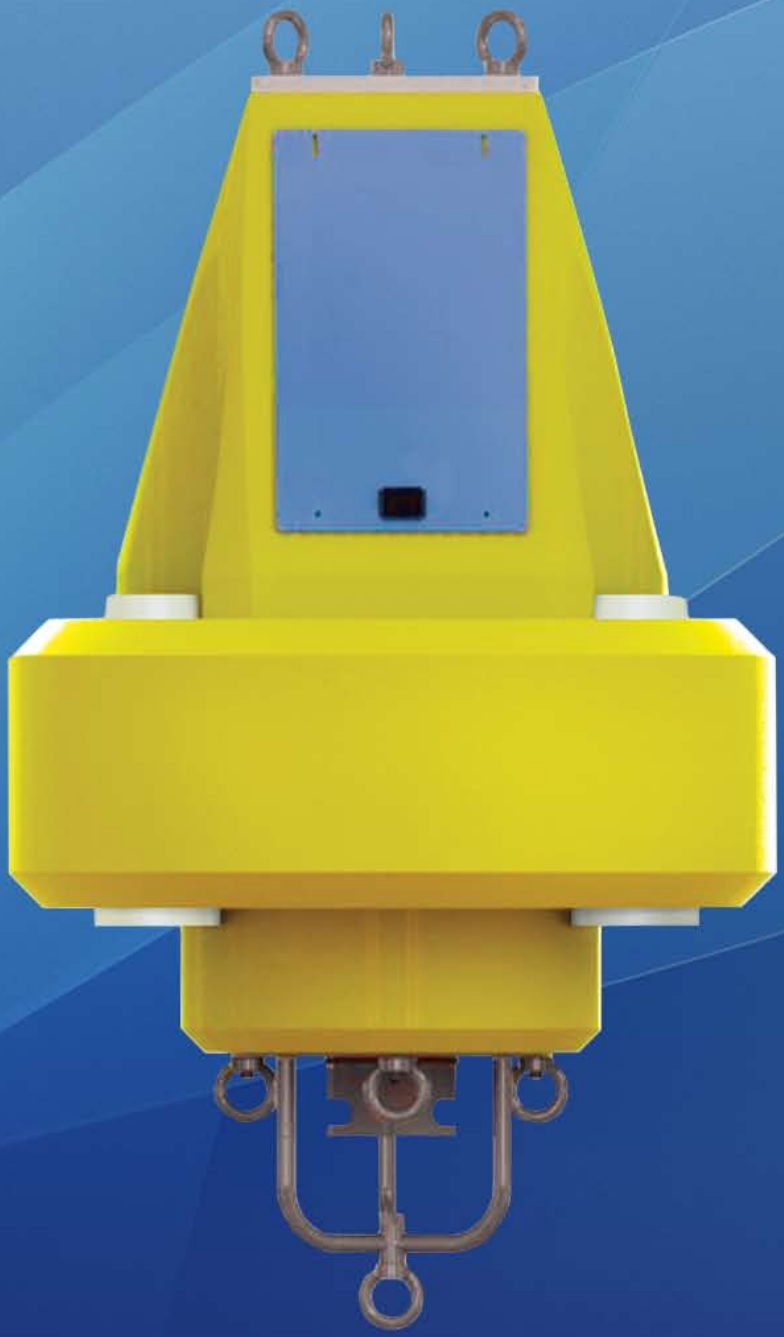
CB-400

Data Buoy

User Manual



NEXSENS technology

About NexSens Technology, Inc.

NexSens Technology, Inc. was founded in the late 1990s with a mission to advance the capabilities and simplify the development of environmental monitoring systems. The company specializes in environmental sensors, remote data acquisition and communications technology, easy-to-use computer software, and web-based datacenters.

iChart Software is an easy-to-learn, easy-to-use Windows-based software program designed to interface with the industry's most popular environmental monitoring sensors and systems. A large, multi-vendor instrument library makes setup quick and easy. iChart automates much of the tedious programming, data collection, and manual data processing common with other environmental data collection systems.

The SDL500 (Submersible Data Logger) and iSIC (Intelligent Sensor Interface and Control) are state-of-the-art data loggers that simplify the collection of real-time data from environmental sensors and monitoring instruments. The data loggers support multi-vendor sensor connections and are specifically designed for environmental data monitoring.

WQData LIVE is an enterprise class and business critical web-based software solution for environmental data management. It assists with collecting, storing, analyzing, interpreting, sharing and publishing environmental data. The datacenter effectively manages a wide variety of biological, physical, and chemical parameters, along with many other environmental observations and project information.

Smart USB-based WQ Sensors include: Temperature, pH, ORP, Dissolved Oxygen, Ammonium, Bromide, Calcium, Chloride, Fluoride, and Nitrate. An integral USB connector on the sensor cable offers a simple, hassle-free connection to a computer without the need for a meter or batteries.

T-Node FR temperature systems, based on RS-485 Modbus technology, provide a simple, yet effective, plug-and-play solution for developing multi-sensor networks and temperature strings. The T-Node FR offers pass-through signals for SDI-12 and RS-485, allowing the user to connect Nodes and other environmental measurement sensors along a string. This sensorBUS architecture has been designed so researchers can easily build and customize multi-point temperature strings for more powerful environmental monitoring networks.

Coastal Buoys are designed to support offshore monitoring systems. These buoys provide a robust floating platform for coastal water or lake monitoring projects.

NexSens products and systems simplify the setup and operation of environmental monitoring networks and help ensure quality data.

