for years of service.



### Self-Powered

Three integrated 4-watt solar panels are evenly spaced around the buoy to capture sunlight from any direction and charge the internal battery.

### Sensor Connections

Three sensor ports with wet-mate connectors on the X3-SUB allow for integration with GPS receivers, meteorological stations, water quality sondes and other sensor types on the buoy.

### Mooring Connections

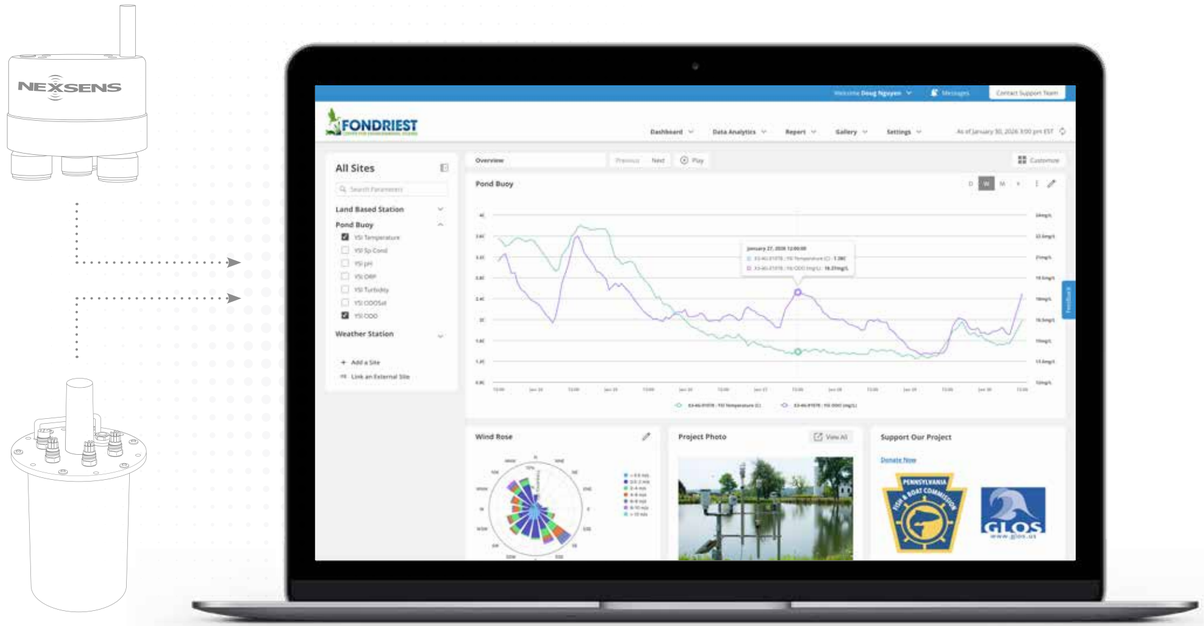
Three eye nuts on the bottom frame provide mooring points for tethering and mooring applications. The stainless-steel instrument cage provides ballast weight and also includes a mooring eye.

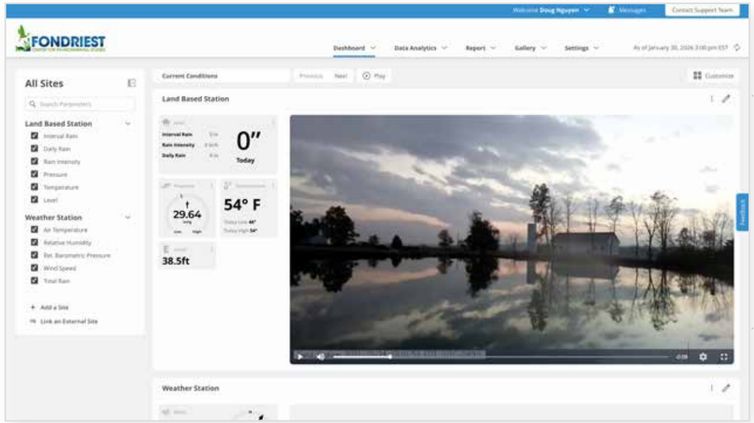
### Top-to-Bottom Ports

Three 1.5-inch pass-through ports allow for sensors to be mounted underwater while securely routing the cable. Each port includes a slotted cap secured by hex bolts.

# WQData LIVE Web Datacenter

WQData LIVE is a web-based service providing 24/7 access to remote environmental monitoring sites. Telemetry-enabled data loggers collect and transmit sensor measurements at predefined schedules. Customizable dashboards reveal trends, monitor performance, support informed decision-making, and transform complex data into actionable insights. Data analytics allow users to examine data and apply statistical methods, helping to identify patterns, draw conclusions, anticipate future trends, and make information more meaningful. Reports consolidate, organize, analyze, and present data in clear, understandable formats with graphs, data tables, and statistical summaries. Exports save data in various formats (CSV, XML, NDBC, GLOS) for integration in other applications, and the API provides direct access to the data for secure information exchange over the internet.




## Current Conditions

The Current Conditions dashboard displays the most recent data and, if available, the site photo or video.

## Project Map

The Project Map dashboard displays geolocated markers for each site with data overlay and alarm indicators.