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CHAPTER 1 - INTRODUCTION

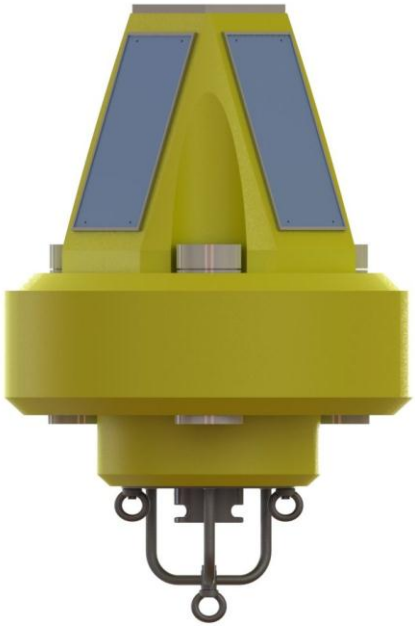
NexSens CB-400 data buoy systems are designed for coastal or lake water monitoring applications. The floating platform supports both topside and subsurface environmental monitoring sensors with options for radio, cellular, and satellite data transmission. Temperature strings, multi-parameter sondes, Doppler current meters, weather stations, and other monitoring instruments can all be quickly deployed in protected coastal waters or lakes.

The 400 lb. buoyancy buoys are constructed of an inner core of cross-linked polyethylene foam with a tough polymer skin. Three 4" diameter PVC pipes pass through the buoy hull for quick deployment of subsurface instruments. On the topside, a removable tower supports weather monitoring stations and beacons.

Multiple configurations are available for the CB-400 data buoy. The standard CB-400 package includes the buoy with no power option. This configuration is designed for use with an SDL500 Submersible Data Logger powered with D-cell alkaline batteries. CB-400S configurations are fitted with three 10-Watt solar panels, which are harnessed together and connected to an RBP500 Rechargeable Battery Pack installed inside the buoy hull. The RBP500 contains an 8.5 A-Hr battery to power the SDL500 and sensors.

The SDL500 is configured with five sensor ports for connection to industry-standard digital and analog sensor interfaces, including RS-485, RS-232, SDI-12, 1-wire temp string, 0-2.5V, pulse count and more. Each sensor port offers a UW receptacle with a double O-ring seal for a reliable, waterproof connection.

NexSens iChart Software is a Windows-based program for interfacing both locally (direct-connect) and remotely (through telemetry) to a single data buoy or network of data buoys.



CHAPTER 2 – COMPONENTS AND SPECIFICATIONS

2.1 CB-400 Components

- Polymer-coated foam hull
- Polymer-coated foam tower
- Stainless steel frame
- (3) 4” PVC instrument deployment pipes
- (7) 3/4-inch stainless steel eye nuts, three on top and four on bottom

2.2 CB-400S Components

- Polymer-coated foam hull
- Polymer-coated foam tower
- Stainless steel frame
- (3) 4” PVC instrument deployment pipes
- (7) 3/4-inch stainless steel eye nuts, three on top and four on bottom
- (3) 10-watt solar panels
- (1) RBP500 Rechargeable Battery Pack with 8.5 A-Hr SLA battery
- (1) Power harness for connection of solar panels to RBP500
- (1) UW-1P 1-meter cable for connection of RBP500 to SDL500 data logger

2.3 CB-400/CB-400S Specifications

Dimensions	**Tower:** 23” diameter, 26” height **Hull:** 36” diameter, 12” height **Overall:** 57” height (without instrument cage), 81” height (with instrument cage)
Weight	**CB-400:** 95 Lbs. (with SDL500, cage and tower) **CB-400S:** 120 Lbs. (with solar, RBP500, SDL500, cage and tower)
Materials	**Hull**: cross-linked polyethylene foam with polyurea coating **Tower:** cross-linked polyethylene foam with polyurea coating
Maximum Buoyancy	400 lbs.
Mooring Attachments	(7) ¾” stainless steel eye nuts, (3) top-mounted and (4) bottom-mounted
Suitable Environments	Freshwater lakes, protected coastal waters, rivers, reservoirs, estuaries
Power Options	**RBP500:** 8.5 A-Hr Sealed Lead Acid (SLA) battery **SDL500 (not included):** (8) D-cell alkaline batteries
Charging	**CB-400S:** (3) 10-Watt solar panels with solar regulator

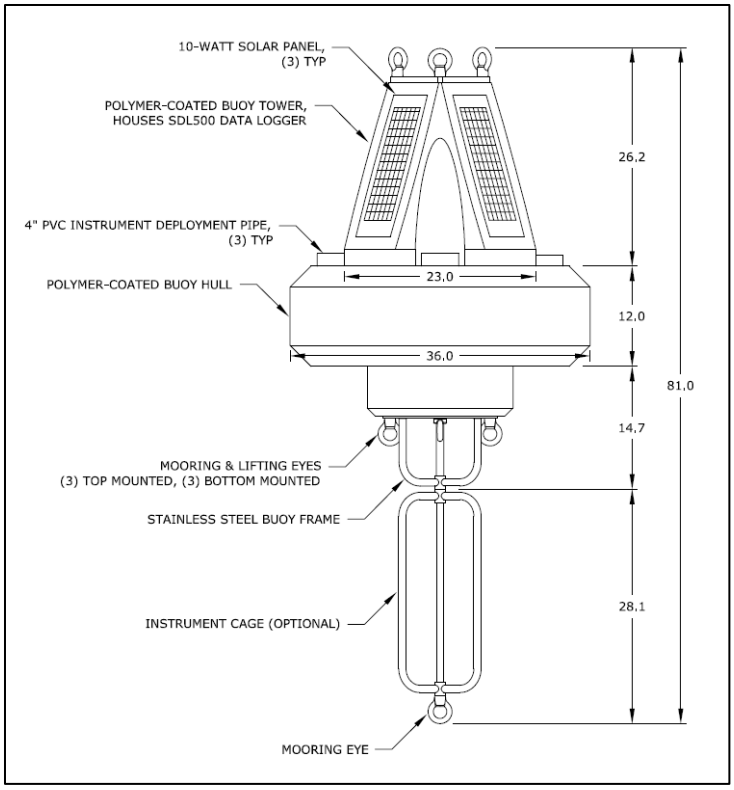


Figure 2-1: Buoy Components & Dimensions

2.4 Common Accessories

Item	Description	Details
RBP500	Rechargeable battery pack	Provides power to an SDL500 in a CB-400S. Optional on CB-400.
CAGE	Instrument mooring cage	For water sensor deployments.
914	Deployment pipe	4” Sch. 80 PVC pipe with threaded adapter.
SDL500	Submersible data logger	Fully submersible data logger designed for use with NexSens data buoys. Direct connect.
SDL500C	Submersible data logger	Cellular telemetry.
SDL500R	Submersible data logger	Radio telemetry.
SDL500I	Submersible data logger	Iridium satellite telemetry.
502-A15	LED Beacon	Mounts to buoy tower, 15 flashes per minute.
DOR35	Anchor	Pyramid anchor, 35 lb.
DOR70	Anchor	Pyramid anchor, 70 lb.
SSPA375-BOW	Shackle	Bow shackle, $^{3}/_{8}$”
SSPA500-BOW	Shackle	Bow shackle, $^{1}/_{2}$”
SSPA625-BOW	Shackle	Bow shackle, $^{5}/_{8}$”
SS187	Stainless steel mooring line	Used for buoy and sensor mooring systems.
HGPC500i	Chain, ½”	Galvanized steel chain used for buoy moorings.
A-3-RED	Marker buoy, 18” diameter	Used for 2-point and 3-point mooring systems.

CHAPTER 3 – GETTING STARTED

Before deploying a CB-400 data buoy , it is very important for the user to become familiar with the hardware connections and operation of the system with iChart software. To begin, lay out the buoy, sensors, data logger, and other components that make up the CB-400 system. Follow the steps in the Chapters 3-5 to test and assemble the system.

3.1 System Connections – Power, Communications and Sensors

CB-400 data buoys are designed to accommodate the SDL500 Submersible Data Logger for connection of monitoring instruments. On CB-400 systems without solar charging, the SDL500 is powered with D-cell alkaline batteries. A communications antenna may be installed in the SDL500 top bulkhead port for radio, cellular or satellite telemetry systems. Sensor connections are made on the top port and/or the five ports on the bottom bulkhead. All sensors and devices must have a NexSens UW connector factory installed in order to connect to the SDL500.

Consult the SDL500 manual for detailed information on the port characteristics to aid in assigning sensors to the appropriate ports. The available ports are shown in Figure 3-1 below.

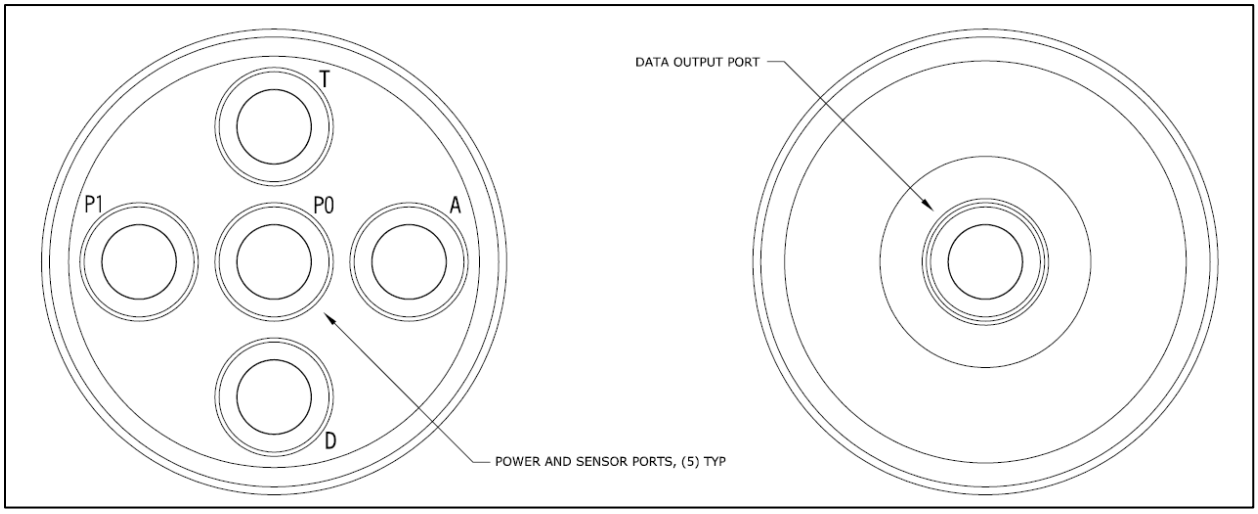


Figure 3-1: SDL500 Bottom (left) and Top (right) Bulkhead Ports

CB-400S systems include an RBP500 Rechargeable Battery Pack and a solar charging kit comprised of three 10-watt solar panels and a power harness with solar regulator. Figure 3-2 is a schematic drawing showing how these components are connected together along with the SDL500.

The three 10-Watt solar panels are harnessed together and connected to a solar regulator. This assembly is connected to **Port D** on the RBP500. Pass-through signals are enabled on the bottom bulkhead of the RBP500 by connecting UW-1P cables from the SDL500 to the RBP500 top bulkhead as shown. The CB-400S package includes (1) UW-1P cable that connects from **Port P0** on the SDL500 to **Port P0** on the RBP500 top bulkhead. This enables sensors to be connected to **Port P0** and **Port D** on the RBP500 bottom bulkhead.

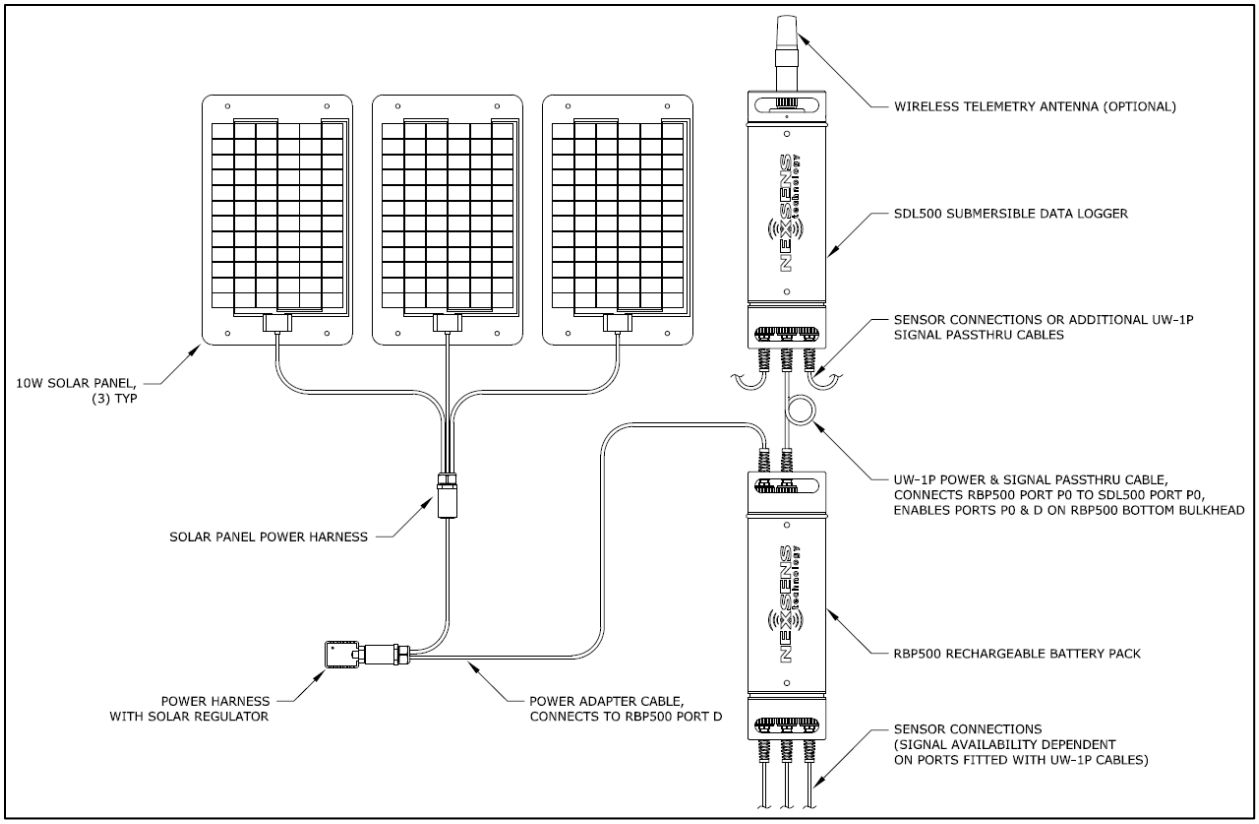


Figure 3-2: CB-400S Power & Communications Schematic

Additional ports can be enabled on the RBP500 by connecting additional UW-1P cables. For example, to enable **Port P1** on the RBP500, a UW-1P cable must connect the SDL500 **Port P1** to the RBP500 top bulkhead **Port P1**. To enable **Port T** on the RBP500, a UW-1P cable must connect the SDL500 **Port T** to the RBP500 top bulkhead **Port T**.

Port A, the Analog sensor port, is not available on the RBP500 because it is used as a vent for the battery. Sensors with analog outputs can only be connected to **Port A** on the SDL500.

3.2 Gathering Sample Data

Prior to buoy setup and deployment, it is essential to test the monitoring system (sensors, data logger and telemetry) on shore. ***This is the most important part of the setup process because it allows users to familiarize themselves with the system while confirming that everything is operating properly.*** Connect all sensors, power the system, and gather sets of sample data with iChart software.

Refer to the SDL500 and iChart manuals for additional information on setup and testing of the software, data loggers and sensors. Systems may also ship with project-specific startup documentation provided by NexSens Customer Support.

For troubleshooting assistance, the NexSens Knowledge Base contains detailed information on many of the most common issues that may be encountered:

http://nexsens.com/knowledgebase/

NexSens tech support specialists may also be contacted for assistance:

NexSens Technology, Inc.
2091 Exchange Court
Fairborn, OH 45324
937-426-2151
support@nexsens.com

CHAPTER 4 – BUOY SETUP

This section contains detailed instructions on the physical setup of a CB-400 buoy system. Directions are included for a complete CB-400S package with solar panels and RBP500 battery pack. For standard CB-400 systems without solar charging, the process is the same, but all sensor connections are made directly to the SDL500 data logger.

4.1 Basic Setup

The basic setup for a CB-400 buoy system requires installing sensor cables, connecting sensors and the RBP500 to the SDL500 data logger, installing the SDL500 in the buoy tower, securing the buoy lid, and installing protective pipe caps. The following steps walk the user through this process.

Warning: The buoy is very heavy. Take care to lift properly and wear necessary lifting gear (e.g., back braces). Always wear gloves when handling the buoy to protect hands as the buoy may have sharp edges or points. Three people are required for safe lifting.

4.1.1 Running Sensor Cables

The buoy has three 4" PVC sensor deployment pipes for deployment of water monitoring instruments. Starting at the bottom of a sensor deployment, feed sensor cables up and into the center chamber of the buoy tower. The cables enter the center chamber through a small slot. Be careful to keep the slot in the sensor deployment pipe lined up with the slot of the buoy tower throughout buoy setup.

Figure 4-1: Feeding Sensor Cable into Buoy Tower

After feeding sensor cables into the center chamber, reach down into the buoy tower. Grab the cables and pull them through the buoy tower opening (top). On a CB-400S package, the chamber will also have a UW-1P cable coming from the top of the RBP500.

Figure 4-2: Sensor Cable and UW-1P Cable

4.1.2 Installing the SDL500 Submersible Data Logger

For SDL500 versions with wireless telemetry (radio, cellular or satellite), an antenna must be connected to the top port. No antenna is needed for the direct-connect SDL500. Instead, the port is plugged or used to connect a topside sensor.

Important: *Double check that there is an O-ring installed on both the antenna plug and at the bottom of the port. The double O-ring seal ensures that connections do not leak. Install the antenna carefully to avoid damaging the pins. Consult the SDL500 manual for additional information on antenna installation.*

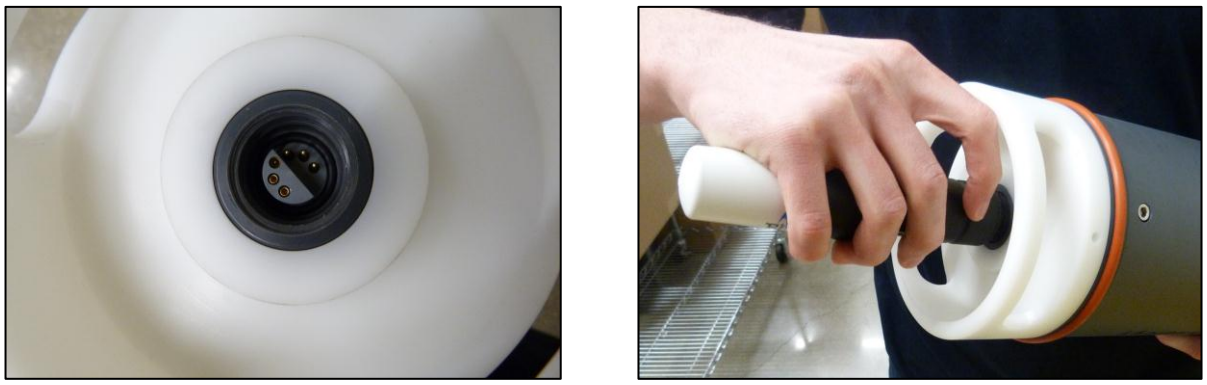


Figure 4-3: Top Port Pins and O-ring and Connecting SDL500 Antenna

Unscrew the plugs from ports that will be used on the bottom of the SDL500. Store them with the SDL500 maintenance kit for future use. For CB-400S systems, Port P0 will always be used to connect to the RBP500 with the UW-1P cable. Remove the large orange O-ring at the bottom of the SDL500. Keep with the SDL500 maintenance kit.

Figure 4-4: SDL500 with Port Plugs and Bottom O-ring Removed

Connect the UW-1P cable running from Port P0 on the RBP500 to Port P0 on the SDL500. Connect additional sensor cables to the appropriate ports. Refer to the SDL500 manual for additional information on sensor-specific port selections. *Again, double check for the O-rings on all UW plugs and ports.*

Carefully slide the SDL500 into the center chamber of the buoy tower. Extra cable slack may need to be drawn through the sensor deployment pipes as the SDL500 is lowered.

Figure 4-5: SDL500 Cable Connections and Installation

4.1.3 Securing Buoy Lid

Install the buoy lid to the tower cap using the (3) 3/8”-16 bolts provided with the system. Include a washer and a lock washer between the bolt head and the lid (the washer sits under the lock washer). Tighten the bolts until the lock washers are flattened, then an additional 1/8” turn. *Do not over-tighten the bolts to avoid stripping of the threading on the lid and cap.*

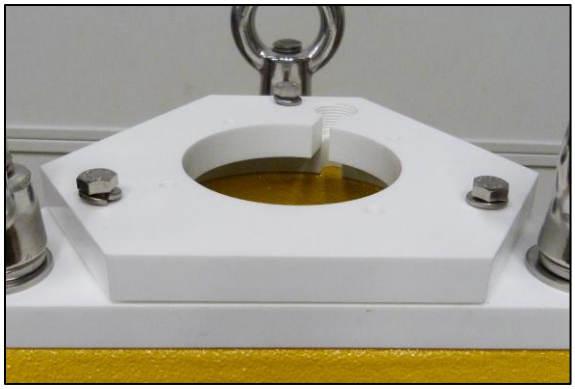


Figure 4-6: Buoy Lid Installation

Optional beacons or weather sensors to be mounted on the buoy lid can be installed once the lid is securely in place.

4.1.4 Setting Pipe Caps

PVC caps are included for additional protection of sensor pass-through tubes. Place a cap over each opening and secure with the provided bolts.

Figure 4-7: Pipe Cap on a Sensor Pass-through Tube

4.1.5 Connecting Bottom Sensors

On a CB-400S configuration, sensors may connect into **Port 0** and **Port D** on the bottom of the RBP500 battery pack. The RBP500 acts as a pass-through, so the signal availability on enabled RBP500 ports is the same as is available on the SDL500. For example, the RS-232 and SDI-12 signals on the SDL500 **Port P0** are also available on the RBP500 **Port P0** when the UW-1P cable is attached.

Port P1 and **Port T** can be made available by connecting additional UW-1P cables between the battery pack and SDL500 within the buoy. **Port A** is unavailable on the bottom side of the buoy because it serves as a top-side battery vent. The SDL500 manual contains detailed information on selecting ports for sensor connections.

Double check that each UW plug and port have an O-ring installed. Missing O-rings will result in water intrusion and sensor failure. See Section 4.1.2 for more information.

Figure 4-8: Sensor Connected to RBP500 Port P0

4.2 Accessories

Deployment pipes, instrument cages and ballast weights can be added to CB-400 buoy systems. Deployment pipes and instrument cages provide options for secure mounting of sensors, and ballast weights can help to balance the buoy and prevent overturning.

4.2.1 Deployment Pipe

Deployment pipe extensions are easily fitted to the built-in sensor deployment pipes to provide extra protection for sensitive monitoring equipment. The 914 deployment pipe is a 4" Schedule 80 PVC pipe section that attaches to the sensor deployment pipes with a threaded adapter. The bottom of the 914 pipe is fitted with a stop bolt to keep sensors in place.

To attach a 914 deployment pipe, lay the buoy on its side and thread the deployment pipe into one of the three available pass-through sensor tubes. Take caution to avoid cross-threading of the adapter. Also make sure the built-in deployment pipes do not rotate inside the buoy hull. The slotted top end must be properly aligned with the slot in the buoy tower to allow sensor cables to run from the tower to the deployment pipe assembly.

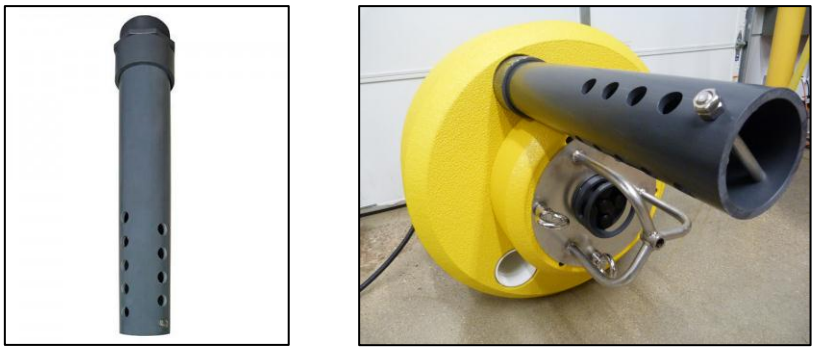


Figure 4-9: CB-400S with 914 Deployment Pipe

4.2.2 Instrument Cage

The CB-400 buoy allows an instrument cage to be installed on the bottom. Sensors can be securely attached to the instrument cage. To install the cage, first remove the 1-3/4”-10 x 4” bolt, 1-3/4” lock washer and 1-3/4”-10 nut from the buoy frame.

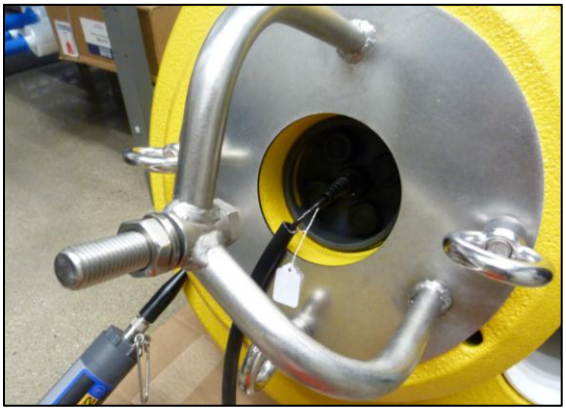


Figure 4-10: Bolt on Buoy Frame

Run the bolt downward through the buoy frame and top of the cage. Place the lock washer and nut onto the bolt.

Figure 4-11: Securing the Cage Assembly

Tighten securely with large crescent wrenches, and *weld the connection to prevent the cage from coming loose in rough water.*

4.2.3 Ballast Weight

Proper ballast weight is essential to prevent buoy overturning. Carefully consider the site-specific ballast requirements prior to deployment.

A 25 lb. ballast weight is available for installation to the bottom of the instrument cage for additional balance. Begin installation by inserting the 9-3/4" threaded rod section through the ballast weight and bottom of the buoy frame or instrument cage assembly.

Figure 4-12: Inserting the Threaded Rod

On the bottom end of the rod, tighten a 1-3/4" eye nut with a 1-3/4" lock washer. Tighten the top end of the rod securely to the buoy frame or instrument cage with a 1-3/4"-10 nut and 1-3/4" lock washer. *Weld the connections to prevent loosening in rough water.*

Figure 4-13: Securing the Ballast Weight

CHAPTER 5 – MOORING THE BUOY

This section contains only general information on the available mooring options. To develop an effective mooring strategy, a variety of application-specific criteria must be thoroughly reviewed prior to deployment. Adverse weather conditions, water level fluctuations, currents and wave action, debris loads, and other factors can cause entanglement of mooring lines, submersion of the buoy, and damage to sensors and other components. NexSens does not endorse any particular mooring strategy for any application unless the end user performs a thorough review of the site conditions with the NexSens engineering team.

5.1 Mooring Configurations

CB-400 buoys contain a total of four bottom-side eye nuts to accommodate single-point, two-point and three-point mooring styles. Three of the eye nuts are arranged in a semi-circle directly at the bottom of the hull for two- and three-point moorings. The final eye nut is located on the bottom of the buoy frame or instrument cage if one is installed. This nut is used for single-point moorings or to deploy sensor chains.

5.1.1 Single-Point Mooring

Single-point moorings are used in extremely calm waters when monitoring sensors are attached to the instrument cage or housed in deployment pipes. The sensors are thus protected and less vulnerable to damage caused by subsurface debris, high currents, and entanglement from anchor lines.

In a single-point configuration, a stainless steel mooring line connects the buoy directly to a bottom chain and anchor. The anchor, bottom chain, and mooring line are assembled and attached to the buoy prior to deploying the system.

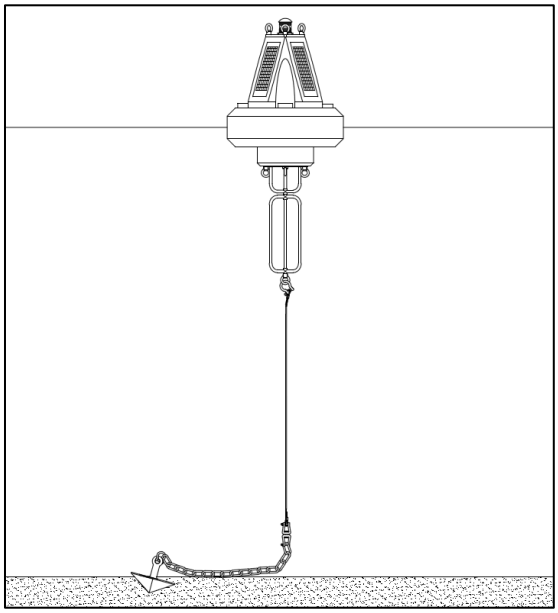


Figure 5-1: Typical Single-Point Mooring Setup

5.1.2 Two-Point and Three-Point Moorings

Two-point moorings are commonly used when monitoring sensors are deployed in the water column below the buoy. In this setup, the mooring lines are pulled taut away from the buoy, freeing the water column for a suspended sensor line.

In most two-point configurations, mooring lines connect the data buoy to small marine marker buoys. These marker buoys are shackled to another mooring line that runs to the seafloor and connects via a bottom chain to an anchor.

Three-point configurations are similar to two-point, but a third set of anchors, mooring lines and marker buoys keep the buoy in place.

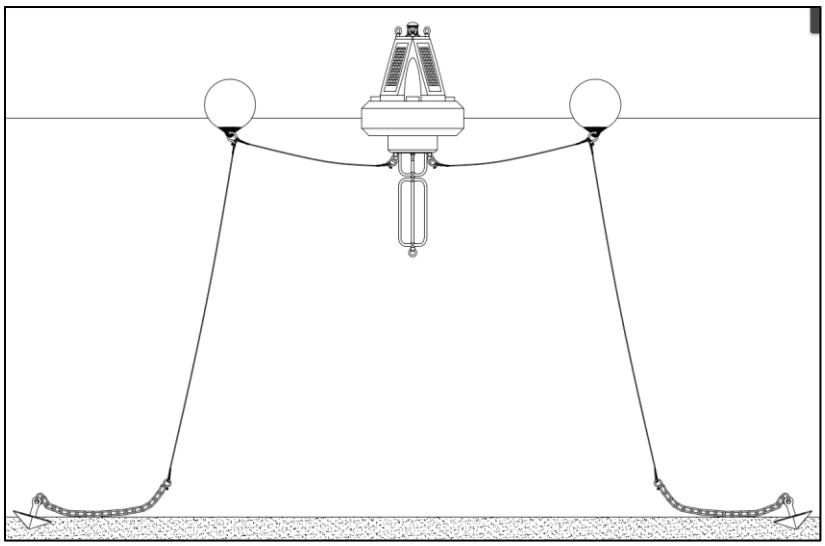


Figure 5-2: Typical Two-Point Mooring Setup

5.2 Connecting Mooring Hardware

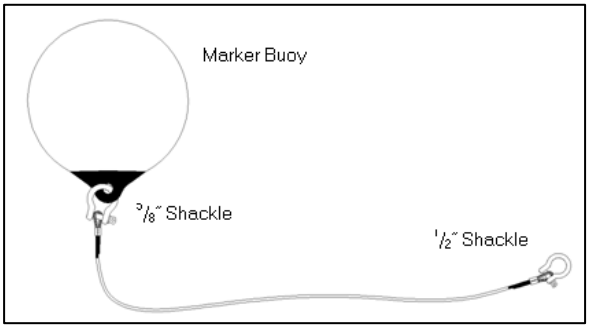
Stainless steel bow shackles are used to connect the various mooring components (mooring lines, marker buoys, chains and anchors) together and to the CB-400 buoy. Bow shackles must be properly connected and secured to prevent hardware from loosening and becoming detached over time in rough water conditions.

After hand-tightening a bow shackle, use a crescent wrench to tighten the connection. Then, run a cable tie through the hole on the shackle pin and run this through the loop of the shackle. Pull tightly to secure.

Figure 5-3: Attaching Mooring Lines

Figure 5-4: Cable Tie Installed on Bow Shackle

A 1/2” bow shackle is used to connect mooring lines to the CB-400 buoy eye nuts and to 1/2” bottom chains. Larger, 5/8” bow shackles are required for connection of marker buoys and anchors.



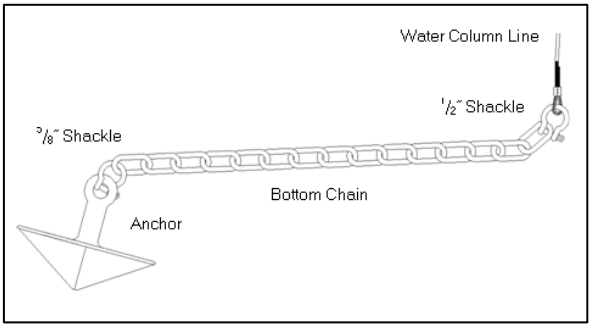


Figure 5-5: Mooring Components

CHAPTER 6 – SAFELY DEPLOYING THE BUOY

Personnel safety should be the number one priority when deploying a buoy. *It is essential to use the proper equipment (work boat, lifting rig, etc.) to deploy any buoy system. Buoy systems are heavy and personnel can quickly become entangled with mooring lines and anchors. Safety and flotation gear should be worn at all times when working on or near the water.*

Remember to perform a complete system test on shore before deployment. Communication and sensor issues are much easier to troubleshoot before the system is in the water. See Chapter 3 for additional information.

6.1 Single-Point Mooring Deployment

Deployment of a single-point mooring system is a fairly straightforward process. With the buoy in the boat, begin by connecting all mooring hardware (see Section 5.2) including the connection of the mooring line to the bottom eye nut of the CB-400.

Next, with the buoy still in the boat, lift the anchor over the side of the boat and drop in the water at the chosen deployment location. *Be sure that the mooring line and bottom chain assembly is long enough that dropping the anchor does not pull the buoy over the side of the boat.*

Finalize any sensor connections and apply power, then lift the buoy over the side of the boat and set in the water. Deployment of the system is complete.

6.2 Two-Point and Three-Point Mooring Deployment

For deployment of a two- or three-point mooring system, first connect all mooring components inside the boat. Navigate to the chosen location for the first anchor. Lift the anchor and marker buoy over the side of the boat and drop into the water. *Be sure that the mooring line and bottom chain assembly is long enough that dropping the anchor does not pull the buoy over the side of the boat.*

Then, move to the location where the buoy will sit. The distance from the position of the first anchor to the buoy location is determined by the lengths of the mooring lines that are attached. Pay out the mooring line from the marker buoy to the CB-400 as the boat is moved. Finalize sensor connections and apply power, then lift the buoy over the side of the boat and set in the water.

Move onward to the location of the second anchor. Lift the anchor and marker buoy over the side of the boat and drop into the water. Repeat this process if a third mooring point is to be used.

CHAPTER 7 – MAINTENANCE

System maintenance requires that the buoy is regularly visited for inspection and sensor calibrations. If solar panels are present, clean thoroughly as needed to optimize performance. *Solar panels are made of glass and will break. Avoid dropping tools or impacting them with other objects.*

7.1 Post-Season Cleaning

To decommission the buoy, first pull the sensor mooring line followed by anchor and buoy lines. Scrub all components to remove biological fouling and store buoy in a clean, dry location. A pressure washer may be used to remove fouling on the buoy hardware, but take caution before using a pressure washer on sensors and other sensitive equipment.

If possible, store the buoy near a window facing south to prevent excessive draining that can be harmful to the rechargeable battery. Alternatively, bring the buoy outside on sunny days to periodically charge the battery.

7.2 Replacing an RBP500 Battery Pack

CB-400S configurations ship with the RBP500 Rechargeable Battery Pack preinstalled in the buoy hull. The RBP500 includes an internal 8.5 A-Hr sealed lead acid (SLA) battery that is recharged by the 10-Watt solar panel assemblies. The typical lifespan of the SLA battery is 1-3 years. The battery should be replaced as needed or a minimum of every 3 years.

Removal of the buoy tower is necessary in order to access the RBP500 for removal and replacement. To gain access to the hull, the SDL500 must first be removed from the tower. Remove the 3/8”-16 bolts from the buoy top lid and store in a safe location. Carefully pull the SDL500 through the top of the buoy to expose the sensor connections on the bottom bulkhead. Disconnect the UW-1P cable from port P0 and any other sensors connected. Set the SDL500 aside with the buoy top lid.

Next, the topside stainless steel eye nuts must be removed. Use a large wrench to loosen the eye nuts. Remove the eye nuts, lock washers and washers and store them in a safe location.

Figure 7-1: Loosen Topside Eye Nuts

Remove the lid and store with the eye nuts. Gently lift the tower upward from the hull. Prop the tower about 12” above the hull, or have an assistant hold the tower in this position. Remove the solar panel power cable from port D on the top RBP500 bulkhead.

After disconnecting this cable, continue lifting the tower until it is free from the buoy. Set this aside with the SDL500 and other hardware. Be careful to avoid damaging the PVC guide pipes that protrude from the bottom of the tower.

Figure 7-2: Disconnecting Power Cable from Port D and Removing the Tower

Lift the RBP500 up from the buoy hull to remove. Make sure the replacement RBP500 has an orange O-ring installed around the top to hold it in place. Lower the replacement RBP500 into the hull chamber.

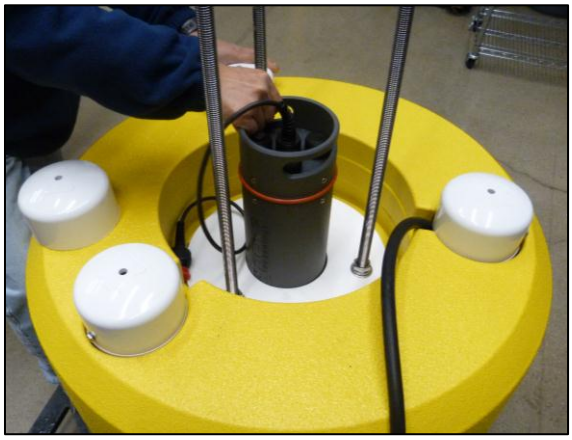


Figure 7-3: Replacing the RBP500

Reconnect the UW-1P cable that connects the RBP500 to the SDL500 to **Port 0** on the top bulkhead of the battery pack. Carefully slide the tower back onto the hull. Feed the UW-1P cable that connects the RBP500 to the SDL500 through the center of the tower so that it can be reconnected to the SDL500. Before lowering the tower completely, reconnect the solar panel power cable to **Port D** of the RBP500.

Important: *Double check for O-rings on the UW connectors and inside the RBP500 and SDL500 ports.*

Figure 7-4: Reconnecting Power Cable to Port D

Reconnect the UW-1P cable and any sensors to the SDL500. Reinstall the SDL500 inside the buoy tower. Tighten the eye nuts using a large wrench and reinstall the buoy lid. For eye nut reinstallation, set a washer and lock washer onto the lid at each location. Tighten the eye nuts by hand or with a large wrench as needed to flatten the lock washers.

Figure 7-5: Tightening Eye Nuts

CHAPTER 8 – WARRANTY & SERVICE

NexSens Technology, Inc. warrants products against defects in materials or workmanship for a period of 12 months from the date of delivery to the original customer. This warranty is limited to the replacement or repair of such defects, without charge, when the product is returned to NexSens Technology, Inc. Damage due to accidents, misuse, tampering, lack of reasonable care, loss of parts, failure to perform prescribed maintenance, or accidents of nature are not covered. This warranty excludes all other warranties, express or implied, and is limited to a value not exceeding the purchase price of the instrument.

8.1 Limitation of Warranty

This warranty is not applicable to any NexSens Technology, Inc. product damage or failure caused by failure to install, operate or use the product in accordance with NexSens Technology, Inc. written instructions; abuse or misuse of the product; failure to maintain the product in accordance with NexSens Technology, Inc. written instructions; any improper customer repairs to the product; use by the customer of defective or improper components or parts in servicing or repairing the product; or customer modification of the product in any way not expressly authorized by NexSens Technology, Inc.

NexSens Technology, Inc. products are not authorized for use as critical components in any life support system where failure of the product may affect its safety or effectiveness.

8.2 Corporate Headquarters & Authorized Service Center

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